



Transportation Concept Report
Interstate 710
District 7
July 2013



Approvals:

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DISCLAIMER

The information and data contained in this document are for planning purposes only and should not be relied upon for final design of any project. Any information in this Transportation Concept Report (TCR) is subject to modifications as conditions change and new information is obtained. Although planning information is dynamic and continually changing, the D7 Office of Transportation Planning makes every effort to ensure the accuracy and timeliness of the information contained in the TCR. The information in the TCR does not constitute a standard, specification, or regulation, nor is it intended to address design policies and procedures.

ABOUT THE TRANSPORTATION CONCEPT REPORT

System Planning is the long-range transportation planning process for the California Department of Transportation (Caltrans). The System Planning process fulfills Caltrans' statutory responsibility as owner/operator of the State Highway System (SHS) (Gov. Code §65086) by identifying deficiencies and proposing improvements to the SHS. Through System Planning, Caltrans focuses on developing an integrated multimodal transportation system that meets Caltrans' goals of safety, mobility, delivery, stewardship, and service.

The System Planning process is primarily composed of four parts: the District System Management Plan (DSMP), the Transportation Concept Report (TCR), the Corridor System Management Plan (CSMP), and the Transportation System Development Plan (TSDP). The district-wide **DSMP** is a strategic policy and planning document that focuses on maintaining, operating, managing, and developing the transportation system. The **TCR** is a planning document that identifies the existing and future route conditions as well as future needs for each route on the SHS. The **CSMP** is a complex, multi-jurisdictional planning document that identifies future needs within corridors experiencing or expected to experience high levels of congestion. The CSMP serves as a TCR for segments covered by the CSMP. The **TSDP** is a list of planned and partially programmed transportation projects used to recommend projects for funding. These System Planning products are also intended as resources for stakeholders, the public, and partner regional and local agencies.

TCR Purpose

California's State Highway System needs long range planning documents to guide the logical development of transportation systems as required by law and as necessitated by public, stakeholders, and system users. The purpose of the TCR is to evaluate current and projected conditions along the route and communicate the vision for the development of each route in each Caltrans District during a 20-25 year planning horizon. The TCR is developed with the goals of increasing safety, improving mobility, providing excellent stewardship, and meeting community and environmental needs along the corridor through integrated management of the transportation network, including the highway, transit, pedestrian, bicycle, freight, operational improvements and travel demand management components of the corridor.

STAKEHOLDER PARTICIPATION

Stakeholder participation was sought throughout the development of the Interstate/State Route 710 TCR. Outreach involved internal and external stakeholders. Both internal and external stakeholders were asked to review the document for comments, edits, and for consistency with the intent of existing plans, policies, and procedures. The process of including and working closely with stakeholders adds value to the TCR, allows for outside input and ideas to be reflected in the document, increases credibility and helps strengthen public support and trust.

EXECUTIVE SUMMARY

The Interstate/State Route 710 Transportation Concept Report (TCR) is divided into several major sections; three of the sections – the Corridor Performance, System Characteristics and Corridor Concept – are the core of the document. All of the remaining sections provide a context for analyzing the route 710 corridor and document the data resources.

The main purpose of this TCR is to evaluate current and projected conditions along the route and suggest a configuration for route 710 that will meet projected demand within a framework of programming and implementation constraints and regional policy.

Historically the freeway system in Southern California is highly congested and this trend will continue into the future. Due to financial, environmental, right of way and political constraints, it is very difficult for Caltrans to continue adding more lanes to the system. With these limitations, Caltrans District 7 office has established LOS F0 as the minimum acceptable level of service on the freeway system. (1996 District System Management Plan) The 2035 concept facility intent is to show how much additional capacity is needed to achieve the desired LOS.

Route 710 traverses over fifteen cities and communities in Los Angeles County. It is a major Goods Movement route providing access to both international and domestic commerce and local commute traffic. Currently, the Route Classification for the section of Route 710 beginning from West Ocean Blvd. in Long Beach to I-10 is an Interstate route and from I-10 to Valley Blvd. in Alhambra is a State Route and also West Del Mar Blvd. to SR-134 in Pasadena is a State Route.

Concept Summary

Long Beach Freeway

<u>Seq.</u>	<u>P.M.</u>	<u>Segment Description</u>	<u>2035 System Operation/Concept</u>	<u>2035 Facility Concept</u>
1	4.96 - 6.8	Begin Fwy.-Rte. 1	Other Fwy/Expressway	Freeway
2-7	6.8 -T27.48	Rte. 1–Valley Blvd.	Interstate/Interregional Commute Corridor	Freeway
8	T27.48- T32.1	Valley Blvd.- W. Del Mar Blvd. (Begin Fwy.)	Unconstructed	Unconstructed
9	T32.1- R32.72	Begin Fwy.- SR-134	Commute Corridor	Commute Corridor

Concept Rationale

Both the seaports of Los Angeles and Long Beach as well as rail and truck transfer facilities all use Route 710 for goods movement in addition to local commuters. Traffic volumes in 2008 ranged from 47,800 to 286,900. Several rehabilitation projects are underway as the roadway suffers severe wear and tear. The northern portion is unconstructed and currently under study (SR-710 North Study).

Proposed and On-going Projects and Strategies

Route 710 is identified as a Primary Goods Movement Corridor with a high amount of truck traffic; except for segments 7 through 9. The North SR-710 Study is ongoing and would determine through scenario planning, how the unconstructed portion of the route (Segments 8) would be classified. In 2008, Annual Average Daily Truck Traffic (AADTT) ranged from 2.7% to 21.3%.

Several projects are in the pipeline including the following; I-710 Corridor Project, I-710 Freight Corridor, I-710 Rehabilitation Project, SR-710 North Study and Gerald Desmond Bridge Replacement.

The references following, pertains to the table on the next page (6):

** The number of lanes in the LOS D Attainment column is for both directions. LOS D Attainment indicates how many lanes it would require to achieve LOS D. It is meant to show the severity of future conditions and what it would take to achieve LOS D. Caltrans is not suggesting that it is our plan to build the facility to achieve the LOS D.*

**The number of lanes in the LOS F0 attainment column is for both directions. The data in the LOS F0 attainment column is only meant to show the severity of congestion on our system and what it would require to achieve that level of service. We recognize the difficulty in achieving the desired LOS given the financial, environmental, right of way and political constraints. However, it is Caltrans' goal to provide improved mobility when feasible.*

** The 2035 Baseline includes all planned and programmed projects in the 2012 RTP*

** We used 2008 for existing and 2035 for future to be consistent with the 2012 RTP*

**sometimes the model output implies that there would be aux lanes (each direction) and aux. lanes are given only half capacity. That is why there are instances where we have odd number of lanes for both directions.*

Route 710 – 2035
FACILITY

Segments	ADT	Dir. Split	PEAK HOUR P.H.%	TRUCK P.H. Truck P.H%	2035 Baseline RTP (Both Directions)		LOS "D"* (Both Directions)	Concept Attainment (Both Directions)
1	115,200	55.0%	7,700 (6.6%)	2,100 (27.5%)	6 MF		6	6
					V/C	LOS		
					.72	C		
2	205,000	54.1%	13,300 (6.5%)	3,100 (23.2%)	8 MF		9	9
					V/C	LOS		
					.82	D		
3	283,000	50.8%	20,400 (7.2%)	3,800 (18.8%)	10 MF		13	10
					V/C	LOS		
					1.06	F0		
4	233,200	51.1%	17,500 (7.5%)	2,900 (16.7%)	8 MF		11	8
					V/C	LOS		
					1.14	F0		
5	220,600	50.2%	16,500 (7.5%)	2,800 (16.9%)	8 MF		11	8
					V/C	LOS		
					1.21	F0		
6	166,500	51.0%	12,300 (7.4%)	2,100 (17.4%)	6 MF		8	6
					V/C	LOS		
					1.07	F0		
7	69,100	67.4%	4,600 (6.6%)	150 (3.3%)	6 MF		6	6
					V/C	LOS		
					.63	C		
8	U N C O N S T R U C T E D						-	-
9	50,600	74.4%	4,200 (8.2%)	200 (4.0%)	4 MF		4	4
					V/C	LOS		
					.63	C		

Directional Split – peak period of the peak direction.

CORRIDOR OVERVIEW

Route Description

The limits of the route, as stated under Article 3 of the Statutes of the State of California, are from Route 1 in Long Beach to I-210 in Pasadena. Route 710 also includes that portion of the freeway between Route 1 and the northern end of Harbor Scenic Drive, that portion of Harbor Scenic Drive to Ocean Boulevard, that portion of Ocean Boulevard west of its intersection with Harbor Scenic Drive to its junction with Seaside Boulevard, and that portion of Seaside Boulevard from the junction with Ocean Boulevard to Route 47 (with some restriction). The northern portion of the freeway between Valley Blvd. in Alhambra and West Del Mar Boulevard in Pasadena is unconstructed.

Route Segmentation

With regards to Route 710, segments are generally defined as “freeway interchange to freeway interchange”, “county line to freeway interchange” or “freeway interchange to end of freeway”. The table below depicts segments for this route.

SEGMENTS	DESCRIPTION	BEGINNING P.M.	ENDING P.M.
1	Begin Fwy. to I-405	4.96	9.41
2	I-405 to SR-91	9.41	12.97
3	SR-91 to I-105	12.97	R15.69
4	I-105 to I-5	R15.69	23.28
5	I-5 to SR-60	23.28	24.63
6	SR-60 to I-10	24.63	26.5
7	I-10 to Valley Blvd.	26.5	T27.48
8	UNCONSTRUCTED	T27.48	T32.08
9	Begin Fwy. - SR-134	T32.08	R32.72

