Chapter 1 Proposed Project

1.1 Introduction

California Department of Transportation (Caltrans), in cooperation with the San Bernardino Associated Governments (SANBAG), proposes to improve Interstate 10 (I-10) by relieving traffic congestion and implementing operational improvements on I-10 from approximately the city of Pomona to the city of Redlands. Please refer to Figures 1-1 and 1-2 for project location and vicinity maps. The Interstate 10 Corridor Project (I-10 CP) proposes a No Build Alternative (Alternative 1) and two build alternatives (Alternatives 2 and 3). The build alternatives associated with the I-10 CP would reduce traffic congestion, increase throughput, and enhance trip reliability for the planning design year of 2045 and is expected to be open to traffic by year 2025.

Caltrans is the lead agency under the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA). SANBAG is the project sponsor.

1.1.1 Project Location and Setting

I-10 is a transcontinental freeway extending eastward from Santa Monica, California, to Jacksonville, Florida. The 1990 Federal Surface Transportation Assistance Act (STAA) identifies I-10 as a "National Network" route for STAA trucks. The Federal Functional Clarification for I-10 is a Rural Principal Arterial and extension of a Rural Principal Arterial into an urban area. Within southern California, I-10 is included in the National Highway System and the Rural and Single Interstate Routing System.

Within the project study area, I-10 is a major east-west freeway facility that has major junctions with Interstate 15 (I-15), Interstate 215 (I-215), and State Route (SR) 210, designated as either the San Bernardino Freeway or Redlands Freeway.

The project limits, including transition areas, extend from approximately 0.4 mile west of White Avenue in the city of Pomona at LA Post Mile (PM) 44.9 to Live Oak Canyon Road in the city of Yucaipa at SBd PM R37.0. Within the project limits, I-10 is generally an eight-lane divided controlled-access freeway with four general purpose (GP) lanes in each direction and auxiliary lanes along selected portions of the route. Between the Los Angeles/San Bernardino (LA/SB) county line and Haven Avenue, there is one high-occupancy vehicle (HOV) lane in each direction, which is separated from the GP lanes via a 2- to 4-foot-wide striped buffer. The existing lane

