# VICTOR VALLEY AREA TRANSPORTATION STUDY

FINAL REPORT

Prepared for:
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(SANBAG)

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#### 1 EXISTING CONDITIONS

## 1.1 Project Description

The purpose of this study is to prepare a roadway plan to accommodate Victor Valley Area transportation needs for the Year 2035 traffic and buildout of local City and County general plans. The Victor Valley is comprised of the Cities of Adelanto, Hesperia and Victorville, the Town of Apple Valley and County of San Bernardino.

This chapter describes existing traffic conditions on the freeway and major arterial highway network in the Victor Valley area. Existing roadway characteristics, including number of lanes and traffic controls at key intersections are documented. Daily traffic volumes on roadway segments and afternoon peak hour turning movements at critical intersections and interchanges are presented. Finally, the peak hour traffic level of service (LOS) analyses results are summarized.

## 1.2 Roadway Characteristics

The existing roadway analysis includes 33 significant east-west and north-south arterials in the Victor Valley area with a total of 109 segments. It also includes Interstate 15 between the SR-138 interchange and the D Street interchange (7 segments). The description of existing roadway conditions is based on data collected from each participating agency and field observations made in March 2006. Generally, the roadway segments have two or four total travel lanes and do not have raised medians. Data on existing roadway characteristics is provided in the LOS tables later in this chapter.

## 1.3 Traffic Volumes on Roadway Segments

The daily traffic volume counts were provided by each agency for most locations and 24-hour counts were conducted at approximately 35 locations where counts were not available. **Figure 1-1** presents the average daily traffic volume counts on the roadway segments in the Victor Valley Area. The highest traffic volumes in the area are on Bear Valley Road, Palmdale Road (SR-18), Phelan Road/Main Street, Hesperia Road, US-395 and portions of Happy Trails Highway (SR-18). Count worksheets are provided in **Appendix A**.

#### 1.4 Level of Service on Roadway Segments – Daily Traffic

**Table 1-1** is a description of the LOS designations for roadway segments and **Table 1-2** is a description of the LOS designations for freeway segments. Generally, LOS C or better implies very little, if any, congestion on the roadway. LOS E represents a condition where the roadway is at capacity and motorists encounter congestion. LOS F indicates severe congestion.

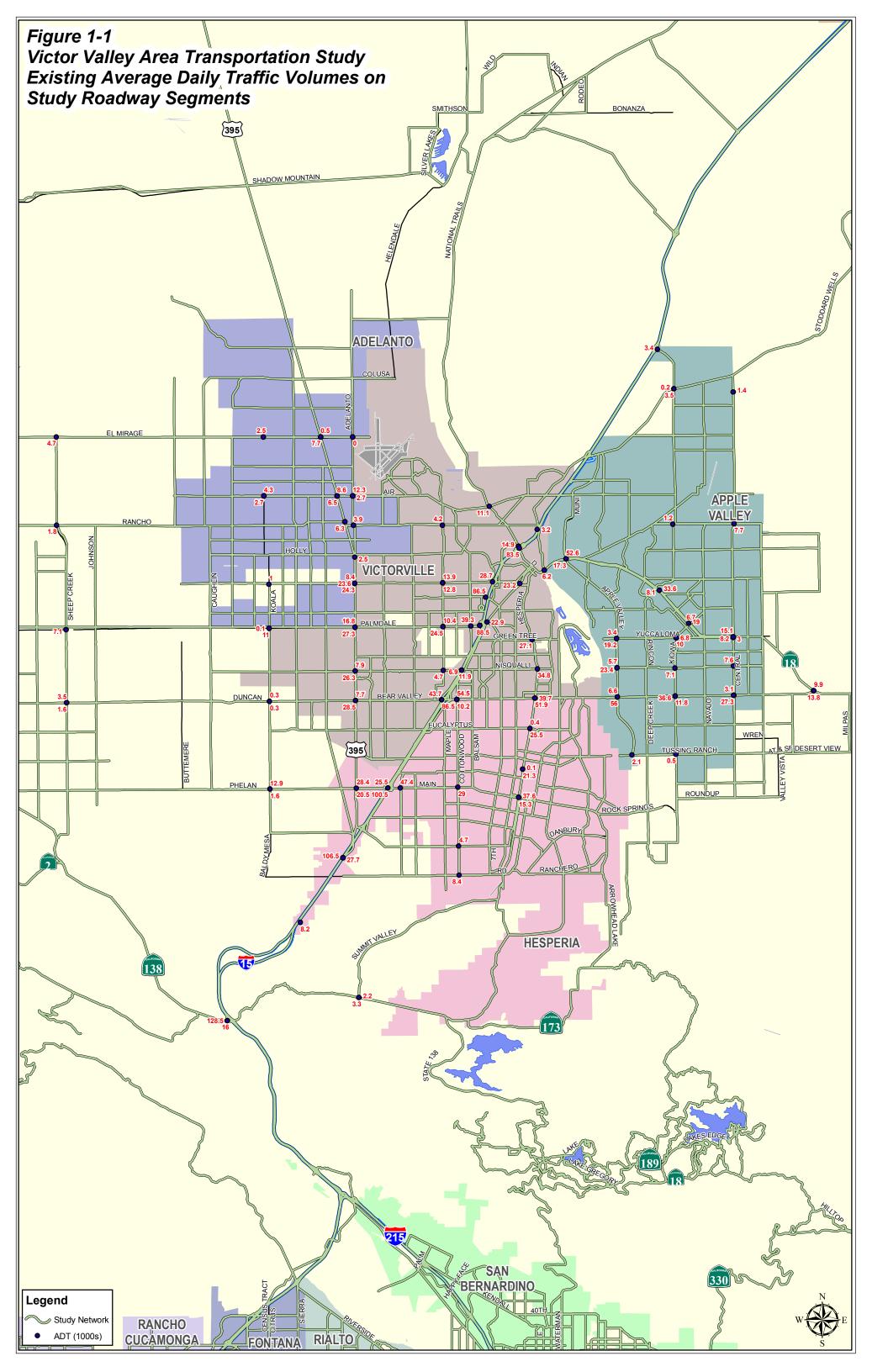




Table 1-1 - Roadway Segment Level of Service Description

LEVEL OF SERVICE	OPERATING CONDITIONS				
A	Free flow, with no restrictions on maneuvering or operating speeds. Minimal or no delay.				
В	B Stable flow, with some restrictions on maneuvering or operating speeds. Nominal delays.				
С	C Stable flow, with more restrictions on speed and maneuverability. Some delays.				
D	D Approaching unstable flow. Restricted speed and maneuverability. Delays encountered at intersections.				
Е	E Unstable flow, with some stoppages. Constitutes maximum capacity by definition. Extensive delays at some locations.				
Forced flow, with many stoppages. Low operating speeds, extensive queuing and very extensive delays.					
Source: Highway Capacity Manual, 2000					

**Table 1-2 – Freeway Segment Level of Service Description** 

LEVEL OF SERVICE	OPERATING CONDITIONS			
A	Free flow operations, with no restrictions on maneuvering and free-flow speeds prevail.			
В	Stable flow, with slight restrictions on maneuvering and ree-flow speeds are maintained. Driver comfort level is high.			
С	Stable flow, with noticeable restrictions on maneuverability and speeds are near the free-flow speed.			
D	Approaching unstable flow. Limited maneuverability and speeds slightly decline. Driver comfort level is reduced and density begins to increase.			
E	Unstable flow, with extremely limited maneuverability			
F	Forced flow, with breakdowns in vehicular flow. Queue form behind breakdown points caused by traffic incident merge or weaving segments, etc.			
Source: Highwa	Source: Highway Capacity Manual, 2000			

The capacities and LOS thresholds for each facility type were determined based on the procedure outlined in the Florida Tables from the Florida Department of Transportation (FDOT). Based on 24-hour count data at approximately 25 locations spread throughout the Victor Valley area, factors including the peak hour percentage, peak hour factor and effective green ratio, were



adjusted in the Florida Tables to better represent traffic conditions in the Victor Valley. The resulting traffic volume thresholds for LOS E for the various roadway classifications are shown in **Table 1-3** below. Maximum volumes of LOS D and C represent 90% and 75% of the capacity at LOS E. The FDOT Tables and assumptions used for this analysis are provided in **Appendix B**. Using these assumptions, the results of this analysis indicate the peak hour LOS based on the average daily traffic (ADT) volume.

Table 1-3 – Average Daily Traffic Volume Thresholds for Victor Valley Area

#Lanes/Facility Type	LOS C	LOS D	LOS E
2/Divided	12,975	15,570	17,300
2/Undivided	9,525	11,430	12,700
4/Divided	30,375	36,450	40,500
4/Undivided	19,125	22,950	25,500
6/Divided	51,975	62,370	69,300
2-4/Highway	18,525	22,230	24,700
6/Freeway	120,675	144,810	160,900
8/Freeway	160,900	193,080	214,533

**Table 1-4** presents the number of travel lanes, the median type and a comparison of the daily traffic volume to the capacity of the roadway segment, along with the Level of Service (LOS) of the roadway segment. The results of the roadway analysis indicate 39 out of 109 of the arterial roadway segments operate at LOS D or worse. The segments along I-15 operate at LOS C or better with the exception of the segment between SR-138 and US-395 which operates at LOS D. The afternoon peak hour mainline volumes along I-15 are presented in **Table 1-5**. Several segments along Bear Valley Road, Apple Valley Road, Hesperia Road, Happy Trails Highway and US-395 operate at LOS D, E or F. **Figure 1-2** presents the levels of service on the study area roadway segments for existing conditions.



Table 1-4 – Summary of Roadway Operations for Existing Conditions Average Daily Traffic

Roadway Segment	# of Lanes/ Median Type	Existing Traffic Volumes	LOS C Roadway Capacity	LOS
El Mirage Road between:				
w/o Sheep Creek	2/Undivided	4,655	9,525	C or Better
Sheep Creek and Baldy Mesa	2/Undivided	2,475	9,525	C or Better
Baldy Mesa and US-395 <sup>1</sup>	2/Undivided	462	9,525	C or Better
US-395 and Adelanto <sup>1</sup>	2/Undivided	28	9,525	C or Better
Air Expressway Boulevard between:				
Baldy Mesa/Koala and US-395	2/Undivided	4,255	9,525	C or Better
US-395 and Adelanto	4/Undivided	6,528	19,125	C or Better
Adelanto and Village Drive	4/Undivided	12,289	19,125	C or Better
Rancho Road between:				
Baldy Mesa/Koala and US-395	2/Undivided	6,301	9,525	C or Better
Mojave Drive between:			-	
Baldy Mesa and US-395	2/Undivided	8,400	9,525	C or Better
US-395 and El Evado	4/Undivided	12,755	19,125	C or Better
El Evado and I-15	4/Undivided	28,694	19,125	F
I-15 and 7th Street	4/Undivided	23,222	19,125	Е
Green Tree Boulevard between:			·	
I-15 and Hesperia	4/Undivided	22,900	19,125	D
Palmdale Road (SR-18) between:				
w/o Sheep Creek	2/Undivided	7,100	9,525	C or Better
Sheep Creek and Baldy Mesa/Koala	2/Undivided	11,008	9,525	D
Baldy Mesa and US-395	4/Undivided	16,800	19,125	C or Better
US-395 and El Evado	4/Undivided	24,547	19,125	Е
El Evado and I-15	4/Divided	30,774	30,375	D
e/o I-15	4/Divided	39,299	30,375	D
La Mesa Road between:				
US-395 and El Evado	4/Undivided	7,858	19,125	C or Better
El Evado and I-15	4/Undivided	6,889	19,125	C or Better
Bear Valley Road/Duncan Road between:				
w/o Sheep Creek <sup>1</sup>	2/Undivided	1,608	9,525	C or Better
Sheep Creek and Baldy Mesa <sup>1</sup>	2/Undivided	256	9,525	C or Better
Baldy Mesa and US-395	2/Undivided	7,698	9,525	C or Better
US-395 and I-15	4/Divided	43,659	30,375	F
I-15 and Cottonwood	6/Divided	54,500	51,975	D
Cottonwood and Hesperia	6/Divided	51,850	51,975	C or Better
Hesperia and Apple Valley	6/Divided	55,957	51,975	D
Apple Valley and Kiowa	4/Divided	36,556	30,375	Е
Kiowa and Central	4/Undivided	27,287	19,125	F
Central and SR-18	2/Undivided	9,892	9,525	D
Goss Road/Eucalyptus between:				
Cottonwood and Hesperia <sup>1</sup>	2/Undivided	431	9,525	C or Better
Lemon/Tussing Ranch/Desert View between:				
w/o Apple Valley	2/Undivided	2,100	9,525	C or Better
Kiowa and Central <sup>1</sup>	2/Undivided	478	9,525	C or Better