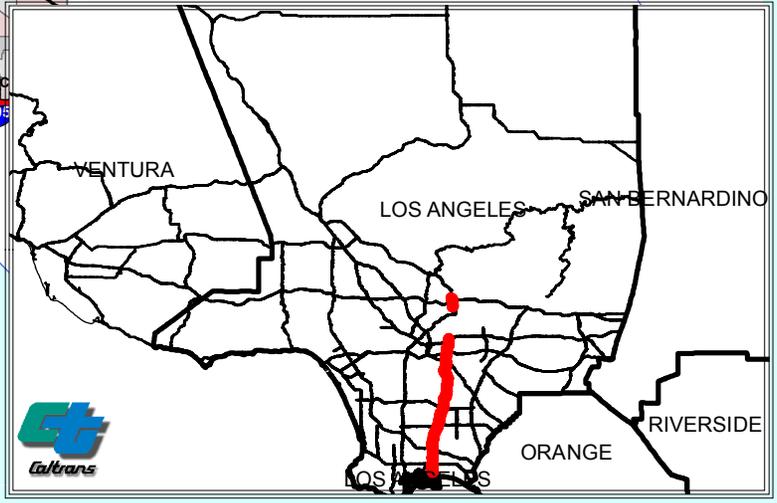
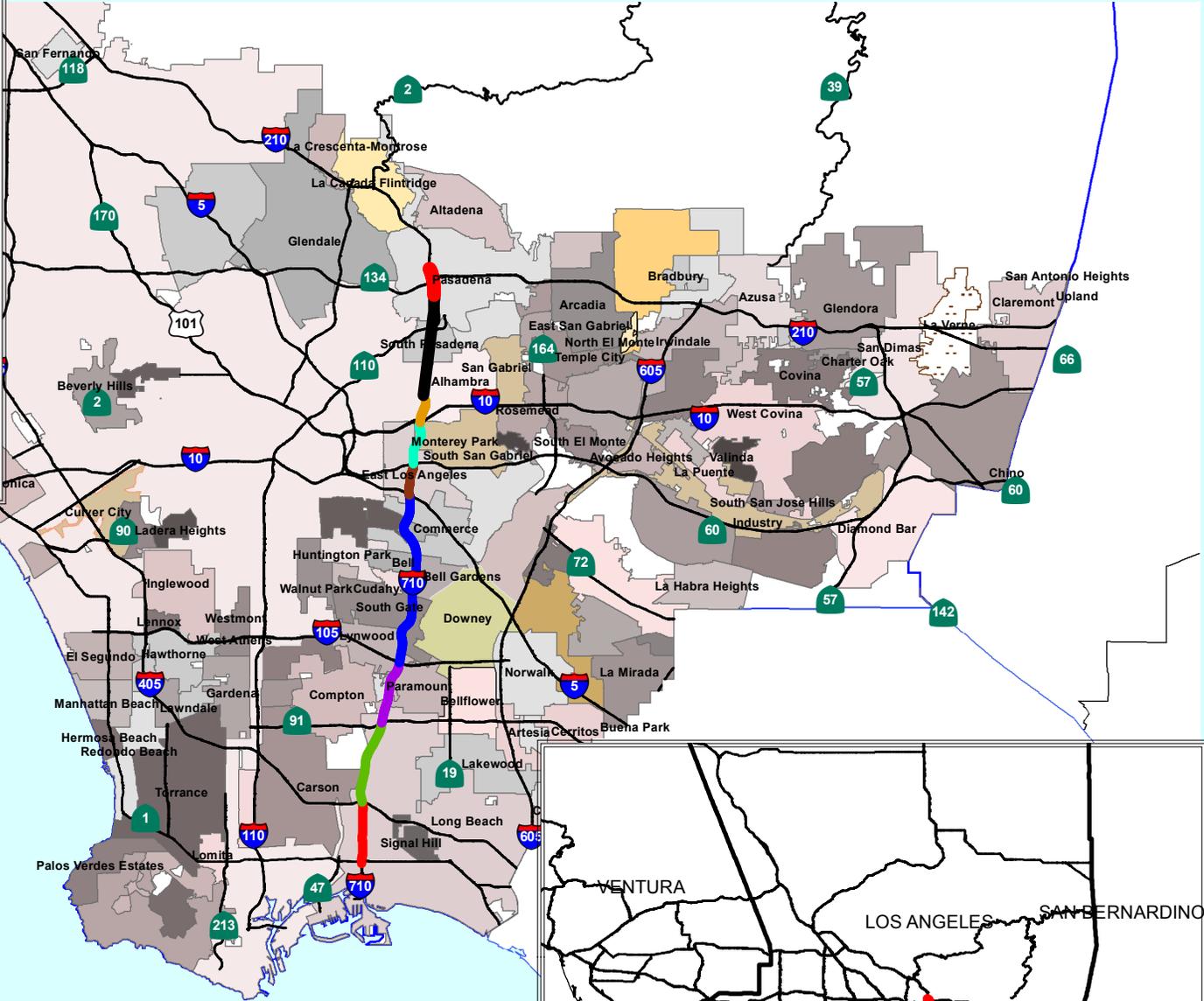
I-710 SEGMENTS MAP

LEGEND

I-710 SEGMENTS

LIMITS

- █ SEG 1: Begin Fwy to I-405
- █ SEG 2: I-405 to SR-91
- █ SEG 3: SR-91 to I-105
- █ SEG 4: I-105 TO I-5
- █ SEG 5: I-5 TO SR-60
- █ SEG 6 : SR-60 TO I-10
- █ SEG 7 : I-10 TO Valley Blvd.
- █ SEG 8: UNCONSTRUCTED
- █ SEG 9: Begin Fwy - SR-134



Route Purpose

Route 710 is an Interstate, also a State Route - Interregional commute corridor that provides access to the Los Angeles Central Business District (CBD) from Long Beach to the south and from Pasadena to the north. It also provides access to the Long Beach and Pasadena CBD, access to the Catalina Island ferries, Port of Long Beach, Port of Los Angeles, Long Beach Municipal Airport, Long Beach World Trade Center, truck terminals in the Cities of Commerce and Vernon, and California State University, Los Angeles. Due to the major sea ports and terminals, this facility serves a large volume of truck traffic.

Long Beach Freeway

<u>Seq.</u>	<u>P.M.</u>	<u>Description</u>	<u>Route Purpose</u>	<u>Facility Type</u>
1	4.96- 6.8	Begin Fwy-Rte.1	Other Fwy/Expressway	Freeway
2-7	6.8-T27.48	Rte.1-Valley Blvd.	Interstate/Interregional Freight Corridor	
8	T27.48- R32.1	Valley Blvd. - W. Del Mar Blvd. (Begin Fwy)	Unconstructed	Unconstructed
9	T32.72- R32.72	Begin Fwy.- SR-134/I-210 IC	Commute Corridor	Commute Corridor

Functional Classification

Route 710 is classified as Principal Arterial. The portion of Route 710 between Route 1 and Route 10 is designated as a Terminal Access Route of the Federal Surface Transportation Assistance Act (STAA) truck route. The remainder of the route is designated as a part of the STAA network and the SHELL System (Subsystem of Highways for the movement of Extra Legal permit Loads). For the purpose of this analysis, Route 710 is examined in nine segments based on congestion; major changes in Average Annual Daily Traffic (AADT), changes in the number of freeway lanes, and interchanges with other freeways, state highways and county boundaries. Per MAP-21 legislation, the NHS system have been expanded to include all Principal Arterials and added to the new Enhanced NHS. (October 1, 2012)

Long Beach Freeway

<u>Seq.</u>	<u>P.M.</u>	<u>Limits</u>	<u>Functional Classification.</u>
1	4.6-6.8	Begin Fwy-Rte 1	Freeway
2-7	6.8-R32.1	Valley Blvd.- W. Del Mar Blvd.	Principal Arterial NHS
9	T32.1- R32.72	Begin Fwy.-SR134/I-210 IC	Other Fwy./Exp. Way

710 ROUTE DESIGNATION AND CHARACTERISTICS

Segment	1	2	3	4	5	6	7	8	9
Freeway and Expressway System	Freeway	U N C O N S I D E R E D	Freeway						
National Highway System	Yes		Yes						
Strategic Highway Network	Yes	Yes	Yes	Yes	Yes	Yes	No		No
Scenic Highway	No		No						
Interstate/Inter--Regional Road System Route	Yes	Yes	Yes	Yes	Yes	Yes	No		No
High Emphasis Route	No		No						
Focus Route	No		No						
Goods Movement Route	Yes	Yes	Yes	Yes	Yes	Yes	No		No
Truck Designation	STAA/NHS	STAA/NHS	STAA/NHS	STAA/NHS	STAA/NHS	STAA/NHS	No		No
Conventional Highway	No		No						
Rural/Urban/	Urbanized		Urbanized						
Terrain	Flat	Flat	Flat	Flat	Flat	Flat	Rolling		Rolling
MPO	SCAG		SCAG						
Regional Transportation Agency	METRO		METRO						
Congestion Management Agency	METRO								
Tribes	N/A								
Air District	AQMD								

COMMUNITY CHARACTERISTICS

Route 710 traverses five of Southern California Association of Governments (SCAG) Regional Statistical Areas (RSA) namely; Long Beach, Southgate, Downey-Santa Fe Springs, Glendale and West San Gabriel. Cities in the above RSAs are listed in the table and graph on page 13. The City of Long Beach shows the highest population, households and employment while the Cities of Signal Hill, Cudahy and Maywood shows some of the lowest of all three listed categories.

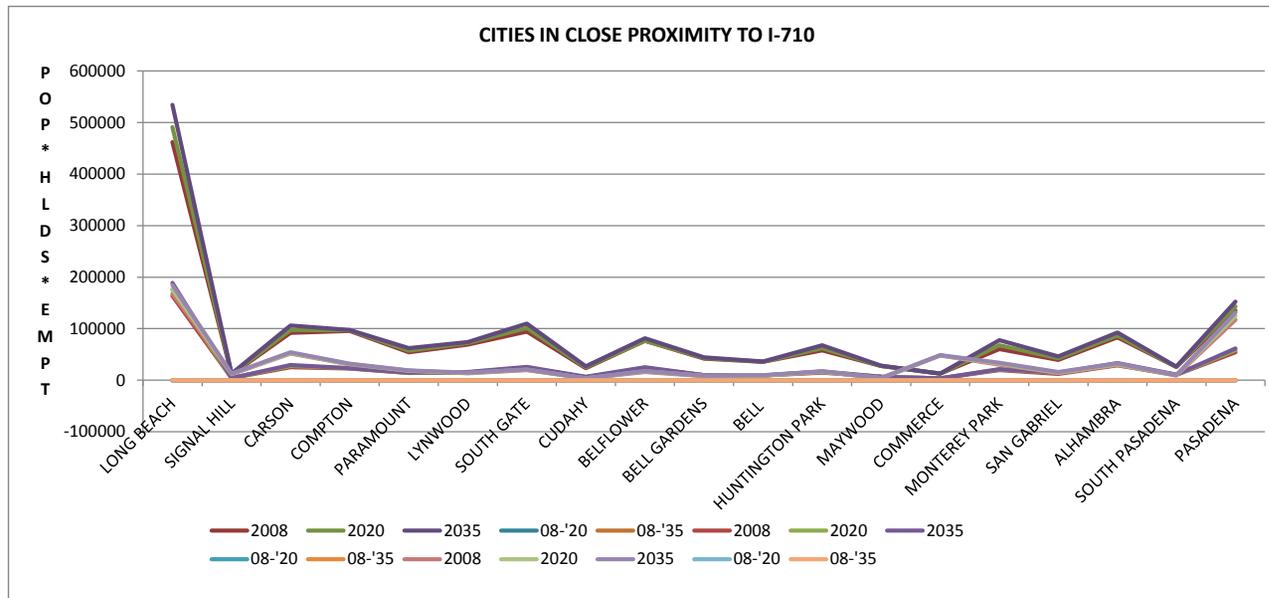
LAND USE: Land use along Interstate/State Route 710 corridor varies from residential to commercial and industrial.