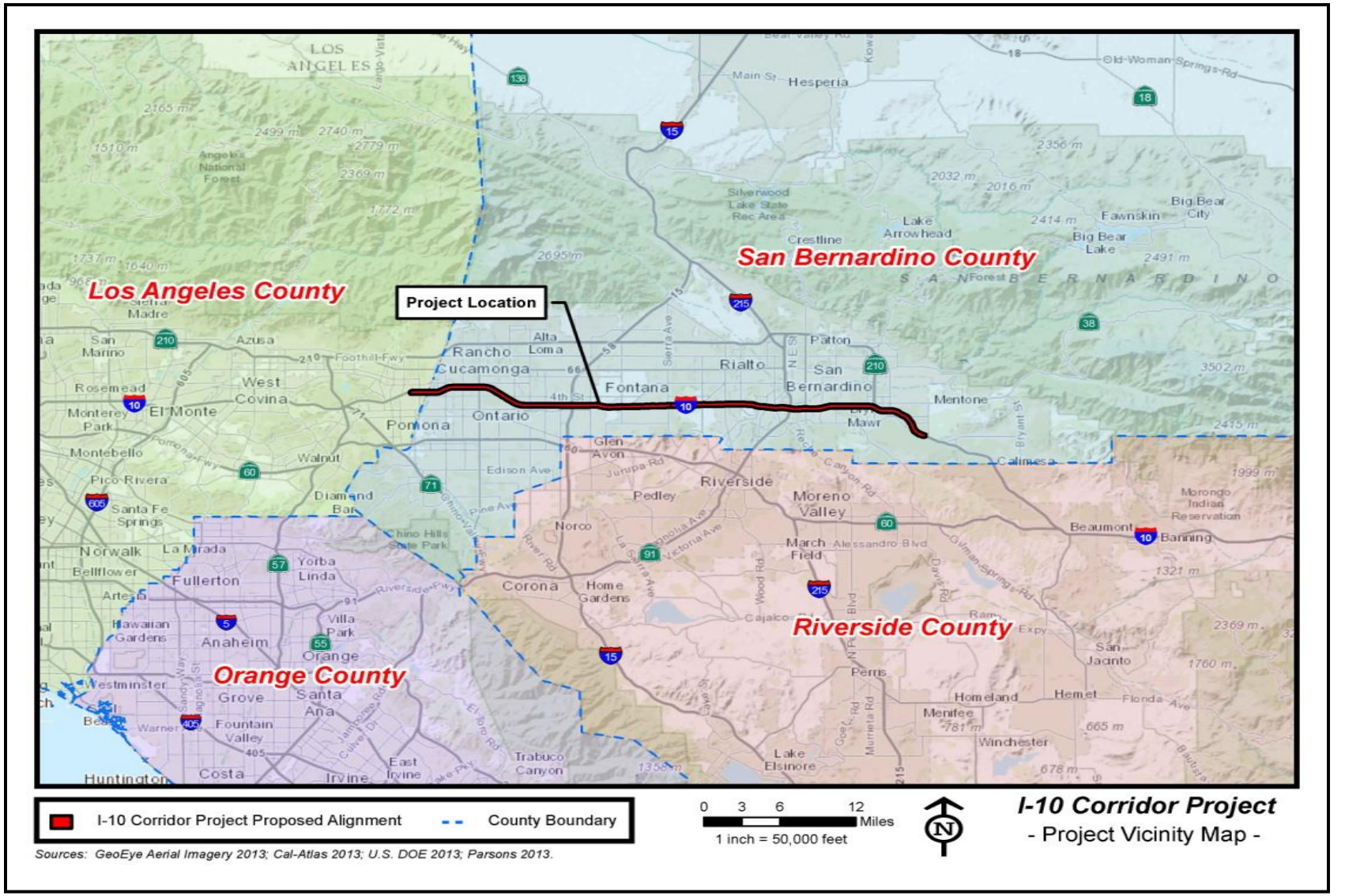


Figure 1-1 Vicinity Map

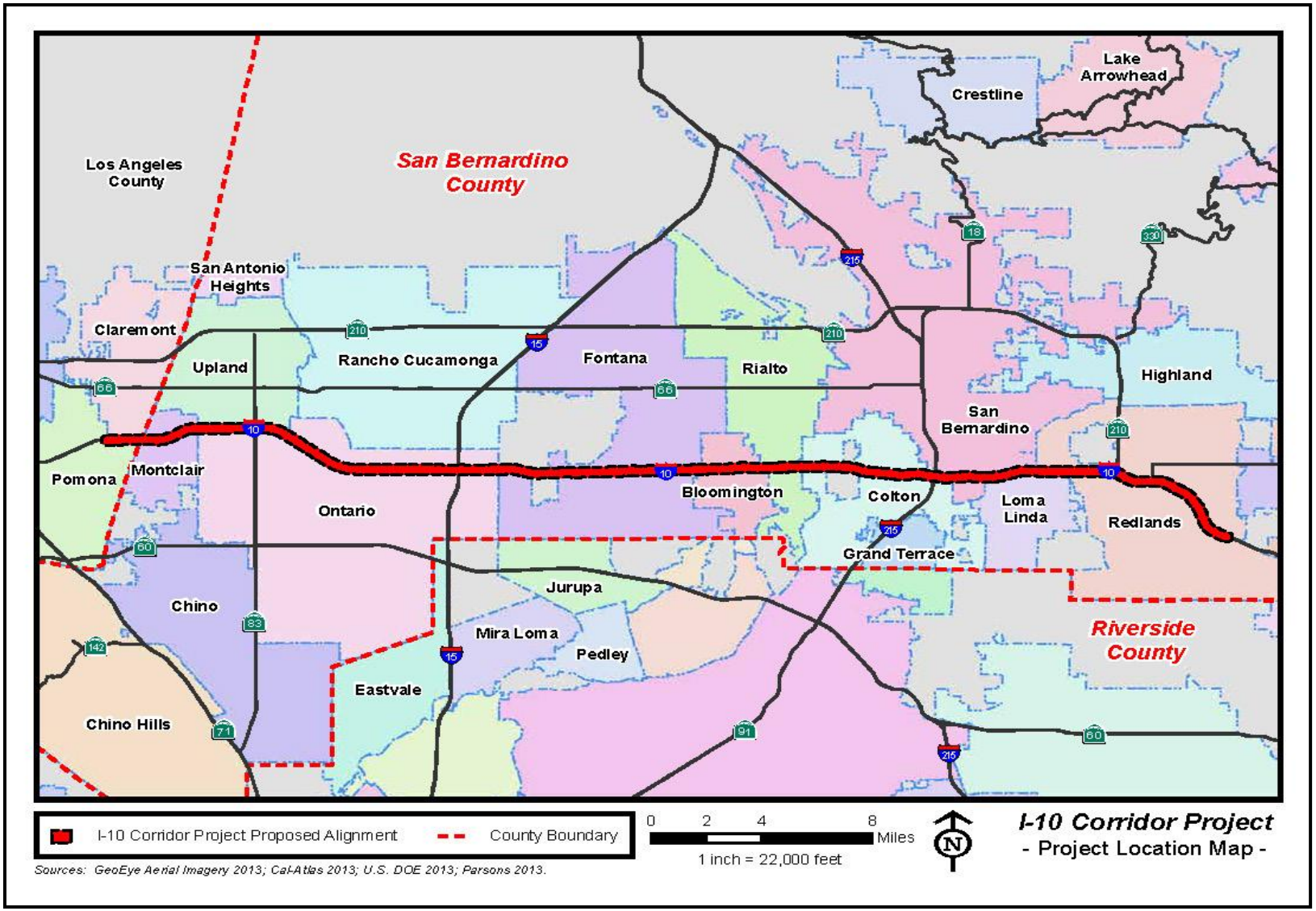


Figure 1-2 Location Map

width is generally 12 feet throughout the corridor, except for the HOV lanes west of I-15, which are 11 feet wide. The outside shoulder has the standard width of 10 feet, while the inside shoulder varies from 8 feet west of I-15 to 17 feet (not entirely paved) east of I-15. There are 45 existing auxiliary lanes along the project corridor, including 21 in the westbound (WB) direction and 24 in the eastbound (EB) direction. All of the existing auxiliary lanes would be re-established as part of the project improvements. The project traverses the communities of Pomona, Claremont, Montclair, Upland, Ontario, Fontana, Bloomington, Rialto, Colton, San Bernardino, Loma Linda, and Redlands. Land uses in the project study area include residential, commercial, industrial, undeveloped/vacant, and governmental west of I-15; a mix of residential, commercial, and industrial land uses between I-15 and SR-210; and residential communities between SR-210 and Ford Street.

1.1.2 Programming Status

The proposed I-10 CP is included in the 2012 Regional Transportation Plan (RTP) (RTP ID 4H01001) and 2015 Federal Transportation Improvement Program (FTIP). On September 11, 2014, the Southern California Association of Governments (SCAG) Regional Council approved Amendment #2 to the 2012-2035 RTP/Sustainable Communities Strategy (SCS) after a 30-day public review and comment period. Amendment #2 was developed as a response to changes to projects in the 2012-2035 RTP/SCS but also includes the complete list of modeled projects. The 2012-2035 RTP/SCS includes both Alternatives 2 and 3. Alternative 2 is identified by RTP ID 4H01001 and is described as "I-10 HOV Lane Addition – from Haven (Ontario) to Ford Street (Redlands) – Widening from 8-10 lanes, aux lanes widening, undercrossing, and reconstruction of ramps where needed." Alternative 3 is identified by RTP IDs 4122004 and 4122005 and is described as "I-10 Express Lane Addition from Garey Avenue to the Ford Street Undercrossing – Express Lane widening to implement two (2) express lanes in each direction for a total of 12 lanes including auxiliary lane widening, undercrossings, overcrossings, and reconstruction of ramps where needed."

1.1.3 Planning Background

The current Route Concept Report identifies the ultimate concept facility for I-10 within the project area as a 12-lane freeway, with 4 HOV and 8 mixed-flow lanes. In 2000, HOV lanes were constructed on I-10 between the LA/SB county line and Haven Avenue in Ontario. In 2007, the I-10 corridor widened from 6 lanes to 8 lanes from Orange Street to Ford Street in Redlands.

An Initial Study/Environmental Assessment (IS/EA) was initiated for the I-10 HOV Lane Addition Project in 2008. This 25-mile-long project proposed to construct HOV lanes in both directions of I-10 in San Bernardino County, in addition to adding auxiliary lanes between freeway ramps at various locations. In 2010, SANBAG evaluated the feasibility of including a 33-mile-long Express Lane Alternative as part of the I-10 HOV Lane Addition Project. SANBAG also evaluated funding strategies for implementing an Express Lane project. SANBAG concluded that the Express Lane Alternative would be appropriate to include as an alternative to be studied within the I-10 HOV Lane Addition Project. This conclusion was reached based on preliminary studies showing the physical feasibility, operational benefits, and economic viability of this alternative, including its consistency with the I-10 Project purpose and need. In August 2011, the SANBAG Board of Directors voted in favor of moving forward with a comprehensive study and included the Express Lane Alternative in the I-10 CP.

1.2 Purpose and Need

1.2.1 Purpose

The purpose of the I-10 CP is to improve traffic operations on I-10 in San Bernardino County to:

- Reduce congestion;
- Increase throughput;
- Enhance trip reliability; and
- Accommodate long-term congestion management of the corridor.

In furtherance of the project's purpose, the objectives of the project are to:

- Reduce volume-to-capacity (v/c) ratios along the corridor;
- Improve travel times within the corridor;
- Relieve congestion and improve traffic flow on the regional transportation system;
- Address increased travel associated with existing and planned development;
- Provide a facility that is compatible with transit and other modal options;
- Provide consistency with the SCAG RTP, where feasible and in compliance with Federal and State regulations;
- Provide a cost-effective project solution;

- Minimize environmental impacts and right-of-way (ROW) acquisition; and
- Promote sustainable travel and livability for the corridor.

1.2.2 Need

I-10 is a critical link in the state transportation network and is used by interstate travelers, local commuters, and regional and inter-regional trucks. The efficient movement of traffic through San Bernardino County is limited by the existing capacity of the transportation networks.

Existing deficiencies of I-10 include:

- GP lanes peak-period traffic demand currently exceeds capacity; and
- I-10 HOV lanes operation is reduced during peak periods.