Mojave Street between:           Cottonwood and Hesperia <sup>1</sup> 2/Undivided         133         9,525           Phelan Road/Main Street between:         Sheep Creek and Baldy Mesa <sup>1</sup> 2/Divided         12,908         12,975           Baldy Mesa and US-395         4/Divided         20,500         30,375           US-395 and I-15         4/Divided         25,500         30,375           I-15 and Escondido         4/Divided         47,400         30,375           Escondido and Cottonwood         4/Divided         28,974         30,375           e/o Hesperia <sup>1</sup> 4/Divided         37,553         30,375	C or Better C or Better C or Better C or Better F C or Better E C or Better
Cottonwood and Hesperia <sup>1</sup> 2/Undivided         133         9,525           Phelan Road/Main Street between:           Sheep Creek and Baldy Mesa <sup>1</sup> 2/Divided         12,908         12,975           Baldy Mesa and US-395         4/Divided         20,500         30,375           US-395 and I-15         4/Divided         25,500         30,375           I-15 and Escondido         4/Divided         47,400         30,375           Escondido and Cottonwood         4/Divided         28,974         30,375	C or Better C or Better C or Better F C or Better E
Phelan Road/Main Street between:           Sheep Creek and Baldy Mesa <sup>1</sup> 2/Divided         12,908         12,975           Baldy Mesa and US-395         4/Divided         20,500         30,375           US-395 and I-15         4/Divided         25,500         30,375           I-15 and Escondido         4/Divided         47,400         30,375           Escondido and Cottonwood         4/Divided         28,974         30,375	C or Better C or Better C or Better F C or Better F C or Better
Sheep Creek and Baldy Mesa <sup>1</sup> 2/Divided         12,908         12,975           Baldy Mesa and US-395         4/Divided         20,500         30,375           US-395 and I-15         4/Divided         25,500         30,375           I-15 and Escondido         4/Divided         47,400         30,375           Escondido and Cottonwood         4/Divided         28,974         30,375	C or Better C or Better F C or Better E
Baldy Mesa and US-395       4/Divided       20,500       30,375         US-395 and I-15       4/Divided       25,500       30,375         I-15 and Escondido       4/Divided       47,400       30,375         Escondido and Cottonwood       4/Divided       28,974       30,375	C or Better C or Better F C or Better E
US-395 and I-15       4/Divided       25,500       30,375         I-15 and Escondido       4/Divided       47,400       30,375         Escondido and Cottonwood       4/Divided       28,974       30,375	C or Better F C or Better E
I-15 and Escondido         4/Divided         47,400         30,375           Escondido and Cottonwood         4/Divided         28,974         30,375	F C or Better E
Escondido and Cottonwood 4/Divided 28,974 30,375	C or Better
	Е
i biriaca 57,555	
Ranchero Road between:	C or Better
Escondido and Cottonwood <sup>1</sup> 2/Undivided 8,373 9,525	C of Better
Summit Valley Road between:	
SR-138 and Ranchero <sup>1</sup> 2/Undivided 3,258 9,525	C or Better
SR-138 between:	C of Better
Sheep Creek and I-15 2/Divided 16,000 12,975	Е
I-15 and Summit Valley 2/Undivided 2,200 9,525	C or Better
Stoddard Wells Road between:	C of Better
	C an Dattan
	C or Better
	C or Better
Dale Evans and Central <sup>1</sup> 2/Undivided 201 9,525	C or Better
Waalew Road between:	G P "
Dale Evans and Central <sup>1</sup> 2/Undivided 1,178 9,525	C or Better
Happy Trails Hwy (SR-18) between:	
Stoddard Wells and Apple Valley 4/Divided 52,603 30,375	F
Corwin and Dale Evans 4/Divided 33,600 30,375	D
Dale Evans and Kiowa 4/Divided 19,000 30,375	C or Better
Kiowa and Central         4/Divided         15,100         30,375	C or Better
Yates Road/Yucca Loma between:	
w/o Apple Valley 2/Undivided 3,400 9,525	C or Better
Apple Valley and Kiowa 2/Undivided 10,000 9,525	D
Kiowa and Navajo 2/Undivided 3,000 9,525	C or Better
Nisqualli Road/Sitting Bull Road between:	
I-15 and Hesperia 2/Undivided 11,927 9,525	Е
Apple Valley and Kiowa 2/Undivided 5,700 9,525	C or Better
SR-18 between:	
Bear Valley Cutoff and High <sup>1</sup> 2/Undivided 13,786 9,525	F
Sheep Creek Road between:	
Phelan and Duncan/Bear Valley <sup>1</sup> 2/Undivided 3,519 9,525	C or Better
Rancho and El Mirage <sup>1</sup> 2/Undivided 1,790 9,525	C or Better
Baldy Mesa Road/Koala Road between:	
Phelan and Goss/Eucalyptus <sup>1</sup> 2/Undivided 1,606 9,525	C or Better
Bear Valley and La Mesa <sup>1</sup> 2/Undivided 251 9,525	C or Better
Palmdale and Mojave Dr <sup>1</sup> 2/Undivided 75 9,525	C or Better
Mojave Dr and Rancho 2/Undivided 1,008 9,525	C or Better
Air Expressway and El Mirage 2/Undivided 2,666 9,525	C or Better
US-395 between:	1
I-15 and Phelan 2-4/Highway 27,700 18,525	F
Phelan and Mojave 2-4/Highway 28,400 18,525	F



Roadway Segment	# of Lanes/ Median Type	Existing Traffic Volumes	LOS C Roadway Capacity	LOS
Mojave St. and Goss/Eucalyptus	2-4/Highway	24,306	18,525	E
Duncan/Bear Valley and La Mesa	2-4/Highway	28,452	18,525	F
La Mesa and Palmdale	2-4/Highway	26,300	18,525	F
Palmdale and Mojave Dr	2-4/Highway	27,307	18,525	F
Mojave Dr and Rancho	2-4/Highway	23,626	18,525	E
Air Expressway and El Mirage <sup>1</sup>	2-4/Highway	8,581	18,525	C or Better
El Mirage and Colusa <sup>1</sup>	2-4/Highway	7,687	18,525	C or Better
Adelanto Road between:	2-4/IIIgiiway	7,007	16,323	C of Better
US-395 and Rancho	2/Undivided	2,466	9,525	C or Better
Rancho and Air Expressway	2/Undivided	3,917	9,525	C or Better
Air Expressway and El Mirage	2/Undivided	2,705	9,525	C or Better
El Evado Road between:	2/ Ondivided	2,703	7,323	C of Better
s/o La Mesa	2/Undivided	4,669	9,525	C or Better
La Mesa and Palmdale	2/Undivided	10,413	9,525	D
Palmdale and Mojave Dr	2-4/Undivided	13,880	9,525	F
Mojave Dr and Rancho	2/Undivided	4,239	9,525	C or Better
Cottonwood Avenue between:	2/Ondivided	7,237	7,323	C of Better
Mesquite and Main <sup>1</sup>	2/Undivided	4,735	9,525	C or Better
Eucalyptus and Bear Valley	2/Undivided	10,152	9,525	D
Bear Valley and Mariposa	2/Undivided	8,239	9,525	C or Better
National Trails Hwy between:	2/Ondivided	6,239	9,323	C of Better
I-15 and Rancho	2/Undivided	14,907	9,525	F
n/o Air Expressway	2/Undivided	11,099	9,525	D
Hesperia Road between:	2/ Charvided	11,077	7,323	В
Main and Mojave St <sup>1</sup>	2/Divided	15,327	12,975	D
Mojave St and Eucalyptus <sup>1</sup>	2/Divided	21,252	12,975	F
Eucalyptus and Bear Valley	4/Divided	25,458	30,375	C or Better
Bear Valley and Nisqualli	4/Divided	39,657	30,375	E
Nisqualli and Green Tree	4/Divided	34,762	30,375	D
Green Tree and D Street	4/Divided	27,148	30,375	C or Better
Apple Valley Road between:	72111444	27,110	20,270	C of Butter
Lemon and Bear Valley	2/Undivided	6,601	9,525	C or Better
Bear Valley and Sitting Bull	4/Undivided	23,369	19,125	E
Sitting Bull and Yucca Loma	2/Undivided	19,200	9,525	F
Yucca Loma and Happy Trails Hwy	2/Divided	17,259	12,975	E
Kiowa Road between:	2/21/1404	17,203	12,5 70	
Tussing Ranch and Bear Valley	2/Undivided	11,793	9,525	Е
Bear Valley and Sitting Bull	2/Undivided	7,100	9,525	C or Better
Sitting Bull and Yucca Loma	2/Undivided	6,800	9,525	C or Better
Yucca Loma and Happy Trails Hwy	2/Undivided	6,700	9,525	C or Better
Dale Evans Parkway between:		- 3		
Happy Trails Hwy and Corwin	2/Undivided	8,143	9,525	C or Better
Corwin and Stoddard Wells <sup>1</sup>	2/Undivided	3,465	9,525	C or Better
Stoddard Wells and I-15 <sup>1</sup>	2/Undivided	3,366	9,525	C or Better
Central Road between:	2, Charriaga	2,200	7,525	C O. Better
Tussing Ranch and Bear Valley	2/Undivided	3,128	9,525	C or Better
Bear Valley and Nisqualli	2/Undivided	7,563	9,525	C or Better
Nisqualli and Happy Trails (SR-18)	2/Undivided	8,233	9,525	C or Better



Roadway Segment	# of Lanes/ Median Type	Existing Traffic Volumes	LOS C Roadway Capacity	LOS
Happy Trails (SR-18) and Waalew	2/Undivided	7,655	9,525	C or Better
Waalew and Stoddard Wells 1	2/Undivided	1,371	9,525	C or Better
I-15 between:				
SR-138 and US-395	8/Freeway	128,500	160,900	C or Better
US-395 and Main Street	6/Freeway	106,500	120,675	C or Better
Main Street and Bear Valley Road	6/Freeway	100,500	120,675	C or Better
Bear Valley Road and Palmdale Road	6/Freeway	86,500	120,675	C or Better
Palmdale Rd and Roy Rogers/La Paz	6/Freeway	88,500	120,675	C or Better
Roy Rogers/La Paz and Mojave Dr	6/Freeway	86,500	120,675	C or Better
Mojave Dr and National Trails Hwy/D St	6/Freeway	83,500	120,675	C or Better

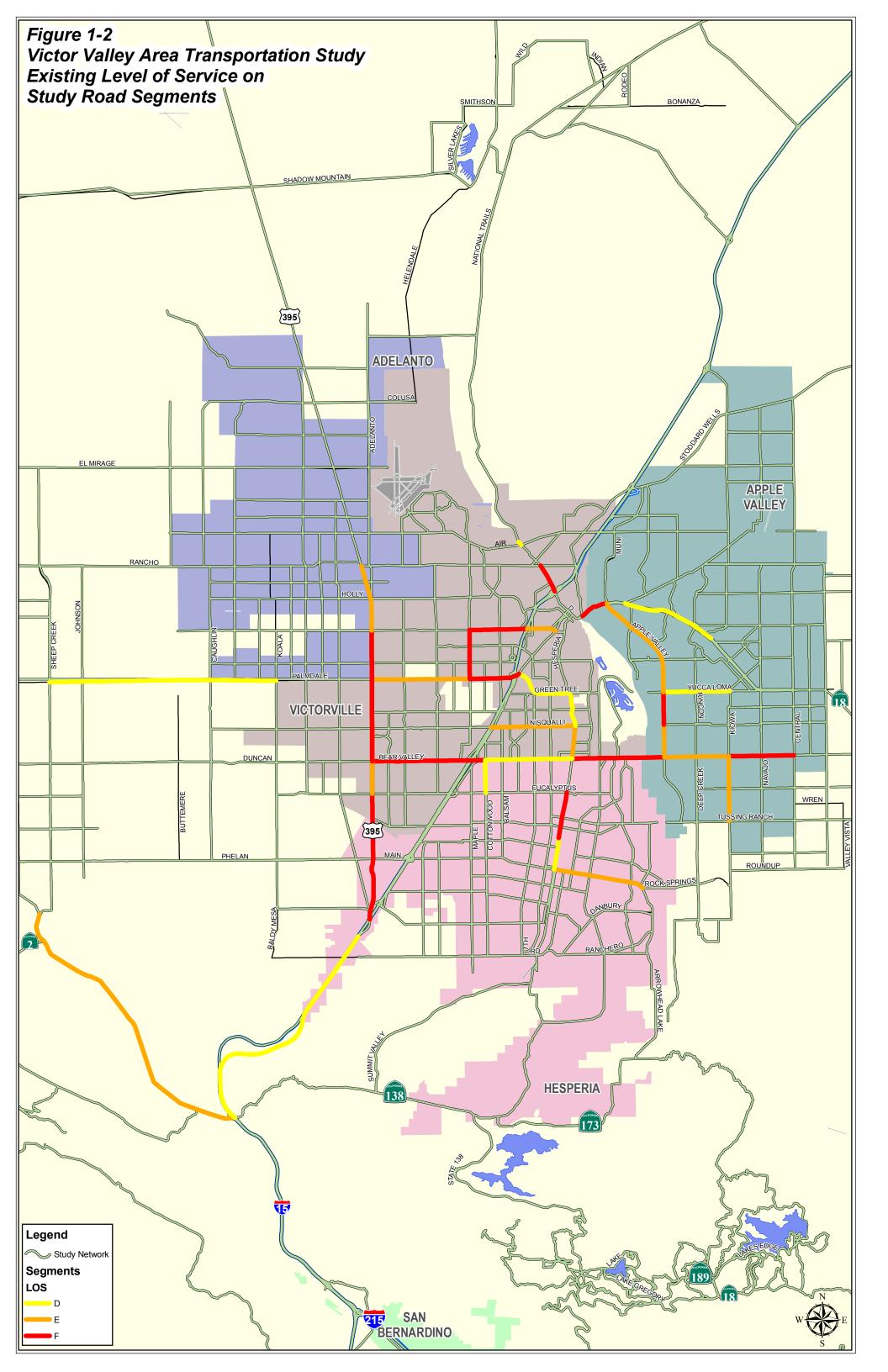
<sup>&</sup>lt;sup>1</sup> New Count Data

Note: All other daily volumes are from Traffic Impact Studies or other count data provided by each agency Source: Capacities were determined based on the procedure outlined in the Florida Tables from Florida Department of Transportation. Assumptions for peak hour percentage, peak hour factor and effective green ratio were adjusted to represent 24-hour count data collected in Victor Valley Area.



Table 1-5 – Summary of PM Peak Hour Mainline Volumes on I-15

	I-15 PM Peak Hour Mainline Volumes					
Roadway Segment	North	South	LOS*	LOS *		
	Direction	Direction	Northbound	Southbound		
I-15 between:						
SR-138 and US-395	4,882	3,564	В	A		
US-395 and Main Street	4,425	2,599	С	A		
Main Street and Bear Valley Road	3,446	2,859	A	A		
Bear Valley Road and Palmdale Road	2,764	3,108	A	A		
Palmdale Rd and Roy Rogers/La Paz	2,404	3,128	A	A		
Roy Rogers/La Paz and Mojave Dr	2,296	3,230	A	A		
Mojave Dr and National Trails Hwy/D St	2,185	3,198	A	A		
* Assumes 2000 vehicles/lane/hour						





#### 1.5 Intersection Characteristics

The existing intersection analysis includes 65 key intersections as identified by the County and Victor Valley cities. **Figure 1-3** presents the locations of the study intersections. Traffic signals control traffic at 37 of the existing intersections while the remaining 28 intersections are stop-controlled.

#### 1.6 Peak Hour Traffic Volumes at Intersections

The afternoon peak hour turning movement counts were provided by each agency for 44 locations and afternoon peak hour turning movement counts were conducted at 21 locations where counts were not available. Count worksheets are provided in Appendix A.

