

1

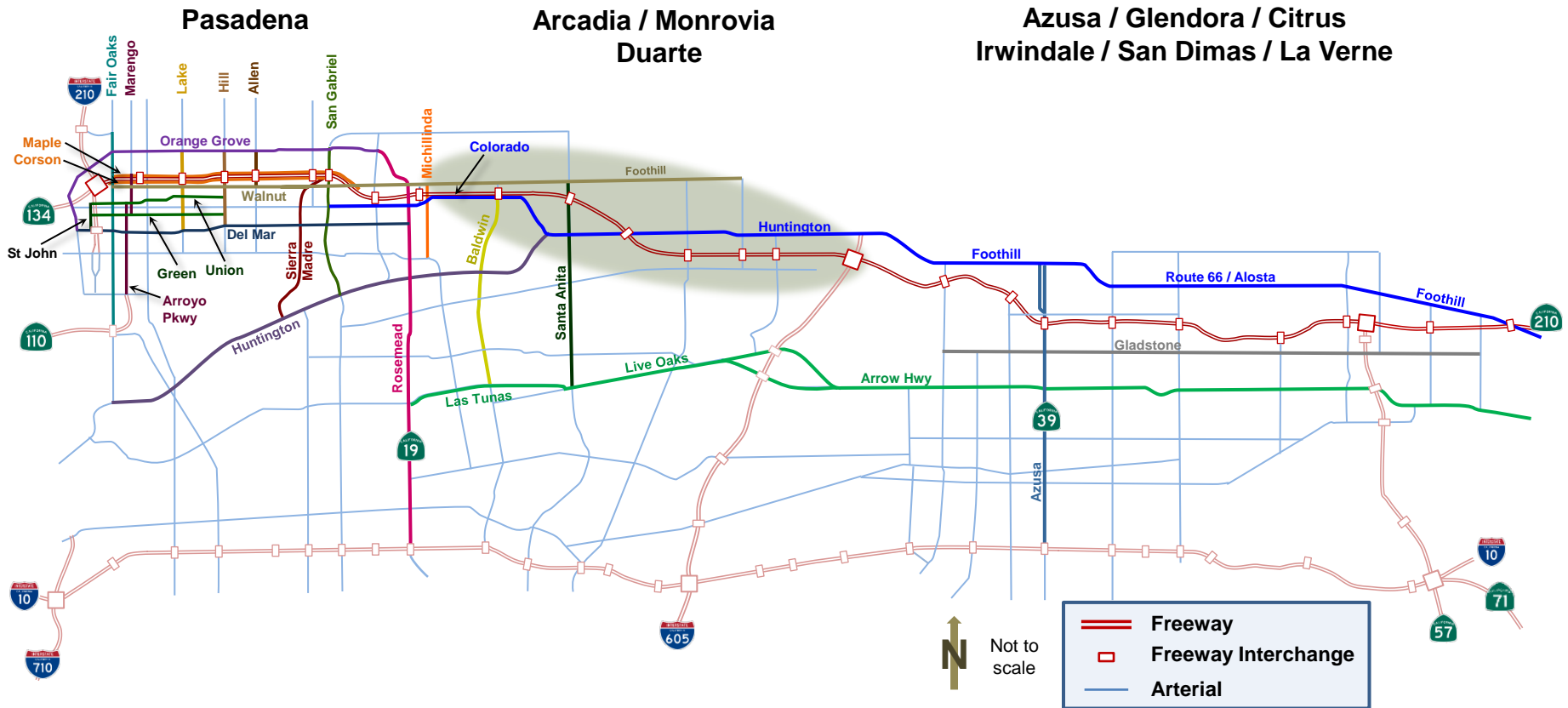
Corridor Environment

Corridor Boundaries

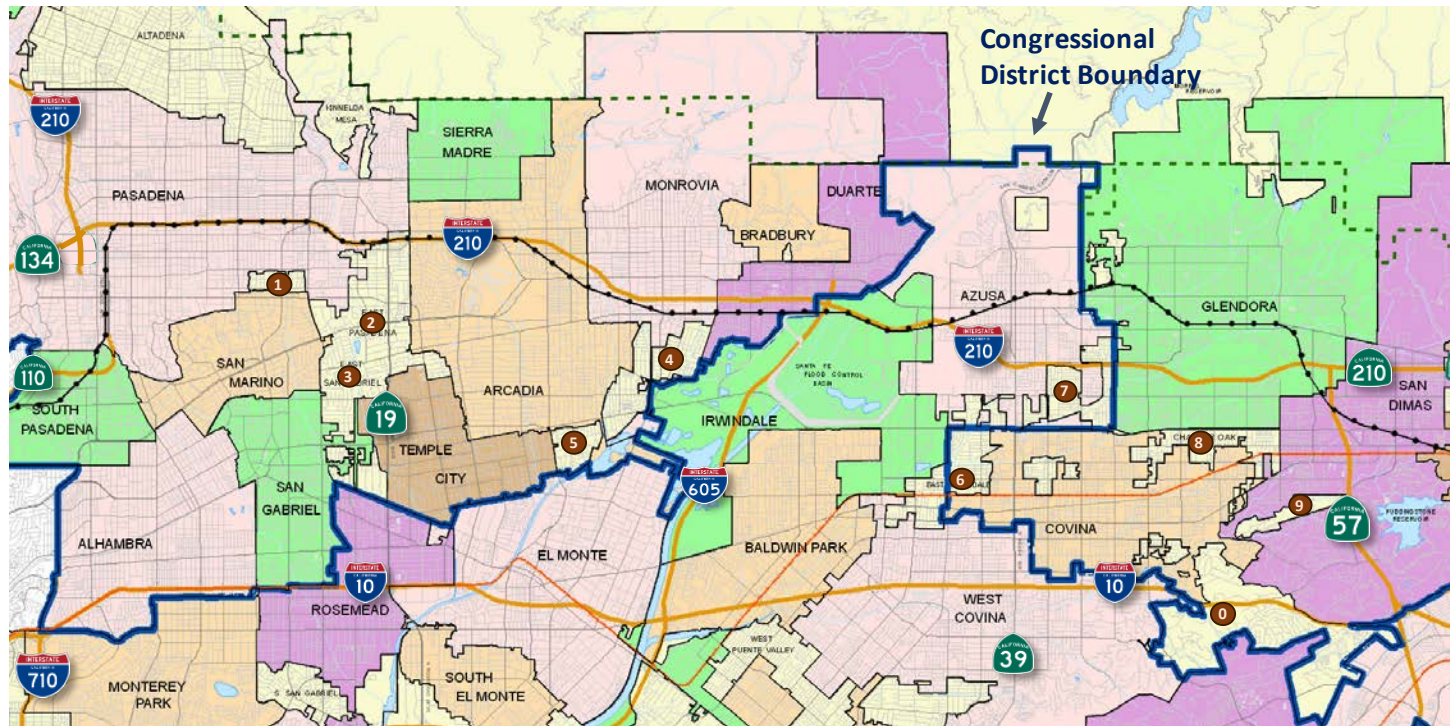


Supporting Arterials

3



Jurisdictional Environment



Pasadena (137,122)
 El Monte (116,249)
 West Covina (106,870)
 Alhambra (85,961)
 Baldwin Park (75,940)
 Arcadia (56,769)
 Rosemead (54,154)

Covina (50,954)
 Glendora (50,435)
 Azusa (46,678)
 San Gabriel (40,005)
 Monrovia (36,857)
 Temple City (35,816)
 San Dimas (35,064)

South Pasadena (25,806)
 Duarte (21,486)
 San Marino (13,241)
 Sierra Madre (10,996)
 Irwindale (1,472)
 Bradbury (1,268)

Unincorporated LA County Areas

- | | |
|------------------------------|------------------------|
| 1 San Pasqual (2,082) | 6 Vincent (15,922) |
| 2 East Pasadena (6,144) | 7 Citrus (11,964) |
| 3 East San Gabriel (14,874) | 8 Charter Oak (9,310) |
| 4 Mayflower Village (11,649) | 9 West San Dimas (309) |
| 5 North El Monte (3,723) | 0 Ramona (4,053) |