Forecasted deficiencies of the I-10 include:

- Local and regional traffic demand is expected to increase due to population growth;
- Increase in delays;
- Increase in accidents;
- Regional/local circulation will worsen as additional traffic avoids congestion on the freeway;
- Interchange/junctions traffic service will worsen as additional traffic attempts to enter and exit the freeway;
- Bus/multimodal travel time will increase due to congestion and become unreliable due to additional congestion; and
- I-10 HOV will continue to degrade as speed decreases on the facility due to the increase in traffic volumes.

1.2.2.1 Existing Capacity and Level of Service

Currently, there is insufficient capacity on I-10 to accommodate existing and future travel demands within the project limits with the current configuration.

The ability of a highway to accommodate traffic is typically measured in terms of traffic levels of service (LOS)[1]. Figure 1-3 shows a pictorial representation of the six LOS for freeways. An analysis of the existing LOS on I-10 from the LA/SB county line to Ford Street (see Table 1-1 for mainline GP and Table 1-2 for mainline HOV analysis) was conducted.

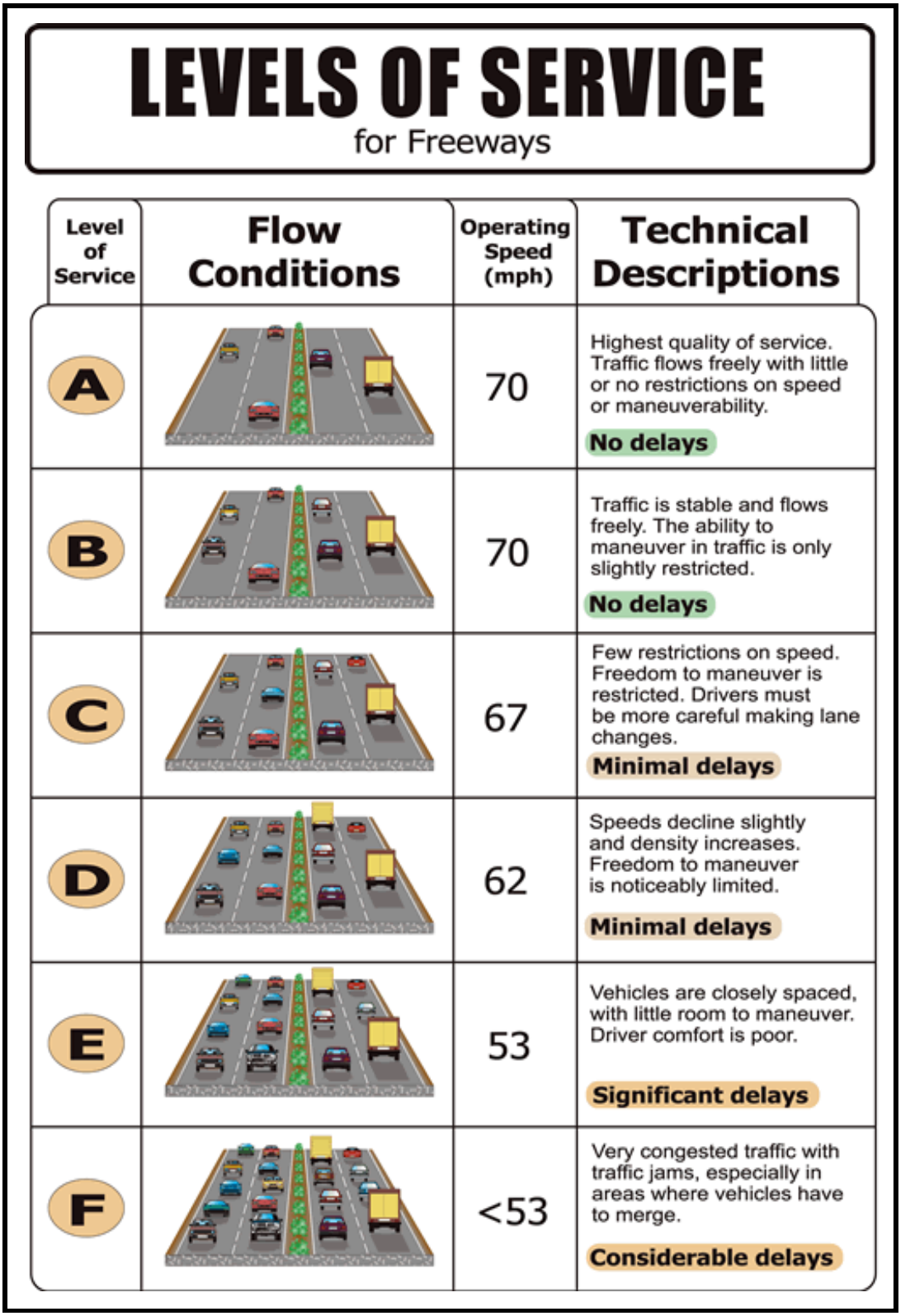
Tables 1-1 and 1-2 show that the current configuration on I-10 has insufficient capacity to accommodate existing travel demands. Based on 2012 traffic volumes, traffic capacity analysis shows that sections of I-10 currently operate at unacceptable LOS with v/c[2] ratios in excess of 1.00 on all segments during one or both of the peak hours.

Under the current configuration, an HOV lane exists between the LA/SB county line and Haven Avenue within the project area. The existing EB HOV lane experiences congestion during the afternoon peak hours. Based on the 2013 California HOV Degradation Determination Report prepared by Caltrans, the existing HOV lane in the EB direction of I-10 between 4th Street (PM 5.0) and Milliken Avenue (PM 9.9) experienced considerable congestion in 2013 and is considered to be "degraded," requiring corrective actions in accordance with the mandates of the federal Moving Ahead for Progress in the 21st Century Act (MAP-21).

By year 2045, traffic is projected to grow by approximately 36 to 60 percent in response to population and employment increases in the corridor and region. Tables 1-1 and 1-2 show that by 2025 all segments of I-10 in the project area will be operating at unacceptable LOS F in both directions during one or both peak hours, with v/c ratios in excess of 1.00. This is indicative of extensive congestion.

[1] 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 LOS represents a range of operating conditions and the driver's perception of those conditions. (HCM 2-2)

[2] V/C 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.



Source: Caltrans Standard Environmental Reference, 2008.

Figure 1-3 LOS Thresholds for a Basic Freeway Segment

Table 1-1 I-10 Mainline GP Lane Density, LOS, and Volume-to-Capacity Ratio

Segment	EB or WB	Existing 2012				Year 2025 No Build				Year 2045 No Build			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		LOS	V/C	LOS	V/C	LOS	D/C	LOS	D/C	LOS	D/C	LOS	D/C
LA/SB County Line to Haven Avenue	EB	D	1.00	F	0.99	D	0.94	F	1.03	F	1.17	F	1.09
	WB	F	1.11	F	1.01	F	1.18	F	1.32	F	1.23	F	1.49
Haven Avenue to California Street	EB	F	1.06	F	1.16	F	1.27	F	1.39	F	1.37	F	1.41
	WB	F	1.17	E	0.99	F	1.29	F	1.25	F	1.44	F	1.39
California Street to Ford Street	EB	B	0.52	F	1.02	C	0.58	F	1.23	D	0.78	F	1.42
	WB	F	1.08	C	0.64	F	1.31	C	0.73	F	1.54	F	0.91

EB – Eastbound; WB – Westbound; Den – Density; LOS – Level of Service; V/C – Volume-to-Capacity Ratio; D/C – Demand Volume-to-Capacity Ratio
* GP lane LOS is based on density, except when traffic demand v/c or d/c is greater than 1.00, which is LOS F.

