

# Plan Helps LA's ExpressLanes Meet Expectations

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## Introduction / Background

The drivers on the storied freeways of the Los Angeles County urban area are accustomed to traffic congestion. With more than 10 million residents in 4,000-square-mile LA County, and a complex transportation network that includes major facilities such as Los Angeles International Airport (LAX) and the high-volume ports of Los Angeles and Long Beach, this region is well known to be the most traffic-congested urban area in the US. The LA freeway system, including its network of high occupancy vehicle (HOV) lanes, is the most extensive in the country.<sup>1</sup> The system is managed by California Department of Transportation (Caltrans) in partnership with the Los Angeles County Metropolitan Transportation Authority (Metro) and with support from the California Highway Patrol (CHP), which plays a primary role in incident response.

While the large and concentrated population and employment base is the main factor in the high levels of traffic congestion, rapid growth of freight movement traffic – particularly trucks transporting containers – has also contributed to this congestion. Increasing numbers of traffic incidents, especially along major freight corridors, exacerbate the problem.

LA's "rush hour" or congested peak-period traffic occurs every morning from 5 to 9 a.m. and every evening from 4 to 7 p.m. About 86 percent of LA's peak-period vehicle miles occur in congested conditions.<sup>1</sup>

Metro is the largest public transportation provider in the region. Metro serves an area of 1,433 square miles, and 16 other municipal transit operators also provide bus service in the county.

## ExpressLanes: Pilot Program Offers Assistance

LA's I-10 and I-110 highways are key transportation corridors that move traffic to and from downtown Los Angeles. While these sections of highway do not carry major cargo or a heavy influx of commercial vehicles, they do have some local delivery with a normal occupancy of commercial vehicles in the general purpose lanes. Prior to this project, the I-110 and I-10 had HOV lanes in each direction.

Federal legislation encourages states to implement high occupancy traffic lanes in areas with air quality or traffic problems.<sup>2</sup> As part of this encouragement, the US Department of Transportation (USDOT) entered into an agreement in April 2008 with Metro and Caltrans. The agreement awarded a \$210.6 million federal grant to convert existing HOV lanes into dynamically priced high occupancy toll (HOT) lanes as a congestion pricing pilot project known as ExpressLanes.

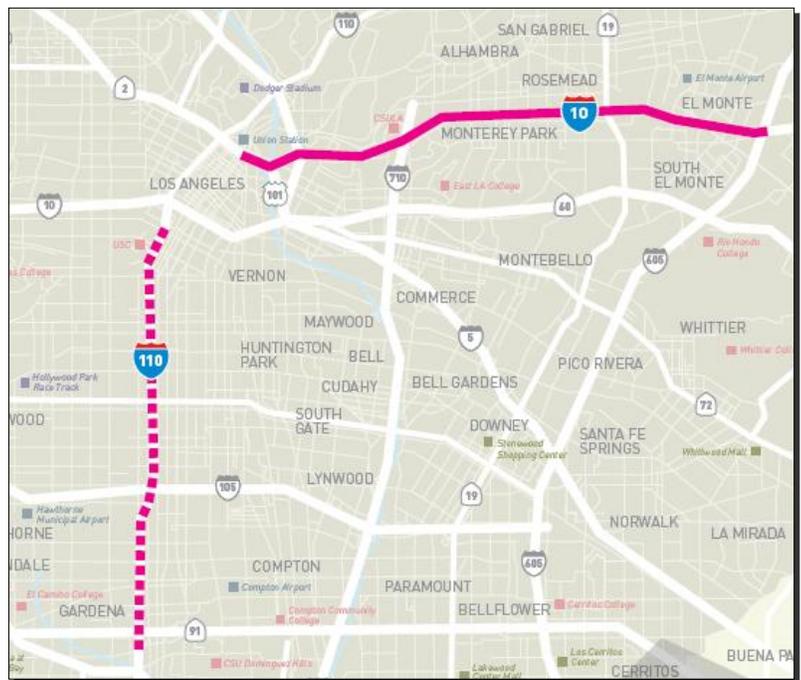


Figure 1: Metro ExpressLanes Project Limits  
Map courtesy of Metro

<sup>1</sup> Los Angeles County Congestion Reduction Demonstration National Evaluation Plan  
<https://www.metroexpresslanes.net/en/about/performance-measures-national-evaluation-plan.pdf>

<sup>2</sup> Federal Highway Administrations Frequently Asked Questions: <http://ops.fhwa.dot.gov/freewaymgmt/faq.htm>

Metro ExpressLanes is a one-year demonstration program operated by Xerox as part of the design-build-operate-maintain (DBOM) contractor team led by Atkinson, LLC. Partnering with Caltrans, Metro converted 11 miles of existing HOV lanes on the I-110 Harbor Transitway to HOT lanes as of November 10, 2012. It did the same for 14 miles of the I-10 El Monte Busway starting February 23, 2013. The program is designed to improve traffic flow and provide enhanced travel options on the I-110 and I-10 with the introduction of congestion pricing. It allows single-occupancy vehicles (SOVs) to use HOT lane capacity by paying a toll, which is an option not available on HOV lanes.