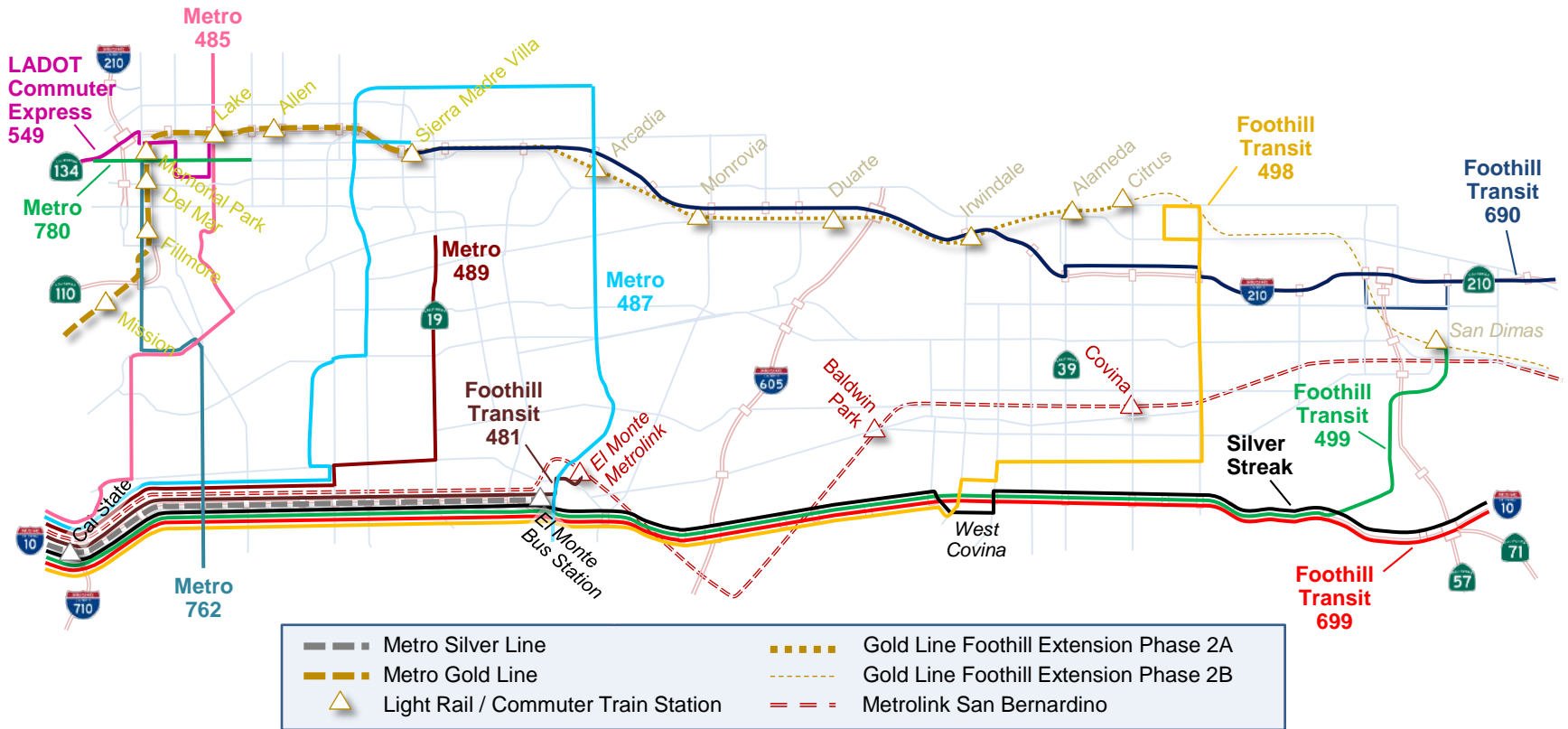
5

Transit Networks

Light-Rail, Transitway and Commuter Rail



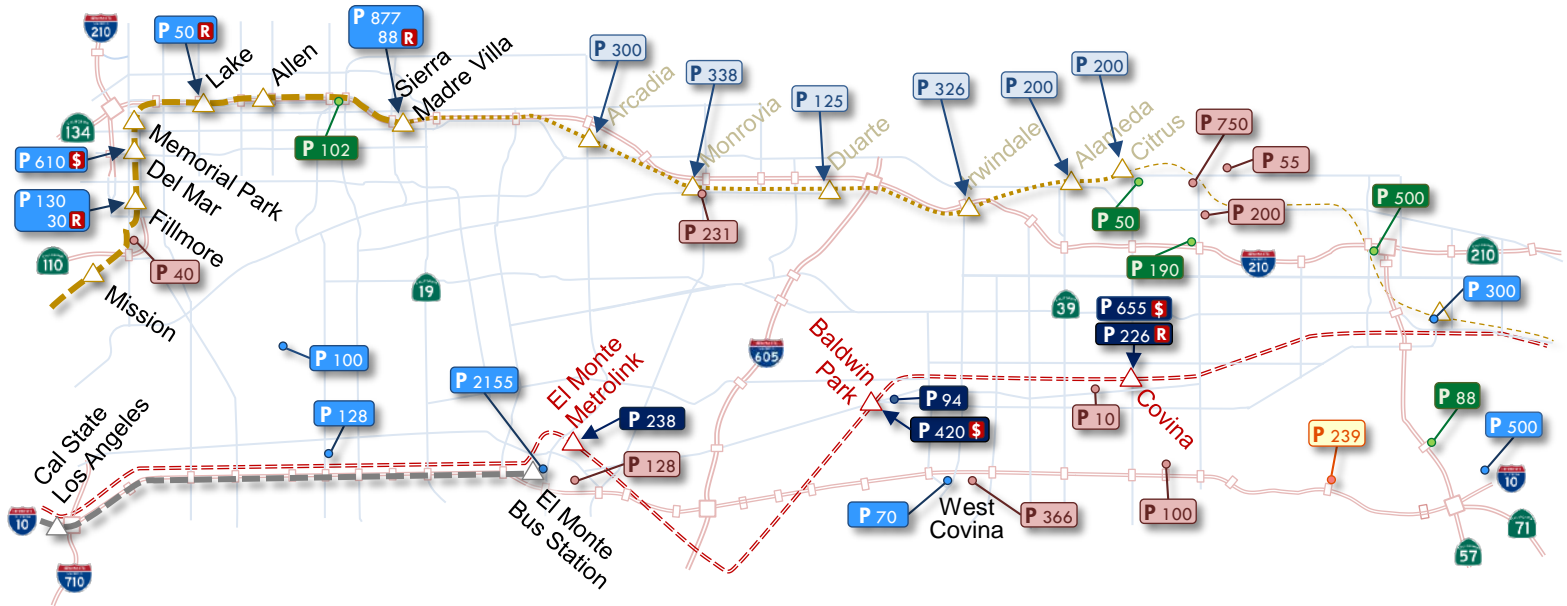
Express Commuter Buses



8

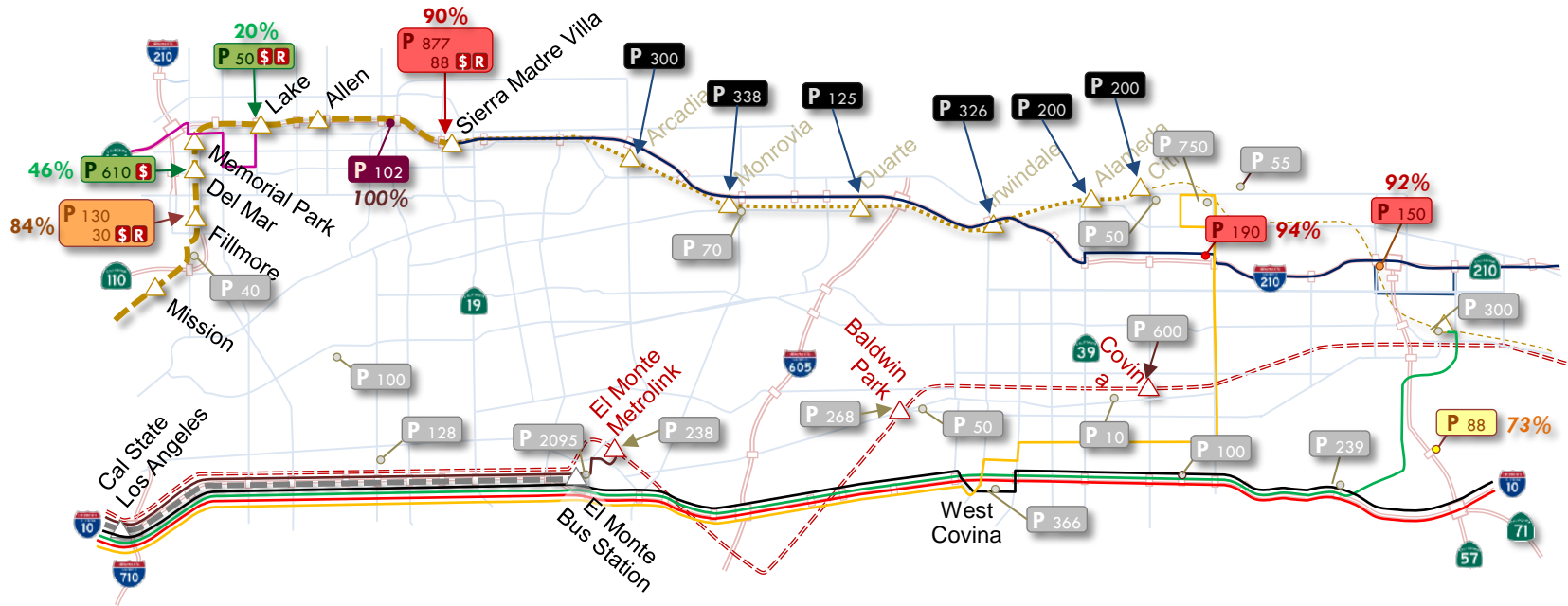
Parking Facilities

Park & Ride Facilities



	Metro Silver Line		Existing LA Metro Lots		Parking Fee
	Metro Gold Line		Future LA Metro Lots (late 2015)		Paid Reserved Parking
	Gold Line Extension Phase 2A		MetroLink Lots		
	Gold Line Extension Phase 2B		Caltrans Lots		
	MetroLink San Bernardino		Los Angeles County Lots		
	Express Bus Lines		Other Park-and-Ride Lots		

Parking Occupancy



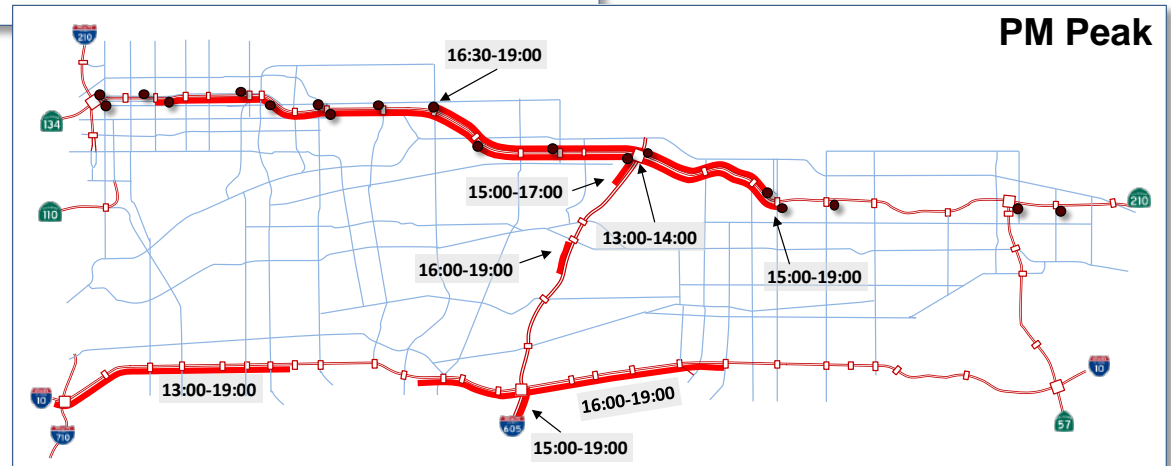
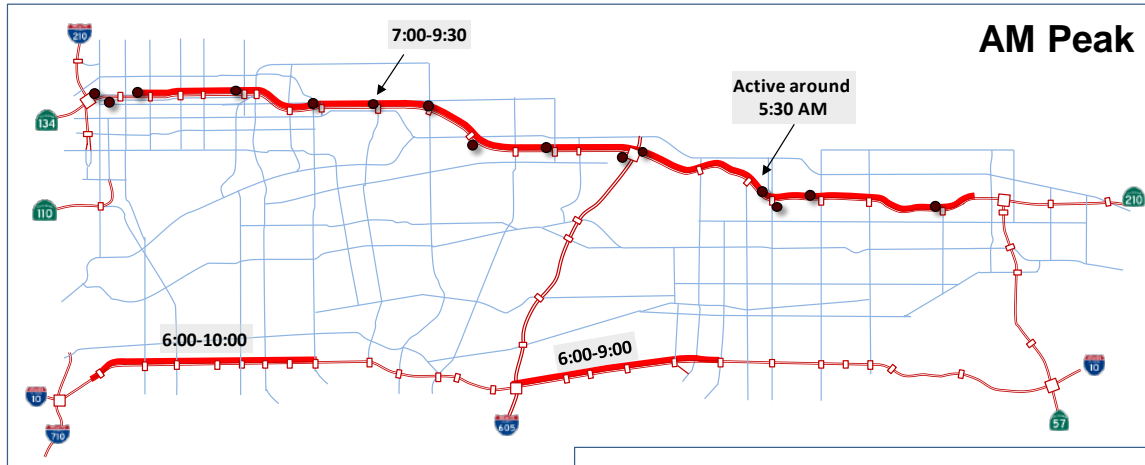
	Metro Silver Line	P 100	100%% and Above Occupancy
	Metro Gold Line	P 100	90-99% Occupancy
	Gold Line Foothill Extension Phase 2A	P 100	80-89% Occupancy
	Gold Line Foothill Extension Phase 2B	P 100	50-79% Occupancy
	Transit Station	P 100	Less than 50% Occupancy
	Bus Lines	P 100	Existing facility – No Occupancy Data
	Parking Fee Required	P 100	Planned Park-and-ride Lots
	Reservation Required		

