I-105 EXPRESSLANES PROJECT

District 7, Los Angeles County, California

SCH#2018031037
LA–105 PM R0.5/R18.1
LA–110 PM R13.8/R14.8
EA 31450

DRAFT ENVIRONMENTAL IMPACT REPORT/ ENVIRONMENTAL ASSESSMENT AND SECTION 4(F) DE MINIMIS EVALUATION

Prepared by:
The State of California, Department of Transportation and The Los Angeles County Metropolitan Transportation Authority

APRIL 2020

The environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 USC 327 and the Memorandum of Understanding dated December 23, 2016 and executed by FHWA and Caltrans.

07-LA-105 PM R0.5/R18.1
07-LA-110 PM R13.8/R14.8
EA 31450 / EFIS 0715000122
SCH# 2018031037

LA -105 Construct a continuous managed lanes facility on Interstate 105,
West of I-405 in the City of Los Angeles to East of I-605 to Studebaker Road in the City of Norwalk
(Postmiles 105-R0.5/R18.1 and 110- R13.8/R14.8)

Draft Environmental Impact Report/Environmental Assessment
and
Section 4(f) De Minimis Determination

Submitted Pursuant to: (State) Division 13, California Public Resources Code
(Federal) 42 USC 4332(2)(C), 49 USC 303, and/or 23 USC 138

THE STATE OF CALIFORNIA
Department of Transportation
and
The Los Angeles County Metropolitan Transportation Authority

Responsible Agencies: California Transportation Commission, United States Army Corps of Engineers, California State Water Resource Control Board, California Department of Fish and Wildlife, and Department of Parks and Recreation - Office of Historic Preservation

April 28, 2020
Date

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Summary

California participated in the “Surface Transportation Project Delivery Pilot Program” (Pilot Program) pursuant to 23 USC 327, for more than five years, beginning July 1, 2007, and ending September 30, 2012. MAP-21 (P.L. 112-141), signed by President Obama on July 6, 2012, amended 23 USC 327 to establish a permanent Surface Transportation Project Delivery Program. As a result, Caltrans entered into a Memorandum of Understanding (MOU) pursuant to 23 USC 327 (NEPA Assignment MOU) with Federal Highway Administration (FHWA). The National Environmental Policy Act (NEPA) Assignment MOU became effective October 1, 2012 and was renewed on December 23, 2016 for a term of five years. In summary, Caltrans continues to assume FHWA responsibilities under NEPA and other federal environmental laws in the same manner as was assigned under the Pilot Program, with minor changes. With NEPA Assignment, FHWA assigned and Caltrans assumed all of the United States Department of Transportation (USDOT) Secretary's responsibilities under NEPA. This assignment includes projects on the State Highway System and Local Assistance Projects off of the State Highway System within the State of California, except for certain categorical exclusions that FHWA assigned to Caltrans under the 23 USC 326 CE Assignment MOU, projects excluded by definition, and specific project exclusions.

California Department of Transportation (Caltrans), as assigned by FHWA, is the lead agency under NEPA and is the lead agency under California Environmental Quality Act (CEQA). Caltrans, in cooperation with the Los Angeles County Metropolitan Transportation Authority (Metro), proposes to provide continuous managed lanes in the eastbound and westbound directions of Interstate 105 (I-105) in Los Angeles County from the terminus of the existing high-occupancy vehicle (HOV) lanes west of Interstate 405 (I-405) in the City of Los Angeles and east of Interstate 605 (I-605) to Studebaker Road in the City of Norwalk. The project limits include allowance for the installation of a new overhead tolling system and signage.

The purpose of the project is to improve existing congestion, and thus enhance traffic operations and mobility on I-105. The proposed improvements along the I-105 corridor will accomplish the following objectives:

- Enhance operations and improve trip reliability and travel times within the corridor
- Improve the traffic flow by reducing the congested areas and therefore, offering motorists a faster and reliable commute
- Sustain and manage mobility within the corridor to include other transportation options such as ExpressLanes

The project is needed to help address the deficiencies on I-105 within the project limits. The deficiencies are summarized below:

- Current daily traffic demand on some sections of I-105 exceeds capacity due to heavy traffic on both weekdays and weekends
- The existing traffic of the mixed flow and HOV lanes of the I-105 exceeds the capacity of the interstate, thus, future operating conditions will be further deteriorated
- According to the 2016 California High-Occupancy Vehicle Lane Degradation Determination Report (Caltrans, 2017) and the 2016 California High-Occupancy Vehicle Lane Degradation Action Plan (Caltrans, 2017) the existing I-105 HOV facilities are degraded and the travel speed is below 45 miles per hour during peak periods

The project seeks to convert the existing HOV lanes to ExpressLanes addressing existing degradation of the HOV lanes by deploying dynamic pricing as a means to optimize existing capacity thereby offering greater travel time reliability and enhanced mobility choice to travelers. Dynamic pricing allows for the adjustment of toll rates in real-time based on actual traffic conditions. Prices in the ExpressLanes will be higher with increased congestion, and lower when traffic is light. Based on the conceptual analysis and preliminary engineering studies, two Build Alternatives are proposed in addition to a “No-Build” Alternative.

- **Alternative 1 – No-Build Alternative**: Existing Conditions. The No-Build Alternative does not include any improvements to the existing configurations for I-105

- **Alternative 2 – Build Alternative:** Convert Existing HOV Lane to One ExpressLane (Standard Lane and Shoulder Widths)

- **Alternative 3 – Build Alternative:** Covert Existing HOV Lane to Two ExpressLanes (Non-standard Lane and Shoulder Widths)

A full alternative description can be found in the project alternatives section of Chapter 1.

Joint NEPA/CEQA Document

The proposed project is subject to state and federal environmental review requirements. Project documentation has been prepared in compliance with both CEQA and NEPA. Caltrans is the lead agency under CEQA. In addition, FHWA’s responsibility for environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 United States Code Section 327 (23 USC 327) and the MOU dated December 23, 2016 and executed by FHWA and Caltrans. Caltrans is the lead agency under NEPA.

Some impacts determined to be significant under CEQA may not lead to a determination of significance under NEPA. Because NEPA is concerned with the significance of the project as a whole, often a “lower level” document is prepared for NEPA. One of the most common joint document types is an Environmental Impact Report/Environmental Assessment (EIR/EA).

Project Impacts

Table S-1 summarizes the effects of the Build Alternatives in comparison with the No-Build Alternative. The proposed avoidance, minimization, and/or mitigation measures to reduce the effects of the Build Alternatives are also presented. A complete description of potential effects and recommended measures is provided in the specific sections in Chapter 2 and Chapter 3.

Table S-1: Summary of Impacts and Avoidance, Minimization, and/or Mitigation Measures

Table S-1: Summary of Impacts and Avoidance, Minimization, and/or Mitigation Measures

Affected Resource	Potential Impact			Avoidance, Minimization, and/or Mitigation Measures
	Alternative 1	Alternative 2	Alternative 3	
Land Use	No Impact	No Impact	No Impact	No permanent change to land use
Parks and Recreational Facilities	No Impact	No Impact	Less Than Significant with Mitigation Measures Incorporated	Restore Temporary Construction Easements (TCEs) to previous or better condition
Growth	No Impact	No Impact	No Impact	No anticipated Avoidance, Minimization, and/or Mitigation Measures Requied
Community Character and Cohesion	No Impact	No Impact	No Impact	No anticipated Avoidance, Minimization, and/or Mitigation Measures Requied
Relocations and Real Property Acquisition	No Impact	No Impact	Less Than Significant with Mitigation Measures Incorporated	Coordinate Traffic Management Plan with local businesses and residents before construction
Environmental Justice	No Impact	Less Than Significant with Mitigation Measures Incorporated	Less Than Significant with Mitigation Measures Incorporated	Conduct outreach to bring awareness of the Low-Income Assistance Program to I-105 Communities
Utilities/Emergency Services	No Impact	Less Than Significant with Mitigation Measures Incorporated	Less Than Significant with Mitigation Measures Incorporated	Coordinate with local emergency and utility services prior to construction
Traffic and Transportation Pedestrian and Bicycle Facilities	No Impact	Less Than Significant with Mitigation Measures Incorporated	Less Than Significant with Mitigation Measures Incorporated	Restore bus stops to previous or better condition after TCE. Prepare a traffic management plan to minimize traffic impacts
Visual/Aesthics	No Impact	No Impact	No Impact	Consolidate Signs. Consult Landscape for design and plant palette. See Visual Section in chapter 2
Cultural Resources	No Impact	Anticipated Finding of No Adverse Effect	Anticipated Finding of No Adverse Effect	Stop work and notify DEP if cultural materials/human remains are found. Create Programmatic Agreement with the SHPO for I-105 Corridor
Hydrology and Floodplain	No Impact	No Impact	No Impact	No anticipated Avoidance, Minimization, and/or Mitigation Measures Requied
Water Quality and Stormwater Runoff	No Impact	Less Than Significant with Mitigation Measures Incorporated	Less Than Significant with Mitigation Measures Incorporated	Prepare Storm Water Pollution Prevention Plan (SWPPP), dewatering plan, and Plans, Specs, and Estimates (PS&E) Storm Water Data Report (SWDR). Inspect Construction Site Best Management Practices (BMPs). Dispose groundwater according to National Pollutant Discharge Elimination System (NPDES)
Geology/Soils/Seismicity/Topography	No Impact	No Impact	No Impact	No anticipated Avoidance, Minimization, and/or Mitigation Measures Requied
Hazardous Waste/Materials	No Impact	Less Than Significant with Mitigation Measures Incorporated	Less Than Significant with Mitigation Measures Incorporated	Conduct Aerially Deposited Lead(ADL), Asbestos-Containing Material (ACM)/ Lead-Based Paint (LBP) surveys, and soil/groundwater sampling. Prepare Health and Safety Plan, Lead Compliance Plan (LCP), Work Plan for thermoplastic paint removal. Dispose properly Treated Wood Waste (TWW)

Table S-1: Summary of Impacts and Avoidance, Minimization, and/or Mitigation Measures

Air Quality	No Impact	Less Than Significant with Mitigation Measures Incorporated	Less Than Significant with Mitigation Measures Incorporated	Control fugiive dust emissions. Use soil binders, gravel pads, and Environmentally Sensitive Areas (ESAs) around sensitive air receptors. Mulch will be installed as soon as practical. Wash trucks leaving construction sites. Construction equipment and vehicles will be properly maintained. Prepare dust control plan. Equipment and material storage will be properly located, construction area will be kept clean and orderly. Cover all transported loads of soils and wet materials. Remove dust and mud deposits on paved, public roads. See Air Quality section
Noise	No Impact	Less Than Significant with Mitigation Measures Incorporated	Less Than Significant with Mitigation Measures Incorporated	Install Soundwalls that are reasonable and feasible
Energy	No Impact	No Impact	No Impact	During Construction, reuse existing rail, steel, lumber, and asphalt where possible
Natural Communities	No Impact	Less Than Significant with Mitigation Measures Incorporated	Less Than Significant with Mitigation Measures Incorporated	Employ stormwater and erosion control BMPs. Utilize existing pullouts and parking lots. Include a tree replacement plan
Wetlands and Other Water	No Impact	No Impact	Less Than Significant with Mitigation Measures Incorporated	No work adjacent to the bed, bank, and channels of Dominguez Channel and Compton Creek during the rainy season
Plant Species	No Impact	No Impact	No Impact	Use existing pull outs and parking lots for staging and storing. Avoid removing existing native vegegation
Animal Species	No Impact	Less Than Significant with Mitigation Measures Incorporated	Less Than Significant with Mitigation Measures Incorporated	Clear and Grub vegetation outside the bird nesting season
Threatened and Endangered Species	No Impact	No Impact	No Impact	No anticipated Avoidance, Minimization, and/or Mitigation Measures Requied
Invasive Species	No Impact	Less Than Significant with Mitigation Measures Incorporated	Less Than Significant with Mitigation Measures Incorporated	No invasive species will be used as part of this project
Cumulative Impacts				
Climate Change				

Coordination with Public and Other Agencies

Caltrans filed a Notice of Preparation (NOP) for the Draft EIR/EA with the State Clearinghouse on March 7, 2018. The filing on the NOP began a 30-day scoping period that extended through April 16,

2018. Four scoping meetings were held in March of 2018. Additional information about public scoping can be found in Chapter 4.

Table S-2: Permits and Approvals Needed

Agency	Permit/Approval	Status
Federal Highway Administration (FHWA)	Air Quality Conformity Determination	Request for determination to be submitted following selection of a preferred alternative. The interagency consultation concurred the project is not of air quality concern on 6/25/19.
U.S. Army Corps of Engineers (USACE)	Section 404/408 Permits	To be obtained during PS&E
Regional Water Quality Control	Section 401 Certification Permit	To be obtained during PS&E
Regional Water Quality Control Board	National Pollutant Discharge Elimination System Permit	To be obtained during PS&E
California Department of Fish and Wildlife	Section 1600 Permit	To be obtained during PS&E
State Historic Preservation Officer (SHPO)	Concurrence on findings with respect to historic resources and Section 106 requirements	To be obtained after Draft Document Circulation

After receiving comments from the public and reviewing agencies, a Final EIR/EA will be prepared. Caltrans may prepare additional environmental and/or engineering studies to address comments. The Final EIR/EA will include responses to comments received on the Draft EIR/EA and will identify the preferred alternative. If the decision is made to approve the project, a Notice of Determination will be published for compliance with CEQA, and Caltrans will decide whether to issue a Finding of No Significant Impact (FONSI) or require an Environmental Impact Statement (EIS) for compliance with NEPA. A Notice of Availability (NOA) of the FONSI will be sent to the affected units of federal, state, and local government, and to the State Clearinghouse in compliance with Executive Order 12372.

Chapter 1 – Proposed Project

1.1 Introduction

The California Department of Transportation (Caltrans), in cooperation with Los Angeles County Metropolitan Transportation Authority (Metro), proposes to enhance operations, improve traffic flow, manage mobility, and expand the ExpressLanes System within the Interstate 105 (I-105) corridor. The project traverses the cities of El Segundo, Inglewood, Hawthorne, Los Angeles, Lynwood, South Gate, Paramount, Downey, Norwalk, and unincorporated areas of Los Angeles County.

This project is included in the federally-adopted 2019 Federal Transportation Improvement Program (FTIP) and it is included in the 2017 California Federal Statewide Transportation Improvement Program (FSTIP). It is also shown on the adopted Southern California Association of Governments (SCAG) 2016-2040 Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS) and is planned to be carried over into the modeling for SCAG's 2020 RTP/SCS. Metro prepared a comprehensive ExpressLanes Strategic Plan (2017) for Los Angeles County and this project was identified as a Tier 1 (near-term) project, the first set of ExpressLanes routes to be constructed as part of the larger planned ExpressLanes system.

Caltrans, as assigned by the Federal Highway Administration (FHWA), is the lead agency under both the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA).

1.2 Background

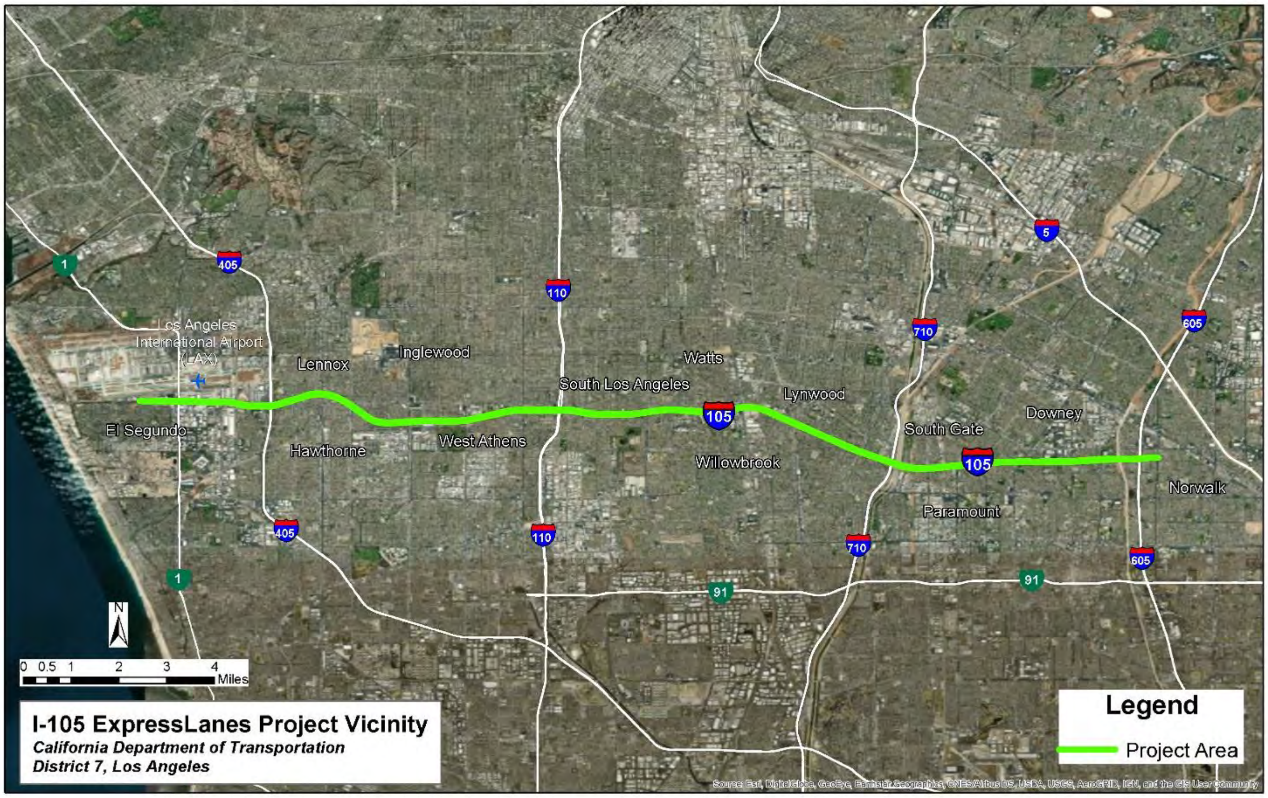
The I-105 freeway (Glenn Anderson Freeway, also referred to as the Century Freeway) is a pivotal east-west commuter corridor in the southern part of Los Angeles County, California, which currently runs from the City of El Segundo (west of I-405) to the City of Norwalk (east of I-605), connecting the I-405, I-110, and the freight heavy I-710 and I-605 freeways. The I-105 freeway provides a direct link to the Los Angeles International Airport (LAX) and access to job centers along the corridors that are in multiple jurisdictions. The I-105 corridor is designated as part of the National Highway System and California Freeway and Expressway System and has been recognized as an essential link in a multi-modal transportation network. I-I05 is also on the National Network for Surface Transportation Assistance Act Trucks and Subsystem of Highway for the Movement of Extra Legal Permit Loads.

Within the limits of the proposed project, I-105 currently has three 12-foot general-purpose lanes and one 12-foot High Occupancy Vehicle (HOV) lane in each direction, with 12-foot auxiliary lanes between ramps at various locations. Standard 10-foot inside and outside shoulders are maintained throughout a majority of the corridor in both directions. The Metro Green Line Light Rail Transit (LRT) corridor runs in the median of I-105 for 10 miles of the 18 mile corridor, providing rapid transit through south Los Angeles towards LAX. Stations are in place at several interchanges along the I-105 corridor, providing easy access to bus corridors along local roadways. In addition, there are several local roadways paralleling I-105 that provide alternative routes to commuters wishing to avoid peak hour congestion on the freeway.

An HOV lane, also known as a carpool or diamond lane is a traffic management strategy to promote and encourage ridesharing, thereby alleviating congestion and maximizing the people-carrying capacity of highways. ExpressLanes, also known as High Occupancy Toll (HOT) lanes are designated lanes that allow other vehicles, often vehicles that do not qualify for the existing carpool policy, the use of available capacity in the HOV lane for a toll during specified times. The toll charges changes dynamically in response to existing congestion levels and available capacity in the HOV lane. HOV lanes and ExpressLanes are two specific types of managed lanes.

The I-105 corridor general purpose lanes currently experience recurring congestion and heavy demand during peak commute hours that exceed the freeway's maximum operational capacity. In addition, sections of the eastbound and westbound I-105 HOV lanes are classified as degraded as defined by federal standards because speeds on the HOV lanes operate at less than 45 miles per hour (mph) during peak periods for more than 10% of the time. See figure 1-1 for Project Vicinity Map.

Figure 1-1: Project Vicinity Map



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

1.3 Purpose and Need

The project purpose is a set of objectives the project intends to meet. The project need is the transportation deficiency that the project was initiated to address and is the transportation problem that Caltrans is responding to. The statement of need, together with the purpose, allows the agency to focus the range of alternatives.

Purpose

The purpose of the project is to improve existing congestion, and thus enhance traffic operations and mobility on I-105. The proposed improvements along the I-105 corridor will accomplish the following objectives:

- Enhance operations and improve trip reliability and travel times within the corridor.

- Improve the traffic flow by reducing the congested areas and therefore, offering the motorists a faster and reliable commute.

- Sustain and manage mobility within the corridor to include other transportation options such as ExpressLanes.

Need

The project is needed to address deficiencies on I-105 within the project limits, which are summarized below:

- Current daily traffic demand on some sections of I-105 exceeds capacity due to heavy traffic on both weekdays and weekends

- The existing traffic of the mixed flow and HOV lanes of the I-105 exceeds the capacity, thus, future operating conditions will be further deteriorated

- According to the 2016 California High-Occupancy Vehicle Lane Degradation Determination Report (Caltrans, 2017) and the 2016 California High-Occupancy Vehicle Lane Degradation Action Plan (Caltrans, 2017), the existing I-105 HOV facilities are degraded and the travel speed is below 45 mph during peak periods.

Existing Deficiencies

A Current Conditions Technical Memorandum (WSP, 2019) which evaluated the current operations along the I-105 corridor was completed in support of the project.

The I-105 corridor serves 62,000 to 117,000 Annual Average Daily Traffic (AADT) in the general purpose lanes in each travel direction. In the I-105 HOV lanes, the eastbound direction carries 11,000 to 22,000 daily traffic volumes, while the westbound carries 5,000 to 20,000 daily traffic volumes. The highest demands for both the general purpose lanes and HOV lanes occur near the Crenshaw Boulevard interchange and the entire eastbound section between I-405 and I-605. There are several areas along the I-105 corridor that are currently operating at oversaturated conditions, typically worse in the eastbound direction due to the following bottlenecks:

- The most severe bottleneck on the corridor occurs just west of the I-710 Interchange between the Long Beach Boulevard on-ramp and the I-710 off-ramps. This bottleneck typically overwhelms the upstream bottlenecks at Wilmington Avenue and the queuing contributes to congestion on the I-110 Southbound to Eastbound I-105 Connector Ramp. The vehicular demand exceeds the capacity with a demand/capacity ratio of 1.21 for the entirety of the PM peak hour at this location and operates at a Level of Service (LOS) F.

- There are two major bottlenecks east of the I-710 Interchange. During both AM and PM peak periods, the I-605 Northbound Connector Ramp forms a major bottleneck at the eastern end of the corridor. This bottleneck is caused by the vehicle demand exceeding the available capacity of the northbound connector ramp, the queuing from the heavy congestion, and the slower speeds along the northbound I-605 mainline (at the connector on-ramp). Interactions between the Paramount Boulevard on-ramp and the Lakewood Boulevard off-ramp also form a major bottleneck east of the I-710 Interchange and operate at a LOS F during AM and PM peak hours. The bottleneck is caused by the additional volume merging onto the corridor from the on-ramp and the resulting weaving conflict. There is not enough capacity on the roadway to accommodate for the additional demand from the on-ramp merge traffic and additional weaving.

- West of the I-110 freeway at Crenshaw Boulevard is the third most congested location on the corridor. The auxiliary lane from the Hawthorne Boulevard/Imperial Highway on-ramp to the

Crenshaw Boulevard/120th Street off-ramps ends, causing a bottleneck that leads to a drop in overall capacity. There are also two closely spaced high volume on-ramps (>10,000 AADT) at West 120th Street and the Eastbound on-ramp from Northbound Crenshaw Boulevard. There is a moderate bottleneck near the I-405 Southbound on-ramp during the PM peak period due to the high volume connector ramp that carries more than 30,000 AADT. This bottleneck is overwhelmed by the Crenshaw Boulevard on-ramp bottleneck downstream.

- Bottlenecks in the Westbound direction of the I-105 are less restrictive and congested than the Eastbound direction. The most congested Westbound bottleneck occurs at the Crenshaw Boulevard on-ramp due in part to its high ramp flows and operates at a LOS F in the AM peak hour. The second biggest bottleneck in this direction occurs at the interaction between the connector ramps from the Southbound I-710 on-ramps to the Long Beach Boulevard off-ramps. The volume of vehicles transitioning onto the I-105 mainline from the on-ramp causes congestion in the area, primarily due to the merging of 2 lanes into 1 lane west of the Long Beach Boulevard off-ramp. The ramps operate at a LOS F for both AM and PM peak hours.

Travel speed for the Eastbound section between I-405 and I-605 is below 30 mph during the PM peak period, while travel speed for the Westbound section between Bellflower Boulevard and Crenshaw Boulevard is below 40 mph during the AM peak period.

The HOV analysis identified multiple locations with HOV lanes operating at LOS F. This is caused by congestion in the mainline traffic and by the HOV lane bottlenecks. HOV congestion is typically worse in the Eastbound direction also due to the following bottlenecks:

- The most severe bottleneck on the corridor occurs in the Eastbound facility just east of the I-110 Interchange. This bottleneck occurs because the I-110 ExpressLanes Direct Connector Ramp traffic merges with the I-105 HOV lane traffic and the facility capacity cannot handle the additional demand from the ramp.

- Likewise, the main bottleneck in the Westbound direction exists where the ExpressLanes Direct Connector Ramp merges with the HOV lane. The volume of vehicles merging from two lanes into one exceeds the capacity of the HOV lane.

- Another major bottleneck is on the Eastbound facility that occurs between the Hawthorne Boulevard on-ramp and Crenshaw Boulevard/120th Street off-ramp at the HOV ingress/egress location. Due to the congestion on the mainline, traffic on the HOV lane must reduce their speed to match the mainline traffic and exit, while the slow traffic from the mainline enters the HOV lane.

The results of the existing peak hour performance analysis performed on the current ramp and adjacent arterial intersections located within the project limits showed about half of all intersections studied (23 in the AM peak period and 27 in the PM peak period) have LOS D or worse. LOS D is considered the threshold for acceptable level of service.

The proposed improvements to the I-105 corridor are needed in order to address the identified problems and deficiencies. The proposed improvements would increase the capacity of the managed lanes to allow for more flexibility in the traffic movement and higher efficiencies, enabling the corridor to maximize productivity and travel reliability.

1.4 Independent Utility and Logical Termini

FHWA regulations (23 Code of Federal Regulations [CFR] 771.111 [f]) require that the project (1) have logical termini and be long enough to address environmental matters on a broad scope, (2) be usable and be a reasonable expenditure even if no additional transportation improvements in the area are made, and (3) not restrict consideration of alternatives for other reasonably foreseeable transportation improvements.

Logical Termini

To meet the FHWA criteria for logical termini, this project must have rational end points and be long enough to address environmental matters. The eastern terminus of the project is at Studebaker Road in the City of Norwalk and the western terminus of the project is at Imperial Highway/Sepulveda Boulevard in the City of Los Angeles. The length of the proposed project encompasses a 17.6 mile long section of the I-105 corridor. The I-105 corridor intersects I-110, which already contains an established ExpressLanes system. The connectors between I-105 and I-110 has been included in the projects limits to address connectivity from the proposed I-105 ExpressLanes to the existing I-110 ExpressLanes. Based on the above discussion, the project meets the criteria for logical termini.

Independent Utility

To meet the FHWA criteria for independent utility, this project must be usable even if no additional improvements in the area are made. The I-105 ExpressLanes corridor will be run independently from other ExpressLanes corridors and the funding generated on I-105 will be allocated separately from other ExpressLanes corridors to be used within the corridor. The proposed upgrade to the existing facilities would be a cost-effective and reasonable use of existing funds. The proposed project would benefit the local community even if additional improvements are not made to I-105 in the future.

Restriction of Consideration of Alternatives

Approval of the proposed action would not restrict consideration of alternatives for this or other reasonably foreseeable transportation improvements. The proposed project is being designed in coordination with the local and regional transportation authorities in the area. Continuous coordination will avoid potential conflicts with alternatives for this project and for other planned area transportation improvements.

1.5 Project Description

This section describes the proposed project to improve traffic conditions on I-105 starting at Imperial Highway/Sepulveda Boulevard Intersection west of I-405 in the City of Los Angeles and terminating at Studebaker Road located east of I-605 in the City of Norwalk, and on I-110 from the I-105 separation in the City of Los Angeles, to 103rd Street in the City of Los Angeles. This proposed project will reduce congestion, encourage carpooling and transit, improve trip reliability, minimize degradation of the general purpose lanes, increase person throughput, and apply technology to help manage traffic. The improvements include converting existing HOV lanes to Express lanes or adding an additional Express lane in each direction.

Existing Facilities

Within the project limits, the Caltrans operated I-105 spans 18.1 miles and is designed as a six-lane highway, with auxiliary lanes between most on-ramps and off-ramps, an HOV lane in each direction, and an exclusive median transit way for the Metro Green LRT. The width of the I-105 right-of-way spans roughly 320-feet, with additional space in portions of the corridor to accommodate interchanges and transit stations. The general purpose and HOV lane widths are typically 12-feet, with 10-foot wide interior and exterior shoulders.

The I-105 corridor runs parallel to Imperial Highway and State Route 91 (SR-91). The corridor directly links commuters to LAX and functions as a major-collector distributor route for the north-south routes of I-405, I-110, I-710, I-605, as well as local streets. An existing HOV Direct Connector currently connects the I-105 HOV to the I-110 ExpressLanes and provides 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. The Metro Green Line LRT corridor runs in the median of I-105 for the majority of the route. The Metro Green LRT is owned and maintained by Metro while the I-105 corridor is owned and maintained by Caltrans.

In addition to the I-105 corridor, the project limits also include one mile on I-110, from PM 13.8 to PM 14.8. The I-110 is primarily designed as a six-lane highway, which includes a 7-story ramp that connects the I-105 HOV lanes to the I-110 northbound ExpressLanes.

1.6 Project Alternatives

This section includes all alternatives that are considered for further evaluation, based on the criteria that each alternative: (1) meets the purpose and need, (2) avoids environmental impacts, and (3) is feasible (per CEQA Guidelines Section 15126.6(f)(1)).

Two Build Alternatives are proposed in addition to a “No-Build” Alternative.

- **Alternative 1 – No-Build Alternative: Existing Conditions**
  The No-Build alternative does not include improvements to the existing lanes within I-105.

- **Alternative 2 – Build Alternative: Convert Existing HOV Lane to One ExpressLane (Standard Lane and Shoulder Widths)**
  This build alternative would convert the existing HOV lane, from Imperial Highway/Sepulveda Boulevard Intersection to Studebaker Road, to an ExpressLane in each direction. The freeway would be restriped within the existing footprint to accommodate one 12-foot wide ExpressLane with a 4-foot wide buffer separating the ExpressLane from the 12-foot general purpose lanes. Dynamic pricing would be deployed to address existing degradation of the HOV lane. This alternative also proposes improvements to the I-110 corridor from PM R13.8 to R14.8 to place associated signage for this build alternative. Roadway widening up to 8 feet would be required in some locations to accommodate three new merge lane locations, an additional 12-foot weave lane at ingress/egress locations, and to improve stopping sight distances at curves. The bridge at Central Avenue would need to be reprofiled to maintain vertical clearance for vehicles, while the sidewalk would be upgraded to ADA compliance. Eleven existing ramps, seven interchanges, eleven bridge structures, forty-two retaining walls, and eight sound walls would need to be realigned/widened/converted to accommodate outside widening proposed in this build alternative.

- **Alternative 3 – Build Alternative: Convert Existing HOV Lane to Two ExpressLanes (Non-standard Lane and Shoulder Widths)**
  This build alternative would convert the existing HOV lane, from Imperial Highway/Sepulveda Boulevard Intersection to Studebaker Road, to an 11-foot ExpressLane in each direction. A second 11-foot ExpressLane in each direction would be added by utilizing non-standard lane and shoulder widths. The freeway would be restriped within the existing footprint to accommodate the two ExpressLanes with a 1-foot wide buffer separating the ExpressLane from the 11-foot general purpose lanes. Dynamic pricing would be deployed to address existing degradation of the HOV lane. This alternative also proposed improvements to the I-110 corridor from PM R13.8 to R14.8 to place associated signage for this build alternative. Roadway widening up to 25 feet would be needed to accommodate the second ExpressLane configuration, five new merge lane locations, five new/extended auxiliary lanes, an additional 12-foot weave lane at ingress/egress locations, avoid existing maintenance gates to Metro Green Line LRT, and improve stopping sight distances at curves. Central Avenue, Fir Street, Bullis Road, and Harris Avenue would need to be reprofiled to maintain vertical clearance and the sidewalks would be upgraded to ADA compliance. In addition, Imperial Highway would need to be reconstructed between Mona Boulevard and Fernwood Avenue to accommodate the roadway widening. Twenty-two existing ramps, seven interchanges, twenty-two bridge structures, seventy-eight retaining walls, and fifteen sound walls would need to be realigned/widened/converted to accommodate outside widening by this build alternative.

Comparison of Alternatives

This section will evaluate the alternatives based on how each alternative addresses the purpose and need in consideration to environmental impacts. The No-Build Alternative will provide a baseline for comparison with the Build Alternatives.

Alternative 1 – No-Build Alternative: Existing Conditions

Under the No-Build Alternative, no additional travel lanes or ramp improvements would occur. Additional land areas would not be impacted, and existing and projected traffic congestion would not be alleviated beyond construction of other projects in approved regional transportation plans. The No-Build Alternative does not include any of the features considered during the conceptual analysis and preliminary engineering stage of the project. Consequently, the alternative does not address the current or future traffic demand. The No-Build Alternative does not meet the established purpose and need of the project outlined in the Purpose and Need section. However, it does provide insight on the future conditions of the area in the event no improvements are installed and serves as a baseline for comparison against the other alternatives.

Alternative 2 – Build Alternative: Convert Existing HOV Lane to One ExpressLane (Standard Lane and Shoulder Widths)

Under the Build Alternative 2, no additional travel lanes would be constructed. Additional land areas would be impacted with the 8 feet roadway widening. Eleven ramps, eleven structures, eight noise barriers, forty-two retaining walls, and seven system interchanges would be modified by this build alternative. Existing and projected traffic congestions would be alleviated as this alternative would enhance operations and improve trip reliability and travel times within the corridor. This alternative would reduce the congested areas and improve traffic flow to provide motorists with a faster and reliable commute and sustain and manage mobility within the corridor to include other transportation options. The escalated cost estimate for this build alternative is $473,644,408.

Alternative 3 – Build Alternative: Convert Existing HOV Lane to Two ExpressLanes (Non-standard Lane and Shoulder Widths)

Under the Build Alternative 3, one additional travel lane would be constructed in each direction. Additional land areas would be impacted with the 25 feet roadway widening. Twenty-two ramps, twenty structures, fifteen noise barriers, seventy-eight retaining walls, fourteen TCEs, and seven system interchanges would be modified by this build alternative. Existing and projected traffic congestions would be alleviated as this alternative would enhance operations and improve trip reliability and travel times within the corridor. The alternative would reduce the congested areas and improve traffic flow to provide motorists with a faster and more reliable commute. It will also sustain and manage mobility within the corridor to include other transportation options. The escalated cost estimate for this build alternative is $763,430,753.

This project contains a number of standardized project measures which are employed on most, if not all, Caltrans projects and were not developed in response to any specific environmental impact resulting from the proposed project. These measures are addressed in more detail in the Environmental Consequences sections found in Chapter 2.

Common Design Features of the Build Alternatives

Under the Build Alternatives, the existing HOV lane would be converted to an ExpressLane in each direction. The ExpressLanes would address the degradation of the existing HOV lanes by utilizing dynamic pricing to optimize existing capacity thereby offering greater travel time reliability and enhanced mobility choice to travelers. Dynamic pricing allows for the adjustment of toll rates in real-time based on actual traffic conditions. Prices in the ExpressLanes will be higher with increased congestion, and lower when traffic is light. ExpressLanes would require single occupant vehicles to pay a toll while vehicles that meet the current carpool policy could utilize the facility toll free. Trucks, other than 2-axle light duty trucks, would not be allowed to utilize the ExpressLanes and clean air vehicles would receive a 15% toll discount. Clear air vehicles are defined as zero emission vehicles or transitional zero emission vehicles which display a DMV-issued clean air vehicle decal.

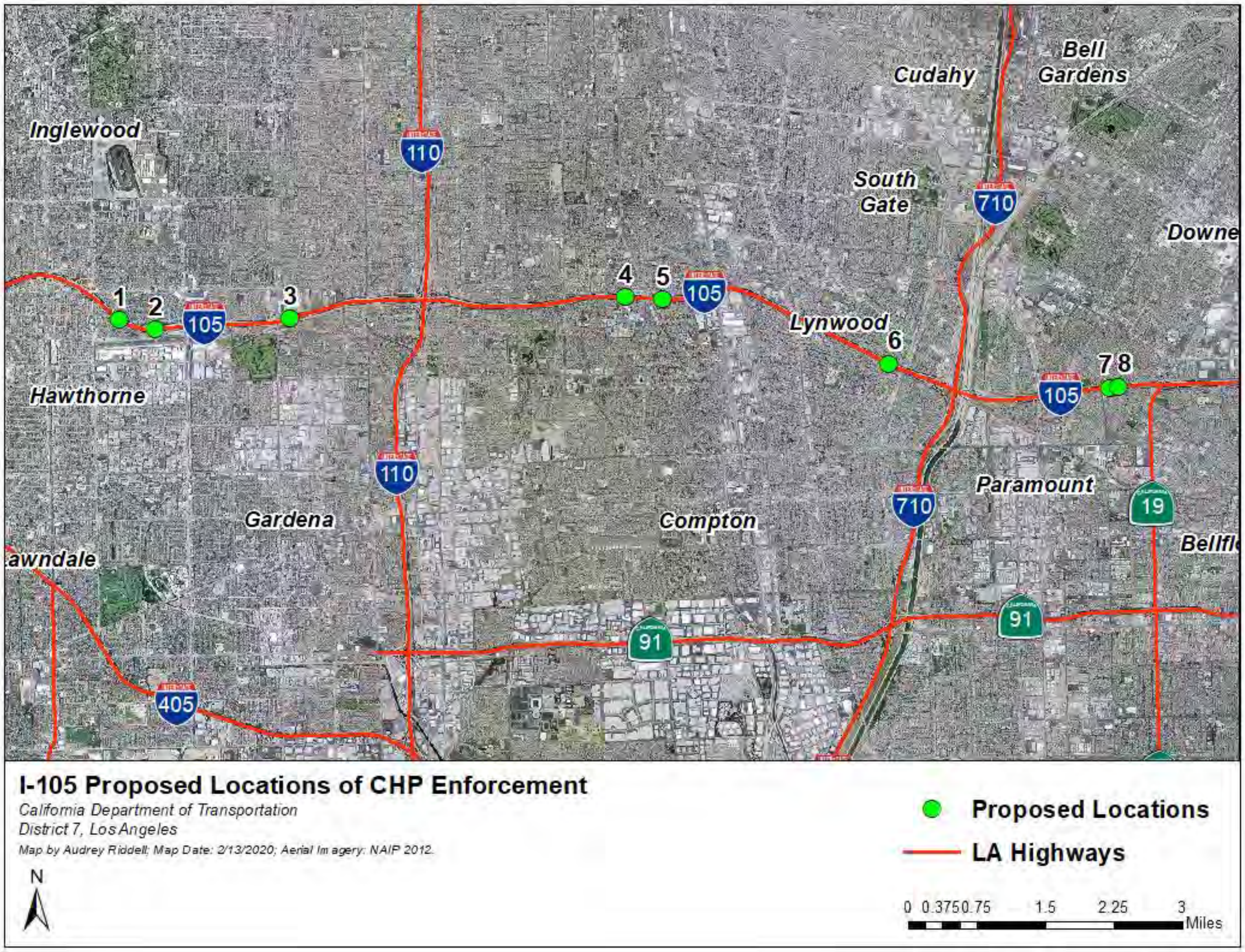
The Build Alternatives would also require various toll infrastructure including toll gantries with transponder readers, and high-speed digital cameras to: verify transactions, read license plates, and automatically collect tolls from customers as part of an electronic toll collection program. Signage will be posted within the corridor to notify commuters of the approaching ExpressLanes and to indicate the current tolls at ingress/egress points and travel time to selected destinations. Complete closed-circuit television coverage of the entire ExpressLanes Facility will be recorded to provide security and video surveillance for tolling equipment which will enable quick response times to breakdowns and other incidents. Fiber optics will be used to link the electronic infrastructure to a centralized toll operations office.

A weaving lane between the first general purpose lane and the closest ExpressLane is proposed in each direction at most ingress/egress locations to provide a dedicated lane for speed adjustments between the high speed through traffic in the ExpressLanes and the slower speed of the general purpose lanes during heavily congested peak periods.

Maintenance Vehicle Pullouts (MVPs) are being considered at designated locations where there is a need to access toll gantries and changeable message signs.

There are 29 existing California Highway Patrol (CHP) Observation Areas along I-105 within the project limits. Eight additional observation areas have been incorporated into the build alternatives to help ensure traffic laws are enforced. Toll enforcement is an essential element of any successful express lane system to ensure customers are charged the appropriate toll based on vehicle occupancy and minimize toll evasion. Toll violations are currently enforced within the Los Angeles Metro jurisdiction through both visual observation by the CHP and the Electronic Toll Collection (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. CHP is anticipated to be contracted to conduct supplemental enforcement services on the I-105 Express facility including toll infractions, HOV eligibility occupancy infractions, buffer crossing infractions, speeding, and other moving violations. Figure 1-2 below identifies the proposed observations areas.

Figure 1-2: Proposed CHP Observation Areas



Under either build alternative, the project is expected to yield mobility benefits to commuters and freight traffic alike, through reduced travel times, increased vehicle and passenger throughput, and reduced delays through active traffic management to optimize freeway speeds throughout the corridor.

Local Improvements

Central Avenue would need to be improved due to mainline roadway widening of 11 feet. The existing Central Avenue undercrossing has a non-standard vertical clearance of 14 feet 10 inches.

Bike, Pedestrian, and Sustainability Improvements

Replace sidewalks, ADA ramps, and bikeway connections in accordance with local City standards, to accommodate the reprofiling of Central Avenue. Reprofiling involves adjusting vertical clearance under crossings by altering the slope of the approach street.

Ramp Metering

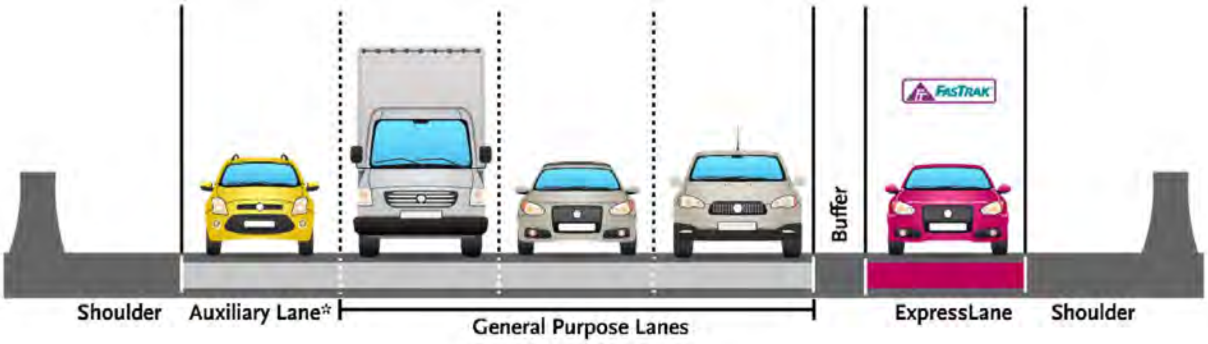
Incorporation of ramp metering on all ramps and interchanges impacted by the project build alternative is anticipated.

Unique Features of Build Alternatives

Under Build Alternative 2, the ExpressLane (12 feet), general purpose lanes (12 feet), Auxiliary lanes (12 feet), and Buffers (4 feet) would all be constructed with standard conditions. Non-standard 4 foot inside shoulders and 10-foot outside shoulders, would be implemented where site constraints exist. Where necessary, outside shoulders would be removed to provide full structural sections. New merge lanes approximately 300 feet in length would be proposed at 3 locations: Eastbound I-105/Paramount Avenue on-ramp, Eastbound I-105/Bellflower Boulevard on-ramp, and Westbound I-105/Bellflower Boulevard on-ramp. No new auxiliary lanes or extension of current auxiliary lanes are proposed under this alternative. The ExpressLanes would offer discounts for HOV + Clear Air Vehicles.

Figure 1-3 shows the Cross Section for Alternative 2.

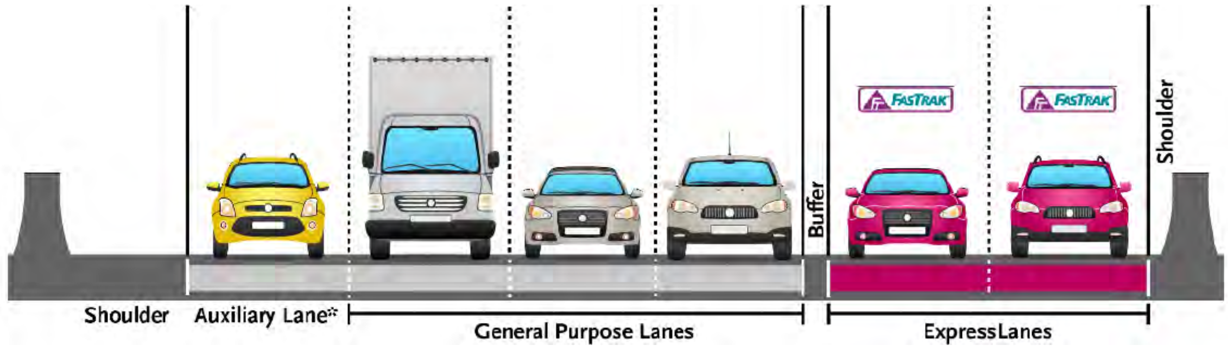
Figure 1-3: Cross Section for Alternative 2



Under Build Alternative 3, a second ExpressLane would be added in each direction (total of 2 tolled 11-foot wide ExpressLanes with discounts for HOV + Clear Air Vehicles). The ExpressLanes, general purpose lanes, and auxiliary lanes would also be non-standard 11 feet wide, with exception to the outside general purpose lane remaining at 12 feet. The buffers would be non-standard 2 feet, the inside shoulder 2-4 feet, but the outside shoulder would be a standard 10 feet design. New merge lanes are proposed at 5 locations: Eastbound I-105/Wilmington Avenue on-ramp, Eastbound I-105/Bellflower Boulevard on-ramp, Eastbound I-105/Paramount Boulevard on-ramp, Westbound I-105/Lakewood Boulevard on-ramp, and Westbound I-105/Wilmington Avenue on-ramp. New Auxiliary Lanes, approximately 1,000 feet in length, are proposed at: Westbound I-105/Northbound I-110 ExpressLanes Connector, Southbound I-110/Eastbound I-105 ExpressLanes Connector, and Southbound I-710/Eastbound I-105 Connector. Extension of 2,800 feet at the existing auxiliary lanes is proposed from Northbound I-710/Westbound I-105 connector to Westbound I-105/Long Beach Boulevard off-ramp and 1,800 feet extension is proposed at Long Beach Boulevard on-ramp/Eastbound I-105 to Eastbound I-105/Southbound I-710 Connector.

Figure 1-4 shows the Cross Section for Alternative 3.

Figure 1-4: Cross Section for Alternative 3



Widening

Both build alternatives would require widening at some locations to accommodate the ingress lane and improve or maintain stopping sight distances at curves. Alternative 2 will require widening up to 8 feet to the outside for the 1 proposed ExpressLane and Alternative 3 will require up to 25 feet to the outside for the dual ExpressLanes. The widening proposed in Alternative 3 would also accommodate an additional 12-foot auxiliary lane at on-ramps and ExpressLanes direct connectors.

Ramps

Certain ramps within the corridor are proposed to be modified under both build alternatives as a result of realignment, widening, or installation of ramp metering. The realignment of ramps is required to accommodate outside widening for the ExpressLanes and some ramps will be widened to correspond with anticipated traffic forecasts. Alternative 2 would modify eleven ramps and Alternative 3 would modify twenty three ramps. The locations and proposed changes of the ramps are listed in Table 1-1.

Table 1-1: Ramp Improvements for Build Alternatives

Location	Post Mile (Approx.)	Alternative 2			Alternative 3		
		Ramp Improvements	Ramp Metering		Ramp Improvements	Ramp Metering	
			Existing	Proposed*		Existing	Proposed*
Imperial Hwy WB Off-Ramp (near California St)	R000.13						
Imperial Hwy EB On-Ramp (near California St)	R000.134						

Sepulveda Blvd WB On-Ramp	R000.295						
Sepulveda Blvd EB Off-Ramp	R000.37						
Sepulveda Blvd EB On-Ramp	R000.451						
Sepulveda Blvd WB Loop Off-Ramp	R000.48						
Sepulveda Blvd WB Off-Ramp	R000.66						
Imperial Hwy EB On-Ramp (near Nash St.)	R000.889			X			X
N Nash St WB Off-Ramp	R000.99						
Atwood Way EB On-Ramp	R001.164		X			X	
N&S405-W105 Connector	R001.695						
E105-S405 Connector	R001.77						
Imperial Hwy EB On-Ramp (Near La Cienega Blvd)	R001.909		X			X	
Imperial Hwy WB Off-Ramp (near La Cienega)	R001.94						
N405-E105 Connector	R002.291		X			X	
W105-N&S405 Connector	R002.52						
S405-E105 Connector	R002.531		X			X	
S Prairie Ave EB Off-Ramp	R003.21						
Hawthorne Blvd EB On-Ramp	R003.49		X			X	
Imperial Hwy EB On-Ramp (near Prairie Ave)	R003.49		X			X	
Imperial Hwy WB On-Ramp (near Prairie Ave)	R003.49		X			X	
Hawthorne Blvd WB Off-Ramp	R003.64						
S Prairie Ave WB Off-Ramp	R003.70						
W 120th St EB Off-Ramp	R004.35	X			X		
Crenshaw Blvd WB On-Ramp	R004.57		X			X	
W 120th St EB On-Ramp	R004.60		X			X	
Crenshaw Blvd WB Loop On-Ramp	R004.75		X			X	

Crenshaw Blvd WB Off-Ramp	R004.89						
Crenshaw Blvd EB On-Ramp	R004.93		X			X	
Vermont Ave WB On-Ramp	R006.58		X			X	
Vermont Ave EB Off-Ramp	R006.60				X		
Vermont Ave WB Off-Ramp	R006.90						
S Hoover St EB On-Ramp	R007.13		X			X	
S110-W105 Connector (HOV)	R007.23						
E105-N110 Connector (HOV)	R007.23						
S110-W105 Connector	R007.40		X		X	X	X
N&S110-E105 Connector	R007.40		X**		X	X**	X
E105-N&S110 Connector	R007.40				X		
N110-W105 Connector	R007.43						
S110-E105 Connector (HOV)	R007.62						
W105-N&S110 Connector	R007.75						
W105-N110 Connector (HOV)	R007.97						
Central Ave WB On-Ramp	R008.75	X	X	X	X	X	X
Central Ave EB Off-Ramp	R008.75	X			X		
Central Ave EB On-Ramp	R009.10	X	X	X	X	X	X
Central Ave WB Off-Ramp	R009.10	X			X		
Wilmington Ave EB Off-Ramp	R009.60				X		
Wilmington Ave EB On-Ramp	R009.79		X			X	
Imperial Hwy WB On-Ramp (near Wilmington Ave)	R010.03		X			X	
Imperial Hwy WB Off-Ramp (near Wilmington Ave)	R010.19						
Long Beach Blvd WB On-Ramp	R011.37		X			X	
Long Beach Blvd EB Off-Ramp	R011.45				X		
Long Beach Blvd WB Loop On-Ramp	R011.52		X			X	

Long Beach Blvd EB Loop On-Ramp	R011.65		X		X	X	X
Long Beach Blvd EB On-Ramp	R011.65		X		X	X	X
Long Beach Blvd WB Off-Ramp	R011.65				X		
N710-W105 Connector	R013.02		X			X	
E105-N&S710 Connector	R013.10				X		
S710-W105 Connector	R013.25		X			X	
Garfield Ave EB Off-Ramp	R013.76						
N710-E105 Connector	R013.85		X		X	X	X
S710-E105 Connector	R013.85		X		X	X	X
Garfield Ave WB On-Ramp	R014.03		X			X	
W105-N&S710 Connector	R014.10				X		
Paramount Blvd EB On-Ramp	R014.85	X	X	X	X	X	X
Paramount Blvd WB Off-Ramp	R014.85				X		
Lakewood Blvd WB On-Ramp	R015.55		X		X	X	X
Lakewood Blvd EB Off-Ramp	R015.65	X			X		
Lakewood Blvd EB Loop On-Ramp	R015.71		X			X	
Lakewood Blvd EB On-Ramp	R015.93		X			X	
Lakewood Blvd WB Off-Ramp	R015.93						
Bellflower Blvd WB On-Ramp	R016.40	X	X	X		X	
Bellflower Blvd EB Off-Ramp	R016.40	X					
Bellflower Blvd EB On-Ramp	R016.85	X	X	X		X	
Bellflower Blvd WB Off-Ramp	R016.85	X					
N&S605-W105 Connector	R017.42						
E105-N&S605 Connector	R017.44						
Norwalk Metro Station Off-Ramp	R017.67						
Imperial Hwy WB On-Ramp (near Hoxie Ave)	R017.72		X	X		X	X

Hoxie Ave WB On-Ramp	R017.88			X			X
Hoxie Ave EB On-Ramp	R017.95			X			X
Hoxie Ave WB Off-Ramp	R017.95						
Total		11	35	9	22	35	14

Notes: * Existing ramp metering to be relocated and/or upgrade to latest equipment requirements.
**Ramps metered separately before joining.
Ave = Avenue; Blvd = Boulevard; E = East; EB = Eastbound; Hwy = Highway; N = North; S = South; W = West; WB = Westbound

Structures

Both build alternatives require several bridge structures in the project area to be rebuilt or widened. Alternative 2 proposes eleven structures to be modified and Alternative 3 proposes twenty structures to be modified, as described in Table 1-2.

Table 1-2: Structures Widened for Build Alternatives

Bridge Name	Post Mile	Bridge No.	Alternative 2							Alternative 3						
			Westbound (Left)			Eastbound (Right)			Average Width of Widening (Feet)	Westbound (Left)			Eastbound (Right)			Average Width of Widening (Feet)
			Rebuild/New	Outside Widening	Median Widening	Rebuild/New	Outside Widening	Median Widening		Rebuild/New	Outside Widening	Median Widening	Rebuild/New	Outside Widening	Median Widening	
Dominguez Channel	R004.16	53 2518					X		EB 7.3		X			X	8.4	WB 13.7 / EB 7.3
Yukon Ave UC	R004.23	53 2598					X		EB 6.8		X			X	7.5	WB 14.0 / EB 7.3
Hoover Street UC	R007.05	53 2528												X		EB 4.5
Main St UC	R007.79	53 2410R												X		EB 3.7
San Pedro St UC	R008.04	53 2476									X			X	5.5	WB 13.3 / EB 10.5
Avalon Blvd UC	R008.29	53 2477									X			X	1.3	WB 9.1 / EB 8.0
Stanford Ave UC	R008.46	53 2478		X					WB 5.4		X			X	2.6	WB 16.3 / EB 12.0

Central Ave UC	R008.94	53 2480		X					WB 6.1		X			X	11.2	WB 11.2 / EB 9.4
Compton Creek	R008.98	53 2483		X					WB 5.5		X			X	10.5	WB 10.5 / EB 9.1
Success Ave UC	R009.21	53 2484		X			X		WB 3.3 / EB 1.0		X			X	10.8	WB 10.8 / EB 8.5
Compton Ave UC	R009.38	53 2485					X		EB 4.3		X			X	4.5	WB 4.5 / EB 6.5
Willowbrook OH	R009.78	53 2487L									X				12.2	WB 12.2
Alameda St Viaduct	R010.25	53 2490									X				15.0	WB 15.0
State St UC	R011.10	53 2662									X				7.0	WB 7.0
Long Beach Blvd UC	R011.56	53 2493												X		EB 11.3
Fir/Spruce St UC	R011.91	53 2494		X					WB 4.7		X			X	21.0	WB 21.0 / EB 11.5
Bullis Rd UC	R012.07	53 2495		X					WB 7		X			X	21.7	WB 21.7 / EB 11.0
Gertrude Dr UC	R012.30	53 2496		X					WB 8.1		X			X	13.0	WB 13.0 / EB 12.0
Harris Ave UC	R012.58	53 2497		X					WB 7.6		X			X	15.0	WB 15.0 / EB 5.0
Atlantic Ave UC	R012.88	53 2452												X		EB 10.8

Noise Barriers

The rebuilding of new noise barriers is proposed under both build alternatives. Alternative 2 proposes 4 new soundwalls and Alternative 3 proposes 10 new sound walls to be constructed. Table 1-3 lists the anticipated sound walls and the maximum length of extension for Alternative 2 and Alternative 3, respectively.

Table 1-3: Anticipated Sound Wall Impacts within the Project Limits

Location	Post Mile	Alternative 2				Alternative 3			
		Rebuild/New	Extension	Removal	Maximum Length of Extension (Feet)	Rebuild/New	Extension	Removal	Maximum Length of Extension (Feet)
EB I-105 between W 118th St & Yukon Ave S	R003.91	R			1754	R*			1754
WB I-105 between Doty Ave & S Cherry Ave	R003.95					R*			2310
WB I-105 between S Main St & S Central Ave	R007.77	R*			6017	R			6019
EB I-105 between S Main St & S San Pedro St	R007.78					R			1357
EB I-105 between West of S Avalon Blvd & Stanford Ave	R008.26					R			1108
EB I-105 between S Central Ave Off & On Ramps	R008.77					R*			1645
WB I-105 between S Central Ave & East of Compton Ave	R009.01	N			2519	N*			2519
EB I-105 between S Central Ave On Ramp & S Wilmington Ave Off Ramp	R009.06	R			2440	R			2929
WB I-105 Imperial Hwy On Ramp	R009.90	N			1911	N			1911
EB I-105 between Imperial Hwy On Ramp & Alameda St	R009.95	N			3313	N			3313
WB I-105 between Long Beach Blvd Off-Ramp & Fir St	R011.52	N			2128	N			2128
EB I-105 between Long Beach Blvd & Spruce St	R011.64					R			892
EB I-105 between Spruce St & Bullis Rd	R011.89					R			896
WB I-105 between Spruce St & Atlantic Ave	R011.91	R			4690	R			4830
EB I-105 between Bullis Rd & Atlantic Ave	R012.06					N*			4489

Retaining walls

Retaining wall improvements are required for both build alternatives in the proposed locations to minimize and avoid extensive right-of-way acquisition. Alternative 2 proposes thirty-two new retaining walls with another eight as rebuilds and Alternative 3 proposes sixty-three new retaining walls with another thirteen as rebuilds. Table 1-4 lists the anticipated retaining wall impacts and maximum length of extension for Alternative 2 and Alternative 3, respectively. Those marked as "N" are combination Retaining Wall & Sound Wall.

Table 1-4: Anticipated Retaining Wall Impacts within the Project Limits

Location	Post Mile	Alternative 2			Alternative 3		
		Rebuild/ New	Type	Max Length (Feet)	Rebuild/ New	Type	Max Length (Feet)
EB I-105 West of Inglewood Ave	R002.46	N	1	94	N	1	94
EB I-105 East of Inglewood Ave	R002.75	N	1	94	N	1	94
EB I-105 West of Hawthorne Blvd	R002.88	N	1	94	N	1	94
WB I-105 Between Inglewood Blvd & Hawthorne Blvd	R002.92	R	1	308			
WB I-105 at Hawthorne Blvd	R003.03	N	Tie-Back	284			
EB I-105 between Prairie Ave OC & Dominguez Channel	R003.87				R	1	184
WB I-105 between Prairie Ave OC & Dominguez Channel	R003.88				R	1	307
WB I-105 West of Dominguez Channel	R004.02				N*	1	544
EB I-105 between Prairie Ave OC & Dominguez Channel	R004.04				N*	1	349
WB I-105 between Dominguez Channel & Yukon Ave UC	R004.16				N*	1	332
WB I-105 East of Yukon Ave	R004.24				N*	1	844
EB I-105 West of Crenshaw Blvd	R004.58	N	1	94	N	1	94
WB I-105 West of Van Ness Ave	R005.14				N	1	491
EB I-105 West of Van Ness Ave	R005.20	N	1	94	N	1	94
WB I-105 at Van Ness Ave OC	R005.23				N	Tie-back	76
WB I-105 between Van Ness Ave OC & Wilton Place OC	R005.24				N	1	1,260
WB I-105 between Van Ness Ave OC & Normandie Ave OC	R005.34	R	1	308			
WB I-105 at Wilton Pl OC	R005.48				N	Tie-back	51
WB I-105 between Wilton Place OC & Western Ave OC	R005.49				N	1	1,253
WB I-105 at Western Ave OC	R005.73				N	Tie-back	99

WB I-105 between Western Ave OC & Normandie Ave OC	R005.75				N	1	2,652
WB I-105 between Western Ave OC & Normandie Ave OC	R006.04	N	1	308			
WB I-105 at Normandie Ave OC	R006.27				N	Tie-back	77
WB I-105 between Normandie Ave OC & Budlong Ave OC	R006.27				N	1	1,246
EB I-105 at Normandie Ave	R006.24				N	Tie-back	87
WB I-105 East of Normandie Ave	R006.29	N	1	94			
EB I-105 at Budlong Ave OC	R006.51				N	Tie-back	88
WB I-105 East of Budlong Ave	R006.57				N	1	199
WB I-105 between Budlong Ave OC & Vermont Ave OC	R006.59				R	1	308
EB I-105 between Budlong Ave OC & Vermont Ave OC	R006.63				R	1	571
WB I-105 between Budlong Ave OC & Vermont Ave OC	R006.72				N	1	135
EB I-105 at Vermont Ave OC	R006.74				N	Tie-back	198
WB I-105 at Vermont Ave OC	R006.74				N	Tie-back	178
WB I-105 between Vermont Ave OC & Hoover St UC	R006.77				N	1	209
WB I-105 East of Vermont Ave	R006.80	N	1	94			
EB I-105 East of Hoover St	R007.10	N	1	94	N	1	94
WB I-105 East of Main St	R007.86	N	1	94	N	1	94
WB I-105 West of Stanford Ave	R008.34	N*	1	242			
WB I-105 Central Ave WB On-Ramp	R008.60	N	1	340			
EB I-105 between Central Ave Off-Ramp & Central Ave UC	R008.78				N*	1	699
WB I-105 Central Ave WB On-Ramp	R008.78				N*	1	206
WB I-105 between Central Ave On-Ramp & Central Ave UC	R008.83	N	1	439	N	1	408
WB I-105 Central Ave On_Ramp	R008.87				N*	1	94
WB I-105 between Central Ave UC & Compton Creek	R008.94	N	1	161	N	1	144
EB I-105 between Central Ave UC & Compton Creek	R008.94				N*	1	291
WB I-105 between Compton Creek & Central Ave Off-ramp	R009.00				N	1	52
EB I-105 between Compton Creek & Central Ave On-Ramp	R009.01				N*	1	435
WB I-105 between Compton Creek & Central Ave Off- Ramp	R009.04	N	1	362			
EB I-105 between Success Ave & Compton Ave	R009.23	N	1	300			

EB I-105 between Success Ave UC & Compton Ave UC	R009.31				N	1	328
EB I-105 between Willowbrook OH & Mona Blvd UC	R009.98				N	1	690
EB I-105 East of Wilmington Ave On-Ramp	R010.04	N	1	94			
WB I-105 between Alameda St Viaduct & State St UC	R010.93				N	1	624
EB I-105 between State St UC & Long Beach Blvd UC	R011.16				R	1	308
EB I-105 East of Harris Ave	R012.62	N	1	94			
EB I-105 between Harris Ave UC & Atlantic Ave UC	R012.73				R	1	308
WB I-105 West of I-710	R013.23	N	1	94	N	1	94
EB I-105 between Garfield Ave Off-Ramp & NB I-710/EB I-105 Connector	R013.66				N	5	825
EB I-105 at SB I-710/EB I-105 Connector adjacent to NB I-710 / EB I- 105 connector	R013.81				N	5	392
EB I-105 at SB I-710 / EB I-105 Connector adjacent to EB I-105 Garfield Ave Off-Ramp	R013.89				N	5	608
EB I-105 West of Garfield Ave	R014.06	N	1	94	N	1	337
EB I-105 at Garfield Ave OC	R014.13				N	Tie-back	88
EB I-105 between Garfield Ave OC & Paramount Blvd OC	R014.14				R	1	2,618
WB I-105 between Garfield Ave OC & Paramount Blvd OC	R014.16				N	1	2,550
EB I-105 between Garfield Ave OC & Paramount Blvd OC	R014.55	R	1	308			
EB I-105 at Paramount Blvd OC	R014.64	N	Tie-Back	202	N	Tie-back	96
EB I-105 between Paramount Blvd OC & Merkel Ave OC	R014.66				N	1	955
EB I-105 On-Ramp from Paramount Blvd	R014.78				R	5	739
WB I-105 Off-Ramp to Paramount Blvd	R014.87				R	1	459
EB I-105 On-Ramp from Paramount Blvd (at Merkel Ave OC)	R014.93				N	Tie-back	97
WB I-105 Off-Ramp to Paramount Blvd (at Merkel Ave OC)	R014.96				N	Tie-back	109
EB I-105 between Merkel Ave OC & Downey Ave OC	R015.05				N	1	181
EB I-105 at Downey Ave OC	R015.08	N	Tie-Back	117	N	Tie-back	76
WB I-105 at Downey Ave	R015.08				N	Tie-back	75
EB I-105 between Downey Ave OC & Laureldale Ave OC	R015.10				N	1	1,221
EB I-105 between Downey Ave & Gardendale	R015.17	R	1	308			
WB I-105 between Downey Ave OC & Gardendale St OC	R015.10				R	1	690

EB I-105 between Downey Ave & Gardendale ST OC	R015.30	N	1	138			
WB I-105 at Gardendale St OC	R015.32				N	Tie-back	159
EB I-105 at Laureldale Ave OC	R015.33	N	Tie-Back	77	N	Tie-back	57
EB I-105 between Laureldale Ave & Gardendale St OC	R015.34	N	1	213	N	1	220
WB I-105 between Gardendale St OC & Lakewood Blvd On-Ramp	R015.35				N	1	657
EB I-105 at Gardendale St OC	R015.38	N	Tie-Back	160	N	Tie-back	140
EB I-105 between Gardendale St OC & Barlin Ave OC	R015.41	N	1	212	N	1	567
EB I-105 at Barlin Ave OC	R015.52				N	Tie-back	83
WB I-105 On-Ramp from Lakewood Blvd	R015.56				R	1	165
EB I-105 Between Lakewood Blvd Off-Ramp & Lakewood Blvd On- Ramp	R015.60				N	1	176
WB I-105 West of Ardis Ave	R016.19	R	1	308			
WB I-105 at Ardis Ave	R016.39	N	Tie-Back	94			
WB I-105 at Bellflower Blvd	R016.54	R	1/Tie-Back	1301/130			
EB I-105 at Bellflower Blvd	R016.64	R	1	160			
WB I-105 between Dunrobin Ave & Woodruff Ave OC	R017.05	R	1	308	R	1	348
EB I-105 between Dunrobin Ave & Woodruff Ave OC	R017.12	N	Tie-Back	140	R	1	307
WB I-105 between Woodruff Ave OC & San Gabriel River	R017.23				N	5	318
WB I-105 between Woodruff Ave OC & San Gabriel River	R017.29	N	1	94			
WB I-105 East of San Gabriel River	R017.60	N	1	94	N	1	94

Right-of-Way

Both build alternatives will require temporary encompassing of properties adjacent to the project area for construction, known as temporary construction easements (TCEs). Alternative 2 will require 1 TCE while Alternative 3 will require 7 TCEs. In addition to temporary occupancy of these properties, Alternative 3 will also require 1 partial permanent acquisition and 1 aerial easement. The affected properties are listed in Table 1-5.

Table 1-5: Affected Properties for Build Alternatives

Location	Alternative 2	Alternative 3		
	Temporary Construction Easements	Temporary Construction Easements	Partial Permanent Acquisition	Aerial Easement

Arthur Avenue Utility and Pedestrian Overcrossing	X	X		
Dominguez Channel		X		
Central Avenue		X		
Imperial Highway adjacent to westbound I-105 at Alameda Street Viaduct		X	X	X
Fir Street		X		
Harris Street		X		
Westbound I-105 between Prairie Avenue Overcrossing and Yukon Avenue Overcrossing		X		

Interchanges

In order to convert the HOV lanes to ExpressLanes, system interchanges within the corridor are proposed to be impacted. Both build alternatives would impact 7 system interchanges and are described in Table 1-6.

Table 1-6: Interchange Improvements for Build Alternatives

Location	Post Mile (Approx.)	Alternative 2 Interchange Improvements	Alternative 3 Interchange Improvements
I-405/I-105 IC	R002.10	Convert HOV lane to ExpressLane	Convert HOV lane to ExpressLane
I-110/I-105 IC	R007.40	Convert HOV lane to ExpressLane	Convert HOV lane to 2 ExpressLanes
W105-N110 Connector	R007.40	Convert HOV Connector to ExpressLane Connector	Convert HOV Connector to ExpressLanes Connector
S110-E105 Connector	R007.40	Convert HOV Connector to ExpressLane Connector	Convert HOV Connector to ExpressLanes Connector
E105-N110 Connector	R007.40	Convert HOV Connector to ExpressLane Connector	Convert HOV Connector to ExpressLanes Connector
S110-W105 Connector	R007.40	Convert HOV Connector to ExpressLane Connector	Convert HOV Connector to ExpressLanes Connector
I-710/I-105 IC	R013.45	Convert HOV lane to ExpressLane	Convert HOV lane to 2 ExpressLanes
I-605/I-105 IC	R017.80	Convert HOV lane to ExpressLane	Convert HOV lane to 2 ExpressLanes

Local Improvements

In addition to the local improvements listed under the common design features of the build alternatives section, Build Alternative 3 also proposes to reconstruct Imperial Highway, between Mona Boulevard and Fernwood Avenue to accommodate widening on the Westbound side of the Alameda Street Viaduct and the subsequent construction of bents and footings to support the structure widening. Fir Street would be reprofiled to a height of 15 feet 5 inches to accommodate mainline widening by 21 feet 6 inches at Fir Street. Bullis Road would be reprofiled to maintain the existing vertical clearance of 15 feet to accommodate mainline widening by 21 feet 6 inches at Bullis Road. Harris Avenue would be reprofiled to maintain the existing vertical clearance of 15 feet to accommodate mainline widening by 15 feet at Harris Avenue.

Bike, Pedestrian, and Sustainability Improvements

In addition to the common design features of the build alternatives section, Build Alternative 3 proposes to replace sidewalks, ADA ramps, and bikeway connections in accordance with local City standards. These improvements will accommodate the reconstruction of Imperial Highway, reprofiling of Dominguez Channel Walkway, Central Avenue, Fir Street, Bullis Road, and Harris Avenue.

Utilities

The build alternatives would impact utilities within the study area. Alternative 2 would impact 4 utilities and Alternative 3 would impact 19 utilities. Table 1-7 lists the utility owners, type and location for both build alternatives.

Table 1-7: Utilities Owners, Type and Location for Build Alternatives

Location	Utility Owner	Wet (W) / Dry (D)	Utility Type	Utility Conflict Description	Alt 2	Alt 3
Bullis Rd UC	LACSD	W	Sewer	Remained-in-Place	X	X
Bullis Rd UC	SCE	D	Electrical	Remained-in-Place; Pothole to confirm depth	X	X
Bullis Rd UC	Standard Oil	W	Oil	Remained-in-Place; High Priority	X	X
Bullis Rd UC	City of Lynwood	W	Water	Remained-in-Place	X	X
Bullis Rd UC	PT&T	D	Telecom	Remained-in-Place; Pothole to confirm depth	X	X
Bullis Rd UC	SCG	D	Gas	Remained-in-Place; Pothole to confirm depth	X	X
Bullis Rd UC	Standard Oil	W	Oil	Remained-in-Place; High Priority	X	X
Bullis Rd UC	Standard Oil	W	Oil	Remained-in-Place; High Priority	X	X
Bullis Rd UC	Standard Oil	W	Oil	Remained-in-Place; High Priority	X	X
Central Ave UC	Pacific Bell	D	Telecom	Remained-in-Place; Pothole to confirm depth		X
Central Ave UC	SCG	D	Gas	Remained-in-Place; Pothole to confirm depth		X
Central Ave UC	Shell	D	Gas	Remained-in-Place; Pothole to confirm depth		X
Central Ave UC	SCG	D	Gas	Remained-in-Place; Pothole to confirm depth		X
Central Ave UC	SCG	D	Gas	Remained-in-Place; Pothole to confirm depth; High Priority		X
Central Ave UC	LACSD	W	Sewer	Remained-in-Place		X
Central Ave UC	LACDWP	W	Water	Remained-in-Place		X
Doty Ave	Pacific Bell	D	Telecom	Remained-in-Place; Pothole to confirm depth		X
Doty Ave	SCWC	W	Water	Remained-in-Place		X
Downey Ave OC	SCWC	W	Water	Remained-in-Place	X	X
Downey Ave OC	LACSD	W	Sewer	Remained-in-Place	X	X

Downey Ave OC	PT&T	D	Telecom	Remained-in-Place; Pothole to confirm depth	X	X
Downey Ave OC	LACSD	W	Sewer	Remained-in-Place	X	X
Downey Ave OC	PT&T	D	Telecom	Remained-in-Place; Pothole to confirm depth	X	X
Downey Ave OC	SCG	D	Gas	Remained-in-Place; Pothole to confirm depth	X	X
Downey Ave OC	PT&T	D	Telecom	Remained-in-Place; Pothole to confirm depth	X	X
Downey Ave OC	SCWC	W	Water	Remained-in-Place	X	X
Downey Ave OC	SCG	D	Gas	Remained-in-Place; Pothole to confirm depth	X	X
Façade Ave	LACSD	W	Sewer	Remained-in-Place	X	X
Façade Ave	LACSD	W	Sewer	Remained-in-Place	X	X
Grevillea Ave	Pacific Bell	D	Telecom	Remained-in-Place; Pothole to confirm depth	X	
Grevillea Ave	SCG	D	Gas	Remained-in-Place; Pothole to confirm depth	X	
Grevillea Ave	LACSD	W	Sewer	Remained-in-Place	X	
Harris Ave UC	SCE	D	Electrical	Remained-in-Place; Pothole to confirm depth	X	X
Harris Ave UC	Rogers Cable	D	Telecom	Remained-in-Place; Pothole to confirm depth	X	X
Harris Ave UC	City of Lynwood	W	Water	Remained-in-Place	X	X
Harris Ave UC	City of Lynwood	W	Sewer	Remained-in-Place	X	X
Paramount Blvd	Pacific Bell	D	Telecom	Remained-in-Place; Pothole to confirm depth	X	X
Paramount Blvd	SCG	D	Gas	Remained-in-Place; Pothole to confirm depth	X	X
Paramount Blvd	SCE	D	Electrical	Remained-in-Place; Pothole to confirm depth	X	X
Paramount Blvd	LACSD	W	Sewer	Remained-in-Place	X	X
WB I-105 at Truro Ave	SCE	D	Electrical	Remained-in-Place; Pothole to confirm depth	X	
WB I-105 at Truro Ave	LACSD	W	Sewer	Remained-in-Place	X	
WB I-105 at Truro Ave	SCWC	W	Water	Remained-in-Place	X	X

Transportation System Management and Transportation Demand Management Alternatives

Transportation Demand Management (TDM) focuses on strategies that result in more efficient use of transportation resources, such as ridesharing, telecommuting, park-and-ride programs, pedestrian improvements, alternative work schedules, and congestion pricing in an effort to improve overall mobility. This project would provide a continuous managed lane along the I-105 and provide a direct connector to the I-110 ExpressLanes, which will contribute to regional efficiencies toward reducing vehicle trips. The ExpressLanes continues to allow carpoolers and buses to travel toll free, resulting in improved transit performance. Metro will also continue to encourage carpooling and transit use on the ExpressLanes, by providing incentives and rewards through Metro’s Transit Rewards and Carpool Loyalty programs.

Transportation Systems Management (TSM) strategies increase the efficiency of existing facilities by accommodating a greater number of vehicle trips on a facility without increasing the number of general purpose lanes. The proposed project has TSM features that will encourage transit use and ridesharing by allowing HOVs to have ExpressLanes use-priority over single occupancy vehicles (SOV). Increased use by HOVs would increase the efficiency of I-105 by maintaining the current number of general purpose lanes while also allowing more people to travel through the system. Although TSM measures alone could not satisfy the purpose and need of the project, TSM measures have been incorporated into the build alternatives with the inclusion of vehicle detection systems to monitor traffic speed, density, enforcement, incident management, and other subsystems to maintain acceptable traffic flow in the express lanes, which would benefit transit and HOVs.

Access to Navigable Rivers

California Streets and Highways Code Section 84.5 states that during the design hearing process relating to state highway projects that include the construction by the Department of a new bridge across a navigable river, there shall be included full consideration of, and a report on, the feasibility of providing a means of public access to the navigable river for public recreational purposes.

The project will not construct any new bridges across a navigable river.

1.7 Alternatives Considered but Eliminated from Further Discussion

This section includes all alternatives that were considered during the project development process, but were eliminated from further consideration, and the issues supporting the elimination. Eliminating the alternatives from further evaluation included whether or not the alternatives: (1) failed to meet the most basic project objectives, (2) were infeasible (per CEQA Guidelines Section 15126.6(f)(1), or (3) were unable to avoid significant environmental impacts.

Operational Alternative Single ExpressLane 2+ occupancy policy.

This operational alternative would convert the existing HOV lane to an ExpressLane, with standard lanes and shoulder widths in both the East Bound and West Bound direction. The I-105 HOV lane currently operates with an HOV2+ occupancy policy and is classified as degraded. 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.

Reason for Elimination:

This operational alternative was screened based on the policy not addressing HOV degradation and the forecasted HOV vehicle demand. Future projected vehicle demands exceeded the HOV/ExpressLane capacity and keeping the current policy would only worsen degradation. As a result, the HOV2+ occupancy policy was excluded from further analysis for the single ExpressLanes alternative.

Alternative 4: Convert existing High Occupancy Vehicle (HOV) lane to 2 High Occupancy Toll (HOT) lanes, with standard lanes and shoulder widths.

This alternative would widen the I-105 freeway by 12 feet to add two standard ExpressLanes in both the EB and WB direction. A profile view of Alternative 4 is provided in Figure 1-5. The widening of the freeway would require installation of new fiber optics and relevant equipment under the new shoulders, mainline retaining wall reconstruction, relocation of the drainage system, relocation of dewatering and control wells, reconstruction/widening of almost all interchanges and overcrossings, widening under crossings, relocations and reconstruction of sound walls, and right-of-way acquisitions.

Reason for Elimination:

This alternative was eliminated due to various significant environmental impacts. Fifty-four structures would need to be widened or modified and thirty-six structures would need to be reconstructed. In addition, fifty-four on and off ramps will be impacted and require reconfiguration. Approximately, thirty-two residential buildings and 2 large commercial/industrial parcels would need to be entirely acquired. An agreement with Union Pacific Railroad (UPRR) would be needed to relocate tracks between Budlong Avenue and Vermont Avenue. Right-of-way acquisition would be needed at an estimated cost of $50 to $100 million. Figures 1-5 and 1-6 provide examples of the potential impact of Alternative 4. During the scoping period, comments received from the public and agencies indicated support for dropping Alternative 4 from further evaluation due to right-of-way impacts.

Figure 1-5: Alternative 4 Profile View

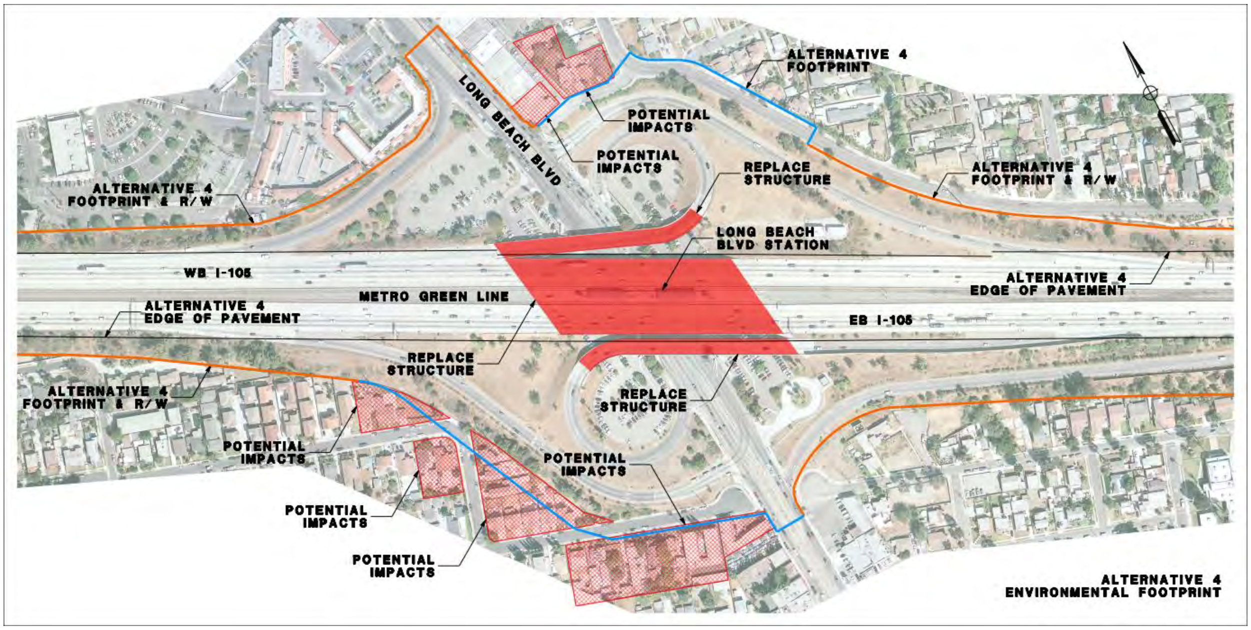
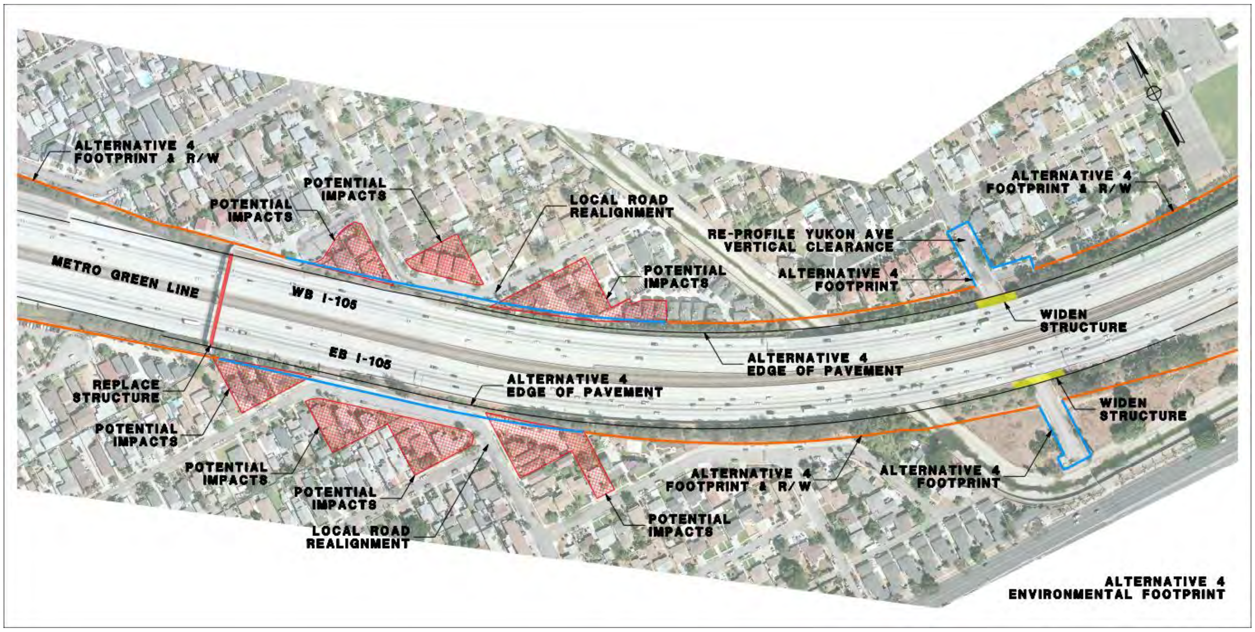


Figure 1-6: Alternative 4 Potential Impacts in the City of Hawthorne



Reversible Lanes Alternative

The project is required to demonstrate that reversible lanes were considered when submitting a capacity-increasing project or a major street or highway lane realignment project by Caltrans or a regional transportation planning agency to the CTC for approval, per Assembly Bill (AB) 2542, signed into law on September 23, 2016 and effective as of January 1, 2017 (Senate Rules Committee, Office of Senate Floor Analysis, Senate Floor Analysis AB 2542, 2016).

The purpose of AB 2542 is “to encourage the use of reversible lanes when they are the best option. Reversible lanes reduce congestion and prevent unnecessary road expansions. Road expansions can exacerbate our infrastructure backlog and have detrimental effects on the environment.” As described by the California Senate Floor Analysis on AB 2542, “Reversible lanes add peak-direction capacity to a two-way road and decrease congestion by utilizing available lane capacity from the other (off-peak) direction. The lanes are particularly beneficial where the cost to increase capacity is especially expensive (e.g., bridges, dense urban areas).”

Reversible flow lanes are most appropriate on facilities that experience large directional traffic imbalances. Reversible facilities are best suited for long-distance trips with limited intermediate access needs along the affected route to minimize traffic disruptions (Freeway Management and Operations Handbook, FHWA, 2011). All freeway reversible lanes must be separated by "Jersey" barriers in a high-speed roadway setting. They are typically constructed in the median of freeway facilities and may be one, two, or more lanes wide.

Potential benefits of the reversible lanes include a reduction in capital cost of construction because reversible lanes would be implemented within the existing freeway median; and a reduction in environmental impacts because the idea would be mostly constructed within the existing freeway right-of-way.

Caltrans existing data indicate that the directional split of the Managed Lanes is between 55 and 60 percent under both the AM and PM peak hour conditions at various locations along the I-105 freeway. Based on the 2047 design year future forecast, the build alternative directional split is between 50 and 59 percent under both the AM and PM peak hour conditions. FHWA’s guidance to warrant reversible lanes is that peak-period traffic volumes should exhibit or be anticipated to exhibit significant directional imbalance (such as a 70/30 percent split). As the I-105 direction split is within a balanced range, it was determined that the reversible lane was not a viable option and removed from consideration.

Permits and Approvals Needed

The following permits, licenses, agreements, and certifications (PLACs) are required for project construction:

Table 1-8: Regulatory Agencies Requiring PLACs

Agency	PLAC	Status
Federal Highway Administration (FHWA)	Air Quality Conformity Determination	Request for determination to be submitted following selection of a preferred alternative. The interagency consultation concurred the project is not of air quality concern on 6/25/19.
California Transportation Commission (CTC)	CTC Application for Toll Facility	The CTC approved tolling for the project on October 9, 2019
State Historic Preservation Office	Concurrence on Finding of Adverse/No Adverse Effect	Determination to be provided after Draft Document Circulation
Regional Water Quality Control Board	Section 401 Permit	Apply during PS&E to coincide with construction schedule
Regional Water Quality Control Board	National Pollutant Discharge Elimination System	Apply during PS&E to coincide with construction schedule
United States Army Corps of Engineers	Section 404/408 Permit	Apply during PS&E to coincide with construction schedule
California Fish and Wildlife	Section 1600 Permit	Apply during PS&E to coincide with construction schedule

Chapter 2 – Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures

This chapter discusses project impacts on human, physical, and biological environments within the study area defined for each environmental resource. Analysis of each environmental factor includes discussion of the regulatory setting, affected environment, environmental consequences, and avoidance/minimization/mitigation measures for the build alternatives and the No-Build alternative. The regulatory setting language explains why we analyze issues the way we do in an environmental document. The affected environment portion will describe the existing social, economic, and environmental setting within the project limits. Environmental consequences will discuss the impacts of each build alternative and the No-Build alternative, which will include permanent, temporary, direct, and indirect impacts. Avoidance, minimization, and/or mitigation measures will discuss the effects of the project after consideration of standard measures and project features.

A separate section is provided to describe potential cumulative impacts, and recommended mitigation measures.

For CEQA, the environmental conditions existing in 2017, when the traffic volumes and speeds were collected, serves as the baseline for impact analysis evaluated in this environmental document. For NEPA, the No-Build alternative serves as the baseline for determining the project's impacts.

Topics Considered but Determined Not to be Relevant

As part of the scoping and environmental analysis carried out for the project, the following environmental issues were considered but no adverse impacts were identified. As a result, there is no further discussion about these issues in this document.

Timberlands. The project is located in an urban area. There are no timberlands within the project limits.

Coastal Zone. The project is not within a coastal zone and is not within the jurisdiction of the California Coastal Commission. The project will have no effect to coastal resources.

Wild and Scenic Rivers. No designated wild and scenic rivers are in the project area.

Paleontology. The proposed project will not result in impacts to paleontological resources. The project area has already been disturbed and paleontology is not anticipated to be an issue on this project.

Wildfire. The proposed project is in an urban area and along an existing transportation corridor. It is not located within or near a very high fire hazard severity zone. Wildfire is not anticipated to be an issue for the proposed project.

Section 2.1 Human Environment

Section 2.1.1 Land Use

This section addresses potential impacts to existing and planned land uses in the project area that could result from implementation of the project alternatives. Land use for each city may be found in the Community Impacts Assessment (CIA) completed in September of 2019 by Caltrans.

2.1.1.1 Existing and Future Land Use

The General Plan of each respective city is maintained by the city itself or by the Los Angeles County Department of Regional Planning. General plans outline permitted land uses and development densities or intensities for each city, and they provide a roadmap for how existing neighborhoods, commercial centers, business districts, transportation uses, and open spaces will be conserved. They also direct how growth will be managed to protect the qualities that distinguish each city.

Several general plans were reviewed in order to identify the land use goals/policies and current development trends that could be impacted by the proposed project. First, each city's General Plan and the Los Angeles County General Plan were reviewed. Then, any regional plans for the area and state plans for California were examined for consistency.

Transportation and development projects are in various phases of planning in the project vicinity and are identified and described in Table 2-1. Most of the projects listed are in planning or have been proposed but have not begun construction, with the exception of Metro’s Crenshaw/LAX Line, which is currently in construction and expected to be completed Summer 2020. Bicycle and pedestrian projects are not listed here.

Table 2-1: Transportation and Development Projects in the Project Vicinity

Project	Jurisdiction	Description	Status
Crenshaw/LAX Transit Project	Metro, City of LA, Inglewood, El Segundo, LA County	The Metro Crenshaw/LAX Line will extend from the existing Metro Exposition Line at Crenshaw and Exposition Boulevards, travelling 8.5 miles to the Metro Green Line	In construction
Green Line Improvements	Metro, Downey, El Segundo, Hawthorne, City of LA, Lynwood, Manhattan Beach, Norwalk, Paramount, South Gate, LA County	Miscellaneous capital and operational improvements to existing Metro Green LRT. Improvements include adding tail tracks and crossovers at the Redondo Beach Station and extending station platforms to allow for 3-car trains at several stations	In Planning
Green Line/Lakewood Station	Metro, Downey	Transit Center and Park-and-Ride Lot for Connection to the Metro Green LRT at Lakewood Station. Expansion with 230 Parking Spaces are proposed to be added	In Planning
I-105 Ramp Signalization	Downey	Improve signals at the EB and WB ramps at I-105 and Clark Ave	In Planning
I-105 Ramp Improvements	Downey, Lynwood, Norwalk, Paramount, South Gate, LA County	Install auxillary lanes to eliminate the bottlenecks between Route 605 and Route 110	In Planning
I-105/Artesia Blvd. Ramp Improvements	Long Beach, Paramount	Street improvement, signal modification, pedestrian signal, auxiliary lane, and etc. on WB ramps and EB off-ramps at I-105 and Artesia Blvd	In Planning

Project	Jurisdiction	Description	Status
I-105/Garfield Ave. Ramp Improvements	Paramount	Improve ramp metering and pedestrian signals at EB and WB off- and on-ramps at I-105 and Garfield Ave	In Planning
I-710 HOV Lanes	Compton, Long Beach, Lynwood, Paramount	I-710 HOV Lanes from SR-91 to I-105, PM 13.00 to 15.70	In Planning
I-105/I-605 HOV Direct Connector	Norwalk	I-105/I-605 HOV direct connector at PM 17.82	In Planning
I-110/I-105 HOV Connectors	City of LA	Add HOV connectors from NB I-110 to EB and WB I-105	In Planning
I-105/I-405 HOV Connectors	Hawthorne	HOV Connectors from I-105 WB to NB and SB I-405	In Planning
I-405 Express Lanes	City of LA, Hawthorne, Lawndale, Redondo Beach, Torrance	Add Express Lanes on I-405 between I-110 and I-105	In Planning
I-405/I-105/SR-90 Metering	Culver City, Hawthorne, Inglewood, City of LA, LA County	Add connector metering and ramp metering between I-105 and SR-90 interchanges on NB and SB I-405. PM R21.18/25.94	In Planning
I-105 Auxiliary Lane	Lawndale	Add auxiliary lane on WB I-105 from Wilton Place to Hawthorne Blvd. PM 3.05/5.48	In Planning
I-105 Auxiliary Lane	El Segundo, Hawthorne, City of LA, LA County	Add auxiliary lane on EB I-105 from Nash Ave. to Van Ness Ave. PM 0.99/5.23	In Planning
I-405 Auxiliary Lane	Hawthorne, LA County	Add northbound auxiliary lane from south of El Segundo Blvd. to I-105	In Planning
I-405 Auxiliary Lane	City of LA, Culver City	Add auxiliary lanes from SR-90 to I-105	In Planning
I-105 Integrated Corridor Management	Caltrans	Integrated Corridor Management on I-105 from terminus to I-605	In Planning
I-605 Corridor Improvement Project	Baldwin Park, El Monte, City of Industry, Pico Rivera, South El Monte, Whittier, Downey, Norwalk, Sante Fe Springs, LA County	Facilitate improvements in freeway operations, safety, mobility, throughput, and travel times through widening of the freeway mainline and improvements to interchanges and confluence areas at Interstate 105 (I-105), Interstate 5 (I-5), State Route 60 (SR-60), and Interstate 10 (I-10).	In Planning
West Santa Ana Branch (WSAB)	LA County, Vernon, City of La, Huntington Park, Bell, Cudahy, South Gate, Downey, Paramount, Bellflower, Cerritos, & Artesia	New light rail transit (LRT) line that will connect southeast LA County to downtown Los Angeles. Projects combined may contribute to an effect but further evaluation will need to be done during subsequent phase of the WSAB project, where project details are refined with supporting environmental reports.	In Planning

Project	Jurisdiction	Description	Status
Telegraph Rd. Improve Critical Movements	Commerce	Project includes consideration of lane width widening from I-105 to Imperial Hwy to better accommodate buses and trucks, access management, parking restrictions, and grade separating railroad tracks where feasible	In Planning
Central Ave. Corridor Improvements	Compton, LA County	Analyze for efficient vehicle movement along the corridor, which provides primary connectivity between SR-91 and I-105 freeways	In Planning
I-105/Bellflower Operational Improvements	Downey	Ramps improvements and pedestrian marking improvements at I-105 and Bellflower. Improve signals and left turn pockets to WB on-ramp and EB off-ramp	In Planning
I-105/Avalon Operational Improvements	Undefined - Gateway	I-105/Avalon: At EB and WB ramps, improve signals, pedestrian crossing, and ramp metering improvements	In Planning
I-105/Alameda Street Signal and Channelization	Lynwood, LA County	I-105/Alameda Street: EB and WB signal and channelization	In Planning
I-105/Long Beach Blvd. Operational Improvements	Lynwood	I-105/Long Beach Blvd: EB and WB ramps widen and install auxiliary lane and improve left turn pockets at Long Beach Blvd	In Planning
I-105/Paramount Pedestrian Enhancement	South Gate	I-105/Paramount: Pedestrian enhancement and signal modifications at the EB and WB on and off-ramps and left turn pockets	In Planning
I-105 Transportation Management System (TMS)	Downey, Lynwood, Norwalk, Paramount, South Gate, LA County	Upgrade TMS on I-105 from I-110 to I-605, PM 7.2/17.9	In Planning
I-105 TMS	Hawthorne, City of LA, LA County	Upgrade TMS from Imperial Hwy to I-110, Post Mile 0.0/7.264	In Planning
I-105 Advanced Traffic Management (ATM) and TMS Improvements	Downey, El Segundo, Hawthorne, City of LA, Lynwood, Norwalk, Paramount, South Gate, LA County	ATM and TMS improvements along I-105 between I-605 and Route 1	In Planning
I-405 and I-105 Corridor Refinements	Hawthorne, Lawndale, City of LA, Redondo Beach, Torrance, LA County	Corridor Refinements on I-405 from I-110 and I-105 and I-105 from I-405 to Crenshaw	In Planning
Imperial Hwy Capacity Enhancement	Downey, Lynwood, South Gate, LA County	Evaluate widening to 3 lanes on Imperial Hwy through Lynwood to tie into the 3 lanes on either side of the city - or	In Planning

Project	Jurisdiction	Description	Status
		consider widening between Fernwood Ave. and Long Beach Blvd	
Aviation Blvd. Capacity Enhancement	City of LA	From Arbor Vitae St. to Imperial Hwy, widen and restripe to accommodate three through lanes in each direction	In Planning
Imperial Hwy Widening	City of LA	Between Sepulveda Blvd. and Pershing Dr., widen to provide three continuous lanes through lanes in each direction	In Planning
Imperial Hwy/Alameda St. Intersection Improvement	Lynwood, LA County	Add second right-turn lane SB at Imperial Hwy and Alameda St. Intersection	In Planning
Imperial Hwy Operational Improvements	LA County	ITS and/or Operational Improvements on Imperial Hwy from Sundale Ave. to Budlong Ave	In Planning
Prairie Ave. Operational Improvements	LA County	ITS/Communications with Motorists Program on Prairie Ave., Imperial Highway to Redondo Beach Boulevard	In Planning
Imperial Hwy Operational Improvements	LA County	ITS/Communications with Motorists on Imperial Hwy from Sundale Avenue to Vermont Ave	In Planning
Imperial Hwy Operational Improvements	Hawthorne, Inglewood, LA County	Traffic Signal Synchronization (TSSP) on Imperial Highway from Sundale Ave. to Budlong Ave	In Planning

2.1.1.2 Consistency with State, Regional, and Local Plans and Programs

This section is based on data from the U.S. Census Bureau and State, Los Angeles County, and Cities & census-designated places of Norwalk, Downey, South Gate, Paramount, Lynwood, Willowbrook, Los Angeles, West Athens, Inglewood, Hawthorne, Lennox, and El Segundo. Demographic data for the study area was reviewed for socioeconomic characteristics, such as race, ethnicity, household income and employment, age, and housing characteristics. County, city, and tract-level data are primarily provided by the 2012-2016 American Community Survey (ACS) and Southern California Association of Governments (SCAG). Information provided by local planning departments, general plans, and data from the Bureau of Labor Statistics and ACS were utilized for socioeconomic analysis.

The collected data was organized into spreadsheets and graphs and evaluated in figures and through GIS analysis to better understand the socioeconomic impacts of the project. Census tracts affected by the project were compared to the demographic characteristics of the populations of Los Angeles County and of the city in which they were located in as reference populations in order to identify potential impacts.

The study area is defined based on census tracts adjacent to or encompassing the project footprint, as they are the communities near the project area that may potentially be affected by the project. They are census tracts 9800.28, 6200.01, 9800.13, 6022, 6016, 6021.03, 6021.04, 6017, 6020.02, 6025.09, 6005.02, 6027, 6028.01, 2412.02, 2413, 2414, 2410.01, 2410.02, 5407, 5406, 5404, 5403, 5405.01, 5402.03, 5417, 5401.02, 5418.01, 5400, 5418.02, 5537,01, 5362, 5536.01, 5536.02, 5535.03, 5517, 5534, 5518, 5519, and 5520.01. This spans the cities & census-designated places of El Segundo, Lennox, Hawthorne, Inglewood, West Athens, Los Angeles, Willowbrook, Lynwood, South Gate, Paramount, Downey, and Norwalk in Los Angeles County.

Table 2-2: City of Norwalk Land Use Designations

Norwalk (source: Norwalk General Plan)		
Land Use Designation	*Acres*	*Percentage of City*
Low Density Residential	3,117	45.50%
Medium Density Residential	12	.18%
High Density Residential	272	3.97%
Residential Subtotal	**3,401**	**49.64%**
Neighborhood Commercial	66	.96%
Professional Office	88	1.28%
General Commercial	242	3.53%
Commercial Subtotal	**396**	**5.78%**
Light Industrial	171	2.5%
Heavy Industrial	141	2.06%
Industrial Subtotal	**312**	**4.55%**
Specific Plan Area/Planned Unit Development	**82**	**1.2%**
Open Space/Public Schools/Public Facilities	**700**	**10.22%**
Institutional	**53**	**.77%**
Undesignated	**1,907**	**27.84%**
TOTAL	**6,581**	**100%**

On the north side of I-105, land use is designated residential and Open Space/Public Schools/Public Facilities. The residential designations consist of single family residential and multi-family High Density Residential (23-30 units per acre). On the south side, land use is also residential and Open Space/Public Schools/Public Facilities, but the residential designations here consist solely of single family residential. See Figure 2-2: City of Norwalk General Plan Land Use Map for a more detailed look at the land use designation in Norwalk.

Figure 2-1: City of Norwalk General Plan Land Use Map

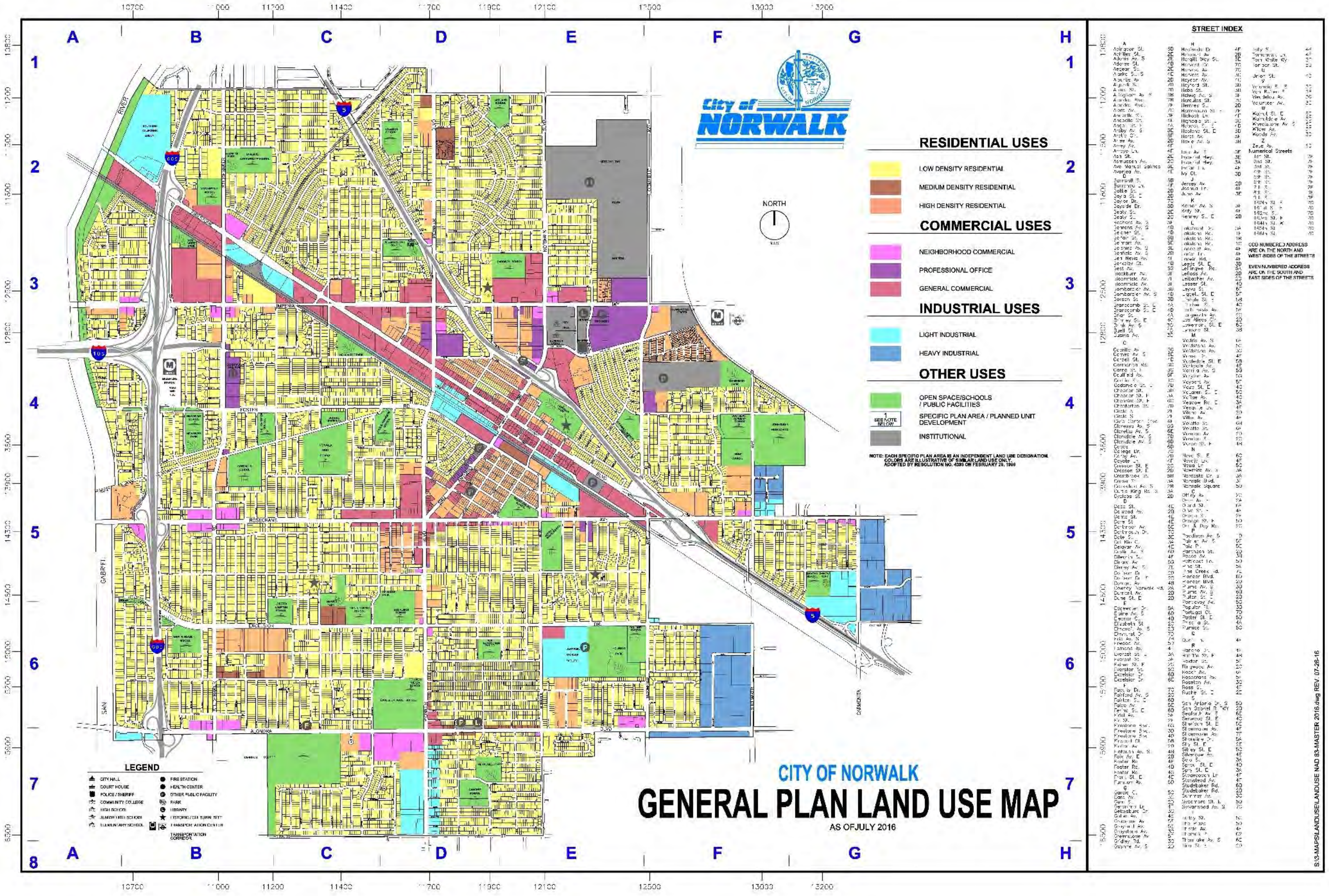


Table 2-3: City of Downey Land Use Designations

Downey (source: Downey General Plan)		
Land Use Designation	*Acres*	*Percentage of City*
Low Density Residential	3,188	51%
Low/Medium Density Residential	187	3%
Medium Density Residential	414	7%
Residential Subtotal	**3789**	**61%**
Neighborhood Commercial	103	2%
Professional Office	163	3%
General Commercial	372	6%
Commercial Subtotal	**638**	**11%**
General Manufacturing	229	4%
Commercial Manufacturing	304	5%
Manufacturing Subtotal	**533**	**9%**
Open Space	**516**	**8%**
Schools (including Mixed Use- School)	**348**	**6%**
Public	**104**	**2%**
Mixed Use (not including Mixed Use- School)	**301**	**5%**
TOTAL	**6,229**	**100%**

Land use in Downey north of I-105 is designated residential, mixed use, open space, and school. The residential component is comprised of Low Density Residential (1-8.9 units per acre), Low/Medium Density Residential (9-17 housing units per acre), and Medium Density Residential (18-24 units per acre). On the south side of I-105, land use designations include commercial, residential, open space, and school. The commercial component is solely neighborhood commercial, which is small scale commercial development oriented only toward the immediate neighborhood. The residential land use in this area consists of Low Density Residential (1-8.9 units per acre), Low/Medium Density Residential (9-17 housing units per acre), and Medium Density Residential (18-24 units per acre).

Figure 2-2: City of Downey General Plan Land Use Map

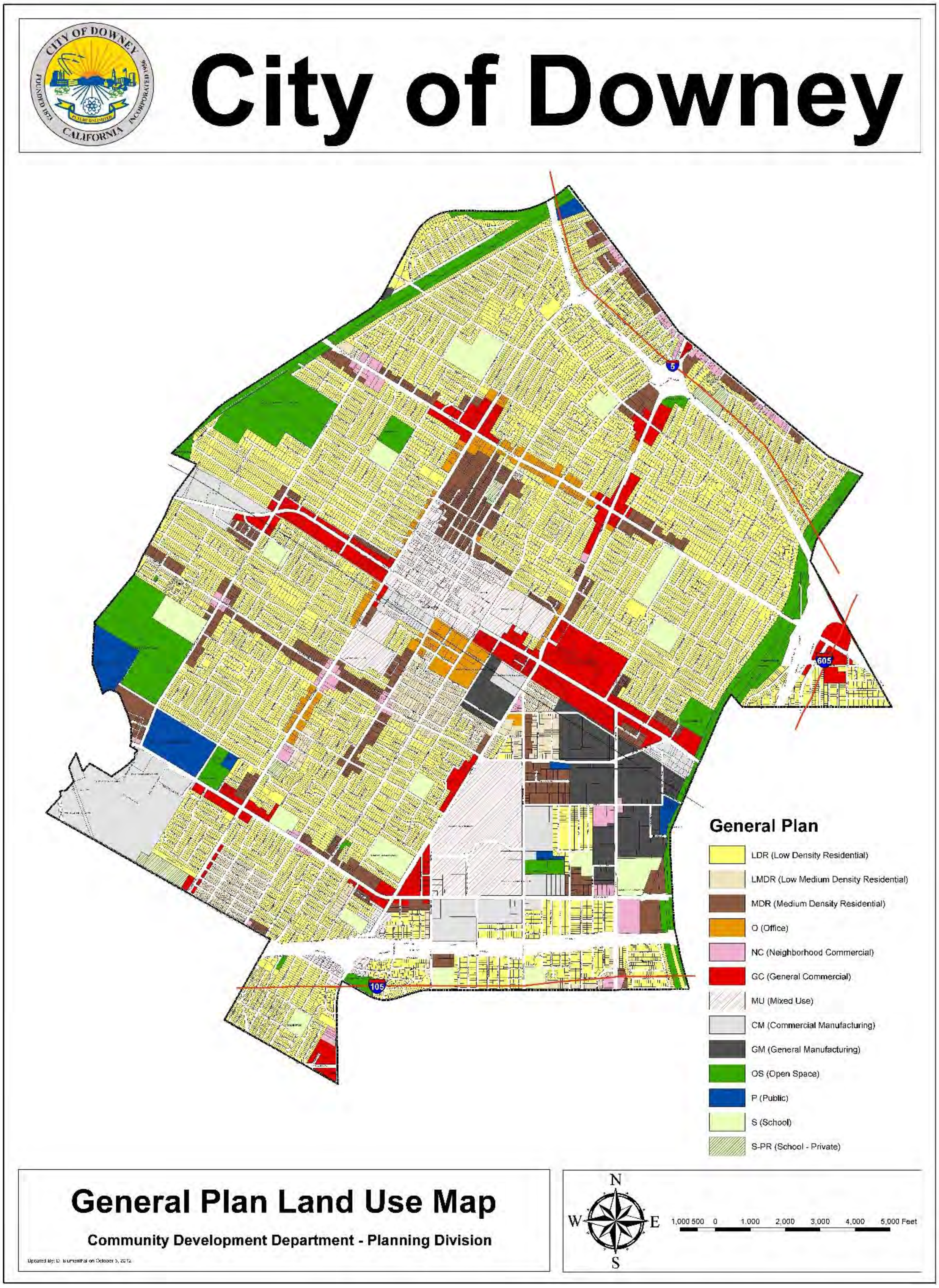
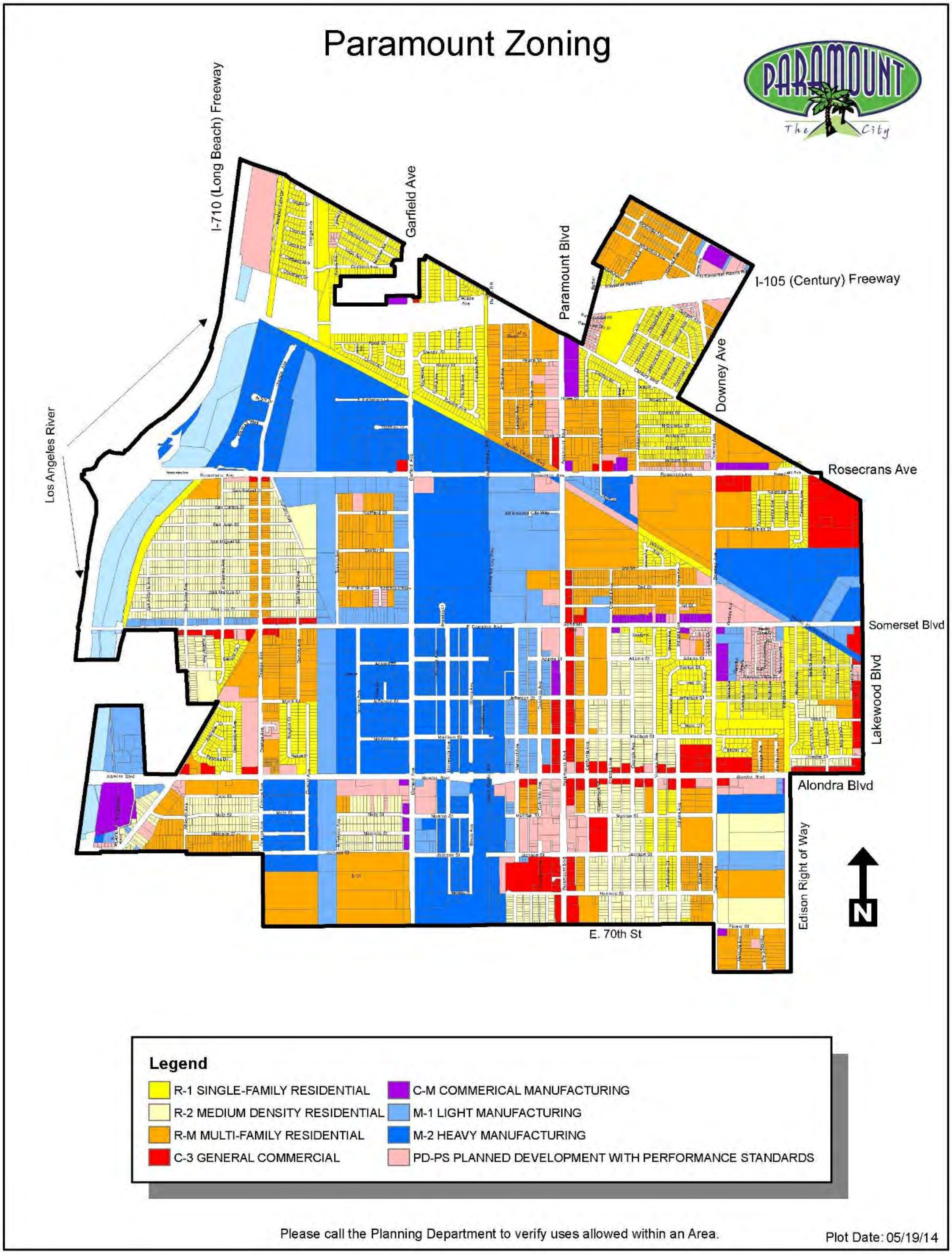


Table 2-4: City of Paramount Land Use Designations

Paramount (source: Paramount General Plan)		
Land Use Designation	*Acres*	*Percentage of City*
Single Family Residential	694.5	24.8%
Multiple Family Residential	797.7	28.5%
Commercial (retail and office)	221.6	7.9%
Industrial (manufacturing)	584.5	20.9%
Business Park (Light industrial and business park)	60	2.1%
Public/Quasi Public	438.6	15.75
TOTAL	**2,796.9**	**100%**

On the north side of I-105, development with performance standards is planned with residential, commercial, and manufacturing land uses. Planned development with performance standards is meant to be development with superior design and quality through creative application of the city's zoning criteria. The Commercial land use is comprised of general commercial and commercial manufacturing. The residential land use consists of Single Family Residential and Multiple Family Residential. Lastly, the Industrial (manufacturing) land use is made up of light manufacturing, which is defined to be devoid of nuisance factors, hazard, or exceptional demands upon public facilities. Designated on the south side of I-105 is planned development with performance standards, residential, and manufacturing land uses. The residential areas include Single Family Residential and Multiple Family Residential. The Industrial (manufacturing) land is made up of light manufacturing (devoid of nuisance factors, hazard or exceptional demands upon public facilities) and heavy manufacturing (involves some noise, bulk handling of products manufactured, treated, processed, or assembled on the premises).

Figure 2-3: City of Paramount Zoning Map



Please call the Planning Department to verify uses allowed within an Area.

Plot Date: 05/19/14

Table 2-5: City of South Gate Land Use Designations

South Gate (source: South Gate General Plan)		
Land Use Designation	*Acres*	*Percentage of City*
Residential	1966	41.0%
Commercial	308	6.4%
Industrial	762	15.9%
Parks	166	3.4%
Schools	109	2.3%
Civic/Institutional	99	2.1%
Vacant	80	1.7%
Public Works, Water Bodies, Easements	342	7.1%
Transportation	968	20.2%
TOTAL	**4800**	**100%**

On the north side of I-105, the City has designated residential and mixed-use land uses, with the residential area consisting only of neighborhood low density (up to 5 units per acre). On the south side of I-105, land is singularly mixed-use. Please see Figure 2-4: City of South Gate Specific Plan for City of South Gate Boundary.

Figure 2-4: City of South Gate Specific Plan

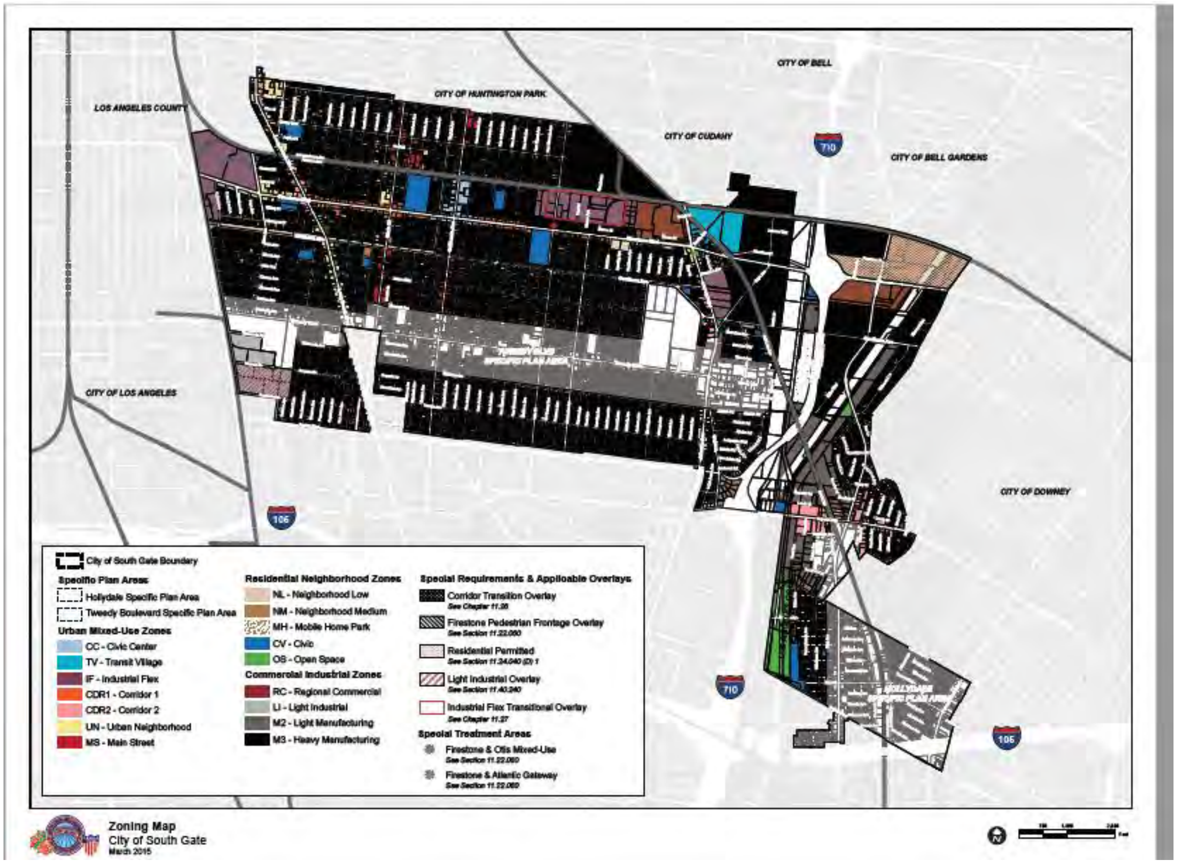


Table 2-6: City of Lynwood Land Use Designations

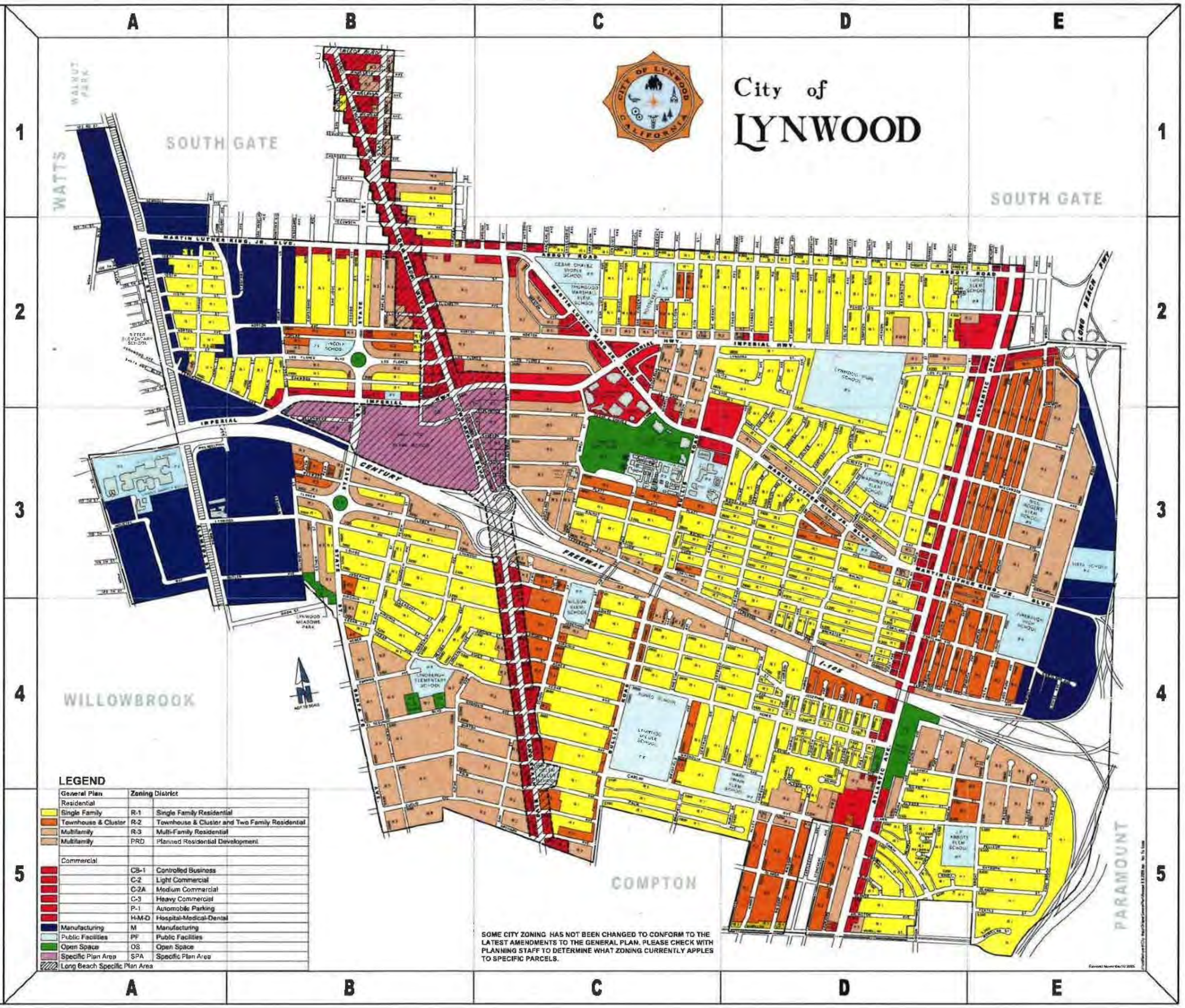
Lynwood (source: Lynwood General Plan)		
Land Use Designation	*Acres*	*Percentage of City*
Single Family Residential	773	24.73%
Multifamily Residential	530	16.95%
Mobile Homes	3	0.09%
Retail Commercial	207	6.62%
Industrial	218	6.97%
Schools	131	4.19%
Government	11	0.35%
Parks	46	1.47%
Institutional	24	0.77%
Streets/Highways	1,037	33.17%
Railroad	18	0.56%
Vacant	128	4.09%
TOTAL	**3,126**	**100.00%**

Industrial, residential, open space, commercial, and specific plan area land uses are designated on the north side of I-105. The residential land use consists of Multi Family Residential (up to 17 units per acre) and townhouse (up to 14 units per acre). The commercial areas consist only of heavy commercial, which are defined as retail centers that serve community-wide needs and neighborhood needs. On the south side of I-105, there are industrial, residential, commercial, and open space land uses. The residential areas are comprised of Single Family Residential (0-7 units per acre), townhouse (up to 14 units per acre), and Multi Family Residential (up to 17 units per acre). The commercial areas consist only of medium commercial, which provides for retail centers that serve community-wide needs, and heavy commercial.

Figure 2-5: City of Lynwood Zoning Map

LYNWOOD STREET INDEX

108th St.	A2
109th St.	A2
110th St.	A2
111th St.	A2
112th St.	A2
Abbott Rd.	C2,D2,E2
Agnes Av.	C4
Agnes St.	C4
Alameda St.	A1, 3
Alamo Ct.	A2
Alberta St.	D3
Alexander Av.	D2
Alma Av.	C2
Alma St.	B2
Alpine Av.	B4
Alvada St.	D4, 5
Annette Av.	D2, 3
Arlington Av.	D5
Arval St.	C2
Atlantic Av.	D5, E3
Banning Av.	B4
Barlow Av.	B2
Beechwood Av	B2, DE3
Bellinger St.	B2, 3
Benwell Dr.	C2
Birch St.	C3
Blount Place	D5
Borson Av.	E2
Bowman Av	D2
Bradfield Av.	C4, 5
Brenton Av.	C2
Brewster Av.	D4
Bryson Av.	D2
Bullis Rd.	C3, 5
Burton Av.	C4
Butler Av	B3
California Av.	C3
Capistrano Av	B1, 2
Cardwell St.	D5
Carlin Av.	BC4, CD5
N. Castlegate Av.	D5
Carson Dr.	C2, 3
Cedar Av.	BC4
Cesar Chavez Lane	C3
Century Ln.	E3
Cherokee Av.	B1
Clark St.	DE5
Colyer Av.	D2, 3
Cookacre St.	D5
Copeland St.	C3
Cornish Av	D2-4
Cortland St.	D3, 4
Cortland Av	D4, E4
Dorothy Av.	D2
Dply. Yamamoto Place	A3
Drury Ln.	B2
Duncan Av	E3, 4, D5
Edgebrook Av.	E5
El Granada Av.	E4
El Segundo Blvd.	B4
Elizabeth Av.	B2
Elizabeth St.	B1, 2
Elm Av.	D2-4
Elmwood Av.	D2, E3
Ernestine Av	C3, 4
Esther St.	B3
Euclid Av.	BC5
Eve Av	D2
Fernwood Av.	A2; BC3
Fertile St.	E5
Fir St.	C3, 4
First Av.	D4
Flower St.	B3
Fourth Av.	D4
Fracar Av.	D2
Franklin St.	B2, 3
Gertrude Dr.	C4; D3
Gibson Av.	D5
Halo Dr.	D5
Harris Av.	D3-5
Hildreth Av.	D2
Hulme Av.	D2, 3
Hunt Av.	D2
Imperial Hwy.	BD2
Industry Way	A3
Ira St.	D2
Jackson Av.	D2, 3
Josephine St.	B3; CD4
Kauffman Av.	D2
Lavinia Av.	DE4
Le Sage St.	CD2
Lewis Rd.	D2
Lewis St.	C3
Lilita St.	CD2
Lindbergh Av.	B4
Linden St.	D3
Long Beach Blvd.	B2; C4
Longvale Av.	B4
Lorrain St.	A2
Los Flores Blvd.	B-E2
Louise Av.	E4
Louise St.	B3;C4
Lugo Av.	CD3
Lugo Park Av.	E4
Lyndora St.	D2
Lynwood Rd.	BC3
Magnolia Av.	CD4
Mallison Av.	C2
Manette Pl.	DE5
Mariposa Ln.	B1.2
M.L.K. Jr. Blvd.	A-C2;E3
McMillan St.	DE5
McNerney Av.	C2
Michigan Av.	B1
Millrace Av.	D5
Minnesota Av.	B1
Monrovia Av.	B3
Mulford Av.	C3
Muriel Dr	D3-5
Nedra St	D2
Nevada Av	B4
Niland St	D4,5
Norton Av	AB2
Oak St	C5
Oakwood Av.	B2
Olanda St	D5
Olive St	C3,4
Orange Av.	D2
Orchard Av	C5
Osgood Av.	B2
Otis St	C2
Palm Av.	C4,5
Peach St	B3,4
Pear St	B3
Pelleur St	DE5
Pendelton Av.	D2
Penn St	B2
Philadelphia Way	A3
Pine St	D2,3
Pinehurst Av	E2
Platt Av	CD3
Pleasant St	B4
Plum St	B3
Pluma St	B2
Pope Av	D4;E3
Poplar Dr	B2
Rayoorn St.	DE5
Redwood Av.	B3
Rosewood Av.	E2
Ruth Av.	C2
Sampson Av	D2,3
San Antonio Av	C2
San Carlos Av	C2
San Gabriel Av	C2
San Jose St	B1,2
San Juan Av	C2
San Luis Av	C2
San Miguel Av	C2
San Vincente Av	C2
Sanborn Av	CD3
Santa Fe Av	A1;B2,4
School St	C4
Second Av	D4
Seminole Av	B1
Sequoia Dr	C3, 4
Shirley Av	D3
Spruce St	C3
Standard Av	D2
Stanford Av	B1,2
State St	B2,3
Stockwell Dr	C2
N. Stoneacre St.	D5
Sue Av	D2,3
Tecumseh Av	B1
Tenaya Av	B1
Third Av	D4
Thorson Av	D3-5
Tweedy Blvd	AC1
Vieta Av	E4
Virginia Av	CD4;D5;E3
Virginia Av	C2
Virginia St	BC4
Waldorf Dr	D5
Walnut Av	D2;CD3
Warren Av	C4
Washington Av	D2
Weber St	B4
Wilson Av	E5
Wisconsin Av	B1
Woodlawn Av	D3
Wright Rd	E2



LEGEND

General Plan		Zoning District	
	Residential		
🟨	Single Family	R-1	Single Family Residential
🟧	Townhouse & Cluster	R-2	Townhouse & Cluster and Two Family Residential
🟫	Multifamily	R-3	Multi-Family Residential
🟫	Multifamily	PRD	Planned Residential Development
	Commercial		
🟥		CB-1	Controlled Business
🟥		C-2	Light Commercial
🟥		C-2A	Medium Commercial
🟥		C-3	Heavy Commercial
🟥		P-1	Automobile Parking
🟥		H-M-D	Hospital-Medical-Dental
🟦	Manufacturing	M	Manufacturing
⬜	Public Facilities	PF	Public Facilities
🟩	Open Space	OS	Open Space
🟪	Specific Plan Area	SPA	Specific Plan Area
▨	Long Beach Specific Plan Area		

SOME CITY ZONING HAS NOT BEEN CHANGED TO CONFORM TO THE LATEST AMENDMENTS TO THE GENERAL PLAN. PLEASE CHECK WITH PLANNING STAFF TO DETERMINE WHAT ZONING CURRENTLY APPLES TO SPECIFIC PARCELS.