## Congestion Pricing: Dynamic Management of Tolling

By operating under this USDOT grant, Metro is committed to maintaining a minimum speed of 45 mph during 90 percent of the peak periods in the HOT lanes through dynamic pricing. This was seen by USDOT as a way to “test the public’s willingness to accept pricing as a way of moderating congestion and improving transportation facility utilization in the Los Angeles region.”<sup>3</sup>

In developing the congestion pricing system, a variety of factors needed to be considered including the issuance of “SigAlerts,” which would generally consist of incidents requiring lane closures for up to 30 minutes or more. SigAlerts are typically issued by CHP and posted on their website, with notifications also being sent out by radio, news broadcasts and electronic message signs on the affected freeways. SigAlerts issued for the ExpressLanes which cause average “trip” speeds for toll paying customers to drop below 45 mph, would prompt the system to automatically credit back the toll to the affected accounts..

Maintaining this kind of speed and service can only be achieved by **effective and efficient management of traffic incidents**.

## Operational Guide: Traffic Incident Management Plan

Metro needed to create a specific incident management plan for the ExpressLanes. This plan would not replace existing incident management plans but it would describe supplemental roles, responsibilities and procedures for clearing incidents that impact the operation of the ExpressLanes. The goal of this plan would be to clear incidents as quickly as possible so that the ExpressLanes can function at or above the minimum 45 mph speeds required by the federal grant.

**With regular review and practice, operationally based traffic incident management plans increase safety for responders and motorists.**

This challenge required taking an *operational* approach to incident management, which was new to area transportation players. Stantec Consulting led a team that included CH2M HILL to create an **operationally based traffic incident management plan (TIMP)**.

Implementing an operationally based TIMP can create an efficient, professional response when an incident occurs. With regular review and practice, these plans increase safety for responders, secondary vehicles, and the people involved in an incident. And an organized response creates less impact on traffic.

Creating the TIMP involved bringing stakeholders and responders together, building plans for ongoing and emergency communication, and refining procedures for moving traffic as smoothly as possible even during incidents. The TIMP was developed with the understanding that it was a living document and the stakeholders would continue providing input during operations of the ExpressLanes in order to add components unique to the system and the region. This collaborative process allows the TIMP to change as needed and meet the performance measures stipulated by the grant.

<sup>3</sup> Los Angeles County Congestion Reduction Demonstration National Evaluation Plan  
<https://www.metroexpresslanes.net/en/about/performance-measures-national-evaluation-plan.pdf>

Because the ExpressLanes project is federally funded, the development of the ExpressLanes TIMP is consistent with the National Incident Management System (NIMS) principles and nomenclature.<sup>4</sup> The TIMP designates the roles of the various responders and the procedures that are to be followed, as described below.

## Managing Incidents on the ExpressLanes: CHP and FSP

For incidents on area freeways, CHP is typically the designated Incident Commander; it is assisted in incident response by the **Freeway Service Patrol (FSP)** through contracts managed by Metro. FSP consists of independent contractors who provide their services on defined beats during set hours with their own dispatcher, trucks and drivers. When a traffic incident occurs, CHP dispatches their patrol officers to the scene and communicates any other response needs to the assigned CHP or FSP dispatcher responsible for the beat on which the incident has occurred.

Additional FSP patrols are under contract to Metro for exclusive use on the I-10 and I-110 ExpressLanes. Their operating procedures differ from those in the general purpose lanes in that the primary emphasis in all cases is for FSP to clear the disabled vehicle or obstruction from the ExpressLanes as quickly as possible (within 10 minutes), rather than accomplishing minor repairs on the shoulder as they may do on the general purpose freeways.

The functional roles and responsibilities of CHP and FSP are itemized in the TIMP.