11

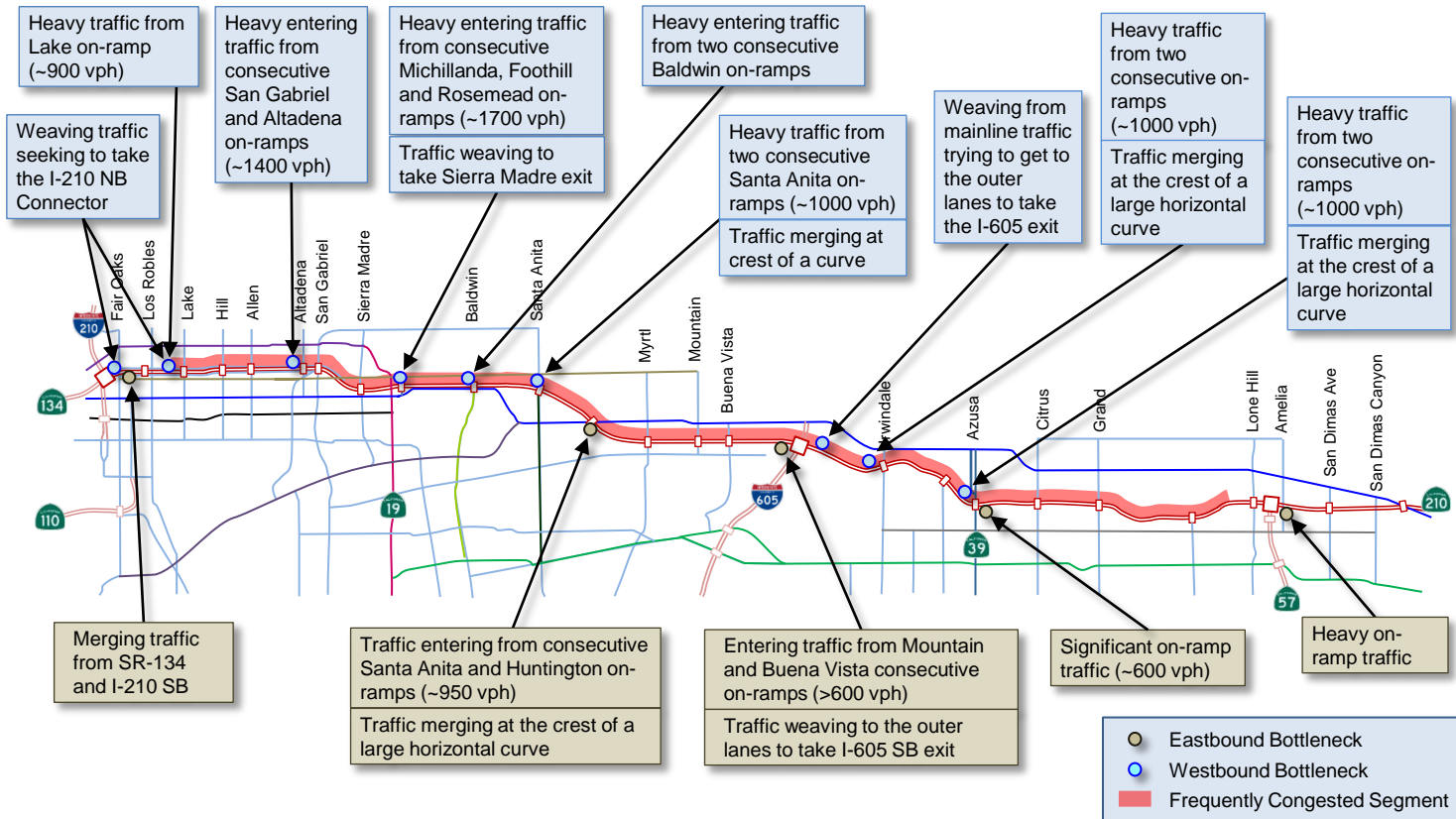
Freeway Congestion

Freeway Congested Areas

12



Major Bottlenecks – AM Peak



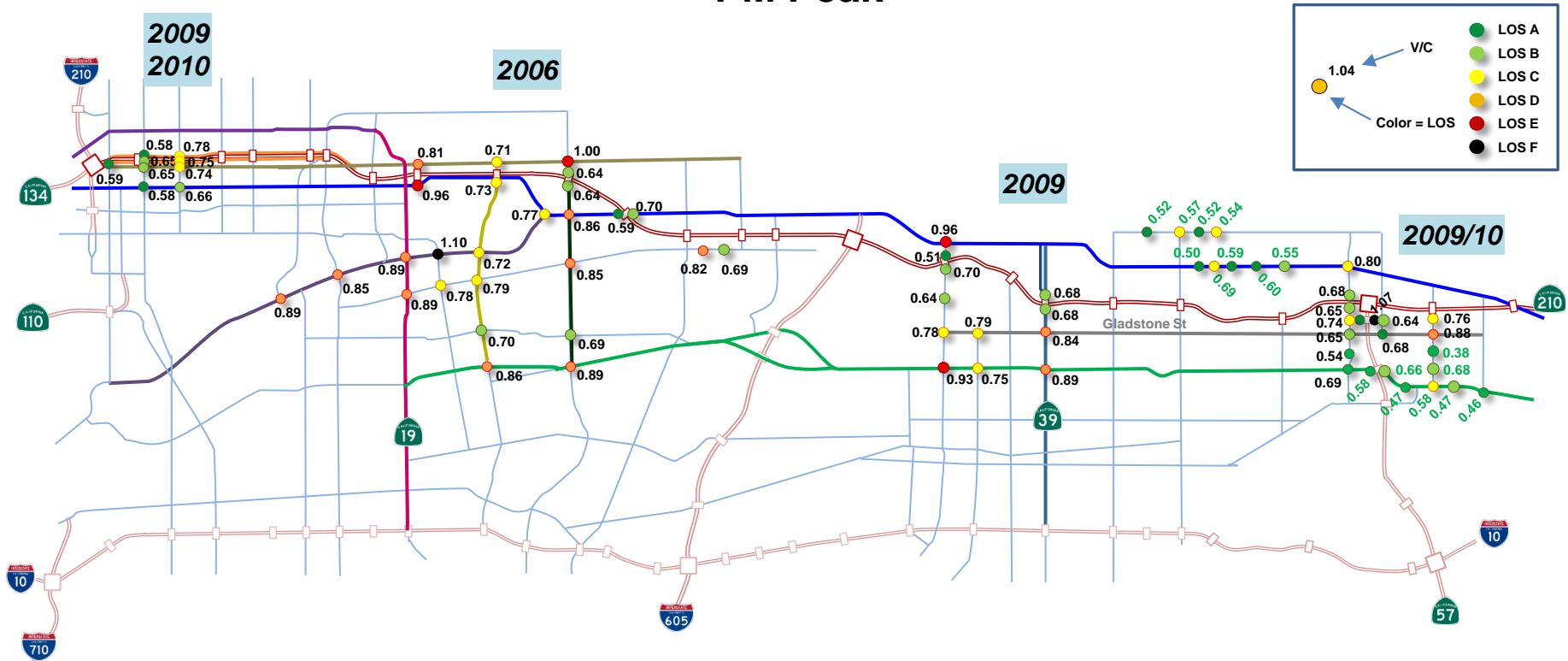
Data source: 2010 Corridor CSMP

15

Arterial Congestion

Intersection V/C Ratios

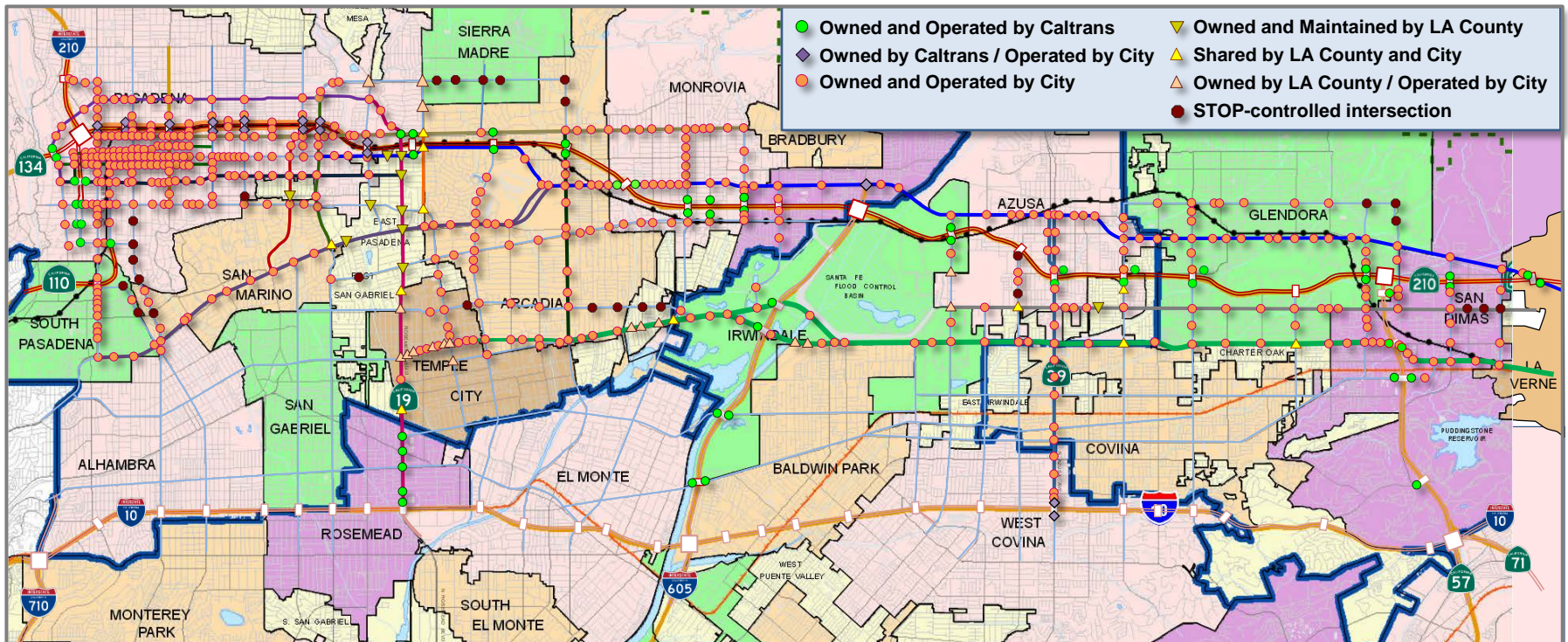
PM Peak



19

Traffic Signal Control

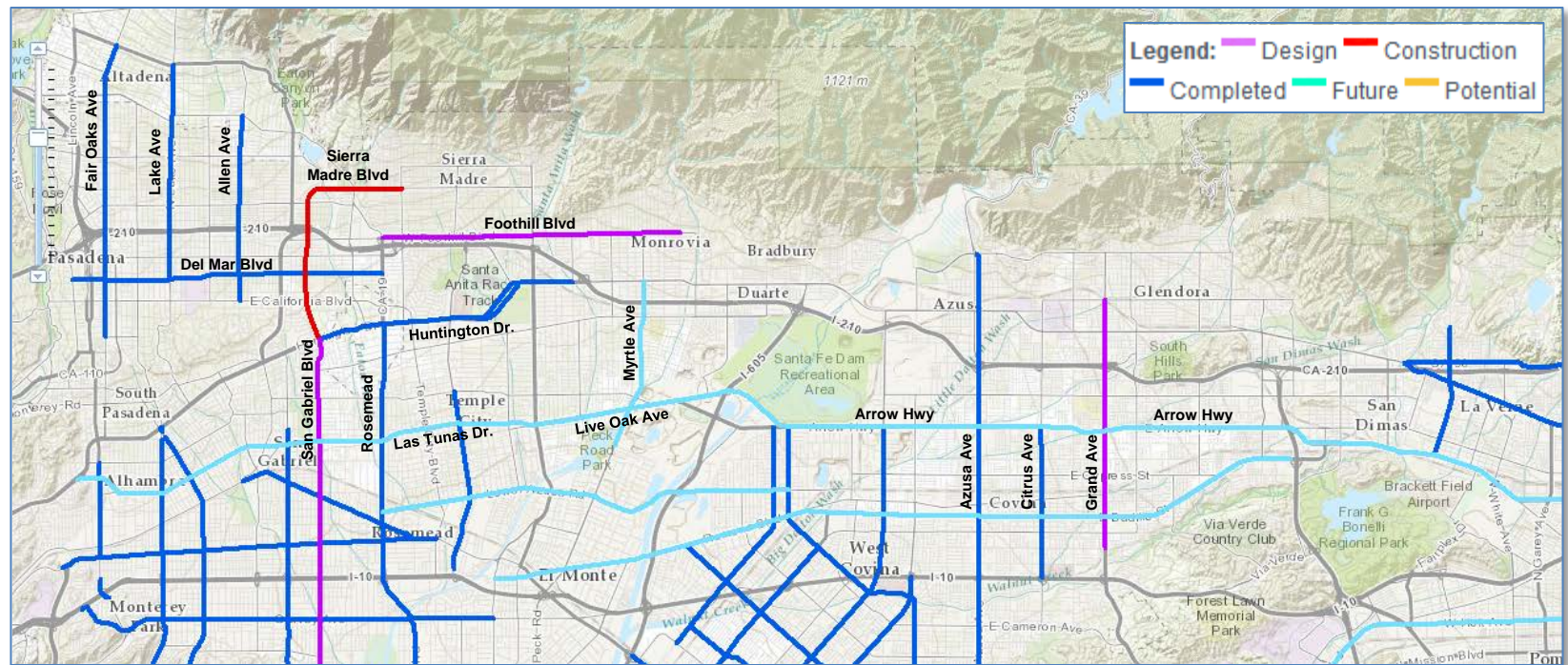
Arterials – Traffic Signals



Signal Synchronization

21

- Arterial segments synchronized through LA County's Traffic Signal Synchronization Project (TSSP)