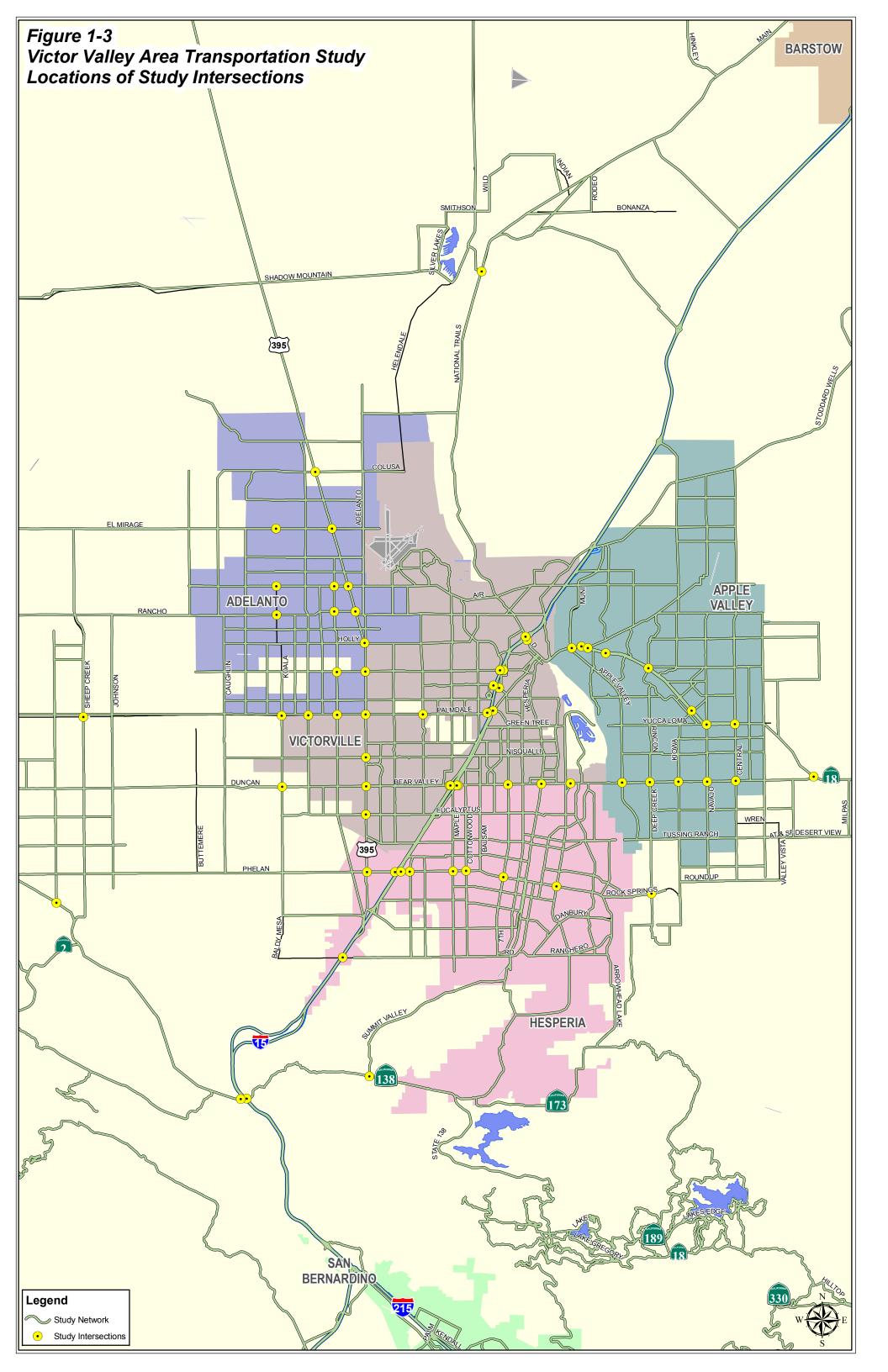
#### 1.7 Peak Hour Level of Service at Intersections

The intersection analysis was performed using the Highway Capacity Manual (HCM) methodologies, as required by San Bernardino CMP, which was implemented using the TRAFFIX analysis software. The specific input data as outlined in Appendices A and C of the CMP was used. A summary of each Level of Service and the corresponding delay is provided in the **Table 1-6**.

Table 1-6 - Intersection Level of Service Description

Level of Service	Signalized Intersections: Average Delay per Vehicle (sec)	Unsignalized Intersections: Average Delay per Vehicle (sec)	
A	≤10	≤10	
В	$> 10 \text{ and } \le 20$	$> 10 \text{ and} \le 15$	
С	$> 20 \text{ and} \le 35$	$> 15 \text{ and } \le 25$	
D	$>$ 35 and $\leq$ 55	$> 25 \text{ and} \le 35$	
Е	$> 55 \text{ and} \le 80$	$> 35 \text{ and} \le 50$	
F	> 80	> 50	
Source: Highway Capacity Manual, 2000			

**Table 1-7** summarizes the analysis results of the study intersections under existing traffic conditions. The results of the intersection analysis indicate that 27 of the 65 existing intersections operate at LOS D or worse. The majority of intersections operating at LOS D, E or F are along Bear Valley Road, Palmdale Road (SR-18) and at freeway interchanges. The inconsistency in the segment and intersection level of service results along US-395 is due to the geometric irregularities. US-395 widens at major intersections and narrows on segments resulting in levels of service at intersections that are better than they would be if the midblock geometry continued through the intersections. **Figure 1-4** presents the levels of service at the study intersections for existing conditions. TRAFFIX analysis worksheets are provided in **Appendix C**.



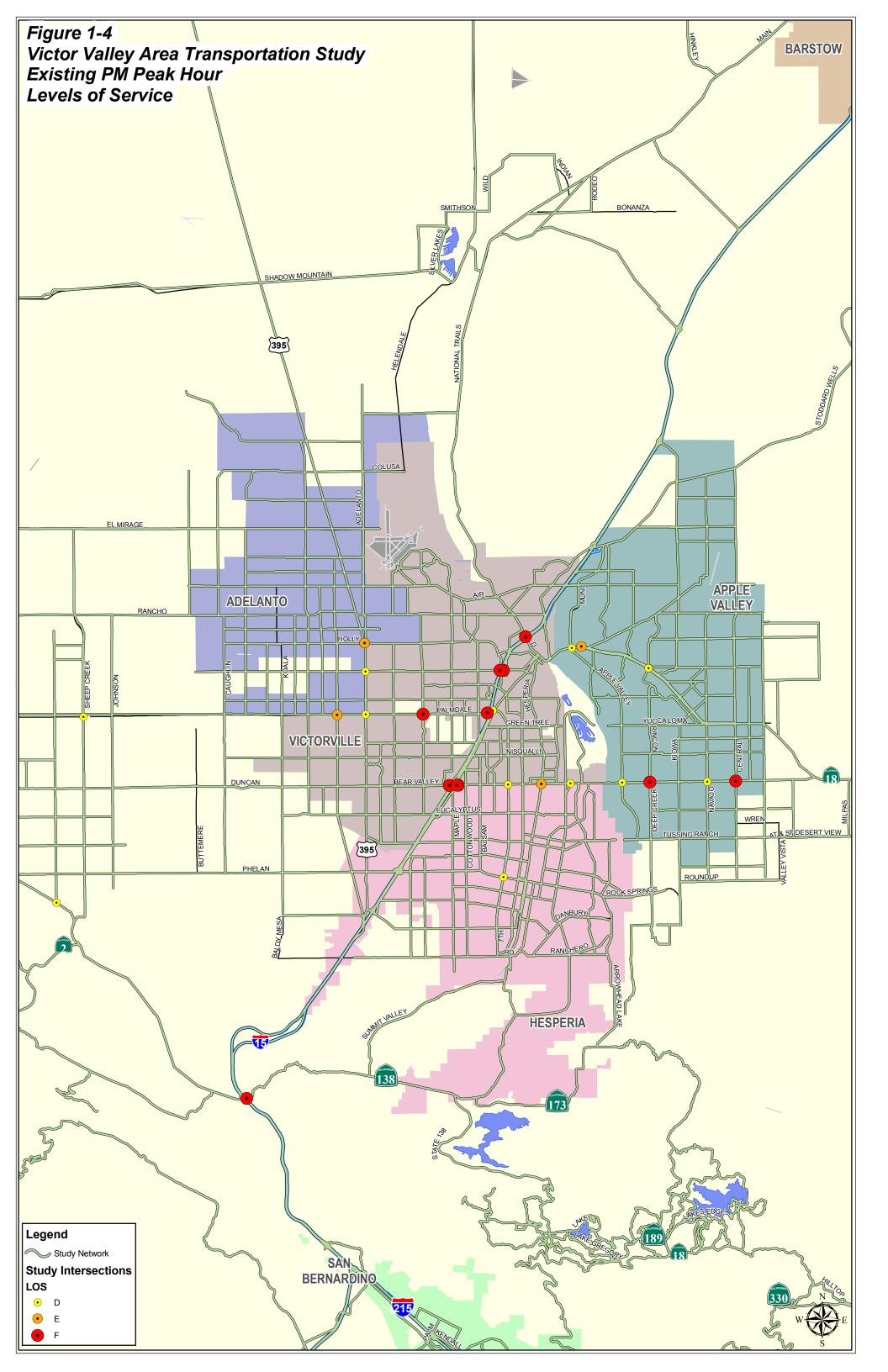




Table 1-7 – Summary of Intersection Operations for Existing Conditions PM Peak Hour

Int.#	Intersection	Control	Delay	LO S
1	Koala Rd at Air Expressway 1	U	8.9	A
2	Bellflower St at Air Expressway <sup>1</sup>	U	10.2	В
3	US-395 at Air Expressway <sup>2</sup>	U	17.5	С
4	Koala Rd at El Mirage 1	U	10.0	A
5	US-395 at El Mirage <sup>1</sup>	U	9.0	A
6	Bellflower St at Mojave Dr	U	10.1	В
7	Aster at Palmdale Rd	U	0.2	A
8	Bellflower St at Palmdale Rd <sup>2</sup>	U	42.2	Е
9	US-395 at Palmdale Rd <sup>2</sup>	S	35.5	D
10	Koala Rd at Rancho Rd 1	U	9.9	A
11	Bellflower St at Rancho Rd <sup>1</sup>	U	10.9	В
12	US-395 at Rancho Rd 1	S	28.7	С
13	Apple Valley at SR-18	S	36.8	D
14	Corwin Rd at SR-18	S	23.5	С
15	Tao Rd at SR-18	S	20.9	С
16	Rancherias Rd at SR-18	S	45.8	D
17	Kiowa Rd at SR-18	S	32.6	С
18	Navajo Rd at SR-18	S	33.6	С
19	Central Rd at SR-18	S	17.8	В
20	Apple Valley Rd at Bear Valley Rd	S	41.2	D
21	Deep Creek Rd at Bear Valley Rd	U	**	F
22	Kiowa Rd at Bear Valley Rd	S	31.4	С
23	Navajo Rd at Bear Valley Rd	S	36.3	D
24	Central Rd at Bear Valley Rd	U	67.4	F
25	SR-18 at Bear Valley Cutoff	U	10.9	В
26	Beekley Rd at SR-138 <sup>1</sup>	S	40.7	D
27	Deep Creek Rd at Rock Springs Rd	S	11.6	В
28	Vista Rd at National Trails Hwy 1	U	12.6	В
29	US-395 at Phelan Rd	S	32.2	С
30	Sheep Creek Rd at SR-18 1	U	28.7	D
31	Summit Valley Rd at SR-138 <sup>1</sup>	U	9.4	A



Int.#	Intersection	Control	Delay	LO S
32	Escondido at Main Street	S	11.6	В
33	Maple at Main Street	S	31.9	С
34	Cottonwood at Main Street <sup>1</sup>	S	23.7	С
35	Seventh at Main Street <sup>1</sup>	S	37.6	D
36	I Avenue at Main Street <sup>1</sup>	S	34.2	С
37	7th Street at Bear Valley Rd <sup>2</sup>	S	36.9	D
38	Hesperia Road at Bear Valley Rd <sup>3</sup>	S	55.6	Е
39	I Avenue at Bear Valley Rd	S	38.3	D
40	Mariposa Road at Ranchero Rd 1	U	15.5	С
41	US-395 at Eucalyptus St	U	9.5	A
42	US-395 at Bear Valley Rd <sup>2</sup>	S	31.1	С
43	US-395 at La Mesa Rd	N/A	future intersection	N/A
44	US-395 at Mojave Dr <sup>2</sup>	S	36.7	D
45	US-395 at Hopland Rd <sup>1</sup>	U	42.3	Е
46	Amethyst Rd at Palmdale Rd <sup>2</sup>	U	76.2	F
47	Baldy Mesa Rd at Palmdale Rd <sup>1</sup>	U	15.4	C
48	Mariposa Road at Bear Valley Rd <sup>3</sup>	S	98.9	F
49	Amargosa Rd at Bear Valley Rd <sup>3</sup>	S	114.5	F
50	Baldy Mesa Rd at Bear Valley Rd 1	U	8.9	A
51	I-15 Ramps NB at SR-138 <sup>1</sup>	U	76.2	F
52	I-15 Ramps SB at SR-138 <sup>1</sup>	U	21.2	С
53	I-15 Ramps NB at Ranchero Rd	N/A	future intersection	N/A
54	I-15 Ramps SB at Ranchero Rd	N/A	future intersection	N/A
55	I-15 Ramp SB at Main St	S	30.4	С
56	I-15 Ramp NB at Main St	S	15.3	В
57	I-15 Ramp SB at Mojave St	N/A	future intersection	N/A
58	I-15 Ramp NB at Mojave St	N/A	future intersection	N/A
59	I-15 Ramps NB at Eucalyptus St	N/A	future intersection	N/A
60	I-15 Ramps SB at Eucalyptus St	N/A	future intersection	N/A
61	I-15 Ramps NB at Bear Valley <sup>2,3</sup>	S	84.5	F



Int.#	Intersection	Control	Delay	LO S
62	I-15 Ramps SB at Bear Valley <sup>2,3</sup>	S	16.1	В
63	I-15 Ramps NB at La Mesa-Nisqualli	N/A	future intersection	N/A
64	I-15 Ramps SB at La Mesa-Nisqualli	N/A	future intersection	N/A
65	I-15 Ramp NB at Palmdale <sup>2</sup>	S	41.2	D
66	I-15 Ramps SB at Palmdale <sup>2</sup>	U	69.1	F
67	I-15 Ramps NB at Roy Rogers <sup>2</sup>	S	26.8	С
68	I-15 Ramps SB at Rogers <sup>2</sup>	S	11.9	В
69	I-15 Ramps NB at Mojave Dr <sup>2</sup>	U	**	F
70	I-15 Ramps SB at Mojave Dr <sup>2</sup>	U	260.3	F
71	I-15 Ramps NB at D Street <sup>2,3</sup>	S	26.8	С
72	I-15 Ramps SB at D Street <sup>2,3</sup>	S	105.7	F

S = Signalized, U = Unsignalized

N/A = Not Applicable

Note: All other pm peak hour volumes are from TIAs provided by each agency

\*\*When the capacity has been reached or exceeded the delay equation grows exponentially, resulting in very high delays, which do not accurately represent the actual delay. In some cases, the range limits in the TRAFFIX program have been exceeded for the HCM analysis and no delay is provided, which results in LOS F.

