

California Transportation Commission Application for Toll Facility

INTERSTATE 105 EXPRESS LANES (INTERSTATE 405 TO INTERSTATE 605)

SUBMITTED BY:

LOS ANGELES COUNTY METROPOLITAN TRANSPORTATION AUTHORITY



IN PARTNERSHIP WITH:

CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS) DISTRICT 7



PREPARED FOR:

CALIFORNIA TRANSPORTATION COMMISSION



August 2019

TABLE OF CONTENTS

1.0	Minimum Eligibility Criteria	7
1.1	Improvement in Corridor Performance.....	7
1.2	Regional Transportation Plan	7
1.3	Regional Agency Coordination	9
1.4	Streets and Highways Code Section 149.7 Compliance	9
1.5	Project Initiation Document	9
1.6	Funding Plan.....	10
2.0	Supporting information	10
2.1	Compliance with State Law	10
2.2	System Compatibility	14
2.3	Corridor Improvement	16
2.3.1	Existing Conditions.....	16
2.4	Technical Feasibility	22
2.4.1	Project Definition.....	22
2.4.2	Anticipated Impacts.....	26
2.4.3	Proposed Project Timeline	37
2.4.4	Operation	40
2.4.5	Federal Involvement.....	45
2.4.6	Maintenance.....	46
2.5	Financial Feasibility	46
2.5.1	Funding Plan	46
2.6	Regional Transportation Plan & Community Support	57
2.6.1	Consistency with Existing Plans	57
2.6.2	Considerations of Impacts.....	60
2.6.3	Fulfilling Policies and Goals	63
2.6.4	Environmental Considerations	65
2.6.5	Community and Stakeholder Support.....	66
3.0	Supplemental Information	70
3.1	Executed Cooperative Agreement between Metro and Caltrans	70
3.2	Project Study Report – Project Development Support (PSR-PDS)	70
3.3	Measure M Expenditure Plan.....	70
3.4	I-105 ExpressLanes Preliminary Level I Traffic & Revenue Forecasts	70

3.5	Metro ExpressLanes Toll Revenue Guidelines	70
3.6	I-105 Arterial and Intersection Traffic Analysis Level of Service.....	70
3.7	SCAG Transportation Conformity Working Group Letter.....	70
3.8	I-105 Outreach Event Listing	70
3.9	SCAG 2016 RTP/SCS Amendment #2.....	70

LIST OF FIGURES

Figure 1:	Proposed Metro ExpressLanes Network	15
Figure 2:	Proposed I-105 ExpressLanes Project Corridor	17
Figure 3:	Eastbound Travel Time Reliability	18
Figure 4:	Westbound Travel Time Reliability	18
Figure 5:	I-105 General Purpose Lane Vehicle-Hours of Delay by Day of Week.....	19
Figure 6:	I-105 Bottleneck Locations	20
Figure 7:	I-105 Peak Hour Average Traffic Conditions.....	20
Figure 8:	I-105 Mainline Accidents	21
Figure 9:	Existing Typical Configuration of I-105.....	22
Figure 10:	Alternative 2 – Convert High-Occupancy (HOV) to Single ExpressLane	23
Figure 11:	Alternative 3 – Convert High-Occupancy (HOV) to Dual ExpressLanes (non-standard lane widths)..	24
Figure 12:	Percentage of Non-White Population along I-105.....	25
Figure 13:	Median Household Incomes along I-105.....	25
Figure 14:	Employment Density along I-105.....	26
Figure 15:	Daily Vehicle Throughput Comparison	28
Figure 16:	Daily Passenger Throughput Comparison	29
Figure 17:	Corridor Travel Times (minutes) for 2040 Alternatives	30
Figure 18:	Vehicle Hours of Delay for 2040 Alternatives	31
Figure 19:	2040 Peak-Hour Average Speed – Single ExpressLane.....	32
Figure 20:	2040 Peak-Hour Average Speed – Dual ExpressLanes.....	33
Figure 21:	2040 AM Peak Vehicle Occupancy Breakdown	34
Figure 22:	2040 PM Peak Vehicle Occupancy Breakdown.....	35
Figure 23:	Metro ExpressLanes Operation	41
Figure 24:	I-110 ExpressLanes Toll Gantry	43
Figure 25:	SCAG Regional Express Lane Network.....	58

LIST OF TABLES

Table 1:	Proposed Project Schedule – Alternative 2 (Single ExpressLane in each direction).....	37
Table 2:	Alternative 3 – Aggressive Schedule (Dual ExpressLanes in each direction)	38
Table 3:	Alternative 3 – Conservative Schedule (Dual ExpressLanes in each direction)	38
Table 4:	Sources and Uses of Project Funding (All Amounts in \$ Thousands)	47
Table 5:	Metro Sales Tax Revenue Measures	48
Table 6:	Financing Alternatives.....	52
Table 7:	Ramp and Arterial Intersections Analyzed.....	61

Table 8: Intersection Performance Comparison for LOS E..... 62
Table 9: Intersection Performance Comparison for LOS F..... 62
Table 10: Community Outreach Event Types 66

ACRONYMS AND ABBREVIATIONS

AADT	Annual Average Daily Traffic
ADT.....	Average Daily Traffic
AB	California Assembly Bill
ABT	Additional Bonds Test
ATM.....	Active Traffic Management
Caltrans	California Department of Transportation
CAV.....	Clean Air Vehicle
CCTV	Closed Circuit Television
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CHP.....	California Highway Patrol
CMAQ.....	Congestion Mitigation and Air Quality (Improvement Program)
CSC	Customer Service Center
CTC	California Transportation Commission
CTOC	California Toll Operators Committee
CVC.....	California Vehicle Code
DMV	Department of Motor Vehicles
DSCR.....	Debt Service Coverage Ratio
EA	Environmental Assessment
EIR	Environmental Impact Report
ETC	Electronic Toll Collection
ETL.....	Express Toll Lane
FAST	Fixing America’s Surface Transportation Act
FHWA	Federal Highway Administration
FSP	Freeway Service Patrol
FTIP.....	Federal Transportation Improvement Program
HDM.....	Highway Design Manual
HOT	High Occupancy Toll
HOV	High Occupancy Vehicle
INFRA	Infrastructure For Rebuilding America (Grant Program)
LARTMC	Los Angeles Regional Traffic Management Center
LAX	Los Angeles International Airport
LPR.....	License Plate Recognition
LRT.....	Light Rail Transit
MADS	Maximum Annual Debt Service
Metro	Los Angeles County Metropolitan Transportation Authority
MOMS.....	Maintenance Operations Management System
NEPA	National Environmental Policy Act
O&M	Operations and Maintenance
OCTA	Orange County Transportation Authority
ODS	Occupancy Detection System
PA/ED	Project Approval / Environmental Document
PEAR.....	Preliminary Environmental Analysis Report
PeMS.....	(Caltrans Freeway) Performance Measurement System

PSR/PDS	Project Study Report / Project Development Support
RTP/SCS.....	Regional Transportation Plan / Sustainable Communities Strategy
SCAG.....	Southern California Association of Governments
SEA	Systems Engineering Analysis
SHELL.....	Subsystem of Highways for the Movement of Extralegal Permit Loads
STAA	Surface Transportation Assistance Act
T&R.....	Traffic and Revenue
TASAS	Traffic Accident Surveillance and Analysis System
TIFIA	Transportation Infrastructure Finance and Innovation Act
TMC.....	Traffic Management Center
USDOT.....	United States Department of Transportation
VHD	Vehicle Hours of Delay

1.0 MINIMUM ELIGIBILITY CRITERIA

The Commission must find, at a minimum, that the criteria identified in AB 194 are met. Therefore, every application should clearly discuss how it meets the following minimum criteria:

1.1 Improvement in Corridor Performance

- 1. A demonstration that the proposed toll facility will improve the corridor's performance by, for example, increasing passenger throughput or reducing delays for freight shipments and travelers, especially those traveling by carpool, vanpool, and transit.*

The I-105 ExpressLanes Project will improve corridor performance through a reduction in recurring peak period congestion and travel times, as well as an increase in average speeds, throughput, and reliability for freight shipments and travelers. In particular, the I-105 ExpressLanes Project will address existing degradation of the HOV (High Occupancy Vehicle) lanes on I-105 by deploying dynamic pricing as a means to better manage existing capacity and the possible addition of a second ExpressLane in each direction, thereby offering greater travel time reliability and an enhanced mobility choice to travelers. Notably, in 2040 the I-105 ExpressLanes Project dual lane alternative is expected to result in:

- Increased daily vehicle throughput of 62-80% in the ExpressLanes and 11-15% overall compared to the No Build alternative.
- Up to a 6% increase in daily person throughput in the corridor in comparison to the No Build Alternative
- Peak-period end to end travel time improvement of up to 15 minutes in the ExpressLanes and 6 minutes in the GP lanes.
- Increased peak-period speeds on the ExpressLanes to 53 miles per hour compared to 29-33 miles per hour in the HOV lane in the no build alternative. This would enable the 105 ExpressLanes to meet federal performance standards. GP lane speeds would remain constant or increase slightly.
- General purpose lane daily passenger throughput increase up to 3% in 2040 compared to 2017 and up to 4% compared to the 2040 no build, while maintaining speeds similar to the No Build Alternative and improving performance on local arterials.
- General purpose lane daily Vehicle Hours of Delay (VHD) reduction of 42% and ExpressLanes daily VHD reduction of 37% in the eastbound direction. In the westbound direction, general purpose lane daily VHD is reduced by 10% and ExpressLanes daily VHD is reduced by 37%.

Additional information on corridor performance is detailed in section 2.3.

1.2 Regional Transportation Plan

- 2. A requirement that the proposed toll facility is contained in the constrained portion of a conforming regional transportation plan prepared pursuant to Section 65080 of the Government Code.*

The I-105 ExpressLanes Project is listed in the financially constrained portion of the adopted Southern California Association of Governments' (SCAG) 2016-2040 Regional Transportation Plan / Sustainable Communities Strategy (RTP/SCS) under RTP ID 1162S011. Additionally, the project is also included in SCAG's financially constrained 2019 Federal Transportation Improvement Program (FTIP) under FTIP ID LA0G1324. The I-105 ExpressLanes project is also included as a Tier 1 priority corridor in the 2017 Metro Countywide ExpressLanes Strategic Plan, which establishes a vision for the delivery of a comprehensive express lane network in Los Angeles County. These details are further described in section 2.2 and section 2.6.1.

1.3 Regional Agency Coordination

- 3. For projects involving the state highway system, evidence of cooperation between the applicable regional transportation agency and Caltrans. Examples of acceptable evidence of cooperation could be in the form of a completed cooperative agreement or a signed letter between the parties to demonstrate that the parties are working cooperatively on the development of the toll facility.*

The I-105 ExpressLanes Project has the full support of Caltrans District 7. As explained further in section 2.2, a Project Study Report/Project Development Support (PSR/PDS) document was developed and subsequently approved by Caltrans in September 2015, and a formal cooperative agreement between Metro and Caltrans was executed in October 2017 to facilitate the preparation of the PA/ED. Metro and Caltrans are now cooperatively working to prepare the PA/ED with Metro leading the preparation of the Project Report and Caltrans the Lead Agency for the preparation of the Environmental Document, which is expected to be an Environmental Impact Report (EIR)/Environmental Assessment (EA). Metro and Caltrans are also working cooperatively with Federal Highway Administration (FHWA), SCAG, and the California Highway Patrol (CHP) to develop and confirm the Concept of Operations for the proposed I-105 ExpressLanes. In addition, an Investment Grade Traffic and Revenue study is being prepared.

1.4 Streets and Highways Code Section 149.7 Compliance

- 4. A discussion of how the proposed toll facility meets the requirements of Streets and Highways Code Section 149.7.*

This tolling application is compliant with Streets and Highways Code Section 149.7, and includes all elements required in the California Transportation Plan Guidelines for Toll Facility Project Applications as described in the following sections.

1.5 Project Initiation Document

- 5. A complete project initiation document for the proposed toll facility.*

A Project Study Report/Project Development Support (PSR/PDS) was completed and signed by Caltrans on September 8, 2015. The PSR/PDS serves as the project initiation document for the I-105 ExpressLanes Project. A copy is included in Section 3.2.

1.6 Funding Plan

6. *A complete funding plan has been prepared for the proposed toll facility project.*

Metro has prepared a complete funding plan for the design and construction of the I-105 ExpressLanes Project, which includes a mix of funding sources such as Metro Measure M sales tax revenues and toll-revenue backed obligations. The funding plan is detailed further in section 2.5.1.

2.0 SUPPORTING INFORMATION

In evaluating applications, the Commission will consider all provided information to determine whether to approve the proposed toll facility. Accordingly, in conjunction with responding to the statutorily-defined minimum criteria, applicants are strongly encouraged to provide more information than that necessary to meet the minimum criteria.

2.1 Compliance with State Law

Has the applicant demonstrated that the proposed project is consistent with the established standards, requirements, and limitations that apply to the toll facilities in Section 149.7 of the Streets and Highways Code as well as all other applicable sections of state law?

The Los Angeles County Metropolitan Transportation Authority (Metro) is applying to develop and operate a HOT lane (hereafter referred to as ExpressLanes) as a regional transportation agency, in accordance with Section 149.7 of the California Streets and Highways Code.

Section 149.7(c) states the minimum requirements that must be met for California Transportation Commission (CTC) approval. This application will comply with these requirements, as outlined below.

1. ***A demonstration that the proposed toll facility will improve the corridor's performance by, for example, increasing passenger throughput or reducing delays for freight shipments and travelers, especially those traveling by carpool, vanpool, and transit.*** The I-105 ExpressLanes dual-lane alternative will increase vehicle and passenger throughput in both the General Purpose and ExpressLanes and significantly improve travel time and speed on the ExpressLanes that will enable the ExpressLanes to meet federal HOV performance standards. Further details can be found in section 2.4.2.
2. ***A requirement that the proposed toll facility is contained in the constrained portion of a conforming RTP prepared pursuant to Section 65080 of the Government Code.*** The I-105 ExpressLanes project is included as part of the 2016 SCAG RTP / SCS under RTP ID 1162S011, as described further in section 2.2.

3. **Evidence of cooperation between the applicable regional transportation agency and Caltrans.** Metro and Caltrans executed a cooperative agreement in October 2017, as described in section 1.3, and shown in section 3.1. In accordance with this agreement, Metro and Caltrans are now working cooperatively to prepare the PA/ED with Metro and Caltrans leading the preparation of the Project Report and the Environmental Document respectively. Metro and Caltrans are also working cooperatively with FHWA, SCAG, CHP, and other stakeholders to develop and confirm the Concept of Operations for the proposed I-105 ExpressLanes.
4. **A discussion of how the proposed toll facility meets the requirements of this section.** Adherence to these requirements are described throughout this document and within this section.
5. **A requirement that a project initiation document has been completed for the proposed toll facility.** A PSR/PDS (the project initiation document) was completed and approved by Caltrans on September 8, 2015. A copy is included in section 3.1.
6. **A demonstration that a complete funding plan has been prepared.** Metro has developed a funding plan as described in section 2.5.1, and included in section 3.2.

The I-105 ExpressLanes project will also be subject to the additional requirements described in Section 149.7(e) of the Streets and Highways Code, which include:

1. **A regional transportation agency sponsoring a toll facility shall enter into an agreement with the Department of the California Highway Patrol (CHP) that addresses all law enforcement matters related to the toll facility, including reimbursement of enforcement costs.** CHP is included as an agency stakeholder of the current PA/ED and Concept of Operations development processes. In addition, Metro and CHP currently have an agreement for enforcement of the I-10 and I-110 ExpressLanes, and Metro plans to use this agreement as the basis for an enforcement agreement with CHP for the I-105 ExpressLanes.
2. **A regional transportation agency sponsoring a toll facility shall enter into an agreement with Caltrans that addresses all matters related to design, construction, maintenance, and operation of the toll facility, including, but not limited to, liability, financing, repair, rehabilitation, and reconstruction.** These items are currently being informed by the I-105 PA/ED & Concept of Operations process and will be included by Metro and Caltrans in an Operating Toll Agreement to be established later in project development. Metro and Caltrans executed a similar agreement for the I-10/I-110 ExpressLanes which will serve as the basis for the I-105 ExpressLanes project. These items will be further informed by the I-105 PA/ED and

Concept of Operations process and will be included by Metro and Caltrans in an Operating Toll Agreement to be established later in project development.

3. ***That the sponsoring agency shall be responsible for activities related to toll collection.*** Metro currently manages toll collection activities through contractors on the I-10 and I-110 ExpressLanes. Metro recently procured new contractors to manage the back office, roadside toll collection, and customer service on the I-10 and I-110 ExpressLanes with toll collection activities on the I-105 ExpressLanes as optional tasks.
4. ***That the revenue generated by the tolls will be used to cover debt obligations of the toll facility and “development, maintenance, repair, rehabilitation, improvement, reconstruction, administration, and operation of the toll facility” and a reserve fund with all remaining funds used in the corridor pursuant to an expenditure plan developed by the sponsoring agency.*** Metro is committed to manage the revenue generated by the tolls in accordance with these requirements, and in a manner consistent with the Metro Board’s accepted toll revenue policies, roles and responsibilities, reserve funding, and expenditure plan established in 2014 and updated in 2016 for the I-10 and I-110 ExpressLanes, which is included as an attachment in section 3.5.
5. ***For any project under this section involving the conversion of an existing high-occupancy vehicle lane to a high-occupancy toll lane, the sponsoring agency shall demonstrate that the project will, at a minimum, result in expanded efficiency of the corridor in terms of travel time reliability, passenger throughput, or other efficiency benefit.*** The I-105 ExpressLanes project is expected to address existing HOV lane degradation in the corridor and improve the efficiency of I-105 including speed, travel time, and passenger throughput as described in section 2.3.
6. ***That a regional transportation agency will consult with local transportation authorities and congestion management agencies whose jurisdictions include the toll facility.*** Metro has met and continues to meet with all ten local jurisdictions, resource agencies, and councils of governments along the I-105 corridor during the current PA/ED and Concept of Operations process. Coordination will continue throughout project development and during ExpressLanes operations.

Clean Air Vehicle Requirements

Previously, all Clean Air Vehicles (CAVs) were toll-exempt on ExpressLanes. Under California Vehicle Code Section 5205.5 (h) (1) Metro can grant a reduced toll rate to CAVs issued distinctive decals, labels, or other identifiers pursuant to Section 5205.5. On April 26, 2018, the Metro Board of Directors approved a new

policy which offers previously exempt Clean Air Vehicles (CAVs) that are Single Occupant Vehicles (SOVs) a 15% toll discount, replacing the prior policy of free access. This policy took effect on March 1, 2019. CAVs with valid decals who meet the minimum HOV occupancy requirement may continue to use the ExpressLanes without paying a toll. It is anticipated that the I-105 ExpressLanes will be operated consistent these provisions, until such a time that the CAV program expires or additional action is taken by the Metro Board.

Privacy of Personal Account Information

Consistent with the existing I-10/I-110 ExpressLanes practices and procedures, during operations on the I-105 ExpressLanes Metro and its contractors will process all toll transactions and maintain all accounts. Privacy of personal account information will be strictly maintained and will comply with all applicable state and federal statutes, rules, and regulations consistent with the current I-10/I-110 practices.

Utility Relocation and Right-of-Way (ROW) Acquisitions

In the event that an I-105 ExpressLanes design alternative is selected with a cross-section that requires ROW acquisitions and/or utility relocations, these shall be completed under the authority and guidance of local, state, and federal law, policies, and procedures. Federal and State compliance includes adherence to the Uniform Relocation Assistance and Real Property Acquisition Policies Act (the Uniform Act), the *Code of Federal Regulations* (CFR) Section 49, Part 24, and the California Relocation Act (California Act) to ensure that relocation services and payments be made available to eligible residents, businesses, and non-profit organizations displaced as a direct result of the project. The acts also provide for uniform and equitable treatment of persons displaced from their homes and businesses by establishing uniform and equitable land acquisition policies. Any property acquisitions shall also be guided by the Caltrans ROW Manual. If legal proceedings are required to retain property rights, the governing body of law shall include all relevant state and federal statutes and case law, including but not limited to the *California Code of Civil Procedure* Sections 1230.010-1273.050 (Eminent Domain Law).

Caltrans and FHWA Design Criteria

The design phase of I-105 ExpressLanes project development will be subject to the standards outlined in the Caltrans Highway Design Manual (HDM) and FHWA design criteria. Any exceptions to the advisory and mandatory standards included in the HDM will require Fact Sheets to justify these exceptions and subsequent approval by Caltrans.

2.2 System Compatibility

If on the state system, has the applicant demonstrated that the project is consistent with State Highway System requirements? Does this project propose improvements that are compatible with the present and planned transportation system? Does the project provide continuity with existing and planned state and local facilities?