Table 2-7: Willowbrook Community Land Use Designations

Willowbrook (source: Willowbrook TOD Specific Plan)		
Land Use Designation	*Acres*	*Percentage of City*
Residential (9 dwelling units per acre)	57.44	18.41%
Residential (18 dwelling units per acre)	25.23	8.09%
Residential (30 dwelling units per acre)	24.12	7.73%
General Commercial	3.61	1.16%
Mixed Use	18.86	6.04%
Light Industrial	1.07	0.34%
Public and Semi-Public	82.40	26.41%
Parks and Recreation	8.49	2.72%
Total Net Acres	**221.22**	**70.9%**
Right-of-Way	90.76	29.09%
TOTAL	**311.98**	**100.00%**

Willowbrook is an unincorporated area of Los Angeles County. According to the Willowbrook Transit Oriented District (TOD) Specific Plan, the north side of I-105 is a mix of commercial, residential, and light manufacturing land uses. The commercial zones are comprised of restricted business (commercial services, retail sales of new goods, and genuine antiques), neighborhood business (rentals, outdoor advertising, and tailor shops), and general commercial (secondhand stores). The Residential areas include two family residences and limited multiple residences (apartments). On the south side, land use is a mix of residential, commercial, mixed use, and light manufacturing. The commercial zone is comprised solely of neighborhood business (commercial services, retail sales of new goods, and genuine antiques), and the Residential areas include two family residences and limited multiple residences (apartments). The Mixed Use zone consists of a combination of Residential, General Commercial, and Light Industrial uses.

Figure 2-6: Willowbrook Community Zoning Map

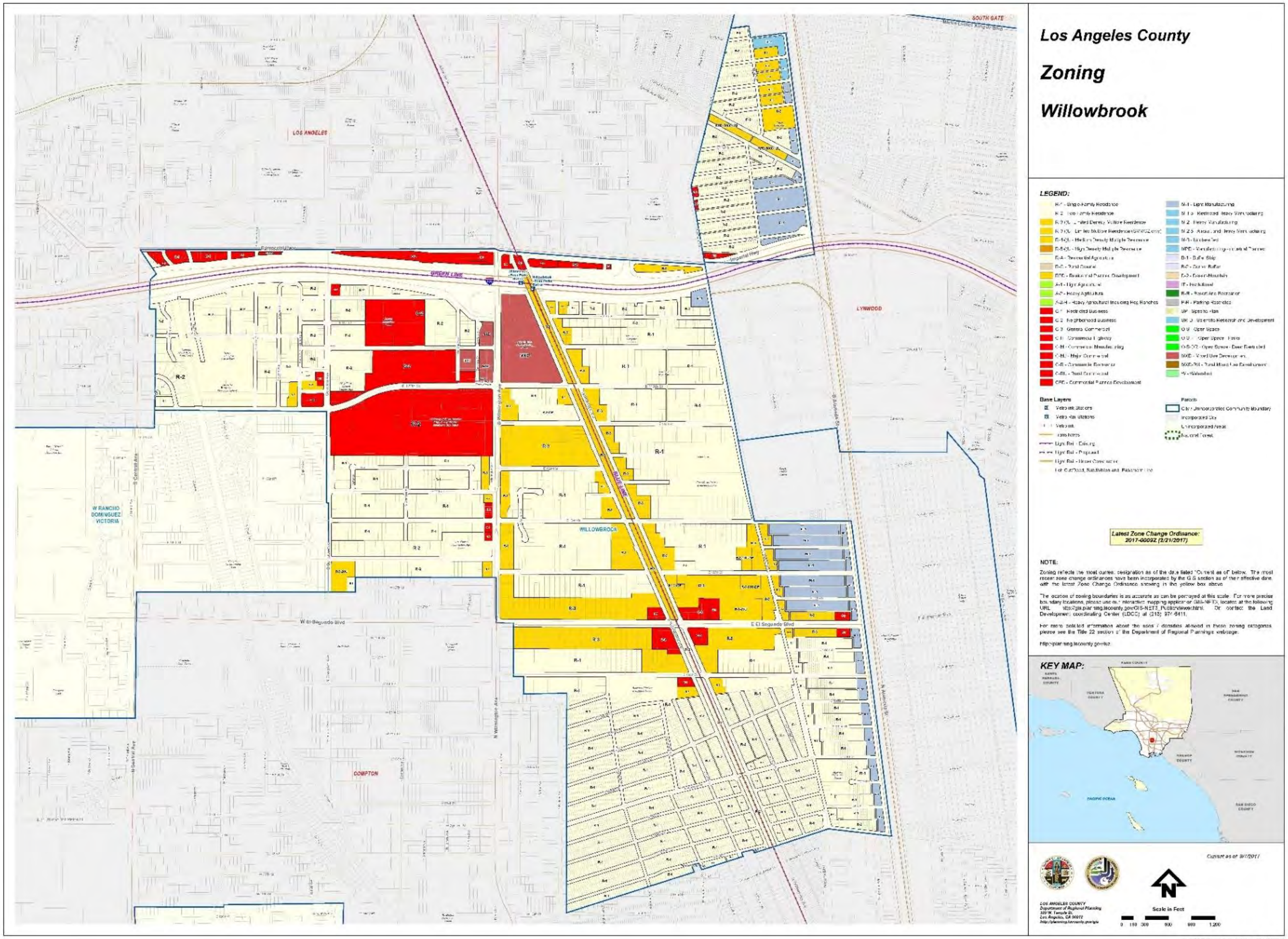


Table 2-8: City of Los Angeles Land Use Designations

South Los Angeles (source: South Los Angeles Community Plan)		
Land Use Designation	*Acres*	*Percentage of City*
Single Family Residential (Low)	2,146	24.9%
Multiple Family Residential (Low Medium I, Low Medium II, Medium, & High Medium)	1.967	22.8%
Commercial (Neighborhood, General, Highway/Limited, & Community)	863	10%
Industrial (Commercial, Limited, & Light)	275	3.2%
Open Space/Public Facilities	754	8.7%
Streets	2,261	30.4%
TOTAL	**8,626**	**100.0%**

In the area that I-105 traverses the city, the City of Los Angeles has developed a Community Plan for both South Los Angeles and Southeast Los Angeles. On the north side of I-105, there are residential and commercial land uses. The residential zone is comprised of Single Family Low (4-12 units per acre) density and Multiple Family Medium (30-55 units per acre) density designations. The commercial areas consist solely of General Commercial, which are districts with a diversity of retail sales and serves, office, and auto-oriented uses. On the south side of I-105 are open space and residential land uses. The residential zone is comprised of Single Family Low (4-12 units per acre) density and Multiple Family Medium (30-55 units per acre) density designations.

Figure 2-7: City of Los Angeles General Plan Land Use Map (South Los Angeles Community Plan)

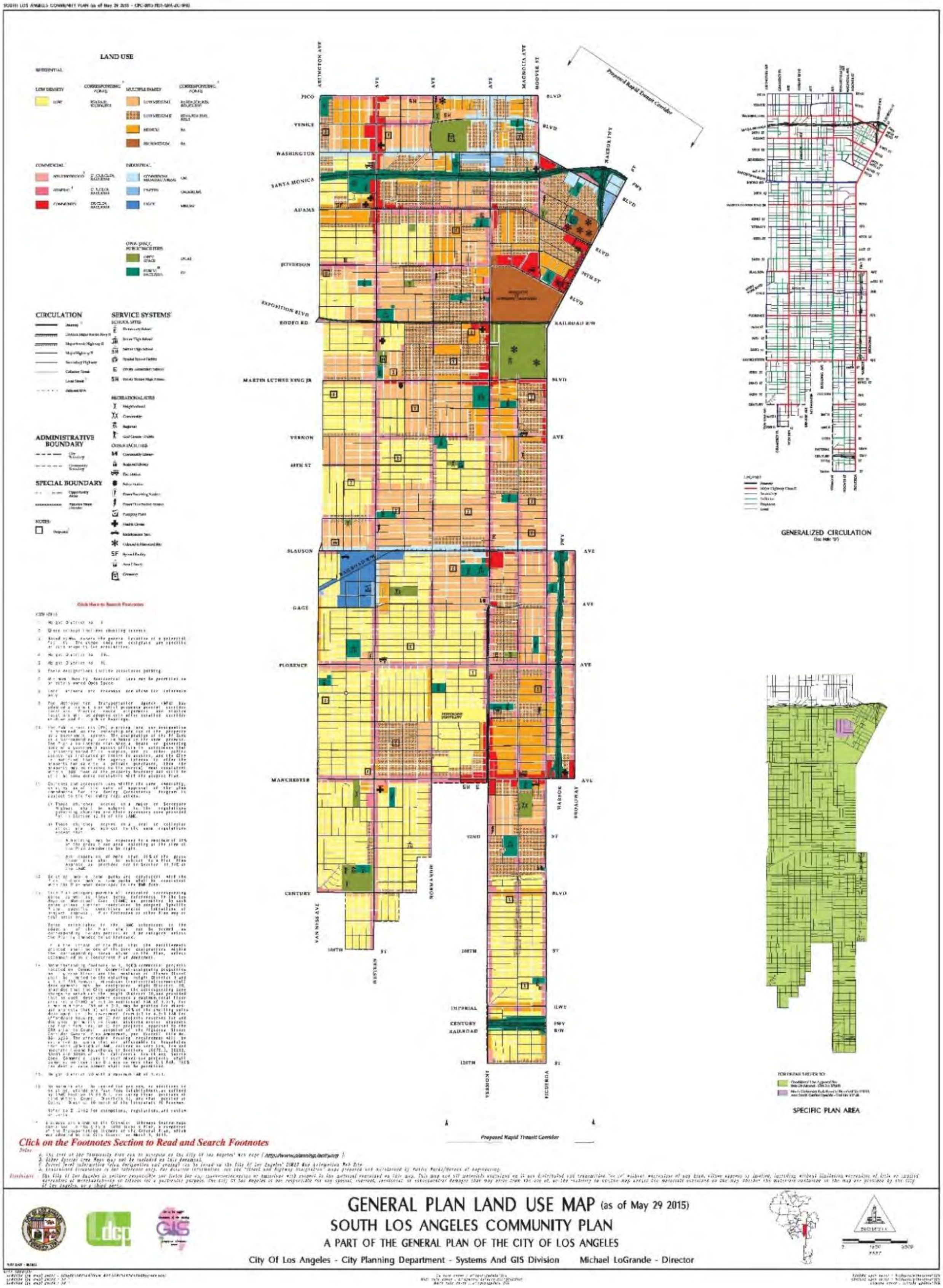


Table 2-9: Southeast Los Angeles Land Use Designations

Southeast Los Angeles (source: Southeast Los Angeles Community Plan)		
Land Use Designation	*Acres*	*Percentage of City*
Single Family Residential (Low)	864	8.7%
Multiple Family Residential (Low Medium I, Low Medium II, Medium, & High Medium)	3,403	34.4%
Commercial (Neighborhood, General, Highway/Limited, & Community)	635	6.4%
Industrial (Commercial, Limited, & Light)	1,462	14.8%
Open Space/Public Facilities	935	9.5%
Streets	2,588	26.2%
TOTAL	**9,887**	**100.00%**

In the Southeast Los Angeles Community Plan, the north side of I-105 is designated residential, commercial, industrial, and public facility land use. The residential areas are comprised of Single Family Low (4-12 units per acre) density, Multiple Family Low Medium I (10-17 units per acre) density, and Multiple Family Medium (30-55 units per acre) density. The commercial areas include Neighborhood Commercial, which are pedestrian-oriented districts that provide local identity and commercial activity, and General Commercial, which are the same as in South Los Angeles above. The Industrial areas consist of commercial manufacturing. Designated on the south side of I-105 are residential and commercial land uses. The residential includes Single Family Low (4-12 units per acre) density, Multiple Family Low Medium I (10-17 units per acre) density, Multiple Family Low Medium II (18-29 units per acre) density, and Multiple Family Medium (30-55 units per acre) density. The commercial areas here are also Neighborhood Commercial use.

Figure 2-8: Southeast Los Angeles General Plan Land Use Map

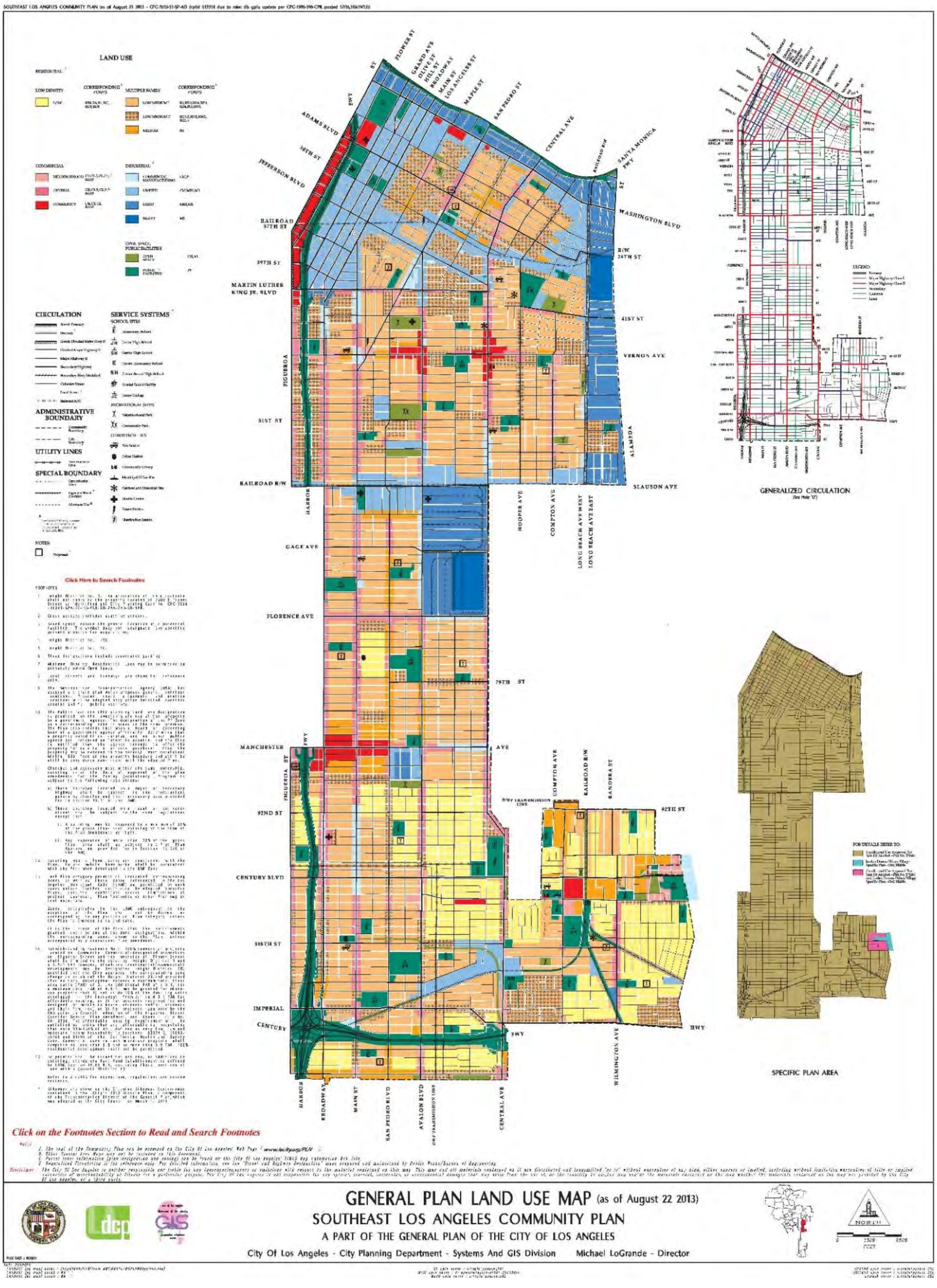


Table 2-10: West Athens Land Use Designations

West Athens (source: West Athens-Westmont TOD Specific Plan)		
Land Use Designation	*Acres*	*Percentage of City*
Single Family Residence	167	35.3%
Two Family Residence	80	16.8%
Limited Density Multiple Residence	18	3.9%
Residential Planned Development	7	1.4%
Neighborhood Commercial	11	2.3%
Mixed Use Development 1	27	5.6%
Mixed Use Development 2	23	4.9%
Civic Center	22	4.7%
Public/Institutional	83	17.5%
Buffer Strip	35	7.4%
TOTAL	**473**	**100.0%**

West Athens is an unincorporated area of Los Angeles County. According to the Westmont TOD Specific Plan, the north side of I-105 is a mix of residential, public, and mixed-use designations. The residential areas include Single Family Residence, Two Family Residence, Limited Density Multiple Residence (apartments), and Residential Planned Development (single family residences). The public space zone consists of a Public/Institutional area in addition to a Civic Center. The mixed-use zone includes a combination of residential, commercial, and limited light industrial land uses. The south side of I-105 is designated a mix of commercial, residential, and mixed-use. The commercial zone is comprised solely of Neighborhood Commercial (rentals, outdoor advertising, and tailor shops), and the residential areas consist of Single Family Residence, Two Family Residence, Limited Density Multiple Residence (apartments), and Residential Planned Development (single family residences), similar to the north side. Also similar to the north side, the mixed-use zone includes a combination of residential, commercial, and limited light industrial land uses.

Figure 2-9: West Athens-Westmont R-2 Zoning Map

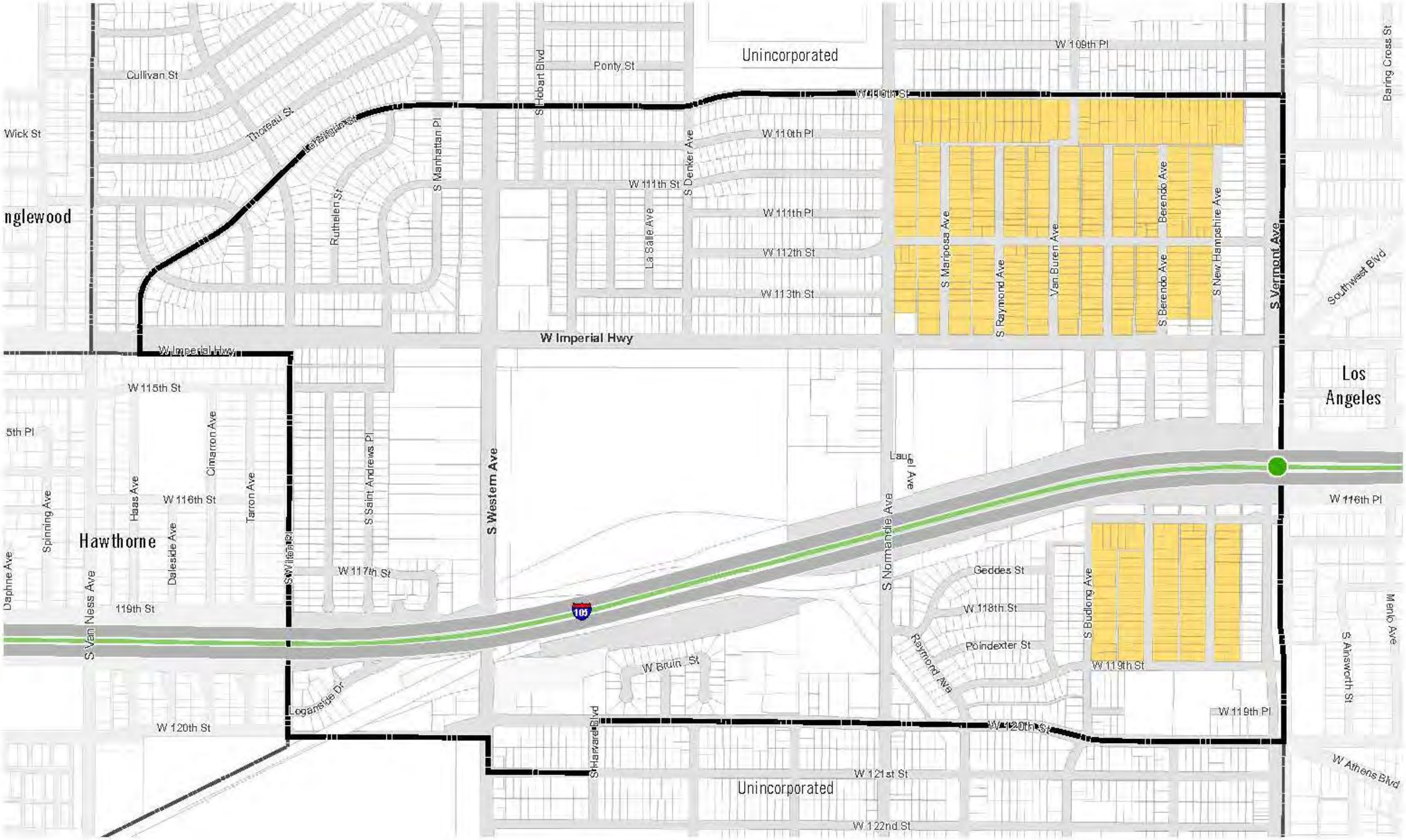


Table 2-11: City of Inglewood Land Use Designations

Inglewood (source: Inglewood General Plan)		
Land Use Designation	*Acres*	*Percentage of City*
Single Family Residential	1,613	28.2%
Two Family Residential	327	5.7%
Multiple Family Residential	707	12.4%
Commercial	351	6.1%
Industrial	235	4.1%
Public/Semi-Public	1,152	20.1%
Rights-of-Way	1,337	23.4%
TOTAL	**5,722**	**100.0%**

Land uses on the north side of I-105 are designated Commercial and residential land uses. The Commercial areas consist mostly of airport commercial, facilities that provide additional commercial uses that are appropriate for and/or dependent upon close proximity to the Los Angeles International Airport. The residential areas are Single Family Residential (0-6 units per acre). Very little of the City of Inglewood extends to the south of I-105, but land use there is also Low Density (0-6 units per acre) Residential.

Figure 2-10: City of Inglewood General Plan Land Use Map

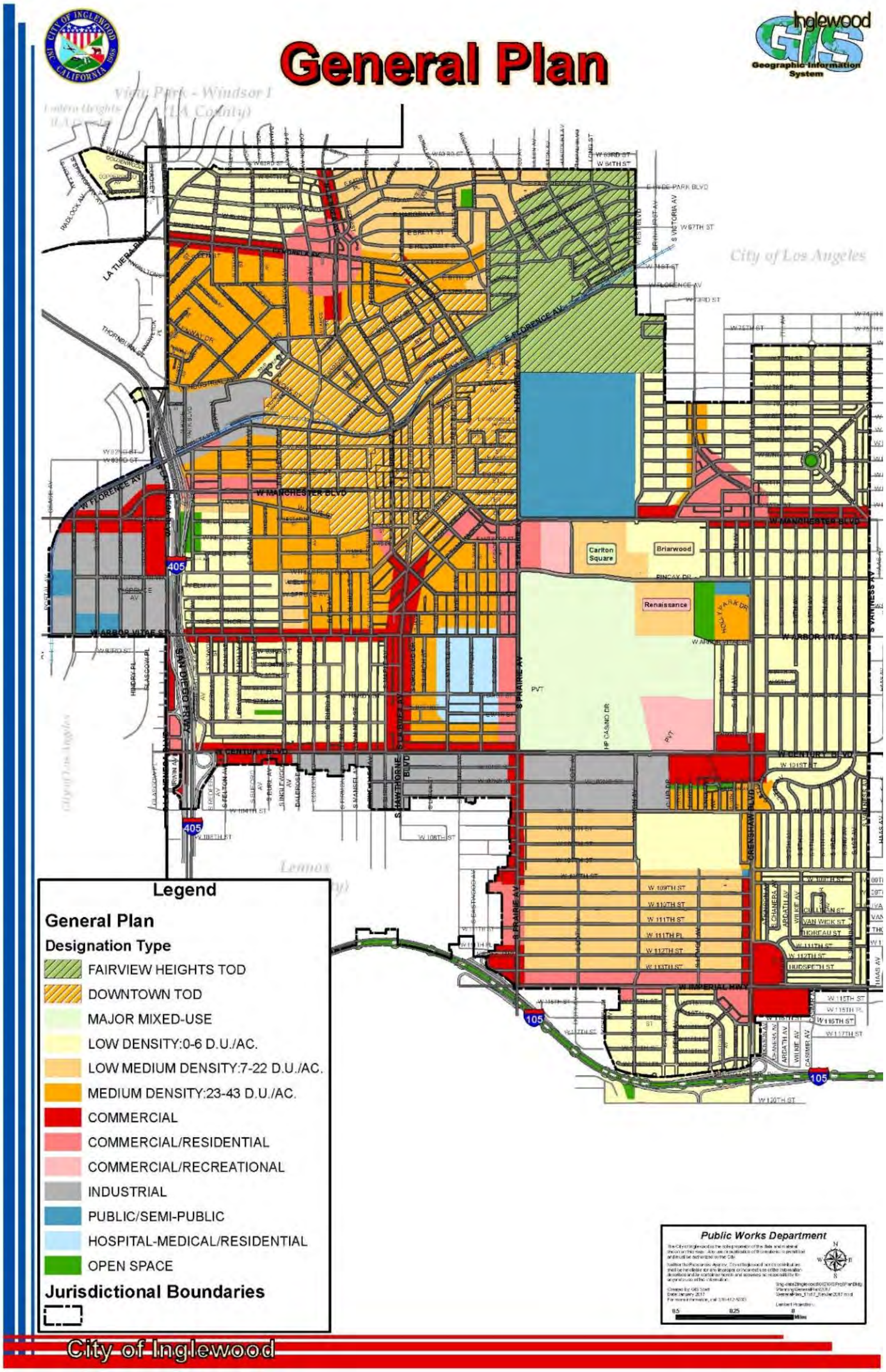


Table 2-12: City of Hawthorne Land Use Designations

Hawthorne (source: Hawthorne General Plan)		
Land Use Designation	*Acres*	*Percentage of City*
Low Density Residential	589	18.3%
Medium Density Residential	111	3.5%
High Density Residential	536	16.7%
Commercial (Local, General, and Regional)	426	13.3%
Industrial (Light & General)	330	10.3%
Open Space	62	1.9%
Public Facilities	203	6.3%
Specific Plans	1,035	32.2%
TOTAL	**3,212**	**100.0%**

The north side of I-105 is designated residential, Commercial, Industrial, and Public Facilities land uses. The residential areas are comprised of single family Low Density Residential (4-12 units per acre), multiple family Low-Medium Density I (10-17 units per acre), and multiple family Medium Density Residential (30-55 units per acre). The commercial areas include areas called Neighborhood Commercial, which are pedestrian-oriented districts that provide a local identity and commercial activity, and areas called General Commercial, which are districts with a diversity of retail sales and services, office, and auto-oriented uses. The industrial areas consist of commercial manufacturing uses.

On the south side of I-105, residential and commercial land uses are designated. The residential uses include single family Low Density, multiple family Low-Medium Density, and multiple family Medium Density designations. Commercial areas consist of Neighborhood Commercial.

Figure 2-11: City of Hawthorne Zoning Map

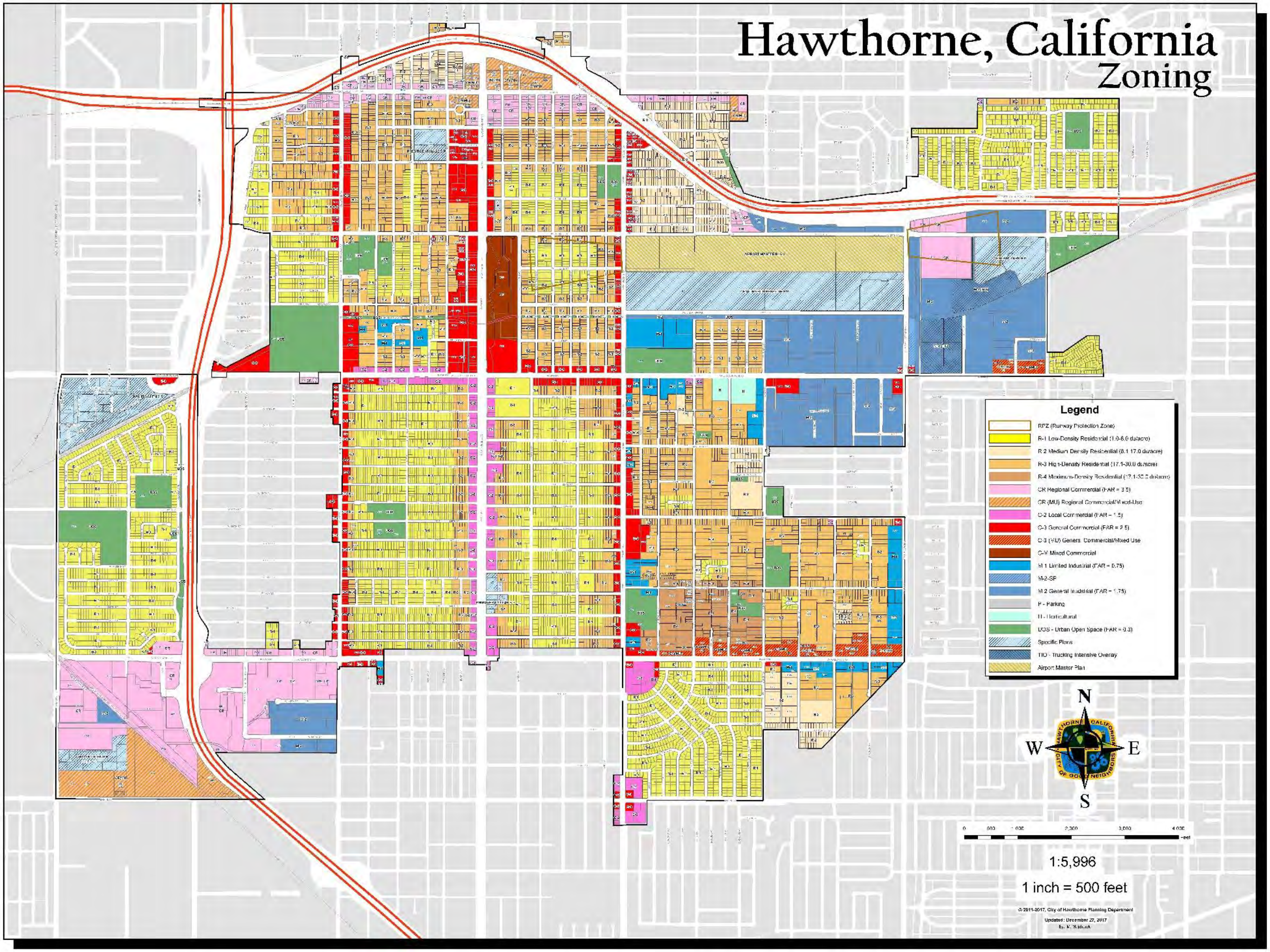


Table 2-13: Lennox Land Use Designations

Lennox (source: Lennox Community Parks and Recreation Plan)		
Land Use Designation	*Acres*	*Percentage of City*
Low Density Residential	385.23	54.64%
High Density Residential (unlimited, limited, & two-family residence)	145.22	20.60%
Commercial/Institutional	145.04	20.57%
Industrial (heavy, light, & restricted heavy manufacturing)	21.47	3.05%
Open Space	8.09	1.15%
TOTAL	**705.04**	**100.0%**

Lennox is an unincorporated area of Los Angeles County. According to the county's Vision Lennox Plan, the north side of I-105 is designated a mix of residential and commercial land uses. The commercial zones are comprised only of neighborhood businesses (Zone C-1 uses (commercial), rentals, outdoor advertising, and tailor shops). The residential areas are single family residences only.

Figure 2-12: Lennox Land Use and Zoning Maps


Land Uses

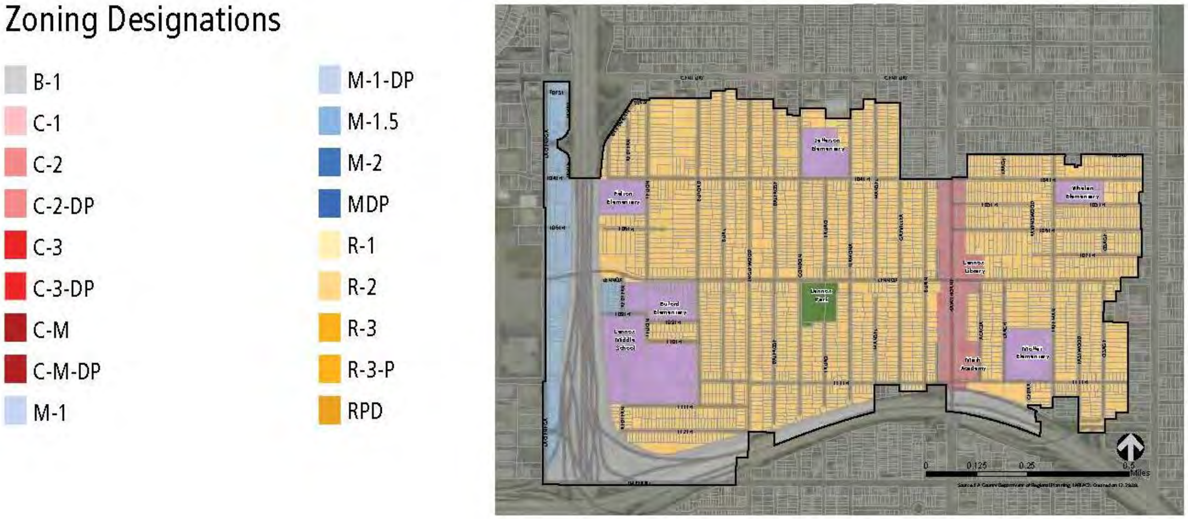
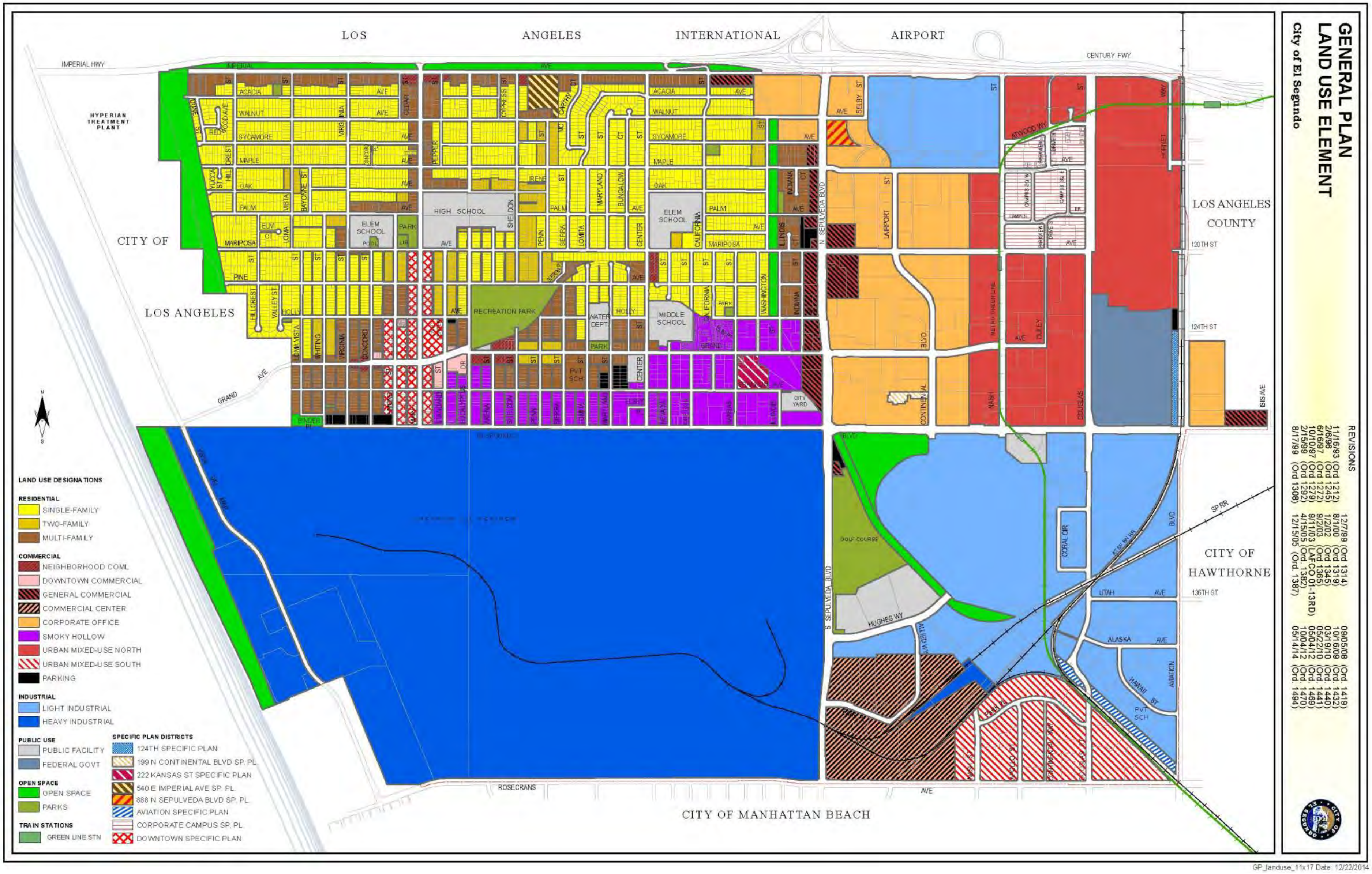

Zoning Designations

Table 2-14: City of El Segundo Land Use Designations

El Segundo (source: El Segundo General Plan)		
Land Use Designation	*Acres*	*Percentage of City*
Low Density Residential	NA	NA
High Density Residential (unlimited, limited, & two-family residence)	NA	NA
Commercial/Institutional	NA	NA
Industrial (heavy, light, & restricted heavy manufacturing)	NA	NA
Open Space	NA	NA
TOTAL	**NA**	**NA**

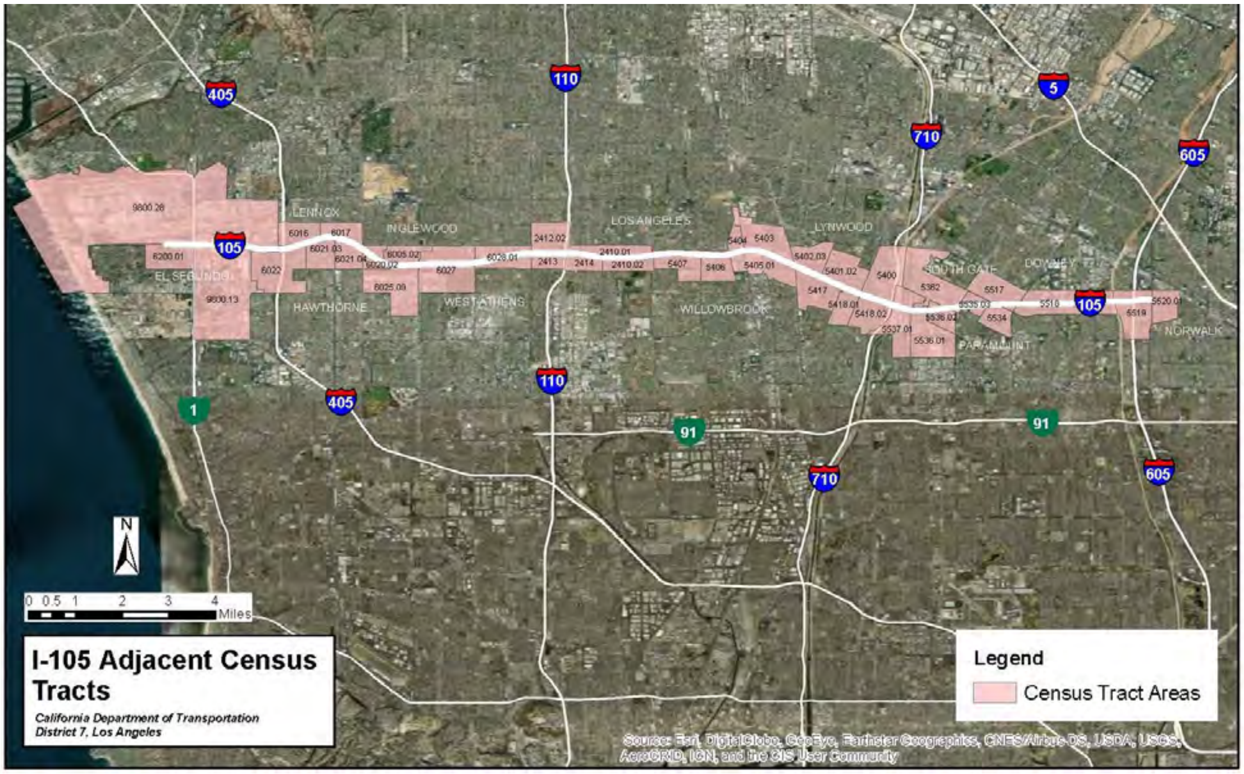
El Segundo lies to the south of I-105. In the area near the interstate, it has Commercial/Institutional and Industrial land uses designated. The commercial areas consist of corporate offices and urban mixed-use, and the Industrial area is Heavy Industrial.

Figure 2-13: City of El Segundo Land Use Element Map



The study area is located within a highly developed urban portion of the greater Los Angeles area. It includes transportation facility, industrial site, commercial property, residential development, and public facility land uses. The proposed project alternatives would be constructed predominantly within the existing transportation facilities and no changes to existing or planned uses are anticipated. Where right-of-way acquisitions would occur for Alternative 3, only slivers of non-transportation parcels would be required and use of the parcels would be otherwise unaffected. No relocations are anticipated for either build alternative.

Figure 2-14: Adjacent Census Tracts



2.1.1.3 Environmental Consequences

This section assesses and discusses the consistency of the alternatives with the applicable state, regional, and local land use, transportation, and habitat conservation plans and programs adopted for the area. This project does not change any of the current land uses in the project area. As the potential change is limited to additional lanes within the existing freeway ROW, the proposed project would not open new areas to development or lead to changes in land use or density. The exception to this statement are the portions of construction that require Temporary Construction Easements (TCE) or partial acquisition for Alternative 3. TCEs will be strictly temporary and cause no permanent effect. The parcels affected by TCEs are described below in table 2-15.

Table 2-15: Alternative 3 Right-of-Way Impacts

ROW Impact				Parcel		
Sheet	No.	Type	Area of ROW Impact (sq. ft.)	APN	Total Parcel Area (sq. ft.)	Type
ROW-1	1.1	TCE	9,712	4048-004-901	35,787	Government
	1.2	TCE	7,427	4048-004-900	82,914	Government
ROW-2	2.1	TCE	568	6084-031-042	7,368	Commercial
ROW-3	3.1	TCE	105	6067-022-041	3,117	Residential
	3.2	TCE	194	6067-022-039	3,109	Residential
	3.3	TCE	206	6067-022-040	3,005	Residential
	3.4	TCE	213	6067-022-038	2,900	Residential
	3.5	TCE	221	6067-022-037	2,801	Residential
	3.6	TCE	227	6067-022-036	2,691	Residential
	3.7	TCE	234	6067-022-035	2,582	Residential
	3.8	TCE	504	6067-022-048	4,700	Residential
	3.8	Partial Acquisition	44	6067-022-048	4,700	Residential
	3.9	TCE	4,788	6067-022-046	24,392	Industrial
	3.9	Partial Acquisition.	5,837	6067-022-046	24,392	Industrial
	3.10	Aerial Easement	1,553	6169-032-917	26,158	ACTA
ROW-4	4.1	TCE	4,755	6169-001-900	62,463	Commercial
	4.1	Partial Acquisition	1,242	6169-001-900	62,463	Commercial
	4.2	TCE	10,728	6169-002-005	42,170	Industrial
	4.2	Partial Acquisition	3,899	6169-002-005	42,170	Industrial

The project is consistent with all state, regional, and local planning goals and policies. It does not conflict with any city's goals for their region, in fact only improving on the current condition of the existing freeway and thereby improving circulation. Many local plans contain policies to discourage I-105 freeway traffic from spilling out onto local streets, including those of El Segundo, Hawthorne, Norwalk, and Downey. Plans like those of Los Angeles City, Lynwood South Gate, and South Los Angeles seek to improve traffic flow and highway infrastructure on I-105, while the Westchester-Playa Del Rey Transportation Element specifically calls for increasing traffic capacity on existing freeways. Although Alternative 2 is not designed to increase freeway capacity, both build alternatives would improve traffic operations, thereby decreasing travel time and congestion on both the mainline freeway and local streets.

The proposed project is expected to help achieve these goals and policies and contribute to better circulation on and off the mainline freeway.

2.1.1.4 Avoidance, Minimization, and/or Mitigation Measures

Project Alternative 2 would not require any right-of-way so no avoidance, minimization, and/or mitigation measures are proposed. Alternative 3 would have no permanent changes to any parcel's overall land use, however parcels for TCEs are required. The impacts of construction on land use in the form of TCEs will be strictly temporary.

Even though it is not anticipated, if any relocation become necessary, the provisions of the Uniform Act and the 1987 Amendments as implemented by the Uniform Relocation Assistance and Real Property Acquisition Regulations for Federal and Federally Assisted Programs adopted by the United States Department of Transportation (March 2, 1989) would be followed. An independent appraisal of the affected property will be obtained, and an offer for the full appraisal would be made.

RW1 - Parcels that require TCEs for alternative 3 will be restored to their original use after project completion, after which TCEs are no longer necessary.

2.1.2 Parks and Recreational Facilities

2.1.2.1 Regulatory Setting

The Park Preservation Act (California Public Resources Code [PRC] Sections 5400-5409) prohibits local and state agencies from acquiring any property which is in use as a public park at the time of acquisition unless the acquiring agency pays sufficient compensation or land, or both, to enable the operator of the park to replace the park land and any park facilities on that land.

2.1.2.2 Affected Environment

Several parks and recreational facilities are located within a 0.5-mile radius of the project area projected by the Park Preservation Act. Tables 2-16 below list those parks and recreational facilities with their location, size, and distance from I-105. Community centers are also included.

Table 2-16: Parks and Recreational Facilities within Proximity of the Project Area

City/Area	Park/Recreation Facility Name	Address	Size (Acres)	Distance from I-105 Freeway
Norwalk	New River Park	13432 Halcourt Ave, Norwalk, CA 90650	4.83	~0.5 miles
	Robert White Park	12120 Hoxie Ave, Norwalk, CA 90650	4.78	~0.5 miles
	Vista Verde Park	11459 Ratliffe St, Norwalk, CA 90650	6.53	~0.5 miles
	San Gabriel River Mid Trail	NA	N/A	Crosses under I-105
Downey	Golden Park	8840 Golden St, Downey, CA 90242	7.4	~0.4 miles

	Independence Park	12334 Bellflower Blvd, Downey, CA 90242	12.5	~0.3 miles
Paramount	All-American Park	13330 Orizaba Ave, Paramount, CA 90723	6.78	~0.1 miles
	Paramount Park	14400 Paramount Blvd, Paramount, CA 90723	8.04	~0.5 miles
South Gate	Hollydale Regional Park	5400 Monroe Ave, South Gate, CA 90280	48.04	~0.5 miles
	Hollydale Community Center	12221 Industrial Ave, South Gate, CA 90280	N/A	~0.2 miles
Lynwood	Yvonne Burke-John D. Ham Park	11832 Atlantic Ave, Lynwood, CA 90262	8.91	< 0.1 miles
	Ricardo Lara Linear Park	3850 Fernwood Ave, Lynwood, CA 90262	12.89	< 0.1 miles
	Lynwood Park	11301 Bullis Rd, Lynwood, CA 90262	32.68	~0.2 miles
Lynwood	Rose Park	Flower Street and State Street	1.57	~0.1 miles
	Carnation Park	Los Flores Blvd. and State Street	1.5	~0.3 miles
	Lucy Avalos Community Center	5121 Lavinia Ave, Lynwood, CA 90262	N/A	~0.1 miles
	Lynwood Senior Citizen Center	11329 Ernestine Ave, Lynwood, CA 90262	N/A	~0.4 miles
	Lynwood Youth Center	11409 Birch St, Lynwood, CA 90262	N/A	~0.2 miles
	Lynwood Community Center	11301 Bullis Rd, Lynwood, CA 90262	N/A	~0.4 miles
Willowbrook	George Washington Carver Park	1400 E 118th St, Los Angeles, CA 90059	6.13	~0.3 miles
	Mona Park	2291 E 121st St, Compton, CA 90222	8.06	~0.4 miles
	Faith and Hope Park	2247 E 119th St, Los Angeles, CA 90059	.45	~0.3 miles

	Earvin Magic Johnson Park	905 E El Segundo Blvd, Los Angeles, CA 90059	98.72	~0.5 miles
	Watts-Willowbrook Boys and Girls Club	1339 E 120th St, Los Angeles, CA 90059	N/A	~0.4 miles
	Athens Park	12603 S Broadway, Los Angeles, CA 90061	18.72	~0.5 miles
Los Angeles	Serenity Park	11300 Monitor Ave, Los Angeles, CA 90059	1.13	~0.3 miles
	111th Place Neighborhood Park	207 E 111th Pl Los Angeles, CA 90061	.09	~0.5 miles
	William Nickerson Recreation Center	11251 Compton Ave, Los Angeles, CA	4.33	~0.3 miles
	Imperial Courts Recreation Center	2250 E. 114th St, Los Angeles, CA 90059	2.43	~0.3 miles
	109th Street Recreation Center	1464 E 109th St, Los Angeles, CA 90059	3.18	~0.5 miles
West Athens	Chester Washington Golf Course	1818 Charlie Sifford Dr, Los Angeles, CA 90047	N/A	~0.1 miles
Inglewood	Center Park	3704 W 111th St, Inglewood, CA 90303	1.94	~0.5 miles
Hawthorne	Holly Park	2150 W 120th St, Hawthorne, CA 90250	10.94	~0.1 miles
	118th Street Mini Park	3834 W 118th St Hawthorne, CA 90250	.15	<0.1 miles
	Moneta Gardens Community Center	11802 York Ave, Hawthorne, CA 90250	N/A	~0.2 miles
El Segundo	Sycamore Park	1414 E Sycamore Ave El Segundo, CA 90245	.77	~0.2 miles

	Independence Park	Washington St & Sycamore Avenues, El Segundo, CA 90245	.55	~0.2 miles
	Constitution Park	E Maple Ave & Washington St, El Segundo, CA 90245	1.02	~0.3 miles
	Washington Park	E Maple Ave, El Segundo, CA 90245	2.74	~.05 miles
	Campus El Segundo Athletic Fields	2201 E Mariposa Ave, El Segundo, CA 90245	5.44	~.04 miles
	El Segundo Dog Park	E Imperial Ave, El Segundo, CA 90245	N/A	~.02 miles

2.1.2.3 Environmental Consequences

This project will affect facilities that are protected by the Park Preservation Act (California Public Resources Code [PRC] Sections 5400-5409). The Park Preservation Act prohibits local and state agencies from acquiring any property which is in use as a public park at the time of acquisition unless the acquiring agency pays sufficient compensation or land, or both, to enable the operator of the park to replace the park land and any park facilities on that land.

There are parks and recreational facilities within the project vicinity that are protected by Section 4(f) of the Department of Transportation Act of 1966. This project will result in a “use” of those facilities as defined by Section 4(f). Please see Appendix A, Section 4(f), for additional details.

Ricardo Lara Linear Park is a publicly owned park located at 3850 Fernwood Avenue, Lynwood, California, and is subject to the protection under the requirements of Section 4(f). The park features a one-mile long walking trail which spans 5 separate blocks. Block 1 has two dog parks: one for small dogs and one for big dogs. Block two has 3 exercise stations. Block three has two children’s playground and open space. Block four has a community garden with raised garden beds, benches, and a space for outdoor classes. Block five has open space and bioswales to filter stormwater runoff.

A TCE of approximately 903 square feet would be required during construction of Alternative 3 along Fir Street. The TCE would be needed for construction activities and will likely result in the removal of some of the existing vegetation. Caltrans policy and practice are to return all areas disturbed temporarily during construction, including TCEs, to a condition as good as or better than prior to the temporary disturbance of those areas. Therefore, the construction activities in the TCE would not result in any permanent adverse physical impacts in that area and would not interfere with the protected activities, features, or attributes of that portion of the park on a permanent basis; however, there may be some interference with the protected features, or attributes on a temporary basis during construction. Park access and the parking lot will always remain available to the public, except for the ADA curb ramp along Fir Street as it is required for the TCE.

2.1.2.4 Avoidance, Minimization, and/or Mitigation Measures

Project alternative 2 would not require any right-of-way at parks and recreational centers so no avoidance, minimization, and/or mitigation measures are proposed. Alternative 3 would have less than a significant impact to parks and recreation centers with inclusion of the following measure.

PR1 - Alternative 3 would require a TCE at Ricardo Lara Linear Park. At the completion of construction activities that use the TCEs at Ricardo Lara Linear Park, Caltrans will require the construction contractor to return the area occupied by that TCE to a condition as good as or better than prior to its use for the TCE. The required improvements for the rehabilitation of that area will be determined in consultation among Caltrans, the City of Lynwood, and the construction contractor.

2.1.3 Growth

2.1.3.1 Regulatory Setting

The Council on Environmental Quality (CEQ) regulations, which established the steps necessary to comply with the National Environmental Policy Act (NEPA) of 1969, require evaluation of the potential environmental effects of all proposed federal activities and programs. This provision includes a requirement to examine indirect effects, which may occur in areas beyond the immediate influence of a proposed action and at some time in the future. The CEQ regulations (40 Code of Federal Regulations [CFR] 1508.8) refer to these consequences as indirect impacts. Indirect impacts may include changes in land use, economic vitality, and population density, which are all elements of growth.

The California Environmental Quality Act (CEQA) also requires the analysis of a project’s potential to induce growth. The CEQA Guidelines (Section 15126.2[d]) require that environmental documents “…discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment...”

2.1.3.2 Methodology

The relationship between land use, development, transportation projects, and growth is complex, and they will all influence each other in different ways and to different degrees. Any one of these factors or combination of them may affect population and economic growth, desirability of certain locations, costs and availability of developable land, physical and regulatory constraints, transportation availability, and costs of utility services. Transportation agencies play a role in land use changes by providing infrastructure that may increase access to new locations. Conversely, new development somewhere may generate travel to and from that location, creating a need for new transportation facilities.

In 2006, Caltrans, FHWA, and the U.S. EPA developed a guidance document entitled *Guidance for Preparers of Growth-Related, Indirect Impact Analyses*. The guidance was prepared to address California's specific challenges relating to growth-related impacts, and it focuses on the influence that transportation projects may have on the location, rate, type, or amount of growth. The growth-related impacts of the proposed project alternatives were assessed using this guidance. It provides a two-phase approach, the first phase of which is called "first-cut screening". If the first phase results in a determination that further analysis is required, then a more detailed growth-related analysis is conducted. The growth analysis was conducted in the CIA and may be read in Chapter 3, Growth. The analysis and findings will be summarized here. First-cut screening is conducted to help identify the likely growth potential effect and whether further analysis is necessary. The following section will lay out the information needed to establish the baseline for growth, such as growth trends in the area.

2.1.3.3 Affected Environment

The region of I-105 studied in the CIA includes the cities and unincorporated areas that I-105 traverses: Norwalk, Downey, South Gate, Paramount, Lynwood, Los Angeles, Inglewood, Hawthorne, and El Segundo. SCAG performed an analysis on population, household, and employment growth projections in the cities and published the data in its 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). Its findings are summarized below in the following tables for Population Growth Projections, Household Growth Projections, and Employment Growth Projections.

No data was available from SCAG for Willowbrook, West Athens, and Lennox individually as they are unincorporated. However, as they generally follow the same geographic patterns, land use designations, and similar demographic and employment patterns (refer to the Community Character and Cohesion and Environmental Justice sections of this document for comparisons), the analysis conducted was based on the assumption that their growth projections would follow similar trends to their surrounding cities along the freeway.

Table 2-17: Population Growth Projections

City	2012	2020		2035		2040	
	Population	Population	% Change	Population	% Change	Population	% Change
Norwalk	105,900	106,100	0.19%	106,200	0.09%	106,300	0.38%
Downey	112,500	114,400	1.69%	119,000	5.78%	121,700	8.18%
South Gate	94,700	99,300	4.86%	107,300	13.31%	111,800	18.06%
Paramount	54,500	54,900	0.73%	56,900	4.40%	58,000	6.42%
Lynwood	70,300	71,800	2.13%	74,300	5.69%	76,100	8.25%
Willowbrook	N/A						
Los Angeles	3,845,500	4,017,000	4.46%	4,442,500	15.52%	4,609,400	19.86%
West Athens	N/A						
Hawthorne	85,300	85,600	0.35%	86,500	1.41%	87,000	1.99%
Inglewood	110,900	120,800	8.93%	126,500	14.07%	129,000	16.32%
Lennox	N/A						

El Segundo	16,700	16,800	0.60%	17,000	1.80%	17,300	3.59%

Table 2-18: Household Growth Projections

City	2012	2020		2035		2040	
	Household	Household	% Change	Household	% Change	Household	% Change
Norwalk	27,100	27,100	0.00%	27,200	0.37%	27,200	0.37%
Downey	33,900	35,000	3.24%	36,400	7.37%	37,300	10.03%
South Gate	23,200	25,200	8.62%	27,200	17.24%	28,300	21.98%
Paramount	13,900	14,100	1.44%	14,600	5.04%	14,800	6.47%
Lynwood	14,700	15,200	3.40%	15,800	7.48%	16,200	10.20%
Willowbrook	N/A						
Los Angeles	1,325,500	1,441,400	8.74%	1,618,900	22.14%	1,690,300	27.52%
West Athens	N/A						
Hawthorne	28,600	29,000	1.40%	29,700	3.85%	30,000	4.90%
Inglewood	36,000	40,400	12.22%	42,400	17.78%	43,300	20.28%
Lennox	N/A						
El Segundo	7,100	7,200	1.41%	7,200	1.41%	7,400	4.23%

Table 2-19: Employment Growth Projections

City	2012	2020		2035		2040	
	Employment	Employment	% Change	Employment	% Change	Employment	% Change
Norwalk	24,100	25,600	6.22%	26,700	4.30%	27,300	13.28%
Downey	47,500	50,100	5.47%	51,900	9.26%	53,000	11.58%
South Gate	20,400	22,100	8.33%	23,200	13.73%	24,000	17.65%
Paramount	19,600	21,000	7.14%	21,800	11.22%	22,300	13.78%
Lynwood	9,200	9,900	7.61%	10,500	14.13%	10,900	18.48%
Willowbrook	N/A						
Los Angeles	1,696,400	1,899,500	11.97%	2,104,100	24.03%	2,169,100	27.86%
West Athens	N/A						
Hawthorne	27,200	29,600	8.82%	31,100	14.34%	32,100	18.01%
Inglewood	31,100	34,800	11.90%	36,400	17.04%	37,400	20.26%
Lennox	N/A						
El Segundo	38,400	42,100	9.64%	44,100	14.84%	45,400	18.23%

2.1.3.4 Environmental Consequences

The objectives of a first-cut screening are to screen for growth-related impacts early and consider the potential of the project to contribute to those impacts. This must be done by contextualizing the geographic area in which the impacts may occur, and then considering whether the potential impacts would affect any areas of the concern. The results are then documented.

The guidance emphasizes that early communication, coordination, and involvement among federal, state, and local agencies will help to avoid conflict and delay. These efforts will allow for the early consideration of avoidance and minimization opportunities, if needed, to reduce growth-related effects to resources of concern.

To achieve these objectives, a variety of interrelated factors are weighed, including: population, household growth data, employment growth data, geographic location, city planning goals, local development goals, and future projects planned in the area. The timeframe for a growth-related impact analysis is 20 years, as the timeframe associated with most RTPs is 20 years. SCAG's RTP/SCS also has a 20-year outlook. With this combined data, the following four questions are asked.

How, if at all, does the project potentially change accessibility?

None of the proposed project alternatives would add or remove accessibility to any location. In all alternatives, accessibility to, from, and along the freeway will remain unchanged. The addition of an ExpressLane or lanes will only affect freeway operation.

How, if at all, do the project type, project location, and growth-pressure potentially influence growth?

According to traffic studies performed for this project (Available at the Caltrans District 7 Office), I-105 often operates at maximum capacity during peak travel hours. The introduction of ExpressLanes to the freeway is not expected to draw new travel to I-105 for prospective commuters; rather, it is intended to decrease travel time for commuters already using I-105.

Furthermore, the addition of ExpressLanes is not expected to induce new construction, as most adjacent areas are built out and no development would be contingent on the existence of ExpressLanes. Therefore, the project type and location will not potentially influence growth. The growth pressure in the area is not expected to be affected by implementation of an ExpressLane network or freeway operations in general.

Is project-related growth "reasonably foreseeable"? If there is project-related growth, how, if at all, will that impact resources of concern?

"Reasonably foreseeable" events as defined by the CEQ are those that are likely to occur or are probable, rather than those that are merely possible. Effects that are possible but not probable are excluded from NEPA analysis. Based on the previous two answers, growth related to the proposed project is not reasonably foreseeable. Accessibility or ease of accessibility on and off the freeway are unchanged, and the project is not expected to induce or reduce travel to the area.

If there is project-related growth, how, if at all, will that affect resources of concern?

For the proposed project, no project-related growth is reasonably foreseeable. Resources of concern will not be affected by growth as a result of this project and it is anticipated that this project will have no impacts to growth in the surrounding environment.

2.1.3.5 Avoidance, Minimization, and/or Mitigation Measures

The first-cut screening for the proposed projects concluded that growth-related impacts are not reasonably foreseeable as per CEQ definitions for the addition of ExpressLanes to I-105. Therefore, no avoidance, minimization, and/or mitigation measures are necessary.

2.1.4 Community Character and Cohesion

2.1.4.1 Regulatory Setting

The National Environmental Policy Act (NEPA) of 1969, as amended, established that the federal government use all practicable means to ensure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings (42 United States Code [USC] 4331[b][2]). The Federal Highway Administration (FHWA) in its implementation of NEPA (23 USC 109[h]) directs that final decisions on projects are to be made in the best overall public interest. This requires taking into account adverse environmental impacts, such as destruction or disruption of human-made resources, community cohesion, and the availability of public facilities and services.

Under the California Environmental Quality Act (CEQA), an economic or social change by itself is not to be considered a significant effect on the environment. However, if a social or economic change is related to a physical change, then social or economic change may be considered in determining whether the physical change is significant. Since this project would result in physical change to the environment, it is appropriate to consider changes to community character and cohesion in assessing the significance of the project’s effects.

2.1.4.2 Affected Environment

The proposed project spans a total length of 17.6 miles, crossing 12 cities and unincorporated areas of Los Angeles County. Each of these cities is comprised of its own neighborhoods and has its own unique characteristics, but there are some similarities that stretch across the tracts adjacent to the highway. The full demographic characteristics data and summary for each city may be found in the CIA completed in December of 2019, including data for population, age, income, household size, and race. These characteristic totals may exceed 100% due to multiple responses to some questions being allowed. The CIA was prepared as a comprehensive study of community impacts, including community character and cohesion. Employment in the cities trend toward similar categories with some exceptions, and household sizes and average residency tend to be quite high compared to the Los Angeles County average. Almost all cities have high minority populations, and several city demographics demonstrate high ethnic homogeneity.

By first building a community profile of social and economic characteristics where the project would be built, or the “affected environment”, the potential effects of the proposed project may then be predicted and analyzed. For this project, the community profiles for each city were built based primarily on each city’s general plan and census data from the 2012-2017 American Community Survey conducted by the U.S. Census Bureau, and also supplemented by regional data gathered by SCAG, aerial maps from Google Maps, and self-reported statistics on www.nextdoor.com. Site visits were also conducted.

Norwalk

The City of Norwalk is enclosed by 116th St. to the south, the San Gabriel River to the west, Florence Ave. to the north, and Carmelita Road to the east. The city is comprised of 32 different neighborhoods, according to Nextdoor. Data gathered in 2017 indicates that 62.98% (17,155 households are owner-occupied) of residents own homes while 37.02% (10,083 households are renter-occupied) rent (SCAG). Within a half-mile radius of I-105, three schools (DD Johnston Elementary School, New River Elementary School, and Corvallis Middle School), one hospital (Coast Plaza Hospital), and three parks (New River Park, Robert White Park, and Vista Verde Park exist. Coast Plaza Hospital and Costco are nearby job centers. Tables 2-20 and 2-21 below summarize the city's demographic characteristics and racial composition as compared to Los Angeles County's totals.

Table 2-20: Norwalk Demographic Characteristics

Demographic Characteristic	City Total	Los Angeles County Total
Total Population	106,404	10,105,722
Median Age	34.9	36
Residents 65 years and older	12,127 (11.40%)	1,264,984 (12.5%)
Median Income	63,669	$61,015
Total Households	27,238	3,506,903
Average Household Size	3.81	3.025
Individuals Below Poverty Level	13.9%	17.00%

Table 2-21: Norwalk Racial Composition

Race	City Total	City Percentage	Los Angeles County Total	Los Angeles County Total
Latino or Hispanic	74,886	70.38%	4,893,579	48.42%
White	54,384	51.11%	5,539,772	54.82%
Black or African American	4,796	4.51%	938,238	9.28%
Asian	15,287	14.37%	1,621,548	16.05%
American Indian and Alaska Native	1,448	1.36%	157,517	1.56%
Native Hawaiian and Other Pacific Islander	385	0.36%	54,214	0.54%
Two or More Races	3,059	2.87%	219,180	2.17%

Downey

The City of Downey is enclosed between the San Gabriel river to the east, Foster Rd. to the south, Rio Hondo to the northwest, and Telegraph Rd. to the northeast. The city is comprised of 31 separate neighborhoods/communities according to Nextdoor. As per data gathered in 2017, approximately 50.82% (16,616 owner-occupied households) of residents own homes, while 49.18% (16,080 renter-occupied households) rent. Within a half-mile radius of I-105, there are six schools (Lewis Elementary School, Carpenter Elementary School, EW Ward Elementary, Columbus High School, A L Gauldin Elementary School, and Sussman Middle School), two emergency services (Kaiser Permanente Downey Medical Center and Downey Fire Department Station #2), and three parks (Golden Park, Downey Cemetery, and Independence Park). Kaiser Permanente Downey Medical Center is the city's largest employer, and several other important job centers are located within the half mile, including the Downey Promenade Mall, the Los Angeles County Office of Education, and the Los Angeles County Probation Department. Tables 2-22 and 2-23 below summarize the city's demographic characteristics and racial composition as compared to Los Angeles County's totals.

Table 2-22: Downey Demographic Characteristics

Demographic Characteristic	City Total	Los Angeles County Total
Total Population	113,358	10,105,722
Median Age	34.6	36
Residents 65 years and older	12,611 (11.12%)	1,264,984 (12.5%)
Median Income	$68,162	$61,015
Total Households	32,696	3,506,903
Average Household Size	3.445	3.025
Individuals Below Poverty Level	10.7%	17.00%

Table 2-23: Downey Racial Composition

Race	City Total	City Percentage	Los Angeles County Total	Los Angeles County Total
Latino or Hispanic	83,937	74.05%	4,893,579	48.42%
White	73,852	65.15%	5,539,772	54.82%
Black or African American	4,883	4.31%	938,238	9.28%
Asian	9,513	8.39%	1,621,548	16.05%
American Indian and Alaska Native	753	0.66%	157,517	1.56%
Native Hawaiian and Other Pacific Islander	641	0.57%	54,214	0.54%
Two or More Races	3,166	2.79%	219,180	2.17%

South Gate

South Gate is enclosed by I-105 to the south, Alameda St. to the west, Santa Ana St. to the north, and Paramount Blvd. to the east. The 105 runs through the very southeastern tip of South Gate. The city is comprised of 15 separate neighborhoods according to Nextdoor. 43.52% (10,254 owner-occupied households) of South Gate residents owned a home while 56.47%

(13,303 renter-occupied households) rented in 2017. There are no emergency services located within a half-mile of I-105, but there are two schools, Kid Town USA Preschool and Kindergarten and Hollydale Elementary, and one park, Hollydale Regional Park. Hollydale Community Center is also situated near I-105. Tables 2-24 and 2-25 below summarize the city's demographic characteristics and racial composition as compared to Los Angeles County's totals.

Table 2-24: South Gate Demographic Characteristics

Demographic Characteristic	City Total	Los Angeles County Total
Total Population	95,420	10,105,722
Median Age	31.6	36
Residents 65 years and older	8,653 (9.07%)	1,264,984 (12.5%)
Median Income	$47,281	$61,015
Total Households	23,557	3,506,903
Average Household Size	4.08	3.025
Individuals Below Poverty Level	19.3%	17.00%

Table 2-25: South Gate Racial Composition

Race	City Total	City Percentage	Los Angeles County Total	Los Angeles County Total
Latino or Hispanic	90,884	95.25%	4,893,579	48.42%
White	59,282	62.13%	5,539,772	54.82%
Black or African American	1,487	1.56%	938,238	9.28%
Asian	860	0.90%	1,621,548	16.05%
American Indian and Alaska Native	878	0.92%	157,517	1.56%
Native Hawaiian and Other Pacific Islander	256	0.27%	54,214	0.54%
Two or More Races	1,924	2.02%	219,180	2.17%

Paramount

Paramount City is enclosed by 70th St. to the south, I-710 to the west, I-105 to the north, and Lakewood Blvd. to the east. The city is comprised of eight separate neighborhoods according to Nextdoor. As of 2017, approximately 38.94% (5,584 owner-occupied households) of Paramount residents own a home while 61.06% (8,755 renter-occupied households) rent. Paramount High School, Roosevelt Elementary School, Harry Wirtz Elementary School, and Howard Tanner Elementary School are located within a half mile of I-105. Paramount Park and All-American Park are located within this radius as well, and Castle Medals Aerospace and LACO STEEL serve as major job centers within the area. Tables 2-26 and 2-27 below summarize the city's demographic characteristics and racial composition as compared to Los Angeles County's totals.

Table 2-26: Paramount Demographic Characteristics

Demographic Characteristic	City Total	Los Angeles County Total
Total Population	55,020	10,105,722
Median Age	30.8	36
Residents 65 years and older	4,285 (7.79%)	1,264,984 (12.5%)
Median Income	$49,064	$61,015
Total Households	14,339	3,506,903
Average Household Size	3.83	3.025
Individuals Below Poverty Level	20.3%	17.00%

Table 2-27: Paramount Racial Composition

Race	City Total	City Percentage	Los Angeles County Total	Los Angeles County Total
Latino or Hispanic	44,829	81.48%	4,893,579	48.42%
White	30,821	56.02%	5,539,772	54.82%
Black or African American	5,385	9.79%	938,238	9.28%
Asian	1,984	3.61%	1,621,548	16.05%
American Indian and Alaska Native	803	1.46%	157,517	1.56%
Native Hawaiian and Other Pacific Islander	736	1.34%	54,214	0.54%
Two or More Races	1,462	2.66%	219,180	2.17%

Lynwood

Lynwood is enclosed by E McMillan St to the south, Alameda St. to the west, Abbott Rd. to the north, and I-710 to the east. The city is comprised of 6 separate neighborhoods according to Nextdoor. According to the 2017 census, 42.40% (6,495 owner-occupied households) of residents own a home while 57.64% (8,838 renter-occupied households) rent. Lynwood shows a degree of community cohesion higher than other cities around I-105 with a high density of community and economic centers and services.

Within half a mile of I-105, there are 12 schools: Mario Antonio Firebaugh High School, Janie P Abbott Elementary School, Hosler Middle School, Lincoln Elementary School, Wilson Elementary School, Rosa Parks Elementary School, Mark Twain Elementary School, Will Rodgers Elementary School, Vista High Continuation School, Lindbergh Elementary School, Washington Elementary School, and Lynwood Middle School. There are also several emergency services: two fire stations (Los Angeles County Fire Department Stations 147 and 148), one hospital (St. Francis Medical Center), and one police station (LA County Sheriff Department). Five parks can be found within the half mile radius: Yvonne Burke-John D. Ham

Park, Ricardo Lara Linear Park, Lynwood Park, Rose Park, and Carnation Park, and five community centers: Lucy Avalos Community Center, Lynwood Senior Citizen Center, Lynwood Youth Center, Lynwood Library and Lynwood Community Center. Several important job centers include the Century Regional Correction Facility, the Imperial Shopping Center, St. Francis Medical Center, and the LA County Sheriff Department. Tables 2-28 and 2-29 below summarize the city's demographic characteristics and racial composition as compared to Los Angeles County's totals.

Table 2-28: Lynwood Demographic Characteristics

Demographic Characteristic	City Total	Los Angeles County Total
Total Population	71,350	10,105,722
Median Age	29.3	36
Residents 65 years and older	4,940 (6.92%)	1,264,984 (12.5%)
Median Income	$45,839	$61,015
Total Households	15,333	3,506,903
Average Household Size	4.51	3.025
Individuals Below Poverty Level	22.7%	17.00%

Table 2-29: Lynwood Racial Characteristics

Race	City Total	City Percentage	Los Angeles County Total	Los Angeles County Total
Latino or Hispanic	62,808	88.03%	4,893,579	48.42%
White	41,843	58.64%	5,539,772	54.82%
Black or African American	6,151	8.62%	938,238	9.28%
Asian	977	1.37%	1,621,548	16.05%
American Indian and Alaska Native	838	1.17%	157,517	1.56%
Native Hawaiian and Other Pacific Islander	295	0.41%	54,214	0.54%
Two or More Races	1,036	1.45%	219,180	2.17%

Willowbrook

The City of Willowbrook is enclosed by East Rosecrans Ave. to the south, S. Figueroa St. to the west, I-105 to the north, and Alameda St. to the east. The 2017 census reports that 40.90% (2,049 owner-occupied households) of the population owns and 59.10% (2,961 renter-occupied households) rent. Four schools, Carver Elementary School, Lincoln Elementary School, 122nd Street Elementary School, and King Drew Magnet High School, may be found within a half mile of I-105. A fire station (Los Angeles County Fire Station 41) and two medical facilities (Martin Luther King Jr. Community Hospital and Augustus Hawkins Mental Health Center) are located within the area. There are four parks: George Washington Carver Park, Faith and Hope Park, Earvin Magic Johnson Park and Mona Park, and one community center, the Watts-Willowbrook

Boys & Girls Club. The Willowbrook Library is also located within the area. The medical centers and Kenneth Hahn Plaza serve as job centers for the radius area. Tables 2-30 and 2-31 below summarize the city's demographic characteristics and racial composition as compared to Los Angeles County's totals.

Table 2-30: Willowbrook Demographic Characteristics

Demographic Characteristic	City Total	Los Angeles County Total
Total Population	22,654	10,105,722
Median Age	26.6	36
Residents 65 years and older	1,238 (5.46%)	1,264,984 (12.5%)
Median Income	$40,279	$61,015
Total Households	5,010	3,506,903
Average Household Size	4.59	3.025
Individuals Below Poverty Level	25.0%	17.00%

Table 2-31: Willowbrook Racial Characteristics

Race	City Total	City Percentage	Los Angeles County Total	Los Angeles County Total
Latino or Hispanic	16,694	73.69%	4,893,579	48.42%
White	9,676	42.71%	5,539,772	54.82%
Black or African American	5,428	23.96%	938,238	9.28%
Asian	61	0.27%	1,621,548	16.05%
American Indian and Alaska Native	227	1.00%	157,517	1.56%
Native Hawaiian and Other Pacific Islander	189	0.83%	54,214	0.54%
Two or More Races	188	0.83%	219,180	2.17%

Los Angeles

The City of Los Angeles overlaps with I-105 Freeway on two separate stretches. The first segment (eastern segment) is between the unincorporated areas of West Athens and Willowbrook. The second segment (western segment) sits between I-405 and SR-1. As of 2017, 36.81% (502,165 owner-occupied households) of Los Angeles residents own homes while 63.19% (862,062 renter-occupied households) rent, according to SCAG. Within a half mile of I-105 there are eight schools residing in Los Angeles including 112th Street Elementary, 116th Street Elementary, 118th Street Elementary, Alliance Jack H. Skirball Middle School, Samuel Gompers Middle School, Ascension Catholic School, Lovelia P Flournoy Elementary, Figueroa Street Elementary, Ritter Elementary, Amino Locke Charter High School and Grape Street

Elementary. All of these schools are found within the eastern segment. There are five parks: Serenity Park, 111th Place Neighborhood Park, William Nickerson Recreation Center, Imperial Courts Recreation Center, and 109th Street Recreation Center. LAX and FedEx Shipping Center serve as major job centers. Tables 2-32 and 2-33 below summarize the city's demographic characteristics and racial composition as compared to Los Angeles County's totals.

Table 2-32: Los Angeles City Demographic Characteristics

Demographic Characteristic	City Total	Los Angeles County Total
Total Population	3,949,776	10,105,722
Median Age	35.2	36
Residents 65 years and older	462,838 (11.72%)	1,264,984 (12.5%)
Median Income	$54,501	$61,015
Total Households	1,364,227	3,506,903
Average Household Size	2.88	3.025
Individuals Below Poverty Level	20.4%	17.00%

Table 2-33: Los Angeles City Racial Composition

Race	City Total	City Percentage	Los Angeles County Total	Los Angeles County Total
Latino or Hispanic	1,922,879	48.68%	4,893,579	48.42%
White	2,172,210	55.00%	5,539,772	54.82%
Black or African American	394,126	9.98%	938,238	9.28%
Asian	520,216	13.17%	1,621,548	16.05%
American Indian and Alaska Native	57,995	1.47%	157,517	1.56%
Native Hawaiian and Other Pacific Islander	15,095	0.38%	54,214	0.54%
Two or More Races	138,635	3.51%	219,180	2.17%

West Athens

The unincorporated area of West Athens is enclosed by W. El Segundo Blvd. to the south, Van Ness Ave. to the west, Imperial Hwy to the north, and Vermont Ave. to the east. According to the 2017 census, 51.70% (1,445 owner-occupied households) of the West Athens population owns while 48.30% (1,350 renter-occupied households) rent. There are five schools in West Athens within a half mile of I-105, which are Animo Western Charter Middle School, Amino Phillis Wheatley Cahrter Middle School, Los Angeles Southwest College, Middle College High School and West Athens Elementary School. Chester Washington Golf Course is the single park in the half-mile radius. The Department of Public Social Services and the Los Angeles County Probation Department serve as important job centers here. Tables 2-34 and 2-35 below summarize West Athen's demographic characteristics and racial composition as compared to Los Angeles County's totals.

Table 2-34: West Athens Demographic Characteristics

Demographic Characteristic	City Total	Los Angeles County Total
Total Population	8,746	10,105,722
Median Age	38.4	36
Residents 65 years and older	1,088 (12.44%)	1,264,984 (12.5%)
Median Income	$45,110	$61,015
Total Households	2,795	3,506,903
Average Household Size	3.115	3.025
Individuals Below Poverty Level	19.7%	17.00%

Table 2-35: West Athens Racial Composition

Race	City Total	City Percentage	Los Angeles County Total	Los Angeles County Total
Latino or Hispanic	3,797	43.41%	4,893,579	48.42%
White	1,418	16.21%	5,539,772	54.82%
Black or African American	4,773	54.57%	938,238	9.28%
Asian	82	0.94%	1,621,548	16.05%
American Indian and Alaska Native	83	0.95%	157,517	1.56%
Native Hawaiian and Other Pacific Islander	0	0.00%	54,214	0.54%
Two or More Races	160	1.83%	219,180	2.17%

Inglewood

The City of Inglewood is enclosed by I-105 Freeway to the south, La Cienega Blvd. to the west, W. 64th to the north, and S. Van Ness Ave. to the east. The city is comprised of 21 distinct neighborhoods according to Nextdoor. As of 2017, 35.83% (13,072 owner-occupied households) of Inglewood residents own a home while 64.18% (23,409 renter-occupied households) rent. Worthington Elementary, Bennet/Kew Elementary, Environmental Charter Middle School, and Today's Fresh Start Charter School are the four schools located within half a mile of I-105. Center Park is the single park located in the area. Crenshaw Imperial Branch Library is also located in the radius. A major job center in the area is the Crenshaw Imperial Plaza Shopping Center. Tables 2-36 and 2-37 below summarize the city's demographic characteristics and racial composition as compared to Los Angeles County's totals.

Table 2-36: Inglewood Demographic Characteristics

Demographic Characteristic	City Total	Los Angeles County Total
Total Population	111,006	10,105,722
Median Age	34.5	36
Residents 65 years and older	12,722 (11.46%)	1,264,984 (12.5%)
Median Income	$46,389	$61,015
Total Households	36,481	3,506,903
Average Household Size	3.05	3.025
Individuals Below Poverty Level	20.1%	17.00%

Table 2-37: Inglewood Racial Composition

Race	City Total	City Percentage	Los Angeles County Total	Los Angeles County Total
Latino or Hispanic	57,105	51.44%	4,893,579	48.42%
White	32,450	29.23%	5,539,772	54.82%
Black or African American	48,791	43.95%	938,238	9.28%
Asian	2,487	2.24%	1,621,548	16.05%
American Indian and Alaska Native	2,474	2.23%	157,517	1.56%
Native Hawaiian and Other Pacific Islander	405	0.36%	54,214	0.54%
Two or More Races	4,137	3.73%	219,180	2.17%

Hawthorne

The city of Hawthorne is enclosed by Marine Ave. to the south, S. Aviation Blvd. to the west, I-105 Freeway to the north, and Crenshaw Blvd. to the east. The city is comprised of 17 distinct neighborhoods according to Nextdoor, though the City of Hawthorne website breaks down the city into 12 distinct neighborhoods. As of 2017, 26.54% (7,827 owner-occupied households) of Hawthorne residents own a home while 73.46% (21,661 renter-occupied households) rent. There are two schools in Hawthorne within a half mile of I-105: Cimarron Avenue Elementary and York Elementary School. Los Angeles County Fire Department Station 162 is the only emergency service near the freeway. Two parks, Holly Park and 118th Street Mini-Park, and one community center, Moneta Gardens Community Center, are located within the area. Tables 2-38 and 2-39 below summarize the city's demographic characteristics and racial composition as compared to Los Angeles County's totals.

Table 2-38: Hawthorne Demographic Characteristics

Demographic Characteristic	City Total	Los Angeles County Total
Total Population	87,425	10,105,722
Median Age	33.0	36
Residents 65 years and older	7,837 (8.96%)	1,264,984 (12.5%)
Median Income	$47,636	$61,015
Total Households	29,488	3,506,903
Average Household Size	3.075	3.025
Individuals Below Poverty Level	17.0%	17.00%

Table 2-39: Hawthorne Racial Composition

Race	City Total	City Percentage	Los Angeles County Total	Los Angeles County Total
Latino or Hispanic	47,909	54.80%	4,893,579	48.42%
White	33,759	38.61%	5,539,772	54.82%
Black or African American	25,136	28.75%	938,238	9.28%
Asian	8,264	9.45%	1,621,548	16.05%
American Indian and Alaska Native	4,873	5.57%	157,517	1.56%
Native Hawaiian and Other Pacific Islander	925	1.06%	54,214	0.54%
Two or More Races	8,057	9.22%	219,180	2.17%

Lennox

The unincorporated area of Lennox is enclosed by I-105 Freeway to the south, La Cienega Blvd. to the west, Century Blvd. to the north, and S. Prairie Ave. to the east. The home owner to renter ratio is 24.00% (1,540 owner-occupied households) to 71.00% (3,771 renter-occupied households). Within a half mile of the 105 there are five schools in Lennox, including Animo Leadership High School, Moffet Elementary, Lennox Academy, Lennox Middle School, and Buford Elementary. The Los Angeles County Fire Department Station 18 is located in the radius as well. Lennox Park and Lennox Library are situated here, but there are no major job centers near I-105 in Lennox. Tables 2-40 and 2-41 below summarize Lennox's demographic characteristics and racial composition as compared to Los Angeles County's totals.

Table 2-40: Lennox Demographic Characteristics

Demographic Characteristic	City Total	Los Angeles County Total
Total Population	21,537	10,105,722
Median Age	29.0	36
Residents 65 years and older	1,240 (5.76%)	1,264,984 (12.5%)
Median Income	$41,022	$61,015
Total Households	5,311	3,506,903
Average Household Size	4.18	3.025
Individuals Below Poverty Level	27.6%	17.00%

Table 2-41: Lennox Racial Composition

Race	City Total	City Percentage	Los Angeles County Total	Los Angeles County Total
Latino or Hispanic	20,103	93.34%	4,893,579	48.42%
White	10,240	47.55%	5,539,772	54.82%
Black or African American	737	3.42%	938,238	9.28%
Asian	448	2.08%	1,621,548	16.05%
American Indian and Alaska Native	432	2.01%	157,517	1.56%
Native Hawaiian and Other Pacific Islander	0	0.00%	54,214	0.54%
Two or More Races	437	2%	219,180	2.17%

El Segundo

The City of El Segundo is enclosed by Rosecrans Ave. to the south, the Pacific Ocean to the west, Imperial Hwy to the north, and S. Aviation Blvd. to the east. I-105 Freeway terminates at the northeastern corner of the city. As of the 2017 census, 44.56% (2,958 owner-occupied households) of El Segundo residents own a home while 55.44% (3,680 renter-occupied households) rent. A single school, Center Street Elementary School, is located within a half-mile radius of the freeway, and there is one fire station (El Segundo Fire Station #2). There are six parks within the half-mile: Sycamore Park, Independence Park, Constitution Park, Washington Park, Campus El Segundo Athletic Fields, and El Segundo Dog Park. El Segundo is particularly aerospace and business-focused, housing job centers such as Northrop Grumman, Boeing Satellite Systems, and AT&T Entertainment Group near I-105. No community services, grocery stores, or houses of worship are found in this area, in contrast to the other cities along the freeway. Tables 2-42 and 2-43 below summarize the city’s demographic characteristics and racial composition as compared to Los Angeles County’s totals.

Table 2-42: El Segundo Demographic Characteristics

Demographic Characteristic	City Total	Los Angeles County Total
Total Population	16,929	10,105,722
Median Age	38.7	36
Residents 65 years and older	1,923 (11.4%)	1,264,984 (12.5%)
Median Income	$92,942	$61,015
Total Households	6,638	3,506,903
Average Household Size	2.575	3.025
Individuals Below Poverty Level	8.7%	17.00%

Table 2-43: El Segundo Racial Composition

Race	City Total	City Percentage	Los Angeles County Total	Los Angeles County Total
Latino or Hispanic	3,024	17.86%	4,893,579	48.42%
White	14,115	83.38%	5,539,772	54.82%
Black or African American	682	4.03%	938,238	9.28%
Asian	2,220	13.11%	1,621,548	16.05%
American Indian and Alaska Native	497	2.94%	157,517	1.56%
Native Hawaiian and Other Pacific Islander	281	1.66%	54,214	0.54%
Two or More Races	1,406	8.31%	219,180	2.17%

A high density of minority and low-income populations exist in the area surrounding I-105. Impacts and disproportionate impacts on these particular communities will be discussed in detail in the Environmental Justice section later in this chapter, as required by Executive Order 12898. Employment in the census tracts along I-105 trends toward manufacturing, retail, health care, and transportation/warehousing (generally in order of magnitude). In almost every city along I-105 these are the four categories of employment with the highest percentage of employees per city, though there are a few exceptions. In Willowbrook, construction also has a comparable percentage. In Hawthorne and Lennox, accommodation and food services make up the larger percentages as well. El Segundo stands out with professional, scientific, technical, and educational services as one of its largest categories. Tables with employment category data per city are available from the U.S. Census Bureau ACS 5-Year Estimate, or summarized in section 4.2 Economic Conditions of the CIA.

2.1.4.3 Environmental Consequences

Community character and cohesion are often subtle qualities that can be hard to identify through numbers alone, especially for someone that does not live in and is not familiar with the community. However, there are certain qualities that tend to indicate a higher degree of community cohesion. For example, longer average residency tenures, larger households, home ownership, ethnic homogeneity, and evidence of community activity could individually or collectively contribute to a feeling of connectedness and community.

Several of these qualities are present in the corridor. Household size tends to be greater than 3.0 for all cities; only Los Angeles City and El Segundo are less than 3.0, and Los Angeles City covers a far greater area than that surrounding the corridor. Household size is in fact greater than 4.0 in some (South Gate, Lynwood, Willowbrook, and Lennox), and average residency tends to be longer than Los Angeles County for these cities as well. In many cities, a large percentage of a single ethnicity is present, indicating high ethnic homogeneity; all cities except El Segundo have a high to extremely high Latino or Hispanic population, while West Athens and Inglewood have high Black or African American populations.

The proposed project is not expected to have an impact on the surrounding neighborhoods and communities, nor is it expected to change the character of the community or its cohesion because only existing freeway facilities would be affected and no reasonably foreseeable indirect effects on communities would occur as a result of ExpressLanes. Essentially, I-105 as a transportation facility would remain the same. Some construction (approximately 2,200 feet) would be required to Imperial Highway between Mona Blvd. and Fernwood Ave., but after construction operations in the area would also remain the same.

Access to all community facilities and features would be preserved, and the community's aesthetic character and quality would not change. No new roads or freeways would be built, and no existing neighborhoods would be divided in any way. Property value or taxes are not anticipated to change as a result of any alternative.

The Traffic Study Report indicates that vehicle volumes will remain mostly unchanged for the Build Alternatives in 2027 and 2047, so no additional travel to or through the area is expected to be generated as a result of the proposed project. Based on this information and result, the proposed project is not anticipated to direct traffic away or toward community facilities and businesses. No parking spaces will be lost as a result of the project alternatives. Thus, there will no effects to business activities and patronage within the communities.

If homeless individuals will need to be relocated from the right of way prior to construction of the proposed project, Caltrans will provide A Notice of Vacate which provides advance notice of the date on which belongings will be removed, information on where belongings will be stored and for how long, and information on community services available.

2.1.4.4 Avoidance, Minimization, and/or Mitigation Measures

The proposed project would primarily affect the existing I-105 freeway and make minor realignments off the freeway. Effectively, all routes, structures, and facilities would remain the same, and the community's relationship with any existing or affected structures would not change. The proposed project is not anticipated to have any effect on population, housing, community facilities, or economic conditions in any area along the corridor. In the event homeless individuals will need to be relocated:

Com1 - If homeless individuals will need to be relocated from the right of way prior to construction of the proposed project, Caltrans will provide A Notice of Vacate which provides advance notice of the date on which belongings will be removed, information on where belongings will be stored and for how long, and information on community services available.

2.1.5 Relocations and Real Property Acquisition

2.1.5.1 Regulatory Setting

Caltrans' Relocation Assistance Program (RAP) is based on the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (Uniform Act), and Title 49 Code of Federal Regulations (CFR) Part 24. The purpose of the RAP is to ensure that persons displaced as a result of a transportation project are treated fairly, consistently, and equitably so that such persons will not suffer disproportionate injuries as a result of projects designed for the benefit of the public as a whole.

All relocation services and benefits are administered without regard to race, color, national origin, persons with disabilities, religion, age, or sex.

2.1.5.2 Affected Environment

Since no relocations or full parcel acquisitions were necessary for the proposed project, a Relocation Impact Report was not prepared. However, a Community Impact Assessment was completed by Caltrans in December of 2019. The report covers all easements and partial acquisitions of each alternative.

I-105 traverses several cities, each with their own community characteristics. In general, the study area is comprised of residential, commercial, and industrial neighborhoods that house several community facilities such as parks, schools, community centers, and churches.

The areas of partial acquisitions for both build alternatives will be located within industrial and commercial zones. No residential parcel will be partially acquired by the proposed project.

2.1.5.3 Environmental Consequences

The following Table 2-44 discloses all right-of-way impacts.

Table 2-44: Right-of-Way Impacts

ROW Impact			Parcel		
No.	Type	Area of ROW Impact (sq. ft.)	APN	Total Parcel Area (sq. ft.)	Type
1.1	TCE	9,712	4048-004-901	35,787	Government
1.2	TCE	7,427	4048-004-900	82,914	Government
2.1	TCE	568	6084-031-042	7,368	Commercial
3.1	TCE	105	6067-022-041	3,117	Residential
3.2	TCE	194	6067-022-039	3,109	Residential
3.3	TCE	206	6067-022-040	3,005	Residential
3.4	TCE	213	6067-022-038	2,900	Residential

3.5	TCE	221	6067-022-037	2,801	Residential
3.6	TCE	227	6067-022-036	2,691	Residential
3.7	TCE	234	6067-022-035	2,582	Residential
3.8	TCE	504	6067-022-048	4,700	Residential
3.8	Partial Acquisition	44	6067-022-048	4,700	Residential
3.9	TCE	4,788	6067-022-046	24,392	Industrial
3.9	Partial Acquisition	5,837	6067-022-046	24,392	Industrial
3.10	Aerial Easement	1,553	6169-032-917	26,158	ACTA
4.1	TCE	4,755	6169-001-900	62,463	Commercial
4.1	Partial Acquisition	1,242	6169-001-900	62,463	Commercial
4.2	TCE	10,728	6169-002-005	42,170	Industrial
4.2	Partial Acquisition	3,899	6169-002-005	42,170	Industrial

For Alternative 2, there will be no relocations or real property acquisition as a part of the proposed project.

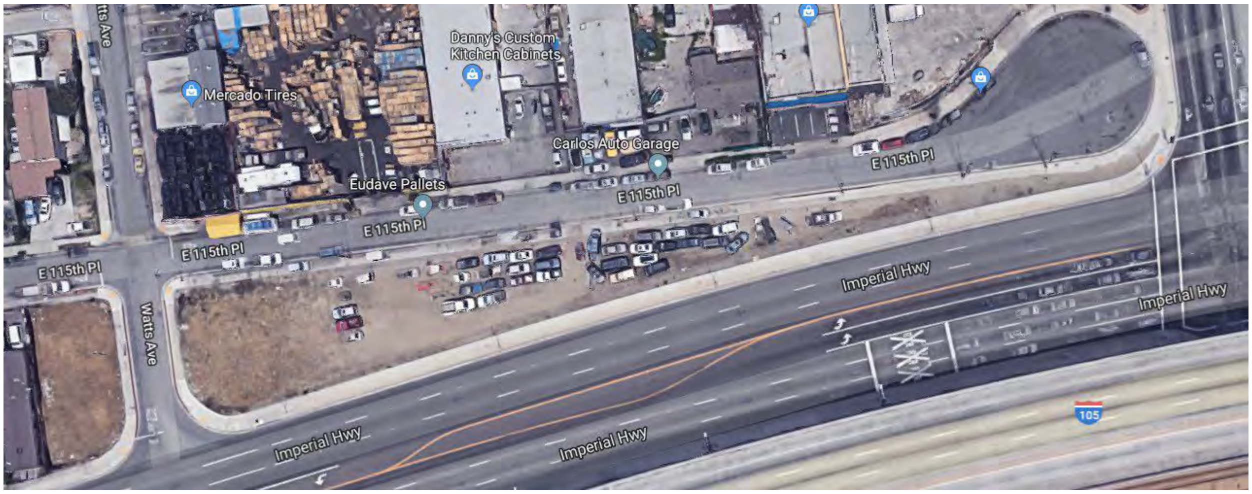
For Alternative 3 there will be fourteen TCEs which will be temporary during construction only. Four partial acquisitions will also be required. The parcels are Industrial, Commercial, and Residential, located at the Imperial Highway at 115th Place and Philadelphia Way.

TCEs will remain during construction only, and any effects on properties will be reverted after construction is finished. TCEs will be required on government, residential, industrial, and miscellaneous type properties. For the properties that will be affected by partial acquisition, business operation will be unaffected by during and after construction.

Even though it is not anticipated, if any relocation become necessary, the provisions of the Uniform Act and the 1987 Amendments as implemented by the Uniform Relocation Assistance and Real Property Acquisition Regulations for Federal and Federally Assisted Programs adopted by the United States Department of Transportation (March 2, 1989) would be followed. An independent appraisal of the affected property will be obtained, and an offer for the full appraisal would be made.

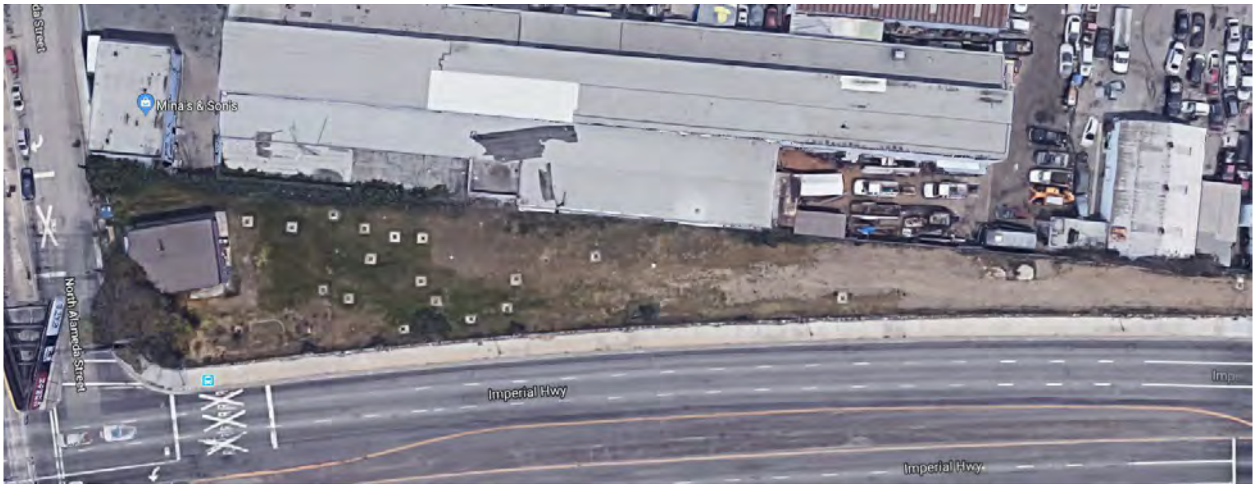
The partial acquisition listed under 3.9 is located within a dirt area across the street from several businesses located at Imperial Hwy and Alameda St. The area is currently used to store vehicles from a nearby auto garage. According to the Los Angeles County Assessor’s Office, the parcel has no known owner and is classified as vacant land. Build Alternative 3 would acquire a sliver for the realignment of the Imperial Highway, but most of the parcel would remain. Figure 2-15 displays the dirt area.

Figure 2-15 3.9 Partial Acquisition



Partial Acquisition 4.1 & 4.2 occur across Alameda Street, east of an auto repair shop and auto parts store. The parcel is a vacant, grassy area separated by a chain link fence from the two businesses. There is a building of unknown purpose within the grassy area, but it is outside the boundaries of the planned partial acquisition. Figure 2-16 displays the grassy area.

Figure 2-16: 4.1 and 4.2 Partial Acquisition



2.1.5.4 Avoidance, Minimization, and/or Mitigation Measures

The following measures are recommended for both build alternatives. With inclusion of these measures into the project, it is anticipated that this project will have no impacts to Relocations and Real Property Acquisition resources.

RW-1: A Transportation Management Plan (TMP) will be prepared during the design phase of the project to minimize disruptions to businesses and residents from project construction.

2.1.6 Environmental Justice

2.1.6.1 Regulatory Setting

All projects involving a federal action (funding, permit, or land), must comply with Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, signed by President William J. Clinton on February 11, 1994. This EO directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. Low income is defined based on the Department of Health and Human Services poverty guidelines. For 2017, this was 24,600 for a family of four.

All considerations under Title VI of the Civil Rights Act of 1964, and related statutes, have also been included in this project. Caltrans' commitment to upholding the mandates of Title VI is demonstrated by its Title VI Policy Statement, signed by the Director, which can be found in Appendix B of this document.

2.1.6.2 Affected Environment

To determine whether environmental justice populations are present, an analysis was conducted using data from the 2017 American Community Survey conducted by the U.S. Census Bureau. Three major groups were identified for the study focus: racial minorities, low income individuals, and elderly populations, who can often be indicators of fixed (often low) incomes.

The methodology used in the CIA organized resident populations by census tract in each city or unincorporated area. Each focus category of the census tract (racial minorities, low income, and age over 65) was then compared to a reference population. For this study, the reference population is the city or unincorporated area the census tract is located in. For race demographics, the category "Race alone or in combination with one or more other races" was used. Elderly populations are defined in this analysis as individuals over the age of 65.

As an example, census tract 5519 located in Norwalk has a Black or African American population percentage of 5.7%, higher than Norwalk's overall Black or African American population percentage of 4.5%. Therefore, a disproportionate minority share is present in census tract 5519, and it is marked as an environmental justice population. The majority of the census tracts adjacent to the project area have high proportions of minority or low-income residents.

Each city's and unincorporated area's disproportionate minority populations are outlined below in the following tables. Every city the project traverses contains at least one census tract with environmental justice population, but not every census tract traversed by the project does.

Norwalk

Census Tract Number	**Disproportionate Minority Shares** (City %)	**Share of Population Over 65 Years Old** (City %)	**Poverty Rate (City Median Poverty Rate)**

5519	Black: 5.7% (4.5%) Asian: 18.4% (14.4%)	Over 65: 14.7% (11.4%)	Lower than city rate
5520.01	Hispanic or Latino: 71.2% (70.4%)	Lower than city average	Lower than city rate

Downey

Census Tract Number	**Disproportionate Minority Shares** (City %)	**Share of Population Over 65 Years Old** (City %)	Poverty Rate (City Median Poverty Rate)
5517	Black: 4.4% (4.31%) Hispanic or Latino: 80.7% (73.7%)	Lower than city average	Lower than city rate
5518	Black: 4.7% (3.8%) Asian: 15.3% (7.1%)	Lower than city average	Lower than city rate
5534	Asian: 9.5% (8.4%)	Lower than city average	14.6% (10.7%)

South Gate

Census Tract Number	**Disproportionate Minority Shares** (City %)	**Share of Population Over 65 Years Old** (City %)	Poverty Rate (City Median Poverty Rate)
5362	Black: 2.9% (1.56%) Asian: 3.7% (0.90%)	Lower than city average	19.2% (19.3%)

Paramount

Census Tract Number	**Disproportionate Minority Shares** (City %)	**Share of Population Over 65 Years Old** (City %)	Poverty Rate (City Median Poverty Rate)
5536.01	Black: 11.9% (9.79%) Native Hawaiian and Other Pacific Islander: 3.7% (1.34%)	Lower than city average	Lower than city rate
5536.02	Black: 19.1% (9.8%) Native Hawaiian and Other Pacific Islander: 3.2% (1.24%)	Lower than city average	Lower than city rate
5537.01	Hispanic or Latino: 95.2% (81.48%)	Equal to city average	21.7% (20.3%)

Lynwood

Census Tract Number	**Disproportionate Minority Shares** (City %)	**Share of Population Over 65 Years Old** (City %)	**Poverty Rate (City Median Poverty Rate)**
5400	American Indian and Alaska Native: 1.5% (1.17%) Asian: 2.0% (1.37%) Hispanic or Latino: 93.7% (88.03%)	8.6% (6.92%)	Lower than city rate
5401.02	Black: 12.1% (8.62%) American Indian and Alaska Native: 2.5% (1.17%)	7.9% (6.92%)	Lower than city rate
5402.03	Black: 12.7% (8.62%) American Indian and Alaska Native: 2.1% (1.17%) Hispanic or Latino: 85.4% (88.03%)	Lower than city average	23.4% (22.7%)
5403	Hispanic: 98.8% (88.03%) American Indian and Alaska Native: 1.8% (1.17%) Asian: 1.5% (1.37%)	Lower than city average	Lower than city rate
5405.01	Black: 11.1% (8.62%) Asian: 1.5% (1.37%)	Lower than city average	Lower than city rate
5417	Black: 11.6% (8.62%) American Indian and Alaska Native: 2.2% (1.17%) Asian: 1.8% (1.37%)	9.4% (6.92%)	Lower than city rate
5418.01	Black: 13.4% (8.62%) American Indian and Alaska Native: 1.4% (1.17%)	Lower than city average	31.2% (22.7%)
5418.02	Black: 13.6% (8.62%) Asian: 1.9% (1.37%)	Lower than city average	Lower than city rate

Willowbrook

Census Tract Number	**Disproportionate Minority Shares** (City %)	**Share of Population Over 65 Years Old** (City %)	**Poverty Rate (City Median Poverty Rate)**
5406	Black: 40.0% (23.96%) American Indian and Alaska Native: 1.0% (1.0%)	6.7% (5.46%)	27.3% (25.0%)

5407	Black: 30.7% (23.96%) Asian: 1.6% (0.27%)	Lower than city average	Lower than city rate

Los Angeles

Census Tract Number	**Disproportionate Minority Shares** (City %)	**Share of Population Over 65 Years Old** (City %)	**Poverty Rate (City Median Poverty Rate)**
2410.01	Black: 26.2% (9.98%) Hispanic or Latino: 72.6% (48.68%)	Lower than city average	30.5% (20.4%)
2410.02	Black: 39.8% (9.98%) Hispanic or Latino: 59.4% (48.68%)	Lower than city average	22.3% (20.4%)
2412.02	Black: 36.8% (9.98%) Native Hawaiian and Other Pacific Islander: 2.0% (0.38%) Hispanic or Latino: 59.6% (48.68%)	Lower than city average	40.0% (20.4%)
2413	Black: 55.0% (9.98%)	Lower than city average	24.3% (20.4%)
2414	Black: 32.2% (9.98%) Hispanic or Latino: 64.4% (48.68%)	Lower than city average	35.1% (20.4%)
2426	Black: 29.7% (9.98%) Native Hawaiian and Other Pacific Islander: 1.2% (0.38%) Hispanic or Latino: 69.5% (48.68%)	Lower than city average	66.4% (20.4%)
2427	Black: 23.3% (9.98%) Hispanic or Latino: 77.3% (48.68%)	Lower than city average	36.6% (20.4%)
2431	Black: 28.7% (9.98%) Hispanic or Latino: 69.9% (48.68%) Native Hawaiian and Other Pacific Islander: 1.1% (0.38%)	Lower than city average	50.9% (20.4%)

5404	Black: 19.7% (9.98%) Hispanic or Latino: 81.8% (48.68%)	Lower than city average	33.5% (20.4)

West Athens

Census Tract Number	**Disproportionate Minority Shares** (City %)	**Share of Population Over 65 Years Old** (City %)	**Poverty Rate (City Median Poverty Rate)**
6027	Black: 73.6% (54.57%)	14.2% (12.44%)	Lower than city rate
6028.01	Hispanic or Latino: 63.2% (43.41%)	Lower than city average	32.2% (19.7%)

Hawthorne

Census Tract Number	**Disproportionate Minority Shares** (City %)	**Share of Population Over 65 Years Old** (City %)	**Poverty Rate (City Median Poverty Rate)**
6016	Hispanic or Latino: 94.1% (54.8%)	Lower than city average	31.3% (17.0%)
6017	Hispanic or Latino: 89.0% (54.8%)	Lower than city average	27.5% (17.0%)
6020.02	Hispanic or Latino: 78.2.3% (54.8%)	Lower than city average	19.9% (17.0%)
6021.03	Hispanic or Latino: 68.3% (54.8%)	9.4% (8.96%)	Lower than city rate
6021.04	Hispanic or Latino: 67.8% (54.8%)	Lower than city average	18.6% (17.0%)
6022	Asian: 10.1% (9.45%)	Lower than city average	20.1% (17.0%)
6025.09	Asian: 12.3% (9.45%) American Indian and Alaska Native: 6.9% (5.57%) Hispanic or Latino: 64.6% (54.8%)	9.1% (8.96%)	Lower than city rate
6027	Black: 73.6% (28.75%) American Indian and Alaska Native: 12.6% (5.57%) Asian: 11.6% (9.45%)	13.3% (8.96%)	Lower than city rate

Inglewood

Census Tract Number	**Disproportionate Minority Shares** (City %)	**Share of Population Over 65 Years Old** (City %)	**Poverty Rate (City Median Poverty Rate)**
6005.02	Black: 50.7% (43.95%) Asian: 2.5% (2.24%)	15.8% (11.46%)	Lower than city rate
6017	Hispanic or Latino: 91.9% (51.44%) American Indian and Alaska Native: 6.7% (2.23%)	Lower than city average	40.0% (20.1%)
6021.04	Hispanic or Latino: 67.8% (51.44%) American Indian and Alaska Native: 5.5% (2.23%)	Lower than city average	Lower than city rate

Lennox

Census Tract Number	**Disproportionate Minority Shares** (City %)	**Share of Population Over 65 Years Old** (City %)	**Poverty Rate (City Median Poverty Rate)**
6016	Hispanic or Latino: 94.1% (93.34%) Asian: 4.2% (2.08%)	9.9% (5.76%)	31.3% (27.6%)
6017	Black: 5.9% (3.42%)	Lower than city average	Lower than city rate

El Segundo

Census Tract Number	**Disproportionate Minority Shares** (City %)	**Share of Population Over 65 Years Old** (City %)	**Poverty Rate (City Median Poverty Rate)**
6200.01	Black: 6.3% (4.03%) American Indian and Alaska Native: 6.1% (2.94%) Native Hawaiian and Other Pacific Islander: 4.3% (1.66%) Hispanic or Latino: 19.0% (17.86%)	12.4% (11.4%)	Lower than city rate
6201.01	Asian: 15.3% (13.11%)	11.6% (11.4%)	10.3% (8.7%)

2.1.6.3 Environmental Consequences

One important note to make while considering the data presented in the Affected Environment section above is that the specific populations studied here do not necessarily represent all users of I-105 that could be affected by the proposed build alternatives. Many drivers on I-105 do not live directly adjacent to the freeway, so their demographic data is not captured specifically in this environmental justice analysis. However, economic discussion will address all low-income users similarly regardless of their geographic locations and environmental justice population statuses. Where the demographic data gathered will be most useful is for analysis of physical effects of the proposed project. Therefore, this section will be divided into two sub-sections, one for economic or traffic impacts to users of the facility and one for physical or indirect impacts to the facility's surrounding communities.

2.1.6.4 Impacts to Users of I-105

These economic impacts would be felt most by current users of HOV lanes and drivers interested in using ExpressLanes. Users who cannot or do not use HOV lanes or who do not have interest in using ExpressLanes would continue using the general purpose lanes, which would be functionally and operationally unaffected by the proposed alternatives. Anticipated effects to traffic flow and operation on I-105's general purpose lanes are beneficial for the most part, and the existing I-105 would remain in operation at a level that is the same or better than current conditions. In this sense, non-HOV and -HOT users would be unaffected.

The largest area of concern from an economic standpoint is whether the introduction of a tolling system to I-105, previously a non-toll road with HOV lanes, would cause disproportionate impacts to low-income users and environmental justice populations. Single drivers using the proposed ExpressLanes would pay a toll through a required transponder to use them, and vehicles that meet the qualifications for carpooling would need to indicate so using the transponder. In order to preserve equity, toll facility usage should be available at an equal opportunity to all drivers, and the introduction of such a facility should not cause a disproportionate effect on any group. The additional cost requirement for both single and carpool drivers could certainly be prohibitive for these groups. The transponder itself would cost $1 a month and would be an impact to low income users. There is also the option for toll free travel in the express lanes. Alternative 3 maintains the existing HOV 2+ occupancy policy for toll free travel, whereas Alternative 2 assumes an increase in occupancy policy to HOV 3+ for toll free travel.

To address this, Metro completed a report in March of 2010 titled "ExpressLanes Final Low-Income Assessment Report," in which its proposed Low-Income Assistance Plan and Transit Rewards Program were outlined and discussed. It is available online and analyzes the effects of toll lanes on low-income drivers and riders. The report identified two barriers to ExpressLane use by low-income drivers. The first would be the requirement to open an account and obtain a transponder, and the second would be the need to provide a credit card to open the account. To address these two barriers, Metro offers a Low-Income Assistance Plan. Low Income Assistance Plan participants are provided a $25 credit upon opening the account, and the monthly $1 account maintenance fee is waived. Additionally, Metro provides the option of opening a cash account that does not require the driver to have a credit card. To be eligible to participate in this program, low-income drivers in the Metro study are defined by the adoptability threshold below.

Figure 2-17: Low-Income Assistance Plan Eligibility

LOW-INCOME ASSISTANCE PLAN ELIGIBILITY

HOUSEHOLD SIZE	INCOME THRESHOLD**
1	$24,280
2	$39,920
3	$41,560
4	$50,200
5	$58,840
6	$66,940
7	$76,140
8	$84,760
FOR EACH ADDITIONAL PERSON, ADD	$8,640

**THIS THRESHOLD IS TWICE THE 2019 FEDERAL POVERTY LEVEL.

The Transit Rewards Program also exists to provide transit credit for frequent transit riders, many of whom live in low-income households. Frequent transit riders can earn a $5 toll credit by taking 16 one-way trips on routes operating on the I-10 El Monte Busway and/or I-110 Transitway. While this program does not directly address low-income households, it could still be beneficial for low-income drivers. The qualifying transit lines are as follows:

On I-110:
Metro Lines 460, 550 and Metro Silver Line
Gardena Line 1X
Torrance Line 4
LADOT Commuter Express 438 and 448

On I-10:

Metro Lines 485, 487, 489 and Metro Silver Line
Foothill Lines 481, 493, 495, 497, 498, 499, 699 and Foothill Silver Streak

More details about these lines and future updates are available at:
https://www.metroexpresslanes.net/en/about/transit.shtml.

With the application of these two programs to the proposed project's operation and use once completed, the disproportionate impact of the transponder fee requirement on low-income drivers can be mitigated to less than significant.

Impacts to Surrounding Communities of I-105

Almost every census tract along I-105 qualifies as an environmental justice population under the methodology used in the CIA. Typically, impacts that tend to be disproportionate for highway projects are relocations and temporary or partial acquisitions for construction easements. As both Build Alternatives involve limited road widening, this area of concern is greatly lessened. For Alternative 2, all new construction would remain within Caltrans' existing right-of-way, and there would be no expansion of the freeway into surrounding properties or land uses. For Alternative 3, the required partial acquisitions would not disproportionately affect any one group, and they are not anticipated to cause a significant impact.

As a whole entity from the perspective of an adjacent resident, the I-105 would not change functionally or operationally. There would be no permanent change in access, parking, or available routes, and the proposed project would not have any new effects on community topics such as cohesion, economic vitality, employment, safety, or accessibility. Because accessibility would be unaffected, access to jobs and community services would not be impacted. There would be no adverse change in traffic or routes along I-105 to any environmental justice population locations or to any businesses located in or owned by such, and business activity will be unaffected. Property value is not anticipated to change as a result of the proposed project, and no agricultural land will be converted to transportation uses.

There may be temporary impacts on business activity during construction, as there is the possibility that lanes or ramps will need to be temporarily closed. However, detours and signage would be provided if this were the case, and any of these lane changes would be strictly temporary. A Traffic Management Plan (TMP) will be developed if necessary in the next phase of the project.

Other environmental impacts caused by the proposed project would not cause disproportionate impacts on any segment of the population, and both beneficial and adverse impacts would be felt equally along all corridor populations. For targeted discussion on impacts to these other subject areas, please refer to the relevant chapters in this document or Chapter 3 for a summary.

2.1.6.5 Avoidance, Minimization, and/or Mitigation Measures

Based on the above discussion and analysis, the build alternatives will not cause disproportionately high and adverse effects on any minority or low-income populations in accordance with the provisions of EO 12898.

The following measures are recommended for both build alternatives. With inclusion of these measure into the project, it is anticipated that this project will have no impacts to low income communities.

EJ1 - Metro currently has policies in place to allow for all groups to have equal opportunity to access and use the ExpressLanes for I-10 and I-110. It is recommended that these policies will continue to be in place and apply to the ExpressLanes on I-105 in order to minimize financial burdens on low-income drivers. As discussed in section 4.2.1.5, Toll Projects, the Low-Income Assistance Plan provides a $25 credit and waives the monthly maintenance fees, thus relieving financial stress caused by this new requirement. Frequent transit riders can also take advantage of the Transit Rewards Program to earn monetary credits toward ExpressLane tolls. The Carpool Loyalty Program allows carpoolers the opportunity to win toll credits for future SOV travel on the ExpressLanes.

EJ2 - It is important when conducting outreach to make sure communities know the above policies and Low-Income Assistance Plan are available. Outreach efforts should be made to notify members of the public of their existence and the qualifications required to use them.

2.1.7 Railroads

The Union Pacific Railroad (UPRR) runs parallel to the Eastbound I-105, at approximately Post Mile 6.5, between Budlong Avenue and Vermont Avenue. The UPRR, runs perpendicular to the I-105 as a Railroad Overhead, at approximately Post Mile 14.4. The Alameda Corridor Transpiration Authority (ACTA), as part of the Southern Pacific Transportation corridor (Alameda corridor), runs perpendicular to I-105 and Imperial Highway, at approximately Post Mile 10.6, adjacent to Alameda Street. The Los Angeles County Metropolitan Transportation Authority (Metro) Green Line Rail Transit corridor runs parallel to/in the median of the I-105 for the majority of the route, from approximately Post Mile 1.8 to Post Mile 18.0.

2.1.7.1 Affected Environment

No impacts to UPRR facilities are anticipated as part of the Project for Build Alternative 2 or 3; facilities to Remain-In-Place.

Impacts to the ACTA corridor (Alameda corridor) include modification of existing aerial easement for reconstruction of Imperial Highway to accommodate widening on the westbound side of the Alameda Street Viaduct. No impacts to ACTA facilities are anticipated as part of the Project for Build Alternative 2 or 3; facilities to Remain-In-Place.

Impacts to the Metro Green Line Rail Transit corridor include addition of various tolling equipment to be placed on the existing median barrier.

2.1.7.2 Environmental Consequences

A Construct and Maintenance Agreement for the Alameda corridor will be required between Caltrans and ACTA for various modifications of the Project (e.g., aerial easement for reconstruction of Imperial Highway at Alameda Street). An updated Operations and Maintenance Agreement for the Metro Green Line Rail Transit corridor, previously executed August 12, 1995, will be required between Caltrans and Metro for various transit modifications of the Project (i.e., tolling equipment placed on median barrier).

2.1.7.3 Avoidance, Minimization and/or Mitigation Measures

The following measures are recommended for both build alternatives. With inclusion of these measures into the project, it is anticipated that the project will have no impacts to railroad facilities

RR1 -	A traffic management plan will be put in place for the duration of construction to minimize the effects of delay or closures.
RR2 -	All railroad owners will be contacted before construction and made aware of construction schedules and potential work around railroad facilities.

2.1.8 Utilities/Emergency Services

2.1.8.1 Affected Environment

No separate report was prepared for utilities, but a Utility Conflict Matrix and Cost Estimate Analysis was prepared for both Build Alternatives of the proposed project on August 30, 2019. The matrices list all utility conflicts anticipated and the associated resolutions and costs of avoiding or relocating them. For this project, the recommended action for utility conflicts was to protect rather than relocate for all utilities except two. Both underground and above ground utility relocations are anticipated with the proposed project. No service disruptions are anticipated as a result of the proposed project. Location of Utilities will be performed during the PS&E phase of the project for underground utilities in the project vicinity that may be in close proximity or conflict with proposed improvements. Relocation and addition of towers are not anticipated for the existing overhead electrical lines.

2.1.8.2 Environmental Consequences

The two utilities that will need to be relocated are the City of Paramount water line on Facade Ave. and the Los Angeles County Sanitation District's sewer line on Arthur Ave. All other utilities occurring in the project area will be protected in place. Both utilities to be relocated are expected to be relocated within the bridge, and no disruptions of service are anticipated. Coordination with utility companies shall be carried out during the PS&E and construction phases of the project.

Table 2-45 lists the anticipated impacts to utilities for Build Alternative 2.

Table 2-45: Anticipated Impacts to Utilities – Build Alternative 2

#	Utility Owner	Utility Type	Size and/or Material	Utility Conflict Location	Utility Conflict Description
1.1	Southern California Edison	Electrical	Duct	WB I-105 at Truro Ave	Conflict with Pavement Widening/ Reconstruction
1.2	Los Angeles County Sanitation District	Sewer	27"		
1.3	Southern California Water Coalition	Water	12" DI in 22"		
2.1	Pacific Bell	Telecom	18-4" Ducts in 30" Steel Casing	Grevillea Ave	Conflict with Pavement Widening/ Reconstruction/ Retaining Wall
2.2	Southern California Gas	Gas	2"	Grevillea Ave	Conflict with Pavement Widening/ Reconstruction
2.3	Los Angeles County Sanitation District	Sewer	30"		
3.1	Los Angeles County Sanitation District	Sewer	15" VCP	Bullis Rd	Conflict with Bridge Abutment
3.2	Southern California Edison	Electrical	UG		
3.3	Standard Oil	Oil	6"		
3.4	City of Lynwood	Water	12"		
3.5	Pacific Telephone and Telegraph	Telecom	4 DU		
3.6	Southern California Gas	Gas	4"		
3.7	Standard Oil	Oil	6"		
3.8	Standard Oil	Oil	6"		
3.9	Standard Oil	Oil	8"		
4.1	Southern California Edison	Electrical	Duct	Harris Ave	Conflict with Reprofiling
4.2	Rogers Cable	Telecom	UG		
4.3	City of Lynwood	Water	12"		
4.4	City of Lynwood	Sewer	8" VCP		
5.1	Los Angeles County Sanitation District	Sewer	8"	Façade Ave	Conflict with Reprofiling
5.2	Los Angeles County Sanitation District	Sewer	8" VCP	Façade Ave	Conflict with Bridge
5.3	City of Paramount	Water	10"		
5.4	Los Angeles County Sanitation District	Sewer	12" VCP	Arthur Ave	Conflict with Bridge
6.1	Pacific Bell	Telecom	12 DU	Paramount Blvd	Conflict with Bridge Abutment/ Retaining Wall
6.2	Southern California Gas	Gas	4" in 8" Casing		
6.3	Southern California Edison	Electrical	4-5" Ducts ED UG		
6.4	Los Angeles County Sanitation District	Sewer	8"		
7.1	Southern California Water Coalition	Water	6"	Downey Ave	Conflict with Bridge
7.2	Los Angeles County Sanitation District	Sewer	8"		
7.3	Pacific Telephone and Telegraph	Telecom	6 MCD		
7.4	Los Angeles County Sanitation District	Sewer	8"		
7.5	Pacific Telephone and Telegraph	Telecom	UG		
7.6	Southern California Gas	Gas	2"		
7.7	Pacific Telephone and Telegraph	Telecom	UG		
7.8	Southern California Water Coalition	Water	2"		
7.9	Southern California Gas	Gas	2"		

Table 2-46 lists the anticipated impacts to utilities for Build Alternative 3.

Table 2-46: Anticipated Impacts to Utilities – Build Alternative 3

#	Utility Owner	Utility Type	Size and/or Material	Utility Conflict Location	Utility Conflict Description
1.1	Pacific Bell	Telecom	2 DU	Doty Ave	Conflict with Pavement Widening / Reconstruction
1.2	Southern California Water Coalition	Water	8"		
2.1	Pacific Bell	Telecom Duct	Conduit	Central Ave	Conflict with Repaving
2.2	Southern California Gas	Gas	3"		
2.3	Shell	Gas	4"		
2.4	Southern California Gas	Gas	2"		
2.5	Southern California Gas	Gas	30"H		
2.6	Los Angeles County Sanitation District	Sewer	8"		
2.7	Los Angeles County Department of Public Works	Water	8" CI		
3.1	Los Angeles County Sanitation District	Sewer	15" VCP	Bullis Rd	Conflict with Bridge Abutment
3.2	Southern California Edison	Electrical	UG		
3.3	Standard Oil	Oil	6"		
3.4	City of Lynwood	Water	12"		
3.5	Pacific Telephone and Telegraph	Telecom	4 DU		
3.6	Southern California Gas	Gas	4"		
3.7	Standard Oil	Oil	6"		
3.8	Standard Oil	Oil	6"		
3.9	Standard Oil	Oil	8"		
4.1	Southern California Edison	Electrical	Duct	Harris Ave	Conflict with Reprofiling
4.2	Rogers Cable	Telecom	UG		
4.3	City of Lynwood	Sewer	12"		
4.4	City of Lynwood	Sewer	8" VCP		
5.1	Los Angeles County Sanitation District	Sewer	8"	Façade Ave	Conflict with Reprofiling
5.2	Los Angeles County Sanitation District	Sewer	8" VCP	Façade Ave	Conflict with Bridge
5.3	City of Paramount	Water	10"		
5.4	Los Angeles County Sanitation District	Sewer	12" VCP	Arthur Ave	Conflict with Bridge
6.1	Pacific Bell	Telecom	12 DU	Paramount Blvd	Conflict with Bridge Abutment / Retaining Wall
6.2	Southern California Gas	Gas	4" IN 8" Casing		
6.3	Southern California Edison	Electrical	4-5" Ducts ED UG		
6.4	Los Angeles County Sanitation District	Sewer	8"		
7.1	Southern California Water Coalition	Water	6"	Downey Ave	Conflict with Bridge
7.2	Los Angeles County Sanitation District	Sewer	8"		
7.3	Pacific Telephone and Telegraph	Telecom	6 MCD		
7.4	Los Angeles County Sanitation District	Sewer	8"		
7.5	Pacific Telephone and Telegraph	Telecom	UG		
7.6	Southern California Gas	Gas	2"		
7.7	Pacific Telephone and Telegraph	Telecom	UG		
7.8	Southern California Water Coalition	Water	2"		
7.9	Southern California Gas	Gas	2"		

Travel time may be affected negatively during construction on the freeway and ramps, but any delay caused by construction will be minimized by the TMP, which will be developed in detail during the next phase of the project. The TMP will strategize management of the project's work zone impacts on traffic safety and control. It will include transportation operations, such as signal retiming, use of intelligent transportation systems (ITS), and speed enforcement, and public information components, such as radio advertisements, variable message signs, and other communication with the public. Table 2-47 lists emergency services adjacent to I-105

Table 2-47: Emergency Services Adjacent to I-105

City	**Emergency Service**	**Address**	**Distance from I-105**
Norwalk	Coast Plaza Hospital	13100 Studebaker Rd, Norwalk, CA 90650	~0.1 mile
Downey	Kaiser Permanente Downey Medical Center	9333 Imperial Hwy, Downey, CA 90242	~0.3 mile
	Downey Fire Department Station #2	9556 Imperial Hwy, Downey, CA 90242	~0.2 mile
South Gate	None	None	None
Paramount	None	None	None
Lynwood	Los Angeles County Fire Department Station 147	3161 E Imperial Hwy, Lynwood, CA 90262	~0.3 mile
	Los Angeles County Fire Department Station 148	4264 Martin Luther King Jr Bl, Lynwood, CA 90262	~0.4 mile
	St Francis Medical Center	3630 E Imperial Hwy, Lynwood, CA 90262	~0.5 mile
	Los Angeles County Sheriff Department	11703 Alameda St, Lynwood, CA 90262	~0.1 mile
Willowbrook	Los Angeles County Fire Department Station 41	1815 E 120th St, Los Angeles, CA 90059	~0.3 mile
	Martin Luther King Jr. Community Hospital	1680 E 120th St, Los Angeles, CA 90059	~0.5 mile
	Augustus Hawkins Mental Health Center	1720 E 120th St, Los Angeles, CA 90059	~0.4 mile
Los Angeles	None	None	None
West Athens	Los Angeles County Sheriff Station	1310 W Imperial Hwy, Los Angeles, CA 90044	~0.3 mile
Inglewood	None	None	None
Hawthorne	Los Angeles County Fire Department Station 162	12151 Crenshaw Blvd, Hawthorne, CA 90250	~0.2 mile
Lennox	Los Angeles County Fire Department Station 18	4518 Lennox Blvd, Lennox, CA 90304	~0.4 mile
El Segundo	El Segundo Fire Station #2	2261 E Mariposa Ave, El Segundo, CA 90245	~0.5 mile

2.1.8.3 Avoidance, Minimization, and/or Mitigation Measures

The following measures are recommended for both build alternatives. With inclusion of these measures into the project, it is anticipated that this project will have no impacts to utilities and emergency services.