Interstate/State Route 710 traverses over fifteen cities including unincorporated Los Angeles County communities. Some of these cities and communities include Los Angeles, Long Beach, Wilmington, Signal Hill, Carson, Lakewood, Downey, Compton, Paramount, Bellflower, Lynwood, Monterey Park, South Gate, Cudahy, Bell, Bell Gardens, Huntington Park, Maywood, Commerce, Alhambra, South Pasadena and Pasadena. The route is a major Goods Movement Corridor for Interstate, International and local commerce, except for segments 7 through 9. It also serves as a local commute route.

Major trip generators for Route 710 include the ports of Long Beach and Los Angeles, and related goods facilities such as; several Intermodal Transfer Facilities and truck and rail terminals in the cities of Vernon and Commerce, the Los Angeles Central Business District (LACBD), Long Beach Central Business District (LBCBD), California State University, Los Angeles, University of Southern California Medical Center, Catalina Island ferries, Long Beach Municipal Airport, Long Beach World Trade Center, etc.

CITIES IN CLOSE PROXIMITY WITH I-710

LOS ANGELES COUNTY CITIES:						POPULATION					HOUSEHOLDS					EMPLOYMENT				
CITIES	2008	2020	2035	% change		2008	2020	2035	% change		2008	2020	2035	% change						
				08-'20	08-'35				08-'20	08-'35				08-'20	08-'35					
LONG BEACH	462,200	491,000	534,100	6.23%	15.56%	163,500	175,600	188,900	7.40%	15.54%	168,100	176,000	184,800	5.13%	8.55%					
SIGNAL HILL	11,000	11,800	12,900	7.27%	17.27%	4,100	4,100	4,400	0.00%	7.32%	11,700	12,300	12,700	1.16%	4.05%					
CARSON	91,700	97,500	106,000	6.32%	15.59%	25,500	27,400	29,600	7.45%	16.08%	51,900	52,500	54,000	1.96%	5.23%					
COMPTON	95,900	96,900	97,600	1.04%	1.77%	22,900	23,100	23,100	0.87%	0.87%	30,600	31,200	32,200	1.09%	4.37%					
PARAMOUNT	54,100	57,100	62,200	5.55%	14.97%	13,900	14,100	14,400	1.44%	3.60%	18,300	18,500	19,100	4.55%	9.85%					
LYNWOOD	69,300	72,300	74,300	4.33%	7.22%	14,600	15,300	15,700	4.79%	7.53%	13,200	13,800	14,500	1.52%	4.57%					
SOUTH GATE	94,400	101,200	110,000	7.20%	16.53%	23,400	24,800	26,100	5.98%	11.54%	19,700	20,000	20,600	2.94%	8.82%					
CUDAHY	23,600	25,200	27,200	6.78%	15.25%	5,600	6,000	6,400	7.14%	14.29%	3,400	3,500	3,700	5.63%	11.88%					
BELFLOWER	76,600	76,600	81,300	0.00%	6.14%	23,600	23,700	25,100	0.42%	6.36%	16,000	16,900	17,900	5.00%	10.00%					
BELL GARDENS	41,900	43,000	44,500	2.63%	6.21%	9,600	9,700	9,700	1.04%	1.04%	8,000	8,400	8,800	3.33%	7.78%					
BELL	35,500	35,900	36,400	1.13%	2.54%	8,900	8,900	9,000	0.00%	1.12%	9,000	9,300	9,700	2.44%	6.10%					
HUNTINGTON PARK	58,100	62,000	67,700	6.71%	16.52%	15,000	15,700	16,900	4.67%	12.67%	16,400	16,800	17,400	5.41%	8.11%					
MAYWOOD	27,400	27,600	28,000	0.73%	2.19%	6,600	6,600	6,700	0.00%	1.52%	3,700	3,900	4,000	-0.62%	1.04%					
COMMERCE	12,800	12,900	13,000	0.78%	1.56%	3,400	3,400	3,500	0.00%	2.94%	48,100	47,800	48,600	5.26%	10.86%					
MONTEREY PARK	60,100	67,900	77,700	12.98%	29.28%	19,900	20,900	21,700	5.03%	9.05%	30,400	32,000	33,700	5.63%	10.56%					
SAN GABRIEL	39,700	42,800	46,100	7.81%	16.12%	12,500	13,800	14,800	10.40%	18.40%	14,200	15,000	15,700	4.73%	9.80%					
ALHAMBRA	83,000	87,000	92,400	4.82%	11.33%	29,200	31,300	33,300	7.19%	14.04%	29,600	31,000	32,500	5.56%	11.11%					
SOUTH PASADENA	25,600	25,900	26,300	1.17%	2.73%	10,500	10,600	10,800	0.95%	2.86%	9,000	9,500	10,000	6.05%	11.94%					
PASADENA	135,300	143,300	152,500	5.91%	12.71%	54,500	58,400	61,400	7.16%	12.66%	117,300	124,400	131,300	6.05%	10.66%					



SOURCE: SCAG'S 2012 RTP Growth Forecast

SYSTEM CHARACTERISTICS

This Transportation Concept Report (TCR)¹ is an internal Caltrans planning tool intended to provide an initial look at developments within the route 710 corridor over the next twenty years. Its primary focus is on identifying needed improvements—to provide necessary added capacity in response to anticipated travel demand. It analyzes this need in three primary ways:

- 1). Documents current conditions;
- 2). Contrasts projected future demand with planned facilities (capacity); and
- 3). Proposes future development alternatives to address the shortfalls between demand and capacity.

As an initial step in the planning process, observations and conclusions stated in this document serve as reference for more complex and specific studies such as Feasibility Studies, Major Investment Studies, and Project Studies. This report was prepared based on research of Regional, State, and Federal policies, plans and documents. The references are addressed in footnotes, and Appendix sections.

This TCR analyzes route 710 conditions using the “segment” as the study unit. Segments are generally defined as “freeway interchange to freeway interchange”, “county line to freeway interchange” or “freeway interchange to end of freeway”. The map on page 8 illustrates these segments. The table on page 14 shows the route 710 characteristics.

1. This TCR is an update of the Interstate 710 Transportation Concept Report, 2000

ROUTE 710 SYSTEM CHARACTERISTICS

Segments	Limits	Post Miles	Facility Type	Mixed Flow Lanes	HOV Lanes	Centerline Miles	Lane Miles
1	Begin Fwy. to I-405	4.96-9.41	Interstate	3	0	7.83	23.49
2	I-405 to SR-91	9.41-12.97	Interstate	4	0	3.56	14.24
3	SR-91 to I-105	12.97-R15.69	Interstate	4	0	2.72	10.88
4	I-105 to I-5	R15.69-23-28	Interstate	4	0	7.59	30.36
5	I-5 to SR-60	23.28-24.63	Interstate	4	0	1.35	5.4
6	SR-60 to I-10	24.63-26.5	Interstate	3	0	1.85	5.61
7	I-10 to Valley Blvd.	26.5-T27.48	State Route	3	0	2.94	0.98
8	UNCONSTRUCTED	T27.48-T32.08	State Route	-	-	-	-
9	Begin Fwy. - SR-134	T32.08-R32.72	State Route	2	0	0.64	1.28

Transit Component

Current System

Two Los Angeles County Metropolitan Transportation Authority or METRO Express Transit Lines use this route, namely; METRO Lines 483 and 485. These two transit lines traverse route 710 in Segment 7. In addition, the Blue Line roughly parallels this route along Segments one and two then veers northwest towards downtown Los Angeles. The Green Line crosses route 710 at the I-105 interchange, providing service from Norwalk to El Segundo.

Four other municipal transit agencies provide indirect service along with the Green Line namely; Long Beach Transit, Cudahy Area Rapid Transit, Commerce Bus Lines and Monterey Park Transit. These transit agencies provide only local community based service. Currently, no High Occupancy Vehicle (HOV) Lanes exist on route 710.

The table below lists the agency and transit lines.

Agency	Line #	Hours of Operation
LACMTA	483, 485	A.M. + P.M. Commute Hours

Recent county legislation (“MTA Reform and Accountability Act of 1998”), has given the Los Angeles County Metropolitan Transportation Agency (LACMTA) the opportunity to expand and enhance its transit strategy. The agency spent \$1 billion to increase its fleet by nearly 2,100 by 2004. In addition, federal rulings to reduce overcrowding during peak periods have required the agency to purchase over 500 additional buses and increase service within the same time frame.

One of the major strategies of METRO’s Long-Range Transportation Plan is the preparation of a Bus System Improvement Plan including Bus Rapid Transit (BRT) to improve and augment transit services on overcrowded routes throughout Los Angeles County. In addition, other projects include extension of El Monte Busway to San Bernardino County line, a distance of approximately twenty miles. The Phase I of Metro Rail Gold Line from Los Angeles Union Station to Pasadena was opened. From Los Angeles Union Station to Eastside via route 710 at Atlantic Blvd. became operational in 2008. Phase II of the Gold Line which extends from Pasadena to

Claremont and the Expo light rail going to Santa Monica from downtown Los Angeles are other upcoming projects.

Future Consideration

METRO is also examining ways to connect the growing Metro Rail system to Los Angeles International Airport (LAX). The focus of this study is a four square mile area bounded by La Cienega Blvd. on the east, Manchester Ave to the north, Imperial Highway to the south and the LAX airport terminals on the west. Initial alternatives under consideration include Light Rail Transit (LRT), Automated People Mover (APM) and Bus Rapid Transit (BRT). METRO is currently analyzing various options for each transit type in order to narrow down the number of alternatives that will be carried forward to the environmental review phase.

Project Goals (LAX Connection)

1. Provide a reliable, fast, and convenient connection for passengers traveling between the airport and the regional transit system
2. Satisfy the surface transportation travel demand associated with a modern, world-class international airport
3. Increase the share of transit trips to and from LAX and reduce regional traffic congestion
4. Integrate with existing and future transit connections and airport facilities

The proposed High Speed Rail System traversing east-west of the Southern California region and to Northern California will also affect travel patterns.

These projects are compatible with SCAG's Regional Transportation Plan. In addition, SCAG has advocated the development of new transit centers and Park-and-Ride facilities. A universal fare system called EZ-Pass, allows unlimited travel on Metro Rail and Bus Systems and municipal bus operators. Metro has introduced 272 60-foot long compressed natural gas (CNG) buses with more seats allocated to high ridership zones. Caltrans funded 15 miles of a third passenger rail track between the Cities of Commerce and Fullerton (\$85 million), while Metrolink is adding a third rail

track along 30 miles of the Route 91 Corridor from Anaheim Canyon to Riverside (Federal funds: \$160 million).

The City of Los Angeles recently introduced Parking Management System (PMS) in the downtown area, which will be expanded on a regional basis in the future. The PMS provides a suite of applications and tools to facilitate monitoring, analysis and management of on- and off street parking in the city of Los Angeles. Please refer to LAExpressPark.org for more detailed information.