Signal Synchronization

- **Caltrans intersections**
 - ▣ Typically not directly coordinated with local signals (exception may exist – need to check)
 - ▣ Informal coordination as a result of considering traffic arrival patterns from adjacent signals



Transit Signal Priority Corridors



Traffic Management Systems

System City	Kimley-Horn KITS	Siemens i2ims	McCain QuickNet Pro	Econolie Centracs	TransCore Series 2000	TransCore TransSuite	SCATS
Caltrans						X	
LA County	X						
Pasadena		X	X		X		X
Arcadia						X	
Monrovia	X						
Duarte	X						
Irwindale						X	
Azusa	<i>System to be selected in the future</i>						
Glendora				X			
San Dimas	X						
La Verne				X			
Alhambra						X	
San Marino	X						
San Gabriel	X						
Temple City	X						
El Monte	X						
Baldwin Park	X						
Covina	X						
West Covina						X	



Traffic Signal Controllers

25

□ Arcadia

- Majority of controllers equipped with LACO-4E firmware
- Upgrade to LACO-4E in progress along Duarte, Colorado, Foot
- 2070 controller with D4 firmware to be installed at Huntington (entrance to race tracks) due to complexity of intersection



□ LA County

- 170E or 170ATC controllers with HC-11/QUAD UART processors
- LACO-4 firmware deployed using AB3418E protocol

□ Caltrans

- 44 intersections using Type 170 controllers
- 3 intersections using 2070 controllers
 - Foothill/North Baldwin intersection along I-210 Westbound
 - Ramona Blvd ramps on I-605

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Traffic Monitoring - Arterials