The Level of Service at Unsignalized Intersections represents the delay on the worst approach of the intersection.

Intersection delay is expressed in average seconds of delay per vehicle during the peak hour.

<sup>&</sup>lt;sup>1</sup> New Count Data

<sup>&</sup>lt;sup>2</sup> PM Peak Hour Volumes from City of Victorville Citywide Count Program (2005)

<sup>&</sup>lt;sup>3</sup> Based on input from local agencies, an initial queue was applied at these intersections to account for the close spacing of signals at these locations



## 1.8 Existing Transit Service

The Victor Valley Transit Authority (VVTA) provides local transit service throughout the Victor Valley, including the Adelanto, Apple Valley, Hesperia, Victorville, and San Bernardino County communities. There are a total of 13 routes serving the Victor Valley Area. **Table 1-8** summarizes the VVTA bus service serving the Victor Valley area. A copy of the route maps and transit schedules for each of these routes is provided in **Appendix D**.

Table 1-8 – Victor Valley Transit Authority Bus Service

Route #	Name	Origin/Destination	Days / Times
21	Tri-Community	Victor Valley Mall to Phelan Serrano High School Wrightwood Community Center	Weekdays, 6:00 AM - 9:30 PM Saturday, 6:30 AM - 8:00 PM No service on Sunday
22	Helendale	Lorene Trans Pt. to Silver Lakes Market	Weekdays, 6:15 AM - 7:45 PM Saturday, 8:00 AM-7:45 PM No service on Sunday
23	Lucerne Valley	Apple Valley Post Office to Town Center Moss MH Park	Weekdays, 5:50 AM - 8:28 PM Saturday, 7:41 AM - 8:28 PM No service on Sunday
31	Adelanto	Muskrat and El Mirage to Adelanto Hub Bartlett Lorene Trans Pt.	Weekdays*, 5:57 AM - 10:05 PM Saturday*, 7:27 AM - 9:05 PM No service on Sunday *Routes 31 & 32 combine for the last hour of the evening (last bus to Adelanto)
32	Adelanto	Lorene Trans Pt. to Adelanto Hub Bartlett Muskrat and El Mirage	Weekdays*, 6:15 AM - 10:05 PM Saturday*, 7:45 AM - 9:05 PM No service on Sunday *Routes 31 & 32 combine for the last hour of the evening (last bus to Adelanto)
40	Apple Valley North	Apple Valley Quinnault (Post Office) to Wal Mart (SR-18)	Weekdays, 6:05 AM & 8:57 PM Saturday, 7:05 AM - 7:57 PM No service on Sunday
41	Victorville/St. Mary's	Lorene Trans Pt. to S. Outer SR-18 & Apple Valley Rd Dante and Venus	Weekdays, 6:00 AM - 8:55 PM Saturday, 7:00 AM - 7:55 PM No service on Sunday
42	Apple Valley/St. Mary's	Depart Apple Valley and Quinnault S. Outer SR-18 & Apple Valley Rd Wal Mart (SR-18)	Weekdays, 6:00 AM - 8:52 PM Saturday, 7:00 AM - 7:52 PM No service on Sunday



Route #	Name	Origin/Destination	Days / Times
43	Apple Valley/Mall	(A) Victor Valley Mall Trans Pt. to Victor Valley College Trans Pt. (B) Apple Valley and Quinnault to Victor Valley College Trans Pt.	(A) Weekdays, 6:00 AM - 8:53 PM Saturday, 7:00 AM - 7:53 PM (B) Weekdays, 6:00 AM - 8:55 PM Saturday, 7:00 AM - 7:55 PM
44	Mall/Hesperia	Victor Valley Mall Trans Pt. to Hesperia TP and Olive	Weekdays, 6:30 AM - 9:22 PM Saturday, 7:17 AM - 8:10 PM No service on Sunday
45	Victorville/Hesperia	<ul><li>(A) Lorene Trans Pt. to</li><li>Victor Valley College Trans Pt.</li><li>(B) Victor Valley College Trans Pt. to</li><li>Hesperia TP and Olive</li></ul>	(A) Weekdays, 6:00 AM - 8:52 PM Saturday, 7:00 AM - 7:52 PM (B) Weekdays, 5:55 AM - 8:55 PM Saturday, 6:55 AM - 7:55 PM
51	Victorville Circulator	Lorene Trans Pt. to Orick and Vasquez 7th and B Street Green Tree and Rodeo	Weekdays, 6:00 AM - 8:58 PM Saturday, 7:00 AM - 7:58 PM No service on Sunday
52	Victorville/Mall	Lorene Trans Pt. to Victor Valley Mall	Weekdays, 6:00 AM - 8:57 PM Saturday, 7:00 AM - 7:57 PM No service on Sunday

Source: Victor Valley Transit Authority Website (www.vvta.org)



#### 2 FUTURE CONDITIONS

This chapter presents the evaluation of future traffic conditions in the Victor Valley area in 2035 and at General Plan Buildout. The analysis evaluates the traffic conditions associated with 11 future alternative scenarios including a "No Build" (Baseline) alternative and 10 alternatives with various combinations of transportation improvement scenarios for two future horizons: 2035 and buildout. More information about the roadway improvement assumptions is presented below in the discussion of each alternative.

The remainder of the chapter includes discussion of the traffic forecasting methodology, evaluation of the Future Baseline (Year 2035 No Build) scenario, development of alternatives, and the evaluation results of the ten "Build" alternatives.

## 2.1 Model Development and Post-Processing

An important part of VVATS was development of a traffic forecasting tool for the Victor Valley area. Prior to this study, the Southern California Association of Governments (SCAG) had initiated a comprehensive update of the regional model, but the level of traffic analysis zone detail in the Victor Valley area was insufficient for developing traffic forecasts for planning the valley's roadway system. The intent of VVATS was to utilize the updated regional model, and provide additional detail in the Victor Valley area for the forecasting needs of this study.

The SCAG regional model update was not finalized in time for use in VVATS, so SCAG recommended use of the Regional Interim Model, which included several of the updated model's components and was used for development of the South Coast Air Quality Management District Air Quality Management Plan in 2006.

In the Victor Valley, the model's zone system was disaggregated from 68 zones in the Interim Model to 582 in the VVATS model. The model's roadway network includes all the streets included in the SANBAG Nexus Study – most of which were included in the Interim Model network. SANBAG worked with the local jurisdictions (Adelanto, Apple Valley, Hesperia, Victorville, and the County) to develop socioeconomic data inputs at the refined zone level for the base year (2003), Year 2035, and General Plan Buildout.

The VVATS base year model was validated to Year 2003 traffic counts (screenline validation results are included in **Appendix E**). During the validation process it was found that: (1) the model significantly underestimated traffic volumes around major shopping centers; (2) the afternoon peak period forecasts were more consistent with traffic counts than the total daily volume forecasts; and (3) total screenline volumes were more consistent with the counts than the volumes on individual roadways crossing them. Through consultations with SANBAG, SCAG, and the project Technical Advisory Committee, it was determined that these issues would be



addressed in the forecasting process as follows: (1) home-based shopping trip productions and attractions for zones in the Victor Valley were calculated outside the model stream and balanced on a Valley-wide basis; (2) daily traffic volume forecasts used in the VVATS study were developed by factoring the afternoon peak period traffic volumes up to a total daily volume level using a factor of 3.5 (derived by comparing the ratio of total daily volumes to afternoon peak period volumes at counted locations throughout the Valley); and (3) post-processing is applied in developing the VVATS forecast results, so that the forecast volume equals the counted volume plus the difference between the model's future forecast and base year forecast for that location.

#### 2.2 Future Baseline Conditions

The Future Baseline condition represents a Year 2035 growth/development forecast with a roadway network comprised of existing roadways plus improvements with committed funding. The significant committed improvements include the following:

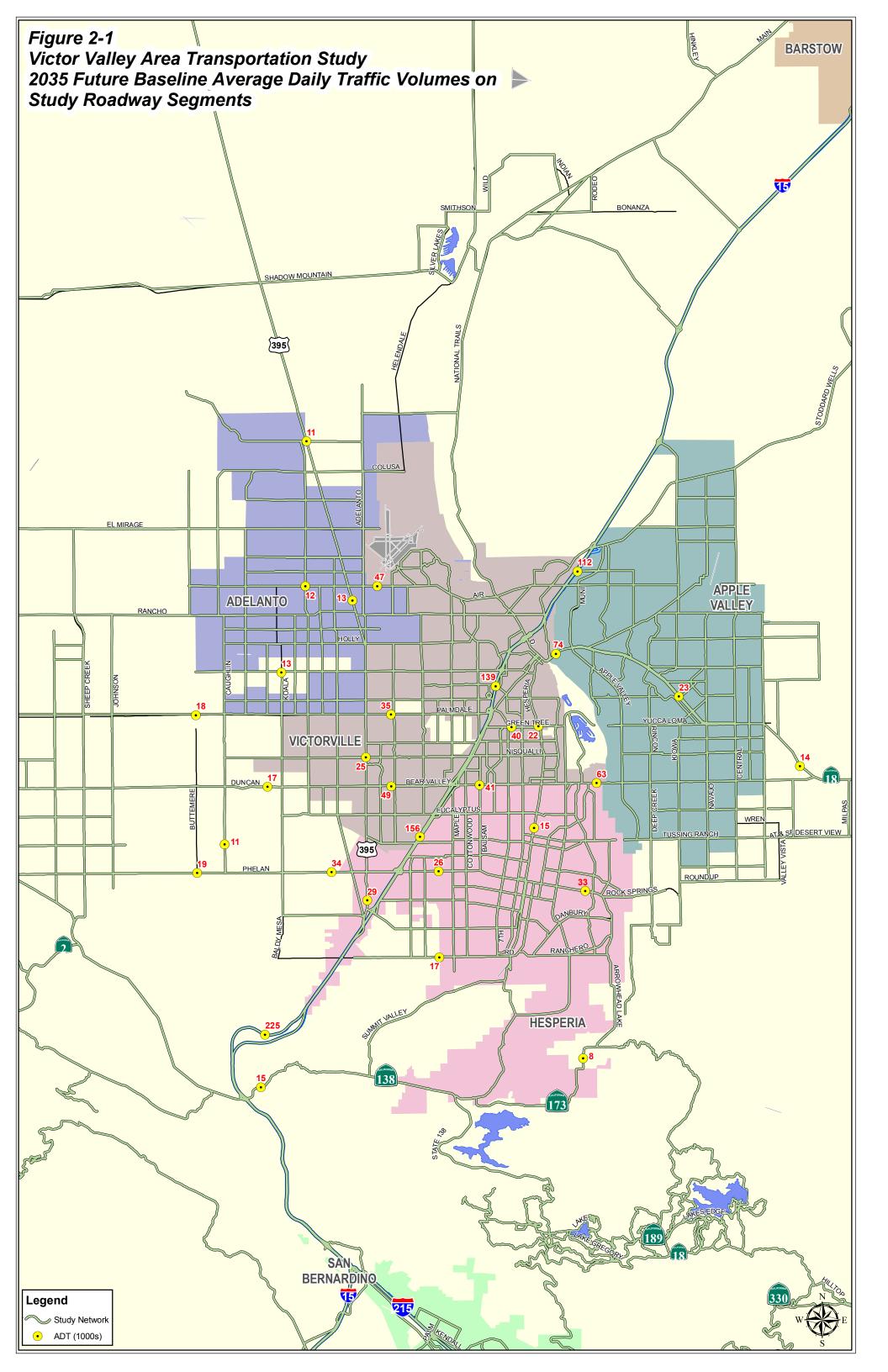
- Helendale Road constructed to two lanes
- Phelan Road widened to four lanes from Baldy Mesa Road to east of US-395
- Ranchero Road underpass of BNSF Railroad completed
- El Mirage Road widened to four lanes from Lessing Avenue to US-395
- 7<sup>th</sup> Avenue widened to four lanes from Bear Valley Road to Green Tree Boulevard
- Nisqualli Rd widened to four lanes from Balsam Avenue to Hesperia Road
- Spring Valley Parkway widened to four lanes north of Bear Valley
- Navajo Road widened to four lanes from SR-18 to Thunderbird Road

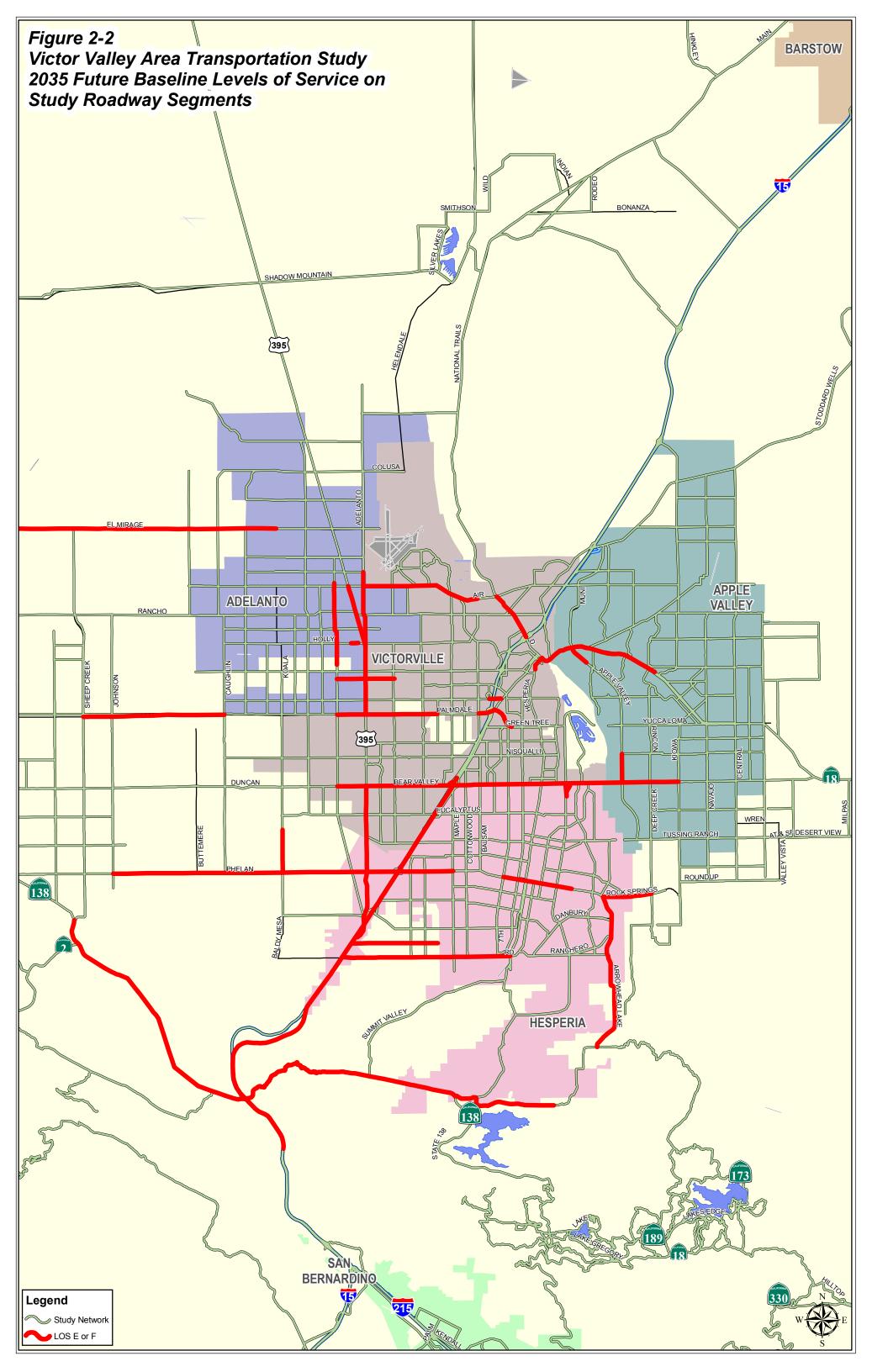
#### 2.2.1 Traffic Volumes on Roadway Segments

**Figure 2-1** presents 2035 daily traffic volume forecasts at key locations in the Victor Valley area for the future baseline alternative. The highest traffic volumes in the area are on I-15 south of Phelan/Main Street, Air Expressway east of Adelanto Road, Happy Trails Highway (SR-18), SR-138 and portions of Bear Valley Road, Palmdale Road (SR-18), and US-395. The model's forecasts of 2035 Baseline daily traffic volumes for the entire Victor Valley area (not post-processed) are provided in **Appendix F**.