Senate Bill 1298 would allow “autonomous Vehicles” on California streets and highways. These self driving vehicles would be guided by radar and GPS systems instead of human hands on the steering wheel thus reducing human error and improving safety and reducing commute times.

Transit-Oriented Developments (TODs)

Caltrans supports programs such as Transit Oriented Development; a moderate to higher density development located within easy walk of a major transit stop. Transit Oriented Developments generally have a mix of residential, employment and shopping opportunities designed for pedestrians. Research has shown that these types of developments increase transit trips, walking and bicycling. SCAG’s 2012 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) and METRO’s 2013 Long Range Plan all support TOD developments.

Transportation System Management /Travel Demand Management

With the passage of Senate Bill (SB) 45 in 1998, the Transportation System Management program funds were consolidated with other program funds to provide for a broad range of transportation improvements through the Interregional Improvement Program (IIP), which include transportation system and demand management projects.

A major element of the route 710 concept is an improved utilization of the existing highway system. One aspect of this element is ramp metering. This strategy employs computer- controlled traffic signals to regulate the number of vehicles entering the freeway at one time. This helps alleviate freeway congestion, which occurs when traffic demand exceeds highway capacity.

Ramp Metering

Ramp metering is one of Traffic Management's tools used to regulate the flow of traffic entering the freeways during the peak hours. Ramp metering will:

- a. smooths the overall flow of freeway traffic,
- b. accommodate more vehicles per hour on the freeway,
- c. decrease commuting travel times, and
- d. increase safety on the freeway.

Ramp metering reduces traffic congestion on the freeway. This increases the flow rate of the mixed flow lane and allowing traffic to flow at greater speeds. The number of traffic accidents is reduced as well. Freeway congestion is most often caused by a bottleneck, where the freeway demand exceeds the freeway capacity. This condition usually occurs during the weekday peak hours, but some freeways experience congestion during the mid-day and some on weekends. When the demand exceeds the capacity, congestion creates queues of stop-and-go traffic, and ramp metering limits the amount of traffic entering the freeway so that the demand at the bottleneck does not exceed the capacity. A free-flowing traffic lane can carry 33% more cars than a congested lane. It is in the public interest to keep the freeways moving freely.

On weekdays, the meters operate 5 to 6 hours during the AM and PM peak periods, depending on the recurrent directional freeway congestion. Some ramps are also metered during the mid-day hours, and some are even metered on weekends. The ramp volume as well as the volume on the freeway determines the rate at which cars are allowed onto the freeway. The mainline responsive controllers react to the volumes on the freeway, such that if the volumes decrease significantly, then the meter will adjust and allow more cars onto the freeway. If the freeway volumes are very light, the meter may go to continuous green.

Projects within freeway segments identified in the Ramp Meter Development Plan should include provisions for ramp metering. However, there are ramp locations that are not metered, due to the heavy volume of traffic and/or insufficient storage area for the metered vehicles. The average cost of a ramp meter installation is over \$50,000. This cost as a percentage of the freeway construction varies depending on the type of freeway construction. In addition to ramp meters, a system of electronic traffic sensors,

changeable message signs, and closed-circuit television cameras have been installed district-wide to monitor traffic flow and respond to congestion in a variety of ways. These, plus a highway Advisory Radio and 24 hour traffic condition cable access “Freeway Vision” are controlled from a state-of-the-art Transportation Management Center. For further information on ramp metering please refer to; http://www.dot.ca.gov/dist07/resources/ramp_metering/

Goods Movement

The economic vitality and well being of the Greater Los Angeles Region depends upon the safe and timely transport of goods as well as people. Truck vehicle miles traveled is expected to double by 2030. Average annual daily heavy truck traffic exceeds 10,000 on route 710. Current levels of congestion are detrimental to this vitality, and future projections indicate that this situation will get much worse. Total Goods Movement traffic is expected to grow by more than 80% in the next 25 years as international trade volume triples. Significant actions thus need to be taken to protect the economic well being of the region. These include improved rail service, including more grade separations; additional and improved intermodal transfer facilities; truck lanes on major truck routes; improved access to and enhanced cargo handling capabilities at seaports; and improved air cargo accessibility with separation from passenger activities at airports. Some of the specific conditions affecting route 710 are as follows:

Trucks: Route 710 is part of the Surface Transportation Assistance Act (STAA) truck network, and is identified in the current SCAG RTP. Total truck volumes in 2008 range from 5% to 17.9% of AADT. Regionally, truck traffic is expected to increase by over 60% by 2035, with virtually no capacity available to handle this added volume. Several solutions to addressing this situation are being studied including; a dedicated truck lane for the Route 710 stretching from the seaports to SR-60; a non-polluting system of “Goods- Mover” for in and out of the ports similar to Vale Serra’s project in northern Brazil- a conveyor belt system and use of electric-only-powered trucks, etc.

Seaports: Route 710 will continue to handle some of the freight from the ports of Los Angeles and Long Beach. It is expected that most port cargo going less than 800 miles will be transported by truck. These are full service ports, handling

in particular containers, autos, and bulk cargo. Together they are the third busiest in the world, and are forecasted to triple in both domestic and international cargo volumes by 2035. A recent publication in the Los Angeles Times (Los Angeles Times; Thursday January 20, 2011, Page B2) states that 7.8 million containers moved in and out of the Los Angeles seaport during 2010, up 16% from 6.7 million in 2009. For the port of Long Beach, 6.3 million 20 foot equivalent containers (TEUs) were moved in 2010 compared to 5.1 million containers in 2009. This is a 25% increase over 2009.

Rail: In conjunction with trucks, airports and seaports, rail is one of the major components for goods movement. Union Pacific (UP) freight lines and Burlington Northern Santa Fe (BNSF) freight lines in conjunction with the Alameda Corridor, serve the southern end of route 710. Available facilities include an intermodal terminal in Los Angeles, a major classification yard in East Los Angeles, and a major truck-train transfer and warehouse facility in Los Angeles and the City of Commerce. Service improvements could include enhancement of and/or additional transfer facilities, additional tracks, and more grade separations. The Alameda Corridor includes an extensive list of these improvements and as such, will significantly enhance the movement of rail freight from the seaports through the Alameda Corridor-East to the San Bernardino County Line and beyond.

Burlington Northern Santa Fe (BNSF) Railways of Dallas, Texas recently submitted an Environmental Impact Report (EIR) for a new intermodal transfer facility. The proposed \$500 million Southern California International Gateway will be only four miles from the ports of Los Angeles and Long Beach. This means truck travel between the ports and the new intermodal yard will be reduced thereby reducing truck traffic on route 710 and also cutting down on air and noise pollution in the area.

Airports: Regionally, passenger travel by air is expected to increase to 167 million annual passengers in 2025 compared to 80 million in 1997. LAX in combination with Ontario International airport handled over 96% of the region's air cargo in 2010. Military air base conversions are under development planning and additional ground access improvements and funding need to be identified.

710 FREIGHT FACILITY TABLE					
Facility Type/Freight Generator	Location	Mode	Name	Major Commodity/ Industry	Comments/Issues
Ports	San Pedro Bay	Ship, Rail, Truck	POLA/ POLB	Electronics, Automobiles, Manufactured and Agricultural Products	Environmental Constraints: Traffic Congestion, Noise and Air Pollution
Intermodal Freight Facility	Cities of Commerce and Vernon	Truck, Rail	Hobart Yard	Electronics, Automobiles, Manufactured and Agricultural Products	Environmental Issues: Air, Noise and Water Pollution
Rail Yard	Long Beach/ Los Angeles	Rail	Maersk Rail Yard	Electronics, Automobiles, Manufactured and Agricultural Products	Traffic Congestion and its related unintended issues.
Rail Line	Long Beach/ Los Angeles, Compton	Rail	BNSF	Electronics, Automobiles, Manufactured and Agricultural Products	Environmental Issues: Air Noise and Water Pollution
Rail Line	Long Beach/ Los Angeles, Compton	Rail	UP	Electronics, Automobiles, Manufactured and Agricultural Products	Environmental Issues: Air, Noise and Water Pollution
Air Cargo Airport	LAX	Airplane	LAX	Agriculture, Electronics	Environmental Issues: Air, Noise and Water Pollution
Highways	Long Beach, Los Angeles, Commerce	Truck	I-10, I-710	Electronics, Automobiles, Manufactured and Agricultural Products	Environmental Issues: Air, Noise and Water Pollution. Possibility of a dedicated truck lane on I-710. Traffic Congestion

POLA-Port of Los Angeles
POLB-Port of Long Beach
BNSF-Burlington Northern, Santa Fe
UP-Union Pacific
LAX-Los Angeles International Airport
I-10-Interstate 10
I-710-Interstate 710

D7 GOODS MOVEMENT CORRIDOR MAP



SANTA BARBARA CO.

KERN CO.

0 1 2 3 4 5 6 7 Miles



VENTURA COUNTY

LOS ANGELES COUNTY

SAN BERNARDINO CO.

- Legend**
- AIRPORTS IN D7
 - PORTS IN D7
 - RAIL

MAJOR GOODS MOVEMENT ROUTES IN D7

HWY_NUM

- 10
- 101
- 105
- 110
- 210
- 405
- 47
- 5
- 57
- 60
- 605
- 710
- 91
- NO TRUCKS OVER 6,000 POUNDS

OCEAN

PORT OF LONG BEACH

PORT OF LOS ANGELES

ORANGE CO.

RIVERSI CO.

California Department of Transportation
 District 7, Los Angeles
 Office of Advance Planning

Date: 6/3/13
 map by - skb

Parallel Routes

I-110 and SR-19 serve as parallel facilities to route 710 while the Alameda Corridor serves as a rail freight route also paralleling route 710 to an extent. There are several arterial streets paralleling route 710 that provide alternative routes to commuters. Currently some of these streets fail to provide effective alternatives due to physical inadequacies, numerous traffic signals, access conflicts, and general congestion. Listed below are some selected local arterials that parallel route 710.

ROUTE 710 PARALLEL ARTERIAL DESCRIPTION

Arterial Name	Segment No.	City And/or Community	Thomas Guide Page No.	Boundary Streets	Existing Lanes	Future Plans
Santa Fe Ave.	1,2	Long Beach, Dominguez, Carson	795, 765	Anaheim St., - Del Amo Blvd.	3 – 4	None
Atlantic Ave.	2,3,4	Long Beach, Compton, Lynwood,	735, 705	Artesia Blvd. - Imperial Hwy	4	None
Garfield Ave.	4	South Gate	705	Imperial Hwy.- Eastern Ave.	4	None
Eastern Ave.	4	Bell Gardens, Bell	705, 675	Garfield Ave.- Bandini Blvd.	4	None
Eastern Ave.	5,6	E. Los Angeles	675, 635	Olympic Blvd.- I-10	3 - 4	None

Active Transportation

SCAG's 2012-2035 Regional Transportation Plan/Sustainable Communities Strategies (RTP/SCS) invests \$6.7 billion towards increasing bikeways, bringing sidewalks into compliance with the Americans with Disabilities Act, safety improvements and other Active Transportation Strategies. Several local streets are open for non-motorized use including the parallel streets mentioned above. Future improvements to route 710 corridor interchanges must not sever existing bicycle and pedestrian access facilities crossing the corridor and new or planned projects at interchanges must also provide safe bicycle and pedestrian access.



