

Chapter 1 Proposed Project

1.1 Introduction

The California Department of Transportation (Caltrans), in cooperation with the Orange County Transportation Authority (OCTA), proposes to improve the mainline freeway and interchanges on Interstate 405 (I-405 or San Diego Freeway) in Orange and Los Angeles counties. The proposed project alternatives would relieve congestion and improve operational efficiency on I-405 between State Route (SR)-73 and I-605. The approximately 16-mile-long project corridor is primarily located in Orange County on I-405 and traverses the cities of Costa Mesa, Fountain Valley, Huntington Beach, Westminster, Garden Grove, Seal Beach, Los Alamitos, Long Beach, and the community of Rossmore. Caltrans is the Lead Agency for compliance with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). The environmental review, consultation, and any other action required in accordance with applicable federal laws for this project has been or is being carried out by Caltrans under its assumption of responsibility pursuant to 23 United States Code (U.S.C.) 327. The United States Army Corps of Engineers (USACE) is a Cooperating Agency under NEPA. OCTA (responsible agency pursuant to CEQA §15381) and Caltrans are the project sponsors.

The project limits extend 0.2-mile south of Bristol Street (12-ORA-405 Postmile [PM] 9.3) to the Orange County/Los Angeles County line (12-ORA-405 PM 24.2) and in Los Angeles County from the county line (07-LA-405 PM 0.00) to 1.4 miles north of Interstate 605 (I-605) (07-LA-405 PM 1.2). Improvements are proposed on SR-22 West in Orange County from 0.2-mile west of I-605 (12-ORA-22 PM R0.5) to I-405 (12-ORA-22 PM R0.7) and on SR-22 East¹ in Orange County from I-405 (12-ORA-22 PM R0.7) to 0.2-mile east of the Beach Boulevard Undercrossing (12-ORA-22 PM R3.8). Improvements on SR-73 will be from the Bear Street Overcrossing (12-ORA-73 PM R27.2) to I-405 (12-ORA-73 PM R27.8). Improvements on I-605 in Orange County will be from I-405 (12-ORA-605 PM 3.5) to the county line (12-ORA-605 PM R1.6) and in Los Angeles County from the county line (07-LA-605 PM R0.0) to 0.9-mile north of the Spring Street Overcrossing (07-LA-605 PM R1.2). Encroachments into Los Angeles County and work on SR-22 are associated with signing and striping to accommodate the transition from the existing to proposed facility. Figure 1-1 shows the project's regional vicinity location, and Figure 1-2 shows the project's local location.

¹ SR-22 East refers to the portion of SR-22 east of its junction with I-405 near Valley View Street.

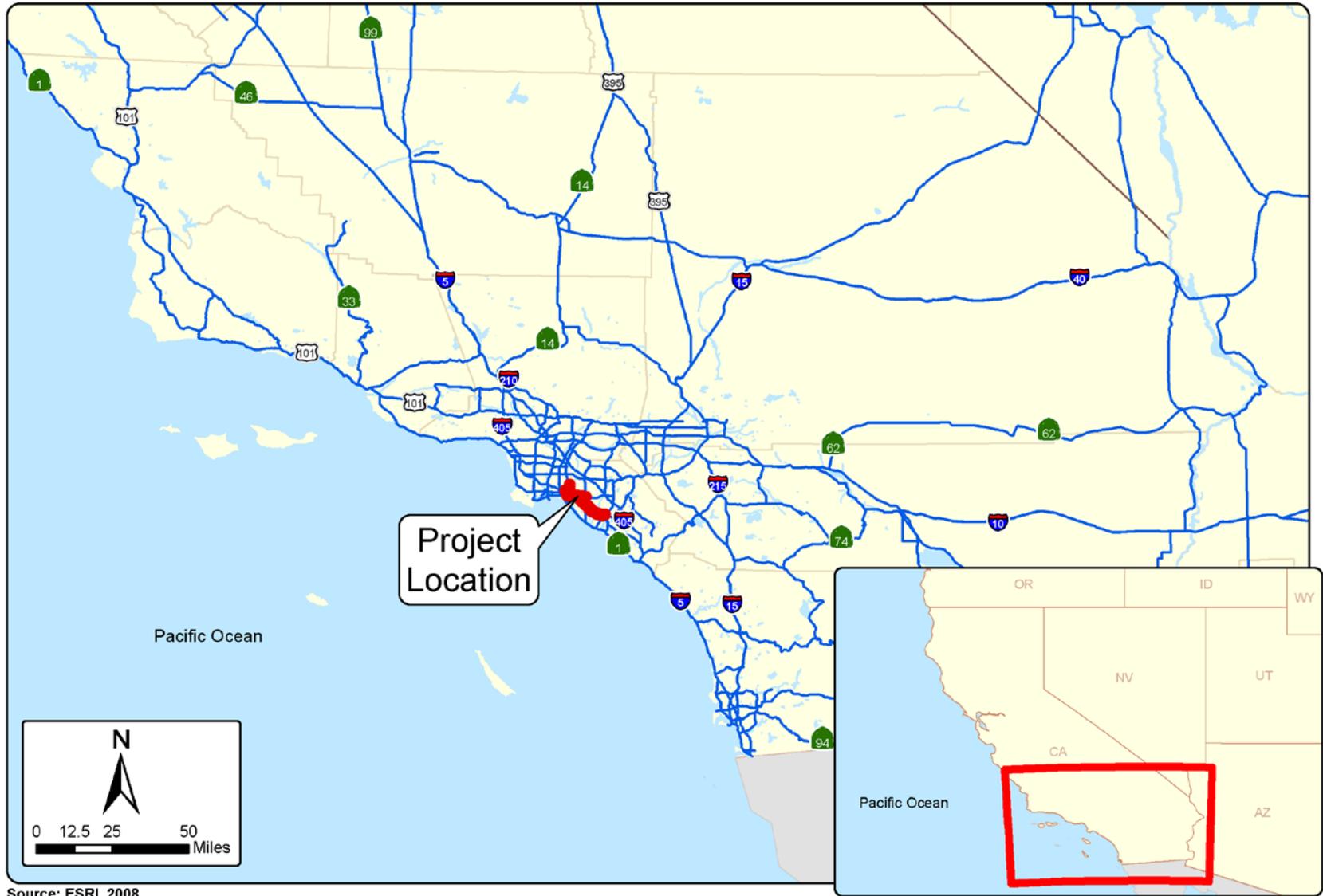


Figure 1-1: Regional Vicinity Map



Figure 1-2: Project Location Map

The proposed project descriptions were updated in the 2012 Regional Transportation Plan (RTP) and 2015 Federal Transportation Improvement Program (FTIP) as listed below:

- 2012 RTP: (ORA030605) “Add 1 MF lane in each direction, and additional capital improvements (by 2022); convert existing HOV to HOT, add 1 additional HOT lane each direction (by 2035)”
- 2015 FTIP: (ORA030605) “I-405 FROM SR-73 TO I-605. Add 1 MF lane in each direction, and additional capital improvements. Combined with ORA045, ORA151, ORA100507 and ORA120310.”
- 2015 FTIP: (ORA030605A) “I-405 from SR-73 to I-605. Convert existing HOV to HOT. Add 1 additional HOT lane each direction (by 2035).”