Uti1 - A traffic management plan will be put in place for the duration of construction to minimize the effects of delays or closures.

Uti2 - All emergency and utility services will be contacted before construction and made aware of construction schedules and any road closures ahead of time.

2.1.9 Traffic and Transportation/Pedestrian and Bicycle Facilities

Caltrans, as assigned by the Federal Highway Administration (FHWA), directs that full consideration should be given to the safe accommodation of pedestrians and bicyclists during the development of Federal-aid highway projects (see 23 Code of Federal Regulations [CFR] 652). It further directs that the special needs of the elderly and the disabled must be considered in all Federal-aid projects that include pedestrian facilities. When current or anticipated pedestrian and/or bicycle traffic presents a potential conflict with motor vehicle traffic, every effort must be made to minimize the detrimental effects on all highway users who share the facility.

In July 1999, the U.S. Department of Transportation (USDOT) issued an Accessibility Policy Statement pledging a fully accessible multimodal transportation system. Accessibility in federally assisted programs is governed by the USDOT regulations (49 CFR 27) implementing Section 504 of the Rehabilitation Act (29 United States Code [USC] 794). The FHWA has enacted regulations for the implementation of the 1990 Americans with Disabilities Act (ADA), including a commitment to build transportation facilities that provide equal access for all persons. These regulations require application of the ADA requirements to the Federal-aid projects, including Transportation Enhancement Activities.

2.1.9.1 Affected Environment

The following discussion and summary are based on information from the Draft Project Report completed by Caltrans in January 2020, the Traffic Study Report, overhead surveys based on satellite images from Google Maps and Google Earth, and field surveys.

The Traffic Study Report was completed for Metro in January 2020 by WSP. The Traffic Study Report's study area covered the entirety of I-105 and a 1-mile buffer around the area, which traverses multiple cities and contains multiple transportation facilities, including the freeway itself and the Metro Green Line, a light rail transit way that exists in the median of I-105. This study area includes the entirety of I-105's GP and HOV lanes, ramps (merge and diverge), weaving sections, and ramp terminus and arterial intersections.
The traffic operations analysis was performed for four scenarios:

- 2017 Existing Conditions,
- 2027 and 2047 Alternative 1 Conditions (No-Build Conditions),
- 2027 and 2047 Alternative 2 Conditions (Convert Existing HOV lane to One ExpressLane, Standard Lanes and Shoulder Widths), and

- 2027 and 2047 Alternative 3 Conditions (Convert Existing HOV lane to Two ExpressLanes, Non-Standard Lanes and Shoulder widths)

In this Affected Environment section, first all transportation facilities affected will be introduced with a brief description, including bicycle and pedestrian facilities (see *Existing Facilities*). Next, an overview of current traffic conditions will be summarized based on the findings and reports from the Traffic Study Report (see *Existing Traffic Conditions*). In the following Environmental Consequences section, traffic forecasts will be summarized, and traffic impacts will be discussed.

Existing Facilities

I-105 Freeway: Interstate 105, also known as the Glenn Anderson Freeway or Century Freeway, runs east-west through Los Angeles County from SR-1 near El Segundo and LAX to a small distance east of I-605 in Norwalk. It is a six-lane facility almost 19 miles long with auxiliary lanes between most on- and off-ramps with 12-foot lane widths for general purpose and HOV lanes and 10-foot shoulder widths (typically). I-105 is intersected by SR-1, I-405, I-110, I-710, and I-605 and runs parallel to Imperial Highway for the most part, crossing both Los Angeles and San Gabriel Rivers. The majority of the Metro Green Line is located within its median, running through nearly the entire length of the freeway.

Imperial Highway: The Imperial Highway runs parallel and adjacent to I-105 along much of the project area, crossing 41 miles across Los Angeles, Orange, Riverside, San Diego, and Imperial Counties. It begins near LAX at Vista Del Mar in Los Angeles and ends at the Anaheim city line at Via Escola. From SR-39 to SR-91 it is maintained by Caltrans, but local jurisdictions maintain the rest.

Metro Green Line: The Metro Green Line is a light-rail facility 20 miles long owned and operated by Metro. It runs between Redondo Beach and Norwalk and is fully grade-separated, running mostly in the median of I-105. The Metro Green Line stops at 14 stations and connects to several other transit lines, including the Silver Line (busway), the Metro Blue Line (light rail), or Metro Express 460 (bus).

Other Transit: Several bus lines serve the area around I-105 and allow
The Metro Local 115 bus runs from Playa Del Rey to Norwalk along stretches of Manchester Blvd. and Firestone Blvd. The Metro Local 117 runs from LAX to Downey along stretches of Century Blvd., Tweedy Blvd., and Imperial Highway. Metro Local 120 runs from LAX to Whittier along Imperial Highway.

Bicycle and Pedestrian Facilities: No bicycle or pedestrian access is allowed on freeway facilities except at designated transit locations. The Metro Green line is located within the median of I-105, but it is separated from the freeway by barrier and will not have any work performed outside that barrier.

Two bike paths and trails traverse or intersect the project area and are listed as follows. The San Gabriel River Mid Trail runs under I-105 at the east end of the freeway alongside the San Gabriel River. Ricardo Lara Linear Park in Lynwood is located on Fernwood Ave., which runs parallel to I-105 from Bullis Road to Atlantic Ave. A bike path project is proposed along the length of the linear park along the north side of I-105. Neither of these facilities will be affected by the proposed project.

Parking: Parking is not available in the project area. The project primarily affects the freeway, where there is no parking; for areas where work is planned on ramps, shoulders, or expansion areas off Imperial Highway or I-105, no parking is permitted. No new parking will be created nor will existing parking be removed by the proposed project.

Existing Traffic Conditions

For reference, tables for general purpose lanes, HOV lanes, and Highway Capacity Manual (HCM) intersection performance criterion are provided below. Some of these metrics use LOS as a measurement. LOS is a qualitative measure based on the quantities below that indicates traffic service quality for motor vehicles: a peak hour volume density of passenger cars per mile per lane. Locations that exceed LOS “D” are considered deficient. It is important to note that even for LOS “F”, there are distinctions to be made within the category. As an example, delays of 81 seconds per vehicle and 120 seconds per vehicle would both be considered LOS “F”, but represent a noticeably different quality of traffic for drivers.

Table 2-48: Freeway General Purpose Lanes Performance Criteria

Performance Criteria Methodology	
GP Lanes	Criteria based on LOS using peak hour volume density (passenger cars per mile per lane) as the measurement. Locations that exceed LOS ‘E’ are considered deficient.
Performance Threshold	
LOS	**Density (pc/mi/ln)**
A	≤11
B	> 11 - 18
C	> 18 - 26
D	> 26 - 35
E	> 35 - 45
F	>45 or any component V/C ratio > 1.00

Source: HCM 6th Edition

Table 2-49: HOV Lane Performance Criteria

Performance Criteria Methodology	
HOV Lanes	Criteria based on maximum peak hour demand for LOS C or better. Deficiencies identified as locations that exceed LOS C.
Performance Threshold	
Number of Lanes	**Maximum Demand (veh/hr)**
1 Lane	≤ 1,600
2 Lanes	≤ 3,200
LOS	**Density (pc/mi/ln)**
A	≤11
B	> 11 - 18
C	> 18 - 26
D	> 26 - 35
E	> 35 - 45
F	>45 or any component V/C ratio > 1.00

Source: HCM 6th Edition and Caltrans HOV Guidelines (2018) - states that 1,650 vehicles per hour represents the maximum desired HOV volume for one (1) lane and represents LOS C conditions. Planning studies in Caltrans have used 1,600 vph as the maximum desired HOV volume for one (1) HOV lane.

Table 2-50: Merge, Diverge, and Weaving Performance Criteria

Performance Criteria Methodology			
Merge, Diverge, and Weaving Segments	Criteria based on LOS using peak hour volume density (passenger cars per mile per lane) as the measurement. Deficiencies identified as locations that exceed LOS ‘E’.		
Performance Thresholds			
Merge and Diverge Segments		**Weaving Segments**	
LOS	**Density (pc/mi/ln)**	**LOS**	**Density (pc/mi/ln)**
A	≤10	A	≤10
B	>10-20	B	>10 – 20
C	>20-28	C	>20 – 28
D	>28-35	D	>28 – 35
E	>35	E	>35 – 43
F	Demand exceeds capacity	F	>43, or demand exceeds capacity

Source: HCM 6th Edition (Exhibit 13-6, Exhibit 14-3)

Table 2-51: HCM Intersection Performance Criteria

Performance Criteria Methodology		
Intersections	Criteria based on LOS using intersection control delay (average seconds per vehicle) as the measurement. Locations that exceed LOS 'D' are considered deficient.	
Performance Thresholds		
LOS	**Control Delay - Signalized (sec/veh)**	**Control Delay - Stop Control (sec/veh)**
A	≤10	≤10
B	>10 – 20	>10 - 15
C	>20 – 35	>15 - 25
D	>35 – 55	>25 - 35
E	>55 – 80	>35 - 50
F	>80	>50

Source: HCM 6th Edition

Data collected in the Traffic Study Report is organized first by general purpose and HOV lane, then by eastbound and westbound. Each of the general purpose freeway lanes directions has data for mainline segments, merge/diverge/weave segments, and ramps. The tables below report this data in vehicle volume and LOS at AM and PM peak hours. LOS determinations here are based on the 2016 HCM (FREEVAL), where segments are not saturated. F* denotes saturated conditions where vehicles are in queue. F** denotes saturated conditions where demand exceeds or is at near capacity, causing bottleneck to occur. Deficient locations (those exceeding LOS "D") are highlighted as red text and bolded.

Table 2-52: Eastbound General Purpose Mainline: 2017 Current Conditions

Location	Segment Analysis	AM Peak Hour Volume	AM Peak Hour LOS	PM Peak Hour Volume	PM Peak Hour LOS
Btwn I-405 & Hawthorne Blvd/Prairie Ave off-ramp	Basic	5189	C	3483	F*
Btwn Prarie Ave off-ramp & on-ramp	Basic	5075	D	4012	F*
Btwn Prarie Ave & Crenshaw Blvd/120th St	Basic	5032	D	4500	F*
Btwn Crenshaw Blvd & Vermont Ave	Basic	6233	D	6251	F*
Btwn Normandie OC & Vermont off-ramp	Basic	6233	C	6251	F*
Btwn I-110 off-ramp & Hoover St on-ramp	Basic	3755	C	2414	F*
Btwn Central Ave off-ramp & on-ramp	Basic	4640	D	3073	F*
Btwn Wilmington Ave off-ramp & on-ramp	Basic	4773	D	4269	F*
Btwn Wilmington Ave & Long Beach Blvd	Basic	5266	D	4697	F*
Btwn Long Beach Blvd off-ramp & on-ramp	Basic	4282	C	4065	F*
Btwn Long Beach Blvd & I-710	Basic	5793	D	5241	F*
Btwn I-710 off-ramp & on-ramp	Basic	3725	C	2916	C
Btwn Garfield Ave & Grove St	Basic	2830	B	2206	B

Btwn Grove St OC & Paramount Blvd OC	Basic	4793	F*	4548	F*
Btwn Paramount Blvd & Lakewood Blvd	Basic	4583	D	4197	F*
Btwn Lakewood Blvd & Bellflower Blvd	Basic	4105	C	3676	F*

Notes: LOS based on 2016 HCM (FREEVAL) where segments are not saturated.
Btwn = between
F denotes saturated conditions where vehicles are in queue based on INRIX speed contours.*
*F** denotes saturated conditions where demand exceeds or is at near capacity causing bottleneck to occur, based on* INRIX speed contours.

Table 2-53: Eastbound General Purpose Merge/Diverge/Weave Segments: 2017 Current Conditions

Location	Segment Analysis	AM Peak Hour Volume	AM Peak Hour LOS	PM Peak Hour Volume	PM Peak Hour LOS
Imperial Hwy on-ramp	Merge	3451	C	2578	F*
I-405 NB on-ramp	Merge	3240	C	2578	F*
I-405 SB on-ramp	Merge	5189	C	3547	F**
Prairie Ave off-ramp	Diverge	5189	D	3547	F*
Hawthorn Blvd/Imperial Hwy on-ramp to Crenshaw/120th off-ramp	Weave	5838	D	4890	F*
Crenshaw Blvd/120th St on-ramp	Merge	5873	D	5186	F*
Crenshaw Blvd/120th St on-ramp (NB)	Merge	6233	D	6119	F**
Vermont Ave off-ramp	Diverge	6233	C	6119	F*
I-110 off-ramp	Diverge	5556	C	5041	F*
Hoover St on-ramp	Merge	4427	C	2485	F*
I-110 on-ramp to Central Ave off-ramp	Weave	5757	C	4168	F*
Central Ave on-ramp to Wilmington Ave off-ramp	Weave	5533	D	4001	F*
Wilmington Ave on-ramp	Merge	5613	D	4643	F**
Long Beach Blvd off-ramp	Diverge	5266	D	4643	F*
SB Long Beach Blvd on-ramp	Merge	5043	D	4704	F*
NB Long Beach Blvd on-ramp	Merge	5793	C	5271	F*
I-710 off-ramp	Diverge	5793	E	5271	F**
Garfield Ave off-ramp	Diverge	3725	C	2987	B
I-710 NB on-ramp	Merge	4045	F*	3624	F*
I-710 SB on-ramp	Merge	4793	F*	4670	F*
Paramount Blvd on-ramp	Merge	5214	F*	4878	F**
Lakewood Blvd off-ramp	Diverge	4854	F**	4329	F*
SB Lakewood Blvd on-ramp	Merge	4798	C	4357	F*
NB Lakewood Blvd on-ramp	Weave	5015	C	4492	F*
Bellflower Blvd on-ramp	Merge	4665	C	4535	F*
I-605 off-ramp	Diverge	4665	C	4535	F**

Table 2-54: Westbound General Purpose Mainline: 2017 Current Conditions

Location	Segment Analysis	AM Peak Hour Volume	AM Peak Hour LOS	PM Peak Hour Volume	PM Peak Hour LOS
Btwn Bellflower Blvd & Lakewood Blvd	Basic	5258	C	5373	C
Btwn Lakewood Blvd off-ramp & on-ramp	Basic	4794	F*	4598	F*
Btwn Paramount Blvd off-ramp & on-ramp	Basic	5060	D	4729	D
Btwn Paramount Blvd & I-710	Basic	5060	C	4729	C
Btwn I-710 off-ramp & Garfield Ave on-ramp	Basic	1591	F*	1184	B
Btwn I-710 off-ramp & SB on-ramp	Basic	2343	F*	1766	F*
Btwn I-710 NB on-ramp & Gertrude Dr UC	Basic	4835	F*	5435	F*
Btwn Gertrude Dr UC & Long Beach Blvd	Basic	4835	F*	5435	F*
Btwn Long Beach Blvd off-ramp & on-ramp	Basic	3968	F*	4310	F*
Btwn State St UC & Alameda St	Basic	5040	F*	5291	D
Btwn Imperial Hwy off-ramp & on-ramp	Basic	4187	F*	4199	C
Btwn Imperial Hwy & Central Ave	Basic	5343	F*	5357	D
Btwn Central Ave off-ramp & on-ramp	Basic	4874	D	4619	D
Btwn Stanford Ave UC & Avalon Blvd UC	Basic	5854	C	5771	C
Btwn Avalon UC & San Pedro St UC	Basic	5854	F*	5771	C
Btwn I-110 off-ramp & Hoover St on-ramp	Basic	3134	F*	3315	C
Btwn Vermont Ave off-ramp & on-ramp	Basic	4030	F*	4301	C
Btwn Vermont Ave & Crenshaw Blvd	Basic	6551	F*	6315	C
Btwn Crenshaw Blvd off-ramp & on-ramp	Basic	5421	F*	4463	D
Btwn Prarie Ave/Hawthorne Blvd off-ramp & Imperial Hwy on-ramp	Basic	6679	F**	4720	D
Btwn Imperial Hwy & I-405	Basic	6008	F*	4865	B
Btwn I-405 off-ramp & La Cienega Blvd	Basic	4698	F*	1476	A

Table 2-55: Westbound General Purpose Merge/Diverge/Weave Segments: 2017 Current Conditions

Location	Segment Analysis	AM Peak Hour Volume	AM Peak Hour LOS	PM Peak Hour Volume	PM Peak Hour LOS
I-605 on-ramp	Merge	6192	D	5891	C
Bellflower Blvd off-ramp	Diverge	6192	D	5891	C
Bellflower Blvd on-ramp to Lakewood Blvd off-ramp	Weave	5761	F*	5932	F*
Lakewood Blvd on-ramp	Merge	5754	F**	5536	F**
Paramount Blvd off-ramp	Diverge	5754	D	5536	D
I-710 off-ramp	Diverge	5060	F*	4729	B

Garfield Ave on-ramp	Merge	2343	F*	1766	B
I-710 SB on-ramp	Merge	2984	F*	2658	F*
I-710 NB on-ramp	Merge	4835	F*	5435	F*
Long Beach Blvd off-ramp	Diverge	4835	F*	5435	F*
NB Long Beach Blvd on-ramp	Merge	4243	F*	4468	F*
SB Long Beach Blvd on-ramp	Merge	5040	F**	5291	F**
Imperial Hwy off-ramp	Diverge	5040	F*	5291	D
Imperial Hwy on-ramp	Merge	5343	F*	5357	D
Central Ave off-ramp	Diverge	5343	F**	5357	D
Central Ave on-ramp	Merge	5854	C	5771	C
I-110 off-ramp	Diverge	5854	F*	5771	C
I-110 NB on-ramp	Weave	4761	F*	5034	C
I-110 SB on-ramp	Merge	4957	F**	5530	C
Vermont Ave on-ramp	Merge	6102	F*	6131	C
Crenshaw Blvd off-ramp	Diverge	6065	F*	5847	C
NB Crenshaw Blvd on-ramp	Merge	6479	F**	5058	C
SB Crenshaw Blvd on-ramp to Prairie Ave/Hawthorne Blvd off-ramp	Weave	6867	F*	5202	C
Imperial Hwy on-ramp	Merge	6008	F*	4865	C
I-405 off-ramp	Diverge	4192	F*	2644	E

Typically, congestion is worse in the eastbound direction of the freeway. This is the result of several bottlenecks, the worst of which occurs between the Long Beach Blvd. on-ramp and I-710 off-ramps just west of the I-710 interchange. The bottlenecks at these two points cause congestion to the I-110 SB to I-105 EB connector ramp. Two other major bottlenecks occur east of the I-710 interchange: the first, where demand at the I-605 NB connector ramp exceeds capacity; the next, between Paramount Blvd. on-ramp and Lakeview Blvd. off-ramp, due to the on-ramp merge and weaving conflict with the off-ramp. The next is west of the I-110 freeway at Crenshaw Blvd., where the combination of an auxiliary lane ending and two closely-spaced, high-volume ramps create the next most congested bottleneck. These four points are the greatest contributing factors to congestion on EB I-105.

In the westbound direction, there are still major bottlenecks, but they are smaller and less congested. The worst bottleneck occurs at Crenshaw Blvd., due to high on-ramp volumes. The second largest occurs at the connector ramps from the SB I-710 ramps to the Long Beach off-ramps, where the lane drop aggravates conditions just west of the Long Beach off-ramp.

2.1.9.2 Existing Ramp Conditions

East- and westbound freeway ramp conditions were analyzed in the Traffic Study Report. However, because most of the ramp locations have demands that are within the available capacities except for the few locations listed below (7 maximum out of all directions and peak hours out of 39 locations) and only one location (EB I-105 at Atwood Way/Douglas Street on-ramp) is currently operating deficiently, they will not be summarized here. Caltrans also plans to meter most of these ramps in the near future. Additionally, the queuing analysis indicates that excessive queuing exceeding the turn bay storage capacity only occurs approximately 5% of the time at 95% queue length, and none of the ramps typically have queues extending the length of ramp. To view this data, please refer to Traffic Study Report, Section 3.3, Existing I-105 Freeway Ramps and its Appendix F for queue reports.

Eastbound Ramps exceeding available capacity:

- During AM peak hours: Central Ave. off-ramp.
- During PM peak hours: Sepulveda Blvd on-ramp (SB), Imperial Hwy on-ramp (EB), Atwood Way/Douglas St. on-ramp (SB), I-405 off-ramp (NB & SB), I-110 off-ramp (NB & SB), Central on-ramp.

Westbound Ramps exceeding available capacity:

- During AM peak hours: Sepulveda Blvd off-ramp (NB), Nash St. off-ramp (SB), Imperial Hwy on-ramp, Crenshaw Blvd. on-ramp, Vermont Ave. off-ramp, Imperial Highway on-ramp, I-710 on-ramp (NB).
- During PM peak hours: I-405 off-ramp (NB & SB), Long Beach Blvd. off-ramp, I-710 on-ramp (NB), I-710 freeway to freeway (NB & SB), I-605 on-ramp (NB & SB).

2.1.9.3 Existing HOV Conditions

Several bottlenecks also exist for the HOV lanes of I-105 in both directions. These are also typically worse in the eastbound direction, like the general purpose lanes. The most severe occurs just east of the I-110 interchanges in the eastbound direction, where the I-110 ExpressLanes direct connector ramp traffic merges with I-105 HOV lane traffic. The I-105 HOV facility does not currently have the capacity to handle the additional demand coming from I-110. The main bottleneck in the westbound direction occurs for the same reason at the same location, where the I-110 ExpressLanes direct connector ramp merges with the HOV lane westward.

Another major bottleneck occurs on the eastbound HOV lanes between the Hawthorne Blvd. on-ramp and Crenshaw Blvd./120th Street off-ramp at the HOV ingress/egress location. Congestion on the general purpose lanes requires users exiting the HOV facility to slow down; conversely, slow traffic from the GP lanes entering the HOV lanes also causes slowdowns on the HOV facility.

Table 2-56: Eastbound HOV Lanes: 2017 Current Conditions

Location	Segment Analysis	AM Peak Hour Volume	AM Peak Hour LOS	PM Peak Hour Volume	PM Peak Hour LOS
Btwn e/o Aviation Blvd & Inglewood Ave	Access	337	A	962	F*
Btwn Inglewood Ave & Hawthorn Blvd Access	Basic	337	A	962	F*
Btwn Hawthorne Blvd & Prarie Ave	Access	640	A	1209	F*
Btwn Prarie Ave Access & Crenshaw Blvd	Basic	640	A	1209	F*
Btwn Crenshaw Blvd & Crenshaw Blvd Access	Basic	665	A	1307	F*
Btwn Crenshaw Blvd & Western Ave	Access	1134	B	1325	F*

Btwn Western Ave Access & Vermont Ave	Basic	1134	B	1325	F*
Btwn Vermont Ave & NB I-110 off-ramp	Diverge	1230	C	1296	F*
Btwn I-110 off-ramp & I-110 on-ramp	Basic	1230	C	1296	F*
Btwn I-110 on-ramp & Central Ave Access	Merge	658	A	1324	F*
Btwn w/o & e/o Central Ave	Access	510	A	1384	F*
Btwn Central Ave Access & Wilmington Ave	Basic	510	A	1384	F*
Btwn Wilmington Ave & Alameda St	Basic	1042	B	1632	F*
Btwn Alameda St & Long Beach Blvd Access	Basic	1015	B	1439	E
Btwn w/o & e/o Long Beach Blvd	Access	1011	B	1279	D
Btwn Long Beach Blvd Access & Gertrude Dr	Basic	1011	B	1279	D
Btwn Gertrude Dr & I-710	Basic	1010	B	1234	C
Btwn I-710 & Garfield Ave	Basic	1010	B	1234	C
Btwn Garfield Ave & I-710	Basic	1010	C	1234	C
Btwn I-710 & Grove St	Basic	1010	C	1234	F*
Btwn Grove St OC & Paramount Blvd OC	Basic	1245	D	1327	F*
Btwn Paramount Blvd & Downey Ave	Access	1245	D	1327	F*
Btwn Downey Ave Access & Lakewood Blvd	Basic	1199	D	1263	D
Btwn Lakewood Blvd & Bellflower Blvd Access	Basic	1546	D	1514	E
Btwn w/o & e/o Bellflower Blvd	Access	1546	F*	1514	E
Btwn Bellflower Blvd Access & I-605	Basic	1250	F**	1309	F**

Table 2-57: Westbound HOV Lanes: 2017 Current Conditions

Location	Segment Analysis	AM Peak Hour Volume	AM Peak Hour LOS	PM Peak Hour Volume	PM Peak Hour LOS
Btwn I-605 & Bellflower Blvd Access	Basic	300	A	300	A
Btwn e/o & w/o Bellflower Blvd	Access	679	B	335	A
Btwn Bellflower Blvd Access & Lakewood Blvd	Basic	679	B	335	A
Btwn Lakewood Blvd & Paramount Blvd	Basic	1295	C	1017	B
Btwn Paramount Blvd & e/o I-710	Basic	1157	C	1091	B
Btwn e/o & w/o I-710	Basic	777	D	903	B
Btwn w/o I-710 & Harris Ave Access	Basic	1255	F*	1183	D
Btwn Harris Ave & Gertrude Dr	Access	1255	F*	1183	C
Btwn Gertrude Dr Access & Long Beach Blvd	Basic	1255	F*	1183	C
Btwn Long Beach Blvd & State St	Basic	1361	F**	1092	C
Btwn State St UC & Imperial Hwy	Basic	1361	E	1092	B
Btwn Imperial Hwy & Central Ave Access	Basic	1292	E	946	B
Btwn e/o & w/o Central Ave	Access	1188	F*	791	B
Btwn Central Ave Access & Avalong Blvd	Basic	1123	F*	774	B

Btwn Avalon Blvd & I-110 off-ramp (DAR)	Diverge	818	F*	681	A
Btwn I-110 off-ramp (DAR) & I-110 on-ramp (DAR)	Basic	753	F*	613	A
Btwn I-110 on-ramp (DAR) & Vermont Ave	Merge	753	F*	613	A
Btwn Vermont Ave & Western Ave Access	Basic	1449	F*	1388	C
Btwn e/o & w/o Western Ave	Access	1421	F*	1089	C
Btwn Western Ave Access & Crenshaw Blvd	Basic	1572	F*	835	B
Btwn Crenshaw Blvd & Prairie Ave Access	Basic	1572	D	835	B
Btwn Prarie Ave & Hawthorne Blvd	Access	1572	E	835	B
Btwn Hawthorne Blvd Access & I-405	Basic	1398	C	629	A
Btwn I-405 & Aviation Blvd	Basic	825	B	329	A

2.1.9.4 Existing Intersections Conditions

Existing conditions for intersections relevant to the proposed project are shown in the following table. The delay is in seconds.

Table 2-58: Intersections: 2017 Current Conditions

Location	AM Peak Hour LOS	AM Peak Hour Delay	PM Peak Hour LOS	PM Peak Hour Delay
I-105 WB off-ramp/NB Sepulveda Boulevard	**F**	**117.8**	**E**	**60.2**
Sepulveda Boulevard/Imperial Highway	D	47.2	**E**	**70.1**
Aviation Boulevard/Imperial Highway	**E**	**78.3**	**E**	**72.6**
I-105 WB Off- and I-105 EB on-ramp/Imperial Highway	C	26.8	B	11
La Cienega Boulevard/Imperial Highway	D	38.8	D	42.9
Hawthorne Boulevard/I-105 WB off-ramp	B	13.5	B	17.5
Hawthorne Boulevard/Imperial Highway	C	29.2	D	45.2
I-105 EB on-ramp/Imperial Highway (Freeman)	C	27.4	C	27.7
Prairie Avenue/I-105 WB off-ramp	B	17.9	**F**	**123.6**
Prairie Avenue/Imperial Highway	**E**	**69.5**	**F**	**196.5**
I-105 EB Ramps/120th Street	**E**	**69.5**	D	46
Crenshaw Boulevard/Imperial Highway	D	38.2	D	46.5
Crenshaw Boulevard/I-105 WB off-ramp	C	25.5	D	36.8
Crenshaw Boulevard/120th Street	D	39.4	D	39.3
Vermont Avenue/Imperial Highway	D	48.6	**E**	**58.7**
Vermont Avenue/I-105 WB Ramps	C	26.9	B	18.3
Vermont Avenue/I-105 EB off-ramp	C	25.3	C	20.8
Vermont Avenue/120th Street	C	23.9	C	23.6
Central Avenue/Imperial Highway	**F**	**92.7**	D	43.2
Central Avenue/I-105 WB Ramps	B	19.4	C	23.3

Central Avenue/I-105 EB Ramps	C	27.2	C	23.7
Central Avenue/120th Street	D	35.1	D	35.7
Wilmington Avenue/Imperial Highway	B	16.1	B	18.1
Wilmington Avenue/I-105 EB Ramps	**E**	**67.6**	C	27.9
Wilmington Avenue/E 120th Street	B	17.3	B	16.3
I-105 WB Ramps/Imperial Highway	**F**	**165.1**	**F**	**103.4**
Mona Boulevard/Imperial Highway	D	49.6	D	41.7
Long Beach Boulevard/Imperial Highway	D	39.4	D	36.5
Long Beach Boulevard/I-105 WB off-ramp	B	14.6	B	18.8
Long Beach Boulevard/I-105 EB off-ramp	C	23.4	B	16.4
Garfield Avenue/I-105 WB on-ramp	C	20.2	B	16.7
Garfield Avenue/I-105 EB off-ramp	C	28	C	25.6
Garfield Avenue/Rosecrans Avenue	D	51.7	D	47.8
Paramount Boulevard/Imperial Highway	C	29.4	D	36.3
Paramount Boulevard/I-105 WB off-ramp	C	25.5	B	17.3
Paramount Boulevard/I-105 EB on-ramp	C	21.4	C	20.1
Paramount Boulevard/Rosecrans Avenue	D	49.6	**E**	**66.3**
Lakewood Boulevard/Imperial Highway	C	24	C	30.9
Lakewood Boulevard/I-105 EB off-ramp and WB Ramps	**F**	**152.6**	**E**	**55.1**
Lakewood Boulevard/Rosecrans Avenue	C	27.4	D	44.1
Bellflower Boulevard/Imperial Highway	C	27.9	C	27.4
Bellflower Boulevard/I-105 WB Ramps	B	18.1	B	16.9
Bellflower Boulevard/I-105 EB Ramps	B	19.8	C	20.5
Bellflower Boulevard/Rosecrans Avenue	D	37.2	C	31
Woodruff Avenue/Imperial Highway	C	33.2	D	51.5
Hoxie Avenue/Imperial Highway	D	42.7	**E**	**60.2**
Studebaker Road/Imperial Highway	**E**	**60.2**	D	50.6
Studebaker Road/I-105 WB on-ramp and EB off-ramp	**E**	**75.8**	**F**	**97.5**
Studebaker Road/Rosecrans Avenue	D	42.7	D	48.5

2.1.9.5 Existing Traffic Conditions in Vehicle Miles Traveled, Vehicles Hours Delay, and Average Travel Time

The next tables below summarize Vehicle Miles Traveled (VMT), Vehicle Hours Delay (VHD), and Average Travel Time (in minutes) for the current condition of general purpose and HOV lanes on I-105. Due to the length of the project area, this type of data is presented here and in the next section in three major segments: on I-105: from I-405 to I-110, from I-110 to I-710, and from I-710 to I-605. Numbers for each of the smaller segments listed in the LOS Mainline, Merge/Diverge/Weave, and HOV tables earlier in this section are still available in the Traffic Study Report for the highest level of detail, but they have been condensed for easier comparison between the 7 scenarios modelled.

Table 2-59: General Purpose Lanes: 2017 Current Condition Performance Measures

Performance Measure and Segment	Eastbound						Westbound					
	AM Peak (6am-9am)	Midday (9am-3pm)	PM Peak (3pm-7pm)	Evening (7pm-9pm)	Night (9pm-6am)	Daily Totals	AM Peak (6am-9am)	Midday (9am-3pm)	PM Peak (3pm-7pm)	Evening (7pm-9pm)	Night (9pm-6am)	Daily Totals
Vehicle Miles Traveled (VMT)	217,289	408,254	196,700	201,426	358,215	1,381,885	209,658	428,673	220,668	199,501	351,525	1,410,026
I-405 -- I-110	63,726	130,889	58,394	61,791	107,671	422,471	80,854	170,731	86,834	80,317	141,078	559,814
I-110 -- I-710	87,408	169,896	77,406	81,281	143,902	559,895	74,784	158,326	81,025	73,616	128,800	516,551
I-710 -- I-605	66,154	107,469	60,900	58,354	106,642	399,519	54,020	99,616	52,810	45,568	81,646	333,660
Vehicle Hours Delay (VHD)	431	2,198	5,152	3,126	112	11,019	3,993	2,132	562	409	228	7,324
I-405 -- I-110	27	661	2,327	1,299	39	4,354	1,892	1,126	73	112	138	3,341
I-110 -- I-710	208	1,142	2,206	1,360	61	4,977	1,578	833	393	254	75	3,134
I-710 -- I-605	195	394	619	467	12	1,688	523	172	96	43	16	850
Average Travel Time (Min)	20.2	34.6	47.5	30.3	16.8		36.3	29	21.6	18.1	16	
I-405 -- I-110	5.3	12.2	18.2	9.9	5.8		13	10.6	5.4	5.7	5.7	
I-110 -- I-710	6.8	12.3	18.1	11.7	6.1		15.2	12.1	8.4	7.2	5.7	
I-710 -- I-605	8.1	10.1	11.2	8.7	4.9		8.1	6.3	7.8	5.2	4.6	

Table 2-60: HOV Lanes: 2017 Current Condition Performance Measures

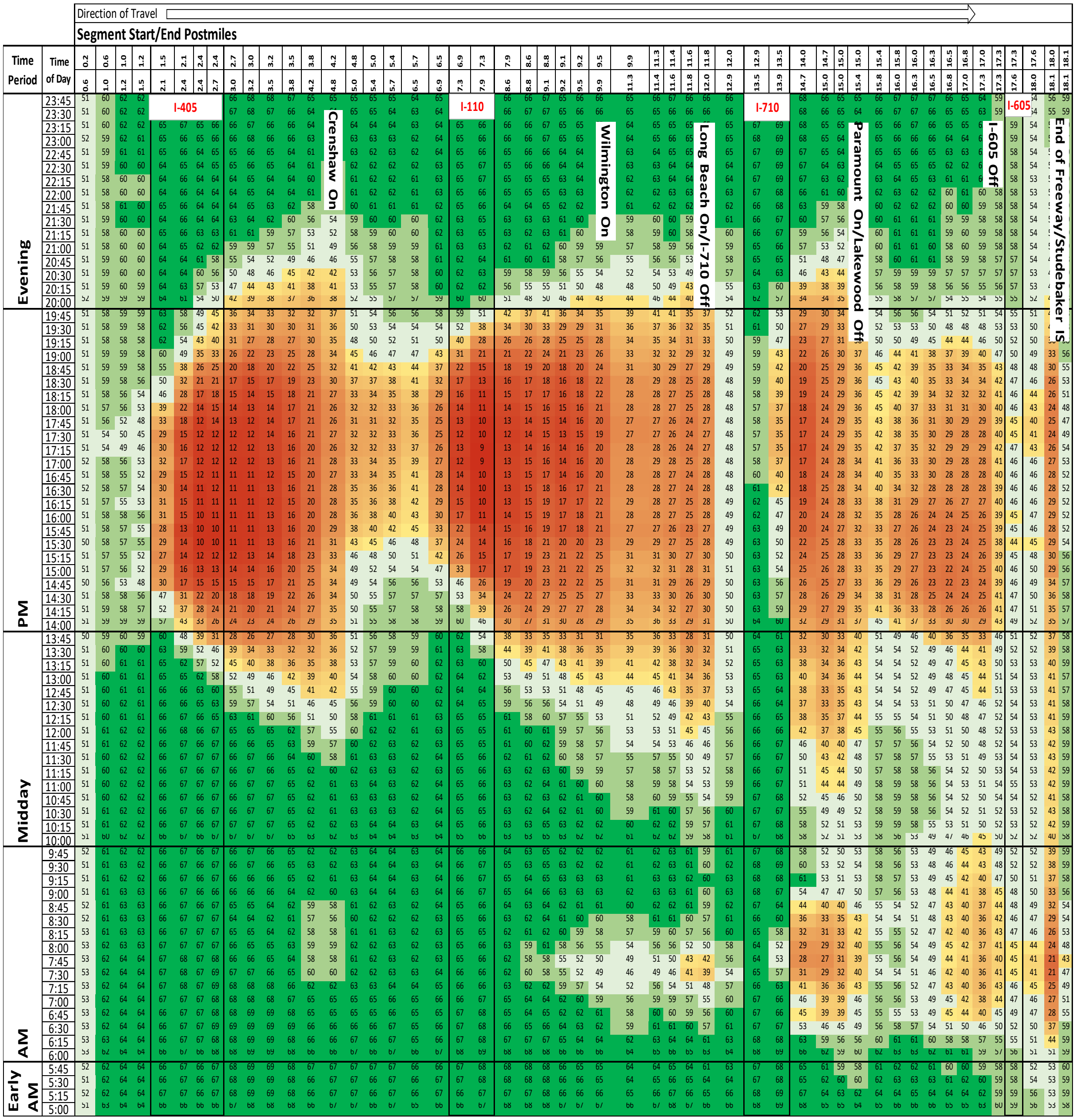
Performance Measure and Segment	Eastbound						Westbound					
	AM Peak (6am-9am)	Midday (9am-3pm)	PM Peak (3pm-7pm)	Evening (7pm-9pm)	Night (9pm-6am)	Daily Totals	AM Peak (6am-9am)	Midday (9am-3pm)	PM Peak (3pm-7pm)	Evening (7pm-9pm)	Night (9pm-6am)	Daily Totals
Vehicle Miles Traveled (VMT)	41,553	82,685	61,355	55,662	42,997	284,253	57,421	85,927	47,198	42,464	52,257	285,266
I-405 -- I-110	10,472	31,227	18,956	18,577	15,509	94,741	20,250	30,623	12,162	13,144	17,412	93,590
I-110 -- I-710	15,209	31,041	24,263	21,744	16,746	109,004	21,230	34,465	19,572	17,701	20,543	113,511
I-710 -- I-605	15,872	20,417	18,136	15,341	10,742	80,509	15,941	20,839	15,465	11,618	14,302	78,165
Vehicle Hours Delay (VHD)	147	255	1,155	704	14	2,274	1,391	359	230	160	18	2,159
I-405 -- I-110	1	99	710	383	10	1,202	557	231	0	5	4	798
I-110 -- I-710	125	127	323	225	2	802	493	121	221	136	12	983
I-710 -- I-605	21	30	122	96	2	270	341	7	9	19	2	378
Average Travel Time (Min)	18.8	31.2	43.6	29.8	16.5		32.4	27.5	18.6	16.9	15.3	
I-405 -- I-110	5.1	11.4	18.6	10.4	5.7		13.1	10.9	5.2	5.5	5.5	
I-110 -- I-710	6.3	9.7	14.0	10.7	5.9		12.6	11.1	7.0	6.4	5.4	
I-710 -- I-605	7.4	10.1	11.0	8.7	4.9		6.7	5.5	6.4	5.0	4.4	

Visual Representation of Vehicular Speed

For a more direct visual representation of freeway performance, recorded and modelled speeds from INRIX, an analytics company, were organized into speed contour diagrams. The charts below from the Traffic Study Report show vehicle speeds across I-105 starting from 5 a.m. to 12 a.m. With coloration, it is easy to see when and where most congestion occurs, and the bottlenecks previously discussed are illuminated.

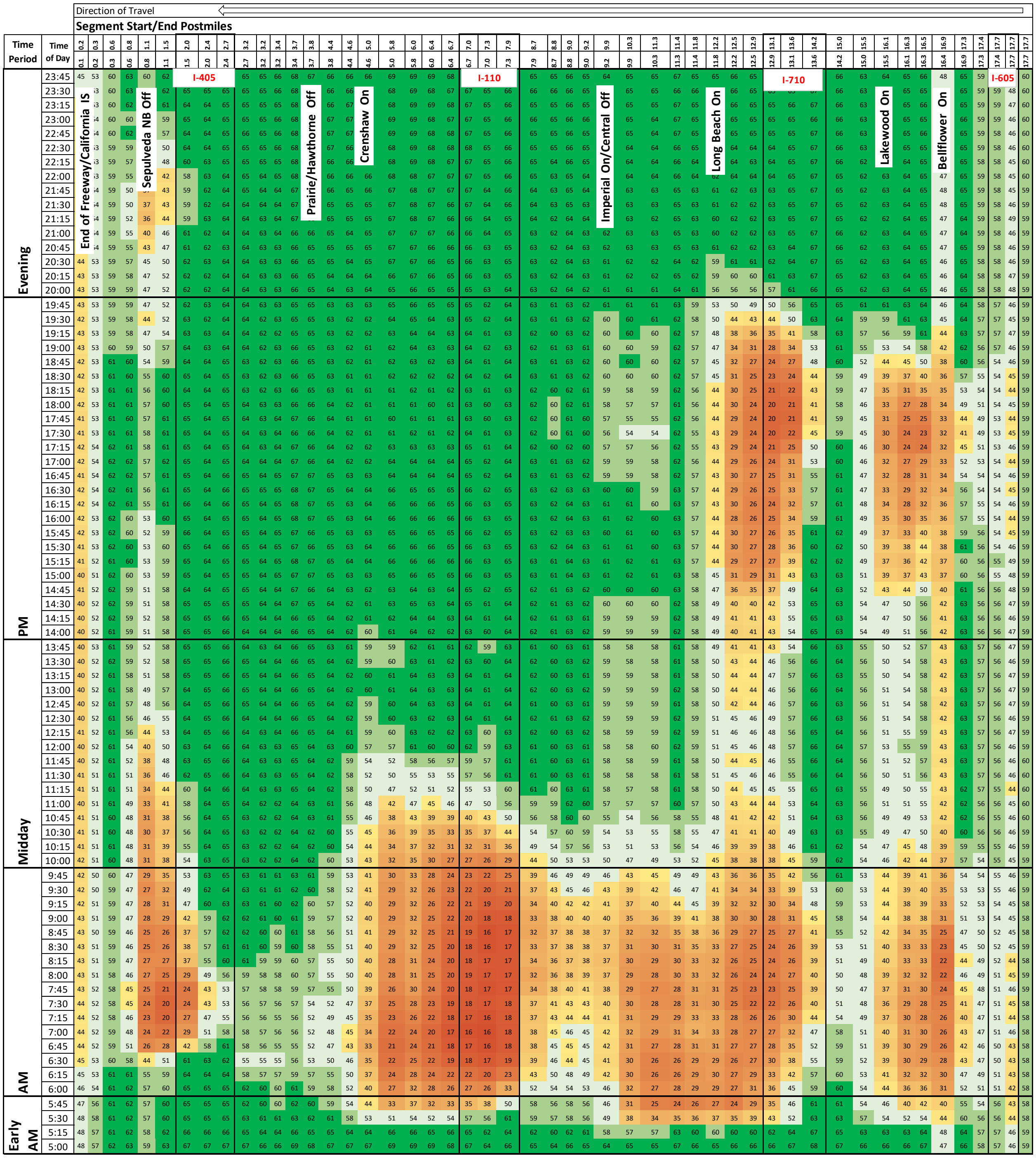
Legend: Speed in mph ≥ 65 ≥ 55 ≥ 45 45 to 0

Table 2-61: Eastbound General Purpose Lanes: Speed Contour Diagram



Source: INRIX

Table 2-62: Westbound General Purpose Lanes: Speed Contour Diagram



Direction of Travel

Segment Start/End Postmiles

Time Period	Time of Day	0.2	0.3	0.6	0.8	1.1	1.5	2.0	2.4	2.7	3.2	3.2	3.4	3.7	3.8	4.4	4.6	5.0	5.8	6.0	6.4	6.7	7.0	7.3	7.9	8.7	8.8	9.0	9.2	9.9	10.3	11.3	11.4	11.8	12.2	12.5	12.9	13.1	13.6	14.2	15.0	15.5	16.1	16.3	16.5	16.9	17.3	17.4	17.7	17.7	17.7
		0.1	0.2	0.3	0.6	0.8	1.1	1.5	2.0	2.4	2.7	3.2	3.2	3.4	3.7	3.8	4.4	4.6	5.0	5.8	6.0	6.4	6.7	7.0	7.3	7.9	8.7	8.8	9.0	9.2	9.9	10.3	11.3	11.4	11.8	12.2	12.5	12.9	13.1	13.6	14.2	15.0	15.5	16.1	16.3	16.4	16.9	17.3	17.4	17.7	17.7
Evening	23:45	45	53	60	63	60	62	I-405			65	65	66	68	67	66	66	66	69	69	69	68	I-110			65	65	66	65	64	65	65	67	65	65	66	65	I-710			66	63	64	65	66	48	65	59	I-605		60
	23:30	End of Freeway/California IS	[illegible]	60	63	Sepulveda NB Off	62	65	65	65	65	65	66	68	Prairie/Hawthorne Off	66	66	Crenshaw On	68	69	68	67	67	65	66	66	66	66	65	Imperial On/Central Off	65	65	66	66	Long Beach On	66	65	[illegible]	[illegible]	[illegible]	66	63	Lakewood On	65	65	Bellflower On	65	59	59	48	60
	23:15		[illegible]	60	62		61	64	64	65	65	65	65	68		66	67		68	69	69	68	67	65	66	65	65	66	65		65	65	67	65		66	65	65	66	67	66	63		65	66		65	59	59	47	60
	23:00		[illegible]	60	60		59	65	64	65	65	65	66	68		67	67		69	69	68	67	67	65	66	66	65	66	66		65	64	67	65		65	65	65	65	66	66	63		65	65		66	59	59	46	60
	22:45		[illegible]	60	62		57	64	64	65	66	65	66	68		67	67		69	69	68	68	67	65	66	65	65	66	65		65	64	67	65		65	65	65	65	67	66	63		65	66		65	59	58	46	60
	22:30		[illegible]	59	59		50	64	64	65	65	65	66	68		67	66		68	69	68	68	68	65	66	65	65	66	65		64	64	66	65		64	64	64	65	67	66	63		65	65		65	59	58	46	60
	22:15		[illegible]	59	57		48	60	63	65	65	65	65	68		66	66		68	69	68	67	67	65	66	65	64	66	65		64	64	66	64		64	63	64	65	67	66	62		64	65		65	58	58	45	60
	22:00		[illegible]	59	55		42	58	63	64	65	64	65	68		66	66	66	68	68	67	67	67	65	66	65	63	65	64		64	64	66	64	62	64	64	64	65	67	65	62	63	64	65	47	65	59	58	45	60
	21:45		[illegible]	59	50	[illegible]	43	59	62	64	65	64	64	67		66	65	66	67	68	67	67	67	64	66	64	63	65	64		63	63	65	63	61	62	63	63	65	67	65	62	63	64	65	48	65	59	58	45	59
	21:30		[illegible]	59	50	37	43	59	62	64	64	64	64	67		65	65	65	67	68	67	66	67	64	66	64	63	65	63		63	63	65	63	61	62	62	63	65	67	65	62	63	64	65	48	65	59	58	46	59
	21:15		[illegible]	59	52	36	44	59	63	64	64	63	64	67	[illegible]	65	65	65	67	68	67	66	66	64	65	64	62	64	64		63	62	65	63	60	62	62	63	65	67	65	62	62	64	65	47	64	59	58	49	59
	21:00		[illegible]	59	55	40	46	61	62	64	64	63	64	66	66	65	64	65	67	67	67	66	66	64	65	63	62	64	63	62	63	63	65	63	60	62	62	63	65	67	66	62	63	64	65	47	64	59	58	46	59
	20:45		[illegible]	59	55	43	47	61	62	63	64	63	63	66	65	65	65	65	67	67	66	66	66	63	65	63	62	64	63	62	63	63	65	63	61	62	62	63	64	67	66	62	63	64	65	47	65	59	58	46	59
	20:30	44	53	59	57	45	50	62	63	64	64	63	63	66	65	65	64	65	67	67	66	65	66	63	65	63	62	64	63	61	62	62	64	62	59	61	61	62	64	67	65	62	63	64	65	46	65	58	58	46	59
	20:15	43	53	59	58	47	52	62	62	64	64	63	63	66	65	64	64	64	66	67	66	65	66	63	65	63	62	64	63	61	62	62	65	62	59	60	60	61	63	67	65	62	63	64	65	46	64	58	58	47	59
	20:00	43	53	59	59	47	52	62	62	64	64	63	63	66	65	64	63	64	65	66	65	65	65	63	64	63	62	64	62	61	61	61	64	61	56	56	56	57	61	66	65	62	63	64	65	46	65	58	58	48	59
PM	19:45	43	53	59	59	47	52	62	63	64	64	63	63	65	65	63	63	63	65	66	65	65	65	62	64	63	61	63	62	61	61	61	63	59	53	50	49	50	56	65	65	61	61	63	64	46	64	58	57	46	59
	19:30	42	53	59	58	44	52	63	62	64	64	62	63	65	65	63	62	62	64	65	64	63	65	62	64	63	61	63	62	60	60	61	62	58	50	44	43	44	50	63	64	59	59	61	63	45	64	57	57	45	59
	19:15	43	53	59	58	47	54	63	63	64	64	62	62	65	65	63	62	62	63	64	64	63	64	61	63	62	60	63	62	60	60	60	62	57	48	38	36	35	41	58	63	57	56	59	61	44	63	57	57	47	59
	19:00	43	53	60	59	50	57	64	63	64	64	62	63	66	65	63	62	61	62	64	63	63	64	62	63	62	61	63	61	60	60	59	62	57	47	34	31	28	34	53	61	55	53	54	58	42	62	56	57	46	59
	18:45	42	53	61	60	54	59	64	64	65	63	62	63	66	65	63	62	61	62	63	62	63	64	61	64	63	61	63	62	60	60	60	62	57	45	32	27	24	27	48	60	52	44	45	50	38	60	56	54	46	59
	18:30	42	53	61	60	55	60	65	64	65	63	62	63	66	65	63	61	61	62	62	62	62	64	62	64	63	61	63	62	60	60	60	62	57	45	31	25	23	24	44	59	49	39	37	40	36	57	55	54	45	59
	18:15	42	53	61	61	56	60	64	64	65	63	62	63	66	65	63	61	61	61	62	61	62	63	61	63	62	60	62	61	59	58	59	62	56	44	30	25	21	22	43	59	47	35	31	35	35	53	54	54	44	59
	18:00	42	53	61	61	57	60	65	64	65	64	63	63	66	66	64	62	61	61	61	60	61	63	60	63	62	60	62	61	58	57	57	61	56	44	30	24	20	21	41	58	46	33	27	28	34	49	51	54	45	59
	17:45	41	53	61	60	57	61	65	64	65	64	63	64	67	66	64	61	61	60	61	61	61	63	60	63	62	60	61	60	57	55	55	62	56	44	29	24	20	21	41	59	45	31	25	25	33	44	49	53	44	59
	17:30	41	53	61	61	58	61	65	64	65	64	63	64	66	66	64	62	61	61	62	61	62	64	61	63	62	60	61	60	56	54	54	62	55	43	29	24	20	22	45	59	45	30	24	23	32	41	49	53	45	59
	17:15	42	54	62	61	58	61	65	64	65	64	63	64	67	66	64	62	62	63	63	63	63	65	61	64	62	60	62	60	57	57	56	62	55	43	29	24	21	25	50	60	46	30	24	24	32	45	51	53	46	59
	17:00	42	54	62	62	57	62	65	64	65	64	64	64	67	66	64	62	62	64	64	64	64	65	62	64	63	61	63	62	59	59	58	62	56	44	29	26	24	31	53	60	46	32	27	29	33	52	53	54	44	59
	16:45	41	54	62	62	57	61	65	64	66	65	64	65	67	67	65	63	63	64	64	64	64	65	62	64	63	61	63	62	59	59	58	62	57	43	30	27	25	31	55	61	47	32	28	31	34	54	54	54	46	59
	16:30	42	54	62	61	56	61	65	64	66	65	65	65	68	67	65	64	64	66	65	65	65	66	62	65	63	62	63	63	60	60	59	63	57	44	29	26	25	33	57	61	47	33	29	32	34	56	54	54	45	59
	16:15	42	54	62	61	55	61	66	64	66	65	64	65	68	67	65	63	64	66	66	66	65	66	63	65	63	62	64	63	61	61	60	63	57	43	30	26	24	32	57	61	48	34	28	32	36	57	55	54	46	59
	16:00	42	53	62	60	53	60	65	64	65	65	64	65	68	67	65	63	64	66	66	66	66	66	63	65	63	62	64	63	61	62	60	63	57	44	28	26	25	34	59	61	49	35	30	35	36	57	55	54	44	59
	15:45	42	53	62	60	52	59	66	64	65	65	64	65	67	66	65	63	63	65	66	65	65	66	62	65	63	62	63	63	60	61	60	63	57	44	30	27	26	35	61	62	49	37	33	40	38	59	56	54	45	59
	15:30	41	53	62	60	53	60	65	64	66	65	64	65	67	66	65	63	64	66	66	66	65	66	63	65	63	62	64	63	61	61	60	63	57	44	30	27	28	36	60	62	50	39	38	44	38	61	56	54	46	59
	15:15	41	52	61	60	53	59	65	64	65	65	64	65	68	67	65	64	64	66	66	66	66	66	63	65	63	61	64	63	61	62	61	63	57	44	29	27	27	39	62	62	49	37	36	42	37	60	56	55	49	59
	15:00	40	51	62	60	53	59	65	64	65	65	64	65	67	67	65	63	63	65	66	65	65	66	63	65	63	61	64	63	61	62	61	63	58	45	31	29	31	43	63	63	51	39	37	43	37	60	56	55	48	59
	14:45	41	52	62	59	51	58	64	64	65	65	64	64	67	66	64	63	62	63	64	63	64	65	62	65	62	61	63	62	60	60	60	63	58	47	36	35	37	49	64	63	52	43	44	50	40	61	56	56	48	59
	14:30	40	52	62	59	51	58	65	65	65	65	64	64	67	65	64	62	61	63	65	63	64	65	61	64	62	61	63	62	60	60	60	62	58	49	40	40	42	53	65	63	54	47	50	56	42	63	56	56	47	59
	14:15	40	52	62	59	52	58	65	65	66	65	64	64	66	65	64	62	61	62	64	64	63	64	61	64	62	61	63	61	59	59	59	62	58	49	41	41	43	55	65	63	54	47	50	56	41	63	56	56	46	59
	14:00	40	52	61	59	51	58	65	65	66	64	64	64	66	65	64	62	60	61	64	62	62	63	60	64	62	61	63	62	59	59	59	62	58	49	40	41	43	54	65	63	54	49	51	56	42	63	56	56	47	59
Midday	13:45	40	53	61	59	52	58	65	65	66	64	63	64	66	65	63	61	59	59	62	61	61	62	59	63	61	60	63	61	58	58	58	61	58	49	41	41	43	54	66	63	55	50	52	57	43	63	57	56	47	59
	13:30	40	52	62	59	52	58	65	65	66	65	64	64	66	65	64	62	59	60	63	61	62	63	60	64	62	60	63	62	59	58	58	61	58	50	43	44	46	56	66	64	56	50	54	58	43	63	57	56	46	59
	13:15	40	52	61	58	51	58	65	65	66	65	64	64	66	65	64	62	60	61	64	63	63	64	61	64	62	60	63	61	59	59	58	61	58	50	44	44	47	57	66	63	55	50	54	58	42	63	57	56	47	59
	13:00	40	52	61	58	49	57	64	65	66	65	64	64	66	65	64	62	60	61	64	63	63	64	61	64	62	60	63	62	59	59	59	62	58	50	44	44	46	56	66	64	56	51	54	58	43	63	57	56	47	59
	12:45	40	52	61	57	48	56	64	65	66	65	64	64	66	65	64	62	59	60	64	63	63	64	61	64	61	60	63	61	59	59	59	61	58	50	42	44	46	57	66	63	56	51	54	58	42	63	57	56	47	59
	12:30	40	52	61	56	46	55	64	65	66	64	64	64	66	65	64	62	59	60	63	62	63	64	61	64	62	61	63	62	59	59	59	62	59	51	45	46	49	57	66	63	56	51	54	58	42	63	57	56	46	59
	12:15	41	52	61	56	44	53	64	65	66	64	63	64	66	65	64	61	59	60	63	62	62	63	60	63	62	60	63	62	58	59	59	62	59	51	46	46	48	56	65	64	56	51	55	59	43	63	57	56	47	59
	12:00	40	52	61	54	40	50	63	64	66	64	63	63	65	64	63	60	57	57	61	60	60	62	59	63	61	60	63	61	58	58	60	62	59	51	45	46	48	57	66	64	57	53	55	59	43	63	57	56	46	59
	11:45	40	52	61	52	38	48	63	65	66	64	63	63	65	64	62	59	54	52	58	56	57	59	57	61	61	60	63	61	58	58	59	61	58	50	44	45	46	55	66	64	56	51	52	57	43	63	57	56	46	60
	11:30	41	51	61	51	36	46	62	65	66	64	63	63	65	64	62	58	52	50	55	53	55	57	56	61	61	60	63	61	58	58	58	61	58	51	45	46	46	55	66	64	56	50	51	56	43	63	57	56	46	60
	11:15	41	51	61	51	34	44	60	64	66	64	63	63	65	64	62	58	50	47	52	51	52	55	53	60	61	60	63	61	58	57	58	61	58	50	44	45	45	55	65	63	55	49	50	55	43	62	57	55	44	60
	11:00	40	51	61	49	33	41	58	64	65	64	62	62	64	63	61	56	48	42	47	45	46	47	50	56	59	59	62	60	57	57	57	60	57	50	43	44	44	53	64	63	56	51	51	55	42	62	56	56	45	60
	10:45	41	51	60	48	31	38	56	64	65	63	62	62	64	63	61	55	46	38	43	39	39	40	43	50	56	58	60	60	55	54	56	58	55	48	41	42	42	51	64	63	56	49	49	53	42	62	56	55	46	60
	10:30	41	51	60	48	30	37	56	64	65	63	62	62	64	62	60	55	45	36	39	35	33	35	37	44	54	57	60	59	54	53	55	58	55	47	41	41	40	49	63	63	55	49	47	50	40	60	56	56	46	59
	10:15	41	51	61	48	31	39	55	64	65	63	62	62	64	62	60	54	44	34	37	32	31	32	31	36	49	54	57	56	53	51	53	56	54	46	39	39	38	46	61	62	54	47	45	48	39	59	55	55	46	59
	10:00	42	51	60	48	31	38	54	63	65	63	62	62	64	62	60	53	43	32	35	30	27	27	26	29	44	50	53	53	50	47	49	53	52	45	38	38	38	45	59	62	54	46	42	44	37	57	54	55	45	59
AM	9:45	42	50	60	47	29	35	53	63	65	63	61	61	63	61	59	53	41	30	33	28	24	23	22	25	39	46	49	49	46	43	45	49	49	43	36	36	35	42	56	61	53	44	39	41	36	54	54	55	46	59
	9:30	42	50	59	47	27	32	49	62	64	63	61	61	62	60	58	52	41	29	32	26	23	22	20	21	37	43	45	46	43	39	42	46	47	41	34	34	33	39	53	60	53	44	39	40	35	53	53	55	46	59
	9:15	42	51	59	47	28	31	47	60	63	63	61	60	62	60	57	52	40	29	32	26	22	21	19	20	34	40	42	42	41	37	40	44	45	39	32	32	30	34	48	59	53	44	38	39	33	52	53	54	45	58
	9:00	43	51	59	47	28	29	42	59	62	62	61	60	61	59	57	52	40	29	32	25	22	20	18	18	33	38	40	40	40	35	36	39	41	38	30	30	28	31	45	58	54	44	38	38	31	51	53	54	45	58
	8:45	43	50	59	46	25	26	37	57	62	62	60	60	61	58	56	51	41	29	32	25	21	19	16	17	32	37	38	38	37	32	32	35	38	36	29	27	25	27	41	55	52	42	34	35	25	47	50	52	45	58
	8:30	43	51	59	46	25	26	38	57	61	61	60	59	60	58	55	51	40	29	32	25	20	18	16	17	33	37	38	38	37	31	30	31	35	33	27	25	24	26	39	53	51	40	33	33	23	45	50	52	45	59
	8:15	43	51	59	47	27	27	37	55	60	61	59	59	60	57	55	50	40	28	31	24	20	18	17	17	34	36	37	38	37	30	29	30	33	32	26	25	24	26	39	51	49	40	33	33	22	44	49	52	44	58
	8:00	43	51	58	46	27	25	29	49	56	59	58	58	60	57	55	50	40	28	31	25	20	19	17	17	32	36	38	39	37	29	28	30	33	32	26	24	24	27	40	50	48	39	32	32	22	46	49	51	45	59
	7:45	43	52	58	45	25	21	24	43	53	57	58	58	59	57	55	50	39	26	30	24	20	18	17	17	34	38	40	41	38	29	27	28	31	31	25	23	23	25	39	50	47	37	31	30	24	45	48	51	46	59
	7:30	44	52	58	45	24	20	24	43	53	56	57	56	57	54	52	47	37	25	28	23	19	18	17	18	37	41	43	43	40	30	28	28	31	30	25	22	22	26	40	51	48	36	29	28	25	41	47	51	45	58
	7:15	44	52	58	46	23	20	27	47	55	56	56	55	56	52	49	45	35	23	26	22	18	17	16	18	37	43	44	44	41	31	29	29	33	33	28	26	26	30	44	54	49	37	30	28	26	40	47	51	44	58
	7:00	44	52	59	48	24	22	29	51	58	58	57	56	56	52	48	45	34	22	24	20	17	16	16	18	38	45	46	45	42	32	29	31	34	33	28	27	27	32	47	58	51	40	31	30	26	43	47	51	46	58
	6:45	44	52	59	51	26	28	42	58	61	58	56	55	55	52	47	43	33	21	24	21	18	17	16	18	38	45	45	45	42	31	27	28	31	31	27	27	28	35	52	59	51	39	30	29	26	42	46	50	43	58
	6:30	45	53	60	58	44	51	61	63	62	55	55	55	56	53	50	46	35	22	25	22	19	18	17	19	39	46	44	45	41	30	26	26	29	29	26	27	30	38	55	59	52	39	30	29	28	43	47	50	43	58
	6:15	45	53	61	61	55	59	64	64	64	58	57	57	59	57	55	50	37	24	28	24	22	22	20	23	43	50	48	49	42	30	26	26	29	30	27	29	33	42	57	60	53	41	32	32	30	47	49	51	43	58
	6:00	46	54	61	62	57	60	65	65	65	62	60	60	61	59	58	52	40	27	32	28	26	27	26	33	52	54	54	53	46	32	27	28	29	29	27	31	36	45	59	60	54	44	36	36	31	52	51	51	42	58
Early AM	5:45	47	56	61	62	57	60	65	65	65	62	60	60	62	60	59	54	44	33	37	32	33	35	38	50	58	56	58	56	46	31	25	24	26	27	24	29	35	46	61	61	54	46	40	42	40	55	54	56	43	58
	5:30	48	58	61	62	57	60	65	65	65	63	61	61	63	62	61	58	53	51	54	52	54	57	56	61	59	57	58	56	49	38	34	35	36	37	35	39	43	52	63	63	57	54	52	54	44	60	56	56	44	58
	5:15	48	57	61	62	58	62	66	66	66	65	64	64	66	65	65	64	64	66	66	65	66	65	62	64	62	60	62	61	58	57	57	63	60	60	60	60	62	64	67	65	63	63	63	64	48	64	57	57	46	59
	5:00	48	57	62	63	59	63	67	67	67	67	66	66	69	68	67	67	67	69	69	69	68	67	64	66	65	64	66	65	64	65	65	67	66	65	66	66	66	67	68	67	66	66	66	67	47	66	58	57	46	59

The two charts above show the main traffic volume travelling westbound in the morning and eastbound in the afternoon, with congestion worst in the eastbound direction in the evening. Notable bottlenecks from around the Crenshaw on-ramp and Wilmington on-ramp, with smaller ones at the eastbound Paramount on-ramp/Lakewood off-ramp, westbound Long Beach on-ramp, and Bellflower on-ramp.

Table 2-63: Eastbound HOV Lanes: Speed Contour Diagram

Direction of Travel →

Segment Start/End Postmiles

Time Period	Time of Day	2.4 3.2	3.5 4.4	4.4 5.4	5.7 6.9	6.9 7.7	7.7 8.6	8.6 8.8	9.1 10.1	10.1 11.4	11.6 12.6	12.6 13.7	13.7 14.7	15.0 16.5	16.8 17.3	17.3 17.3
Evening	23:45	I-405	65	66	68	I-110	70	70	67	67	68	I-710	69	67	I-605	8
	23:30		66	67	68		69	70	68	67	68		68	67		4
	23:15	66	Hawthorne Blvd I/E 6	Crenshaw On-Vermont Off I/E	67	69	S Central Ave I/E 70	69	66	Long Beach Blvd I/E	68	69	68	67	60	42
	23:00	65	4		67	69		70	66		68	69	68 Paramount Blvd I/E	67	61	36
	22:45	67	4		67	68		70	66		67	69		66	61	59
	22:30	66	3		67	68		70	66		67	69		67	60	59
	22:15	66	3		67	67		69	64		66	69		64	58	53
	22:00	66	1		67	68		70	64		66	68		61	60	56
	21:45	65	1		66	68		70	63		65	68		62	60	60
	21:30	66	9		65	67		68	62		64	68		63	59	32
	21:15	64	7		65	67		67	61		64	67		61	58	35
	21:00	61	5		65	66		66	59		63	67		61	58	55
	20:45	60	1		64	66		66	58		61	66		61	57	58
	20:30	55	8		63	66	65	65	56		60	65		60	56	19
	20:15	53	5		63	65	63	62	50	55	57	63		59	56	47
	20:00	49	43		62	64	59	58	44	51	55	61		57	54	49
PM	19:45	44	40		61	59	51	52	40	48	53	59	36	56	53	45
	19:30	39	38		59	50	41	44	34	45	52	58	32	53	49	37
	19:15	34	36		54	39	32	40	32	42	50	56	30	50	46	44
	19:00	27	33		47	31	26	37	28	40	49	54	28	45	38	35
	18:45	19	30		40	21	22	37	26	38	49	53	27	44	32	31
	18:30	17	29	35	35	17	21	38	25	38	48	53	27	45	31	30
	18:15	16	28	33	30	15	19	37	25	37	48	52	26	44	29	28
	18:00	15	27	32	28	13	18	35	24	37	48	52	25	44	30	30
	17:45	14	27	32	25	12	18	35	24	37	48	51	24	43	30	27
	17:30	13	26	32	25	12	18	35	25	38	48	51	24	43	30	30
	17:15	14	27	33	26	12	18	36	26	39	49	51	23	42	30	33
	17:00	14	27	34	27	12	18	37	26	40	49	55	26	42	30	33
	16:45	13	27	34	29	13	19	38	27	41	49	56	26	42	30	33
	16:30	13	27	36	30	13	19	38	27	40	49	58	28	40	28	29
	16:15	13	27	37	32	14	19	38	27	40	49	59	29	39	27	26
	16:00	13	28	40	37	16	20	38	28	40	49	61	30	38	26	23
	15:45	13	29	42	43	21	22	39	28	41	49	61	32	38	26	23
	15:30	14	30	46	47	27	24	39	31	43	50	62	34	37	25	24
	15:15	16	31	49	53	32	28	41	33	45	51	62	34	39	26	28
	15:00	19	32	51	57	40	32	43	34	45	52	63	36	39	25	28
	14:45	24	34	53	61	52	38	44	39	46	52	65	39	41	28	28
	14:30	31	36	54	63	59	46	48	41	47	52	65	42	43	27	27
	14:15	34	39	55	64	61	51	51	45	49	53	66	44	45	29	30
	14:00	37	41	56	65	63	54	53	45	50	53	66	46	48	29	27
Midday	13:45	42	44	57	65	65	59	57	48	53	54	66	48	51	34	30
	13:30	49	47	57	65	67	62	59	51	54	55	67	51	54	39	33
	13:15	56	49	58	66	67	64	63	54	55	57	67	52	56	41	31
	13:00	59	51	59	67	68	66	64	56	57	57	68	54	55	42	35
	12:45	61	53	60	67	68	67	66	59	58	57	67	53	56	44	36
	12:30	64	57	61	67	69	69	68	62	61	59	68	53	58	44	38
	12:15	67	61	63	68	69	69	69	63	62	60	68	56	60	45	45
	12:00	69	63	65	68	69	70	69	63	62	61	68	59	60	46	45
	11:45	67	63	64	68	69	69	70	64	63	62	69	62	60	47	44
	11:30	68	65	66	68	69	70	70	65	64	62	69	61	62	48	38
	11:15	68	66	66	68	70	70	70	65	65	64	69	62	60	47	40
	11:00	68	66	67	68	69	71	70	66	65	65	69	62	60	46	43
	10:45	68	65	66	68	69	71	70	65	66	65	69	62	61	47	35
	10:30	68	66	67	69	70	71	70	66	66	66	69	64	62	46	45
	10:15	69	66	67	69	69	71	70	67	66	66	69	64	60	43	44
	10:00	69	66	66	69	69	71	70	67	67	66	70	65	58	39	36
AM	9:45	69	66	66	69	69	71	70	66	66	66	70	64	59	37	35
	9:30	68	67	66	69	69	71	71	66	66	66	70	65	59	35	30
	9:15	68	67	67	69	70	70	71	67	66	66	69	63	58	35	30
	9:00	67	66	67	69	70	71	70	68	66	66	69	60	56	34	31
	8:45	68	65	65	68	69	70	71	65	64	67	69	52	55	31	29
	8:30	68	65	64	68	69	70	70	65	64	66	68	47	56	30	30
	8:15	68	65	64	68	68	70	71	62	63	65	67	44	57	30	29
	8:00	66	65	65	68	68	69	69	60	60	64	65	42	57	33	32
	7:45	67	65	65	69	69	70	69	57	58	61	67	43	56	33	35
	7:30	68	66	65	69	69	69	68	60	57	61	67	47	55	32	34
	7:15	66	67	65	69	69	69	70	60	61	64	69	52	57	33	31
	7:00	64	67	66	69	68	69	69	62	63	65	69	53	56	35	29
	6:45	65	68	66	70	68	70	70	62	63	65	69	58	58	35	30
	6:30	68	68	66	70	69	71	70	65	66	66	70	62	60	38	37
	6:15	67	68	69	70	70	70	70	65	66	67	70	65	63	45	43
	6:00	67	68	68	70	70	70	70	66	66	67	70	66	64	49	48
Early AM	5:45	63	67	67	69	69	69	70	64	65	67	69	67	63	58	49
	5:30	68	67	67	69	69	69	70	66	67	67	69	67	66	59	
	5:15	69	67	67	69	70	69	69	67	67	69	70	68	66	62	61
	5:00	69	66	68	68	70	69	69	67	67	68	70	67	66	62	61

Table 2-64: Westbound HOV Lanes: Speed Contour Diagram

		Direction of Travel														
		Segment Start/End Postmiles														
Time Period	Time of Day	2.4	3.5	4.4	5.7	6.9	7.7	8.6	9.1	10.1	11.6	12.6	13.7	15.0	16.8	17.3
		3.2	4.4	5.4	6.9	7.7	8.6	8.8	10.1	11.4	12.6	13.7	14.7	16.5	17.3	17.3
Evening	23:45	I-405	65	66	68	I-110	70	70	67	67	68	I-710	69	67	I-605	8
	23:30		66	67	68		69	70	68	67	68		68	67		4
	23:15	66	Hawthorne Blvd I/E 6	Crenshaw On-Vermont Off I/E	67	69	S Central Ave I/E 70	69	66	Long Beach Blvd I/E	68	69	68	67	60	42
	23:00	65	4		67	69		70	66		68	69	68	67	61	36
	22:45	67	4		67	68		70	66		67	69	Paramount Blvd I/E	66	61	59
	22:30	66	3		67	68		70	66		67	69		67	60	59
	22:15	66	3		67	67		69	64		66	69		64	58	53
	22:00	66	1		67	68		70	64		66	68		61	60	56
	21:45	65	1		66	68		70	63		65	68		62	60	60
	21:30	66	9		65	67		68	62		64	68		63	59	32
	21:15	64	7		65	67		67	61		64	67		61	58	35
	21:00	61	5		65	66		66	59		63	67		61	58	55
	20:45	60	1		64	66		66	58		61	66		61	57	58
	20:30	55	8		63	66	65	65	56		60	65		60	56	19
	20:15	53	5		63	65	63	62	50	55	57	63		59	56	47
	20:00	49	43		62	64	59	58	44	51	55	61		57	54	49
PM	19:45	44	40		61	59	51	52	40	48	53	59	36	56	53	45
	19:30	39	38		59	50	41	44	34	45	52	58	32	53	49	37
	19:15	34	36		54	39	32	40	32	42	50	56	30	50	46	44
	19:00	27	33		47	31	26	37	28	40	49	54	28	45	38	35
	18:45	19	30		40	21	22	37	26	38	49	53	27	44	32	31
	18:30	17	29	35	35	17	21	38	25	38	48	53	27	45	31	30
	18:15	16	28	33	30	15	19	37	25	37	48	52	26	44	29	28
	18:00	15	27	32	28	13	18	35	24	37	48	52	25	44	30	30
	17:45	14	27	32	25	12	18	35	24	37	48	51	24	43	30	27
	17:30	13	26	32	25	12	18	35	25	38	48	51	24	43	30	30
	17:15	14	27	33	26	12	18	36	26	39	49	51	23	42	30	33
	17:00	14	27	34	27	12	18	37	26	40	49	55	26	42	30	33
	16:45	13	27	34	29	13	19	38	27	41	49	56	26	42	30	33
	16:30	13	27	36	30	13	19	38	27	40	49	58	28	40	28	29
	16:15	13	27	37	32	14	19	38	27	40	49	59	29	39	27	26
	16:00	13	28	40	37	16	20	38	28	40	49	61	30	38	26	23
	15:45	13	29	42	43	21	22	39	28	41	49	61	32	38	26	23
	15:30	14	30	46	47	27	24	39	31	43	50	62	34	37	25	24
	15:15	16	31	49	53	32	28	41	33	45	51	62	34	39	26	28
	15:00	19	32	51	57	40	32	43	34	45	52	63	36	39	25	28
	14:45	24	34	53	61	52	38	44	39	46	52	65	39	41	28	28
	14:30	31	36	54	63	59	46	48	41	47	52	65	42	43	27	27
	14:15	34	39	55	64	61	51	51	45	49	53	66	44	45	29	30
	14:00	37	41	56	65	63	54	53	45	50	53	66	46	48	29	27
Midday	13:45	42	44	57	65	65	59	57	48	53	54	66	48	51	34	30
	13:30	49	47	57	65	67	62	59	51	54	55	67	51	54	39	33
	13:15	56	49	58	66	67	64	63	54	55	57	67	52	56	41	31
	13:00	59	51	59	67	68	66	64	56	57	57	68	54	55	42	35
	12:45	61	53	60	67	68	67	66	59	58	57	67	53	56	44	36
	12:30	64	57	61	67	69	69	68	62	61	59	68	53	58	44	38
	12:15	67	61	63	68	69	69	69	63	62	60	68	56	60	45	45
	12:00	69	63	65	68	69	70	69	63	62	61	68	59	60	46	45
	11:45	67	63	64	68	69	69	70	64	63	62	69	62	60	47	44
	11:30	68	65	66	68	69	70	70	65	64	62	69	61	62	48	38
	11:15	68	66	66	68	70	70	70	65	65	64	69	62	60	47	40
	11:00	68	66	67	68	69	71	70	66	65	65	69	62	60	46	43
	10:45	68	65	66	68	69	71	70	65	66	65	69	62	61	47	35
	10:30	68	66	67	69	70	71	70	66	66	66	69	64	62	46	45
	10:15	69	66	67	69	69	71	70	67	66	66	69	64	60	43	44
	10:00	69	66	66	69	69	71	70	67	67	66	70	65	58	39	36
AM	9:45	69	66	66	69	69	71	70	66	66	66	70	64	59	37	35
	9:30	68	67	66	69	69	71	71	66	66	66	70	65	59	35	30
	9:15	68	67	67	69	70	70	71	67	66	66	69	63	58	35	30
	9:00	67	66	67	69	70	71	70	68	66	66	69	60	56	34	31
	8:45	68	65	65	68	69	70	71	65	64	67	69	52	55	31	29
	8:30	68	65	64	68	69	70	70	65	64	66	68	47	56	30	30
	8:15	68	65	64	68	68	70	71	62	63	65	67	44	57	30	29
	8:00	66	65	65	68	68	69	69	60	60	64	65	42	57	33	32
	7:45	67	65	65	69	69	70	69	57	58	61	67	43	56	33	35
	7:30	68	66	65	69	69	69	68	60	57	61	67	47	55	32	34
	7:15	66	67	65	69	69	69	70	60	61	64	69	52	57	33	31
	7:00	64	67	66	69	68	69	69	62	63	65	69	53	56	35	29
	6:45	65	68	66	70	68	70	70	62	63	65	69	58	58	35	30
	6:30	68	68	66	70	69	71	70	65	66	66	70	62	60	38	37
	6:15	67	68	69	70	70	70	70	65	66	67	70	65	63	45	43
	6:00	67	68	68	70	70	70	70	66	66	67	70	66	64	49	48
Early AM	5:45	63	67	67	69	69	69	70	64	65	67	69	67	63	58	49
	5:30	68	67	67	69	69	69	70	66	67	67	69	67	66	59	
	5:15	69	67	67	69	70	69	69	67	67	69	70	68	66	62	61
	5:00	69	66	68	68	70	69	69	67	67	68	70	67	66	62	61

The HOV lanes are most congested in both directions in the afternoons, especially at connections to other freeways (I-405 and I-110 especially).

2.1.9.6 Environmental Consequences

Methodology

The analysis approach taken in the Traffic Study Report was performed according to the methodologies outlined in the 2016 Highway Capacity Manual (HCM) 6th Edition to determine peak hour LOS per freeway segment when not oversaturated. FREEVAL, a macroscopic freeway analysis tool, was used for these computations. For the HCM analysis, a truck percentage of 4% was used to the west of I-710 and 10% to the east of I-710; these percentages were based on vehicle occupancy count data provided in the Data Collection Summary memorandum (please see the Traffic Study Report for this memorandum).

For locations where a freeway segment was oversaturated (i.e. LOS F condition), FREEVAL was not used. Demand/Capacity (D/C) analysis was conducted instead as it is useful for estimating the amount of demand exceeding capacity and analyzing the magnitude of congestion from a bottleneck based on the cars queued behind the bottleneck point. It was determined that D/C analysis be used instead because FREEVAL would not be as effective, since it is unable to measure demand in a segment where roadway capacity is less than demand.

Future traffic forecasts were based on the SCAG Regional Travel Demand Model (RTDM). It produces average daily traffic volumes broken down by five time periods: AM peak (6 AM to 9 AM), Midday (9 AM to 3 PM), PM peak (3 PM to 7 PM), Evening (7 PM to 9 PM), and Night (9 PM to 5 AM) for different vehicle classes (single traveler automobiles, shared-ride vehicles, trucks, etc). The closest scenarios to the project’s horizon years of 2027 Opening Year and 2047 Design Year available were SCAG’s model inputs for 2026 and 2040.

In the SCAG RTDM future year scenarios, a higher automobile operating cost and higher trip reduction due to SCAG’s commitment to its Travel Demand Management (TDM) programs and policies is assumed. This results in a slowdown of some vehicle travel growth that might be expected from projection population and employment growth. For this project, the Traffic Study Report uses more conservative assumptions; SCAG’s 2026 trip reduction rate was used for the 2047 long range scenario. In the same vein of conservative assumption, locations where negative growth was forecast for No-Build scenarios used existing volumes for analysis instead.

For the complete data set of traffic analyses performed, please refer to the Traffic Study Report. It details the results of the project’s traffic modeling in text and table form with numbers for vehicle volume, average speeds, travel delay, and LOS, and it includes accident data as well. Build Alternative 2 (single ExpressLane) forecasts use an HOV 3+ toll-free travel policy. Build Alternative 3 (two ExpressLanes) forecasts use an HOV 2+ toll-free travel policy.

Results

Results from traffic modelling will be presented here in the form of travel time comparisons and peak period performances, with LOS results for clarity. Data for vehicle volumes as shown in the previous section and traffic densities are also available in the Traffic Study Report, but travel time and speeds will most effectively show the impacts of the project on practical usage of I-105’s general purpose and HOV lanes.

There will be a large amount of data presented in the following tables. For ease of reading and comparison, they will be presented in the following order:

- EB I-105
    - General Purpose Lanes
        - No-Build 2027 and 2047 scenarios
        - Build Alternatives 2 and 3 2027 scenarios
        - Build Alternatives 2 and 3 2047 scenarios
    - HOV lanes (in Alternative 1’s No-Build scenarios) or ExpressLanes (Alternatives 2 and 3)
        - No-Build 2027 and 2047 scenarios
        - Build Alternatives 2 and 3 2027 scenarios
        - Build Alternatives 2 and 3 2047 scenarios
- WB I-105
    - General Purpose Lanes
        - No-Build 2027 and 2047 scenarios
        - Build Alternatives 2 and 3 2027 scenarios
        - Build Alternatives 2 and 3 2047 scenarios
    - HOV lanes (in Alternative 1’s No-Build scenarios) or ExpressLanes (Alternatives 2 and 3)
        - No-Build 2027 and 2047 scenarios
        - Build Alternatives 2 and 3 2027 scenarios
        - Build Alternatives 2 and 3 2047 scenarios
- Intersections
        - No-Build 2027 and 2047 scenarios
        - 2027 comparison for all alternatives
        - 2047 comparison for all alternatives

Table 2-65: Eastbound General Purpose Lanes: No-Build Scenarios – 2027 and 2047 Performance Measures

Performance Measure and Segment	**2027 No-Build Alternative 1**						**2047 No-Build Alternative 1**					
	AM Peak (6am-9am)	Midday (9am-3pm)	PM Peak (3pm-7pm)	Evening (7pm-9pm)	Night (9pm-6am)	Daily Totals	AM Peak (6am-9am)	Midday (9am-3pm)	PM Peak (3pm-7pm)	Evening (7pm-9pm)	Night (9pm-6am)	Daily Totals
Vehicle Miles Traveled (VMT)	214,361	454,810	297,772	158,515	355,254	1,480,712	219,041	475,264	277,219	159,951	360,161	1,491,636
I-405 -- I-110	65,561	161,077	108,038	56,695	110,075	501,447	68,639	176,650	97,925	57,256	111,351	511,821
I-110 -- I-710	88,951	176,116	105,723	59,151	141,333	571,273	92,281	179,548	98,243	59,608	141,947	571,628
I-710 -- I-605	59,848	117,618	84,011	42,669	103,846	407,992	58,120	119,066	81,051	43,086	106,864	408,187
Vehicle Hours Delay (VHD)	1,102	2,224	5,032	1,744	296	10,398	1,437	3,674	6,122	1,617	328	13,178
I-405 -- I-110	132	655	1897	692	51	3426	167	1434	2451	590	54	4696
I-110 -- I-710	467	972	2318	835	134	4727	569	1457	2706	802	140	5673
I-710 -- I-605	503	596	817	217	110	2244	702	783	965	225	135	2809
Average Travel Time (Min)	18	18	29.2	23.6	14.1		19.4	20.5	34.1	22.8	14.2	
I-405 -- I-110	5	5.7	9.8	8.2	4.6		5.1	6.9	12.1	7.6	4.6	
I-110 -- I-710	7.1	7.2	13.1	10.3	5.5		7.4	8.1	15.2	10.1	5.5	
I-710 -- I-605	5.9	5.1	6.3	5.1	4		6.9	5.5	6.8	5.1	4.1	

Data for future modelled speed diagrams comes from the Traffic Study Report's travel demand model outputs. It is organized differently from the speed diagrams in the previous section, Affected Environment in order to show the speeds at specific segments more clearly according to model output results, and the time periods are identified like the SCAG models.

Table 2-66: Eastbound General Purpose Lanes: No-Build Scenarios – 2027 and 2047 Speed Contour Diagram

Eastbound General Purpose Lanes Speed Contours														
Start PM	**Start Location**	**End PM**	**End Location**		2027 Model No Build (Alt 1)					2047 Model No Build (Alt 1)				
					AM Peak (6AM-9AM)	**Midday (9AM-3PM)**	**PM Peak (3PM-7PM)**	**Evening (7PM-9PM)**	**Night (9PM-6AM)**	**AM Peak (6AM-9AM)**	**Midday (9AM-3PM)**	**PM Peak (3PM-7PM)**	**Evening (7PM-9PM)**	**Night (9PM-6AM)**
R1.768	Imperial Hwy On	R2.124	I-405 junction		59	55	40	45	59	59	51	38	45	59
R2.124	I-405 junction	R2.507	NB-405 On		59	48	19	31	59	59	41	15	33	59
R2.507	NB-405 On	R2.677	SB-405 On		66	52	16	28	69	66	42	12	33	68
R2.677	SB-405 On	R3.050	Hawthorne Bl junction		61	48	11	18	68	60	34	9	24	68
R3.050	Hawthorne Bl junction	R3.343	Imperial Hwy/Freeman Av On		59	50	24	19	67	57	32	16	27	66
R3.343	Imperial Hwy/Freeman Av On	R3.859	Prarie Av On		62	52	26	31	66	60	42	19	32	66
R3.859	Prarie Av On	R4.233	120th/Crenshaw Bl Off		60	55	36	44	68	58	46	26	45	68
R4.233	120th/Crenshaw Bl Off	R4.848	120th St On		57	52	36	31	66	55	38	27	35	66
R4.848	120th St On	R5.148	Crenshaw Bl On		64	59	47	51	69	62	52	43	53	69
R5.148	Crenshaw Bl On	R5.505	Western Av junction		60	57	35	46	68	58	49	28	48	68
R5.505	Western Av junction	R6.242	Normandie Av junction		60	55	34	46	68	59	46	27	48	68
R6.242	Normandie Av junction	R6.472	Vermont Av Off		64	60	47	53	69	62	53	43	54	69
R6.472	Vermont Av Off	R6.842	I-110 Off	Direction of Travel	65	60	47	56	69	64	55	43	56	69
R6.842	I-110 Off	R7.397	I-110 junction		65	67	34	39	67	63	64	28	40	67
R7.397	I-110 junction	R7.993	I-110 On		61	64	22	31	67	58	61	19	32	67
R7.993	I-110 On	R8.626	Central Av Off		52	49	25	39	66	49	45	21	39	66
R8.626	Central Av Off	R8.915	Central Av junction		52	49	22	35	65	48	44	17	33	64
R8.915	Central Av junction	R9.211	Central Av On		50	52	19	31	64	48	46	15	32	64
R9.211	Central Av On	R9.498	Wilmington Av Off		52	54	28	41	66	50	49	24	43	66
R9.498	Wilmington Av Off	R9.918	Wilmington Av On		53	50	36	40	66	51	45	30	41	66
R9.918	Wilmington Av On	R11.271	Long Beach Bl Off		47	47	27	32	65	45	39	23	35	65
R11.271	Long Beach Bl Off	R11.435	Long Beach Bl junction		52	51	39	46	66	49	47	36	45	66
R11.435	Long Beach Bl junction	R11.689	SB Long Beach Bl On		53	49	32	44	66	50	44	30	42	66
R11.689	SB Long Beach Bl On	R12.034	NB Long Beach Bl On		51	48	31	33	65	48	42	29	33	65
R12.034	NB Long Beach Bl On	R12.393	Gertrude Dr junction		48	48	29	33	64	46	41	28	32	64
R12.393	Gertrude Dr junction	R12.872	I-710 Off		48	48	29	33	64	46	41	28	32	64
R12.872	I-710 Off	R13.129	I-710 NB/SB Off Split		60	61	50	52	67	58	59	50	50	66
R13.129	I-710 NB/SB Off Split	R13.455	I-710 junction		60	61	50	52	67	58	59	50	50	66
R13.455	I-710 junction	R14.005	NB-710 On		60	66	62	61	67	58	64	62	60	67
R14.005	NB-710 On	R14.128	SB-710 On		61	64	58	61	68	59	62	58	61	68
R14.128	SB-710 On	R14.618	Paramount Bl junction		55	59	50	56	66	52	56	49	56	66
R14.618	Paramount Bl junction	R15.048	Paramount Bl On		47	52	36	48	63	41	47	35	48	62
R15.048	Paramount Bl On	R15.374	Lakewood Bl Off		45	49	38	44	63	39	46	34	46	62
R15.374	Lakewood Bl Off	R15.681	Lakewood Bl junction		52	53	42	50	64	48	50	37	51	63
R15.681	Lakewood Bl junction	R15.843	SB Lakewood Bl On		52	53	42	50	64	48	50	37	51	63
R15.843	SB Lakewood Bl On	R16.099	NB Lakewood Bl On		59	59	52	58	67	56	58	50	58	66
R16.099	NB Lakewood Bl On	R16.264	Bellflower Bl Off		35	45	38	52	66	29	42	32	53	66
R16.264	Bellflower Bl Off	R16.607	Bellflower Bl junction		25	40	29	48	64	19	36	24	48	63
R16.607	Bellflower Bl junction	R17.041	Bellflower Bl On		30	44	33	49	64	19	37	27	49	63
R17.041	Bellflower Bl On	R17.233	I-605 Off		25	41	26	47	64	15	33	21	47	63

For Alternative 1, the No-Build future scenarios show a clear decrease in speeds for all congested segments from 2027 to 2047 by about 5 miles per hour, and up to 9 miles (from 120th St. on-ramp to Crenshaw Blvd. on-ramp).

Table 2-67: Eastbound General Purpose Lanes: Build Alternatives 2 and 3 – 2027 Performance Measures

Performance Measure and Segment	2027 Build Alternative 2						2027 Build Alternative 3					
	AM Peak (6am-9am)	**Midday (9am-3pm)**	**PM Peak (3pm-7pm)**	**Evening (7pm-9pm)**	**Night (9pm-6am)**	**Daily Totals**	**AM Peak (6am-9am)**	**Midday (9am-3pm)**	**PM Peak (3pm-7pm)**	**Evening (7pm-9pm)**	**Night (9pm-6am)**	**Daily Totals**
Vehicle Miles Traveled (VMT)	218,196	485,244	276,018	160,849	385,178	1,525,484	202,632	405,942	319,371	158,446	397,218	1,483,610
I-405 -- I-110	65,320	168,408	100,522	58,074	118,027	510,351	58,418	143,420	124,691	56,652	122,682	505,863
I-110 -- I-710	89,316	191,307	90,241	56,717	153,156	580,737	82,745	155,404	106,324	64,594	157,210	566,277
I-710 -- I-605	63,560	125,529	85,254	46,058	113,995	434,396	61,469	107,118	88,356	37,201	117,327	411,471
Vehicle Hours Delay (VHD)	881	2,688	7,603	2,251	273	13,696	663	1,213	4,676	713	301	7,566
I-405 -- I-110	114	699	2675	810	44	4341	66	345	1148	258	52	1869
I-110 -- I-710	409	1220	3650	1169	121	6569	289	516	2741	352	131	4029
I-710 -- I-605	358	769	1278	273	108	2786	307	353	787	103	118	1669
Average Travel Time (Min)	16.9	18.4	39.7	26.4	13.9		16.1	16	27.6	17.3	14	
I-405 -- I-110	4.9	5.7	12.4	8.6	4.5		4.7	5.1	7.2	5.8	4.5	
I-110 -- I-710	6.8	7.4	19.7	12.5	5.5		6.4	6.3	14.4	7.1	5.5	
I-710 -- I-605	5.2	5.3	7.5	5.2	4		5	4.5	6	4.4	4	

Table 2-68: Eastbound General Purpose Lanes: Build Alternatives 2 and 3 – 2027 Speed Contour Diagram

Eastbound General Purpose Lanes

Start PM	Start Location	End PM	End Location	2027 Alternative 2					2027 Alternative 3				
				AM Peak (6AM-9AM)	Midday (9AM-3PM)	PM Peak (3PM-7PM)	Evening (7PM-9PM)	Night (9PM-6AM)	AM Peak (6AM-9AM)	Midday (9AM-3PM)	PM Peak (3PM-7PM)	Evening (7PM-9PM)	Night (9PM-6AM)
0.00	California St (Begin freew	R1.768	Imperial Hwy On	60	56	36	47	60	60	59	53	57	60
R1.768	Imperial Hwy On	R2.124	I-405 junction	59	49	13	35	59	60	56	42	52	59
R2.124	I-405 junction	R2.507	NB-405 On	68	54	12	32	69	68	63	43	56	69
R2.507	NB-405 On	R2.677	SB-405 On	63	50	8	21	68	65	57	27	42	68
R2.677	SB-405 On	R3.050	Hawthorne Bl junction	61	52	17	23	67	63	61	46	48	67
R3.050	Hawthorne Bl junction	R3.343	Imperial Hwy/Freeman Av On	63	51	18	24	67	66	57	45	48	67
R3.343	Imperial Hwy/Freeman A	R3.859	Prarie Av On	61	54	28	37	68	64	58	47	53	68
R3.859	Prarie Av On	R4.233	120th/Crenshaw Bl Off	58	51	27	24	67	63	58	50	52	67
R4.233	120th/Crenshaw Bl Off	R4.848	120th St On	64	59	44	48	69	66	62	54	60	69
R4.848	120th St On	R5.148	Crenshaw Bl On	61	57	28	43	69	64	60	46	55	68
R5.148	Crenshaw Bl On	R5.505	Western Av junction	62	54	25	43	69	64	60	33	54	68
R5.505	Western Av junction	R6.242	Normandie Av junction	65	59	41	51	69	66	63	46	59	69
R6.242	Normandie Av junction	R6.472	Vermont Av Off	66	60	41	54	69	67	64	47	62	69
R6.472	Vermont Av Off	R6.842	I-110 Off	66	66	22	31	68	67	69	30	54	68
R6.842	I-110 Off	R7.397	I-110 junction	63	63	13	24	68	64	68	19	50	67
R7.397	I-110 junction	R7.993	I-110 On	55	48	17	32	67	57	53	21	49	67
R7.993	I-110 On	R8.626	Central Av Off	55	48	13	27	66	57	54	17	48	65
R8.626	Central Av Off	R8.915	Central Av junction	52	50	11	25	66	58	61	18	50	65
R8.915	Central Av junction	R9.211	Central Av On	54	52	19	35	67	58	60	25	53	67
R9.211	Central Av On	R9.498	Wilmington Av Off	55	49	23	33	67	59	59	32	55	67
R9.498	Wilmington Av Off	R9.918	Wilmington Av On	49	46	17	25	66	53	56	22	51	66
R9.918	Wilmington Av On	R11.271	Long Beach Bl Off	54	50	26	41	67	58	60	37	58	67
R11.271	Long Beach Bl Off	R11.435	Long Beach Bl junction	55	47	25	40	67	59	58	38	55	67
R11.435	Long Beach Bl junction	R11.689	SB Long Beach Bl On	53	46	24	29	66	56	56	35	50	66
R11.689	SB Long Beach Bl On	R12.034	NB Long Beach Bl On	50	45	23	29	65	53	55	33	49	65
R12.034	NB Long Beach Bl On	R12.393	Gertrude Dr junction	50	45	23	29	65	53	55	33	49	65
R12.393	Gertrude Dr junction	R12.872	I-710 Off	61	60	46	50	67	64	66	54	63	67
R12.872	I-710 Off	R13.129	I-710 NB/SB Off Split	61	60	46	50	67	64	66	54	63	67
R13.129	I-710 NB/SB Off Split	R13.455	I-710 junction	62	65	59	60	68	64	69	64	68	68
R13.455	I-710 junction	R14.005	NB-710 On	62	63	56	60	68	63	66	59	66	68
R14.005	NB-710 On	R14.128	SB-710 On	57	58	47	55	67	58	63	51	63	67
R14.128	SB-710 On	R14.618	Paramount Bl junction	49	50	29	46	64	50	59	40	58	64
R14.618	Paramount Bl junction	R15.048	Paramount Bl On	49	48	29	42	64	50	56	37	51	63
R15.048	Paramount Bl On	R15.374	Lakewood Bl Off	56	52	33	49	65	57	60	42	57	64
R15.374	Lakewood Bl Off	R15.681	Lakewood Bl junction	56	52	33	49	65	57	60	42	57	64
R15.681	Lakewood Bl junction	R15.843	SB Lakewood Bl On	61	59	49	57	67	63	64	52	62	67
R15.843	SB Lakewood Bl On	R16.099	NB Lakewood Bl On	43	44	31	51	67	46	52	40	58	67
R16.099	NB Lakewood Bl On	R16.264	Bellflower Bl Off	33	38	21	47	65	44	51	35	55	65
R16.264	Bellflower Bl Off	R16.607	Bellflower Bl junction	46	39	22	47	65	44	50	34	58	65
R16.607	Bellflower Bl junction	R17.041	Bellflower Bl On	43	35	17	46	65	42	47	32	56	64

Direction of Travel

In the eastbound direction, the project's two build alternatives show higher speeds than Alternative 1's No-Build. Comparing between Alternatives 2 and 3 in 2027, Alternative 3 shows drastically fewer time periods of heavy congestion, and many segments have improved speeds throughout.

Table 2-69: Eastbound General Purpose Lanes: Build Alternatives 2 and 3 – 2047 Performance Measures

Performance Measure and Segment	2047 Build Alternative 2						2047 Build Alternative 3					
	AM Peak (6am-9am)	Midday (9am-3pm)	PM Peak (3pm-7pm)	Evening (7pm-9pm)	Night (9pm-6am)	Daily Totals	AM Peak (6am-9am)	Midday (9am-3pm)	PM Peak (3pm-7pm)	Evening (7pm-9pm)	Night (9pm-6am)	Daily Totals
Vehicle Miles Traveled (VMT)	237,022	484,257	230,085	170,135	411,454	1,532,952	209,227	435,659	288,980	150,725	416,823	1,501,414
I-405 -- I-110	77,166	180,572	80,005	60,299	126,743	524,785	62,435	149,720	114,078	54,355	129,689	510,277
I-110 -- I-710	95,962	179,473	72,680	67,869	161,965	577,949	85,798	170,678	86,969	60,973	164,163	568,581
I-710 -- I-605	63,894	124,211	77,400	41,967	122,746	430,218	60,994	115,261	87,932	35,397	122,972	422,556
Vehicle Hours Delay (VHD)	1,575	5,407	9,957	1,227	379	18,546	811	1,721	6,640	552	399	10,123
I-405 -- I-110	230	1898	3587	473	61	6248	94	432	1817	204	68	2615
I-110 -- I-710	688	2276	4597	610	158	8327	337	787	3816	266	173	5379
I-710 -- I-605	658	1234	1774	145	160	3970	381	502	1007	83	158	2130
Average Travel Time (Min)	19.3	23.4	55.3	19.7	14.1		16.7	16.8	36.7	16.5	14.1	
I-405 -- I-110	5.3	7.5	17.9	6.8	4.6		4.8	5.3	9.2	5.5	4.6	
I-110 -- I-710	7.7	9.6	27.8	8.4	5.5		6.6	6.8	20.8	6.7	5.5	
I-710 -- I-605	6.3	6.2	9.5	4.6	4.1		5.3	4.8	6.6	4.3	4	

Table 2-70: Eastbound General Purpose Lanes: Build Alternatives 2 and 3 – 2047 Speed Contour Diagram

Eastbound General Purpose Lanes

Start PM	Start Location	End PM	End Location	2047 Alternative 2					2047 Alternative 3				
				AM Peak (6AM-9AM)	Midday (9AM-3PM)	PM Peak (3PM-7PM)	Evening (7PM-9PM)	Night (9PM-6AM)	AM Peak (6AM-9AM)	Midday (9AM-3PM)	PM Peak (3PM-7PM)	Evening (7PM-9PM)	Night (9PM-6AM)
0.00	California St (Begin freew	R1.768	Imperial Hwy On	60	53	31	50	59	60	59	50	57	59
R1.768	Imperial Hwy On	R2.124	I-405 junction	59	43	10	39	59	60	55	35	51	59
R2.124	I-405 junction	R2.507	NB-405 On	67	43	7	41	68	68	61	27	56	68
R2.507	NB-405 On	R2.677	SB-405 On	61	36	6	31	68	63	54	16	48	68
R2.677	SB-405 On	R3.050	Hawthorne Bl junction	56	34	9	35	66	61	58	31	52	66
R3.050	Hawthorne Bl junction	R3.343	Imperial Hwy/Freeman Av On	57	31	9	36	66	65	56	32	52	66
R3.343	Imperial Hwy/Freeman A	R3.859	Prarie Av On	54	39	14	48	68	63	57	36	56	68
R3.859	Prarie Av On	R4.233	120th/Crenshaw Bl Off	49	27	15	40	67	61	58	41	53	66
R4.233	120th/Crenshaw Bl Off	R4.848	120th St On	61	48	31	56	69	66	62	49	60	68
R4.848	120th St On	R5.148	Crenshaw Bl On	56	45	18	52	68	62	59	37	57	68
R5.148	Crenshaw Bl On	R5.505	Western Av junction	60	44	18	51	68	62	57	24	56	68
R5.505	Western Av junction	R6.242	Normandie Av junction	64	51	33	58	69	64	61	40	61	69
R6.242	Normandie Av junction	R6.472	Vermont Av Off	66	53	33	60	69	66	62	43	63	69
R6.472	Vermont Av Off	R6.842	I-110 Off	64	61	15	46	67	66	68	21	56	67
R6.842	I-110 Off	R7.397	I-110 junction	60	57	10	39	67	62	66	13	53	67
R7.397	I-110 junction	R7.993	I-110 On	51	42	12	45	66	55	51	14	53	66
R7.993	I-110 On	R8.626	Central Av Off	50	40	9	40	65	54	52	11	53	64
R8.626	Central Av Off	R8.915	Central Av junction	46	37	7	39	65	56	57	12	53	64
R8.915	Central Av junction	R9.211	Central Av On	49	44	13	47	66	57	57	18	56	66
R9.211	Central Av On	R9.498	Wilmington Av Off	50	34	15	46	66	58	55	22	57	66
R9.498	Wilmington Av Off	R9.918	Wilmington Av On	39	27	11	41	66	52	51	15	54	65
R9.918	Wilmington Av On	R11.271	Long Beach Bl Off	51	39	19	50	66	57	56	27	59	66
R11.271	Long Beach Bl Off	R11.435	Long Beach Bl junction	50	41	20	50	66	58	53	27	57	66
R11.435	Long Beach Bl junction	R11.689	SB Long Beach Bl On	46	38	19	44	65	55	52	25	52	65
R11.689	SB Long Beach Bl On	R12.034	NB Long Beach Bl On	43	36	18	44	64	52	50	23	52	64
R12.034	NB Long Beach Bl On	R12.393	Gertrude Dr junction	43	36	18	44	64	52	50	23	52	64
R12.393	Gertrude Dr junction	R12.872	I-710 Off	59	58	44	57	67	64	63	49	63	67
R12.872	I-710 Off	R13.129	I-710 NB/SB Off Split	59	58	44	57	67	64	63	49	63	67
R13.129	I-710 NB/SB Off Split	R13.455	I-710 junction	60	64	60	66	67	64	68	62	68	67
R13.455	I-710 junction	R14.005	NB-710 On	60	61	55	66	68	63	65	57	67	68
R14.005	NB-710 On	R14.128	SB-710 On	51	54	43	62	66	57	60	48	64	66
R14.128	SB-710 On	R14.618	Paramount Bl junction	35	45	22	54	63	49	54	32	60	63
R14.618	Paramount Bl junction	R15.048	Paramount Bl On	38	37	20	50	62	48	50	30	55	62
R15.048	Paramount Bl On	R15.374	Lakewood Bl Off	49	45	22	56	63	55	55	36	60	63
R15.374	Lakewood Bl Off	R15.681	Lakewood Bl junction	49	45	22	56	63	55	55	36	60	63
R15.681	Lakewood Bl junction	R15.843	SB Lakewood Bl On	58	54	42	63	66	61	61	50	64	66
R15.843	SB Lakewood Bl On	R16.099	NB Lakewood Bl On	29	34	21	58	66	43	47	34	60	66
R16.099	NB Lakewood Bl On	R16.264	Bellflower Bl Off	22	27	14	53	63	38	46	30	58	63
R16.264	Bellflower Bl Off	R16.607	Bellflower Bl junction	32	28	13	53	63	38	50	32	57	63
R16.607	Bellflower Bl junction	R17.041	Bellflower Bl On	28	25	11	51	63	35	48	31	55	63

Direction of Travel

In 2047, there seems to be a reversal in positive traffic progress. Compared to 2027, speeds overall are lower, and the difference between Alternatives 2 and 3 is even more drastic. While there are still fewer segments out of the entire freeway that are congested in Alternative 3, the model does show lower speeds in the PM peak compared to Alternative 2.

Table 2-71: Eastbound HOV Lanes: No-Build Scenarios – 2027 and 2047 Performance Measures

Performance Measure and Segment	2027 No-Build Alternative 1						2047 No-Build Alternative 1					
	AM Peak (6am-9am)	Midday (9am-3pm)	PM Peak (3pm-7pm)	Evening (7pm-9pm)	Night (9pm-6am)	Daily Totals	AM Peak (6am-9am)	Midday (9am-3pm)	PM Peak (3pm-7pm)	Evening (7pm-9pm)	Night (9pm-6am)	Daily Totals
Vehicle Miles Traveled (VMT)	45,926	114,536	93,960	45,205	45,253	344,880	33,123	130,731	87,853	35,170	41,189	328,066
I-405 -- I-110	13,330	38,870	35,020	15,898	16,014	119,132	8,240	45,635	30,964	13,028	14,239	112,106
I-110 -- I-710	17,162	39,870	28,911	16,428	14,838	117,209	12,914	46,281	27,899	12,169	14,603	113,866
I-710 -- I-605	15,434	35,796	30,029	12,878	14,401	108,538	11,968	38,815	28,991	9,973	12,347	102,095
Vehicle Hours Delay (VHD)	79	395	1,035	290	0	1,800	17	710	1,388	80	0	2,194
I-405 -- I-110	10	108	304	114	0	536	1	229	500	36	0	766
I-110 -- I-710	35	155	484	117	0	791	8	276	597	28	0	909
I-710 -- I-605	34	132	248	59	0	472	8	205	291	16	0	520
Average Travel Time (Min)	17.9	20.3	28.7	22	16		16.8	22.2	33.1	18.1	16	
I-405 -- I-110	4.9	5.5	7.3	6.9	4.7		4.7	6.2	9.6	5.5	4.7	
I-110 -- I-710	6.3	7	11.6	8.2	5.6		5.8	7.7	13.3	6.4	5.6	
I-710 -- I-605	4.6	5	6.2	5.2	4		4.2	5.4	6.6	4.4	4	

Table 2-72: Eastbound HOV Lanes: No-Build Scenarios – 2027 and 2047 Speed Contour Diagram

Eastbound HOV Lanes Speed Contours

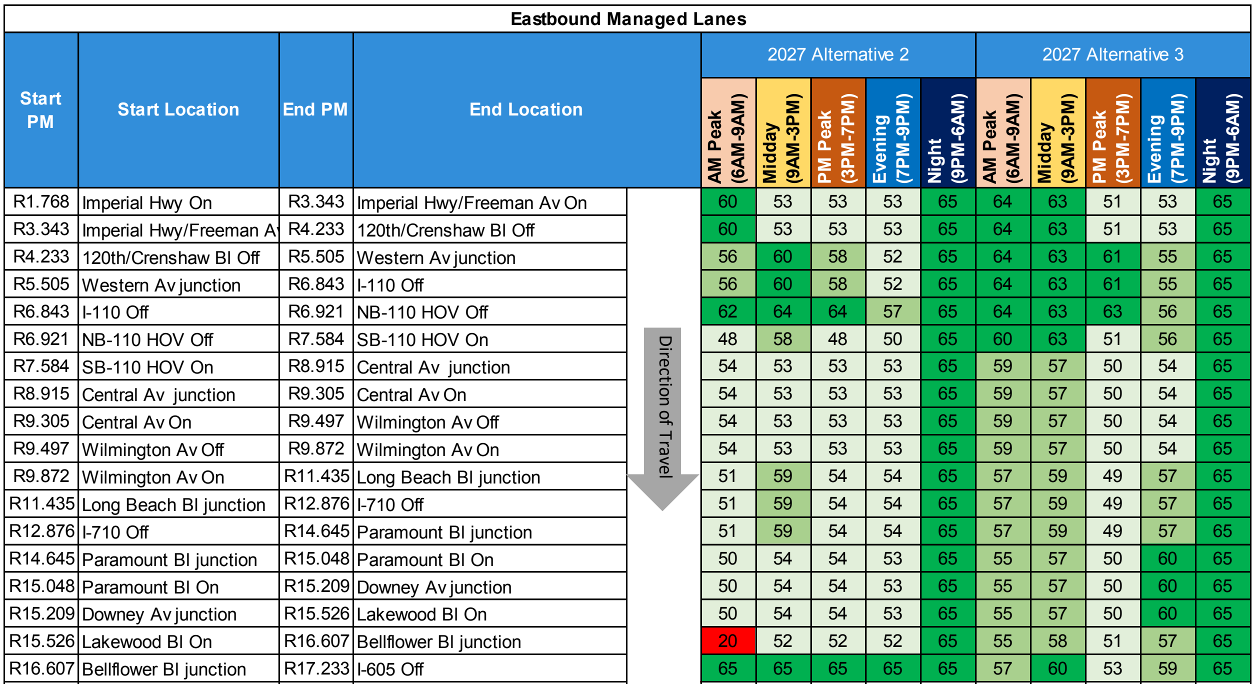
Start PM	Start Location	End PM	End Location		2027 Model No Build (Alt 1)					2047 Model No Build (Alt 1)				
					AM Peak (6AM-9AM)	Midday (9AM-3PM)	PM Peak (3PM-7PM)	Evening (7PM-9PM)	Night (9PM-6AM)	AM Peak (6AM-9AM)	Midday (9AM-3PM)	PM Peak (3PM-7PM)	Evening (7PM-9PM)	Night (9PM-6AM)
R3.343	Imperial Hwy/Freeman Av On	R4.233	120th/Crenshaw Bl Off		62	52	40	42	65	65	44	27	53	65
R4.233	120th/Crenshaw Bl Off	R5.505	Western Av junction		62	52	40	42	65	65	44	27	53	65
R5.505	Western Av junction	R6.843	I-110 Off		61	58	42	42	65	64	53	31	55	65
R6.843	I-110 Off	R6.921	NB-110 HOV Off		61	58	42	42	65	64	53	31	55	65
R6.921	NB-110 HOV Off	R7.584	SB-110 HOV On	Direction of Travel	64	64	57	48	65	65	60	45	55	65
R7.584	SB-110 HOV On	R8.915	Central Av junction		56	56	18	37	65	63	48	17	55	65
R8.915	Central Av junction	R9.305	Central Av On		58	49	28	45	65	63	43	24	56	65
R9.305	Central Av On	R9.497	Wilmington Av Off		58	49	28	45	65	63	43	24	56	65
R9.497	Wilmington Av Off	R9.872	Wilmington Av On		58	49	28	45	65	63	43	24	56	65
R9.872	Wilmington Av On	R11.435	Long Beach Bl junction		58	49	28	45	65	63	43	24	56	65
R11.435	Long Beach Bl junction	R12.876	I-710 Off		55	54	44	49	65	62	52	38	60	65
R12.876	I-710 Off	R14.645	Paramount Bl junction		55	54	44	49	65	62	52	38	60	65
R14.645	Paramount Bl junction	R15.048	Paramount Bl On		55	54	44	49	65	62	52	38	60	65
R15.048	Paramount Bl On	R15.209	Downey Av junction		59	52	41	50	65	62	45	41	57	65
R15.209	Downey Av junction	R15.526	Lakewood Bl On		59	52	41	50	65	62	45	41	57	65
R15.526	Lakewood Bl On	R16.607	Bellflower Bl junction		59	52	41	50	65	62	45	41	57	65
R16.607	Bellflower Bl junction	R17.233	I-605 Off		55	45	30	47	65	62	43	30	57	65
R17.233	I-605 Off	R18.144	Studebaker Rd (End freeway)		65	65	64	65	65	65	65	62	65	65

The No-Build scenario shows that as time passes, speeds will deteriorate heavily during the PM peak and mildly during midday. Off-peak travel hours show some increase in speed though, but all these segments were already operating at 40 miles per hour at least.

Table 2-73: Eastbound HOT Lanes: Build Alternatives 2 and 3 – 2027 Performance Measures

Performance Measure and Segment	2027 Build Alternative 2						2027 Build Alternative 3					
	AM Peak (6am-9am)	Midday (9am-3pm)	PM Peak (3pm-7pm)	Evening (7pm-9pm)	Night (9pm-6am)	Daily Totals	AM Peak (6am-9am)	Midday (9am-3pm)	PM Peak (3pm-7pm)	Evening (7pm-9pm)	Night (9pm-6am)	Daily Totals
Vehicle Miles Traveled (VMT)	59,001	116,289	81,746	42,255	66,241	365,532	100,684	220,397	192,000	88,121	66,224	667,427
I-405 – I-110	17,843	42,309	28,085	15,003	23,119	126,359	22,927	69,130	63,606	32,888	22,777	211,328
I-110 – I-710	21,730	38,471	28,216	14,497	22,968	125,882	38,755	78,085	66,729	30,795	22,977	237,342
I-710 – I-605	19,428	35,509	25,445	12,755	20,154	113,291	39,001	73,182	61,665	24,439	20,470	218,757
Vehicle Hours Delay (VHD)	249	310	254	142	0	956	162	316	804	236	0	1,518
I-405 – I-110	29	131	78	53	0	291	4	58	224	107	0	394
I-110 – I-710	80	98	101	50	0	330	62	128	293	84	0	567
I-710 – I-605	140	81	75	39	0	335	96	130	287	45	0	557
Average Travel Time (Min)	18	16.7	17.2	17.4	14.3		15.6	15.6	18.2	16.7	14.3	
I-405 – I-110	5.2	5.6	5.5	5.8	4.7		4.7	4.9	5.8	5.7	4.7	
I-110 – I-710	6.9	6.5	6.9	6.8	5.6		6.2	6.2	7.2	6.6	5.6	
I-710 – I-605	5.9	4.6	4.8	4.8	4		4.7	4.5	5.2	4.5	4	

Table 2-74: Eastbound HOT Lanes: Build Alternatives 2 and 3 – 2027 Speed Contour Diagram



Eastbound Managed Lanes													
Start PM	Start Location	End PM	End Location	2027 Alternative 2					2027 Alternative 3				
				AM Peak (6AM-9AM)	Midday (9AM-3PM)	PM Peak (3PM-7PM)	Evening (7PM-9PM)	Night (9PM-6AM)	AM Peak (6AM-9AM)	Midday (9AM-3PM)	PM Peak (3PM-7PM)	Evening (7PM-9PM)	Night (9PM-6AM)
R1.768	Imperial Hwy On	R3.343	Imperial Hwy/Freeman Av On	60	53	53	53	65	64	63	51	53	65
R3.343	Imperial Hwy/Freeman A	R4.233	120th/Crenshaw Bl Off	60	53	53	53	65	64	63	51	53	65
R4.233	120th/Crenshaw Bl Off	R5.505	Western Av junction	56	60	58	52	65	64	63	61	55	65
R5.505	Western Av junction	R6.843	I-110 Off	56	60	58	52	65	64	63	61	55	65
R6.843	I-110 Off	R6.921	NB-110 HOV Off	62	64	64	57	65	64	63	63	56	65
R6.921	NB-110 HOV Off	R7.584	SB-110 HOV On	48	58	48	50	65	60	63	51	56	65
R7.584	SB-110 HOV On	R8.915	Central Av junction	54	53	53	53	65	59	57	50	54	65
R8.915	Central Av junction	R9.305	Central Av On	54	53	53	53	65	59	57	50	54	65
R9.305	Central Av On	R9.497	Wilmington Av Off	54	53	53	53	65	59	57	50	54	65
R9.497	Wilmington Av Off	R9.872	Wilmington Av On	54	53	53	53	65	59	57	50	54	65
R9.872	Wilmington Av On	R11.435	Long Beach Bl junction	51	59	54	54	65	57	59	49	57	65
R11.435	Long Beach Bl junction	R12.876	I-710 Off	51	59	54	54	65	57	59	49	57	65
R12.876	I-710 Off	R14.645	Paramount Bl junction	51	59	54	54	65	57	59	49	57	65
R14.645	Paramount Bl junction	R15.048	Paramount Bl On	50	54	54	53	65	55	57	50	60	65
R15.048	Paramount Bl On	R15.209	Downey Av junction	50	54	54	53	65	55	57	50	60	65
R15.209	Downey Av junction	R15.526	Lakewood Bl On	50	54	54	53	65	55	57	50	60	65
R15.526	Lakewood Bl On	R16.607	Bellflower Bl junction	20	52	52	52	65	55	58	51	57	65
R16.607	Bellflower Bl junction	R17.233	I-605 Off	65	65	65	65	65	57	60	53	59	65

Traffic modelling shows that the proposed ExpressLanes in both Alternatives 2 and 3 both operate very well, with only one congested segment in the Alternative 2 2027 scenario from Lakewood Blvd. on-ramp to Bellflower Blvd. junction. All other segments are shown to operate at 48 miles per hour or better. Compared to the No-Build scenarios, this would be a great improvement for managed lanes.

Table 2-75: Eastbound HOT Lanes: Build Alternatives 2 and 3 – 2047 Performance Measures

Performance Measure and Segment	2047 Build Alternative 2						2047 Build Alternative 3					
	AM Peak (6am-9am)	Midday (9am-3pm)	PM Peak (3pm-7pm)	Evening (7pm-9pm)	Night (9pm-6am)	Daily Totals	AM Peak (6am-9am)	Midday (9am-3pm)	PM Peak (3pm-7pm)	Evening (7pm-9pm)	Night (9pm-6am)	Daily Totals
Vehicle Miles Traveled (VMT)	58,172	125,168	86,460	41,664	46,215	357,680	84,650	214,783	172,398	72,069	48,882	592,782
I-405 -- I-110	17,690	44,233	31,347	14,907	15,273	123,450	18,950	66,929	57,640	27,221	16,320	187,060
I-110 -- I-710	21,157	41,481	29,537	14,278	16,222	122,675	33,019	75,933	59,427	25,452	17,140	210,971
I-710 -- I-605	19,325	39,454	25,576	12,479	14,721	111,556	32,682	71,921	55,330	19,395	15,422	194,751
Vehicle Hours Delay (VHD)	177	434	271	101	0	984	105	436	701	139	0	1,381
I-405 -- I-110	28	153	108	40	0	328	2	81	190	64	0	338
I-110 -- I-710	64	146	98	35	0	343	44	163	254	51	0	512
I-710 -- I-605	85	136	65	27	0	313	59	192	257	23	0	531
Average Travel Time (Min)	17	17.5	17.2	16.5	14.3		15.3	16.1	18	16	14.3	
I-405 -- I-110	5.2	5.7	5.7	5.5	4.7		4.7	5.1	5.7	5.4	4.7	
I-110 -- I-710	6.7	6.8	6.8	6.5	5.6		6.1	6.4	7.1	6.3	5.6	
I-710 -- I-605	5.2	4.9	4.7	4.6	4		4.5	4.7	5.2	4.3	4	

Table 2-76: Eastbound HOT Lanes: Build Alternatives 2 and 3 – 2047 Speed Contour Diagram

Eastbound Managed Lanes

Start PM	Start Location	End PM	End Location	2047 Alternative 2					2047 Alternative 3				
				AM Peak (6AM-9AM)	Midday (9AM-3PM)	PM Peak (3PM-7PM)	Evening (7PM-9PM)	Night (9PM-6AM)	AM Peak (6AM-9AM)	Midday (9AM-3PM)	PM Peak (3PM-7PM)	Evening (7PM-9PM)	Night (9PM-6AM)
R1.768	Imperial Hwy On	R3.343	Imperial Hwy/Freeman Av On	63	54	53	55	65	64	60	51	56	65
R3.343	Imperial Hwy/Freeman A	R4.233	120th/Crenshaw Bl Off	63	54	53	55	65	64	60	51	56	65
R4.233	120th/Crenshaw Bl Off	R5.505	Western Av junction	54	57	53	56	65	65	62	60	57	65
R5.505	Western Av junction	R6.843	I-110 Off	54	57	53	56	65	65	62	60	57	65
R6.843	I-110 Off	R6.921	NB-110 HOV Off	64	65	63	56	65	65	63	63	57	65
R6.921	NB-110 HOV Off	R7.584	SB-110 HOV On	47	50	47	56	65	61	60	51	57	65
R7.584	SB-110 HOV On	R8.915	Central Av junction	56	54	55	57	65	60	55	50	57	65
R8.915	Central Av junction	R9.305	Central Av On	56	54	55	57	65	60	55	50	57	65
R9.305	Central Av On	R9.497	Wilmington Av Off	56	54	55	57	65	60	55	50	57	65
R9.497	Wilmington Av Off	R9.872	Wilmington Av On	56	54	55	57	65	60	55	50	57	65
R9.872	Wilmington Av On	R11.435	Long Beach Bl junction	57	52	54	56	65	58	58	50	59	65
R11.435	Long Beach Bl junction	R12.876	I-710 Off	57	52	54	56	65	58	58	50	59	65
R12.876	I-710 Off	R14.645	Paramount Bl junction	57	52	54	56	65	58	58	50	59	65
R14.645	Paramount Bl junction	R15.048	Paramount Bl On	53	53	56	57	65	58	56	50	61	65
R15.048	Paramount Bl On	R15.209	Downey Av junction	53	53	56	57	65	58	56	50	61	65
R15.209	Downey Av junction	R15.526	Lakewood Bl On	53	53	56	57	65	58	56	50	61	65
R15.526	Lakewood Bl On	R16.607	Bellflower Bl junction	31	51	57	57	65	58	50	49	62	65
R16.607	Bellflower Bl junction	R17.233	I-605 Off	65	65	65	65	65	60	52	51	63	65

Direction of Travel

The same observations for ExpressLanes in 2027 hold for 2047, with some speeds changing here and there. The lowest speed is now 47 miles per hour, but the congested segment's speed improves by 11 miles per hour. Overall, the proposed ExpressLanes would operate well in both 2027 and 2047.

Table 2-77: Westbound General Purpose Lanes: No-Build Scenarios – 2027 and 2047 Performance Measures

Performance Measure and Segment	2027 No-Build Alternative 1						2047 No-Build Alternative 1					
	AM Peak (6am-9am)	Midday (9am-3pm)	PM Peak (3pm-7pm)	Evening (7pm-9pm)	Night (9pm-6am)	Daily Totals	AM Peak (6am-9am)	Midday (9am-3pm)	PM Peak (3pm-7pm)	Evening (7pm-9pm)	Night (9pm-6am)	Daily Totals
Vehicle Miles Traveled (VMT)	209,072	388,849	267,681	154,089	343,331	1,363,023	219,626	418,234	283,068	141,731	346,062	1,408,721
I-405 -- I-110	66,353	127,711	82,551	51,425	117,616	445,656	67,337	145,987	93,864	45,802	117,853	470,843
I-110 -- I-710	79,976	160,073	102,504	58,836	141,370	542,759	88,556	171,413	106,948	55,883	142,339	565,139
I-710 -- I-605	62,743	101,065	82,626	43,828	84,345	374,608	63,734	100,834	82,256	40,046	85,870	372,740
Vehicle Hours Delay (VHD)	3,754	1,481	1,586	1,187	308	8,316	3,160	2,361	2,027	706	325	8,579
I-405 -- I-110	1,216	453	252	285	118	2,324	1,212	904	440	164	121	2,842
I-110 -- I-710	1,834	577	867	628	129	4,036	1,376	861	1,031	377	136	3,781
I-710 -- I-605	704	451	468	274	60	1,956	571	596	556	165	68	1,956
Average Travel Time (Min)	30.1	16.8	18.7	20.4	14.1		26.7	18.5	20	17.8	14.1	
I-405 -- I-110	9.9	5.4	5.3	6	4.7		9.8	6.2	5.8	5.4	4.7	
I-110 -- I-710	13.5	6.5	8.2	9	5.5		10.8	7	8.7	7.6	5.5	
I-710 -- I-605	6.7	4.9	5.2	5.4	3.9		6.1	5.3	5.5	4.8	3.9	

Table 2-78: Westbound General Purpose Lanes: No-Build Scenarios – 2027 and 2047 Speed Contour Diagram

Westbound General Purpose Lanes Speed Contours

Start PM	Start Location	End PM	End Location	2027 Model No Build (Alt 1)					2047 Model No Build (Alt 1)				
				AM Peak (6AM-9AM)	Midday (9AM-3PM)	PM Peak (3PM-7PM)	Evening (7PM-9PM)	Night (9PM-6AM)	AM Peak (6AM-9AM)	Midday (9AM-3PM)	PM Peak (3PM-7PM)	Evening (7PM-9PM)	Night (9PM-6AM)
R3.182	Prarie Av On	R2.75	I-405 Off	54	66	65	51	68	52	61	59	56	67
R3.607	Prarie Av junction	R3.182	Prarie Av On	37	60	59	46	64	35	53	50	53	63
R3.864	Prarie Av Off	R3.607	Prarie Av junction	45	64	62	50	65	42	59	58	55	65
R4.337	SB Crenshaw Bl On	R3.864	Prarie Av Off	48	59	61	54	67	46	53	57	58	66
R4.677	NB Crenshaw Bl On	R4.337	SB Crenshaw Bl On	37	54	57	46	64	35	46	52	52	64
R5.048	Crenshaw Bl Off	R4.677	NB Crenshaw Bl On	42	58	61	49	65	42	51	56	55	65
R6.02	Western Av junction	R5.048	Crenshaw Bl Off	20	51	53	50	65	18	44	49	56	65
R6.411	Vermont Av On	R6.02	Western Av junction	20	52	53	50	65	22	42	49	56	64
R6.728	SB-110 On	R6.411	Vermont Av On	22	56	58	53	65	26	47	54	58	65
R7.073	Vermont Av Off	R6.728	SB-110 On	17	55	59	54	66	24	47	54	59	66
R7.251	NB-110 On	R7.073	Vermont Av Off	18	57	59	57	68	24	51	55	61	68
R7.881	I-110 Off	R7.251	NB-110 On	21	57	63	52	68	29	54	62	57	68
R8.272	Avalon Bl junction	R7.881	I-110 Off	32	59	60	51	66	37	56	57	56	66
R8.669	Central Av On	R8.272	Avalon Bl junction	32	59	60	51	66	37	56	57	56	66
R8.909	Central Av junction	R8.669	Central Av On	32	63	60	55	65	38	60	57	59	65
R9.152	Central Av Off	R8.909	Central Av junction	30	62	61	54	66	39	60	58	59	65
R9.84	Imperial Hwy/Wilmington Av O	R9.152	Central Av Off	25	58	55	47	65	31	55	52	53	64
R10.335	Imperial Hwy/Wilmington Av O	R9.84	Imperial Hwy/Wilmington Av On	40	61	61	53	66	45	58	58	59	66
R11.202	SB Long Beach Bl On	R10.335	Imperial Hwy/Wilmington Av Off	26	55	54	47	65	32	51	51	54	65
R11.512	NB Long Beach Bl On	R11.202	SB Long Beach Bl On	48	63	63	58	68	51	60	61	62	68
R11.877	Long Beach Bl Off	R11.512	NB Long Beach Bl On	34	60	61	54	66	43	57	58	60	66
R12.402	Gertrude Dr junction	R11.877	Long Beach Bl Off	14	41	10	11	64	20	33	8	19	64
R12.815	NB-710 On	R12.402	Gertrude Dr junction	26	52	27	25	66	33	48	22	40	66
R13.128	SB-710 On	R12.815	NB-710 On	24	63	51	27	69	34	60	50	41	68
R13.607	Garfield Av On	R13.128	SB-710 On	33	68	58	45	70	40	68	57	51	69
R14.149	Garfield Av junction	R13.607	Garfield Av On	51	70	61	52	70	55	70	61	58	70
R14.615	Paramount Bl junction	R14.149	Garfield Av junction	55	64	61	59	68	58	62	59	63	68
R15.046	Paramount Bl Off	R14.615	Paramount Bl junction	48	61	55	53	67	51	58	53	59	67
R15.409	Lakewood Bl On	R15.046	Paramount Bl Off	32	43	44	37	64	39	35	38	49	63
R16.153	Lakewood Bl Off	R15.409	Lakewood Bl On	44	45	49	46	64	48	39	46	53	64
R16.255	Bellflower Bl On	R16.153	Lakewood Bl Off	21	52	34	48	67	26	49	31	54	66
R16.62	Bellflower Bl junction	R16.255	Bellflower Bl On	29	54	44	52	67	35	52	42	57	67
R16.999	Bellflower Bl Off	R16.62	Bellflower Bl junction	31	56	44	49	68	31	54	42	50	68
R17.147	I-605 On	R16.999	Bellflower Bl Off	31	56	44	48	68	31	54	42	49	68
R18.144	Studebaker Rd (Begin freeway	R17.147	I-605 On	66	69	69	65	69	66	69	69	65	69

Direction of Travel

In the No-Build scenario, the westbound general purpose lanes see some decrease in speeds but not by any great amount (around 5 miles per hour). Certain segments actually see speed improvements, such as Gertrude Dr. junction to Long Beach Blvd off-ramp or Lakewood Blvd. on-ramp to Paramount Blvd. off-ramp during the AM peak. These same segments still see deterioration during midday and the PM peak though. Considering the westbound I-105 is the less congested between the two directions, these observations are noted but not weighed very heavily, since improvements or deteriorations are not as large as those seen in the eastbound direction.