## 2.2.2 Level of Service on Roadway Segments

**Figure 2-2** shows the study area roadway segments where the projected future daily traffic volume is projected to approach or exceed the segment capacity in the future baseline condition. Traffic congestion problem areas are widespread in the future baseline scenario, particularly at river crossings, rail crossings, major arterials, I-15 interchanges, US-395 and SR-138.







#### 2.2.3 Intersection Characteristics

The future baseline intersection analysis includes 62 of the key study intersections in the Victor Valley area. **Figure 2-3** presents the locations of the study intersections. Consistent with the definition of the future baseline system (existing plus committed/funded improvements), the future baseline analysis assumes that traffic signals control traffic at 36 of these intersections while the remaining 26 intersections are stop-controlled.

#### 2.2.4 Peak Hour Traffic Volumes at Intersections

The future lanes and traffic control type at each intersection were assumed to be the same as existing conditions for the 2035 future baseline alternative, unless capacity improvements to the road were identified as committed improvements. Afternoon peak hour intersection turning movement volumes were estimated for the 2035 future baseline forecast using the post-processing methodology described above. The peak hour volumes estimated are conservative. The model growth was added to existing counts to develop future turn movements. A conservative factor of 0.28 was applied to the PM peak period volumes to get the PM peak hour turn movement volumes.

## 2.2.5 Peak Hour Levels of Service at Intersections

The future baseline intersection LOS analysis was performed using the Highway Capacity Manual (HCM) methodology, implemented using the TRAFFIX analysis software using the same assumptions applied in the Existing Conditions analysis (consistent with the San Bernardino County Congestion Management Program).

**Table 2-1** summarizes the analysis results of the study intersections under future baseline traffic conditions. The analysis results indicate that all of the intersections are projected to operate at LOS E or F during the PM peak hour under 2035 future baseline conditions with just two exceptions. The intersections of SR-18 at Bear Valley Cutoff and Vista Road at National Trails Highway are projected to operate at LOS C. **Figure 2-3**, previously referenced, presents the levels of service at the study intersections for future baseline conditions. TRAFFIX analysis worksheets are provided in **Appendix G**.

Both the analysis of daily traffic volumes and the peak hour analysis of study intersections indicate that unless substantial improvements to the roadway system are implemented, traffic congestion will be severe throughout the Victor Valley by the Year 2035.

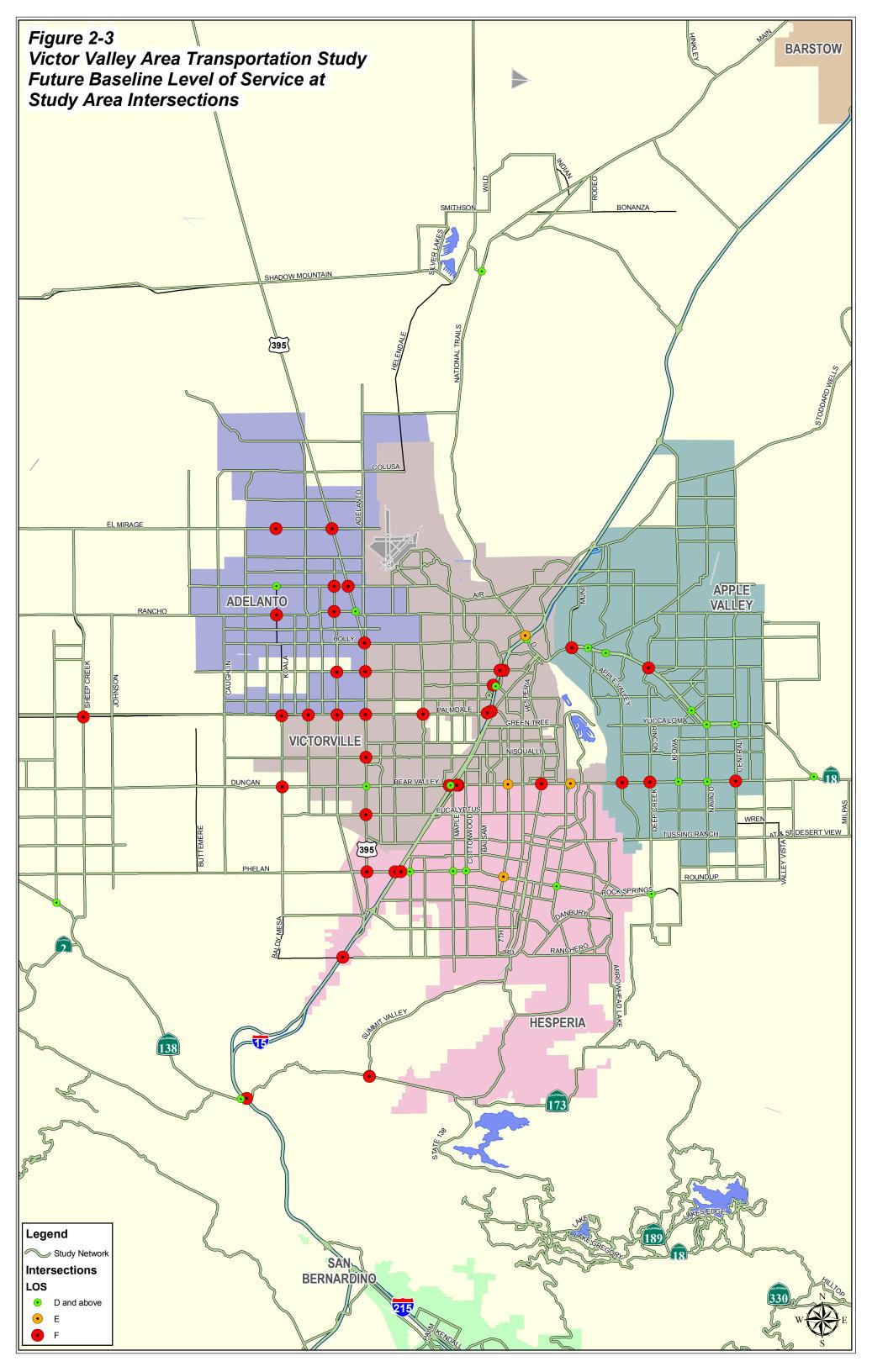




Table 2-1 – Summary of Intersection Operations for 2035 Future Baseline PM Peak Hour

Т4 4	I4	2035 Future Baseline		
Int.#	Intersection	Intersection Control		LOS
1	Koala Rd at Air Expressway	U	21.9	С
2	Bellflower St at Air Expressway	U	298.1	F
3	US-395 at Air Expressway	U	677.2	F
4	Koala Rd at El Mirage	U	**	F
5	US-395 at El Mirage	U	**	F
6	Bellflower St at Mojave Dr	U	328.7	F
7	Aster at Palmdale Rd	U	324.8	F
8	Bellflower St at Palmdale Rd	U	**	F
9	US-395 at Palmdale Rd	S	131.8	F
10	Koala Rd at Rancho Rd	U	**	F
11	Bellflower St at Rancho Rd	U	396.7	F
12	US-395 at Rancho Rd	S	52.2	D
13	Apple Valley at SR-18	S	232.4	F
14	Corwin Rd at SR-18	S	7.2	A
15	Tao Rd at SR-18	S	21.1	С
16	Rancherias Rd at SR-18	S	137.0	F
17	Kiowa Rd at SR-18	S	23.2	С
18	Navajo Rd at SR-18	S	32.2	С
19	Central Rd at SR-18	S	18.7	В
20	Apple Valley Rd at Bear Valley Rd	S	87.3	F
21	Deep Creek Rd at Bear Valley Rd	U	**	F
22	Kiowa Rd at Bear Valley Rd	S	40.8	D
23	Navajo Rd at Bear Valley Rd	S	51.1	D
24	Central Rd at Bear Valley Rd	S	387.0	F
25	SR-18 at Bear Valley Cutoff	U	11.7	В
26	Beekley Rd at SR-138	S	51.1	D
27	Deep Creek Rd at Rock Springs Rd	S	19.7	В
28	Vista Rd at National Trails Hwy	U	14.0	В
29	US-395 at Phelan Rd	S	215.5	F
30	Sheep Creek Rd at SR-18	U	**	F
31	Summit Valley Rd at SR-138	U	**	F
32	Escondido at Main Street	S	26.0	C
33	Maple at Main Street	S	37.3	D
34	Cottonwood at Main Street	S	31.2	C
35	Seventh at Main Street	S	79.7	E
36	I Avenue at Main Street	S	35.1	D
37	7th Street at Bear Valley Rd	S	66.9	E
38	Hesperia Road at Bear Valley Rd	S	124.8	F
39	I Avenue at Bear Valley Rd	S	76.2	E
40	Mariposa Road at Ranchero Rd	U	840.8	F
	*	N/A		N/A
41	US-395 at Eucalyptus St	IN/A	N/A	IN/A



T4 44	Intersection	2035 Future Baseline		
Int.#	Intersection	Control	Delay	LOS
42	US-395 at Bear Valley Rd	S	37.3	D
43	US-395 at La Mesa Rd	N/A	N/A	N/A
44	US-395 at Mojave Dr	S	284.4	F
45	US-395 at Hopland Rd	U	**	F
46	Amethyst Rd at Palmdale Rd	S	35.0	D
47	Baldy Mesa Rd at Palmdale Rd	S	396.0	F
48	Mariposa Road at Bear Valley Rd	S	245.2	F
49	Amargosa Rd at Bear Valley Rd	S	354.0	F
50	Baldy Mesa Rd at Bear Valley Rd	S	248.0	F
51	I-15 Ramps NB at SR-138	U	861.7	F
52	I-15 Ramps SB at SR-138	U	25.4	D
53	I-15 Ramps NB at Ranchero Rd	N/A	N/A	N/A
54	I-15 Ramps SB at Ranchero Rd	N/A	N/A	N/A
55	I-15 Ramp SB at Main St	S	436.7	F
56	I-15 Ramp NB at Main St	S	551.5	F
57	I-15 Ramp SB at Mojave St	N/A	N/A	N/A
58	I-15 Ramp NB at Mojave St	N/A	N/A	N/A
59	I-15 Ramps NB at Eucalyptus St	N/A	N/A	N/A
60	I-15 Ramps SB at Eucalyptus St	N/A	N/A	N/A
61	I-15 Ramps NB at Bear Valley	S	217.8	F
62	I-15 Ramps SB at Bear Valley	S	22.0	С
63	I-15 Ramps NB at La Mesa-Nisqualli	N/A	N/A	N/A
64	I-15 Ramps SB at La Mesa-Nisqualli	N/A	N/A	N/A
65	I-15 Ramp NB at Palmdale	S	105.2	F
66	I-15 Ramps SB at Palmdale	S	548.0	F
67	I-15 Ramps NB at Roy Rogers	S	87.9	F
68	I-15 Ramps SB at Roy Rogers	S	30.1	С
69	I-15 Ramps NB at Mojave Dr	S	1570.0	F
70	I-15 Ramps SB at Mojave Dr	S	1470.0	F
71	I-15 Ramps NB at D Street	S	26.1	С
72	I-15 Ramps SB at D Street	S	61.0	Е

S = Signalized, U = Unsignalized

N/A = Intersections that did not exist in the Existing Condition, so were not assumed as part of the Future Baseline condition. Therefore, no delay or LOS analysis is provided.

In some cases the range limits in the TRAFFIX program have been exceeded for the HCM Analysis, and no delay is provided, which results in LOS F.

Intersection delay is expressed in average seconds of delay per vehicle during the peak hour.

<sup>\*\*</sup>When the capacity has been reached or exceeded the delay equation grows exponentially, resulting in very high delays, which do not accurately represent the actual delay.