The I-105 ExpressLanes project is consistent with the recommendations of the 2014 Caltrans District 7 Transportation Concept Report for Route 105, which includes congestion pricing through High Occupancy Toll (HOT) lanes as an effective means to relieve congestion and improve goods movement within the corridor. The I-105 PSR/PDS was approved by Caltrans in September 2015, and a formal cooperative agreement was executed by Metro and Caltrans in October 2017 for PA/ED development. Additionally, further I-105 ExpressLanes project development will be subject to the Caltrans HDM, with possible design exceptions that will be determined through the PA/ED.

The I-105 ExpressLanes project is included in the financially constrained portion of the adopted SCAG 2016-2040 Regional Transportation Plan / Sustainable Communities Strategy (RTP/SCS) under RTP ID 1162S011. The SCAG RTP/SCS emphasizes value pricing to better utilize existing freeway capacity, offer greater travel time reliability, and enhance mobility. To achieve this goal, the RTP/SCS proposes a regional express lanes network that includes the I-105 ExpressLanes project.

The I-105 ExpressLanes project is also included in the 2017 Metro Countywide ExpressLanes Strategic Plan, which establishes a vision for the delivery of a comprehensive express lane network in Los Angeles County. The Strategic Plan screened all planned, in construction, and existing HOV lanes in the county to assess the potential benefits and costs of conversion to ExpressLanes. The individual corridors included in the Strategic Plan were evaluated based on projected mobility benefits and financial feasibility, and then prioritized based on these findings, along with qualitative factors such as connectivity with other ExpressLanes, transit benefits, funding availability, and the ability to implement dual ExpressLanes in each direction. As part of this process, the I-105 ExpressLanes project was identified as part of a Tier 1 near-term priority for implementation in the next 5 to 10 years, as highlighted in Figure 1. ExpressLanes operations on the I-105 are expected to be generally consistent with the I-110/I-10 ExpressLanes, including business rules, enforcement, and tolling policies and utilize the same back office, roadside system, and customer service center. It should also be noted that subsequent to this application, Metro intends to submit an application under AB 194 for the remaining Tier 1 projects as **one** corridor, including:

- I-605 between I-10 and the Los Angeles/Orange County Line
- I-405 between US-101 and the Los Angeles/Orange County Line
- I-10 between I-605 and the Los Angeles/San Bernardino County Line

Metro may also in the future request tolling authority for Tier 2 projects, with the intention of creating an interconnected network of ExpressLanes that would expand the regional benefits and continuity of ExpressLanes across Los Angeles County. Tier 2 projects include:

2.3 Corridor Improvement

AB 194 specified the Legislature's intent that highway tolling should be employed for the purpose of optimizing the performance of the transportation system on a transportation corridor and should not be employed strictly as a revenue generating facility. Has the applicant provided compelling evidence that demonstrates that the proposed toll facility will significantly improve the corridor's performance?

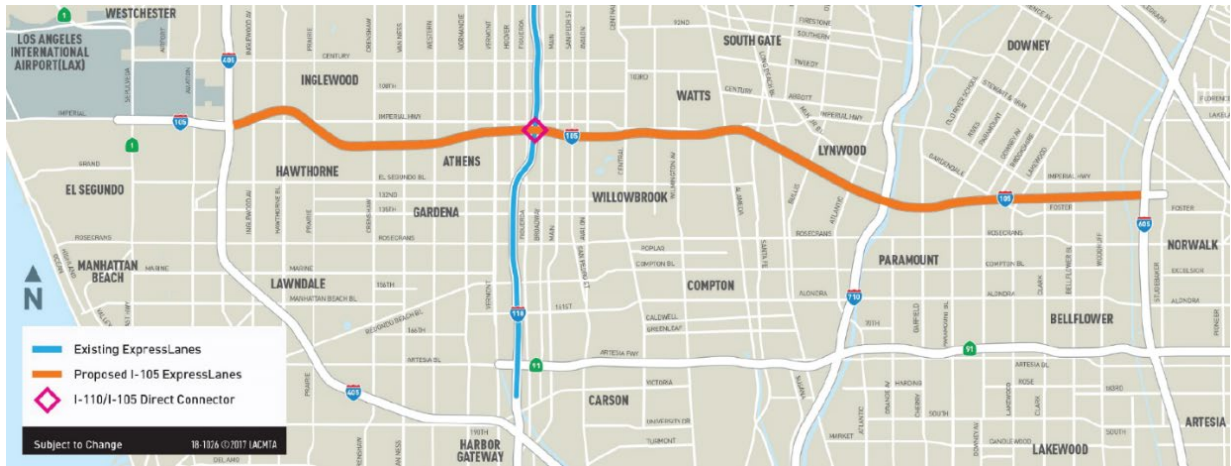
The I-105 ExpressLanes project will help address significant deficiencies that exist within the I-105 corridor. These include insufficient capacity to meet current traffic demand, which results in a degraded level of service and significant travel time delays in both the general-purpose lanes and the existing HOV lane during peak-hours, existing structural and lane configuration limitations that create traffic bottlenecks, and the higher than average accident rates that result from these conditions. The I-105 ExpressLanes project seeks to enhance traffic flow, improve trip reliability and travel times, and sustain & manage mobility within the corridor. This will ease congestion, improve overall passenger throughput, enhance safety through increased corridor monitoring and the reduction of crashes and start-stop conditions, and reduce emissions.

2.3.1 Existing Conditions

Located in the southern part of Los Angeles County, I-105 begins at Imperial Highway and California Street on the southern edge of LAX, adjacent to the city of El Segundo. It proceeds generally eastward, crossing the Los Angeles and San Gabriel Rivers before terminating just east of I-605 in Norwalk at Studebaker Road, traversing a total of 18.1 miles. The I-105 ExpressLanes will be constructed along approximately 15.7 of the 18.1 miles between the I-405 and I-605, serving as a major collector distributor Interstate Highway route feeding north-south routes 405, 110, 710 and 605, as well as local streets. In addition, a HOV direct connector currently exists between the I-105 HOV and I-110 ExpressLanes that would provide direct ExpressLanes connectivity into downtown Los Angeles. I-105 traverses the South Bay and Gateway Cities of El Segundo, Hawthorne, Inglewood, Los Angeles, Lynwood, South Gate, Paramount, Downey, and Norwalk, and the unincorporated communities of Willowbrook and Lennox in Los Angeles County. A map of the corridor is shown in Figure 2.

The I-105 freeway experiences heavy demand during peak commute hours, often exceeding the freeway's maximum operational capacity. 2016 Caltrans Performance Measurement System (PeMs) data analysis shows that the I-105 corridor carries 200,000 to 250,000 daily vehicles on an average weekday. The highest Average Annual Daily Traffic (AADT) counts occur between the I-405 and I-110 interchanges, and gradually reduce as the freeway progresses eastward to the I-605 interchange.

Figure 2: Proposed I-105 ExpressLanes Project Corridor



Average weekday travel times for the fall of 2016 were calculated using INRIX speed data purchased by Metro. The INRIX dataset was aggregated to 15-minute intervals for each non-holiday weekday for the entire year, for both GP and HOV lanes. Figure 3 and Figure 4 illustrate travel time by time of day for the eastbound and westbound directions, respectively. Under free flow conditions, it would take approximately 17 minutes to travel the corridor. In comparison, in the eastbound direction, the worst congestion on the general-purpose lane is reported during the PM peak period at 5:15 PM when it takes approximately 51 minutes to travel the corridor at an average speed of 20 mph. During the same PM time frame, it takes approximately 43 minutes to travel the corridor in the HOV lane at an average speed of 23 mph. In the westbound direction, the general-purpose lanes experience both AM and PM peak-period congestion with the slowest travel times occurring at 7:30 AM, when it takes approximately 38 minutes to travel the corridor at an average speed of 27 mph. It also takes approximately 32 minutes to travel the corridor at an average speed of 29 mph using the HOV lane during the AM peak-period highlighting the substantial degradation of peak-period traffic flows in the existing HOV lanes.

Per federal performance standards, managed lanes are considered degraded if the average traffic speed during the morning or evening weekday peak commute hour is less than 45 miles per hour (mph) for more than 10 percent of the time over a consecutive 180-day period. According to the most recent *Caltrans California High-Occupancy Vehicle Lane Degradation Determination Report (2017)*, certain HOV lanes' segments on I-105 are considered degraded per federal performance standards. These segments include EB I-105 from PM R2.2 – PM R14.117 and WB I-105 from PM R18.09 – PM R6.172.

Figure 3: Eastbound Travel Time Reliability

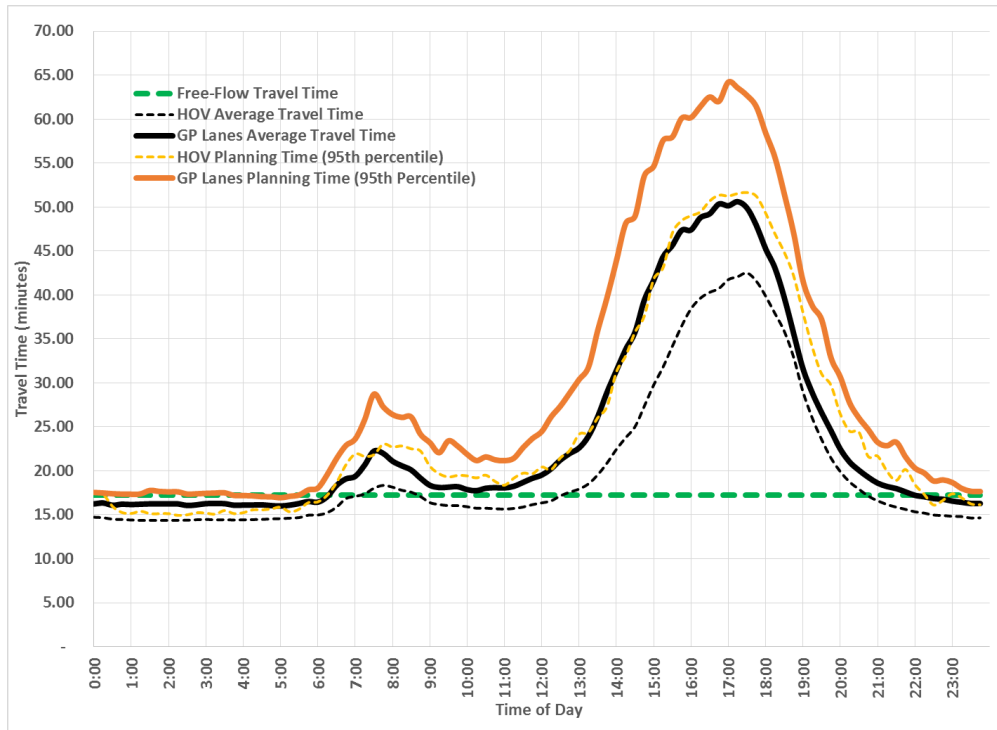
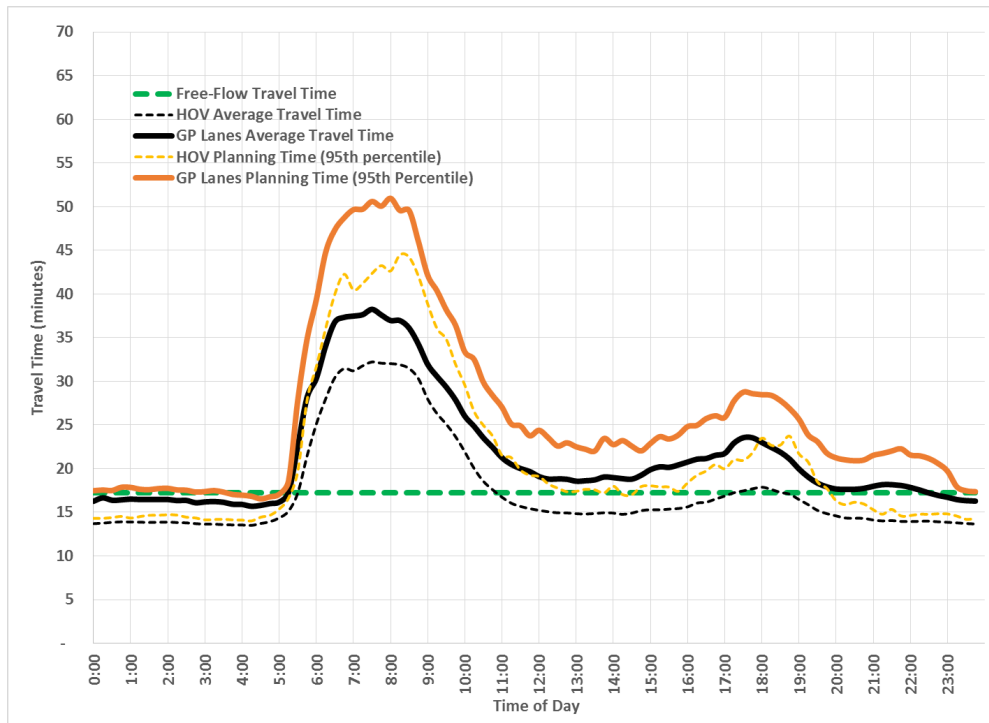
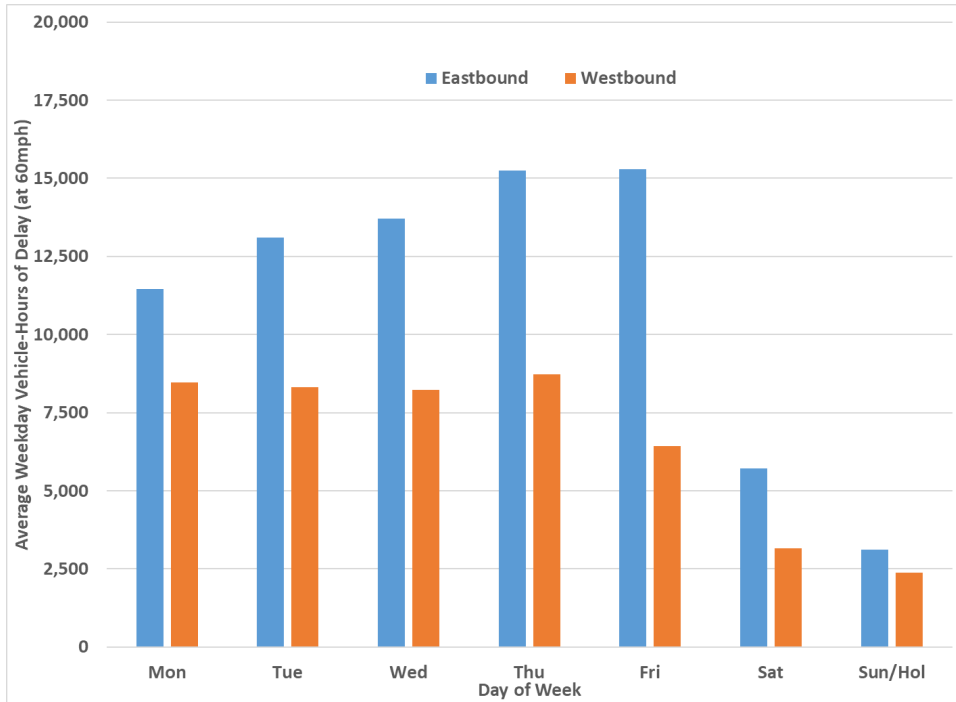


Figure 4: Westbound Travel Time Reliability



The analysis also showed that corridor congestion tends to increase as the week progresses from Monday to Thursday, with Thursday being the most congested day in the eastbound direction, with over 15,000 daily vehicle hours of delay (VHD). Thursday is also the most congested day in the westbound direction with approximately 8,000 daily VHD (see Figure 5).

Figure 5: I-105 General Purpose Lane Vehicle-Hours of Delay by Day of Week



There are 15 known bottlenecks on the corridor as identified in Figure 6. Bottlenecks are the primary cause of recurrent congestion, which can be triggered by a sudden reduction in effective capacity, such as a physical loss of a lane or when heavy merging and weaving take place near on and off-ramps. Figure 7 shows INRIX speed contour plots for an average condition in the AM and PM hours. The darker-colored segments indicate extremely congested conditions where speeds are less than 35 mph. In contrast, the green segments are the locations with higher speeds over 50 mph. The speed contour figure illustrates the congestion locations consistent with the bottlenecks identified below.

Figure 6: I-105 Bottleneck Locations

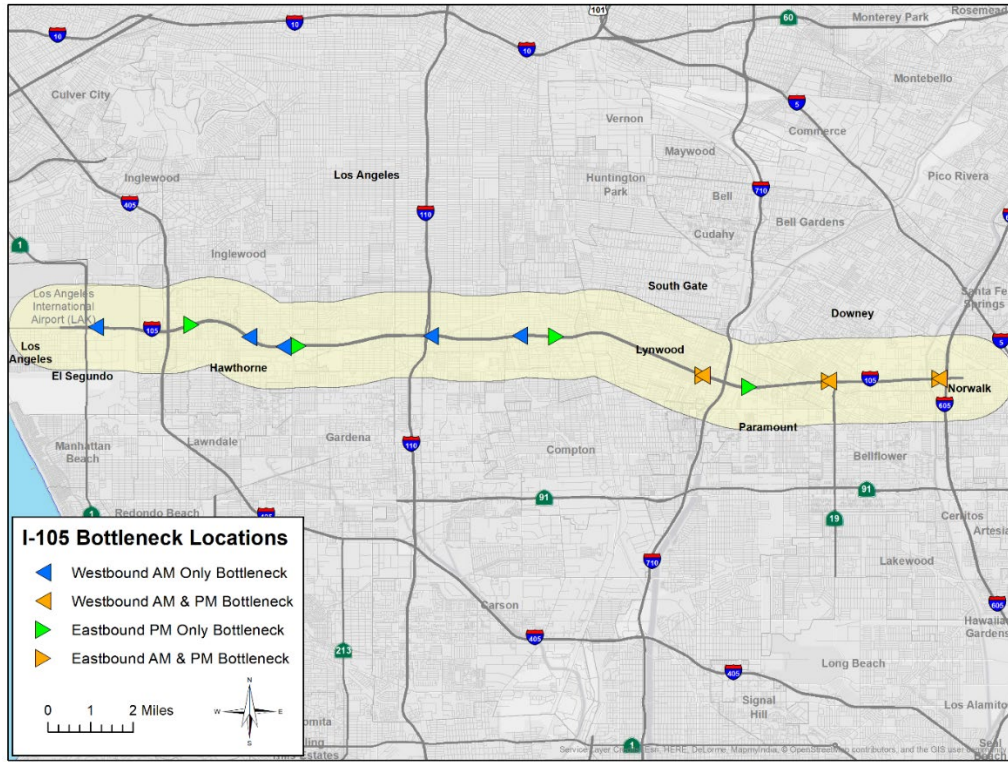
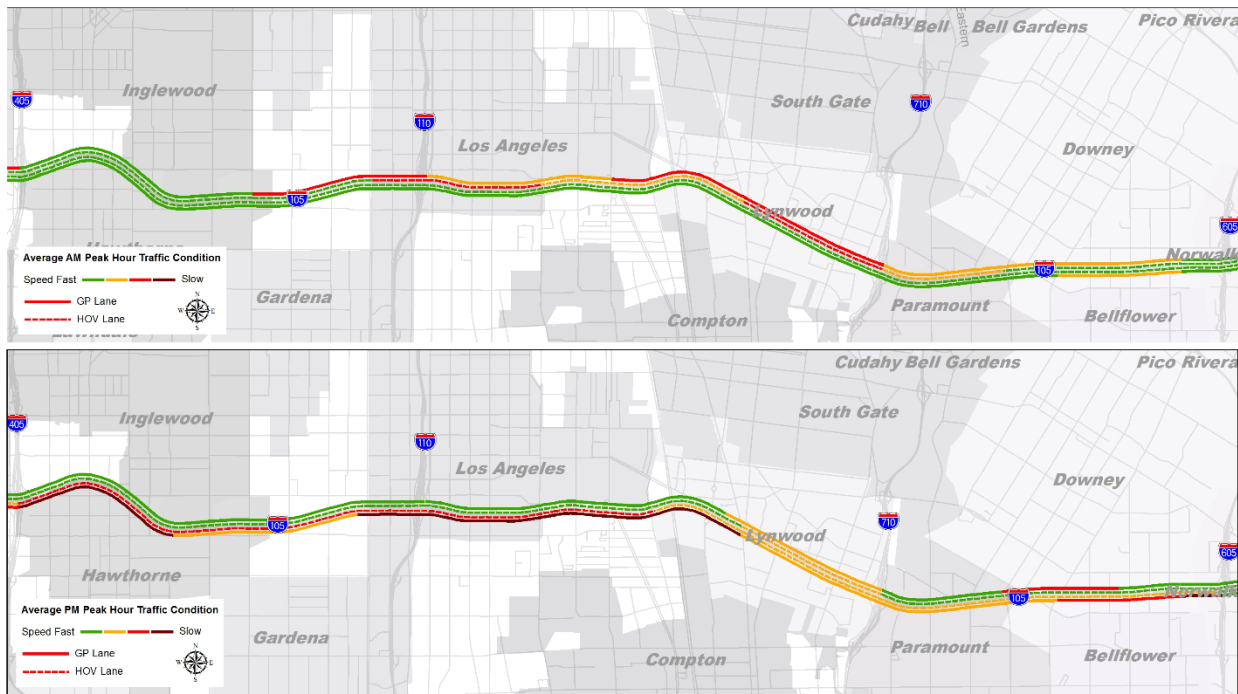
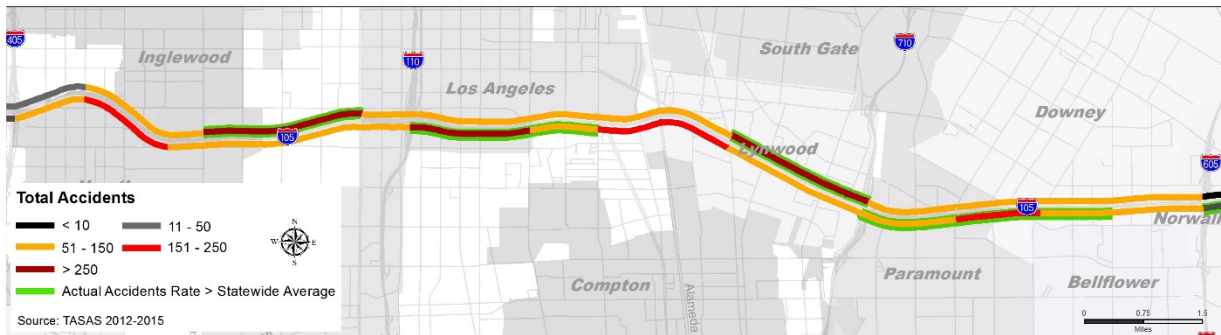


Figure 7: I-105 Peak Hour Average Traffic Conditions



Accident data within the project limits was reviewed for a three-year period from 2012 to 2015, using the Caltrans Traffic Accident Surveillance and Analysis System (TASAS). The total number of accidents on each segment of the I-105 corridor are summarized in Figure 8 indicating an actual accident rate higher than the statewide average with the highest number (260 accidents) occurring between I-110 and Central Avenue interchanges. There are three segments showing an accident rate higher than the statewide average in the westbound direction with the highest number (410 accidents) between the Crenshaw and Vermont Interchanges. In terms of fatal and injury related collisions, there are seven segments showing a fatal and injury (F+I) accident rate higher than the statewide average in the eastbound direction with the highest rate (2.70) occurring between the I-105/I-605 junction and Studebaker Road. In the westbound direction, there are five segments showing an actual F+I accident rate higher than the statewide average with the highest rate (0.59) occurring between the I-105/PCH junction and Douglas Street. A clear majority of these crashes are rear-end collisions with variable speeds as the primary cause.