Project proponents include the Federal Highway Administration (FHWA), Caltrans, and OCTA. In addition, FHWA’s role requires approval of the following documents:

- Modified Access Report to the Interstate System
- Design Exceptions
- Project-Level Air Quality Conformity Finding
- Draft Project Management Plan
- Draft Financial Plan
- Cost Estimate Review

Details regarding the status of these approvals are provided in Tables S-3 and 2-2.

1.1.1 Recommendations from Previous Project Planning Studies

A Major Investment Study (MIS) for the I-405 corridor from SR-73 to I-605 was completed in February 2006. The MIS addressed a variety of potential solutions to the mobility problems in the corridor. As part of the MIS process, the OCTA Board of Directors adopted a resolution supporting a Locally Preferred Strategy (LPS) of improvements to the I-405 corridor within the study area. A major consideration in the selection of the LPS was its limited ROW acquisition impacts. The OCTA Board indicated that other alternatives with similar ROW impacts could be considered during the Project Approval/Environmental Document (PA/ED) stage.

OCTA’s 2006 Long-Range Transportation Plan, “*New Directions: Charting the Course for Orange County’s Future Transportation System*,” includes a project to “add new lanes to the San Diego Freeway between I-605 and SR-73, generally within the existing right-of-way” (OCTA 2006). In implementing this directive, the proposed project would need to make best use of the

existing available freeway property, update interchanges, and replace all local overcrossings according to city and regional master plans.

A Project Study Report/Project Development Support (PSR/PDS) document for this project, then called the “I-405 Widening Project,” was completed in July 2008. The PSR/PDS document describes the transportation problem, identifies the scope of viable alternatives, and provides an estimate of the project development support resources required. A Preliminary Environmental Assessment Report (PEAR) was also prepared as part of the PSR/PDS. This process resulted in a determination that a joint Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) will be required in compliance with CEQA and NEPA, respectively (Caltrans 2008).

1.2 Project Purpose and Need

The project purpose is a set of objectives the project is intended to meet. The project need is the transportation deficiency that the project was initiated to address.

1.2.1 Purpose of the Project

The purpose of the proposed action is to:

- Reduce congestion;
- Enhance operations;
- Increase mobility, improve trip reliability, maximize throughput, and optimize operations; and
- Minimize environmental impacts and ROW acquisition.

In furtherance of the project’s purpose, the following objective is established:

- To be consistent with regional plans and find a cost-effective early project solution for delivery.

1.2.2 Need for the Project

Current deficiencies of I-405 within the project limits are summarized below:

- The I-405 mainline GP lanes peak-period traffic demand exceeds available capacity;
- The I-405 mainline HOV lanes peak-period traffic demand exceeds available capacity;
- The I-405 mainline GP traffic lanes have operational and geometric deficiencies;
- The interchanges along I-405 within the study area have geometric, storage, and operational capacity deficiencies; and

- I-405 currently has limitations in detecting traffic incidents and providing rapid response and clearance due to lack of capacity and technological infrastructure.

1.2.2.1 Capacity, Transportation Demand, and Safety

Existing Capacity and Level of Service

- With the current configuration, there is insufficient capacity within the I-405 corridor on the freeway and adjacent arterial streets to accommodate existing and projected travel demands between SR-73 and I-605.
- Sections of the I-405 corridor currently operate at unacceptable levels of traffic congestion.

In November 1999, Caltrans prepared a Route Concept Report (RCR) for I-405 in Orange County. The report states: “The concept for this route is to provide the best LOS possible and reduce the duration of congestion. If no major capital improvements are made, it is anticipated longer delays will occur” (Caltrans 1999). As presented in Table 1-1, the RCR recommends 10 to 12 GP lanes on I-405 from SR-73 to Beach Boulevard and 10 GP lanes from Beach Boulevard to SR-22 East. Currently, there are 8 GP lanes on I-405 between Brookhurst Street and SR-22 East.

Table 1-1: Improvements Recommended in I-405 Route Concept Report

Segment	Postmile (PM)	Recommended Number of Lanes		
		General Purpose	HOV	Auxiliary
SR-73 to Beach Boulevard	10.8/16.5	10 to 12	2	Yes
Beach Boulevard to SR-22 East	16.5/20.8	10	2	Yes
SR-22 East to Los Angeles county line	20.8/24.2	8 to 12	4	No

Source: California Caltrans of Transportation 1999.

The ability of a highway to accommodate traffic is typically measured in terms of traffic levels of service (LOS)². Figure 1-3 shows a pictorial representation of the six LOS for freeways. An analysis of the existing LOS on I-405 from the SR-73 interchange to the Orange/Los Angeles county line (see Table 1-2 for northbound and Table 1-3 for southbound analysis) was conducted.

Tables 1-2 and 1-3 show that the current configuration of I-405 has insufficient capacity to accommodate existing travel demands. Based on 2009 traffic volumes, traffic analysis shows that sections of I-405 currently operate at unacceptable LOS during one or both of the peak hours with volume-to-capacity (V/C)² ratios in excess of 1.00 on all segments except northbound from SR-73 to Brookhurst Street.

The existing HOV lanes also experience congestion during the peak hours. The HOV lane volumes are exceeding the capacity of the HOV lanes in the corridor and throughout southern California as explained in the *California HOV/Express Lane Business Plan* (Caltrans, March 31, 2009). The travel time advantage of the HOV lanes on I-405 within the project limits is anticipated to be completely lost by the time the proposed project is open to traffic, except along the northernmost 3 miles of the corridor. Table 3.1.6-5 in Section 3.1.6, Traffic and Transportation, shows that the HOV lanes currently operate at LOS D-F during the PM peak hour and that LOS F conditions are anticipated in 2020 in both directions during both the AM and PM peak hours.

By 2040, traffic is projected to grow by approximately 30 to 35 percent in response to population and employment increases in the corridor and region. Tables 1-2 and 1-3 show that by 2020 all segments of I-405 in the project area will be operating at unacceptable LOS F in both directions during peak hours, with V/C ratios in excess of 1.00. This is indicative of extensive congestion.

² Level of service (LOS) is a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. Six LOS are defined for each type of facility that has analysis procedures available.

Letters designate each level, from A to F, with LOS A representing the best operating conditions and LOS F the worst. Each level of service represents a range of operating conditions and the driver's perception of those conditions. (HCM page 2-2)

² Volume-to-capacity ratio is a measure of the amount of traffic (volume) compared to the ability of the roadway (capacity) to serve the volume. A value below 1.00 indicates that the roadway can accommodate additional volume and a value in excess of 1.00 indicates that the roadway will have substantial congestion and unstable traffic flow. Under future conditions, V/C in excess of 1.00 indicates that forecast traffic demand exceeds capacity. Under existing conditions, V/C in excess of 1.00 indicates that the volume exceeds the maximum sustainable flow rate and congested conditions are likely.