## 2.3 Development of Future Alternatives

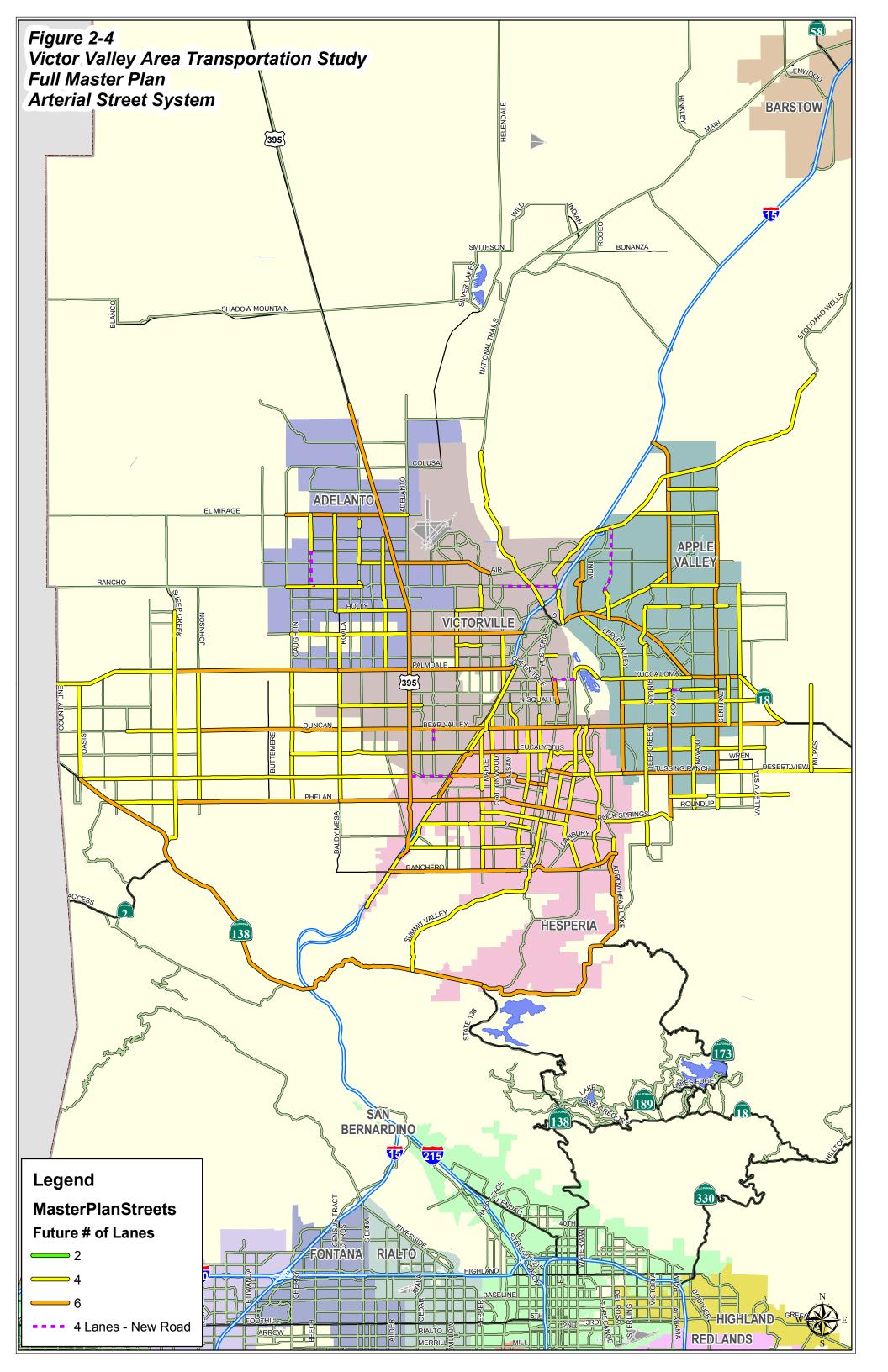
The VVATS future analysis includes 10 alternatives evaluating roadway needs in Year 2035 and a Buildout condition (i.e. when local general plan land uses are fully developed). The 10 alternatives evaluate various combinations of transportation improvement scenarios for two future horizons: 2035 and buildout. The major factors considered in these alternatives include:

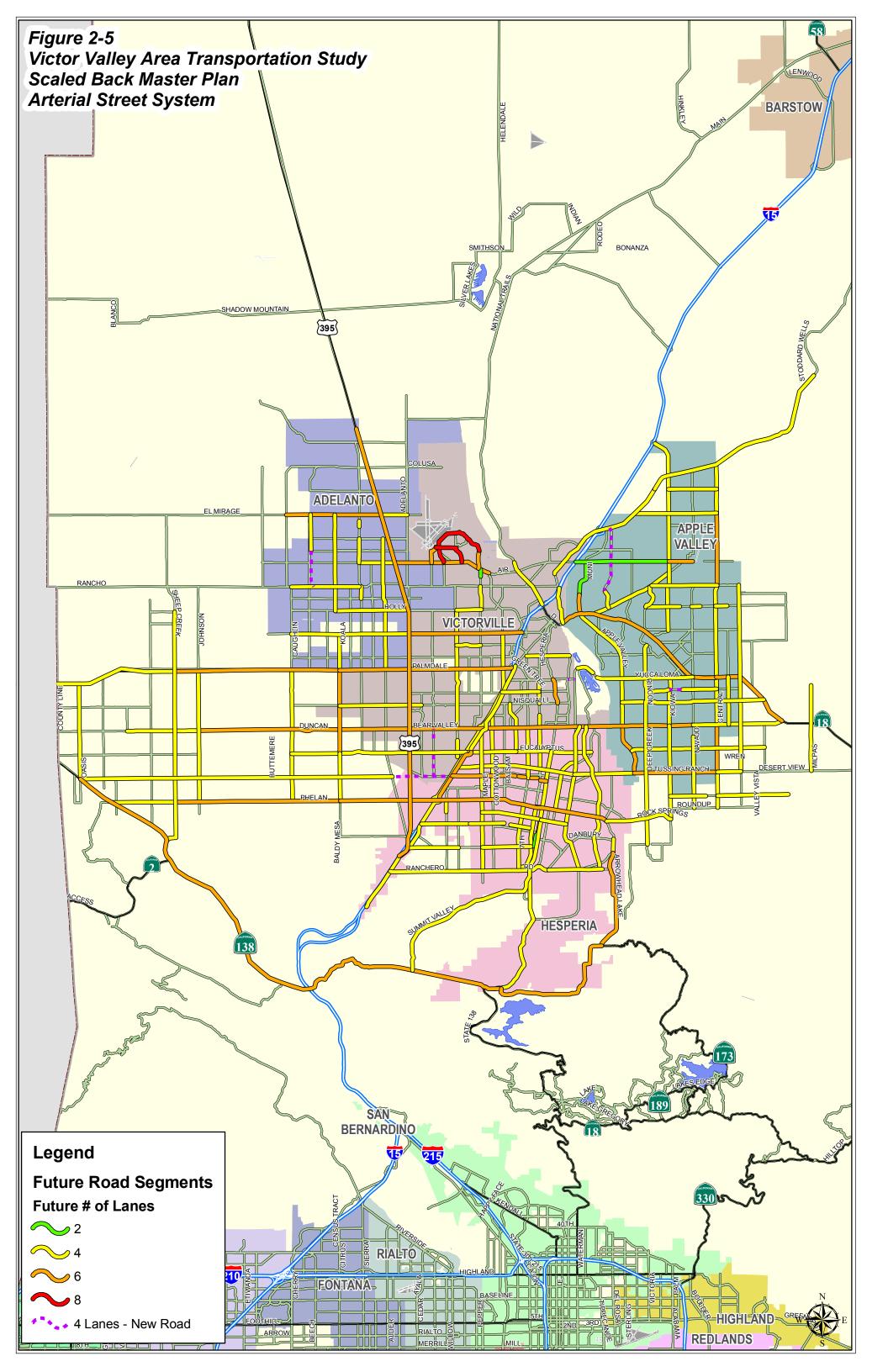
- New corridors: High Desert Corridor, Southeast Beltway and a realignment of US-395 evaluation of toll scenarios, alternative alignments and connections
- Improved I-15 interchanges and overcrossings: Ranchero Road, Mojave Street, Eucalyptus Street, La Mesa/Nisqualli and Muscatel Road
- Arterial Street System: Full Master Plan System vs. Scaled Back Master Plan Street System
- New Mojave River Crossings: Ranchero Road, Lemon Street and Yucca Loma Road, plus a new bridge at Rock Springs Road

**Figure 2-4** illustrates the Full Master Plan Arterial Street System and **Figures 2-5** illustrates the Scaled Back Master Plan Arterial Street System.

The development of the 10 future alternatives was a two-step process. Alternatives 1-5 were developed first and evaluated. Review of the first five alternatives' results led to the selection of the additional modeling alternatives (6-10). The key findings that affected Alternatives 6-10 are as follows:

- The decision was made by the Technical Advisory Committee to have a second Buildout alternative, rather than a 2035 scenario with alternative land use.
- In Alternatives 1-5 much of the arterial system was relatively uncongested, so a scaled-back arterial street system was assumed for Alternatives 6-10.
- In Alternatives 1-5 the Southeast Beltway carried low volumes east of the Mojave River, so in Alternatives 6-10 the Beltway was terminated on the west side of the Mojave River.







Descriptions of key elements in each of the ten alternatives are presented below. Alternatives 1 – 8 represent a Year 2035 scenario, and Alternatives 9 and 10 reflect General Plan Buildout.

### Alternative 1 – 2035 Full System

Purpose: Alternative 1 is intended to evaluate the full proposed highway system, with no tolls on new corridors.

- New corridors (No Tolls):
  - Realigned US-395: Alternative F Alignment (western most alignment) from I-15 to existing US-395 with I-15 connection at Ranchero Road
  - High Desert Corridor: From SR-18 and terminating at realigned US-395 alignment
  - Southeast Beltway: Southern alignment from I-15 to SR-18 with connection to I-15 near SR-138
- Improved I-15 interchanges and overcrossings: Ranchero Road, Mojave Street, Eucalyptus Street, La Mesa/Nisqualli, Rancho Road and Muscatel (with Muscatel interchange, the Joshua interchange would become an overcrossing)
- Arterial Street System: Full Master Plan System
- New Mojave River Crossings: Southeast Beltway, Ranchero Road, Lemon Street and Yucca Loma Road

## Alternative 2 – 2035 Corridor Alignment Alternatives

Purpose: Alternative 2 is intended to evaluate the full highway system with no tolls but alternative alignments for realigned US-395 and Southeast Beltway.

- New corridors (No Tolls):
  - Realigned US-395: Alternative H Alignment (eastern alignment) from I-15 to existing US-395 with I-15 connection at existing US-395 connection
  - High Desert Corridor: From SR-18 extending to Palmdale terminating at SR-14
  - Southeast Beltway: Northern alignment from I-15 to SR-18 with connection to I-15 near Oak Hills
- Improved I-15 interchanges and overcrossings: Ranchero Road, Mojave Street, Eucalyptus Street, La Mesa/Nisqualli, Rancho Road and Muscatel (with Muscatel interchange, the Joshua interchange would become an overcrossing)
- Arterial Street System: Full Master Plan System
- New Mojave River Crossings: Southeast Beltway, Ranchero Road, Lemon Street and Yucca Loma Road

## Alternative 3 – 2035 Full System with Tolls

Alternative 3 is intended to evaluate the traffic impact of charging tolls for use of the new corridors.

- New corridors (Tolls on all three corridors):
  - Realigned US-395: Alternative F Alignment (western most alignment) from I-15 to existing US-395 with I-15 connection at Ranchero Road



- High Desert Corridor: From SR-18 and terminating at realigned US-395 alignment
- Southeast Beltway: Southern alignment from I-15 to SR-18 with connection to I-15 near SR-138
- Improved I-15 interchanges and overcrossings: Ranchero Road, Mojave Street, Eucalyptus Street, La Mesa/Nisqualli, Rancho Road and Muscatel (with Muscatel interchange, the Joshua interchange would become an overcrossing)
- Arterial Street System: Full Master Plan System
- New Mojave River Crossings: Southeast Beltway, Ranchero Road, Lemon Street and Yucca Loma Road

#### Alternative 4 – 2035 Minimal I-15 Interchanges and Overcrossings

Alternative 4 is intended to evaluate how well the system would operate with fewer interchanges and overcrossings along I-15 and without the Southeast Beltway.

- New corridors (No Southeast Beltway):
  - Realigned US-395: Alternative H Alignment (eastern alignment) from I-15 to existing US-395 with I-15 connection at existing US-395 connection
  - High Desert Corridor: From SR-18 and terminating at realigned US-395 alignment
- Improved I-15 interchanges and overcrossings: Ranchero Road, Eucalyptus Street, La Mesa/Nisqualli, and Muscatel (overcrossing) (with Muscatel overcrossing, the Joshua interchange would remain)
- Arterial Street System: Full Master Plan System
- New Mojave River Crossings: Ranchero Road, Lemon Street, and Yucca Loma Road

## Alternative 5 – 2035 No Realigned US-395 or Southeast Beltway

Alternative 5 is intended to evaluate how well the system would operate without the Southeast Beltway and without a realigned US-395 alignment.

- New corridors (No Tolls):
  - High Desert Corridor: From SR-18 and terminating at existing US-395 alignment
- Improved I-15 interchanges and overcrossings: Ranchero Road, Mojave Street, Eucalyptus Street, La Mesa/Nisqualli, Rancho Road and Muscatel
- Arterial Street System: Full Master Plan System
- New Mojave River Crossings: Ranchero Road, Lemon Street and Yucca Loma Road

#### Alternative 6 – 2035 High End Alternative

Alternative 6 is intended to evaluate the full system with scaled back arterial streets and the High Desert Corridor extending west to Palmdale.

- New corridors (No Tolls):
  - Realigned US-395: Alternative F Alignment (western most alignment) from I-15 to existing US-395 with I-15 connection at existing US-395 connection
  - High Desert Corridor: From SR-18 and extending to Palmdale terminating at SR-14



- Southeast Beltway: Southern alignment with connection to I-15 near SR-138 and terminating just west of the Mojave River
- Improved I-15 interchanges and overcrossings: Ranchero Road, Mojave Street, Eucalyptus Street, La Mesa/Nisqualli, and Muscatel
- Arterial Street System: Scaled Back arterial street system
- New Mojave River Crossings: Ranchero Road, Lemon Street and Yucca Loma Road

#### Alternative 7 – High End Alternative with Tolls

Alternative 7 is intended to evaluate the traffic effect of charging tolls on the three new corridors (in other respects it is the same as Alternative 6).

- New corridors (Tolls on all three corridors):
  - Realigned US-395: Alternative F Alignment (western most alignment) from I-15 to existing US-395 with I-15 connection at existing US-395 connection
  - High Desert Corridor: From SR-18 and extending to Palmdale terminating at SR-14
  - Southeast Beltway: Southern alignment with connection to I-15 near SR-138 and terminating just west of the Mojave River
- Improved I-15 interchanges and overcrossings: Ranchero Road, Mojave Street, Eucalyptus Street, La Mesa/Nisqualli, and Muscatel
- Arterial Street System: Scaled Back arterial street system
- New Mojave River Crossings: Ranchero Road, Lemon Street and Yucca Loma Road

#### Alternative 8 – 2035 Low End Alternative

Alternative 8 is intended to evaluate congestion levels with a relatively low level of roadway infrastructure investment by 2035, including no Southeast Beltway, no realigned US-395, reduced I-15 interchanges and overcrossings, and no Yucca Loma crossing of the Mojave River.