Figure 8: I-105 Mainline Accidents



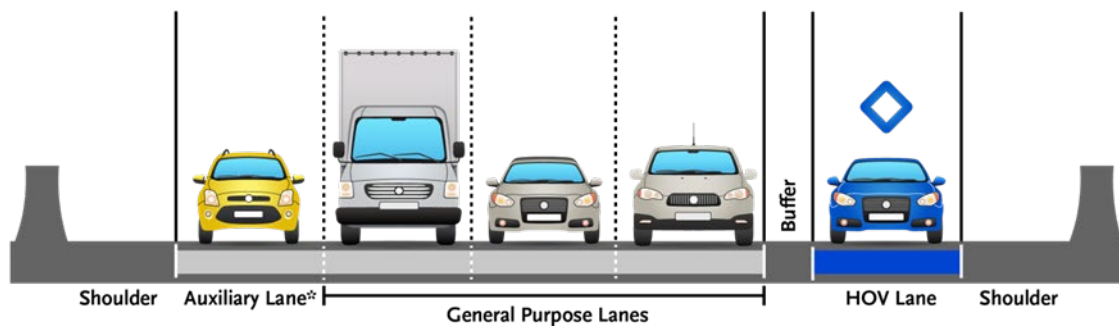
2.4 Technical Feasibility

2.4.1 Project Definition

Has the applicant described the proposed facility in sufficient detail to determine the type and size of the project, the location, all proposed interconnections with other transportation facilities, the communities that may be affected, and alternatives that may need to be evaluated?

Interstate 105 is a major east-west freeway in southern Los Angeles County, which originates in the city of El Segundo west of I-405 and terminates in the city of Norwalk at Studebaker Rd east of I-605. The entire I-105 freeway spans 18.1 miles as a typically six-lane facility with auxiliary lanes between most on-ramps and off-ramps, an HOV lane in each direction, and a Light Rail Transit (LRT) way for the Metro Green Line situated in the freeway median. The freeway ROW is roughly 320 feet wide, with exceptions at interchanges and transit stations. Existing general purpose and HOV lanes are 12 ft. wide, with 10 ft. wide left and right shoulders. In addition, a 2-4 ft. painted buffer exists between the GP and HOV lanes (Figure 9). Interstate 105 links the Los Angeles International Airport (LAX) to the rest of the region and to the I-405, I-110, I-710, and I-605 freeways.

Figure 9: Existing Typical Configuration of I-105



Alternatives to be studied in PA/ED

The I-105 ExpressLanes project proposes to improve traffic conditions on I-105 by implementing one or two ExpressLanes in each direction between I-405 and I-605. The PA/ED is studying the conversion of existing HOV lanes to HOT lanes, and possibly the addition of a second HOT lane in each direction to create a dual HOT lane facility. Three alternatives are currently under evaluation as part of the I-105 PA/ED process, including a No-Build alternative (Alternative 1) that will retain the existing HOV lane and two Build alternatives (Alternatives 2 & 3) as shown in Figure 10 & Figure 11. Alternative 2 would convert the existing HOV lane into a single ExpressLane and Alternative 3 would convert the existing HOV lane into an ExpressLane and add a second ExpressLane in each direction with non-standard lane (11 feet) and shoulder widths. During the public scoping process, a fourth alternative was presented to the public that would convert the existing HOV lane into a single ExpressLane and add a second express lane in each direction with standard lane (12 feet) and left and right shoulder widths (10 feet). Since the scoping process, Caltrans has determined that Alternative 4 would result in

significant, unavoidable environmental impacts. As a result, Alternative 4 has been eliminated from further consideration.

All Build alternatives will entail restriping of the lanes on the I-105, buffer separation between the ExpressLanes and the GP lanes, an upgrade to the existing communication infrastructure within the corridor, and introduction of tolling equipment including dynamic message signs, pricing signs, toll gantries, license plate cameras, speed detectors embedded in the freeway pavement, CCTV cameras, enforcement beacons, and an Occupancy Detection System to determine vehicle occupancy.

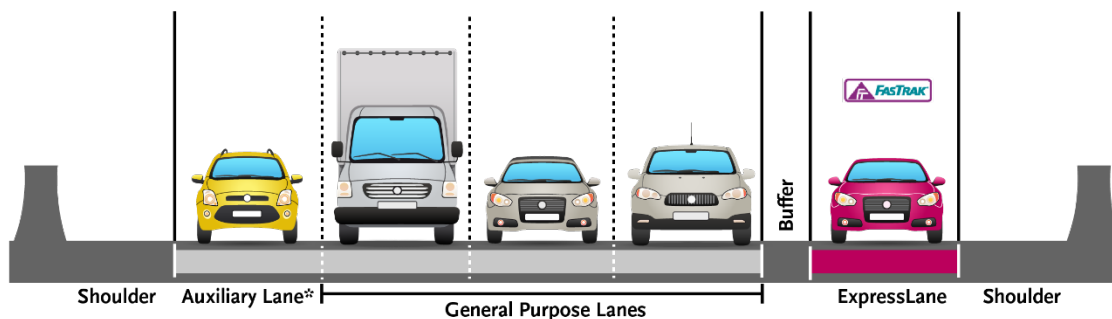
Alternative 1

Alternative 1 is the No-Build scenario. In this alternative, no improvements would be made to the HOV lanes, GP lanes, or ramps. Under this scenario, the existing lane configuration shown in Figure 9 would remain.

Alternative 2

This alternative involves the conversion of the existing single HOV lane to a single express lane in each direction, as outlined in Figure 10. No property acquisition is anticipated for this alternative, as it retains standard 12 ft. lane and 10 ft. left and right shoulder widths. Physical improvements would include modifications to striping and pavement markings, the installation of overhead signs and tolling and communication infrastructure, and spot widenings within the existing Caltrans right-of-way to add weave lanes (if warranted) at ExpressLanes ingress/egress locations and CHP enforcement areas. The total cost estimate for this alternative is anticipated to be \$266 million.

Figure 10: Alternative 2 – Convert High-Occupancy (HOV) to Single ExpressLane

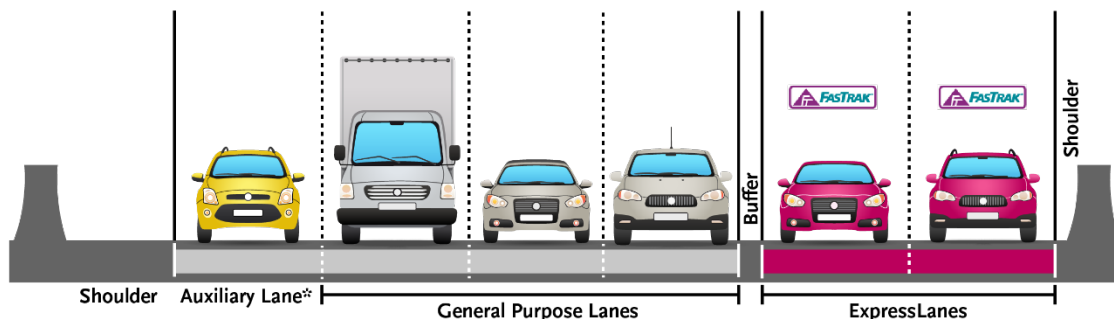


Alternative 3

The second Build alternative for the I-105 ExpressLanes project would restripe the freeway within its existing footprint to create two 11 ft. wide express lanes, with a 2 ft. buffer separating express from general purpose lanes (Figure 11). To accommodate the dual express lane configuration, general purpose lane widths would be reduced to 11 ft. (with the exception of the outermost lane, which would remain at 12 ft.), and the left shoulder would be reduced to 2-4 ft. The right shoulder would remain at 10 ft wide. For this alternative,

Caltrans approval of non-standard lane and shoulder widths would be required. This widening can mostly be accommodated within the existing Caltrans ROW. However, spot widenings will be required to add weave lanes (if warranted) at ExpressLanes ingress/egress locations & CHP enforcement areas and to maintain sight distance. The total cost for this alternative is estimated at \$520.9 million.

Figure 11: Alternative 3 – Convert High-Occupancy (HOV) to Dual ExpressLanes (non-standard lane widths)



Caltrans has also studied the implementation of Active Traffic Management (ATM) strategies that seek to dynamically manage and control traffic based on prevailing conditions on the I-105. These strategies would complement ExpressLanes operations and potentially include a coordinated ramp metering system, speed harmonization, queue warning, or dynamic re-routing. These strategies will ultimately improve mobility and enhance safety by using technology, real-time data and decision support structures for system operators to make informed, performance-driven decisions on how to manage traffic flow.

Affected Communities

According to the U.S. Census Bureau, in 2016, roughly 1.43 million people live within three miles of the I-105 freeway, comprising 14% of the Los Angeles County’s total population. There are also 401,000 households. The majority of which contains more than two residents, with 17% having three, and 42% with four or more individuals. In regards to age, nearly 47% of the residents are under the age of 49, compared to 42% countywide.

Communities adjacent to I-105 are quite ethnically diverse with a large proportion of minorities. As shown in Figure 12, a majority of non-white populations are located centrally along I-105, within the communities of Gardena, Lynwood, Paramount, Compton, South Gate, and Downey. Communities located on the east and west side of I-105 such as El Segundo, Manhattan Beach, and Downey tend to have a lower percentage of non-white populations. Similar to race and ethnicity, the median household incomes of residents vary considerably throughout the I-105 corridor. As shown in Figure 13, there are Census Block Groups with median incomes over \$250,000 primarily located on the west side of the I-105, while lower income households are generally located in central communities along I-105 and to the east of I-105.

Figure 12: Percentage of Non-White Population along I-105

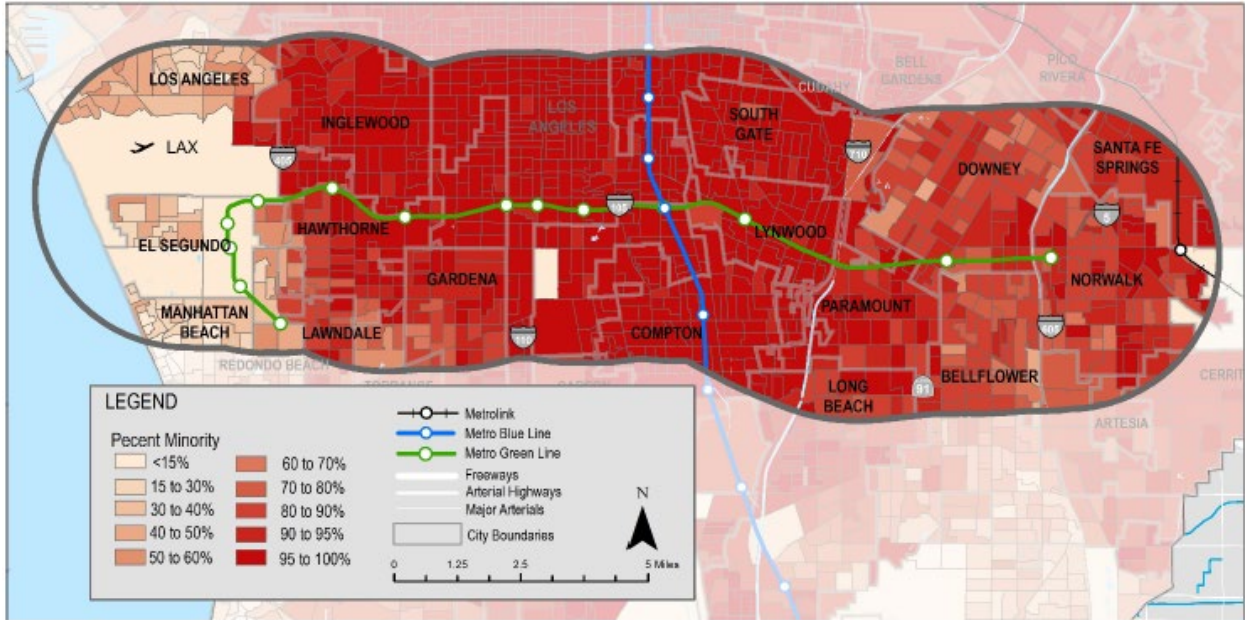
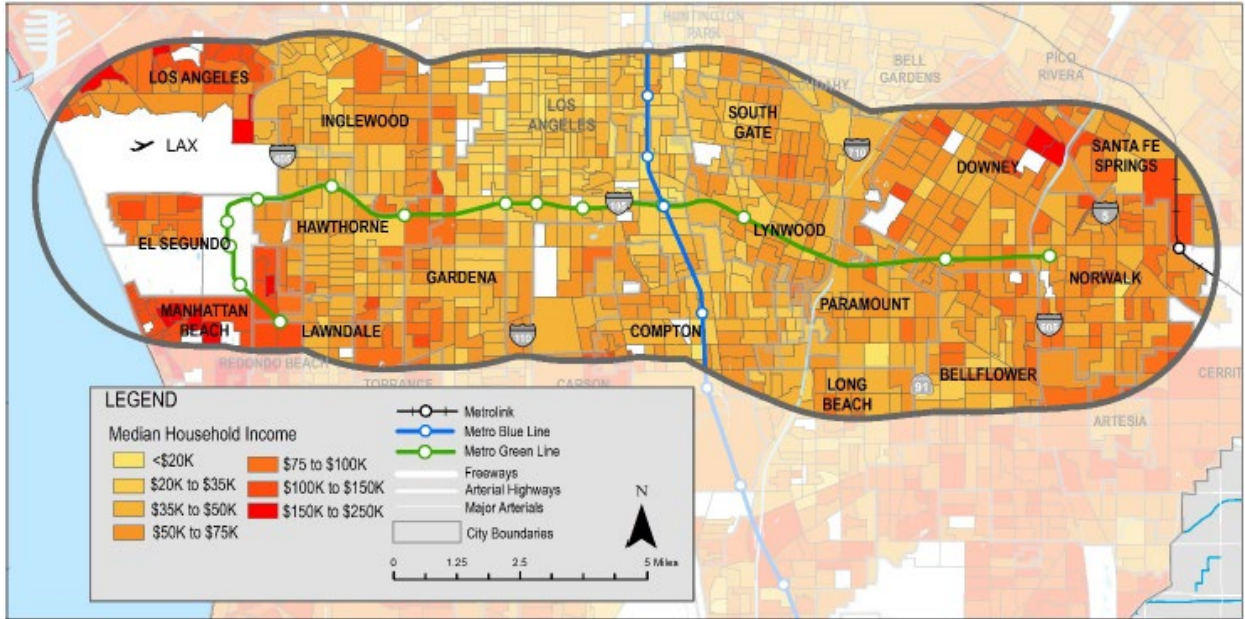


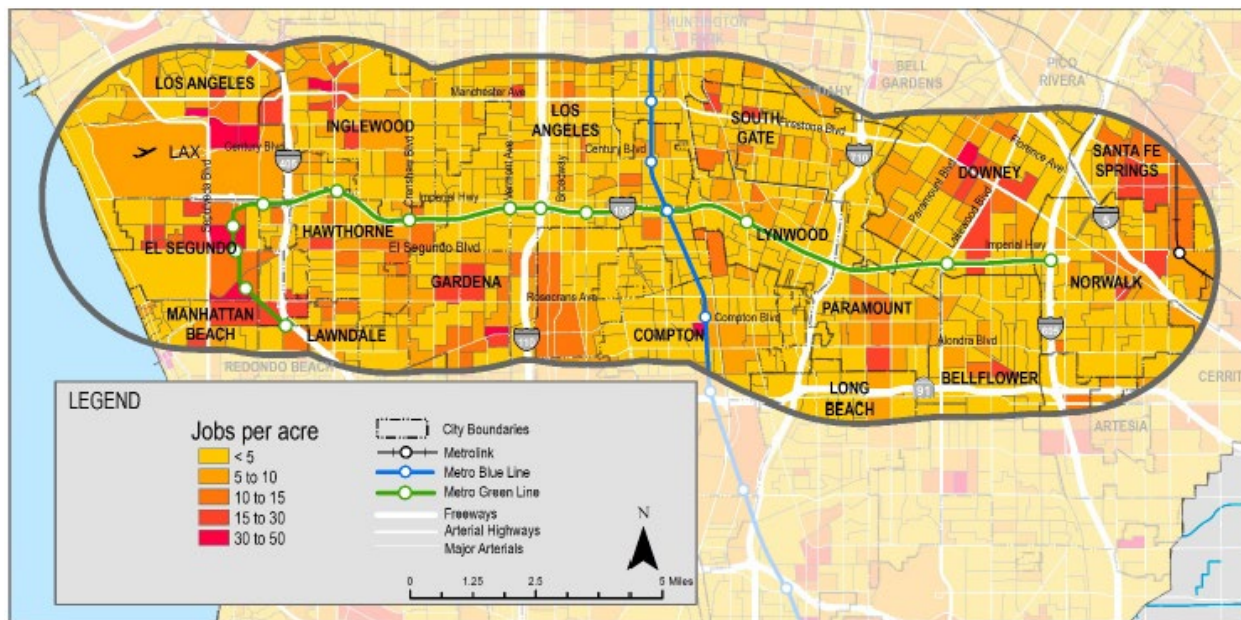
Figure 13: Median Household Incomes along I-105



There are approximately 465,000 jobs located directly on the I-105 corridor, which is more than 10% of all the jobs in Los Angeles County. As shown in Figure 14, the largest concentration of jobs is located toward the western terminus in El Segundo and in and around LAX. The education and healthcare sector is the largest

employer (20% of all jobs) in the corridor. Notably, due to the proximity to the Port complex and LAX, the share of transportation, warehousing, and utilities (11%) is significantly higher than the countywide average (5%).

Figure 14: Employment Density along I-105



As shown in the previous figures, there is a higher percentage of jobs at the western and eastern ends of the corridor. Through the use of net toll revenue, Metro intends to improve transit options in the I-105 corridor to connect residential communities with key activity and job centers, as is done on the I-10/110 ExpressLanes. Expansion of the ExpressLanes network to I-105 will also extend the benefits of Metro’s existing ExpressLanes programs to workers in these communities. For example, Metro’s Low-Income Assistance Plan provides an initial \$25 subsidy and a waiver of the \$1 monthly account maintenance fee to eligible low income customers, and Metro’s Transit Rewards Program allows ExpressLanes customers who register their TAP card to earn toll credits for trips taken on qualifying transit lines that utilize the ExpressLanes. For those users that carpool, Metro also has a carpool loyalty program that rewards 40 carpools monthly (20 on I-10, 20 on I-110) with toll credits of \$20 for 2 person carpools and \$30 for 3 person carpools.