LEVELS OF SERVICE

for Freeways

Level of Service	Flow Conditions	Operating Speed (mph)	Technical Descriptions
A		70	Highest quality of service. Traffic flows freely with little or no restrictions on speed or maneuverability. No delays
B		70	Traffic is stable and flows freely. The ability to maneuver in traffic is only slightly restricted. No delays
C		67	Few restrictions on speed. Freedom to maneuver is restricted. Drivers must be more careful making lane changes. Minimal delays
D		62	Speeds decline slightly and density increases. Freedom to maneuver is noticeably limited. Minimal delays
E		53	Vehicles are closely spaced, with little room to maneuver. Driver comfort is poor. Significant delays
F		<53	Very congested traffic with traffic jams, especially in areas where vehicles have to merge. Considerable delays

Source: Caltrans, Standard Environmental Reference, accessed on April 10, 2010.

Figure 1-3: Levels of Service Criteria for Freeways

**Table 1-2: Existing and Projected 2020 and 2040 LOS and V/C
Northbound General Purpose Lanes**

Freeway Segment	Existing Peak-Hour Conditions				Future 2020 Peak-Hour Conditions				Future 2040 Peak-Hour Conditions			
	AM		PM		AM		PM		AM		PM	
	LOS ¹	V/C ²	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C
SR-73 – Brookhurst Street	D	0.89	F	0.93	F	1.14	F	1.29	F	1.31	F	1.49
Brookhurst Street – SR-22 East	F	1.14	F	1.15	F	1.42	F	1.53	F	1.64	F	1.76
SR-22 East – I-605	F	1.13	F	1.06	F	1.31	F	1.30	F	1.51	F	1.52

¹ Level of service (LOS) is a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience.

² Volume-to-capacity ratio is a measure of the amount of traffic (volume) compared to the ability of the roadway (capacity) to serve the volume. A value below 1.00 indicates that the roadway can accommodate additional volume and a value in excess of 1.00 indicates that the roadway will have substantial congestion and unstable traffic flow.

Source: Albert Grover and Associates 2011.

**Table 1-3: Existing and Projected 2020 and 2040 LOS and V/C
Southbound General Purpose Lanes**

Freeway Segment	Existing Peak-Hour Conditions				Future 2020 Peak-Hour Conditions				Future 2040 Peak-Hour Conditions			
	AM		PM		AM		PM		AM		PM	
	LOS ¹	V/C ²	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C
SR-73 – Brookhurst Street	F	1.16	D	0.95	F	1.48	F	1.18	F	1.73	F	1.33
Brookhurst Street – SR-22 East	F	1.24	F	1.16	F	1.61	F	1.43	F	1.89	F	1.61
SR-22 East – I-605	F	1.10	F	1.16	F	1.31	F	1.30	F	1.57	F	1.47

¹ Level of service (LOS) is a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience.

² Volume-to-capacity ratio is a measure of the amount of traffic (volume) compared to the ability of the roadway (capacity) to serve the volume. A value below 1.00 indicates that the roadway can accommodate additional volume and a value in excess of 1.00 indicates that the roadway will have substantial congestion and unstable traffic flow.

Source: Albert Grover and Associates 2011.

Table 1-4 shows that travel time through the corridor between SR-73 and I-605 ranges from 13 to 37 minutes during peak hours under the existing condition. In 2040 travel times are anticipated to increase and would range from 95 to 163 minutes. Table 1-5 shows existing and forecast vehicle hours of delay. Under existing conditions, there are approximately 4 million vehicle hours of delay (vhd) annually on I-405 between SR-73 and I-605. Without any improvements to the corridor, delay is anticipated to increase to 23 million vhd in 2020 and 91 million vhd in 2040. Improvements to the I-405 corridor are needed to accommodate the projected future traffic, congestion, slow speeds, and delay that currently exist and are anticipated to worsen.

Table 1-4. Existing and 2040 No Build Travel Time on I-405 from SR-73 to I-605 for Existing Condition and Year 2040 No Build Alternative (minutes)

Period	Condition	Lane Type	
		GP	HOV
Northbound I-405			
AM	Existing 2009	18	13
	No Build 2040	114	101
PM	Existing 2009	25	19
	No Build 2040	133	121
Southbound I-405			
AM	Existing 2009	37	17
	No Build 2040	163	147
PM	Existing 2009	15	13
	No Build 2040	107	95

Source: Calculated from speed data in Albert Grover and Associates 2011.

Table 1-5: Vehicle Hours of Delay Existing and Years 2020 and 2040 on Weekdays

Year	Alternative	Daily	Annual
2009	Existing	19,083	4,198,209
2020	No Project	102,984	22,656,558
2040	No Project	413,278	90,921,066

Source: Calculated from speed data in Albert Grover and Associates 2011.

Existing and Future Traffic Volumes

- Traffic volumes are expected to increase along the project corridor. Table 1-6 presents the daily traffic volume along I-405 between SR-73 and I-605 under existing and future conditions.

Table 1-6: Existing and Forecast 2020 and 2040 Daily and Peak-Hour Traffic Volumes on I-405 within the Project Limits

Freeway Segment	Number of Lanes: HOV+GP	AADT Volume	Peak-Hour Volumes			
			SB AM	NB AM	SB PM	NB PM
Existing 2009						
SR-73 – Brookhurst Street	2+12*	307,000	14,290	10,470	11,750	11,450
Brookhurst Street – SR-22 East	2+8	257,000	10,600	9,850	10,180	10,070
SR-22 East – I-605	2+12**	370,000	13,260	14,130	14,520	13,400
No Build 2020						
SR-73 – Brookhurst Street	2+12*	373,000	19,172	13,915	15,349	15,715
Brookhurst Street – SR-22 East	2+8	297,200	14,854	13,178	13,227	14,079
SR-22 East – I-605	4+12**	441,400	18,884	18,741	18,565	18,713
No Build 2040						
SR-73 – Brookhurst Street	2+12*	417,000	22,230	15,908	17,240	18,197
Brookhurst Street – SR-22 East	2+8	324,000	17,477	15,204	14,848	16,149
SR-22 East – I-605	4+12**	489,000	22,698	21,704	21,067	21,906

* 2+10 north of Euclid Street to Brookhurst Street

** 4+10 north of SR-22 West/7th Street to I-605

AADT – Average Annual Daily Traffic; NB – northbound; SB – southbound

Source: Albert Grover and Associates 2011.

Regional Population and Employment Growth Trends

- Projected population and employment growth trends indicate that transportation demand in the I-405 corridor will continue to increase in future years.

Data contained in the SCAG 2008 RTP Growth Forecast provide information on current and forecasted (through year 2035) population and employment totals and growth trends for cities within the proposed project area, as well as Orange County. Additional analysis for the proposed project was conducted (using SCAG 2008 Integrated Growth Forecast data) to project population and employment totals in 2040, as well as growth from 2035 to 2040. These data are summarized in Tables 1-7 and 1-8.