Table 2-79: Westbound General Purpose Lanes: Build Alternatives 2 and 3 – 2027 Performance Measures

Performance Measure and Segment	2027 Build Alternative 2						2027 Build Alternative 3					
	AM Peak (6am-9am)	**Midday (9am-3pm)**	**PM Peak (3pm-7pm)**	**Evening (7pm-9pm)**	**Night (9pm-6am)**	**Daily Totals**	**AM Peak (6am-9am)**	**Midday (9am-3pm)**	**PM Peak (3pm-7pm)**	**Evening (7pm-9pm)**	**Night (9pm-6am)**	**Daily Totals**
Vehicle Miles Traveled (VMT)	204,217	420,028	290,603	149,212	365,464	1,429,524	216,474	385,832	257,978	133,022	395,791	1,389,097
I-405 -- I-110	65,416	137,721	90,987	48,756	126,733	469,612	68,838	123,169	78,467	42,757	134,295	447,526
I-110 -- I-710	74,204	175,199	110,221	59,272	152,454	571,350	84,344	155,869	101,470	53,056	164,141	558,879
I-710 -- I-605	64,598	107,108	89,395	41,184	86,277	388,562	63,292	106,794	78,041	37,209	97,355	382,691
Vehicle Hours Delay (VHD)	5,044	1,911	2,025	742	257	9,979	3,568	1,404	1,163	409	366	6,910
I-405 -- I-110	1559	563	336	185	101	2745	1178	316	167	99	131	1892
I-110 -- I-710	2528	767	1071	392	112	4871	1942	465	651	197	167	3422
I-710 -- I-605	956	580	618	165	44	2364	448	623	344	113	68	1597
Average Travel Time (Min)	36.4	17.4	19.6	17.7	13.8		28.4	16.5	17.3	16	14	
I-405 -- I-110	11.5	5.6	5.4	5.5	4.6		9.5	5.1	5	5	4.6	
I-110 -- I-710	17.3	6.7	8.6	7.5	5.4		13.4	6.2	7.5	6.5	5.5	
I-710 -- I-605	7.5	5.1	5.5	4.7	3.9		5.6	5.2	4.8	4.5	3.9	

Table 2-80: Westbound General Purpose Lanes: Build Alternatives 2 and 3 – 2027 Speed Contour Diagram

Westbound General Purpose Lanes

Start PM	Start Location	End PM	End Location	2027 Alternative 2					2027 Alternative 3				
				AM Peak (6AM-9AM)	Midday (9AM-3PM)	PM Peak (3PM-7PM)	Evening (7PM-9PM)	Night (9PM-6AM)	AM Peak (6AM-9AM)	Midday (9AM-3PM)	PM Peak (3PM-7PM)	Evening (7PM-9PM)	Night (9PM-6AM)
2.43	NB-405/SB-405 Split	0	California St (End freeway)	64	70	70	64	70	67	70	70	67	69
R2.75	I-405 Off	R2.427	NB-405/SB-405 Split	55	65	64	57	68	58	64	65	59	68
R3.182	Prarie Av On	R2.75	I-405 Off	42	60	57	54	66	47	61	61	60	65
R3.607	Prarie Av junction	R3.182	Prarie Av On	39	63	59	55	66	50	67	66	61	65
R3.864	Prarie Av Off	R3.607	Prarie Av junction	45	59	59	58	67	50	63	65	62	67
R4.337	SB Crenshaw Bl On	R3.864	Prarie Av Off	29	54	54	51	65	42	61	63	58	64
R4.677	NB Crenshaw Bl On	R4.337	SB Crenshaw Bl On	34	57	58	55	66	47	64	65	61	65
R5.048	Crenshaw Bl Off	R4.677	NB Crenshaw Bl On	16	51	51	54	66	20	57	58	60	65
R6.02	Western Av junction	R5.048	Crenshaw Bl Off	16	49	53	54	66	19	54	56	58	65
R6.411	Vermont Av On	R6.02	Western Av junction	17	53	57	57	66	23	58	61	61	65
R6.728	SB-110 On	R6.411	Vermont Av On	13	51	59	58	67	22	58	62	63	67
R7.073	Vermont Av Off	R6.728	SB-110 On	14	55	58	61	68	21	59	62	64	68
R7.251	NB-110 On	R7.073	Vermont Av Off	16	54	63	56	69	30	61	66	61	69
R7.881	I-110 Off	R7.251	NB-110 On	27	57	59	55	67	29	58	60	58	66
R8.272	Avalon Bl junction	R7.881	I-110 Off	27	57	59	55	67	29	58	60	58	66
R8.669	Central Av On	R8.272	Avalon Bl junction	25	61	59	59	66	29	63	60	62	65
R8.909	Central Av junction	R8.669	Central Av On	22	61	59	60	67	32	67	66	66	65
R9.152	Central Av Off	R8.909	Central Av junction	18	57	53	54	66	19	63	60	62	64
R9.84	Imperial Hwy/Wilmington	R9.152	Central Av Off	31	60	59	59	66	33	66	65	66	65
R10.335	Imperial Hwy/Wilmington	R9.84	Imperial Hwy/Wilmington Av On	19	54	51	54	66	21	60	58	61	64
R11.202	SB Long Beach Bl On	R10.335	Imperial Hwy/Wilmington Av Off	44	62	61	63	68	48	66	66	67	67
R11.512	NB Long Beach Bl On	R11.202	SB Long Beach Bl On	25	59	58	60	67	37	65	65	66	66
R11.877	Long Beach Bl Off	R11.512	NB Long Beach Bl On	10	38	8	20	65	15	49	17	36	64
R12.402	Gertrude Dr junction	R11.877	Long Beach Bl Off	21	50	22	40	67	34	48	34	49	66
R12.815	NB-710 On	R12.402	Gertrude Dr junction	19	62	48	45	69	42	62	57	53	69
R13.128	SB-710 On	R12.815	NB-710 On	26	68	55	54	70	49	68	64	61	70
R13.607	Garfield Av On	R13.128	SB-710 On	48	70	59	60	70	61	70	66	65	70
R14.149	Garfield Av junction	R13.607	Garfield Av On	53	63	59	64	69	62	63	64	66	68
R14.615	Paramount Bl junction	R14.149	Garfield Av junction	45	59	53	60	68	57	59	60	63	67
R15.046	Paramount Bl Off	R14.615	Paramount Bl junction	25	39	38	50	66	48	36	50	54	64
R15.409	Lakewood Bl On	R15.046	Paramount Bl Off	37	42	46	54	66	55	41	55	59	65
R16.153	Lakewood Bl Off	R15.409	Lakewood Bl On	17	50	29	55	68	39	49	46	59	67
R16.255	Bellflower Bl On	R16.153	Lakewood Bl Off	23	52	40	58	68	48	52	52	62	67
R16.62	Bellflower Bl junction	R16.255	Bellflower Bl On	32	56	45	48	68	26	55	42	48	68
R16.999	Bellflower Bl Off	R16.62	Bellflower Bl junction	32	56	45	47	68	26	54	42	47	68
R17.147	I-605 On	R16.999	Bellflower Bl Off	66	69	69	64	69	66	68	69	58	68

Direction of Travel

In 2027, Alternative 3 shows higher speeds overall compared to Alternative 2. The number of severely congested segments also decreases. Most traffic is concentrated during the AM Peak, as previously stated; Alternative 3 performs better for most segments during most time periods.

Table 2-81: Westbound General Purpose Lanes: Build Alternatives 2 and 3 – 2047 Performance Measures

Performance Measure and Segment	2047 Build Alternative 2						2047 Build Alternative 3					
	AM Peak (6am-9am)	Midday (9am-3pm)	PM Peak (3pm-7pm)	Evening (7pm-9pm)	Night (9pm-6am)	Daily Totals	AM Peak (6am-9am)	Midday (9am-3pm)	PM Peak (3pm-7pm)	Evening (7pm-9pm)	Night (9pm-6am)	Daily Totals
Vehicle Miles Traveled (VMT)	179,555	446,550	303,147	136,116	393,800	1,459,168	215,403	404,151	258,430	129,961	406,371	1,414,317
I-405 -- I-110	55,457	153,769	100,259	43,388	134,685	487,559	69,763	129,481	75,821	42,926	139,787	457,778
I-110 -- I-710	62,183	186,455	116,762	54,625	163,142	583,167	81,418	168,141	105,744	51,733	169,091	576,126
I-710 -- I-605	61,915	106,326	86,125	38,102	95,973	388,442	64,222	106,529	76,865	35,302	97,493	380,413
Vehicle Hours Delay (VHD)	6,429	3,364	2,508	378	373	13,052	3,696	1,876	1,386	344	432	7,735
I-405 -- I-110	2169	1312	489	78	140	4188	1118	430	153	99	164	1964
I-110 -- I-710	3154	1158	1212	209	161	5895	2105	715	854	163	191	4028
I-710 -- I-605	1106	893	807	91	73	2970	473	732	379	82	78	1743
Average Travel Time (Min)	47.7	20.1	20.8	15.7	14.1		29.1	17.4	17.9	15.6	14.2	
I-405 -- I-110	16.1	6.9	5.8	4.9	4.7		9.1	5.3	4.9	5	4.7	
I-110 -- I-710	23.3	7.4	8.9	6.5	5.5		14.4	6.6	8	6.3	5.6	
I-710 -- I-605	8.3	5.8	6.1	4.3	3.9		5.6	5.4	5	4.3	3.9	

Table 2-82: Westbound General Purpose Lanes: Build Alternatives 2 and 3 – 2047 Speed Contour Diagram

Westbound General Purpose Lanes

Start PM	Start Location	End PM	End Location	2047 Alternative 2					2047 Alternative 3				
				AM Peak (6AM-9AM)	Midday (9AM-3PM)	PM Peak (3PM-7PM)	Evening (7PM-9PM)	Night (9PM-6AM)	AM Peak (6AM-9AM)	Midday (9AM-3PM)	PM Peak (3PM-7PM)	Evening (7PM-9PM)	Night (9PM-6AM)
2.43	NB-405/SB-405 Split	0	California St (End freeway)	63	68	70	67	69	66	70	70	67	69
R2.75	I-405 Off	R2.427	NB-405/SB-405 Split	50	59	64	62	68	56	64	65	61	68
R3.182	Prarie Av On	R2.75	I-405 Off	25	50	55	61	64	45	60	60	61	64
R3.607	Prarie Av junction	R3.182	Prarie Av On	24	55	59	62	64	52	65	68	61	64
R3.864	Prarie Av Off	R3.607	Prarie Av junction	32	49	57	64	66	53	60	66	62	66
R4.337	SB Crenshaw Bl On	R3.864	Prarie Av Off	18	40	51	59	63	46	57	65	57	63
R4.677	NB Crenshaw Bl On	R4.337	SB Crenshaw Bl On	25	46	57	62	64	50	61	67	60	64
R5.048	Crenshaw Bl Off	R4.677	NB Crenshaw Bl On	10	38	47	63	65	26	53	60	60	64
R6.02	Western Av junction	R5.048	Crenshaw Bl Off	9	36	45	61	65	16	52	55	58	64
R6.411	Vermont Av On	R6.02	Western Av junction	11	44	52	63	66	20	57	60	61	65
R6.728	SB-110 On	R6.411	Vermont Av On	9	44	52	64	67	19	58	61	62	66
R7.073	Vermont Av Off	R6.728	SB-110 On	10	49	53	66	68	18	58	61	64	68
R7.251	NB-110 On	R7.073	Vermont Av Off	16	52	63	63	68	25	60	65	61	68
R7.881	I-110 Off	R7.251	NB-110 On	18	54	56	61	66	28	57	58	59	66
R8.272	Avalon Bl junction	R7.881	I-110 Off	18	54	56	61	66	28	57	58	59	66
R8.669	Central Av On	R8.272	Avalon Bl junction	17	58	55	64	65	28	61	58	62	65
R8.909	Central Av junction	R8.669	Central Av On	17	58	58	66	65	30	64	64	66	65
R9.152	Central Av Off	R8.909	Central Av junction	11	52	49	61	64	18	58	56	63	63
R9.84	Imperial Hwy/Wilmington	R9.152	Central Av Off	21	56	57	66	65	31	62	62	66	64
R10.335	Imperial Hwy/Wilmington	R9.84	Imperial Hwy/Wilmington Av On	12	49	47	62	65	19	54	54	63	64
R11.202	SB Long Beach Bl On	R10.335	Imperial Hwy/Wilmington Av Off	35	59	61	67	67	47	63	64	67	67
R11.512	NB Long Beach Bl On	R11.202	SB Long Beach Bl On	19	55	58	66	66	35	60	62	67	65
R11.877	Long Beach Bl Off	R11.512	NB Long Beach Bl On	7	28	6	31	64	14	41	12	42	63
R12.402	Gertrude Dr junction	R11.877	Long Beach Bl Off	18	45	17	49	66	32	44	29	51	66
R12.815	NB-710 On	R12.402	Gertrude Dr junction	18	58	46	50	69	40	61	55	53	69
R13.128	SB-710 On	R12.815	NB-710 On	23	67	56	59	70	48	67	63	61	70
R13.607	Garfield Av On	R13.128	SB-710 On	47	70	60	65	70	60	70	66	65	70
R14.149	Garfield Av junction	R13.607	Garfield Av On	52	60	58	67	68	61	62	64	67	68
R14.615	Paramount Bl junction	R14.149	Garfield Av junction	40	55	50	65	67	56	58	60	64	67
R15.046	Paramount Bl Off	R14.615	Paramount Bl junction	19	27	28	56	64	47	32	50	57	63
R15.409	Lakewood Bl On	R15.046	Paramount Bl Off	31	31	37	61	64	54	38	55	61	64
R16.153	Lakewood Bl Off	R15.409	Lakewood Bl On	14	46	24	61	67	38	48	46	61	66
R16.255	Bellflower Bl On	R16.153	Lakewood Bl Off	22	49	35	63	67	47	51	53	63	67
R16.62	Bellflower Bl junction	R16.255	Bellflower Bl On	30	55	42	53	68	26	52	37	53	68
R16.999	Bellflower Bl Off	R16.62	Bellflower Bl junction	30	55	42	52	68	26	52	37	52	68
R17.147	I-605 On	R16.999	Bellflower Bl Off	66	69	69	65	69	66	67	69	66	69

Direction of Travel

In 2047, Alternative 3 still shows even greater improvement over Alternative 2 for speeds overall. Especially during congested time periods, speeds improve on average by about 10 miles per hour across almost all segments. In 2047 there are fewer congested segments for Alternative 3 compared to Alternative 2.

Table 2-83: Westbound HOV Lanes: No-Build Scenarios – 2027 and 2047 Performance Measures

Performance Measure and Segment	2027 No-Build Alt 1						2047 No-Build Alt 1					
	AM Peak (6am-9am)	Midday (9am-3pm)	PM Peak (3pm-7pm)	Evening (7pm-9pm)	Night (9pm-6am)	Daily Totals	AM Peak (6am-9am)	Midday (9am-3pm)	PM Peak (3pm-7pm)	Evening (7pm-9pm)	Night (9pm-6am)	Daily Totals
Vehicle Miles Traveled (VMT)	62,565	102,626	71,091	18,269	50,517	305,068	61,338	122,294	75,825	24,387	51,787	335,632
I-405 -- I-110	20,171	30,827	18,042	6,622	17,425	93,086	18,891	35,715	17,464	7,888	16,797	96,756
I-110 -- I-710	30,135	50,211	36,437	8,980	22,797	148,560	26,098	57,130	38,092	11,878	22,516	155,715
I-710 -- I-605	12,259	21,588	16,612	2,667	10,296	63,422	16,349	29,449	20,269	4,620	12,474	83,161
Vehicle Hours Delay (VHD)	501	299	277	6	0	1,083	888	595	340	18	0	1,841
I-405 -- I-110	119	81	28	3	0	231	117	167	34	6	0	325
I-110 -- I-710	318	148	159	3	0	627	650	278	191	9	0	1127
I-710 -- I-605	63	70	91	0	0	225	122	150	115	3	0	390
Average Travel Time (Min)	21.3	17	17.8	14.5	14.2		27.1	18.8	18.2	14.9	14.2	
I-405 -- I-110	6.5	5.5	5.2	4.8	4.7		6.6	6.1	5.3	4.9	4.7	
I-110 -- I-710	9.4	6.6	7.2	5.7	5.6		14.6	7.3	7.4	5.8	5.6	
I-710 -- I-605	5.4	4.9	5.4	4	4		6	5.3	5.5	4.2	4	

Table 2-84: Westbound HOV Lanes: No-Build Scenarios – 2027 and 2047 Speed Contour Diagram

Westbound HOV Lanes Speed Contours

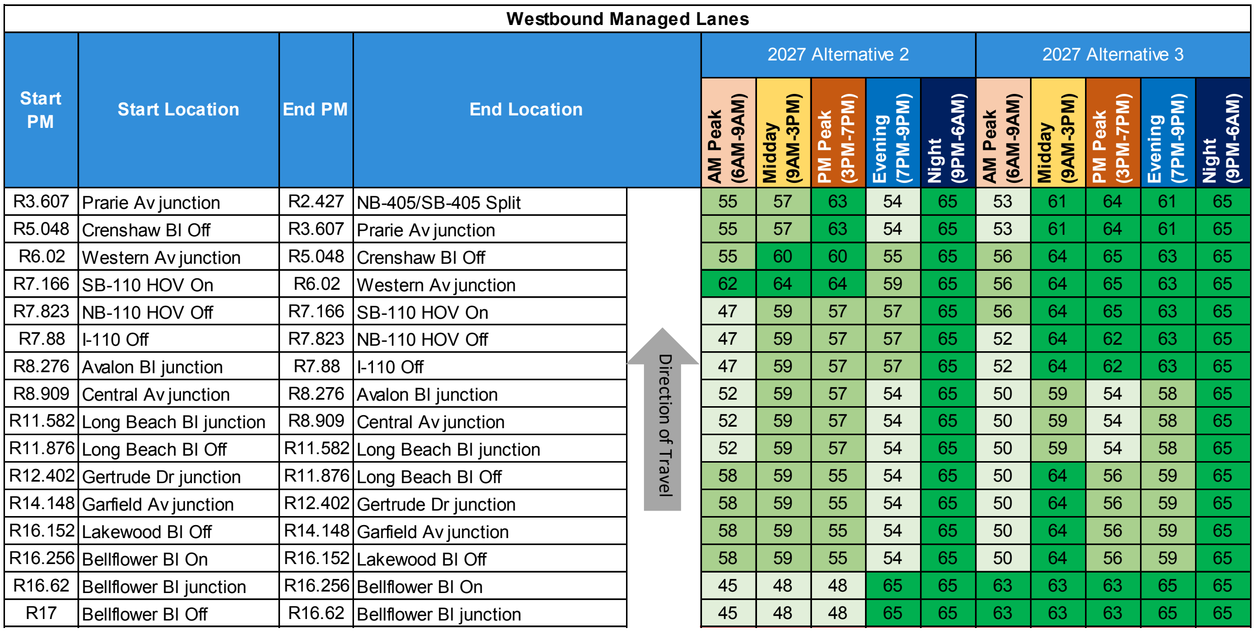
Start PM	Start Location	End PM	End Location		2027 Model No Build (Alt 1)					2047 Model No Build (Alt 1)				
					AM Peak (6AM-9AM)	Midday (9AM-3PM)	PM Peak (3PM-7PM)	Evening (7PM-9PM)	Night (9PM-6AM)	AM Peak (6AM-9AM)	Midday (9AM-3PM)	PM Peak (3PM-7PM)	Evening (7PM-9PM)	Night (9PM-6AM)
R5.048	Crenshaw Bl Off	R3.607	Prarie Av junction		45	55	58	63	65	48	47	57	61	65
R6.02	Western Av junction	R5.048	Crenshaw Bl Off		45	55	58	63	65	48	47	57	61	65
R7.166	SB-110 HOV On	R6.02	Western Av junction		46	53	58	63	65	38	50	57	62	65
R7.823	NB-110 HOV Off	R7.166	SB-110 HOV On		57	62	64	64	65	42	57	60	62	65
R7.88	I-110 Off	R7.823	NB-110 HOV Off	↑ Direction of Travel	33	53	55	63	65	21	48	53	62	65
R8.276	Avalon Bl junction	R7.88	I-110 Off		33	53	55	63	65	21	48	53	62	65
R8.909	Central Av junction	R8.276	Avalon Bl junction		33	53	55	63	65	21	48	53	62	65
R11.582	Long Beach Bl junction	R8.909	Central Av junction		37	55	50	64	65	20	49	48	62	65
R11.876	Long Beach Bl Off	R11.582	Long Beach Bl junction		37	55	50	64	65	20	49	48	62	65
R12.402	Gertrude Dr junction	R11.876	Long Beach Bl Off		37	55	50	64	65	20	49	48	62	65
R14.148	Garfield Av junction	R12.402	Gertrude Dr junction		49	55	48	65	65	42	51	47	62	65
R16.152	Lakewood Bl Off	R14.148	Garfield Av junction		49	55	48	65	65	42	51	47	62	65
R16.256	Bellflower Bl On	R16.152	Lakewood Bl Off		49	55	48	65	65	42	51	47	62	65
R16.62	Bellflower Bl junction	R16.256	Bellflower Bl On		49	55	48	65	65	42	51	47	62	65
R17	Bellflower Bl Off	R16.62	Bellflower Bl junction		46	48	48	65	65	48	46	48	65	65
R18.042	Hoxie Av Off	R17	Bellflower Bl Off		46	48	48	65	65	48	46	48	65	65

The only major congestion that would occur on future No-Build scenarios is during the AM peak. There is a 12-17 mile per hour deterioration of AM peak congested segments from 2027 to 2047, which is quite severe. The rest of the time, traffic operates at speeds greater than 40 miles per hour, but these segments too show some slowing down from 2027 to 2047.

Table 2-85: Westbound HOT Lanes: Build Alternatives 2 and 3 – 2027 Performance Measures

Performance Measure and Segment	2027 Build Alternative 2						2027 Build Alternative 3					
	AM Peak (6am-9am)	Midday (9am-3pm)	PM Peak (3pm-7pm)	Evening (7pm-9pm)	Night (9pm-6am)	Daily Totals	AM Peak (6am-9am)	Midday (9am-3pm)	PM Peak (3pm-7pm)	Evening (7pm-9pm)	Night (9pm-6am)	Daily Totals
Vehicle Miles Traveled (VMT)	60,557	102,558	68,481	36,586	75,944	344,126	136,860	169,835	132,904	65,576	65,557	570,732
I-405 -- I-110	18,142	30,157	15,694	11,700	24,524	100,218	39,546	49,379	25,774	19,029	21,543	155,271
I-110 -- I-710	28,514	45,943	33,639	17,883	33,243	159,223	66,833	85,634	72,066	32,893	28,031	285,457
I-710 -- I-605	13,900	26,457	19,148	7,003	18,178	84,686	30,480	34,822	35,064	13,653	15,983	130,003
Vehicle Hours Delay (VHD)	221	202	160	105	0	687	518	136	257	83	0	995
I-405 -- I-110	56	49	10	34	0	149	118	35	5	16	0	174
I-110 -- I-710	112	71	77	52	0	312	287	89	181	49	0	607
I-710 -- I-605	53	82	72	20	0	226	114	12	71	18	0	214
Average Travel Time (Min)	17.6	16.1	16.3	17	14.3		17.7	14.9	15.8	15.4	14.3	
I-405 -- I-110	5.6	5.2	4.9	5.6	4.7		5.6	4.9	4.7	4.9	4.7	
I-110 -- I-710	7	6.1	6.4	6.6	5.6		7.1	6	6.5	6.1	5.6	
I-710 -- I-605	5	4.8	5	4.8	4		5	4.1	4.5	4.4	4	

Table 2-86: Westbound HOT Lanes: Build Alternatives 2 and 3 – 2027 Speed Contour Diagram



Westbound Managed Lanes													
Start PM	Start Location	End PM	End Location	2027 Alternative 2					2027 Alternative 3				
				AM Peak (6AM-9AM)	Midday (9AM-3PM)	PM Peak (3PM-7PM)	Evening (7PM-9PM)	Night (9PM-6AM)	AM Peak (6AM-9AM)	Midday (9AM-3PM)	PM Peak (3PM-7PM)	Evening (7PM-9PM)	Night (9PM-6AM)
R3.607	Prarie Av junction	R2.427	NB-405/SB-405 Split	55	57	63	54	65	53	61	64	61	65
R5.048	Crenshaw Bl Off	R3.607	Prarie Av junction	55	57	63	54	65	53	61	64	61	65
R6.02	Western Av junction	R5.048	Crenshaw Bl Off	55	60	60	55	65	56	64	65	63	65
R7.166	SB-110 HOV On	R6.02	Western Av junction	62	64	64	59	65	56	64	65	63	65
R7.823	NB-110 HOV Off	R7.166	SB-110 HOV On	47	59	57	57	65	56	64	65	63	65
R7.88	I-110 Off	R7.823	NB-110 HOV Off	47	59	57	57	65	52	64	62	63	65
R8.276	Avalon Bl junction	R7.88	I-110 Off	47	59	57	57	65	52	64	62	63	65
R8.909	Central Av junction	R8.276	Avalon Bl junction	52	59	57	54	65	50	59	54	58	65
R11.582	Long Beach Bl junction	R8.909	Central Av junction	52	59	57	54	65	50	59	54	58	65
R11.876	Long Beach Bl Off	R11.582	Long Beach Bl junction	52	59	57	54	65	50	59	54	58	65
R12.402	Gertrude Dr junction	R11.876	Long Beach Bl Off	58	59	55	54	65	50	64	56	59	65
R14.148	Garfield Av junction	R12.402	Gertrude Dr junction	58	59	55	54	65	50	64	56	59	65
R16.152	Lakewood Bl Off	R14.148	Garfield Av junction	58	59	55	54	65	50	64	56	59	65
R16.256	Bellflower Bl On	R16.152	Lakewood Bl Off	58	59	55	54	65	50	64	56	59	65
R16.62	Bellflower Bl junction	R16.256	Bellflower Bl On	45	48	48	65	65	63	63	63	65	65
R17	Bellflower Bl Off	R16.62	Bellflower Bl junction	45	48	48	65	65	63	63	63	65	65

Westbound ExpressLanes in 2027 show no congested segments. Between the two alternatives, however, Alternative 2’s speeds are slightly higher by 2 or 3 miles per hour, though AM Peak speeds are better for Alternative 3 near the end of the freeway (from Bellflower Blvd. off-ramp to Bellflower Blvd. on-ramp).

Table 2-87: Westbound HOT Lanes: Build Alternatives 2 and 3 – 2047 Performance Measures

Performance Measure and Segment	2047 Build Alternative 2						2047 Build Alternative 3					
	AM Peak (6am-9am)	Midday (9am-3pm)	PM Peak (3pm-7pm)	Evening (7pm-9pm)	Night (9pm-6am)	Daily Totals	AM Peak (6am-9am)	Midday (9am-3pm)	PM Peak (3pm-7pm)	Evening (7pm-9pm)	Night (9pm-6am)	Daily Totals
Vehicle Miles Traveled (VMT)	59,310	112,843	72,092	35,275	53,469	332,989	121,550	185,692	136,149	49,670	50,026	543,087
I-405 -- I-110	18,887	32,841	19,514	11,245	17,774	100,262	36,177	55,968	30,804	14,036	15,700	152,685
I-110 -- I-710	27,701	55,841	35,011	17,395	23,648	159,595	58,605	91,587	70,795	25,085	20,854	266,925
I-710 -- I-605	12,721	24,161	17,568	6,634	12,047	73,132	26,769	38,137	34,550	10,549	13,473	123,478
Vehicle Hours Delay (VHD)	178	409	156	67	0	810	468	265	384	33	0	1,150
I-405 -- I-110	57	82	20	20	0	179	132	71	27	6	0	237
I-110 -- I-710	69	191	72	34	0	366	245	165	249	20	0	679
I-710 -- I-605	51	136	64	14	0	265	91	28	108	7	0	234
Average Travel Time (Min)	17.2	17.7	16.3	16.1	14.3		17.8	15.5	16.6	14.9	14.3	
I-405 -- I-110	5.6	5.4	5	5.2	4.7		5.8	5	5	4.8	4.7	
I-110 -- I-710	6.5	6.8	6.3	6.3	5.6		7.1	6.2	6.8	5.9	5.6	
I-710 -- I-605	5.1	5.5	5	4.6	4		4.9	4.2	4.8	4.2	4	

Table 2-88: Westbound HOT Lanes: Build Alternatives 2 and 3 – 2047 Speed Contour Diagram

Westbound Managed Lanes

Start PM	Start Location	End PM	End Location	2047 Alternative 2					2047 Alternative 3				
				AM Peak (6AM-9AM)	Midday (9AM-3PM)	PM Peak (3PM-7PM)	Evening (7PM-9PM)	Night (9PM-6AM)	AM Peak (6AM-9AM)	Midday (9AM-3PM)	PM Peak (3PM-7PM)	Evening (7PM-9PM)	Night (9PM-6AM)
R3.607	Prarie Av junction	R2.427	NB-405/SB-405 Split	54	54	60	57	65	49	59	60	63	65
R5.048	Crenshaw Bl Off	R3.607	Prarie Av junction	54	54	60	57	65	49	59	60	63	65
R6.02	Western Av junction	R5.048	Crenshaw Bl Off	58	56	62	61	65	59	61	64	64	65
R7.166	SB-110 HOV On	R6.02	Western Av junction	60	61	64	61	65	59	61	64	64	65
R7.823	NB-110 HOV Off	R7.166	SB-110 HOV On	55	51	61	61	65	59	61	64	64	65
R7.88	I-110 Off	R7.823	NB-110 HOV Off	55	51	61	61	65	51	60	60	64	65
R8.276	Avalon Bl junction	R7.88	I-110 Off	55	51	61	61	65	51	60	60	64	65
R8.909	Central Av junction	R8.276	Avalon Bl junction	55	53	56	57	65	50	56	51	61	65
R11.582	Long Beach Bl junction	R8.909	Central Av junction	55	53	56	57	65	50	56	51	61	65
R11.876	Long Beach Bl Off	R11.582	Long Beach Bl junction	55	53	56	57	65	50	56	51	61	65
R12.402	Gertrude Dr junction	R11.876	Long Beach Bl Off	57	56	56	57	65	51	62	52	62	65
R14.148	Garfield Av junction	R12.402	Gertrude Dr junction	57	56	56	57	65	51	62	52	62	65
R16.152	Lakewood Bl Off	R14.148	Garfield Av junction	57	56	56	57	65	51	62	52	62	65
R16.256	Bellflower Bl On	R16.152	Lakewood Bl Off	57	56	56	57	65	51	62	52	62	65
R16.62	Bellflower Bl junction	R16.256	Bellflower Bl On	40	33	45	65	65	63	62	63	65	65
R17	Bellflower Bl Off	R16.62	Bellflower Bl junction	40	33	44	65	65	63	62	63	65	65

Direction of Travel

Speeds for ExpressLanes overall remain pretty high for both alternatives in 2047, though Alternative 2 starts to show some congestion at Bellflower in the AM peak, midday, and PM peak times. Alternative 3 is predicted to have greater speeds for 2047.

The tables below tally the number of freeway segments operating at LOS E or F for general purpose and HOV/ExpressLanes (managed lanes). When totaled for 2027, Alternative 1 No-Build has 209 general purpose and HOV lanes operating at LOS E or F, Alternative 2 has 119, and Alternative 3 has 110. In 2047, Alternative 1 will have 215 general purpose and HOV lanes operating at LOS E or F, Alternative 2 will have 138, and Alternative 3 will have 105. There are a few instances where minor increases in tallies are seen: two cases for Alternative 3 in 2027, one case for Alternative 3 in 2047, and one case for Alternative 2 in 2047. However, these discrepancies are minor and do not contradict the overall trend.

Table 2-89: Peak Hour LOS E or F Freeway Segment Tally – 2027

Facility	LOS	Alt 1 (No-Build)	Alt 2 (1-Lane HOT)	Alt 3 (2-Lane HOT)
General Purpose Lanes	**E**	6 (1)	2 (2)	3 (2)
	F	55 (55)	44 (53)	45 (42)
Managed Lanes	**E**	19 (11)	4 (0)	0 (0)
	F	26 (36)	7 (7)	9 (9)
	Total	209	119	110

Table 2-90: Peak Hour LOS E or F Freeway Segment Tally – 2047

Facility	LOS	Alt 1 (No-Build)	Alt 2 (1-Lane HOT)	Alt 3 (2-Lane HOT)

GP Lanes	**E**	4 (3)	4 (5)	2 (3)
	F	57 (56)	51 (57)	50 (43)
Managed Lanes	**E**	16 (11)	4 (3)	0 (0)
	F	32 (36)	7 (7)	8 (9)
	Total	215	138	115

The Traffic Study Report also shows that daily VMT for the general purpose lanes are relatively the same among all three alternatives, indicating that the conversion or addition of ExpressLanes will not affect growth or usage rates of I-105, only traffic flow and congestion. However, Alternative 3 is expected to have a higher VMT for the managed lanes: an increase in VMT by 14% by 2047, while Alternative 2 is expected to only increase by 3%. Alternative 3 is also expected to experience significantly less congestion delay than Alternatives 1 and 2 in 2027 and 2047 (particularly in the general purpose lanes), resulting in 1,350,000 vehicle hours of delay reduction from Alternative 1 (No-Build) annually- a 20% reduction and double that of Alternative 2. Travel speeds are anticipated to be higher, and travel times are anticipated to be shorter as well in Alternative 3 compared to Alternatives 1 and 2. The tables below provide the summary totals for vehicle miles traveled and vehicle hours delayed in 2027 and 2047.

In summary, traffic impacts by the proposed project's build alternatives are expected to be positive for freeway circulation, decreasing congestion and delays and improving traffic flow. The projected vehicle volumes do not show any influence on growth by the project specifically, indicating that implementation of ExpressLanes would not induce new travel to the area.

Table 2-91: 2027 Daily VMT and VHD Performance Measure Comparison

2027 Performance Measure	ALTERNATIVE 1 (NO-BUILD)				ALTERNATIVE 2 (1 LANE HOT)				ALTERNATIVE 3 (2 LANE HOT)			
	EB GP	EB HOV	WB GP	WB HOV	EB GP	EB HOT	WB GP	WB HOT	EB GP	EB HOT	WB GP	WB HOT
Daily VMT	1,480,712	344,880	1,363,023	305,068	1,525,484	365,532	1,429,524	344,126	1,483,610	667,427	1,389,097	570,732
Daily VHD	10,398	1,800	8,316	1,083	13,696	956	9,979	687	7,566	1,518	6,910	995

Table 2-92: 2047 Daily VMT and VHD Performance Measure Comparison

2047 Performance Measure	ALTERNATIVE 1 (NO-BUILD)				ALTERNATIVE 2 (1 LANE HOT)				ALTERNATIVE 3 (2 LANE HOT)			
	EB GP	EB HOV	WB GP	WB HOV	EB GP	EB HOT	WB GP	WB HOT	EB GP	EB HOT	WB GP	WB HOT
Daily VMT	1,491,636	328,066	1,408,721	335,632	1,532,952	357,680	1,459,168	332,989	1,501,414	592,782	1,414,317	543,087
Daily VHD	13,178	2,194	8,579	1,841	18,546	984	13,052	810	10,123	1,381	7,735	1,150

In the Alternative 1 scenario, we see that there will be a steady increase in delay times from 2027 to 2047 if nothing is built. Intersection analysis for the year 2027 shows very minor positive changes for build alternatives, with a few exceptions. In fact, there are certain instances of severe delay increases, for Alternative 3 especially. The same is true for 2047 projections, though major decreases in delay also emerge for certain locations (see Mona Boulevard/Imperial Highway), but not exclusively. For example, at Mona Boulevard/Imperial Highway, delays improve significantly during AM peak hours for Alternative 3 but deteriorate for PM peak hours. I-105 WB Ramps/Imperial Highway, Lakewood Boulevard/I-105 EB off-ramp and WB Ramps, and Studebaker Road/I-105 WB on-ramp and EB off-ramp show a major increase in delay time for Alternative 3.

Overall, trends generally show that Alternative 3 would lead to a larger increase in delay at several intersections out of the 41 total analyzed. The changes in delay for Alternative 2 are fairly minor, but they vary in whether they increase or decrease in comparison to Alternative 1's No-Build scenario. That stated, the number of intersections operating deficiently generally decreases for build scenarios compared to the No-Build scenario, though not universally. The counts are tallied below. The first number in each field represents the AM tally, and the number in parentheses represents the PM tally.

Table 2-93: Peak Hour LOS E or F Intersection Tally – 2027

Facility	LOS	ALT 1 (No-Build)	ALT 2 (1-Ln HOT)	ALT 3 (2-Ln HOT)
Study Intersections	E	6 (7)	5 (6)	6 (6)
	F	5 (5)	5 (5)	5 (6)

XX(YY) = AM (PM) peak hour tally

Table 2-94: Peak Hour LOS E or F Intersection Tally – 2047

Facility	LOS	ALT 1 (No-Build)	ALT 2 (1-Ln HOT)	ALT 3 (2-Ln HOT)
Study Intersections	E	6 (8)	6 (6)	5 (7)
	F	6 (5)	7 (6)	6 (7)

XX(YY) = AM (PM) peak hour tally

Table 2-95 Intersections: No-Build Scenarios – 2027 and 2047 AM and PM Peak Hour Performance

Location	2027 AM Peak Hour LOS	2027 AM Peak Hour Delay	2027 PM Peak Hour LOS	2027 PM Peak Hour Delay	2047 AM Peak Hour LOS	2047 AM Peak Hour Delay	2047 PM Peak Hour LOS	2047 PM Peak Hour Delay
I-105 WB off-ramp/NB Sepulveda Boulevard	**F**	**121.7**	D	53.3	**F**	**123.2**	D	53.3
Sepulveda Boulevard/Imperial Highway	D	49.5	**F**	**94.3**	D	49.5	**F**	**100.8**
Aviation Boulevard/Imperial Highway	**E**	**57.5**	**E**	**65**	**E**	**67.5**	**F**	**93.3**
I-105 WB Off- and I-105 EB on-ramp/Imperial Highway	C	24.9	B	11.1	C	24.8	B	10.5
La Cienega Boulevard/Imperial Highway	D	36.4	D	44.1	D	37.1	D	44.8
Hawthorne Boulevard/I-105 WB off-ramp	B	16.1	B	17.9	B	17	B	18
Hawthorne Boulevard/Imperial Highway	C	25.6	D	46.2	C	29.4	**E**	**58.8**
I-105 EB on-ramp/Imperial Highway (Freeman)	C	27.2	C	28.4	C	27.9	C	29.6
Prairie Avenue/I-105 WB off-ramp	B	18.7	D	38.6	B	18.7	D	38.6
Prairie Avenue/Imperial Highway	**F**	**86.3**	**F**	**168.5**	**F**	**86.3**	**F**	**168.5**
I-105 EB Ramps/120th Street	**E**	**70.2**	C	34	**E**	**74.4**	C	34.2
Crenshaw Boulevard/Imperial Highway	D	38.8	D	46.7	D	46.1	D	47.3
Crenshaw Boulevard/I-105 WB off-ramp	C	28.9	D	39.9	C	27.9	D	39.9
Crenshaw Boulevard/120th Street	D	49.1	**E**	**55.8**	D	49.1	**E**	**55.8**
Vermont Avenue/Imperial Highway	**E**	**55.8**	**E**	**57.5**	**E**	**57.6**	**E**	**74.4**
Vermont Avenue/I-105 WB Ramps	C	28.9	B	18	C	28.3	B	17.2
Vermont Avenue/I-105 EB off-ramp	C	24.9	C	21.7	C	27.5	C	21.5
Vermont Avenue/120th Street	C	24	C	24.5	C	25.2	C	28.1
Central Avenue/Imperial Highway	**E**	**65.5**	**E**	**58.5**	**E**	**68.2**	**E**	**58.5**
Central Avenue/I-105 WB Ramps	C	20.9	C	22.1	C	22.6	C	22.1
Central Avenue/I-105 EB Ramps	C	26.9	C	26.1	C	28.2	C	25.9

Central Avenue/120th Street	D	36.4	D	41.1	D	37.7	D	47.2
Wilmington Avenue/Imperial Highway	B	17.6	C	24.1	B	17.4	C	24.1
Wilmington Avenue/I-105 EB Ramps	D	39.8	C	28.5	D	39.5	C	28.5
Wilmington Avenue/E 120th Street	C	21.1	B	17	C	21.2	B	17.6
I-105 WB Ramps/Imperial Highway	**F**	**176.5**	**F**	**83.3**	**F**	**178.8**	**F**	**83.3**
Mona Boulevard/Imperial Highway	**E**	**72.5**	**F**	**93.6**	**F**	**106.6**	**F**	**93.6**
Long Beach Boulevard/Imperial Highway	D	40.7	D	39.4	**E**	**55.1**	D	39.8
Long Beach Boulevard/I-105 WB off-ramp	B	14.8	B	19.1	B	14.6	B	19.3
Long Beach Boulevard/I-105 EB off-ramp	C	23.2	B	15.2	C	22.7	B	15.1
Garfield Avenue/I-105 WB on-ramp	C	22.1	C	20.2	C	23.6	C	21
Garfield Avenue/I-105 EB off-ramp	C	30.8	D	36.5	C	33.7	D	37.7
Garfield Avenue/Rosecrans Avenue	D	53.4	D	47.6	D	53.4	D	49.1
Paramount Boulevard/Imperial Highway	C	29.4	D	37	C	30.7	D	37.9
Paramount Boulevard/I-105 WB off-ramp	C	26.4	B	19.3	C	26.4	B	19.3
Paramount Boulevard/I-105 EB on-ramp	C	21.1	C	23.5	C	22.8	C	23.7
Paramount Boulevard/Rosecrans Avenue	D	52.8	D	53.8	D	54	D	54.3
Lakewood Boulevard/Imperial Highway	C	24.3	C	32.8	C	26.1	C	34.1
Lakewood Boulevard/I-105 EB off-ramp	**F**	**137.2**	**E**	**56.9**	**F**	**136.1**	**E**	**58.2**
Lakewood Boulevard/Rosecrans Avenue	C	27.4	D	49.1	C	28	D	49.1
Bellflower Boulevard/Imperial Highway	C	28.8	C	27.2	C	30	C	27.2
Bellflower Boulevard/I-105 WB Ramps	B	18.7	B	17.2	B	18.9	B	17.1
Bellflower Boulevard/I-105 EB Ramps	B	18.7	C	21.3	B	18.7	C	20.3
Bellflower Boulevard/Rosecrans Avenue	D	37.2	C	30.8	D	35.6	C	30.8
Woodruff Avenue/Imperial Highway	D	37.9	D	54.5	D	40.4	D	54.4
Hoxie Avenue/Imperial Highway	D	36.5	**E**	**55.8**	D	37.1	**E**	**75.4**
Studebaker Road/Imperial Highway	**E**	**68.3**	**E**	**56.8**	**E**	**67.5**	**E**	**62.7**
Studebaker Road/I-105 WB on-ramp and	**F**	**88.3**	**F**	**108.2**	**F**	**87.7**	**E**	**77.7**
Studebaker Road/Rosecrans Avenue	D	42.3	D	50.5	D	48.3	D	51.4

Table 2-96: Intersections: All Alternatives - 2027 Comparisons

Intersection	Alt 1 AM Peak Hour		Alt 1 PM Peak Hour		Alt 2 AM Peak Hour		Alt 2 PM Peak Hour		Alt 3 AM Peak Hour		Alt 3 PM Peak Hour	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
I-105 WB off-ramp/NB Sepulveda Boulevard	**F**	**121.7**	D	53.3	**F**	**120.3**	D	53.1	**F**	**120.7**	D	53.6
Sepulveda Boulevard/Imperial Highway	D	49.5	**F**	**94.3**	D	49.2	**F**	**95**	D	49.4	**F**	**94.7**
Aviation Boulevard/Imperial Highway	E	57.5	E	65	E	57.6	E	65	E	61.5	E	64.4
I-105 WB Off- and I-105 EB on-ramp/Imperial Highway	C	24.9	B	11.1	C	24.8	B	11	C	28.2	B	11.5
La Cienega Boulevard/Imperial Highway	D	36.4	D	44.1	D	36.5	D	43.9	D	35.8	D	43.8
Hawthorne Boulevard/I-105 WB off-ramp	B	16.1	B	17.9	B	16.1	B	18	B	16.8	B	18.1
Hawthorne Boulevard/Imperial Highway	C	25.6	D	46.2	C	28.6	D	46.2	C	28.6	D	46.1
I-105 EB on-ramp/Imperial Highway (Freeman)	C	27.2	C	28.4	C	27.2	C	24	C	27.2	E	60
Prairie Avenue/I-105 WB off-ramp	B	18.7	D	38.6	B	18.6	D	38.7	B	19.4	D	38
Prairie Avenue/Imperial Highway	**F**	**86.3**	**F**	**168.5**	**F**	**86.1**	**F**	**168.1**	**F**	**86.1**	**F**	**168.2**

I-105 EB Ramps/120th Street	E	70.2	C	34	E	70.2	C	30.6	E	70.9	E	56.9
Crenshaw Boulevard/Imperial Highway	D	38.8	D	46.7	D	38.9	D	46.7	D	38.8	D	46.6
Crenshaw Boulevard/I-105 WB off-ramp	C	28.9	D	39.9	C	27.2	D	40	C	30.8	D	40.1
Crenshaw Boulevard/120th Street	D	49.1	E	55.8	D	48.6	E	55.8	D	48.8	E	55.4
Vermont Avenue/Imperial Highway	E	55.8	E	57.5	D	45.5	D	47	E	55.1	D	48.1
Vermont Avenue/I-105 WB Ramps	C	28.9	B	18	C	25.9	B	18.1	D	48.3	B	18.3
Vermont Avenue/I-105 EB off-ramp	C	24.9	C	21.7	C	24.2	C	20.8	C	24.4	C	24.7
Vermont Avenue/120th Street	C	24	C	24.5	C	23.2	C	24.5	C	24	C	24.5
Central Avenue/Imperial Highway	E	65.5	E	58.5	E	69	E	59	E	63	D	49.4
Central Avenue/I-105 WB Ramps	C	20.9	C	22.1	C	20.5	C	22	C	27.1	C	24.7
Central Avenue/I-105 EB Ramps	C	26.9	C	26.1	C	28.5	C	25.3	C	31.6	C	22.8
Central Avenue/120th Street	D	36.4	D	41.1	D	36.4	D	41.1	D	36.4	D	41.1
Wilmington Avenue/Imperial Highway	B	17.6	C	24.1	B	17.6	C	24.2	B	17.6	C	24.1
Wilmington Avenue/I-105 EB Ramps	D	39.8	C	28.5	D	39.8	C	27.7	D	45.1	D	42.9

Wilmington Avenue/E 120th Street	C	21.1	B	17	C	21.1	B	17	C	21.2	B	17.2
I-105 WB Ramps/Imperial Highway	**F**	**176.5**	**F**	**83.3**	**F**	**175.4**	**F**	**84.2**	**F**	**368.3**	**F**	**141.9**
Mona Boulevard/Imperial Highway	E	72.5	**F**	**93.6**	E	72.6	**F**	**89.3**	E	75.8	**F**	**88.6**
Long Beach Boulevard/Imperial Highway	D	40.7	D	39.4	D	41.1	D	39.6	D	43.5	D	39.3
Long Beach Boulevard/I-105 WB off-ramp	B	14.8	B	19.1	B	14.8	C	20.6	B	19.8	C	23.1
Long Beach Boulevard/I-105 EB off-ramp	C	23.2	B	15.2	C	23.8	B	16.1	C	25.9	B	19
Garfield Avenue/I-105 WB on-ramp	C	22.1	C	20.2	C	22.1	C	20.6	C	24.5	C	22.7
Garfield Avenue/I-105 EB off-ramp	C	30.8	D	36.5	C	33.9	D	35.3	D	40	D	47.1
Garfield Avenue/Rosecrans Avenue	D	53.4	D	47.6	D	53.4	D	47.6	D	53.4	D	47.6
Paramount Boulevard/Imperial Highway	C	29.4	D	37	C	29.4	D	37.1	C	29.4	D	37
Paramount Boulevard/I-105 WB off-ramp	C	26.4	B	19.3	C	26.2	B	19.8	C	32.3	C	20.9
Paramount Boulevard/I-105 EB on-ramp	C	21.1	C	23.5	C	21.7	C	23.4	C	23.2	C	24

Paramount Boulevard/Rosecrans Avenue	D	52.8	D	53.8	D	52.8	D	53.8	D	52.8	D	53.8
Lakewood Boulevard/Imperial Highway	C	24.3	C	32.8	C	24.3	C	32.7	C	24.3	C	32.5
Lakewood Boulevard/I-105 EB off-ramp and WB Ramps	**F**	**137.2**	E	56.9	**F**	**157.3**	E	55.5	**F**	**265.1**	**F**	**97.2**
Lakewood Boulevard/Rosecrans Avenue	C	27.4	D	49.1	C	27.4	D	49.1	C	27.4	D	49.1
Bellflower Boulevard/Imperial Highway	C	28.8	C	27.2	C	28.9	C	27.2	C	28.3	C	27.4
Bellflower Boulevard/I-105 WB Ramps	B	18.7	B	17.2	C	29.5	B	17.7	C	33.5	B	18.6
Bellflower Boulevard/I-105 EB Ramps	B	18.7	C	21.3	C	30.5	C	20.3	C	33.6	D	37.6
Bellflower Boulevard/Rosecrans Avenue	D	37.2	C	30.8	D	37.2	C	30.8	D	37.2	C	30.8
Woodruff Avenue/Imperial Highway	D	37.9	D	54.5	D	38.1	D	54.9	D	37.5	D	53.6
Hoxie Avenue/Imperial Highway	D	36.5	E	55.8	D	36.8	E	56.7	D	36.4	E	57.8
Studebaker Road/Imperial Highway	E	68.3	E	56.8	E	69	E	55	E	77.1	E	62

Studebaker Road/I-105 WB on-ramp and EB off-ramp	**F**	**88.3**	**F**	**108.2**	**F**	**91.3**	**F**	**111.7**	**F**	**96.5**	**F**	**111.7**
Studebaker Road/Rosecrans Avenue	D	42.3	D	50.5	D	42.3	D	50.5	D	42.3	D	50.5

Table 2-97: Intersections: All Alternatives – 2047 Comparisons

Intersection	**Alt 1 AM Peak Hour**		**Alt 1 PM Peak Hour**		**Alt 2 AM Peak Hour**		**Alt 2 PM Peak Hour**		**Alt 3 AM Peak Hour**		**Alt 3 PM Peak Hour**	
	LOS	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**
I-105 WB off-ramp/NB Sepulveda Boulevard	**F**	**123.2**	D	53.3	**F**	**123.1**	D	55	**F**	**121.2**	D	52.3
Sepulveda Boulevard/Imperial Highway	D	49.5	**F**	**100.8**	D	49.2	**F**	**101.3**	D	46.4	**F**	**122**
Aviation Boulevard/Imperial Highway	E	67.5	**F**	**93.3**	E	67.4	**F**	**98.7**	E	66.9	**F**	**116.5**
I-105 WB Off- and I-105 EB on-ramp/Imperial Highway	C	24.8	B	10.5	C	25.6	B	11.7	C	27.5	B	10.2
La Cienega Boulevard/Imperial Highway	D	37.1	D	44.8	D	37.7	D	45.5	C	34.8	D	44.2
Hawthorne Boulevard/I-105 WB off-ramp	B	17	B	18	B	16.9	B	18.6	B	17	B	17.7
Hawthorne Boulevard/Imperial Highway	C	29.4	E	58.8	C	28.9	E	60.1	C	29.1	E	61.3

I-105 EB on-ramp/Imperial Highway (Freeman)	C	27.9	C	29.6	C	32.2	C	27.6	C	26.7	E	73.3
Prairie Avenue/I-105 WB off-ramp	B	18.7	D	38.6	B	18.5	D	41.5	B	19.4	D	38.2
Prairie Avenue/Imperial Highway	**F**	**86.3**	**F**	**168.5**	**F**	**87.2**	**F**	**168.9**	**F**	**85.8**	**F**	**168.9**
I-105 EB Ramps/120th Street	E	74.4	C	34.2	**F**	**81.5**	C	32.1	D	53.4	E	61.3
Crenshaw Boulevard/Imperial Highway	D	46.1	D	47.3	D	46.9	D	47.5	D	42.1	D	47.5
Crenshaw Boulevard/I-105 WB off-ramp	C	27.9	D	39.9	C	27.8	D	42.9	C	28.7	D	38.5
Crenshaw Boulevard/120th Street	D	49.1	E	55.8	D	49	E	60.4	D	52.1	E	57.1
Vermont Avenue/Imperial Highway	E	57.6	E	74.4	E	58.6	E	74.8	E	55.8	E	75.7
Vermont Avenue/I-105 WB Ramps	C	28.3	B	17.2	C	27.3	B	19.4	D	51.6	B	17
Vermont Avenue/I-105 EB off-ramp	C	27.5	C	21.5	C	29.7	C	21.6	C	27.1	C	26.2
Vermont Avenue/120th Street	C	25.2	C	28.1	C	25.2	C	28.1	C	25.2	C	28.1
Central Avenue/Imperial Highway	E	68.2	E	58.5	E	70.9	E	62.3	E	58.7	E	58.4
Central Avenue/I-105 WB Ramps	C	22.6	C	22.1	C	22.2	C	23.4	C	29.3	C	26
Central Avenue/I-105 EB Ramps	C	28.2	C	25.9	C	29.1	C	25	C	30.9	D	49.7

Central Avenue/120th Street	D	37.7	D	47.2	D	37.7	D	47.2	D	37.7	D	47.2
Wilmington Avenue/Imperial Highway	B	17.4	C	24.1	B	17.4	C	24.9	B	17.7	C	25.7
Wilmington Avenue/I-105 EB Ramps	D	39.5	C	28.5	E	58.7	C	28.4	E	63	D	44.4
Wilmington Avenue/E 120th Street	C	21.2	B	17.6	C	21.5	B	17.5	C	21.6	B	17.9
I-105 WB Ramps/Imperial Highway	**F**	**178.8**	**F**	**83.3**	**F**	**176.7**	**F**	**94.2**	**F**	**307.5**	**F**	**151.3**
Mona Boulevard/Imperial Highway	**F**	**106.6**	**F**	**93.6**	**F**	**110.1**	**F**	**88.9**	**F**	**85.7**	**F**	**107.5**
Long Beach Boulevard/Imperial Highway	E	55.1	D	39.8	E	61	D	40.5	D	54.5	D	44.4
Long Beach Boulevard/I-105 WB off-ramp	B	14.6	C	20.3	B	14.3	C	21.4	B	19.4	C	23.6
Long Beach Boulevard/I-105 EB off-ramp	C	22.7	B	15.8	C	24.6	B	16	C	26.1	B	18.9
Garfield Avenue/I-105 WB on-ramp	C	23.6	C	21	C	23.8	C	22.7	C	25.7	C	23.9
Garfield Avenue/I-105 EB off-ramp	C	33.7	D	37.7	C	32.1	D	35.7	D	41	D	46.8
Garfield Avenue/Rosecrans Avenue	D	53.4	D	49.1	D	53.4	D	49.1	D	53.4	D	49.1
Paramount Boulevard/Imperial Highway	C	30.7	D	37.9	C	30.7	D	37.9	C	30.7	D	37.9

Paramount Boulevard/I-105 WB off-ramp	C	26.4	B	19.3	C	28.3	B	19.4	C	29.6	C	20.2
Paramount Boulevard/I-105 EB on-ramp	C	22.8	C	23.7	C	25.5	C	23.5	C	28.4	C	24.1
Paramount Boulevard/Rosecrans Avenue	D	54	D	54.3	D	54	D	54.3	D	54	D	54.3
Lakewood Boulevard/Imperial Highway	C	26.1	C	34.1	C	26.1	C	34.7	C	24	C	35.5
Lakewood Boulevard/I-105 EB off-ramp and WB Ramps	**F**	**136.1**	E	58.2	**F**	**151.7**	E	61.8	**F**	**236.4**	**F**	**96.7**
Lakewood Boulevard/Rosecrans Avenue	C	28	D	49.1	C	28	D	49.1	C	27.7	D	49.1
Bellflower Boulevard/Imperial Highway	C	30	C	27.2	C	30.5	C	27.4	C	28.1	C	27.8
Bellflower Boulevard/I-105 WB Ramps	B	18.9	B	17.2	C	29.4	B	17.9	C	33.8	B	19
Bellflower Boulevard/I-105 EB Ramps	B	18.7	C	21.3	C	29	C	20.4	C	32.7	D	38.4
Bellflower Boulevard/Rosecrans Avenue	D	39.5	C	30.8	D	39.5	C	30.8	D	39.5	C	30.8
Woodruff Avenue/Imperial Highway	D	43	D	54.4	D	42.9	D	54.4	D	38.7	D	54

Hoxie Avenue/Imperial Highway	D	37.1	E	55.9	D	37.6	D	53	D	38.4	E	57.1
Studebaker Road/Imperial Highway	E	67.5	E	56.8	E	67.8	E	55.6	E	79.2	D	54.7
Studebaker Road/I-105 WB on-ramp and EB off-ramp	**F**	**87.7**	**F**	**108.1**	**F**	**90.5**	**F**	**143.4**	**F**	**235.3**	**F**	**239.9**
Studebaker Road/Rosecrans Avenue	D	48.3	D	50.7	D	48.3	D	50.7	D	48.3	D	50.7

Access and Circulation

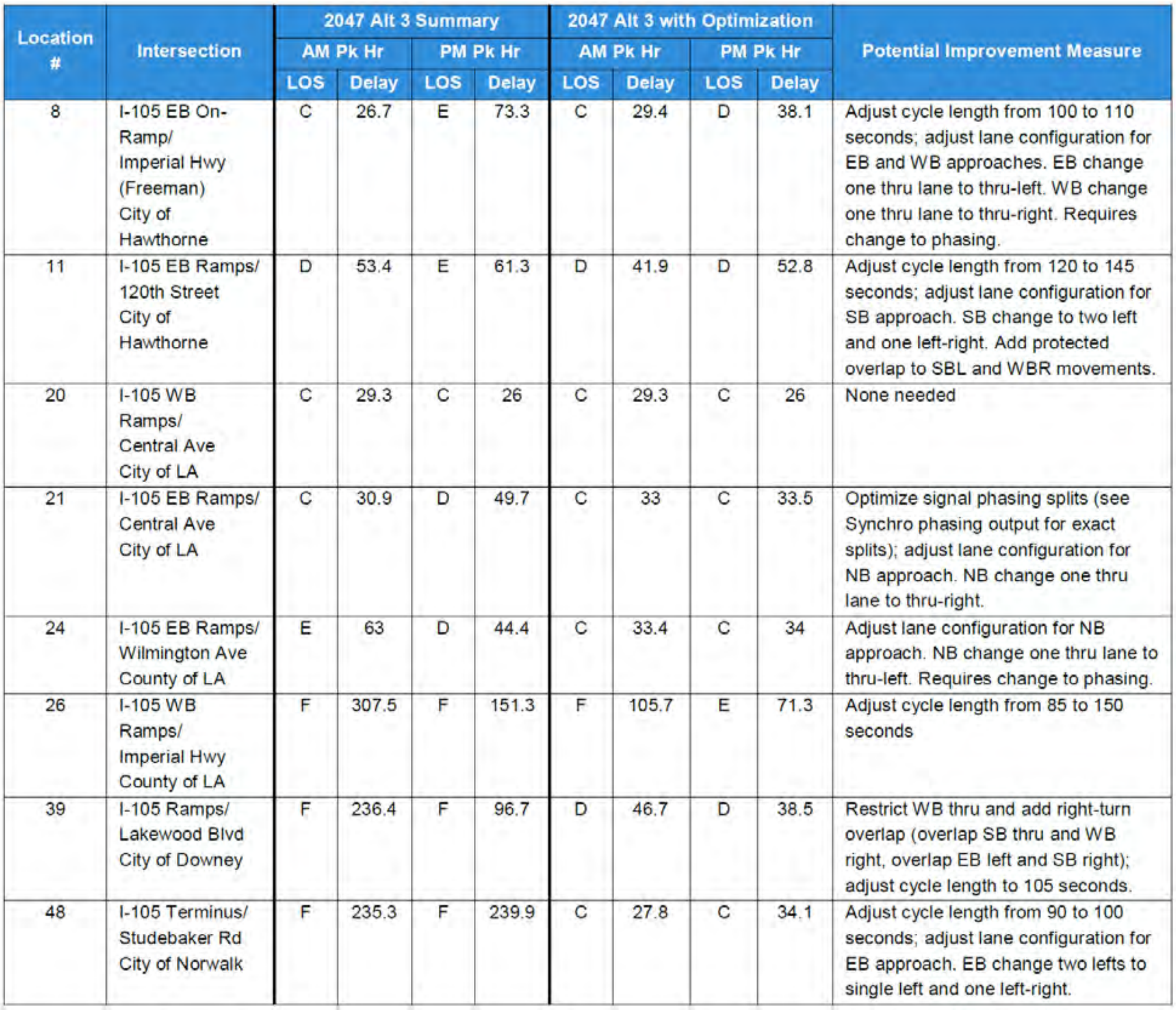
The proposed project would not eliminate or restrict automobile or pedestrian access to stores, public services, schools, or other facilities in the project area. It will not increase or decrease traffic on local streets, making it no more or less difficult to reach businesses or residences in the area. Emergency vehicles will be able to take the same routes as prior to the project, and emergency routes will be unaffected by distance, speed, or routing. No bicycle or pedestrian routes will be permanently affected by the project, and any detours, signs, and/or flaggers required during construction will be detailed in the TMP. Local drivers, cyclists, and pedestrians will not need to alter their travel patterns.

For Alternative 3, there are two bus stops that will be affected by partial acquisition located on opposite sides of the street at the corner of Alameda St. and Imperial Highway, which service the eastbound and westbound Metro Local 120 and 612 buses. Alternative 3 would not have any effect on other public transportation routes or services, and no access to transit stops will be affected except for those two bus stops. The partial acquisition required for Alternative 3 takes the sidewalk where the stop is located. No other alternative will impact any other public transit circulation.

As such, the proposed project should have no effect on business operation or community circulation. As construction and project effects will be limited to the freeway, pedestrians and bicyclists will be unaffected. No properties will become restricted in access or landlocked, and there will be no change in routes or traffic patterns that could affect businesses, residences, or emergency services. No additional access or visibility will be granted to any business or residence by the proposed project, and all improvements will be compliant with ADA regulations, if applicable.

The proposed project is consistent with local circulation goals in city general plans. Several cities express goals of directing through traffic off of local streets; with the reduction in congestion projected, freeway traffic overspill onto local intersections should be reduced. 8 intersections were investigated and analyzed for traffic signal improvements. At 7 locations, signal improvement operations were identified to address the adverse impacts. No adjacent arterial intersections were found to have any adverse impacts. With inclusion of the improvement measures identified in table 2-98, it is anticipated that the impacts will be mitigated to a less than significant level.

Table 2-98: I-105 Ramps Intersection Potential Improvement Measure



Location #	Intersection	2047 Alt 3 Summary				2047 Alt 3 with Optimization				Potential Improvement Measure
		AM Pk Hr		PM Pk Hr		AM Pk Hr		PM Pk Hr		
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	
8	I-105 EB On-Ramp/ Imperial Hwy (Freeman) City of Hawthorne	C	26.7	E	73.3	C	29.4	D	38.1	Adjust cycle length from 100 to 110 seconds; adjust lane configuration for EB and WB approaches. EB change one thru lane to thru-left. WB change one thru lane to thru-right. Requires change to phasing.
11	I-105 EB Ramps/ 120th Street City of Hawthorne	D	53.4	E	61.3	D	41.9	D	52.8	Adjust cycle length from 120 to 145 seconds; adjust lane configuration for SB approach. SB change to two left and one left-right. Add protected overlap to SBL and WBR movements.
20	I-105 WB Ramps/ Central Ave City of LA	C	29.3	C	26	C	29.3	C	26	None needed
21	I-105 EB Ramps/ Central Ave City of LA	C	30.9	D	49.7	C	33	C	33.5	Optimize signal phasing splits (see Synchro phasing output for exact splits); adjust lane configuration for NB approach. NB change one thru lane to thru-right.
24	I-105 EB Ramps/ Wilmington Ave County of LA	E	63	D	44.4	C	33.4	C	34	Adjust lane configuration for NB approach. NB change one thru lane to thru-left. Requires change to phasing.
26	I-105 WB Ramps/ Imperial Hwy County of LA	F	307.5	F	151.3	F	105.7	E	71.3	Adjust cycle length from 85 to 150 seconds
39	I-105 Ramps/ Lakewood Blvd City of Downey	F	236.4	F	96.7	D	46.7	D	38.5	Restrict WB thru and add right-turn overlap (overlap SB thru and WB right, overlap EB left and SB right); adjust cycle length to 105 seconds.
48	I-105 Terminus/ Studebaker Rd City of Norwalk	F	235.3	F	239.9	C	27.8	C	34.1	Adjust cycle length from 90 to 100 seconds; adjust lane configuration for EB approach. EB change two lefts to single left and one left-right.

A temporary adjustment period may occur that would cause inconvenience to drivers unfamiliar with new ExpressLanes and their associated rules of usage. As drivers become accustomed to the presence of ExpressLane(s) and their operations, traffic effects due to unfamiliarity and confusion would decrease.

Parking

Availability of parking will be not be affected by the project. The project will primarily change the freeway, where no parking is available, and where ramps and shoulders will be affected, no parking is permitted. As such, no business will lose any portion of its parking spaces, and there will be no temporary nor permanent impacts to parking.

2.1.9.7 Avoidance, Minimization, and/or Mitigation Measures

Traf1 - As standard practice for all Caltrans construction projects that potentially have traffic impacts, a Traffic Management Plan will be established in order to minimize those effects. The full details of the plan will be determined in the next phase of project planning, but a TMP will typically include elements such as public information, motorist information, incident management, construction, demand management, and alternate routes or detours.

Public information plans may include brochures and mailers, press releases/media alerts, paid advertisements, a project website, and information distributed by public meetings or public hearings in order to inform the public ahead of time of construction and delays. Information may be disseminated to motorists via traffic radio announcement, changeable message signs, temporary motorist signs, or any other signage that could give notice of construction. Special incident management may be put into place, where traffic management teams, Intelligent Transportation Systems (ITS), surveillance equipment, or tow/freeway service patrols could monitor and assist where needed. During construction, lane requirement charts, construction staging, or traffic handling plans may be utilized to minimize traffic impacts that result from reduced lane widths or closures, reduced shoulder widths or closures, lane shifts, ramp closures, or nightwork. Alternate routes or detours may be marked where available.

Transportation Management Plans sometimes also include agreements with local agencies for coordination during construction. These agreements could provide for enhanced infrastructure on arterial roads and intersections to handle detoured traffic, or even traffic personnel near the construction zone.

Traf2 - For the bus stops affected by ROW acquisition in Alternative 3, notification must be given to the public and to the bus operator, Metro Local. The bus stops may need to be relocated or temporarily skipped during construction, and details of such arrangements will be planned in full during the next phase of the project. After construction is complete, the bus stops will be replaced near their current locations.

Traf3 - The potential improvement measures to address I-105 Ramps Intersection in table 2-98 shall be incorporated into the project.

2.1.10 Visual/Aesthetics

2.1.10.1 Regulatory Setting

The National Environmental Policy Act (NEPA) of 1969, as amended, establishes that the federal government use all practicable means to ensure all Americans safe, healthful, productive, and *aesthetically* and culturally pleasing surroundings (42 United States Code [USC] 4331[b][2]). To further emphasize this point, the Federal Highway administration (FHWA), in its implementation of NEPA (23 USC 109[h]), directs that final decisions on projects are to be made in the best overall public interest taking into account adverse environmental impacts, including among others, the destruction or disruption of aesthetic values.

The California Environmental Quality Act (CEQA) establishes that it is the policy of the state to take all action necessary to provide the people of the state "with…enjoyment of *aesthetic*, natural, scenic and historic environmental qualities" (CA Public Resources Code [PRC] Section 21001[b]).

2.1.10.2 Affected Environment

The following information is presented in the Revised Scenic Resource Evaluation and Visual Impact Assessment prepared by Caltrans in October 2019. There was also a Landscape Impact Summary report with design recommendations prepared in January of 2020.

This project is located within the County of Los Angeles, starting at Imperial Highway/Sepulveda Boulevard Intersection west of 1-405 in the City of Los Angeles, and terminating at Studebaker Road east of 1-605 in the City of Norwalk, in Los Angeles County and I-110 from the I-105 Separation in the City of Los Angeles, to 103rd Street in the City of Los Angeles. The project traverses nine cities and unincorporated areas of LA County, including Downey, El Segundo, Hawthorne, Inglewood, Los Angeles, Lynwood, Norwalk, Paramount, and South Gate.

Key Views are located at the major freeway intersections at the I-605, I-110, I-710, and I-405, where grade changes occur. No portion of the project is within an officially designated scenic highway or within the coastal zone.

2.1.10.3 Environmental Consequences

I-105 traverses many grade changes within the project limits. This section will break the freeway into 3 categories, Below Grade, At Grade, and Above Grade to describe the changes drivers experience.

Below Grade

The freeway is below grade east of the Los Angeles River to I-605. West of I-110, the freeway slowly descends to below grade. Below grade sections of the freeway are experienced from the driver's perspective as semi enclosed spaces. Below grade sections of the I-105 typically are not overly visually intrusive. See Figure 2-18 for a sample key viewpoint.

Figure 2-18: Below Grade

At Grade

The I-105 is at grade at the western terminus to Imperial highway. At street level, there is no visual intrusion as the freeway is below street grade.

Above Grade

West of the Los Angeles River to I-110, the freeway is built on fill. At the junction of I-405 before the western terminus, I-105 ascends above grade as a viaduct. Fill, and viaduct portions of the highway are the more prominent structures when viewed from street level. From the driver's perspective on the viaduct, there can be panoramic views. See Figures 2-19 and 2-20 for viaduct key view point.

Figure 2-19: Viaduct from Street Level

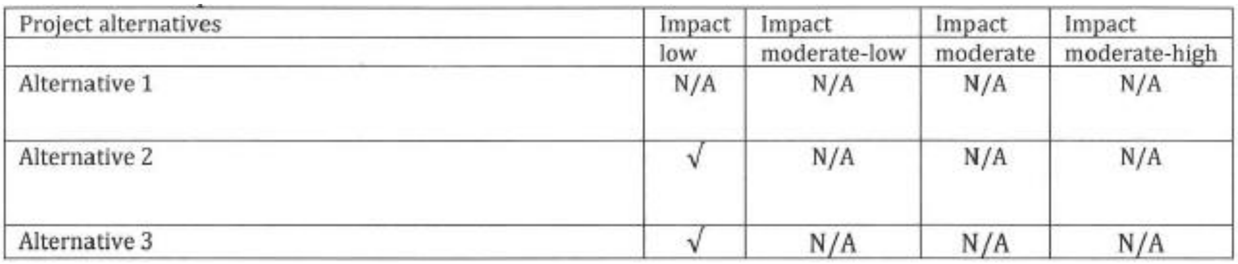
Figure 2-20: Viaduct Panoramic Key View Point

There are no significant grade changes anticipated for any of the build project.

2.1.10.4 Potential Visual Impacts to Visual Resources.

The table below summarizes potential impacts to visual resources.

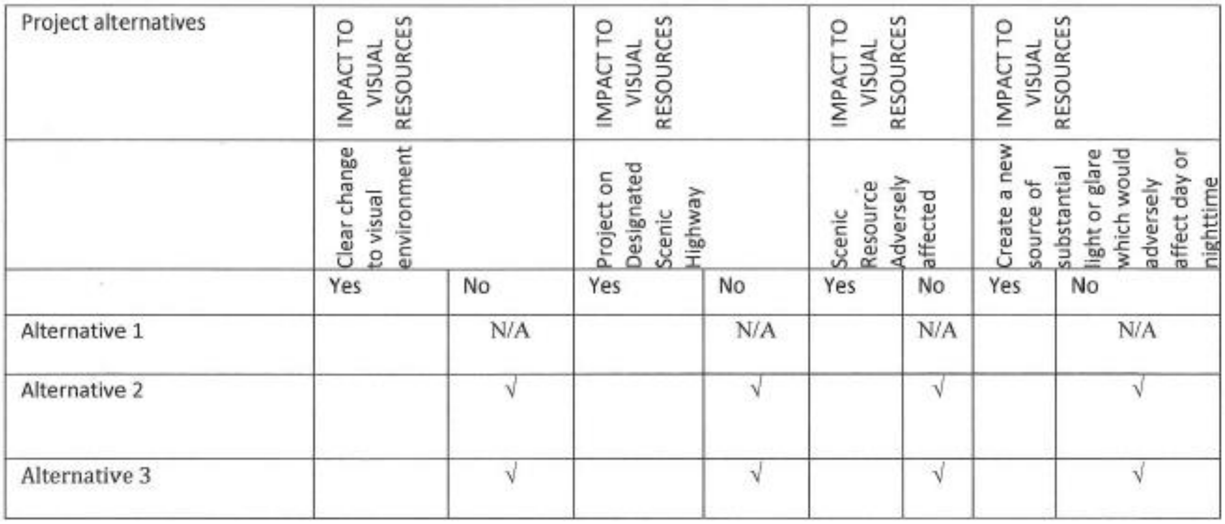
Table 2-99: Potential Impacts to Visual Resources



Project alternatives	Impact low	Impact moderate-low	Impact moderate	Impact moderate-high
Alternative 1	N/A	N/A	N/A	N/A
Alternative 2	√	N/A	N/A	N/A
Alternative 3	√	N/A	N/A	N/A

There would be minimal removal of existing vegetation under the two build alternatives. The majority of the vegetation are ornamental and would be replaced in kind. Most of the change is to the Driver’s visual acuity as it relates to change in lanes width and signage. For most drivers, the differences are minimal.

Table 2-100: Potential Impacts to Visual Resources cont.



Project alternatives	IMPACT TO VISUAL RESOURCES		IMPACT TO VISUAL RESOURCES		IMPACT TO VISUAL RESOURCES		IMPACT TO VISUAL RESOURCES	
	Clear change to visual environment		Project on Designated Scenic Highway		Scenic Resource Adversely affected		Create a new source of substantial light or glare which would adversely affect day or nighttime	
	Yes	No	Yes	No	Yes	No	Yes	No
Alternative 1		N/A		N/A		N/A		N/A
Alternative 2		√		√		√		√
Alternative 3		√		√		√		√

2.1.10.5 Resulting Visual Impact

Collectively, the addition of these facilities for both build alternatives will have a less than significant impact to visual resources to the existing roadside environment. There may be a positive impact; if signs and other associated support facilities can be consolidated.

2.1.10.6 Avoidance, Minimization, and/or Mitigation Measures

No-Build Alternative

Avoidance, minimization, and/or mitigation measures are not required for the No-Build alternative as there is no impacts to visual resources.

Build Alternatives

The following measures are recommended for both build alternatives. With inclusion of these measure into the project, it is anticipated that this project will have no impacts to visual resources.

Vis1 - The project shall incorporate sweeping round pole for ExpressLane signage.

Vis2 - Eliminate visual clutter and distraction by consolidating facilities/signage where possible or placing facilities/signage close by.

Vis3 - Design all visible concrete structures and surfaces to match existing adjacent landscape and natural plantings.

Vis4 - Landscape Architect shall be included when designing suitable plant replacement palette.

Vis5 - Any lighting replaced or relocated shall use Light Emitting Diodes (LED) lighting fixtures and glare shields to avoid lighting spillover.

Vis6 - Any replaced outside bridge railings will match the aesthetic design theme of the corridor.

Vis7 - The use of recycled water is encouraged if available.

Vis8 - Retaining walls will conform to the standard District-7 aesthetic treatment of fractured rib texture. If the retaining wall exceeds 300 feet, a graphic theme will also be included.

Vis9 - The consultant landscape architect will coordinate with the District Landscape Architect to formulate initial planting concepts and replacement planting strategies.

Vis10 - The replacement landscape design should not change dramatically from the existing design. Plant forms and character should not deviate significantly from the original planting theme.

Vis11 - As-built drawings, available photos, google street views, and on-site visits will be utilized to reconstruct the landscape.

Vis12 - Roadside landscapes contribute to urban forestry and biodiversity habitats, which provide perching and nesting opportunities for birds and shelter for other urban adapted wildlife. To continue bird perching opportunities, 50% of Eucalyptus trees replacement trees must be Platanus Racemosa.

Vis13 - California pepper trees removed will be replaced with Engelman Oaks on a 1:1 ratio.

Vis14 - Nectar/larval host plants are encouraged, such as; Cercis Occidenatlis, Plumbago Imperial Blue, Rhus Integrifolia, Lantana Camara.

Vis15 - Consultant Landscape Architect and District Landscape Architect will field review areas for suitable mass tree planting areas, if necessary

Vis16 - All trees removed will adhere to a replacement tree ratio of 1:1.

Vis17 - Replacement costs for landscaping shall be no lower than $97,000 per acre.

2.1.11 Cultural Resources

2.1.11.1 Regulatory Setting

The term “cultural resources,” as used in this document, refers to the “built environment” (e.g., structures, bridges, railroads, water conveyance systems, etc.), places of traditional or cultural importance, and archaeological sites (both prehistoric and historic), regardless of significance. Under federal and state laws, cultural resources that meet certain criteria of significance are referred to by various terms including “historic properties,” “historic sites,” “historical resources,” and “tribal cultural resources.” Laws and regulations dealing with cultural resources include:

The National Historic Preservation Act (NHPA) of 1966, as amended, sets forth national policy and procedures for historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for listing in the National Register of Historic Places (NRHP). Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties and to allow the Advisory Council on Historic Preservation (ACHP) the opportunity to comment on those undertakings, following regulations issued by the ACHP (36 Code of Federal Regulations [CFR] 800). On January 1, 2014, the First Amended Section 106 Programmatic Agreement (PA) among the Federal Highway Administration (FHWA), the ACHP, the California State Historic Preservation Officer (SHPO), and Caltrans went into effect for Department projects, both state and local, with FHWA involvement. The PA implements the ACHP’s regulations, 36 CFR 800, streamlining the Section 106 process and delegating certain responsibilities to Caltrans. The FHWA’s responsibilities under the PA have been assigned to Caltrans as part of the Surface Transportation Project Delivery Program (23 United States Code [USC] 327).

Historic properties are also covered under Section 4(f) of the U.S. Department of Transportation Act, which regulates the “use” of land from historic properties (in Section 4(f) terminology—historic sites). See Appendix A for specific information about Section 4(f).

The California Environmental Quality Act (CEQA) requires the consideration of cultural resources that are historical resources and tribal cultural resources, as well as “unique” archaeological resources. California Public Resources Code (PRC) Section 5024.1 established the California Register of Historical Resources (CRHR) and outlined the necessary criteria for a cultural resource to be considered eligible for listing in the CRHR and, therefore, a historical resource. Historical resources are defined in PRC Section 5020.1(j). In 2014, Assembly Bill 52 (AB 52) added the term “tribal cultural resources” to CEQA, and AB 52 is commonly referenced instead of CEQA when discussing the process to identify tribal cultural resources (as well as identifying measures to avoid, preserve, or mitigate effects to them). Defined in PRC Section 21074(a), a tribal cultural resource is a CRHR or local register eligible site, feature, place, cultural landscape, or object which has a cultural value to a California Native American tribe. Tribal cultural resources must also meet the definition of a historical resource. Unique archaeological resources are referenced in PRC Section 21083.2.

PRC Section 5024 requires state agencies to identify and protect state-owned historical resources that meet the NRHP listing criteria. It further requires Caltrans to inventory state-owned structures in its rights-of-way. Sections 5024(f) and 5024.5 require state agencies to provide notice to and consult with the State Historic Preservation Officer (SHPO) before altering, transferring, relocating, or demolishing state-owned historical resources that are listed on or are eligible for inclusion in the NRHP or are registered or eligible for registration as California Historical Landmarks. Procedures for compliance with PRC Section 5024 are outlined in a Memorandum of Understanding (MOU) between Caltrans and SHPO, effective January 1, 2015. For most Federal-aid projects on the State Highway System, compliance with the Section 106 PA will satisfy the requirements of PRC Section 5024.

2.1.11.2 Affected Environment

A Historic Property Survey Report was prepared to comply with Caltrans' regulatory responsibilities under Section 106 of the NHPA and pursuant to the January 2014 *First Amended Programmatic Agreement among the Federal Highway Administration, the Advisory Council on Historic Preservation, the SHPO, and Caltrans regarding compliance with Section 106 of the NHPA* (Caltrans Section 106 PA), as well as Public Resources Code 5024 and pursuant to the January 2015 *MOU between Caltrans and the SHPO regarding compliance with Public Resources Code Section 5024 and Governor's Executive Order W-26-92* (Caltrans 5024 MOU) in October of 2019.

Identification efforts were made for National and California Registers as well as California Historical Landmark (CHL) eligibility. CHL eligibility was only evaluated for state-owned properties. Sources reviewed included the Directory of Properties Historic Property Data File for Los Angeles County, California Historic Bridge Inventory, designated California Historical Landmarks, Caltrans Cultural Resources Database and the South Central Coastal Information Center. A search of the Native American Heritage Commission sacred lands file was received in April of 2019 returning in negative results and a list of six Native American representatives was provided. Letters requesting information regarding historic properties that contained the project description and a map, were sent to eleven local or other government agencies, six historic preservation groups, and the six Native American contacts. Andy Salas of the Gabrielino Band of Mission Indians – Kizh Nation and Robert Dorame of the Gabrielino Tongva Indians of California Tribal Council responded with sensitivity concerns and requested participation in monitoring. No response was received from the other 4 notified Native American contacts. Specifics on the coordination conducted with Native American parties is detailed in Chapter 4: Comments and Coordination.

In addition to the project limits, the defined project-specific direct Area of Potential Effects (APE) encompasses all ground disturbance associated with the project, including any property acquisition and TCEs. The indirect APE also includes parcels that could have visual, noise or vibration effects caused by proposed project construction or implementation. The vertical APE is 50 feet above grade and the subterranean APE is 30 feet below grade.

Field surveys were conducted as part of the identification effort. The results of the records search, consultation and field surveys resulted in the identification of two properties, Lynwood Pacific Electric Depot and the Mojave Road which are listed in the National Register. The Lynwood Pacific Electric Depot building was relocated in 1974 beyond the project APE boundaries as part of the original I-105 project. A different portion of the Mojave Road is listed in the National Register, but the Mojave Road segment in Los Angeles County is a designated CHL (from the Drum Barracks at 1052 N Banning Bl, Wilmington, to Route 66, crossing Los Angeles County line to San Bernardino County). The field survey revealed no physical or visual evidence of the Mojave Road in the project APE.

As part of the built environment evaluation, 130 other properties were surveyed. Of the 130 properties, seven warranted consideration for National Register and CHL eligibility. Those seven properties were intensively evaluated for historic significance, and two were determined eligible for listing in the National Register and thus are listed in the California Register. Those two linear resources are the Century Freeway-Transitway Historic District and Dominguez Channel Historic District. The Century Freeway-Transitway Historic District is also eligible for CHL designation.

Century Freeway-Transitway Historic District was determined eligible for the National Register at the state level of significance for its associative as well as engineering significance. It is considered as the last urban interstate constructed and was the subject of a landmark California environmental justice lawsuit. Its design significance is partially based on its status as the final full-length, inner-city interstate, the incorporation of novel Intelligent Transportation System (ITS) features and design components, the integral light rail system and stations in the median and its massive intermodal interchanges. The limits of the Century Freeway-Transitway Historic District are Caltrans right-of-way from California Street in the City of El Segundo to Studebaker Road in the City of Norwalk, including integral ramps built as part of the project and the interchanges at I-405, I-110, I-710, and I-605. The character defining features of I-105 that cause the corridor to be considered a historic property include: the freeway itself and its alignment, the ITS system, bridges and ramps constructed or significantly altered as part of the I-105, its interchanges, the remaining original landscape, the light rail line and the ten freeway-related light rail stations.

Dominguez Channel Historic District was determined eligible for the National Register at the local level of significance. Its importance is based on its direct association with development of the communities in its watershed as well as its engineering achievement. As a large water conveyance system with multiple components, Dominguez Channel is considered a historic district rather than a single property. It possesses a significant concentration as well as linkage of water conveyance resources that are united historically by both their original plan and by its physical development. It was part of a historic trend at the time, channelizing rain and other water runoff, which made the significant contribution of development in the community possible. Contributing features include the concrete section of open, straight-sided channels, the square concrete tunnels, and trapezoidal-sided lower segments with compacted clay bottoms. Its boundaries are the length of the resource and include its full right-of-way. The bridges crossing the resource do not contribute to the Dominguez Channel's historic significance.

Although no known archaeological resources were identified within the APE through the records search or field survey, archival research and Native American consultation efforts suggest moderate potential for buried cultural resources within one portion of the APE. Excavations into native soil throughout this area have the potential to encounter buried cultural deposits. As it is anticipated that the Undertaking shall be constructed in phases or stages, phased identification of buried resources within this locale will occur as access is gained for each construction phase or stage. This identification will follow procedures outlined in the Historic Properties Treatment Plan prepared for the Undertaking, pursuant to Stipulation XII.A of the Section 106 PA. A Programmatic Agreement will be prepared in consultation with the SHPO to complete identification, evaluation, and assessment of effects.

2.1.11.3 Environmental Consequences

Coordination was initiated with the California Historic Preservation Officer in October 2019. Within the defined project APE, two properties (the Century Freeway-Transitway Historic District and Dominguez Channel Historic District) were determined eligible for listing in the National and California Registers. No Adverse Effect is expected to these two properties for either Build Alternative. Effects to archaeological resources are unknown.

A Section 4(f) De Minimis impact report was prepared for the historic sites located within the project limits. It is anticipated no adverse effects would be caused to the two linear historic properties as a result of construction and implementation of either of the two build alternatives.

The Section 4(f) document can be found in Appendix A under Resources, Evaluated Relative to the Requirements of Section 4(f).

For the project as a whole, the effects and impacts to cultural resources as a result of either build alternative are currently unknown. No adverse effects have currently been identified. Effects and impacts to cultural resources will be assessed in consultation with the SHPO and consulting parties as outlined in the Programmatic Agreement as access is obtained to potential buried resources within the project APE.

2.1.11.4 Avoidance, Minimization, and/or Mitigation Measures

Cul1 - If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find.

Cul2 - If human remains are discovered, California Health and Safety Code (H&SC) Section 7050.5 states that further disturbances and activities shall stop in any area or nearby area suspected to overlie remains, and the County Coroner contacted. If the remains are thought by the coroner to be Native American, the coroner will notify the Native American Heritage Commission (NAHC), who, pursuant to PRC Section 5097.98, will then notify the Most Likely Descendent (MLD). At this time, the person who discovered the remains will contact Caltrans, Cultural Resources so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.

Cul3 - Caltrans will develope a Programmatic Agreement with a Historic Properties Treatment Plan (HPTP) to plan for the identification, evaluation, and treatment of archaeological resources should they be discovered during construction. The HPTP will be appended to the project Finding of Effect. Provisions outlined in HPTP will be followed during construction.

2.2 Physical Environment

2.2.1 Hydrology and Floodplain

2.2.1.1 Regulatory Setting

Executive Order (EO) 11988 (Floodplain Management) directs all federal agencies to refrain from conducting, supporting, or allowing actions in floodplains unless it is the only practicable alternative. The Federal Highway Administration (FHWA) requirements for compliance are outlined in 23 Code of Federal Regulations (CFR) 650 Subpart A.

To comply, the following must be analyzed:

- The practicability of alternatives to any longitudinal encroachments.
- Risks of the action.
- Impacts on natural and beneficial floodplain values.
- Support of incompatible floodplain development.
- Measures to minimize floodplain impacts and to preserve/restore any beneficial floodplain values affected by the project.

The base floodplain is defined as “the area subject to flooding by the flood or tide having a one percent chance of being exceeded in any given year.” An encroachment is defined as “an action within the limits of the base floodplain.”

2.2.1.2 Affected Environment

As an appendix to the Water Quality Assessment Technical Memorandum, Location Hydraulic Study Forms for Dominguez Channel and Compton Creek, and a *Summary Floodplain Encroachment Report* for Special Flood Hazard Areas (SFHAs) were prepared in November 2019.

The Federal Emergency Management Agency (FEMA) provides information on flood hazards and frequency for cities and counties, based on its Flood Insurance Rate Maps (FIRMs). A FIRM is the official map of a community for which FEMA has delineated SFHAs. SFHAs are defined as an area that will be inundated by a flood event having a 1% chance of being equaled or exceeded in any given year. The 1% annual chance flood is also referred to as the base flood or 100-year flood. Due to their vulnerability, SFHAs must enforce the National Flood Insurance Program’s floodplain management regulations and where mandatory purchase of flood insurance applies. Figure 2-21 depicts the flood zone map of the project area relative to the base 100-year floodplain.

Figure 2-21: Flood Zone Map

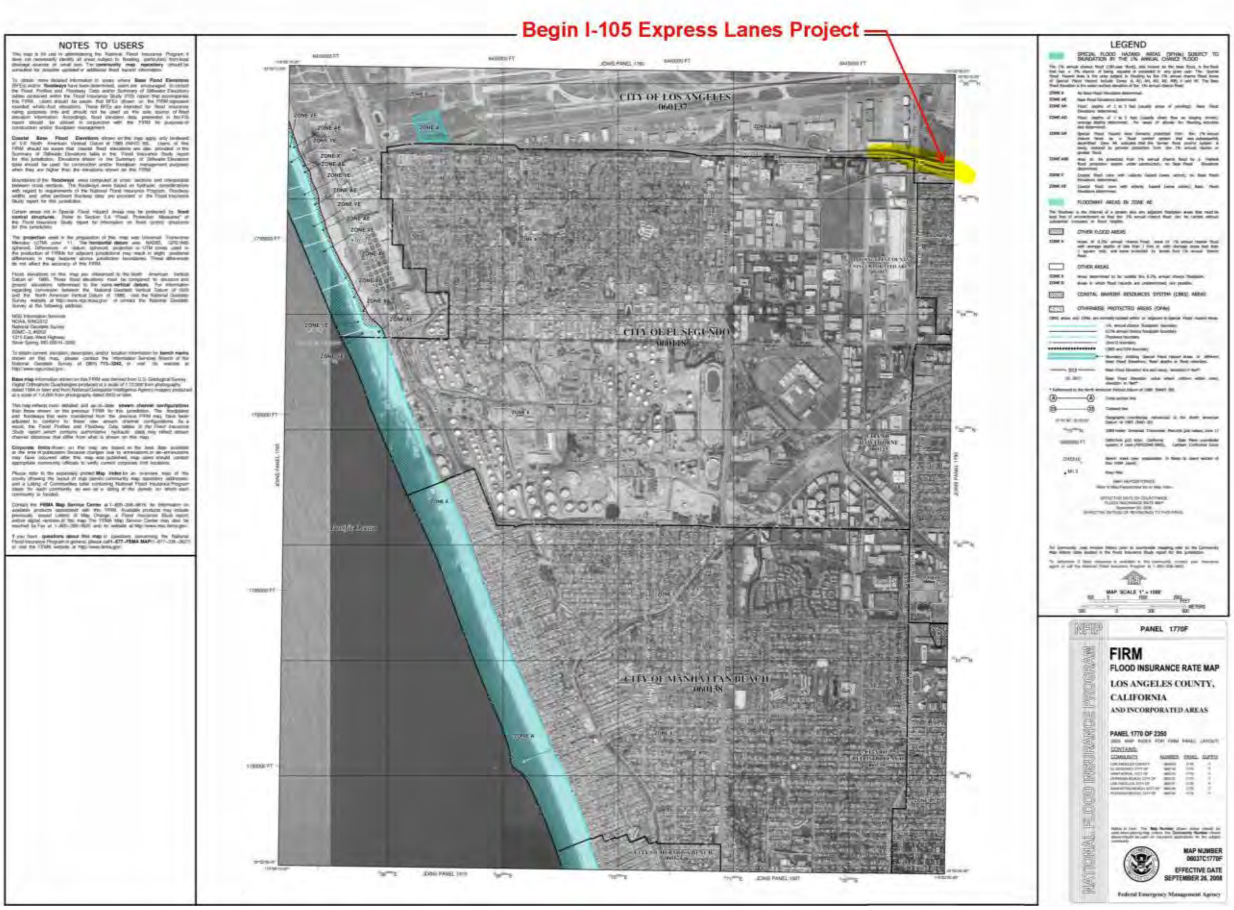


Figure 2-21: Flood Zone Map Cont.

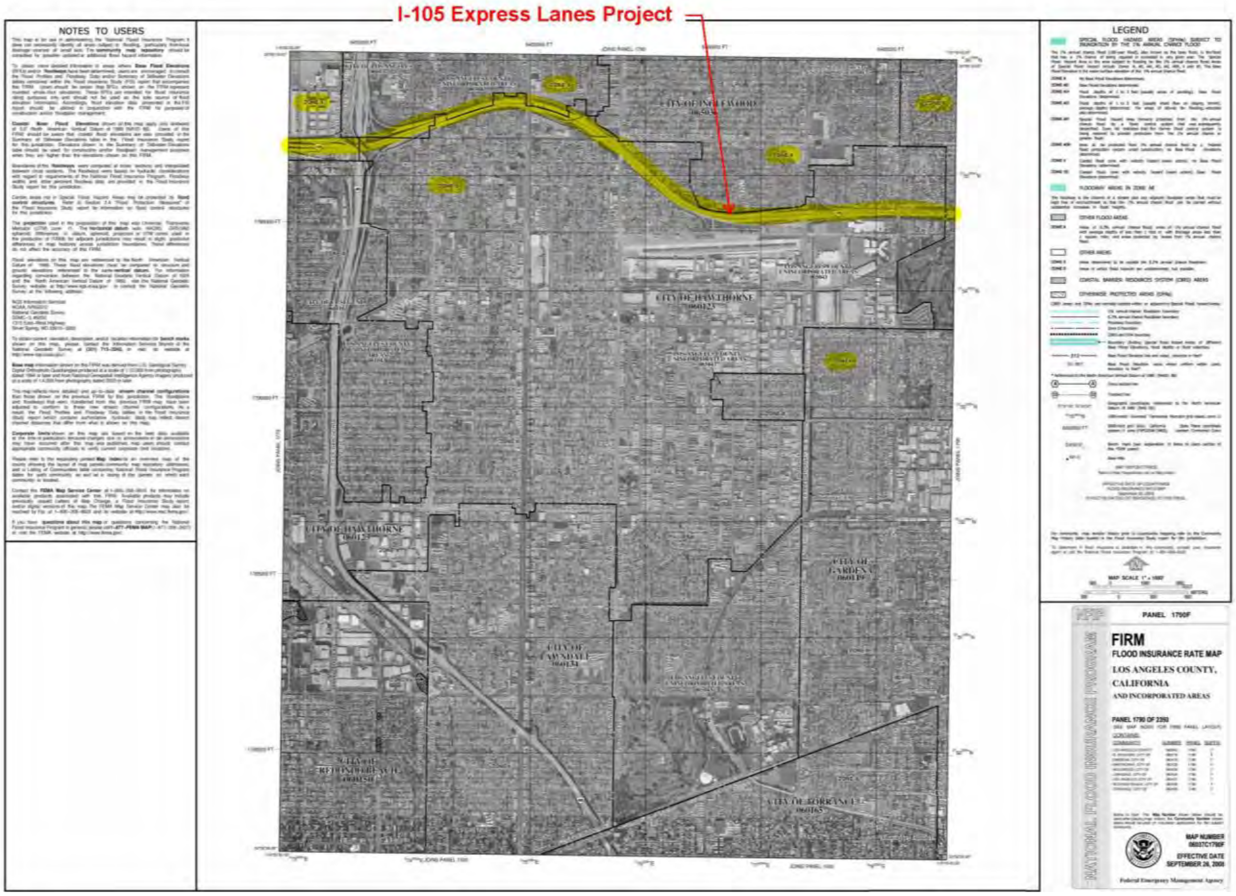


Figure 2-21: Flood Zone Map Cont.

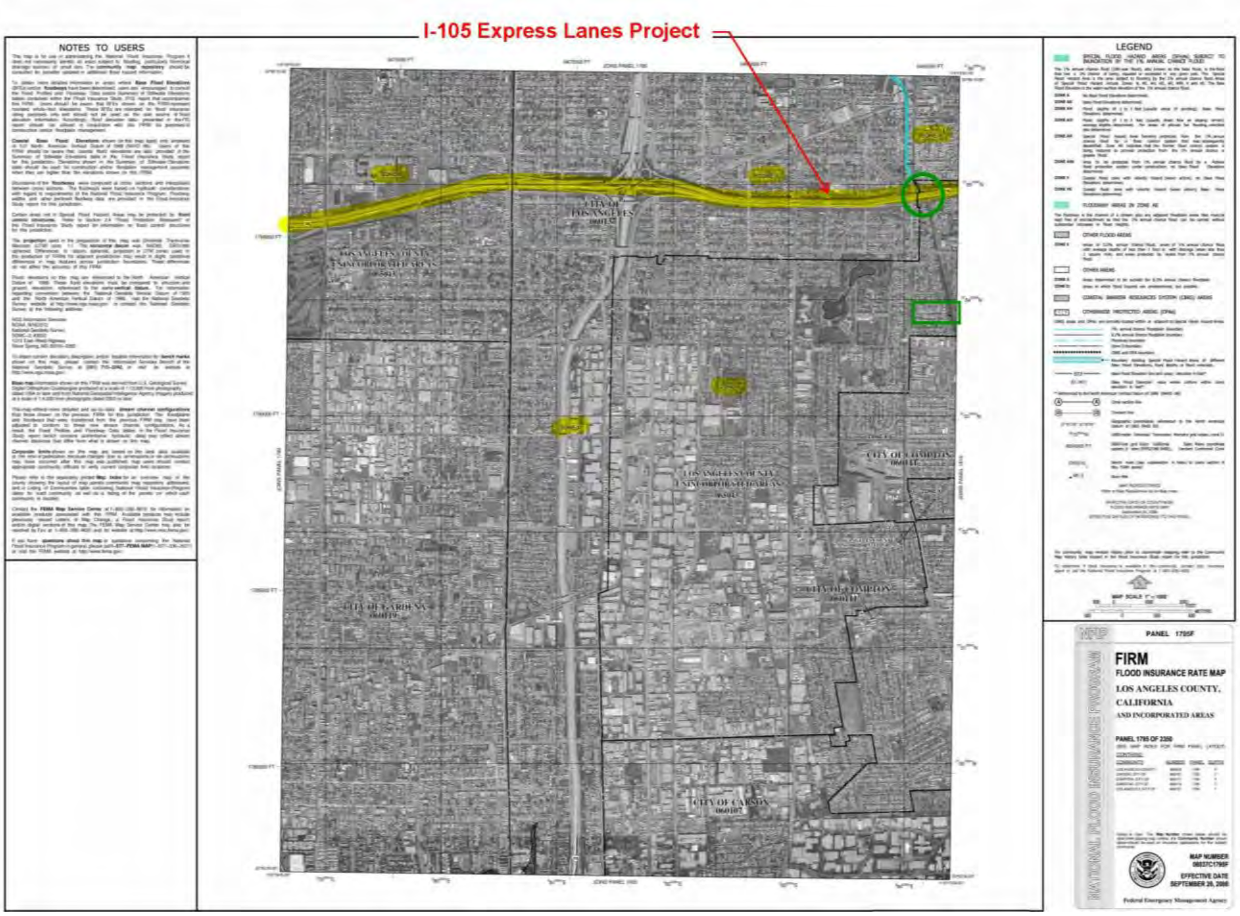


Figure 2-21: Flood Zone Map Cont.

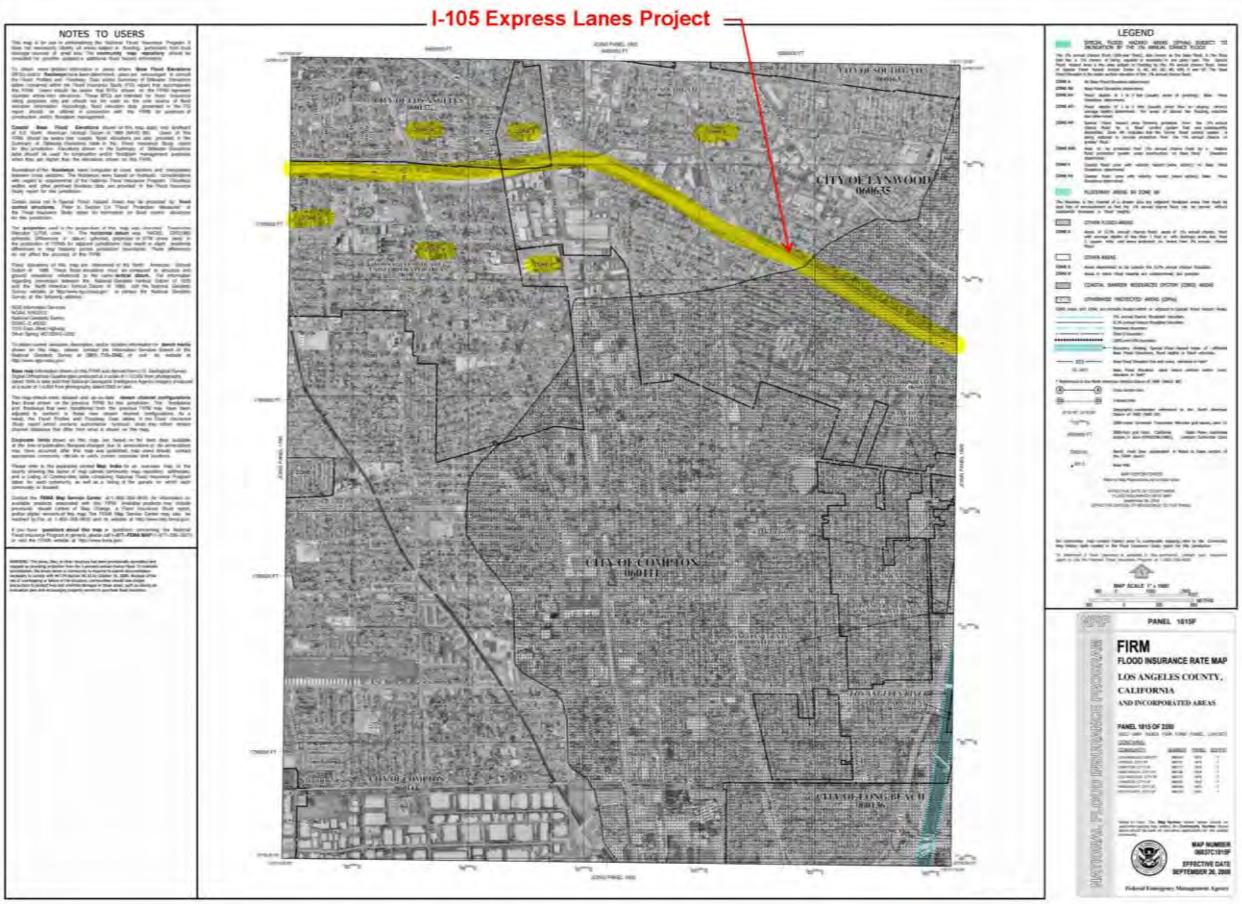


Figure 2-21: Flood Zone Map Cont.

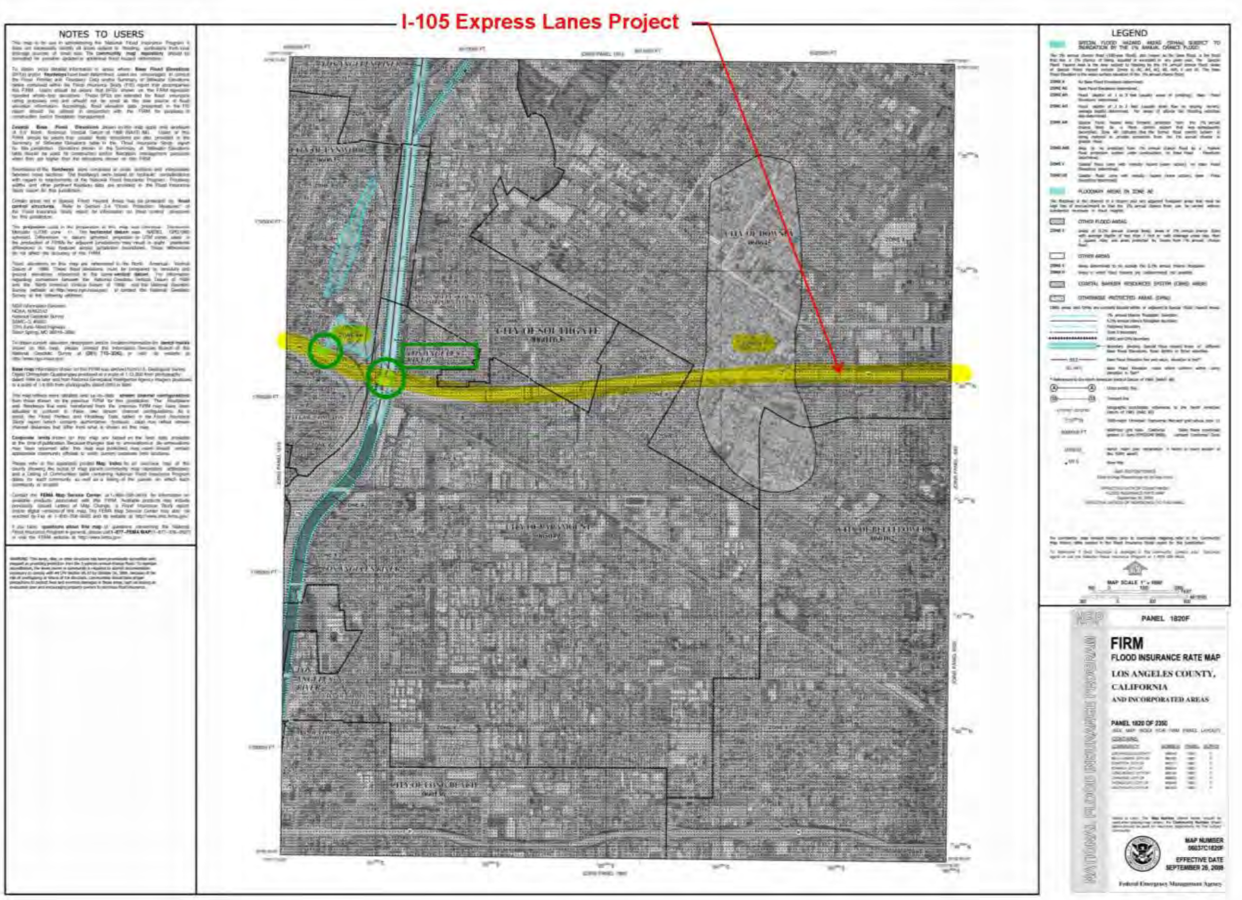
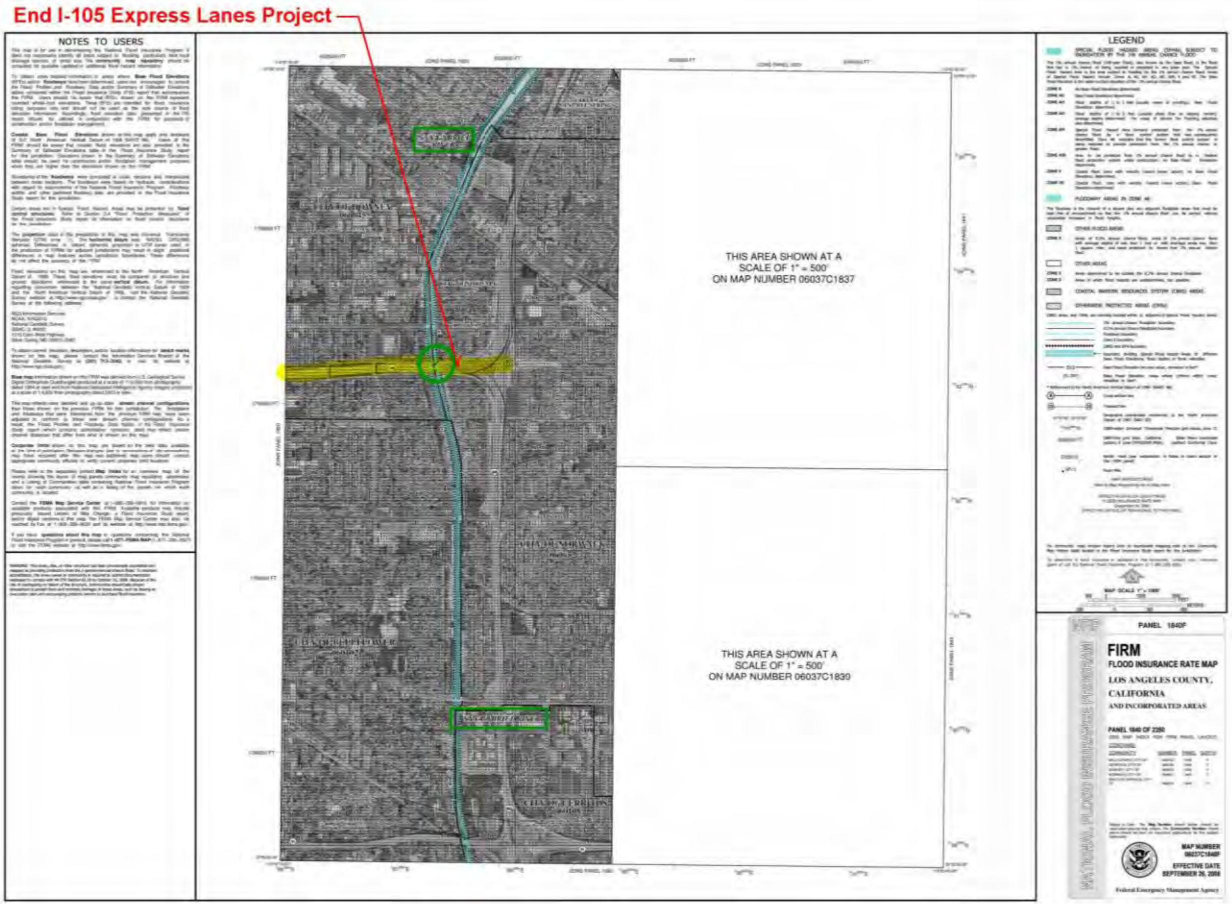


Figure 2-21: Flood Zone Map Cont.



The majority of the I-105 corridor is found within the Zone X and Shaded Zone X flood zones. Zone X is an area determined outside the 1% annual chance floodplain and is not a SFHA. Shaded Zone X are areas of a 0.2% annual chance flood or areas with protected by levees from a 1% annual chance flood. Shaded Zone X is also not a SFHA. Dominguez Channel and Compton Creek are shown in the FIRM within Zone X. The SFHAs that are located within the corridor are Zone AH and Zone A. Both of these areas are subject to inundation by the 1% annual chance flood, but Zone A does not have a base flood elevation determined and Zone AH has a base flood elevation determination of 1 to 3 feet. The locations of the SFHAs within the project area are:

Table 2-101: FEMA Flood Zones (SFHAs) within the Project Study Area

Post Mile/Channel Crossing	FEMA Flood Zone
R13.17 to R13.22	Zone AH
R13.54 to R13.60/Los Angeles River	Zone A
R17.45 to R17.49/San Gabriel River	Zone A

2.2.1.3 Environmental Consequences

The No-Build Alternative would not alter or modify the existing environment. No soil disturbance or increase in impervious areas would occur. Therefore, it would present no potential impacts in terms of hydrology and floodplain encroachment.

The proposed project intersects through 3 SFHAs. These FEMA designated floodplains are listed in Table X. Zone AH is located on the westbound side of I-105 at PM R13.2 (near Wright Road), and Zone A is contained within the channel crossings of the Los Angeles River and the San Gabriel River.

Zone AH is located below the existing freeway elevations. I-105 at PM R13.2 is elevated over 20 feet above the existing surface street level thus, the proposed project improvements on the freeway will not encroach into or alter the existing Zone AH flood zone because the freeway is not encompassed within the flood zone. Within Zone A, no bridge structure modifications are proposed at the channel crossings of Los Angeles River and San Gabriel River. The bridges will remain at current length and vertical height with no proposed changes to the bridges or impacts to the base floodplain. Therefore, the project is located within a 100-year base floodplain but no action from the proposed build alternatives would constitute a significant floodplain encroachment.

Bridge widening at Dominguez Channel and Compton Creek Channel is proposed for both Build Alternatives. The proposed bridge widening (5.5 feet to 14.7 feet) would maintain the current vertical clearance once the maintenance roadway is reprofiled, and the bridges would span over the channels with no pier or other permanent impacts to the channel. Both channels are located outside the base floodplain in Zone X therefore, there are no anticipated impacts to the existing base flood elevations. If plans in subsequent design phases determine a potential for channel encroachment and base flood elevation impacts, then detailed hydraulic modeling of the preferred alternative shall be conducted and a Location Hydraulic Study will be prepared.

2.2.1.4 Avoidance, Minimization, and/or Mitigation Measures

There are no anticipated impacts by the proposed project to the existing base flood elevations. Since no impacts are anticipated, no avoidance, minimization, and/or mitigation measures would be required.

2.2.2 Water Quality and Storm Water Runoff

2.2.2.1 Regulatory Setting

Federal Requirements: Clean Water Act

In 1972, Congress amended the Federal Water Pollution Control Act, making the addition of pollutants to the waters of the United States (U.S.) from any point source[1] unlawful unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. This act and its amendments are known today as the Clean Water Act (CWA). Congress has amended the act several times. In the 1987 amendments, Congress directed dischargers of storm water from municipal and industrial/construction point sources to comply with the NPDES permit scheme. The following are important CWA sections:

- Sections 303 and 304 require states to issue water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for a federal license or permit to conduct any activity that may result in a discharge to waters of the U.S. to obtain certification from the state that the discharge will comply with other provisions of the act. This is most frequently required in tandem with a Section 404 permit request (see below).
- Section 402 establishes the NPDES, a permitting system for the discharges (except for dredge or fill material) of any pollutant into waters of the U.S. Regional Water Quality Control Boards (RWQCBs) administer this permitting program in California. Section 402(p) requires permits for discharges of storm water from industrial/construction and municipal separate storm sewer systems (MS4s).
- Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the U.S. This permit program is administered by the U.S. Army Corps of Engineers (USACE).

The goal of the CWA is “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.”

The USACE issues two types of 404 permits: General and Individual. There are two types of General permits: Regional and Nationwide. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to allow a variety of minor project activities with no more than minimal effects.

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[1] A point source is any discrete conveyance such as a pipe or a man-made ditch.

Ordinarily, projects that do not meet the criteria for a Regional or Nationwide Permit may be permitted under one of the USACE's Individual permits. There are two types of Individual permits: Standard permits and Letters of Permission. For Individual permits, the USACE decision to approve is based on compliance with U.S. Environmental Protection Agency's (U.S. EPA) Section 404 (b)(1) Guidelines (40 Code of Federal Regulations [CFR] Part 230), and whether the permit approval is in the public interest. The Section 404(b)(1) Guidelines (Guidelines) were developed by the U.S. EPA in conjunction with the USACE, and allow the discharge of dredged or fill material into the aquatic system (waters of the U.S.) only if there is no practicable alternative which would have less adverse effects. The Guidelines state that the USACE may not issue a permit if there is a least environmentally damaging practicable alternative (LEDPA) to the proposed discharge that would have lesser effects on waters of the U.S. and not have any other significant adverse environmental consequences. According to the Guidelines, documentation is needed that a sequence of avoidance, minimization, and compensation measures has been followed, in that order. The Guidelines also restrict permitting activities that violate water quality or toxic effluent[2] standards, jeopardize the continued existence of listed species, violate marine sanctuary protections, or cause "significant degradation" to waters of the U.S. In addition, every permit from the USACE, even if not subject to the Section 404(b)(1) Guidelines, must meet general requirements. See 33 CFR 320.4. A discussion of the LEDPA determination, if any, for the document is included in the Wetlands and Other Waters section.

State Requirements: Porter-Cologne Water Quality Control Act

California's Porter-Cologne Act, enacted in 1969, provides the legal basis for water quality regulation within California. This act requires a "Report of Waste Discharge" for any discharge of waste (liquid, solid, or gaseous) to land or surface waters that may impair beneficial uses for surface and/or groundwater of the state. It predates the CWA and regulates discharges to waters of the state. Waters of the State include more than just waters of the U.S., like groundwater and surface waters not considered waters of the U.S. Additionally, it prohibits discharges of "waste" as defined, and this definition is broader than the CWA definition of "pollutant." Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements (WDRs) and may be required even when the discharge is already permitted or exempt under the CWA.

The State Water Resources Control Board (SWRCB) and RWQCBs are responsible for establishing the water quality standards (objectives and beneficial uses) required by the CWA and regulating discharges to ensure compliance with the water quality standards. Details about water quality standards in a project area are included in the applicable RWQCB Basin Plan. In California, RWQCBs designate beneficial uses for all water body segments in their jurisdictions and then set criteria necessary to protect those uses. As a result, the water quality standards developed for particular water segments are based on the designated use and vary depending on that use. In addition, the SWRCB identifies waters failing to meet standards for specific pollutants. These waters are then state-listed in accordance with CWA Section 303(d). If a state determines that waters are impaired for one or more constituents and the standards cannot be met through point source or non-point source controls (NPDES permits or WDRs), the CWA requires the establishment of Total Maximum Daily Loads (TMDLs). TMDLs specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed.

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[2] The U.S. EPA defines "effluent" as "wastewater, treated or untreated, that flows out of a treatment plant, sewer, or industrial outfall."

State Water Resources Control Board and Regional Water Quality Control Boards

The SWRCB administers water rights, sets water pollution control policy, and issues water board orders on matters of statewide application, and oversees water quality functions throughout the state by approving Basin Plans, TMDLs, and NPDES permits. RWCQBs are responsible for protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility.

- ### National Pollutant Discharge Elimination System (NPDES) Program

  Municipal Separate Storm Sewer Systems (MS4)

  Section 402(p) of the CWA requires the issuance of NPDES permits for five categories of storm water discharges, including Municipal Separate Storm Sewer Systems (MS4s). An MS4 is defined as “any conveyance or system of conveyances (roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, and storm drains) owned or operated by a state, city, town, county, or other public body having jurisdiction over storm water, that is designed or used for collecting or conveying storm water.” The SWRCB has identified Caltrans as an owner/operator of an MS4 under federal regulations. Caltrans’ MS4 permit covers all Department rights-of-way, properties, facilities, and activities in the state. The SWRCB or the RWQCB issues NPDES permits for five years, and permit requirements remain active until a new permit has been adopted.

  Caltrans’ MS4 Permit, Order No. 2012-0011-DWQ (adopted on September 19, 2012 and effective on July 1, 2013), as amended by Order No. 2014-0006-EXEC (effective January 17, 2014), Order No. 2014-0077-DWQ (effective May 20, 2014) and Order No. 2015-0036-EXEC (conformed and effective April 7, 2015) has three basic requirements:

  1. Caltrans must comply with the requirements of the Construction General Permit (see below);

  2. Caltrans must implement a year-round program in all parts of the State to effectively control storm water and non-storm water discharges; and

  3. Caltrans storm water discharges must meet water quality standards through implementation of permanent and temporary (construction) Best Management Practices (BMPs), to the maximum extent practicable, and other measures as the SWRCB determines to be necessary to meet the water quality standards.

  To comply with the permit, Caltrans developed the Statewide Storm Water Management Plan (SWMP) to address storm water pollution controls related to highway planning, design, construction, and maintenance activities throughout California. The SWMP assigns responsibilities within Caltrans for implementing storm water management procedures and practices as well as training, public education and participation, monitoring and research, program evaluation, and reporting activities. The SWMP describes the minimum procedures and practices Caltrans uses to reduce pollutants in storm water and non-storm water discharges. It outlines procedures and responsibilities for protecting water quality, including the selection and implementation of BMPs. The proposed project will be programmed to follow the guidelines and procedures outlined in the latest SWMP to address storm water runoff.

Construction General Permit

Construction General Permit, Order No. 2009-0009-DWQ (adopted on September 2, 2009 and effective on July 1, 2010), as amended by Order No. 2010-0014-DWQ (effective February 14, 2011) and Order No. 2012-0006-DWQ (effective on July 17, 2012). The permit regulates storm water discharges from construction sites that result in a Disturbed Soil Area (DSA) of one acre or greater, and/or are smaller sites that are part of a larger common plan of development. By law, all storm water discharges associated with construction activity where clearing, grading, and excavation result in soil disturbance of at least one acre must comply with the provisions of the General Construction Permit. Construction activity that results in soil disturbances of less than one acre is subject to this Construction General Permit if there is potential for significant water quality impairment resulting from the activity as determined by the RWQCB. Operators of regulated construction sites are required to develop Storm Water Pollution Prevention Plans (SWPPPs); to implement sediment, erosion, and pollution prevention control measures; and to obtain coverage under the Construction General Permit.

The Construction General Permit separates projects into Risk Levels 1, 2, or 3. Risk levels are determined during the planning and design phases, and are based on potential erosion and transport to receiving waters. Requirements apply according to the Risk Level determined. For example, a Risk Level 3 (highest risk) project would require compulsory storm water runoff pH and turbidity monitoring, and before construction and after construction aquatic biological assessments during specified seasonal windows. For all projects subject to the permit, applicants are required to develop and implement an effective SWPPP. In accordance with Caltrans' SWMP and Standard Specifications, a Water Pollution Control Program (WPCP) is necessary for projects with DSA less than one acre.

Section 401 Permitting

Under Section 401 of the CWA, any project requiring a federal license or permit that may result in a discharge to a water of the U.S. must obtain a 401 Certification, which certifies that the project will be in compliance with state water quality standards. The most common federal permits triggering 401 Certification are CWA Section 404 permits issued by the USACE. The 401 permit certifications are obtained from the appropriate RWQCB, dependent on the project location, and are required before the USACE issues a 404 permit.

In some cases, the RWQCB may have specific concerns with discharges associated with a project. As a result, the RWQCB may issue a set of requirements known as WDRs under the State Water Code (Porter-Cologne Act) that define activities, such as the inclusion of specific features, effluent limitations, monitoring, and plan submittals that are to be implemented for protecting or benefiting water quality. WDRs can be issued to address both permanent and temporary discharges of a project.

2.2.2.2 Affected Environment

A Storm Water Data Report (SWDR) was developed and completed for the project as part of the PSR-PDS on June 3, 2015 and a Water Quality Assessment Technical Memorandum was prepared for the project in October of 2019.

Receiving water bodies and watersheds within the proposed project area include Compton Creek, Los Angeles River Reach 1 and 2, Los Angeles River Estuary, Dominguez Channel (concrete lined portion above Vermont Avenue and unlined portion below Vermont Avenue), Los Angeles/Long Beach Inner and Outer Harbor, and San Pedro Bay Near/Off Shore Zones.

A portion of I-105 in the cities of Norwalk, Paramount, and Downey (PM R13.4/R17.4) is constructed approximately 30 feet below original ground surface and is periodically threatened by groundwater levels in the Central Basin. To protect the substructure of the I-105 from damage, Caltrans owns and operates a series of wells that extract groundwater from beneath the freeway. The extracted groundwater has traditionally contained elevated levels of volatile organic compounds (VOCs) that exceed drinking water standards, so Caltrans operates a treatment facility at the Garfield Pump Station (PM R14.31) to treat the water before releasing it to the Los Angeles River. In addition to the extraction wells, there are a number of groundwater observation and test wells along the project corridor between I-710 and I-605.

2.2.2.3 Environmental Consequences

Construction of the build alternatives have the potential to impact water quality temporarily during construction. Soil disturbance activities such as excavation and trenching, soil compaction and moving, cut and fill, pavement rehabilitation at the sub-grade level and grading might have a potential impact to surface waters. Disturbed soils are susceptible to high rates of erosion from wind and rain, resulting in sediment transport via storm water runoff from the project area. Chemical contaminants, such as oils, fuels, paints, solvents, nutrients, trace metals, and hydrocarbons, can attach to sediment and be transported to downstream drainages and ultimately into collecting waterways, creating short term impacts such as the chemical degradation of water quality.

Construction materials, waste handling, and the use of construction equipment could also result in storm water contamination and affect water quality. Spills or leaks from heavy equipment and machinery can result in oil and grease contamination. The removal of waste materials during construction could also result in tracking of dust and debris. Other sources of pollutants associated with construction activities include asphalt paving, asphalt striping and marking, concrete cement operations and the use of metals during construction. Pesticide use, including herbicides, fungicides, and rodenticides, associated with site preparation is another potential source of storm water contamination. Larger pollutants, such as trash, debris, and organic matter, are also byproducts associated with construction activities. As such, the discharge of storm water may cause or threaten to cause violations of water quality objectives. These pollutants would occur in both the storm water discharges and non-storm water discharges and could potentially cause chemical degradation and aquatic toxicity in the receiving waters.

Short-term impacts caused by each of the alternatives include potential increases in sediment loads because of removal of existing groundcover and disturbance of soil during grading. The temporary residual increase in sediment loads from construction areas is unlikely to alter the hydrologic response (i.e., erosion and deposition) downstream in the hydrologic sub-area. The project would implement project design features to reduce short term impacts to either a less than significant or no significant impact level. For example, Implementation of a SWPPP is expected to attenuate and minimize the amount of sediments released from the construction site and, subsequently, the sediment processes in these areas would be reduced because all disturbed soil areas would be protected with temporary construction site BMPs that are identified in the SWPPP. Therefore, with incorporation of temporary construction site BMPs, no adverse impacts are expected with implementation of the project. Project design features, including development of a SWPPP are discussed in the following section.