Arterial Sensors

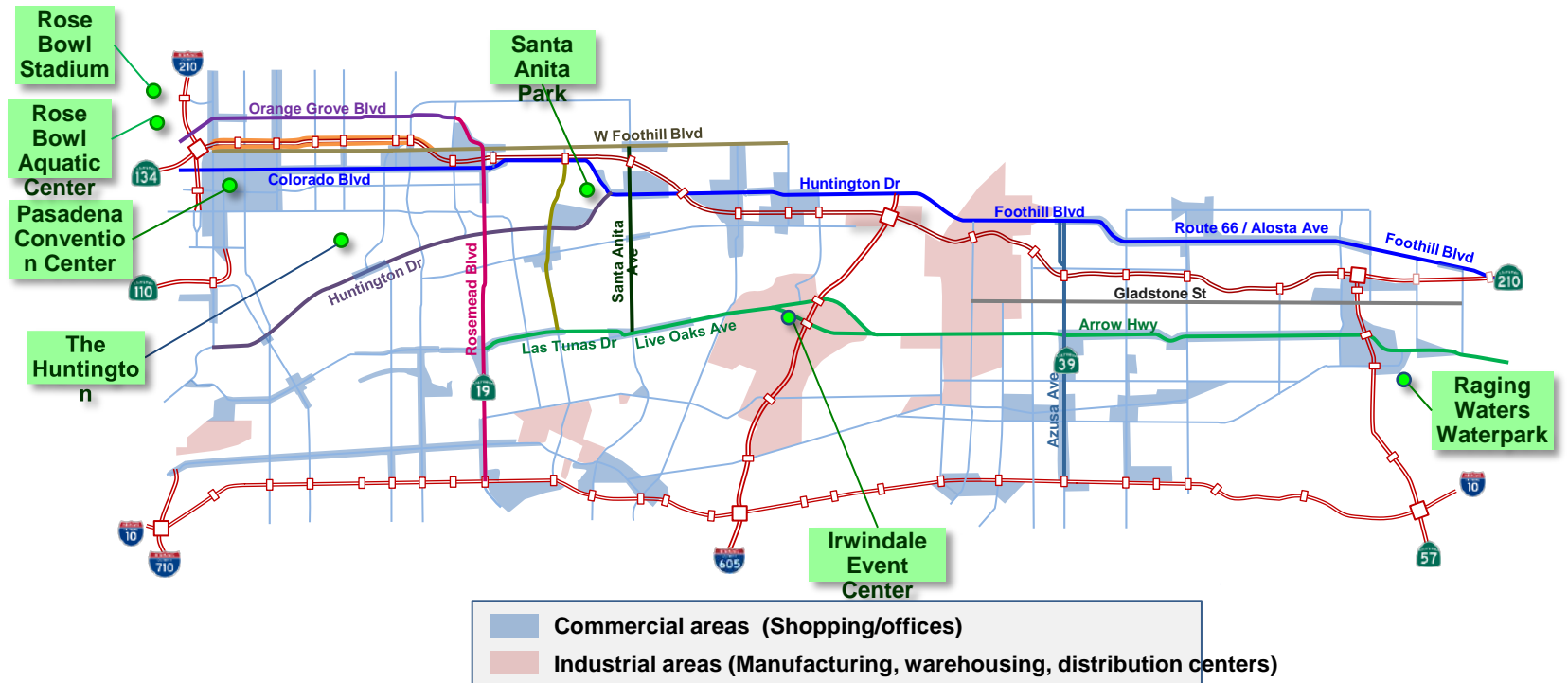
27

- **Need information**

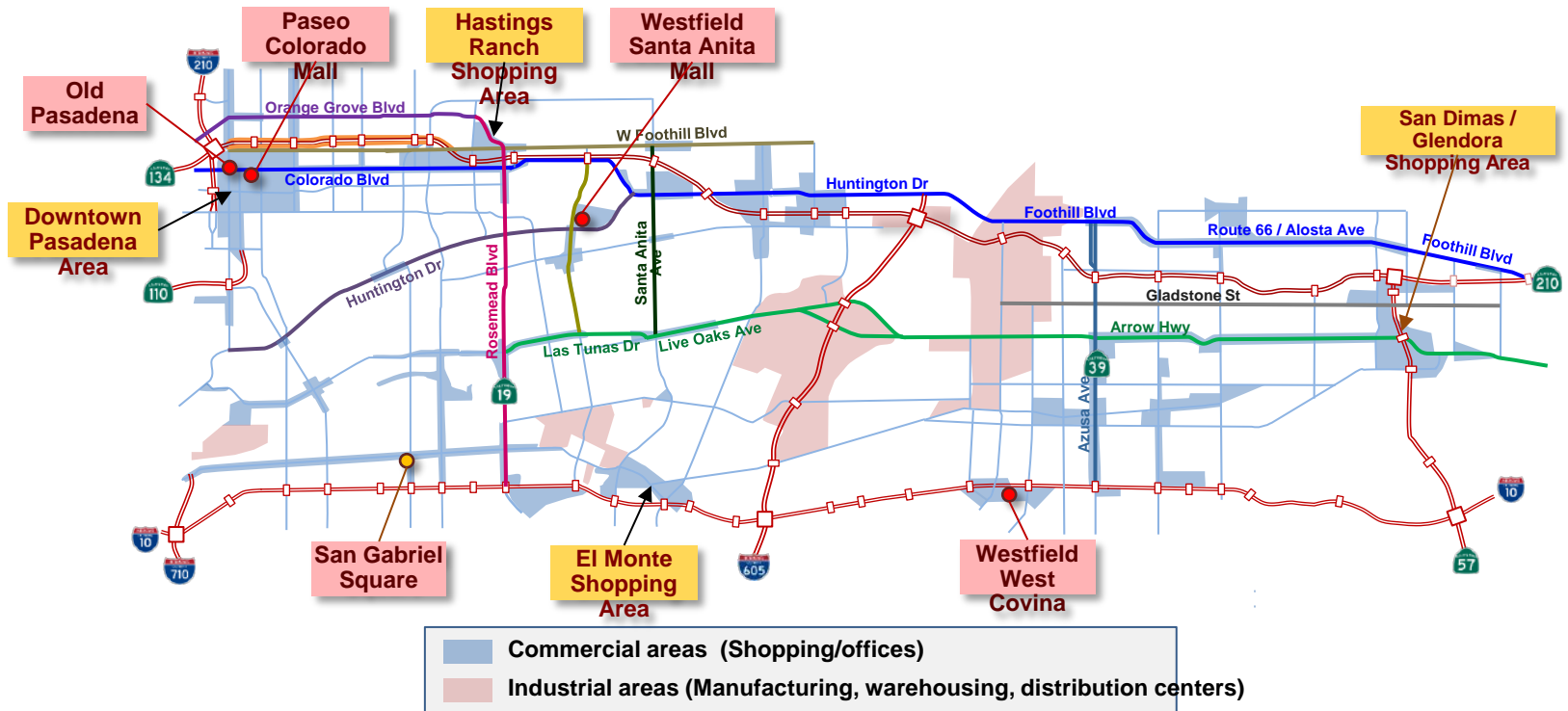
28

Trip Generators

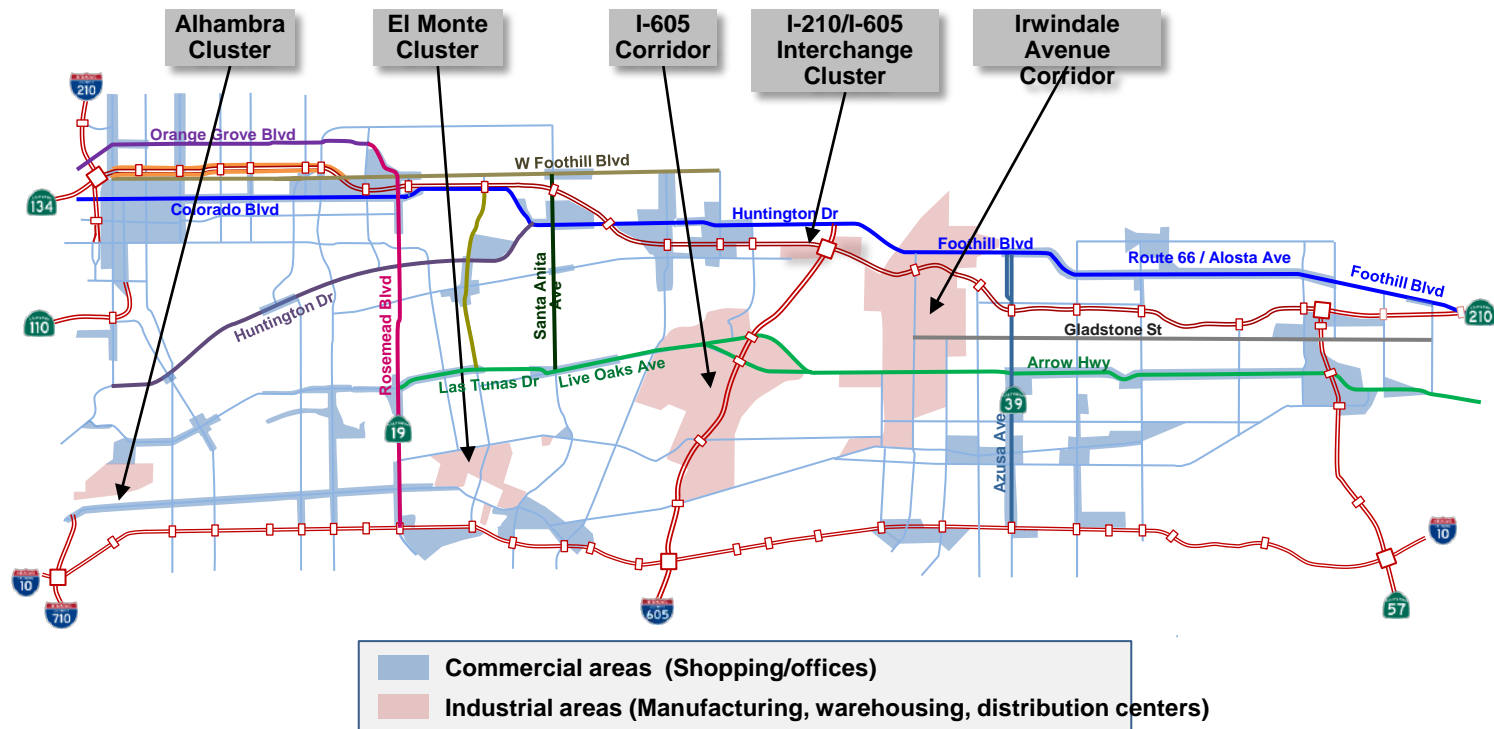
Event Venues



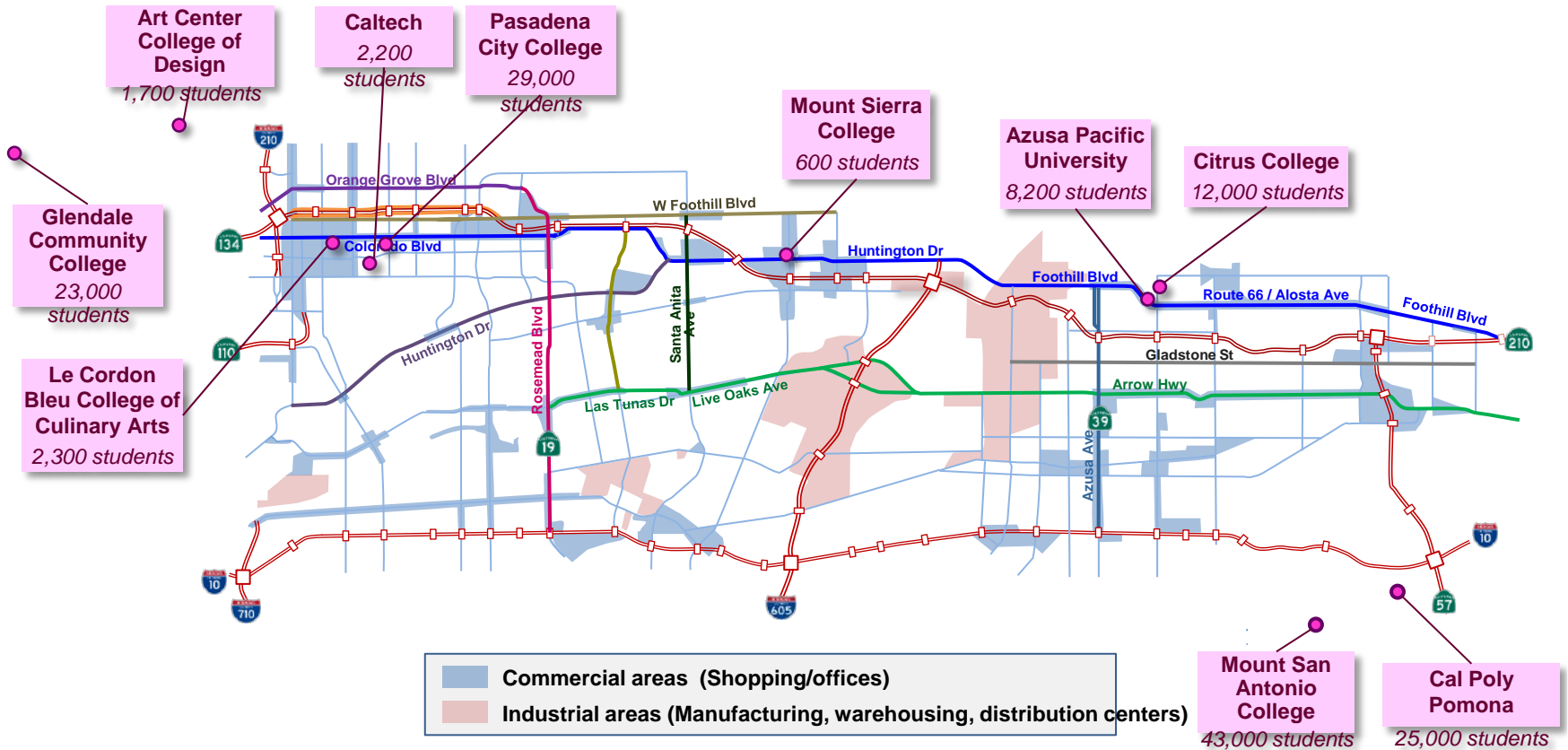
Shopping Areas



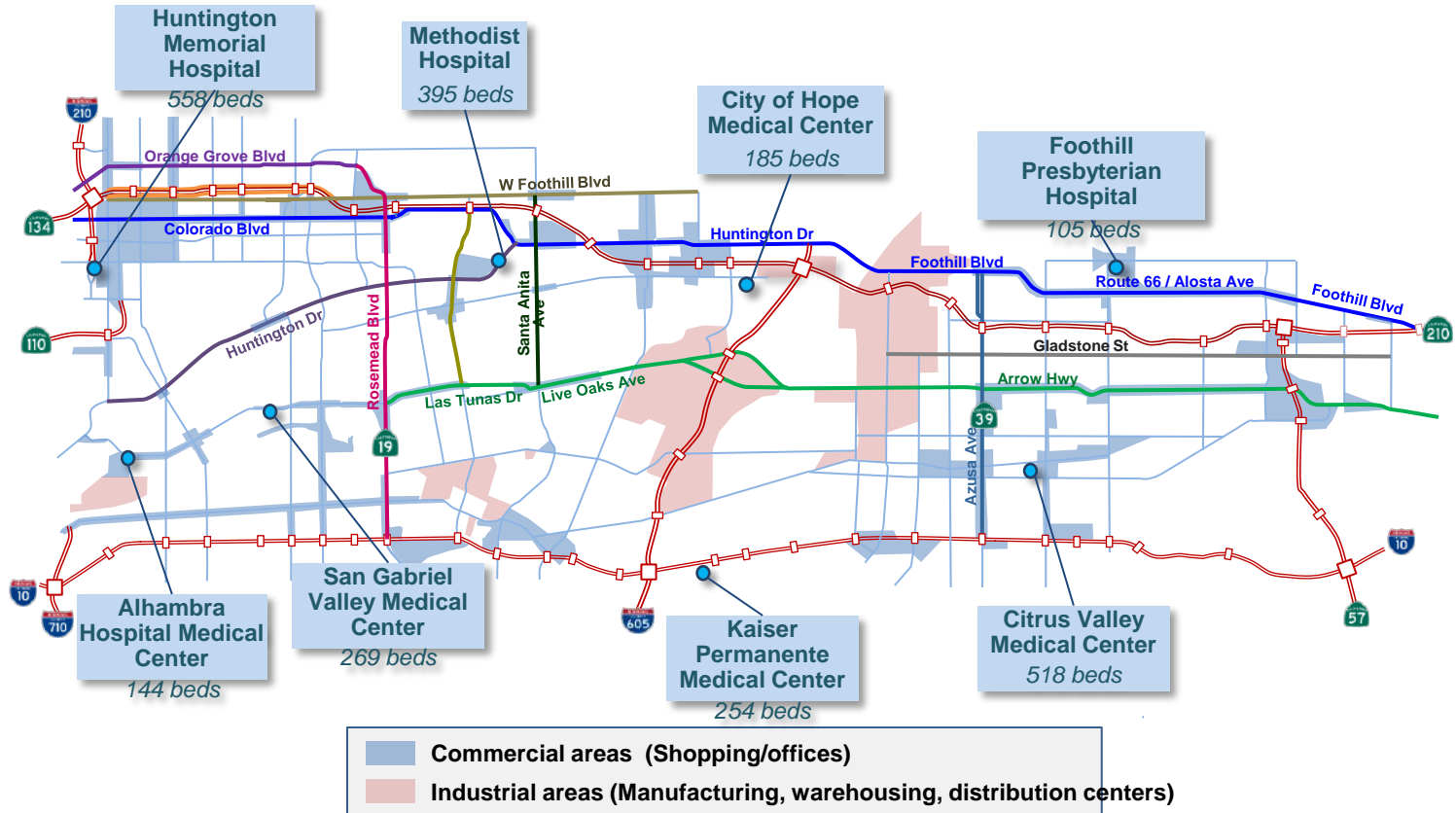
Industrial Areas



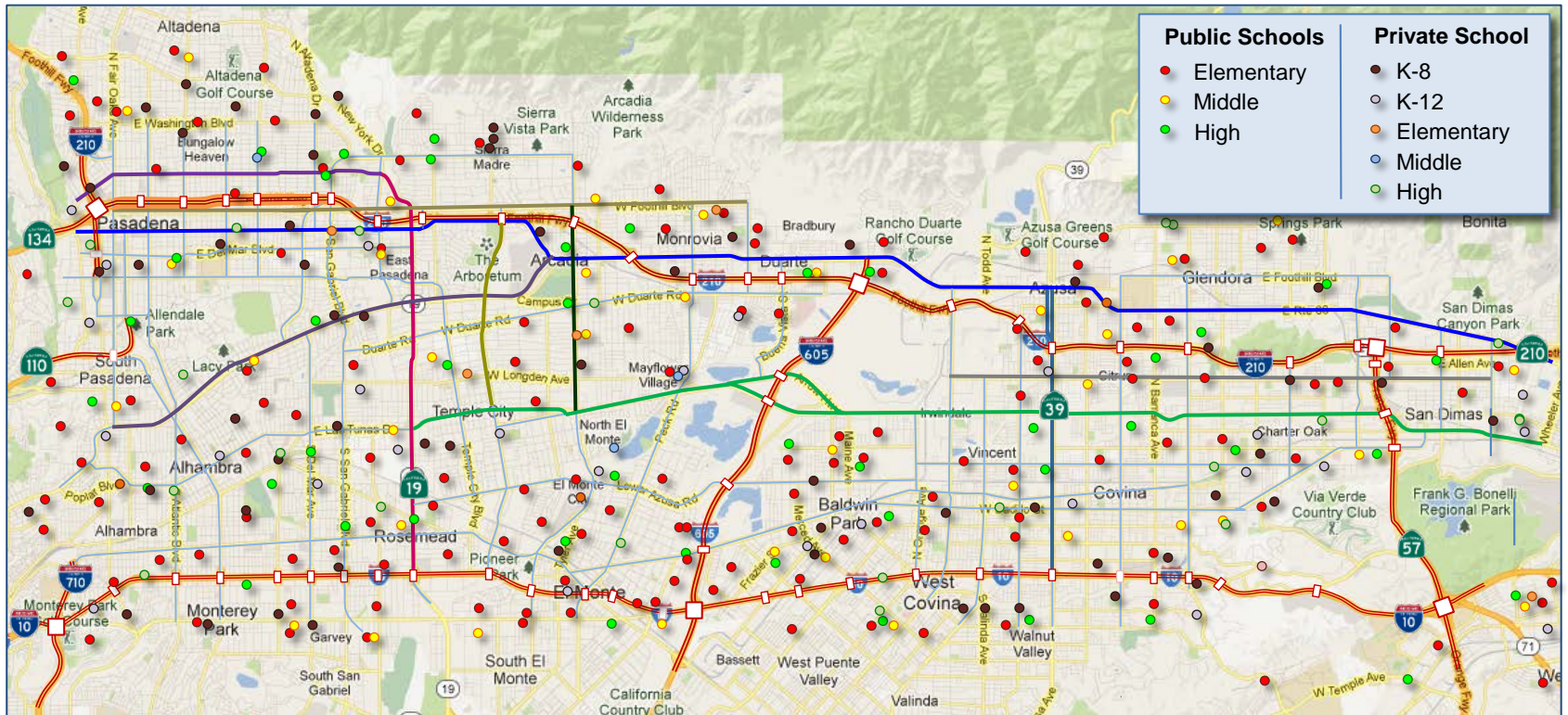
Educational Institutions



Hospitals



Elementary/Middle/High Schools



35

Travel Demand

Travel Demand Profile

- **Travel demand analysis (AM Peak)**
 - Based on Caltrans version of SCAG's 2000 travel demand model
 - Trips with portion of travel within I-210 corridor area