Table 1-7: Population Projections and Growth Trends

Jurisdiction	Year						
	2005	2010	2020	2030	2035	2040	
Seal Beach	25,190	26,626	27,444	27,776	27,871	27,969	
<i>Annual Growth Rate</i>	--	1.14 % (2005-2010)	0.31 % (2010-2020)	0.12 % (2020-2030)	0.07 % (2030-2035)	0.07 % (2035-2040)	--
Westminster	91,869	96,485	99,794	101,486	102,017	102,528	
<i>Annual Growth Rate</i>	--	1.00 % (2005-2010)	0.34 % (2010-2020)	0.17 % (2020-2030)	0.10 % (2030-2035)	0.10 % (2035-2040)	--
Huntington Beach	200,329	212,957	220,892	224,788	225,815	226,833	
<i>Annual Growth Rate</i>	--	1.26 % (2005-2010)	0.37 % (2010-2020)	0.18 % (2020-2030)	0.09 % (2030-2035)	0.09 % (2035-2040)	--
Fountain Valley	56,079	59,392	62,278	63,969	64,525	65,075	
<i>Annual Growth Rate</i>	--	1.18 % (2005-2010)	0.49 % (2010-2020)	0.27 % (2020-2030)	0.17 % (2030-2035)	0.17 % (2035-2040)	--
Costa Mesa	113,137	120,501	124,692	126,492	126,958	127,403	
<i>Annual Growth Rate</i>	--	1.30 % (2005-2010)	0.35 % (2010-2020)	0.14 % (2020-2030)	0.07 % (2030-2035)	0.07 % (2035-2040)	--
Orange County	3,059,952	3,314,948	3,533,935	3,629,539	3,653,990	3,677,803	
<i>Annual Growth Rate</i>	--	1.67 % (2005-2010)	0.66 % (2010-2020)	0.27 % (2020-2030)	0.13 % (2030-2035)	0.13 % (2035-2040)	--

Source: Years 2005-2035: SCAG 2008a; Year 2040: Parsons 2010.

Table 1-8: Employment Projections and Growth Trends

Jurisdiction	Year						Total Growth	
	2005	2010	2020	2030	2035	2040		
Seal Beach	9,142	11,559	11,617	11,630	11,633	11,639	2,497	
<i>Annual Growth Rate</i>	--	5.29 % (2005-2010)	0.05 % (2010-2020)	0.01 % (2020-2030)	0.01 % (2030-2035)	0.01 % (2035-2040)	--	0.15%
Westminster	27,522	31,477	32,220	32,612	32,709	32,807	5,285	
<i>Annual Growth Rate</i>	--	2.87 % (2005-2010)	0.24 % (2010-2020)	0.12 % (2020-2030)	0.06 % (2030-2035)	0.06 % (2035-2040)	--	0.10%
Huntington Beach	81,599	92,028	98,226	99,830	100,085	100,335	18,736	
<i>Annual Growth Rate</i>	--	2.56 % (2005-2010)	0.67 % (2010-2020)	0.16 % (2020-2030)	0.05 % (2030-2035)	0.05 % (2035-2040)	--	0.10%
Fountain Valley	32,268	35,193	37,045	37,787	37,896	38,010	5,742	
<i>Annual Growth Rate</i>	--	1.18 % (2005-2010)	0.53 % (2010-2020)	0.20 % (2020-2030)	0.06 % (2030-2035)	0.06 % (2035-2040)	--	0.06%
Costa Mesa	91,305	99,562	102,245	103,565	103,816	104,076	12,771	
<i>Annual Growth Rate</i>	--	1.81 % (2005-2010)	0.27 % (2010-2020)	0.13 % (2020-2030)	0.05 % (2030-2035)	0.05 % (2035-2040)	--	0.07%
Orange County	1,615,936	1,755,167	1,897,352	1,960,633	1,981,901	2,003,798	387,862	
<i>Annual Growth Rate</i>	--	1.72 % (2005-2010)	0.81 % (2010-2020)	0.33 % (2020-2030)	0.22 % (2030-2035)	0.22 % (2035-2040)	--	0.09%

Source: Years 2005-2035: SCAG 2008; Year 2040: Parsons 2010.

As reported in Table 1-7, between 2005 and 2040, the population in each of the cities along the I-405 corridor is projected to grow incrementally over time. In most of the I-405 corridor cities, the annual rate of population growth is expected to peak around 2010, after which the rate of growth is projected to decline or slow down over several years. Growth would continue to be focused in areas where there is still undeveloped land, particularly south of the proposed project area in south Orange County (SCAG 2008), which would affect the capacity of I-405 because it functions as a regional facility. The LOS along the project corridor, shown in Tables 1-2 and 1-3, illustrates that the current freeway configuration does not support the existing population. As population and employment levels continue to grow, indicating increased travel volumes, driving conditions would degrade, resulting in a loss of mobility and a decrease in trip reliability.

As reported in Table 1-8, total employment in Orange County was more than 1.6 million persons in 2005. The I-405 corridor cities had combined total employment of approximately 270,000 in 2005. Through year 2040, average annual growth in Orange County employment is projected to range from 0.22 to 1.72 percent per year, while the average annual employment growth in the I-405 corridor cities is projected to range from 0.01 to 5.29 percent per year, depending upon the city.

Redevelopment efforts on the part of some of the I-405 corridor cities are a main contributing factor to this employment trend. In most of the I-405 corridor cities, the annual rate of employment growth was expected to peak around 2010, after which the rate of growth was projected to decline or slow down over several years.

The project corridor is an important route for many employment centers near or adjacent to the project area. Significant employment centers occur in the following locations: the Irvine Business Center (IBC) in Irvine; the South Coast Metro Center in north Costa Mesa; west Costa Mesa and west Santa Ana; along Beach Boulevard; the northwest area of Huntington Beach between Bolsa Chica Road and Springdale Street; along Katella Avenue; and in Long Beach.

A considerable increase in employment by 2025 is anticipated in the John Wayne Airport area, Fountain Valley, and Huntington Beach (SCAG 2008b).

Projected Delay and Level of Service Degradation

- Without any improvements in the I-405 corridor, additional traffic congestion resulting from regional growth will further degrade traffic Level of Service (LOS) and worsen operational deficiencies in the future as shown in Tables 1-2 and 1-3. During the morning and evening peak hours in years 2020 and 2040, traffic is forecast to operate at LOS F along the entire corridor, with a volume to capacity (V/C) ratio of 1.14 to 1.61.

- Without any improvements in the I-405 corridor, future increased traffic congestion will result in substantially reduced travel speeds and substantially increased commute times, as shown in Tables 1-4 and 1-5.