Excavations could affect groundwater quality during dewatering activities if groundwater is encountered. If an excavation needs to be dewatered, groundwater would be disposed of according to NPDES dewatering permit requirements. The amount of dewatering, however, is likely to be relatively small. Therefore, no substantial changes to regional groundwater levels are anticipated.

Construction activities could result in accidental releases of construction-related hazardous materials that might affect groundwater. Excavations could provide a direct path for construction-related contaminants to reach groundwater. Excavations could disturb known and undocumented soil or groundwater contaminants resulting in the migration of contaminated groundwater further into the groundwater table. All build alternatives would have the same potential for inadvertent contamination of groundwater. Per NPDES requirements, a dewatering plan would be prepared to guide the response to undocumented soil or groundwater contamination. Therefore, no substantial changes to groundwater quality are anticipated.

It is estimated that Build Alternative 2 would add 10 acres of new impervious surface (NIS) area and 31 acres under Alternative 3. This increase of NIS is the results of Alternative 2 affecting 15 gross solids removal devices and Alternative 3 affecting 22. When an existing treatment BMP is removed or modified, or if its impervious contributing drainage area cannot continue to be treated by the treatment BMP, the NIS shall be counted towards the post construction treatment area (PCTA). A new calculation on NIS, PCTA, and treatment BMP will be more defined in the next phase of the SWDR. Operation of the proposed project would result in an increase in storm water runoff and a reduction in groundwater percolation. Potential pollutants associated with the operation of transportation facilities include sediment from natural erosion; nutrients, such as phosphorus and nitrogen, associated with roadway landscaping; mineralizing organic phosphorus and nitrogen, associated with roadway landscaping; mineralizing organic matter in soils; nitrite discharges from automobile exhausts and atmospheric fallout; litter; and metals from the combustion of fossil fuels, the wearing of brake pads, and corrosion of galvanized structure. Overall, the potential impacts to the physical/chemical characteristics of the aquatic environment associated with operation of the proposed project include the following:

- Pollutants associated with the new roadway may create turbidity in receiving water bodies
- Pollutants, such as oil and grease and other pollutants associated with operation of the proposed project, may impair downstream receiving water bodies
- Nutrients associated with chemicals used in roadway landscaping may cause oxygen depletion and increased temperatures in the aquatic environment

Maintenance of the project has the potential to affect water quality. Potential pollutant sources associated with maintenance of the proposed project include highway maintenance activities and landscaping care. Project design features such as Maintenance, Treatment and Design Pollution Prevention BMPs would be incorporated into the proposed project. Per NPDES requirements, Caltrans has identified BMPs that would reduce long term impacts during the operational phase of the proposed project. With implementation of Maintenance, Treatment and Design Pollution Prevention BMPs during the operational phase, no adverse long-term impacts to the physical/chemical characteristics of the aquatic environment are anticipated. These BMPS, which will be incorporated into the project as project design features are discussed in the following section.

The proposed project is being constructed in a built environment. The urbanized areas where the improvements are proposed have a very low potential for groundwater recharge. Therefore, operation of the proposed project would not cause a substantial long-term change to groundwater quality or volume.

This project is anticipated to not impact water quality as there will not be any large cut or fills or exposure of soil since it would consist of minimal widening, and the retaining walls would be placed at various locations that would not require large cuts or fills.

2.2.2.4 Avoidance, Minimization, and/or Mitigation Measures

The following measures are recommended for both build alternatives. With inclusion of these measure into the project, it is anticipated that this project will have no impacts to water resources.

Wat1 - A SWPPP shall be prepared for the project and will address all construction-related activities, equipment, and materials that have the potential to affect water quality.

Wat2 - All Construction Site BMPs would be installed, inspected and maintained to control and minimize the impacts of construction-related pollutants.

Wat3 - Should an excavation need to be dewatered, groundwater would be disposed of according to NPDES dewatering permit requirements.

Wat4 - Per NPDES requirements, a dewatering plan would be prepared to guide the response to undocumented soil or groundwater contamination.

2.2.3 Geology/Soils/Seismic/Topography

2.2.3.1 Regulatory Setting

For geologic and topographic features, the key federal law is the Historic Sites Act of 1935, which establishes a national registry of natural landmarks and protects “outstanding examples of major geological features.” Topographic and geologic features are also protected under the California Environmental Quality Act (CEQA).

This section also discusses geology, soils, and seismic concerns as they relate to public safety and project design. Earthquakes are prime considerations in the design and retrofit of structures. Structures are designed using Caltrans’ Seismic Design Criteria (SDC). The SDC provides the minimum seismic requirements for highway bridges designed in California. A bridge’s category and classification will determine its seismic performance level and which methods are used for estimating the seismic demands and structural capabilities. For more information, please see the Department’s Division of Engineering Services, Office of Earthquake Engineering, Seismic Design Criteria.

2.2.3.2 Affected Environment

The information in this section is summarized from the Geologic and Seismic Hazards Report (Diaz Yourman & Associates) completed in May 2019.

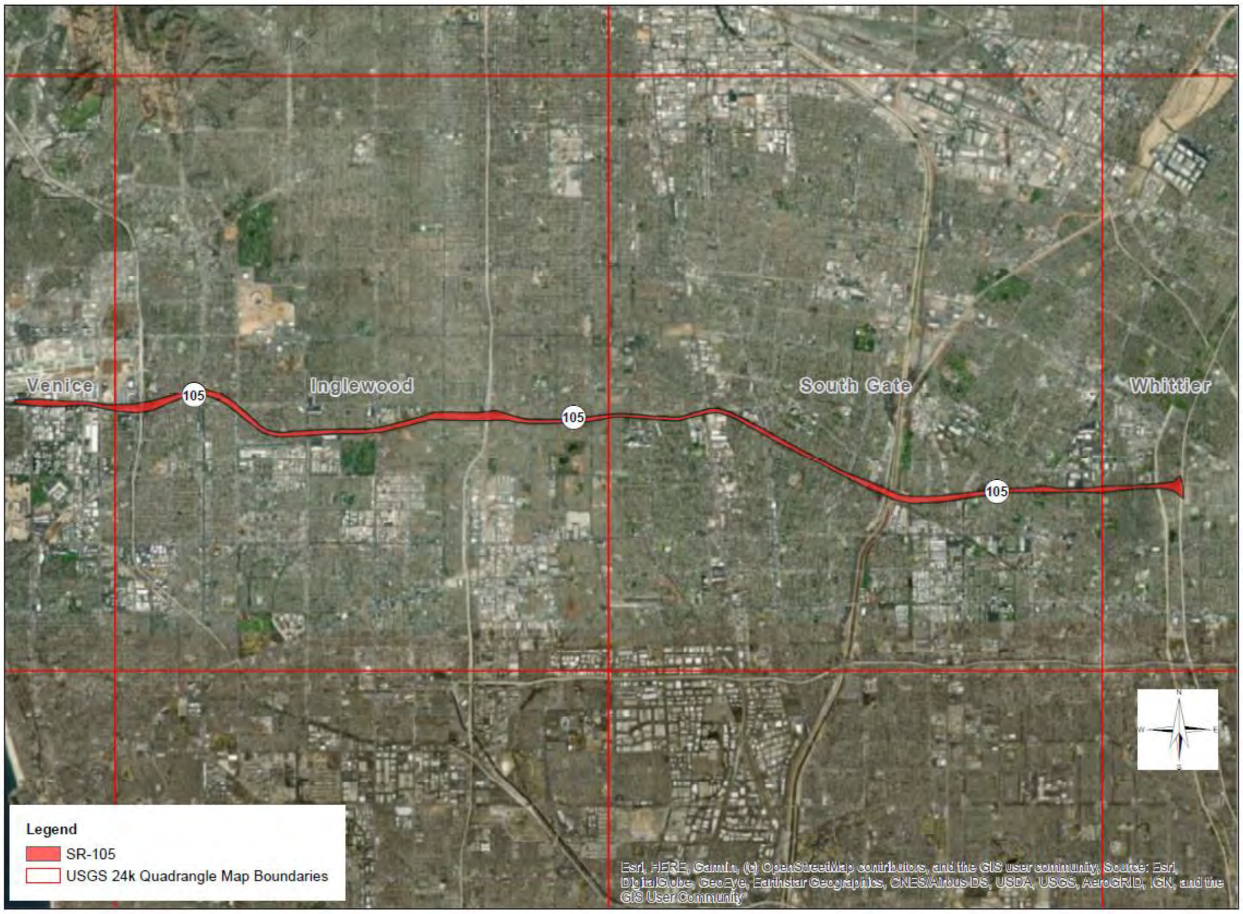
Regional Geologic Overview and Site Geology

The project alignment lies within the Los Angeles Basin, which is part of the Peninsular Ranges geomorphic province. The Peninsular Ranges are a north-south-trending series of ranges in Southern California and extending into Mexico (CGS, 2002). The Los Angeles Basin is a low-lying basin that is bound by the Santa Monica Mountains to the north, the Santa Ana Mountains to the south, and the continental borderland marks the western boundary. The basin is composed of marine and non-marine deposits overlying the Cretaceous age basement rock. The project alignment largely resides within the Central Block of the Los Angeles Basin with a small portion of the alignment crossing into the Southwestern Block at the terminus of the alignment. Basement rocks of the two blocks are different, with the Southwestern Block basement designated as the Catalina Schist. Basement rocks of the Central Block are more challenging to define because of the depth of the basin. Basement rock has therefore been defined based on outcrops within the Santa Ana Mountains. These outcrops include the Bedford Canyon Formation composed of sandstone and siltstone; rocks of the Santiago Peak volcanics, which are composed mostly of andesitic breccias, flows, agglomerates, and tuffs; and granitoid plutonic rocks of the Southern California batholith found in the Santa Monica Mountains, which are mostly granodiorite, quartz monzonite, and quartz diorite.

Topography and Drainage

The project alignment stretches through four quadrangles, see Figure 2-29, identified by California Geologic Survey Warehouse starting from west to east as: Venice, Inglewood, South Gate, and Whittier quadrangles. In general, the project alignment consists of roadway pavement supported on aerial structures, embankment fills, or in a cut section on natural subgrade or minor local fills. At the westernmost point of the project alignment, I-105 begins at an at-grade section with a corresponding elevation of approximately 112 feet and quickly rises above surrounding elevation on aerial support structures for about 2 miles to just slightly west of the Inglewood Avenue undercrossing (UC). From there, I-105 begins to decrease in elevation and enters into a large cut section between the Inglewood Avenue UC and the Hawthorne Boulevard overcrossing (OC). The large cut section extends for approximately one mile to the Prairie Avenue OC and the Yukon Avenue UC then transitions to an approximately 15 to 20 foot-tall embankment section. For approximately one mile, the embankment section continues decreasing in height until approximately between the Crenshaw Boulevard UC and the Van Ness Avenue OC where it transitions to a cut section with a height difference between I-105 and the surrounding existing ground surface ranging from 20 to 40 feet. The cut section continues for the next two miles to approximately between the Vermont Avenue OC and the Hoover Street UC where another transition from cut to a likely large embankment section of up to 50 feet in height occurs as I-105 then proceeds over I-110. For the next 7 miles, I-105 continues on an embankment section of approximately 10 to 20 feet in height as it intersects over I-710. Between I-710 and the Garfield Avenue OC, another transition from embankment to a likely cut section as deep as 15 to 20 feet occurs. For the last 4 miles, the project alignment continues as a likely cut section and ends at the at-grade section of Studebaker Road with an elevation of 98 feet.

Figure 2-22: Project Alignment



Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

The project alignment crosses two major drainages, the San Gabriel River on the east near I-605 and the Los Angeles River near I-710. The concrete-lined San Gabriel River travels approximately 60 miles south from the San Gabriel Mountains, passing through urban areas and underneath I-105 close to I-605 to reach the Pacific Ocean. The San Gabriel River receives drainage from 689 square miles of eastern Los Angeles County with water draining from the mountains as well as storm drains along its route to the ocean (Department of Water Resources, 2019).

The larger Los Angeles River crosses under the project Alignment just east of the I-710 freeway. The Los Angeles River travels southward and eastward from its headwaters in the Santa Monica Mountains, the Simi Hills, and the Santa Susana Mountains to the northern corner of Griffith Park where the channel turns southward and continues across the coastal plain until it terminates in San Pedro Bay. The Los Angeles River is concrete lined over about 75% of its length and receives drainage from an 834-square-mile watershed. This includes mountain runoff, contributions from minor tributaries, and urban runoff (Los Angeles Department of Public Works, 2019). Surface water drainage along the project Corridor is controlled by storm drains that drain along the shoulder of the freeway.

The project alignment lies within the Los Angeles Basin portion of the Peninsular Ranges geomorphic province. The Los Angeles Basin is a depositional basin that is bound to the north by the Santa Monica Mountains, to the south by the Santa Ana Mountains, and to the west by the continental border (Yerkes, 1965). The project alignment begins in the Venice quadrangle where it encounters Quaternary older alluvium (Qoa) and Quaternary older eolian deposits (Qoe). Qoa is described as pebbly, gravelly, and silty sands. Because Qoe are aerially deposited, they are considered to be well sorted and are described as medium to coarse sand (CGS, 1998f). Continuing east along the project alignment, into the Inglewood quadrangle, Quaternary older alluvium (Qoa) and Quaternary younger alluvial-fan deposits (Qyf) can be expected. Qoa is described as dense to very dense sand, silt, and clay. Qyf is characterized as dense to very dense sand and silt (CGS, 1998d). Lastly, the remaining Project alignment continues east into the South Gate and Whittier quadrangles, where it is mapped predominately as Qyf (CGS, 1998b and 1998a). These soils represent deposition from the San Gabriel and Rio Honda Rivers.

Based on review of available geotechnical data from the available Caltrans MR and LOTBs, the subsurface soils in the upper 5 to 10 feet consists of loose to slightly compacted sandy silts, clayey sands, and clayey silts with varying amounts of fill. LOTBs at various locations along I-105 indicated that from 10 feet to approximately 100 feet below ground surface (bgs), the soil consists of dense to very dense silty sands and medium stiff to hard silty clays.

Groundwater Conditions

The project alignment lies entirely over the Coastal Plain of Los Angeles - West Coast Groundwater Basin 4-011.03. (DWR, 2019). Groundwater data available from the CGS Warehouse (CGS, 1998) for the Venice, Inglewood, South Gate, and Whittier quadrangles were reviewed for the historically highest groundwater level presented in this section. Groundwater data available from Caltrans LOTBs within the project vicinity (Caltrans, 1987, 1988, 1989, 1990) and the GeoTracker website were reviewed to check the recent groundwater levels.

The depths to historically highest groundwater levels within the project limits have been reported as shallow as 5 feet and as deep as 53 feet bgs The historically high groundwater levels west of the Newport-Inglewood Fault Zone (NIFZ) are in the 30- to 50-foot- depth range, while east of the NIFZ levels are in the 5- to 8-foot-depth range. This is particularly true between the Los Angeles and San Gabriel Rivers (I-710 to the I-605). According to a March 3, 1998 Memorandum from Caltrans, the “1998 El Nino storms have caused a dramatic rise in the groundwater levels beneath I-105,” reaching to “within 12 inches of the pavement surface.” Under the Director’s Order, “installation of wells to pump down groundwater levels” between PM 13.4/17.4, just west of I-710 to the I-605 interchange was authorized.

The more recent groundwater level observed in the Caltrans LOTBs and the GeoTracker data ranged from 10 to 100 feet bgs across the project alignment. GeoTracker groundwater monitoring wells in the areas near the project alignment between I-710 and I-605 indicated that from 2002 to 2018 the groundwater level ranged from 10 to 68 feet bgs.

Seismic Hazards

Southern California is in a region with many known faults and high seismic activity. Faults are fractures in the Earth’s crust, and when they are subjected to displacement, earthquakes can occur. The displacement of the fault can occur in four different ways: strike slip, normal, reverse, and thrust. Depending on the fault displacement and amount of stress that has accumulated, the magnitude of the earthquakes can have a wide range.

Surface fault rupture refers to the extension of a fault from depth to the ground surface along which the ground breaks, resulting in displacement, such as vertical or horizontal offset. Surface fault ruptures are the result of stress relief during an earthquake event and often cause damage to structures within the rupture zone.

California’s Alquist-Priolo Earthquake Fault Zoning Act (AP Act; CGS 2018) was enacted to identify and reduce the hazard from surface fault rupture by regulating development projects near active faults. The purpose of the AP Act is to prohibit the location of most structures intended for human occupancy across the trace of an active fault. The AP Act requires that projects in defined “Earthquake Fault Zones” conduct geologic investigations that demonstrate that the sites are not threatened by surface displacement from future fault rupture. To be zoned under the AP Act, a fault must be considered Holocene-active as defined (CGS 2018). CGS defines a Holocene-active fault as one that has had surface displacement within Holocene time (approximately the last 11,700 years). CGS considers a fault to be well defined if its trace is clearly detectable as a physical feature at or just below the ground surface. The City of Los Angeles Safety Element (1996) identifies a Fault Rupture Study Area similar to an Alquist-Priolo Earthquake Fault Zone.

The Charnock Fault, the Newport-Inglewood Fault, and the Puente Hills Fault, intersect the project alignment. Several locations along the project area were evaluated for Peak Ground Acceleration (PGA). Earthquake-induced ground motion intensity.

Liquefaction

The project alignment is partially in a liquefaction zone, beginning slightly west of Central Avenue (UC) and continuing east to the end of the project alignment at Studebaker Road. Settlement at the ground surface due to liquefaction can range from 3 to 8 inches. There may also be potential of lateral spreading near the Los Angeles and San Gabriel Rivers.

Seismically-Induced Landslides and Tsunami

The project alignment does not cross any areas susceptible to landslides. Seiches are large waves generated in enclosed bodies of water induced by ground shaking. Tsunamis are large waves generated in the sea by significant disturbance of the ocean flow, causing the water column above it to displace rapidly. Tsunamis are predominately caused by shallow underwater earthquakes and landslides. According to the Tsunami Inundation Map for Emergency Planning Venice Quadrangle (CGS, 2009), the project alignment is outside any current tsunami inundation areas.

Methane Zones

The project alignment does not pass through any methane zones designated by the City of Los Angeles (2004). These zones were established by the City of Los Angeles Department of Building and Safety to mitigate risks associated with subsurface methane deposits. The boundaries of the zones were primarily defined by the proximity to oil and natural gas extraction wells. According to DOGGR digital wells database (DOGGR 2016), most of the wells are in or near the project alignment, whether they are for gas or water, are either abandoned or idle. There may be a few non-disclosed wells in addition to small regions throughout the project alignment that are in the Buffer Methane Zones.

2.2.3.3 Environmental Consequences

Alternative 1 (No-Build Alternative)

Alternative 1 would not result in the construction of any of the proposed improvements, and therefore would not result in any impacts related to geology, soils, seismicity, and topography.

Alternatives 2 & 3 (Build Alternatives)

Seismic Hazards

Built structures may be subject to strong ground motions from nearby earthquake sources during their design life. However, the project would be built to meet current seismic standards and will have no impacts on seismic hazards.

Liquefaction

As previously mentioned, the project alignment is partially in a liquefaction zone. Any existing bridge structures widened, and any new retaining walls, or sound walls planned within the liquefaction zone as mentioned above, will need to be designed based on an in-depth analysis of liquefaction and lateral spreading potential based on further investigations. With inclusion of the proper design and lateral spreading potential, the proposed project would have no impacts to liquefaction.

Flooding

No enclosed bodies of water are near the project alignment, so therefore seiches will not pose an impact as a result of the proposed project. The main concern for flooding comes from the San Gabriel and Los Angeles Rivers, running north and south along I-605 and I-710, however the proposed project would not result in a significant encroachment in the 100-year floodplain.

Methane Zones

Based on the proposed modifications to the existing I-105 alignment, existing and/or active wells and methane pockets should not pose a concern. Thus, there are no environmental concerns or impacts correlated to this project.

2.2.3.4 Avoidance, Minimization, and/or Mitigation Measures

This project is not anticipated to have impacts to geological resources. There is no avoidance, minimization, and/or mitigation measures required for any of the project alternatives.

2.2.4 Hazardous Waste/Materials

2.2.4.1 Regulatory Setting

Hazardous materials, including hazardous substances and wastes, are regulated by many state and federal laws. Statutes govern the generation, treatment, storage, and disposal of hazardous materials, substances, and waste, and also the investigation and mitigation of waste releases, air and water quality, human health, and land use.

The primary federal laws regulating hazardous wastes/materials are the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, and the Resource Conservation and Recovery Act (RCRA) of 1976 (RCRA). The purpose of CERCLA, often referred to as "Superfund," is to identify and cleanup abandoned contaminated sites so that public health and welfare are not compromised. The RCRA provides for "cradle to grave" regulation of hazardous waste generated by operating entities. Other federal laws include:

- Community Environmental Response Facilitation Act (CERFA) of 1992
- Clean Water Act
- Clean Air Act
- Safe Drinking Water Act
- Occupational Safety and Health Act (OSHA)
- Atomic Energy Act
- Toxic Substances Control Act (TSCA)
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

In addition to the acts listed above, Executive Order (EO) 12088, *Federal Compliance with Pollution Control Standards*, mandates that necessary actions be taken to prevent and control environmental pollution when federal activities or federal facilities are involved.

California regulates hazardous materials, waste, and substances under the authority of the CA Health and Safety Code and is also authorized by the federal government to implement RCRA in the state. California law also addresses specific handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning of hazardous waste. The Porter-Cologne Water Quality Control Act also restricts disposal of wastes and requires cleanup of wastes that are below hazardous waste concentrations but could impact ground and surface water quality. California regulations that address waste management and prevention and cleanup of contamination include Title 22 Division 4.5 Environmental Health Standards for the Management of Hazardous Waste, Title 23 Waters, and Title 27 Environmental Protection.

Worker and public health and safety are key issues when addressing hazardous materials that may affect human health and the environment. Proper management and disposal of hazardous material is vital if it is found, disturbed, or generated during project construction.

2.2.4.2 Affected Environment

A Preliminary Hazardous Waste Assessment was prepared for the project by Caltrans Office of Environmental Engineering in November of 2019. The purpose of the preliminary hazardous waste assessment is to identify known or potential sources of contamination or recognized environmental conditions that may adversely affect the project area, project corridor, or parcels proposed for TCEs and partial fee acquisitions. Records of sites with potential recognized environmental conditions were obtained from online current and historic aerial photos and regulatory databases, including the State Water Resources Control Board GeoTracker and the

Department of Toxic Substances Control EnviroStor. In addition, Caltrans reviewed environmental reports formerly prepared for Caltrans highway improvement projects or prepared by others for parcels and properties located within and/or near some of the sections of the project area.

A total of 30 facilities/sites within 1/8-mile radius of the project area were identified from the database searches as having a potential environmental release or concern. These facilities/sites were further evaluated to assess whether they may have adversely affected the project corridor based on their:

- Reported impacts to soil and/or groundwater
- Relative distance from the project area
- Location at or up gradient with respect to the local groundwater flow direction relative to the project area.

Of the 30 facilities/sites, ten were identified at and/or adjacent to the project area as facilities that appeared to have adversely impacted soil and/or groundwater beneath the project area. The type of potential impact and facility name with address are listed in Table 2-102.

Table 2-102: Facility Name and Types of Potential Environmental Impacts

Facility Name	Facility Address	Type of Potential Environmental Impacts beneath the project area
11105 La Cienega Properties	11105 La Cienega Blvd. Los Angeles	Groundwater (between approximately 33 and 55 feet bgs) is likely impacted with petroleum hydrocarbons and/or chlorinated VOCs.
Chevron Site # 9-7795	5201 West Imperial Highway, Westchester	
2700 East Imperial Highway	2700 East Imperial Highway, Lynwood	
2900 Fernwood Avenue	2900 Fernwood Avenue, Lynwood	
Garfield Express	11600 Long Beach Blvd, Lynwood	
TMB Oil	1340 East Imperial Highway, Willowbrook	Deeper soils, (below approximately 30 feet bgs) and groundwater (between 35 and 45 feet bgs), are likely impacted with petroleum hydrocarbon compounds.
Former Mobil Site	1836 East Imperial Highway, Los Angeles	

Caltrans Former Witco Chemical Company	2601 East Imperial Highway, Lynwood	Shallow and deeper soils and groundwater beneath the project area are likely impacted with several contaminants.
City of Lynwood Master Redevelopment Project	Area 6, Lynwood	
City of Lynwood Redevelopment – Phase II - Plaza Mexico Extension	Plaza Mexico, Lynwood	Shallow soils (0.5 and 2 feet bgs) are potentially impacted with arsenic and groundwater (at approximately 35 feet bgs) with tetrachloroethylene (PCE), TCE, cis-1, 2-dichloroethylene (DCE) and benzene.

2.2.4.3 Environmental Consequences

Aerially deposited lead (ADL) from the historical use of leaded gasoline, exists along roadways throughout California. There is a potential that ADL is present within the project area. An ADL site investigation shall be conducted within the project area to evaluate the potential presence of ADL in soils that will be subject to disturbances such as soil excavation and earthwork planned for project construction activities. The ADL data will allow for selection of appropriate/special handling and waste management/classification and disposal methods in compliance with Caltrans Standard Special Provisions and Standard Specifications, State and Federal laws and regulations, and the Soil Management for Aerially Deposited Lead-Contaminated Soils agreement between the Department of Toxic Substances Control and Caltrans entered into on July 1, 2016. The soil data shall also be used to prepare a health and safety plan/lead compliance plan for worker protection and public safety from exposure to contaminated soils during construction activities.

Since the No-Build alternative would have no earth moving activities, this alternative would not affect potential sources of hazardous materials in the project area.

Build Alternative 2 would require no TCEs or any parcel acquisitions. This alternative would have no impacts to known/potential sources of contamination or recognized environmental conditions.

Build Alternative 3 would require a total of 19 parcels for TCEs, 4 of which also need Partial Acquisitions. The results of the environmental records review identified the following six of the nineteen proposed TCE/Partial Fee acquisition areas as having existing or potential environmental concerns:

- TCE (6,174 SF) and Partial Fee acquisition (6,457 SF) areas (Assessor's Parcel Number (APN) unknown) are portions of Caltrans former Witco Chemical Company, 2601 East Imperial Highway, Lynwood;

  The former Witco Chemical Site contain several groundwater monitoring wells and was contaminated with petroleum hydrocarbons and Polychlorinated Biphenyls (PCBs) due to the past industrial activities historically conducted at the facility and at the up-gradient neighboring Magnetek property. PCB-impacted soils were excavated from the site by Caltrans in 2017. Due to the access constrains, a small portion of PCB-impacted soil was left in place along the southern portion of the site near the storm drain. Petroleum hydrocarbon contaminated soil and groundwater are present below 20 feet bgs. Several groundwater monitoring wells are located within the boundaries that are owned and used by Caltrans to conduct semi-annual groundwater monitoring activities for the former Witco Chemical site under the California Department of Toxic Substances Control (DTSC) oversight. The wells would need to be relocated under the oversight of the DTSC if they were to be located within the planned construction activities for the project.

- TCE (4,755 SF) and Partial Fee acquisition (1,242 SF) areas are portions of Parcel (APN 6169-001-900) called City of Lynwood Master Redevelopment Project – Area 6, 2701 East Imperial Highway, Lynwood;

  The City of Lynwood Master Redevelopment Project was historically used as a rubber processing plant in the 1950s to 1970s. Arsenic impacts above background levels were reported in shallow soils where the former underground storage tanks (UST) were located. Residual petroleum hydrocarbons were reported at concentrations generally below their screening levels in shallow soils throughout the site. Additional investigation to delineate petroleum hydrocarbons in soil was recommended during a 2011 site investigation by Gannett Fleming.

- TCE (10,728 SF) and Partial Fee acquisition (3,899 SF) areas are portions of Parcel (APN 6169-002-005) located at 2900 Fernwood Avenue, Lynwood (“2900 Fernwood site”).

  The 2900 Fernwood site is located just south of an industrial site called City of Lynwood Redevelopment-Phase II - Plaza Mexico Extension that has significant groundwater contamination with a dissolved plume of chlorinated VOCs (PCE, TCE, cis-1, 2-DCE) and Petroleum Hydrocarbons as Diesel (TPH-d). The results of previous site investigations by the City of Lynwood indicate that the VOCs groundwater plume could have migrated onto the 2900 Fernwood site. To address the identified recognized areas of environmental concern within project area/ project corridor and within proposed TCE and Partial fee acquisition areas, the following activities are recommended to be conducted during the PS&E phase of the project and prior to any parcel acquisitions. Existing Caltrans ROW located next to the City of Lynwood Redevelopment – Phase II - Plaza Mexico Extension Site should be evaluated for arsenic concentrations in soil due to the former presence of Southern Pacific railroad tracks. TCE and Partial Fee acquisition areas located within the Caltrans former Witco Chemical Company require the relocation (under supervision of DTSC) of the existing groundwater monitoring wells if construction excavation is to occur at their locations. Conduct sampling activities to evaluate arsenic in soil (former USTs area) and petroleum hydrocarbons and VOCs in soil and groundwater throughout TCE and Partial Fee acquisition areas located within Parcel 6169-001-900 (the City of Lynwood Master Redevelopment Project – Area 6 at 2701 East Imperial Highway). TCE and Partial Fee acquisition areas located at Parcel 6169-002-005 (2900 Fernwood Avenue) should also be evaluated for TPH and VOCs concentrations in soil and groundwater.

Adherence to federal and state regulations during project construction and maintenance reduces the risk of exposure to hazardous materials, as well as accidental hazardous materials releases. Compliance with existing regulations is mandatory; therefore, construction of Alternative 3 is not expected to create a hazard to construction workers, the public, or the environment through the routine transport, use, disposal, or accidental release of hazardous materials. As a result, the project would have no adverse effects related to the routine transport, use, disposal, or accidental release of hazardous materials during construction and maintenance activities.

2.2.4.4 Avoidance, Minimization, and/or Mitigation Measures

The following measures are recommended for both build alternatives. With inclusion of these measures into the project, it is anticipated that this project will have no impacts to hazardous waste and materials.

Haz1 - An Aerially Deposited Lead (ADL) site investigation during final design shall be conducted within the project area to evaluate potential presence of ADL in soils that will be disturbed during soil excavation and earthwork planned for construction activities.

Haz2 - A Health and Safety Plan/Lead compliance plan shall be prepared for worker protection and public safety from exposure to contaminated soils during construction activities.

Haz3 - An Asbestos-Containing Materials (ACM) and Lead-Based Paint (LBP) surveys during final design shall be done for work related to utility relocations, bridge alterations/demolitions, oil field appurtenances, or structures suspected to be coated with LBP or construction with ACM.

Haz4 - A Work Plan for thermoplastic paint removal, containment, profile, transportation, and disposal per Caltrans standard special provisions and standard specifications shall be prepared by the General Contractor.

Haz5 - Treated wood waste must be handled, stored, transportation, and disposed of per California regulations.

Haz6 - Conduct soil and/or groundwater sampling within project area/ project corridor and within proposed TCE and Partial fee acquisition areas, to address the identified recognized areas of environmental concern. All sampling activities are to be completed during the PS&E phase of the project and prior to any parcel acquisitions.

Haz7 - Should construction occur within the footprint of the existing monitoring wells at the Former Witco Chemical Site, coordination with the DTSC shall commence and the wells will be relocated.

2.2.5 Air Quality

2.2.5.1 Regulatory Setting

The Federal Clean Air Act (FCAA), as amended, is the primary federal law that governs air quality while the California Clean Air Act (CCAA) is its companion state law. These laws, and related regulations by the United States Environmental Protection Agency (U.S. EPA) and the California Air Resources Board (ARB), set standards for the concentration of pollutants in the air. At the federal level, these standards are called National Ambient Air Quality Standards

(NAAQS). NAAQS and state ambient air quality standards have been established for six transportation-related criteria pollutants that have been linked to potential health concerns: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM)—which is broken down for regulatory purposes into particles of 10 micrometers or smaller (PM_{10}) and particles of 2.5 micrometers and smaller ($PM_{2.5}$)—and sulfur dioxide (SO_2). In addition, national and state standards exist for lead (Pb), and state standards exist for visibility reducing particles, sulfates, hydrogen sulfide (H_2S), and vinyl chloride. The NAAQS and state standards are set at levels that protect public health with a margin of safety, and are subject to periodic review and revision. Both state and federal regulatory schemes also cover toxic air contaminants (air toxics); some criteria pollutants are also air toxics or may include certain air toxics in their general definition.

Federal air quality standards and regulations provide the basic scheme for project-level air quality analysis under the National Environmental Policy Act (NEPA). In addition to this environmental analysis, a parallel "Conformity" requirement under the FCAA also applies.

Conformity

The conformity requirement is based on FCAA Section 176(c), which prohibits the U.S. Department of Transportation (USDOT) and other federal agencies from funding, authorizing, or approving plans, programs, or projects that do not conform to State Implementation Plan (SIP) for attaining the NAAQS. "Transportation Conformity" applies to highway and transit projects and takes place on two levels: the regional (or planning and programming) level and the project level. The proposed project must conform at both levels to be approved.

Conformity requirements apply only in nonattainment and "maintenance" (former nonattainment) areas for the NAAQS, and only for the specific NAAQS that are or were violated. U.S. EPA regulations at 40 Code of Federal Regulations (CFR) 93 govern the conformity process. Conformity requirements do not apply in unclassifiable/attainment areas for NAAQS and do not apply at all for state standards regardless of the status of the area.

Regional conformity is concerned with how well the regional transportation system supports plans for attaining the NAAQS for carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM_{10} and $PM_{2.5}$), and in some areas (although not in California), sulfur dioxide (SO_2). California has nonattainment or maintenance areas for all of these transportation-related "criteria pollutants" except SO_2, and also has a nonattainment area for lead (Pb); however, lead is not currently required by the FCAA to be covered in transportation conformity analysis. Regional conformity is based on emission analysis of Regional Transportation Plans (RTPs) and Federal Transportation Improvement Programs (FTIPs) that include all transportation projects planned for a region over a period of at least 20 years (for the RTP) and 4 years (for the FTIP). RTP and FTIP conformity uses travel demand and emission models to determine whether or not the implementation of those projects would conform to emission budgets or other tests at various analysis years showing that requirements of the FCAA and the SIP are met. If the conformity analysis is successful, the Metropolitan Planning Organization (MPO), Federal Highway Administration (FHWA), and Federal Transit Administration (FTA) make the determinations that the RTP and FTIP are in conformity with the SIP for achieving the goals of the FCAA. Otherwise, the projects in the RTP and/or FTIP must be modified until conformity is attained. If the design concept and scope and the "open-to-traffic" schedule of a proposed transportation project are the same as described in the RTP and FTIP, then the proposed project meets regional conformity requirements for purposes of project-level analysis.

Project-level conformity is achieved by demonstrating that the project comes from a conforming RTP and TIP; the project has a design concept and scope that has not changed significantly from those in the RTP and TIP; project analyses have used the latest planning assumptions and EPA-approved emissions models; and in PM areas, the project complies with any control measures in the SIP. Furthermore, additional analyses (known as hot-spot analyses) may be required for projects located in CO and PM nonattainment or maintenance areas to examine localized air quality impacts.

2.2.5.2 Affected Environment

The following discussion is based on the information provided in an Air Quality Report prepared by the Caltrans Air Quality Branch on November 2019.

Climate, Meteorology, and Topography

The topography of a region can substantially impact air flow and resulting pollutant concentrations. California is divided into 15 air basins with similar topography and meteorology to better manage air quality throughout the state. Each air basin has a local air district that is responsible for identifying and implementing air quality strategies to comply with ambient air quality standards.

The I-105 Express Lanes project site starts in the west in the City of El Segundo and terminates in the east in the City of Norwalk in Los Angeles County, an area within the South Coast Air Basin (SCAB) which includes Ventura County, Orange County, Riverside County, and portions of San Bernardino County. Air quality regulation in the Los Angeles portion of the SCAB is administered by the Southern California Air Quality Management District (SCAQMD).

Meteorology (weather) and terrain can influence air quality. Certain weather parameters are highly correlated to air quality, including temperature, the amount of sunlight, and the type of winds at the surface and above the surface. Winds can transport ozone and ozone precursors from one region to another, contributing to air quality problems downwind of source regions. Furthermore, mountains can act as a barrier that prevents ozone from dispersing.

SCAB's severe air pollution problem is a consequence of the combination of emissions from the nation's second largest urban area, mountainous terrain surrounding the basin that traps pollutants as they are pushed inland with the sea breeze, and meteorological conditions which are adverse to the dispersion of those emissions. The average wind speed for Los Angeles is the lowest of the nation's ten largest urban areas. In addition, the summertime daily maximum mixing heights (an index of how well pollutants can be dispersed vertically in the atmosphere) in Southern California are the lowest, on average, in the U.S., due to strong temperature inversions in the lower atmosphere that effectively trap pollutants near the surface. The Southern California area is also an area with abundant sunshine, which drives the photochemical reactions to form pollutants such as ozone and a significant portion of fine Particulate Matter ($PM_{2.5}$).

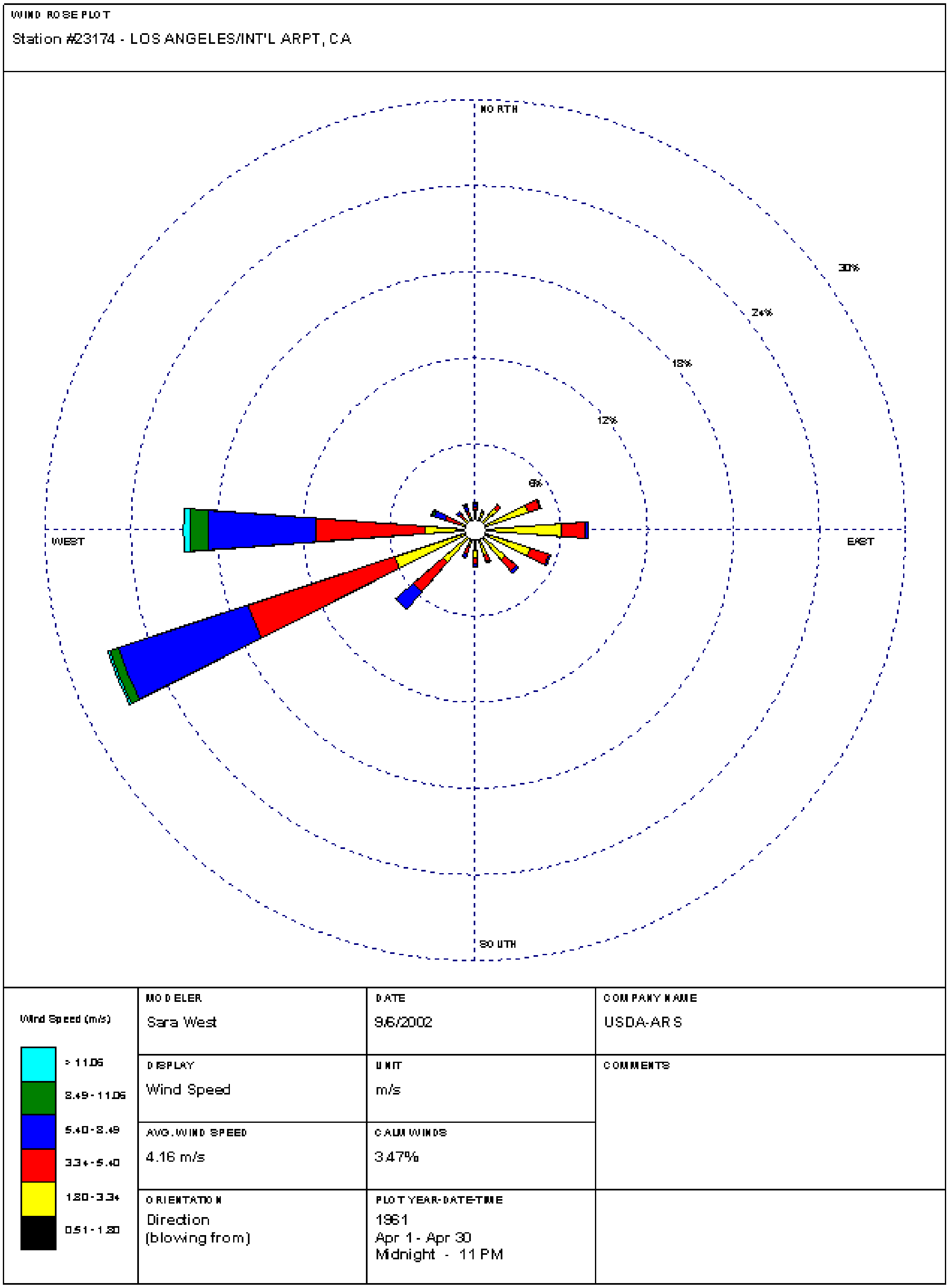
Within SCAB, high concentrations of ozone are normally recorded during the late spring and summer months, when more intense sunlight drives enhanced photochemical reactions. In contrast, higher concentrations of carbon monoxide are generally recorded in late fall and winter, when nighttime radiation inversions trap the emissions at the surface. High Inhalable PM_{10} and $PM_{2.5}$ concentrations can occur throughout the year but occur most frequently in fall and winter in SCAB. Although there are changes in emissions by season, the observed variations in pollutant concentrations are largely a result of seasonal differences in weather conditions.

LAX climatological station, maintained by Western Regional Climate Center, is located near the I-105 and I-405 interchange and is representative of meteorological conditions on the western portion of the project. The Long Beach Daugherty Field climatological station, maintained by Western Regional Climate Center, is located on the southeast side of the project and is representative of meteorological conditions on the eastern portion of the project.

Figure 2-30 shows a wind rose illustrating the predominant wind patterns along the project corridor around the LAX. The average wind speed recorded was 9.3 mph (4.16 m/s). The climate of the project area is generally Mediterranean in character with cool winters and warm, dry summers. The average minimum temperature recorded at LAX is 47.5°Fahrenheit in January and average maximum temperature of 75.1°Fahrenheit in July. The average minimum temperature recorded at the Long Beach Daugherty Field is 45.6°Fahrenheit in January and average maximum temperature of 82.2 °Fahrenheit in July.

Temperature inversions are common, affecting localized pollutant concentrations in the winter and enhancing ozone formation in the summer. Such inversions restrict the vertical dispersion of air pollutants released into the marine layer and, together with strong sunlight, can produce worst-case conditions for the formation of photochemical smog. The basin-wide occurrence of inversions at 3,500 feet above sea level or less averages 191 days per year (2016 RTP/SCS). Annual average rainfall recorded at the LAX and at the Long Beach Daugherty Field station is 12.0 inches, mainly falling during the winter months.

Figure 2-23: Wind Rose Illustration



WIND ROSE PLOT

Station #23174 - LOS ANGELES/INT'L ARPT, CA

MODELER

Sara West

DATE

9/6/2002

COMPANY NAME

USDA-ARS

DISPLAY

Wind Speed

UNIT

m/s

COMMENTS

AVG. WIND SPEED

4.16 m/s

CALM WINDS

3.47%

ORIENTATION

Direction
(blowing from)

PLOT YEAR-DATE-TIME

1961
Apr 1 - Apr 30
Midnight - 11 PM

WRPLOT View 3.5 by Lakes Environmental Software - www.lakes-environmental.com

Existing Air Quality

Monitoring data were obtained from Compton monitoring station (ARB#8409) and from the LAX-Hastings monitoring station (ARB#7975). The Compton monitoring station is located on 700 North Bullis Road in Compton and it is approximately 1.4 miles south of I-105 and 1.0 mile west of I-710. The LAX-Hastings monitoring station is located on 7201 W. Westchester Parkway in Los Angeles and it is approximately 1.6 miles north of I-105 and 3.3 miles west of I-405. A map showing the location of air monitoring sites relative to the proposed project is provided in Figure 2-31 below.

Figure 2-24: Air Monitoring Sites

Criteria Pollutants and Attainment Status

Table 2-103 lists the state and federal attainment status for all regulated pollutants. Table 2-104 lists air quality trends in data collected at Compton monitoring station for the past 5 years and Table 2-105 lists air quality trends in data collected at the LAX-Hasting monitoring station for the past 5 years. The ambient concentration data from Compton and LAX-Hasting monitoring stations are deemed representative for comparison to the proposed project based on similar traffic volumes, truck percentage, land uses, and proximity to the freeway.

Table 2-103: State and Federal Attainment Status

Pollutant	State Attainment Status	Federal Attainment Status
Ozone (O_3)	Nonattainment	Nonattainment-Extreme
Respirable Particulate Matter (PM_{10})	Nonattainment	Attainment-Maintenance
Fine Particulate Matter ($PM_{2.5}$)	Nonattainment	Nonattainment
Carbon Monoxide (CO)	Attainment	Attainment-Maintenance
Nitrogen Dioxide (NO_2)-1Hour	Attainment	Attainment
Sulfur Dioxide (SO_2)	Attainment	Attainment
Lead (Pb)	Attainment	Nonattainment
Visibility-Reducing Particles	Unclassified	N/A
Sulfates	Attainment	N/A
Hydrogen Sulfide	Unclassified	N/A
Vinyl Chloride	Attainment	N/A

Table 2-104: Ambient Concentrations for 5 Years at Compton Monitoring Station

Pollutant	Standard	2014	2015	2016	2017	2018
Ozone						
Max 1-hr concentration		0.094	0.091	0.098	0.092	0.075
No. days exceeded: State	0.09 ppm	0	0	0	0	0
Max 8-hr concentration		0.081	0.072	0.071	0.076	0.063
No. days exceeded: State Federal	0.070 ppm 0.070 ppm	4	1	1	5	0
Carbon Monoxide						
Max 1-hr concentration		5.8	4.4	4.4	6.1	4.7
No. days exceeded: State Federal	20 ppm 35 ppm	0	0	0	0	0
Max 8-hr concentration		3.8	3.3	3.0	4.6	3.5
No. days exceeded: State Federal	9.0 ppm 9 ppm	0	0	0	0	0
PM_{10}						
Max 24-hr concentration		PM_{10} data not available at this monitoring station				
No. days exceeded: State Federal	50 µg/m^3 150 µg/m^3					
Max annual concentration						
No. days exceeded: State	20 µg/m^3					
$PM_{2.5}$						
Max 24-hr concentration		35.8	41.3	36.3	66.7	48.4
No. days exceeded: Federal	35 µg/m^3	1	3	1	5	*
Max annual concentration		*	11.7	11.0	13.2	12.9
No. days exceeded: State Federal	12 µg/m^3 12.0 µg/m^3	*	*	*	*	*
Nitrogen Dioxide						

Pollutant	Standard	2014	2015	2016	2017	2018
Max 1-hr concentration		68	74	64	99	68
No. days exceeded: State Federal	0.18 ppm 100 ppb	0	0	0	0	0
Max annual concentration		*	16	15	16	15
No. days exceeded: State Federal	0.030 ppm 53 ppb	*	*	*	*	*
Notes: 1. "*" Means data not available 2. Blue exceeds California Standard						

Table 2-105: Ambient Concentrations for 5 Years at LAX-Hasting Monitoring Station

Pollutant	Standard	2014	2015	2016	2017	2018
Ozone						
Max 1-hr concentration		0.114	0.096	0.087	0.086	0.074
No. days exceeded: State	0.09 ppm	1	1	0	0	0
Max 8-hr concentration		0.08	0.077	0.08	0.07	0.065
No. days exceeded: State Federal	0.070 ppm 0.070 ppm	6	3	2	0	0
Carbon Monoxide						
Max 1-hr concentration		2.7	1.7	1.6	2.1	1.8
No. days exceeded: State Federal	20 ppm 35 ppm	0	0	0	0	0
Max 8-hr concentration		1.9	1.4	1.3	1.6	1.5
No. days exceeded: State Federal	9.0 ppm 9 ppm	0	0	0	0	0
PM_{10}						
Max 24-hr concentration		46	42	43	46	45
No. days exceeded: State Federal	50 μg/m^3 150 μg/m^3	0	0	0	0	0
Max annual concentration		21.9	*	21.9	20.2	*
No. days exceeded: State	20 μg/m^3	*	*	*	*	*
Max 24-hr concentration		No data available at this monitoring station				
No. days exceeded: Federal	35 μg/m^3					
Max annual concentration						
No. days exceeded: State Federal	12 μg/m^3 12.0 μg/m^3					
Nitrogen Dioxide						
Max 1-hr concentration		87	87	82	72	60
No. days exceeded: State Federal	0.18 ppm 100 ppb	0	0	0	0	0
Max annual concentration		12	11	10	*	*

Pollutant	Standard	2014	2015	2016	2017	2018
No. days exceeded: State Federal	0.030 ppm 53 ppb	*	*	*	*	*
Notes: 1. "*" means data not available 2. Blue exceeds California Standard						

EPA's Transportation Conformity Rule requires that regional emissions be consistent with the motor vehicle emissions budgets in the applicable SIPs. For the 2016 RTP/SCS conformity determination, the applicable emissions budgets are established in the SIPs, as shown in Table 2-106. The regional emissions analyses meet all applicable emissions budget test for all milestone, attainment, and planning horizon years in the SCAB (2016 RTP/SCS, Transportation Conformity Analysis).

Table 2-106: Status of SIPs Relevant to the Project Area

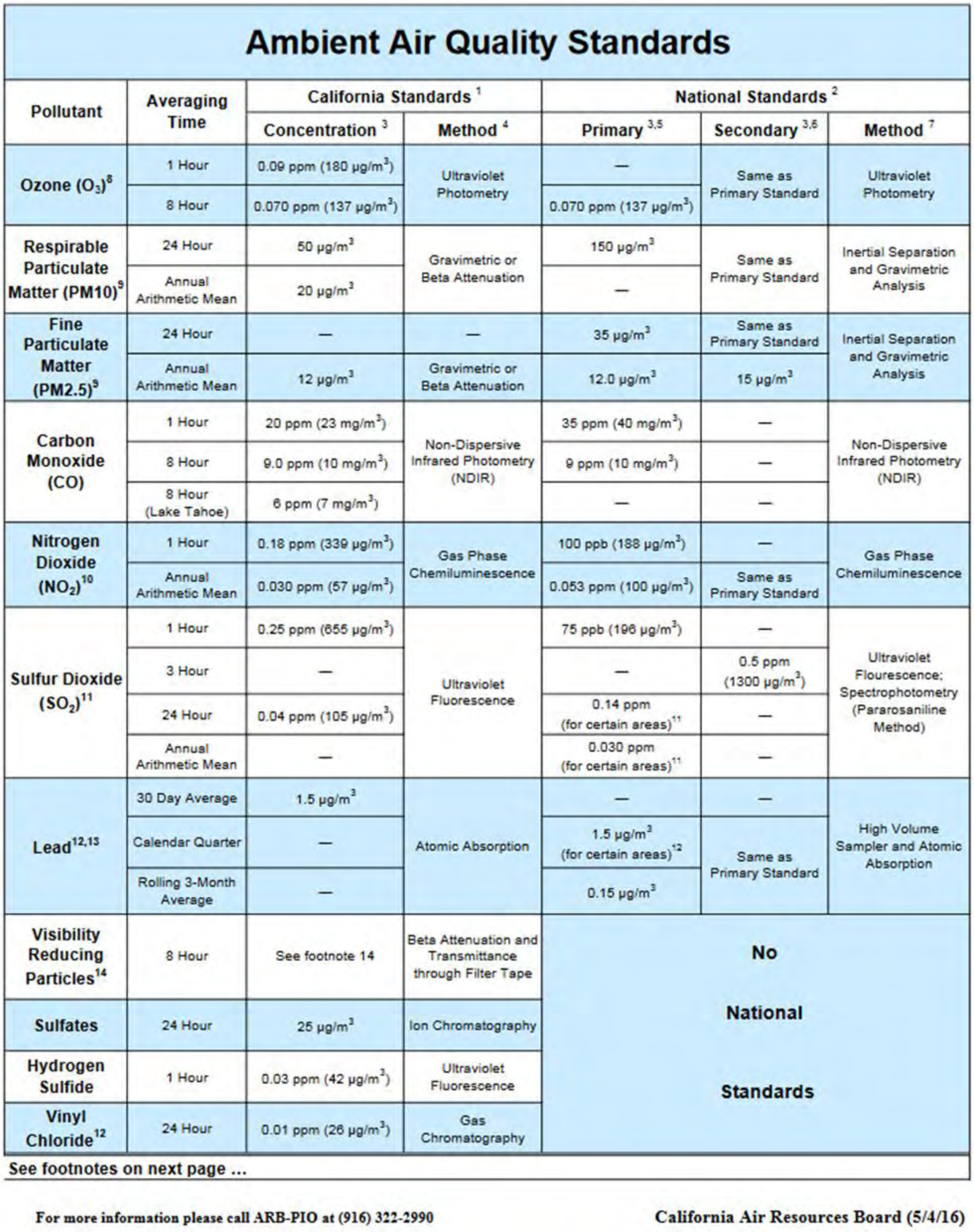
Name/Description	Status
2007 Ozone	Budgets effective April 30, 2012
2007 $PM_{2.5}$	Budgets effective January 9, 2012
2007 CO (Maintenance Plan)	Budgets effective June 11, 2017
2007 NO_2 (Maintenance Plan)	Budgets effective January 4, 2010
2010 PM_{10} (Maintenance Plan)	Budgets effective July 26, 2013

Criteria Pollutants

Air pollutants are governed by multiple federal and state standards to regulate and mitigate health impacts. At the federal level, there are six criteria pollutants for which NAAQS have been established: CO, Pb, NO_2, O_3, $PM_{2.5}$ and PM_{10}, and SO_2. The U.S. EPA has also identified nine priority mobile source air toxics: 1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter (DPM), ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter (POM) (https://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/msat/). In California, sulfates, visibility reducing particles, hydrogen sulfide, and vinyl chloride are also regulated.

The Clean Air Act requires the U.S. EPA to set NAAQS for six criteria air contaminants: O_3, PM, CO, NO_2, Pb, and SO_2. It also permits states to adopt additional or more protective air quality standards if needed. California has set standards for certain pollutants. Table 2-107 documents the current air quality standards while Table 2-108 summarizes the sources and health effects of the six criteria pollutants and pollutants regulated in the State of California.

Table 2-107: Table of State and Federal Ambient Air Quality Standards



Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [1]		National Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O_3)[8]	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m^3)		0.070 ppm (137 µg/m^3)		
Respirable Particulate Matter (PM10)[9]	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		—		
Fine Particulate Matter (PM2.5)[9]	24 Hour	—	—	35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	12.0 µg/m^3	15 µg/m^3	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m^3)	—	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)	—	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	
Nitrogen Dioxide (NO_2)[10]	1 Hour	0.18 ppm (339 µg/m^3)	Gas Phase Chemiluminescence	100 ppb (188 µg/m^3)	—	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)		0.053 ppm (100 µg/m^3)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[11]	1 Hour	0.25 ppm (655 µg/m^3)	Ultraviolet Fluorescence	75 ppb (196 µg/m^3)	—	Ultraviolet Flourescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 µg/m^3)	
	24 Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (for certain areas)[11]	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas)[11]	—	
Lead[12,13]	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m^3 (for certain areas)[12]	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m^3		
Visibility Reducing Particles[14]	8 Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	No National Standards		
Sulfates	24 Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

See footnotes on next page ...

For more information please call ARB-PIO at (916) 322-2990 **California Air Resources Board (5/4/16)**

Table 2-108: State and Federal Criteria Air Pollutant Effects and Sources

Pollutant	Principal Health and Atmospheric Effects	Typical Sources
Ozone (O_3)	High concentrations irritate lungs. Long-term exposure may cause lung tissue damage and cancer. Long-term exposure damages plant materials and reduces crop productivity. Precursor organic compounds include many known toxic air contaminants. Biogenic VOC may also contribute.	Low-altitude ozone is almost entirely formed from reactive organic gases/volatile organic compounds (ROG or VOC) and nitrogen oxides (NOx) in the presence of sunlight and heat. Common precursor emitters include motor vehicles and other internal combustion engines, solvent evaporation, boilers, furnaces, and industrial processes.
Respirable Particulate Matter (PM_{10})	Irritates eyes and respiratory tract. Decreases lung capacity. Associated with increased cancer and mortality. Contributes to haze and reduced visibility. Includes some toxic air contaminants. Many toxic and other aerosol and solid compounds are part of PM_{10}.	Dust- and fume-producing industrial and agricultural operations; combustion smoke & vehicle exhaust; atmospheric chemical reactions; construction and other dust-producing activities; unpaved road dust and re-entrained paved road dust; natural sources.
Fine Particulate Matter ($PM_{2.5}$)	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and produces surface soiling. Most diesel exhaust particulate matter – a toxic air contaminant – is in the $PM_{2.5}$ size range. Many toxic and other aerosol and solid compounds are part of $PM_{2.5}$.	Combustion including motor vehicles, other mobile sources, and industrial activities; residential and agricultural burning; also formed through atmospheric chemical and photochemical reactions involving other pollutants including NOx, sulfur oxides (SOx), ammonia, and Reactive Organic Gases (ROG).
Carbon Monoxide (CO)	CO interferes with the transfer of oxygen to the blood and deprives sensitive tissues of oxygen. CO also is a minor precursor for photochemical ozone. Colorless, odorless.	Combustion sources, especially gasoline-powered engines and motor vehicles. CO is the traditional signature pollutant for on-road mobile sources at the local and neighborhood scale.
Nitrogen Dioxide (NO_2)	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown. Contributes to acid rain & nitrate contamination of stormwater. Part of the “NOx” group of ozone precursors.	Motor vehicles and other mobile or portable engines, especially diesel; refineries; industrial operations.
Sulfur Dioxide (SO_2)	Irritates respiratory tract; injures lung tissue. Can yellow plant leaves. Destructive to marble, iron, steel. Contributes to acid rain. Limits visibility.	Fuel combustion (especially coal and high-sulfur oil), chemical plants, sulfur recovery plants, metal processing; some natural sources like active volcanoes. Limited contribution possible from heavy-duty diesel vehicles if ultra-low sulfur fuel not used.
Lead (Pb)	Disturbs gastrointestinal system. Causes anemia, kidney disease, and neuromuscular and neurological	Lead-based industrial processes like battery production and smelters. Lead paint, leaded gasoline. Aerially deposited lead from older

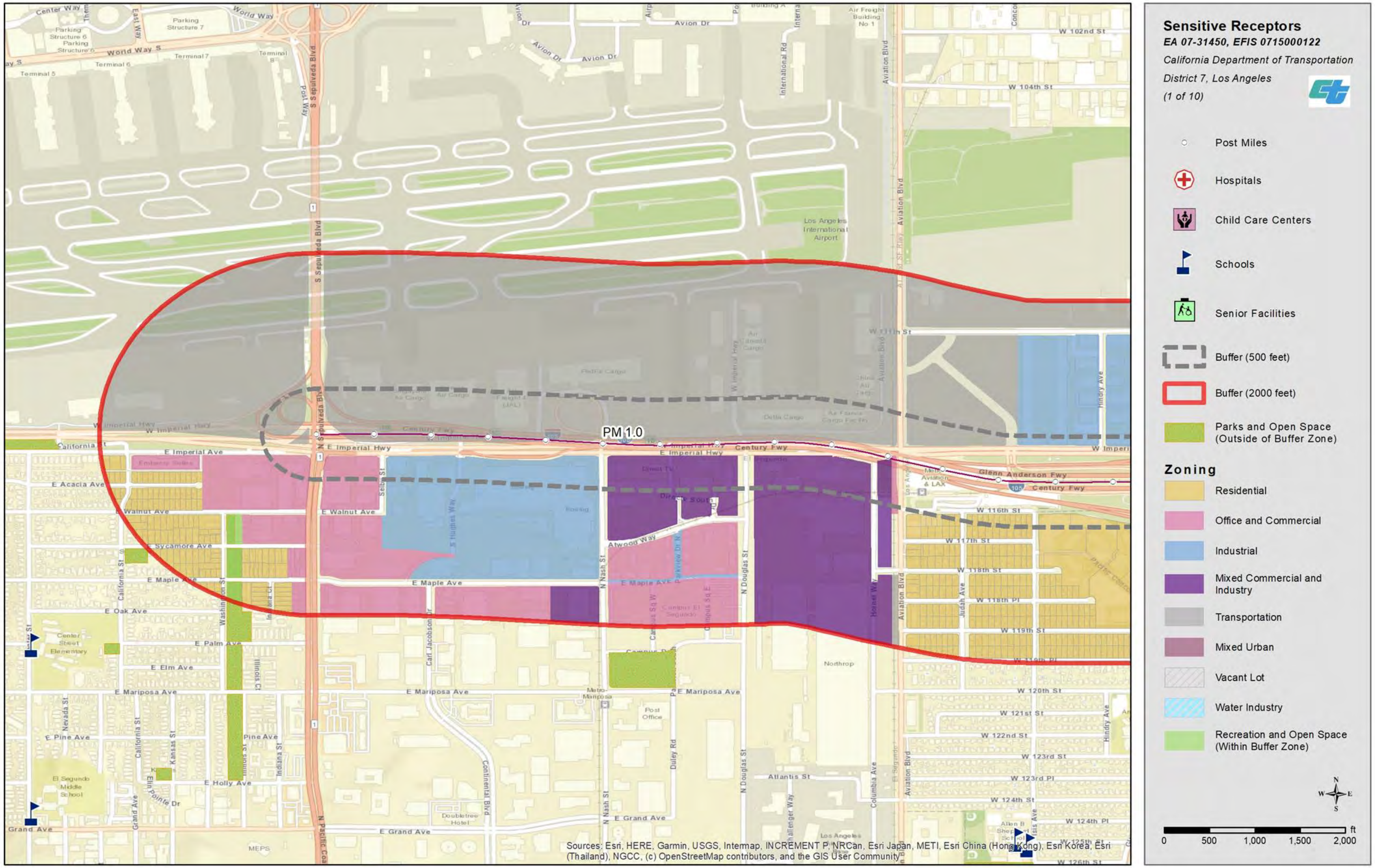
	dysfunction. Also a toxic air contaminant and water pollutant.	gasoline use may exist in soils along major roads.
Visibility-Reducing Particles (VRP)	Reduces visibility. Produces haze. NOTE: not directly related to the Regional Haze program under the Federal Clean Air Act, which is oriented primarily toward visibility issues in National Parks and other "Class I" areas. However, some issues and measurement methods are similar.	See particulate matter above. May be related more to aerosols than to solid particles.
Sulfate	Premature mortality and respiratory effects. Contributes to acid rain. Some toxic air contaminants attach to sulfate aerosol particles.	Industrial processes, refineries and oil fields, mines, natural sources like volcanic areas, salt-covered dry lakes, and large sulfide rock areas.
Hydrogen Sulfide (H_2S)	Colorless, flammable, poisonous. Respiratory irritant. Neurological damage and premature death. Headache, nausea. Strong odor.	Industrial processes such as: refineries and oil fields, asphalt plants, livestock operations, sewage treatment plants, and mines. Some natural sources like volcanic areas and hot springs.
Vinyl Chloride	Neurological effects, liver damage, cancer. Also considered a toxic air contaminant.	Industrial processes.

Sensitive Receptors

Some land uses are considered more sensitive to changes in air quality than others, depending on the demographic characteristics of occupants and users and the activities involved. Sensitive receptors include residential areas, hospitals, elder-care facilities, rehabilitation centers, elementary schools, daycare centers, and parks. Residential areas are considered sensitive to air pollution because residents, including children and the elderly, tend to be at home for extended periods of time, resulting in sustained exposure to pollutants.

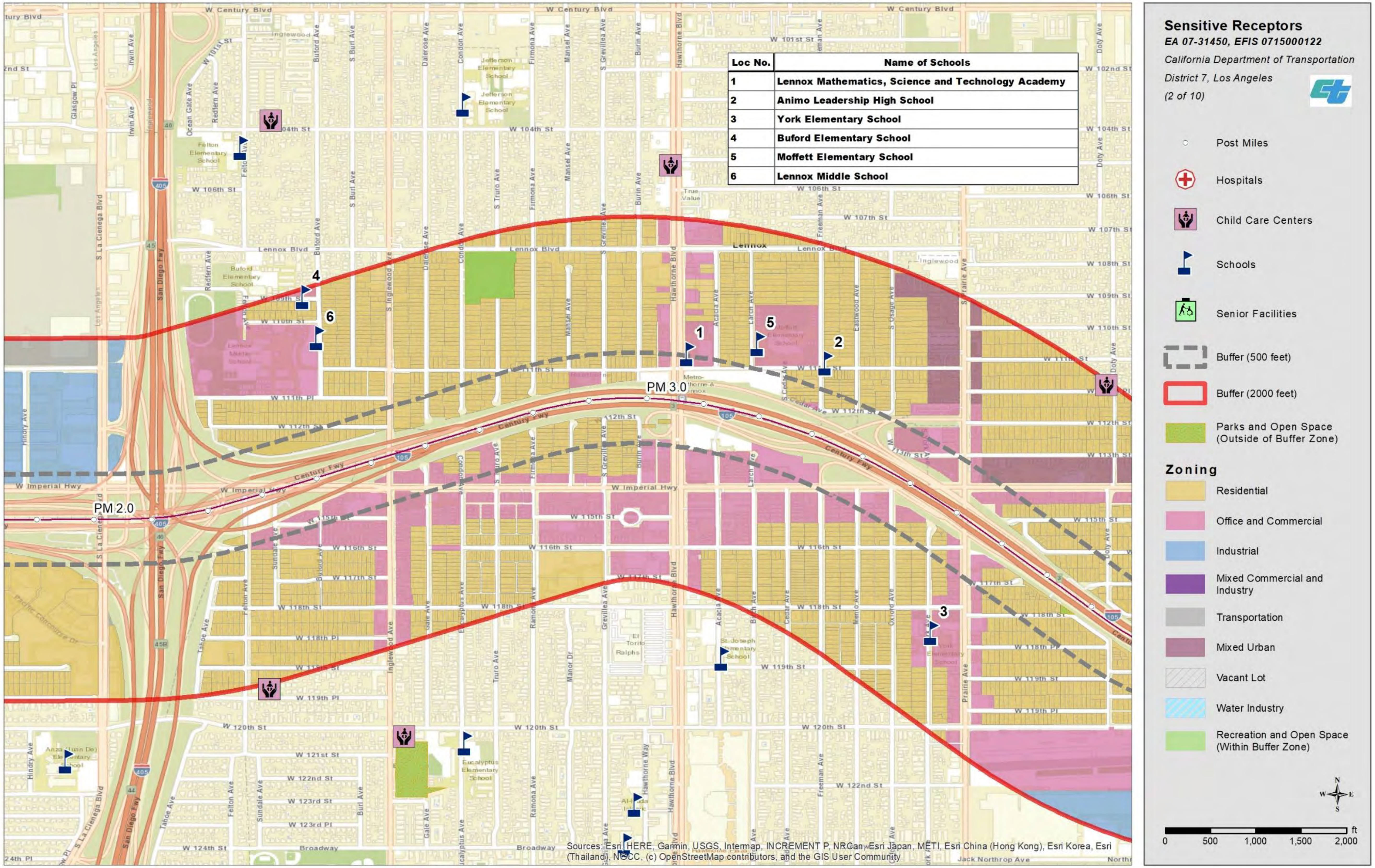
The zone of greatest concern near roadways is within 500 feet (or 150 meters). Sensitive land uses along the project corridor include a mix of residential, commercial, and industrial with many hospitals, child care centers, schools, and senior facilities identified within the buffer zones of 500 and 2000 feet from the corridor alignment. Figure 2-25 identify various sensitive receptors within buffer zones of 500 and 2000 feet.

Figure 2-25: Sensitive Receptors



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

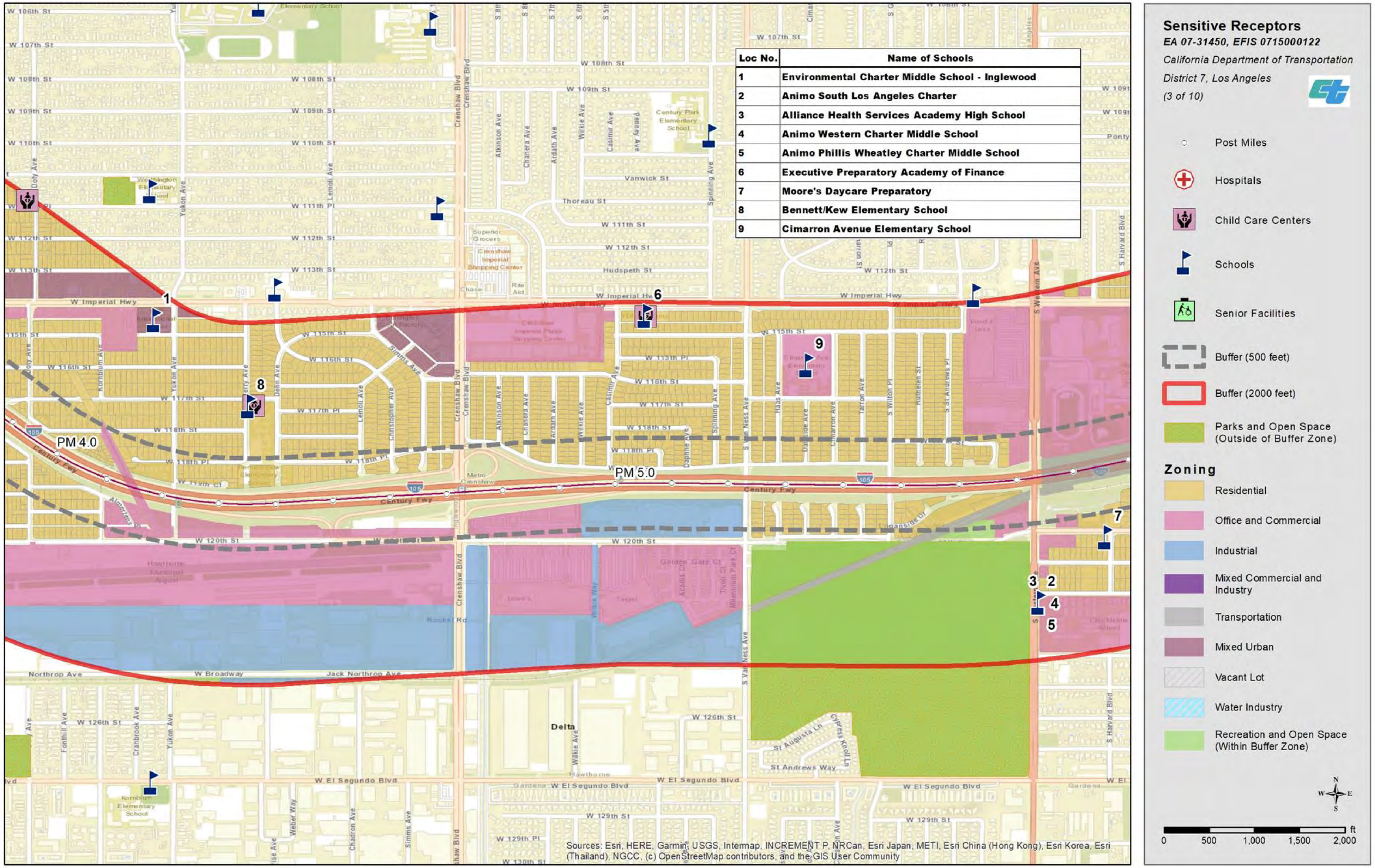
Figure 2-25: Sensitive Receptors Cont.



Loc No.	Name of Schools
1	Lennox Mathematics, Science and Technology Academy
2	Animo Leadership High School
3	York Elementary School
4	Buford Elementary School
5	Moffett Elementary School
6	Lennox Middle School

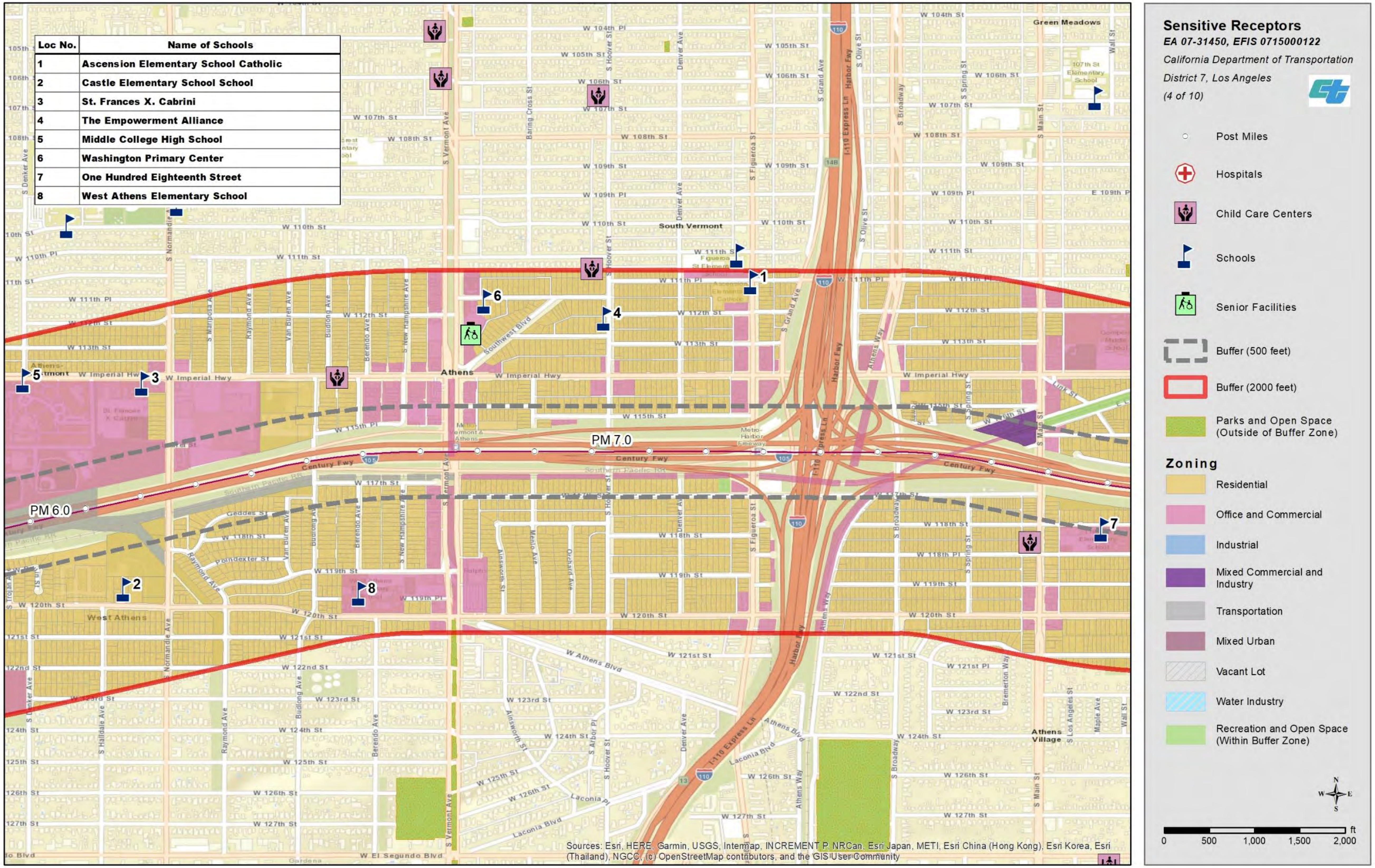
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Figure 2-25: Sensitive Receptors Cont.



Loc No.	Name of Schools
1	Environmental Charter Middle School - Inglewood
2	Animo South Los Angeles Charter
3	Alliance Health Services Academy High School
4	Animo Western Charter Middle School
5	Animo Phillis Wheatley Charter Middle School
6	Executive Preparatory Academy of Finance
7	Moore's Daycare Preparatory
8	Bennett/Kew Elementary School
9	Cimarron Avenue Elementary School

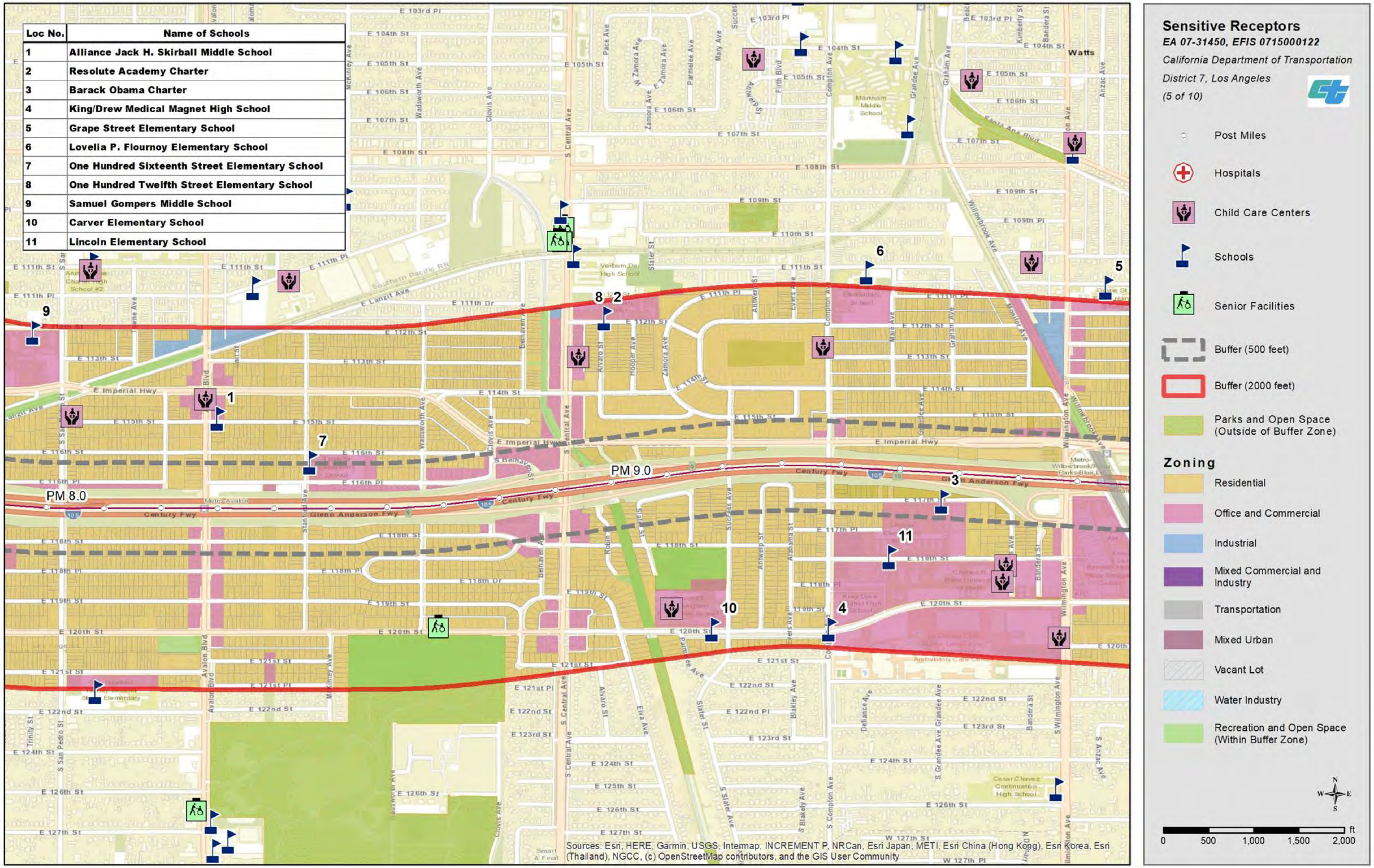
Figure 2-25: Sensitive Receptors Cont.



Loc No.	Name of Schools
1	Ascension Elementary School Catholic
2	Castle Elementary School School
3	St. Frances X. Cabrini
4	The Empowerment Alliance
5	Middle College High School
6	Washington Primary Center
7	One Hundred Eighteenth Street
8	West Athens Elementary School

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

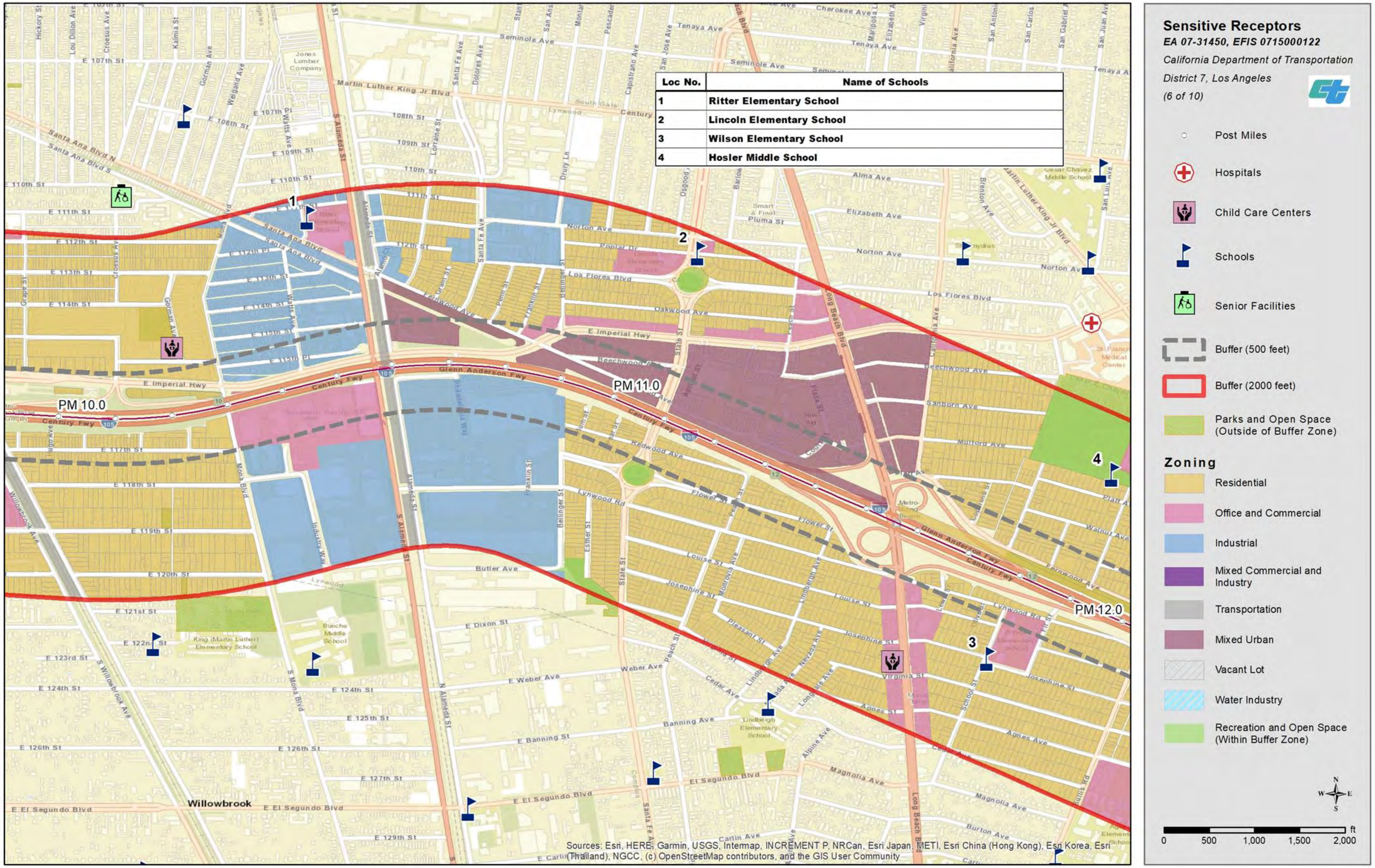
Figure 2-25: Sensitive Receptors Cont.



Loc No.	Name of Schools
1	Alliance Jack H. Skirball Middle School
2	Resolute Academy Charter
3	Barack Obama Charter
4	King/Drew Medical Magnet High School
5	Grape Street Elementary School
6	Lovelia P. Flournoy Elementary School
7	One Hundred Sixteenth Street Elementary School
8	One Hundred Twelfth Street Elementary School
9	Samuel Gompers Middle School
10	Carver Elementary School
11	Lincoln Elementary School

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

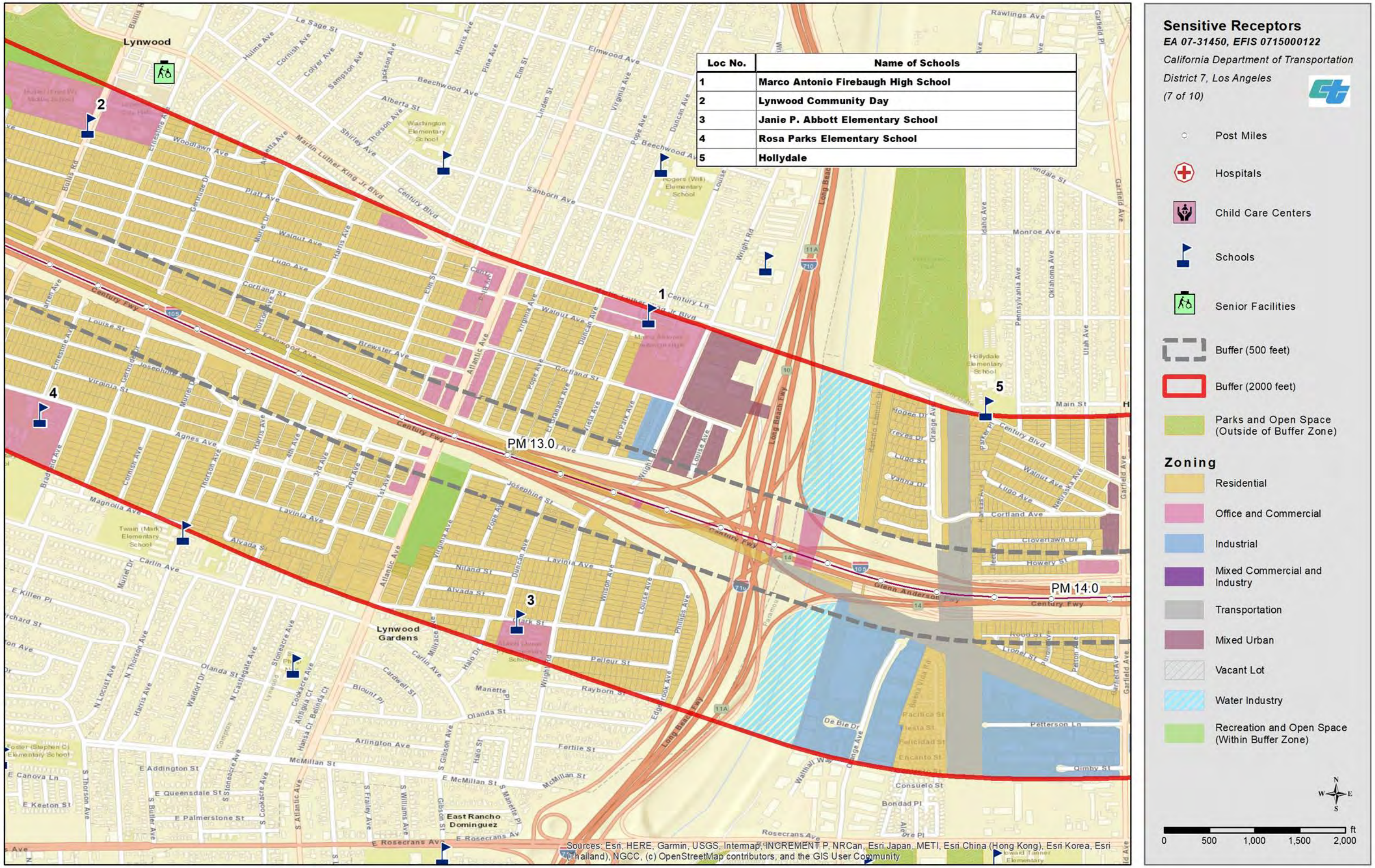
Figure 2-25: Sensitive Receptors Cont.



Loc No.	Name of Schools
1	Ritter Elementary School
2	Lincoln Elementary School
3	Wilson Elementary School
4	Hosler Middle School

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

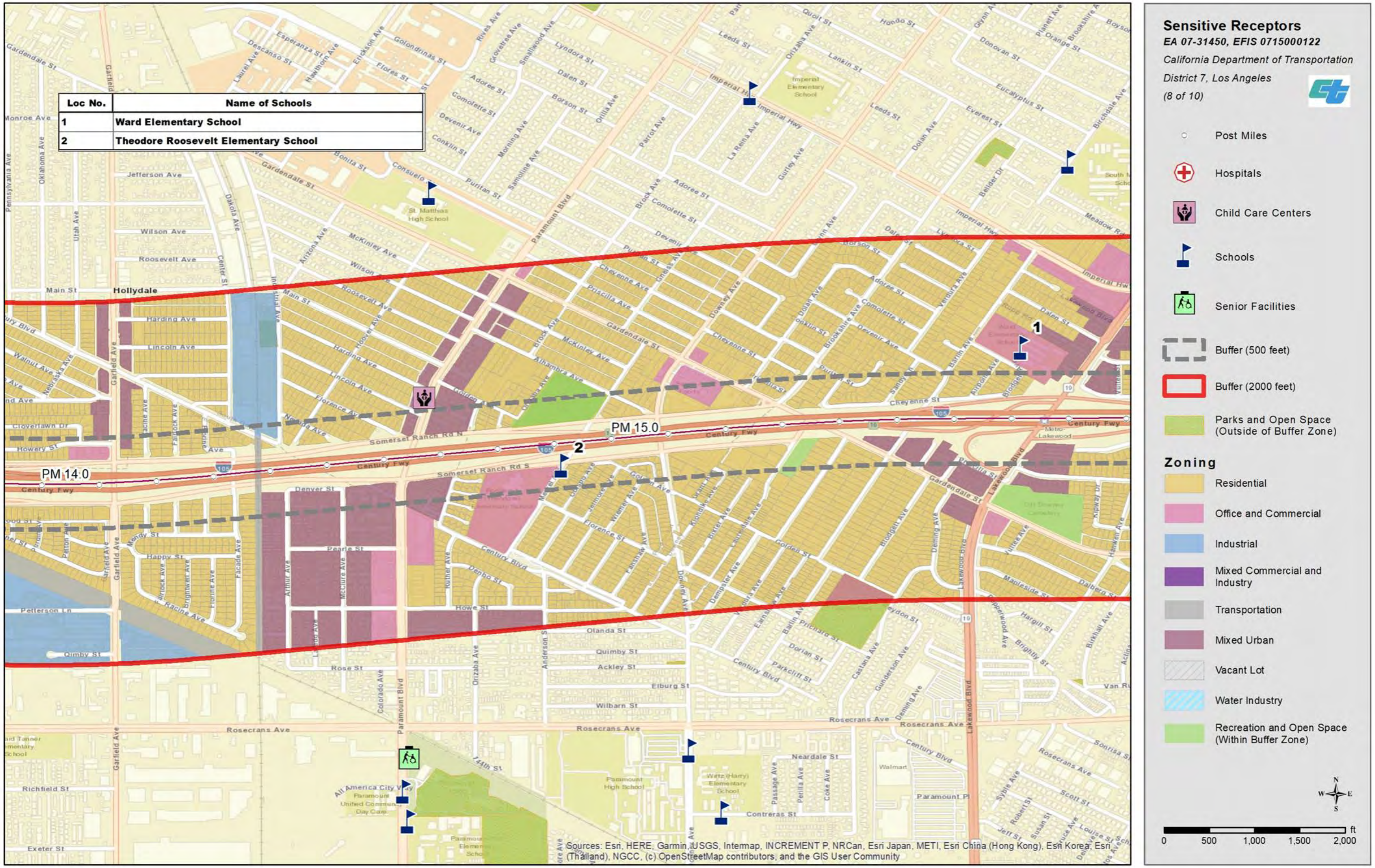
Figure 2-25: Sensitive Receptors Cont.



Loc No.	Name of Schools
1	Marco Antonio Firebaugh High School
2	Lynwood Community Day
3	Janie P. Abbott Elementary School
4	Rosa Parks Elementary School
5	Hollydale

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

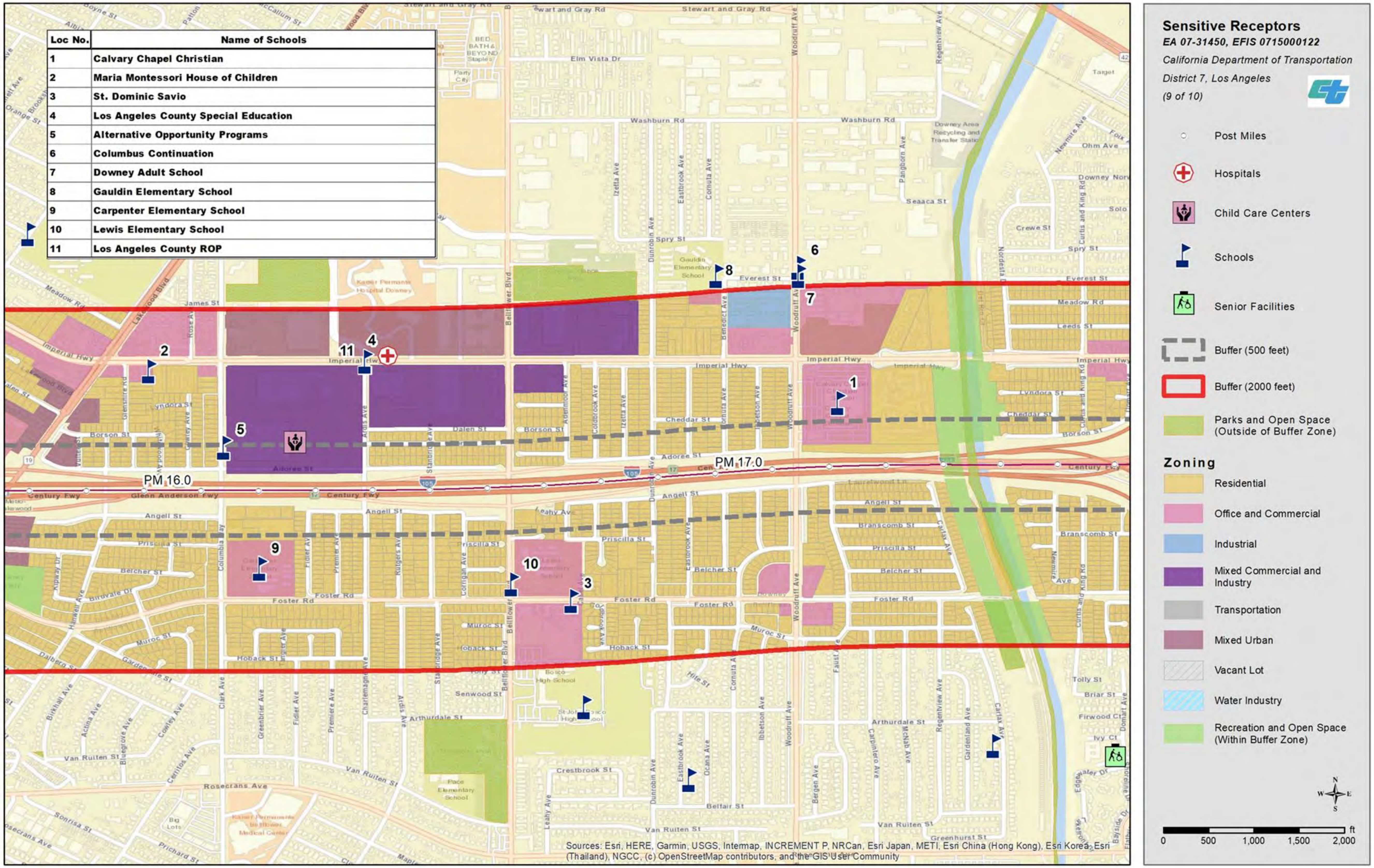
Figure 2-25: Sensitive Receptors Cont.



Loc No.	Name of Schools
1	Ward Elementary School
2	Theodore Roosevelt Elementary School

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

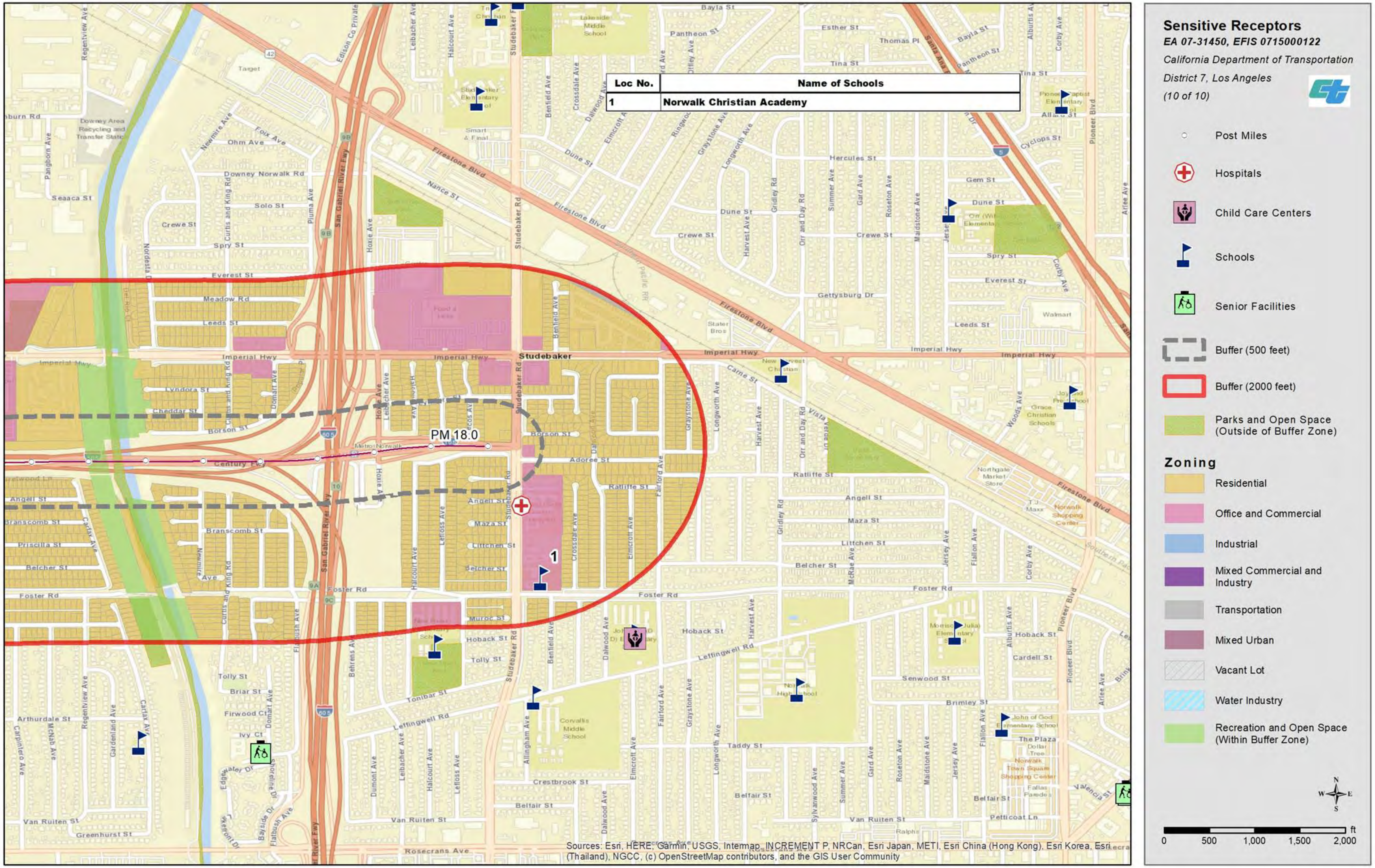
Figure 2-25: Sensitive Receptors Cont.



Loc No.	Name of Schools
1	Calvary Chapel Christian
2	Maria Montessori House of Children
3	St. Dominic Savio
4	Los Angeles County Special Education
5	Alternative Opportunity Programs
6	Columbus Continuation
7	Downey Adult School
8	Gauldin Elementary School
9	Carpenter Elementary School
10	Lewis Elementary School
11	Los Angeles County ROP

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Figure 2-25: Sensitive Receptors Cont.



Loc No.	Name of Schools
1	Norwalk Christian Academy

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

2.2.5.3 Environmental Consequences

Regional Conformity

The 2016 RTP/SCS is the latest conforming plan that covers the project area; and was adopted by the SCAG on April 7, 2016. FHWA and FTA made a regional conformity determination on June 1, 2016. The 2016 RTP/SCS has since gone through 3 Amendments. The proposed project was added to the 2016 RTP/SCS in Amendment No. 2 (Project ID No. 1162S011) which was found to conform by FHWA and FTA on August 1, 2017. The project is also included in the latest conforming financially constrained 2019 Federal Transportation Improvement Program (FTIP) Amendment No. 19-09 (LA0G1324). The latest 2019 FTIP Amendment No. 19-09 was determined to conform by FHWA and FTA on September 3, 2019. The design concept and scope of the proposed project is consistent with the project description in the 2016 RTP, 2019 FTIP, and the “open to traffic” assumptions of the SCAG regional emissions analysis.

Regional Analysis

A regional analysis compares emissions of different alternatives based on aggregate emissions estimated for all segments along the corridor within the project limits. Emissions estimated for each segment in each direction are combined to provide a representative regional emission for each criteria pollutant for comparison with various scenarios as summarized in Table 2-109 below. As indicated in the table below, all future Alternatives result in a decrease in emissions of CO and NOx when compared to the 2017 Baseline. $PM_{2.5}$ emissions for Alternatives 1 and 2 result in a decrease in all future years while Alternative 3 result in an increase when compared to the 2017 Baseline. PM_{10} emissions result in an increase for all Alternatives in all future years when compared to the 2017 Baseline, except for Alternative 1 in 2027. When compared to the No-Build (Alternative 1) in each analysis year, all Build Alternatives (Alternatives 2 and 3) result in increased emissions of the criteria pollutants listed in the table below.

Table 2-109: Regional Emissions of Criteria Pollutants for Alternatives in All Analysis Years

Analysis Year	Scenario	CO (tons/day)	PM_{10} (tons/day)	$PM_{2.5}$ (tons/day)	NOx (tons/day)
2017	Baseline	5.209	0.452	0.136	1.413
2027	Alternative 1	2.253	0.441	0.120	0.450
	Alternative 2	2.368	0.458	0.125	0.473
	Alternative 3	2.534	0.508	0.139	0.503
2040	Alternative 1	1.785	0.455	0.121	0.344
	Alternative 2	1.895	0.473	0.126	0.395
	Alternative 3	1.943	0.515	0.138	0.388
2047	Alternative 1	1.763	0.464	0.123	0.358
	Alternative 2	1.863	0.481	0.128	0.451
	Alternative 3	1.908	0.526	0.140	0.405

Project Level Conformity

The project is located in nonattainment area for federal 8-hour ozone and $PM_{2.5}$ and in nonattainment-maintenance for CO and PM_{10}; and a project-level hot-spot analysis for CO, $PM_{2.5}$ and PM_{10} is thus required pursuant to 40 CFR 93.109. The project proposes to implement measures relied upon in the RTP/TIP regional conformity analysis. Conformity analyses demonstrate that the proposed project is not anticipated to cause or contribute to any new localized CO, $PM_{2.5}$, and/or PM_{10} violations, or delay timely attainment of any NAAQS or any required interim emission reductions or other milestones during the timeframe of the transportation plan (or regional emissions analysis).

CO Analysis

The CO Protocol was developed for project-level conformity (hot-spot) analyses and was approved for use by the EPA in 1997. It provides qualitative and quantitative screening procedures, as well as quantitative (modeling) analysis methods to assess project-level CO impacts. The qualitative screening step is designed to avoid the use of detailed modeling for projects that clearly cannot cause a violation or worsen an existing violation of the CO standards. Although the protocol was designed to address federal standards, it has been recommended for use by several air pollution control districts in their CEQA analysis guidance documents and should also be valid for California standards because the key criterion (8-hour concentration) is similar: 9 ppm for the federal standard and 9.0 ppm for the state standard. Traffic data from the Caltrans Traffic Study for the I-105 Express Lanes Project were utilized in the CO analysis.

Sections 3 and 4 of the CO Protocol describe the methodology for determining whether a CO hot-spot analysis is required. The Protocol provides two conformity requirement decision flowcharts that are designed to assist project sponsors in evaluating the requirements that apply to their project. The flowchart of the CO Protocol applies to new projects and was used for the proposed project. The CO Flowchart (Figure 2-26) has been included in the following pages.

Figure 2-26: CO Flowchart

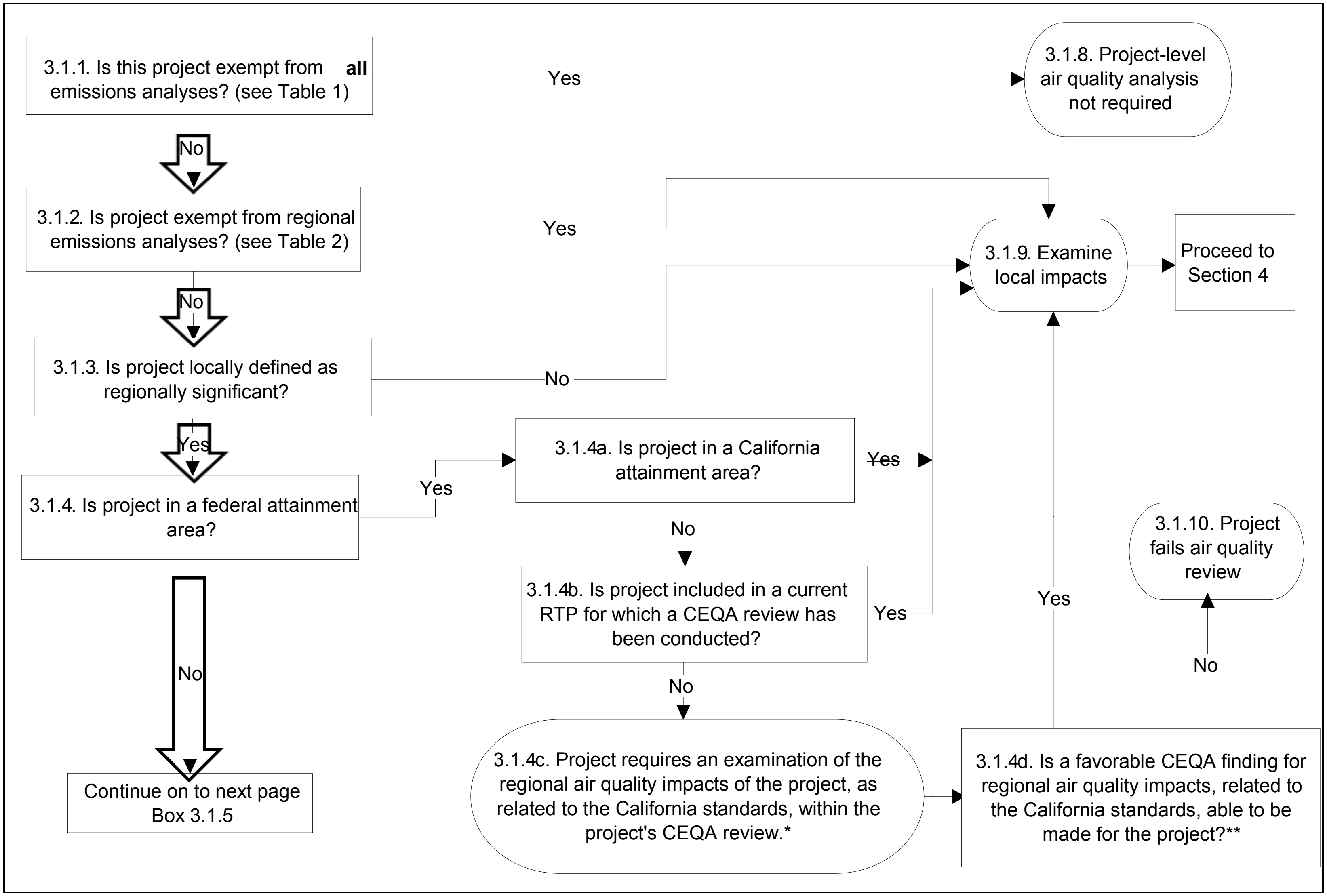


Figure 2-26: CO Flowchart Cont.

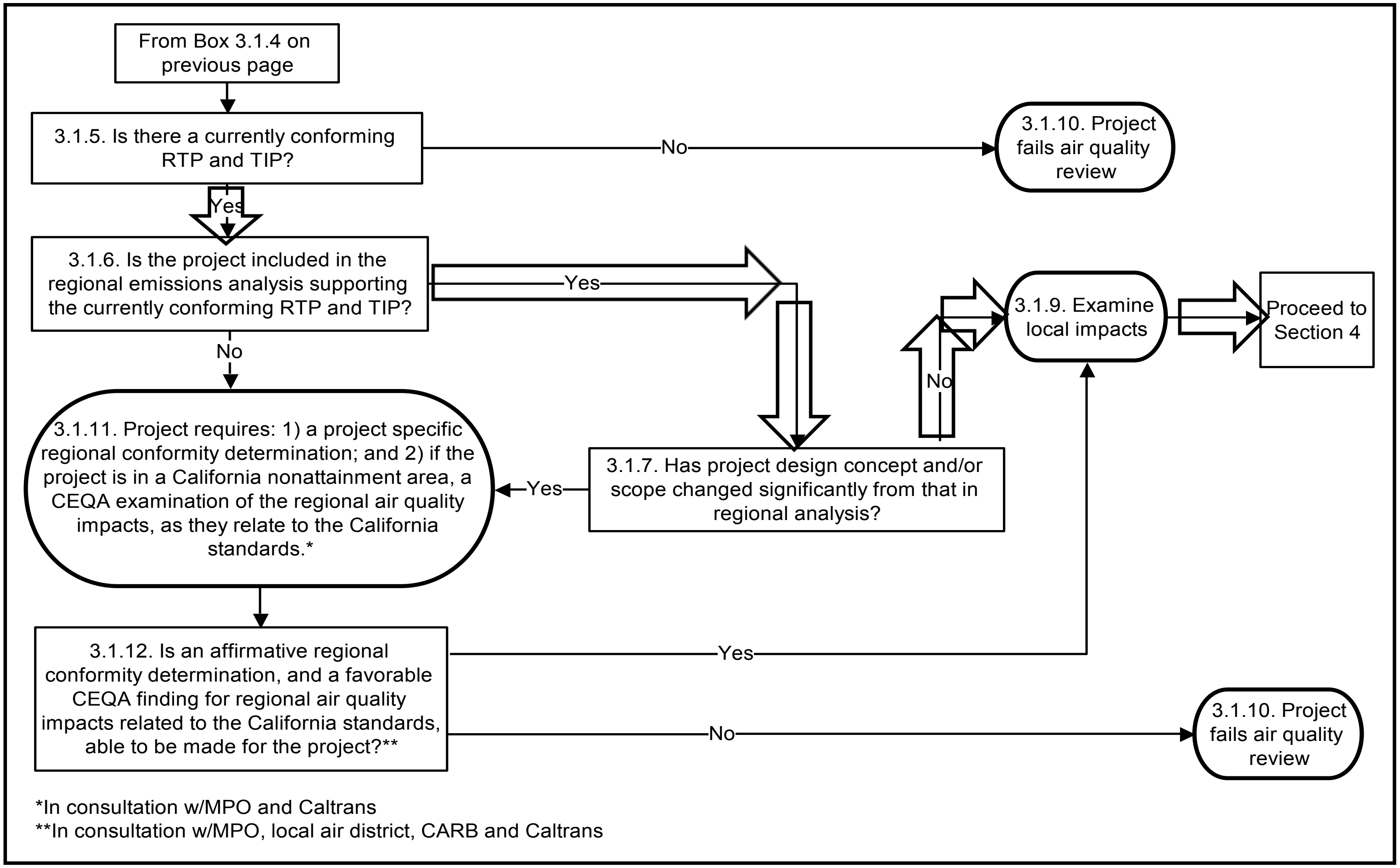


Figure 2-26: CO Flowchart Cont.

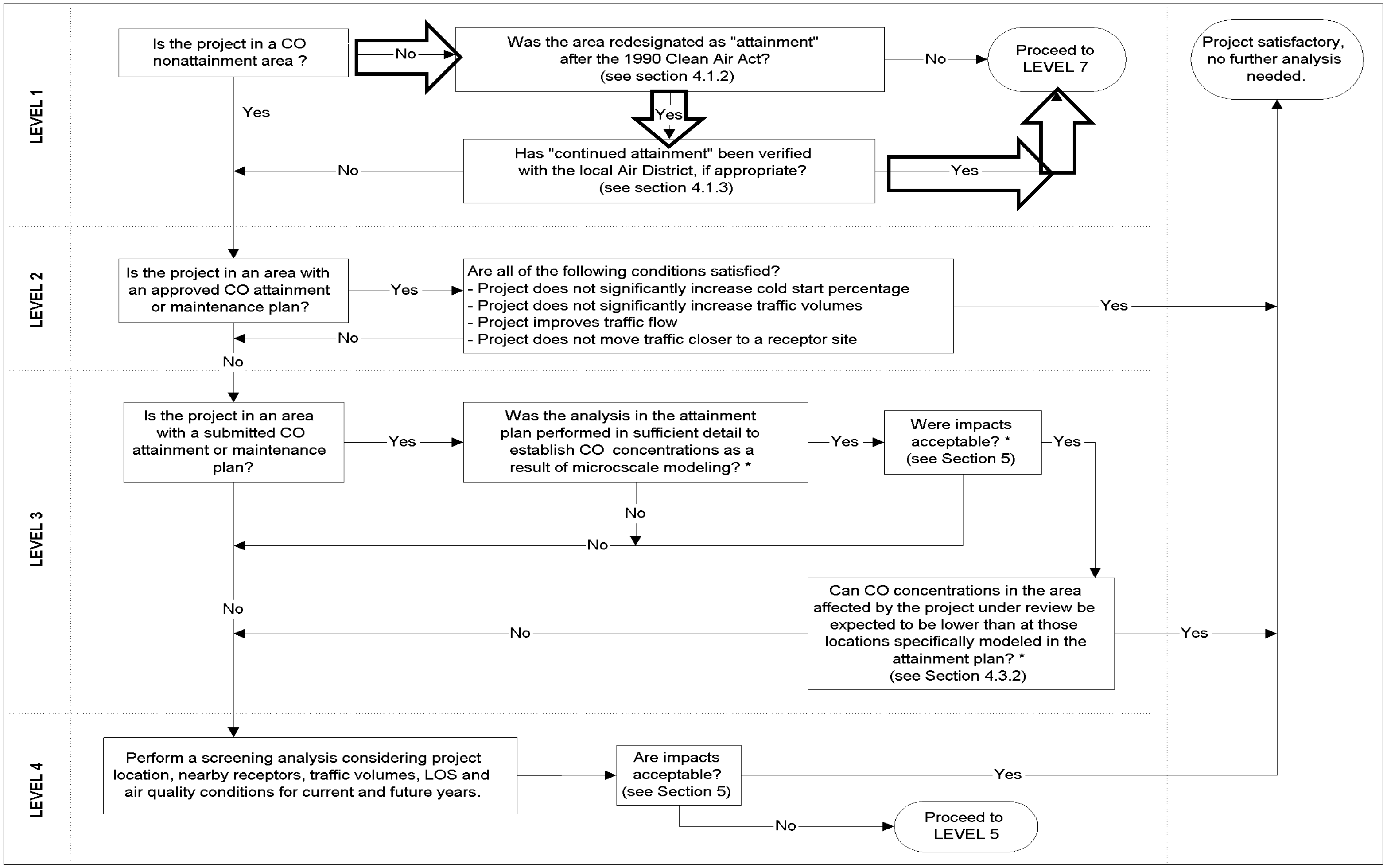
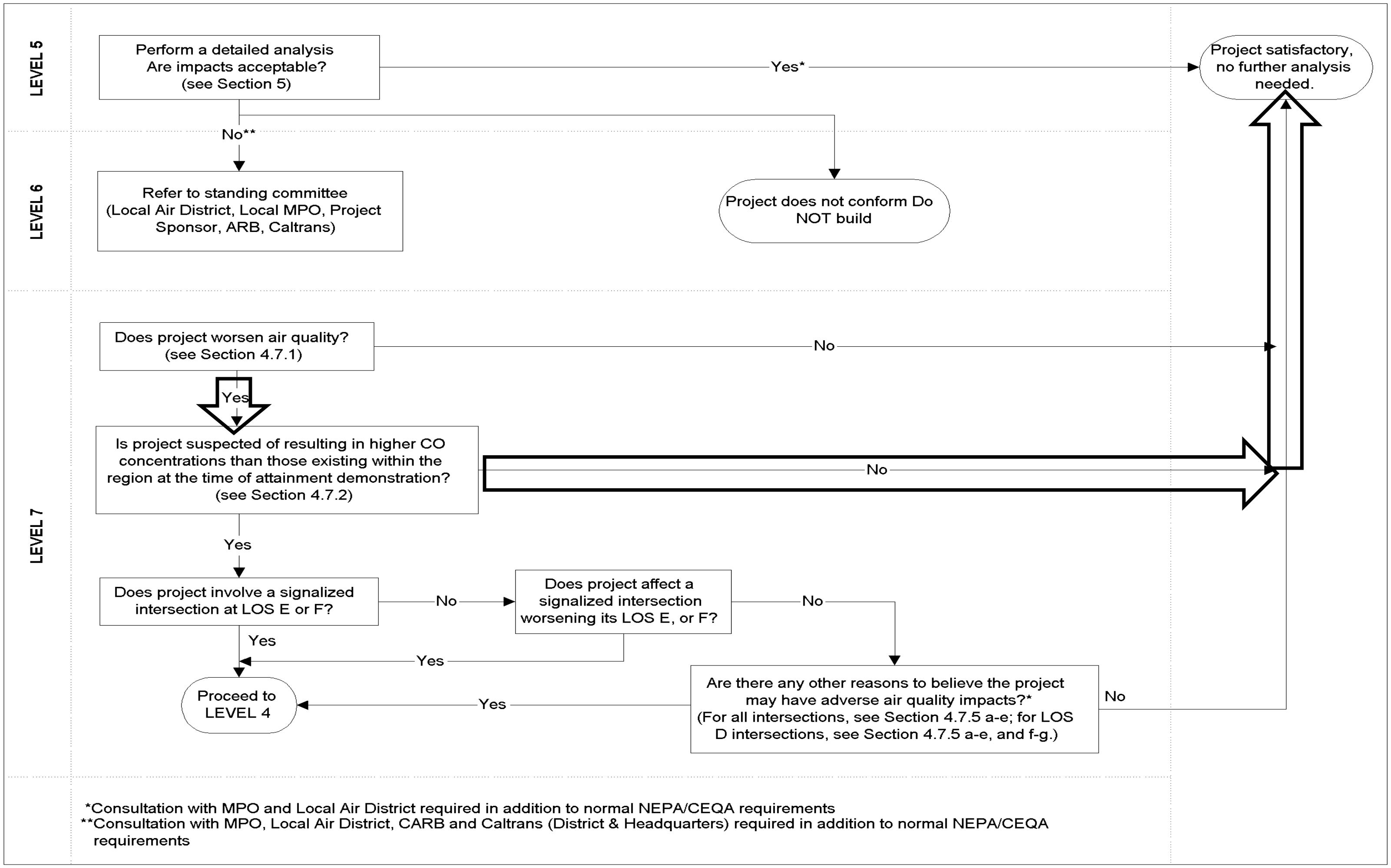


Figure 3. Local CO Analysis

4-10

Figure 2-26: CO Flowchart Cont.



*Consultation with MPO and Local Air District required in addition to normal NEPA/CEQA requirements

**Consultation with MPO, Local Air District, CARB and Caltrans (District & Headquarters) required in addition to normal NEPA/CEQA requirements

Figure 3 (cont.). Local CO Analysis

PM Analysis

In November 2015, the U.S. EPA released an updated version of Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas (Guidance) for quantifying the local air quality impacts of transportation projects and comparing them to the PM NAAQS (75 FR 79370). The U.S. EPA originally released the quantitative guidance in December 2010 and released a revised version in November 2013 to reflect the approval of EMFAC 2011 and U.S. EPA's 2012 PM NAAQS final rule. The November 2015 version reflects MOVES2014 and its subsequent minor revisions such as MOVES2014a, to revise design value calculations to be more consistent with other U.S. EPA programs, and to reflect guidance implementation and experience in the field. Note that EMFAC, not MOVES, should be used for project hot-spot analysis in California. The Guidance requires a hot-spot analysis to be completed for a project of air quality concern (POAQC). The final rule in 40 CFR 93.123(b)(1) defines a POAQC as:

(i) New or expanded highway projects that have a significant number of or significant increase in diesel vehicles;

(ii) Projects affecting intersections that are at Level-of-Service (LOS) D, E, or F with a significant number of diesel vehicles, or those that will change to LOS D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project;

(iii) New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location;

(iv) Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location; and

(v) Projects in or affecting locations, areas, or categories of sites which are identified in the $PM_{2.5}$ and PM_{10} applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.

The proposed project is in an area that is in nonattainment of the federal $PM_{2.5}$ standard and in maintenance of the federal PM_{10} standard; and therefore, is subject to a project-level PM hot-spot conformity analysis pursuant to 40 CFR Part 93. However, a PM hot-spot analysis is only required for the five types of projects listed in 40 CFR 93.123(b)(1) of the conformity rule, identified as projects of local air quality concern.

The purpose of the project is to mitigate existing congestion and to enhance operations and mobility along the I-105 corridor as the current demands exceed capacity and its HOV facilities are degraded with a travel speed below 45 mph during peak period. When compared to Alternative 1 (based on Daily Traffic Data for 2017 Baseline), Alternative 2 would increase the truck volumes by up to 425, and 361 in 2027 and 2040, respectively; and Alternative 3 would increase the truck volumes by up to 1462 and 2282 in 2027 and 2040, respectively. The proposed scope and resulting traffic data have been submitted for review and discussion by the Interagency Consultation (IAC) in SCAG's monthly meeting in June 2019. Stakeholders at the monthly IAC meeting concurred that the project-related daily truck trips are not significant, and the proposed project is not of air quality concern for PMs. As a result, the proposed project has met the requirements of the Clean Air Act (CAA) and 40 CFR 93.116 without an explicit hot-spot analysis; and it is anticipated that it would not worsen existing PM_{10} or $PM_{2.5}$ violations or delay timely attainment of the standards.

NO$_2$ Analysis

NO$_2$ is among the near-road pollutants of concern. However, currently, there is no federal project-level NO$_2$ analysis requirement. The proposed project is located in attainment-unclassified area for the federal and state 1-hour standards; attainment-maintenance area for federal annual standard and attainment area for state annual standard. As shown in Tables 2-106 and 2-107, maximum 1-hr NO$_2$ ambient concentrations at the Compton and LAX-Hastings ranged from 60 to 99 ppb while maximum annual NO$_2$ ambient concentrations ranged from 10 ppb to 16 ppb. Ambient NO$_2$ concentrations at both monitoring stations did not exceed any of the respective federal and state standards for NO$_2$.

EMFAC2017 does not currently provide emission factors for NO$_2$. NOx emissions are thus estimated as a surrogate for quantifying the emissions of NO$_2$ from each of the Alternatives. Changes in the NOx emissions in comparison to the 2017 Baseline as well as to the No-Build (Alternative 1) conditions are provided as well. Build Alternatives 2 and 3 are anticipated to result in increase of up to 38.7 and 31.9 percent, respectively, when compared to the No-Build (Alternative 1) conditions in each analysis year. All Alternatives, however, are anticipated to result in decrease in NOx emissions when compared to the 2017 Baseline.

Mobile Source Air Toxics (MSAT) Analysis

FHWA released updated guidance in October 2016 (FHWA, 2016) for determining when and how to address MSAT impacts in the NEPA process for transportation projects. FHWA identified three levels of analysis:

- No analysis for exempt projects or projects with no potential for meaningful MSAT effects;
- Qualitative analysis for projects with low potential MSAT effects; and
- Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

Projects with no impacts generally include those that a) qualify as a categorical exclusion under 23 CFR 771.117, b) qualify as exempt under the FCAA conformity rule under 40 CFR 93.126, and c) are not exempt, but have no meaningful impacts on traffic volumes or vehicle mix.

Projects that have low potential MSAT effects are those that serve to improve highway, transit, or freight operations or movement without adding substantial new capacity or creating a facility that is likely to substantially increase emissions. The large majority of projects fall into this category.

Projects with high potential MSAT effects include those that:

- Create or significantly alter a major intermodal freight facility that has the potential to concentrate high levels of Diesel Particulate Matter in a single location; or
- Create new or add significant capacity to urban highways such as interstates, urban arterials, or urban collector-distributor routes with traffic volumes where the AADT is projected to be in the range of 140,000 to 150,000, or greater, by the design year; and
- Are proposed to be located in proximity to populated areas or, in rural areas, in proximity to concentrations of vulnerable populations (i.e., schools, nursing homes, hospitals).

Based on a comparison of the Alternatives with the different categories in the Interim Guidance, the project is deemed to meet the criteria for Category 3 MSAT analysis. A review of the proposed project scope, traffic data, and settings indicates that this project is anticipated to have the potential for meaningful differences in MSAT emissions among project alternatives. In accordance with the FHWA Guidance, the project therefore requires a quantitative analysis.

The latest version of CT-EMFAC2017, which incorporates emission factors from the latest EMFAC2017 v 1.0.2 and the latest speciation factors from CARB, is utilized in estimating emissions of all 9 priority MSATs including 1,3-butadiene, acrolein, benzene, DPM, ethylbenzene, formaldehyde, naphthalene, and POM. Emissions are estimated by using travel activity data forecasted for each segment along the corridor, i.e., from a ramp interchange to the next.

All future MSAT emissions are anticipated to decrease when compared to the 2017 Baseline. Alternatives 2 and 3, however, are anticipated to result in an increase of up to 30 percent in MSAT emissions (i.e., acetaldehyde) when compared to the No-Build (Alternative 1) conditions. It should be noted, however, that emissions of DPM for Build Alternative 2 are anticipated to result in decrease when compared to the No-Build conditions in all future years despite increase in future daily volumes.

Naturally Occurring Asbestos

Asbestos is a term used for several types of naturally occurring fibrous minerals that are a human health hazard when airborne. The most common type of asbestos is chrysotile, but other types such as tremolite and actinolite are also found in California. Asbestos is classified as a known human carcinogen by state, federal, and international agencies and was identified as a toxic air contaminant by the ARB in 1986. All types of asbestos are hazardous and may cause lung disease and cancer.

Asbestos can be released from serpentinite and ultramafic rocks when the rock is broken or crushed. At the point of release, the asbestos fibers may become airborne, causing air quality and human health hazards. These rocks have been commonly used for unpaved gravel roads, landscaping, fill projects, and other improvement projects in some localities. Asbestos may be released to the atmosphere due to vehicular traffic on unpaved roads, during grading for development projects, and at quarry operations. All these activities may have the effect of releasing potentially harmful asbestos into the air. Natural weathering and erosion processes can act on asbestos-bearing rock and make it easier for asbestos fibers to become airborne if such rock is disturbed.

Serpentinite may contain chrysotile asbestos, especially near fault zones. Ultramafic rock, a rock closely related to serpentinite, may also contain asbestos minerals. Asbestos can also be associated with other rock types in California, though much less frequently than serpentinite and/or ultramafic rock. Serpentinite and/or ultramafic rock are known to be present in 44 of California's 58 counties. These rocks are particularly abundant in counties of the Sierra Nevada foothills, the Klamath Mountains, and Coast Ranges. The California Department of Conservation, Division of Mines and Geology has developed a map showing the general location of ultramafic rock in the state (www.conservation.ca.gov/cgs/minerals/hazardous_minerals/asbestos/Pages/index.aspx).

The project is located in Los Angeles County, which is among the counties listed as containing serpentinite and ultramafic rock. However, the portion of Los Angeles County in which the project lies is not known to contain serpentinite or ultramafic rock. Therefore, the impact from naturally occurring asbestos during project construction would be minimal to none.

However, structures, including buildings and bridges, may contain asbestos-containing materials (ACM). Asbestos was used in many building materials prior to 1978 and may have been used up until the early 1980s. ACMs include fireproofing, acoustic ceiling material, transite pipe, roofing materials, thermal insulation, support piers, expansion joint material in bridges, asphalt, concrete, and other building materials. It is of primary concern when it is friable (i.e., material that can be easily crumbled). During demolition, if not properly identified and mitigated, asbestos fibers could become airborne. Project improvements would require demolition or disturbance of existing structures, including buildings and bridges that may contain ACM. In addition, soil surrounding railroad tracks within the project study area may also contain ACMs from disk brake pads for railroad use that may have been manufactured with ACMs.