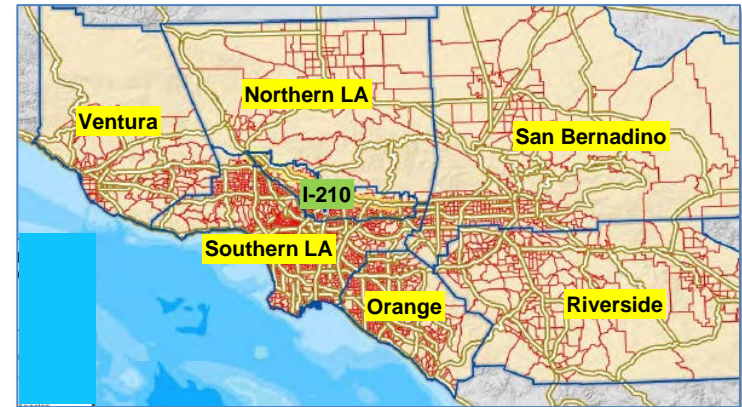


	I-210	Southern LA	Northern LA	Orange	Riverside	San Bernardino	Ventura	Outside Zone	Total Origin
I-210	83,477	49,842	3,872	3,230	622	3,431	2,886	483	147,843
Southern LA	37,275	2,703	504	31	129	518	154	225	4,301
897	7,780	1,766	76	61	29	95	76	14	9,897
Orange County	2,852	45	12	0	0	0	13	74	2,996
Riverside	1,678	286	9	0	0	0	23	113	2,109
San Bernardino	7,932	1,652	71	3	0	0	105	99	9,862
Ventura	2,006	103	50	10	45	109	0	33	2,356
Outside Zones	280	180	9	21	85	90	10	336	1,011
Total Dest.	106,042	56,577	4,603	3,356	910	4,243	3,267	1,377	180,375

Source: I-210 CSMP Report (2010)

Travel Demand Profile

- **Travel demand analysis (PM Peak)**
 - Based on Caltrans version of SCAG's 2000 travel demand model
 - Trips with portion of travel within I-210 corridor area



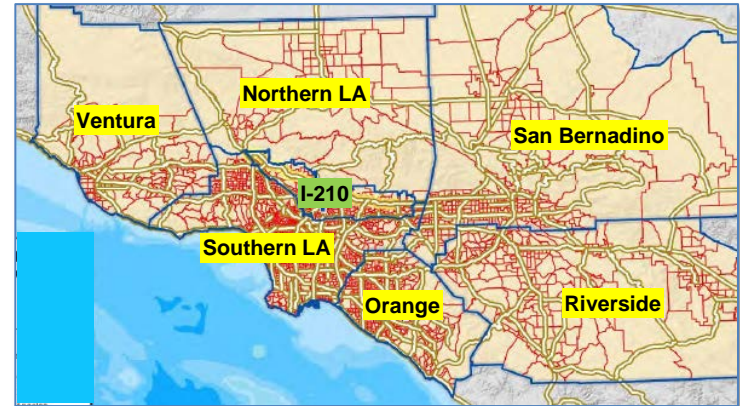
	I-210	Southern LA	Northern LA	Orange	Riverside	San Bernardino	Ventura	Outside Zone	Total Origin
I-210	122,552	58,306	10,380	4,747	2,271	11,035	2,886	597	212,774
Southern LA	74,797	2,809	1,617	122	409	2,048	154	363	82,319
Northern LA	7,297	1,092	133	53	43	155	76	16	8,865
Orange County	5,735	55	96	0	0	1	13	111	6,011
Riverside	1,306	248	27	0	0	0	23	135	1,739
San Bernardino	7,103	1,275	167	3	0	0	105	125	8,778
Ventura	2,056	103	55	14	46	134	0	46	2,454
Outside Zones	1,062	546	23	284	341	278	15	1,164	3,713
Total Dest.	221,908	64,434	12,498	5,223	3,110	13,651	3,272	2,557	326,653

Source: I-210 CSMP Report (2010)

Travel Demand Profile

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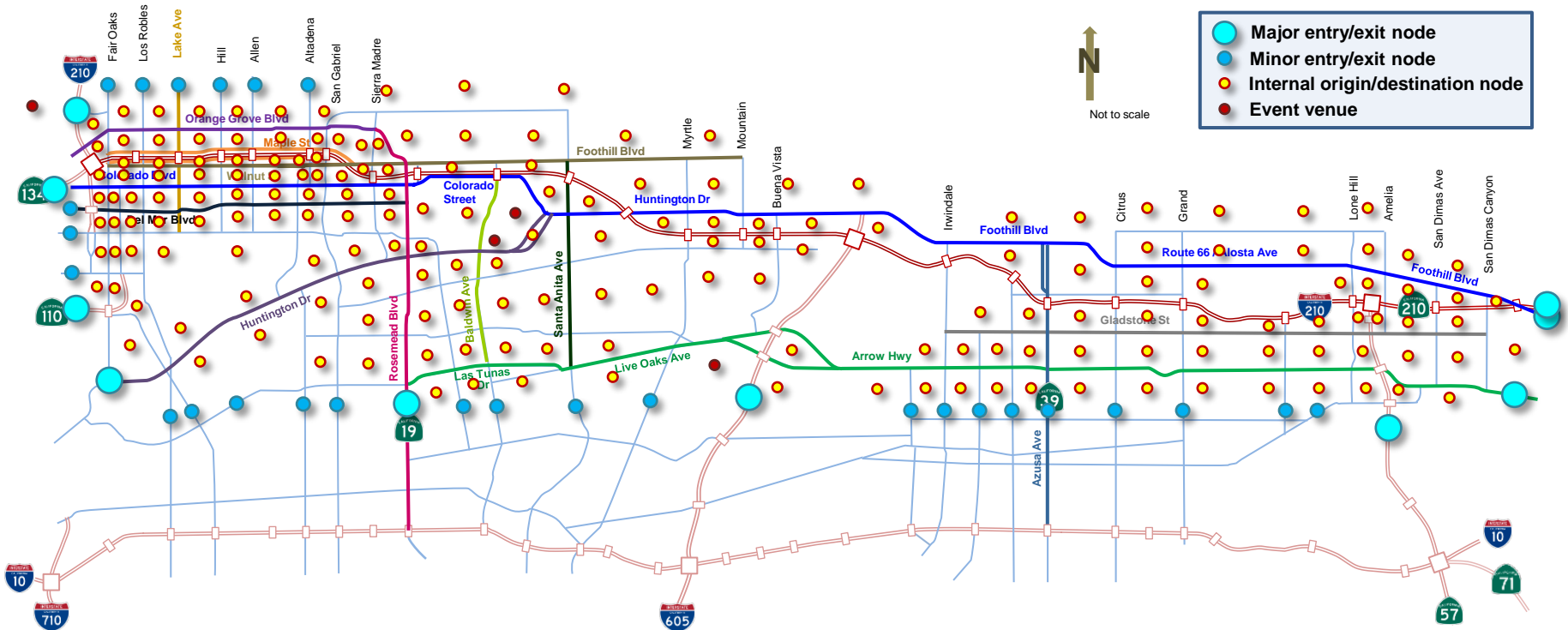
- **Travel demand 52% greater during PM peak**
- **85-87% of trip originating or terminating in LA County**
 - ▣ 38-39% travel within I-210 corridor
 - ▣ 41% travel to/from Southern LA County
 - ▣ 7% travel to/from other sections of LA County



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OD Modeling

Origin/Destination Nodes



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Traffic Safety

General Statistics

□ Weekdays

All Incident Types, Jan 2011 – Dec 2011

Corridor Section			I-210 W				I-210 E			
Segment	Mileposts	Length	Number of Incidents	VMT	Incidents/Day	Incidents/million VMT	Number of Incidents	VMT	Incidents/day	Incidents/million VMT
I-5 to SR-134	0.0 – 25.0	25.0	1,835	339,578,943	7.3	5.4	1,762	324,338,666	7.0	5.4
SR-134 to Rosemead	25.0 – 30.0	5.0	729	166,269,804	2.9	4.4	637	175,010,107	2.6	3.6
Rosemead to I-605	30.0 – 36.6	6.6	1,076	166,158,455	4.3	6.5	961	167,657,426	3.8	5.7
I-605 to SR-57	36.6 – 45.0	8.4	1,385	218,635,400	5.5	6.3	1,294	231,871,070	5.2	5.6
SR-57 to Foothill	45.0 – 47.3	2.3	93	43,758,903	0.4	2.1	110	25,030,549	0.4	4.4
Foothill to County Line	47.3 – 52.5	5.2	223	91,213,575	0.9	2.5	325	120,708,649	1.3	2.7
Freeway	0.0 – 52.5	52.3	5,349	1,025,615,08	21.4	5.2	5,089	1,044,616,470	20.4	4.9

General Statistics

□ Weekends and holidays

All Incident Types, Jan 2011 – Dec 2011

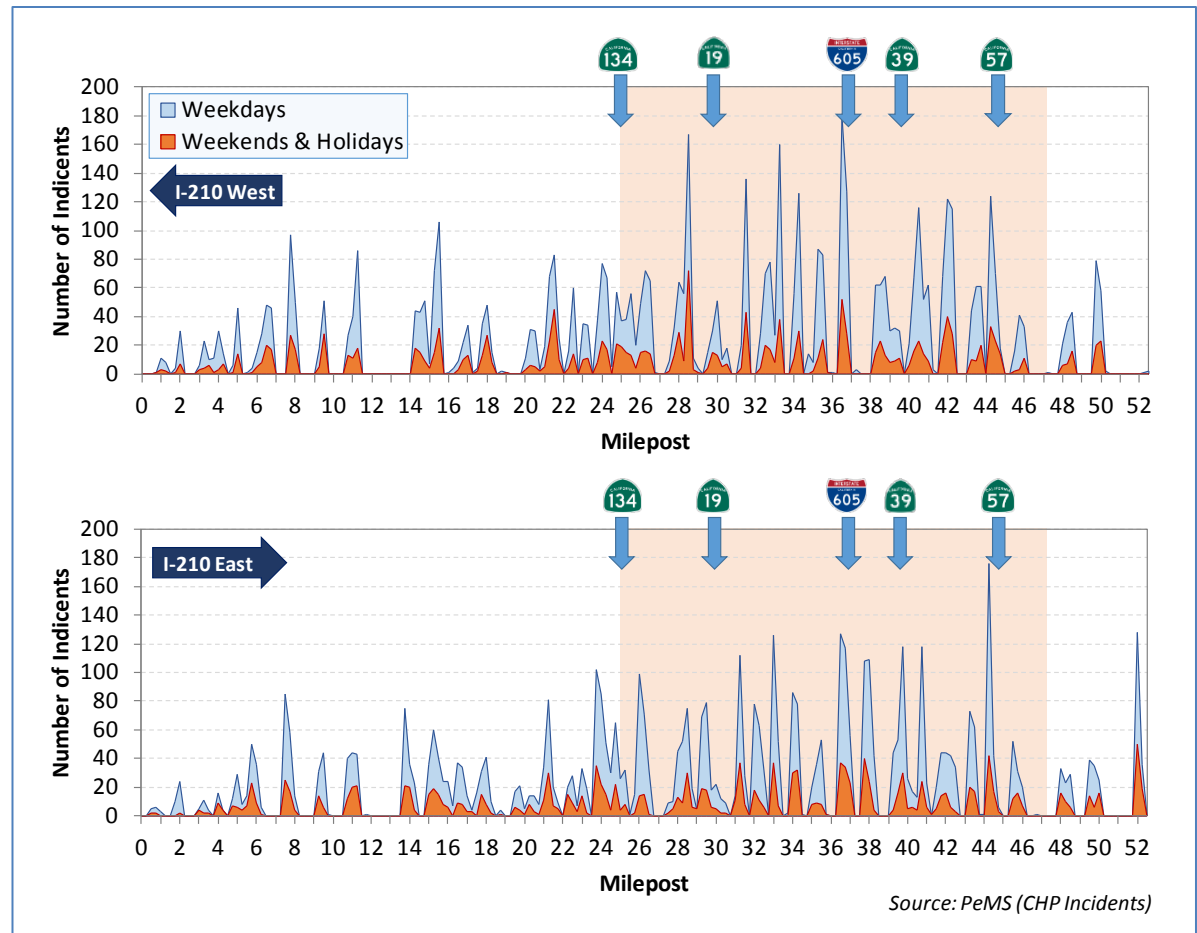
Corridor Section			I-210 W				I-210 E			
Segment	Mileposts	Length	Number of Incidents	VMT	Incidents/Day	Incidents/million VMT	Number of Incidents	VMT	Incidents/day	Incidents/million VMT
I-5 to SR-134	0.0 – 25.0	25.0	689	118,633,140	4.6	5.8	629	116,207,283	4.2	5.4
SR-134 to Rosemead	25.0 – 30.0	5.0	248	66,396,295	1.7	3.7	173	70,969,312	1.2	2.4
Rosemead to I-605	30.0 – 36.6	6.6	300	70,636,813	2.0	4.2	313	69,956,648	2.1	4.5
I-605 to SR-57	36.6 – 45.0	8.4	412	93,418,639	2.8	4.4	379	98,754,346	2.5	3.8
SR-57 to Foothill	45.0 – 47.3	2.3	21	19,902,723	0.1	1.0	42	11,295,046	0.3	3.7
Foothill to County Line	47.3 – 52.5	5.2	76	40,664,034	0.5	1.9	148	53,017,030	1.0	2.8
Freeway	0.0 – 52.5	52.5	1,746	409,651,646	11.6	4.3	1,684	420,199,667	11.2	4.0