Bicycle Lane



Bicycle Racks

Park and Ride/Bicycle Facilities¹

Route 710 has several Park-n'-Ride and Bicycle Facilities located within its vicinity; however none of these facilities are owned and/or operated by Caltrans. Metro owns and/or leases these facilities from private entities. The table below lists these facilities in greater detail.

INTERSTATE/STATE ROUTE 710 PARK 'N RIDE LOTS/BICYCLE STORAGE.

CITY/ COMMUNITY	LOCATION	CAPACITY	OPERATOR	BICYCLES L/R/S	TRANSIT
COMPTON	Artesia Blue Line Station	672	MTA-Blue Line	R	Long Beach Transit Compton Renaissance Torrance Transit Metro Rapid MTA-Blue Line
	Compton Blue Line Station	196	MTA-Blue Line	R	Long Beach Transit Compton Renaissance Gardena Transit Metro Rapid MTA-Blue Line
DOWNEY	Lakewood Blvd.	112	MTA	L/R	Downey Link
	Lakewood Green Line Station	545	MTA-Green Line	L/R	MTA
EAST LOS ANGELES	Indiana Gold Line Station	43	MTA-Gold Line	L/R	MTA, Montebello Transit
LONG BEACH	Wardlow Blue Line Station	107	MTA-Blue Line	L/R	Long Beach Transit
	Willow Blue Line Station	1799	MTA-Blue Line	R	Long Beach Transit
MONTEBELLO/ COMMERCE	Montebello/Commerce	255	Metrolink	R	Montebello Transit
	Montebello @ E. 26 th Street	89	Montebello	R	MTA-Metrolink
PASADENA	Del Mar Gold Line Station	600	MTA-Gold Line	R	MTA, Met 6 Rapid
	Sierra Madre P-'N-R	76	MTA	R/L	MTA
	Fillmore Gold Line Station	131	MTA-Gold Line	R	MTA, Pasadena ARTS
	Sierra Madre Villa Gold Line	950	MTA	R/L	MTA, Foothill Transit
WATTS	103rd St. Blue Line Station	62	MTA-Blue Line	-	MTA, DASH

L/R/S: Lockers/Racks/Stations

P-'N-R – Park and Ride

¹Source: LACMTA Park 'n Ride Lots 2012.

Environmental Consideration

One of the many key portals to the global trade and goods movement can be found in the southern California region, at the ports of Los Angeles and Long Beach. With the rapid increase in global trade in the 1990s, the twin ports became even more dominant, receiving over 40 percent of all imports into the United States and accounting for 20 percent of diesel particulate pollutants in Southern California.

The SCAG 2012 RTP/SCS Goods Movement and Environmental Strategy emphasizes coordinated solutions for mobility, economy, energy and environment, so that single investments can provide multiple benefits. See table below.

Route 710 Environmental Scan																			
Segments	Section 4(f) Land	Farmland/ Timberland	Environmental Justice	Cultural Resources	Visual Aesthetics	Geology/Soils/ Seismic	Floodplain	Climate Change and Sea Level Rise Vulnerability	Hazardous Materials	Naturally Occurring Asbestos	Air Quality			Noise	Waters and Wetlands	Special Status Species	Fish Passage	Habitat Connectivity	
											Ozone	PM							CO
												2.5	10						
1 - 2	LOW	UNDETERMINED	HIGH	LOW	MEDIUM	MEDIUM	HIGH	HIGH	HIGH	HIGH	NON ATTAINMENT	NON ATTAINMENT	NON ATTAINMENT	ATTAINMENT	HIGH	HIGH	UNDETERMINED	HIGH	MEDIUM
3 - 9	LOW	LOW	HIGH	LOW	MEDIUM	MEDIUM	LOW	MEDIUM	LOW	LOW	NON	NON	NON	ATTAINMENT	HIGH	LOW	UNDETERMINED	LOW	LOW

Source: South Coast Air Basin (SCAB) Los Angeles County

Technology

Technological innovations will continue to provide increasing opportunities for improvements to the transportation system in several ways including; monitoring and control devices, employer/employee rideshare incentives, Intelligent Transportation Systems (ITS), goods movement and mass transit operators, and automated highways and Collision Avoidance Systems (CAS).

Monitoring and Control Devices

Several technologies deployed to assist in the smooth running of highways, thereby reducing congestion. They include loop detectors, ramp meters, changeable message signs, Closed Circuit Television (CCTV) and cameras, etc. These devices compliment Freeway Service Patrols and working in cooperation with the California Highway Patrol (CHP) via a Transportation Management Center (TMC) to observe and respond to incidents quickly.

Employer/Employee Rideshare Incentives

Employers are provided with incentives to encourage their employees to participate in several congestion reduction programs such as ridesharing, vanpooling, telecommuting, and work from home and flexible work hours.

Intelligent Transportation Systems (ITS)

Components of traveler information available via the internet, kiosks, personal communication devices, provide travel information with which to make informed travel decisions. They include Geographic Information Systems (GIS) and Global Positioning Systems (GPS).

Goods Movement and Mass Transit Operators

Goods movement and mass transit benefit from automatic vehicle location and identification, vehicle routing, transponders with permit and weigh-in-motion information, smart cards and traffic signal pre-emption.

Automated Highways

Senate Bill 1298 (SB1298) sponsored by Senator Alex Padilla and signed into law by Governor Jerry Brown in September 25, 2012, will allow the operation of autonomous vehicles on California highways. This new bill allows driverless vehicles to be operated on California roadways. These technologies incorporate Vehicle to Vehicle (V2V) and Vehicle to Infrastructure (V2I) Systems together with computers and cameras, alongside GIS and GPS technologies to be successful. Driverless cars eliminate human errors thereby reducing incidents and thereby, congestion on our highways.

KEY CORRIDOR ISSUE

The new National Freight Network Program under Moving Ahead For Progress In The 21st Century (MAP-21) consolidates certain programs into a focused freight program to improve the movement of goods. This program would provide funds to states by formula for projects to improve regional and national freight movement on highways such as Route 710, including freight intermodal connectors.

It is well known that transportation is the single largest emitter of green house gases (GHG) in the state, generating nearly 40 percent of California's emissions. However, we are still investigating how transportation contributes to global warming and how it may affect our transportation infrastructure. Sea-level-rise is the most urgent climate change impact Caltrans is facing. Sea-level-rise poses serious threats to California's residents and coastal highway infrastructure, such as route 710. To assess the vulnerability of our existing infrastructure and future projects, Caltrans is participating in a National Academy of Sciences assessment that will include sea-level-rise projections which will help Caltrans determine which of our infrastructure are at risk. Ignoring or postponing the impacts of climate change may prove too risky and so Caltrans is adhering to the California Global Warming Solutions Act of 2006, or Assembly Bill 32. This bill calls for reductions in GHG emissions to 1990 levels by 2020 and further reductions to 1990 levels by 2050. Another landmark bill passed in California in 2008 was Senate Bill 375. This bill aims to link land use planning, transportation investments, and GHG reductions.¹

Since both the ports of Los Angeles and Long Beach are building a higher and larger Gerald Desmond bridge to accommodate taller cargo ships, we would recommend taking into consideration, sea-level-rise/global warming impacts. Upon completion of the improved Gerald Desmond Bridge, it will be handed over to the State and it will become an extension of Interstate 710.

1. **Climate Change**; Biggar, Julia **Caltrans News**, March 29,2011, Page 1

CORRIDOR PERFORMANCE

Route 710 is mostly an artery for Regional, global trade and goods movement in Southern California. Several major improvement projects are programmed for the upkeep and maintenance of the highway including rehabilitation projects from Post Mile 09.4 to 20.8; long life pavement and bridge widening from Post Mile 17.2 to 26.4; Highway expansion, from Post Mile 16.1 to 18.4 and resurfacing with rubberized hot mix asphalt from Post Mile 16.1 to Post Mile 20.8.

Truck traffic in 2008 along this route ranged from 2.7% to 21.3%, while AADT ranged from 47,000 to 287,000. Please see tables below for more details.

Future performance of the Route 710 freeway will be reduced as global trade and goods movement increases. Performance of Route 710 will deteriorate unless measures are taken to prevent which will be difficult in a fiscally strained economy.

Raising the height of Gerald Desmond Bridge will make the seaports easily accessible for larger cargo ships entering both ports thereby increasing goods movement and global trade. This will only increase vehicular traffic to the route 710. The table below shows the corridor performance in greater detail.

Basic System Operations							
Segment	AADT 2008	AADT 2035	LOS 2008	LOS 2035	LOS CONCEPT	VMT 2008	VMT 2035
1	103,800	115,200	D	C	-	368,000	407,600
2	193,100	205,000	D	D	-	542,000	574,100
3	286,900	283,000	F0	F0	F0	428,300	422,600
4	234,100	233,200	F0	F0	F0	1,540,500	1,532,000
5	220,400	220,600	F0	F0	F0	111,300	111,400
6	167,300	166,500	F0	F0	F0	139,000	138,000
7	68,600	69,100	C	C	-	37,500	38,000
8	U N C O N S T R U C T E D						
9	47,800	50,600	C	C	-	5,600	6,000

**ROUTE 710 2008 TRUCK
TRAFFIC**

SEGMENT	2008 AADT	2008 TRUCK AADT	TOTAL TRUCK %	5 WHEEL AXLE TRUCKS	5 WHEEL AXLE TRUCK %
1	103,800	22,200	21.3%	15,900	71.6%
2	193,100	26,900	13.9%	17,600	65.4%
3	286,900	22,400	7.8%	13,100	58.5%
4	234,100	21,300	9.1%	11,100	52.2%
5	220,400	13,300	5.9%	8,100	60.9%
6	167,300	6,500	3.9%	3,500	53.8%
7	68,600	2,850	4.1%	600	21.1%
8	U N C O N S T R U C T E D				
9	47,800	1,300	2.7%	130	10.2%

**ROUTE 710 IMPROVEMENT
PROJECTS**

As a result of increasing cargo container volumes at the ports of Los Angeles and Long Beach, increasing traffic volumes, and an aging infrastructure, the route 710 Freeway experiences serious congestion. Several improvements are projected for route 710 with funding coming from the Los Angeles County Measure R, the California Trade Corridors Improvement Fund (TCIF); Moving Ahead for Progress in the 21st Century (MAP-21) and the Cities of Long Beach and Los Angeles sea ports. Listed below, are some of these improvements:

1). I-710 CORRIDOR PROJECT

In March of 2005, Los Angeles County Metropolitan Transportation Agency (LACMTA) or "Metro" completed a Major Corridor Study (MCS) for the I-710. The MCS study considered congestion and mobility leading to preserving and enhancing quality of life of the surrounding communities. The EIS/EIR Study includes 18 miles of the I-710 Freeway from the Ports of Long Beach and Los Angeles to the Pomona Freeway (SR-60). The study area encompasses 15 cities and unincorporated areas in Los Angeles County adjacent to the I-710 Freeway.