According to a hazardous waste assessment completed for the project, an ACM and lead-based paint (LBP) surveys are required for work related to utility relocations, bridge alterations and/or demolition, oil field appurtenances and/or structures that are suspected of having been coated with LBP or constructed with ACM. The results of ACM and LBP surveys will be used to prepare appropriate AQMD permits for renovations and to provide information to the contractor so that appropriate worker safety protocols and abatement activities are planned, if necessary. It is recommended that the ACM and LBP surveys be conducted during the PS&E phase for any structures planned to be altered/demolished during construction of the project. The ACM survey shall be conducted in conformance with the EPA National Emission Standard for Hazardous Air Pollutants (NESHAP) 40 CFR regulation, SCAQMD Rule 1403, and Caltrans SSP 14-11.16 Asbestos-Containing Construction Materials in Bridges.

Lead

The proposed project is located in a federal nonattainment area and state attainment area for Pb. Lead is a stable compound, which persists and accumulates both in the environment and in animals. Since 1975, lead emissions have been in decline due in part to the introduction of catalyst-equipped vehicles and decline in production of leaded gasoline. In general, an analysis of lead is limited to projects that emit significant quantities of the pollutant and are not applied to transportation projects. If applicable, disturbance of lead paint must meet U.S. EPA and air district rules (Caltrans Standard Specifications 14-9.02, 2018) as well as applicable any local district rules that apply to sandblasting and other activities related to lead paint removal or disturbances.

Roadway Segment Emissions Analysis

When compared to the No-Build (Alternative 1) conditions, both Build Alternatives are anticipated to result in small increases in all criteria pollutants due to increase in VMT. All Alternatives are anticipated to result in decrease in CO and NOx emissions when compared to the 2017 Baseline. All Alternatives result in decrease or minor increases in $PM_{2.5}$ when compared to the 2017 Baseline; but all Build Alternatives mostly result in minor increases in PM_{10} when compared to the 2017 Baseline. Sensitive receptors are present along all freeway segments and would be exposed to these localized PM increases. The localized PM analysis provided therein concluded that the proposed project would not create new or worsen existing $PM_{2.5}$ or PM_{10} violations.

Alternative 1 (No-Build Alternative)

Short-Term Effects (Construction Emissions)

Alternative 1 would not result in the construction of any of the proposed improvements and therefore, would not result in temporary, construction-related impacts to air quality.

Long-Term Effects (Operational Emissions)

There would be no substantial long-term effects associated with Alternative 1 regarding Air Quality.

Alternatives 2 & 3 (Build Alternatives)

Short-Term Effects (Construction Emissions)

The proposed project will result in short-term degradation of air quality during construction by generating airborne dust from such activities as clearing, grading, hauling, demolition, or excavation for roadway improvements. Emissions from construction equipment powered by gasoline and diesel engines are also anticipated and would include criteria pollutants and MSATs from exhaust or road dust. Emissions of particulates, CO, NOx, and CO_2 are estimated using the latest SCAQMD's RCEM based on the construction activities data provided by Metro. Implementation of avoidance and minimization measures, including compliance with Caltrans' Standard Specifications and SCAQMD rules and regulation, will ascertain that any temporary air quality impacts are minimized during construction. It is also recommended to conduct ACM and LBP surveys so that SCAQMD's permit requirements and worker safety are appropriately evaluated prior to construction or demolition activities.

Construction activities will not last for more than 5 years at one general location, so construction-related emissions do not need to be included in regional and project-level conformity analysis (40 CFR 93. 123(c)(5)).

Long-Term Effects (Operational Emissions)

Operational emissions of criteria pollutants, MSATs, and GHG have been estimated for each segment along the I-105 Corridor within the project limits. When compared to the 2017 Baseline, all Alternatives will likely result in a decrease in emissions of CO, NOx, CO_2, and all MSATs; decrease or minor increase in $PM_{2.5}$ emissions; and localized increases in PM_{10}. Alternative 2 will likely result in decrease of regional $PM_{2.5}$ emissions.

According to the traffic forecast, the Build Alternatives will result in increase in VMTs when compared to the No-Build conditions. Accordingly, all Build Alternatives are anticipated to result in increase of emissions of all criteria pollutants, MSATs, and GHG when compared to the No-Build conditions, except emissions of DPM for Alternative 2. However, the proposed project is not anticipated to cause or contribute to any new violation of the state and federal standards of the criteria pollutants.

The proposed project is located in the federal nonattainment area; and is subject to the requirements to demonstrate conformity. The proposed project is identified in the latest conforming 2016 RTP/SCS (Amendment No. 3) and 2019 FTIP (Amendment No. 9); and has satisfactorily demonstrated conformity at the regional level. A project-level hot-spot analysis was conducted according to the EPA-approved CO Protocol and the latest Transportation Conformity Guidance for $PM_{2.5}$ and PM_{10}. The proposed project satisfies all criteria in Section 4.7.2 of the CO Protocol, and is therefore not anticipated to cause or worsen localized violations of new violations of the CO standards. The proposed project has undergone through a review by the IAC for its potential to cause concern for PM_{10} and $PM_{2.5}$. At its June 2019 meeting, stakeholders at the IAC concurred that the proposed project is not of air quality concern. As a result, the proposed project has satisfactorily demonstrated the project-level conformity requirements; and is not anticipated to worsen existing PM_{10} and $PM_{2.5}$ violations of delay timely attainment of the standards.

2.2.5.4 Cumulative Impacts

The proposed project is in Los Angeles County within the jurisdiction of SCAQMD, which is an air district within the SCAG region. The proposed project is in an area that is currently in nonattainment or maintenance for federal $PM_{2.5}$, PM_{10}, CO, and ozone standards. The area is currently in nonattainment of the state $PM_{2.5}$, PM_{10}, and ozone standards. As the MPO over the project area, SCAG has prepared the 2016 RTP/SCS as part of which a cumulative impact analysis was conducted. The result indicates that the 2016 RTP/SCS would not result in a cumulatively considerable net increase of any criteria pollutant for which the region is designated nonattainment because the projected long-term emissions are in alignment with local AQMPs/SIPs as demonstrated in their conformity analyses. The result also demonstrates that, when compared to the existing conditions, implementation of the 2016 RTP/SCS would result in either no change or a decrease in cumulative $PM_{2.5}$ and PM_{10} emissions. Ozone is assessed using the emissions of ozone precursors which include ROG and NOx. Since ROG and NOx emissions show a decrease from the existing conditions, the 2016 RTP/SCS forecasts that its implementation would not contribute to a net increase in ozone.

Long-term operational analyses demonstrate that such an ozone precursor like NOx is anticipated to decrease in the future. As a result, the proposed project is not anticipated to worsen the current violation of the state and federal $PM_{2.5}$, PM_{10}, or ozone standards; or create new violations of the state or federal standards for other criteria pollutants. Furthermore, this project is listed in the 2016 RTP/SCS and 2019 FTIP, which was found to conform to the SIP, demonstrating conformity at the regional level.

2.2.5.5 Avoidance, Minimization, and/or Mitigation Measures

Short-Term (Construction)

Most of the construction impacts to air quality are short-term in duration and, therefore, will not result in long-term adverse conditions. Implementation of the following measures, some of which may also be required for other purposes such as storm water pollution control will reduce any air quality impacts resulting from construction activities:

Air1 - The construction contractor must comply with the Caltrans' Standard Specifications in Section 14-9 (2018).

Section 14-9.02 specifically requires compliance by the contractor with all applicable laws and regulations related to air quality, including air pollution control district and air quality management district regulations and local ordinances.

Air2 - Water or a dust palliative will be applied to the site and equipment as often as necessary to control fugitive dust emissions. Fugitive emissions must meet a "no visible dust" criterion either at the right-of-way line according to the SCAQMD Rule 403.

Air3 - Soil binder will be spread on any unpaved roads used for construction purposes, and on all project construction parking areas.

Air4 - Trucks will be washed as they leave the right-of-way as necessary to control fugitive dust emissions.

Air5 - Construction equipment and vehicles will be properly tuned and maintained. All construction equipment will use low sulfur fuel as required by CA Code of Regulations Title 17, Section 93114.

Air6 - A dust control plan will be developed documenting sprinkling, temporary paving, speed limits, and timely re-vegetation of disturbed slopes as needed to minimize construction impacts to existing communities.

Air7 - Equipment and materials storage sites will be located as far away from residential and park uses as practicable. Construction areas will be kept clean and orderly.

Air8 - Environmentally sensitive areas (ESAs) will be established near sensitive air receptors. Within these areas, construction activities involving the extended idling of diesel equipment or vehicles will be prohibited, to the extent feasible.

Air9 - Track-out reduction measures, such as gravel pads at project access points to minimize dust and mud deposits on roads affected by construction traffic, will be used.

Air10 - All transported loads of soils and wet materials will be covered before transport, or adequate freeboard (space from the top of the material to the top of the truck) will be provided to minimize emission of dust during transportation.

Air11 - Dust and mud that are deposited on paved, public roads due to construction activity and traffic will be promptly and regularly removed to reduce PM emissions.

Air12 - To the extent feasible, construction traffic will be scheduled and routed to reduce congestion and related air quality impacts caused by idling vehicles along local roads during peak travel times.

Air13 - Mulch will be installed or vegetation planted as soon as practical after grading to reduce windblown PM in the area.

As noted above, Caltrans Standard Specifications specifically require compliance with all applicable laws and regulations related to air quality, which would include applicable rules and regulations of the respective AQMD such as Rules 401, 402, and 403.

Rule 401 requires no visible emissions be discharged in the atmosphere of such opacity for a period or periods aggregating more than three minutes in any one hour as to obscure an observer's view to a degree equal to or greater than the dark shade of smoke as that designated No. 1 on the Ringelmann Chart, as published by the United States Bureau of Mines. Rule 402 requires that air pollutant emissions not be a nuisance off-site.

SCAQMD's Rule 403 requires that fugitive dust be controlled with the best available control measures (BACM) in order to reduce dust so that it does not remain visible in the atmosphere beyond the property line of the proposed project. It also requires a dust control plan to be submitted and approved prior to construction. The dust control plan should describe all applicable dust control measures that will be implemented at the project; and should describe types of dust suppressant, surface treatments and other measures to be utilized at the construction sites to comply with the Rule.

Long-Term (Operational)

No avoidance, minimization, and/or mitigation measures are needed to reduce operational air quality impacts or GHG emissions. The proposed project is not anticipated to cause or contribute to any new violation of the state and federal standards of the criteria pollutants.

2.2.6 Climate Change

Neither U.S. EPA nor FHWA has issued explicit guidance or methods to conduct project-level greenhouse gas analysis. FHWA emphasizes concepts of resilience and sustainability in highway planning, project development, design, operations, and maintenance. Because there have been requirements set forth in California legislation and executive orders on climate change, the issue is addressed in the California Environmental Quality Act (CEQA) chapter of this document. The CEQA analysis may be used to inform the National Environmental Policy Act (NEPA) determination for the project.

2.2.7 Noise

2.2.7.1 Regulatory Setting

The National Environmental Policy Act (NEPA) of 1969 and the California Environmental Quality Act (CEQA) provide the broad basis for analyzing and abating highway traffic noise effects. The intent of these laws is to promote the general welfare and to foster a healthy environment. The requirements for noise analysis and consideration of noise abatement and/or mitigation, however, differ between NEPA and CEQA.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

CEQA requires a strictly baseline versus build analysis to assess whether a proposed project will have a noise impact. If a proposed project is determined to have a significant noise impact under CEQA, then CEQA dictates that mitigation measures must be incorporated into the project unless those measures are not feasible. The rest of this section will focus on the NEPA/Title 23 Part 772 of the Code of Federal Regulations (23 CFR 772) noise analysis; please see Chapter 3 of this document for further information on noise analysis under CEQA.

NATIONAL ENVIRONMENTAL POLICY ACT AND 23 CFR 772

For highway transportation projects with Federal Highway Administration (FHWA) involvement (and Caltrans, as assigned), the Federal-Aid Highway Act of 1970 and its implementing regulations (23 CFR 772) govern the analysis and abatement of traffic noise impacts. The regulations require that potential noise impacts in areas of frequent human use be identified during the planning and design of a highway project. The regulations include noise abatement criteria (NAC) that are used to determine when a noise impact would occur. The NAC differ depending on the type of land use under analysis. For example, the NAC for residences (67 dBA) is lower than the NAC for commercial areas (72 dBA). The following table lists the noise abatement criteria for use in the NEPA/23 CFR 772 analysis.

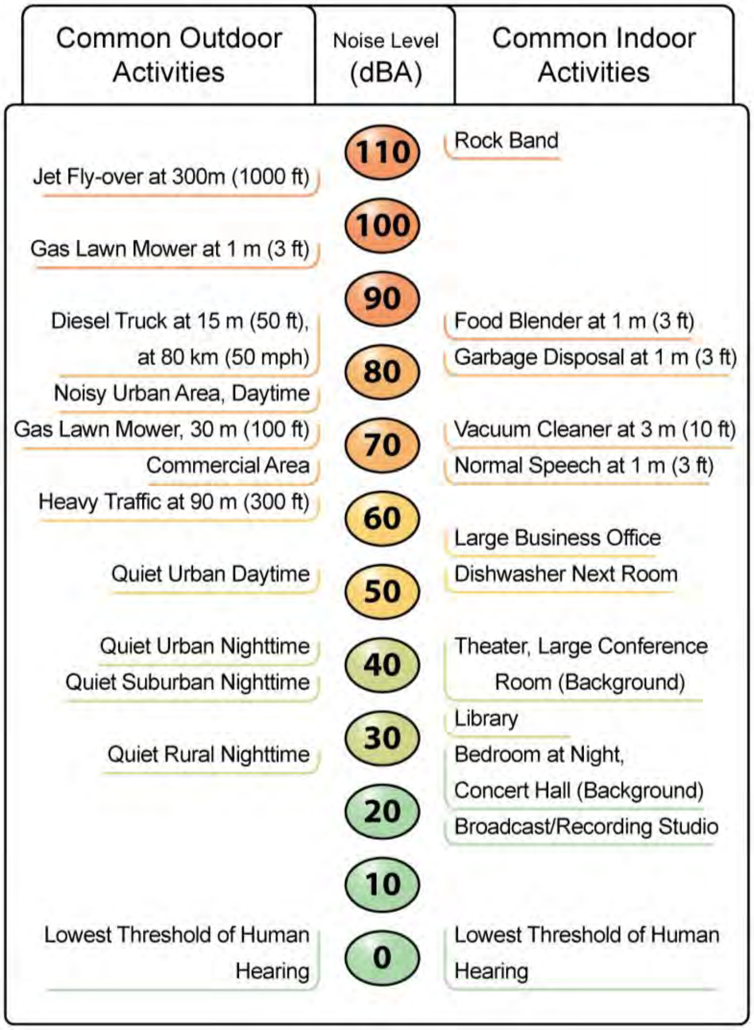
Table 2-110: Noise Abatement Criteria

Activity Category	NAC, Hourly A-Weighted Noise Level, Leq(h)	Description of activity category
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B[1]	67 (Exterior)	Residential.
C[1]	67 (Exterior)	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52 (Interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72 (Exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A–D or F.
F	No NAC—reporting only	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical, etc.), and warehousing.
G	No NAC—reporting only	Undeveloped lands that are not permitted.

[1] Includes undeveloped lands permitted for this activity category.

Figure 2-27 lists the noise levels of common activities to enable readers to compare the actual and predicted highway noise levels discussed in this section with common activities.

Figure 2-27: Noise Levels of Common Activities



According to Caltrans' *Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects, May 2011,* a noise impact occurs when the predicted future noise level with the project substantially exceeds the existing noise level (defined as a 12 dBA or more) or when the future noise level with the project approaches or exceeds the NAC. A noise level is considered to approach the NAC if it is within 1 dBA of the NAC.

If it is determined that the project will have noise impacts, then potential abatement measures must be considered. Noise abatement measures that are determined to be reasonable and feasible at the time of final design are incorporated into the project plans and specifications. This document discusses noise abatement measures that would likely be incorporated in the project.

Caltrans' *Traffic Noise Analysis Protocol* sets forth the criteria for determining when an abatement measure is reasonable and feasible. Feasibility of noise abatement is basically an engineering concern. Noise abatement must be predicted to reduce noise by at least 5 dB at an impacted receptor to be considered feasible from an acoustical perspective. It must also be possible to design and construct the noise abatement measure for it to be considered feasible. Factors that affect the design and constructability of noise abatement include, but are not limited to, safety, barrier height, topography, drainage, access requirements for driveways, presence of local cross streets, underground utilities, other noise sources in the area, and maintenance of the abatement measure. The overall reasonableness of noise abatement is determined by the following three factors: 1) the noise reduction design goal of 7 dB at one or more impacted receptors; 2) the cost of noise abatement; and 3) the viewpoints of benefited receptors (including property owners and residents of the benefited receptors).

2.2.7.2 Affected Environment

A Traffic Noise Study Report was prepared in December 2019 to evaluate the entire area within the project limits of potential traffic noise impacts that may result from the proposed project.

As part of the Traffic Noise Study report, a field noise investigation was conducted to determine existing noise levels and gather information to develop and calibrate the traffic noise model for predicting future noise levels. The entire area within the project limits was acoustically represented by 180 noise site locations. Existing noise levels were recorded at 153 locations and modeled at 28 locations. These locations are acoustically representative of the noise environment and land uses within the limits of the project. Existing ambient noise levels were between 34 and 73 decibels (dBA). Thirteen long-term (24-hour) noise levels readings were conducted to determine the noisiest hours within the project limits.

Single-family residences and multi-family residences were identified as Activity Category B while places of worship, schools, parks, playgrounds were identified as Activity Category C and D land uses in the project area. Hotels/motels and restaurants were identified under Activity Category E. Category F composed of airports, a nursery, a light rail station, a transit station, a suburban train line, park and ride, and industrial/commercial facilities. Most of the noise sensitive land uses are residences along I-105. Table 2-111 summarize the results of the short-term noise monitoring conducted in the project area. Table 2-121 summarizes the community background noise level measured within the project limits. See Table 2-111 to 2-113 for noise monitoring results at each long-term noise measurement sites and Figures 2-28 to 2-40 for noise monitoring graphs at each site.

Table 2-111: Short-Term Noise Measurements

Site	Address	Land Use	Date	Start Time	Duration (minutes)	Measured Leq-dBA	Freeway Direction	Number of MF Lanes + HOV	Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles	Observed Speed (mph)
W1	12712 Domart Avenue, Norwalk, CA 90650	Residential	3/27/2018	1:22 PM	10	64.5	WB	4+1	804	40	48	-	2	65
							EB	4+1	900	27	63	2	5	65
W2	10537 Boason Street, Norwalk, CA 90650	Residential	3/27/2018	1:22 PM	10	60.1	WB	4+1	804	40	48	-	2	65
							EB	4+1	900	27	63	2	5	65
W3	12820 Woodruf Avenue, Downey, CA 90242	Church	3/28/2018	9:36 AM	10	59.9	WB	4+1	663	34	51	2	2	65
							EB	4+1	920	27	72	1	2	65
W4	12822 Ibbetson Avenue, Downey, CA 90242	Residential	3/27/2018	10:38 AM	10	66.8	WB	4+1	749	47	56	-	3	60-65
							EB	4+1	862	26	77	1	3	65
W5	12830 Dunrobin Avenue, Downey, CA 90242	Residential	3/27/2018	10:38 AM	10	61.8	WB	4+1	749	47	56	-	3	60-65
							EB	4+1	862	26	77	1	3	65
W6	9634 Adoree Sreet, Downey, CA 90242	Residential	3/27/2018	10:38 AM	10	62.2	WB	4+1	749	47	56	-	3	60-65
							EB	4+1	862	26	77	1	3	65
E1	13028 Curtis & King Road, Norwalk, CA 90650	Residential	3/28/2018	10:26 AM	10	54	WB	4+1	743	33	57	1	2	50-65
							EB	4+1	989	22	80	1	4	65
E2	10515 Angell Street, Norwalk, CA 90650	Residential	3/28/2018	10:24 AM	10	57.7	WB	4+1	743	33	57	1	2	50-65
							EB	4+1	989	22	80	1	4	65
E3	13008 Carfax Avenue, Downey, CA 90242	Residential	3/28/2018	10:52 AM	10	59.6	WB	4+1	816	42	67	-	2	45-65
							EB	4+1	926	19	83	1	3	65
E4	10204 Laurelwood Ln, Downey, CA 90242	Residential	3/27/2018	11:19 AM	10	62.4	WB	4+1	703	32	59	-	3	65
							EB	4+1	941	25	80	2	4	65
E5	13012 Ibbetson Avenue, Downey, CA 90242	Residential	3/27/2018	11:01 AM	10	60.2	WB	4+1	802	44	50	-	-	60-65
							EB	4+1	956	33	69	-	1	65
E6	13019 Eastbrook Avenue, Downey, CA 90242	Residential	3/27/2018	11:00 AM	10	60.9	WB	4+1	802	44	50	-	-	60-65
							EB	4+1	956	33	69	-	1	65
E7	13028 Adenmoor Avenue, Downey, CA 90242	Residential	3/27/2018	11:20 AM	10	60.7	WB	4+1	703	32	59	-	3	65
							EB	4+1	941	25	80	2	4	65

Table 2-111: Short-Term Noise Measurements Cont.

Site	Address	Land Use	Date	Start Time	Duration (minutes)	Measured Leq-dBA	Freeway Direction	Number of MF Lanes + HOV	Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles	Observed Speed (mph)
W7	9539 Adoree Street, Downey, CA 90242	Residential	4/6/2018	10:35 AM	10	59.4	WB	4+1	819	42	79	1	3	65
							EB	4+1	896	19	75	-	2	65-75
W8	9419 Adoree Street, Downey, CA 90242	Residential	4/6/2018	10:21 AM	10	61.9	WB	4+1	803	50	79	1	2	60-65
							EB	4+1	806	28	60	1	1	65
W9	12830 Columbia Way, Downey, CA 90242	School	4/6/2018	10:56 AM	10	59.9	WB	4+1	887	46	76	2	3	65-75
							EB	4+1	937	30	76	-	-	65
W10	9157 Adoree Street, Downey, CA 90242	Residential	4/6/2018	9:40 AM	10	62.7	WB	4+1	785	41	48	2	1	65
							EB	4+1	823	26	68	1	1	65
W11	9033 Adoree Street, Downey, CA 90242	Residential	4/6/2018	10:00 AM	10	61	WB	4+1	834	47	82	1	6	65
							EB	4+1	756	30	78	-	1	45-60
E8	9638 Angell Sreet, Downey, CA 90242	Residential	4/5/2018	10:04 AM	10	59.2	WB	4+1	895	40	65	2	3	60-65
							EB	4+1	823	31	75	1	3	65
E9	13037 Rutgers Avenue, Downey, CA 90242	Residential	4/5/2018	9:45 AM	10	62.2	WB	4+1	959	49	60	2	3	65
							EB	4+1	864	33	77	1	1	65
E10	13022 Premiere Avenue, Downey, CA 90242	Residential	4/5/2018	9:45 AM	10	58.9	WB	4+1	959	49	60	2	3	65
							EB	4+1	864	33	77	1	1	65
E11	13200 Columbia Way, Downey, CA 90242	Church	4/5/2018	10:42 AM	10	52.1	WB	4+1	728	39	81	2	7	60-65
							EB	4+1	826	30	70	-	3	65
E11A*			4/5/2018	10:30 AM	10	36.3	WB	4+1	728	39	81	2	7	60-65
							EB	4+1	826	30	70	-	3	65
E12	9172 Angell Sreet, Downey, CA 90242	Residential	4/5/2018	10:58 AM	10	57.2	WB	4+1	800	41	70	2	3	65
							EB	4+1	734	28	66	1	4	65
E13	9078 Angell Street, Downey, CA 90242	Residential	4/5/2018	11:15 AM	10	59.2	WB	4+1	670	35	63	-	3	65
							EB	4+1	809	21	51	2	2	65
E14	12852 Lakewood Boulevard, Downey, CA 90242	Residential	4/5/2018	12:30 PM	10	57.7	WB	4+1	780	35	67	1	3	50-60
							EB	4+1	746	29	63	-	5	60

Table 2-111: Short-Term Noise Measurements Cont.

Site	Address	Land Use	Date	Start Time	Duration (minutes)	Measured Leq-dBA	Freeway Direction	Number of MF Lanes + HOV	Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles	Observed Speed (mph)
W12	8801 Cheyenne Street, Downey, CA 90242	Residential	4/24/2018	11:06 AM	10	59.8	WB	3+1	860	58	68	2	1	65
							EB	3+1	770	40	75	1	4	65
W13	12942 Sandy Lane, Downey, CA 90242	Residential	4/24/2018	11:20 AM	10	58.5	WB	3+1	919	38	68	1	4	65
							EB	3+1	865	36	61	2	2	65
W14	13020 Laureldale Avenue, Downey, CA 90242	Residential	4/24/2018	11:37 AM	10	60.9	WB	3+1	856	44	93	2	-	65
							EB	3+1	890	33	75	-	-	65
W15	13330 Downey Avenue, Paramount, CA 90723	Residential	4/25/2018	11:53 AM	10	56.2	WB	3+1	784	38	79	2	2	65
							EB	3+1	814	36	83	1	2	65
W16	13330 Orizaba Avenue, Paramount, CA 90723	Park	4/24/2018	1:18 PM	10	57.8	WB	3+1	769	21	54	2	2	65
							EB	3+1	1028	30	41	2	6	60-65
W18	13422 Ruther Avenue, Paramount, CA 90723	Residential	4/26/2018	10:24 AM	10	59.4	WB	3+1	923	57	67	-	6	65
							EB	3+1	898	38	70	1	4	65
E15	1304 Airport Avenue, Downey, CA 90242	Residential	4/24/2018	10:46 AM	10	59.5	WB	3+1	853	43	88	2	2	65
							EB	3+1	908	39	74	2	1	65
E16	13035 Barlin Avenue, Downey, CA 90242	Residential	4/26/2018	10:04 AM	10	61.3	WB	3+1	940	29	88	1	-	65
							EB	3+1	874	47	82	1	2	60-65
E17	13102 Verdura Avenue, Downey, CA 90242	Residential	4/24/2018	11:54 AM	10	67.7	WB	3+1	806	52	62	3	2	65
							EB	3+1	906	33	70	1	2	65
E18	8314#A Somerset Ranch Rd, Paramount, CA 90723	Residential	4/25/2018	12:59 PM	10	64.8	WB	3+1	857	36	75	-	3	65
							EB	3+1	1010	31	59	-	5	65
E19	8230 Golden Avenue, Paramount, CA 90723	Residential	4/26/2018	11:04 AM	10	55.7	WB	3+1	868	42	99	2	3	65
							EB	3+1	812	32	74	1	5	65
E20*	13451 Merkel Avenue, Paramount, CA 90723	Residential	4/25/2018	9:49 AM	10	37.0	WB	3+1	963	27	64	6	6	65
							EB	3+1	954	29	77	1	2	65
E21	8108 Rancho Valero Road, Paramount, CA 90723	Residential	4/25/2018	11:30 AM	10	53	WB	3+1	784	38	79	2	2	65
							EB	3+1	814	36	83	1	2	65
E22	8113 Rancho Del Oro street, Paramount, CA 90723	Church	4/25/2018	11:30 AM	10	56.4	WB	3+1	784	38	79	2	2	65
							EB	3+1	814	36	83	1	2	65
E23	8302 Rancho Dorado Road, Paramount, CA 90723	Residential	4/26/2018	11:04 AM	10	57.2	WB	3+1	868	42	99	3	3	65
							EB	3+1	812	32	74	1	5	65

Table 2-111: Short-Term Noise Measurements Cont.

Site	Address	Land Use	Date	Start Time	Duration (minutes)	Measured Leq-dBA	Freeway Direction	Number of MF Lanes + HOV	Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles	Observed Speed (mph)
W19	6171 Folrence Avenue, South Gate, CA 90280	Residential	5/2/2018	11:04 AM	10	62.2	WB	4+1	739	33	67	1	2	65
							EB	4+1	755	35	75	2	3	65
W20	6127 Nevada Avenue, South Gate, CA 90280	Residential	5/2/2018	10:47 AM	10	62.0	WB	5+1	767	47	101	1	2	65
							EB	4+1	723	32	69	1	-	65
W21	13726 Florine Avenue, Paramount, CA 90723	Residential	5/2/2018	10:30 AM	10	63.4	WB	5+1	743	43	69	1	2	65
							EB	5+1	780	25	71	-	-	65
W22	13714 Racine Avenue, Paramount, CA 90723	Residential	5/2/2018	12:01 PM	10	56.9	WB	3+1	750	25	89	3	2	65
							EB	5+1	765	27	62	1	1	65
W23	7346 Howery Street, South Gate, CA 90280	Residential	5/3/2018	11:17 AM	10	62	WB	5+1	739	44	78	2	3	65
							EB	3+1	776	23	66	-	2	65
W24	7134 Cloverlawn Drive, Paramount, CA 90723	Residential	5/3/2018	10:55 AM	10	56.9	WB	3+1	753	39	92	2	4	65
							EB	3+1	796	24	66	-	1	65
E24	7812 Denver Street, Paramount, CA 90723	Residential	5/2/2018	11:24 AM	10	61.4	WB	3+1	743	37	85	1	-	65
							EB	3+1	850	32	88	1	1	45-60
E25	13802 Facade Avenue, Paramount, CA 90723	Residential	5/2/2018	10:07 AM	10	67.3	WB	5+1	861	40	78	3	4	65
							EB	4+1	911	35	78	1	2	50-60
E26	13814 Racine Avenue, Paramount, CA 90723	Residential	5/2/2018	10:07 AM	10	60.6	WB	3+1	861	40	78	3	4	65
							EB	5+1	911	35	78	1	2	50-60
E27	7441 Rood Street, Paramount, CA 90723	Residential	5/3/2018	10:32 AM	10	59.2	WB	5+1	723	31	63	2	2	65
							EB	5+1	861	29	86	1	3	65
E28	7325 Rood Street, Paramont, CA 90723	Residential	5/3/2018	10:13 AM	10	61.8	WB	3+1	756	40	71	1	3	65
							EB	4+1	747	29	69	2	2	65

Table 2-111: Short-Term Noise Measurements Cont.

Site	Address	Land Use	Date	Start Time	Duration (minutes)	Measured Leq-dBA	Freeway Direction	Number of MF Lanes + HOV	Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles	Observed Speed (mph)
W42	11700 Lugo Park Avenue, Lynwood, CA 90262	Residential	6/26/2018	10:35 AM	10	61.3	WB	4+1	1183	30	35	1	3	65
							EB	4+1	867	46	29	6	2	65
E36	5210 Josephine Street, Lynwood, CA90262	Residential	6/26/2018	10:50 AM	10	64.3	WB	4+1	1100	24	38	3	4	65
							EB	4+1	903	41	32	-	3	65
E37	11832 Atlantic Avenue, Lynwood, CA 90262	Park	6/26/2018	11:05 AM	10	60.4	WB	4+1	1135	33	42	-	3	65
							EB	4+1	866	38	44	4	2	65
W43	11701 Pope Avenue, Lynwood, CA 90262	Residential	6/26/2018	11:22 AM	10	62.7	WB	4+1	1200	20	37	5	4	65
							EB	4+1	972	45	52	1	2	60
W44	4357 Fernwood Avenue, Lynwood, CA 90262	Residential	6/26/2018	11:42 AM	10	65.1	WB	4+1	1183	27	34	3	3	65
							EB	4+1	958	49	45	3	3	60
W45	33.917805, -118.192345 Lynwood, CA 90262	Park	6/26/2018	12:40 PM	10	64.9	WB	4+1	1177	19	25	-	5	65
							EB	4+1	969	34	45	1	1	60
W46	4225 Fernwood Avenue, Lynwood, CA 90262	Residential	6/26/2018	12:54 PM	10	68	WB	4+1	1188	19	24	1	3	65
							EB	4+1	999	26	47	2	1	65
E39	11736 4th Avenue, Lynwood, CA 90262	Residential	6/26/2018	1:09 PM	10	62.6	WB	4+1	1172	36	29	1	5	65
							EB	4+1	977	36	34	2	6	65
E38	11733 1st Avenue, Lynwood, CA 90262	Residential	6/26/2018	1:25 PM	10	61.4	WB	4+1	1149	36	31	2	6	65
							EB	4+1	1012	30	40	1	5	65
E42	11730 1st Avenue, Lynwood, CA 90262	Residential	6/26/2018	1:25 PM	10	61.6	WB	4+1	1149	36	31	2	6	65
							EB	4+1	1012	30	40	1	5	65
W47	33.919383,-118.196020 Lynwood, CA 90262	Park	6/27/2018	9:45 AM	10	61.8	WB	4+1	1055	37	32	3	5	60
							EB	4+1	1146	30	46	3	5	65

Table 2-111: Short-Term Noise Measurements Cont.

Site	Address	Land Use	Date	Start Time	Duration (minutes)	Measured Leq-dBA	Freeway Direction	Number of MF Lanes + HOV	Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles	Observed Speed (mph)
E41	4040 Louise Street, Lynwood, CA 90262	Residential	6/27/2018	10:02 AM	10	61.4	WB	4+1	1117	46	24	2	4	60
							EB	4+1	1109	35	38	4	1	65
W48	3935 Fernwood Avenue, Lynwood, CA 90262	Residential	6/27/2018	10:49 AM	10	63	WB	4+1	919	25	44	1	2	60
							EB	4+1	997	30	31	3	2	65
W49	3865 Fernwood Avenue, Lynwood, CA 90262	Residential	6/27/2018	11:08 AM	10	63.4	WB	4+1	981	33	39	3	2	60
							EB	4+1	1137	22	31	3	-	65
W50*	3801 Cortland Street, Lynwood, CA 90262	School	6/27/2018	11:29 AM	10	46.4	WB	4+1	1065	40	40	6	2	60
							EB	4+1	1209	31	34	1	-	65
E43	3867 Ernestine Avenue, Lynwood, CA 90262	Residential	6/27/2018	12:48 PM	10	58.3	WB	4+1	1251	18	25	-	5	60
							EB	4+1	963	38	40	3	5	65
W51	3693 Fernwood Avenue, Lynwood, CA 90262	Residential	6/28/2018	9:48 AM	10	65	WB	4+1	1171	34	32	7	7	55
							EB	4+1	862	42	42	3	3	65
E45*	11700 School Street, Lynwood, CA 90262 (Indoor)	School	6/28/2018	10:14 AM	10	34.1	WB	4+1	1123	26	44	4	2	55
							EB	4+1	945	61	43	1	1	65
E46	11700 School Street, Lynwood, CA 90262	School	6/28/2018	10:28 AM	10	58.1	WB	4+1	1123	26	44	4	2	50-60
							EB	4+1	945	61	43	1	1	65
E44	3666 Lynwood Road, Lynwood, CA 90262	Residential	6/28/2018	10:49 AM	10	61.2	WB	4+1	1086	39	45	2	5	55
							EB	4+1	1031	65	36	3	4	65
W52*	3655 Fernwood Avenue, Lynwood, CA 90262	Church	6/28/2018	11:10 AM	10	41.5	WB	4+1	1022	20	32	-	3	55
							EB	4+1	980	59	36	5	6	65

Table 2-111: Short-Term Noise Measurements Cont.

Site	Address	Land Use	Date	Start Time	Duration (minutes)	Measured Leq-dBA	Freeway Direction	Number of MF Lanes + HOV	Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles	Observed Speed (mph)
W53	11401 Long Beach Blvd, Lynwood, CA 90262	Hotel	7/10/2018	1:13 PM	10	58.1	WB	3+1	1242	32	33	2	1	50-65
							EB	3+1	1012	23	28	3	4	65
W54	2965 Fernwood Avenue, Lynwood, CA 90262	Residential	7/10/2018	11:42 AM	10	68.9	WB	3+1	867	30	39	4	2	65
							EB	3+1	1072	39	30	5	2	40-50
W55	2436 East 115th Place, Los Angeles, CA 90059	Residential	7/11/2018	10:29 AM	10	72.7	WB	3+1	1029	36	37	1	4	65
							EB	3+1	931	24	36	1	1	55-65
W56	East 115th Place, Los Angeles, CA 90059	School	7/11/2018	10:29 AM	10	61	WB	3+1	1029	36	37	1	4	65
							EB	3+1	931	24	36	1	1	55-65
W57	2077 East Imperial Hwy, Los Angeles, CA 90059	Residential	7/11/2018	10:59 AM	10	72.8	WB	3+1	907	38	39	3	3	65
							EB	3+1	715	16	26	1	6	65-70
W58*	2003 East Imperial Hwy, Los Angeles, CA 90059	Church	7/11/2018	10:59 AM	10	39.1	WB	3+1	907	38	39	3	3	65
							EB	3+1	715	16	26	1	6	65-70
E47	3237 Flower Street, Lynwood CA 90262	Residential	7/10/2018	11:19 PM	10	56.4	WB	4+1	1080	29	27	2	2	65
							EB	4+1	830	38	27	2	2	45-60
E48	3172 Redwood Avenue, Lynwood, CA 90262	Residential	7/10/2018	11:17 AM	10	59.8	WB	4+1	830	38	27	2	6	45-60
							EB	3+1	1080	29	27	2	2	65
E49	11419 Pear Street, Lynwood, CA 90262	Residential	7/10/2018	11:41 AM	10	62.6	WB	4+1	867	30	39	4	2	65
							EB	4+1	1072	39	30	5	2	40-50
E50	11426 Plum Street, Lynwood, CA 90262	Residential	7/10/2018	11:41 AM	10	62.8	WB	3+1	867	30	39	4	2	65
							EB	3+1	1072	39	30	5	2	40-50
E51	11653 Gorman Avenue, Los Angeles, CA 90059	Residential	7/11/2018	11:27 AM	10	61.3	WB	3+1	1000	24	29	3	8	65
							EB	3+1	1217	35	36	5	2	65
E52	11664 Lou Dillon Avenue, Los Angeles, CA 90059	Residential	7/11/2018	11:27 AM	10	59.1	WB	3+1	1000	24	29	3	8	65
							EB	3+1	1217	35	36	5	2	65

Table 2-111: Short-Term Noise Measurements Cont.

Site	Address	Land Use	Date	Start Time	Duration (minutes)	Measured Leq-dBA	Freeway Direction	Number of MF Lanes + HOV	Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles	Observed Speed (mph)
W59	1763 E.Imperial Highway, Los Angeles, CA 90059	Residential	7/12/2018	11:59 AM	10	68.3	WB	3+1	1159	20	28	2	3	65
							EB	3+1	1031	54	29	3	2	65
W60*	1700 E. Imperial Highway, Los Angeles, CA 90059	School	7/13/2018	11:03 AM	10	47.9	WB	3+1	1159	20	28	2	3	65
							EB	3+1	1031	54	29	3	2	65
W60	1700 E. Imperial Highway, Los Angeles, CA 90059	School	7/13/2018	11:03 AM	10	60.5	WB	3+1	1159	20	28	2	3	65
							EB	3+1	1031	54	29	3	2	65
W61	1639 E. Imperial Highway, Los Angeles, CA 90059	Residential	7/12/2018	11:59 AM	10	71.6	WB	3+1	1159	20	28	2	3	65
							EB	3+1	1031	54	29	3	2	65
W62	1421 E. Imperial Highway, Los Angeles, CA 90059	Residential	7/12/2018	11:07 AM	10	66.6	WB	3+1	1104	28	38	2	2	65
							EB	4+1	967	60	28	4	-	65
E53	1764 E 117th Street, Los Angeles, CA 90059	Residential	7/12/2018	11:36 AM	10	59.6	WB	3+1	1201	36	17	2	6	65
							EB	3+1	998	56	23	2	4	65
E54	1641 East 117th Street, Los Angeles, CA 90059	Residential	7/12/2018	11:35 PM	10	59.3	WB	3+1	1201	36	17	2	6	65
							EB	4+1	998	56	23	2	4	65
E55	11645 Success Avenue, Los Angeles, CA 90059	Residential	7/12/2018	11:36 AM	10	63.7	WB	3+1	1201	36	17	2	6	65
							EB	3+1	998	56	23	2	4	65
E56	11658 Robin Street, Los Angeles, CA 90059	Residential	7/12/2018	11:07 AM	10	61.7	WB	4+1	1104	28	38	2	2	65
							EB	3+1	967	60	28	4	-	65

Table 2-111: Short-Term Noise Measurements Cont.

Site	Address	Land Use	Date	Start Time	Duration (minutes)	Measured Leq-dBA	Freeway Direction	Number of MF Lanes + HOV	Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles	Observed Speed (mph)
W63	949 East 116th Place, Los Angeles, CA 90059	Residential	7/18/2018	10:48 AM	10	65.4	WB	4+1	1266	33	26	2	6	65
							EB	3+1	933	39	45	2	1	65
W64	11652 Wadsworth Ave, Los Angeles, CA 90059	Residential	7/18/2018	10:28 AM	10	62.8	WB	4+1	1266	33	26	2	6	65
							EB	3+1	933	39	45	2	1	65
W65	11610 Stanford Avenue, Los Angeles, CA 90059	School	7/18/2018	11:07 AM	10	58.9	WB	4+1	1389	15	36	3	3	65
							EB	4+1	955	50	35	1	-	65
W66	629 East 116th Place, Los Angeles, CA 90059	Residential	7/18/2018	11:06 AM	10	63.7	WB	4+1	1389	15	36	3	3	65
							EB	4+1	955	50	35	1	-	65
W67	362 East 116th Place, Los Angeles, CA 90061	Residential	7/18/2018	11:31 AM	10	60.6	WB	5+1	1353	25	30	2	4	65
							EB	4+1	973	29	28	-	1	65
W68	239 East 116th Place, Los Angeles, CA 90061	Residential	7/18/2018	11:31 AM	10	63.6	WB	5+1	1353	25	30	2	4	65
							EB	4+1	973	29	28	-	1	65
W69	133 East 116th Place, Los Angeles, CA 90061	Residential	7/17/2018	11:53 AM	10	67.9	WB	5+1	1231	26	19	2	1	65
							EB	4+1	957	37	32	2	4	65
W70	11509 South Spring Street, Los Angeles, CA 90061	Residential	7/17/2018	11:53 AM	10	60.6	WB	4+1	1231	26	19	2	1	65
							EB	4+1	957	37	32	2	4	65
E57	11701 Belhaven Street, Los Angeles, CA 90059	Church	7/17/2018	10:35 AM	10	63.3	WB	4+1	1316	25	34	-	2	65
							EB	4+1	939	32	37	3	4	65
E58	913 East 118th Street, Los Angeles, CA 90059	School	7/17/2018	10:30 AM	10	56.8	WB	4+1	1316	25	34	-	2	65
							EB	4+1	939	32	37	3	4	65
E59	721 East 118th Street, Los Angeles, CA 90059	Residential	7/17/2018	10:36 AM	10	57	WB	4+1	1316	25	34	-	2	65
							EB	4+1	939	32	37	3	4	65
E60*	675 East 118th Street, Los Angeles, CA 90059	Residential	7/17/2018	11:03 AM	10	39.3	WB	4+1	1266	25	26	3	4	65
							EB	4+1	917	42	44	2	3	50-65
E61	415 East 118th Street, Los Angeles, CA 90061	Residential	7/17/2018	11:04 AM	10	55	WB	5+1	1266	25	26	3	4	65
							EB	4+1	917	42	44	2	3	50-65
E62	211 East 118th Street, Los Angeles, CA 90061	Residential	7/17/2018	11:28 AM	10	57.1	WB	5+1	1180	31	30	-	7	65
							EB	4+1	916	40	41	2	2	65
E63	152 West 117th Street, Los Angeles, CA 90061	Residential	7/17/2018	11:27 AM	10	59.6	WB	4+1	1180	31	30	-	7	65
							EB	4+1	916	40	41	2	2	65

Table 2-111: Short-Term Noise Measurements Cont.

Site	Address	Land Use	Date	Start Time	Duration (minutes)	Measured Leq-dBA	Freeway Direction	Number of MF Lanes + HOV	Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles	Observed Speed (mph)
W71	557 West 115th Street, Los Angeles, CA 90044	Residential	7/18/2018	13:09:00 PM	10	64.9	WB	4+1	1139	18	24	2	5	65
							EB	4+1	1242	28	31	1	3	65
W72	11515 Menlo Avenue, Los Angeles, CA 90044	Residential	7/18/2018	13:09:00 PM	10	61.9	WB	4+1	1139	18	24	2	5	65
							EB	4+1	1242	28	31	1	3	65
W73	11506 Berendo Avenue, Los Angeles, CA 90044	Residential	7/19/2018	11:11 AM	10	59.8	WB	4+1	1096	36	28	2	5	65-70
							EB	4+1	1230	46	34	2	4	20-30
W74	1600 W Imperial Hwy, Los Angeles, CA 90047	School	7/31/2018	11:59 AM	10	57.9	WB	4+1	1322	29	29	1	3	40-60
							EB	4+1	1313	23	35	-	1	65-75
W75*	1600 W Imperial Hwy, Los Angeles, CA 90047	School	7/31/2018	12:06 PM	10	39.4	WB	4+1	1322	29	29	1	3	40-60
							EB	4+1	1313	23	35	-	1	65-75
W76	11723 Ruthelen Street, Los Angeles, CA 90047	Residential	7/31/2018	1:27 PM	10	67.6	WB	4+1	1390	27	34	2	5	50-60
							EB	4+1	1340	39	23	-	1	65-75
W77	11731 Tarron Avenue, Hawthorne, CA 90250	Residential	7/31/2018	1:27 PM	10	58.9	WB	4+1	1309	18	18	1	7	50-65
							EB	4+1	1342	35	23	-	2	65-75
W78	11836 Purche Avenue, Hawthorne CA 90250	Residential	7/31/2018	11:35 AM	10	65.8	WB	4+1	1390	27	34	2	5	50-60
							EB	4+1	1340	39	23	-	1	65-75
W79	11828 Chanera Av. Hawthorne, CA 90250	Residential	7/31/2018	11:35 AM	10	62.2	WB	4+1	1390	27	34	2	5	50-60
							EB	4+1	1340	39	23	-	1	65-75
E64	557 West 117th Street, Los Angeles, CA 90044	Residential	7/18/2018	12:44 PM	10	66.1	WB	4+1	1087	20	40	5	9	50-65
							EB	4+1	1087	20	40	5	9	65
E65	761 West 117th Street, Los Angeles, CA 90044	Residential	7/18/2018	12:44 PM	10	59.2	WB	4+1	1087	20	40	5	9	65
							EB	4+1	1087	20	40	5	9	65
E66	1060 W. 117th Street, Los Angeles, CA 90044	Residential	7/18/2018	12:44 PM	10	59.0	WB	4+1	1087	20	40	5	9	65
							EB	4+1	1087	20	40	5	9	65
E67	1315 Geddes Street, Los Angeles, CA 90044	Residential	7/19/2018	11:31 AM	10	53.6	WB	4+1	1043	29	33	2	1	65
							EB	4+1	1279	47	34	1	2	65
E68	1633 W. Bruin Street, Los Angeles, CA 90047	Residential	7/31/2018	1:27 PM	10	68.6	WB	4+1	1309	18	18	1	7	50-65
							EB	4+1	1342	35	23	-	2	65-75
E69	1925 Loganside Drive, Los Angeles, CA90047	Residential	8/1/2018	10:56 AM	10	63.2	WB	4+1	1325	34	28	3	2	65-75
							EB	4+1	1285	33	25	1	1	60-65
E70	11908 Cimarron Avenue, Hawthorne, CA 90250	Residential	8/1/2018	10:56 AM	10	54.9	WB	4+1	1325	34	28	3	2	65-75
							EB	4+1	1285	33	25	1	1	60-65

Table 2-111: Short-Term Noise Measurements Cont.

Site	Address	Land Use	Date	Start Time	Duration (minutes)	Measured Leq-dBA	Freeway Direction	Number of MF Lanes + HOV	Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles	Observed Speed (mph)
W80	11811 Simms Avenue, Inglewood , CA 90303	Residential	8/7/2018	11:02 AM	10	57.5	WB	4+1	1243	32	38	1	8	65-75
							EB	4+1	1121	33	32	1	2	65-75
W81	3324 W 118th Place, Inglewood, CA 90303	Residential	8/7/2018	11:40 AM	10	57.0	WB	4+1	1419	28	30	4	2	65-75
							EB	4+1	1232	37	26	1	2	65-75
W82*	Bennett/Kew Elementary School, Inglewood, CA90303	School	8/7/2018	10:29 AM	10	46.3	WB	4+1	1419	28	30	4	2	65-75
							EB	4+1	1232	37	26	1	2	65-75
W83	11909 Yukon Avenue, Inglewood, CA 90303	Residential	8/7/2018	11:02 AM	10	63.1	WB	4+1	1243	32	38	1	8	65-75
							EB	4+1	1121	33	32	1	2	65-75
W84	3753 W118th Street, Hawthorne, CA 90250	Residential	8/7/2018	11:30 AM	10	67.1	WB	4+1	1419	28	30	4	2	65-75
							EB	4+1	1232	37	26	1	2	65-75
W85	3857 116th Street, Hawthorne, CA 90250	Residential	8/7/2018	11:29 PM	10	68.6	WB	4+1	1419	28	30	4	2	65-75
							EB	4+1	1232	37	26	1	2	65-75
W86	3929 W115th Street, Hawthorne, CA90250	Residential	8/7/2018	11:30 AM	10	64.3	WB	4+1	1419	28	30	4	2	65-75
							EB	4+1	1232	37	26	1	2	65-75
W87	11138 S Freeman Avenue, Inglewood, CA 90304	Residential	8/7/2018	12:01 PM	10	63.5	WB	4+1	1305	31	44	-	8	65-75
							EB	4+1	1173	37	28	-	2	65-75
E71	11925 Almertens Place, Inglewood, CA 90303	Residential	8/7/2018	1:43 PM	10	61.0	WB	4+1	1413	21	20	7	2	65-75
							EB	4+1	1026	26	33	3	2	10 to 50
E72	3803 118th Street, Hawthorne, CA 90250	Residential	8/7/2018	1:43 PM	10	59.7	WB	4+1	1413	21	20	7	2	65-75
							EB	4+1	1026	26	33	3	2	10 to 50
E73	3908 W 117th Street, Hawthorne, CA 90250	Residential	8/7/2018	1:43 PM	10	59.7	WB	4+1	1413	21	20	7	2	65-75
							EB	4+1	1026	26	33	3	2	10 to 50
E74	11501 York Avenue, Hawthorne, CA 90250	Residential	8/7/2018	12:02 PM	10	65.4	WB	4+1	1305	31	44	2	8	65-75
							EB	4+1	1173	37	28	4	2	65-75
E75	11301 Larch Avenue, Lennox, CA 90304	Residential	8/7/2018	12:01 PM	10	56.3	WB	4+1	1305	31	44	2	8	65-75
							EB	4+1	1173	37	28	4	2	65-75

Table 2-111: Short-Term Noise Measurements Cont.

Site	Address	Land Use	Date	Start Time	Duration (minutes)	Measured Leq-dBA	Freeway Direction	Number of MF Lanes + HOV	Autos	Medium Trucks	Heavy Trucks	Buses	Motorcycles	Observed Speed (mph)
W88	11109 S Grevillea Avenue, Ingelwood, CA90304	Residential	9/19/2018	11:25 AM	10	58.1	WB	5+1	1067	44	31	4	5	65
							EB	4+1	1311	25	28	3	3	65
W89	11138 S Trvro Avenue, Inglewood, CA 90304	Residential	9/19/2018	11:43 AM	10	68.9	WB	5+1	1020	31	44	3	3	65
							EB	4+1	1438	33	33	4	2	65
W90	11144 Dalerose Avenue, Inglewood, CA90304	Residential	9/19/2018	11:02 AM	10	62.0	WB	5+1	1020	31	44	3	3	65
							EB	4+1	1438	33	33	4	2	65
W91	4850 W 112th Street, Inglewood, CA 90304	Residential	9/19/2018	11:01 AM	10	63.5	WB	3+1	1020	31	44	3	3	65
							EB	3+1	1438	33	33	4	2	65
W92	4952 N 112th Street, Inglewood, CA 90304	Residential	8/8/2018	11:15 AM	10	64.4	WB	3+1	1020	31	44	3	3	65
							EB	3+1	1438	33	33	4	2	65
E76	11156 S Grevillea Avenue, Inglewood, CA 90304	Residential	9/19/2018	11:25 AM	10	66.6	WB	5+1	1067	44	31	4	5	65
							EB	4+1	1311	25	28	3	3	65
E77	11200 Firmona Avenue, Inglewood, CA90304	Residential	9/19/2018	11:46 AM	10	63.3	WB	5+1	1027	24	29	5	2	65
							EB	4+1	1422	44	37	2	2	65
E78	11300 Condon Avenue, Indlewood, CA90304	Residential	9/19/2018	11:46 AM	10	63.6	WB	5+1	1027	24	29	5	2	65
							EB	4+1	1422	44	37	2	2	65
E79	11431 Gale Avenue, Hawthorne, CA 90250	Residential	9/19/2018	12:12 PM	10	62.5	WB	3+1	977	27	27	5	3	65
							EB	3+1	1263	41	35	3	8	40-55
E80	11524 Felton Avenue, Los Angeles, CA90045	Residential	9/19/2018	12:12 PM	10	67.1	WB	4	977	27	27	5	3	65
							EB	3+1	1263	41	35	3	8	40-55
E81	5400 W 116th Street, Ingelwood, CA90304	Residential	9/19/2018	12:41 AM	10	62.8	WB	3	437	3	7	-	2	65
							EB	3	571	13	9	1	2	65
E82	5308 W 116th Street, Inglewood, CA 90304	Residential	9/19/2018	12:41 PM	10	62	WB	3	437	3	7	-	2	65
							EB	3	571	13	9	1	2	65

Table 2-112: Background Noise Measurements

Site	Address	Freeway Direction	Land Uses	Start Time	Date	Duration (minutes)	Measured Leq dBA
BG-A	12622 Cornuta Avenue, Downey, CA 90242	WB	Residential	8:50 AM	5/30/2019	10	50.7
BG-B	8544 Adoree Street, Downey, CA 90242	WB	Residential	9:07 AM	5/30/2019	10	49.8
BG-C	5772 Lincoln Avenue, South Gate, CA 90280	WB	Residential	9:26 AM	5/30/2019	10	56.0
BG-D	4265 Lugo Avenue, Lynwood, CA 90262	WB	Residential	9:49 AM	5/30/2019	10	47.8
BG-E	837 E. 115th Street, Los Angeles, CA 90059	WB	Residential	10:13 AM	5/30/2019	10	54.3
BG-F	912 E. 118th Drive, Los Angeles, CA 90059	EB	Residential	10:37 AM	5/30/2019	10	54.2
BG-G	11612 Peach Street, Lynwood, CA 90262	EB	Residential	10:56 AM	5/30/2019	10	51.2
BG-H	4025 Virginia Avenue, Lynwood, CA 90262	EB	Residential	12:57 AM	5/30/2019	10	53.2
BG-I	13613 Fanshan Avenue, Paramount, CA 90723	EB	Residential	1:21 AM	5/30/2019	10	55.2
BG-J	13219 Rutgers Avenue, Downey, CA 90242	EB	Residential	1:45 PM	5/30/2019	10	59.3
BG-K	736 W. 113th Street, Los Angeles, CA 90044	WB	Residential	10:03 AM	5/31/2019	10	53.9
BG-L	11554 Tarron Avenue, Hawthorne, CA 90250	WB	Residential	10:24 AM	5/31/2019	10	51.1
BG-M	3632 W. 116th Street, Inglewood, CA 90303	WB	Residential	10:45 AM	5/31/2019	10	51.5
BG-N	10934 S. Truro Avenue, Lennox, CA 90304	WB	Residential	11:07 AM	5/31/2019	10	60.8
BG-O	11306 Mansel Avenue, Lennox, CA 90304	EB	Residential	11:32 AM	5/31/2019	10	60.2
BG-P	3856 W. 119th Street, Hawthorne, CA 90250	EB	Residential	12:40 PM	5/31/2019	10	52.1
BG-Q	1304 Pointdexter Street, Los Angeles, CA 90044	EB	Residential	13:10 PM	5/31/2019	10	52.5

Table: 2-113: Long-Term Noise Measurements

Site	Address	Land Uses	Start Time	Start Date	Duration (Hours)	Noisiest Hour	
						Noise Level (dBA)	Time
Site W6	9634 Adoree Street, Downey, CA 90242	Residential	10:20 AM	3/27/2018	24	63.4	4:10 AM - 5:10 AM

Figure 2-28: Long-Term Noise Monitoring Graph at Site W6

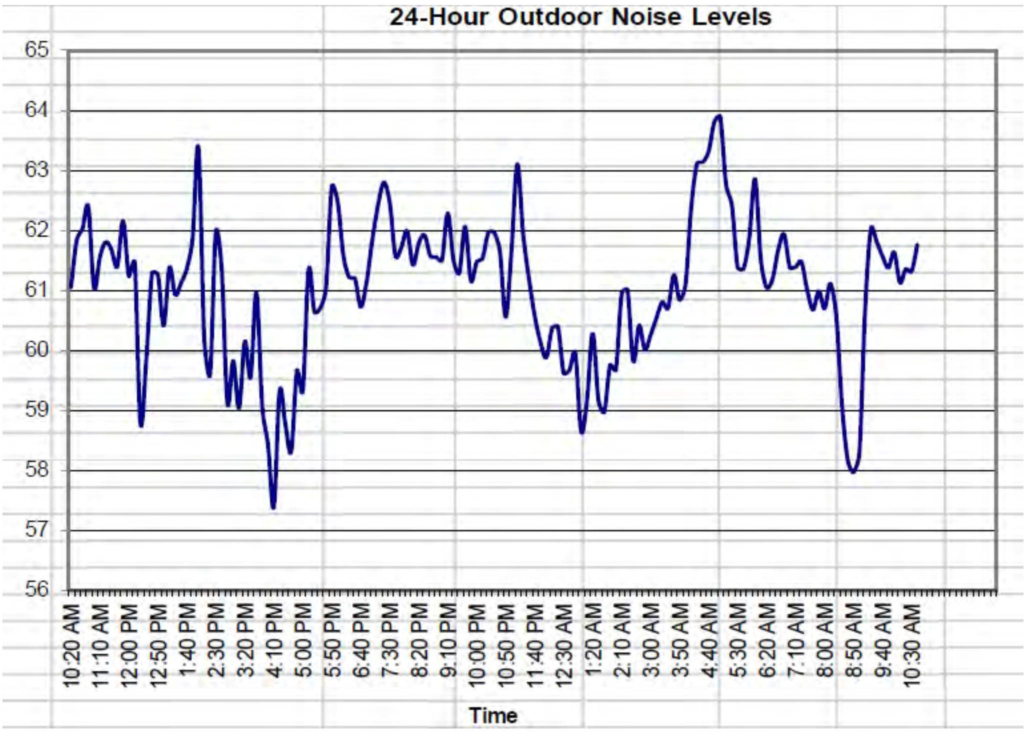


Table: 2-113: Long-Term Noise Measurements Cont.

Site	Address	Land Uses	Start Time	Start Date	Duration (Hours)	Noisiest Hour	
						Noise Level (dBA)	Time
Site E10	13022 Premiere Avenue, Downey, CA 90242	Residential	9:31 AM	4/5/2018	24	61.3	6:01 AM - 7:01 AM

Figure 2-29: Long-Term Noise Monitoring Graph at Site E10

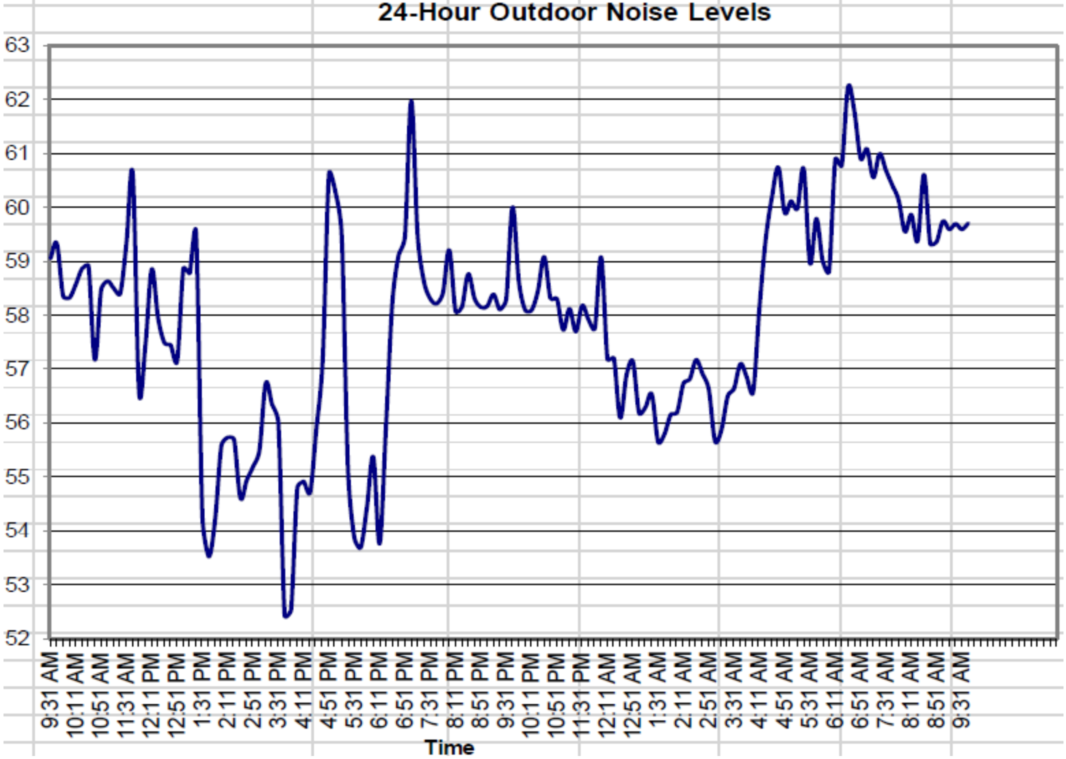


Table: 2-113: Long-Term Noise Measurements Cont.

Site	Address	Land Uses	Start Time	Start Date	Duration (Hours)	Noisiest Hour	
						Noise Level (dBA)	Time
Site E19	8230 Golden Avenue, Paramount, CA 90723	Residential	10:28 AM	4/24/2018	24	57.2	2:18 PM - 3:18 PM

Figure 2-30 Long-Term Noise Monitoring Graph at Site E19

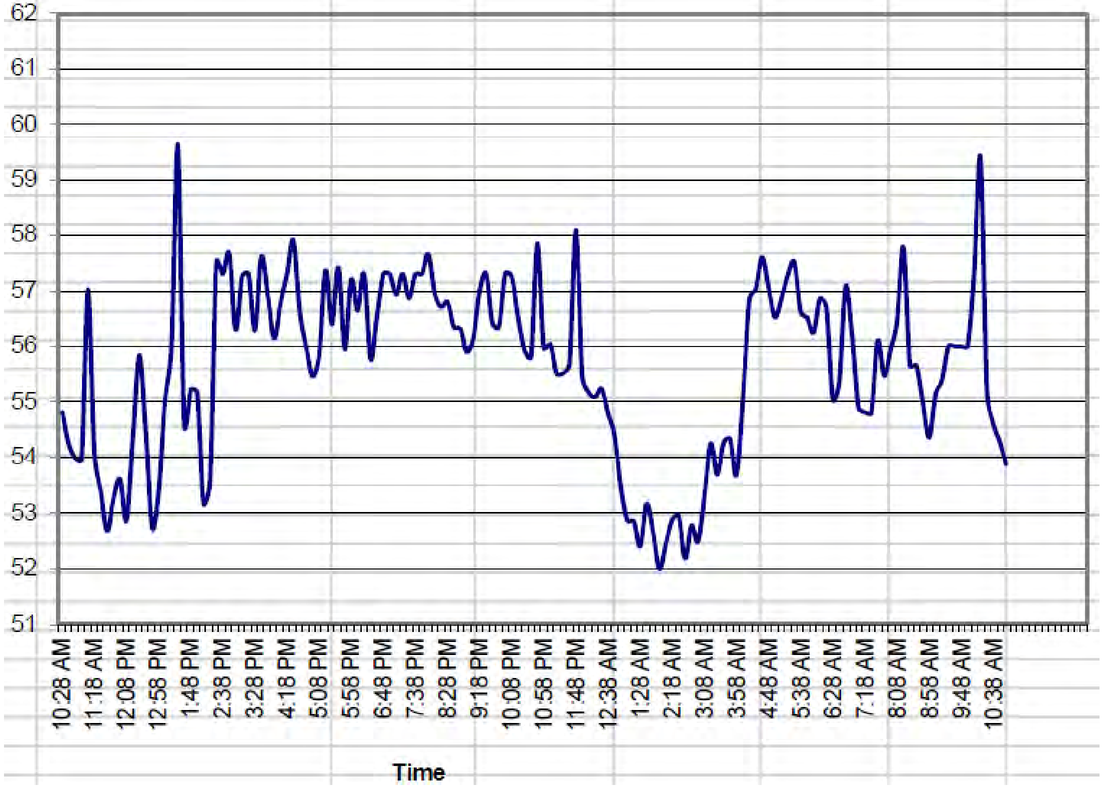


Table: 2-113: Long-Term Noise Measurements Cont.

Site	Address	Land Uses	Start Time	Start Date	Duration (Hours)	Noisiest Hour	
						Noise Level (dBA)	Time
Site E21	8108 Rancho Valero Rd, Paramount, CA 90723	Residential	11:22 AM	4/25/2018	24	57.0	6:02 PM - 7:02 PM

Figure 2-31: Long-Term Noise Monitoring Graph at Site E21

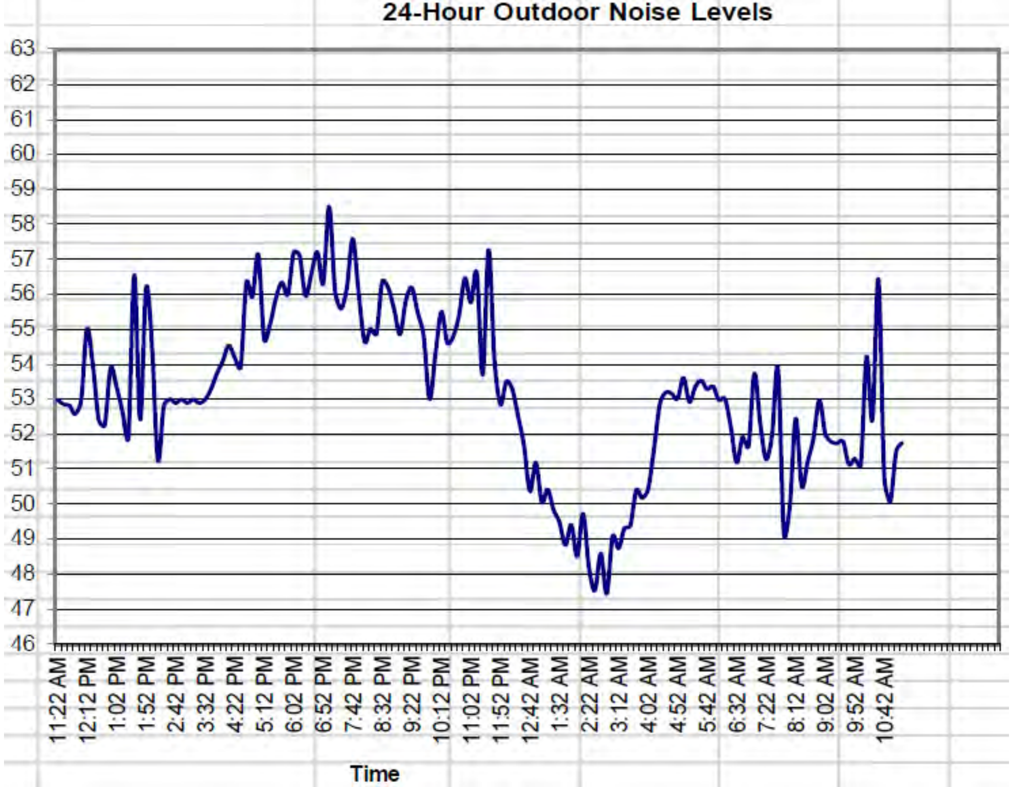


Table: 2-113: Long-Term Noise Measurements Cont.

Site	Address	Land Uses	Start Time	Start Date	Duration (Hours)	Noisiest Hour	
						Noise Level (dBA)	Time
Site E26	13814 Racine Avenue, Paramount, CA 90723	Residential	9:52 AM	5/2/2018	24	63.3	5:02 AM - 6:02 AM

Figure 2-32: Long-Term Noise Monitoring Graph at Site E26

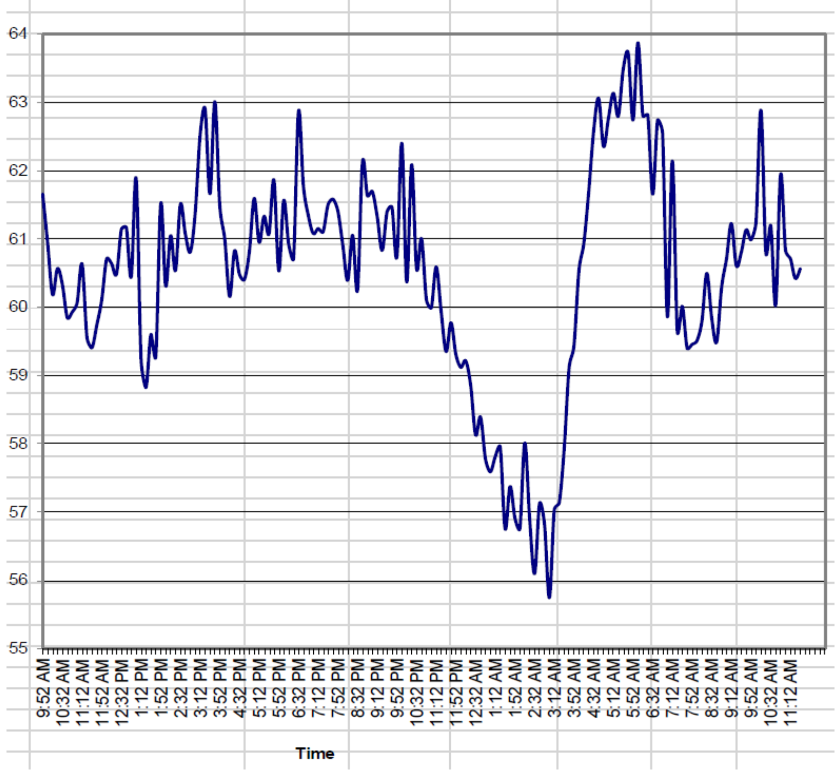


Table: 2-113: Long-Term Noise Measurements Cont.

Site	Address	Land Uses	Start Time	Start Date	Duration (Hours)	Noisiest Hour	
						Noise Level (dBA)	Time
Site E40	11734 Harris Avenue, Lynwood, CA 90262	Residential	10:09 AM	6/26/2018	24	66.1	5:49 AM - 6:49 AM

Figure 2-33: Long-Term Noise Monitoring Graph at Site E40

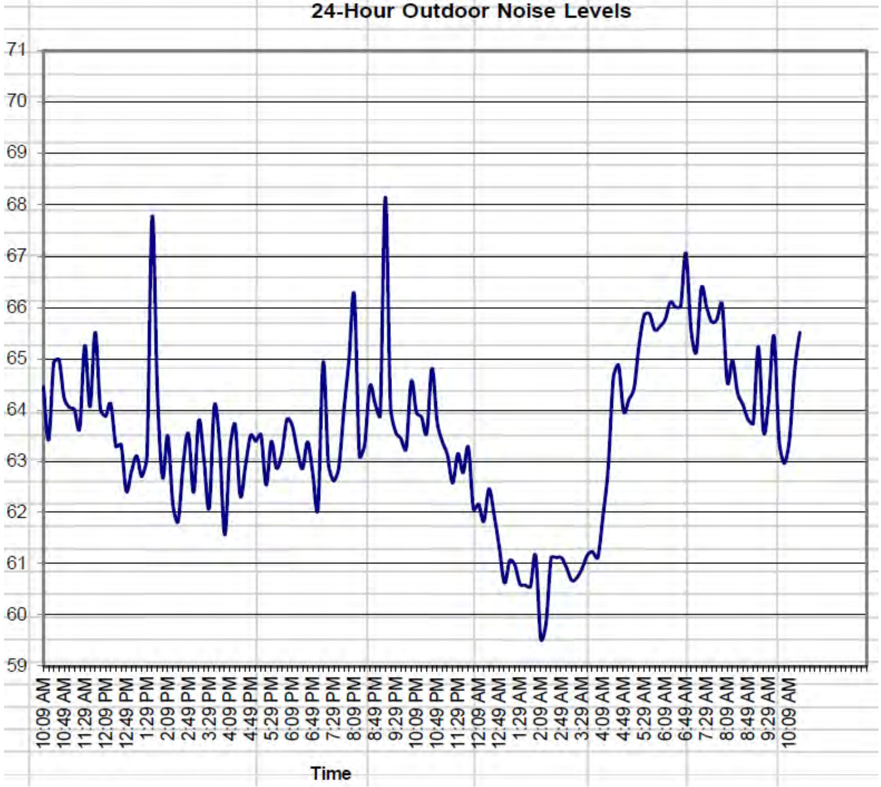


Table: 2-113: Long-Term Noise Measurements Cont.

Site	Address	Land Uses	Start Time	Start Date	Duration (Hours)	Noisiest Hour	
						Noise Level (dBA)	Time
Site E42	11730 1st Avenue, Lynwood, CA 90262	Residential	10:29 AM	6/27/2018	24	67.2	5:39 AM - 6:39 AM

Figure 2-34: Long-Term Noise Monitoring Graph at Site E42

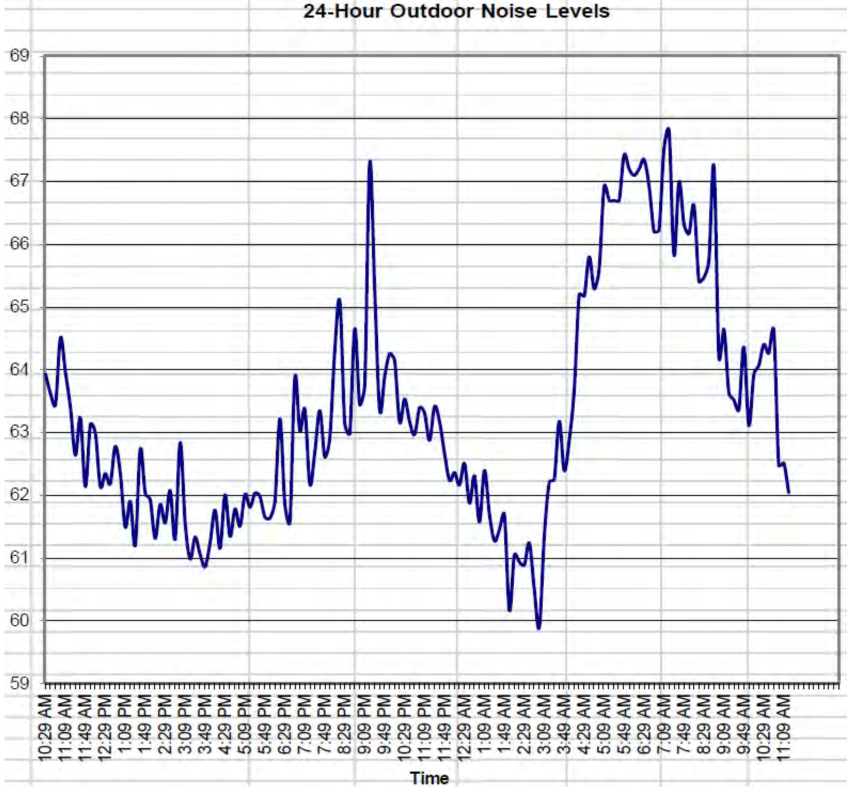


Table: 2-113: Long-Term Noise Measurements Cont.

Site	Address	Land Uses	Start Time	Start Date	Duration (Hours)	Noisiest Hour	
						Noise Level (dBA)	Time
Site E49	11419 Pear Street, Lynwood, CA 90262	Residential	11:04 AM	7/10/2018	24	65.4	6:04 AM - 7:04 AM

Figure 2-35: Long-Term Noise Monitoring Graph at Site E49

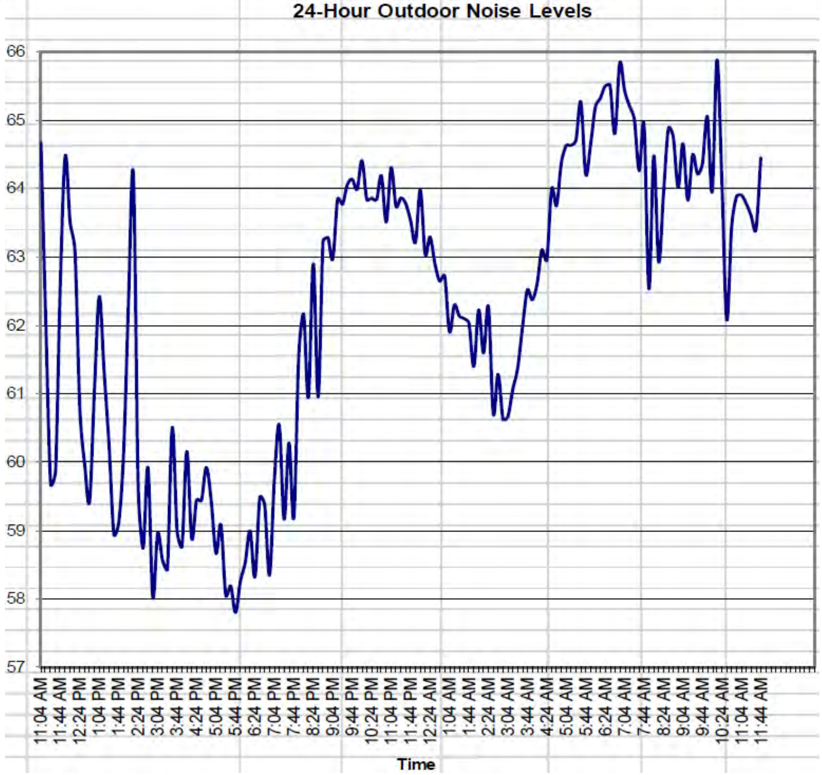


Table: 2-113: Long-Term Noise Measurements Cont.

Site	Address	Land Uses	Start Time	Start Date	Duration (Hours)	Noisiest Hour	
						Noise Level (dBA)	Time
Site E55	11645 Success Avenue, Los Angeles, CA 90059	Residential	10:47 AM	7/12/2018	24	66.9	6:07 AM - 7:07 AM

Figure 2-36: Long-Term Noise Monitoring Graph at Site E55

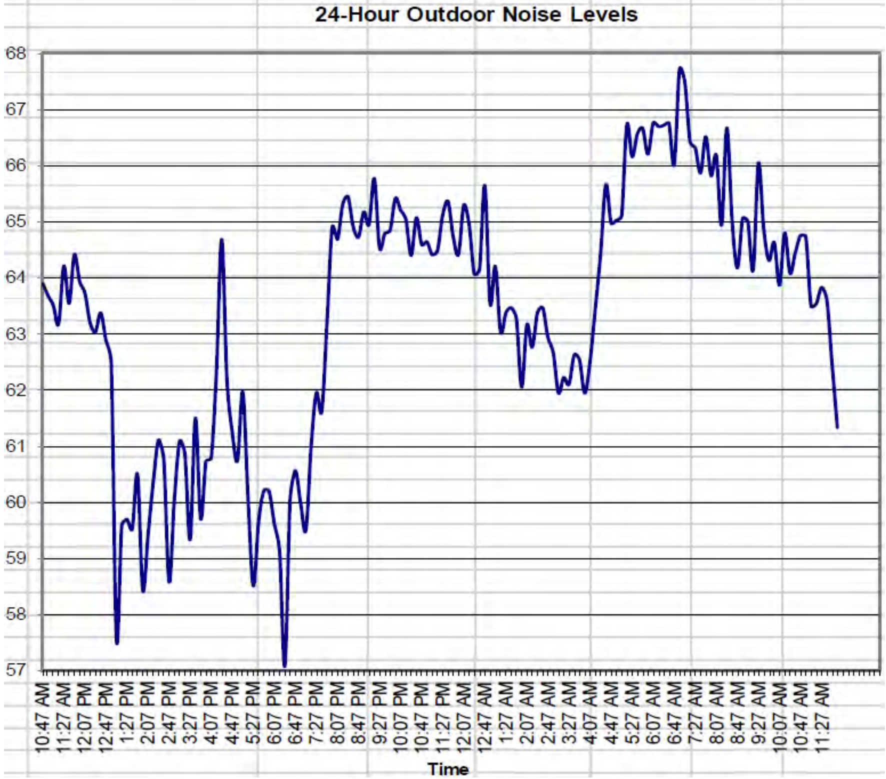


Table: 2-113: Long-Term Noise Measurements Cont.

Site	Address	Land Uses	Start Time	Start Date	Duration (Hours)	Noisiest Hour	
						Noise Level (dBA)	Time
Site E58	913 East 118th Street, Los Angeles, CA 90059	Residential	10:19 AM	7/17/2018	24	58.8	6:49 AM - 7:49 AM

Figure 2-37: Long-Term Noise Monitoring Graph at Site E58

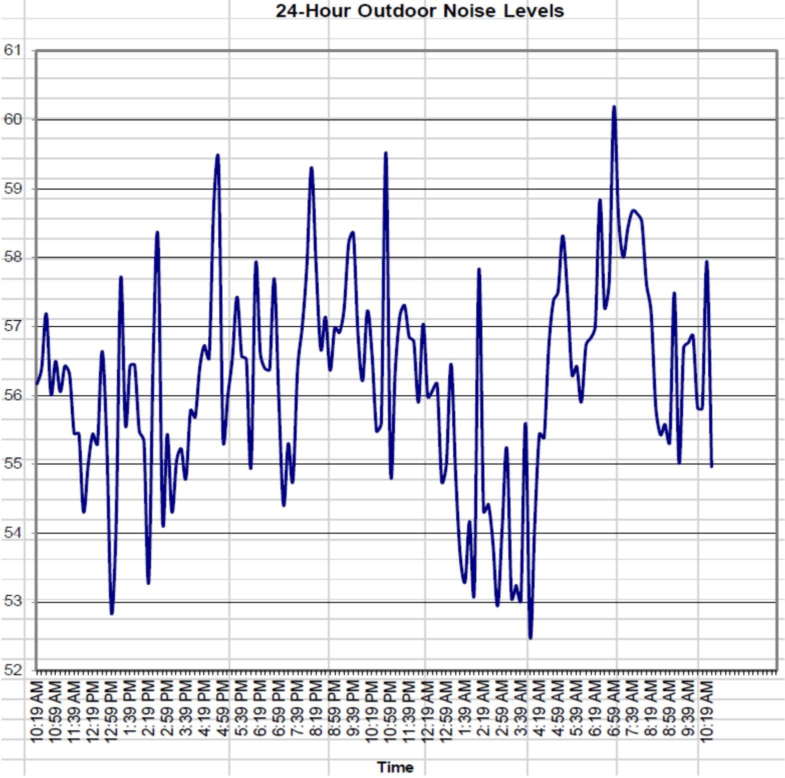


Table: 2-113: Long-Term Noise Measurements Cont.

Site	Address	Land Uses	Start Time	Start Date	Duration (Hours)	Noisiest Hour	
						Noise Level (dBA)	Time
Site W76	11723 Ruthelen Street, Los Angeles, CA 90047	Residential	11:18 AM	7/31/2018	24	69.0	4:18 AM - 5:18 AM

Figure 2-38: Long-Term Noise Monitoring Graph at Site W76

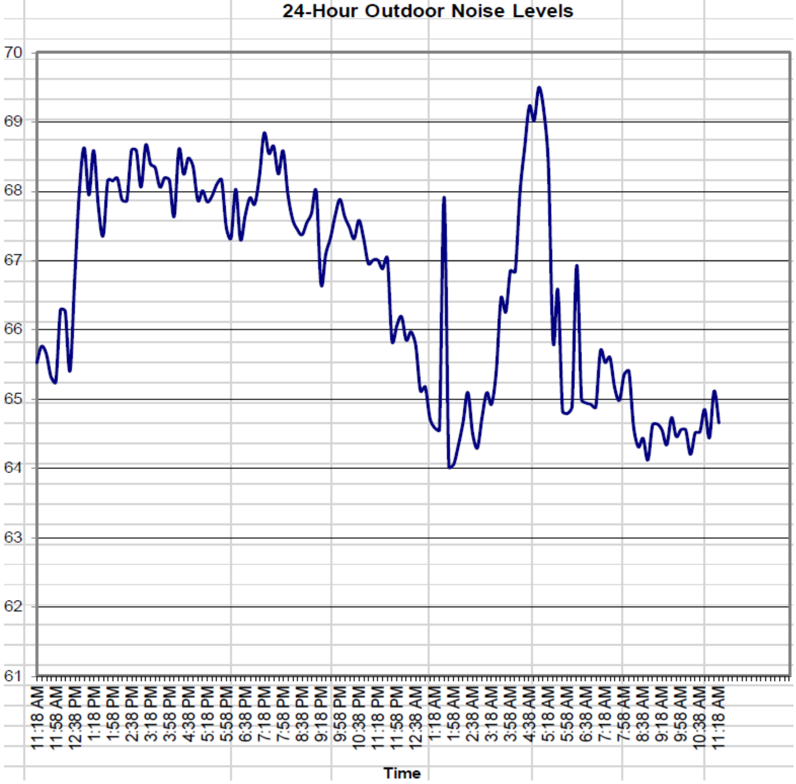


Table: 2-113: Long-Term Noise Measurements Cont.

Site	Address	Land Uses	Start Time	Start Date	Duration (Hours)	Noisiest Hour	
						Noise Level (dBA)	Time
Site W81	3324 W 118th Pl. Inglewood, CA 90303	Residential	10:40 AM	8/7/2018	24	58.6	5:40 PM - 6:40 PM

Figure 2-39: Long-Term Noise Monitoring Graph at Site W81

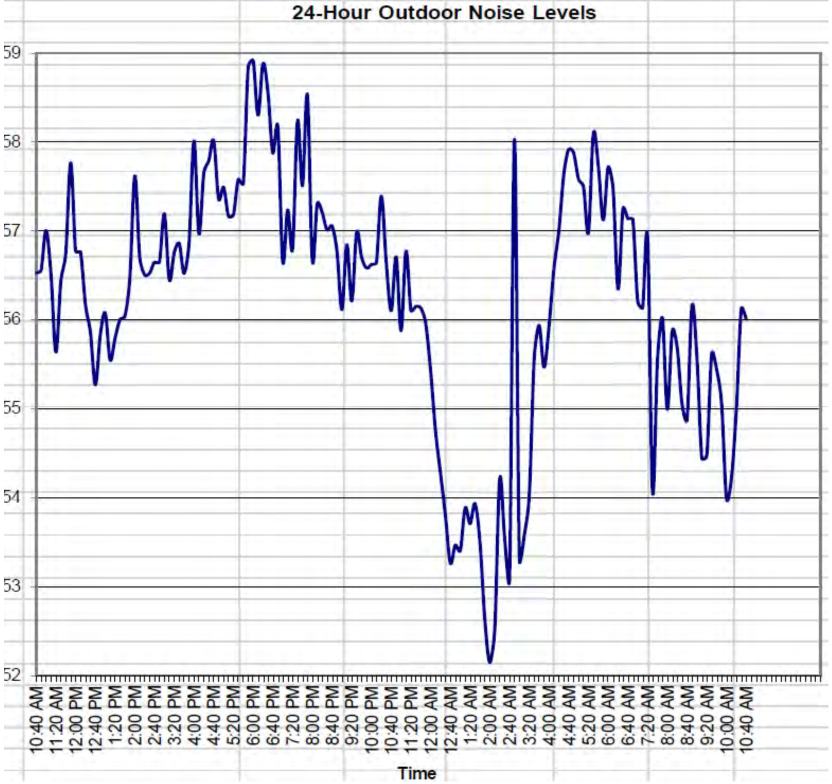
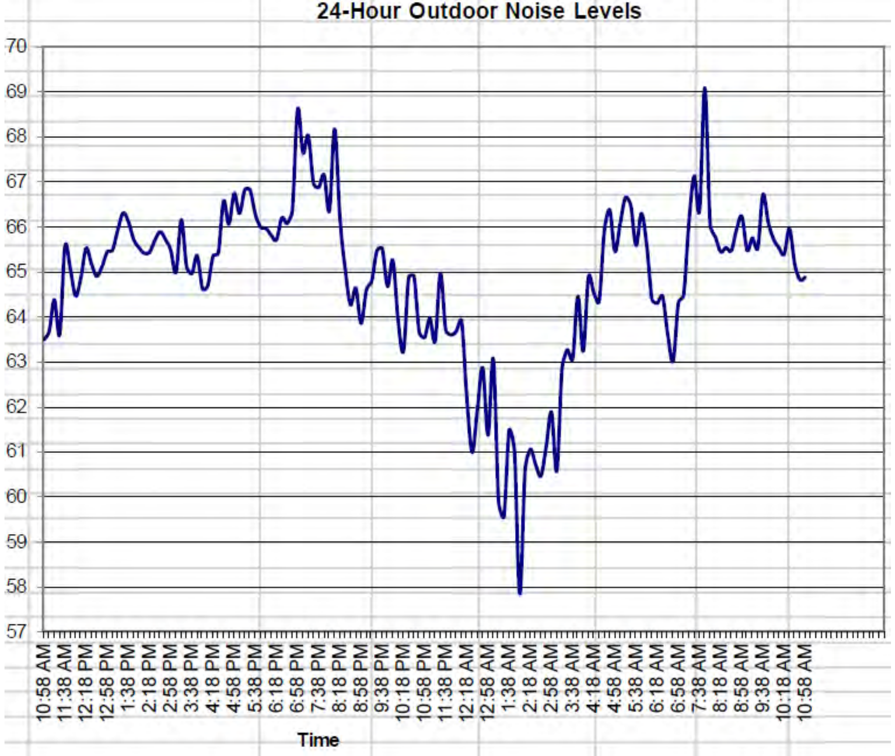


Table: 2-113: Long-Term Noise Measurements Cont.

Site	Address	Land Uses	Start Time	Start Date	Duration (Hours)	Noisiest Hour	
						Noise Level (dBA)	Time
Site W89	11138 S Truro Avenue, Inglewood, CA 90304	Residential	10:58 AM	9/19/2018	24	67.6	6:48 PM - 7:48 PM

Figure 2-40: Long-Term Noise Monitoring Graph at Site W89



2.2.7.3 Environmental Consequences

Under 23CFR772.7, projects are categorized as Type I, Type II projects, or Type III projects. FHWA defines a Type I project as a proposed federal or federal-aid highway project for the construction of a highway on a new location, or the physical alteration of an existing highway which significantly changes either the horizontal or vertical alignment or increases the number of through-traffic lanes. Based on the above brief description of the alternatives, this project has been deemed to be a Type I project. As such, traffic noise analysis has been conducted for this project in accordance with the FHWA Protocol for Type I projects.

The traffic noise analysis indicates that the adjacent noise sensitive areas within the project limits will be impacted after project completion under Alternatives 2 and 3 [i.e. the noise level will approach or exceed FHWA Noise Abatement Criteria (NAC)]. Since traffic noise impacts have been identified, noise abatement has been considered for the impacted noise sensitive land use areas. In order for noise abatement barriers to be installed, construction of such barriers must be “reasonable and feasible” as defined under 23CFR772.7.

The overall reasonableness for noise abatement is determined by these factors: acoustical design goal, the cost of abatement, and viewpoints of benefited receptors (including property owners and residents of the benefited receptors). 23CFR722 requires that an acoustical design goal be applied to all noise abatement. Caltrans acoustical design goal is that a barrier must be predicted to provide at least 7 dBA of noise reduction at one or more benefited receptors. In order for a sound barrier to be considered reasonable, the 7 dBA design goal must be achieved at one or more benefited receptors. This design goal applies to any receptor and is not limited to impacted receptors. Cost considerations in the reasonableness determination of noise abatement are based on a 2019 allowance per *benefited receptor* of $107,000. A benefited receptor is a dwelling unit that is predicted to receive a noise reduction of at least 5 dBA from the proposed noise abatement measure. A receptor can be a benefited receptor even if it is not subject to a traffic noise impact. The noise barrier is not required to reduce noise levels to below the NAC for any noise sensitive land uses.

Future traffic noise levels were also predicted using the FHWA Traffic Noise Model Version 2.5 (TNM 2.5). TNM 2.5 is a computer model based on two FHWA reports: FHWA-PD-96-009 and FHWA-PD-96-010 (FHWA 2004). Key inputs to the traffic noise model were the locations of roadways, shielding features (e.g., topography and buildings), noise barriers, ground type, and receivers. Three-dimensional representations of these inputs were developed using Microstation drawings, aerials photos, and topographic contours and spot elevations. Future noise levels were predicted using traffic characteristics that would yield the worst hourly traffic noise impact on a regular basis. Design year (2047) traffic volumes were used as the future traffic for Alternative 2 and Alternative 3 but 1950 vehicles per lane per hour at 65 mph were used as the future No-Build traffic volumes for I-105. The comparison to future No-Build condition indicates the traffic noise increase resulting from the project. Table 2-114 summarizes the traffic noise modeling results for existing conditions and design-year conditions with and without the project. Predicted design-year traffic noise levels with the project are compared to existing conditions and to design-year no-project conditions.

Table 2-114: Traffic Noise Measurements & Modeling Results

Receiver	Direction	Location	Land Use	Noise Abatement Category	Field-Measured Noise Level	Modeled Noise Level	K-Factor	Existing Worst-Hour Noise Level	Future (2040) No Build Noise Level Alternative 1	Noise Increase (No Build Vs. Existing)	Future Worst-Hour Noise Level Alternative 2	Impact Type	Noise Increase (Build Vs. Existing)	Noise Increase (Build Vs. No Build)	Future Worst-Hour Noise Level Alternative 3	Impact Type	Noise Increase (Build Vs. Existing)	Noise Increase (Build Vs. No Build)
R1	Westbound	12724 leibacher Avenue, Norwalk, CA 90650	Residential	B (67)	60.9	59.8	1.1	62	64.1	2.1	63.5	N	1.5	-0.6	63.6	N	1.6	-0.5
R2		12733 Lefloss Ave, Norwalk, CA 90650			-	59.8	1.1	62	63.4	1.4	62.9	N	0.9	-0.5	62.9	N	0.9	-0.5
R3		12738 Pecos Ave, Norwalk, CA 90650			-	59.8	1.1	62	62.5	0.5	62.1	N	0.1	-0.4	62.1	N	0.1	-0.4
W1		12712 Domart Avenue, Norwalk, CA 90650			64.5	63.7	0.8	66.7	66.7	0	65.4	N	-1.3	-1.3	65.2	N	-1.5	-1.5
W2		10537 Boason Street, Norwalk, CA 90650			60.1	60.7	-0.6	62.3	62.3	0	60.8	N	-1.5	-1.5	60.7	N	-1.6	-1.6
W3		12820 Woodruff Avenue, Downey, CA 90242	Café	E(72)	59.9	59.1	0.8	61.7	61.7	0	59.9	N	-1.8	-1.8	60.3	N	-1.4	-1.4
MW3		10000 Imperial Hwy, Downey, CA 90242	R	B(67)	-	62.1	0.8	64.7	64.7	0	63.3	N	-1.4	-1.4	63.4	N	-1.3	-1.3
W3^		12808 Woodruff Avenue, Downey, CA 90242	School & Church	D(52)	43.6	-	-	45.4	45.4	0	44	N	-1.5	-1.4	44.1	N	-1.4	-1.3
W4		12822 Ibbetson Avenue, Downey, CA 90242	Residential	B (67)	66.8	63.4	3.4	68.0	68.7	0.7	66.9	A/E	-1.1	-1.8	67.3	A/E	-0.7	-1.4
W5		12830 Dunrobin Avenue, Downey, CA 90242			61.8	65.1	-3.3	63.0	63.8	0.8	62.7	N	-0.3	-1.1	62.6	N	-0.4	-1.2
W6[24]		9634 Adoree Street, Downey, CA 90242			61.8	62.1	-0.3	63.4	63.6	0.2	61.9	N	-1.5	-1.7	62.2	N	-1.2	-1.4
R4		10940 Adoree Street, Norwalk, CA 90650			-	59.8	1.1	62.0	64.4	2.4	64	N	2	-0.4	64	N	2.0	-0.4
R5		12902 Lefloss Avenue, Norwalk, CA 90650			-	59.8	1.1	62.0	64.8	2.8	64.3	N	2.3	-0.5	64.4	N	2.4	-0.4
R6		12903 Halcourt Avenue, Norwalk, CA 90650			-	59.8	1.1	62.0	63.1	1.1	62.8	N	0.8	-0.3	62.8	N	0.8	-0.3
E1	Eastbound	13028 Curtis & King Road, Norwalk, CA 90650			54.0	55.3	-1.3	55.8	58.0	2.2	55.6	N	-0.2	-2.4	56	N	0.2	-2.0
E2		10515 Angell Street, Norwalk, CA 90650			57.7	61	-3.3	59.5	61.6	2.1	59.9	N	0.4	-1.7	60.3	N	0.8	-1.3
E3		13008 Carfax Avenue, Downey, CA 90242			59.6	61.9	-2.3	62.3	62.3	0	60.9	N	-1.4	-1.4	61.5	N	-0.8	-0.8
E4		10204 Laurel wood Lane, Downey, CA 90242			62.4	63.8	-1.4	64.0	64.4	0.4	62.7	N	-1.3	-1.7	63.1	N	-0.9	-1.3
E5		13012 Ibbetson Avenue, Downey, CA 90242			60.2	62.5	-2.3	62.3	62.3	0	60.6	N	-1.7	-1.7	61	N	-1.3	-1.3
E6		13019 Eastbrook Avenue, Downey, CA 90242			60.9	62.6	-1.7	63	63.0	0	61.1	N	-1.9	-1.9	61.4	N	-1.6	-1.6
E7		13028 Adenmoor Avenue, Downey, CA 90240			60.7	61.8	-1.1	62.3	63.0	0.7	61.4	N	-0.9	-1.6	61.7	N	-0.6	-1.3

Table 2-114: Traffic Noise Measurements & Modeling Results Cont.

Receiver	Direction	Location	Land Use	Noise Abatement Category	Field-Measured Noise Level	Modeled Noise Level	K-Factor	Existing Worst-Hour Noise Level	Future (2040) No Build Noise Level Alternative 1	Noise Increase (No Build Vs. Existing)	Future Worst-Hour Noise Level Alternative 2	Impact Type	Noise Increase (Build Vs. Existing)	Noise Increase (Build Vs. No Build)	Future Worst-Hour Noise Level Alternative 3	Impact Type	Noise Increase (Build Vs. Existing)	Noise Increase (Build Vs. No Build)
W7	Westbound	9539 Adoree Street, Downey, CA 90242	R	B (67)	59.4	61.2	-1.8	62.1	62.1	0	59.6	N	-2.5	-2.5	60.2	N	-1.9	-1.9
W8		9419 Adoree Street, Downey, CA 90242			61.9	61.4	0.5	64.4	64.4	0	62.5	N	-1.9	-1.9	63.1	N	-1.3	-1.3
W9		12830 Columbia Way, Downey, CA 90242	School	C(67)	59.9	58.7	1.2	63	63.0	0	60.1	N	-2.9	-2.9	60.4	N	-2.6	-2.6
W10		9157 Adoree Street, Downey, CA 90242	Residential	B (67)	62.7	60.6	2.1	65.1	65.1	0	64.3	N	-0.8	-0.8	64.1	N	-1	-1.0
W11		9033 Adoree Street, Downey, CA 90242			61	61.8	-0.8	64.3	64.3	0	62.1	N	-2.2	-2.2	62.2	N	-2.1	-2.1
E8	Eastbound	9638 Angell Street, Downey, CA 90242			59.2	57.6	1.6	61.8	61.8	0	59.3	N	-2.5	-2.5	64.2	N	2.4	2.4
E9		13037 Rutgers Avenue, Downey, CA 90242			62.2	62.7	-0.5	64.6	64.6	0	62.7	N	-1.9	-1.9	63.1	N	-1.5	-1.5
E10[24]		13022 Premiere Avenue, Downey, CA 90242			58.9	60.4	-1.5	61.3	61.3	0	59	N	-2.3	-2.3	59.5	N	-1.8	-1.8
ME10		13027 Filder Avenue, Downey, CA 90242			-	62.9	-1.5	63.8	63.8	0	62	N	-1.8	-1.8	62.5	N	-1.3	-1.3
E11		13200 Columbia Avenue, Downey, CA 90242	Church	C(67)	52.1	54.4	-2.3	55.5	55.5	0	53	N	-2.5	-2.5	53.5	N	-2	-2.0
E11A^				D(52)	36.3	-	-	39.7	39.7	0	37.2	N	-2.5	-2.5	37.7	N	-2	-2.0
E12		9172 Angell Street, Downey, CA 90242	Residential	B(67)	57.2	58.8	-1.6	59.9	59.9	0	58.2	N	-1.7	-1.7	58.1	N	-1.8	-1.8
E13		9078 Angell Street, Downey, CA 90242			59.2	58.9	0.3	61.6	61.6	0	60.8	N	-0.8	-0.8	60.7	N	-0.9	-0.9
E14		12852 Lakewood Blvd, Downey, CA 90242			57.7	58.9	-1.2	61.5	61.5	0	59.5	N	-2	-2.0	59.6	N	-1.9	-1.9

Table 2-114: Traffic Noise Measurements & Modeling Results Cont.

Receiver	Direction	Location	Land Use	Noise Abatement Category	Field-Measured Noise Level	Modeled Noise Level	K-Factor	Existing Worst-Hour Noise Level	Future (2040) No Build Noise Level Alternative 1	Noise Increase (No Build Vs. Existing)	Future Worst-Hour Noise Level Alternative 2	Impact Type	Noise Increase (Build Vs. Existing)	Noise Increase (Build Vs. No Build)	Future Worst-Hour Noise Level Alternative 3	Impact Type	Noise Increase (Build Vs. Existing)	Noise Increase (Build Vs. No Build)
W12	Westbound	8801 Cheyenne Street, Downey, CA 90242	Residential	B (67)	59.8	61.3	-1.5	61	61.0	0	60.4	N	-0.6	-0.6	60.5	N	-0.5	-0.5
W13		12942 Sandy Lane, Downey, CA 90242			58.5	61.2	-2.7	61.7	61.7	0	59.2	N	-2.5	-2.5	59.5	N	-2.2	-2.2
W14		13020 Laureldale Avenue, Downey, CA 90242			60.9	60.9	0	63.9	63.9	0	61.3	N	-2.6	-2.6	61.5	N	-2.4	-2.4
W15		13330 Downey Avenue, Paramount, CA 90723			56.2	56.2	0	59.2	59.2	0	56.1	N	-3.1	-3.1	56.4	N	-2.8	-2.8
W16		13330 Orizaba Avenue, Paramount, CA 90723	Park	C(67)	57.8	55.5	2.3	59.0	59.4	0.4	60.0	N	1	0.6	59.8	N	0.8	0.4
MW16		13330 Orizaba Avenue, Paramount, CA 90723			-	54.3	2.3	57.8	58.0	0.2	58.3	N	0.5	0.3	57.7	N	-0.1	-0.3
MW17		8851 Adorree Street, Downey, CA 90242	School	C(67)	-	54.8	0.0	56.0	56.0	0	55.3	N	-0.7	-0.7	55.4	N	-0.6	-0.6
W18		13422 Ruther Avenue, Paramount, CA 90723	Residential	B(67)	59.4	60.6	-1.2	62.0	62.0	0	59.3	N	-2.7	-2.7	58.5	N	-3.5	-3.5
E15	Eastbound	1304 Airport Avenue, Downey, CA 90242			59.5	61	-1.5	62.7	62.7	0	59.7	N	-3	-3.0	59.5	N	-3.2	-3.2
E16		13035 Barlin Avenue, Downey, CA 90242			61.3	64.1	-2.8	64.1	64.1	0	61.9	N	-2.2	-2.2	61.9	N	-2.2	-2.2
E17		13102 Verdura Avenue, Downey, CA 90242			67.7	66.4*,62.9**	1.3	66.4	66.4***	0	64.9***	N	-6.6	-0.2	65.1***	N	-6.4	0.0
E18		8314#A Somerset Ranch Rd, Paramount, CA 90723			64.8	64.6	0.2	65.8	65.8	0	64.2	N	-1.6	-1.6	64.1	N	-1.7	-1.7
E19[24]		8230 Golden Avenue, Paramount, CA 90723			55.7	57.2	-1.5	57.2	57.2	0	56.3	N	-0.9	-0.9	56	N	-1.2	-1.2
E20^		13451 Merkel Avenue, Paramount, CA 90723	School	D(52)	37	-	-	38.2	38.2	0	38.0	N	-0.8	-0.2	37.6	N	-0.9	-0.6
ME20		13451 Merkel Avenue, Paramount, CA 90723		C(67)	-	61.3	0	62.5	62.5	0	62.3	N	-0.2	-0.2	61.9	N	-0.6	-0.6
E21[24]		8108 Rancho Valero Road, Paramount, CA 90723	Residential	B(67)	53	55	-2	57	57.0	0	53.9	N	-3.1	-3.1	53.6	N	-3.4	-3.4
E22		8113 Rancho Del Oro street, Paramount, CA 90723			56.4	57.2	-0.8	58.4	58.4	0	57.4	N	-1	-1.0	57.2	N	-1.2	-1.2
ME22		13621 Ruther Avenue, South Gate, CA 90280	Church	C(67)	-	60.2	-0.8	61.2	61.2	0	60.5	N	-0.7	-0.7	59.7	N	-1.5	-1.5
E23		8302 Rancho Dorado Road, Paramount, CA 90723	R	B(67)	57.2	59.8	-2.6	59.4	59.4	0	58.6	N	-0.8	-0.8	57.2	N	-2.2	-2.2
ME23		8251 Rancho Dorado Road, Paramount, CA 90723			-	60.5	-2.6	60.1	60.1	0	58.6	N	-1.5	-1.5	58.1	N	-2	-2.0

Table 2-114: Traffic Noise Measurements & Modeling Results Cont.

Receiver	Direction	Location	Land Use	Noise Abatement Category	Field-Measured Noise Level	Modeled Noise Level	K-Factor	Existing Worst-Hour Noise Level	Future (2040) No Build Noise Level Alternative 1	Noise Increase (No Build Vs. Existing)	Future Worst-Hour Noise Level Alternative 2	Impact Type	Noise Increase (Build Vs. Existing)	Noise Increase (Build Vs. No Build)	Future Worst-Hour Noise Level Alternative 3	Impact Type	Noise Increase (Build Vs. Existing)	Noise Increase (Build Vs. No Build)
W19	Westbound	6171 Folrence Avenue, South Gate, CA 90280	Residential	B (67)	62.2	62.1	0.1	65.2	65.3	0.1	64.9	N	-0.3	-0.4	65.3	N	0.1	0.0
W20		6127 Nevada Avenue, South Gate, CA 90280			62	61.1	0.9	65.4	65.4	0	64.2	N	-1.2	-1.2	64.6	N	-0.8	-0.8
W21		13726 Florine Avenue, Paramount, CA 90723			63.4	61.8	1.6	66.3	66.4	0.1	66.1	A/E	-0.2	-0.3	66.4	A/E	0.1	0.0
W22		13714 Racine Avenue, Paramount, CA 90723			56.9	59.9	-3	59.5	59.7	0.2	59.6	N	0.1	-0.1	59.7	N	0.2	0.0
W23		7346 Howery Street, South Gate, CA 90280			62	62.1	-0.1	64.8	64.8	0	64.6	N	-0.2	-0.2	65.3	N	0.5	0.5
W24		7134 Cloverlawn Drive, Paramount, CA 90723			56.9	60.2	-3.3	58.9	58.9	0	58.2	N	-0.7	-0.7	59.1	N	0.2	0.2
E24	Eastbound	7812 Denver Street, Paramount, CA 90723			61.4	61.5	-0.1	65.2	65.2	0	64.0	N	-1.2	-1.2	64.3	N	-0.9	-0.9
E25		13802 Facade Avenue, Paramount, CA 90723			67.3	66.4	0.9	70.1	70.1	0	69.8	A/E	-0.3	-0.3	70.0	A/E	-0.1	-0.1
E26[24]		13814 Racine Avenue, Paramount, CA 90723			60.6	60.9	-0.3	63.3	63.3	0	63.1	N	-0.2	-0.2	63.4	N	0.1	0.1
E27		7441 Rood Street, Paramont, CA 90723			59.2	60.4	-1.2	61.3	61.8	0.5	61.9	N	0.6	0.1	62.6	N	1.3	0.8
E28		7325 Rood Street, Paramount, CA 90723			61.8	62.5	-0.7	62.2	64.5	2.3	64.6	N	2.4	0.1	65.3	N	3.1	0.8

Table 2-114: Traffic Noise Measurements & Modeling Results Cont.

Receiver	Direction	Location	Land Use	Noise Abatement Category	Field-Measured Noise Level	Modeled Noise Level	K-Factor	Existing Worst-Hour Noise Level	Future (2040) No Build Noise Level Alternative 1	Noise Increase (No Build Vs. Existing)	Future Worst-Hour Noise Level Alternative 2	Impact Type	Noise Increase (Build Vs. Existing)	Noise Increase (Build Vs. No Build)	Future Worst-Hour Noise Level Alternative 3	Impact Type	Noise Increase (Build Vs. Existing)	Noise Increase (Build Vs. No Build)
W42	Westbound	11700 Lugo Park Avenue, Lynwood, CA 90262	Residential	B (67)	61.3	61.1	0.2	62.4	62.9	0.5	61.6	N	-0.8	-1.3	65.7	A/E	3.3	2.8
W43		11701 Pope Avenue, Lynwood, CA 90262			62.7	60.5	2.2	64.4	64.4	0.0	63.2	N	-1.2	-1.2	64.4	N	0.0	0.0
W44		4357 Fernwood Avenue, Lynwood, CA 90262			65.1	61.1	4.0	66.4	67.7	1.3	70.9	A/E	4.5	3.2	68.2	A/E	1.8	0.5
W45		33.917805, -118.192345 Lynwood, CA 90262	Park	C(67)	64.9	60.9	4.0	68.0	68.0	0.0	72.8	A/E	4.8	4.8	72.5	A/E	4.5	4.5
W46		4225 Fernwood Avenue, Lynwood, CA 90262	R	B(67)	68.0	62.4	5.6	71.5	71.5	0.0	74.4	A/E	2.9	2.9	73.3	A/E	1.8	1.8
W47		33.919383,-118.196020 Lynwood, CA 90262	Park	C(67)	61.8	61.1	0.7	63.5	63.5	0.0	68.8	N	5.3	5.3	68.4	A/E	4.9	4.9
W48		3935 Fernwood Avenue, Lynwood, CA 90262	Residential	B(67)	63.0	60.9	2.1	66.8	66.8	0.0	70.0	N	3.2	3.2	70.9	A/E	4.1	4.1
W49		3865 Fernwood Avenue, Lynwood, CA 90262			63.4	60.1	3.3	67.1	67.1	0.0	71.7	N	4.6	4.6	72.1	A/E	5.0	5.0
MW50		3801 Cortland St. Lynwood, CA 90262 (Indoor)	School	C(67)	-	63.4	1.8	66.4	66.4	0.0	69.7	N	3.3	3.3	71.5	A/E	5.1	5.1
W50^		3801 Cortland St. Lynwood, CA 90262 (Indoor)		D(52)	46.4	-	-	49.2	49.2	0.0	52.5	N	-2.8	3.3	54.3	A/E	3.9	5.1
W51		3693 Fernwood Avenue, Lynwood, CA 90262	R	B(67)	65.0	63.2	1.8	67.8	67.8	0.0	69.8	N	2.0	2.0	71.5	A/E	3.7	3.7
MW52$^{\Phi}$		3655 Fernwood Avenue, Lynwood, CA 90262 (Indoor)	Church	C(67)	-	68.3	1.8	72.9	72.9	0.0	70.2	N/A	-2.7	-2.7	70.3	N/A	-2.6	-2.6
W52^		3655 Fernwood Avenue, Lynwood, CA 90262 (Indoor)		D(52)	41.5	-	-	44.3	44.3	0.0	41.6	N	-2.7	-2.7	41.7	N	-2.6	-2.6
W52A		3613 Fernwood Avenue, Lynwood, CA 90262	R	B(67)	63.1	64.5	-1.4	65.9	65.9	0.0	64.1	N	-1.8	-1.8	65.7	A/E	-0.2	-0.2

Table 2-114: Traffic Noise Measurements & Modeling Results Cont.

Receiver	Direction	Location	Land Use	Noise Abatement Category	Field-Measured Noise Level	Modeled Noise Level	K-Factor	Existing Worst-Hour Noise Level	Future (2040) No Build Noise Level Alternative 1	Noise Increase (No Build Vs. Existing)	Future Worst-Hour Noise Level Alternative 2	Impact Type	Noise Increase (Build Vs. Existing)	Noise Increase (Build Vs. No Build)	Future Worst-Hour Noise Level Alternative 3	Impact Type	Noise Increase (Build Vs. Existing)	Noise Increase (Build Vs. No Build)
E36	Eastbound	5210 Josephine Street, Lynwood, CA90262	Residential	B(67)	64.3	63.5	0.8	65.3	65.3	0.0	64.0	N	-1.3	-1.3	63.8	N	-1.5	-1.5
M1E36		5520 Lavinia Avenue, Lynwood, CA 90262			-	60.9	0.8	63.0	64.8	1.8	64.0	N	1.0	-0.8	63.4	N	0.4	-1.4
M2E36		11825 Wilson Avenue, Lynwood, CA 90262			-	58.9	0.8	61.0	63.0	2.0	62.8	N	1.8	-0.2	61.7	N	0.7	-1.3
E37		11832 Atlantic Avenue, Lynwood, CA 90262	Park	C(67)	60.4	63.1	-2.7	62.5	62.5	0.0	61.7	N	-0.8	-0.8	61.7	N	-0.8	-0.8
E38		11733 1st Avenue, Lynwood, CA 90262	Residential	B(67)	61.4	65.2	-3.8	65.5	65.5	0.0	62.6	N	-2.9	-2.9	62.6	N	-2.9	-2.9
E39		11736 4th Ave, Lynwood, CA 90262			62.6	63.4	-0.8	65.6	65.6	0.0	66.0	A/E	0.4	0.4	66.0	A/E	0.4	0.4
E40[24]		11734 Harris Avenue, Lynwood CA 90262			65.0	66.1	-1.1	66.1	66.1	0.0	65.6	A/E	-0.5	-0.5	65.6	A/E	-0.5	-0.5
E41		4040 Louise Street, Lynwood, CA 90262			61.4	64.8	-3.4	64.3	64.3	0.0	64.2	N	-0.1	-0.1	64.2	N	-0.1	-0.1
E42[24]		11730 1st Avenue, Lynwood, CA 90262			61.6	63.6	-2.0	67.2	67.2	0.0	66.0	A/E	-1.2	-1.2	66.0	A/E	-1.2	-1.2
E43		3867 Ernestine Avenue, Lynwood, CA 90262			58.3	61.2	-2.9	62.7	62.7	0.0	61.4	N	-1.3	-1.3	64.5	N	1.8	1.8
E44		3666 Lynwood Road, Lynwood, CA 90262			61.2	61.9	-0.7	63.8	63.8	0.0	61.0	N	-2.8	-2.8	61.3	N	-2.5	-2.5
E45^		11700 School Street, Lynwood, CA 90262	School	D(52)	34.1	-	-1.4	36.7	36.7	0.0	35.9	N	-0.8	-0.8	37.6	N	0.9	0.9
E46		11700 School Street, Lynwood, CA 90262		C(67)	58.1	59.5	-1.4	61.0	61.0	0.0	60.2	N	-0.8	-0.8	61.9	N	0.9	0.9
M1E46		3551 Lynwood Rd, Lynwood, CA 90262	Residential	B(67)	-	61.9	-1.4	61.8	61.8	0.0	60.6	N	-1.2	-1.2	61.8	N	0.0	0.0
M2E46		3560 Lynwood Rd, Lynwood, CA 90262			-	60.5	-1.4	60.3	60.3	0.0	59.1	N	-1.2	-1.2	60.0	N	-0.3	-0.3

Table 2-114: Traffic Noise Measurements & Modeling Results Cont.

Receiver	Direction	Location	Land Use	Noise Abatement Category	Field-Measured Noise Level	Modeled Noise Level	K-Factor	Existing Worst-Hour Noise Level	Future (2040) No Build Noise Level Alternative 1	Noise Increase (No Build Vs. Existing)	Future Worst-Hour Noise Level Alternative 2	Impact Type	Noise Increase (Build Vs. Existing)	Noise Increase (Build Vs. No Build)	Future Worst-Hour Noise Level Alternative 3	Impact Type	Noise Increase (Build Vs. Existing)	Noise Increase (Build Vs. No Build)
W53	Eastbound	11401 Long Beach Blvd, Lynwood, CA 90262	Hotel	E(72)	58.1	57.1	1.0	61.1	61.1	0.0	58.1	N	-3.0	-3.0	58.9	N	-2.2	-2.2
W54		2965 Fernwood Avenue, Lynwood, CA 90262	Residential	B(67)	68.9	67.3	1.6	71.3	71.3	0.0	68.9	A/E	-2.4	-2.4	68.9	A/E	-2.4	-2.4
MW54A		2727 Fernwood Avenue, Lynwood, CA 90262			-	62.4	-2.0	64.0	64.0	0.0	65.2	N	1.2	1.2	66.9	A/E	2.9	2.9
MW54B		2713 Fernwood Avenue, Lynwood, CA 90262			-	61.3	-2.0	62.9	64.1	1.2	64.8	N	1.9	0.7	65.8	A/E	2.9	1.7
W55		2436 East 115th Place, Los Angeles, CA 90059			72.7	74.7*, 73.4**	-2.0	73.7	73.7	0.0	71.7	A/E	-2.0	-2.0	72.4	A/E	-1.3	-1.3
W56		East 115th Place, Los Angeles, CA 90059	PG	C (67)	61.0	62.2*, 61.5**	-1.2	62.9	62.9	0.0	60.6	N	-2.3	-2.3	61.4	N	-1.5	-1.5
W57		2077 East Imperial Hwy, Los Angeles, CA 90059	R	B(67)	72.8	70.6*, 65.4**	2.2	69.1	69.5	0.4	68.4	A/E	-0.7	-1.1	68.8	A/E	-0.3	-0.7
MW58		2003 East Imperial Hwy, Los Angeles, CA 90059	Church	C(67)	-	66.2*, 60.2**	2.2	63.9	64.3	0.4	63.0	N	-0.9	-1.3	63.6	N	-0.3	-0.7
W58^		2003 East Imperial Hwy, Los Angeles, CA 90059		D(52)	39.1	-	-	40.6	41.0	0.4	40.6	N	0.0	-0.4	40.6	N	0.0	-0.4
E47	Eastbound	3237 Flower Street, Lynwood CA 90262	Residential	B(67)	56.4	58.8	-2.4	60.9	62.3	1.4	60.9	N	0.0	-1.4	62.0	N	1.1	-0.3
E48		3172 Redwood Avenue, Lynwood, CA 90262			59.8	63.0	-3.2	62.2	62.2	0.0	60.1	N	-2.1	-2.1	59.0	N	-3.2	-3.2
E49[24]		11419 Pear Street, Lynwood, CA 90262			62.6	66.4	-3.8	65.4	65.4	0.0	62.7	N	-2.7	-2.7	62.9	N	-2.5	-2.5
E50		11426 Plum Street, Lynwood, CA 90262			62.8	66.4	-3.6	66.4	65.0	-1.4	63.0	N	-3.4	-2.0	64.0	N	-2.4	-1.0
E51		11653 Gorman Avenue, Los Angeles, CA 90059			61.3	66.5	-5.2	63.2	63.2	0.0	60.9	N	-2.3	-2.3	62.6	N	-0.6	-0.6
E52		11664 Lou Dillon Avenue, Los Angeles, CA 90059			59.1	60.5	-1.4	61.0	61.0	0.0	58.6	N	-2.4	-2.4	65.1	N	4.1	4.1

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W59	Westbound	1763 E.Imperial Highway, Los Angeles, CA 90059	R	B(67)	68.3	70.3*, 61.5**	0.2	62.6	62.6	0.0	61.5	N	-1.1	-1.1	63.1	N	0.5	0.5
W60^		1700 E. Imperial Highway, Los Angeles, CA 90059	School	D(52)	47.9	45.8**	-3.2	45.2	45.2	0.0	42.5	N	-2.7	-2.7	45.1	N	-0.1	-0.1
W60		1700 E. Imperial Highway, Los Angeles, CA 90059		C(67)	60.5	64.5*, 62.4**	-3.2	61.8	61.8	0.0	59.1	N	-2.7	-2.7	61.7	N	-0.1	-0.1
W61		1639 E. Imperial Highway, Los Angeles, CA 90059	Residential	B(67)	71.6	72*, 61.8**	1.9	64.5	64.5	0.0	63.4	N	-1.1	-1.1	64.5	N	0.0	0.0
W62		1421 E. Imperial Highway, Los Angeles, CA 90059			66.6	67.1*, 65.7**	0.5	67.0	67.0	0.0	65.6	N	-1.4	-1.4	65.6	A/E	-1.4	-1.4
E53	Eastbound	1764 E 117th St, Los Angeles, CA 90059			59.6	59.8	-0.2	62.8	62.8	0.0	60.3	N	-2.5	-2.5	60.9	N	-1.9	-1.9
E54		1641 East 117th Street, Los Angeles, CA 90059			59.3	60.4	-1.1	62.5	62.5	0.0	65.7	A/E	3.2	3.2	65.7	A/E	3.2	3.2
M1E54		1559 E 117th St. Los Angeles, CA 90059			-	64.8	-1.1	66.9	66.9	0.0	66.8	A/E	-0.1	-0.1	66.8	A/E	-0.1	-0.1
M2E54		11650 Antwerp Ave. Los Angeles, CA 90059			-	62.8	-1.1	64.9	64.9	0.0	65.4	N	0.5	0.5	65.7	A/E	0.8	0.8
E55[24]		11645 Success Avenue, Los Angeles, CA 90059			63.7	65.6	-1.9	66.9	66.9	0.0	65.2	N	-1.7	-1.7	65.9	A/E	-1.0	-1.0
E56		11658 Robin Street, Los Angeles, CA 90059			61.7	62.9	-1.2	65.1	65.1	0.0	62.3	N	-2.8	-2.8	66.9	A/E	1.8	1.8

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Receiver	Direction	Location	Land Use	Noise Abatement Category	Field-Measured Noise Level	Modeled Noise Level	K-Factor	Existing Worst-Hour Noise Level	Future (2040) No Build Noise Level Alternative 1	Noise Increase (No Build Vs. Existing)	Future Worst-Hour Noise Level Alternative 2	Impact Type	Noise Increase (Build Vs. Existing)	Noise Increase (Build Vs. No Build)	Future Worst-Hour Noise Level Alternative 3	Impact Type	Noise Increase (Build Vs. Existing)	Noise Increase (Build Vs. No Build)
W63	Westbound	949 East 116th Place, Los Angeles, CA 90059	Residential	B967)	65.4	64.3	1.1	66.3	66.5	0.2	64.4	N	-1.9	-2.1	63.9	N	-2.4	-2.6
W64		11652 Wadsworth Ave, Los Angeles, CA 90059			62.8	63.4	-0.6	66.3	66.3	0.0	66.1	A/E	-0.2	-0.2	66.1	A/E	-0.2	-0.2
W65		11610 Stanford Avenue, Los Angeles, CA 90059	School	C (67)	58.9	59.4	-0.5	61.9	61.9	0.0	63.2	N	1.3	1.3	63.5	N	1.6	1.6
W66		629 East 116th Place, Los Angeles, CA 90059	Residential	B(67)	63.7	62.9	0.8	66.7	66.7	0.0	66.8	A/E	0.1	0.1	67.3	A/E	0.6	0.6
W67		362 East 116th Place, Los Angeles, CA 90061			60.6	60.5	0.1	63.8	63.8	0.0	60.7	N	-3.1	-3.1	64.5	N	0.7	0.7
W68		239 East 116th Place, Los Angeles, CA 90061			63.6	63.3	0.3	66.8	67.7	0.9	65.7	A/E	-1.1	-2.0	65.2	N	-1.6	-2.5
W69		133 East 116th Place, Los Angeles, CA 90061			67.9	63.9	4.0	70.4	70.4	0.0	68.8	A/E	-1.6	-1.6	68.8	A/E	-1.6	-1.6
W70		11509 South Spring Street, Los Angeles, CA 90061			60.6	60.6	0.0	63.1	63.1	0.0	61.5	N	-1.6	-1.6	60.2	N	-2.9	-2.9
E57	Eastbound	11701 Belhaven Street, Los Angeles, CA 90059			63.3	62.8	0.5	65.3	65.3	0.0	63.7	N	-1.6	-1.6	67.3	A/E	2.0	2.0
E58[24]		913 East 118th Street, Los Angeles, CA 90059			56.8	59.0	-2.2	58.8	58.8	0.0	57.1	N	-1.7	-1.7	56.8	N	-2.0	-2.0
E59		721 East 118th Street, Los Angeles, CA 90059			57.0	59.8	-2.8	59.0	59.0	0.0	57.0	N	-2.0	-2.0	57.4	N	-1.6	-1.6
ME60		675 East 118th Street, Los Angeles, CA 90059	Church	C(67)	-	65.7	-3.0	64.7	64.7	0.0	62.8	N	-1.9	-1.9	62.6	N	-2.1	-2.1
E60^		675 East 118th Street, Los Angeles, CA 90059		D(54)	39.3	-	-	41.3	41.3	0.0	39.4	N	-1.9	-1.9	39.2	N	-2.1	-2.1
E61		415 East 118th Street, Los Angeles, CA 90061	Residential	B(67)	55.0	56.8	-1.8	57.5	57.5	0.0	55.0	N	-2.5	-2.5	55.4	N	-2.1	-2.1
E62		211 East 118th Street, Los Angeles, CA 90061			57.1	59.8	-2.7	59.6	59.6	0.0	57.2	N	-2.4	-2.4	60.2	N	0.6	0.6
E63		152 West 117th Street, Los Angeles, CA 90061			59.6	59.6	0.0	62.1	62.1	0.0	59.5	N	-2.6	-2.6	59.8	N	-2.3	-2.3

Table 2-114: Traffic Noise Measurements & Modeling Results Cont.

Receiver	Direction	Location	Land Use	Noise Abatement Category	Field-Measured Noise Level	Modeled Noise Level	K-Factor	Existing Worst-Hour Noise Level	Future (2040) No Build Noise Level Alternative 1	Noise Increase (No Build Vs. Existing)	Future Worst-Hour Noise Level Alternative 2	Impact Type	Noise Increase (Build Vs. Existing)	Noise Increase (Build Vs. No Build)	Future Worst-Hour Noise Level Alternative 3	Impact Type	Noise Increase (Build Vs. Existing)	Noise Increase (Build Vs. No Build)
W71	Westbound	557 West 115th Street, Los Angeles, CA 90044	Residential	B(67)	64.9	65.9	-1.0	65.4	66.6	1.2	65.7	A/E	0.3	-0.9	68.8	A/E	3.4	2.2
W72		11515 Menlo Avenue, Los Angeles, CA 90044			61.9	62.8	-0.9	62.4	62.9	0.5	62.1	N	-0.3	-0.8	64.5	N	2.1	1.6
W73		11506 Berendo Avenue, Los Angeles, CA 90044			59.8	63.2	-3.4	62.3	62.3	0.0	59.7	N	-2.6	-2.6	61.2	N	-1.1	-1.1
W74		1600 W Imperial Hwy, Los Angeles, CA 90047	School	C(67)	57.9	62.2	-4.3	60.6	60.6	0.0	59.3	N	-1.3	-1.3	59.3	N	-1.3	-1.3
W75^		1600 W Imperial Hwy, Los Angeles, CA 90047		D(52)	39.4	-	-	43.2	43.2	0.0	41.9	N	-1.3	-1.3	41.9	N	-1.3	-1.3
W76[24]		11723 Ruthelen Street, Los Angeles, CA 90047	Residential	B(67)	67.6	64.9	2.7	69.0	69.0	0.0	65.4	N	-3.6	-3.6	66.2	A/E	-2.8	-2.8
MW77		11731 Tarron Avenue, Hawthorne, CA 90250			-	62.5	2.7	66.6	66.6	0.0	65.3	N	-1.3	-1.3	65.3	N	-1.3	-1.3
W78		11836 Purche Avenue, Hawthorne CA 90250			65.8	67.5	-1.7	69.1	69.1	0.0	66.8	A/E	-2.3	-2.3	66.8	A/E	-2.3	-2.3
W79		11828 Chanera Avenue, Hawthorne, CA 90250			62.2	64.5	-2.3	65.5	65.5	0.0	64.0	N	-1.5	-1.5	64.0	N	-1.5	-1.5
E64	Eastbound	557 West 117th Street, Los Angeles, CA 90044			66.1	66.5	-0.4	66.4	66.4	0.0	64.9	N	-1.5	-1.5	65.9	A/E	-0.5	-0.5
E65		761 West 117th Street, Los Angeles, CA 90044			59.2	60.2	-1.0	59.5	59.8	0.3	59.0	N	-0.5	-0.8	61.7	N	2.2	1.9
E66		1060 W. 117th Street, Los Angeles, CA 90044			59.0	59.2	-0.2	62.7	62.7	0.0	59.7	N	-3.0	-3.0	61.4	N	-1.3	-1.3
E67		1315 Geddes Street, Los Angeles, CA 90044			53.6	58.6	-5.0	55.8	55.8	0.0	53.4	N	-2.4	-2.4	54.4	N	-1.4	-1.4
E68		1633 W. Bruin Street, Los Angeles, CA 90047			68.6	73.8	-5.2	69.7	69.7	0.0	68.7	A/E	-1.0	-1.0	69.5	A/E	-0.2	-0.2
M1E68		11920 Manzanilla Avenue, Los Angeles CA 90047	Play-Ground	C(67)	-	64.5	-5.2	60.4	60.4	0.0	58.7	N	-1.7	-1.7	59.7	N	-0.7	-0.7
M2E68		1651 W. Bruin Street, Los Angeles, CA 90047	Residential	B(67)	-	64.2	-5.2	60.1	60.1	0.0	58.7	N	-1.4	-1.4	59.7	N	-0.4	-0.4
M3E68		1679 W. Bruin Street, Los Angeles, CA 90047			-	64.5	-5.2	60.4	60.4	0.0	59.2	N	-1.2	-1.2	60.1	N	-0.3	-0.3
E69		1925 Loganside Dr. Los Angeles, CA 90047			63.2	67.1	-0.5	67.2	67.2	0.0	66.6	A/E	-0.6	-0.6	67.3	A/E	0.1	0.1
E70		11908 Cimarron Avenue, Hawthorne, CA 90250			54.9	59.6	-4.1	59.3	59.3	0.0	56.7	N	-2.6	-2.6	57.4	N	-1.9	-1.9

Table 2-114: Traffic Noise Measurements & Modeling Results Cont.