The I-105 ExpressLanes will benefit lower-income communities by improving transit in the corridor, speeding up travel on the GP lanes, and offering a more reliable and faster travel option that is available in times of need.

2.4.2 Anticipated Impacts

The primary goal of the I-105 ExpressLanes Project is to mitigate the existing congestion conditions and associated travel delay, reliability, and safety issues in the I-105 corridor. The I-105 ExpressLanes project seeks

to address these conditions and enhance traffic operations and mobility on I-105 by achieving the following objectives:

- Improve operations and trip reliability & travel times within the corridor
- Improve traffic flow by reducing congestion, and therefore, offering drivers a faster and more reliable commute
- Sustain and proactively manage mobility within the corridor through the introduction of advanced transportation management strategies, including congestion pricing

The SCAG regional travel demand model and a separate toll optimization tool called the Rapid Toll Optimization Model (RapidTOM) were used to develop forecasts for the I-105 ExpressLanes Project to support this application and the ongoing PA/ED process, and to gauge the impact of various design and policy scenarios.

A two step process was used to document the traffic analysis. The first step prepared a travel demand model methodology and model validation memo. This memo describes the travel demand forecast methodology, assumptions, model validation, and the baseline transportation network. Caltrans District 7 has reviewed this memo and concurs with the travel demand methodology. The second step is to apply the travel demand methodology and prepare the traffic analysis, and then summarize the results in the traffic study report. As of July 2019, the draft traffic study report has been submitted to Caltrans and Metro is in the process of incorporating Caltrans' comments into the report.

In analyzing the anticipated mobility impacts of each alternative, the following scenarios were analyzed:

- Single HOV lane, HOV2+ occupancy (no build)
- Single ExpressLane, HOV3+ occupancy
- Dual ExpressLanes, HOV2+ occupancy
- Dual ExpressLanes, HOV3+ occupancy

The I-105 HOV lane currently operates with an HOV2+ occupancy policy and is classified as degraded by Caltrans. Based on vehicle occupancy counts conducted in Spring 2018, HOV2+ vehicles accounted for 60-65% of vehicle volume and HOV3+ vehicles accounted for 5-10% of vehicle volume. Single occupant clean air vehicles accounted for approximately 10-12% of volume, with the remainder consisting of violators, vanpools, buses, and motorcycles. Due to the high volume of HOV2+ vehicles currently using the HOV lane, Metro has determined that conversion of the single HOV lane into a single ExpressLane while maintaining the current occupancy policy would not result in any mobility benefits nor would it address HOV degradation. As a result, the HOV2+ occupancy policy was excluded from further analysis for the single ExpressLanes alternative.

Key mobility metrics analyzed and summarized in the following tables include 2040 peak-period peak-directional vehicle volume, passenger throughput, travel time, speed, and vehicle occupancy. Figure 15 shows daily traffic volume for both GP and express lanes, for both single and dual lane configurations under various HOV

exemption policies. This is intended to represent the relationship between GP and ExpressLanes traffic and to provide an indication of overall corridor efficiency under each scenario. As shown in the figure, Alternative 2 would increase vehicle throughput 1-8% in the ExpressLanes and 3-4% overall compared to the no build. Alternative 3 would increase vehicle throughput 62-80% in the ExpressLanes and 11-15% overall compared to the no build.

The change in passenger throughput is shown in Figure 16. Alternative 2 would reduce passenger throughput 1-5% due to HOV2+ vehicles shifting to the general-purpose lanes and being replaced by single occupant vehicles. Alternative 3 would increase person throughput by up to 6% when compared to Alternative 1.

Figure 15: Daily Vehicle Throughput Comparison

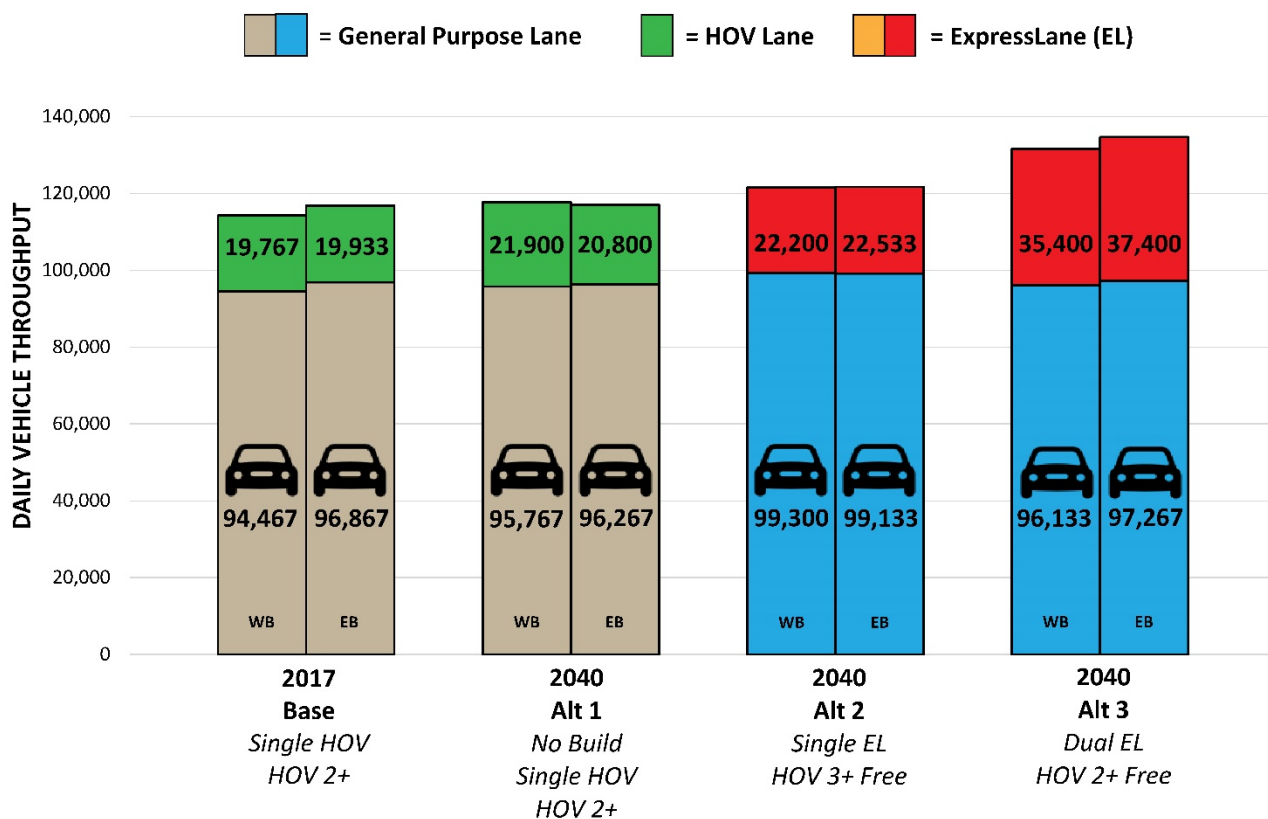
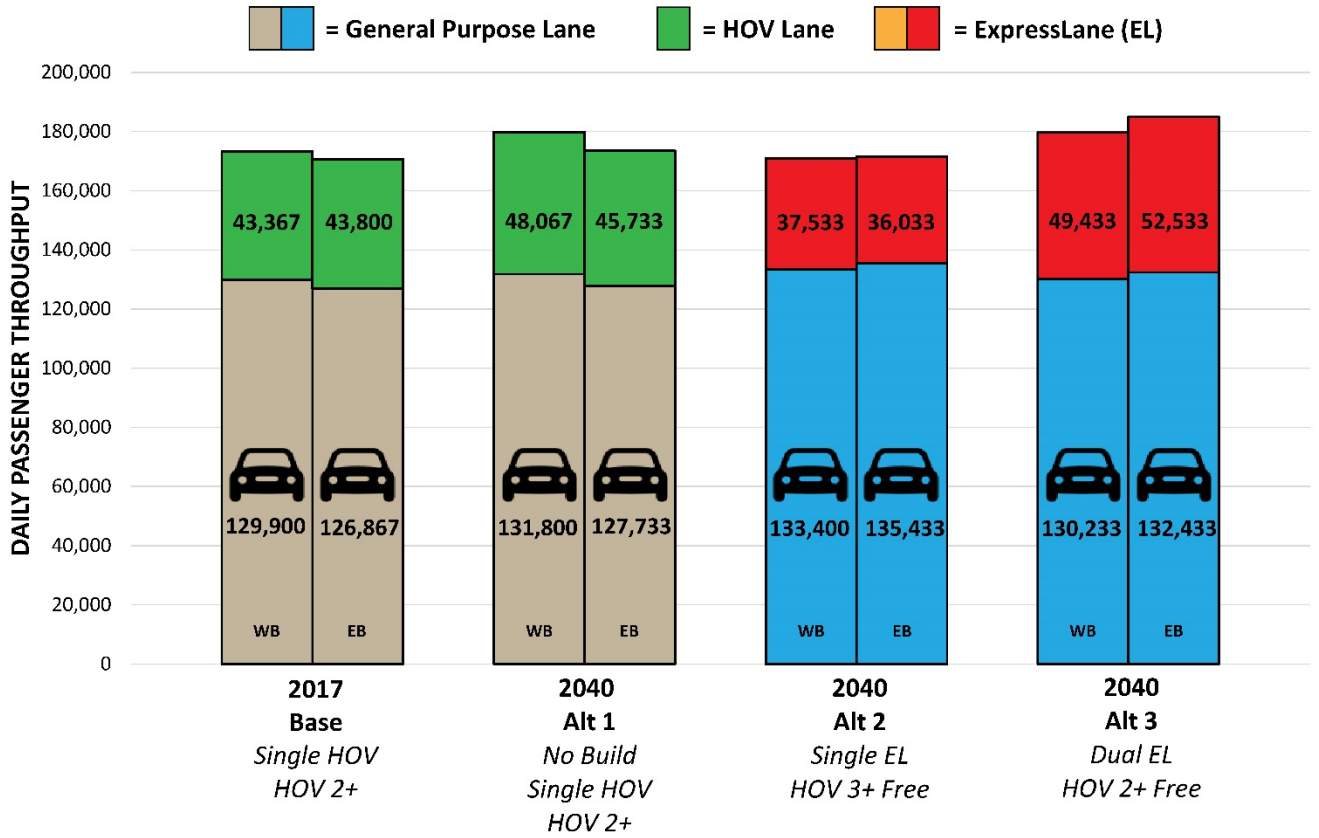


Figure 16: Daily Passenger Throughput Comparison



The travel time savings offered by express lanes over GP lanes is considered the primary factor that influences a traveler’s decision to utilize the ExpressLanes. Figure 17 shows the forecasted 2040 travel time on I-105 for both GP lanes and ExpressLanes under Alternative 1, Alternative 2, and Alternative 3.

Alternative 2 would improve corridor speeds (Figure 19) in the ExpressLanes, particularly in peak period, peak direction travel (westbound in the AM period and eastbound in the PM period) but reduce speeds in the GP lanes due to the shift of vehicles from the ExpressLanes to the GP lanes. Conversely, Alternative 3 would improve or maintain travel times and speeds in the GP lanes as well as provide significant improvements in travel time and speeds (Figure 20) in the ExpressLanes. Increases in speeds on the ExpressLanes would also improve reliability and travel times for the transit operating on the ExpressLanes which predominately serve transit dependent populations.

Figure 17: Corridor Travel Times (minutes) for 2040 Alternatives

Period	Direction	GP Travel Time			HOV Travel Time		
				Alt 3 Dual EL HOV 2+ Free	Alt 1 No Build Single HOV HOV 2+		Alt 3 Dual EL HOV 2+ Free
AM Peak (6:00 9:00 AM)	WB	29	48	29	29	17	18
	EB	22	19	17	17	17	15
PM Peak (3:00 7:00 PM)	WB	24	21	18	22	16	17
	EB	38	55	37	33	17	18
			Travel Time Difference (relative to No Build)			Travel Time Difference (relative to No Build)	
AM Peak (6:00 9:00 AM)	WB		19	0		-12	-11
	EB		-3	-5		0	-2
PM Peak (3:00 7:00 PM)	WB		-3	-6		-6	-5
	EB		17	-1		-16	-15

Vehicle Hours of Delay (VHD) was also analyzed for both the GP and ExpressLanes for Alternatives 1, 2, and 3 in 2040. As shown in Figure 18, VHD in the GP lanes would increase but significantly decrease in the ExpressLanes in Alternative 2. Similar to corridor travel times, this is due to the shift of vehicles from the ExpressLanes to the GP lanes. In contrast to Alternative 2, Alternative 3 would reduce delay in both the GP and ExpressLanes. For example, in the eastbound direction VHD in the GP lanes would decrease 42% from 13,178 hours daily to 7,566 hours daily. In the ExpressLanes, VHD would decrease 37% from 2,194 to 1,381 hours daily. Although total VHD is higher in Alternative 3 than in Alternative 2, this can be attributed to significantly higher vehicle throughput as well as the HOV 2+ occupancy policy in Alternative 3.

Figure 18: Vehicle Hours of Delay for 2040 Alternatives

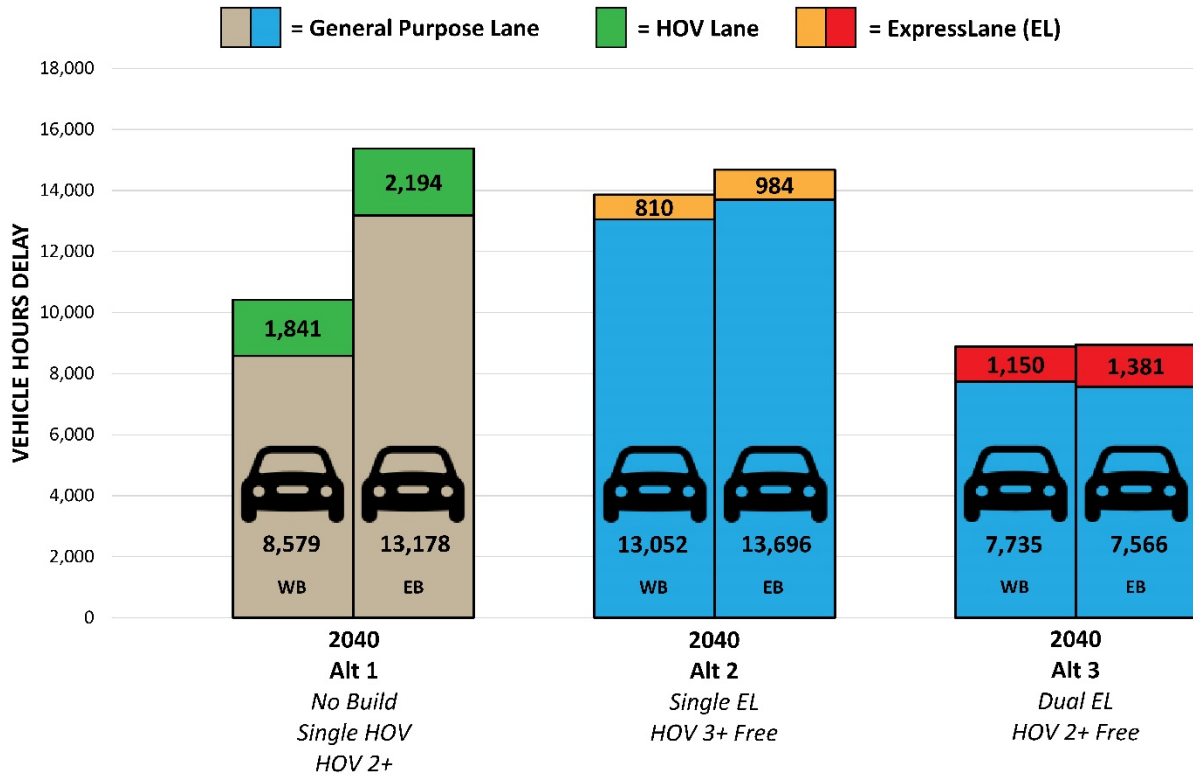


Figure 19: 2040 Peak-Hour Average Speed – Single ExpressLane

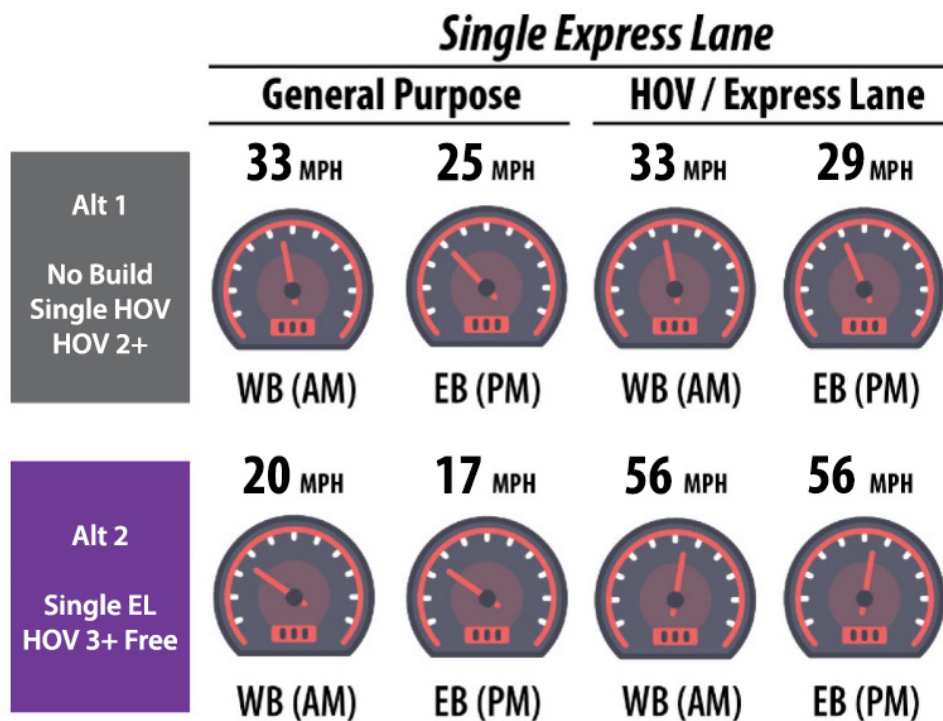


Figure 20: 2040 Peak-Hour Average Speed – Dual ExpressLanes

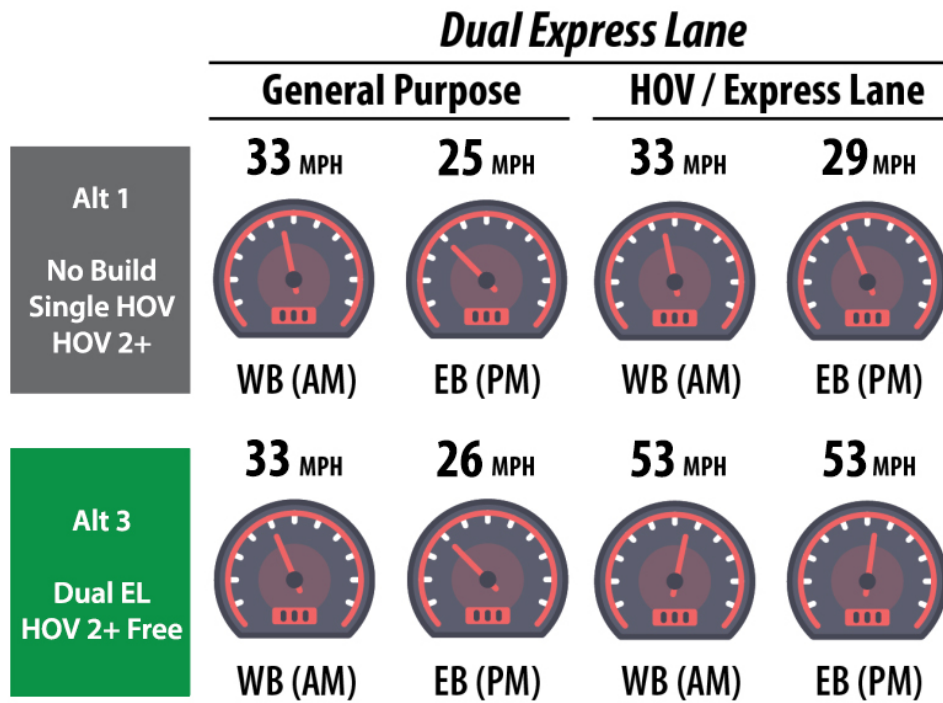
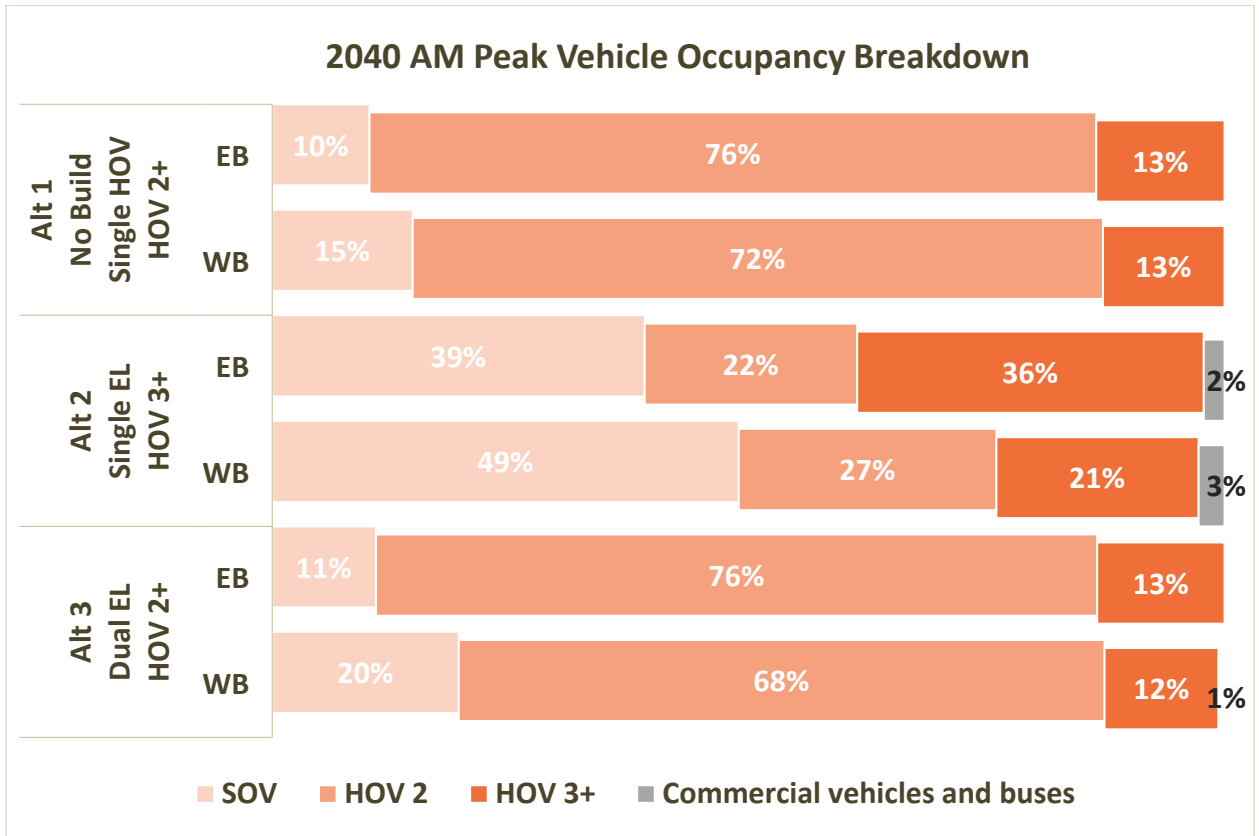