According to information compiled by Caltrans in the *Traffic Accident Surveillance and Analysis System (TASAS) Table B*, during a 3-year period between January 1, 2006, and December 31, 2008, 4,467 accidents, with 1,067 injuries and 14 fatalities, were recorded within the project limits. These accident rates are less than the average statewide accident rates for facilities of this type. The rate of fatalities on I-405 is substantially less than the rate of fatalities found on similar facilities statewide, and the total accident rate on I-405 is approximately 14 to 27 percent below the average statewide total accident rate for similar highway facilities to I-405.

The lower accident rates within the project limits of I-405 do not imply that improvements are not needed. Some portions of I-405 do not conform to state and federal highway design standards, although they are within the range of acceptable deviations from the required standard. Existing geometric and operational issues include: physical bottlenecks, interchange geometrics, nonstandard weaving distances between some ramps, and lack of available ramp storage capacity.

The proposed project would relieve congestion by widening I-405, and reconstructing interchanges. The proposed project would provide safety improvements within the project limits by reducing:

- Congestion-related collisions on the mainline of I-405;
- Off-ramp queuing onto the freeway mainline; and
- On-ramp queuing onto arterials due to mainline congestion and ramp meter operation.

The I-405 project corridor also has limitations on traffic incident detection, rapid response, and clearance. Existing speed detection equipment does not alert traffic management staff to potential incidents as quickly as would be desired. Incomplete closed-circuit television coverage inhibits rapid confirmation of incidents. The high levels of traffic congestion along the project corridor during peak hours and the lack of left-side shoulders increase the response and clearance times of emergency service providers when traffic incidents occur. The proposed project would include technological infrastructure to enhance incident detection capabilities and left-side shoulders to better facilitate rapid response and clearance when traffic incidents occur.

1.2.2.2 Roadway and Operational Deficiencies

- Operational problems occur on I-405 primarily because of physical bottlenecks.

- A variety of interchange and ramp deficiencies in the I-405 corridor result in traffic queue backup onto the freeway and local streets.

Within the project corridor, three “bottleneck” locations (i.e., where GP lanes terminate) occur, creating operational problems. In the northbound direction, lane drops occur just north of the Fairview Road overcrossing (PM 11.0), at the Euclid Street interchange (PM 12.4), and at the Brookhurst Street interchange (PM 13.8). These latter two lane drops occur at interchanges that are adjacent to each other. This drop of three GP lanes in approximately 2.4 miles creates peak-period backups of traffic on I-405 that routinely extend through the SR-73 and SR-55 interchanges as far south as Jamboree Road (PM 6.92), which is a distance of nearly 7 miles.

A variety of interchange and ramp deficiencies along the I-405 corridor are responsible for traffic queues extending onto the freeway and local streets. Interchange ramps within the proposed project limits have inadequate storage capacity at ramp meters and signal-controlled off-ramps. Forecasted exit ramp traffic volume increases are expected to result in off-ramp queues from ramp/local street intersections that back up into the deceleration portion of freeway off-ramps at two locations: the I-405 northbound exit to Garden Grove Boulevard/Valley View Street/SR-22 Eastbound/Bolsa Chica Road, and the I-405 southbound exit to Center Avenue at the Beach Boulevard interchange.

Many metered on-ramp locations also suffer from inadequate storage space, which results in regular queues of vehicles entering the freeway backing onto local streets and, in some cases, across adjacent intersections. Beach Boulevard and Brookhurst Street have collector-distributor (C-D) roads with cloverleaf interchange configurations that require weaving of lower-speed traffic entering the C-D road from ramp meters with higher-speed traffic exiting the freeway. There is a nonstandard weaving length on the southbound freeway mainline between the Magnolia Street on-ramp and the Warner Avenue off-ramp. Finally, the more heavily traveled on-ramps merging onto the freeway cause heavy traffic congestion during peak periods.

Field observation reveals that queuing at ramp meters currently spills back onto the local streets at the following locations during peak hours:

- Northbound I-405 on-ramp at northbound Beach Boulevard;
- Southbound I-405 on-ramp at eastbound Edinger Avenue;
- Southbound I-405 on-ramp at southbound Magnolia Street ;
- Southbound I-405 on-ramp at eastbound Warner Avenue;
- Southbound I-405 on-ramp at southbound Brookhurst Street;
- Southbound I-405 on-ramp at eastbound Talbert Avenue; and

- Southbound I-405 on-ramp at Euclid Street/Ellis Avenue.

In some of these locations, the queuing affects the operations of adjacent arterial/arterial intersections because of their proximity to the freeway ramps and the extent of the queuing. These conditions are further expected to degrade because of projected traffic growth in the I-405 corridor.

Queuing of traffic from exit ramps onto the I-405 freeway mainline occurs infrequently, but it has been observed at the I-405 northbound exit to Garden Grove Boulevard/Valley View Street/SR-22 Eastbound/Bolsa Chica Road. In future years, this location is forecasted to have regular queuing extending into the deceleration portion of the exit ramp approximately 200 feet (ft) downstream of the gore point. Available storage is approximately 390 ft, and the forecasted need is for approximately 620 ft (Caltrans 2008).

A similar condition is forecasted for the southbound I-405 exit to Center Avenue at the Beach Boulevard interchange. The exit ramp is forecasted to have a demand for 380 ft of storage for the left turn at the end of the ramp onto Center Avenue toward Beach Boulevard. Only 370 ft of storage are available. While this condition is only slightly deficient, inadequate storage at the downstream intersection of Center Avenue and Beach Boulevard will exacerbate the situation. The right-turn queue from Center Avenue to southbound Beach Boulevard is forecasted to be 690 ft, which will back across the ramp terminal intersection that is 550 ft away. Additional queuing will take place on the exit ramp and increase the demand for storage beyond what is available and extend into the deceleration area of the off-ramp (Caltrans 2008).

1.2.2.3 Social Demands and Economic Development

Regional Transportation Plan

Improvements in the proposed alternatives for the I-405 project corridor are consistent with the SCAG 2012 RTP. The RTP is a federally mandated long-range planning document that provides the policy and financial framework for the transportation system in the region. A primary purpose of the RTP is to identify and assist in prioritizing regional highway system additions and improvements. Projects listed in the RTP are intended to meet the following goals:

- Maximize mobility and accessibility for people and goods in the region;
- Ensure travel safety and reliability for all people and goods in the region;
- Preserve and ensure a sustainable regional transportation system;
- Protect the environment and health of our residents by improving air quality and encouraging active transportation (i.e., nonmotorized transportation, such as bicycling and walking);

- Maximize the productivity of our transportation system; and
- Actively encourage and create incentives for energy efficiency, where possible.

The I-405 project is also included in SCAG's financially constrained 2015 FTIP project ORA030605 and ORA030605A.

OCTA 2006 Long-Range Transportation Plan

In July 2006, OCTA's Board of Directors approved a long-range transportation plan (LRTP) called *New Directions: Charting the Course for Orange County's Future Transportation System* (OCTA 2006). Key objectives identified in the LRTP and supported by the proposed project include:

- Provide an accessible transportation network;
- Minimize congestion;
- Develop an integrated transportation network;
- Use the existing transportation network efficiently; and
- Bolster economic growth.