- New corridors (No Tolls):
  - High Desert Corridor: From SR-18 and terminating just west of existing US-395 alignment
- Improved I-15 interchanges and overcrossings: Ranchero Road, Mojave Street (overcrossing), Eucalyptus Street, La Mesa/Nisqualli, and Muscatel
- Arterial Street System: Scaled Back arterial street system
- New Mojave River Crossings: Ranchero Road and Lemon Street

## Alternative 9 - Buildout High End Roadway System

Alternative 9 is intended to evaluate how well the full roadway system would accommodate traffic volumes if all development envisioned in local general plans was built.

- New corridors (No Tolls):
  - Realigned US-395: Alternative H Alignment (eastern alignment) from I-15 to existing US-395 with I-15 connection at existing US-395 connection
  - High Desert Corridor: From SR-18 and extending to Palmdale terminating at SR-14



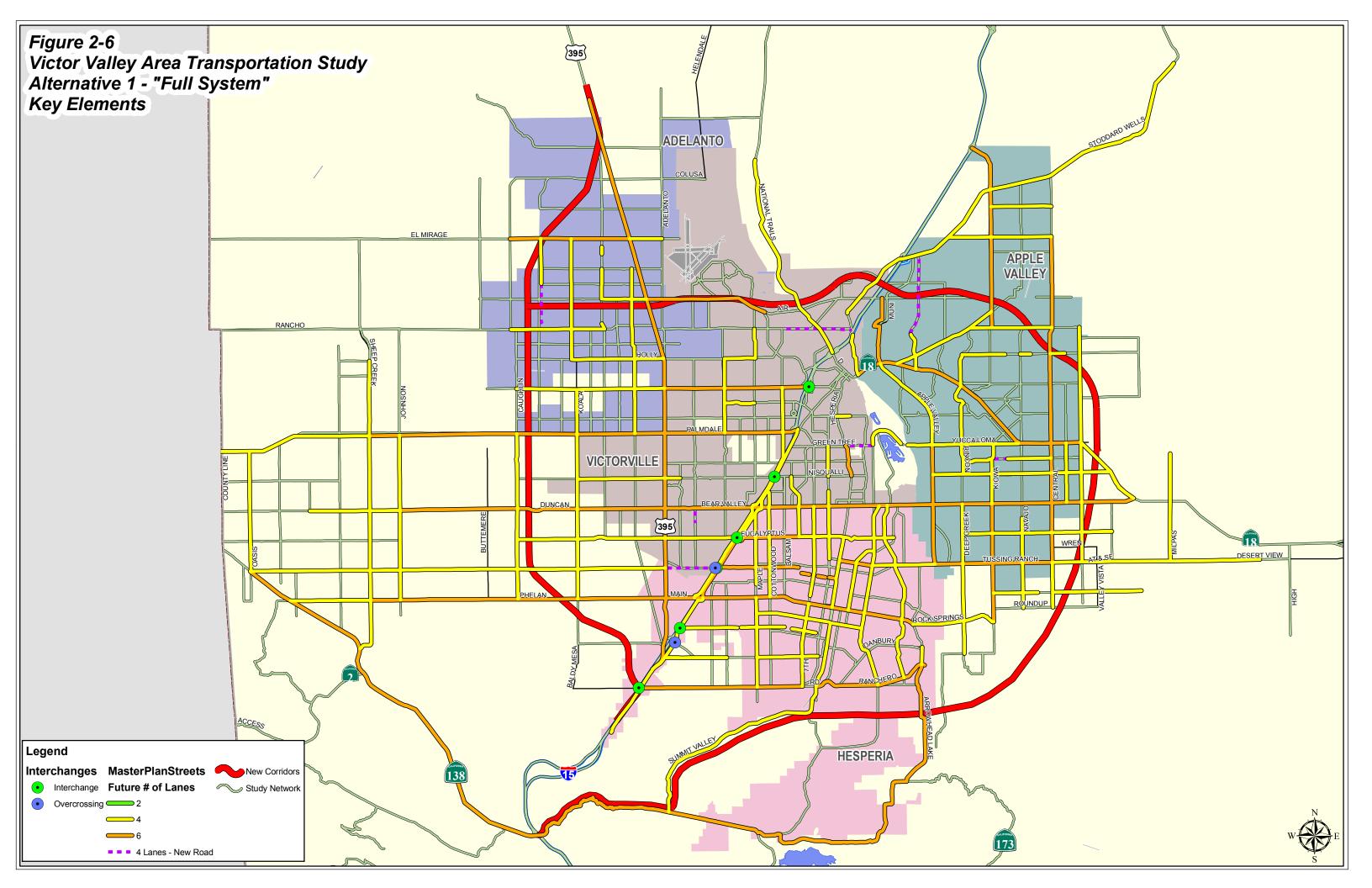
- Southeast Beltway: Southern Southern alignment with connection to I-15 near SR-138 and terminating just west of the Mojave River
- Improved I-15 interchanges and overcrossings: Ranchero Road, Mojave Street, Eucalyptus Street, La Mesa/Nisqualli, and Muscatel
- Arterial Street System: Full Master Plan System
- New Mojave River Crossings: Ranchero Road, Lemon Street and Yucca Loma Road

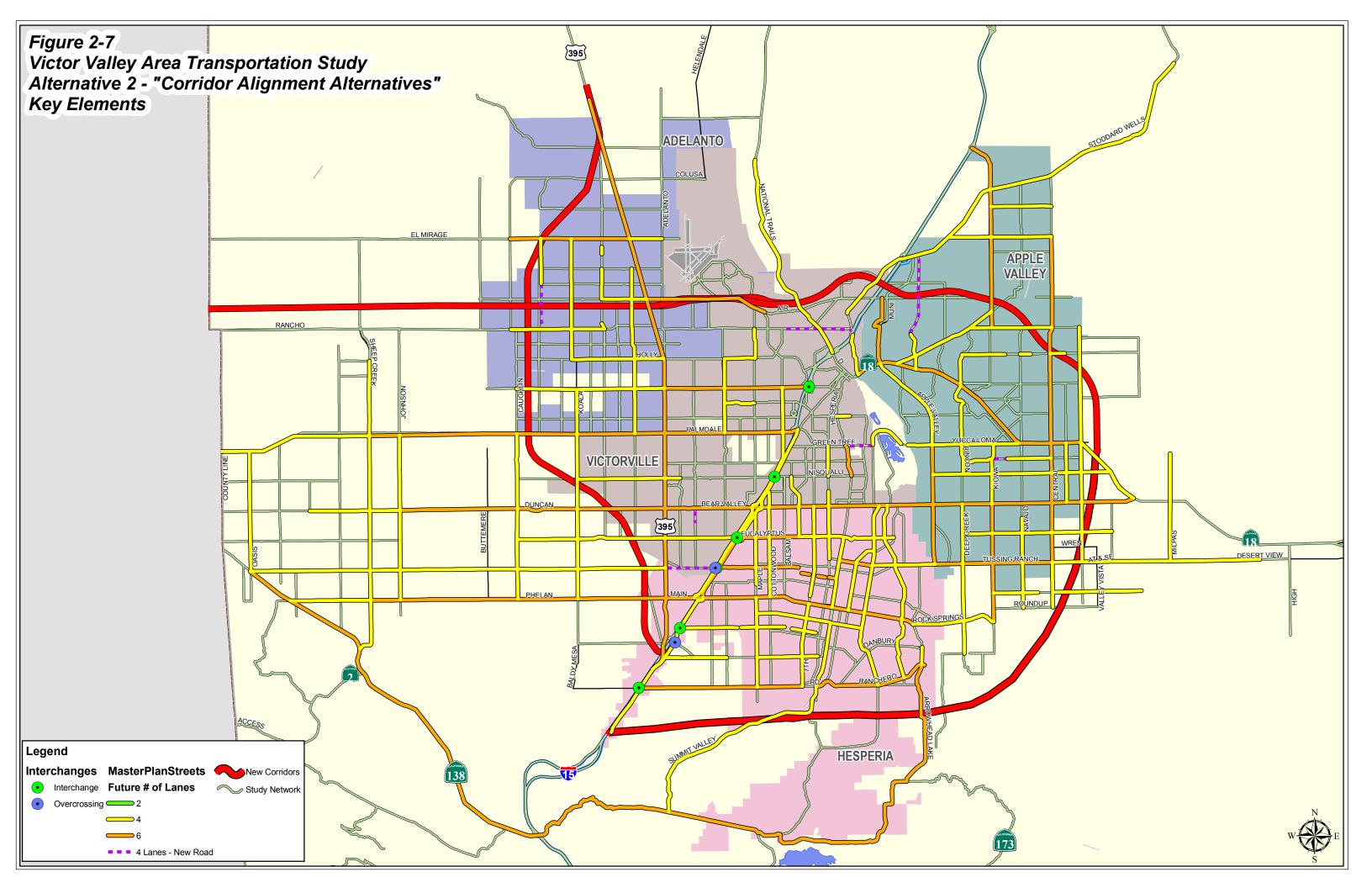
## Alternative 10 - Buildout Low End Roadway System

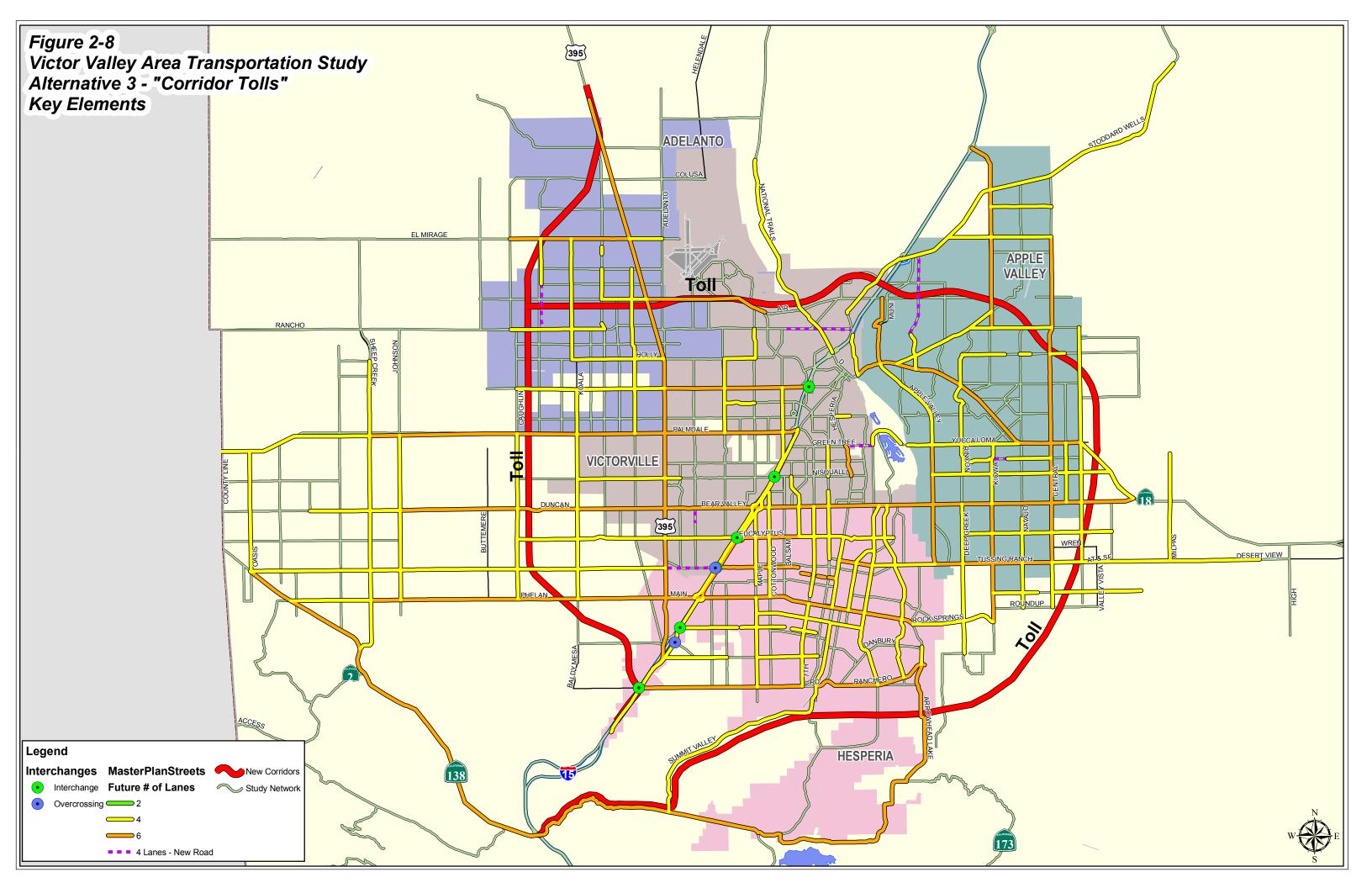
Alternative 10 is intended to evaluate how well a scaled-back roadway system would accommodate the Buildout of local jurisdiction General Plans. This alternative does not include the Southeast Beltway or the realigned US-395, and it has reduced I-15 interchanges/overcrossings and a scaled back arterial system.