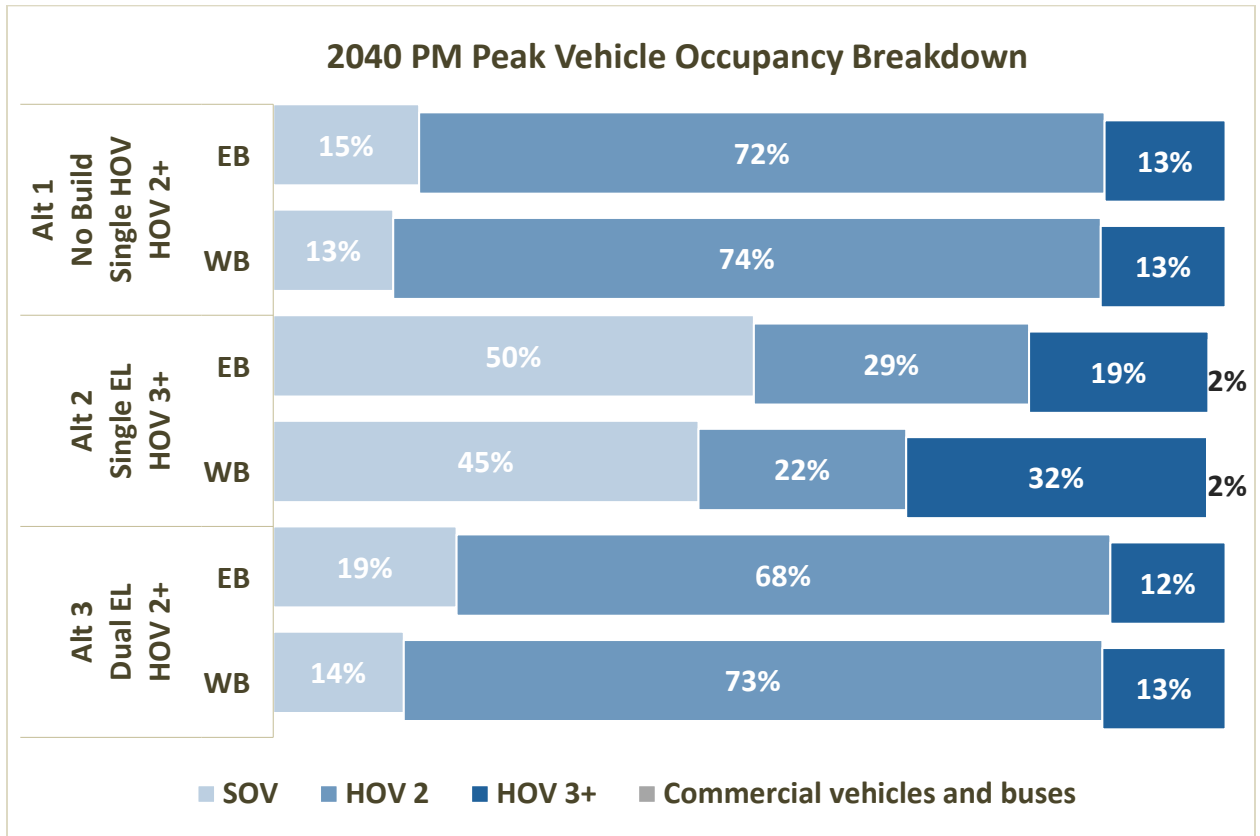
Figure 21 and Figure 22 show year 2040 vehicle occupancies split into the categories of SOV, HOV 2+, HOV 3+, and commercial vehicles and buses during AM and PM peak periods. In Alternatives 1 and 3, HOV2+ vehicles are 68-76% of total volume. Increasing occupancy to a HOV 3+ toll-exempt policy in Alternative 2 would shift many HOV 2s into the general purpose lanes. In Alternative 2, the share of HOV 2+ vehicles decrease to 22-27%. Although some of the HOV 2+ vehicles would be replaced by HOV3+ and SOVs in the ExpressLanes, the shift of HOV2+ vehicles impacts performance in the general purpose lanes. Nevertheless, increasing occupancy to HOV 3+ in Alternative 2 would be required in order for the ExpressLanes to address existing HOV lane degradation and meet federal performance standards.

Figure 21: 2040 AM Peak Vehicle Occupancy Breakdown



Note: Totals may not equal 100% due to rounding

Figure 22: 2040 PM Peak Vehicle Occupancy Breakdown



Note: Totals may not equal 100% due to rounding

Performance

Current daily traffic demand on some sections of the I-105 exceeds capacity due to heavy traffic on weekdays and weekends. According to traffic volume forecasts, previously mentioned under Section 2.3.2, the forecasted 2040 peak-period peak-directional vehicle volumes is expected to increase from current conditions in the no-build scenario. Given the anticipated growth in traffic volumes under Alternative 1, future operating conditions will be further deteriorated compared to today.

Based on the traffic analysis, Alternative 2 (Single ExpressLanes in each direction) in 2040 would result in:

- Increased daily vehicle throughput in the corridor of 1-8% in the ExpressLanes and 3-4% overall compared to the No Build alternative
- A 1-5% decrease in daily person throughput in the corridor in comparison to the No Build Alternative.
- Peak-period end to end travel time improvement of up to 16 minutes in the ExpressLanes
- Increased peak-period speeds on the ExpressLanes of 56 miles per hour compared to peak period speeds of 29-33 miles per hour in the HOV lane in the no build alternative. This would enable the 105 ExpressLanes to meet federal performance standards. Conversion of the HOV lane to ExpressLanes is consistent with the recommended strategy identified in *Caltrans California High-Occupancy Vehicle Lane Degradation Determination Report (2017)* to improve performance and reduce degradation.
- Decreased peak-period speeds on the general purpose lanes to between 17-20 miles per hour compared to the no build alternative of 25-33 miles per hour. This can be attributed to the increase in occupancy policy to HOV3+ and the resulting shift of HOV2+ vehicles from the ExpressLanes to the general-purpose lanes.
- 50% reduction in daily VHD in the ExpressLanes, but up to a 50% increase in daily VHD in the general purpose lanes

Based on the traffic analysis, Alternative 3 (Dual ExpressLanes in each direction) in 2040 would result in:

- Increased daily vehicle throughput of 62-80% in the ExpressLanes and 11-15% overall compared to the No Build alternative
- Up to a 6% increase in daily person throughput in the corridor in comparison to the No Build Alternative
- Peak-period end to end travel time improvement of up to 15 minutes in the ExpressLanes and 6 minutes in the GP lanes
- Increased peak-period speeds on the ExpressLanes to 53 miles per hour compared to 29-33 miles per hour in the HOV lane in the no build alternative. This would enable the 105 ExpressLanes to meet federal performance standards. GP lane speeds would remain constant or increase slightly.
- General purpose lane daily passenger throughput increase up to 3% in 2040 compared to 2017 and up to 4% compared to the 2040 no build, while maintaining speeds similar to the No Build Alternative and improving performance on local arterials.

- General purpose lane daily VHD reduction of 42% and ExpressLanes daily VHD reduction of 37% in the eastbound direction. In the westbound direction, general purpose lane daily VHD is reduced by 10% and ExpressLanes daily VHD is reduced by 37%

Metro and Caltrans are continuing to evaluate the mobility benefits, potential environmental impacts, and revenue potential of the two build alternatives in the PA/ED and Traffic and Revenue study. After the draft EIR/EA is released and public comments are received, Metro expects to recommend a preferred alternative to the Metro Board in mid 2020.

The I-105 ExpressLanes project will improve trip reliability & travel times and manage mobility through the conversion of the existing HOV lane into ExpressLanes to optimize passenger and vehicle throughput while also providing an incentive for ridesharing as an alternative to driving alone. Optimizing throughput in the ExpressLanes would in turn improve the efficiency of the I-105 GP lanes to the benefit of commuters, travelers, freight, and communities in the corridor.

2.4.3 Proposed Project Timeline

Is the time frame for project completion clearly outlined? Is the proposed schedule reasonable given the scope and complexity of the project? Does the proposal contain adequate assurances that the project will be completed on time?

The proposed project schedules for the I-105 ExpressLanes project are provided below in Tables 1, 2, and 3 for Alternative 2, Alternative 3 aggressive, and Alternative 3 conservative. Although the preferred alternative has not been determined at this time, an alternative that requires no or minimal ROW acquisition is considered to be the most viable option at this time. To date, project scoping for the PA/ED process was completed in April 2018. Draft Environmental Document circulation and release of the draft Con Ops and T&R study are expected to occur Fall 2019.

Alternative 2 would require minimal widening and primarily entail pavement restriping, signage, and installation of the tolling infrastructure. For this alternative, final design is anticipated by summer 2021, with construction beginning in late 2022, and ultimate project completion as early as 2024.

Table 1: Proposed Project Schedule – Alternative 2 (Single ExpressLane in each direction)

PROJECT ACTIVITY	COMPLETION
Project Initiation Document	September 2015
Project Scoping	April 2018
Submit application for tolling authority to CTC	Summer 2019

Draft Environmental Document Circulation	Fall 2019
T&R Investment Grade Study Completion	Fall 2019
Draft Concept of Operations	Fall 2019
Final Environmental Document (EIR/FONSI) Approval	Spring 2020
Project PS&E	Summer 2021
Right of Way Certification	Fall 2021
Ready to List	Spring 2022
Construction NTP	Fall 2022
Substantial Completion	December 2023
Project Complete	March 2024

Alternative 3 would add a second ExpressLane in each direction and require additional bridge widenings. As a result, two schedules for Alternative 3 are presented in Tables 2 & 3, with a longer timeframe assumed for right of way certification and construction in the Alternative 3 conservative schedule.

Table 2: Alternative 3 – Aggressive Schedule (Dual ExpressLanes in each direction)

PROJECT ACTIVITY	COMPLETION
Project Initiation Document	September 2015
Project Scoping	April 2018
Submit application for tolling authority to CTC	Summer 2019
Draft Environmental Document Circulation	Fall 2019
T&R Investment Grade Study Completion	Fall 2019
Draft Concept of Operations	Fall 2019
Final Environmental Document (EIR/FONSI) Approval	Spring 2020
Project PS&E	Summer 2021
Right of Way Certification	Fall 2021
Ready to List	Spring 2022
Construction NTP	Fall 2022
Substantial Completion	December 2024
Project Complete	March 2025

Table 3: Alternative 3 – Conservative Schedule (Dual ExpressLanes in each direction)

PROJECT ACTIVITY	COMPLETION
Project Initiation Document	September 2015

Project Scoping	April 2018
Submit application for tolling authority to CTC	Summer 2019
Draft Environmental Document Circulation	Fall 2019
T&R Investment Grade Study Completion	Fall 2019
Draft Concept of Operations	Fall 2019
Final Environmental Document (EIR/FONSI) Approval	Spring 2020
Project PS&E	Summer 2021
Right of Way Certification	Winter 2022
Ready to List	Fall 2022
Construction NTP	Winter 2023
Substantial Completion	Spring 2026
Project Complete	September 2027

A number of methods will be used to assure that the design and construction phases of I-105 ExpressLanes project are completed on time, including regular project reports and status meetings. Application of these methods is informed by the successful implementation of the I-10 and I-110 ExpressLanes utilizing a similar approach.

Project Reporting

Reports will be prepared to assess status and track progress on costs, budgets, schedules, quality, environmental mitigation status, safety, labor compliance, and many other items related to the I-105 ExpressLanes project. These reports will cover periods ranging from one week to as long as one year. Additionally, special reports concerning a particular topic will be prepared, when necessary or requested.

A formal cost, schedule, and status report will be produced and reviewed monthly with agency management from Metro, Caltrans, and FHWA. A status meeting will be held quarterly with the Executive Oversight Committee, or more frequently, upon its request. The Executive Oversight Committee consists of the executives from the three agencies partnering to deliver the Project: Metro Executive Officer, Caltrans District 7, and the FHWA Division Administrator.

Monthly Status Meeting

Senior representatives from Metro, Caltrans, FHWA, and Metro contractors will attend a monthly status meeting, led by Metro, with the purpose of discussing costs, schedules, quality issues, compliance with federal and State requirements, and other status items in sufficient detail to allow all involved parties to be fully aware of the significant issues and actions planned to mitigate any adverse impacts. Metro will prepare a monthly status report for discussion at the meeting, which will include but not be limited to: activities and deliverables, action items, schedule adherence, cost adherence, quality adherence, and safety performance.

Weekly Status Meeting

During the detailed design and construction phases of the I-105 ExpressLanes project, a weekly progress meeting will be held among Metro, Caltrans, the design consultant, construction contractors, and other stakeholders as needed until project completion. The purpose of these meetings will be to review schedule and status, address issues, and provide an opportunity for coordination and dialogue. Another purpose of these meetings will be to identify key issues that need to be elevated to Metro and Caltrans senior management. Immediate communication of progress and identification of issues will help to mitigate problems quickly, and assure that the project is delivered on time.

Risk Register

In accordance with Caltrans Deputy Directive (PD-09), project risk management (PRM) shall be applied throughout the various phases of the project. PRM is a process for planning for, identifying, analyzing, communicating, managing, and responding to project risks through all phases of project delivery. A risk register was prepared for the PSR-PDS and is being updated as part of the PA/ED. The risk register includes a list of all identified risks, the risk owners, and an agreed upon risk response strategy. The successful delivery of a project can be increased by establishing and maintaining a risk register over the project lifecycle.

2.4.4 Operation

Has the applicant presented a reasonable statement setting forth plans for operation of the facility?

The operation of the I-105 ExpressLanes between I-405 and I-605 will require both tolling infrastructure and clearly defined business rules. A Concept of Operations for the proposed I-105 ExpressLanes is being prepared, in concert with the I-105 PA/ED. Per Caltrans Deputy Directive (DD-43-R1), "The Concept of Operations shall describe the design and operational characteristics of the managed lanes, enforcement, incident management, and agency and stakeholder coordination." Metro expects that operation of the I-105 ExpressLanes will be similar to the I-10/I-110 ExpressLanes, inclusive of the items below and as illustrated in Figure 23:

- Toll gantries (#7) with a means to read transponders and high-speed digital cameras to verify transactions, read license plates, and automatically collect tolls from customers as part of an electronic toll collection (ETC) program inclusive of enforcement areas within toll zones to verify occupancy and transponder use, and enforce violations
- Signage designating I-105 ExpressLanes ingress and egress locations (#3 & #5) and dynamic message signs (#4) indicating the toll amount and estimated travel times
- ExpressLanes will be buffer separated from General Purpose Lanes with dedicated ingress/egress locations (#2)
- Closed-circuit television (CCTV) coverage of the I-105 ExpressLanes corridor to provide security and video surveillance for tolling equipment and to enable quick response to breakdowns and other incidents

- A fiber optic network linking the electronic infrastructure to a centralized toll operations office
- Dedicated CHP enforcement and Freeway Service Patrol (FSP) incident management

Figure 23: Metro ExpressLanes Operation



The framework for specific business rules under which the I-105 ExpressLanes will be operated is currently being developed as part of the I-105 Concept of Operations process, and toll policy elements are subject to change as project development continues. However, it is important to note that the policies that guide the operations and administration of the existing Metro I-110/I-10 ExpressLanes will be used as the basis for developing the Concept of Operations and subsequent business rules for the I-105. Key Metro ExpressLanes business rules include:

- Toll free travel for vehicles that meet minimum vehicle occupancy requirements, motorcycles, and buses; qualifying carpools would continue to be able to access the lanes without charge.
- Trucks are not allowed (other than 2-axle light duty trucks).
- Toll/Transit Credits available to frequent ExpressLanes transit riders.
- Tolling will revert to HOV only use (i.e., no toll users will be permitted to enter the ExpressLanes) when travel speeds in the ExpressLanes fall below 45 mph
- Emergency vehicles may use the ExpressLanes toll free when responding to incidents
- All vehicles traveling on the ExpressLanes are required to have a transponder
- Qualifying Clean Air Vehicles are given a 15% toll discount
- A Low Income Assistance Plan is available to persons earning less than twice the Federal poverty level.

Toll Rate Setting

When existing Metro ExpressLanes are in operation, the toll rate schedule imposes a minimum toll of \$0.10 per mile during off-peak hours and \$0.35 per mile during peak hours. Above the minimum, the toll rate adjusts automatically based on real-time traffic density as often as every five minutes as part of a dynamic pricing system. The individual trip price charged to a customer is determined by multiplying the per mile rate by the

miles traveled in each tolling segment at the time of the trip. A maximum per mile toll rate of \$2.10 per mile is currently in effect and updated quarterly based on ExpressLanes performance. Metro ExpressLanes operations staff monitor toll rates against real-time lane density (traffic volumes / travel speeds) and, per Board adopted policy, can increase the maximum toll per mile per segment by \$0.10 per quarter, if lane density is determined to exceed a unit of 48 (calculated as traffic volume/average travel speed) for more than 35 minutes four times during a three-month period (excluding incident events).

Toll Exemptions & Discounts

Toll exemptions and discounts for the I-105 ExpressLanes project are currently being confirmed by the Concept of Operations process. Vehicles meeting minimum occupancy requirements and those qualifying for other exemptions may use the existing Metro ExpressLanes without paying a toll. Motorists in all other vehicles must pay the variably priced toll to use the lanes. On the I-110 ExpressLanes, HOV 2+ are permitted to travel toll free at all times. On the I-10 ExpressLanes, the minimum occupancy rate for toll-free travel is HOV 3+ during peak periods (5-9am and 4-7pm), and HOV 2+ at all other times. These same occupancy requirements were used on the I-10 and I-110 HOV lanes before their conversion to ExpressLanes. In addition to HOVs, other vehicles that may receive toll free use of the I-10/I-110 ExpressLanes include law enforcement and emergency vehicles when responding to incidents, transit vehicles, and motorcycles.