Source: I-10 Corridor Traffic Study, 2014.

Table 1-2 I-10 Mainline HOV Lane Density, LOS, and Volume-to-Capacity Ratio

Segment	EB or WB	Existing 2012				Year 2025 No Build				Year 2045 No Build			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		LOS	V/C	LOS	V/C	LOS	D/C	LOS	D/C	LOS	D/C	LOS	D/C
LA/SB County Line to Haven Avenue	EB	C	0.72	F	0.78	C	0.68	F	1.02	E	0.95	F	1.12
	WB	D	0.81	C	0.63	E	0.92	F	1.31	F	1.04	F	1.46

EB – Eastbound; WB – Westbound; Den – Density; LOS – Level of Service; V/C – Volume-to-Capacity Ratio; D/C – Demand Volume-to-Capacity Ratio;
* HOV lane LOS is based on v/c ratios (or d/c ratios).

Source: I-10 Corridor Traffic Study, 2014.

Population and Traffic Forecasts

According to population growth forecasts published by SCAG, the population within the southern California region is expected to increase by 4.3 million new residents between 2008 and 2035. The SCAG region consists of Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties. Key demographic projections for San Bernardino County and the SCAG region are provided in Table 1-3.

Table 1-3 Key Demographic Data

Area	Population	Resident Population	Households	Residents Employed
Existing – 2012				
San Bernardino County	2,015,994	1,962,290	605,913	700,600
SCAG Region	16,964,830	16,640,598	548,465	7,386,196
2035				
San Bernardino County	2,749,810	2,685,254	847,405	1,059,329
SCAG Region	21,852,486	21,497,514	7,230,262	9,310,132
Percent Growth from 2012 to 2035				
San Bernardino County	36	37	40	51
SCAG Region	29	29	29	26

Source: SCAG, Regional Growth Forecasts, 2012-2035
http://www.scag.ca.gov/DataAndTools/Pages/GrowthForecasting.aspx.

Although the regional growth rate stabilized in the last 20 years, from 1990 to 2010 the urbanization and suburbanization of the region has continued (SCAG RTP). In 2010, San Bernardino County exceeded 2 million people and increased its share of the population from 17.7 percent in 1990 to 23.4 percent in 2010. According to SCAG, the fast growth of population relative to employment in Riverside and San Bernardino counties has led to an imbalance of jobs and housing in the region, which has led to increased congestion that is expected to continue.

I-10 is continuing to experience increased congestion as a result of population growth, particularly in San Bernardino County, and due to an increase in jobs in San Bernardino and Los Angeles counties. Based on the demographic projections for the SCAG region shown in Table 1-3, the number of residents in San Bernardino County is expected to increase by approximately 37 percent by 2035, which would result in increased congestion and delays on I-10. Those projections show that population and employment in San Bernardino County and the SCAG region are forecast to increase substantially by 2035, by 26 to 51 percent, as shown in Table 1-3.

Average daily traffic (ADT) volumes and vehicle miles traveled (VMT) projections along the I-10 corridor for opening year 2025 and design year 2045 conditions compared to existing (2012) conditions are summarized in Table 1-4.

Table 1-4 ADT and VMT Existing (2012), 2025 No Build, and 2045 No Build

Segment	Existing (2012)		Year 2025 No Build		Year 2045 No Build	
	ADT	VMT[1]	ADT	VMT[1]	ADT	VMT[1]
LA/SB County Line and Haven Avenue	230,000	2,258,000	288,000	2,736,000	313,000	3,067,000
Haven Avenue and California Street	181,000	3,875,000	221,000	4,313,000	257,000	5,303,000
California Street and Ford Street	151,000	1,146,000	191,000	1,146,000	241,000	1,376,000

[1]Average weekday vehicle miles traveled.

Source: I-10 Corridor Traffic Study, 2014.

Projected Capacity Needs, Delay, and Level of Service

Without any improvements in the I-10 corridor, additional traffic congestion resulting from regional growth will further degrade traffic LOS and worsen operational deficiencies in the future, as shown in Tables 1-1 and 1-2. In years 2025 and 2045, traffic is forecast to operate at LOS F along the entire corridor for both the GP lanes and HOV lanes during one or both peak hours, with v/c ratios ranging from 1.02 to 1.42.

Average Speed, Travel Time, and Delay

Given SCAG's projections of population growth, travel speeds are forecasted to decrease considerably, operating at an unacceptable LOS F. The *I-10 Corridor Project Traffic Study* (August 2014) used peak-hour speeds, travel time, annual delay in time, and annual cost of delay to compare the current and projected trip reliability.

Table 1-5 summarizes the year 2012, year 2015 and forecast peak-hour speeds during the morning (AM) and evening (PM) peak hours for existing and no-build conditions. Year 2015 speeds are also provided in Table 1-5 as supplemental data to year 2012 existing condition speeds. The year 2015 speeds do not replace the year 2012 speeds. The speed data provide supplemental and more current information than the year 2012 existing condition data. As shown in Table 1-5, the entire corridor speeds have decreased in year 2015. The decreases in speeds predominantly occur in Segment 1 in both directions in the GP and HOV lanes and in the EB direction in the GP lanes during the PM peak hour in all segments.

Table 1-5 I-10 Freeway Mainline Speed[1]
2012, 2015, and No-Build Conditions (2025 and 2045)

I-10 Average Speed (miles-per-hour)	2012				2015[2]				2025 Alternative 1				2045 Alternative 1			
	GP		HOV		GP		HOV		GP		HOV		GP		HOV	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
EASTBOUND																
Segment 1 (County Line to I-15)	57	54	65	63	54	34	56	41	52	41	65	52	28	33	57	44
Segment 2 (I-15 to I-215)	60	56			58	36			46	31			14	16		
Segment 3 (I-215 to SR-210)	63	42			63	28			58	16			40	10		
Segment 4 (SR-210 to Ford)	65	42			60	45			65	21			63	10		
Entire Corridor[3]	**60**	**53**	**61**	**56**	**59**	**36**	**58**	**37**	**52**	**33**	**55**	**38**	**29**	**21**	**36**	**27**
WESTBOUND																
Segment 1 (County Line to I-15)	48	46	62	65	30	38	49	51	20	13	53	13	15	10	43	10
Segment 2 (I-15 to I-215)	59	59			56	60			46	39			29	15		
Segment 3 (I-215 to SR-210)	32	62			49	62			20	55			10	42		
Segment 4 (SR-210 to Ford)	34	65			38	64			13	64			10	56		
Entire Corridor[3]	**48**	**57**	**52**	**59**	**43**	**56**	**45**	**55**	**32**	**38**	**37**	**32**	**21**	**24**	**27**	**21**

[1] The average peak-hour travel speed is calculated based on the demand-to-capacity (d/c) ratios and Modified Bureau of Public Roads (Modified BPR) Curve. This curve calculates the speed relative to the d/c ratios. The data used for the calculation is based on the SBTAM post-processed forecast data.