Receiver	Direction	Location	Land Use	Noise Abatement Category	Field-Measured Noise Level	Modeled Noise Level	K-Factor	Existing Worst-Hour Noise Level	Future (2040) No Build Noise Level Alternative 1	Noise Increase (No Build Vs. Existing)	Future Worst-Hour Noise Level Alternative 2	Impact Type	Noise Increase (Build Vs. Existing)	Noise Increase (Build Vs. No Build)	Future Worst-Hour Noise Level Alternative 3	Impact Type	Noise Increase (Build Vs. Existing)	Noise Increase (Build Vs. No Build)
W80	Westbound	11811 Simms Avenue. Inglewood , CA 90303	Residential	B(67)	57.5	61.6	-4.1	58.8	58.8	0.0	56.8	N	-2.0	-2.0	57.7	N	-1.1	-1.1
W81[24]		3324 W 118th Pl. Inglewood, CA 90303			57.0	61.3	-4.3	58.3	58.3	0.0	56.4	N	-1.9	-1.9	57.1	N	-1.2	-1.2
W82^		11710 S Cherry Ave, Inglewood, CA 90303	School	D(52)	46.3	-	-	47.6	47.6	0.0	47.9	N	0.3	0.3	46.3	N	-1.3	-1.3
MW82		11710 S Cherry Ave, Inglewood, CA 90303		C(67)	-	61.3	-1.3	61.3	61.3	0.0	59.2	N	-2.1	-2.1	60.0	N	-1.3	-1.3
W83		11909 Yukon Avenue, Inglewood, CA 90303	Residential	B(67)	63.1	64.4	-1.3	64.4	64.4	0.0	64.3	N	-0.1	-0.1	66.0	A/E	1.6	1.6
W84		3753 W118th Street, Hawthorne, CA90250			67.1	69.1	-2.0	69.0	69.0	0.0	69.0	A/E	0.0	0.0	70.9	A/E	1.9	1.9
W85		3857 116th Street, Hawthorne, CA 90250			68.6	70.9	-2.3	70.5	70.5	0.0	68.5	A/E	-2.0	-2.0	70.1	A/E	-0.4	-0.4
W86		3929 W115th Street, Hawthorne, CA90250			64.3	67.0	-2.7	66.2	66.2	0.0	66.1	A/E	-0.1	-0.1	67.5	A/E	1.3	1.3
W87		11138 S Freeman Avenue, Inglewood, CA 90304			63.5	67.0	-3.5	65.0	65.0	0.0	62.5	N	-2.5	-2.5	62.5	N	-2.5	-2.5
E71		11925 Almertens Pl, Inglewood, CA 90303			61.0	64.0	-3.0	62.5	62.5	0.0	62.6	N	0.1	0.1	62.5	N	0.0	0.0
E72	Eastbound	3803 118th Street, Hawthorne, CA 90250			59.7	63.5	-3.8	61.2	61.2	0.0	64.7	N	3.5	3.5	68.1	A/E	6.9	6.9
E73		3908 W 117th Street, Hawthorne, CA 90250			59.7	64.2	-4.5	61.2	61.2	0.0	61.2	N	0.0	0.0	61.2	N	0.0	0.0
E74		11501 York Avenue, Hawthorne, CA 90250			65.4	68.1	-2.7	66.9	66.9	0.0	64.5	N	-2.4	-2.4	64.5	N	-2.4	-2.4
E75		11301 Larch Avenue, Lennox, CA 90304			56.3	63.3	-7.0	57.8	57.9	0.1	57.9	N	0.1	0.0	57.9	N	0.1	0.0

Table 2-114: Traffic Noise Measurements & Modeling Results Cont.

Receiver	Direction	Location	Land Use	Noise Abatement Category	Field-Measured Noise Level	Modeled Noise Level	K-Factor	Existing Worst-Hour Noise Level	Future (2040) No Build Noise Level Alternative 1	Noise Increase (No Build Vs. Existing)	Future Worst-Hour Noise Level Alternative 2	Impact Type	Noise Increase (Build Vs. Existing)	Noise Increase (Build Vs. No Build)	Future Worst-Hour Noise Level Alternative 3	Impact Type	Noise Increase (Build Vs. Existing)	Noise Increase (Build Vs. No Build)
W88	Westbound	11109 S Grevillea Avenue, Ingelwood, CA 90304	Residential	B(67)	72.6	69.4	3.2	74.8	76.5	1.7	75.5	A/E	0.7	-1.0	76.2	A/E	1.4	-0.3
W89[24]		11138 S Trvro Avenue, Inglewood, CA 90304			65.0	65.3	-0.3	67.2	67.2	0.0	65.1	N	-2.1	-2.1	66.3	A/E	-0.9	-0.9
W90		11144 Dalerose Avenue, Inglewood, CA 90304			62.0	64.2	-2.2	64.0	64.0	0.0	61.7	N	-2.3	-2.3	61.5	N	-2.5	-2.5
W91		4850 W 112th Street, Inglewood, CA 90304			63.5	62.7	0.8	65.9	65.9	0.0	64.9	N	-1.0	-1.0	64.9	N	-1.0	-1.0
W92		4952 N 112th Street, Inglewood, CA 90304			64.4	64.8	-0.4	66.6	66.6	0.0	65.5	A/E	-1.1	-1.1	65.5	A/E	-1.1	-1.1
E76	Eastbound	11156 S Grevillea Avenue, Inglewood, CA 90304			66.6	68.6	-2.0	68.8	69.0	0.2	68.5	A/E	-0.3	-0.5	69.2	A/E	0.4	0.2
E77		11200 Firmona Avenue, Inglewood, CA 90304			63.3	65.1	-1.8	65.6	65.6	0.0	64.6	N	-1.0	-1.0	65.0	N	-0.6	-0.6
E78		11300 Condon Avenue, Indlewood, CA 90304			63.6	64.3	-0.7	65.9	65.9	0.0	65.2	N	-0.7	-0.7	64.9	N	-1.0	-1.0
E79		11431 Gale Avenue, Hawthorne, CA 90250			62.5	61.7	0.8	64.6	64.6	0.0	62.8	N	-1.8	-1.8	62.8	N	-1.8	-1.8
E80		11524 Felton Avenue, Los Angeles, CA 90045			67.1	68.9	-1.8	69.2	70.6	1.4	69.3	A/E	0.1	-1.3	67.8	A/E	-1.4	-2.8
E81		5400 W 116th Street, Ingelwood, CA 90304			62.8	60.3	2.5	65.0	65.0	0.0	65.0	N	0.0	0.0	64.5	N	-0.5	-0.5
E82		5508 W 116th Street, Inglewood, CA 90304			62.0	63.2	-1.2	64.6	64.6	0.0	64.6	N	0.0	0.0	64.6	N	0.0	0.0

In accordance with 23CFR772, noise abatement is considered where noise impacts are predicted in areas of frequent human use that would benefit from a lowered noise level. Potential noise abatement measures identified in the Protocol include the following:

- Avoiding the impact by using design alternatives, such as altering the horizontal and vertical alignment of the project;
- Constructing noise barriers;
- Acquiring property to serve as a buffer zone;
- Using traffic management measures to regulate types of vehicles and speeds; and
- Acoustically insulating public-use or nonprofit institutional structures.

All of these abatement options have been considered. However, because of the configuration and location of the project, abatement in the form of noise barriers is considered to be most practical.

Each noise barrier has been evaluated for feasibility based on achievable noise reduction. For each noise barrier found to be acoustically feasible, reasonable cost allowances were calculated using the 2019 figure of $107,000 per benefited receptor. For any noise barrier to be considered reasonable from a cost perspective the estimated cost of the noise barrier should be equal to or less than the total cost allowance calculated for the barrier. The cost calculations of the noise barrier should include all items appropriate and necessary for construction of the barrier, such as traffic control, drainage modification, and retaining walls that are specifically needed to construct soundwalls and are not part of overall project.

Tables 2-115 and 2-116 lists the reasonable determination data for sound walls for both build alternatives.

Table 2-115: Summary of Reasonableness Determination Data for Soundwalls Alternative 2

Soundwall No.	Design Year (2047) Noise Level dBA Leq(h)	Noise Increase (dBA)	Height (Feet)	Approximate Length (Feet)	Noise Attenuation (dBA)	Number of Benefited Receivers	Reasonable Allowance Per Benefited Receiver	Total Reasonable Allowance Per Barrier
SW-668W2	74	3	8	4698	5	4	$107,000	$428,000
			10		6	61	$107,000	$6,527,000
			12		7	177	$107,000	$18,939,000
			14		8	195	$107,000	$20,865,000
			16		8	205	$107,000	$21,935,000
SW-621W2	66***	-2	8	2128	2	0	$107,000	$0
			10		4	0	$107,000	$0
			12		4	0	$107,000	$0
			14		5	20	$107,000	$2,140,000
			16		6	22	$107,000	$2,354,000
			18		6	24	$107,000	$2,568,000
			20		6	32	$107,000	$3,424,000
			22		7	32	$107,000	$3,424,000
SW-651E2	67***	-1	8	2174	3	0	$107,000	$0
			10		4	0	$107,000	$0
			12		4	0	$107,000	$0
			14		4	4	$107,000	$428,000
			16		5	7	$107,000	$749,000
			18		5	7	$107,000	$749,000
SW-550W2	72	0	8	1812	5	39	$107,000	$4,173,000
			10		6	41	$107,000	$4,387,000
			12		7	47	$107,000	$5,029,000
			14		7	53	$107,000	$5,671,000
			16		7	53	$107,000	$5,671,000
SW-533W2	68	0	8	1501	0	0	$107,000	$0
			10		0	0	$107,000	$0
			12		0	0	$107,000	$0
			14		0	0	$107,000	$0
			16		5	13	$107,000	$1,391,000
SW-550W2 + SW-533W2	72	0	8	1812+1501	5	55	$107,000	$5,885,000
			10		6	57	$107,000	$6,099,000
			12		7	71	$107,000	$7,597,000
			14		7	76	$107,000	$8,132,000
			16		8	77	$107,000	$8,239,000
SW-533W2 + SW-519W2	68	0	8	1501+410	3	0	$107,000	$0
			10		4	3	$107,000	$321,000
			12		5	13	$107,000	$1,391,000
			14		5	20	$107,000	$2,140,000
			16		6	20	$107,000	$2,140,000
SW-580W2	69	-2	8	1367	2	0	$107,000	$0
			10		4	0	$107,000	$0
			12		4	0	$107,000	$0
			14		5	7	$107,000	$749,000
			16		5	12	$107,000	$1,284,000
			18		5	13	$107,000	$1,391,000
			20		5	13	$107,000	$1,391,000
			22		6	13	$107,000	$1,391,000
			24		6	13	$107,000	$1,391,000
SW-463W2*	67	0	8	3107	4	0	$107,000	$0
			10		5	22	$107,000	$2,354,000
			12		6	32	$107,000	$3,424,000
			14		7	69	$107,000	$7,383,000
			16		7	90	$107,000	$9,630,000

Table 2-115: Summary of Reasonableness Determination Data for Soundwalls Alternative 2 Cont.

Soundwall No.	Design Year (2047) Noise Level dBA Leq(h)	Noise Increase (dBA)	Height (Feet)	Approximate Length (Feet)	Noise Attenuation (dBA)	Number of Benefited Receivers	Reasonable Allowance Per Benefited Receiver	Total Reasonable Allowance Per Barrier
SW-432W2	69	0	8	2910	3	0	$107,000	$0
			10		4	0	$107,000	$0
			12		4	0	$107,000	$0
			14		5	30	$107,000	$3,210,000
			16		6	45	$107,000	$4,815,000
			18		6	55	$107,000	$5,885,000
			20		7	60	$107,000	$6,420,000
SW-470E2+ SW-489E2**	67	0	8	1860+580	4	0	$107,000	$0
			10		5	29	$107,000	$3,103,000
			12		6	62	$107,000	$6,634,000
			14		6	63	$107,000	$6,741,000
			16		7	68	$107,000	$7,276,000
SW-472W2 + SW-492W2	66	-1	8	440+2079	4	0	$107,000	$0
			10		5	14	$107,000	$1,498,000
			12		5	40	$107,000	$4,280,000
			14		6	40	$107,000	$4,280,000
			16		6	40	$107,000	$4,280,000
			18		6	50	$107,000	$5,350,000
			20		7	50	$107,000	$5,350,000
SW376W2	66	0	8	1215	0	0	$107,000	$0
			10		1	0	$107,000	$0
			12		3	0	$107,000	$0
			14		6	12	$107,000	$1,284,000
			16		7	12	$107,000	$1,284,000
SW-306E2	69	-1	6	184	10	3	$107,000	$321,000
			8		12	3	$107,000	$321,000
			10		13	3	$107,000	$321,000
			12		15	3	$107,000	$321,000
			14		15	3	$107,000	$321,000
SW-284E2	67	0	12	471	4	0	$107,000	$0
			14		4	0	$107,000	$0
			16		4	0	$107,000	$0
			18		5	1	$107,000	$107,000
			20		5	1	$107,000	$107,000
SW-192W2	69	-2	8	748	7	4	$107,000	$428,000
			10		7	5	$107,000	$535,000
			12		8	8	$107,000	$856,000
			14		8	9	$107,000	$963,000
			16		9	9	$107,000	$963,000
SW-150W2	76	0	8	2268	6	6	$107,000	$642,000
			10		7	9	$107,000	$963,000
			12		9	16	$107,000	$1,712,000
			14		10	23	$107,000	$2,461,000
			16		10	27	$107,000	$2,889,000
SW-142E2	69	0	8	706	6	7	$107,000	$749,000
			10		7	8	$107,000	$856,000
			12		8	8	$107,000	$856,000
			14		8	8	$107,000	$856,000
			16		9	8	$107,000	$856,000

Table 2-115: Summary of Reasonableness Determination Data for Soundwalls Alternative 2 Cont.

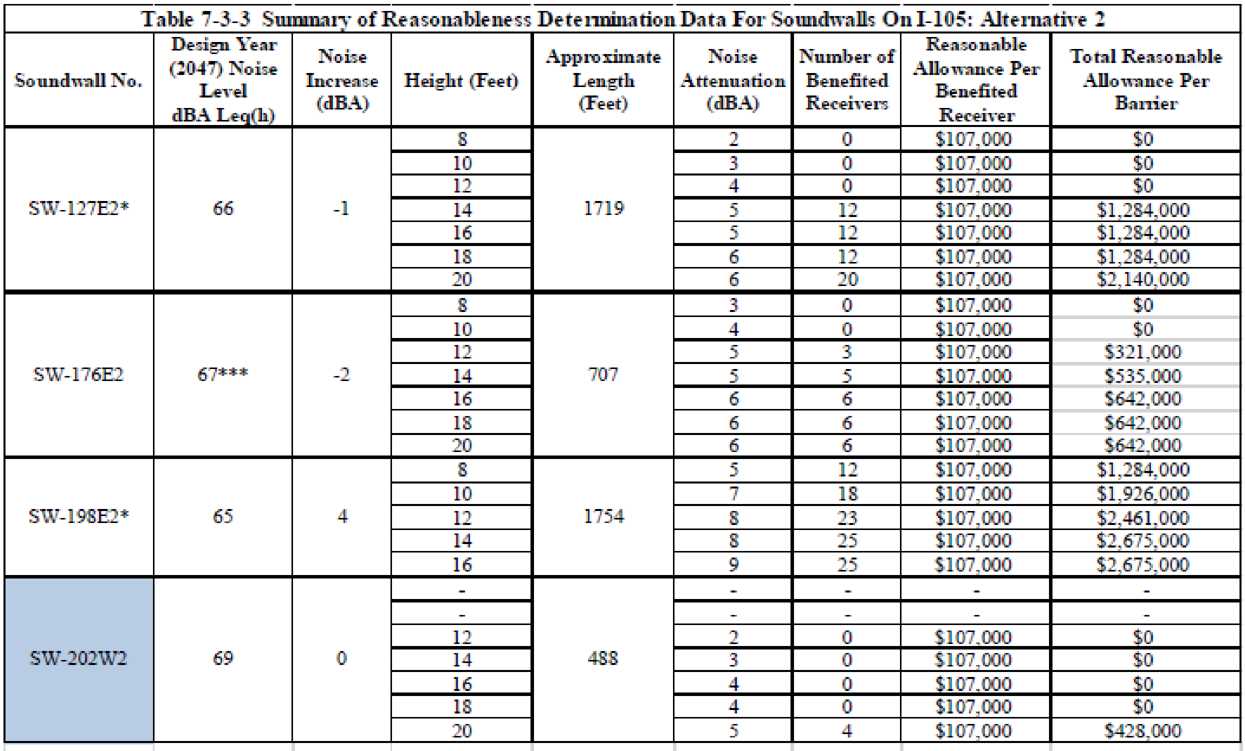


Table 7-3-3 Summary of Reasonableness Determination Data For Soundwalls On I-105: Alternative 2

Soundwall No.	Design Year (2047) Noise Level dBA Leq(h)	Noise Increase (dBA)	Height (Feet)	Approximate Length (Feet)	Noise Attenuation (dBA)	Number of Benefited Receivers	Reasonable Allowance Per Benefited Receiver	Total Reasonable Allowance Per Barrier
SW-127E2*	66	-1	8	1719	2	0	$107,000	$0
			10		3	0	$107,000	$0
			12		4	0	$107,000	$0
			14		5	12	$107,000	$1,284,000
			16		5	12	$107,000	$1,284,000
			18		6	12	$107,000	$1,284,000
			20		6	20	$107,000	$2,140,000
SW-176E2	67***	-2	8	707	3	0	$107,000	$0
			10		4	0	$107,000	$0
			12		5	3	$107,000	$321,000
			14		5	5	$107,000	$535,000
			16		6	6	$107,000	$642,000
			18		6	6	$107,000	$642,000
			20		6	6	$107,000	$642,000
SW-198E2*	65	4	8	1754	5	12	$107,000	$1,284,000
			10		7	18	$107,000	$1,926,000
			12		8	23	$107,000	$2,461,000
			14		8	25	$107,000	$2,675,000
			16		9	25	$107,000	$2,675,000
SW-202W2	69	0	-	488	-	-	-	-
			-		-	-	-	-
			12		2	0	$107,000	$0
			14		3	0	$107,000	$0
			16		4	0	$107,000	$0
			18		4	0	$107,000	$0
			20		5	4	$107,000	$428,000

Table 2-116: Summary of Reasonableness Determination Data for Soundwalls Alternative 3

Soundwall No.	Design Year (2047) Noise Level dBA Leq(h)	Noise Increase (dBA)	Height (Feet)	Approximate Length (Feet)	Noise Attenuation (dBA)	Number of Benefited Receivers	Reasonable Allowance Per Benefited Receiver	Total Reasonable Allowance Per Barrier
SW-669W3*	75	3	8	4830	5	4	$107,000	$428,000
			10		6	65	$107,000	$6,955,000
			12		7	177	$107,000	$18,939,000
			14		8	195	$107,000	$20,865,000
			16		8	205	$107,000	$21,935,000
SW-628E3	66	0	8	4489	4	0	$107,000	$0
			10		6	38	$107,000	$4,066,000
			12		7	46	$107,000	$4,922,000
			14		8	56	$107,000	$5,992,000
			16		8	60	$107,000	$6,420,000
SW-621W3	66	0	8	2128	2	0	$107,000	$0
			10		3	0	$107,000	$0
			12		4	0	$107,000	$0
			14		4	0	$107,000	$0
			16		5	25	$107,000	$2,675,000
			18		5	29	$107,000	$3,103,000
			20		6	33	$107,000	$3,531,000
SW-619E3*	63	0	8	896	2	0	$107,000	$0
			10		2	0	$107,000	$0
			12		3	0	$107,000	$0
			14		3	0	$107,000	$0
			16		3	0	$107,000	$0
			18		4	0	$107,000	$0
			20		4	0	$107,000	$0
SW-606E3*	60	0	8	892	2	0	$107,000	$0
			10		3	0	$107,000	$0
			12		3	0	$107,000	$0
			14		3	0	$107,000	$0
			16		4	0	$107,000	$0
			18		4	0	$107,000	$0
			20		4	0	$107,000	$0
SW-550W3	74	0	8	1812	5	10	$107,000	$1,070,000
			10		6	30	$107,000	$3,210,000
			12		6	34	$107,000	$3,638,000
			14		7	47	$107,000	$5,029,000
			16		7	47	$107,000	$5,029,000
SW-533W3	69	0	8	1501	4	0	$107,000	$0
			10		4	0	$107,000	$0
			12		5	1	$107,000	$107,000
			14		6	8	$107,000	$856,000
			16		6	15	$107,000	$1,605,000
SW-550W3 + SW-533W3	69	0	8	1812+1501	5	37	$107,000	$3,959,000
			10		6	51	$107,000	$5,457,000
			12		7	69	$107,000	$7,383,000
			14		8	76	$107,000	$8,132,000
			16		8	77	$107,000	$8,239,000
SW-533W3 + SW-519W3	69	0	8	1501+410	4	0	$107,000	$0
			10		5	2	$107,000	$214,000
			12		6	11	$107,000	$1,177,000
			14		6	23	$107,000	$2,461,000
			16		6	23	$107,000	$2,461,000
			18		7	23	$107,000	$2,461,000

Table 2-116: Summary of Reasonableness Determination Data for Soundwalls Alternative 3 Cont.

Soundwall No.	Design Year (2047) Noise Level dBA Leq(h)	Noise Increase (dBA)	Height (Feet)	Approximate Length (Feet)	Noise Attenuation (dBA)	Number of Benefited Receivers	Reasonable Allowance Per Benefited Receiver	Total Reasonable Allowance Per Barrier
SW-580W3	69	-2	8	1367	3	0	$107,000	$0
			10		4	0	$107,000	$0
			12		4	0	$107,000	$0
			14		5	7	$107,000	$749,000
			16		5	13	$107,000	$1,391,000
			18		5	13	$107,000	$1,391,000
			20		6	13	$107,000	$1,391,000
SW-470E3	67	1	8	1797	4	0	$107,000	$0
			10		5	3	$107,000	$0
			12		5	3	$107,000	$321,000
			14		6	11	$107,000	$1,177,000
			16		6	13	$107,000	$1,391,000
			18		7	15	$107,000	$1,605,000
			20		7	15	$107,000	$1,605,000
SW-472W2 + SW-492W2	66	-1	8	440+2079	4	0	$107,000	$0
			10		5	14	$107,000	$1,498,000
			12		5	40	$107,000	$4,280,000
			14		6	40	$107,000	$4,280,000
			16		6	40	$107,000	$4,280,000
			18		6	50	$107,000	$5,350,000
			20		7	50	$107,000	$5,350,000
SW-470E3+ SW-489E3**	67***	0	8	1796+1130	4	4	$107,000	$428,000
			10		5	45	$107,000	$4,815,000
			12		6	62	$107,000	$6,634,000
			14		6	64	$107,000	$6,848,000
			16		7	68	$107,000	$7,276,000
SW-461E3*	67	2	8	965	4	0	$107,000	$0
			10		5	4	$107,000	$428,000
			12		6	7	$107,000	$749,000
			14		6	10	$107,000	$1,070,000
			16		6	11	$107,000	$1,177,000
			18		7	13	$107,000	$1,391,000
			20		7	13	$107,000	$1,391,000
SW-455E3*	67	2	8	680	4	0	$107,000	$0
			10		4	0	$107,000	$0
			12		4	0	$107,000	$0
			14		5	2	$107,000	$214,000
			16		5	6	$107,000	$642,000
			18		5	6	$107,000	$642,000
			20		5	6	$107,000	$642,000
SW-461E3+ SW-455E3	67	2	8	1645	5	2	$107,000	$214,000
			10		5	20	$107,000	$2,140,000
			12		6	30	$107,000	$3,210,000
			14		7	33	$107,000	$3,531,000
			16		7	35	$107,000	$3,745,000
SW-463W3**	67	1	8	3107	4	0	$107,000	$0
			10		5	22	$107,000	$2,354,000
			12		6	32	$107,000	$3,424,000
			14		7	69	$107,000	$7,383,000
			16		7	90	$107,000	$9,630,000

Table 2-116: Summary of Reasonableness Determination Data for Soundwalls Alternative 3 Cont.

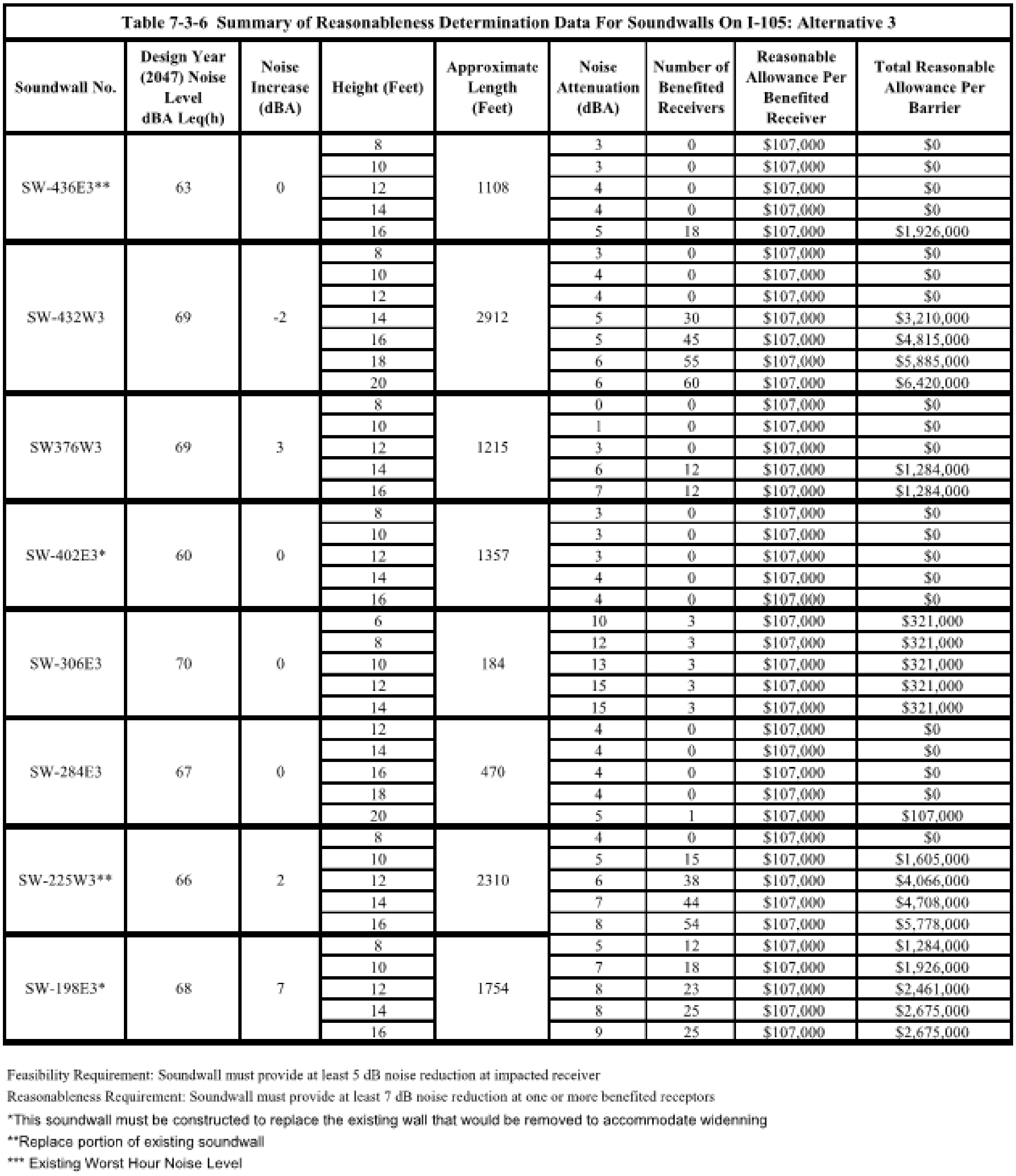


Table 7-3-6 Summary of Reasonableness Determination Data For Soundwalls On I-105: Alternative 3

Soundwall No.	Design Year (2047) Noise Level dBA Leq(h)	Noise Increase (dBA)	Height (Feet)	Approximate Length (Feet)	Noise Attenuation (dBA)	Number of Benefited Receivers	Reasonable Allowance Per Benefited Receiver	Total Reasonable Allowance Per Barrier
SW-436E3**	63	0	8	1108	3	0	$107,000	$0
			10		3	0	$107,000	$0
			12		4	0	$107,000	$0
			14		4	0	$107,000	$0
			16		5	18	$107,000	$1,926,000
SW-432W3	69	-2	8	2912	3	0	$107,000	$0
			10		4	0	$107,000	$0
			12		4	0	$107,000	$0
			14		5	30	$107,000	$3,210,000
			16		5	45	$107,000	$4,815,000
			18		6	55	$107,000	$5,885,000
			20		6	60	$107,000	$6,420,000
SW376W3	69	3	8	1215	0	0	$107,000	$0
			10		1	0	$107,000	$0
			12		3	0	$107,000	$0
			14		6	12	$107,000	$1,284,000
			16		7	12	$107,000	$1,284,000
SW-402E3*	60	0	8	1357	3	0	$107,000	$0
			10		3	0	$107,000	$0
			12		3	0	$107,000	$0
			14		4	0	$107,000	$0
			16		4	0	$107,000	$0
SW-306E3	70	0	6	184	10	3	$107,000	$321,000
			8		12	3	$107,000	$321,000
			10		13	3	$107,000	$321,000
			12		15	3	$107,000	$321,000
			14		15	3	$107,000	$321,000
SW-284E3	67	0	12	470	4	0	$107,000	$0
			14		4	0	$107,000	$0
			16		4	0	$107,000	$0
			18		4	0	$107,000	$0
			20		5	1	$107,000	$107,000
SW-225W3**	66	2	8	2310	4	0	$107,000	$0
			10		5	15	$107,000	$1,605,000
			12		6	38	$107,000	$4,066,000
			14		7	44	$107,000	$4,708,000
			16		8	54	$107,000	$5,778,000
SW-198E3*	68	7	8	1754	5	12	$107,000	$1,284,000
			10		7	18	$107,000	$1,926,000
			12		8	23	$107,000	$2,461,000
			14		8	25	$107,000	$2,675,000
			16		9	25	$107,000	$2,675,000

Feasibility Requirement: Soundwall must provide at least 5 dB noise reduction at impacted receiver

Reasonableness Requirement: Soundwall must provide at least 7 dB noise reduction at one or more benefited receptors

*This soundwall must be constructed to replace the existing wall that would be removed to accommodate widenning

**Replace portion of existing soundwall

*** Existing Worst Hour Noise Level

Table 2-116: Summary of Reasonableness Determination Data for Soundwalls Alternative 3 Cont.

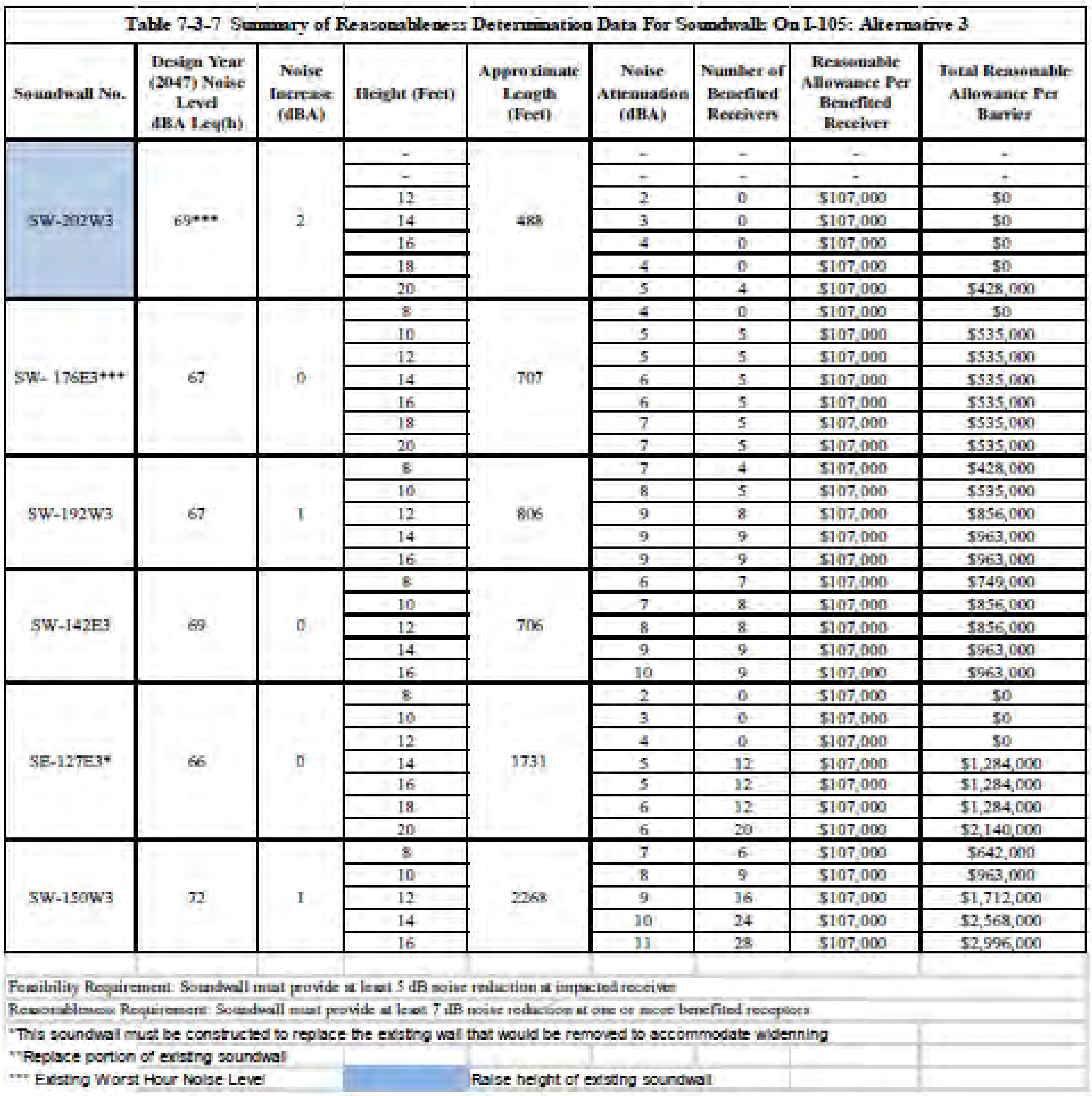


Table 7-3-7 Summary of Reasonableness Determination Data For Soundwalls On I-105: Alternative 3

Soundwall No.	Design Year (2047) Noise Level dBA Leq(h)	Noise Increase (dBA)	Height (Feet)	Approximate Length (Feet)	Noise Attenuation (dBA)	Number of Benefited Receivers	Reasonable Allowance Per Benefited Receiver	Total Reasonable Allowance Per Barrier
SW-202W3	69***	2	-	488	-	-	-	-
			-		-	-	-	-
			12		2	0	$107,000	$0
			14		3	0	$107,000	$0
			16		4	0	$107,000	$0
			18		4	0	$107,000	$0
			20		5	4	$107,000	$428,000
SW- 176E3***	67	0	8	707	4	0	$107,000	$0
			10		5	5	$107,000	$535,000
			12		5	5	$107,000	$535,000
			14		6	5	$107,000	$535,000
			16		6	5	$107,000	$535,000
			18		7	5	$107,000	$535,000
			20		7	5	$107,000	$535,000
SW-192W3	67	1	8	806	7	4	$107,000	$428,000
			10		8	5	$107,000	$535,000
			12		9	8	$107,000	$856,000
			14		9	9	$107,000	$963,000
			16		9	9	$107,000	$963,000
SW-142E3	69	0	8	706	6	7	$107,000	$749,000
			10		7	8	$107,000	$856,000
			12		8	8	$107,000	$856,000
			14		9	9	$107,000	$963,000
			16		10	9	$107,000	$963,000
SE-127E3*	66	0	8	1731	2	0	$107,000	$0
			10		3	0	$107,000	$0
			12		4	0	$107,000	$0
			14		5	12	$107,000	$1,284,000
			16		5	12	$107,000	$1,284,000
			18		6	12	$107,000	$1,284,000
			20		6	20	$107,000	$2,140,000
SW-150W3	72	1	8	2268	7	6	$107,000	$642,000
			10		8	9	$107,000	$963,000
			12		9	16	$107,000	$1,712,000
			14		10	24	$107,000	$2,568,000
			16		11	28	$107,000	$2,996,000

Feasibility Requirement: Soundwall must provide at least 5 dB noise reduction at impacted receiver

Reasonableness Requirement: Soundwall must provide at least 7 dB noise reduction at one or more benefited receptors

*This soundwall must be constructed to replace the existing wall that would be removed to accommodate widenning

**Replace portion of existing soundwall

*** Existing Worst Hour Noise Level

🟦 Raise height of existing soundwall

2.2.7.4 Avoidance, Minimization, and/or Abatement Measures

A Noise Abatement Decision Report (NADR) was prepared for the project by the consultants in February of 2020. The purpose of the NADR is to: summarize the conclusions of the NSR relating to acoustical feasibility, the design goal, and the reasonable allowances for abatement evaluated, present the engineer's cost estimate for evaluated abatement, present the engineer's evaluation of nonacoustical feasibility issues, present the preliminary noise abatement decision, and present preliminary information on secondary effects of abatement. Implementation of the following measures for the proposed project will reduce any noise impacts to less than significant.

Noise1 - All acoustically feasible and reasonable soundwalls approved by benefitted receivers will be incorporated in the final design.

The following tables have a summary of acoustically feasible soundwalls on I-105 for both build alternatives.

Table 2-117: Summary of Acoustically Feasible Soundwalls on I-105 – Alternative 2

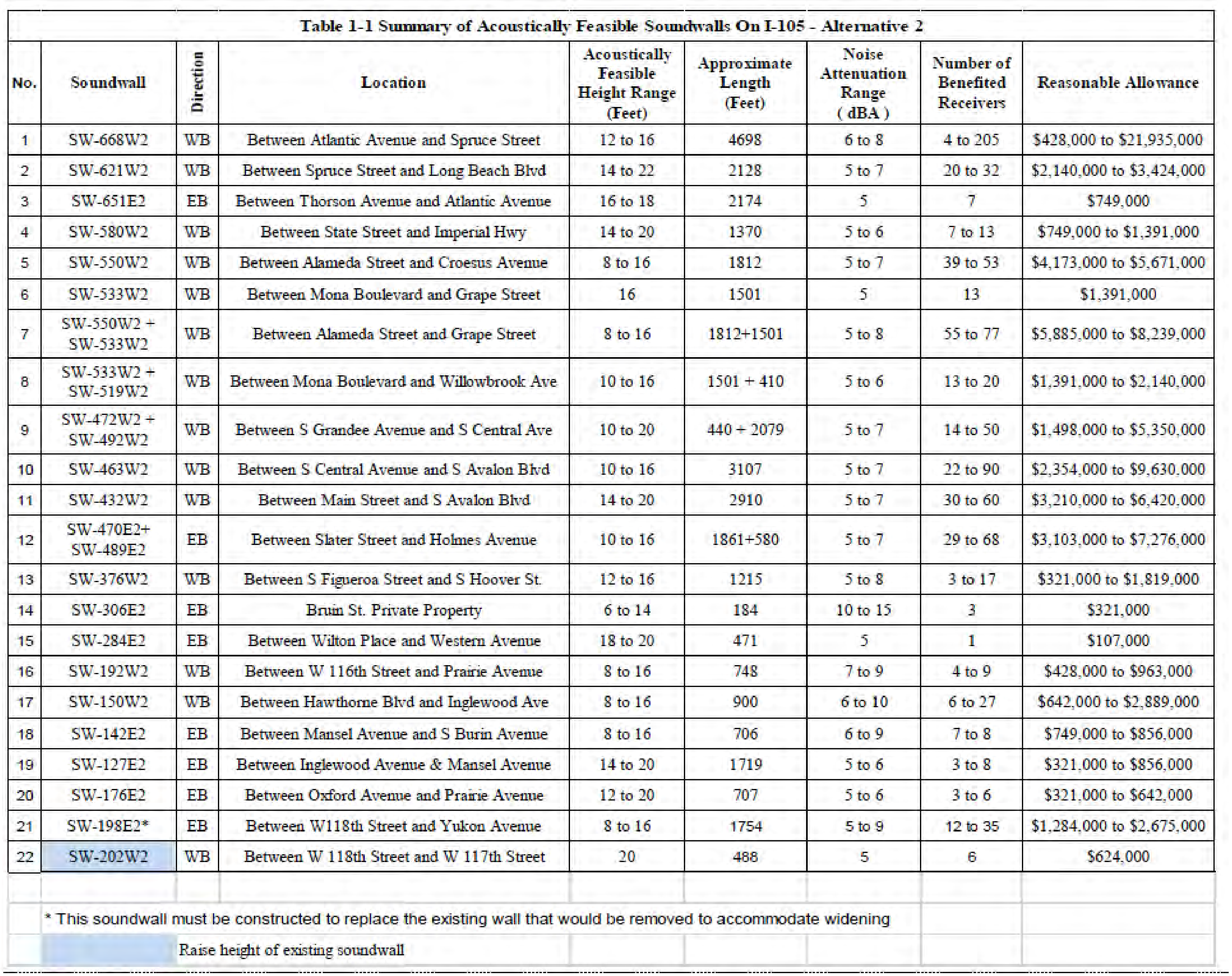


Table 1-1 Summary of Acoustically Feasible Soundwalls On I-105 - Alternative 2

No.	Soundwall	Direction	Location	Acoustically Feasible Height Range (Feet)	Approximate Length (Feet)	Noise Attenuation Range (dBA)	Number of Benefited Receivers	Reasonable Allowance
1	SW-668W2	WB	Between Atlantic Avenue and Spruce Street	12 to 16	4698	6 to 8	4 to 205	$428,000 to $21,935,000
2	SW-621W2	WB	Between Spruce Street and Long Beach Blvd	14 to 22	2128	5 to 7	20 to 32	$2,140,000 to $3,424,000
3	SW-651E2	EB	Between Thorson Avenue and Atlantic Avenue	16 to 18	2174	5	7	$749,000
4	SW-580W2	WB	Between State Street and Imperial Hwy	14 to 20	1370	5 to 6	7 to 13	$749,000 to $1,391,000
5	SW-550W2	WB	Between Alameda Street and Croesus Avenue	8 to 16	1812	5 to 7	39 to 53	$4,173,000 to $5,671,000
6	SW-533W2	WB	Between Mona Boulevard and Grape Street	16	1501	5	13	$1,391,000
7	SW-550W2 + SW-533W2	WB	Between Alameda Street and Grape Street	8 to 16	1812+1501	5 to 8	55 to 77	$5,885,000 to $8,239,000
8	SW-533W2 + SW-519W2	WB	Between Mona Boulevard and Willowbrook Ave	10 to 16	1501 + 410	5 to 6	13 to 20	$1,391,000 to $2,140,000
9	SW-472W2 + SW-492W2	WB	Between S Grandee Avenue and S Central Ave	10 to 20	440 + 2079	5 to 7	14 to 50	$1,498,000 to $5,350,000
10	SW-463W2	WB	Between S Central Avenue and S Avalon Blvd	10 to 16	3107	5 to 7	22 to 90	$2,354,000 to $9,630,000
11	SW-432W2	WB	Between Main Street and S Avalon Blvd	14 to 20	2910	5 to 7	30 to 60	$3,210,000 to $6,420,000
12	SW-470E2+ SW-489E2	EB	Between Slater Street and Holmes Avenue	10 to 16	1861+580	5 to 7	29 to 68	$3,103,000 to $7,276,000
13	SW-376W2	WB	Between S Figueroa Street and S Hoover St.	12 to 16	1215	5 to 8	3 to 17	$321,000 to $1,819,000
14	SW-306E2	EB	Bruin St. Private Property	6 to 14	184	10 to 15	3	$321,000
15	SW-284E2	EB	Between Wilton Place and Western Avenue	18 to 20	471	5	1	$107,000
16	SW-192W2	WB	Between W 116th Street and Prairie Avenue	8 to 16	748	7 to 9	4 to 9	$428,000 to $963,000
17	SW-150W2	WB	Between Hawthorne Blvd and Inglewood Ave	8 to 16	900	6 to 10	6 to 27	$642,000 to $2,889,000
18	SW-142E2	EB	Between Mansel Avenue and S Burin Avenue	8 to 16	706	6 to 9	7 to 8	$749,000 to $856,000
19	SW-127E2	EB	Between Inglewood Avenue & Mansel Avenue	14 to 20	1719	5 to 6	3 to 8	$321,000 to $856,000
20	SW-176E2	EB	Between Oxford Avenue and Prairie Avenue	12 to 20	707	5 to 6	3 to 6	$321,000 to $642,000
21	SW-198E2*	EB	Between W118th Street and Yukon Avenue	8 to 16	1754	5 to 9	12 to 35	$1,284,000 to $2,675,000
22	SW-202W2	WB	Between W 118th Street and W 117th Street	20	488	5	6	$624,000

* This soundwall must be constructed to replace the existing wall that would be removed to accommodate widening

▨ Raise height of existing soundwall

Table 2-118: Summary of Acoustically Feasible Soundwalls on I-105 – Alternative 3

No.	Soundwall	Direction	Location	Acoustically Feasible Height Range (Feet)	Approximate Length (Feet)	Noise Attenuation Range (dBA)	Number of Benefited Receivers	Reasonable Allowance
1	SW-669W3*	WB	Between Atlantic Avenue and Spruce Street	8 to 16	4830	5 to 8	4 to 205	$428,000 to $21,935,000
2	SW-628E3	EB	Between Bullis Road to Atlantic Avenue	10 to 16	4489	6 to 8	38 to 60	$4,066,000 to $6,420,000
3	SW-619E3*	EB	Between Fir Street and Bullis Road	8 to 20	896	2 to 4	N/A	N/A
4	SW-621W3	WB	Between Spruce Street and Long Beach Blvd	16 to 20	2128	5 to 6	25 to 33	$2,675,000 to $3,531,000
5	SW-606E3*	EB	Between Long Beach and Spruce Street	10 to 16	892	3 to 4	N/A	N/A
6	SW-580W3	WB	Between State Street and Imperial Hwy	14 to 20	1370	5 to 6	7 to 13	$749,000 to $1,391,000
7	SW-550W3	WB	Between Alameda Street and Croesus Avenue	8 to 16	1812	5 to 7	10 to 47	$1,070,000 to $5,029,000
8	SW-533W3	WB	Between Mona Boulevard and Grape Street	12 to 16	1501	5 to 6	1 to 15	$1,070,000 to $1,605,000
9	SW-550W3 + SW-533W3	WB	Between Alameda Street and Grape Street	8 to 16	1812+1501	5 to 8	37 to 77	$3,959,000 to $8,239,000
10	SW-533W3 + SW-519W3	WB	Between Mona Boulevard and Willowbrook Ave	10 to 16	1501 + 410	5 to 6	2 to 23	$214,000 to $2,461,000
11	SW-489E3*+ SW-470E3	EB	Between Slater Street and Holmes Avenue	10 to 16	1796+1130	5 to 7	45 to 68	$4,815,000 to $2,276,000
12	SW-472W3 + SW-492W3	WB	Between S.Grandee Ave and S. Central Ave	10 to 20	440+2079	5 to 7	14 to 50	$1,498,000 to $5,350,000
13	SW-461E3*	EB	Between S. Central Avenue and Slater Street	10 to 20	965	5 to 7	4 to 13	$428,000 to $1,391,000
14	SW-455E3*	EB	Between Wadsworth Ave and S. Central Ave	14 to 20	680	5	2 to 6	$214,000 to $642,000
15	SW-461E3 + SW-455E3	EB	Between Wadsworth Avenue and Slater Street	8 to 16	1645	5 to 7	2 to 35	$214,000 to $3,745,000

* This soundwall must be constructed to replace the existing wall that would be removed to accommodate widening

Table 2-118: Summary of Acoustically Feasible Soundwalls on I-105 – Alternative 3 Cont.

No.	Soundwall	Direction	Location	Acoustically Feasible Height Range (Feet)	Approximate Length (Feet)	Noise Attenuation Range (dBA)	Number of Benefited Receivers	Reasonable Allowance
16	SW-463W3*	WB	Between S Central Avenue and S Avalon Blvd	10 to 16	3107	5 to 7	22 to 90	$2,354,000 to $9,630,000
17	SW-436E3*	EB	Between Stanford Ave and S. Avalon Blvd	16	1108	5	18	$1,926,000
18	SW-432W3	WB	Between S. Avalon Blvd and S. Main Street	14 to 20	2912	5 to 6	30 to 60	$3,210,000 to $6,420,000
19	SW-402E3*	EB	Between S Main Street and S San Pedro Street	8 to 16	1357	3 to 4	N/A	N/A
20	SW-376W3	WB	Between S Figueroa Street and S Hoover St.	12 to 16	1215	5 to 8	3 to 17	$321,000 to $1,819,000
21	SW-306E3	EB	Bruin St. Private Property	6 to 14	184	10 to 15	3	$321,000
22	SW-284E3	EB	Between S. Wilton Pl. and Western Avenue	20	470	5	1	$107,000
23	SW-225W3**	WB	Between Yukon Avenue and W 118th Street	10 to 16	2310	5 to 8	15 to 54	$1,605,000 to $5,778,000
24	SW-198E3*	EB	Between W118th Street and Almertens Pl	8 to 16	1754	5 to 9	12 to 25	$1,284,000 to $2,675,000
25	SW-202W3	WB	Between W118th Street and W 117th Street	20	488	5	6	$624,000
26	SW-192W3	WB	Between W 116th Street and Prairie Avenue	8 to 16	806	7 to 9	4 to 9	$428,000 to $963,000
27	SW-176E3	EB	Between Oxford Avenue and Prairie Avenue	12 to 20	707	5 to 7	3 to 6	$321,000 to $642,000
28	SW-142E3	EB	Between Mansel Avenue and S Burin Avenue	8 to 16	706	6 to 10	7 to 9	$749,000 to $963,000
29	SW-127E3	EB	Between Inglewood Ave and S Mansel Avenue	16 to 20	1719	5 to 6	12 to 20	$1,284,000 to $2,140,000
30	SW-150W3	WB	Between S Burin Ave and Inglewood Avenue	8 to 16	2268	7 to 11	6 to 28	$642,000 to $2,996,000

* This soundwall must be constructed to replace the existing wall that would be removed to accommodate widening

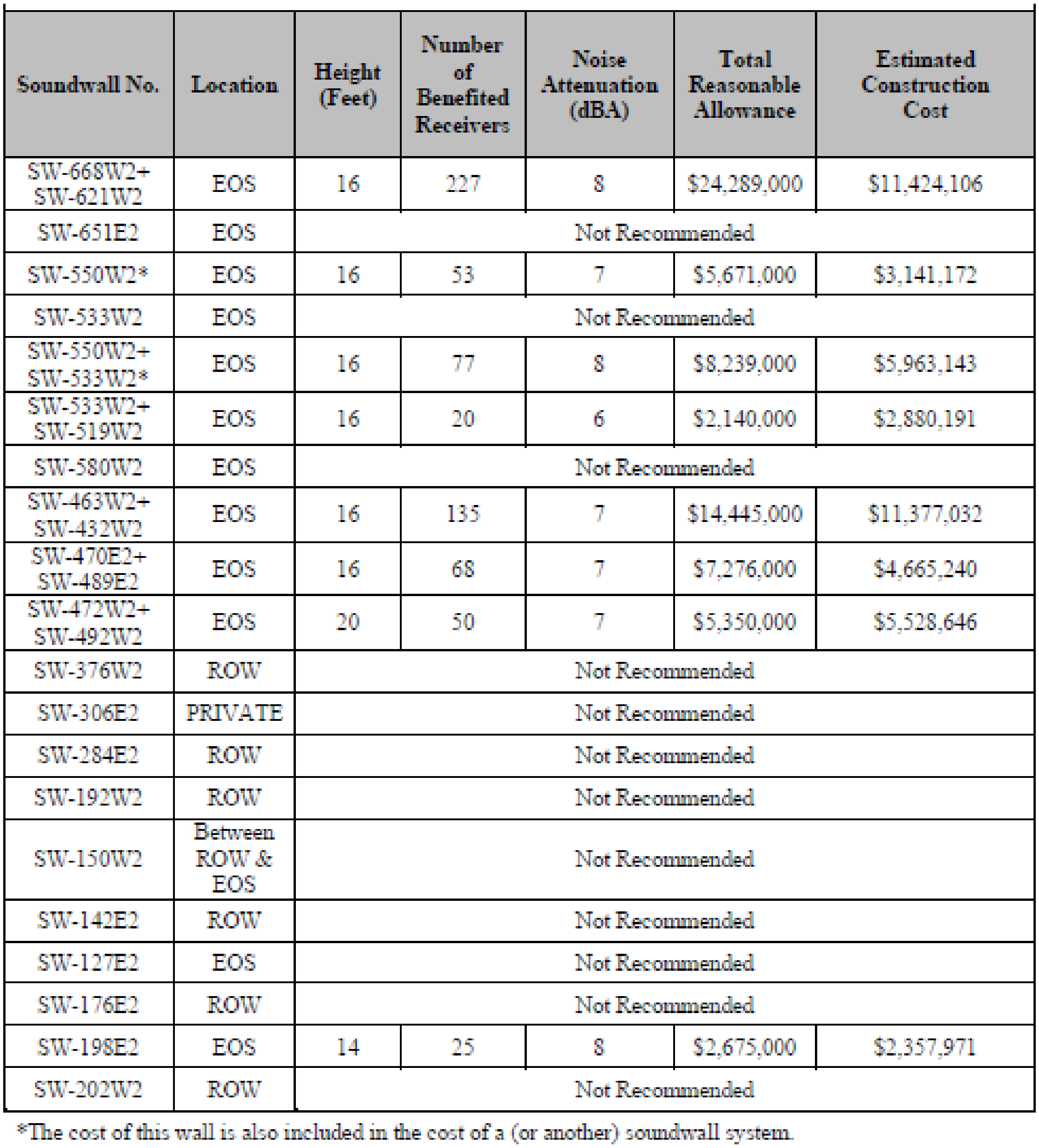
** Replace portion of existing soundwall

🟦 Raise height of existing soundwall

Based on the studies completed to date, Caltrans intends to incorporate noise abatement in the form of barriers at eight locations between 14 to 20 feet for Alternative 2 and fifteen locations from 8 to 20 feet for Alternative 3. Calculations based on preliminary design data show that the new barriers will reduce noise levels by 7 to 8 dBA for up to 227 residences per barrier at a cost of $107,000 per benefited receiver. These measures may change based on input received from the public. If conditions have substantially changed during final design, noise abatement may not be constructed. The final decision on noise abatement will be made upon completion of the project final design. With the inclusion of these sound walls, it is anticipated that noise impacts will be less than significant from the proposed project.

The following tables are a summary of abatement recommended heights for each alternative.

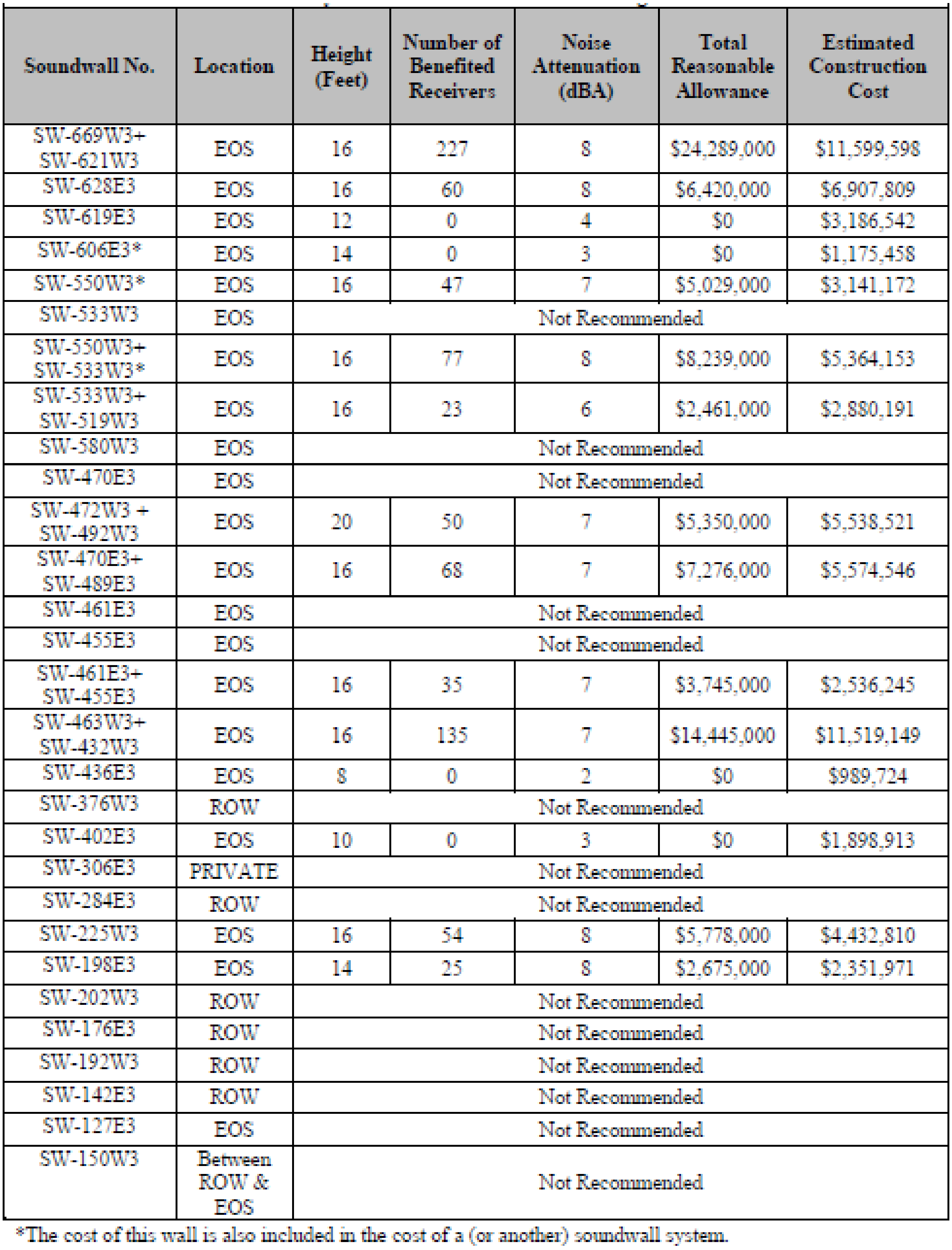
Table 2-119: Alternative 2 Summary of Abatement Recommended Heights



Soundwall No.	Location	Height (Feet)	Number of Benefited Receivers	Noise Attenuation (dBA)	Total Reasonable Allowance	Estimated Construction Cost
SW-668W2+ SW-621W2	EOS	16	227	8	$24,289,000	$11,424,106
SW-651E2	EOS	Not Recommended				
SW-550W2*	EOS	16	53	7	$5,671,000	$3,141,172
SW-533W2	EOS	Not Recommended				
SW-550W2+ SW-533W2*	EOS	16	77	8	$8,239,000	$5,963,143
SW-533W2+ SW-519W2	EOS	16	20	6	$2,140,000	$2,880,191
SW-580W2	EOS	Not Recommended				
SW-463W2+ SW-432W2	EOS	16	135	7	$14,445,000	$11,377,032
SW-470E2+ SW-489E2	EOS	16	68	7	$7,276,000	$4,665,240
SW-472W2+ SW-492W2	EOS	20	50	7	$5,350,000	$5,528,646
SW-376W2	ROW	Not Recommended				
SW-306E2	PRIVATE	Not Recommended				
SW-284E2	ROW	Not Recommended				
SW-192W2	ROW	Not Recommended				
SW-150W2	Between ROW & EOS	Not Recommended				
SW-142E2	ROW	Not Recommended				
SW-127E2	EOS	Not Recommended				
SW-176E2	ROW	Not Recommended				
SW-198E2	EOS	14	25	8	$2,675,000	$2,357,971
SW-202W2	ROW	Not Recommended				

*The cost of this wall is also included in the cost of a (or another) soundwall system.

Table 2-120: Alternative 3 Summary of Abatement Recommended Heights



Soundwall No.	Location	Height (Feet)	Number of Benefited Receivers	Noise Attenuation (dBA)	Total Reasonable Allowance	Estimated Construction Cost
SW-669W3+ SW-621W3	EOS	16	227	8	$24,289,000	$11,599,598
SW-628E3	EOS	16	60	8	$6,420,000	$6,907,809
SW-619E3	EOS	12	0	4	$0	$3,186,542
SW-606E3*	EOS	14	0	3	$0	$1,175,458
SW-550W3*	EOS	16	47	7	$5,029,000	$3,141,172
SW-533W3	EOS	Not Recommended				
SW-550W3+ SW-533W3*	EOS	16	77	8	$8,239,000	$5,364,153
SW-533W3+ SW-519W3	EOS	16	23	6	$2,461,000	$2,880,191
SW-580W3	EOS	Not Recommended				
SW-470E3	EOS	Not Recommended				
SW-472W3 + SW-492W3	EOS	20	50	7	$5,350,000	$5,538,521
SW-470E3+ SW-489E3	EOS	16	68	7	$7,276,000	$5,574,546
SW-461E3	EOS	Not Recommended				
SW-455E3	EOS	Not Recommended				
SW-461E3+ SW-455E3	EOS	16	35	7	$3,745,000	$2,536,245
SW-463W3+ SW-432W3	EOS	16	135	7	$14,445,000	$11,519,149
SW-436E3	EOS	8	0	2	$0	$989,724
SW-376W3	ROW	Not Recommended				
SW-402E3	EOS	10	0	3	$0	$1,898,913
SW-306E3	PRIVATE	Not Recommended				
SW-284E3	ROW	Not Recommended				
SW-225W3	EOS	16	54	8	$5,778,000	$4,432,810
SW-198E3	EOS	14	25	8	$2,675,000	$2,351,971
SW-202W3	ROW	Not Recommended				
SW-176E3	ROW	Not Recommended				
SW-192W3	ROW	Not Recommended				
SW-142E3	ROW	Not Recommended				
SW-127E3	EOS	Not Recommended				
SW-150W3	Between ROW & EOS	Not Recommended				

*The cost of this wall is also included in the cost of a (or another) soundwall system.

2.2.8 Energy

2.2.8.1 Regulatory Setting

The National Environmental Policy Act (NEPA) (42 United States Code [USC] Part 4332) requires the identification of all potentially significant impacts to the environment, including energy impacts.

The California Environmental Quality Act (CEQA) Guidelines section 15126.2(b) and Appendix F, Energy Conservation, require an analysis of a project's energy use to determine if the project may result in significant environmental effects due to wasteful, inefficient, or unnecessary use of energy, or wasteful use of energy resources.

2.2.8.2 Affected Environment

The following discussion is based on a project specific Energy Study prepared by ICF International and approved by Caltrans in November 2019.

Direct Energy

In the context of transportation, direct energy involves all energy consumed by vehicle propulsion (e.g., automobiles, trains, airplanes). This energy consumption is a function of traffic characteristics, such as VMT, speed, vehicle mix, and thermal value of fuel being used. Additionally, direct energy also includes the one-time energy expenditure involved in construction of the project. Therefore, analysis of direct energy use includes the following factors:

- Direct Energy (Mobile Sources): The energy consumed by vehicle propulsion within the facility during operation of the project.
- Direct Energy (Construction): The energy consumed by construction vehicles and equipment during construction of the project.

Indirect Energy

Indirect Energy includes maintenance activities that would result in long-term indirect energy consumption by equipment required to operate and maintain the roadway.

Indirect energy use may also include peripheral energy effects, which includes the use of energy sources that are not used by the transportation system itself, but rather energy used as a result of changes in land use, population density, or transportation patterns that are induced by the project, which would affect the energy demand, supply, and distribution within the surrounding area (California Department of Transportation, 1980). However, because the project area is already urbanized and located along an existing transportation corridor, the proposed project would not be expected to induce substantial changes in land use, population density, or transportation patterns that would increase energy demand, supply, or distribution. Therefore, an analysis of peripheral energy effects was not needed.

Current Energy Consumption

Energy consumption is commonly expressed in British thermal units (BTUs), which is the quantity of heat required to raise the temperature of one pound of water one degree Fahrenheit at sea level. Because other units of energy can be converted into equivalent BTU, the BTU is used as a basis for comparing the consumption of different types of energy resources. In 2017, California’s per capita energy consumption ranked 48th in the United States due to the state’s mild climate and energy efficiency programs (U.S. Energy Information Administration, 2018a).

Existing Project Area Conditions

The project area includes lighting along the freeway but does not currently include any transportation management systems (TMS) elements. Additional details regarding existing conditions in the project area that affect energy usage, such as existing traffic conditions, vehicle mix, and pavement surfaces, are included below.

Existing Traffic Conditions

The VMT in the study area have been analyzed in the Traffic Study Report prepared for the project (WSP, 2019). Table 2-121 shows the existing VMT on the I-105 during different time periods of the day as well as the total VMT in each direction of the freeway.

Table 2-121: I-105 Existing VMT (2017)

Traffic Volume by Time Period	Base Mainline EB	Base HOV EB	Base Mainline WB	Base HOV WB
AM Peak (6 a.m.-9 a.m.)	217,289	41,553	209,658	57,421
Midday (9 a.m.-3 p.m.)	408,254	82,685	428,673	85,927
PM Peak (3 p.m.-7 p.m.)	196,700	61,355	220,668	47,198
Evening (7 p.m.-9 p.m.)	201,426	55,662	199,501	42,464
Night (9 p.m.-6 a.m.)	358,215	42,997	351,525	52,257
Daily Totals	1,381,885	284,253	1,410,026	285,266

The Traffic Study Report identified four major bottlenecks – two in each direction, with congestion being typically worse in the eastbound direction than the westbound direction (WSP, 2019). In summary:

- The most severe bottleneck on the corridor occurs just west of the I-710 interchange between the Long Beach Boulevard on-ramp and the I-710 off-ramps. This bottleneck typically overwhelms the upstream bottlenecks at Wilmington Ave. and the queuing contributes to congestion on the I-110 southbound to I-105 Eastbound connector ramp.
- Two major bottlenecks are located east of the I-710 interchange. The I-605 northbound connector ramp forms a bottleneck at the eastern end of the corridor during both the AM and PM peak periods. The bottleneck is caused by the higher demand exceeding the available capacity of the northbound connector ramp and the queuing from the heavy congestion and slow speeds along the northbound I-605 general purpose lanes (at the connector on-ramp). The second bottleneck is located between the Paramount Boulevard on-ramp and the Lakewood Boulevard off-ramp. This bottleneck is caused by the additional demand from the on-ramp merge and the weaving conflict with the off-ramp that persists throughout most of the day.
- West of I-110 at Crenshaw Boulevard is the third most congested bottleneck location on the corridor. The auxiliary lane from the Hawthorne Boulevard/Imperial Highway on-ramp to the Crenshaw Boulevard/120th Street off-ramp ends, causing a bottleneck that leads to a drop in overall capacity. There are also two closely spaced, high volume on-ramps

(> 10,000 annual average daily traffic [AADT]) at West 120th Street, and the eastbound on from northbound Crenshaw Boulevard.
- There is a moderate bottleneck near the I-405 southbound on-ramp during the PM peak period due to the high-volume connector ramp that carries more than 30,000 AADT. This bottleneck is overwhelmed by the Crenshaw on-ramp bottleneck downstream.
- Bottlenecks in the westbound direction of the I-105 are smaller and less congested than the eastbound direction. The most congested westbound bottleneck occurs at the Crenshaw Boulevard on-ramp due in part to its high ramp flows. The second biggest bottleneck in this direction occurs at the interaction between the connector ramps from the southbound I-710 on-ramps to the Long Beach Boulevard off-ramps.

An analysis of the existing congestion and bottlenecks on the I-105 HOV lanes conducted in the Traffic Study Report also identified the following (WSP, 2019):

- The most severe bottleneck on the corridor occurs in the eastbound facility just east of the I-110 interchange. This bottleneck occurs because the I-110 ExpressLanes direct connector ramp traffic merges with the I-105 HOV lane traffic, where the facility capacity cannot handle the additional demand from the ramp.
- The main bottleneck in the westbound direction is at the I-110 ExpressLanes direct connector ramp merge with the HOV lane. The demand from the two lanes merging into one exceeds the capacity of the HOV lane.
- Another major bottleneck is on the eastbound facility that occurs between the Hawthorne Boulevard on-ramp and Crenshaw Boulevard/120th Street off-ramp at the HOV ingress/egress location. Due to the congestion on the general purpose lanes, traffic slows to exit, while slow traffic from the general purpose lanes enters the HOV lane.

Existing and Projected Vehicle Mix

I-105 is part of the California Freeway and Expressway System and has been recognized as an essential link in a multi-modal transportation network. The route is also part of the Federal Surface Transportation Assistance Act Route Network for Oversized Trucks and the Subsystem of Highways for the Movement of Extralegal Permit Loads. Under existing (2017) conditions, truck traffic as a percentage of freeway ADT traffic within the study area is approximately 8 percent. In opening year (2027), truck traffic will account for approximately 9 percent of total daily volumes, while during both horizon (2040) and design (2047) years truck traffic will account for approximately 10 percent of total daily volumes.

Conditions of Existing Pavement Surface

The following current pavement conditions exist along I-105 within the study area:
- Mainline lanes are typically Portland cement concrete (PCC) pavement.
- Inside and outside shoulders are typically asphalt concrete (AC) pavement.
- Auxiliary lanes are a mix of PCC and AC pavement.
- Interchange ramps are typically AC pavement.
- I-105/I-605, I-105/I-710, I-105/I-110, and I-105/I-405 connectors are typically PCC pavement, with some areas repaired with AC pavement.

2.2.8.3 Environmental Consequences

Direct Energy (Mobile Sources)

Energy calculations for transportation projects are dependent on VMT and vehicle fuel consumption. For the study area, energy calculations are based on annual VMT, shown in Table 2-122. In addition, existing year 2017, opening year 2027, and horizon year 2040 are shown in the table to provide a comparative context of the VMT use. As shown in the table, daily and annual VMT under existing conditions (2017) are lower than daily and annual VMT in the future years 2027, 2040, and 2047. The increase in daily and annual VMT can be attributed to the projected increase in population growth and increased employment in the region.

Table 1-122: Operational Vehicle Miles by Alternative

Study Phase	Vehicle Miles Traveled (VMT)	No-Build (Alternative 1)	Convert Existing HOV to HOT Lane or ExpressLane (Alternative 2)	Convert Existing HOV to Two HOT Lanes or ExpressLanes [Non-Standard Lane Widths] (Alternative 3)
Existing Conditions (2017)	Daily VMT[a]	3,361,430	N/A	N/A
	Annual VMT[b] (thousands)	1,166,416	N/A	N/A
Opening Year (2027)	Daily VMT	3,493,683	3,664,666	4,110,866
	Annual VMT (thousands)	1,212,308	1,271,639	1,426,471
Horizon Year (2040)	Daily VMT	3,549,340	3,718,726	4,022,077
	Annual VMT (thousands)	1,231,621	1,290,398	1,395,661
Design Year (2047)	Daily VMT	3,564,055	3,682,789	4,051,600
	Annual VMT (thousands)	1,236,727	1,277,928	1,405,905

Source: Metro, 2019.

[a] Vehicle miles traveled (VMT)

[b] Annual values were derived by multiplying the daily values by 347, per CARB methodology (CARB, 2008).

Table 2-122 shows that 2027, 2040, and 2047 daily and annual VMT would increase for each of the Build Alternatives compared to the No-Build Alternative. This increase is attributed to a shift in travel patterns, including a redistribution of vehicle trips from the arterial roads to the freeway.

Energy use during operations of any alternative are directly related to the gasoline and diesel fuel consumption by automobiles and trucks. In addition to VMT, traffic operating conditions also affect fuel consumption rates. Therefore, VMT, travel speeds, and vehicle type were used to calculate fuel consumption. Operational energy consumption was estimated based on vehicle types (e.g., automobiles, trucks, light-duty trucks, medium-duty trucks, and heavy-duty trucks) traveling within the proposed area using the CT-EMFAC2017 model, which relies on emission factors from the EFAC2017 (version 1.0.2) model. The EMFAC2017 model output provided the total gallons of combined gasoline and diesel fuel. Energy use can be represented in terms of the thermal value of the fuel usually measured in BTU. Gallons of fuel can be converted to BTUs by using the heat content of the fuel. Diesel fuel has a heat content of 127,460 BTU per gallon and gasoline has a heat content of 109,772 BTU per gallon (California Air Resources Board, 2018). Table 2-123 summarizes the annual energy use for each of the Build Alternatives.

Table 2-122: Annual Direct Energy Use (Mobile Sources) By Alternative and Study Year

Fuel Usage by Study Year	No- Build (Alternative 1)	Convert Existing HOV to HOT Lane or ExpressLane (Alternative 2)	Convert Existing HOV to Two HOT Lanes or ExpressLanes [Non-Standard Lane Widths] (Alternative 3)
2017 Fuel Usage (gallons)			
Gasoline	47,123,900	N/A	N/A
Diesel	6,555,188	N/A	N/A
2027 Fuel Usage (gallons)			
Gasoline	33,922,728	36,196,092	40,057,137
Diesel	5,663,507	5,957,600	6,463,288
2040 Fuel Usage (gallons)			
Gasoline	28,197,541	30,173,613	32,414,276
Diesel	5,663,507	5,957,600	6,463,288
2047 Fuel Usage (gallons)			
Gasoline	27,625,024	29,390,980	31,844,060
Diesel	5,827,883	6,410,005	6,719,792
2017 BTU (billion)	6,008	N/A	N/A
2027 BTU (billion)	4,503	4,765	5,260
2040 BTU (billion)	3,817	4,072	4,382
2047 BTU (billion)	3,775	4,043	4,352
2027 Percent Change from No-Build	---	5.8	16.8
2040 Percent Change from No-Build	---	6.7	14.8
2047 Percent Change from No-Build	---	7.1	15.3

As shown in Table 2-123, the overall energy usage between 2017 and 2047 would decrease. This is attributed to better mandated fuel economy of passenger cars stemming from various energy policies requiring vehicle manufacturers to meet more stringent fuel requirements and the increase in vehicles using newer technologies (e.g., hybrid vehicle, all electric). However, when alternatives are compared for each given year, the energy usage among the Build Alternatives are higher than the No-Build Alternative. This corresponds with the increase in daily and annual VMT that is projected for the project corridor in future years. The increase in VMT could also be attributed to travel pattern shifts that occur as improvement of the transportation system is implemented (driver behavior change). As a result, there would be an increase in energy usage in 2047 for each of the Build Alternatives in comparison to the No-Build.

As stated previously, operational improvements that smooth out traffic flow and eliminate choke points and decrease traffic congestion, such as those proposed for this project, would increase moving vehicle speeds, and decrease travel time on the congested freeway system which would result in a more efficient use of energy. Implementation of the proposed project would result in improvements to the capacity of the managed lanes on the I-105 corridor that would allow for more flexibility in the traffic movement and higher efficiencies, which would enable the corridor to maximize productivity and travel reliability. Therefore, the proposed project would not result in an inefficient, wasteful, and unnecessary consumption of energy.

Direct Energy (Construction)

Direct energy from construction sources is the energy that is consumed during construction activities by vehicles and equipment. Project construction would occur in a single phase and involve the following types of diesel-powered equipment during the estimated 4-year construction period:

- Crawler tractors
- Excavators
- Graders
- Rollers
- Rubber tired loaders
- Scrapers
- Rough terrain forklifts
- Paving equipment

Project construction would also involve the use of on-road gasoline vehicles by construction workers. Overall, construction fuel consumption for the proposed project was calculated by converting the estimated CO_2 emission levels generated by diesel-powered off-road equipment and on-road gasoline vehicles for the construction period, provided by the I-105 ExpressLanes Project Air Quality Report into gallons of diesel and gasoline that would be consumed during project construction activities.

As shown in Table 2-124, construction of Alternative 2 is expected to consume a total of approximately 751,495 gallons of diesel fuel and 10,986 gallons of gasoline fuel, resulting in a total energy consumption of approximately 107,639 million BTUs over the 4-year period. Construction of Alternative 3 is expected to consume a total of approximately 940,455 gallons of diesel fuel and 120,096 gallons of gasoline fuel, resulting in a total energy consumption of approximately 133,054 million BTUs over the 4-year period.

Table 2-123: Direct Energy Use (Construction) For Build Alternatives During 4-Year Construction Period

Year	4-year Construction Period		
	Diesel Consumption (gallons)	Gasoline Consumption (gallons)	Fuel Consumption (BTU)(million)
Convert Existing HOV to HOT Lane or ExpressLane (Alternative 2)			
2024	179,637	26,333	25,788
2025	248,569	30,467	35,027
2026	198,614	27,545	28,339
2027	124,675	23,641	18,486
Total	**751,495**	**107,986**	**107,639**
Convert Existing HOV to Two HOT Lanes or ExpressLanes [Non-Standard Lane Widths] (Alternative 3)			
2024	223,090	28,957	31,614
2025	309,979	34,093	43,252
2026	252,180	31,021	35,548
2027	155,207	26,025	22,639
Total	**940,455**	**120,096**	**133,053**

Project construction would primarily consume diesel through operation of heavy-duty construction equipment, material deliveries, and debris hauling, while gasoline fuel would be consumed from worker vehicle trips to and from the construction site. The construction energy consumption under the two Build Alternatives represents a small demand on local and regional fuel supplies that would be easily accommodated, and this demand would cease once construction is complete. Moreover, construction-related energy consumption would be temporary and not a permanent new source of energy demand, and demand for fuel would have no noticeable effect on peak or baseline demands for energy.

While construction would result in a short-term increase in energy use, construction design features would help conserve energy. For example, recycled materials, including any removed asphalt concrete pavement and cement concrete pavement, will be used where feasible. Recycled products typically have lower manufacturing and transport energy costs since they do not utilize raw materials, which must be mined and transported to a processing facility. Additionally, the proposed project would reuse existing hardware and electrical equipment where feasible and use solar energy systems to power emergency call boxes within the project area. If new materials must be used, fly ash mix may be considered, as well as permeable pavement to allow for lowering of the heat island effect[3], depending on what is allowable according to Caltrans specifications. A Construction Efficiency Plan would also be implemented. These energy conservation features are consistent with State and local policies to reduce energy. Therefore, the project would not result in an inefficient, wasteful, and unnecessary consumption of energy.

Indirect Energy

For facility maintenance, the indirect energy use factor is 1.776×10^8 BTU per lane-mile for an urban roadway with asphalt concrete pavement. For the resource study area, this indirect energy use factor for facility maintenance was multiplied by the total length of the I-105 study area corridor (15.7 miles), and then by the number of lanes along the corridor under each scenario (eight lanes under Alternatives 1 and 2; ten lanes under Alternative 3).

For the regional area, the number of lane-miles in 2015 for the SCAG planning area (155,925.19 miles) (California Department of Transportation, 2017) was multiplied by the indirect energy use factor for facility maintenance to obtain estimates for facility maintenance energy use. While varying types of roadways are in the SCAG planning area, the indirect energy use factor for an urban roadway with asphalt concrete pavement was also used for the regional area to serve as a general estimate of indirect energy use, and to simplify the calculations so that they are consistent with those for the study area. Under Alternative 3, which would include a net addition of lanes on the I-105 corridor, the regional energy was adjusted to include the additional energy that Alternative 3 would require for facility maintenance above the Alternative 1 scenario.

For vehicle maintenance, the indirect energy use factor is 2,146 BTU per mile for medium trucks. This indirect energy use factor is the sum of three factors, which include oil energy, tire energy, and general maintenance and repair energy. The energy use factor for medium trucks was used as an average for the varying types of vehicles that would use the project facility. The indirect energy use factor for vehicle maintenance was multiplied by the annual VMT for the study area provided by Caltrans and regional area obtained from SCAG's 2016/2040 RTP/SCS (SCAG, 2016).

The results of these calculations are shown in Tables 2-125 and 2-126, which show the indirect energy use for facility and vehicle maintenance at both the study area and regional levels. The

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energy impacts for each alternative are discussed in more detail in the following sections, based on the data shown in these tables.

Table 2-124: Indirect Energy Use in the I-105 HOT Study Area by Alternative

Scenario	Indirect Energy for Facility Maintenance (Billion BTU)	Indirect Energy for Vehicle Maintenance (Billion BTU)	Total Indirect Energy Use (Billion BTU)	Numeric Difference Between Alternatives and No-Build Alternative	Percent Difference Between Alternatives and No-Build Alternative
2027 No-Build Alternative (Alternative 1)	22.31	2.60	24.91	--	--
2027 Convert Existing HOV to HOT Lane or ExpressLane (Alternative 2)	22.31	2.73	25.04	0.13	0.52
2027 Convert Existing HOV to Two HOT Lanes or ExpressLanes [Non-Standard Lane Widths] (Alternative 3)	27.88	3.04	30.92	6.01	24.14
2040 Alternative 1	22.31	2.64	24.95	--	--
2040 Alternative 2	22.31	2.77	25.08	0.13	0.51
2040 Alternative 3	27.88	3.00	30.88	5.93	23.76
2047 Alternative 1	22.31	2.66	24.97	--	--
2047 Alternative 2	22.31	2.76	25.06	0.09	0.37
2047 Alternative 3	27.88	3.02	30.90	5.93	23.74

Table 2-125: Indirect Energy Use in the Southern California Association of Governments Regional Area

Scenario	Indirect Energy for Facility Maintenance (Billion BTU)	Indirect Energy for Vehicle Maintenance (Billion BTU)	Total Indirect Energy Use (Billion BTU)	Numeric Difference Between Alternatives and No-Build Alternative	Percent Difference Between Alternatives and No-Build Alternative
2027 No-Build Alternative (Alternative 1)	27,692.31	325,184.06	352,886.37	--	--
2027 Convert Existing HOV to HOT Lane or ExpressLane (Alternative 2)	27,692.31	325,184.19	352,876.50	0.13	0.00004
2027 Convert Existing HOV to Two HOT Lanes or ExpressLanes	27,697.89	325,184.49	352,882.38	6.01	0.0017

[Non-Standard Lane Widths] (Alternative 3)					
2040 Alternative 1	27,692.31	350,332.20	378,024.51	--	--
2040 Alternative 2	27,692.31	350,332.32	378,024.64	0.13	0.00003
2040 Alternative 3	27,697.89	350,332.55	378,030.44	5.93	0.0016
2047 Alternative 1	27,692.31	363,873.50	391,565.82	--	--
2047 Alternative 2	27,692.31	363,873.59	391,565.91	0.09	0.00002
2047 Alternative 3	27,697.89	363,873.85	391,571.74	5.93	0.0015

Alternative 1 (No-Build Alternative)

Direct Energy (Mobile Sources)

Under the No-Build Alternative, the increase in forecasted traffic volumes would result in worsening of traffic congestion, slower traffic speeds, and increases in traffic delays. Without the improvements proposed in the Build Alternatives, congested traffic conditions and limitations on mobility would be more prevalent throughout the study area. These conditions would contribute to inefficient energy consumption, as vehicles would use extra fuel while idling in stop-and-go traffic or moving at slow speeds through congested roadways.

Construction

The No-Build Alternative would not require construction in the project area as a result of the I-105 HOT. Therefore, energy consumption for project construction activities would not be required.

Indirect Energy Use

Under Alternative 1 in the year 2027, indirect energy use in the study area would remain relatively the same compared to Alternative 1 in years 2040 and 2047. Alternative 1 serves as a baseline for comparison against Alternatives 2 and 3, as discussed below.

Alternative 2: Convert Existing HOV to HOT Lane or ExpressLane Alternative

Direct Energy (Mobile Sources)

Alternative 2 would result in a 7.1 percent increase in energy consumption in 2047 compared to the No-Build Alternative due to the increase in daily and annual VMT associated with this alternative. This increase in VMT could also be attributed to travel pattern shifts that occur as improvement of the transportation system is implemented (driver behavior change). Overall, the project is expected to increase travel speed for carpools, vanpools, and express bus services, which in turn is expected to cause some level of mode shift to carpools or transit.

Implementation of Alternative 2 would result in more flexibility in the traffic movement and higher efficiencies on the I-105 corridor. Therefore, Alternative 2 would not result in an inefficient, wasteful, and unnecessary consumption of energy.

Construction

Energy consumption for the construction of Alternative 2 is expected to consume a total of approximately 751,495 gallons of diesel fuel and 10,986 gallons of gasoline fuel, resulting in a total energy consumption of approximately 107,639 million BTUs over the 4-year period. This represents a small demand on local and regional fuel supplies that would be easily accommodated, and this demand would cease once construction is complete. Therefore, Alternative 2 would not result in an inefficient, wasteful, and unnecessary consumption of energy.

Indirect Energy Use

Alternative 2 would result in an increase in indirect energy use of less than one percent in the study area for years 2027, 2040, and 2047 when compared to Alternative 1. Alternative 2 would result in negligible changes in indirect energy use in the region compared to Alternative 1. Based on this data, Alternative 2 would not substantially contribute to indirect energy use at the regional level and would not be expected to result in permanent adverse indirect energy impacts. This alternative would be consistent with federal, regional, and local plans and policies. Therefore, Alternative 2 would not result in inefficient, wasteful, and unnecessary consumption of energy.

Alternative 3: Convert Existing HOV to Two HOT Lanes or ExpressLanes Alternative

Direct Energy (Mobile Sources)

The Two Express Lanes Alternative would result in a 15.3 percent increase in energy consumption in 2047 compared to the No-Build Alternative due to the increase in VMT. This increase in VMT could also be attributed to travel pattern shifts that occur as improvement of the transportation system is implemented (driver behavior change). Overall, the project is expected to increase travel speed for carpools, vanpools, and express bus services, which in turn is expected to cause some level of mode shift to carpools or transit. Implementation of Alternative 3 would result in improvements to the capacity of the managed lanes on the I-105 corridor that would allow for more flexibility in the traffic movement and higher efficiencies, which would enable the corridor to maximize productivity and travel reliability. Therefore, Alternative 3 would not result in an inefficient, wasteful, and unnecessary consumption of energy.

Construction

Energy consumption for Alternative 3 is expected to consume a total of approximately 940,455 gallons of diesel fuel and 120,096 gallons of gasoline fuel, resulting in a total energy consumption of approximately 133,054 million BTUs over the 4-year period. This represents a small demand on local and regional fuel supplies that would be easily accommodated, and this demand would cease once construction is complete. Therefore, Alternative 3 would not result in an inefficient, wasteful, and unnecessary consumption of energy.

Indirect Energy Use

Alternative 3 would result in an increase in indirect energy use of approximately 24 percent in the study area for years 2027, 2040, and 2047 when compared to Alternative 1. Alternative 3 would result in negligible changes in indirect energy use in the region in years 2027, 2040, and 2047 when compared to Alternative 1.

Based on this data, Alternative 3 would not substantially contribute to indirect energy use at the regional level and would not be expected to result in permanent adverse indirect energy impacts. This alternative would be consistent with federal, regional, and local plans and policies. Therefore, Alternative 3 would not result in an inefficient, wasteful, and unnecessary consumption of energy.

2.2.8.4 Avoidance, Minimization, and/or Mitigation Measures

As discussed, Alternatives 2 and 3 would not result in adverse effects related to energy consumption; therefore, no avoidance, minimization, and/or mitigation measures are required. The following avoidance and minimization measure is recommended to conserve energy during project construction:

Ergy1 -As part of the Plans, Specifications, and Estimates, a construction efficiency plan would be prepared, which may include the following:

- Reuse of existing rail, steel, and lumber wherever possible, such as for falsework, shoring, and other applications during the construction process.
- Recycling of asphalt taken up from roadways, if practicable and cost-effective.
- Use of newer, more energy-efficient equipment where feasible, and maintenance of older construction equipment to keep in good working order.
- Scheduling of construction operations to efficiently use construction equipment (e.g., only haul waste when haul trucks are full and combine smaller dozer operations into a single comprehensive operation, where possible).
- Promotion of construction employee carpooling.

2.2.9 Biological Environment

2.2.9.1 Natural Communities

This section of the document discusses natural communities of concern. The focus of this section is on biological communities, not individual plant or animal species. This section also includes information on wildlife corridors and habitat fragmentation. Wildlife corridors are areas of habitat used by wildlife for seasonal or daily migration. Habitat fragmentation involves the potential for dividing sensitive habitat and thereby lessening its biological value.

Habitat areas that have been designated as critical habitat under the Federal Endangered Species Act are discussed below in the Threatened and Endangered Species section 2.2.13. Wetlands and other waters are also discussed below in section 2.2.10.

2.2.9.2 Affected Environment

The following information is presented in the Natural Environmental Study (Minimal impacts) [NES(MI)] prepared by Caltrans in September 2019.

This NESMI will focus primarily on the clearing and grubbing aspects of the project, as well as the two locations where widening is going to occur over jurisdictional waters. The jurisdictional locations offer the highest likelihood of biodiversity. These two locations are:

- Dominguez Channel at PM 4.168
- Compton Creek at PM 8.982

Dominguez Channel and Compton Creek are both waters of the State that offer the most suitable habitat for wildlife. Dominguez Channel and Compton Creek fall under Regional Water Quality Control Board (401), Army Corp of Engineers (404), and California Department of Fish and Wildlife (1600) jurisdictions. Alternative 3 would require Section 401, Section 404/408, and 1600 permits to drill into the bank of Dominguez Channel to install drainage.

2.2.9.3 Environmental Consequences

No wildlife corridors existing within the project limits.

Section 401, Section 404/408, and 1600 permit are needed for Alternative 3 due to drilling into the bank of Dominguez Channel. It is still anticipated that due to the limited scope of the proposed project, there will be a less than significant impact to natural communities of concern. Similarly, the proposed project does not encompass sensitive habitat, so habitat fragmentation will not occur.

2.2.9.4 Avoidance, Minimization, and/or Mitigation Measures

Bio1 - This project must employ all appropriate Stormwater and Erosion Control Best Management Practices, and these must be incorporated into the project specifications. Prior to the start of construction, all drain inlets and outlets must be protected to prevent construction materials and/or debris from entering drainages.

Bio2 - Use existing pull outs and parking lots for staging and storing and avoid the removal of existing native vegetation.

Bio3 - The project shall include a tree replacement plan as part of project fina design.

Bio4 - Section 401, Section 404/408, and 1600 permits will be obtained during PS&E.

2.2.10 Wetlands and Other Waters

2.2.10.1 Regulatory Setting

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the Federal Water Pollution Control Act, more commonly referred to as the Clean Water Act (CWA) (33 United States Code [USC] 1344), is the primary law regulating wetlands and surface waters. One purpose of the CWA is to regulate the discharge of dredged or fill material into waters of the U.S., including wetlands. Waters of the U.S. include navigable waters, interstate waters, territorial seas, and other waters that may be used in interstate or foreign commerce. The lateral limits of jurisdiction over non-tidal water bodies extend to the ordinary high water mark (OHWM), in the absence of adjacent wetlands. When adjacent wetlands are present, CWA jurisdiction extends beyond the OHWM to the limits of the adjacent wetlands. To classify wetlands for the purposes of the CWA, a three-parameter approach is used that includes the presence of hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (soils formed during saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the CWA.

Section 404 of the CWA establishes a regulatory program that provides that discharge of dredged or fill material cannot be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. The Section 404 permit program is run by the U.S. Army Corps of Engineers (USACE) with oversight by the U.S. EPA.

The USACE issues two types of 404 permits: General and Individual. There are two types of General permits: Regional and Nationwide. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to allow a variety of minor project activities with no more than minimal effects.

Ordinarily, projects that do not meet the criteria for a Regional or Nationwide Permit may be permitted under one of USACE's Individual permits. There are two types of Individual permits: Standard permits and Letters of Permission. For Individual permits, the USACE decision to approve is based on compliance with U.S. EPA's Section 404(b)(1) Guidelines (40 Code of Federal Regulations [CFR] Part 230), and whether permit approval is in the public interest. The Section 404 (b)(1) Guidelines (Guidelines) were developed by the U.S. EPA in conjunction with the USACE, and allow the discharge of dredged or fill material into the aquatic system (waters of the U.S.) only if there is no practicable alternative which would have less adverse effects. The Guidelines state that the USACE may not issue a permit if there is a "least environmentally damaging practicable alternative" (LEDPA) to the proposed discharge that would have lesser effects on waters of the U.S., and not have any other significant adverse environmental consequences.

The Executive Order for the Protection of Wetlands (EO 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, EO 11990 states that a federal agency, such as FHWA and/or Caltrans, as assigned, cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds: (1) that there is no practicable alternative to the construction and (2) the proposed project includes all practicable measures to minimize harm. A Wetlands Only Practicable Alternative Finding must be made.

At the state level, wetlands and waters are regulated primarily by the State Water Resources Control Board (SWRCB), the Regional Water Quality Control Boards (RWQCBs) and the California Department of Fish and Wildlife (CDFW). In certain circumstances, the Coastal Commission (or Bay Conservation and Development Commission or the Tahoe Regional Planning Agency) may also be involved. Sections 1600-1607 of the California Fish and Game Code require any agency that proposes a project that will substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify CDFW before beginning construction. If CDFW determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement will be required. CDFW jurisdictional limits are usually defined by the tops of the stream or lake banks, or the outer edge of riparian vegetation, whichever is wider. Wetlands under jurisdiction of the USACE may or may not be included in the area covered by a Streambed Alteration Agreement obtained from the CDFW.

The RWQCBs were established under the Porter-Cologne Water Quality Control Act to oversee water quality. Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements (WDRs) and may be required even when the discharge is already permitted or exempt under the CWA. In compliance with Section 401 of the CWA, the RWQCBs also issue water quality certifications for activities which may result in a discharge to waters of the U.S. This is most frequently required in tandem with a Section 404 permit request. Please see the Water Quality section for more details.

2.2.10.2 Affected Environment

The following information is presented in the NES(MI) prepared by Caltrans in September 2019. Within the project limits, Dominguez Channel and Compton Creek are both waters of the State that offer the most suitable habitat for wildlife. Alternative 3 would require Section 401, Section 404/408, and 1600 permits to drill into the bank of Dominguez Channel to install drainage.

2.2.10.3 Environmental Consequences

Dominguez Channel and Compton Creek fall under Regional Water Quality Control Board (401), Army Corp of Engineers (404), and California Department of Fish and Wildlife (1600) jurisdictions. Alternative 3 would require 401, 404/408, and 1600 permits to drill into the bank of Dominguez Channel to install drainage. Since the limited scope of proposed work is minor, it is anticipated that there will be less than significant impacts to Wetlands and other Waters.

2.2.10.4 Avoidance, Minimization, and/or Mitigation Measures

WW1 - No work adjacent to the bed, bank, and channels of these waters will occur during the rainy season.

WW2 - Section 401, Section 404/408, and 1600 permits will be obtained during final engineering design phase.

2.2.11 Plant Species

2.2.11.1 Regulatory Setting

The U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) have regulatory responsibility for the protection of special-status plant species. “Special-status” species are selected for protection because they are rare and/or subject to population and habitat declines. Special status is a general term for species that are provided varying levels of regulatory protection. The highest level of protection is given to threatened and endangered species; these are species that are formally listed or proposed for listing as endangered or threatened under the Federal Endangered Species Act (FESA) and/or the California Endangered Species Act (CESA). Please see the Threatened and Endangered Species section 2.2.13 in this document for detailed information about these species.

This section of the document discusses all other special-status plant species, including CDFW species of special concern, USFWS candidate species, and California Native Plant Society (CNPS) rare and endangered plants.

The regulatory requirements for FESA can be found at 16 United States Code (USC) Section 1531, et seq. See also 50 Code of Federal Regulations (CFR) Part 402. The regulatory requirements for CESA can be found at California Fish and Game Code, Section 2050, et seq. Department projects are also subject to the Native Plant Protection Act, found at California Fish and Game Code, Section 1900-1913, and the California Environmental Quality Act (CEQA), found at California Public Resources Code, Sections 21000-21177.

2.2.11.2 Affected Environment

The following information is presented in the NES(MI) prepared by Caltrans in September 2019.

The NES(MI) will focus primarily on the clearing and grubbing aspects of the project, as well as the two locations where widening is going to occur over jurisdictional waters. The jurisdictional locations offer the highest likelihood of biodiversity. These two Locations are:

- Dominguez Channel at PM 4.168
- Compton Creek at PM 8.982

The clearing and grubbing locations contain numerous ornamental trees such as eucalyptus (Eucalyptus spp), liquid amber (Liquidambar styraciflua), Shamel ash (*Fraxinus uhdei*), corral (Erythrina spp.), fan palm (Washingtonia robusta), Peruvian pepper (Schinus molle) and Brazilian pepper trees (Schinus terebinthifolius).

Within the Biological Sensitive Area (BSA) for the proposed project at Compton Creek vegetation consists of ornamental vegetation consists of oleander (Nerium oleander), lemon bottlebrush tree (Callistemon citrinus), carrot wood tree (Cupaniopsis anacardioides) lantana (Lantana spp.), lowboy acacia **(**Acacia redolens), and floss silk tree (Ceiba speciose). Native vegetation incudes western sycamore (Platanus racemosa) and Fremont cottonwood (Populus fremontii). Since the project location is in a highly disturbed area, there will be minimal impacts to biological resources.

Within the BSA for the proposed project at Dominguez Channel vegetation consists of native vegetation consists of Fremont cottonwood (Populus fremontii).

Please see table 2-127 below for a list of known plants within the BSA:

Table 2-127: Known Plants within the BSA

Scientific Name	***Common Name***	***Status***	***General Habitat Description***	***Habitat Present/Absent***	***Rationale***	***No Effect on Species***
Atriplex parishii	Parish's brittlescale	CNPS 1B.1	Playas, vernal pools	A	1	X
Chorizanthe parryi var. fernandina	San Fernando valley spineflower	CNPS 1B.1	Coastal sage scrub	A	1	X
Chaenactis glabriuscula var. orcuttiana	Orcutt's pincushion	CNPS 1B.1	Coastal bluff scrub, coastal dunes	A	1	X

Scientific Name	*Common Name*	*Status*	*General Habitat Description*	*Habitat Present/Absent*	*Rationale*	*No Effect on Species*
Phacelia stellaris	Brand's star phacelia	CNPS 1B.1	Coastal dunes, Coastal scrub	A	1	X
Dithyrea maritima	Beach spectaclepod	CNPS 1B.1	Coastal dunes	A	1	X
Calochortus plummerae	Plummer's Mariposa lily	CNPS 4.2	Chaparral, foothill woodland, yellow pine forest, coastal sage scrub, valley grassland	A	1	X
Camissoniopsis lewisii	Lewis' evening primrose	CNPS 3	Coastal strand, foothill woodland, coastal sage scrub, valley grassland	A	1	X
Horkelia cuneata var.puberula	Mesa horkelia	CNPS 1B.1	Chaparral, woodland, coastal sage scrub	A	1	X
Juglans californica	Southern California black walnut	CNPS 4.2	Southern oak woodland, wetland-riparian	A	1	X
Astragalus tener var.titi	Coastal dunes milk vetch	CNPS 1B.1	Coastal strand, northern coastal scrub, coastal sage scrub, wetland-riparian	A	1	X
Atriplex coulteri	Coulter's saltbush	CNPS 1B.2	Coastal strand, valley grassland, coastal sage scrub	A	1	X
Centromadia pungens ssp. laevis	Southern tarplant	CNPS 1B.1	Shadescale, scrub, alkali sink, valley grassland	A	1	X
Chloropyron maritimum ssp. maritimum	Salt marsh birds-beak	1B.2	Coastal dunes, marshes and swamps	A	1	X
Hordeum intercedens	Vernal barley	CNPS 3.2	Valley grassland, freshwater wetlands, wetland-riparian	A	1	X
Lasthenia glabrata ssp. coulteri	Coulter's goldfields	CNPS 1B.1	Alkali sink, coastal salt marsh, freshwater wetlands, wetland-riparian	A	1	X
Navarretia prostrata	Prostrate vernal pool navarretia	CNPS 1B.1	Coastal sage scrub, wetland-riparian	A	1	X

Scientific Name	**Common Name**	**Status**	**General Habitat Description**	**Habitat Present/Absent**	**Rationale**	**No Effect on Species**
Orcuttia californica	California orcutt grass	CNPS 1B.1	Valley grassland, freshwater wetlands, wetland-riparian	A	1	X
Ribes divaricatum var. parishii	Parish's gooseberry	CNPS 1A	Coastal sage scrub, wetland-riparian	A	1	X
Sidalcea neomexicana	Salt spring checkerbloom	CNPS 2B.2	Creosote bush scrub, chaparral, yellow pine forest, coastal sage scrub, alkali sink, wetland-riparian	A	1	X
Navarretia fossalis	Spreading navarretia	CNPS 1B.1	Wetlands, shadescale scrub	A	1	X
Symphyotrichum defoliatum	San Bernardino aster	CNPS 1B.2	Chaparral	A	1	X
Dudleya multicaulis	Many-stemmed dudleya	CNPS 1B.2	Chaparral, Valley Grassland, Coastal Sage Scrub	A	1	X
Calochortus weedii var. intermedius	Intermediate mariposa lily	CNPS 1B.2	Chaparral, Valley Grassland, Coastal Sage Scrub	A	1	X
Astragalus pycnostachyus var. lanosissimus	Ventura marsh milk-vetch	CNPS 1B.1	Coastal salt-marsh, wetland-riparian	A	1	X
Calystegia felix	Lucky morning-glory	CNPS 3.1	Meadows and seeps	A	1	X
Potentilla multijuga	Ballona cinquefoil	CNPS 1A	Coastal sage scrub, wetland riparian, meadows	A	1	X
Phacelia stellaris	Brand's star phacelia	1B.1	Coastal strand, coastal sage scrub	A	1	X
Suaeda esteroa	Estuary seablite	1B.2	Coastal salt marsh, wetland-riparian	A	1	X
Abronia maritima	Red sand-verbena	CNPS 4.2	Coastal Dunes	A	1	X
Dudleya multicaulis	Many-stemmed dudleya	CNPS 1B.2	Chaparral, coastal scrub, valley and foothill grassland	A	1	X
Juncus acutus ssp. leopoldii	Southwestern spiny rush	CNPS 4.2	Coastal strand, wetland-riparian, meadows, saltmarsh	A	1	X

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/Absent	Rationale	No Effect on Species
Erysimum suffrutescens	Suffrutescent wallflower	CNPS 4.2	Coastal sage scrub, coastal dunes	A	1	X
Deinandra paniculata	Paniculate tarplant	CNPS 4.2	Valley grassland, wetlands,	A	1	X
Dichondra occidentalis	Western dichondra	CNPS 4.2	Chaparral, valley grassland, foothill woodland, coastal sage scrub	A	1	X
Chenopodium littoreum	Coastal goosefoot	CNPS 1B.2	Coastal dunes	A	1	X
Phacelia ramosissima var. austrolitoralis	South coast branching phacelia	CNPS 3.2	Chaparral, Coastal dunes, Coastal scrub, Marshes and swamps (coastal salt)	A	1	X
Suaeda taxifolia	woolly seablite	CNPS 4.2	Coastal sage scrub, wetland-riparian	A	1	X
Eryngium aristulatum var. parishii	San Diego button-celery	CNPS 1B.1	Coastal scrub, Valley and foothill grassland, Vernal pools	A	1	X
1- The habitat associated with this species does not occur within the project area. Therefore, the species is not expected to occur within the project limits.						

2.2.11.3 Environmental Consequences

Plant surveys indicated the vegetation present within the BSA generally consists of invasive weeds and native coastal sagebrush plants. No special status plants were observed within the BSA. Also, suitable habitat for these special status plant species were not present.

It is anticipated that this project will not have an impact to plant species. Habitat associated with the species mentioned in the affected environment section does not occur within the project area. Therefore, the species is not expected to occur within the project limits.

2.2.11.4 Avoidance, Minimization, and/or Mitigation Measures

PS1 - Use existing pull outs and parking lots for staging and storing and avoid the removal of existing native vegetation.

2.2.12 Animal Species

2.2.12.1 Regulatory Setting

Many state and federal laws regulate impacts to wildlife. The U.S. Fish and Wildlife Service (USFWS), the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries Service), and the California Department of Fish and Wildlife (CDFW) are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with animals not listed or proposed for listing under the federal or state Endangered Species Act. Species listed or proposed for listing as threatened or endangered are discussed in the Threatened and Endangered Species Section x below. All other special-status animal species are discussed here, including CDFW fully protected species and species of special concern, and USFWS or NOAA Fisheries Service candidate species.

Federal laws and regulations relevant to wildlife include the following:

- National Environmental Policy Act
- Migratory Bird Treaty Act
- Fish and Wildlife Coordination Act

State laws and regulations relevant to wildlife include the following:

- California Environmental Quality Act
- Sections 1600 – 1603 of the California Fish and Game Code
- Sections 4150 and 4152 of the California Fish and Game Code

2.2.12.2 Affected Environment

The following information is presented in the NES(MI) prepared by Caltrans in September 2019.

The table below lists proposed species potentially occurring or known to occur in the BSA.

Table 2-128: List of Species Potentially to Occur within the BSA

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/Absent	Rationale	No Effect on Species
Polioptila californica californica	Coastal California gnatcatcher	FE SE	Coastal sage scrub, chaparral	A	1	X
Anniella stebbinsi	California legless lizard	SSC	Coastal dune, valley-foothill, chaparral, coastal sage scrub	A	1	X
Tryonia imitator	Mimic tryonia	SSC	Aquatic habitat, brackish water, fresh water	A	1	X
Bombus crotchii	Crotch bumble bee		Chaparral, coastal scrub	A	1	X
Emys marmorata	Western pond turtle	SSC	Aquatic, marshy ponds, slow streams	A	1	X
Eucosma hennei	Henne's eucosman moth		Open sand dunes, undisturbed sand dunes	A	1	X
Euphilotes battoides allyni	El Segundo blue butterfly	FE	El Segundo sand dunes	A	1	X
Brennania belkini	Belkin's dune tabanid fly		Los Angeles area, dunes	A	1	X
Coturnicops noveboracensis	Yellow rail	SSC	Shallow freshwater marshes, salt marshes	A	1	X
Cicindela hirticollis gravida	Sandy beach tiger beetle		Coastal sand dunes	A	1	x
Sorex ornatus salicornicus	Southern California salt marsh shrew	SSC	Southern coastal salt marshes	A	1	X
Onychobaris langei)	Lange's El Segundo dune weevil		El Segundo sand dunes	A	1	X

Scientific Name	***Common Name***	***Status***	***General Habitat Description***	***Habitat Present/Absent***	***Rationale***	***No Effect on Species***
Trigonoscuta dorothea dorothea	***Dorothy's El Segundo dune weevil***		***El Segundo sand dunes***	***A***	***1***	***X***
Panoquina errans	***Wandering skipper***		***Coastal California, dunes, marshes***	***A***	***1***	***X***
Passerculus sandwichensis beldingi	***Belding's savannah sparrow***	***SE***	***Southern California saltmarshes***	***A***	***1***	***X***
Coccyzus americanus	***Western yellow-billed cuckoo***	***FT SE***	***Riparian habitat***	***A***	***1***	***X***
Polioptila californica californica	***Coastal California gnatcatcher***	***FE SE***	***Coastal sage scrub, chaparral***	***A***	***1***	***X***
Empidonax traillii extimus	***South western willow flycatcher***	***FE SE***	***Riparian woodland***	***A***	***1***	***X***
Aspidoscelis tigris stejnegeri	***Coastal whiptail***	***S3***	***Chaparral***	***A***	***1***	***X***
Spea hammondii	***Western spadefoot toad***	***SSC***	***Coastal scrub, foothill grassland, wetland, vernal pool***	***A***	***1***	***X***
Agelaius tricolor	***Tricolored blackbird***	***SSC***	***Aquatic, marshy ponds***	***A***	***1***	***X***
Charadrius alexandrinus nivosus	***Western snowy plover***	***FT***	***Coastal beaches, shallow alkaline lakes***	***A***	***1***	***X***
Vireo bellii pusillus	***Least Bell's vireo***	***SE FE***	***Stream sides, ponds***	***A***	***1***	***X***
(Laterallus jamaicensis coturniculus)	***California black rail***	***ST***	***Salt marshes, fresh water marches***	***A***	***1***	***X***

Scientific Name	Common Name	Status	General Habitat Description	Habitat Present/Absent	Rationale	No Effect on Species
Carolels busckana	*Busk's gallmoth*		*Coastal scrub dunes*	*A*	*1*	*X*
Streptocephalus woottoni	*Riverside fairy shrimp*	*FE*	*Vernal pools*	*A*	*1*	*X*
Sterna antillarum	*California Least Tern*	*FE* *SE*	*Coastal salt ponds, estuarine shorelines*	*A*	*1*	*X*
Athene cunicularia	*Burrowing Owl*	*SSC*	*Open dry grasslands, desert habitats, open ponderosa an pinyon-juniper habitat*	*A*	*1*	*X*
Riparia riparia	*Bank swallow*	*SE*	*Riparian, lacustrine, coastal areas with vertical banks, bluffs, and banks with sand soil*	*A*	*1*	*X*
Eumops perotis	*Western mastiff bat*	*SSC*	*Deciduous woodlands, coastal scrub, grassland, chaparral*	*A*	*1*	*X*
Pelecanus occidentalis	*Brown pelican*	*FP*	*Western sea coasts, Salton Sea, isolated islands*	*A*	*1*	*X*
Perognathus longimembris pacificus	*Pacific pocket Mouse*	*FE*	*Coastal sage scrub, grassland, alluvial sage scrub*	*A*	*1*	*X*
Danaus plexippus pop.1	*Monarch butterfly*	*SSC*	*Streams with large trees (Eucalyptus)*	*A*	*1*	*X*
Nyctinomops femorosaccus	*Pocketed free-tailed bat*	*SSC*	*Pinyon juniper woodlands, desert scrub, desert wash*	*A*	*1*	*X*
Cicindela senilis frosti	*Senile tiger beetle*	*SSC*	*Coastal mud flats and salt marshes*	*A*	*1*	*X*

Scientific Name	**Common Name**	**Status**	**General Habitat Description**	**Habitat Present/Absent**	**Rationale**	**No Effect on Species**
Microtus californicus ssp. stephensi	***South coast marsh vole***	***SSC***	***Grassland, coastal marshland, upland savannah***	***A***	***1***	***X***
Taxidea taxus	***American badger***	***SSC***	***Forest, herbaceous habitats***	***A***	***1***	***X***
Coelus globosus	***globose dune beetle***	***SSC***	***Coastal Dune habitat***	***A***	***1***	***X***
Phrynosoma coronatum	***Coast horned lizard***	***SSC***	***Chaparral, Arid desert, loose soil***	***A***	***1***	***X***
1- The habitat associated with this species does not occur within the project area. Therefore, the species is not expected to occur within the project limits.						

2.2.12.3 Environmental Consequences

During field surveys, no animal species were observed within the BSA. Also, suitable habitat for these species is not present. Due to the project locations highly urbanized environment, there is a lack of animal species and habitat. The proposed project is anticipated to not have an impact to animal species.

It is anticipated that this project will not have an impact to animal species. Habitat associated with the animal species mentioned in the affected environment section does not occur within the project area. Therefore, animal species are not expected to occur within the project limits.

2.2.12.4 Avoidance, Minimization, and/or Mitigation Measures

AS1 - If vegetation removal is needed, or loud machinery is to be used, it is recommended that all vegetation removal and loud noise-making machinery use occur outside of bird nesting season which is from February 1st- September 1st.

AS2 - Should vegetation removal or noise-making machinery be used during this period, the District Biologist shall be notified two weeks prior to the start of construction to determine if nesting birds are present.

AS3 - In the event that nesting birds are observed, the Resident Engineer (RE) should pause work until a qualified biologist has determined that fledglings have left the nest. If this is not possible, the RE should coordinate with the District Biologist to minimize the risk of violating the Migratory Bird Treaty Act (MBTA). Most likely, the District Biologist will recommend a buffer of 150 ft. for songbirds and a buffer of 500 ft. for raptors during all phases of construction. Nesting birds are protected under the MBTA and cannot be impacted by construction activities, including noise and dust pollution.

AS4 - If vegetation is to be removed, this is a change in scope, and the Biology unit must be notified. No work shall commence until the vegetation to be removed has been surveyed for nesting birds and cleared by the District Biologist.

2.2.13 Threatened and Endangered Species

2.2.13.1 Regulatory Setting

The primary federal law protecting threatened and endangered species is the Federal Endangered Species Act (FESA): 16 United States Code (USC) Section 1531, et seq. See also 50 Code of Federal Regulations (CFR) Part 402. This act and later amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of this act, federal agencies, such as the Federal Highway Administration (FHWA) (and Caltrans, as assigned), are required to consult with the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries Service) to ensure that they are not undertaking, funding, permitting, or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species. The outcome of consultation under Section 7 may include a Biological Opinion with an Incidental Take statement or a Letter of Concurrence. Section 3 of FESA defines take as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct."

California has enacted a similar law at the state level, the California Endangered Species Act (CESA), California Fish and Game Code Section 2050, et seq. CESA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate planning to offset project-caused losses of listed species populations and their essential habitats. The California Department of Fish and Wildlife (CDFW) is the agency responsible for implementing CESA. Section 2080 of the California Fish and Game Code prohibits "take" of any species determined to be an endangered species or a threatened species. Take is defined in Section 86 of the California Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA allows for take incidental to otherwise lawful development projects; for these actions an incidental take permit is issued by CDFW. For species listed under both FESA and CESA requiring a Biological Opinion under Section 7 of FESA, the CDFW may also authorize impacts to CESA species by issuing a Consistency Determination under Section 2080.1 of the California Fish and Game Code.

Another federal law, the Magnuson-Stevens Fishery Conservation and Management Act of 1976, was established to conserve and manage fishery resources found off the coast, as well as anadromous species and Continental Shelf fishery resources of the United States, by exercising (A) sovereign rights for the purposes of exploring, exploiting, conserving, and managing all fish within the exclusive economic zone established by Presidential Proclamation 5030, dated March 10, 1983, and (B) exclusive fishery management authority beyond the exclusive economic zone over such anadromous species, Continental Shelf fishery resources, and fishery resources in special areas.

2.2.13.2 Affected Environment

The following information is presented in the NES(MI) prepared by Caltrans in September 2019.

According to CNDDB, IPaC, and CNPS there are 8 threatened and endangered species plants within the project quadrangles which include spreading navarretia (*Navarretia fossalis),* California Orcutt grass (*Orcuttia californica*), marsh sandwort (*Arenaria paludicola*), salt marsh birds-beak (*Cordylanthus maritimus*), Ventura marsh milk-vetch (*Astragalus pycnostachyus var. lanosissimus*), San Fernando spineflower (*Chorizanthe parryi var.fernandina*)*,* beach spectaclepod (*Dithyrea maritima*), San Diego button-celery (*Eryngium aristulatum var. parishii*)

According to CNDBB and IPaC, the following thirteen threatened and endangered animal species have the potential to occur within the project quadrangle:

- Least Bell's vireo *(Vireo bellii pusillus)*
- Western snowy plover *(Charadrius alexandrinus nivosus)*
- Tricolored blackbird *(Agelaius tricolor)* **Candidate Endangered**
- Southwestern willow flycatcher (*Empidonax traillii extimus)*
- Belding's Savannah sparrow (*Passerculus sandwichensis beldingi*)
- California Least tern *(Sterna antillarum)*
- Pacific pocket mouse (*Perognathus longimembris pacificus*)
- Bank swallow (*Riparia riparia*)
- Riverside fairy shrimp (*Streptocephalus woottoni*)
- Western yellow-billed cuckoo (*Coccyzus americanus*)
- El Segundo blue butterfly (*Euphilotes battoides allyni*)
- California black rail (*Laterallus jamaicensis coturniculus*)
- Coastal California gnatcatcher (*Polioptila californica californica*)

2.2.13.3 Environmental Consequences

Presence of threatened and endangered species plants and animal species were not noted in aerial map research or during field surveys. Further, as the BSA does not contain suitable habitat, occurrence of any endangered and threatened species listed above within the BSA is not expected.

Due to the lack of suitable habitat, none of these threatened or endangered plants and animal species are expected to occur within the BSA and will result in a no effect impact to the species listed.

2.2.13.4 Avoidance, Minimization, and/or Mitigation Measures

Since no threatened or endangered plants and animal species are expected to occur within the BSA, no avoidance, minimization efforts, or compensatory mitigation measures are needed for special status animal species.

2.2.14 Invasive Species

2.2.14.1 Regulatory Setting

On February 3, 1999, President William J. Clinton signed Executive Order (EO) 13112 requiring federal agencies to combat the introduction or spread of invasive species in the United States. The order defines invasive species as “any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health.” Federal Highway Administration (FHWA) guidance issued August 10, 1999 directs the use of the State’s invasive species list, maintained by the California Invasive Species Council to define the invasive species that must be considered as part of the National Environmental Policy Act (NEPA) analysis for a proposed project.

2.2.14.2 Affected Environment

The following information is presented in the NES(MI) prepared by Caltrans in September 2019.

Compton Creek

Within the BSA for the proposed project at Compton Creek, the vegetation consists of the following invasive species: Peruvian pepper tree (*Schinus mole*), sow thistle (*Sonchus arvensis*), tree of heaven (*Ailanthus altissima*), castor bean (*Ricinus communis*), common mallow (*Malva neglecta*), horseweed (Erigeron canadensis), Russian thistle (*Salsola spp.*), and wild oats (*Avena fatua*).

Dominguez Channel

Within the BSA for the proposed project at Dominguez Channel, the vegetation consists of the following invasive species: Brazilian pepper tree, mallow (*Malva neglecta*), red iron bark eucalyptus (*Eucalyptus sideroxylon*), Russian thistle (*Salsola spp.*), and wild oats (*Avena fatua*).

2.2.14.3 Environmental Consequences

In compliance with EO 13112, the implementation of the proposed project will not spread or introduce invasive species.

Since the project location is in a highly disturbed area, there will be minimal impacts to biological resources.

2.2.14.4 Avoidance, Minimization, and/or Mitigation Measures

IS1 - The District Biologist must be invited to the pre-construction meeting with one week prior notice where proper disposal / identification of invasive species will be discussed.
IS2 - None of the species on the California list of invasive species will be used by the Caltrans for erosion control of landscaping.

2.2.15 Cumulative Impacts

2.2.15.1 Regulatory Setting

Cumulative impacts are those that result from past, present, and reasonably foreseeable future actions, combined with the potential impacts of the proposed project. A cumulative effect assessment looks at the collective impacts posed by individual land use plans and projects. Cumulative impacts can result from individually minor but collectively substantial impacts taking place over a period of time.

Cumulative impacts to resources in the project area may result from residential, commercial, industrial, and highway development, as well as from agricultural development and the conversion to more intensive agricultural cultivation. These land use activities can degrade habitat and species diversity through consequences such as displacement and fragmentation of habitats and populations, alteration of hydrology, contamination, erosion, sedimentation, disruption of migration corridors, changes in water quality, and introduction or promotion of predators. They can also contribute to potential community impacts identified for the project, such as changes in community character, traffic patterns, housing availability, and employment.

The California Environmental Quality Act (CEQA) Guidelines Section 15130 describes when a cumulative impact analysis is necessary and what elements are necessary for an adequate discussion of cumulative impacts. The definition of cumulative impacts under CEQA can be found in Section 15355 of the CEQA Guidelines. A definition of cumulative impacts under the National Environmental Policy Act (NEPA) can be found in 40 Code of Federal Regulations (CFR) Section 1508.7.

This cumulative impact analysis determines whether the Build Alternative in combination with other past, present, or reasonably foreseeable projects would result in a cumulative effect, and, if so, whether the Build Alternative's contribution to the cumulative impact would be considerable. Present and reasonably foreseeable future projects include land use developments, infrastructure, and other transportation improvements that are planned and funded and would be located within a quarter-mile of the proposed Build Alternative improvements. The projects included in the cumulative impact analysis are described in Figure 2-41

The No Build Alternative would not include improvements to Interstate 105. It would not require construction except from routine maintenance and would not contribute to cumulative environmental effects in combination with other projects.

Figure 2-41: Transportation and Development Projects in the Project Vicinity

Project	Jurisdiction	Description	Status
Crenshaw/LAX Transit Project	Metro, City of LA, Inglewood, El Segundo, LA County	The Metro Crenshaw/LAX Line will extend from the existing Metro Exposition Line at Crenshaw and Exposition Boulevards, travelling 8.5 miles to the Metro Green Line	In construction
Green Line Improvements	Metro, Downey, El Segundo, Hawthorne, City of LA, Lynwood,	Miscellaneous capital and operational improvements to existing Metro Green LRT. Improvements include adding tail tracks and crossovers at	In Planning

Project	Jurisdiction	Description	Status
	Manhattan Beach, Norwalk, Paramount, South Gate, LA County	the Redondo Beach Station and extending station platforms to allow for 3-car trains at several stations	
Green Line/Lakewood Station	Metro, Downey	Transit Center and Park-and-Ride Lot for Connection to the Metro Green LRT at Lakewood Station. Expansion with 230 Parking Spaces are proposed to be added	In Planning
I-105 Ramp Signalization	Downey	Improve signals at the EB and WB ramps at I-105 and Clark Ave	In Planning
I-105 Ramp Improvements	Downey, Lynwood, Norwalk, Paramount, South Gate, LA County	Install auxillary lanes to eliminate the bottlenecks between Route 605 and Route 110	In Planning
I-105/Artesia Blvd. Ramp Improvements	Long Beach, Paramount	Street improvement, signal modification, pedestrian signal, auxiliary lane, and etc. on WB ramps and EB off-ramps at I-105 and Artesia Blvd	In Planning
I-105/Garfield Ave. Ramp Improvements	Paramount	Improve ramp metering and pedestrian signals at EB and WB off- and on-ramps at I-105 and Garfield Ave	In Planning
I-710 HOV Lanes	Compton, Long Beach, Lynwood, Paramount	I-710 HOV Lanes from SR-91 to I-105, PM 13.00 to 15.70	In Planning
I-105/I-605 HOV Direct Connector	Norwalk	I-105/I-605 HOV direct connector at PM 17.82	In Planning
I-110/I-105 HOV Connectors	City of LA	Add HOV connectors from NB I-110 to EB and WB I-105	In Planning
I-105/I-405 HOV Connectors	Hawthorne	HOV Connectors from I-105 WB to NB and SB I-405	In Planning
I-405 Express Lanes	City of LA, Hawthorne, Lawndale, Redondo Beach, Torrance	Add Express Lanes on I-405 between I-110 and I-105	In Planning
I-405/I-105/SR-90 Metering	Culver City, Hawthorne, Inglewood, City of LA, LA County	Add connector metering and ramp metering between I-105 and SR-90 interchanges on NB and SB I-405. PM R21.18/25.94	In Planning
I-105 Auxiliary Lane	Lawndale	Add auxiliary lane on WB I-105 from Wilton Place to Hawthorne Blvd. PM 3.05/5.48	In Planning

Project	Jurisdiction	Description	Status
I-105 Auxiliary Lane	El Segundo, Hawthorne, City of LA, LA County	Add auxiliary lane on EB I-105 from Nash Ave. to Van Ness Ave. PM 0.99/5.23	In Planning
I-405 Auxiliary Lane	Hawthorne, LA County	Add northbound auxiliary lane from south of El Segundo Blvd. to I-105	In Planning
I-405 Auxiliary Lane	City of LA, Culver City	Add auxiliary lanes from SR-90 to I-105	In Planning
I-105 Integrated Corridor Management	Caltrans	Integrated Corridor Management on I-105 from terminus to I-605	In Planning
I-605 Corridor Improvement Project	Baldwin Park, El Monte, City of Industry, Pico Rivera, South El Monte, Whittier, Downey, Norwalk, Sante Fe Springs, LA County	Facilitate improvements in freeway operations, safety, mobility, throughput, and travel times through widening of the freeway mainline and improvements to interchanges and confluence areas at Interstate 105 (I-105), Interstate 5 (I-5), State Route 60 (SR-60), and Interstate 10 (I-10).	In Planning
West Santa Ana Branch	LA County, Vernon, City of La, Huntington Park, Bell, Cudahy, South Gate, Downey, Paramount, Bellflower, Cerritos, & Artesia	New light rail transit (LRT) line that will connect southeast LA County to downtown Los Angeles. Projects combined may contribute to an effect but further evaluation will need to be done during subsequent phase of the WSAB project, where project details are refined with supporting environmental reports.	In Planning
Telegraph Rd. Improve Critical Movements	Commerce	Project includes consideration of lane width widening from I-105 to Imperial Hwy to better accommodate buses and trucks, access management, parking restrictions, and grade separating railroad tracks where feasible	In Planning
Central Ave. Corridor Improvements	Compton, LA County	Analyze for efficient vehicle movement along the corridor, which provides primary connectivity between SR-91 and I-105 freeways	In Planning
I-105/Bellflower Operational Improvements	Downey	Ramps improvements and pedestrian marking improvements at I-105 and Bellflower. Improve signals and left turn pockets to WB on-ramp and EB off-ramp	In Planning
I-105/Avalon Operational Improvements	Undefined - Gateway	I-105/Avalon: At EB and WB ramps, improve signals, pedestrian crossing, and ramp metering improvements	In Planning
I-105/Alameda Street Signal and Channelization	Lynwood, LA County	I-105/Alameda Street: EB and WB signal and channelization	In Planning

Project	Jurisdiction	Description	Status
I-105/Long Beach Blvd. Operational Improvements	Lynwood	I-105/Long Beach Blvd: EB and WB ramps widen and install auxiliary lane and improve left turn pockets at Long Beach Blvd	In Planning
I-105/Paramount Pedestrian Enhancement	South Gate	I-105/Paramount: Pedestrian enhancement and signal modifications at the EB and WB on and off-ramps and left turn pockets	In Planning
I-105 Transportation Management System (TMS)	Downey, Lynwood, Norwalk, Paramount, South Gate, LA County	Upgrade TMS on I-105 from I-110 to I-605, PM 7.2/17.9	In Planning
I-105 TMS	Hawthorne, City of LA, LA County	Upgrade TMS from Imperial Hwy to I-110, Post Mile 0.0/7.264	In Planning
I-105 Advanced Traffic Management (ATM) and TMS Improvements	Downey, El Segundo, Hawthorne, City of LA, Lynwood, Norwalk, Paramount, South Gate, LA County	ATM and TMS improvements along I-105 between I-605 and Route 1	In Planning
I-405 and I-105 Corridor Refinements	Hawthorne, Lawndale, City of LA, Redondo Beach, Torrance, LA County	Corridor Refinements on I-405 from I-110 and I-105 and I-105 from I-405 to Crenshaw	In Planning
Imperial Hwy Capacity Enhancement	Downey, Lynwood, South Gate, LA County	Evaluate widening to 3 lanes on Imperial Hwy through Lynwood to tie into the 3 lanes on either side of the city - or consider widening between Fernwood Ave. and Long Beach Blvd	In Planning
Aviation Blvd. Capacity Enhancement	City of LA	From Arbor Vitae St. to Imperial Hwy, widen and restripe to accommodate three through lanes in each direction	In Planning
Imperial Hwy Widening	City of LA	Between Sepulveda Blvd. and Pershing Dr., widen to provide three continuous lanes through lanes in each direction	In Planning
Imperial Hwy/Alameda St. Intersection Improvement	Lynwood, LA County	Add second right-turn lane SB at Imperial Hwy and Alameda St. Intersection	In Planning
Imperial Hwy Operational Improvements	LA County	ITS and/or Operational Improvements on Imperial Hwy from Sundale Ave. to Budlong Ave	In Planning

Project	Jurisdiction	Description	Status
Prairie Ave. Operational Improvements	LA County	ITS/Communications with Motorists Program on Prairie Ave., Imperial Highway to Redondo Beach Boulevard	In Planning
Imperial Hwy Operational Improvements	LA County	ITS/Communications with Motorists on Imperial Hwy from Sundale Avenue to Vermont Ave	In Planning
Imperial Hwy Operational Improvements	Hawthorne, Inglewood, LA County	Traffic Signal Synchronization (TSSP) on Imperial Highway from Sundale Ave. to Budlong Ave	In Planning

2.2.15.2 Resource Areas with No Contribution to Cumulative Effects

The resources considered in the cumulative impacts analysis follow Caltrans' Eight Step Guidance for identifying and assessing cumulative impacts (Caltrans 2019). No cumulative effects are anticipated for the following resource areas (there would be no adverse effects from each of these individual resource areas; therefore, no incremental effects would be cumulatively considerable):

- Existing and Future Land Use
- Parks and Recreational Facilities
- Growth
- Community Character and Cohesion
- Relocations and Real Property Acquisition
- Environmental Justice
- Utilities/Emergency Services
- Traffic and Transportation Pedestrian and Bicycle Facilities
- Cultural
- Hydrology and Floodplain
- Water Quality and Stormwater Runoff
- Geology
- Hazardous Waste/Material
- Noise
- Energy
- Natural Communities

2.2.15.3 Resources Considered for Contribution to Cumulative Effects

2.2.15.3.1 Visual

The proposed project would introduce new VTMS with changeable digital text, additional overhead signs, lighting, and toll collection and monitoring equipment, new pavement markings, the possibility of an additional lane, and result in the relocation of several sounds walls on nearby frontage roads as well as remove vegetation along portions of the 18.1-mile project corridor. The resource change from the proposed project ranges from low to high. Therefore, visual/aesthetic resources are considered for the cumulative effect analysis. The resource study area for the visual/aesthetics analysis encompasses the project footprint as well as land that is visible from or adjacent to the project area. This area was chosen because it encompasses both the views from the project area as well as views of the project area from highway neighbors. Future projects on the I-105 will consolidate facilities/signage where possible and all concrete structures and surfaces will match existing adjacent landscape and natural plantings. The proposed project along with reasonably foreseeable future projects in the area would not result in a cumulatively considerable effect to visual resources.