The California DMV is issuing red decals for all qualifying vehicles pursuant to CVC Section 5205.5 and 21655.9 that will be valid until January 1, 2022 and purple decals that will be valid until January 1, 2023. On April 26, 2018, the Metro Board of Directors approved a new policy which will offer CAV vehicles a 15% toll discount as opposed to toll-free access. The new 15% CAV discount policy is in effect as of March 1, 2019. The I-105 ExpressLanes will be operated consistent with these provisions, until such a time that the CAV program expires, a new law is enacted, or additional action is taken by the Metro Board.

Methods of Toll Collection

As with the existing Metro ExpressLanes, the I-105 ExpressLanes project is anticipated to deploy an Electronic Toll Collection (ETC) system with multiple tolling points where transponders are read and license plate images are captured from toll gantries as the basis for assessing tolls. The ETC system also identifies vehicles that do not have a transponder. In addition, cameras and lane speed detection equipment in the freeway pavement are used to monitor travel conditions and set toll rates. The toll collection system relies on an algorithm that evaluates operating conditions on the facility based on real-time speeds & volumes and determines whether the toll rates need to be modified. Moreover, the algorithm itself may be modified along with other operating policies to ensure optimal performance.

The toll gantries read transponders that are mounted on the inside of a vehicle’s windshield. The transponder, branded as FasTrak®Flex, is a radio frequency identification unit that transmits a signal to the reader on the toll gantry. Transponders branded as FasTrak®Flex are equipped with a switch that motorists utilize to declare their vehicle occupancy – either 1, 2, or 3+. An account is linked to the transponder for billing of tolls. Existing Metro policy requires all vehicles using the ExpressLanes to have an approved FasTrak®Flex transponder, even if qualified for a toll exemption. Metro is also considering the pilot implementation of license plate-based “pay as you use” system in the future. The possible “pay as you use” system would bill the vehicle’s registered owner the relevant toll for their ExpressLanes use plus an additional administrative fee. Under this arrangement, transponders would not be required; however, a vehicle billed under the “pay as you use” system would be ineligible for any toll exemptions or discounts.

Figure 24: I-110 ExpressLanes Toll Gantry



The ETC system at toll gantries would enable Metro to implement a “pay as you use” system as well as facilitate the identification of violators, issuance of notices, and settlement of payments for Fastrak® account holders from other California toll agencies. In this way, Metro maintains interoperability with other toll agencies within California. However, it should be noted that national interoperability is currently required under federal law and may be realized prior to the opening of the I-105 ExpressLanes to traffic. Additionally, mobile device applications will be tested for toll payment and occupancy declaration and could be used in lieu of a transponder in the future. The I-105 ExpressLanes system will comply with accepted Metro, state, and national interoperability requirements & technology standards in effect at the time of operation.

Toll Enforcement

Toll enforcement is an essential element of any successful express lane system, ensuring that traffic laws are enforced, customers are charged the appropriate toll based on vehicle occupancy, and that toll evasion is minimized. Toll enforcement is being accomplished through CHP patrols, electronic systems, and facility design.

Enforcement of the existing Metro ExpressLanes is currently regulated by the California Vehicle Code (CVC), with CHP as the designated enforcement agency. From the inception of the I-110/I-10 ExpressLanes, Metro has had a funding agreement in place with CHP for enforcement services. Metro anticipates that the existing agreement with the CHP for enforcement of the I-110/I-10 ExpressLanes will be used as the basis for enforcement of the I-105 ExpressLanes.

On the I-110/I-10 ExpressLanes, the CHP enforces toll violations, buffer crossing violations, and other violations of the CVC through dedicated patrols on the ExpressLanes. Toll violations are currently enforced through both visual observation by the CHP and the ETC system. The ETC system is intended to both identify vehicles that do not have a transponder as well as the declared transponder switch setting.

Current ExpressLanes business rules require all vehicles using the ExpressLanes to have a transponder. The use of a switchable transponder provides a mechanism for Metro to not only provide toll-free travel for eligible vehicles but also verify the number of occupants in the vehicle. To enforce transponder and occupancy requirements, the toll gantries on the freeway include enforcement beacons that will flash a light pattern to indicate the transponder is set on 1, 2, or 3+ occupants in the vehicle or that there is no transponder. The CHP officer will observe the beacon and then determine if there is a violation, either from not having a transponder or if the incorrect number of occupants is being declared. As of March 2019, the failure to use a transponder is considered a toll violation, as will using a transponder intentionally set to an occupancy that results in a discounted toll charge to which the motorist is not entitled.

At the time of this writing, Metro is in the process of implementing a proof of concept for an automated Occupancy Detection System (ODS) on the existing I-110/I-10 ExpressLanes to electronically determine vehicle occupancy. ODS is intended to supplement manual observation by the CHP to catch violators that intentionally misdeclare their vehicle occupancy. The ODS consists of a front camera and illuminator, a side camera and illuminator, and a laser trigger per lane. The ODS system photographs the front and rear seats of each vehicle, and then determines vehicle occupancy based on those images and compares that occupancy to the corresponding transponder setting. A demonstration project was completed in 2016 to compare the ODS results with time stamped toll transponder data, resulting in 94.1 percent accuracy. When augmented with a manual image review, accuracy improved to 99.9 percent. Metro is optimistic that the ODS proof of concept will be successful and result in the installation of permanent ODS locations to enhance enforcement of occupancy requirements on the ExpressLanes.

The I-105 ExpressLanes would utilize limited access with designated points for ingress/egress and would be separated from the general purpose lanes with a buffer and channelizers. This would prevent vehicles from illegally crossing the buffer outside of the designated ingress/egress points. Furthermore, through the Concept of Operations and PA/ED processes, Metro, Caltrans, and CHP are studying potential locations for observation and citation areas on the I-105. These areas could be used to both visually observe vehicle occupancy and other violations as well as to issue citations to violators.

TMC & Back Office

The operation of the I-105 ExpressLanes project will require the use of a Customer Service Center (CSC) for transponder distribution, outreach, accounting, traffic monitoring, processing, and reporting. These functions on the existing Metro ExpressLanes are handled at the CSC located in Gardena, CA, where Toll Facility Operators monitor operations to ensure the dynamic price algorithm is operating as expected and to respond to incidents. The operation is not staffed 24/7 but system support is provided 24/7 remotely by the toll system operator.

Operators have access to corridor cameras, speed sensors, and tolling management software. They also have the ability to modify corridor pricing, manage incidents and coordinate with CHP and FSP. As part of the new back office contract, the Gardena Customer Service center will be replaced by a larger facility in Torrance where a call center will be located in addition to all the activities currently undertaken in Gardena. Metro also currently operates a CSC at the Metro El Monte station and is opening a CSC in downtown Los Angeles in early 2020. Furthermore, Metro anticipates the opening of a potential fourth CSC somewhere in the I-105 corridor at the time the project becomes operational.

Core processing functionality of the tolling system provided by the toll system operator include the Transaction Database, User Account Database, Tag Database, Dynamic Pricing, Trip Building, Tolling System Management, CSC Interface, Public Website, Reporting, Financial Database, Maintenance and Operations Management System (MOMS), California Toll Operators Committee (CTOC) Transfers, Department of Motor Vehicles (DMV) Processes and User Access Control. Together these systems display price levels, bill customers, and provide the data required to operate the existing Metro ExpressLanes to optimal performance standards. Metro's recently procured contractors for back office management and roadside toll collection will begin management of these activities as well as provide system upgrades and install new roadside equipment on existing ExpressLanes by early 2020.

The specific policies under which the I-105 ExpressLanes will be operated are currently being developed as part of the I-105 Concept of Operations, which will include substantial detail regarding all the systems necessary to construct, operate, and maintain the I-105 ExpressLanes. In addition, all operations functions will be carried out in cooperation with Caltrans District 7, and the Los Angeles Regional Traffic Management Center (LARTMC). Formal agreements between Caltrans and Metro on these topics will be completed prior to the opening of the I-105 ExpressLanes project, replicating the approach used during the implementation of the I-110/I-10 ExpressLanes.

2.4.5 Federal Involvement

Is the project outside the purview of federal oversight, or will it require some level of federal involvement due to its location on the National Highway System or Federal Interstate System or because federal permits are required? If so, has the applicant provided a reasonable plan for addressing all federal responsibilities?

The I-105 corridor is part of the Interstate Highway System, and as such, FHWA participates in the PA/ED, ConOps, and T&R. The I-105 ExpressLanes project has been designated by FHWA as a Project of Division Interest (PoDI).

FHWA will perform oversight of project development through the prescribed Systems Engineering Analysis (SEA) process that is currently underway as part of Concept of Operations development, as well as the issuance of a clearance for construction at the conclusion of the environmental and design phases.

2.4.6 Maintenance

Is there a process in place to clearly define assumptions and responsibilities during the operational phase including law enforcement, toll collection, and maintenance?

There is a process in place to develop a formal maintenance plan as part of the Caltrans and FHWA systems engineering process, with initial assumptions currently under development as part of the I-105 Concept of Operations. Metro and Caltrans will establish a Toll Operating Agreement later in project development, which will specify terms for express lane construction & operations, liabilities & responsibilities of each party, and an outline of maintenance expectations. A Toll Operating Agreement is currently in effect for the existing I-10 and I-110 ExpressLanes and it is expected that the I-105 ExpressLanes toll operating agreement would be modeled after it. At this time, it is anticipated that Caltrans will maintain the physical infrastructure such as pavement, striping, and median barriers as well as perform general maintenance such as trash and graffiti removal, paid for from toll revenue. Metro would manage the toll infrastructure, customer service centers, and other back-office support facilities. Metro will also establish a contract with CHP for enforcement and with the FSP for dedicated incident response for the I-105 ExpressLanes. It should be noted that Metro awarded a contract to a new contractor to implement and maintain a new roadside toll collection system for the existing I-10/I-110 ExpressLanes in June 2018. Metro expects that this contractor would be utilized to develop and maintain the I-105 ExpressLanes toll infrastructure.

2.5 Financial Feasibility

2.5.1 Funding Plan

Is the funding plan built on a reasonable basis for funding project development and operations? For example, are the assumptions on which the plan is based well defined and reasonable in nature? Are the plan's risk factors identified and dealt with sufficiently? Are the planned sources of funding and financing realistic? Has the applicant demonstrated evidence of its ability to obtain the necessary financing? Does the applicant have the ability to fund shortfalls if revenues do not meet projections?

The I-105 ExpressLanes Project will be funded with local Metro sales tax funds including Measure M funds, potential federal and state funds, and the proceeds of non-recourse toll revenue-backed obligations. Assuming Build Alternative 3, the Project's capital cost expense estimate is \$520.90 million, which includes the costs for the preparation & certification of the environmental document, preliminary engineering, final design, right-of-way costs, construction support, construction, and construction contingency.

The financial plan for funding the Project before (i.e., Project Development phase) and during construction consists of four primary funding sources, which are shown below in Table 4.

Table 4: Sources and Uses of Project Funding (All Amounts in \$ Thousands)

Source	Project Development	Construction	Total
CMAQ	\$2,607	\$0	\$2,607
Metro Sales Tax Funds	\$62,907	\$0	\$62,907
Other Federal or State Funding ¹	\$0	\$125,000	\$125,000
Toll Revenue-Backed Obligations	\$0	\$330,390	\$330,390
Total Programmed	\$65,514	\$455,390	\$520,904

Congestion Mitigation and Air Quality Improvement Program (CMAQ)

The Federal Highway Administration annually allocates CMAQ funds to California that are then distributed to Caltrans for apportionment to Metropolitan Planning Organizations and Regional Transportation Planning Agencies in federally-designated air quality nonattainment and maintenance areas within the state in accordance with the formula set forth in Section 182.7 of the Streets and Highways Code for California. Los Angeles County was allocated \$138.5 million in CMAQ funds during Federal Fiscal Year 2017/2018 (per 2017 Metro Funding Sources Guide).

¹ May include SB1 grants or other federal grants.

Metro's Existing Sales Tax Measures

Metro currently has four sales tax measures authorized by voter approval. These are Proposition A, Proposition C, Measure R and Measure M. The taxes apply to both incorporated and unincorporated areas of Los Angeles County. In addition to the Measure M sales tax revenues that are programmed to the 105 ExpressLanes, discretionary funds from other Metro sales taxes may be available that could be used towards the Project.

Table 5: Metro Sales Tax Revenue Measures

Sales Tax Revenue Source	Effective Year	Tax Rate	Sunset	Allocation % Local/LACMTA
Proposition A	1982	Half-cent	None	25/75%
Proposition C	1991	Half-cent	None	20/80%
Measure R	2009	Half-cent	2039	15/85%
Measure M	2017	Half-cent ²	None	16/84% ³

Metro issues debt backed by a gross pledge of sales tax revenues not including local return funds. As of July 1, 2019, Metro has \$5.4 billion in long-term debt outstanding and \$256 million in short-term debt outstanding. There have been no Measure M sales tax revenue-backed bonds issued to date. Metro anticipates issuing \$1.3 billion in Measure M bonds between FY2020 and FY2023.

² After Measure R sunsets on June 30, 2039, Measure M will increase to 1 cent on July 1, 2039.

³ With the increase of the Measure M tax rate on July 1, 2039, allocation percentage will change to 19/81%.

Proposition A

As of July 1, 2019, Metro has \$1.062 billion outstanding in Proposition A bonds rated Aa1, AAA, and AAA by Moody's, Standard & Poor's, and Kroll, respectively. The Proposition A sales tax, approved by voters in 1980, is a one-half of 1% tax on most retail sales in Los Angeles County. Metro returns 25% of the Proposition A tax to the cities in Los Angeles County for transportation purposes. The balance of the Proposition A tax is restricted to 35% for rail development and 40% for discretionary purposes. Almost all the discretionary portion is used to fund bus service provided by Metro and 16 other municipal bus operators within Los Angeles County⁴.

Proposition C

As of July 1, 2019, Metro has \$1.755 billion outstanding in senior lien Proposition C bonds rated Aa2, AAA, and AA+ by Moody's, Standard & Poor's, and Fitch, respectively. The Proposition C sales tax, approved by voters in 1990, is a one-half of 1% tax on most retail sales in Los Angeles County. Metro returns 20% of the Proposition C tax to the cities in Los Angeles County for transportation purposes. The balance of the Proposition C tax is restricted to 40% for construction and operation of the bus transit and rail system; 5% to expand rail and bus security; 10% for commuter rail, construction of transit centers, park and ride lots and freeway bus stops; and 25% for transit-related improvements to freeways and state highways.

Measure R

As of July 1, 2019, Metro has \$1.080 billion in Measure R bonds rated Aa1 and AAA by Moody's and Standard & Poor's, respectively. Additionally, Measure R has \$1.379 billion in TIFIA loans outstanding. Measure R was approved by two-thirds of Los Angeles County voters in November 2008. Measure R is an ordinance authorizing an additional one-half of 1% sales tax on most retail sales in Los Angeles County to fund traffic relief and rail expansion according to an expenditure plan contained in the ordinance. The Measure R sales tax became effective on July 1, 2009, and will remain in effect for 30 years through June 30, 2039. Upon the expiration of Measure R, Measure M sales tax will increase to one-cent.

⁴ Proposition A discretionary funds are predominantly used for bus service operations throughout Los Angeles County and consequently, it is unlikely that these funds would be used for the 105 ExpressLanes.

Measure M

Measure M is a transportation sales tax ballot measure that was approved by Los Angeles County voters in November 2016 with 71.15% support. Collections for the Measure M half-cent sales tax began on July 1, 2017. Measure M has no expiration. The Measure M sales tax will increase to one-cent on July 1, 2039, upon the expiration of the Measure R half-cent sales tax. As of today, there have been no Measure M sales tax revenue-backed bonds issued.

Measure M requires projects in the expenditure plan to adhere to the groundbreaking sequence specified in Metro Ordinance 16-01 (Ordinance). For the I-105 ExpressLanes, Measure M construction funds cannot be accessed for the Project prior to FY 2027. However, funds can be accessed to pay for Project development and pre-construction activities. The Project has been identified as a key project for Metro and Los Angeles County and its current opening date has been recommended to be accelerated from 2029 to 2027 in Metro's Twenty-Eight by '28, which intends to construct twenty-eight projects before the 2028 Summer Olympics. Metro intends to further expedite the delivery of this project by early 2025. However, this would require the use of toll revenue-backed obligations to fund construction costs until FY2027. At that time, the remaining Measure M funds could be used to repay a portion of the outstanding toll revenue-backed obligations.

Measure M Projected Revenues

Based on cash receipts between September 2017 and June 2019, Measure M has generated \$1.5 billion in sales tax revenue. In FY2020, Measure M is expected to generate \$873 million in sales tax revenue. Upon the sunset of the Measure R sales tax and the increase of Measure M sales tax in 2039, Measure M's projected revenues will be based on a full cent sales tax.

Toll-Revenue Backed Obligations

Metro plans to use toll revenue-backed obligations for a significant portion of funding for the I-105 ExpressLanes project during construction to address the fiscal constraints surrounding the expected timing of the Measure M funds availability for the Project. Metro would then repay these obligations with Measure M funds programmed for I-105 ExpressLanes beginning in FY 2027.

While Metro has not yet selected its preferred Project financing approach with respect to these toll revenue-backed obligations, it has flexibility to access the capital markets, seek out a private placement, or apply for TIFIA credit assistance to support the construction of the I-105 ExpressLanes. The current funding plan assumes approximately \$330.39 million of proceeds from such toll revenue-backed obligations. Specifically, the pledged revenues for these obligations may consist of the net toll revenues generated by the 105 ExpressLanes. The borrowing mechanism chosen by Metro will depend on a variety of factors including the following:

- Relative cost of financing options
- Flexibility in key financial covenants
- Expediency of receipt of funds and organizational/administrative burden related to debt issuance
- Market appetite for toll revenue bonds and/or private placements
- Availability of TIFIA credit assistance

A preliminary debt capacity analysis based on the 105 ExpressLanes preliminary Level I traffic and revenue forecasts (attached in Section 3.4) indicates the Project's projected debt financing would likely meet relevant rating agency methodology for toll-revenue backed obligations indicating based on preliminary analysis that the necessary funding can be generated through any of the contemplated financing structures.

In Table 6, Metro has provided a range of debt issuance scenarios to account for conservative and aggressive assumptions that would affect the issuance of toll revenue-backed obligations to fund 105 ExpressLanes construction costs. The scenarios are based on a Single ExpressLane (Build Alternative 2) or Dual ExpressLanes (Build Alternative 3). This analysis of the Dual ExpressLanes utilizes different toll policies for the conservative scenario (HOV 2+ off peak; HOV 3+ peak) and the aggressive scenario (HOV 3+). The analysis of the Single ExpressLane assumes the same toll policy (HOV 3+) for both conservative and aggressive scenarios. An additional primary differentiator between the conservative and aggressive scenarios is a higher cost of capital assumption for the conservative as compared with the aggressive scenarios.

The assumed costs of capital for the scenarios was derived by utilizing the current benchmark municipal market fixed rate (the Municipal Market Data AAA General Obligation Bond) for a 30-year maturity obligation, adding a credit spread assuming BBB- issuance, and adding either 100 basis points (aggressive scenarios) or 250 basis points (conservative scenarios) of forward premium (i.e., the forward premium represents the potential increased costs of capital to issue in the future; financial close estimated in 2021). Based on these assumptions, Metro estimated costs of capital of 4.0% for the aggressive scenarios and 5.5% for the conservative scenarios.

Metro assumes tax-exempt toll revenue-backed obligations, sized to generate Project funds to cover the net construction costs for the Dual ExpressLanes (or the high estimate for the Single ExpressLane). The debt structure assumes approximately level debt service over thirty years, with no principal amortization until one year after the expected revenue operations commence. Metro also assumes capitalized interest on the toll revenue-backed bonds through the first year of revenue operations and a debt service reserve account funded by the proceeds of the toll revenue-backed bonds. Financing scenario statistics are summarized in Table 6.

Table 6: Financing Alternatives

Scenario	Single Lane Conservative ^A	Single Lane Aggressive ^A	Dual Lane Conservative ^B	Dual Lane Aggressive ^C
Project Fund	\$105.83 million	\$105.83 million	\$330.39 million	\$330.39 million
Coupon/Yield	5.5%	4.0%	5.5%	4.0%
Maximum Annual Debt Service	\$10.8 million	\$8.4 million	\$33.8 million	\$26.2 million
Average Annual Debt Service	\$10.4 million	\$7.9 million	\$32.6 million	\$24.8 million
Minimum Debt Service Coverage Ratio	3.45x	4.46x	1.62x	2.92x

^A Single Lane scenarios assume HOV 3+ toll policy at all times.

^B Dual Lane Conservative toll policy assumes HOV 2+ off peak; HOV 3+ peak.

^C Dual Lane Aggressive toll policy assumes HOV 3+ at all times.