Partner agencies involved in this project include the followings; California Department of Transportation, Gateways Cities Council of Governments, the I-5 Consortium Cities Joint Powers Authority, the Ports of Los Angeles and Long Beach and the Southern California Association of Governments. Project objectives include; improving air quality, mobility, congestion and safety and access alternatives. See enclosed Study Area Map on page 33.

Several ideas are currently being studied which would accomplish the goal for goods movement but reduce negative environmental impacts to the communities through which the route traverses. These ideas include;

- Adding two dedicated truck lanes and one general purpose lane in each direction between the ports of Los Angeles and Long Beach and SR-60.
- Implement a zero emission container movement system such as a conveyor belt system and/or a zero emission truck and rail use only to and from the ports.

In addition, several interchanges that the I-710 intersects will be improved, taking on-and-off-ramps and HOV lanes into consideration. They include I-405, SR-91, I-105, and SR-60; Cost for this project is estimated to be \$6.5 billion.

2). INTERSTATE 710 REHABILITATION PROJECT

\$190.2 million to rehabilitate 37 miles of the I-710 Freeway approved by the California Transportation Commission (CTC); from South Gate to Monterey Park. This project will improve safety and ride quality.

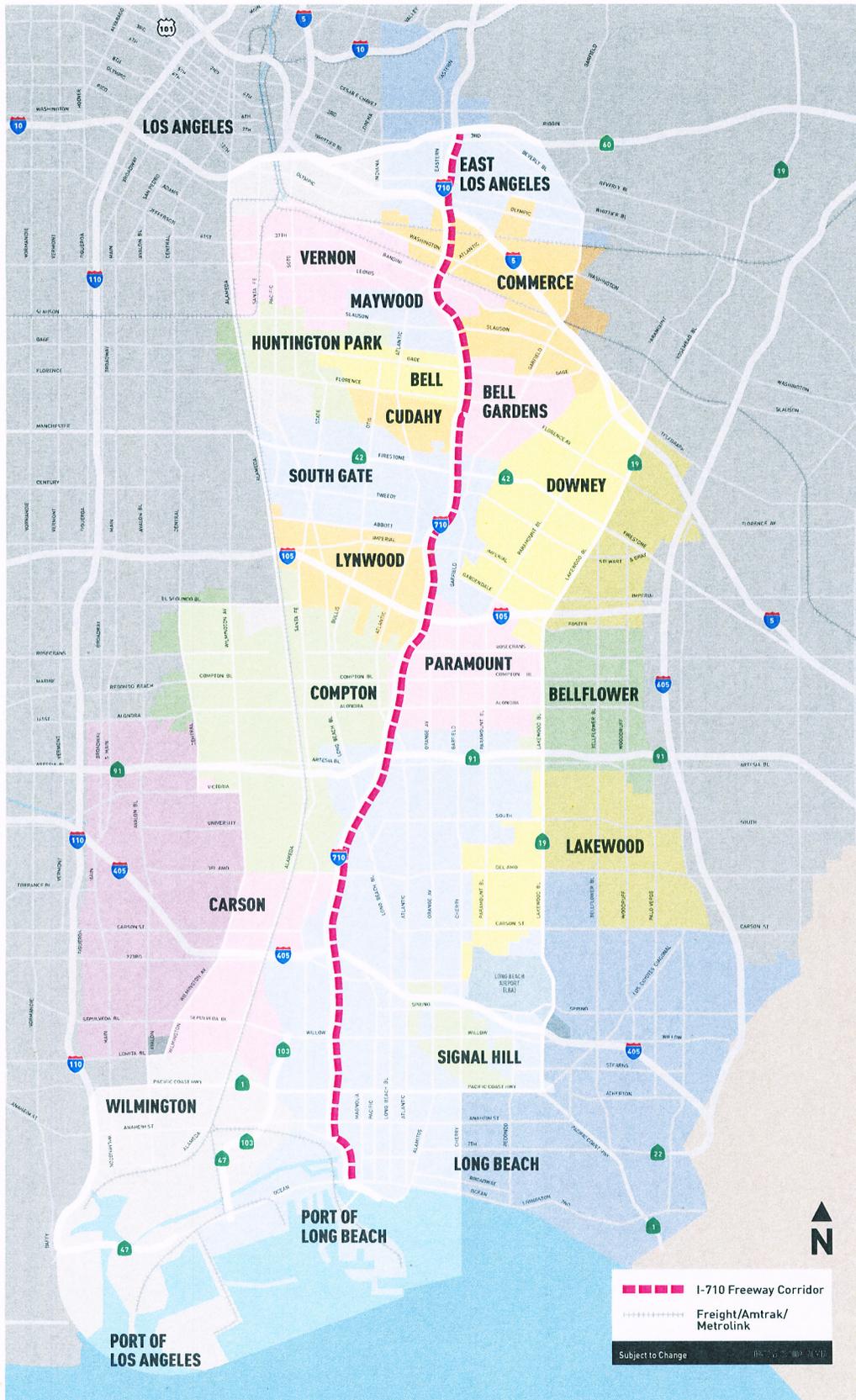
3). STATE ROUTE 710 NORTH STUDY

Los Angeles County Transportation Measure R estimates between \$4.5 billion to \$9 billion for the State Route 710 North Study. Completing the segment is considered critical to improving traffic flow and air quality in the area and linking I-710 to I-210.

4). GERALD DESMOND BRIDGE REPLACEMENT

In February of 2010 the officials of the Port of Long Beach proposed replacing the current bridge with a new taller and wider bridge to accommodate larger cargo ships. The present bridge is so low that some container ships barely fit underneath. Additional problems are the bridge's strategic location as a primary link to Terminal Island cargo facilities and Long Beach. Upon completion, the bridge will be become a portion of Interstate 710.

I-710 Corridor Project EIR/EIS



CONCEPT RATIONALE

Route 710 is an Interstate, Interregional commute corridor that provides access to the Catalina Island ferries, the Port of Long Beach, the Port of Los Angeles, the Long Beach Municipal Airport, Long Beach World Trade Center, truck terminals in the vicinity of the City of Vernon, and California State University, Los Angeles, near Interstate 10. Due to the major sea ports and terminals, this facility serves a large volume of truck traffic. Route 710 is a major thoroughfare serving the Los Angeles region's economic base thereby necessitating further improvements into the future.

PROJECT ID	UPDATED RTP/FTIP PROJECTS
LA0B952	Route 710: Reconstruct I-710 Interchanges at I-5, at I-405, at SR 91, and at I-105. As part of the I-710 Corridor Program proposing 4 truck lanes (ports-rail yards), 10 general lanes (port-SR-60)(ISTEA ID # 37)(SAFTEA-LU 3773)
LA0C8129	PORTS OF LONG BEACH AND LOS ANGELES ATMS/ATIS PROJECT TO IMPROVE TRAFFIC OPERATIONS ON THE: I-710, I-110, SR47/103.
18790	Route 710 Multi Modal Study to perform alternative analysis, engineering and environmental studies. (EA # 187901, PPN0# 2215)
LA0G830	I-710 Improvements/Shoemaker Bridge - Downtown Exits. The project makes bicycle, pedestrian, and streetscape improvements on major thoroughfares.
LA990921	ON VARIOUS HIGHWAYS. Grouped Projects for Noise attenuation (SOUNDWALLS) (ONLY EA00234 ON RTE 710 REMAINING. Projects are consistent with 40 CFR Part 93.126 Exempt Tables 2 and Table 3 categories.
LA996143	Route 710: RTE 710 PCH TO DOWNTOWN L.B., PAVEMENT RECON, MEDIAN, LANDSCAPING IMPROVE (EA 2203U, 23640, PPNO: 2945,3248)
LAE0266	RECONSTRUCT I-710 SOUTHERN TERMINUS OFF RAMP.CURRENT FUNDING APPLIED ONLY TOWARDS THE P/E & PRELIMINARY DESIGN PHASE.CONSTRUCTION FUNDING TO BE SOUGHT LATER (E/P,PS/E ONLY)
LAE0701	DEVELOP AND IMPLEMENT TRAFFIC CALMING MEASURES FOR TRAFFIC EXITING THE I-710 INTO LONG BEACH
LAE2577	Route 5: STUDY NORWALK, SANTA FE SPRINGS, DOWNEY, MONTEBELLO, & COMMERCE: ON I-5, CONDUCT PLAN'G, ENV. STUDIES FOR WIDEN'G W/HOV & MIXED FLOW LNS FROM I-605 TO I-710.(EA2159E, 2159F, PPNO 2808C, 2808D)PAED ONLY
LAF1178	I-710 Early Action Plan - Intersection Improvements at Firestone Blvd/Atlantic Avenue Intersection. Firestone Blvd is existing 2 lanes in each direction, after the project will be 3 lanes in each direction. The length of the project is .75 miles. Primarily it will widen Firestone Blvd and Atlantic Avenue and realign their intersection.
1M1002	I-710 Early Action Projects

1C0401	I-710 CORRIDOR USER-FEE BACKED CAPACITY ENHANCEMENT - WIDEN TO 5 MIXED FLOW + 2 DEDICATED LANES FOR CLEAN TECHNOLOGY TRUCKS (EACH DIRECTION) AND INTERCHANGE IMPROVEMENTS, FROM OCEAN BLVD IN LONG BEACH TO THE INTERMODAL RAILROAD YARDS IN COMMERCE/VERNON
LA0G830	I-710 Improvements/Shoemaker Bridge - Downtown off ramps. The project replaces the existing Shoemaker Bridge and makes bicycle, pedestrian, and streetscape improvements on major thoroughfares.
1M0101	SR-710 North Extension (tunnel) (alignment TBD)

710 STRATEGIC PROJECT			
RTP ID	ROUTE	COUNTY	DESCRIPTION
S1120039	710	Los Angeles	710 Freight Movement Corridor
DEMONSTRATION PROJECTS FROM COMPASS BLUEPRINT IN 710 VICINITY			
1. Long Beach Corridor Study			
2. Compton General Plan Update; Small Area Visioning			
METRO 2009 LONG RANGE TRANSPORTATION STRATEGIC PLAN			
1. I-710 Freeway Improvements: Pacific Coast Hwy. to Downtown Long Beach			
2. SR-710 North Extension (Tunnel)-Preliminary Estimate			
3. I-710 South and/or Early Action Projects			
4. I-710 Freight Movement Corridor			

CONCLUSION

Traffic volume is forecasted to increase on Route 710 due to the growth in population, housing and employment along this route and throughout the region. Growth in the region will continue to create mobility challenges and put additional stresses on our transportation system. Southern California is not only an important component of California's economy but it is also vital to the United States and world's economy as a whole. It is critical that mobility be maintained and improved in order to sustain the economic growth that is expected. In addition to sustaining the economic vitality of the region, mobility is also an important component in enhancing the quality of life for the residents in this region. Route 710 is only one component of the transportation infrastructure but it plays a critical role in providing mobility for the region. In order to improve mobility, additional capacity will be required beyond those planned and programmed in the 2012 RTP to maintain an acceptable level of service through 2035. District 7 Office employs a variety of strategies to address current congestion challenges including:

- High Occupancy Vehicle Lane (HOV)
- Ramp Metering
- Congestion Pricing (Toll Lanes)
- Changeable Message Signs (CMS)

Several regional freeway capacity expansion projects are in the planning process, under development or under construction which will assist in improving congestion. Constructing an HOV or Managed Lane system continues to be a priority. The highway system is only one component of the transportation infrastructure; but it plays a very important role in providing mobility for the region. To achieve the desired minimum acceptable level of service, additional lanes and/or multi-modal (transit) opportunities will be needed beyond those planned and programmed in the 2012 RTP/SCS.