The LRTP includes projects and services to meet the goals and objectives. The addition of lanes to I-405 is identified as a top priority for local residents as a component of the "Balanced Plan." The project would make best use of available freeway property, updating interchanges and widening all overcrossings according to city and regional master plans. The LRTP also includes an "Unconstrained Alternative," which includes further widening of I-405 between SR-55 and I-605.

OCTA Master Plan of Arterial Highways

The OCTA *Master Plan of Arterial Highways* (MPAH), last adopted May 23, 2005, identifies the ultimate route locations and cross sections for arterial roadways in Orange County. The purpose of the MPAH is to effectively serve existing and projected traffic demands throughout the county by establishing a comprehensive network of arterial highway systems (OCTA 2009). The MPAH map depicts a network of major thoroughfares comprising freeways, transportation corridors, and five main arterial highway classifications. The MPAH classifications are a statement of policy intended to reserve adequate ROW for future highway improvements. Consistency with the MPAH is necessary to maintain the integrity of the regional highway network.

Replacements of overcrossings on the portion of I-405 within the project area would be designed and built to MPAH standards, and the overall proposed project is consistent with the MPAH.

OCTA Commuter Bikeways Strategic Plan

The OCTA Commuter Bikeways Strategic Plan (Bike Plan), which was adopted May 22, 2009, shows two Class I bikeway facilities crossing I-405 within the proposed project limits. These bikeways cross underneath I-405 and run along both banks of the Santa Ana River and the eastern bank of the San Gabriel River. Six Class II bikeways cross the freeway on arterial overcrossings. The proposed project is consistent with the Bike Plan because it would preserve existing bikeways and accommodate planned bikeways within the project limits.

1.2.2.4 Legislation and Project Funding

A large portion of the funding for the proposed project is included in Orange County's Renewed Measure M transportation sales tax initiative (countywide half-cent sales tax) funding program. The Renewed Measure M (Measure M2) Program was authorized by Orange County voters in November 2006, and it began in 2011. The Measure M2 Program allocates sales tax revenues to specific Orange County, transportation improvement projects in three major areas – freeways, street, and roads, and transit. The Measure M2 Program, which is a 30-year \$11.8 billion investment program designed to improve Orange County transportation, contains language that commits funding for improvements to the I-405 corridor (identified as Project K) and requires any arterial overcrossing replacements associated with widening I-405 to meet OCTA's MPAH standards.

Project K of the ordinance establishing the Measure M2 Program provides for improvements on I-405 that would “add new lanes to the San Diego Freeway [I-405] between I-605 and SR-55, generally within the existing right-of-way and also includes arterial overcrossing replacements associated with widening I-405 to meet OCTA's MPAH standards. The project will make best use of available freeway property, update interchanges and widen all local overcrossings according to city and regional master plans.”

Table 1-9 shows the estimated costs and available funding for each of the build alternatives. Alternative 1 is fully funded under Measure M2. Alternative 2 shows a funding shortfall of 100M and is still unfunded. Alternative 3, which includes tolled Express Lanes, has a funding shortfall and could be addressed through innovative funding that could be repaid from toll revenue. Under the preliminary operating policies currently under consideration (presented in Section 2.2.2, Unique Features of Build Alternatives under the heading “Express Lane Operating Policies”), the objective is to open the tolled Express Lanes with a HOV2+ occupancy free to encourage rideshare and transit usage. Operational adjustments to the tolled Express Lanes may be implemented based on demand, rates of speed, traffic volumes, and to meet financial covenants, maintenance and operational obligations. Potential operational adjustments include, but are not limited to:

- adjusting to HOV3+ free with HOV2s discounted tolls
- adjusting to HOV3+ free with HOV2s full tolls
- adjusting to tolling HOV2s on individual tolling segments such as direct connectors to or from other freeways
- periodic adjustments of tolling rates to maintain operations on individual tolling segments

Authority has been granted under a Public-Private Partnership (P3) arrangement to operate a toll facility along I-405 within Orange County.

Table 1-9: Proposed Funding and Shortfall

Alternative	Full Cost¹ (billion \$)	Measure M2 Revenue (billion \$)	Funding Shortfall (million \$)	Needed Innovative Financing² Phase 2 (million \$)
1	\$1.3	\$1.3	\$0	\$0
2	\$1.4	\$1.3	\$100	\$0
3	\$1.7	\$1.3	\$394-\$589 ³	\$358-\$589 ³

¹ 2014 costs include program management, public awareness & outreach, and environmental process.

² Innovative financing could be addressed with state or federal funds, TIFIA loan and equity from a public-public or public-private partnership.

³ The differing amounts noted are dependent on amounts necessary to avoid impacting properties twice and avoiding throw-away costs.

Phasing: Alternative 3, the Preferred Alternative may be designed and constructed in phases or segments. The Draft Initial Financial Plan will be completed prior to the award of construction contract.

1.2.2.5 Modal Inter-Relationships and System Linkages

- I-405 represents a major link to other freeway systems within the Orange County area and is a strategic component of the county’s transportation system. Serving as a major link between Orange and Los Angeles counties, the freeway begins at the “El Toro Y” in southeast Irvine and terminates near Mission Hills in the San Fernando Valley section of the City of Los Angeles. I-405 is part of the National Highway System and is considered a bypass route to I-5 (the Santa Ana/Golden State Freeway) providing intra-regional and inter-regional access between Orange and Los Angeles counties.

Local Access

As shown in Figure 1-2, two highways parallel to I-405 exist within the county: Pacific Coast Highway (Highway 1) to the south and I-5 to the north; however, these are not considered effective alternates for travel through the study area because of their distance from I-405 and

because of their limited ability to accept additional traffic, particularly in the case of Pacific Coast Highway.

Improving interchange efficiency would provide a higher level of operation and throughput for entering and exiting traffic along I-405. Improving interchanges would likely enhance interchange safety. Adding ramp storage capacity would reduce queuing of vehicles back onto the freeway mainline and surface streets. Improving intersection efficiency would provide a higher level of operation and throughput for local street and ramp traffic. The project would be consistent with County and other local general plan policies in this regard, including a City of Westminster policy requiring coordination with Caltrans to “implement feasible freeway crossing and access improvements” (City of Westminster 1996).

Regional Access

As shown in Figure 1-2, I-405 serves the beach communities of northern Orange County, including parts of Costa Mesa, Fountain Valley, Huntington Beach, Westminster, Garden Grove, and Seal Beach. The community of Rossmoor, which is an unincorporated area of Orange County, and the Naval Weapons Station (NAVWPNSTA) Seal Beach, Joint Forces Training Base, Los Alamitos are also directly served by I-405. Fifteen (15) service interchanges and 4 system interchanges with SR-73, SR-22 East, SR-22 West, and I-605 occur within the project area.