**Figure 2: Static ExpressLanes Signs**  
*Photo courtesy of Atkinson/Xerox*

## The Role of Metro Bus Operations and Caltrans in Incident Management

The TIMP explains the roles of Metro and Caltrans in managing incidents on the ExpressLanes as follows:

- Metro Bus Operations runs more than 2,200 transit vehicles/buses within Los Angeles County to provide transit connections that move large numbers of patrons and increase their mobility choices.<sup>5</sup> Any Metro (or other) bus that becomes disabled or involved in an incident in the ExpressLanes requires a heavy duty tow truck dispatched by the bus operator or CHP. To avoid impacts on traffic, Metro bus operators are trained to attempt to get the bus off of the interstate and avoid stopping the vehicle in the ExpressLanes. Because several other transit providers operate on the ExpressLanes, Metro is establishing a uniform strategy for incident management of disabled buses.
- Caltrans' role in the ExpressLanes is its operation, along with CHP, of the Los Angeles Regional Transportation Management Center (LARTMC), a focal point for incident management and emergency response. Operators at the LARTMC are notified of traffic incidents as soon as they are entered and displayed on the computer aided dispatch (CAD) system operated by CHP. Each newly entered incident viewed by Caltrans operators at the LARTMC is verified using intelligent transportation system (ITS) devices including cameras and sensors. Once verified, the Caltrans operator assesses the scope and severity of the incident, and then assists in the response with proper resources. In the case of major incidents, Caltrans may activate its Traffic Management Team (TMT), which can help by monitoring back-ups and routing detours. It is this infrastructure that the TIMP supplements for incident management response in the affected lanes.

## Operating the ExpressLanes: DBOM Contractor

As the tolling operator for the DBOM Contractor, Xerox monitors the toll system and traffic using ITS devices on both the I-110 and I-10 corridors. Personnel described in the TIMP as Toll System Operators (TSOs) control the

<sup>4</sup> Since October 1, 2005, all states and territories have been required to meet NIMS implementation requirements to be eligible to receive federal preparedness assistance in the form of grants, cooperative agreements and direct contracts.

<sup>5</sup> Metro's Facts at a Glance - <http://www.metro.net/news/facts-glance/>

ExpressLanes dynamic message signs that are used to convey toll and other information to the ExpressLanes users. The signs have been installed in the medians of the freeways, on bridge-mounted structures, and on arterial streets, and they provide information to drivers to help them determine whether they want to enter the lanes. The TIMP provides specific messaging for the TSOs to use to communicate incident information on the signs.

As part of its function, the tolling system measures the speed, volume, and flow density of vehicles in the ExpressLanes. The TSOs participate in the management of incidents identified by them or by others. If, while monitoring the lanes, the TSOs determine that there is a traffic incident in the ExpressLanes, they notify CHP Dispatch of the direction, severity, and milepost location of the incident. Then CHP Dispatch communicates the incident to FSP and local emergency medical services (EMS) including the appropriate fire department, if necessary. The TSOs then take the appropriate actions including changing messages on the dynamic message signs and coordinating appropriate messaging with the Caltrans message signs in the general purpose lanes.

The TIMP provides a description of the required tasks of the TSOs during incidents, including flow charts with the appropriate communication protocols.



**Figure 3: ExpressLanes Dynamic Message Signs**  
Photo courtesy of Atkinson/Xerox

## Communication among the Stakeholders

Because communication is so vital to smooth corridor operation and management of incidents, it was incorporated early in the process of creating the TIMP. Stantec conducted meetings with the stakeholders and responders who would be involved specifically in incident management on the ExpressLanes. At the meetings, participants discussed incident categories, examples of potential incidents, and current procedures. Stantec incident management specialists encouraged high levels of communication among responders and dispatchers and emphasized this as key to the level of incident response needed for this project.

Examples of discussions that took place during these meetings included instructions for new ExpressLanes TSOs and responders to call the LARTMC for updates about incidents rather than waiting to receive them. In addition, the TSOs were encouraged to report incidents to CHP the moment they observed them on camera. Caltrans and CHP dispatchers were able to explain their setup and procedures to other stakeholders and invite them to visit the LARTMC to better understand how incident information is tracked and communicated. Prior to going “live,” tabletop exercises were conducted with the group to simulate incident response.

Metro compiled a contact list — including its Bus Operations and FSP Management groups, the DBOM Contractor, Caltrans, and CHP — to be sent to the stakeholders and responders before the ExpressLanes became operational. They planned to conduct recurring meetings with the key partners where any changes or additions to the list could be announced to the group.

The key to building the communication strategy for incident management is the simple term “operational.” Each agency is proficient in its respective field of responsibility, able to manage responses from the standpoint of individual responsibility. The key factor in building the plan is to create a way for each agency representative involved in an incident to understand the other agency's operational responsibilities. This allows the responder to have a comfortable level of understanding of what the other agency representative's duties are when an incident is not underway, so that while they are under the stress of an ongoing incident, they can communicate with one another with an increasing degree of comfort. This builds the safer, more efficient environment that constitutes working under an “operationally based” TIMP.