APPENDIX A – Glossary of Terms and Acronyms

AADT: (Average Annual Daily Traffic) Denotes that the daily traffic is averaged over one calendar year.

ADT: (Average Daily Traffic) The average number of vehicles passing a specified point during a 24-hour period.

AQMD: (Air Quality Management District) A regional agency, which adopts and enforces regulations to achieve and maintain state and federal air quality standards.

AQMP: (Air Quality Management Plan) The plan for attaining state air quality as required by the California Clean Air Act of 1988. The plan is adopted by air quality districts and is subject to approval by the California Air Resources Board.

ATIS: (Advanced Traveler Information Systems)

ATMS: (Advanced Traffic Management Systems)

AV: (Antelope Valley Transit)

AVCS: (Automated Vehicle Control Systems)

AVO: (Average Vehicle Occupancy) The average number of persons occupying a passenger vehicle along a roadway segment intersection, or area, as typically monitored during a specified time period. For the purpose of the California Clean Air Act, passenger vehicles include autos, light duty trucks, passenger vans, buses, passenger rail vehicles and motorcycles.

AVR: (Average Vehicle Ridership) The number of employees who report to a worksite divided by the number of vehicles driven by those employees, typically averaged over an established time period. This calculation includes crediting vehicle trip reductions from telecommuting, compressed workweeks and non-motorized transportation.

Caltrans: (California Department of Transportation) As the owner/operator of the state highway system, state agency responsible for its safe operation and maintenance. Proposes projects for intercity rail, interregional roads, and sound walls. Also responsible for the SHOPP, Toll Bridge, and Aeronautics programs.

Caltrans is the implementing agency for most state highway projects, regardless of program, and for the Intercity Rail program.

CBD: (Central Business District) The downtown core area of a city, generally an area of high land valuation, traffic flow, and concentration of retail business offices, theaters, hotels, and service businesses.

CCTV: (Closed Circuit Television)

CEQA: (California Environmental Quality Act) A statute that requires all jurisdictions in the State of California to evaluate the extent of environmental degradation posed by proposed development or project.

CHP: (California Highway Patrol)

CIP: (Capital Improvement Program) A seven-year program of projects to maintain or improve the traffic level of service and transit performance standards developed and to mitigate regional transportation impacts identified by the CMP Land Use Analysis Program, which conforms to transportation-related vehicle emissions air quality mitigation measures.

CMA: (Congestion Management Agency) The agency responsible for developing the Congestion Management Program and coordinating and monitoring its implementation.

CMAQ: (Congestion Mitigation Air Quality program) Part of ISTEA, this is a funding program designed for projects that contribute to the attainment of air quality goals.

CMP: (Congestion Management Program) A legislatively required countywide program, which addresses congestion problems.

CMS: (Changeable Message Sign)

CMS: (Congestion Management System) Required by ISTEA to be implemented by states to improve transportation planning.

COG: (Council of Governments) A voluntary consortium of local government representatives, from contiguous communities, meeting on a regular basis, and formed to cooperate on common planning and solve common development problems of their area. COGs can function as the RTPAs and MPOs in urbanized areas.

Commute Hours: AM and PM peak commute travel times. Generally, between the hours of 5:00 a.m. to 9:00 a.m. and 4:00 p.m. to 7:00 p.m., Monday through Friday.

Compass Blueprint: SCAG's new way to look at how Southern California grows using the 2012/2035 RTP/SCS to assist local government planning efforts. www.compassblueprint.org

Concept: A strategy for future improvements that will reduce congestion or maintain the existing level of service on a specific route.

Congestion: Defined by Caltrans as, reduced speeds of less than 35 miles per hour for longer than 15 minutes.

CTC: (California Transportation Commission) A body established by Assembly Bill 402 (AB 402) and appointed by the Governor to advise and assist the Secretary of the Business, Transportation and Housing Agency and the Legislature in formulating and evaluating state policies and plans for transportation.

D/C: (Demand-to-Capacity ratio) The relationship between the number of vehicle trips operating on a facility, versus the number of vehicle trips that can be accommodated on that facility.

DSMP: (District System Management Plan) A part of the system planning process. A district's long-range plan for management of transportation systems in its jurisdiction.

EIR: (Environmental Impact Report) A report prepared pursuant to CEQA that analyzes the level of environmental degradation expected to be caused by a proposed development or project.

Extended Commute: Service hours beyond the normal commute hours. Generally, in the evening, this refers to transit service until 10:00 p.m.

F+I Actual: (Fatal Plus Injury Actual) Contains specific data for accidents that are State highway related. Each accident record contains a ramp, intersection or highway postmile address that ties it to the Highway database.

F+I Average: (Fatal Plus Injury Average) The Statewide Average Accident Rate (SWA) is based on a rated segment. The accident-rating factor (ARF) indicates how the existing segment compares to other segments on the State Highway System. The ARF is a comparison of the segment's accident rate to the statewide average accident rate for roads of the same type and having similar characteristics. Accident severity as well as accident frequency is considered in calculating the ARF. If the total number of accidents is less than three, there will not be a calculation for the ARF. If there are more than two, but less than twenty-five total accidents, an accident-rating factor will be generated, but there will not be an accident severity flag listed. If there are more than twenty-five accidents, an accident rating factor and severity flag will be generated.

F+I/MVM: (Fatal Plus Injury per Million Vehicle Miles) The fatality rate of those killed in vehicles plus the injury rate of those injured in vehicles.

FAI: (Federal Aid Interstate) Highway program established in 1956 for national defense purposes, these roadways interconnect the major nationwide population and economic centers. Also, there is a federal funding category for these routes.

FHWA: (Federal Highway Administration)

Free-flow Speed: Speed that occurs when density and flow are “zero”. Also described as the average speed that a motorist would travel if there were no congestion or other adverse conditions.

Freeway Capacity: The maximum sustained 15 minute rate of flow that can be accommodated by a uniform freeway segment under prevailing traffic and roadway conditions in a specified direction.

FSP: (Freeway Service Patrol) A special team of tow truck drivers who continuously patrol freeways during commuter hours to help clear disabled automobiles.

FT: (Foothill Transit)

GRT: (Guaranteed Return Trip) A ridesharing strategy which provides a “Guaranteed Return Trip” to those who rideshare, in the case of an emergency or when overtime work hours are required.

HCM: (Highway Capacity Manual) Revised in 1994 by the Transportation Research Board of the National Research Council, the HCM presents various methodologies for analyzing the operation (see Level of Service) of transportation systems as freeways, arterial, transit, and pedestrian facilities.

HOT Lanes: (High Occupancy Toll Lane) New HOV lanes that allow single occupant vehicles access for a variable fee.

HOV: (High Occupancy Vehicle Lane) A lane of freeway reserved for the use of vehicles with more than a preset number of occupants; such vehicles often include buses, taxis and carpools.

HSR: (High Speed Rail) A regional system that will connect major regional activity centers and significant inter-/multi-modal transportation facilities.

I/C: (Interchange) A system of interconnecting roadways in conjunction with one or more grade separations providing for the interchange of traffic between two or more roadways on different levels.

ICES: (Intermodal Corridors of Economic Significance) Significant National Highway System Corridors that link intermodal facilities most directly, conveniently and efficiently to intrastate, interstate and international markets.

IRRS: (Interregional Road System) A series of interregional state highway routes, outside the urbanized areas, that provide access to, and links between, the state's economic centers, major recreational areas, and urban and rural regions.

ISTEA: (Intermodal Surface Transportation Efficiency Act) Federal legislation and funding Program adopted in 1991. It provides increased funding and program flexibility for multi-modal transportation programs. Update: ISTEA expired on September 30, 1997. In December 1997, Congress passed and the President signed a six-month extension of the law, holding funding to current levels and keeping program structure and formulas intact. This extension expired on March 31, 1998, with an obligation deadline of May 1, 1998. On June 9, 1998, the President signed into law PL 105-178, the Transportation Equity Act for the 21st Century (TEA-21) authorizing highway, highway safety, transit and other surface transportation programs for the next 6 years. TEA-21 builds on the initiatives established in the 1991 ISTEA.

ITIP: (Interregional Transportation Improvement Program) An improvement program that makes up 25% of the STIP. 60% of this program is for improvements on Interregional Routes in non-urbanized areas and intercity rail.

40% is to fund projects of interregional significance (for the interregional movement of people and goods).

ITS: (Intelligent Transportation Systems) The use of integrated information, telecommunications, and computer based technology in order to make infrastructure and vehicles safer, smarter and interconnected.

ITSP: (Interregional Transportation Strategic Plan) Caltrans guiding framework for implementing the Interregional Improvement Program under Senate Bill 45.

IVHS: (Intelligent Vehicle Highway Systems) The development of application of electronics, communications or information processing (including advanced traffic

management systems, public transportation systems, satellite vehicle tracking systems, and advanced vehicle communications systems) used alone or in combination to improve the efficiency and safety of surface transportation systems.

LACMTA: (Los Angeles County Metropolitan Transportation Authority) Also called METRO.

LADOT: (Los Angeles Department of Transportation)

LIR: (Local Implementation Report) A report that jurisdictions must submit to LACMTA to remain in conformance with Los Angeles County Congestion Management Program (CMP) requirements. This report is submitted on an annual basis, and contains a resolution of conformance, new development activity reporting, selected mitigation strategies and credit claims and future transportation improvements.

LOS: (Level of Service) A qualitative measure describing operational conditions within a traffic stream; generally described in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety.

LROP: (Long-Range Operations Plan)

LX: (Los Angeles Department of Transportation Commuter Express)

MAP-21: (Moving Ahead for Progress in the 21st Century). Latest Federal Transportation Re-Authorization Bill. It extends federal highway and transit funding through FY 2014.