Based on this analysis, which relies upon the current preliminary Level II traffic and revenue data (Section 3.4) and a range of standard capital market assumptions⁵, the 105 ExpressLanes appear to have sufficient debt capacity to support the current funding plan requirements for toll revenue-backed obligations. Whether the 105 ExpressLanes are financed using only its own net toll revenues or its own net toll revenues in combination with the revenues of existing ExpressLanes, it is reasonable to assume that the Project could raise enough debt financing to cover the Project's funding needs during construction. If additional grant funds are obtained for the Project, the amount of toll-revenue backed obligations required for the Project would decrease. Likewise, if anticipated federal and state grant funds to be used towards project construction do not materialize, the amount of toll revenue-backed obligations could be increased, likely without significantly constraining debt service coverage. As is noted in the table above, minimum debt service coverage in all four scenarios exceeds 1.5x.

Risk Factors

The primary source of payment for the 105 ExpressLanes toll revenue bonds will be I-105 net toll revenues. The level of 105 ExpressLanes toll revenues collected at any time is dependent on the level of traffic on the 105 ExpressLanes, which, is related to several factors, including those listed below:

Completion Risks

Any new project has construction risk. Unanticipated delays or cost overruns may limit Metro's ability to collect toll revenues according to schedule and, in turn, the ability of Metro to make debt service payments. Construction delays and cost escalation for such projects may occur as a result of any number of causes, including, but not limited to, adverse weather conditions, unavailability of contractors, coordination among contractors, environmental concerns, labor disputes, engineering errors or unanticipated or increased costs of construction such as labor, equipment, and materials. In addition, construction delays and increased costs may also be caused by uncontrollable circumstances, force majeure events, unforeseen geotechnical conditions, or for other reasons. Although Metro has past experience with executing ExpressLanes, significant new construction projects always carry these inherent risks.

Collaboration with third-parties and community stakeholders are also key elements to successful project completion. Metro serves an increasingly large and diverse group of communities and stakeholders, and collaboration during the construction period is essential in minimizing negative stakeholder impacts that could adversely affect the effectiveness of the ExpressLanes.

Revenue Risks

The levels of traffic assumed and toll revenue forecasts are based upon estimates and assumptions made by the traffic and revenue consultant. Based upon many estimates and assumptions, the traffic and revenue consultant has provided a reasonable revenue forecast which has been prepared in accordance with accepted practice

⁵ Using level debt service structure with assumed interest rates ranging from 5% to 6.5%, current interest bonds, a debt service reserve fund.

consistent with Level I studies. However, such reports are not a guarantee of any future events or trends and the future demographic and economic developments cannot be predicted with certainty. Actual levels of traffic and toll revenues will differ, and may differ materially, from the levels projected.

A substantial deterioration in the level of economic activity could have an adverse impact on the level of toll revenues collected. Toll revenues may also decline due to traffic interruptions as a result of construction, greater carpooling or use of mass transit, increased costs of gasoline and of operating an automobile, more reliance on telecommuting in lieu of commuting to work, increase in alternative work schedules allowing for non-peak hour commutes, relocation of businesses to areas outside of the project corridor and similar activities. As a toll facility, traffic on the I-105 ExpressLanes is sensitive to vehicles using competing transportation routes or using general purpose lanes (which do not require the payment of a toll).

Toll revenue generation of the 105 ExpressLanes is dependent not only on traffic volume, but also on appropriate rate charges. While Metro has full authority to set appropriate rates and policies to satisfy debt obligations, risk of rate politicization or rate shock that may come from drastic rate changes could lead to unpredictable political or social risks to the ability to generate revenues.

Infrastructure Development Risks

The ability of Metro to pay debt service is to a great extent dependent on the successful management of the 105 ExpressLanes and the ability to achieve revenues set forth in the traffic and revenue forecast. Successful operation of the 105 ExpressLanes will require timely and complete maintenance. Metro budgets for maintenance based on its historical experience and internal projections. The actual costs of repairing and maintaining the 105 ExpressLanes, however, may significantly exceed such projections. Any significant deterioration in the ExpressLanes may result in increased operating costs and reduced usage (or temporary lane closures) and may adversely affect the amount of net toll revenues available to pay debt service.

Force Majeure Risks

Operations of the 105 ExpressLanes and the collection of tolls is at risk of earthquakes and other events of force majeure, such as damaging storms, winds and floods, fires and explosions, spills of hazardous substances, strikes and lockouts, sabotage, wars, blockades, riots, and acts of terrorism. Metro cannot predict the potential impact of such events on the financial condition of the Metro 105 ExpressLanes and Metro's ability to pay the principal of and interest on Metro's 105 ExpressLanes toll revenue backed obligations as well as when due.

Risk Mitigation

Metro anticipates using a design-build contract to construct the Project. The use of a design-build contract is expected to provide incentives to the selected construction contractor firm to provide the Project as indicated by the locally preferred build alternative chosen and within a date-certain schedule.

The preliminary Level I traffic and revenue forecasts include high level O&M assumptions and demonstrate under all toll policies and project build alternatives (i.e., Single Lane and Dual Lanes) that toll revenues are anticipated to cover the expected operations costs.

Metro anticipates providing conventional toll revenue obligation covenants including (i) pledge of toll revenues after operations and maintenance costs; (ii) debt service reserve account; (iii) operations and maintenance reserve account; (iv) major maintenance reserve account; (v) rate covenant; and (vi) additional bonds test. The required reserves would be used in the event of a revenue shortfall during operations.

The Project has budgeted for reserves for operations and maintenance as well as major maintenance and is able to segregate funds into these reserves, which will serve to mitigate the risk that Metro would not operate and maintain the Project in a manner conducive to obtaining sufficient toll revenues.

Additionally, the rate covenant would indicate that Metro would set toll rates and a toll rate structure (i.e., toll policy) such that the Project would generate net toll revenues to achieve a debt service coverage ratio (typically higher than 1.25x). Adjusting the toll rates and structure could provide additional funds in the event of a shortfall. The traffic and revenue scenarios provided in Section 3.4 are based on a toll policy balanced between optimizing mobility and maximizing revenue. As shown in Section 3.4, net toll revenue is estimated between \$2.29 billion (Single Lane Aggressive) to \$4.43 billion (Dual Lane Aggressive).

Overview of Metro ExpressLanes Team Experience

Metro has six years of ExpressLanes experience as well as a fully staffed Congestion Reduction Department. Over the past decade, Metro has completed comparable projects on the I-10 and I-110 freeways demonstrating its technical capacity to oversee implementation of HOV-to-HOT conversions and the design, construction, operation, and maintenance of managed lane facilities, as proposed in this Project. Both projects were delivered on budget and have been successfully operated since with a high level of customer satisfaction. Critical development milestones from a policy perspective include the passage of SB 1298 which eliminated the sunset date on the HOT lane demonstration project in Los Angeles County, Metro's State Advocacy Team securing passage of AB 194 which will allow expansion of the ExpressLanes Program, as well as the completion of the Countywide ExpressLanes Strategic Plan in January 2017 which included both financial and corridor screening for projects. The successful implementation of all three of these policy initiatives demonstrates Metro's commitment to the program. As previously described, Metro Treasury/Finance and Strategic Financial Planning departments have extensive experience with the municipal bond market and funding capital projects using Metro sales tax revenues and external grants.

Metro has considerable experience with highway projects, financing capital projects, as well as working collaboratively with Caltrans and local stakeholders to operate and maintain the existing I-10 and I-110 ExpressLanes.

In addition, Metro's consultants, including WSP, CDM Smith, Sperry Capital, and Nossaman have significant express lanes experience. Metro has also retained a pool of investment banks including Bank of America Merrill Lynch, Barclays, Citigroup, and Goldman Sachs to provide commentary on financial markets and underwriting support (if needed).

WSP, formerly known as Parsons Brinckerhoff, was part of the project team that planned, designed, and implemented the I-10/I-110 ExpressLanes from 2009-2013. Since then, WSP was selected by Metro in February 2015 to provide program support for the development of the Los Angeles County ExpressLanes Network, including the preparation of planning, engineering, and market research studies and reports per Metro board direction. WSP has a history of express lanes experience in the region and across the nation, including express lane projects for the Bay Area Toll Authority and the Colorado High Performance Transportation Enterprise.

CDM Smith is currently performing the investment grade T&R Study for the I-105 ExpressLanes and anticipates delivery of the draft report in fall 2019. CDM Smith has experience preparing T&R Studies for major toll roads across the country including U.S. 36 (Colorado), North Tarrant Express (Texas), SH 183 Managed Lanes (Texas), and LBJ TExpress Lanes (Texas).

The Sperry Team consists of Sperry Capital Inc. (Sperry) and KPMG Corporate Finance LLC (KPMG). Members of the Sperry Team have assisted on Metro's ExpressLanes program since 2014. The team has substantive experience in advising public sector entities on express lanes. Sperry advised the Orange County Transportation Authority (OCTA) on the first ever express lanes debt financing in 2003 for the 91 Express Lanes and uniquely has 15-plus years of advisory experience based on the actual operating requirements of express lanes projects. Sperry also advised OCTA on the first and only successful CTC AB 194 application for the I-405 Improvement Project which included a 2x2 express lanes for 14 miles from the Los Angeles County border to Costa Mesa. KPMG has also advised on a significant number of tolled facilities in the country including all express lanes in Virginia and Texas. The Sperry Team also advised the Virginia DOT on the 495 Capital Beltway Express Lanes, one of the first ever P3 concessions for express lanes in 2008.

Nossaman LLP (Nossaman) and Los Angeles County Counsel represent Metro's ExpressLanes for legal matters. Nossaman has a leading infrastructure law practice and Nossaman attorneys have worked on the most recent California express lanes projects including OCTA's I-405 Improvement Project and Riverside County Transportation Commission's SR-91 Express Lanes Extension and I-15 Express Lanes.

Expenditure Plan for Excess Revenues

Expenditure of excess net revenue generated on the I-105 ExpressLanes will be subject to an expenditure plan developed in consultation with Caltrans and approved by Metro, as required by AB 194. No expenditure plan has been developed to date.

Streets and Highways Code Section 149.7.e.4 indicates that various eligible uses of excess net revenues including:

(4) The revenue generated from the operation of the toll facility shall be available to the sponsoring agency for the direct expenses related to the following:

(A) Debt issued to construct, repair, rehabilitate, or reconstruct any portion of the toll facility, payment of debt service, and satisfaction of other covenants and obligations related to indebtedness of the toll facility.

(B) The development, maintenance, repair, rehabilitation, improvement, reconstruction, administration, and operation of the toll facility, including toll collection and enforcement.

(C) Reserves for the purposes specified in subparagraphs (A) and (B).

Metro would seek to use the excess net revenues from the operation of the 105 ExpressLanes after paying for operations and maintenance to repay debt service on the toll revenue-backed obligations. After the payment of debt service, excess net revenues may be used for payment of major maintenance or required reserves including the debt service reserve account, the O&M Reserve Account, and the Major Maintenance Reserve Account. After use in required reserves, excess net revenues may be used to develop the Tier 1 Metro ExpressLanes network.

Should there be toll revenue remaining after these items, Metro would seek to use net toll revenue to improve transit service serving the I-105 corridor and provide Net Toll Revenue Grants to local jurisdictions along the corridor consistent with current policy on the I-110 and I-10 corridors. Net Toll Revenue Grants are awarded on a competitive basis to active transportation, transit, and roadway projects that improve mobility within the corridor. For more information, please refer to Section 3.5.

2.6 Regional Transportation Plan & Community Support

2.6.1 Consistency with Existing Plans

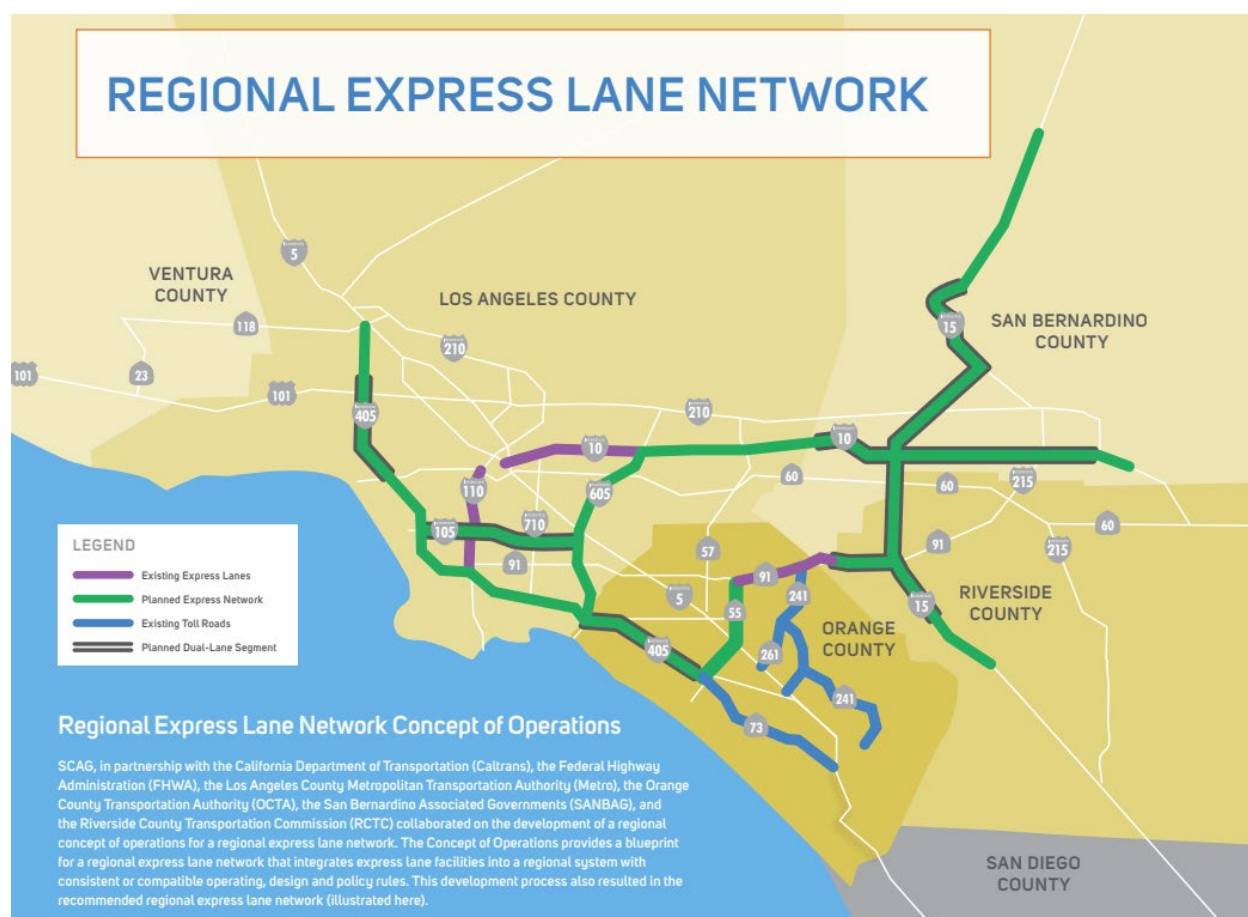
Is the project consistent with the regional transportation plan and affected city and county comprehensive plans? If not, does the applicant discuss strategies that may help achieve consistency with such plans when possible or practicable?

The I-105 ExpressLanes Project is consistent with city, county, and regional plans. The I-105 ExpressLanes was amended into the Southern California Association of Governments (SCAG) 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) under Amendment #2 as a financially constrained project under RTP ID 1162S011 with the following project description: "I-105 Express Lane from I-405 TO I-605". Within SCAG's regional travel demand model, the project is coded as dual express lanes in each direction on I-105 between I-405 and I-605. The regional air quality conformity analysis for the 2016 RTP/SCS Amendment #2 was approved by FHWA and FTA on August 1, 2017.

The 2016 RTP/SCS serves as the region's long-range vision, balancing future mobility and housing needs with economic, environmental, and public health goals. Collectively, the I-105 ExpressLanes along with various transportation improvements would result in reductions in vehicle miles traveled (VMT) and

greenhouse gas (GHG) emissions and improve overall mobility, sustainability, and air quality throughout the region. The 2016 RTP/SCS also includes a Regional Express Lanes Network that builds upon the success of the State Route 91 Express Lanes in Orange County, as well as the I-10 and I-110 Express Lanes in Los Angeles County. As shown in Figure 25, the I-105 ExpressLanes is included as part of SCAG’s Regional ExpressLane Network. Additionally, the project is also included in SCAG’s financially constrained 2019 Federal Transportation Improvement Program (FTIP) under FTIP ID LA0G1324. For further information please see Section 3.9, which includes the financially constrained RTP/SCS I-105 ExpressLanes project listing (RTP ID 1162S011) and the 2019 FTIP (FTIP ID LA0G1324) project listing.

Figure 25: SCAG Regional Express Lane Network



In addition to the 2016 RTP/SCS, SCAG has also developed the I-105 Corridor Sustainability Study (CSS), a multi-modal planning study assessing potential improvements to improve mobility, safety, and sustainability for all modes along the entire I-105 corridor. As part of the I-105 CSS, the 105 ExpressLanes has been identified as a key improvement towards reducing congestion and improving overall safety along the I-105 corridor. With the approval of the Road Repair and Accountability Act of 2017 (Senate Bill 1) in April 2017, the Solutions for Congestion Corridors Program (SCCP) was developed providing critical

funding for key projects (i.e., managed lanes) throughout the state to reduce congestion and to improve overall mobility along the most congested corridors. Per the SCCP guidelines, to qualify for funding a project must be included as a recommended improvement within a comprehensive multi-modal study. With the inclusion of the 105 ExpressLanes as a recommended improvement in the 105 CSS, the 105 ExpressLanes meets this requirement. Please visit SCAG's I-105 CSS project website: <http://www.scag.ca.gov/programs/Pages/105CorridorStudy.aspx> for additional information.

The 2017 Los Angeles Metro Countywide ExpressLanes Strategic Plan identifies the I-105 ExpressLanes project as part of the Tier 1 ExpressLanes network, slated for implementation in the next 5 to 10 years. The individual corridors included in the Strategic Plan were evaluated based on projected mobility benefits and financial feasibility, and then prioritized based on these findings, along with qualitative factors such as express lane connectivity, transit benefits, funding availability, and the ability to implement dual express lanes in each direction. This project is also included in the Measure M local sales tax expenditure plan and is designated to receive \$175 million. Furthermore, this project is included in Metro's Twenty-Eight by '28 project list, which is a set of priority projects that Metro aims to construct prior to the 2028 Los Angeles Olympic and Paralympic Games.

Caltrans District 7 has prepared various transportation plans including a District System Management Plan (DSMP) and transportation concept reports (TCR) for various corridors throughout Los Angeles and Ventura County. The Caltrans District 7 District System Management Plan (DSMP) provides a long-range vision of the proposed transportation system over the next 25 years and includes a series of recommended strategies and objectives to improve overall safety and health, system performance and organizational excellence, stewardship and efficiency, sustainability, and livability and economy. I-105 ExpressLanes is identified as a recommended improvement in the DSMP. In addition to the DSMP, Caltrans has also prepared the I-105 Transportation Concept Report (TCR), a planning document identifying existing and future route conditions, deficiencies, and recommended improvements. The TCR recommends the following strategies including high-occupancy vehicle (HOV) lanes, ramp metering, congestion pricing (tolled lanes), and changeable message signs to address current congestion challenges. I-105 ExpressLanes is consistent with the recommended strategies as identified in the I-105 TCR.

As part of Measure M, the Multi-year Subregional Programs were based, in part, on projects identified by local jurisdictions and subregional council of governments during the Mobility Matrix process prior to the passage of Measure M. Various multi-modal transportation improvements, including I-105 ExpressLanes were included under Measure M. LA County residents passed Metro's no sunset transportation ballot measure with 71.15% support.

In addition to these regional and countywide plans, the I-105 PA/ED process is underway at the time of this writing. The PA/ED will prepare a Project Report, an Environmental Impact Report and an Environmental Assessment. The EIR/EA includes alternatives and impact analysis, as well as substantial agency outreach with

the local municipalities of Los Angeles city, Los Angeles County, Downey, Norwalk, Paramount, Lynwood, South Gate, Inglewood, Hawthorne, and El Segundo. The Final EIR/EA is scheduled to be completed by Summer 2020.

2.6.2 Considerations of Impacts

Does the applicant explicitly consider the potential diversions of vehicles onto adjacent routes that could lead to congestion, safety problems, and infrastructure damage due to the imposition of tolls on particular facilities?

The diversion of freeway traffic onto local streets as a result of HOT lane deployment was a stated concern during the planning stage of the Metro I-10/I-110 ExpressLanes. However, through the introduction of new capacity for toll paying single occupancy drivers, traffic was shown to be diverted from adjacent routes to the freeway. This pattern is typical of express lane deployments, where treatments improve reliability, recurring congestion, and travel times, and as a result, attract those drivers formerly using local streets to avoid freeway congestion.