[2] Year 2015 travel speeds are provided as supplemental data to year 2012 travel speeds and do not replace the year 2012 travel speeds. The 2015 travel speeds provide supplemental and more current information than the year 2012 travel speeds. Year 2015 GP travel speeds are based on a speed survey conducted in October 2015 on the I-10 corridor for the *I-10 and I-15 Express Lanes Traffic Revenue Study* developed by CDM Smith. Year 2015 HOV travel speeds are based on speed data from the Caltrans Freeway Performance Management System (PeMS).

[3] The entire corridor HOV travel speeds for year 2012, year 2015, and Alternative 1 (years 2025 and 2045) are a combination of HOV lane speeds west of Haven Avenue and GP lane speeds east of Haven Avenue, weighted for the distance of each.

Source: I-10 Corridor Traffic Study Addendum, 2016.

As discussed above, a portion of the existing HOV lane in the EB direction is identified as degraded based on the 2013 California HOV Degradation Determination Report. The report states that the EB HOV lane between 4th Street and Milliken Avenue is considered to be "slightly degraded" during the first half of year 2013 and "very degraded" during the second half of year 2013. It is anticipated that this degradation in the HOV lane will continue to worsen as traffic volume increases in future years. Based on the 2014 California HOV Degradation Determination Report, by the end of year 2014, the entire segment of the HOV lane in both directions within San Bernardino County was deemed degraded.

In comparing year 2012 existing condition speeds to the forecasted years 2025 and 2045 Alternative 1 (No Build) speeds, speeds are projected to worsen in both the GP and HOV lanes in both directions due to the higher volume forecasted for the I-10 corridor in years 2025 and 2045. Under Alternative 1, the segment speeds in the GP lanes range from 13 to 65 miles per hour (mph) in year 2025 and 10 to 63 mph in year 2045 compared to 32 to 65 mph in year 2012 and 28 to 64 mph in year 2015. In the HOV lanes west of Haven Avenue, the speed ranges from 13 to 65 mph in year 2025 and 10 to 57 mph in year 2045, compared to 62 to 65 mph in year 2012 and 41 to 56 mph in year 2015.

Table 1-6 shows the travel time through the corridor between the LA/SB county line and Ford Street. In comparing year 2012 existing condition travel times to the forecasted years 2025 and 2045 Alternative 1 (No Build) travel times, travel times are projected to worsen in the GP and HOV lanes in both directions due to the decrease in the corridor speed resulting from higher volume forecasted for the I-10 corridor in years 2025 and 2045. Under Alternative 1, the segment travel times in the GP lanes range from 2 to 37 minutes in year 2025 and 2 to 57 minutes in year 2045 compared to 2 to 14 minutes in year 2012 and 2 to 22 minutes in year 2015. In the HOV lanes west of Haven Avenue, the speed ranges from 7 to 37 minutes in year 2025 and 8 to 49 minutes in year 2045, compared to 7 to 8 minutes in year 2012 and 8 to 12 minutes in year 2015.

Table 1-7 shows existing and forecast vehicle hours of delay (VHD) and cost of delay. Under the existing condition, there are approximately 4.8 million VHD on I-10, which represents an annual cost of delay of approximately $76 million. Without any improvements to the corridor, delay is anticipated to increase to 5.4 million vehicle hours in 2025 and 8.0 million vehicle hours in 2045. The annual cost of those hours of delay in 2025 is estimated at $85 million and $125 million in 2045.

Table 1-6 I-10 Freeway Mainline Travel Time[1] 2012, 2015, and No-Build Conditions (2025 and 2045)

I-10 Travel Time (minutes)	2012				2015				2025 Alternative 1				2045 Alternative 1			
	GP		HOV		GP		HOV		GP		HOV		GP		HOV	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
WESTBOUND																
Segment 1 (County Line to I-15)	10	11	8	7	16	13	10	10	24	37	9	37	32	49	11	49
Segment 2 (I-15 to I-215)	14	14			15	14			18	21			29	56		
Segment 3 (I-215 to SR-210)	9	5			6	5			14	5			28	7		
Segment 4 (SR-210 to Ford)	4	2			4	2			12	2			15	3		
Entire Corridor	**37**	**31**	**34**	**30**	**41**	**31**	**39**	**32**	**56**	**46**	**47**	**55**	**85**	**72**	**66**	**84**
EASTBOUND																
Segment 1 (County Line to I-15)	8	9	7	8	9	14	8	12	9	12	7	9	17	14	8	11
Segment 2 (I-15 to I-215)	13	14			14	22			17	26			57	50		
Segment 3 (I-215 to SR-210)	5	7			5	11			5	19			8	31		
Segment 4 (SR-210 to Ford)	2	3			2	3			2	6			2	12		
Entire Corridor	**29**	**33**	**28**	**31**	**29**	**48**	**29**	**46**	**33**	**52**	**31**	**46**	**59**	**80**	**47**	**63**

1 Corridor travel time is calculated using speeds shown in Table 1-5 and the length of the corridor within the project limits.

2 Year 2015 travel times are provided as supplemental data to year 2012 travel times and do not replace the year 2012 travel times.

3 The entire corridor HOV travel times for year 2012, year 2015 and Alternative 1 (years 2025 and 2045) are a combination of travel times for the HOV lane west of Haven Avenue and GP lanes east of Haven Avenue, weighted for the distance of each.

Source: I-10 Corridor Traffic Study Addendum, 2016.

Table 1-7 Vehicle Hours of Delay – Existing and Years 2025 and 2045 on Weekdays in the Area of Proposed Improvements

	Existing	2025 No Build	2045 No Build
Daily Vehicle Hours of Delay on Weekdays[1]	19,295	21,705	31,871
Annual Vehicle Hours of Delay on Weekdays[2]	4,823,646	5,426,194	7,967,850
Annual Costs of Delay[3]	$76,000,000	$85,000,000	$125,000,000

[1] Source: SBTAM.

[2] Based on 250 weekdays per year.

[3] Cost based on weekday hours of delay times cost of hourly delay from Caltrans "Life-Cycle Benefit-Cost Analysis Economic Parameters 2012" (available at http://www.dot.ca.gov/hq/tpp/offices/eab/benefit_cost/LCBCA-economic_parameters.html) assuming 9 percent trucks, which is the corridor average.

Source: I-10 Corridor Traffic Study, 2014.

Safety

Corridors that are highly congested generally have higher congestion-related accident rates. Congestion-related accidents typically include rear-end collisions and sideswipes. Operational inefficiencies, such as weaving conflicts or comingling of commuter and goods movement traffic, also increase the accident rate. The 2045 projected increase in traffic volumes along the I-10 corridor would likely increase the number of congestion-related accidents within the project area.

The accident data provided by Caltrans Traffic Accident Surveillance and Analysis Systems (TASAS) indicates that the prevalent cause of accidents along the I-10 mainline is traffic congestion, resulting in rear-end, sideswipe, and hit object collisions. Although the project is not intended to directly address safety issues along I-10, it is anticipated that implementing the I-10 CP would improve traffic flow, thereby reducing traffic accidents on the I-10 corridor.

1.2.2.2 Legislation and Project Funding

In November 1989, San Bernardino County voters approved Measure I, a half-cent sales tax, to ensure that needed transportation projects were implemented countywide through 2010. In 2004, San Bernardino County voters overwhelmingly approved the extension of the Measure I sales tax, with 80.03 percent voting to extend the measure through 2040. The proposed I-10 CP is a key component of SANBAG's recent extension of the Measure I Plan. In 2000, HOV lanes were constructed on I-10 between the LA/SB county line and Haven Avenue in Ontario. In 2007, I-10 was widened from six lanes to eight lanes from Orange Street to Ford Street in Redlands.