Incident Locations

45

□ Number of incidents by location for 2011

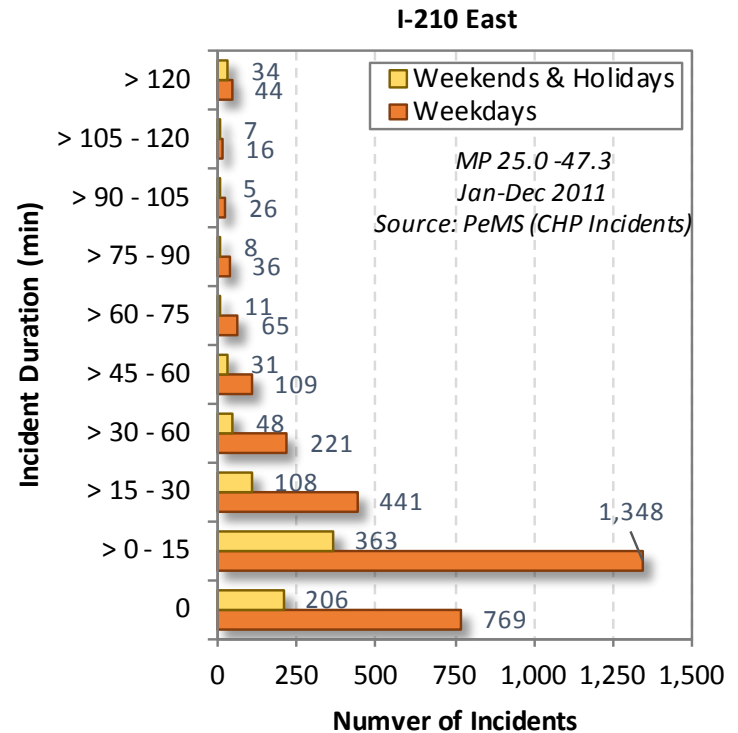
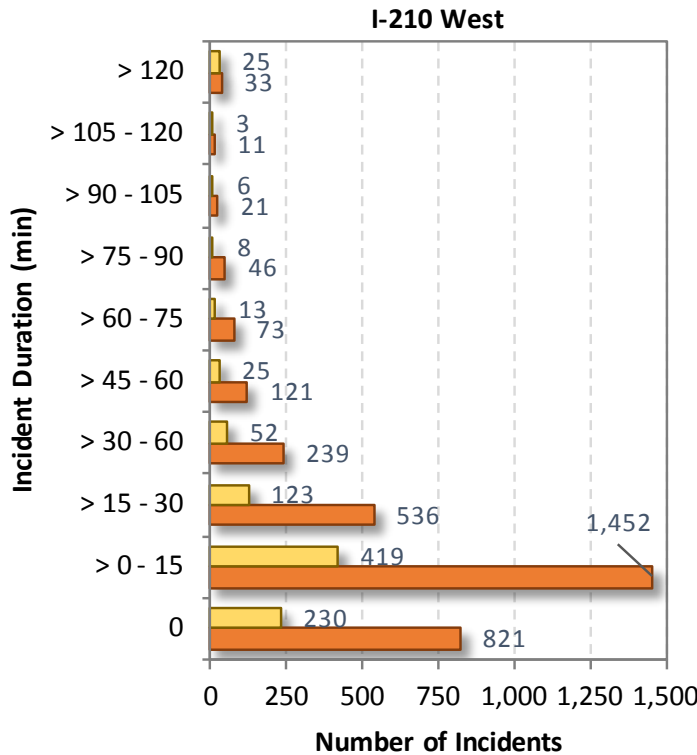
- ▣ All types of incidents
- ▣ Based on CHP records



Source: PeMS (CHP Incidents)

Event Duration

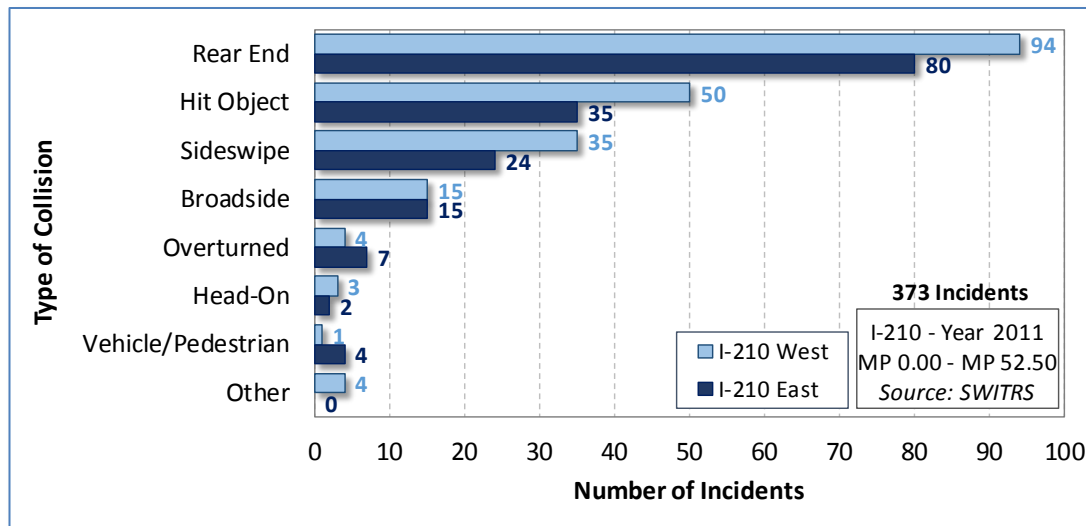
□ Distribution of 2011 incident durations based on CHP records



Injury/Fatal Accidents – Types

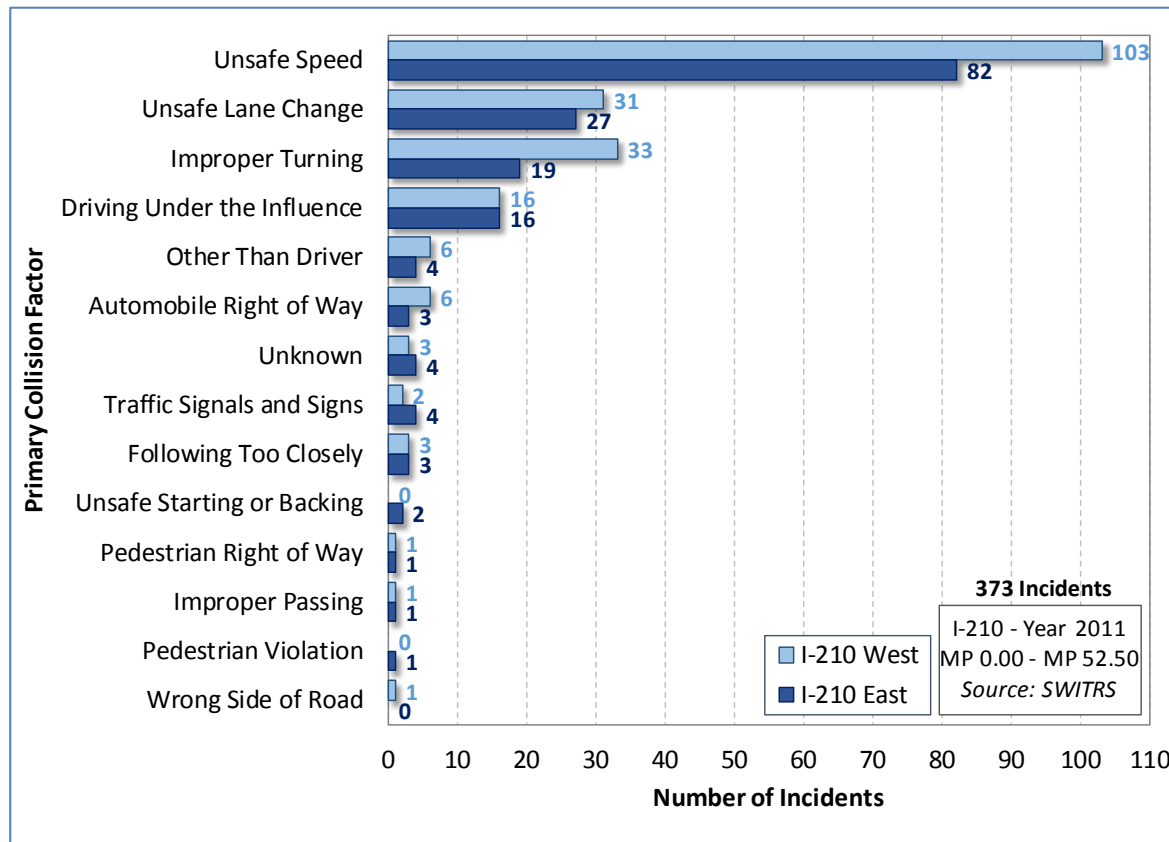
47

□ Type of collisions along I-210 (SWITRS database, 2011)