The two remaining I-105 Build Alternatives will introduce new capacity through a new travel option for toll paying drivers, and particularly new physical lane capacity in the case of dual-lane alternatives. This new capacity, and the associated improvements in congestion, are anticipated to attract traffic to the I-105 freeway from the arterial system. In addition, the October 2017 Caltrans District 7 HOV Lane Degradation Report identified nearly all of the existing I-105 HOV facilities as degraded, with a travel speed of below 45 MPH during peak periods. Through the introduction of pricing, the HOV lanes are anticipated to increase throughput when proactively managed as ExpressLanes rather than as free HOV lanes.

In quantifying the potential diversion of vehicles onto adjacent routes, a draft traffic impact analysis of the I-105 ExpressLanes project has been prepared as part of the PA/ED process. In addition to analyzing mobility changes on the freeway mainline, Build and No Build conditions on the freeway ramps and adjacent arterials were also evaluated. The traffic impact analysis included 49 ramp and arterial intersections. A complete list of freeway ramp and arterial intersections can be found in Table 7.

Table 7: Ramp and Arterial Intersections Analyzed

Location #	Location
1	I-105 WB Off-Ramp/NB Sepulveda Boulevard
2	Sepulveda Boulevard/Imperial Highway
3	Aviation Boulevard/Imperial Highway
4	I-105 WB Off- and I-105 EB On-Ramp/Imperial Highway
5	La Cienega Boulevard/Imperial Highway
6	Hawthorne Boulevard/I-105 WB Off-Ramp
7	Hawthorne Boulevard/Imperial Highway
8	I-105 EB On-Ramp/Imperial Highway (Freeman)
9	Prairie Avenue/I-105 WB Off-Ramp
	Prairie Avenue/Imperial Highway
11	I-105 EB Ramps/120th Street
12	Crenshaw Boulevard/Imperial Highway
13	Crenshaw Boulevard/I-105 WB Off-Ramp
14	Crenshaw Boulevard/120th Street
15	Vermont Avenue/Imperial Highway
16	Vermont Avenue/I-105 WB Ramps
17	Vermont Avenue/I-105 EB Off-Ramp
18	Vermont Avenue/120th Street
19	Central Avenue/Imperial Highway
	Central Avenue/I-105 WB Ramps
21	Central Avenue/I-105 EB Ramps
22	Central Avenue/120th Street
23	Wilmington Avenue/Imperial Highway
24	Wilmington Avenue/I-105 EB Ramps
25	Wilmington Avenue/E 120th Street
26	I-105 WB Ramps/Imperial Highway
27	Mona Boulevard/Imperial Highway
28	Long Beach Boulevard/Imperial Highway
29	Long Beach Boulevard/I-105 WB Off-Ramp
	Long Beach Boulevard/I-105 EB Off-Ramp
31	Garfield Avenue/I-105 WB On-Ramp
32	Garfield Avenue/I-105 EB Off-Ramp
33	Garfield Avenue/Rosecrans Avenue
34	Paramount Boulevard/Imperial Highway
35	Paramount Boulevard/I-105 WB Off-Ramp
36	Paramount Boulevard/I-105 EB On-Ramp
37	Paramount Boulevard/Rosecrans Avenue
38	Lakewood Boulevard/Imperial Highway
39	Lakewood Boulevard/I-105 EB Off Ramp
	Lakewood Boulevard/Rosecrans Avenue
41	Bellflower Boulevard/Imperial Highway
42	Bellflower Boulevard/I-105 WB Ramps
43	Bellflower Boulevard/I-105 EB Ramps
44	Bellflower Boulevard/Rosecrans Avenue

45	Woodruff Avenue/Imperial Highway
46	Hoxie Avenue/Imperial Highway
47	Studebaker Road/Imperial Highway
48	Studebaker Road/I-105 WB On-Ramp and EB Off-ramp
49	Studebaker Road/Rosecrans Avenue

As shown in Table 8, Alternatives 2 and 3 improve performance from LOS E to LOS D at ramp and arterial intersections when compared to the no build alternative. Table 9 shows the change in performance from LOS F to LOS E. Both Alternatives 2 and 3 maintain or improve ramp/intersection performance from LOS F to LOS E, with the exception of the Alternative 2 during the AM period in 2047. The Level of Service Tables can be found in Section 3.6.

Implementation of ExpressLanes on the I-105 would not result in diversion of vehicles or increased congestion on adjacent routes. In fact, the traffic impact analysis indicates that the ExpressLanes would improve overall performance of adjacent ramp and arterial intersections because more vehicles will choose to remain on the I-105 instead of diverting onto parallel arterials.

Table 8: Intersection Performance Comparison for LOS E

Study Period	No Build Alt 1 LOS E	Build Alt 2 LOS E (Difference from Alt 1)	Build Alt 3 LOS E (Difference from Alt 1)
2027 AM	6	5 (-1)	5 (-1)
2027 PM	8	6 (-2)	6 (-2)
2047 AM	7	6 (-1)	5 (-2)
2047 PM	8	6 (-2)	6 (-2)

Table 9: Intersection Performance Comparison for LOS F

Study Period	No Build Alt 1 LOS F	Build Alt 2 LOS F (Difference from Alt 1)	Build Alt 3 LOS F (Difference from Alt 1)
2027 AM	5	5 (0)	5 (0)
2027 PM	7	5 (-2)	6 (-1)
2047 AM	6	7 (+1)	6 (0)
2047 PM	8	5 (-3)	6 (-2)

2.6.3 Fulfilling Policies and Goals

In what ways does the proposed project help achieve performance, safety, mobility, economic, or transportation demand management goals?

The I-105 ExpressLanes Project will substantially improve the performance, safety, mobility, economic impact, and transportation management of the I-105 corridor and adjacent communities. Specifically, the I-105 ExpressLanes Project dual lane alternative will actively manage the corridor in order to maintain freeway speeds with significantly reduced congestion, which will result in the following:

- Increased daily vehicle throughput of 62-80% in the ExpressLanes and 11-15% overall compared to the No Build alternative
- Up to a 6% increase in daily person throughput in the corridor in the dual ExpressLanes alternative in comparison to the No Build Alternative
- Peak-period end to end travel time improvement of up to 15 minutes in the ExpressLanes and 6 minutes in the GP lanes
- Increased peak-period speeds on the ExpressLanes to 53 miles per hour compared to 29-33 miles per hour in the HOV lane in the no build alternative. This would enable the 105 ExpressLanes to meet federal performance standards. GP lane speeds would remain constant or increase slightly.
- General purpose lane daily passenger throughput increase up to 3% in 2040 compared to 2017 and up to 4% compared to the 2040 no build, while maintaining speeds similar to the No Build Alternative and improving performance on local arterials.
- General purpose lane daily VHD reduction of 42% and ExpressLanes daily VHD reduction of 37% in the eastbound direction. In the westbound direction, general purpose lane daily VHD is reduced by 10% and ExpressLanes daily VHD is reduced by 37%
- Increased efficiency and person throughput in the I-105 corridor by encouraging the formation of carpools with toll free use of the I-105 ExpressLanes for vehicles meeting the vehicle occupancy requirements and active management of the ExpressLanes through pricing
- Improved safety by reducing recurring congestion, start-stop conditions, and unpredictable speed differential which results in rear-end collisions
- Enhanced safety and environmental conditions on local streets within adjacent communities by reducing demand on I-105 alternative routes
- Collection of toll revenues with the potential of generating excess revenue that could be used toward implementation of an ExpressLanes network or reinvestment in the community
- Improvement of existing HOV lane degradation through increased demand management
- Improved connectivity between major activity centers and destinations in Los Angeles County through the existing HOV direct connector with the I-110 ExpressLanes, providing an option for a seamless 18-mile Express Lane trip between downtown Los Angeles and LAX
- Economic benefits through more efficient freight movement

The I-105 ExpressLanes project will improve the economic vitality of southern California and the nation by increasing the throughput of the freeway mainline and interchanges to reduce congestion and ensure the efficient flow of goods. The I-105 freeway is a major east-west corridor designated as part of the National Highway Freight Network, and specifically designed to accommodate heavy truck traffic as part of the Federal Surface Transportation Assistance Act (STAA) Route Network for oversized Trucks and the Subsystem of Highways for the Movement of Extralegal Permit Loads (SHELL). I-105 connects LAX to the I-405, I-110, I-710, and I-605. In 2015, I-105 carried 269,000 vehicles per day within the busiest segment of the corridor, at the highest of which nearly 19,000 (or just under 7%) were trucks. Lightweight trucks are the most prevalent west of I-710, representing air cargo shipments from LAX to local distribution centers, while the eastern portion of I-105 is heavily utilized by long-haul freight movements to and from the Ports of Los Angeles and Long Beach. The 2014 SCAG Regional Goods Movement Plan and Implementation Strategy report estimated that over 43,000 daily truck trips either originate or end at the Ports of Los Angeles or Long Beach, while a 2016 PortTAM model run estimated that the section of I-105 east of I-710 carried nearly 21,000 heavy-duty truck trips, and over 6,600 port-related heavy-duty truck trips per day.

As discussed in section 2.3.1, I-105 currently experiences a high rate of crashes relative to the statewide average. As the clear majority of these crashes are rear-end collisions with variable speeds as the primary cause, the I-105 ExpressLanes will help address these conditions by improving traffic flow, ensuring more consistent speeds, and reducing passenger car and large truck conflicts through the diversion of toll paying vehicles into the express lanes. The I-105 ExpressLanes Project will also have the potential to generate excess revenue, which could be used to implement other complementary ATM strategies, such as dynamic lane control or variable speed limits, to further enhance operations and traffic safety.

The I-105 ExpressLanes Project will also help to reduce existing access barriers for the communities located adjacent to I-105, which are considered among some of the most socioeconomically disadvantaged in Los Angeles County. The communities adjacent to the I-105 corridor have among the highest concentration of low wage workers and the lowest employment densities, which results in workers in these communities having higher than average commutes. There are over 300,000 jobs located directly on the I-105 corridor, most of which are concentrated in the western portion near LAX. The I-105 ExpressLanes Project will improve job access and mobility for these communities by improving corridor reliability, reducing congestion, and offering a high-value congestion free Express Lane option when needed.

In addition, Metro will attempt to supplement existing Green Line LRT service with improved transit options along I-105 through the use of I-105 toll revenue, similar to the Metro Silver Line on the I-110/I-10 corridors. Furthermore, low income commuters will qualify for the Metro ExpressLanes Low Income Assistance Plan. To qualify, the applicant must have an income less than or equivalent to twice the Federal poverty level. Low Income Assistance Plan accounts receive a \$25 toll credit upon opening an account and the \$1/month maintenance fee is waived. Finally, Metro has a Transit Rewards program that allows

TAP transit card holders to earn toll credits for trips taken on qualifying transit lines that would utilize the I-105 ExpressLanes.

The I-105 ExpressLanes project is projected to support the vitality of the region by reducing congestion and travel delay, potentially generating a new and sustainable stream of revenue for reinvestment in the Tier 1 Network, and improving a key east-west corridor providing connections between LAX, major port facilities, and adjacent north-south freight routes.

2.6.4 Environmental Considerations

Is the proposed project consistent with applicable state and federal environmental statutes and regulations? Does the proposal adequately address or improve air quality and other environmental concerns?

Project development of the I-105 ExpressLanes Project is consistent with applicable state and federal environmental statutes and regulations. A Preliminary Environmental Analysis Report (PEAR) was approved on July 15, 2015, which includes a high-level environmental assessment identifying potential environmental impacts that will need to be analyzed and reports that will need to be prepared in the PA/ED phase. According to the PEAR checklist, the level of risk/significance was indicated as “low” for all environmental resources including community impacts, cultural resources, biological resources, air quality, and other environmental resources. In addition, with the elimination of the dual ExpressLane full standard alternative (Alternative 4) environmental concerns, such as community impacts and right-of way, have been minimized. However, it should be noted, the PA/ED process is in currently underway where technical studies for various environmental resource areas, such as air quality, noise and vibration, greenhouse gas, storm water, traffic, visual impacts, environmental justice, and other resources areas are in progress. It is possible that the level of impact may change, however based on initial findings this is not likely. Please refer to the I-105 Project Study Report-Project Development Support (Section 3.2) for more information including the PEAR.

A Project Report, an Environmental Impact Report (EIR) in accordance with the California Environmental Quality Act (CEQA) and an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) is being prepared. The Project Report, EIR, and EA will include detailed engineering and environmental technical studies, building towards a final EIR/EA by Summer 2020.

As discussed in section 2.2, the I-105 ExpressLanes Project is included in the 2016 SCAG RTP/SCS financially constrained list of projects, and thereby meets the requirements for regional air quality conformity. Furthermore, this project was presented to the Transportation Conformity Working Group convened by the Southern California Association of Governments (SCAG) on June 25, 2019. At that meeting, EPA, FHWA, CARB, and Caltrans concurred that this project is not a Project of Air Quality Concern for particulate matters and therefore project level air quality conformity requirements have been met. A letter from SCAG documenting this concurrence has been included in section 3.7.

Metro and Caltrans anticipate that any viable Build Alternative will incorporate all necessary avoidance, minimization, and/or mitigation measures in order to ensure that the proposed alternative would not cause significant environmental impacts or disproportionately high and adverse effects on minority or low-income populations.

2.6.5 Community and Stakeholder Support

What is the extent of support or opposition for the project? Does the project proposal demonstrate an understanding of the national and regional transportation issues and needs, as well as the impacts this project may have on those needs? Is there a demonstrated ability to work with the affected communities?

As part of the PA/ED, Metro and Caltrans have initiated an extensive and ongoing outreach program to inform and engage stakeholders in the I-105 corridor. The outreach program consists of: CEQA-required scoping meetings and public hearings, agency briefings/presentations, community events/pop up booths, Stakeholder roundtables, surveys, and the establishment of a project website.

Through July 2019, 73 outreach meetings/events have been conducted. The types of outreach meetings/events are summarized below and in Table 10. The full listing of all community outreach events can be found in Section 3.8.

Table 10: Community Outreach Event Types

Event Type	Number of Events
Agency and Jurisdictional Briefings	22
Community Events	26
Pop-Up Booths	4
Presentations	6
Public Meetings	7
Stakeholder Briefings	5
Stakeholder Roundtables	3

Metro and Caltrans formally initiated the 41-day public scoping period from March 7-April 16, 2018 as part of the EIR/EA process. The scoping process is required by CEQA/NEPA and included three public scoping meetings on March 21st, 22nd and 24th, 2018. To inform the public, Metro and Caltrans utilized print and digital advertising, direct mailing to addresses within 750 feet on either side of the I-105, e-blasts, and social media outreach. In addition, a project website (www.metro.net/105expresslanes) was established that includes fact sheets, Frequently Asked Questions, and a video recording of the scoping meeting presentation. During these public scoping meetings, written comments were received from the following government agencies and special districts:

- California Department of Fish and Wildlife

- City of South Gate
- County of Los Angeles Department of Parks and Recreation
- County of Los Angeles Department of Public Works
- County Sanitation Districts of Los Angeles County
- Gateway Cities Council of Governments
- Los Angeles World Airports (LAWA)
- Native American Heritage Commission
- United States Army Corps of Engineers, Los Angeles District
- United States Environmental Protection Agency

Agency and Jurisdictional Briefings consisted of presentations and focused meetings with city & agency staff, committees, elected officials, and Councils of Governments in the corridor.

Stakeholder Roundtables were held to engage community leaders to inform them of the project and enable them to serve as a communication liaison to the constituents they represent. Invited participants included academic institutions, businesses associations, major employers, community organizations, health organizations, neighborhood councils, and service groups. Business Roundtables will also be held to engage and provide project information to the many companies located in the corridor. To date, two rounds of stakeholder roundtable meetings have been held in November 2018 and March 2019 and a business roundtable will be held in August 2019. Additional stakeholder roundtable meetings will be held prior to the release of the draft environmental document.

Public outreach has also been conducted through Information booths at a variety of community events in the corridor. These events included farmers markets, carnivals, and holiday themed events such as Halloween and Easter. In addition, pop-up booths were set up at Green Line rail stations running through the corridor.

Metro has also established a project website at www.metro.net/105expresslanes. The website includes project information, fact sheets, Frequently Asked Questions (FAQs), and recorded videos of the scoping meeting and stakeholder briefings. In addition, there is a 3-minute, English or Spanish, survey that assesses driver experience on the I-105 and their understanding of Metro ExpressLanes. The survey is available online at sur-vey.typeform.com/to/i4usbq (English) sur-vey.typeform.com/to/gcctx6 (Spanish).

Related Outreach

As part of Metro's Infrastructure for Rebuilding America (INFRA) grant application to the United States Department of Transportation in November 2017 & February 2019, several letters of support for the project were received. The supporters stressed that the I-105 ExpressLanes will improve mobility, improve freight movement between LAX and the Ports of Los Angeles and Long Beach, and will be used extensively by international visitors, dignitaries, and athletes during the LA 2028 Olympics, making this project a high-visibility opportunity to showcase world-class infrastructure and technological innovation. The letters can be found at:

metro.net/about/infra/regional-expresslanes-accelerator-i-105-hot-lanes/ and metro.net/infra2019. Letters of support for this project were received from the following:

- Caltrans District 7
- Los Angeles County Board of Supervisors
- Cities of Downey, Paramount, and Torrance
- Charter Communications
- Congresswoman Linda T Sanchez & US Senator Dianne Feinstein
- Crenshaw Imperial Plaza Shopping Center
- Gateway Cities Council of Governments
- Greater Los Angeles African American, Los Angeles Latino, Inglewood Airport Area, and LAX Coastal Chambers of Commerce
- Los Angeles World Airports (LAWA)
- Dignity Health Sports Park (LA Galaxy, AEG, Stubhub Center)
- Martin Luther King Jr. Community Hospital
- Mobility 21: The Southern California Transportation Coalition
- Southern California Association of Governments

Metro has also coordinated joint outreach efforts with SCAG throughout their development of the I-105 CSS, including joint stakeholder meetings with various jurisdictions along the corridor. As part of the I-105 CSS outreach efforts, SCAG met with various local jurisdictions, council of governments (i.e., Gateway Cities COG, South Bay Cities COG), business stakeholders, and advocacy groups, (i.e., Los Angeles County Bicycle Coalition) to better understand the needs of the community and to solicit feedback regarding various multi-modal improvements throughout the I-105 corridor. In addition, SCAG participated in numerous community events (i.e., Annual Downey Christmas Parade) along the corridor to further inform the public of the study. As a project development team (PDT) member, Metro worked in close coordination with SCAG on the development of the I-105 CSS providing input and feedback regarding the study, in addition to identifying joint outreach opportunities.

Metro and Caltrans will continue to work closely with all of the project's stakeholders during the environmental phase of the project and as the project progresses, on topics related to design, construction, and impacts to local streets. **To date, none of the agencies consulted have opposed the project and Metro is not aware of any organized community opposition to the project.**

Conclusion

The I-105 is a major east-west corridor in LA County serving nine cities, many major employment centers, and the Los Angeles International Airport. The I-105 is also an important freight route due to its connections to I-110, I-710, I-605, that lead to the Ports of Long Beach and Los Angeles. As a result, over 300,000 jobs reside

directly within the corridor.

The I-105 ExpressLanes project will benefit corridor users by enhancing operations, improving trip reliability, increasing speeds & passenger throughput, and decreasing travel times by offering choice to motorists to use the ExpressLanes to save time when needed. The I-105 ExpressLanes Project is included in the 2016 SCAG RTP/SCS list of projects and thereby meets the requirements for regional air quality conformity. Furthermore, the I-105 HOV lanes are currently classified as degraded under Federal standards with speeds less than 45 miles per hour in the HOV lanes. This project will address degradation by deploying dynamic pricing to proactively manage the number of vehicles using the ExpressLanes.

The I-105 ExpressLanes enjoys strong support within LA Metro. This project is explicitly part of both the 2016 voter-approved Measure M and the Board of Directors-approved Twenty-Eight by '28 Plan, a prioritization plan for 28 projects ahead of the 2028 Summer Olympic and Paralympic Games. Metro's I-105 funding plan will take advantage of the Measure M funding prescribed to the project, toll revenue-backed obligations, and potential federal and state grants.

The I-105 ExpressLanes is the continuation of a vision begun with the I-110 & I-10 ExpressLanes. The success of those ExpressLanes have now laid out a clear path for expanding the network including the I-105 and the potential Tier 1 network of facilities throughout Los Angeles County, which would create a system of interconnected facilities maximizing the benefits and synergies of ExpressLanes to the entire Southern California region.

3.0 SUPPLEMENTAL INFORMATION

- 3.1 Executed Cooperative Agreement between Metro and Caltrans**
- 3.2 Project Study Report – Project Development Support (PSR-PDS)**
- 3.3 Measure M Expenditure Plan**
- 3.4 I-105 ExpressLanes Preliminary Level I Traffic & Revenue Forecasts**
- 3.5 Metro ExpressLanes Toll Revenue Guidelines**
- 3.6 I-105 Arterial and Intersection Traffic Analysis Level of Service**
- 3.7 SCAG Transportation Conformity Working Group Letter**
- 3.8 I-105 Outreach Event Listing**
- 3.9 SCAG 2016 RTP/SCS Amendment #2**