On a regional level, I-405 provides access between cities in Orange and Los Angeles counties. I-405 is used for commuting and inter-regional travel, along with direct and indirect access to employment centers, recreational attractions, shopping malls, medical centers, universities, airports, and other land uses. The northern segment, between Valley View Street and the I-605, is considered one of the heaviest traveled sections of freeway in the nation.

The entire length of I-405 is part of the National Highway System, the Department of Defense Priority Network, the Interstate Highway System, and the Strategic Highway Corridor Network. The 1990 Federal Surface Transportation Assistance Act (STAA) identifies I-405 as a “National Network” route for STAA trucks (Caltrans 2007). Strategically, I-405 is a transportation link for national defense and transportation security, providing direct and indirect access to major military installations in the west, including Los Angeles Air Force Base to the north, and NAVWPNSTA Seal Beach, Air Force Reserve Center Los Alamitos, and Camp Pendleton to the south.

On the portion of SR-22 that overlaps with I-405 within the project limits (I-405 PM 20.8/24.0), two projects – the I-405/SR-22 HOV Connector (EA 071621) and the I-405/I-605 HOV Connector (EA 072631) –are collectively referred to as the SR-22 West County Connectors (WCC) Project. The SR-22 WCC Project area includes the portion of I-405 between I-605 and

SR-22 East and the portion of I-605 between I-405 and Katella Avenue. The SR-22 WCC Project adds a second HOV lane on I-405 in each direction from SR-22 East to I-605, and it will also provide structures to directly connect the HOV lanes between the I-405, SR-22 East, and I-605. During the design phase of the SR-22 WCC Project, the SR-22 WCC Project area was evaluated by Caltrans for system connectivity and compatibility with the proposed future I-405 Improvement Project.

Metrolink and Amtrak provide rail service to Orange County. Metrolink connects Orange County with Los Angeles, Riverside, San Bernardino, Ventura, and San Diego counties. Amtrak provides some duplication of this service, especially to Los Angeles County, but more importantly, it provides more distant access to the remainder of California and throughout the United States. There is no passenger rail service within the proposed project area. However, Amtrak and Metrolink provide passenger rail services in the vicinity of the project area as discussed below.

Amtrak's Pacific Surfliner provides regional passenger rail service with stops at stations in Fullerton, Anaheim, Santa Ana, Irvine, San Juan Capistrano, and San Clemente. The Surfliner operates 12 northbound and 11 southbound trains per day.

Commuter rail service is provided by the Southern California Regional Rail Authority (SCRRA) under the brand name "Metrolink." Three Metrolink routes operate within Orange County (i.e., Orange County Line, Inland Empire-Orange County Line, and 91 Line), with stops at stations in Buena Park, Fullerton, Anaheim, Anaheim Canyon, Orange, Santa Ana, Tustin, Irvine, Laguna Niguel, San Juan Capistrano, San Clemente, and San Clemente Pier. The Orange County Line operates 15 northbound and 14 southbound trains per weekday. Some of these trips operate only between the Fullerton and Laguna Niguel/Mission Viejo stations as part of OCTA's Metrolink Service Expansion Program.

The Inland Empire-Orange County Line operates 8 northbound and 8 southbound trains per weekday. The 91 Line operates 5 westbound and 4 eastbound trains per day. The passenger rail network provides inter-county connections to Los Angeles, Riverside, and San Diego Counties.

There are a three OCTA bus express bus routes that travel on I-405 within the project limits; and 20 local, community, and rail feeder routes that cross under/over the I-405 in this area.

OCTA Express Routes Traveling on I-405

- Route 211 is a weekday service from Seal Beach to Irvine via I-405 and has three AM trips and four PM trips.
- Route 216 is a weekday service from San Juan Capistrano to Costa Mesa via I-405 and has 1 trip in the morning and 1 trip in the afternoon.

- Route 701 is a weekday service from Huntington Beach to Los Angeles via I-405 / 605 /105/ 110 and has and has three AM trips and three PM trips.

Local, Community, & Rail Feeder Routes Crossing Under/Over the I-405

- Route 21 travels from Buena Park to Huntington Beach via Valley View St/ Bolsa Chica Rd has a weekday headway of 60 mins. This route crosses I-405 at Valley View.
- Route 25 travels from Fullerton to Huntington Beach via Knott Ave/ Goldenwest St and has a weekday headway of 45 mins. This route crosses I-405 at Goldenwest.
- Route 29 travels from La Habra to Huntington Beach via Beach Blvd and has a weekday peak headway of 15 mins. This route crosses I-405 at Beach.
- Route 33 travels from Fullerton to Huntington Beach via Magnolia St and has a weekday headways of 35 mins. This route crosses I-405 at Magnolia.
- Route 35 travels from Fullerton to Huntington Beach via Brookhurst St and has weekday headways of 30 mins. This route crosses I-405 at Brookhurst.
- Route 37 travels from La Habra to Fountain Valley via Euclid St and has a weekday headway of 30 mins. This route crosses I-405 at New Hope / Ellis.
- Route 42 travels from Seal Beach to Orange via Seal Beach Blvd/ Los Alamitos Blvd/ Lincoln Ave and has a weekday peak headway of 36 mins. This route crosses I-405 at Seal Beach Blvd.
- Route 43 travels from Fullerton to Costa Mesa via Harbor Blvd and has a weekday peak headway of 20 mins. This route crosses I-405 at Harbor Blvd.
- Route 47 travels from Fullerton to Newport Beach via Anaheim Blvd/ Fairview St and has a weekday peak headways of 12 to 14 mins. This route crosses I-405 at Fairview.
- Route 55 travels from Santa Ana to Newport Beach via Standard Ave/ Bristol St/ Fairview St/ 17th St and has a weekday headway of 15 to 20 mins. This route crosses I-405 at Bristol.
- Route 57 travels from Brea to Newport Beach via State College Blvd/ Bristol St and has a weekday peak headways of 15 mins. This route crosses I-405 at Bristol.
- Route 60 travels from Long Beach to Tustin via Westminster Ave/ 17th St and has a peak weekday headway of 20 mins. This route crosses the I-405 at Westminster Blvd and uses a portion of the I-405 from Seal Beach Blvd to 7th St.
- Route 64 travels from Huntington Beach to Tustin via Bolsa Ave/ 1st St and has weekday headways of 15 mins. This route crosses I-405 at Bolsa.
- Route 66 travels from Huntington Beach to Irvine via McFadden Ave/ Walnut Ave and has peak weekday headways of 10 to 15 mins. This route crosses I-405 at McFadden.
- Route 70 travels from Sunset Beach to Tustin via Edinger Ave and has a peak weekday headways of 15 mins. This route crosses I-405 at Edinger.