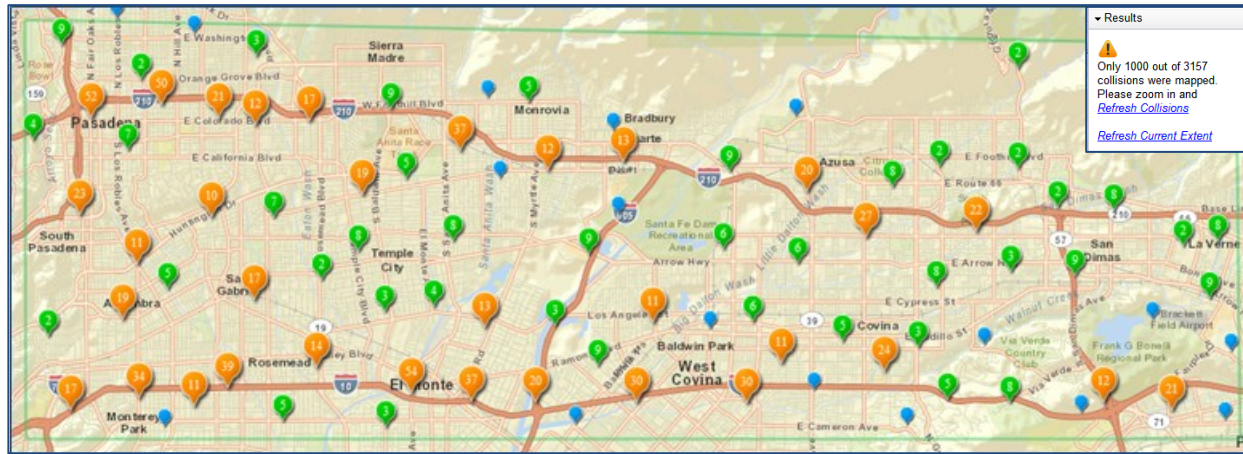


Injury/Fatal Accidents – Causes

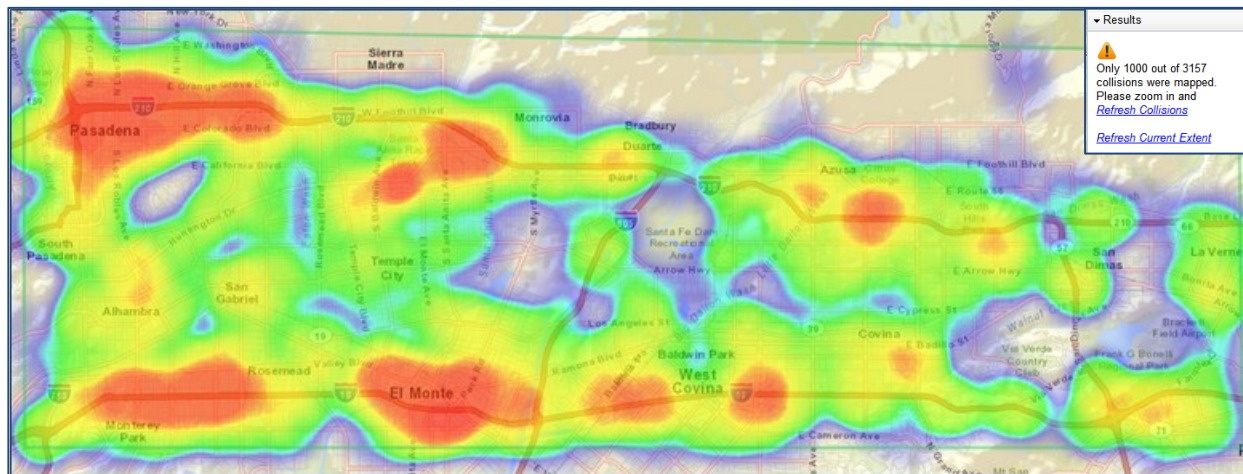
□ Primary Collision Factors (SWITRS database, 2011)



Injury/Fatal Accidents – Spatial Distribution



TIMS Data
Jan-Dec 2011

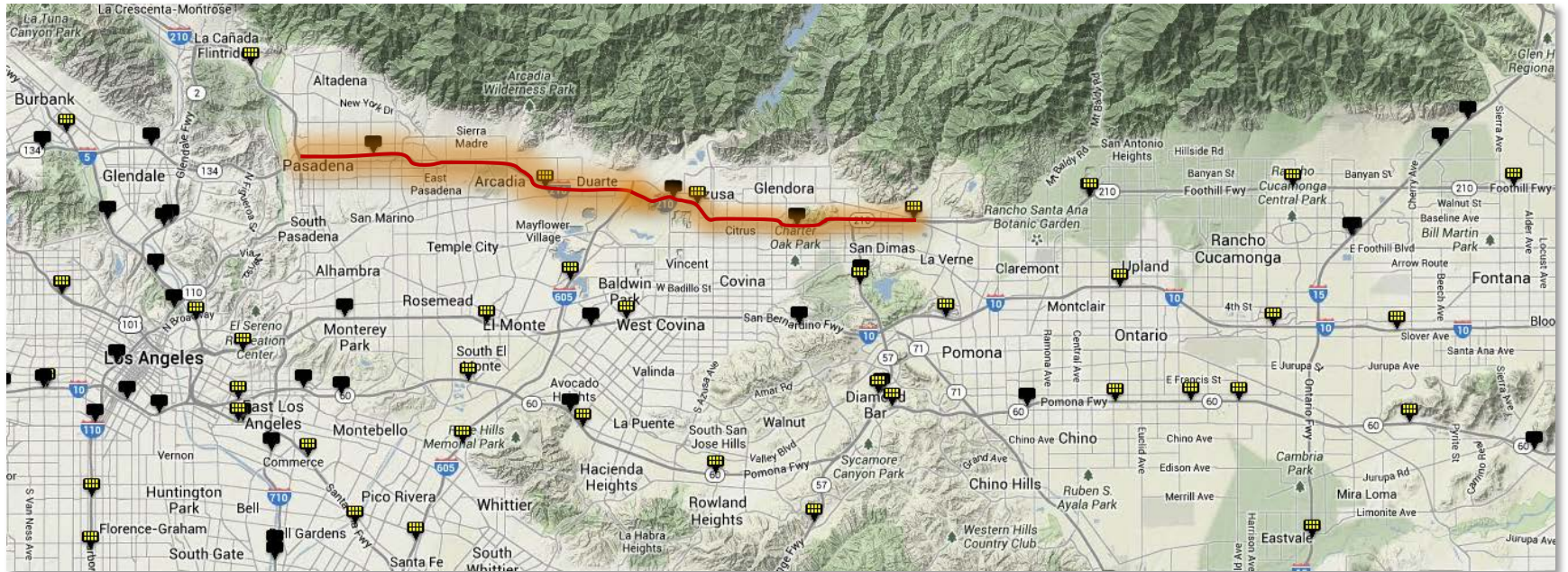


50

Traveler Information Systems

CMS - Caltrans

51



- **Service operated by the Los Angeles County Service Authority for Freeway Emergencies (LA SAFE) with**
 - LA Metro
 - Orange County Transportation Authority
 - Ventura County Transportation Commission,
 - California Highway Patrol
 - Caltrans Districts 7, 8 and 12

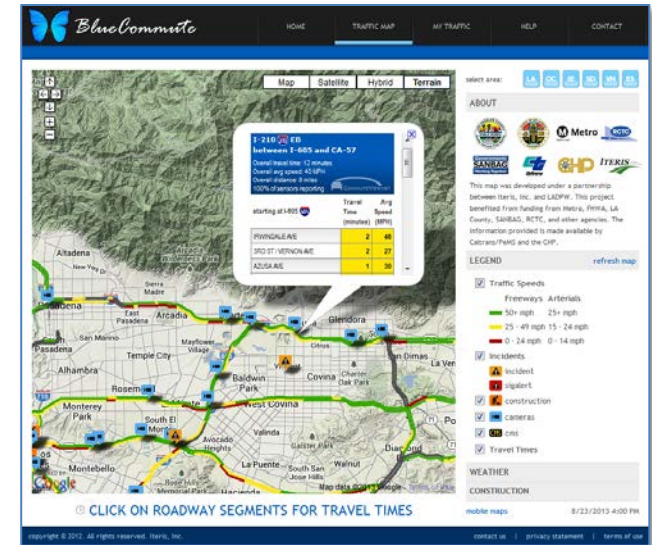
- **Information provided**
 - Real-time traffic speeds
 - Lane closures, construction zones
 - Incidents and Sigalerts
 - Access to live video feeds from CCTV cameras operated by Caltrans
 - Bus and train schedules from all regional public transit agencies
 - Transit trip planner
 - Information about toll roads, carpool lanes, park-and-ride facilities
 - Information on how to obtain roadside assistance



Blue Commute

53

- ❑ **Mobile application developed by Iteris in partnership with LA Couty DPW**
- ❑ **Information provided**
 - ❑ Congestion information on freeways and arterial roads
 - ❑ Speed and travel times along selected routes
 - ❑ Incident notices and construction events along identified routes
 - ❑ Schedule notices
 - ❑ Fastest route from point A to point B by calling the automated phone system.
 - ❑ Messages displayed on changeable message signs
 - ❑ Access to video feeds from CCTV cameras operated by Caltrans
 - ❑ Call-in service



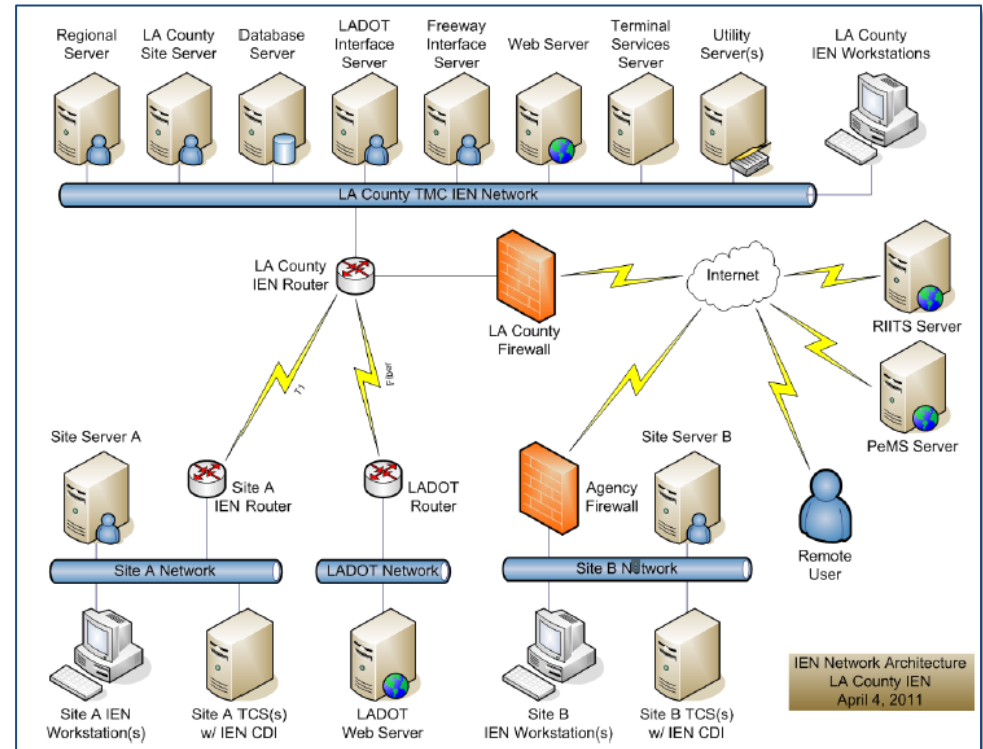
54

Data Exchange Systems

Information Exchange Network (IEN)

55

- Coordinated communication network enabling participants to share traffic signal information, and eventually, control
- Designed to collect second-by-second data
- Operational since 2002



Information Exchange Network (IEN)

56

□ Cities/agencies connected to IEN (as of 09/2013)



Information Exchange Network (IEN)

57

- Traffic signal control system interfaces
 - ▣ LADOT traffic signal control system
 - ▣ TransCore Series 2000
 - ▣ TransCore TransSuite TCS
 - ▣ Siemens i2TMS
 - ▣ McCain QuicNet
 - ▣ Kimley Horn KITS
 - ▣ Econolite Centracs

- Freeway data interfaces (*since September 2010*)
 - ▣ Pulls data from RIITS and PeMS into the IEN
 - ▣ Allows the IEN to report freeway congestion status, incidents, and lane closures to IEN users



Information Exchange Network (IEN)

58

- IEN Web Server
 - ▣ XML-based web service to provide summary intersection and arterial detector data to authorized external systems.
 - ▣ Not currently accessible from the Internet



Regional Integration of ITS (RIITS)

59

- **Platform supporting real-time information exchange among freeway, traffic, transit and emergency service agencies**
- **Participating agencies**
 - ▣ LA Metro, bus and rail operations
 - ▣ LADOT
 - ▣ Caltrans, Districts 7, 8 and 12
 - ▣ California Highway Patrol
 - ▣ Long Beach Transit
 - ▣ Foothill Transit
- **Currently main provider of information to Southern California's 511 system**



Regional Integration of ITS (RIITS)

60

□ Partnering agencies → Full data access

- Traffic detector data
- Freeway travel time data,
- CMS data
- CCTV videos
- Arterial signal timings
- Incident reports from CHP
- Events and lane closure data
- Transit vehicle location and route data

□ Information providers → Limited access

- Freeway congestion and travel time data
- CCTV video snapshots,
- Changeable message sign content