Regular meetings create a level of familiarity from one agency to another as each learns “why they do what they do at an incident” and “how we can work together to improve the overall incident management experience.” This in turn builds ownership of the TIMP and it becomes *their plan*.

The lessons learned through this incident cycle — from occurrence, to mitigation and management, to review, to changes in procedures — leads to continual modification and improvement. This is what makes the TIMP a living document. This process is continued at the rate necessary to keep up with changing conditions and the influx of new people into the group. It also serves as a great training tool for the uninitiated or new staff assigned a role in one of the response agencies; they can be brought up to speed much more quickly than in the traditional sense of incident management.

## Going Live: TIMP in Place, ExpressLanes Begin Operation

The TIMP went through several reviews, not only by the stakeholders, but by the actual personnel involved in incident response. Since the I-110 became operational in November of 2012 and the I-10 in February 2013, incident data has been collected by Xerox. Reports as of May 7, 2013 indicated that approximately 187 incidents had occurred on the I-110 ExpressLanes and 62 on the I-10 ExpressLanes. For the I-110, this included 126 minor incidents, 53 intermediate incidents, and 8 major incidents. For the more recently opened I-10 ExpressLanes, this included 13 minor incidents, 29 intermediate incidents, and 20 major incidents. (The incident levels are explained in the box at right; their definitions have been refined and changed as the procedures have been continually studied.)

The TIMP is working as it should; as a living document, it has been changed and updated as operations warrant, to tailor it for the traffic conditions on both corridors (with changes mostly to incident definitions and notification procedures).

Because Los Angeles, like most metropolitan areas, sees multiple minor to major incidents every day, all players in this operation expect a learning process at this stage now that both corridors have gone into operation.

Both facilities use ongoing programs by dedicated agencies to assist in responses to traffic incidents. As part of the early planning of the ExpressLanes, Metro made a decision to add a number of assets from CHP and the FSP program. While CHP officers were already assigned to the general purpose lanes, additional dedicated officers were assigned to each facility of the ExpressLanes as well, to supervise, respond, and serve as Incident Commander in their safety and enforcement role for the ExpressLanes. These additional resources added to the quick response strategy that the TIMP utilized.

Every minute counts in the ExpressLanes. So, to assist with quick clearance of vehicles after incidents, Metro decided to utilize flatbed tow units instead of the traditional hook-type tow truck. This change could allow one truck to move two vehicles at once instead of the traditional one-for-one tow. In addition, the ExpressLanes FSP patrol units' beats are shorter than those of the general purpose lanes, to decrease the travel distance needed for response.

The key to all of this coming together is the communication protocols. Each agency uses its assigned communication methodology with standardized procedures to communicate their knowledge of an incident to the LARTMC. In turn, the LARTMC is making sure to communicate incident information to each involved agency. When this occurs, multiple agencies are aware of an ongoing incident and can respond as a timely, accurate, and coordinated operation to increase efficiency, safety, and speed of response.

Continued refinement of this TIMP requires review and modification of procedures learned from actual incident outcome. This regular review is being completed through the use of debrief protocol. When the I-110 portion was opened in November of 2012, daily conference calls were made between all of the major agencies involved in the management of the facility. On the surface this may not sound complicated, but it involved multiple entities as well as multiple jurisdictions that must coordinate and communicate with each other. Henry Fuks and Stephanie Wiggins of Metro provided valuable leadership and guidance in the process of creating the procedures and drafting the

<b>Minor Incident</b>	Incident occurring in the ExpressLanes or general purpose lanes, for any reason, which lasts up to 10 minutes
<b>Intermediate Incident</b>	Incident that closes or blocks any lane of ExpressLanes, or when incidents in the GP Lanes "spill over" into the ExpressLanes, for a duration of 11 to 29 minutes during peak hours, and up to one hour outside of peak hours
<b>Major Incident</b>	<ul style="list-style-type: none"> <li>• Incident that has been classified as a SigAlert of any duration</li> <li>• Incident that closes or blocks any lane of ExpressLanes for 30 minutes or more during peak hours and for more than one hour outside of peak hours</li> <li>• When GP Lanes traffic is diverted into the ExpressLanes for any duration</li> <li>• All planned or unplanned maintenance lane closures of any duration</li> </ul>

TIMP. Building the coalition follows the evolution of the TIMP: it takes an ongoing process to keep up with changes to staff and create modifications to streamline the management of actual incidents.

As the ExpressLanes program moves through its pilot testing phase, the operational assistance provided by the TIMP helps give it the best possible chance of success.