In August 2011, the SANBAG Board of Directors voted to move forward with including an Express Lane Alternative for the project.

This project is a major element of the SANBAG 10-Year Delivery Plan, with an estimated construction cost range of $537 million to more than $1.49 billion (estimated nominal construction cost range is approximately $650 million to $1.8 billion in future dollars), depending on the alternative chosen. Future plans, specifications, and estimate (PS&E), ROW, and construction of the proposed project are anticipated to be funded with a combination of Measure I, State, and federal funds and potential toll revenues.

1.2.2.3 Modal Interrelationships and System Linkages

I-10 is part of the National Highway System and is considered a direct route through the heart of Los Angeles and San Bernardino, providing intra-regional and inter-

regional access for people and goods traveling within or to Los Angeles, San Bernardino, and the surrounding communities. I-10 represents a major link to other freeway systems within the San Bernardino County area and is a strategic component of the County's transportation system. As a major regional east-west freeway corridor, I-10 is an important route for facilitating commuter traffic, transit service, goods movement, and major truck movement between the Inland Empire and the greater Los Angeles region, as well as from southern California to the rest of the nation. Improvements along the I-10 freeway corridor proposed by both build alternatives would provide benefits to commuter traffic, transit services, and goods movement by reducing congestion, increasing throughput, and enhancing trip reliability. Alternative 2 would provide additional capacity by extending the existing HOV lane in each direction of I-10 from the current HOV terminus near Haven Avenue in Ontario to Ford Street in Redlands, a distance of approximately 25 miles. Alternative 3 would provide more capacity than Alternative 2 by constructing two Express Lanes in each direction of I-10 from the LA/SB county line to California Street in Redlands and one Express Lane from California Street to Ford Street in Redlands.

Under the proposed HOV lane (Alternative 2) and Express Lanes (Alternative 3), mass transit vehicles may access the additional lane(s). Transit operators depend on travel time reliability to meet scheduled stops for a given route. Maintaining a consistent travel time for transit could be achieved through alleviating traffic congestion. An LOS analysis was conducted to analyze the level of congestion along the proposed additional HOV lane or Express Lanes, which would indicate whether the project would result in enhanced trip reliability for transit. Based on the results of the LOS analysis for both alternatives, the single HOV lane in Alternative 2 provides less benefit to HOV and transit vehicles than the dual Express Lanes included in Alternative 3. Table 3.1.6-5 shows that in 2025 the single HOV lane in Alternative 2 is projected to operate at LOS F in the EB direction during the PM peak hour along two of the three study segments; it is projected to operate at LOS F in the WB direction during both the AM and PM peak hours along two of the three study segments. Table 3.1.6-13 shows that in 2045 the single HOV lane is projected to operate at LOS F in the EB direction during the AM peak hour along one of the three study segments and during the PM peak hour along all three of the study segments; it is projected to operate at LOS F in the WB direction during the AM peak hour in all three of the study segments and during the PM peak hour along two of the three study segments. The dual Express Lanes in Alternative 3 are projected to operate at LOS D or better in both directions in 2025 and 2045 along all study segments. Therefore,

HOV and transit vehicles would encounter less congestion and operate with greater trip reliability in the Express Lanes under Alternative 3 compared to the HOV lanes under Alternative 2.

The greater capacity provided under Alternative 3, compared with Alternative 2, will provide greater transportation benefits to commuters, transit, and goods moving both through the corridor and to/from destinations along the corridor.

Freight and Logistics Movement

With approximately 40 percent of the national imports arriving at the Los Angeles/ Long Beach seaport facilities, the continuous movement of goods along I-10 is a crucial aspect of continued economic development for San Bernardino County, the southern California region, and the nation as a whole. Freight movement via truck transport is a major component for maintaining the region's complex trade and goods production and movement system, including southern California's seaports, airports, rail yards, logistics facilities, and distribution centers. If no improvements are made to the I-10 corridor, trucks traveling through the I-10 corridor will experience severe traffic congestion before the design year 2045.

The project study area, as well as all of southern California, has experienced dramatic growth in the last 30 years, and this trend is expected to continue, including expansion of seaports, airports, rail yards, logistics facilities, and distribution centers, which will increase truck traffic. During the past several decades, the SCAG region, including Orange, Imperial, Riverside, San Bernardino, Los Angeles, and Ventura counties, has been one of the fastest-growing regions in the nation. Cities within San Bernardino County are projected to increase at a faster rate than cities within Los Angeles County (see Table 3.1.2-1 in Section 3.1.2, Growth). It is therefore crucial that I-10, as a vital east/west artery for intra-regional and inter-regional travel for goods and people, including to and from some of the largest ports in the country, be improved for this projected growth.

While freight generally moves in the GP lanes, some freight in lighter trucks (e.g., local FedEx and UPS vehicles) would be allowed to use the HOV and Express Lanes with both Alternative 2 and Alternative 3. The addition of an Express Lane west of Haven Avenue would provide benefits to freight movement by directly serving some local delivery freight vehicles, as well as by freeing up capacity in GP lanes for heavier longer distance trucks. The provision of an HOV lane east of Haven Avenue would free up capacity in the GP lanes for all trucks, but the dual Express Lanes

between Haven Avenue and I-215 would free up even more capacity in the GP lanes for heavier trucks and directly serve some lighter trucks.

LA/Ontario International Airport

LA/Ontario International Airport is located in Ontario just south of the I-10 freeway alignment. Access to the airport is less than 0.5 mile south from I-10, with the primary entrance located at Archibald Avenue. With projected growth of population and jobs within San Bernardino County and the region, the airport is anticipated to serve as an important transportation hub for the region. The proposed improvements associated with the I-10 CP between Haven Avenue and Vineyard Avenue are considered an integral component for the success of the airport because it would greatly enhance access and east-west mobility leading directly to LA/Ontario International Airport.

The build alternatives would improve access to and from LA/Ontario International Airport and the surrounding area, which also includes major logistics, UPS airlines, and distribution businesses developed around the airport.

Metrolink and Regional Rail Transit Services

Metrolink is a southern California commuter rail system consisting of 7 service lines and 55 rail stations in Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties. The San Bernardino Line, which is the heaviest utilized of the 7 lines, runs parallel to the I-10 corridor, extending from downtown Los Angeles to downtown San Bernardino. The San Bernardino Line stops at stations near the I-10 CP, including Pomona (North), Claremont, Montclair, Upland, Rancho Cucamonga, Fontana, Rialto, and San Bernardino.

Improvements to the I-10 corridor under either build alternative would increase travel speeds, reduce congestion, and thereby improve access to and from Metrolink stations along the corridor. This is anticipated to encourage a greater growth and regional expansion of efficient transit options at the same time. In comparison, Alternative 3 would have additional benefit and greater capacity compared to Alternative 2 by providing improved access to/from the Metrolink stations along the corridor and enhanced trip reliability. Alternative 2 provides some benefits east of Haven Avenue; however, it will not provide the same level of long-term congestion relief as Alternative 3; the GP lanes have projected-congestion less than 10 years after opening the HOV lane.