2.2.15.3.2 Air Quality

The proposed project is in Los Angeles County within the jurisdiction of SCAQMD, which is an air district within the SCAG region. The proposed project is in an area that is currently in nonattainment or maintenance for federal $PM_{2.5}$, PM_{10}, CO, and ozone standards. The area is currently in nonattainment of the state $PM_{2.5}$, PM_{10}, and ozone standards. As the MPO over the project area, SCAG has prepared the 2016 RTP/SCS as part of which a cumulative impact analysis was conducted. The result indicates that the 2016 RTP/SCS would not result in a cumulatively considerable net increase of any criteria pollutant for which the region is designated nonattainment because the projected long-term emissions are in alignment with local AQMPs/SIPs as demonstrated in their conformity analyses. The result also demonstrates that, when compared to the existing conditions, implementation of the 2016 RTP/SCS would result in either no change or a decrease in cumulative $PM_{2.5}$ and PM_{10} emissions. Measures described in section 2.2.4.5 of the Air Quality section would address short-term construction impacts and with these design measures and performance criteria, the proposed project would minimize the cumulatively considerable net increase of any criteria pollutant.

Chapter 3 – California Environmental Quality Act (CEQA) Evaluation

Determining Significance under CEQA

The proposed project is a joint project by Caltrans and FHWA and is subject to state and federal environmental review requirements. Project documentation, therefore, has been prepared in compliance with both CEQA and NEPA. FHWA's responsibility for environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 USC 327 and the MOU dated December 23, 2016, and executed by FHWA and Caltrans. Caltrans is the lead agency under CEQA and NEPA.

One of the primary differences between NEPA and CEQA is the way significance is determined. Under NEPA, significance is used to determine whether an EIS, or a lower level of documentation, will be required. NEPA requires that an EIS be prepared when the proposed federal action (project) *as a whole* has the potential to "significantly affect the quality of the human environment." The determination of significance is based on context and intensity. Some impacts determined to be significant under CEQA may not be of sufficient magnitude to be determined significant under NEPA. Under NEPA, once a decision is made regarding the need for an EIS, it is the magnitude of the impact that is evaluated and no judgment of its individual significance is deemed important for the text. NEPA does not require that a determination of significant impacts be stated in the environmental documents.

CEQA, on the other hand, does require Caltrans to identify each "significant effect on the environment" resulting from the project and ways to mitigate each significant effect. If the project may have a significant effect on any environmental resource, then an EIR must be prepared. Each and every significant effect on the environment must be disclosed in the EIR and mitigated if feasible. In addition, the CEQA Guidelines list a number of "mandatory findings of significance," which also require the preparation of an EIR. There are no types of actions under NEPA that parallel the findings of mandatory significance of CEQA. This chapter discusses the effects of this project and CEQA significance.

CEQA Environmental Checklist

This checklist identifies physical, biological, social, and economic factors that might be affected by the proposed project. In many cases, background studies performed in connection with the projects will indicate that there are no impacts to a particular resource. A NO IMPACT answer in the last column reflects this determination. The words "significant" and "significance" used throughout the following checklist are related to CEQA, not NEPA, impacts. The questions in this form are intended to encourage the thoughtful assessment of impacts and do not represent thresholds of significance.

Project features, which can include both design elements of the project, and standardized measures that are applied to all or most Caltrans projects such as Best Management Practices (BMPs) and measures included in the Standard Plans and Specifications or as Standard Special Provisions, are considered to be an integral part of the project and have been considered prior to any significance determinations documented below; see Chapters 1 and 2 for a detailed discussion of these features. The annotations to this checklist are summaries of information contained in Chapter 2 in order to provide the reader with the rationale for significance determinations; for a more detailed discussion of the nature and extent of impacts, please see Chapter 2. This checklist incorporates by reference the information contained in Chapters 1 and 2.

AESTHETICS

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

CEQA Significance Determinations for Aesthetics

a, b, c, d) Less Than Significant Impact

As discussed in the Visual/Aesthetics section, the proposed project would add more overhead signs, lighting, toll collection and monitor equipment, and result in the relocation of sound walls and retaining walls. The proposed project includes replacement of all relocated sound walls and retaining walls. The addition of these facilities would have a minimal visual impact to the existing roadside environment. The project area is within a heavily urbanized portion of Los Angeles County, where many of these facilities already exist. The majority of the vegetation are ornamental and would be replaced in kind where right-of-way allows. The proposed project would have a low impact to visual resources. There are no significant grade changes anticipated for the proposed project. The proposed project would have less than significant impacts to the visual environment, less than significant impacts to scenic resources, and have less than a significant impact on creating new sources of light or glare. No mitigation is required, however, avoidance and minimization measures are included to avoid impacts to visual resources.

AGRICULTURE AND FOREST RESOURCES

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.				
Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

CEQA Significance Determinations for Agriculture and Forest Resources

a, b, c, d, e) No Impact

There are no farmlands, no forest lands, no timberlands, and no agricultural use within the project limits. Therefore, no changes or impacts are anticipated to farmlands or forest lands as a result of the proposed project.

AIR QUALITY

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations.				
Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non- attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

CEQA Significance Determinations for Air Quality

b, c, d) Less Than Significant

The proposed project has satisfactorily demonstrated the project-level conformity requirements and is not anticipated to worsen existing PM_{10} and $PM_{2.5}$ violations and delay timely attainment of the standards. The proposed project is not anticipated to cause or contribute to any new violation of the state and federal standards of the criteria pollutants.

a) No Impact

A regional conformity determination for the project was made on June 1, 2016 by FHWA and FTA. The project is located in nonattainment area for federal 8-hour ozone and $PM_{2.5}$ and in nonattainment-maintenance for CO and PM_{10}; and a project-level hot-spot analysis for CO, $PM_{2.5}$ and PM_{10} is thus required pursuant to 40 CFR 93.109. Conformity analyses demonstrate that the proposed project is not anticipated to cause or contribute to any new localized CO, $PM_{2.5}$, and/or PM_{10} violations, or delay timely attainment of any NAAQS or any required interim emission reductions or other milestones during the timeframe of the transportation plan (or regional emissions analysis).

BIOLOGICAL RESOURCES

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☐	☐	☒
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☒
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

CEQA Significance Determinations for Biological Resources

a, b, c, d, e, f) No Impact

As discussed in the Biological Environment section, no wildlife corridors exist within the project limits. The proposed project will not impact the bed, bank, and channels of any wetlands and other waters. Within the project limits, there was no evidence of suitable habitat for plant species, animal species, or threatened and endangered species so it is anticipated that the proposed project will not have an impact on these resources. Tree removal and necessary clearing and grubbing would occur within the existing and proposed State right-of-way to accommodate pavement widening. These removals would primarily be landscaped ornamental vegetation within a highly urbanized corridor.

CULTURAL RESOURCES

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☒	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐	☒	☐
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☐	☐	☒

CEQA Significance Determinations for Cultural Resources

a, b) Less Than Significant Impact

Of the 130 properties surveyed, two were determined eligible for listing in the National Register and are therefore automatically listed in the California Register. A Finding of No Adverse Effect is currently in preparation.

c) No Impact

There are no known paleontological and archaeological resources or unique geologic features within the project limits. If human remains are discovered during construction, work will halt and the County Coroner contacted.

ENERGY

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☒

CEQA Significance Determinations for Energy

a) Less Than Significant Impact

The proposed project is anticipated to smooth out traffic flow and eliminate choke points and decrease traffic congestion, which would increase moving vehicle speeds, and decrease travel time on the freeway system. Implementation of the proposed project is anticipated in improvements to the capacity of the managed lanes on the I-105 corridor that would allow for more flexibility in the traffic movement and higher efficiencies, which would enable the corridor to maximize productivity and travel reliability. Therefore, the proposed project would not result in an inefficient, wasteful, and unnecessary consumption of energy.

b) No Impact

With implementation of a construction efficiency plan, the proposed project would be consistent with federal, regional, and local plans and policies and would not result in an inefficient, wasteful and unnecessary consumption of energy.

GEOLOGY AND SOILS

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☐	☒
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☒
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☐	☒
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒

CEQA Significance Determinations for Geology and Soils

i, iii) Less Than Significant Impact

Built structures may be subject to strong ground motions from nearby earthquake sources during their design life but the project will be built to meet current seismic standards. The project is partially in a liquefaction zone and any structures will need to be designed based on an analysis of liquefaction and lateral spreading potential.

ii, iv, b, c, d, e, f) No Impact

The project is on level terrain, with soil that has been engineered and compacted to standards which would not expose people or structures to adverse impacts. No active faults are mapped within the project limits. The project alignment does not cross any areas susceptible to landslides, unstable soils, or expansive soils. The community surrounding the project alignment utilizes a sewer system and no septic tanks, therefore soils would not have to support septic tanks.

GREENHOUSE GAS EMISSIONS

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

CEQA Significance Determinations for Greenhouse Gas Emissions

a, b) Less Than Significant Impact

This project be concurred as not of air quality concern from SCAG and TCWG. Project Analyses have used the latest planning assumptions and U.S. EPA approved emissions models. The build alternatives would result in increases to VMTs, which would increase emissions of all criteria pollutants, MSAT's, and GHG when compared to the no-build alternative. However, the proposed project is not anticipated to cause or contribute to any new violation of the state and federal standards of the criteria pollutants. GHG emissions for all Alternatives are anticipated to decrease further as the years progress to 2047, consistent with the statewide goals to reduce GHG.

HAZARDS AND HAZARDOUS MATERIALS

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☒	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☒	☐
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

CEQA Significance Determinations for Hazards and Hazardous Materials

a, b, c, d, e, f) <u>Less Than Significant Impact</u>

Project construction and maintenance activities are expected to involve routine transportation, use, and disposal of hazardous materials. Adherence to federal and state regulations during project construction and maintenance will reduce the risk of exposure to hazardous materials within ¼ mile of a school. A Transportation Management Plan (TMP) will be prepared before construction for the project to address temporary closures. Outreach will be coordinated to inform local jurisdiction, agencies, and public of the times and locations of upcoming construction to avoid traffic disruptions especially for emergency response plans.

Compliance with existing regulations is mandatory, therefore construction of either of the build alternative is not expected to create a significant hazard to construction workers, the public, or the environment.

g) <u>No Impact</u>

The proposed project is not within or nearby any wildlands, as it is entirely located in an urban environment.

HYDROLOGY AND WATER QUALITY

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
(i) result in substantial erosion or siltation on- or off-site;	☐	☐	☐	☒
(ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	☐	☐	☐	☒
(iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☒	☐
(iv) impede or redirect flood flows?	☐	☐	☐	☒
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☐	☒

CEQA Significance Determinations for Hydrology and Water Quality

a, b, iii) Less Than Significant Impact

The project is not located within an identified recharge area. The project would be required to obtain coverage under the RWQCB's Construction General NPDES Permit, which would submit a storm water pollution prevention plan that would address all construction related activities, equipment, and materials that have the potential to affect water quality. All construction site BMPs would be installed, inspected and maintained to control and minimize the impacts of construction-related pollutants. Compliance with the Construction General Permit would reduce the risk of water degradation during construction and operation of the proposed project. Since violation of waste discharge requirements would be minimized, this impact would be less than significant, based upon compliance with regulatory requirements. No mitigation measures are required.

i, ii, iv, d, e) No Impact

As discussed above, the SWPPP is required for the project, and it would address how runoff during construction would be minimized to prevent construction debris from entering the waterways. The project would not cause a longitudinal encroachment or result in incompatible development within the floodplain. The project is required to ensure that the post-project runoff does not exceed the pre-project stormwater runoff rate and volume. The proposed project does not include the placement of housing, is not built within a 100-year floodplain, and is not located within an area identified as susceptible to seiche, tsunami, or mudflow.

LAND USE AND PLANNING

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

CEQA Significance Determinations for Land Use and Planning

a, b) No Impact

The proposed project will not physically divide any established community. Widening will be limited to areas adjacent to the existing corridor and will not conflict with existing land use plans. In addition, no habitat conservation plans, or natural community conservation plans overlap with the proposed project area.

MINERAL RESOURCES

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

CEQA Significance Determinations for Mineral Resources

a, b) No Impact

There are no mineral resources mapped within the vicinity of the proposed project.

NOISE

Would the project result in:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☒	☐

CEQA Significance Determinations for Noise

a, b, c) Less Than Significant Impact

The difference between existing noise levels and predicted noise levels under the build alternatives fall within the range of -2 to 4 dBA with exception to 1 location at soundwall 198E3, where the increase is 7 dBA. At that particular location, a soundwall of 14 foot height has been determined reasonable and feasible and is anticipated to have an 8 dBA reduction in noise attenuation. The dBA increase at the remaining locations would be barely perceptible to the human ear. Any existing soundwall that would be relocated due to the proposed project would be replaced, either in kind or higher than the original height. During construction, there will be an increase in noise levels as existing sound walls are being torn down and new ones constructed, but these increases will be temporary in nature. Under CEQA, no significant noise impact would occur as a result of the project.

POPULATION AND HOUSING

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

CEQA Significance Determinations for Population and Housing

a, b) No Impact

The proposed project would not remove obstacles to development. The proposed project would not provide new access to undeveloped land. The proposed project does not include full-property acquisitions and thus would not displace anyone or necessitate the construction of replacement housing elsewhere.

PUBLIC SERVICES

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

CEQA Significance Determinations for Public Services

a) No Impact

With inclusion of a traffic management plan, the proposed project would not cause existing public services to provide additional services or create new associated facilities.

RECREATION

	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

CEQA Significance Determinations for Recreation

a, b) No Impact

The proposed project does not include the use of existing recreational facilities or any new recreational facilities.

TRANSPORTATION/TRAFFIC

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☒	☐
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☒	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
d) Result in inadequate emergency access?	☐	☐	☒	☐

CEQA Significance Determinations for Transportation/Traffic

a, b, c, d) Less Than Significant Impact

The proposed project would retain the existing number of ingress or egress locations along the I-105 Corridor. Congestion management plans are required to be consistent with SCAG’s Regional Transportation Improvement Program. Traffic impacts from the build alternatives are expected to be positive for freeway circulation, decreasing congestion and delays and improving traffic flow. The projected vehicle volumes do not show any influence on growth by the project specifically, indicating that implementation of ExpressLanes would not induce new travel to the area. The proposed project would not eliminate or restrict automobile or pedestrian access to stores, public services, schools, or other facilities in the project area. It will not increase or decrease traffic on local streets, making it no more or less difficult to reach businesses or residences in the area. Emergency vehicles will be able to take the same routes as prior to the project, and emergency routes will be unaffected by distance, speed, or routing. No bicycle or pedestrian routes will be permanently affected by the project, and any detours, signs, and/or flaggers required during construction will be detailed in the TMP. Local drivers, cyclists, and pedestrians will not need to alter their travel patterns.

TRIBAL CULTURAL RESOURCES

Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☐	☐	☒
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☐	☐	☒

CEQA Significance Determinations for Tribal Cultural Resources

a, b) No Impact

As a result of consultation with the Native American Heritage Commission and local Native American tribes, no tribal cultural resources were identified within the proposed project area.

UTILITIES AND SERVICE SYSTEMS

Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☐	☒
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☐	☒
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☐	☒
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☒

CEQA Significance Determinations for Utilities and Service Systems

a, b, c, d, e, f, g) No Impact

The proposed project does not include additional water, wastewater, or solid waste disposal needs. The proposed project would add additional impervious area, which could contribute to added runoff and intensity as described under Hydrology and Water Quality. The additional impervious areas is minimal and would not overwhelm storm water drainage facilities. Therefore, new facilities are not anticipated as a result of the project. No impacts would occur, and no mitigation is required.

WILDFIRE

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☒
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

CEQA Significance Determinations for Wildfire

a, b, c, d) No Impact

The proposed project is located in an urban area and along an existing transportation corridor. The proposed project would not be expected to induce substantial changes in land use, population density, or transportation patterns that would increase wildlfire risks. With inclusion of a traffic management plan, the proposed project would not have an impact to emergency response or evacuation plans.

MANDATORY FINDINGS OF SIGNIFICANCE

	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☒	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☒	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

CEQA Significance Determinations for Mandatory Findings of Significance

a, b, c) Less Than Significant Impact

The proposed project would have a less than significant impact on the environment including habitat, threated and endangered species, and cultural resources. The proposed project would have temporary construction impacts, such as noise, dust, and visual changes. However, the proposed project would have a less than significant impact to all resource areas evaluated in this CEQA checklist, and would, therefore, not have an environmental effect that would cause substantial adverse effects on human beings, either directly or indirectly.

Climate Change

Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the earth's climate system. An ever-increasing body of scientific research attributes these climatological changes to greenhouse gas (GHG) emissions, particularly those generated from the production and use of fossil fuels.

While climate change has been a concern for several decades, the establishment of the Intergovernmental Panel on Climate Change (IPCC) by the United Nations and World Meteorological Organization in 1988 led to increased efforts devoted to GHG emissions reduction and climate change research and policy. These efforts are primarily concerned with the emissions of GHGs generated by human activity, including carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), tetrafluoromethane, hexafluoroethane, sulfur hexafluoride (SF6), and various hydrofluorocarbons (HFCs). CO_2 is the most abundant GHG; while it is a naturally occurring component of Earth's atmosphere, fossil-fuel combustion is the main source of additional, human-generated CO_2.

Two terms are typically used when discussing how we address the impacts of climate change: "greenhouse gas mitigation" and "adaptation." Greenhouse gas mitigation covers the activities and policies aimed at reducing GHG emissions to limit or "mitigate" the impacts of climate change. Adaptation, on the other hand, is concerned with planning for and responding to impacts resulting from climate change (such as adjusting transportation design standards to withstand more intense storms and higher sea levels). This analysis will include a discussion of both.

REGULATORY SETTING

This section outlines federal and state efforts to comprehensively reduce GHG emissions from transportation sources.

Federal

To date, no national standards have been established for nationwide mobile-source GHG reduction targets, nor have any regulations or legislation been enacted specifically to address climate change and GHG emissions reduction at the project level.

The National Environmental Policy Act (NEPA) (42 United States Code [USC] Part 4332) requires federal agencies to assess the environmental effects of their proposed actions prior to making a decision on the action or project.

The Federal Highway Administration (FHWA) recognizes the threats that extreme weather, sea-level change, and other changes in environmental conditions pose to valuable transportation infrastructure and those who depend on it. FHWA therefore supports a sustainability approach that assesses vulnerability to climate risks and incorporates resilience into planning, asset management, project development and design, and operations and maintenance practices (FHWA 2019). This approach encourages planning for sustainable highways by addressing climate risks while balancing environmental, economic, and social values—"the triple bottom line of sustainability" (FHWA n.d.). Program and project elements that foster sustainability and resilience also support economic vitality and global efficiency, increase safety and mobility, enhance the environment, promote energy conservation, and improve the quality of life.

Various efforts have been promulgated at the federal level to improve fuel economy and energy efficiency to address climate change and its associated effects. The most important of these was the Energy Policy and Conservation Act of 1975 (42 USC Section 6201) and Corporate Average Fuel Economy (CAFE) Standards. This act establishes fuel economy standards for on-road motor vehicles sold in the United States. Compliance with federal fuel economy standards is determined through the CAFE program based on each manufacturer's average fuel economy for the portion of its vehicles produced for sale in the United States.

Energy Policy Act of 2005, 109th Congress H.R.6 (2005–2006): This act sets forth an energy research and development program covering: (1) energy efficiency; (2) renewable energy; (3) oil and gas; (4) coal; (5) the establishment of the Office of Indian Energy Policy and Programs within the Department of Energy; (6) nuclear matters and security; (7) vehicles and motor fuels, including ethanol; (8) hydrogen; (9) electricity; (10) energy tax incentives; (11) hydropower and geothermal energy; and (12) climate change technology.

The U.S. EPA in conjunction with the National Highway Traffic Safety Administration (NHTSA) is responsible for setting GHG emission standards for new cars and light-duty vehicles to significantly increase the fuel economy of all new passenger cars and light trucks sold in the United States. Fuel efficiency standards directly influence GHG emissions.

State

California has been innovative and proactive in addressing GHG emissions and climate change by passing multiple Senate and Assembly bills and executive orders (EOs) including, but not limited to, the following:

EO S-3-05 (June 1, 2005): The goal of this EO is to reduce California's GHG emissions to: (1) year 2000 levels by 2010, (2) year 1990 levels by 2020, and (3) 80 percent below year 1990 levels by 2050. This goal was further reinforced with the passage of Assembly Bill (AB) 32 in 2006 and Senate Bill (SB) 32 in 2016.

Assembly Bill (AB) 32, Chapter 488, 2006, Núñez and Pavley, The Global Warming Solutions Act of 2006: AB 32 codified the 2020 GHG emissions reduction goals outlined in EO S-3-05, while further mandating that the California Air Resources Board (ARB) create a scoping plan and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." The Legislature also intended that the statewide GHG emissions limit continue in existence and be used to maintain and continue reductions in emissions of GHGs beyond 2020 (Health and Safety Code [H&SC] Section 38551(b)). The law requires ARB to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG reductions.

EO S-01-07 (January 18, 2007): This order sets forth the low carbon fuel standard (LCFS) for California. Under this EO, the carbon intensity of California's transportation fuels is to be reduced by at least 10 percent by the year 2020. ARB re-adopted the LCFS regulation in September 2015, and the changes went into effect on January 1, 2016. The program establishes a strong framework to promote the low-carbon fuel adoption necessary to achieve the Governor's 2030 and 2050 GHG reduction goals.

Senate Bill (SB) 375, Chapter 728, 2008, Sustainable Communities and Climate Protection: This bill requires ARB to set regional emissions reduction targets for passenger vehicles. The Metropolitan Planning Organization (MPO) for each region must then develop a "Sustainable

Communities Strategy" (SCS) that integrates transportation, land-use, and housing policies to plan how it will achieve the emissions target for its region.

SB 391, Chapter 585, 2009, California Transportation Plan: This bill requires the State's long-range transportation plan to identify strategies to address California's climate change goals under AB 32.

EO B-16-12 (March 2012) orders State entities under the direction of the Governor, including ARB, the California Energy Commission, and the Public Utilities Commission, to support the rapid commercialization of zero-emission vehicles. It directs these entities to achieve various benchmarks related to zero-emission vehicles.

EO B-30-15 (April 2015) establishes an interim statewide GHG emission reduction target of 40 percent below 1990 levels by 2030 to ensure California meets its target of reducing GHG emissions to 80 percent below 1990 levels by 2050. It further orders all state agencies with jurisdiction over sources of GHG emissions to implement measures, pursuant to statutory authority, to achieve reductions of GHG emissions to meet the 2030 and 2050 GHG emissions reductions targets. It also directs ARB to update the Climate Change Scoping Plan to express the 2030 target in terms of million metric tons of carbon dioxide equivalent ($MMTCO_2e$).[4] Finally, it requires the Natural Resources Agency to update the state's climate adaptation strategy, Safeguarding California, every 3 years, and to ensure that its provisions are fully implemented.

SB 32, Chapter 249, 2016, codifies the GHG reduction targets established in EO B-30-15 to achieve a mid-range goal of 40 percent below 1990 levels by 2030.

SB 1386, Chapter 545, 2016, declared "it to be the policy of the state that the protection and management of natural and working lands … is an important strategy in meeting the state's greenhouse gas reduction goals, and would require all state agencies, departments, boards, and commissions to consider this policy when revising, adopting, or establishing policies, regulations, expenditures, or grant criteria relating to the protection and management of natural and working lands."

AB 134, Chapter 254, 2017, allocates Greenhouse Gas Reduction Funds and other sources to various clean vehicle programs, demonstration/pilot projects, clean vehicle rebates and projects, and other emissions-reduction programs statewide.

SB 743, Chapter 386 (September 2013): This bill changes the metric of consideration for transportation impacts pursuant to CEQA from a focus on automobile delay to alternative methods focused on vehicle miles travelled, to promote the state's goals of reducing greenhouse gas emissions and traffic related air pollution and promoting multimodal transportation while balancing the needs of congestion management and safety.

SB 150, Chapter 150, 2017, Regional Transportation Plans: This bill requires ARB to prepare a report that assesses progress made by each metropolitan planning organization in meeting their established regional greenhouse gas emission reduction targets.

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[4] GHGs differ in how much heat each trap in the atmosphere (global warming potential, or GWP). CO_2 is the most important GHG, so amounts of other gases are expressed relative to CO_2, using a metric called "carbon dioxide equivalent" (CO_2e). The global warming potential of CO_2 is assigned a value of 1, and the GWP of other gases is assessed as multiples of CO_2.

EO B-55-18 (September 2018) sets a new statewide goal to achieve and maintain carbon neutrality no later than 2045. This goal is in addition to existing statewide targets of reducing GHG emissions.

EO N-19-19 (September 2019) advances California's climate goals in part by directing the California State Transportation Agency to leverage annual transportation spending to reverse the trend of increased fuel consumption and reduce GHG emissions from the transportation sector. It orders a focus on transportation investments near housing, managing congestion, and encouraging alternatives to driving. This EO also directs ARB to encourage automakers to produce more clean vehicles, formulate ways to help Californians purchase them, and propose strategies to increase demand for zero-emission vehicles.

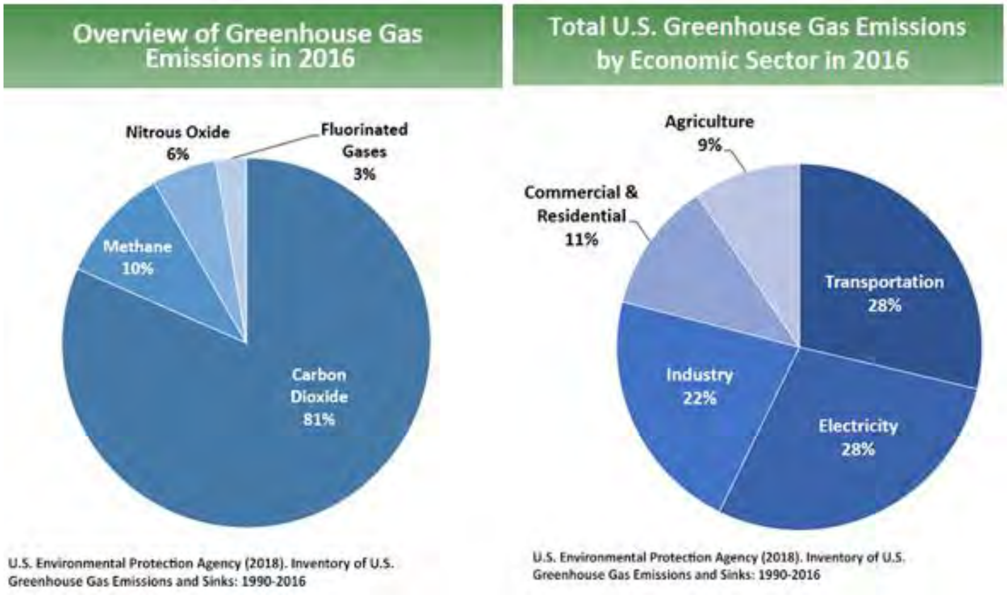
ENVIRONMENTAL SETTING

The proposed project is in an urban area of Los Angeles County with a well-developed road and street network. The project area is mainly residential, with some light industrial and commercial buildings. Traffic congestion during peak hours is not uncommon in the project area. An RTP/SCS by SCAG guides transportation and housing development in the project area. The Los Angeles County General Plan Sustainability element addresses GHGs in the project area.

A GHG emissions inventory estimates the amount of GHGs discharged into the atmosphere by specific sources over a period of time, such as a calendar year. Tracking annual GHG emissions allows countries, states, and smaller jurisdictions to understand how emissions are changing and what actions may be needed to attain emission reduction goals. U.S. EPA is responsible for documenting GHG emissions nationwide, and the ARB does so for the state, as required by H&SC Section 39607.4.

National GHG Inventory

The U.S. EPA prepares a national GHG inventory every year and submits it to the United Nations in accordance with the Framework Convention on Climate Change. The inventory provides a comprehensive accounting of all human-produced sources of GHGs in the United States, reporting emissions of CO_2, CH_4, N_2O, HFCs, perfluorocarbons, SF6, and nitrogen trifluoride. It also accounts for emissions of CO_2 that are removed from the atmosphere by "sinks" such as forests, vegetation, and soils that uptake and store CO2 (carbon sequestration). The 1990–2016 inventory found that of 6,511 MMTCO2e GHG emissions in 2016, 81% consist of CO_2, 10% are CH_4, and 6% are N_2O; the balance consists of fluorinated gases (EPA 2018a). In 2016, GHG emissions from the transportation sector accounted for nearly 28.5% of U.S. GHG emissions.



U.S. Environmental Protection Agency (2018). Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2016

U.S. Environmental Protection Agency (2018). Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2016

Figure ##. U.S. 2016 Greenhouse Gas Emissions

State GHG Inventory

ARB collects GHG emissions data for transportation, electricity, commercial/residential, industrial, agricultural, and waste management sectors each year. It then summarizes and highlights major annual changes and trends to demonstrate the state's progress in meeting its GHG reduction goals. The 2019 edition of the GHG emissions inventory found total California emissions of 424.1 $MMTCO_2e$ for 2017, with the transportation sector responsible for 41% of total GHGs. It also found that overall statewide GHG emissions declined from 2000 to 2017 despite growth in population and state economic output (ARB 2019a).

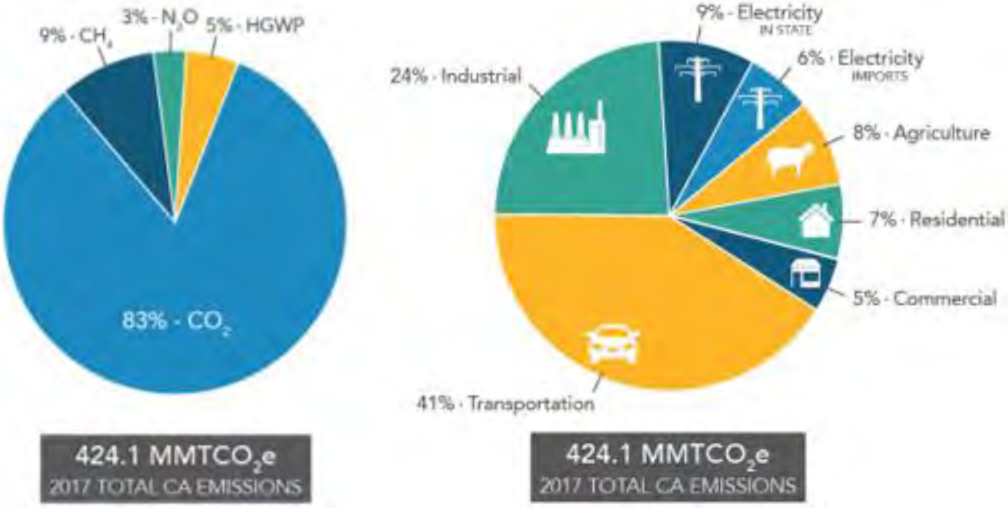
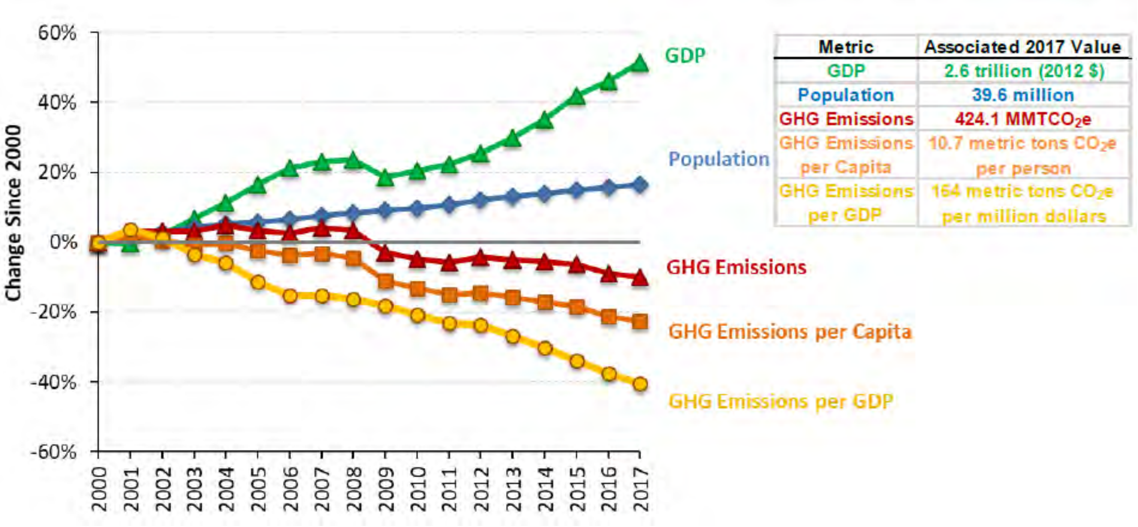


Figure ##. California 2017 Greenhouse Gas Emissions



Metric	Associated 2017 Value
GDP	2.6 trillion (2012 $)
Population	39.6 million
GHG Emissions	424.1 MMTCO$_2$e
GHG Emissions per Capita	10.7 metric tons CO$_2$e per person
GHG Emissions per GDP	164 metric tons CO$_2$e per million dollars

Figure ##. Change in California GDP, Population, and GHG Emissions since 2000 (*Source*: ARB 2019b)

AB 32 required ARB to develop a Scoping Plan that describes the approach California will take to achieve the goal of reducing GHG emissions to 1990 levels by 2020, and to update it every 5 years. ARB adopted the first scoping plan in 2008. The second updated plan, California's 2017 Climate Change Scoping Plan, adopted on December 14, 2017, reflects the 2030 target established in EO B-30-15 and SB 32. The AB 32 Scoping Plan and the subsequent updates contain the main strategies California will use to reduce GHG emissions.

Regional Plans

ARB sets regional targets for California's 18 MPOs to use in their Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) to plan future projects that will cumulatively achieve GHG reduction goals. Targets are set at a percent reduction of passenger vehicle GHG emissions per person from 2005 levels. The proposed project is included in the 2016 RTP/SCS for SCAG. The regional reduction target for SCAG is -8% percent by 2020 and -19% by 2035 (ARB 2019c).

Table X Regional and Local Greenhouse Gas Reduction Plans

Title	GHG Reduction Policies or Strategies
Southern California Association of Governments 2016-2040 Regional Transportation Plan / Sustainable Communities Strategy (adopted April 2016)	• Emphasize land use and transportation strategies to support a more sustainable future • Direct transportation investments within urbanized areas to support a more compact urban form • Utilize extensive regional bus and bus rapid transit system • Improve commuter and light rail service • Expand regional bicycle network • Improve pedestrian infrastructure • Dedicated highway lanes for carpool and express buses • Transportation demand management programs to reduce vehicle trips.

PROJECT ANALYSIS

GHG emissions from transportation projects can be divided into those produced during operation of the SHS and those produced during construction. The primary GHGs produced by the transportation sector are CO_2, CH_4, N_2O, and HFCs. CO_2 emissions are a product of the combustion of petroleum-based products, like gasoline, in internal combustion engines. Relatively small amounts of CH_4 and N_2O are emitted during fuel combustion. In addition, a small amount of HFC emissions are included in the transportation sector.

The CEQA Guidelines generally address greenhouse gas emissions as a cumulative impact due to the global nature of climate change (Pub. Resources Code, § 21083(b)(2)). As the California Supreme Court explained, “because of the global scale of climate change, any one project's contribution is unlikely to be significant by itself.” (Cleveland National Forest Foundation v. San Diego Assn. of Governments (2017) 3 Cal.5th 497, 512.) In assessing cumulative impacts, it must be determined if a project’s incremental effect is “cumulatively considerable” (CEQA Guidelines Sections 15064(h)(1) and 15130).

To make this determination, the incremental impacts of the project must be compared with the effects of past, current, and probable future projects. Although climate change is ultimately a cumulative impact, not every individual project that emits greenhouse gases must necessarily be found to contribute to a significant cumulative impact on the environment.

Operational Emissions

CO_2 accounts for 95 percent of transportation GHG emissions in the U.S. The largest sources of transportation-related GHG emissions are passenger cars and light-duty trucks, including sport utility vehicles, pickup trucks, and minivans. These sources account for over half of the emissions from the sector. The remainder of GHG emissions comes from other modes of transportation, including freight trucks, commercial aircraft, ships, boats, and trains, as well as pipelines and lubricants. Because CO_2 emissions represent the greatest percentage of GHG emissions it has been selected as a proxy within the following analysis for potential climate change impacts generally expected to occur.

The highest levels of CO_2 from mobile sources such as automobiles occur at stop-and-go speeds (0–25 miles per hour) and speeds over 55 miles per hour; the most severe emissions occur from 0–25 miles per hour (see Figure ##). To the extent that a project relieves congestion by enhancing operations and improving travel times in high-congestion travel corridors, GHG emissions, particularly CO_2, may be reduced.

Four primary strategies can reduce GHG emissions from transportation sources: (1) improving the transportation system and operational efficiencies, (2) reducing travel activity, (3) transitioning to lower GHG-emitting fuels, and (4) improving vehicle technologies/efficiency. To be most effective, all four strategies should be pursued concurrently.

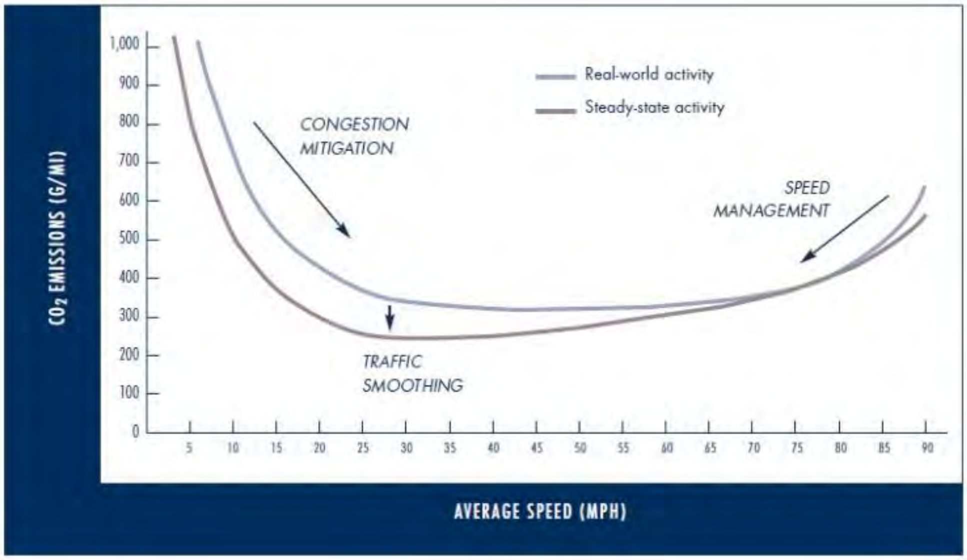


Figure ##. Possible Use of Traffic Operation Strategies in Reducing On-road CO_2 Emissions (*Source:* Barth and Boriboonsomsin 2010)

As part of the SCAG 2016 RTP/SCS, the Project is part of the region's Sustainable Communities Strategy (SCS) required under SB 375 to reduce greenhouse gas (GHG) emissions due to passenger vehicles. The population and employment growth served by the Project is identified in the SCS. The SCS also includes the Project in its transportation network designed to reduce regional vehicle miles traveled and GHG emissions. SCAG is in the process of preparing an update to their RTP/SCS. The Project is being carried over into the modeling for SCAG's 2020 RTP/SCS.

SCAG also prepares and implements the FTIP. The Project was originally programmed and modeled as part of the SCAG 2017 FTIP and is currently shown on the adopted SCAG 2019 FTIP.

Within the SCAG 2016-2040 RTP/SCS, the Project is identified as Project ID 1162S011 with the following description: "I-105 ExpressLane from I-405 to I-605".

Within the SCAG 2019 FTIP, the Project is identified as Project ID LA0G1324 with the following description: "Route 105: In Los Angeles County, in various Cities, between Imperial Highway and I-605, Preparation of PA&ED for potential implementation of ExpressLanes".

Quantitative Analysis

The latest CT-EMFAC2017 and the VMT data provided by Metro are utilized in estimating operational GHG emissions for the 2017 Baseline as well as for all future year Alternatives. CT-EMFAC2017 provides emission factors for such gases as CO2, methane (CH4), nitrous oxides (N2O), and hydrofluorocarbons (HFC), which cause greenhouse effect with varying global warming potentials (GWPs). The table below provides a summary of GHG emissions for each Alternative in equivalents of CO2 (CO2e). Emissions of CO2e are calculated by adjusting and tallying the emissions of GHGs by their respective GWPs in terms of CO2.

According to the summary in Table X, all future GHG emissions result in decrease when compared to the 2017 Baseline. GHG emissions for all Alternatives are anticipated to decrease further as the years progress to 2047, consistent with the statewide goals to reduce GHGs. The GHG emissions are forecasted to reach the lowest in 2047 for all Alternatives. It should be noted that this progressive decrease in GHG emissions is achieved for each Alternative while VMT is projected to continue to increase in future years. When compared to the No-Build (Alternative 1) conditions in each analysis year, however, the Build Alternatives (2 and 3) are anticipated to result in increase.

While EMFAC2017 has a rigorous scientific foundation and has been vetted through multiple stakeholder reviews, its GHG emission rates are based on tailpipe emission test data. Moreover, the model does not account for factors such as the rate of acceleration and vehicle aerodynamics, which influence the amount of emissions generated by a vehicle. GHG emissions quantified using CT-EMFAC or EMFAC2017 are therefore estimates and may not reflect actual physical emissions. Though CT-EMFAC and EMFAC2017 are currently the best available tools for calculating GHG emissions from mobile sources, it is important to note that the GHG results are only useful for a comparison among alternatives.

Table 39: Corridor-Level Operational GHG Emissions for All Alternatives

Alternatives	CO_2e **Emissions** **(tons/year)**	**Annual VMT** **(miles/year)**
2017 Baseline	532,883	1,222,250,191
Open to Traffic (2027)		
Alternative 1	399,371	1,212,941,428
Alternative 2	422,358	1,273,438,416
Alternative 3	466,137	1,416,644,264
Planning Horizon (2040)		
Alternative 1	336,475	1,231,621,056
Alternative 2	358,948	1,290,398,020
Alternative 3	386,803	1,395,660,784
Design Year (2047)		
Alternative 1	332,838	1,241,584,239
Alternative 2	356,870	1,284,685,424
Alternative 3	384,359	1,405,517,796

Note: Annual VMT values derived from Daily VMT multiplied by 347, per ARB methodology (ARB 2008)

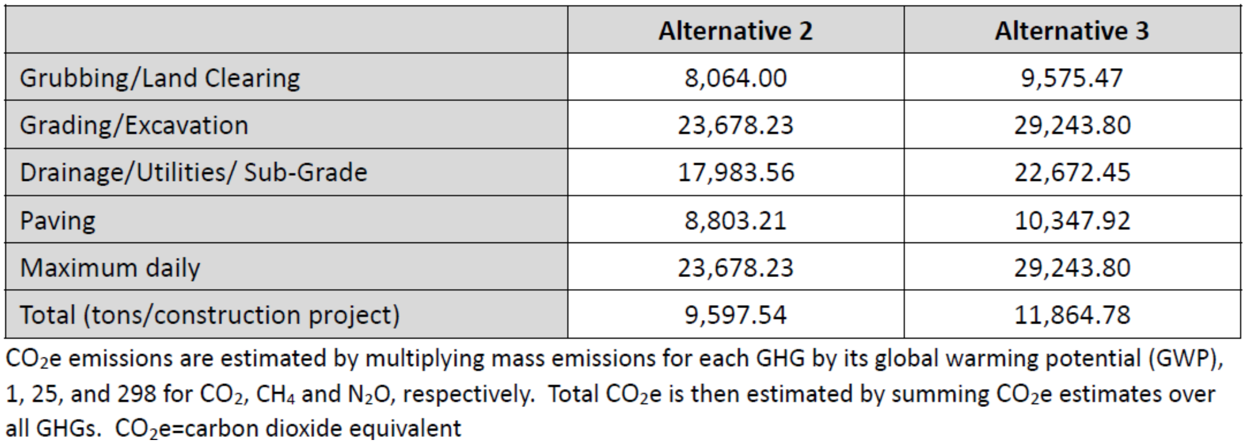
Construction Emissions

Construction GHG emissions would result from material processing, on-site construction equipment, and traffic delays due to construction. These emissions will be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases.

In addition, with innovations such as longer pavement lives, improved traffic management plans, and changes in materials, the GHG emissions produced during construction can be offset to some degree by longer intervals between maintenance and rehabilitation activities.

Construction GHG emissions are estimated for the project alternatives using the latest SMAQMD's RCEM based on construction activities data such as equipment inventories and project construction scheduling information as well as emission factors from the EMFAC2017 and OFFROAD. Construction GHG emissions estimates are provided in Table below for each of the Build Alternatives (2 and 3).

Table X: GHG Emissions from Construction of Build Alternatives



	Alternative 2	Alternative 3
Grubbing/Land Clearing	8,064.00	9,575.47
Grading/Excavation	23,678.23	29,243.80
Drainage/Utilities/ Sub-Grade	17,983.56	22,672.45
Paving	8,803.21	10,347.92
Maximum daily	23,678.23	29,243.80
Total (tons/construction project)	9,597.54	11,864.78

CO_2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1, 25, and 298 for CO_2, CH_4 and N_2O, respectively. Total CO_2e is then estimated by summing CO_2e estimates over all GHGs. CO_2e=carbon dioxide equivalent

All construction contracts include Caltrans Standard Specifications Section 7-1.02A and 7-1.02C, Emissions Reduction, which require contractors to comply with all laws applicable to the project and to certify they are aware of and will comply with all ARB emission reduction regulations; and Section 14-9.02, Air Pollution Control, which requires contractors to comply with all air pollution control rules, regulations, ordinances, and statutes. Certain common regulations, such as equipment idling restrictions, that reduce construction vehicle emissions also help reduce GHG emissions.

CEQA Conclusion

SCAG and TCWG concurred this project as not of air quality concern. Project Analyses have used the latest planning assumptions and U.S. EPA approved emissions models. The build alternatives would result in increases to VMTs, which would increase emissions of all criteria pollutants, MSAT's, and GHG when compared to the no-build alternative. However, the proposed project is not anticipated to cause or contribute to any new violation of the state and federal standards of the criteria pollutants. It is anticipated that the build alternatives would have a less than significant impact to Greenhouse Gas Emissions.

GREENHOUSE GAS REDUCTION STRATEGIES

Statewide Efforts

Major sectors of the California economy, including transportation, will need to reduce emissions to meet the 2030 and 2050 GHG emissions targets. Former Governor Edmund G. Brown promoted GHG reduction goals that involved (1) reducing today's petroleum use in cars and trucks by up to 50 percent; (2) increasing from one-third to 50 percent our electricity derived from renewable sources; (3) doubling the energy efficiency savings achieved at existing buildings and making heating fuels cleaner; (4) reducing the release of methane, black carbon, and other short-lived climate pollutants; (5) managing farms and rangelands, forests, and wetlands so they can store carbon; and (6) periodically updating the state's climate adaptation strategy, Safeguarding California.

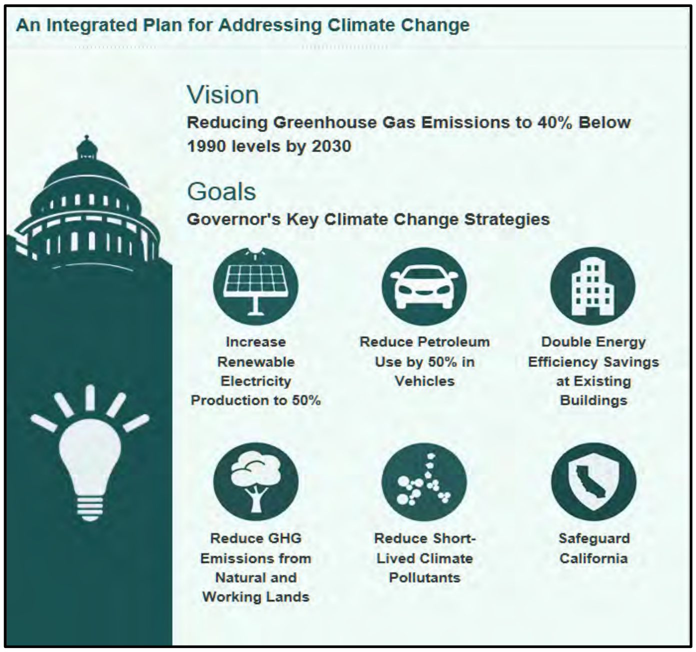


Figure ##. California Climate Strategy

The transportation sector is integral to the people and economy of California. To achieve GHG emission reduction goals, it is vital that the state build on past successes in reducing criteria and toxic air pollutants from transportation and goods movement. GHG emission reductions will come from cleaner vehicle technologies, lower-carbon fuels, and reduction of vehicle miles traveled (VMT). A key state goal for reducing greenhouse gas emissions is to reduce today's petroleum use in cars and trucks by up to 50 percent by 2030 (State of California 2019).

In addition, SB 1386 (Wolk 2016) established as state policy the protection and management of natural and working lands and requires state agencies to consider that policy in their own decision making. Trees and vegetation on forests, rangelands, farms, and wetlands remove carbon dioxide from the atmosphere through biological processes and sequester the carbon in above- and below-ground matter.

Caltrans Activities

Caltrans continues to be involved on the Governor’s Climate Action Team as the ARB works to implement EOs S-3-05 and S-01-07 and help achieve the targets set forth in AB 32. EO B-30-15, issued in April 2015, and SB 32 (2016), set an interim target to cut GHG emissions to 40 percent below 1990 levels by 2030. The following major initiatives are underway at Caltrans to help meet these targets.

CALIFORNIA TRANSPORTATION PLAN (CTP 2040)

The California Transportation Plan (CTP) is a statewide, long-range transportation plan to meet our future mobility needs and reduce GHG emissions. In 2016, Caltrans completed the California Transportation Plan 2040, which establishes a new model for developing ground transportation systems, consistent with CO_2 reduction goals. It serves as an umbrella document for all the other statewide transportation planning documents. Over the next 25 years, California will be working to improve transit and reduce long-run repair and maintenance costs of roadways and developing a comprehensive assessment of climate-related transportation demand management and new technologies rather than continuing to expand capacity on existing roadways.

SB 391 (Liu 2009) requires the CTP to meet California's climate change goals under AB 32. Accordingly, the CTP 2040 identifies the statewide transportation system needed to achieve maximum feasible GHG emission reductions while meeting the state's transportation needs. While MPOs have primary responsibility for identifying land use patterns to help reduce GHG emissions, CTP 2040 identifies additional strategies in Pricing, Transportation Alternatives, Mode Shift, and Operational Efficiency.

CALTRANS STRATEGIC MANAGEMENT PLAN

The Strategic Management Plan, released in 2015, creates a performance-based framework to preserve the environment and reduce GHG emissions, among other goals. Specific performance targets in the plan that will help to reduce GHG emissions include:

- Increasing percentage of non-auto mode share
- Reducing VMT
- Reducing Caltrans' internal operational (buildings, facilities, and fuel) GHG emissions

FUNDING AND TECHNICAL ASSISTANCE PROGRAMS

In addition to developing plans and performance targets to reduce GHG emissions, Caltrans also administers several sustainable transportation planning grants. These grants encourage local and regional multimodal transportation, housing, and land use planning that furthers the region's RTP/SCS; contribute to the State's GHG reduction targets and advance transportation-related GHG emission reduction project types/strategies; and support other climate adaptation goals (e.g., Safeguarding California).

CALTRANS POLICY DIRECTIVES AND OTHER INITIATIVES

Caltrans Director's Policy 30 (DP-30) Climate Change (June 22, 2012) is intended to establish a Department policy that will ensure coordinated efforts to incorporate climate change into Departmental decisions and activities. Caltrans Activities to Address Climate Change (April 2013) provides a comprehensive overview of Caltrans' statewide activities to reduce GHG emissions resulting from agency operations.

Project-Level GHG Reduction Strategies

The following measures will also be implemented in the project to reduce GHG emissions and potential climate change impacts from the project. Most of the construction impacts to air quality are short-term in duration and, therefore, will not result in long-term adverse conditions. Implementation of the following measures, some of which may also be required for other purposes such as storm water pollution control will reduce any air quality impacts resulting from construction activities:

Air1 - The construction contractor must comply with the Caltrans' Standard Specifications in Section 14-9 (2018).

Section 14-9.02 specifically requires compliance by the contractor with all applicable laws and regulations related to air quality, including air pollution control district and air quality management district regulations and local ordinances.

Air2 - Water or a dust palliative will be applied to the site and equipment as often as necessary to control fugitive dust emissions. Fugitive emissions must meet a “no visible dust” criterion either at the right-of-way line according to the SCAQMD Rule 403.

Air3 - Soil binder will be spread on any unpaved roads used for construction purposes, and on all project construction parking areas.

Air4 - Trucks will be washed as they leave the right-of-way as necessary to control fugitive dust emissions.

Air5 - Construction equipment and vehicles will be properly tuned and maintained. All construction equipment will use low sulfur fuel as required by CA Code of Regulations Title 17, Section 93114.

Air6 - A dust control plan will be developed documenting sprinkling, temporary paving, speed limits, and timely re-vegetation of disturbed slopes as needed to minimize construction impacts to existing communities.

Air7 - Equipment and materials storage sites will be located as far away from residential and park uses as practicable. Construction areas will be kept clean and orderly.

Air8 - Environmentally sensitive areas (ESAs) will be established near sensitive air receptors. Within these areas, construction activities involving the extended idling of diesel equipment or vehicles will be prohibited, to the extent feasible.

Air9 - Track-out reduction measures, such as gravel pads at project access points to minimize dust and mud deposits on roads affected by construction traffic, will be used.

Air10 - All transported loads of soils and wet materials will be covered before transport, or adequate freeboard (space from the top of the material to the top of the truck) will be provided to minimize emission of dust during transportation.

Air11 - Dust and mud that are deposited on paved, public roads due to construction activity and traffic will be promptly and regularly removed to reduce PM emissions.

Air12 - To the extent feasible, construction traffic will be scheduled and routed to reduce congestion and related air quality impacts caused by idling vehicles along local roads during peak travel times.

Air13 - Mulch will be installed or vegetation planted as soon as practical after grading to reduce windblown PM in the area.

As noted above, Caltrans Standard Specifications specifically require compliance with all applicable laws and regulations related to air quality, which would include applicable rules and regulations of the respective AQMD such as Rules 401, 402, and 403.

Rule 401 requires no visible emissions be discharged in the atmosphere of such opacity for a period or periods aggregating more than three minutes in any one hour as to obscure an observer's view to a degree equal to or greater than the dark shade of smoke as that designated No. 1 on the Ringelmann Chart, as published by the United States Bureau of Mines. Rule 402 requires that air pollutant emissions not be a nuisance off-site.

SCAQMD's Rule 403 requires that fugitive dust be controlled with the best available control measures (BACM) in order to reduce dust so that it does not remain visible in the atmosphere beyond the property line of the proposed project. It also requires a dust control plan to be submitted and approved prior to construction. The dust control plan should describe all applicable dust control measures that will be implemented at the project; and should describe types of dust suppressant, surface treatments and other measures to be utilized at the construction sites to comply with the Rule.

Long-Term (Operational)

No avoidance, minimization, and/or mitigation measures are needed to reduce operational air quality impacts or GHG emissions. The proposed project is not anticipated to cause or contribute to any new violation of the state and federal standards of the criteria pollutants.

ADAPTATION

Reducing GHG emissions is only one part of an approach to addressing climate change. Caltrans must plan for the effects of climate change on the state's transportation infrastructure and strengthen or protect the facilities from damage. Climate change is expected to produce increased variability in precipitation, rising temperatures, rising sea levels, variability in storm surges and their intensity, and in the frequency and intensity of wildfires. Flooding and erosion can damage or wash out roads; longer periods of intense heat can buckle pavement and railroad tracks; storm surges combined with a rising sea level can inundate highways. Wildfire can directly burn facilities and indirectly cause damage when rain falls on denuded slopes that landslide after a fire. Effects will vary by location and may, in the most extreme cases, require that a facility be relocated or redesigned. Accordingly, Caltrans must consider these types of climate stressors in how highways are planned, designed, built, operated, and maintained.

Federal Efforts

Under NEPA assignment, Caltrans is obligated to comply with all applicable federal environmental laws and FHWA NEPA regulations, policies, and guidance.

The U.S. Global Change Research Program (USGCRP) delivers a report to Congress and the president every 4 years, in accordance with the Global Change Research Act of 1990 (15 U.S.C. ch. 56A § 2921 et seq). The Fourth National Climate Assessment, published in 2018, presents the foundational science and the "human welfare, societal, and environmental elements of climate change and variability for 10 regions and 18 national topics, with particular attention paid to observed and projected risks, impacts, consideration of risk reduction, and implications under different mitigation pathways." Chapter 12, "Transportation," presents a key discussion of vulnerability assessments. It notes that "asset owners and operators have increasingly conducted more focused studies of particular assets that consider multiple climate hazards and scenarios in the context of asset-specific information, such as design lifetime" (USGCRP 2018).

The U.S. DOT Policy Statement on Climate Adaptation in June 2011 committed the federal Department of Transportation to "integrate consideration of climate change impacts and adaptation into the planning, operations, policies, and programs of DOT in order to ensure that taxpayer resources are invested wisely, and that transportation infrastructure, services and operations remain effective in current and future climate conditions" (U.S. DOT 2011).

FHWA order 5520 (Transportation System Preparedness and Resilience to Climate Change and Extreme Weather Events, December 15, 2014) established FHWA policy to strive to identify the risks of climate change and extreme weather events to current and planned transportation systems. FHWA has developed guidance and tools for transportation planning that foster resilience to climate effects and sustainability at the federal, state, and local levels (FHWA 2019).

State Efforts

Climate change adaptation for transportation infrastructure involves long-term planning and risk management to address vulnerabilities in the transportation system. California's Fourth Climate Change Assessment (2018) is the state's effort to "translate the state of climate science into useful information for action" in a variety of sectors at both statewide and local scales. It adopts the following key terms used widely in climate change analysis and policy documents:

- *Adaptation* to climate change refers to adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.
- *Adaptive capacity* is the "combination of the strengths, attributes, and resources available to an individual, community, society, or organization that can be used to prepare for and undertake actions to reduce adverse impacts, moderate harm, or exploit beneficial opportunities."
- *Exposure* is the presence of people, infrastructure, natural systems, and economic, cultural, and social resources in areas that are subject to harm.
- *Resilience* is the "capacity of any entity – an individual, a community, an organization, or a natural system – to prepare for disruptions, to recover from shocks and stresses, and to adapt and grow from a disruptive experience". Adaptation actions contribute to increasing resilience, which is a desired outcome or state of being.
- *Sensitivity* is the level to which a species, natural system, or community, government, etc., would be affected by changing climate conditions.
- *Vulnerability* is the "susceptibility to harm from exposure to stresses associated with environmental and social change and from the absence of capacity to adapt." Vulnerability can increase because of physical (built and environmental), social, political, and/or economic factor(s). These factors include, but are not limited to: ethnicity, class, sexual orientation and identification, national origin, and income inequality.2 Vulnerability is often defined as the combination of sensitivity and adaptive capacity as affected by the level of exposure to changing climate.

Several key state policies have guided climate change adaptation efforts to date. Recent state publications produced in response to these policies draw on these definitions.

EO S-13-08, issued by then-governor Arnold Schwarzenegger in November 2008, focused on sea-level rise and resulted in the *California Climate Adaptation Strategy* (2009), updated in 2014 as *Safeguarding California: Reducing Climate Risk* (Safeguarding California Plan). The Safeguarding California Plan offers policy principles and recommendations and continues to be revised and augmented with sector-specific adaptation strategies, ongoing actions, and next steps for agencies.

EO S-13-08 also led to the publication of a series of sea-level rise assessment reports and associated guidance and policies. These reports formed the foundation of an interim *State of California Sea-Level Rise Interim Guidance Document* (SLR Guidance) in 2010, with instructions for how state agencies could incorporate "sea-level rise (SLR) projections into planning and decision making for projects in California" in a consistent way across agencies. The guidance was revised and augmented in 2013. *Rising Seas in California – An Update on Sea-Level Rise Science* was published in 2017 and its updated projections of sea-level rise and new understanding of processes and potential impacts in California were incorporated into the *State of California Sea-Level Rise Guidance Update* in 2018.

EO B-30-15, signed in April 2015, requires state agencies to factor climate change into all planning and investment decisions. This EO recognizes that effects of climate change other than sea-level rise also threaten California's infrastructure. At the direction of EO B-30-15, the Office of Planning and Research published *Planning and Investing for a Resilient California: A Guidebook for State Agencies* in 2017, to encourage a uniform and systematic approach. Representatives of Caltrans participated in the multi-agency, multidisciplinary technical advisory group that developed this guidance on how to integrate climate change into planning and investment.

AB 2800 (Quirk 2016) created the multidisciplinary Climate-Safe Infrastructure Working Group, which in 2018 released its report, *Paying it Forward: The Path Toward Climate-Safe Infrastructure in California*. The report provides guidance to agencies on how to address the challenges of assessing risk in the face of inherent uncertainties still posed by the best available science on climate change. It also examines how state agencies can use infrastructure planning, design, and implementation processes to address the observed and anticipated climate change impacts.

Caltrans Adaptation Efforts

CALTRANS VULNERABILITY ASSESSMENTS

Caltrans is conducting climate change vulnerability assessments to identify segments of the State Highway System vulnerable to climate change effects including precipitation, temperature, wildfire, storm surge, and sea-level rise. The approach to the vulnerability assessments was tailored to the practices of a transportation agency, and involves the following concepts and actions:

- *Exposure* – Identify Caltrans assets exposed to damage or reduced service life from expected future conditions.
- *Consequence* – Determine what might occur to system assets in terms of loss of use or costs of repair.
- *Prioritization* – Develop a method for making capital programming decisions to address identified risks, including considerations of system use and/or timing of expected exposure.

The climate change data in the assessments were developed in coordination with climate change scientists and experts at federal, state, and regional organizations at the forefront of climate science. The findings of the vulnerability assessments will guide analysis of at-risk assets and development of adaptation plans to reduce the likelihood of damage to the State Highway System, allowing Caltrans to both reduce the costs of storm damage and to provide and maintain transportation that meets the needs of all Californians.

Sea Level Rise

The proposed project is outside the coastal zone and not in an area subject to sea-level rise. Accordingly, direct impacts to transportation facilities due to projected sea-level rise are not expected.

Chapter 4 – Comments and Coordination

Introduction

Scoping is a means of soliciting input early in the development process on the purpose and need of the project, range of alternatives to be analyzed, and scope of the analysis to be included in the environmental document. Early and continual coordination with the public and public agencies is an essential part of the environmental process. Agency consultation and public participation for this project have been accomplished through a variety of formal and informal methods, including an extensive multi-tiered community participation process with numerous public meetings. This chapter summarizes the results of the efforts by Caltrans, Metro, and partner agencies to fully identify, address, and resolve project-related issues through early and continuing coordination.

Scoping Process

The formal scoping period was initiated on March 7, 2018 and continued through April 16, 2018 with the preparation and distribution of a Notice of Preparation (NOP). A NOP is required under Section 15082 of the CEQA guidelines and is used to notify responsible agencies, trustee agencies, federal agencies, and the public that the lead agency intends to prepare an EIR for a project. The NOP inherently initiates the scoping process.

The NOP was posted at the State Clearinghouse (SCH No. 2018031037) on March 13, 2018 and circulated to public agencies responsible for environmental resources affected by the project. In addition to publication of the NOP, the following public notification efforts were conducted:

- A project-specific web presence was established for convenient public access and outreach (https://www.metro.net/projects/i105-expresslanes).
- A total of 28,360 postcards were mailed to residents, property owners and stakeholders within a 750-foot radius from the I-105 study area.
- Letters to appropriate local, state and federal agencies and elected officials representing the project study area were mailed.
- Approximately 4,914 postcard notices were placed on parked vehicles at the 10 Green Line Station Park-and-Ride lots along the I-105 corridor area.
- Scoping notices were posted at the following 7 public libraries: Alondra Library, Downey Library, Lynwood Library, Norwalk Library, Paramount Library, Woodcrest Library, and Clifton M. Brakensiek Library.
- Scoping notices were published in 5 local and 5 electronic newspapers.
- A total of 5 email-blasts were distributed to about 900 stakeholders.
- A total of 21 stakeholder briefings were held prior to and during the scoping period.
- One formal agency scoping meeting and 3 formal public scoping meetings were held.
- Approximately 220 people participated in the scoping meetings, which included 165 webcast viewers.

Stakeholder Briefings

Prior to and during the scoping period, the project team held stakeholder briefings with staff members from each city within the study area, elected officials, and key stakeholders. The briefings served as an effort to ensure that all key representatives of the corridor communities were aware of the project, understood the project timeline, and had an opportunity to solicit feedback. The meetings expanded public notification efforts beyond the typical scoping period and further ingrained the corridor communities into the early development of the project. The schedule of the stakeholder briefings is shown in Table 4-1.

Table 4-1: Schedule of Stakeholder Briefings

No.	Organization	Briefing Date
1.	Gateway Cities Transportation Summit (Elected Officials and City Staff)	February 9, 2018
2.	South Bay Council of Governments Transportation Committee	February 12, 2018
3.	State and Federal Legislative Briefing in Gateway Cities and South Bay Region	February 27, 2018
4.	City of El Segundo Staff	February 28, 2018
5.	City of Los Angeles, Office of Councilmember Joe Buscaino	February 28, 2018
6.	City of Inglewood Staff	March 5, 2018
7.	Westchester Neighborhood Council	March 5, 2018
8.	Gateway Cities Council of Governments Board Meeting	March 7, 2018
9.	City of Downey Staff	March 7, 2018
10.	City of Hawthorne Staff	March 7, 2018
11.	City of Lynwood Staff	March 7, 2018
12.	City of Norwalk Staff	March 7, 2018
13.	City of Paramount Staff	March 7, 2018
14.	City of South Gate Staff	March 7, 2018
15.	City of Los Angeles, Office of Councilmember Marqueece Harris-Dawson	March 9, 2018
16.	State and Federal Legislative Briefing in Gateway Cities and South Bay Region	March 12, 2018
17.	LAX Gateway Business Improvement District	March 13, 2018
18.	El Segundo City Council	March 20, 2018
19.	City of South Gate Staff	April 2, 2018
20.	El Segundo Businesses	April 6, 2018
21.	Empowerment Congress Southwest Area Neighborhood Development Council	April 16, 2018

Scoping Meetings

On March 7, 2018, Metro and Caltrans distributed the Notice of Scoping/Initiation of Studies letter, a copy of the NOP, project map, and the public meeting notice to elected officials and agencies that represent the project study area and stakeholders living within a 750-foot radius from the project study area. The Notice of Scoping/Initiation of Studies letter summarized the proposed project, stated the lead agency's intention to prepare an EIR/EA, and requested comments from interested parties during the 41-day comment period from March 7, 2018 to April 16, 2019. The NOP and details of the Public Scoping Meetings were advertised in the newspapers shown in Table 4-2:

Table 4-2: List of Newspapers and Publication Dates

Print Newspapers	**Publication Date**
La Opinion (daily)	March 7, 2018
The Wave Publication (weekly)	March 8, 2018
El Segundo Herald (weekly)	March 8, 2018
Inglewood News (weekly)	March 8, 2018
Hawthorne Press Tribune (weekly)	March 8, 2018
Electronic Newspapers	**Publication Date**
Los Angeles Times	March 7 – March 24, 2018
Los Angeles Sentinel	March 6 – March 15, 2018
Compton Herald	March 7 – March 24, 2018
Downey Patriot	March 7 (Facebook Post)
Norwalk Herald	March 7 (Facebook Post)

The posted advertisements included a brief synopsis of the proposed project and encouraged attendance at the Public Scoping Meetings. Caltrans and Metro held 4 meetings in March of 2018: 1 Agency Scoping Meeting in Lennox and 3 Public Scoping Meetings in Lennox, Watts, and Paramount. A certified Spanish interpreter and Spanish speaking staff were present at each of the Public Scoping Meetings. All handouts and informational materials can be found in Appendix A. The dates and locations for each of the Agency and Public Scoping Meetings are shown in Table 4-3:

Table 4-3: Schedule, Location, and Attendance of each Agency and Public Scoping Meeting

Date and Time	**Location**	**Signed-in**
Agency Scoping Meeting		
Agency Scoping Meeting Wednesday, March 21, 2018 3:00 – 5:00pm	Lennox Park – Community Room 10828 Condon Ave. Lennox, CA 90304	6
Public Scoping Meetings		
Public Scoping Meeting #1 Wednesday, March 21, 2018 6:00 – 8:00pm	Lennox Park – Community Room 10828 Condon Ave. Lennox, CA 90304	9
Public Scoping Meeting #2 Thursday, March 22, 2018 6:00 – 8:00pm	Watts Labor Community Action Committee – Phoenix Hall 10950 S Central Ave. Los Angeles, CA 90059	8

Date and Time	Location	Signed-in
Webcast (live & video recording) of Public Scoping Meeting #2	Online	165 (14 live & 151 views of video recording)
Public Scoping Meeting #3 Saturday, March 24, 2018 9:30 – 11:30am	Paramount Community Center 14400 Paramount Blvd. Paramount, CA 90723	32
TOTAL		**220**

Table 4-3 also shows the number of participants that signed in to each meeting. The majority of participants partook in the scoping process by streaming the presentation during the webcast. A total of 220 individuals attended the 4 meetings during the public scoping period, with 165 of those individuals participating through webcast.

Scoping Comments

A total of 49 written comment submissions were received as: comment cards submitted during the public scoping meetings or mailed afterwards, emails, online comment forms, or mailed in letters. Comment submissions often addressed a range of issues in multiple comment topics. Of the 49 total comments received, 10 comments were submitted by government agencies and 39 comments were submitted by residents or community members. The most common comment topic received by any commenter pertained to Transportation and Traffic. The range of comment topics received by government agencies and the general public is described in the subsections below.

A request for an informational presentation to the Empowerment Congress Southwest Asia Neighborhood Development Council (ECSANDC) was received from a scoping meeting participant. To accommodate this request, Metro held a brief project presentation and described scoping outreach efforts for the group on April 16, 2018. Approximately 40 members attended the presentation and the ECSANDC was granted an unofficial scoping comment period extension of about 14 days, closing at the end of April 2018. Although no comments were received by the ECSANDC, the time extension allowed the group to review and familiarize themselves with the project alternatives.

Government Agency Comments

The primary concerns of the government agencies centered on coordination with agencies, compliance with environmental laws, discussion of project alternatives, community concerns, and safety. The agencies will receive future project information as it becomes available. Table 4-4 below visually represents the number of comments under each comment topic.

Table 4-4: Comment Topics Specified by Government Agencies

Government Agency Comment Topics	No. of Comments Received	
Transportation/Traffic	4	🟨🟨🟨🟨
Right-of-Way (ROW)	3	🟨🟨🟨

Government Agency Comment Topics	No. of Comments Received	
Biological Resources	2	🟨🟨
Air Quality	2	🟨🟨
General	2	🟨🟨
Environmental Justice	2	🟨🟨
Cultural Resources	1	🟨
Noise	1	🟨
Utilities	1	🟨
Total	**18**	

A total of 18 issues were raised in the 10 comment cards received from government agencies. The 10 government agencies that submitted written comments included:

- 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

The concerns of each government agency are described below under the appropriate comment topic:

General

Gateway Cities Council of Governments: An analysis of the potential impacts of Alternatives 3 and 4, and to I-605 and I-405 should be evaluated and explicitly describe if ramp modernization will be required as part of this project.

County Sanitation Districts of Los Angeles County: Caltrans should grant sewer easements prior to submitting review documents for the proposed project.

Biological Resources

State of California Department of Fish and Wildlife: Recommends discussion of the purpose and need of the project and to design a range of feasible alternatives that avoid or minimize direct and indirect impacts to sensitive biological resources and wildlife movement areas.

United States Army Corps of Engineers: Any proposed road widening over bodies of water needs to be properly modeled for hydraulics to ensure that the water surface does not cause adverse impacts to the proposed overcrossings.

Cultural Resources

State of California Native American Heritage Commission: The existence and significance of tribal and cultural resources should be adequately assessed and planned for avoidance.

Environmental Justice

United States Environmental Protection Agency: The environmental document should discuss potential environmental justice issues (e.g., relocation, air quality, noise, vibration, access to property, pedestrian safety, etc.) and include any environmental justice concerns raised during scoping meetings.

City of South Gate: Consider low-income households when evaluating the addition of toll roads.

Air Quality

United States Environmental Protection Agency: The proposed project has the potential to affect air quality. U.S. EPA recommends that Caltrans perform the required analysis for project-level transportation conformity in advance of publication of the environmental document so that the public and decision-makers can understand how the project could meet conformity requirements.

City of South Gate: Air quality impacts must be evaluated.

Right-of-Way

City of South Gate: The City discouraged the use of eminent domain to secure any property located in South Gate.

County of Los Angeles Department of Parks and Recreation: Project impacts to the following Parks and Recreation facilities should be considered: George Washington Carver Park, Compton Creek Walking Path, Chester Washington Golf Course, San Gabriel River Trail and Los Angeles River Trail.

United States Army Corps of Engineers: Project impacts on the following river facilities should to be considered: Los Angeles River, Los Angeles County Flood Control District, San Gabriel River, Compton Creek and Dominguez Channel.

Noise

City of South Gate: Noise impacts must be evaluated.

Transportation/Traffic

Los Angeles World Airports: I-105 serves as a pivotal east-west corridor for travel to LAX; therefore, improvements or enhancements to the transitions from the ExpressLanes to major arterials serving LAX should be studied as part of this project.

County of Los Angeles Department of Public Works: Intersections with full or partial County jurisdiction should also use the County's methodology for determining traffic impacts and traffic mitigation.

County of Los Angeles Department of Public Works: The project should include a Construction Management Plan.

County of Los Angeles Department of Public Works: Alternative 4 requires right-of-way acquisition on local roads to expand the I-105 and is expected to impact County intersections. Therefore, arterial intersections affected by a change in traffic distributions or locations of the on/off ramps should also be included in the traffic impact analysis.

Utilities

County Sanitation Districts of Los Angeles County: Construction of the proposed project may impact existing and/or proposed Districts' facilities (e.g. trunk sewers, recycled waterline etc.).

The comments listed above have been included in the project record and coordination to address the concerns of the agencies will be ongoing throughout the life of the project. All of the agencies are included in the distribution list and will be notified during circulation of this draft environmental document.

Private Residents and Community Members Comments

The public expressed a wide range of concerns in the written and spoken comments. The primary topic of interest from all the comments was traffic/transportation. Public spoken comments mainly focused on purpose and need, community impacts, and right-of-way acquisition. Table 4-5 visually represents the concerns of the public and the number of comments received.

Table 4-5: Comment Topics Specified by the General Public

General Public Comment Topics	No. of Comments Received
Transportation/Traffic	26
General	12
Right-of-Way	3
Aesthetics	2
Property Acquisition	1
Noise	1
Community Impact Study	1
Total	**46**

Forty-six concerns were raised within the 39 comments received during the public scoping period. The topics of concern are summarized below.

Transportation and Traffic

- Consider restricting the hours trucks can use freeways.
- Improve the Metro Green Line reliability in the corridor. Increase the number of parking spots at the Metro Green Line Stations to take more vehicles off the roads.
- Consider adding lanes designated for express travel to LAX.

- Consider the addition of double decker express lanes if freeway widening is not an option.
- Extending toll lanes onto I-105 is an excellent idea that will improve traffic congestion.
- Consider adding a hard barrier between the FasTrak and regular lanes on the freeways to discourage illegal lane changes onto toll lanes.
- Toll lanes only benefit those who can afford to use them and should not be encouraged.
- The number of lanes on the freeway should not be reduced for additional toll lanes.
- Taxpayers should not have to pay to use roads.
- More Los Angeles Department of Transportation (LADOT) express buses should be added between downtown Los Angeles and the South Bay.
- Consider extending I-105 east farther past the City of Norwalk.
- Toll lanes are not effective.
- The exits on I-105 should be widened and parking structures added along the corridor.

General

- Additional individuals requested to be included in the project mailing list.
- Technology should be used to count the number of people in cars.

Right-of Way

- Additional information was requested for whether the proposed project would affect certain properties.

Aesthetics

- The messages on the electronic display signs should be updated.

Property Acquisition

- Clarification on how far into neighborhoods would the proposed property acquisition occur if Alternative 4 is chosen was requested.

Noise

- Consider noise impacts from the project activities on neighborhoods along the I-105 corridor.

Community Impact Study

- Consider low-income users and effects on communities along the I-105 corridor.

These public comments are acknowledged and will be taken into consideration as the project continues to develop. Public input will also be solicited during circulation of this draft environmental document and addressed in the final environmental document.

Community Interaction

Public outreach efforts to engage with the communities surrounding the I-105 corridor continued after the mandated public scoping period and will be ongoing during future phases of the proposed project. Caltrans and Metro staff held periodic project update meetings at community events to keep the community informed on developments of the project, but more importantly, educate the community on the functions and usability of express lanes. These Community Event Pop-Up meetings consisted of hosting a booth at the community events listed in Table 4-

6. In this way Caltrans and Metro staff members made themselves assessible to answer any questions or address general concerns the public may have on express lanes.

Stakeholder Roundtable Meetings were also held with the intention to engage community leaders to provide feedback and encourage them to serve as a channel of information for the stakeholders they represent. Invitees to the Stakeholder Roundtable Meetings included academic institutions, business associations, major employers, and community organizations.

Table 4-6: Schedule of Community Event Pop-Up and Stakeholder Roundtable Meetings

Type	Date	Location/Event
Community Event Pop-Up	October 2, 2018	Downey/Dia De Los Muertos
Community Event Pop-Up	October 31, 2018	South Gate/Halloween Haunt
Community Event Pop-Up	November 1 & 2, 2018	Lynwood/Fall Festival
Stakeholder Roundtable Meeting	November 27, 2018	West Athens
Stakeholder Roundtable Meeting	November 29, 2018	Downey
Community Event Pop-Up	December 1, 2018	Norwalk/Snowfest and Tree Lighting Ceremony
Community Event Pop-Up	December 2, 2018	Downey/Downey Christmas Parade
Community Event Pop-Up	December 8, 2018	Paramount/Breakfast with Santa
Community Event Pop-Up	December 8 & 9, 2018	Lynwood/Fieston Navideno
Community Event Pop-Up	December 13, 2018	El Segundo/Farmer’s Market
Community Event Pop-Up	December 20, 2018	Hawthorne/Winter Wonderland Spectacular
Community Event Pop-Up	January 19, 2019	Inglewood/Martin Luther King Jr. Parade
Stakeholder Roundtable Meeting	March 21, 2019	Lynwood
Community Event Pop-Up	March 23 & 24, 2019	South Gate/Azalea Festival Carnival
Community Update Meeting	April 8, 2019	Downey (Rancho Los Amigos National Rehabilitation Outpatient Building)
Community Update Meeting	April 10, 2019	Hawthorne (Hawthorne Memorial Center)
Community Event Pop-Up	April 13, 2019	Paramount (Paramount City Hall)/ Eco-Friendly Event
Community Event Pop-Up	April 13, 2019	Hawthorne (Hawthorne Memorial Center)/Bunny Breakfast
Community Event Pop-Up	April 20, 2019	Los Angeles (Macedonia Baptist Church)/Community Easter SpringFest
Community Event Pop-Up	May 4, 2019	Downey (Brookshire Avenue and Firestone Boulevard)/26th Annual Street Faire
Community Event Pop-Up	May 10, 2019	South Gate/Health Fair
Community Event Pop-Up	May 11, 2019	South Gate/Spring Fit 5K

Native American Heritage Coordination

As part of AB52 of CEQA and Section 106 of the National Historic Preservation Act, consultation with tribal governments that may have interest or knowledge about the project area is required for any project that may cause a substantial adverse change in the significance of a tribal cultural resource. Early consultation notification of the project was initiated with 3 tribal representatives through submission of letters depicting preliminary project information. The letters were mailed on March 23, 2018 to:

- Soboba Band of Luiseno Indians
- Gabrieleno Band of Mission Indians-Kizh Nation
- Gabrieleno/Tongva San Gabriel Band of Mission Indians

A Sacred Lands File Search was requested from the Native American Heritage Commission (NAHC) on March 18, 2019. The search results were received on April 5, 2019 and concluded no presence of Native American cultural sites within the project vicinity. However, the NAHC identified 6 Native American contacts who may have knowledge of cultural resources in or close to the project vicinity. The 6 Native American contacts were notified of the proposed project through Section 106 and AB 52 letters on April 18, 2019. Follow-up notifications detailing refinements to the project plans were sent to all parties on September 6, 2019 and October 14, 2019. The 6 Native American contacts identified through the NAHC and their responses to the consultation efforts are described below:

- Rosemary Morillo, Soboba Band of Luiseno Indians
    - No response has been received to date.
- Andrew Salas, Chairperson, Gabrieleno Band of Mission Indians – Kizh Nation
    - Mr. Salas responded to Caltrans and along with Matthew Teutimez, the Kizh Nation tribal biologist, expressed concerns for possible sensitive areas near old trails, waterways, and Spanish ranchos where Native Americans were historically relocated.
- Robert F. Dorame, Gabrielino Tongva Indians of California Tribal Council
    - Mr. Dorame responded to Caltrans with concerns for buried resources and recommended Native American monitoring be conducted during construction of the proposed project.
- Charles Alvarez, Councilmember, Gabrielino-Tongva Tribe
    - No response has been received to date.
- Anthony Morales, Chairperson, Gabrieleno/Tongva San Gabriel Band of Mission Indians
    - No response has been received to date.
- Sandonne Goad, Chairperson, Gabrielino/Tongva Nation
    - No response has been received to date.

Caltrans will continue to consult with the interested Native American representatives as they respond to consultation efforts. Any comments or concerns provided by the representatives that would change the findings made in the cultural studies will be addressed in an addendum to the HPSR. Consultation documentation, including logs, mailed letters, and NAHC results, are located in the HPSR.

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Appendices

Appendix A. Section 4(f)

Section 4(f) *De Minimis* Determination(s)

This section of the document discusses *de minimis* impact determinations under Section 4(f). Section 6009(a) of SAFETEA-LU amended Section 4(f) legislation at 23 United States Code (USC) 138 and 49 USC 303 to simplify the processing and approval of projects that have only *de minimis* impacts on lands protected by Section 4(f). This amendment provides that once the U.S. Department of Transportation (USDOT) determines that a transportation use of Section 4(f) property, after consideration of any impact avoidance, minimization, and mitigation or enhancement measures, results in a *de minimis* impact on that property, an analysis of avoidance alternatives is not required, and the Section 4(f) evaluation process is complete. FHWA's final rule on Section 4(f) *de minimis* findings is codified in 23 Code of Federal Regulations (CFR) 774.3 and CFR 774.17.

Responsibility for compliance with Section 4(f) has been assigned to Caltrans pursuant to 23 USC 326 and 327, including *de minimis* impact determinations, as well as coordination with those agencies that have jurisdiction over a Section 4(f) resource that may be affected by a project action.

Ricardo Lara Linear Park

Ricardo Lara Linear Park is a publicly owned park located at 3850 Fernwood Avenue, Lynwood, California, and is subject to the protection under the requirements of Section 4(f). The park features a one-mile long walking trail which spans 5 separate blocks. Block 1 has two dog parks: one for small dogs and one for big dogs. Block two has 3 exercise stations. Block 3 has two children's playground and open space. Block 4 has a community garden with raised garden beds, benches, and a space for outdoor classes. Block 5 has open space and bioswales to filter stormwater runoff.

A Temporary Constriction Easement (TCE) of approximately 903 square feet would be required during construction of Alternative 3 along Fir Street. The TCE would be needed for construction activities and will likely result in the removal of some of the existing vegetation. Caltrans policy and practice are to return all areas disturbed temporarily during construction, including TCEs, to a condition as good as or better than prior to the temporary disturbance of those areas. Therefore, the construction activities in the TCE would not result in any permanent adverse physical impacts in that area and would not interfere with the protected activities, features, or attributes of that portion of the park on a permanent basis; however, there may be some interference with the protected features, or attributes on a temporary basis during construction. Park access and the parking lot will always remain available to the public, except for the ADA curb ramp along Fir Street as it is required for the TCE. Please see figure A-1: Ricardo Lara Linear Park TCE.

Figure A-1: Ricardo Lara Linear Park TCE

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Restoration of the area used for the TCE will be conducted in consultation with the City of Lynwood to ensure that the condition of the area is as good as or better than before it was used for the TCE. That restoration will include the provision of trees, shrubs, grass, and other plant materials as identified by Caltrans and the City. Therefore, the use of a portion of the property of a TCE will not adversely effect the activities, features, and attributes that qualify this park for protection under Section 4(f) and Caltrans has made a preliminary *de minimi*s determination for the project effects related to the temporary construction easement. Consistent with the requirements of Section 4(f), Caltrans is required to consult with the agencies having jurisdiction over the Section 4(f) properties identified as potentially used by the alternatives. The relevant information from this report has been provided to the City of Lynwood during the consultation process with Caltrans to determine use and ensure that all reasonable measures to minimize harm to the Section 4(f) property have been considered.

The following measure will be implemented to minimize harm to the portion of the property that will be used as a TCE:

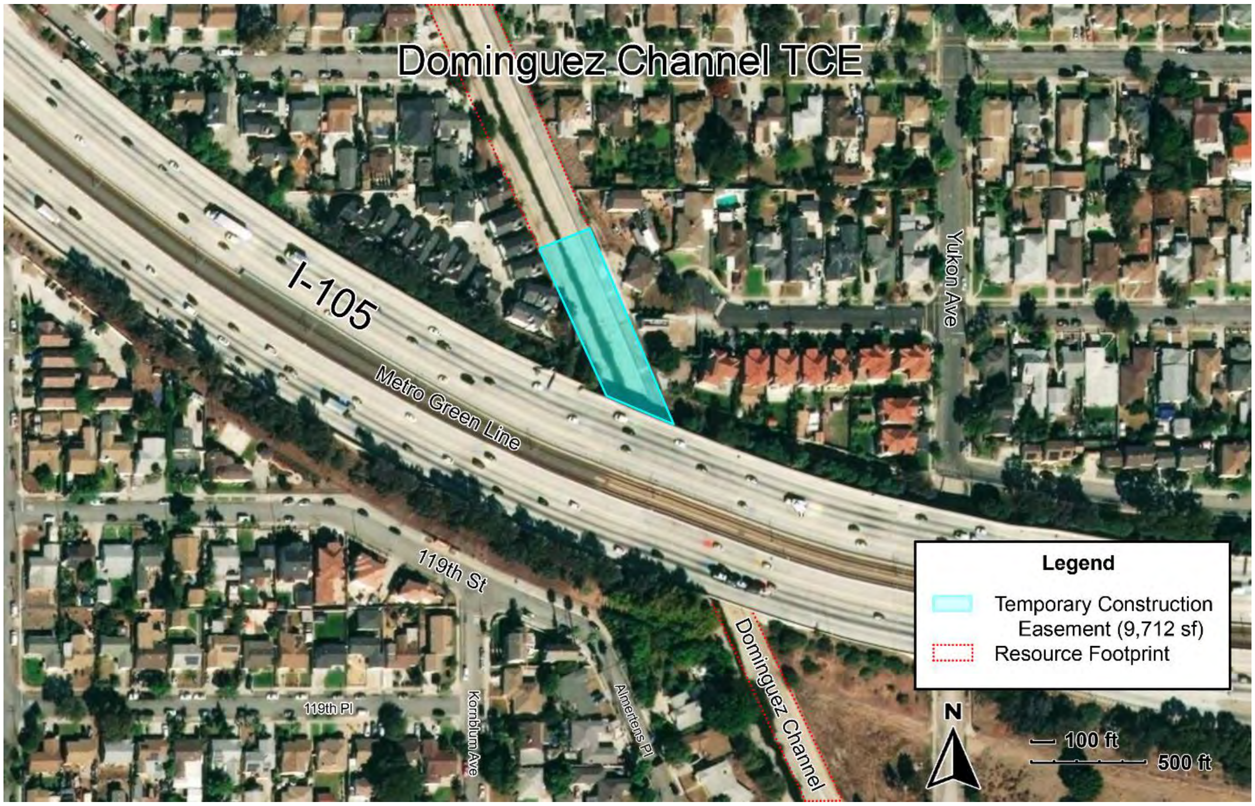
SF-1 **Temporary Construction Easements at Ricardo Lara Linear Park.** At the completion of construction activities that use the TCEs at Senator Lara Linear Park, Caltrans will require the construction contractor to return the area occupied by that TCE to a condition as good as or better than prior to its use for the TCE. The required improvements for the rehabilitation of that area will be determined in consultation among Caltrans, the City of Lynwood, and the construction contractor

Dominguez Historic Channel District

The Dominguez Channel traverses through the City of Inglewood within the I-105 ExpressLanes Project area and is within the Area of Potential Effects (APE) and is eligible for the National Register. Therefore, this property is subject to protection under the requirements of Section 4(f).

Alternative 2 and 3 would require minor reprofiling of the maintenance access road to satisfy minimum vertical clearance of Dominguez Channel Bridge (No. 53-2518) being widened. The Dominguez Channel Bridge would be widening by a maximum of 12 feet on the Westbound side and Eastbound side. This proposed work will require a TCE of approximately 35,787 Square Feet, as shown in Figure A-2. The minor reprofiling of the maintenance access road, lowering the maintenance road by 1.5 feet under I-105, would not result in any change of ownership or any modifications to the use of the maintenance road. The channel itself will not be modified by the project, the channel bottom and walls, and fencing will remain. Therefore, this segment of the Dominguez Channel would continue to be eligible for the National Register of Historic Places.

Figure A-2: TCE at Dominguez Channel



The build alternatives would have no adverse effects on this historic resource under Section 106 of the NHPA, and written concurrence from SHPO is anticipated. Therefore, Caltrans has made a preliminary *de minimi*s determination for the project effects related to the TCE. Section 106 and de minimis determination will be sent to SHPO. Written notification will be provided to the SHPO that a non-response for the purposes of a “no adverse effect” determination will be treated as the written concurrence for a de minimis finding.

Resources Evaluated Relative to the Requirements of Section 4(f)

This section discusses parks, recreational facilities, wildlife refuges, and historic sites found within or next to the project area that do not trigger Section 4(f) protection because either (1) they are not publicly owned, (2) they are not open to the public, (3) they are not National Register-eligible historic properties, (4) the project does not permanently use the property and does not hinder the preservation of the property, or (5) the proximity impacts do not result in constructive use.

The resources listed in Table A-1 were determined to not trigger protection under the requirements of Section 4(f) as a result of the Build Alternatives. There is no permanent or constructive use of these resources by the Build Alternatives. The resources within 0.5 mile of the proposed I-105 ExpressLanes Project were evaluated to assess whether project-related effects would result in proximity impacts after mitigation that would be so severe that the activities, features, and/or attributes of the property are substantially impaired resulting in the value of the resource in terms of its Section 4(f) significance being meaningfully reduced or lost.

For properties listed in Table A-1 that are not publicly owned, the provisions of Section 4(f) are not triggered.

For those properties that are eligible Section 4(f) resources, the proposed project will not cause a constructive use because the proximity impacts will not substantially impair the protected activities, features or attributes of the resource.

Section 4(f) Use for Interstate 105 Freeway-Transitway Historic District

One form of Section 4(f) use occurs when land is permanently incorporated into a transportation facility. This occurs when the land from a Section 4(f) property is either purchased outright as transportation right-of-way or when the applicant for federal-aid funds has acquired a property interest that allows permanent access onto the property such as a permanent easement for maintenance or other-transportation related purpose.

The Section 4(f) Policy Paper issued by the USDOT FHWA’s Office of Planning, Environment, and Realty Project Development and Environmental Review on July 20, 2012, addresses the issue of historic transportation facilities in Question and Answer 8A:

> “The Section 4(f) statue imposes conditions on the use of land from historic sites for highway projects but makes no mention of bridges, highways, or other types of facilities such as railroad stations or terminal buildings, which may be historic and are already serving as transportation facilities. The FHWA’s interpretation is that the Congress clearly did not intend to restrict the rehabilitation or repair, of historic transportation facilities. The FHWA therefore established a regulatory provision that Section 4(f) approval is required only when a historic bridge, highway, railroad, or other transportation facility is adversely affected by the proposed project; e.g., the historic integrity (for which the facility was determined eligible for the NR) is adversely affected by the proposed project” (see Code 23 of Federal Regulations [CFR] 774.13 (a).”

A Historic Property Survey Report (HPSR) was prepared in October 2019 and submitted the SHPO for concurrence. The SHPO concurred the I-105 Freeway-Transitway Historic District is eligible for inclusion in the NRHP. A Finding of No Adverse Effect (FONAE) document will be prepared by Caltrans and concurred upon by the SHPO prior to the final environmental document. Therefore, Section 4(f) is not triggered for the Interstate 105 Freeway-Transitway Historic District as the historic integrity will not be adversely affected.

Table A-1: Resources in the I-105 ExpressLanes Project Study Area

Resources in the I-105 ExpressLanes Project Study Area	Why Section 4(f) is not triggered?
El Segundo	
Clutter's Park	No permanent incorporation; no proximity impacts due to intervening developing and topography.
El Segundo Dog Park	No permanent incorporation; no proximity impacts due to intervening developing and topography.
Center Street Elementary School	No permanent incorporation; no proximity impacts due to intervening developing and topography.
Independence Park	No permanent incorporation; no proximity impacts due to intervening developing and topography.
Constitution Park	No permanent incorporation; no proximity impacts due to intervening developing and topography.
Washington Park	No permanent incorporation; no proximity impacts due to intervening developing and topography.
Sycamore Park	No permanent incorporation; no proximity impacts due to intervening developing and topography.
St. John's Preschool	Not publicly owned; no permanent incorporation; no proximity impacts due to intervening developing and topography.
Campus El Segundo Athletic Fields	No permanent incorporation; no proximity impacts due to intervening developing and topography.
Camp Eucalyptus	Restricted access and no permanent incorporation; no proximity impacts due to intervening developing and topography.

Hawthorne	
Juan De Anza Elementary School	No permanent incorporation; no proximity impacts due to intervening developing and topography.
York Elementary School	No permanent incorporation; no proximity impacts due to intervening developing and topography.
Beach Boys Historic Landmark	No permanent incorporation and given the minimal impacts of the proposed projects near the Landmark, proximity impacts do not rise to the level of substantial impairment.
Holly Park	No permanent incorporation; no proximity impacts due to intervening developing and topography.
Chester Washington Golf Course	No permanent incorporation; no proximity impacts due to intervening developing and topography.

Inglewood	
Center Park	No permanent incorporation; no proximity impacts due to intervening developing and topography.
Lockhaven Center Playground	No permanent incorporation; no proximity impacts due to intervening developing and topography.
Bennett/Kew Elementary School	No permanent incorporation; no proximity impacts due to intervening developing and topography.
Amino Leadership Highschool	No permanent incorporation; no proximity impacts due to intervening developing and topography.
Worthington Elementary School	No permanent incorporation; no proximity impacts due to intervening developing and topography.
City of Los Angeles	
William Nickerson Recreation Center	No permanent incorporation; no proximity impacts due to intervening developing and topography.
Imperial Courts Recreation Center	No permanent incorporation; no proximity impacts due to intervening developing and topography
111th Place Neighborhood Park	No permanent incorporation; no proximity impacts due to intervening developing and topography.
Faith and Hope Park	No permanent incorporation; no proximity impacts due to intervening developing and topography.
Watts Serenity Park/Monitor Skatepark	No permanent incorporation; no proximity impacts due to intervening developing and topography

Lynwood	
Lynwood Park	No permanent incorporation; no proximity impacts due to intervening developing and topography
Rose Park	No permanent incorporation; no proximity impacts due to intervening developing and topography
Carnation Park	No permanent incorporation; no proximity impacts due to intervening developing and topography
Yvonne Burke-John D Ham Park	No permanent incorporation; and given the minimal impacts of the proposed project near the park, proximity impacts do not rise to the level of substantial impairment.
Adolfo Medina Memorial Park	No permanent incorporation; no proximity impacts due to intervening developing and topography
Los Amigos East Park	No permanent incorporation; no proximity impacts due to intervening developing and topography
Lincoln Elementary School	No permanent incorporation; no proximity impacts due to intervening developing and topography
Plaza Mexico	No permanent incorporation; and given the minimal impacts of the proposed project near the park, proximity impacts do not rise to the level of substantial impairment.
Paramount	
All American Park	No permanent incorporation; no proximity impacts due to intervening developing and topography
Pequeno Park	No permanent incorporation; no proximity impacts due to intervening developing and topography
Roosevelt Elementary School	No permanent incorporation; and given the minimal impacts of the proposed project near the school, proximity impacts do not rise to the level of substantial impairment.

Downey	
Golden Park	No permanent incorporation; no proximity impacts due to intervening developing and topography
Independence Park	No permanent incorporation; no proximity impacts due to intervening developing and topography
Discovery Sports Complex	No permanent incorporation; no proximity impacts due to intervening developing and topography
Columbus High School Joint-Use	No permanent incorporation; no proximity impacts due to intervening developing and topography
EW Ward Elementary School	No permanent incorporation; and given the minimal impacts of the proposed project near the school, proximity impacts do not rise to the level of substantial impairment.
Bellflower	
T. Mayne Thompson Park	No permanent incorporation; no proximity impacts due to intervening developing and topography
St. John Bosco High School	No permanent incorporation; no proximity impacts due to intervening developing and topography
Norwalk	
New River Park	No permanent incorporation; no proximity impacts due to intervening developing and topography
Los Angeles County	
Lennox Park	No permanent incorporation; no proximity impacts due to intervening developing and topography
Chester L Washington Golf Course	No permanent incorporation; no proximity impacts due to intervening developing and topography

Lennox Middle School	No permanent incorporation; no proximity impacts due to intervening developing and topography
Mona Park	No permanent incorporation; no proximity impacts due to intervening developing and topography
George Washington Carver Park	No permanent incorporation; no proximity impacts due to intervening developing and topography
Compton Creek Walking Path	No permanent incorporation; no proximity impacts due to intervening developing and topography. The nearest access point begins on E 118th Street.
San Gabriel River and Bike Trail	No permanent incorporation; and given the minimal impacts of the proposed project near the trail, proximity impacts do not rise to the level of substantial impairment.
Earvin “Magic” Johnson Recreation Area	No permanent incorporation; no proximity impacts due to intervening developing and topography

Appendix B. Acronyms

AADT	Annual Average Daily Traffic
AB	Assembly Bill
AC	asphalt concrete
ACHP	Advisory Council on Historic Preservation
ACM	Asbestos-Containing Materials
ACS	American Community Survey
ADA	Americans with Disabilities
ADL	Aerially deposited lead
APE	Area of Potential Effects
Ave	Avenue
Blvd	Boulevard
BTUs	British thermal units
Caltrans	California Department of Transportation
CCAA	California Clean Air Act
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERFA	Community Environmental Response Facilitation Act
CFR	Code of Federal Regulations
CHP	California Highway Patrol
CNPS	California Native Plant Society
CO	carbon monoxide
CTC	California Transportation Commission
CWA	Clean Water Act
dBA	A-weighted decibels
DOT	Department of Transportation
EB	Eastbound
EIR/EA	Environmental Impact Report/Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
ETC	Electronic Toll Collection
FCAA	Federal Clean Air Act
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
FSTIP	Federal Statewide Transportation Improvement Program
FTA	Federal Transit Administration

FTIP	Federal Transportation Improvement Programs
H&SC	Health and Safety Code
H_2S	hydrogen sulfide
HCM	Highway Capacity Manual
HOT	High Occupancy Toll
HOV	high-occupancy vehicle
Hwy	Highway
I-105	Interstate 105
I-405	Interstate 405
I-605	Interstate 605
IC	Interchange
ITS	intelligent transportation systems
LACDPW	Los Angeles County Department of Public Works
LACSD	Los Angeles County Sanitation District
LADWP	Los Angeles Department of Water and Power
LAX	Los Angeles International Airport
LBP	Lead-Based Paint
LEDPA	least environmentally damaging practicable alternative
LOS	Level of Service
LRT	Light Rail Transit
MBTA	Migratory Bird Treaty Act
Metro	Los Angeles County Metropolitan Transportation Authority
MLD	Most Likely Descendent
MOU	Memorandum of Understanding
mph	miles per hour
MPO	Metropolitan Planning Organization
MS4	municipal separate storm sewer system
MSAT	Mobile Source Air Toxics
MVP	Maintenance Vehicle Pullouts
NAAQS	National Ambient Air Quality Standards
NAC	Noise Abatement Criteria
NAHC	Native American Heritage Commission
NB	Northbound
NEPA	National Environmental Policy Act
NES(MI)	Natural Environmental Study (Minimal impacts)
NESHAP	National Emission Standard for Hazardous Air Pollutants
NIS	new impervious surface
NO_2	nitrogen dioxide
NOA	Notice of Availability
NOP	Notice of Preparation
NPDES	National Pollutant Discharge Elimination System

NRHP	National Register of Historic Places
O_3	ozone
OC	Overcrossing
OSHA	Occupational Safety and Health Act
PA	Programmatic Agreement
Pac. Bell	Pacific Bell
Pb	lead
PCC	Portland cement concrete
PCTA	post construction treatment area
PGA	Peak Ground Acceleration
Pilot Program	Surface Transportation Project Delivery Pilot Program
PLAC	permits, licenses, agreements, and certifications
PM	particulate matter
PM_{10}	particles of 10 micrometers or smaller
$PM_{2.5}$	particles of 2.5 micrometers and smaller
POAQC	project of air quality concern
PRC	Public Resources Code
PT&T	Pacific Telephone and Telegraph
RAP	Relocation Assistance Program
RE	Resident Engineer
RTDM	Regional Travel Demand Model
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SB	Southbound
SCAG	Southern California Association of Governments
SCAQMD	Southern California Air Quality Management District
SCE	Southern California Edison
SCG	Southern California Ga
SCS	Sustainable Communities Strategy
SCWC	Southern California Water Coalition
SDC	Seismic Design Criteria
SFHA	Special Flood Hazard Area
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO_2	sulfur dioxide
SOV	single occupancy vehicles
SR-110	State Route 110
St	Street
SWDR	Storm Water Data Report
SWRCB	State Water Resources Control Board
TCE	temporary construction easement

TDM	Transportation Demand Management
TMDLs	Total Maximum Daily Load
TMP	Traffic Management Plan
TMS	transportation management systems
TOD	Transit Oriented District
TSCA	Toxic Substances Control Act
TSM	Transportation System Management
U.S.	United States
UC	Undercrossing
UPRR	Union Pacific Railroad
USACE	U.S. Army Corps of Engineers
USDOT	United States Department of Transportation
UST	underground storage tanks
VHD	Vehicle Hours Delay
VMT	Vehicles Miles Traveled
WB	Westbound
WDR	Waste Discharge Requirement
WPCP	Water Pollution Control Program

Appendix C. Environmental Commitment Record

Environmental Commitments Record for EA 07-31450_ / ID 0715000122

Last updated: 3/13/2020

Hot Lanes
LA-105-R2.100/R17.800
Current Project Phase: 0,1

EP: Le Chen 213-897-4595
CL:
RE:

Permits

Permit	Agency	Date Submitted	Date Received	Expiration	Requirements Completed		Comments
					Name	Date	

Commitments

Task and Brief Description	Source	SSP/ NSSP	Responsible Staff	Action to Comply	Task Completed		Remarks/Due Date
					Name	Date	
PS&E/Before RTL							
Air Quality							
Environmentally sensitive areas (ESAs) will be established near sensitive air receptors. Within these areas, construction activities involving the extended idling of diesel equipment or vehicles will be prohibited, to the extent feasible.							
Biology							
The project shall include a tree replacement plan.							
Section 401, Section 404/408, and 1600 permits will be obtained during PS&E.							
None of the species on the California list of invasive species will be used by the Caltrans for erosion control of landscaping.							
Section 401, Section 404/408, and 1600 permits will be obtained during final engineering design phase.							
Hazardous Waste							
Conduct soil and/or groundwater sampling within project area/ project corridor and within proposed TCE and Partial fee acquisition areas, to address the identified recognized areas of environmental concern. All sampling activities are to be completed during the PS&E phase of the project and prior to any parcel acquisitions.							
Should construction occur within the footprint of the existing monitoring wells at the Former Witco Chemical							

Task and Brief Description	Source	SSP/ NSSP	Responsible Staff	Action to Comply	Task Completed		Remarks/Due Date
					Name	Date	
Site, coordination with the DTSC shall commence and the wells will be relocated.							
Noise							
A survey of acoustically feasible and reasonable soundwalls will be mailed to benefitted receivers to be voted on for constructing.							
Visual Resources							
The project shall incorporate sweeping round pole is preferred for ExpressLane signage.							
The replacement landscape design should not change dramatically from the existing design. Plant forms and character should not deviate significantly from the original planting theme.							
As-built drawings, available photos, google street views, and on-site visits will be utilized to reconstruct the landscape.							
Roadside landscapes contribute to urban forestry and biodiversity habitats, which provide perching and nesting opportunities for birds and shelter for other urban adapted wildlife. To continue bird perching opportunities, 50% of Eucalyptus trees replacement trees must be Platanus Racemosa.							
California pepper trees removed will be replaced with Engelman Oaks on a 1:1 ratio.							
Nectar/larval host plants are encouraged, such as; Cercis Occidenatlis, Plumbago Imperial Blue, Rhus Integrifolia, Lantana Camara.							
In the event, landscaping cannot be replaced in some areas, or there is a net loss of landscaping, areas on I-105 east of I-710 will be identified for mass planting of trees and nectar/larval host plants.							
All trees removed will adhere to a replacement tree ratio							

Task and Brief Description	Source	SSP/ NSSP	Responsible Staff	Action to Comply	Task Completed Name Date	Remarks/Due Date
of 1:1.						
Replacement costs for landscaping shall be no lower than $97,000 per acre.						
Eliminate visual clutter and distraction by consolidating facilities/signage where possible or placing facilities/signage close by.						
Design all visible concrete structures and surfaces to visually blend with the adjacent landscaping and natural plantings.						
Any lighting replaced or relocated shall use Light Emitting Diodes (LED) lighting fixtures and glare shields to avoid lighting spillover.						
Any replaced outside bridge railings will match the aesthetic design theme of the corridor.						
Retaining walls will conform to the standard District-7 aesthetic treatment of fractured rib texture. If the retaining wall exceeds 300 feet, a graphic theme will also be included.						
The consultant landscape architect will coordinate with the District Landscape Architect to formulate initial planting concepts and replacement planting strategies.						
Water Quality						
A new calculation on NIS, PCTA, and treatment BMP will be more defined in the next phase of the SWDR.						

Task and Brief Description	Source	SSP/ NSSP	Responsible Staff	Action to Comply	Task Completed		Remarks/Due Date
					Name	Date	
Other							
As part of the Plans, Specifications, and Estimates, a construction efficiency plan would be prepared, which may include the following: · Reuse of existing rail, steel, and lumber wherever possible, such as for falsework, shoring, and other applications during the construction process. · Recycling of asphalt taken up from roadways, if practicable and cost-effective. · Use of newer, more energy-efficient equipment where feasible, and maintenance of older construction equipment to keep in good working order. · Scheduling of construction operations to efficiently use construction equipment (e.g., only haul waste when haul trucks are full and combine smaller dozer operations into a single comprehensive operation, where possible). · Promotion of construction employee carpooling.							
Pre-Construction							
Biology							
This project must employ all appropriate Stormwater and Erosion Control Best Management Practices, and these must be incorporated into the project specifications. Prior to the start of construction, all drain inlets and outlets must be protected to prevent construction materials and/or debris from entering drainages.							
The District Biologist must be invited to the pre-construction meeting with one week prior notice where proper disposal / identification of invasive species will be discussed.							

Task and Brief Description	Source	SSP/ NSSP	Responsible Staff	Action to Comply	Task Completed Name Date	Remarks/Due Date
Community Impact Assessment						
It is important when conducting outreach to make sure communities know the above policies and Low-Income Assistance Plan are available. Outreach efforts should be made to notify members of the public of their existence and the qualifications required to use them.						
Cultural Resources						
Caltrans is developing a Historic Properties Treatment Plan (HPTP) to plan for the identification, evaluation, and treatment of archaeological resources should they be discovered during construction. The HPTP will be appended to the project Finding of Effect document. Provisions outlined in HPTP will be followed during construction.						
Hazardous Waste						
An Aerially Deposited Lead (ADL) site investigation shall be conducted within the project area to evaluate potential presence of ADL in soils that will be disturbed during soil excavation and earthwork planned for construction activities.						
A Health and Safety Plan/Lead compliance plan shall be prepared for worker protection and public safety from exposure to contaminated soils during construction activities.						
An Asbestos-Containing Materials (ACM) and Lead-Based Paint (LBP) surveys shall be done for work related to utility relocations, bridge alterations/demolitions, oil field appurtenances, or structures suspected to be coated with LBP or construction with ACM.						
A Work Plan for thermoplastic paint removal, containment, profile, transportation, and disposal per Caltrans standard special provisions and standard specifications shall be prepared by the General Contractor.						

Environmental Commitments Record for EA 07-31450_ / ID 0715000122

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Task and Brief Description	Source	SSP/ NSSP	Responsible Staff	Action to Comply	Task Completed		Remarks/Due Date
					Name	Date	
Visual Resources							
Landscape Architect shall be included when designing suitable plant replacement palette.							
Water Quality							
A SWPPP shall be prepare for the project and will address all construction-related activities, equipment, and materials that have the potential to affect water quality.							
Per NPDES requirements, a dewatering plan would be prepared to guide the response to undocumented soil or groundwater contamination.							
Construction							
Air Quality							
The construction contractor must comply with the Caltrans' Standard Specifications in Section 14-9 (2018). Section 14-9.02 specifically requires compliance by the contractor with all applicable laws and regulations related to air quality, including air pollution control district and air quality management district regulations and local ordinances.							
All transported loads of soils and wet materials will be covered before transport, or adequate freeboard (space from the top of the material to the top of the truck) will be provided to minimize emission of dust during transportation.							
Dust and mud that are deposited on paved, public roads due to construction activity and traffic will be promptly and regularly removed to reduce PM emissions.							
To the extent feasible, construction traffic will be scheduled and routed to reduce congestion and related air quality impacts caused by idling vehicles along local roads during peak travel times.							

Task and Brief Description	Source	SSP/ NSSP	Responsible Staff	Action to Comply	Task Completed Name Date	Remarks/Due Date
Mulch will be installed or vegetation planted as soon as practical after grading to reduce windblown PM in the area.						
Water or a dust palliative will be applied to the site and equipment as often as necessary to control fugitive dust emissions. Fugitive emissions must meet a “no visible dust” criterion either at the right-of-way line according to the SCAQMD Rule 403.						
Soil binder will be spread on any unpaved roads used for construction purposes, and on all project construction parking areas.						
Trucks will be washed as they leave the right-of-way as necessary to control fugitive dust emissions.						
Construction equipment and vehicles will be properly tuned and maintained. All construction equipment will use low sulfur fuel as required by CA Code of Regulations Title 17, Section 93114.						
A dust control plan will be developed documenting sprinkling, temporary paving, speed limits, and timely re-vegetation of disturbed slopes as needed to minimize construction impacts to existing communities.						
Equipment and materials storage sites will be located as far away from residential and park uses as practicable. Construction areas will be kept clean and orderly.						
Track-out reduction measures, such as gravel pads at project access points to minimize dust and mud deposits on roads affected by construction traffic, will be used.						

Task and Brief Description	Source	SSP/ NSSP	Responsible Staff	Action to Comply	Task Completed Name Date	Remarks/Due Date
Biology						
If vegetation removal is needed, or loud machinery is to be used, it is recommended that all vegetation removal and loud noise-making machinery use occur outside of bird nesting season which is from February 1st-September 1st. Should vegetation removal or noise-making machinery be used during this period, the District Biologist shall be notified two weeks prior to the start of construction to determine if nesting birds are present. In the event that nesting birds are observed, the Resident Engineer (RE) should pause work until a qualified biologist has determined that fledglings have left the nest. If this is not possible, the RE should coordinate with the District Biologist to minimize the risk of violating the Migratory Bird Treaty Act (MBTA). Most likely, the District Biologist will recommend a buffer of 150 ft. for songbirds and a buffer of 500 ft. for raptors during all phases of construction. Nesting birds are protected under the MBTA and cannot be impacted by construction activities, including noise and dust pollution. If vegetation is to be removed, this is a change in scope, and the Biology unit must be notified. No work shall commence until the vegetation to be removed has been surveyed for nesting birds and cleared by the District Biologist.						
Use existing pull outs and parking lots for staging and storing and avoid the removal of existing native vegetation.						
Use existing pull outs and parking lots for staging and storing and avoid the removal of existing native vegetation.						
No work adjacent to the bed, bank, and channels of these waters will occur during the rainy season.						

Task and Brief Description	Source	SSP/ NSSP	Responsible Staff	Action to Comply	Task Completed Name Date	Remarks/Due Date
Community Impact Assessment						
If homeless individuals will need to be relocated from the right of way prior to construction of the proposed project, Caltrans will provide A Notice of Vacate which provides advance notice of the date on which belongings will be removed, information on where belongings will be stored and for how long, and information on community services available.						
As standard practice for all Caltrans construction projects that potentially have traffic impacts, a Traffic Management Plan will be established in order to minimize those effects. The full details of the plan will be determined in the next phase of project planning, but a TMP will typically include elements such as public information, motorist information, incident management, construction, demand management, and alternate routes or detours. Public information plans may include brochures and mailers, press releases/media alerts, paid advertisements, a project website, and information distributed by public meetings or public hearings in order to inform the public ahead of time of construction and delays. Information may be disseminated to motorists via traffic radio announcement, changeable message signs, temporary motorist signs, or any other signage that could give notice of construction. Special incident management may be put into place, where traffic management teams, Intelligent Transportation Systems (ITS), surveillance equipment, or tow/freeway service patrols could monitor and assist where needed. During construction, lane requirement charts, construction staging, or traffic handling plans may be utilized to minimize traffic impacts that result from reduced lane widths or closures, reduced shoulder widths or closures, lane shifts, ramp closures, or nightwork. Alternate routes or detours may be marked where available. Transportation Management Plans sometimes also include agreements with local agencies for coordination during construction. These agreements could provide for enhanced infrastructure on arterial roads and						

Task and Brief Description	Source	SSP/ NSSP	Responsible Staff	Action to Comply	Task Completed Name Date	Remarks/Due Date
intersections to handle detoured traffic, or even traffic personnel near the construction zone.						
For the bus stops affected by ROW acquisition in Alternative 3, notification must be given to the public and to the bus operator, Metro Local. The bus stops may need to be relocated or temporarily skipped during construction, and details of such arrangements will be planned in full during the next phase of the project. After construction is complete, the bus stops will be replaced near their current locations.						
The potential improvement measures to address I-105 Ramps Intersection in table X shall be incorporated into the project.						
A traffic management plan will be put in place for the duration of construction to minimize the effects of delays or closures.						
All emergency and utility services will be contacted before construction and made aware of construction schedules and any road closures ahead of time.						
Cultural Resources						
If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find.						
If human remains are discovered, California Health and Safety Code (H&SC) Section 7050.5 states that further disturbances and activities shall stop in any area or nearby area suspected to overlie remains, and the County Coroner contacted. If the remains are thought by the coroner to be Native American, the coroner will notify the Native American Heritage Commission (NAHC), who, pursuant to PRC Section 5097.98, will then notify the Most Likely Descendent (MLD). At this time, the person who discovered the remains will contact Caltrans, Cultural Resources so that they may work with the MLD on the						

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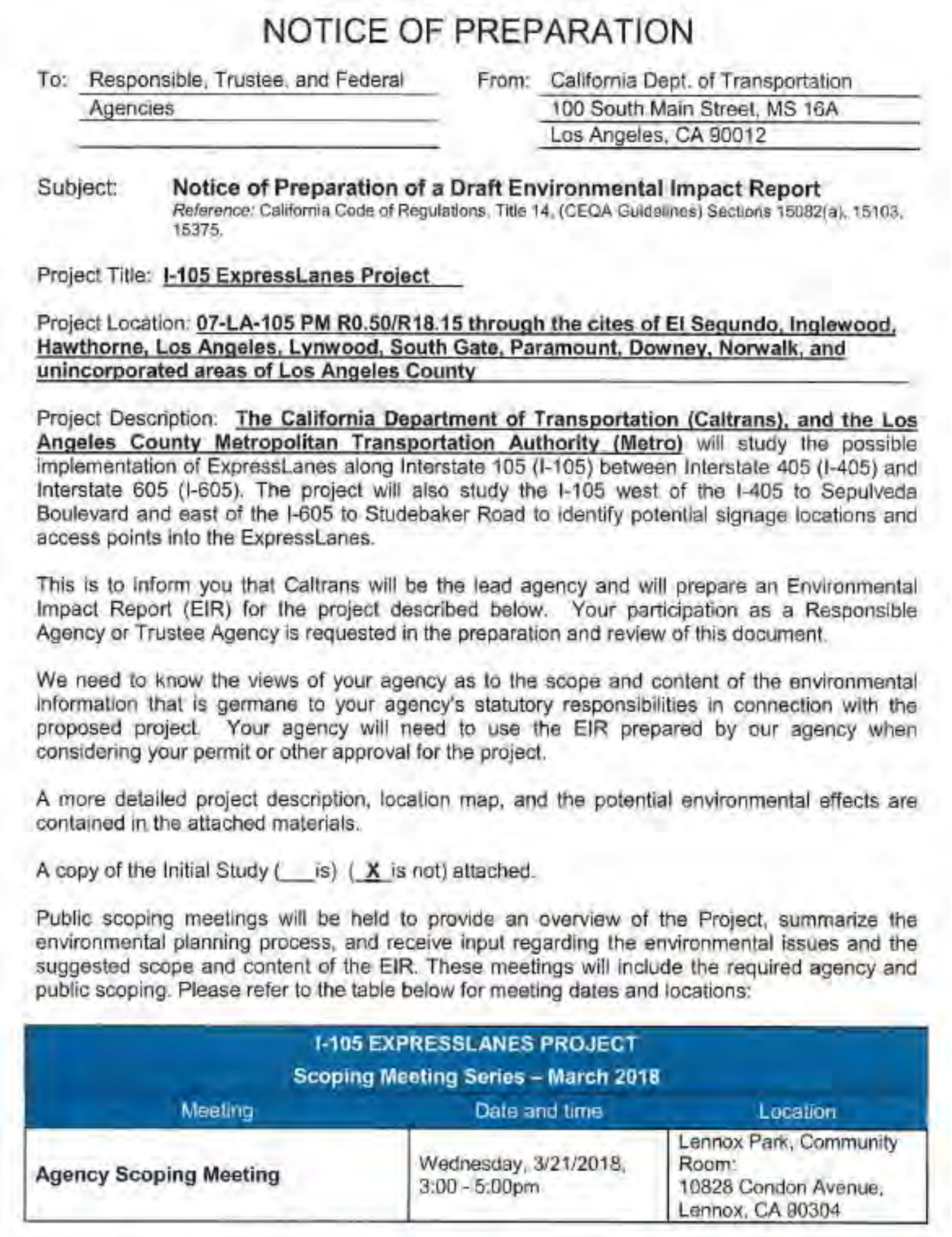
Task and Brief Description	Source	SSP/ NSSP	Responsible Staff	Action to Comply	Task Completed		Remarks/Due Date
					Name	Date	
respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.							
Hazardous Waste							
Treated wood waste must be handled, stored, transportation, and disposed of per California regulations.							
Noise							
All acoustically feasible and reasonable soundwalls approved by benefitted received will be constructed.							
Visual Resources							
The use of recycled water is encouraged if available.							
Water Quality							
All Construction Site BMPs would be installed, inspected and maintained to control and minimize the impacts of construction-related pollutants.							
Should an excavation need to be dewatered, groundwater would be disposed of according to NPDES dewatering permit requirements.							
Post-Construction							

Task and Brief Description	Source	SSP/ NSSP	Responsible Staff	Action to Comply	Task Completed Name	Task Completed Date	Remarks/Due Date
Community Impact Assessment							
Metro currently has policies in place to allow for all groups to have equal opportunity to access and use the ExpressLanes for I-10 and I-110. It is recommended that these policies will continue to be in place and apply to the ExpressLanes on I-105 in order to minimize financial burdens on low-income drivers. As discussed in section 4.2.1.5, Toll Projects, the Low-Income Assistance Plan provides a $25 credit and waives the monthly maintenance fees, thus relieving financial stress caused by this new requirement. Frequent transit riders can also take advantage of the Transit Rewards Program to earn monetary credits toward ExpressLane tolls.							
Right-of-way							
Parcels that require TCEs for alternative 3 will be restored to their original use after project completion, after which TCEs are no longer necessary.							
Section 4(f)							
Alternative 3 would require a TCE at Ricardo Lara Linear Park. At the completion of construction activities that use the TCEs at Ricardo Lara Linear Park, Caltrans will require the construction contractor to return the area occupied by that TCE to a condition as good as or better than prior to its use for the TCE. The required improvements for the rehabilitation of that area will be determined in consultation among Caltrans, the City of Lynwood, and the construction contractor.							

Appendix D. Notice of Preparation



NOTICE OF PREPARATION

To: Responsible, Trustee, and Federal Agencies

From: California Dept. of Transportation
100 South Main Street, MS 16A
Los Angeles, CA 90012

Subject: **Notice of Preparation of a Draft Environmental Impact Report**
Reference: California Code of Regulations, Title 14, (CEQA Guidelines) Sections 15082(a), 15103, 15375.

Project Title: **I-105 ExpressLanes Project**

Project Location: **07-LA-105 PM R0.50/R18.15 through the cites of El Segundo, Inglewood, Hawthorne, Los Angeles, Lynwood, South Gate, Paramount, Downey, Norwalk, and unincorporated areas of Los Angeles County**

Project Description: **The California Department of Transportation (Caltrans), and the Los Angeles County Metropolitan Transportation Authority (Metro)** will study the possible implementation of ExpressLanes along Interstate 105 (I-105) between Interstate 405 (I-405) and Interstate 605 (I-605). The project will also study the I-105 west of the I-405 to Sepulveda Boulevard and east of the I-605 to Studebaker Road to identify potential signage locations and access points into the ExpressLanes.

This is to inform you that Caltrans will be the lead agency and will prepare an Environmental Impact Report (EIR) for the project described below. Your participation as a Responsible Agency or Trustee Agency is requested in the preparation and review of this document.

We need to know the views of your agency as to the scope and content of the environmental information that is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency will need to use the EIR prepared by our agency when considering your permit or other approval for the project.

A more detailed project description, location map, and the potential environmental effects are contained in the attached materials.

A copy of the Initial Study (___is) (X is not) attached.

Public scoping meetings will be held to provide an overview of the Project, summarize the environmental planning process, and receive input regarding the environmental issues and the suggested scope and content of the EIR. These meetings will include the required agency and public scoping. Please refer to the table below for meeting dates and locations:

I-105 EXPRESSLANES PROJECT Scoping Meeting Series – March 2018		
Meeting	Date and time	Location
Agency Scoping Meeting	Wednesday, 3/21/2018, 3:00 - 5:00pm	Lennox Park, Community Room: 10828 Condon Avenue, Lennox, CA 90304

I-105 EXPRESSLANES PROJECT
Scoping Meeting Series – March 2018

Meeting	Date and time	Location
Public Scoping Meeting #1	Wednesday, 3/21/2018, 6:00 - 8:00pm	Lennox Park, Community Room: 10828 Condon Avenue, Lennox, CA 90304
Public Scoping Meeting #2	Thursday, 3/22/2018, 6:00 - 8:00pm	Watts Labor Community Action Committee, Phoenix Hall: 10950 S. Central Avenue, Los Angeles, CA 90059
Public Scoping Meeting #3	Saturday, 3/24/2018, 9:30 -11:30 am	Paramount Community Center: 14400 Paramount Boulevard, Paramount, CA 90723

Please direct your response by April 16, 2018 to **Ronald Kosinski, Deputy District Director, Division of Environmental Planning, Caltrans District 7, 100 South Main Street, MS 16A, Los Angeles, CA 90012;** Telephone **(213) 897-0703**. Please supply us with the name for a contact person in your agency.

Date March 7, 2018

Signature Ronald Kosinski

Title Deputy District Director
Division of Environmental Planning
Department of Transportation, District 7

Appendix E List of Technical Studies

Traffic Study Report by WSP in January 2020

Scenic Resource Evaluation and Visual Impact Assessment by Caltrans in October 2019

Historic Property Survey Report by Caltrans in October 2019

Archeological Survey Report by Caltrans in October 2019

Location Hydraulic Study Form by WSP in November 2019

Water Quality Assessment Report by WSP in November 2019

Geologic and Seismic Hazards Report by Diaz Yourman & Associates in May 2019

Preliminary Hazardous Waste Assessment by Caltrans in November 2019

Air Quality Report by Caltrans in November 2019

Traffic Noise Study Report by Caltrans in December 2019

Noise Abatement Decision Report by WSP in March 2020

Energy Study by ICF International in November 2019

Natural Environmental Study Minimal Impacts by Caltrans in September 2019

Paleontological Review Memo-to-File by Caltrans in October 2019

Community Impact Assessment by Caltrans in December 2019

Preliminary Drainage Report by HNTB Corporation in November 2019