MF: (Mixed Flow) Traffic movement having automobiles, trucks, buses, and motorcycles sharing traffic lanes. Same as general purpose lane.

Model: (1) A mathematical or conceptual presentation of relationships and actions within a system. It is used for analysis of the system or its evaluation under various conditions. (2) A mathematical description of a real-life situation, that uses data on past and present conditions to make a projection about the future.

Model, Land Use: A model used to predict the future spatial allocation of urban activities (land use), given total regional growth, the future transportation system, and other factors.

Model, Mode Choice: A model used to forecast the proportion of total person trips on each of the available transportation modes.

Model, Traffic: A mathematical equation or graphic technique used to simulate traffic movements, particularly those in urban areas or on a freeway.

MPAH: (Master Plan of Arterial Highways)

MPO: (Metropolitan Planning Organization) According to U.S. Code, the organization

designated by the governor and local elected officials as responsible, together with the state, for the transportation planning in an urbanized area. It serves as the forum for cooperative decision making by principal elected officials of general local government.

MTA: (Metropolitan Transportation Authority) Metro Bus Lines

Multi-modal: Pertaining to more than one mode of travel.

NHS: (National Highway System) Will consist of 155,000 miles (plus or minus 15 percent) of the major roads in the U.S. Included will be all Interstate routes, a large percentage of urban and rural principal arterials, the defense strategic highway network, and strategic highway connectors.

Night Owl: Evening transit service hours that extend beyond the normal commute service hours, but is less than 24 hour per day.

NOP: (Notice of Preparation) A notice informing potentially affected agencies that an Environmental Impact Report (EIR) is being prepared for a proposed development or project.

Null: A concept that includes only existing projects and those projects which may or may not be constructed but are programmed in the 1996 STIP.

OHC: Other Highway Construction.

Peak: (Peak Period, Rush Hours): (1) The period during which the maximum amount of travel occurs. It may be specified as the morning (a.m.) or afternoon or evening (p.m.) peak. (2) The period during which the demand for transportation service is the heaviest. (AM Peak period represents 6:30 a.m. to 8:30 a.m. and PM Peak period represents 3:00 p.m. to 6:00 p.m.)

Performance Indicator: Quantitative measures of how effective an activity, task, or function is being performed. In transportation systems, it is usually computed by relating a measure of service output or use to a measure of service input or cost.

PM: (Post Mile) Is the mileage measured from a county line or the beginning of a route to another county line or the ending of the route. Each post mile along a route in a county is a unique location on the State Highway System.

PMT: (Passenger Miles Traveled) The number of miles traveled by all passengers on a transportation mode such as transit.

PPN: (Planning and Program Number) Used in the State Transportation Improvement Program (STIP) to identify projects.

PSR: (Project Study Report) The pre-programming document required before a project may be included in the STIP.

Public Transportation: Transportation service to the public on a regular basis using vehicles that transport more than one person for compensation, usually but not exclusively over a set route or routes from one fixed point or another. Routes and schedules may be determined through a cooperative arrangement. Subcategories include public transit service, and paratransit services that are available to the general public.

RAS: (Rehabilitation and Safety)

Ridesharing: Two or more persons traveling by any mode, including but not limited to, automobile, vanpool, bus, taxi, jitney, and public transit.

RME: (Regional Mobility Element) SCAGs major policy and planning statement on the region's transportation issues and goals. It is comprised of a set of long-range policies, plans, and programs that outline a vision of a regional transportation system compatible with federal and state mobility objectives. Formerly called the Regional Mobility Plan (RMP).

RMP: (Regional Mobility Plan) The equivalent to the federal and state required Regional Transportation Plan (RTP) for the SCAG region.

Roadway Characteristics: The geometric characteristics of the freeway segment under study, including the number and width of lanes, lateral clearances at the roadside and median, free-flow speeds, grades and lane configurations.

RSA: (Regional Statistical Area) An aggregation of census tracts for the purpose of sub-regional demographic and transportation analysis within the Southern California Association of Governments (SCAG) area.

RTIP: (Regional Transportation Improvement Program) A list of proposed transportation projects submitted to the CTC by the regional transportation planning agency. The individual projects are first proposed by local jurisdictions (CMAs in urbanized counties), then evaluated and prioritized by the RTPA for submission to the CTC. The RTIP has a seven-year planning horizon, and is updated every two years.

RTP: (Regional Transportation Plan) A comprehensive 20-year plan for the region, updated every two years by the regional transportation-planning agency. The RTP includes goals, objectives, and policies, and recommends specific transportation improvements.

RTPA: (Regional Transportation Planning Agency) The agency responsible for the preparation of RTPs and RTIPs and designated by the State Business Transportation and Housing Agency to allocate transit funds. RTPAs can be local transportation commissions, COGs, MPOs or statutorily created agencies.

SC: (Santa Clarita Transit)

SCAB: (South Coast Air Basin) A geographic area defined by the San Jacinto Mountains to the east, the San Bernardino Mountains to the north, and the Pacific Ocean to the west and south. The entire SCAB is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD).

SCAG: (Southern California Association of Governments) The Metropolitan Planning Organization (MPO) for Ventura, Los Angeles, Orange, San Bernardino, Riverside and Imperial counties that is responsible for preparing the RTIP and the RTP. SCAG also prepared land use and transportation control measures in the 1994 Air Quality Management Plan (AQMP).

SCAQMD: (South Coast Air Quality Management District) The agency responsible for preparing the Air Quality Management Plan (AQMP) for the South Coast Air Basin.

SCRRA: (Southern California Regional Rail Authority) Operates Metrolink.

Scenario Planning: a process in which transportation professionals and citizens work together to analyze and shape the long term future of their community.

SHELL: (Subsystem of Highways for the movement of Extra Legal Loads)

SHOPP: (State Highway Operation and Protection Program) A four-year program limited to projects related to State highway safety and rehabilitation.

SJHTC: (San Joaquin Hills Transportation Corridor)

SM: (Santa Monica Transit)

Smart Shuttle: A multiple occupant passenger vehicle equipped with advanced technology for more effective vehicle and fleet planning, scheduling and operation, as well as offering passengers more information and fare payment options.

SR: (State Route)

SRTP: (Short-Range Transit Program) A five-year comprehensive plan required by the Federal Transit Administration for all transit operators receiving federal funds. The plans establish the operator's goals, policies, and objectives, analyze current and past performance, and describe short-term operational and capital improvement plans.

STAA: (Surface Transportation Assistance Act)

STIP: (State Transportation Improvement Program) A list of transportation projects, proposed in RTIPs and the PSTIP, which are approved for funding by the CTC.

STP: (Surface Transportation Program) Part of ISTEA, this is a funding program intended for use by the states and cities for congestion relief in urban areas.

STRAHNET: (Strategic Highway Network)

TASAS: (Traffic Accident Surveillance and Analysis System) A system that provides a detailed list and/or summary of accidents that have occurred on highways, ramps or intersections in the State Highway System. Accidents can be selected by location, highway characteristics, accident data codes or any combination of these.

TCM: (Transportation Control Measure) A measure intended to reduce pollutant emissions from motor vehicles. Examples of TCMs include programs to encourage ridesharing or public transit usage, city or county trip reduction ordinances, and the use of cleaner burning fuels in motor vehicles.

TCR: (Transportation Concept Report) Formerly Route Concept Report (RCR) this report analyzes a transportation corridor service area, establishes a twenty-year transportation planning concept and identifies modal transportation options and applications needed to achieve the twenty-year concepts.

TDM: (Transportation Demand Management) Demand based techniques for reducing traffic congestion, such as ridesharing programs and flexible work schedules enabling employees to commute to and from work outside of peak hours.

TEA-21: (Transportation Equity Act for the 21st Century) Signed by President Clinton on June 9, 1998. TEA-21 builds on the initiatives established in the ISTEA Act of 1991. This new Act combines the continuation and improvement of current programs with new initiatives to meet the challenges of improving safety as traffic continues to increase at record levels, protecting and enhancing communities and the natural environment as we provide transportation, and advancing America's economic growth and competitiveness domestically and internationally through efficient and flexible transportation.

TIA: (Transportation Impact Analysis) An analysis procedure to assist local jurisdictions in assessing the impact of land use decisions on the Congestion Management Program (CMP) system for Los Angeles County.

TL: (Truck Lane)

TMC: (Transportation Management Center) A focal point that can monitor traffic and road conditions, as well as train and transit schedules, and airport and shipping advisories. From here, information about accidents, road closures and emergency notifications is relayed to travelers.

TOS: (Traffic Operation System) Computer based signal operation.

TOT/MVM: (Total Accidents Per Million Vehicle Miles)

TPMP: (Transit Performance Measurement Program) A state mandated program to evaluate transit operator system performance on the basis of operating statistics. The program monitors transit system performance of Los Angeles County operators that receive state and federal funds and analyzes the institutional relationships among operators to ensure coordination.

Traffic Conditions: Any characteristics of the traffic stream that may affect capacity or operations, including the percentage composition of the traffic stream by vehicle type and driver characteristics (such as the differences between weekday commuters and recreational drivers).

Transportation Management Association (TMA)/Organization (TMO): A private/non-profit association that has a financial dues structure joined together in a legal agreement for the purpose of achieving mobility and air quality goals and objectives within a designated area. There are fourteen operating TMA/TMO's in Los Angeles County.

TSM: (Transportation System Management) That part of the urban transportation process undertaken to improve the efficiency of the existing transportation system. The intent is to make better use of the existing transportation system by using short-term, low capital transportation improvements that generally cost less and can be implemented more quickly than system development actions.

TW: (Transitway)

UTPS: (Urban Transportation Planning System) A tool for multi-modal transportation planning developed by the Urban Mass Transportation Administration (now the Federal Transit Administration) and the Federal Highway Administration. It is used for both long and short-range Planning, particularly system analysis and covers both computerized and manual planning methods. UTPS consists of computer programs, attendant documentation, user guides and manuals that cover one or more of five analytical

categories: highway network analysis, transit network analysis, demand estimation, data capture and manipulation, and sketch planning.

V-2-V: Vehicle to Vehicle

V-I: Vehicle to Infrastructure

VCTC: (Ventura County Transportation Commission)

Vehicle Occupancy: The number of people aboard a vehicle at a given time; also known as auto or automobile occupancy when the reference is to automobile travel only.

Vehicle Trip: A one-way movement of a vehicle between two points.

V/C: (Volume/Capacity).

VMT: (Vehicle Miles Traveled) (1) On highways, a measurement of the total miles traveled in all vehicles in the area for a specified time period. It is calculated by the number of vehicles multiplied by the miles traveled in a given area or on a given highway during the time period. (2) In transit, the number of vehicle miles operated on a given route or line or network during a specified time period.

VSM: (Vehicle Service Miles) The total miles traveled by transit service vehicles while in revenue service.

APPENDIX B RESOURCES

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