The build alternatives also complement other regional rail transit services planned for San Bernardino and Los Angeles counties by enhancing access to these services. One project that would benefit from the I-10 CP build alternatives is the proposed Metro Gold Line Foothill Extension Project, which will ultimately extend the existing Gold Line light rail system from its current terminus in Pasadena to Montclair. Both build alternatives would support this planned system by improving vehicular access for San Bernardino County commuters to and from the ultimate eastern terminus of the light rail in Montclair, which will be located north of the I-10/Monte Vista Avenue interchange. Specifically, Alternative 3 would include ramp and structure improvements at the I-10/Monte Vista Avenue interchange, which would also facilitate better access to the planned Montclair Station.

Omnitrans

Omnitrans also provides transit services along the I-10 corridor within the San Bernardino Valley. As the largest transit agency in San Bernardino County, the Omnitrans fixed-route service consists of 27 bus routes covering 15 cities and unincorporated areas of the county. Fixed-route bus service runs primarily along major east-west and north-south corridors. The average wait for each route (headway) varies from 15 minutes to hourly service, with approximately 18 hours of service on weekdays, 13 hours on Saturdays, and 12 hours on Sundays.

Omnitrans began providing express bus passenger services along the I-10 corridor in September 2015. This freeway express bus route along I-10 connects the downtown San Bernardino Transit Center with Arrowhead Regional Medical Center, Ontario Mills, and the Montclair Transit Center (see Figures 1-4 and 1-5). Omnitrans is considering several locations along I-10 that may be suitable for implementing key bus stop locations, allowing greater transit connectivity and opportunities to accommodate trip transfers for existing and future customers. As part of the I-10 CP, bus stops would be constructed at the WB and EB on-ramps of the Mountain Avenue interchange in Alternative 3 and at the WB and EB on-ramps of the Sierra Avenue interchange in Alternatives 2 and 3. Associated intersection improvements, pedestrian access enhancement, and traffic signal modifications would be included in the project design to accommodate the Omnitrans express bus services and facilitate the trip transfers to and from local bus services. Once either of the build alternatives is constructed, the proposed Omnitrans route would be able to use approximately 24 miles of the HOV or Express Lanes on I-10, resulting in a reduced travel time of approximately 50 percent compared to local bus services. The route is designed to maximize transfer potential to Foothill Transit's SilverStreak in Montclair, Metrolink

trains, and other Omnitrans routes for better connectivity regionally. Omnitrans also offers a freeway express bus route along Route 215, which connects downtown San Bernardino with downtown Riverside.

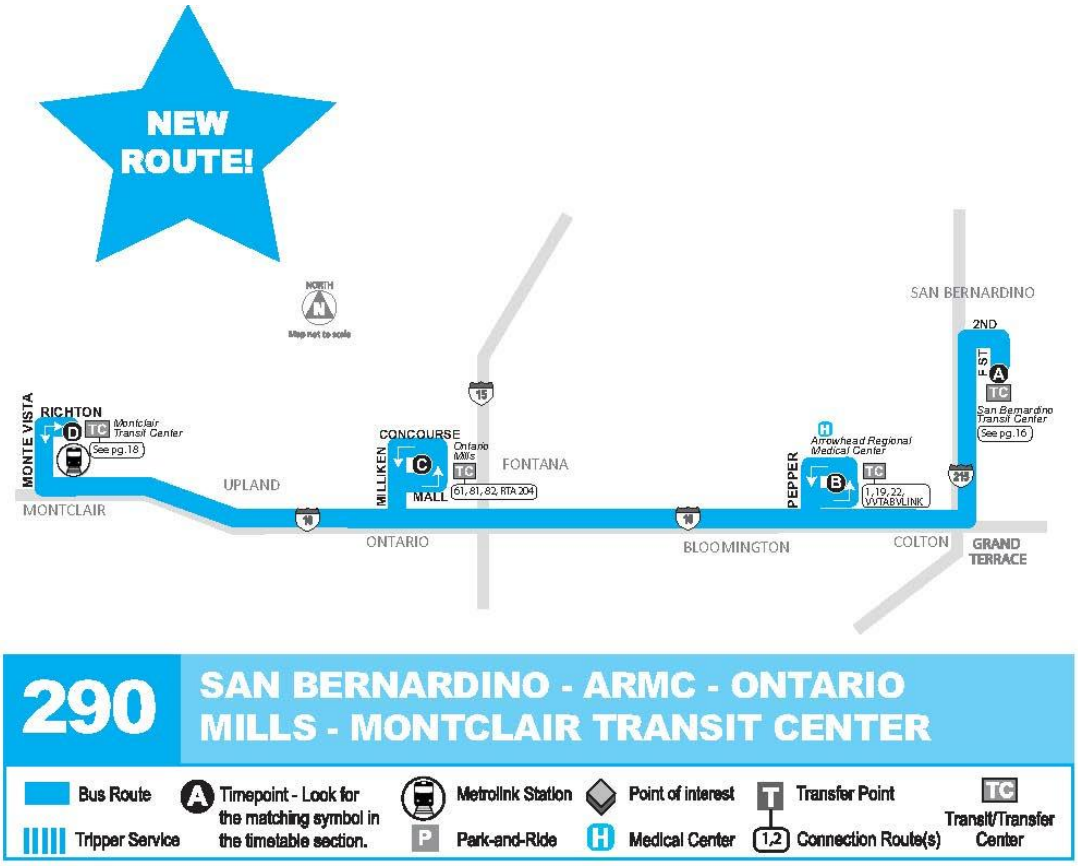


Figure 1-4 Omnitrans Freeway Express Bus Route along I-10

Figure 1-5 Omnitrans Freeway Express Bus

Another express bus line, the sbX Green line, San Bernardino County's first-ever Bus Rapid Transit (BRT) Line, travels a 15.7-mile route along the E Street Corridor, from Cal State University San Bernardino in the north to Loma Linda University & Medical Center in the south. BRT is a premium transit service that includes the development of coordinated improvements to a bus transit system's infrastructure, equipment, operations, and technology to provide a faster, more attractive, high-quality, high-capacity bus service. Service runs weekdays, Monday through Friday, with service every 10 minutes during peak hours and every 15 minutes during off-peak hours. Additionally, the sbX Green line has stations in close proximity to the I-10 corridor and crosses the corridor in some locations.

Omnitrans has also proposed additional BRT services, including two routes paralleling and serving the I-10 corridor: the Holt Boulevard/4th Street corridor and the San Bernardino Avenue corridor. The proposed lines would link the Pomona Transcenter in Los Angeles County with Metrolink Stations and downtown San Bernardino.

Additionally, Omnitrans provides its Access Service, which is a public transportation service for people unable to independently use the fixed-route bus service for all or some of their trips, and mandated by the Americans with Disabilities Act (ADA). Access Service provides curb-to-curb service to complement the Omnitrans fixed-

route bus system and is available during the same periods that fixed-route service operates.

By improving the I-10 corridor, it is anticipated that the project will enhance Omnitrans' current service and access to and from transit centers and encourage increased ridership, thereby increasing transit usage along the I-10 corridor and surrounding communities. Several Omnitrans routes utilize facilities that would be improved by either build alternative, though the Alternative 2 improvements would provide less capacity than Alternative 3 and would not provide the same level of long-term trip reliability as Alternative 3 because the HOV lanes are projected to become congested less than 10 years after opening. Conversely, Alternative 3 would provide the greatest capacity for the existing express bus services and trip reliability along I-10, adding potential for expanded express bus services connecting primary transit stops at the San Bernardino, Pepper, Sierra, Ontario Mills Shopping Center, and Monte Vista transit hubs.