- Route 72 travels from Sunset Beach to Tustin via Warner Ave and has a weekday headways of 45 mins. This route crosses I-405 at Warner Ave.
- Route 76 travels from Huntington Beach to Newport Beach via Talbert Ave/ MacArthur Blvd and has a weekday headway of 45 mins. This route crosses I-405 at Talbert.
- Route 172 which travels from Huntington Beach to Costa Mesa via Main St/ Garfield Ave/ Ellis Ave/ MacArthur Blvd/ Sunflower St has weekday a peak headway of 60 min. This route crosses the I-405 at Ellis/Newhope.
- Route 173 which travels from Huntington Beach to Costa Mesa via Atlantic Ave/ Hamilton Ave/ Victoria St/ Orange Ave/ Fair Dr/ Bear St has a weekday headway of 45 mins. This route crosses I-405 at Bear.
- Route 464 travels from The Depot at Santa Ana to Costa Mesa via 5 Fwy/ 55 Fwy/ Sunflower Ave has 10 trips in the morning and 8 trips in the afternoon. This route crosses I-405 at Bristol.

In addition to the existing routes, OCTA is planning on implementing additional service in this corridor which are included in the 2015 OCTA LRTP.

- Route 722 would be a new inter-county express from Santa Ana to Long Beach via SR-22 and I-405. This service would be operated weekdays only and have a 30 minute peak frequency.
- Route 211 service levels would be increased to every 30 minutes during the peak as part of a restructuring of this route.

The Preferred Alternative will encourage transit since tolled lanes will be free flow. This would provide better access to multimodal facilities (i.e. Metrolink, bus transit stations, and Los Angeles and Orange county airports).

1.2.2.6 Air Quality Improvements

The South Coast Air Quality Management District (SCAQMD) is a regional regulatory agency with the primary responsibility for improving air quality in the South Coast Air Basin (SCAB), which includes Orange County. With the increase in regulations to reduce toxic air emissions, SCAQMD has developed the AQMP, which was most recently adopted in 2007. The AQMP summarizes the state of air quality in the region and provides short- and long-term measures to reduce emissions and achieve overall air quality benefits in the SCAB (SCAQMD 2007).

The project would result in improvement in air quality. Emissions for the PA would generally be less than the existing and future no-build conditions. This decrease is due to higher vehicle speeds which would result in lower emission rates i.e. improved free-flow and encouragement of HOV and bus transit reduces pollutants. Therefore, the project would result in a beneficial effect related to regional operational emissions.

The project features will result in long term air quality reductions. Most of the ramps along the corridor within the project limits are already metered and will be retained with the project. Alternative 3 includes tolled express lanes. While the build alternatives does not include any specific transit related improvements, the tolled express lanes and ramp metering will directly benefit transit vehicles (and their passengers) traveling along the corridor.

1.2.2.7 Independent Utility and Logical Termini

- The proposed project satisfies the requirements for independent utility and logical termini.

A transportation project is required by FHWA (23 CFR 771.111) to meet standards that establish a project's "independent utility" and "logical termini." The definitions and specifications for each requirement are provided below, as well as an explanation of how the proposed I-405 project meets those requirements.

Independent Utility

For a project to have "independent utility," it must be usable and a reasonable expenditure, even if no additional transportation improvements are made in the area. Regardless of other actions, the project must offer transportation benefits that "stand alone" and are not dependent upon the implementation of other projects. Additionally, to be considered of independent utility, a project must not preclude other potential transportation projects from being implemented in the future.

The proposed I-405 project satisfies FHWA's regulations for "independent utility" because it would not prevent the implementation of future transportation projects, and, independent of other actions, it would also provide considerable transportation benefits responsive to the project's stated purpose and need.

The proposed build alternatives would provide additional lanes in the corridor that would be fully usable regardless of other future improvements in the corridor. The additional lanes represent a reasonable expenditure of transportation funds because of the extensive peak-period congestion that currently exists in the corridor and is forecast to become worse over time. The proposed project would provide many benefits, including:

- Reduced congestion and increased travel speeds in the corridor during peak periods associated with the 20 percent to 40 percent increase in GP lane capacity of the proposed alternatives;
- Increased mobility in the corridor;
- Improved access to the freeway;

- Enhanced mainline and interchange geometrics for improved operations;
- Shoulders on both sides of the freeway for improved operational efficiency and incident management;
- Additional storage at ramp meters to reduce queuing onto local streets for improved operations;
- Improved ramp meter operations to optimize overall freeway operations;
- Improved capacity of some arterial overcrossings and undercrossings; and
- Increased arterial/ramp intersection capacity at some locations.

These benefits would be provided by the proposed project and would not require the completion of any other projects.

Logical Termini

Logical termini are required for project development to establish project boundaries that allow for a comprehensive response to transportation deficiencies. Rational end points are required for both transportation improvements and the review of environmental impacts.

The project corridor is of sufficient length (i.e., approximately 16 miles) to adequately address transportation issues that have been identified in the stated purpose and need. The north and south termini are locations where multiple freeways converge, generating congestion and causing delay. The termini have been logically chosen based on geography and transportation needs to ensure adequate response to transportation deficiencies at and around these points of intersection.

The northern terminus of the proposed project is at the interchange of the I-405 and I-605 freeways. The proposed additional lanes on I-405 south of this interchange would terminate into and provide enhanced traffic service between I-405 and the SR-22 and I-605 freeways. The proposed additional lanes would enhance lane continuity along I-405 and terminate new lanes into available lanes on these other freeways.

The southern terminus of the proposed project is at the interchange of SR-73. The additional lanes provided on I-405 would terminate either at locations north of the SR-73 interchange where lanes are currently dropped/added, thereby removing the lane drop/add, or at SR-73, depending upon the alternative.

Currently, three lanes are added to I-405 northbound from SR-73 as it merges into I-405 approximately 1.5 miles north of SR-55. There are no lane additions from SR-55 that extend to SR-73. The lanes added by SR-73 are subsequently dropped at the next three local interchanges at the Harbor Boulevard, Euclid Street, and Brookhurst Street interchanges, creating a series of

bottlenecks. The proposed build alternatives would remove one or more of those lane drops and enhance lane continuity in the corridor. Continuing the project south to SR-55 would further compound rather than address lane continuity problems.

Terminating additional lanes at SR-22 East (near Valley View Street) would result in a bottleneck. Currently, there are four GP lanes northbound on I-405 and three GP lanes on westbound SR-22 upstream of the merge of northbound I-405 and westbound SR-22, for a total of seven GP lanes upstream of their merge and only six GP lanes downstream of their merge. A major chokepoint results on SR-22 as one lane is terminated approaching the junction of the two freeways. Terminating additional lanes on I-405 northbound at SR-22 would create a similar chokepoint on I-405. Carrying the lanes north to the I-405/I-605/SR-22 interchange would not result in such a chokepoint.

Therefore, in terms of corridor length and location of project termini, the project meets FHWA logical termini requirements.

Segmentation

“Segmentation” may occur when a transportation need extends throughout an entire corridor, but environmental issues and transportation needs are inappropriately discussed for a segment of the corridor. By meeting FHWA requirements for independent utility and logical termini, and offering several transportation improvements within these boundaries, the project avoids “segmentation.”

Furthermore, the proposed alternatives would not restrict any other foreseeable transportation improvements in the corridor. None of the proposed alternatives would affect the HOV lanes outside the project limits.