Vanpool Programs

Vanpool programs are designed to transport groups of people to work in shared vans. It is an example of "shared mobility," an emerging transportation strategy to provide the public with alternatives to driving alone. The Federal Transportation Administration (FTA) considers vanpools a public transportation mode when a vanpool is subsidized on an ongoing basis and meets certain FTA public transit requirements. Employees that live and work near one another and share similar schedules can form a group that commutes together between home and work. In most vanpool programs, such as those operated by the San Diego Association of Governments (SANDAG), Orange County Transportation Authority (OCTA), and Los Angeles County Metropolitan Transportation Authority (Metro), which has the largest public vanpooling program in North America, riders pay a low monthly fare based on distance and number of participants. This monthly fare covers all costs of the vanpool, including fuel, maintenance, insurance, tolls, roadside assistance, and other assorted costs.

In San Bernardino County, SANBAG and the Victor Valley Transit Authority partnered to develop and administer the San Bernardino Regional Vanpool Program (Victor Valley Phase), which began in September 2012. By March 2014, the program had 139 active vanpools. Of these vanpools, the average occupancy was 80 percent and the participants traveled roughly 300,000 miles annually. Based on the success of this pilot program, SANBAG is currently working to expand the program countywide

and possibly extend it into Riverside County in partnership with the Riverside County Transportation Commission (RCTC).

Vanpools traveling along the I-10 corridor would benefit to some extent under both of the build alternatives because both build alternatives would result in reduced congestion, increased throughput, and enhanced trip reliability. Although Alternative 2 would provide limited capacity for the near term, Alternative 3 would provide the greatest benefit for vanpools by providing additional capacity and long-term trip reliability in the Express Lanes. Implementation of either of the build alternatives is anticipated to potentially increase vanpool usage within the I-10 corridor.

Carpool Programs

The purpose of carpool lanes, also known as HOV lanes, is to decrease the number of vehicles on freeways by providing incentives for commuters to carpool instead of commuting alone. Alternative 2 would extend the existing HOV lane in each direction of I-10 from the current HOV terminus near Haven Avenue in Ontario to Ford Street in Redlands, a distance of approximately 25 miles. The extended HOV lanes would result in reduced congestion, increased throughput, and enhanced trip reliability for carpoolers; however, the HOV lanes proposed for Alternative 2 would only provide congestion relief for less than 10 years after opening before they become congested. For Alternative 3, the current toll policy is to open the Express Lanes for carpools with three or more occupants (HOV3+) for free, with the exception of heavy peak-period traffic. During heavy peak-period traffic (e.g., weekends and some holidays), HOV3+ may pay a discounted toll. Though both build alternatives would benefit commuter connectivity for carpoolers along the corridor by reducing congestion, providing increased trip reliability, and improving access to and from carpool facilities along the corridor, Alternative 3 provides a greater overall improvement in every regard.

Park-and-Ride Facilities

There are three existing park-and-ride lots in the vicinity of the I-10 corridor between the LA/SB county line and Ford Street as listed below:

- Montclair Transportation Center, 5091 Richton Street, Montclair
- Bloomington Facility, 10175 Cedar Avenue, Bloomington
- sbX Redlands Boulevard Parking Facility, 10554 Anderson Street, Loma Linda

These park-and-ride lots are part of SANBAG's mobility program that promotes public transit and carpooling/van pooling throughout San Bernardino County. Caltrans and SANBAG will continue to work together to identify the need for park-and-ride lots for the future. No improvements to the existing parking lots are proposed as part of this project.

1.3 Independent Utility and Logical Termini

A transportation project is required by the Federal Highway Administration (FHWA) (23 *Code of Federal Regulations* [CFR] 771.111) to meet standards that establish a project's "independent utility" and "logical termini." For a project to have "independent utility," it must be usable and a reasonable expenditure, even if there are no additional transportation benefits that "stand alone" and are not dependent on or trigger the implementation/need of other projects. Additionally, a project must not preclude other potential transportation projects from being implemented in the future.

Both of the build alternatives propose improvements in the corridor that would be fully usable regardless of any other planned future improvements in the corridor. The additional lanes represent a reasonable expenditure of transportation funds because of the peak-period congestion that currently exists in the corridor and is forecast to become more extensive over time. Additionally, the I-10 CP is, and would be, independent of other actions/projects by meeting the objectives of the project's stated purpose and need, and by not creating/introducing congestion for areas outside of the project limits.

As described in Section 3.1.6, Traffic and Transportation/Pedestrian and Bicycle Facilities, and Section 3.2.6, Air Quality, the proposed project would provide many benefits, including:

- Reducing travel time in the corridor by providing additional travel lane(s) in each direction on I-10.
- Promoting carpooling and transit, thereby helping to achieve air quality benefits.
- Reducing congestion and increasing travel speeds in the corridor during peak periods.
- Increasing mobility in the corridor.
- Improving access to the facility.

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

1.3.1 Logical Termini

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

The project corridor is of sufficient length to adequately address transportation issues that have been identified in the stated purpose and need.

Both of the build alternatives would be of sufficient length to provide considerable congestion relief on this corridor, within the project limits. Both of the build alternatives would result in improvements to current traffic conditions along the I-10 corridor without further additional transportation improvements being made in the area. For Alternative 2, the proposed western terminus at Haven Avenue would remove the lane drop that occurs with the termination of the existing HOV lane by extending the lane to the east.

For Alternative 3, the proposed western terminus near the LA/SB county line is in an area where WB peak-hour freeway traffic currently drops approximately 5 percent and is forecast in 2045 to drop by approximately 9 percent, or roughly 1,400 vehicles per hour through successive interchanges.

The proposed eastern terminus of both build alternatives is at Ford Street in Redlands. Ford Street represents logical termini because it coincides with the start of the existing EB truck climbing lane, which extends to Live Oak Canyon Road in Yucaipa. The truck climbing lane provides the fifth lane; therefore, there would be no reduction in lanes where the proposed additional lanes end.

"Segmentation" is when a transportation need extends throughout an entire corridor, but environmental issues and transportation needs are inappropriately discussed for just a segment of that corridor. Such segmentation could result in analyses that downplay total impacts, but result in more (smaller) projects with the same or more total impact, to address traffic needs within a corridor. The proposed project has been determined to have independent utility and logical termini and analyzes and addresses issues holistically within a large corridor, avoiding "segmentation."

Furthermore, the proposed build alternatives would not restrict any other foreseeable transportation improvements, or trigger the need for any, in the corridor. Alternative 2 would not preclude the implementation of the Express Lanes on I-10 that are included in the SCAG RTP because the Express Lanes would incorporate the proposed HOV lane in each direction. The change in management of the existing HOV lane to an Express Lane from the Los Angeles county line to Haven Avenue proposed under Alternative 3 would not prevent the HOV lane in Los Angeles County from continuing to operate as an HOV lane or, with a change in management, to operate as an Express Lane. Likewise, completion of an Express Lane to Ford Street in Redlands proposed under Alternative 3 would not prevent the addition of GP, HOV, or Express Lanes east of the project terminus.