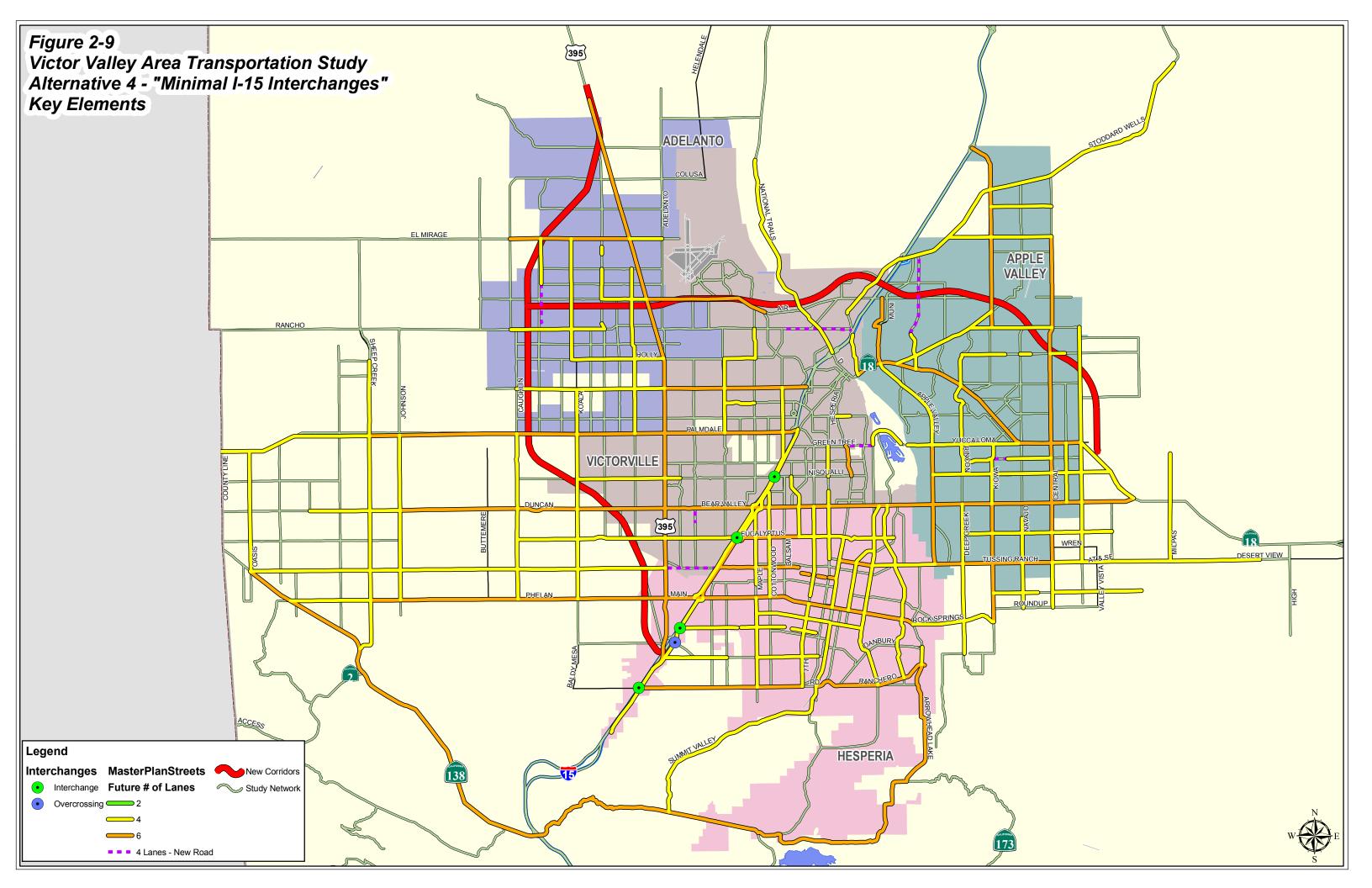
- New corridors (No Tolls):
  - High Desert Corridor: From SR-18 and extending to Palmdale terminating at SR-14
- Improved I-15 interchanges and overcrossings: Ranchero Road, Mojave Street (overcrossing), Eucalyptus Street, La Mesa/Nisqualli, and Muscatel
- Arterial Street System: Scaled Back Master Plan Street System
- New Mojave River Crossings: Ranchero Road, Lemon Street and Yucca Loma Road

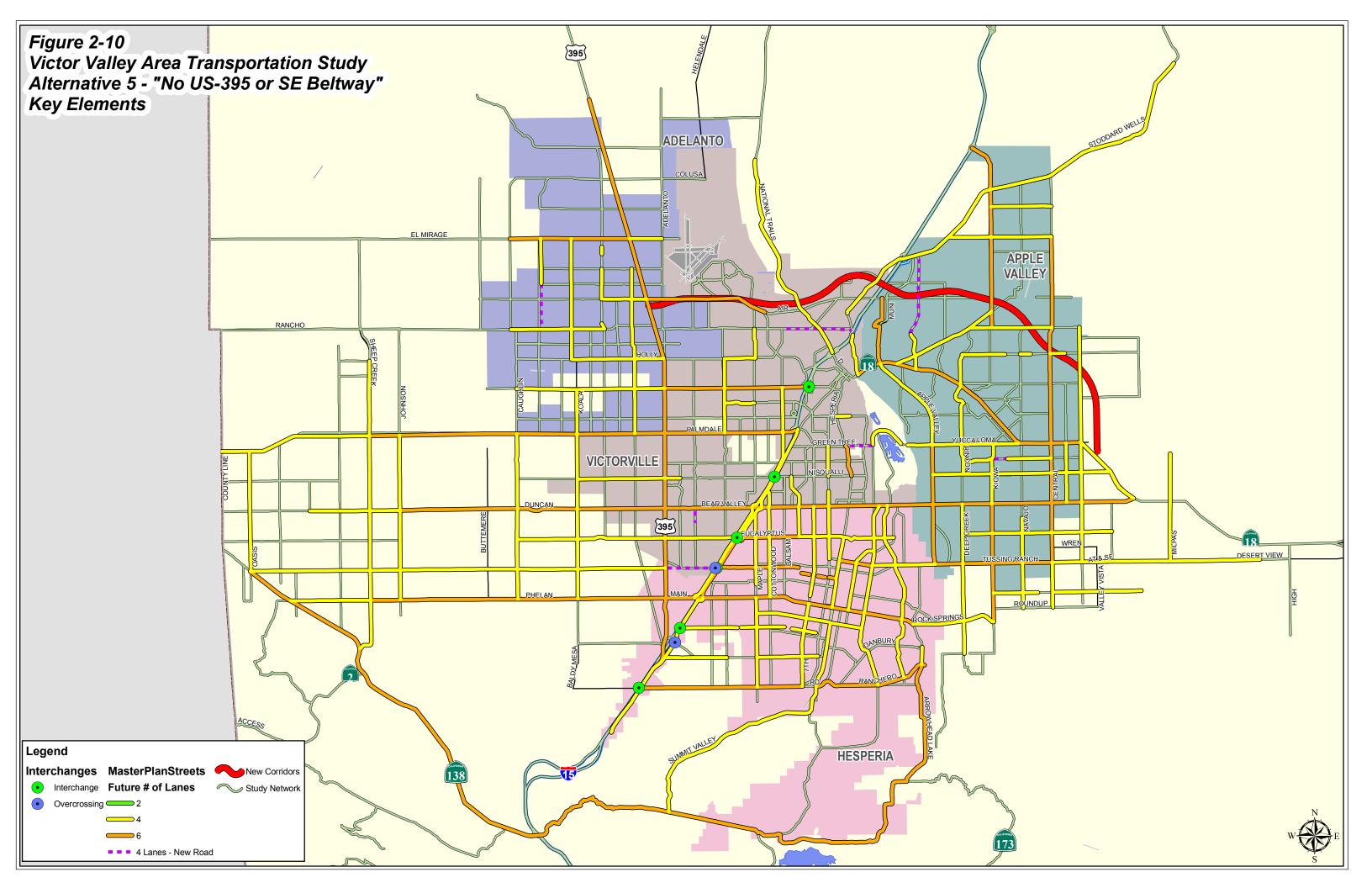
**Figures 2-6** through **2-15** display the major factors of each alternative and **Table 2-2** is an alternatives matrix that summarizes the major elements and assumptions of each of the 10 alternatives described above. The traffic model forecasts of 2035 daily traffic volumes for the ten alternatives (not post-processed) are provided in **Appendix I**.

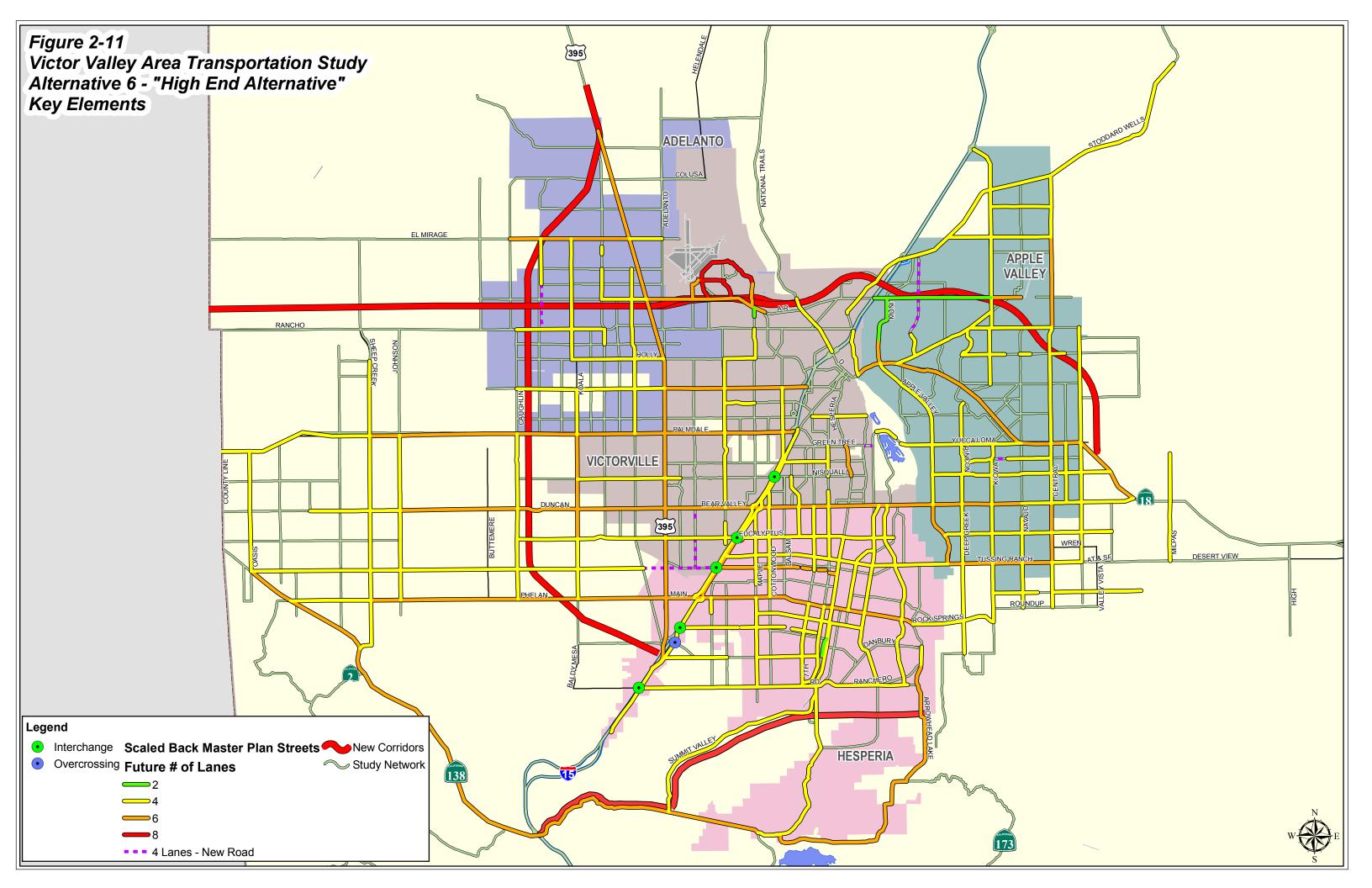


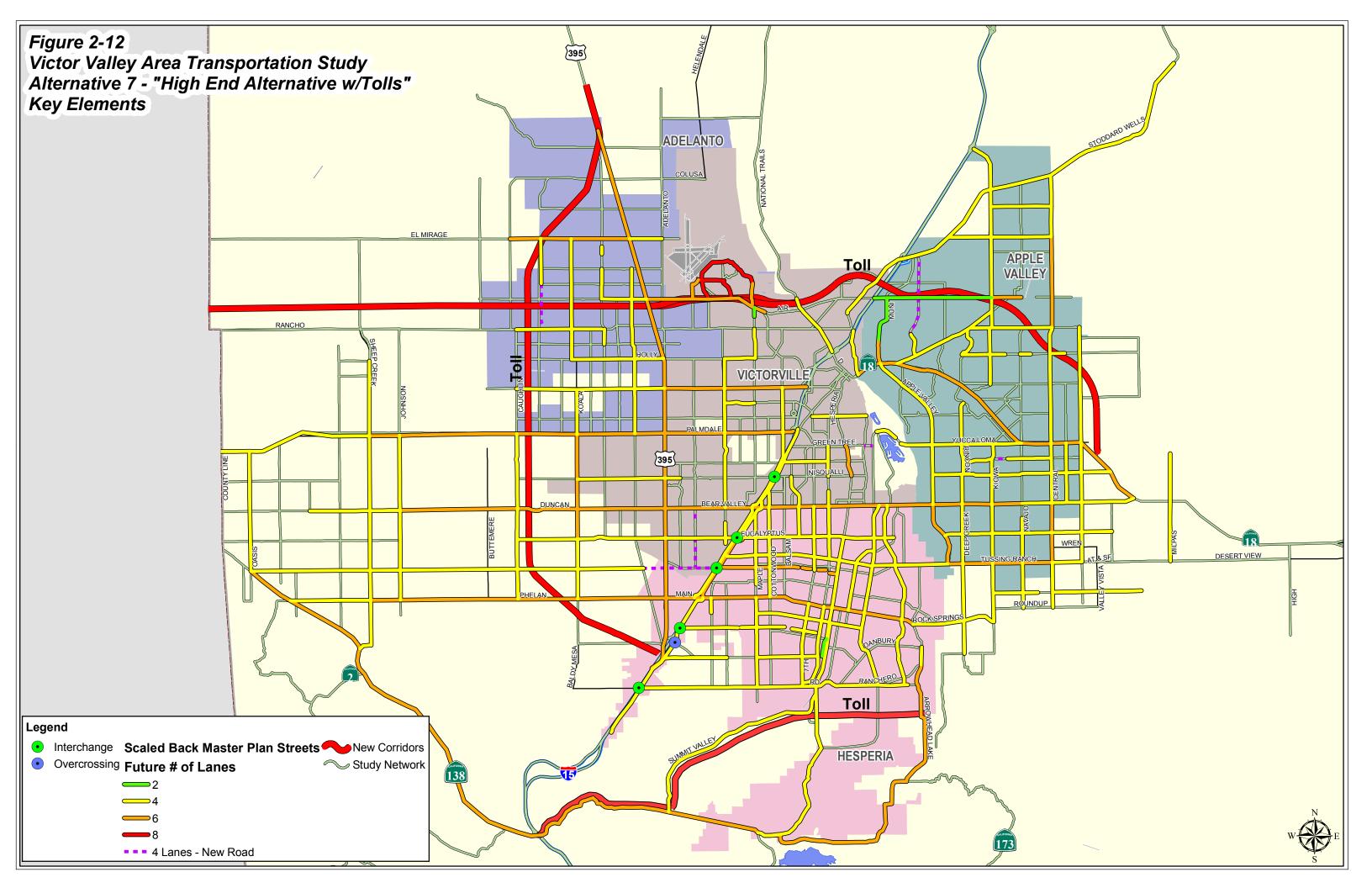


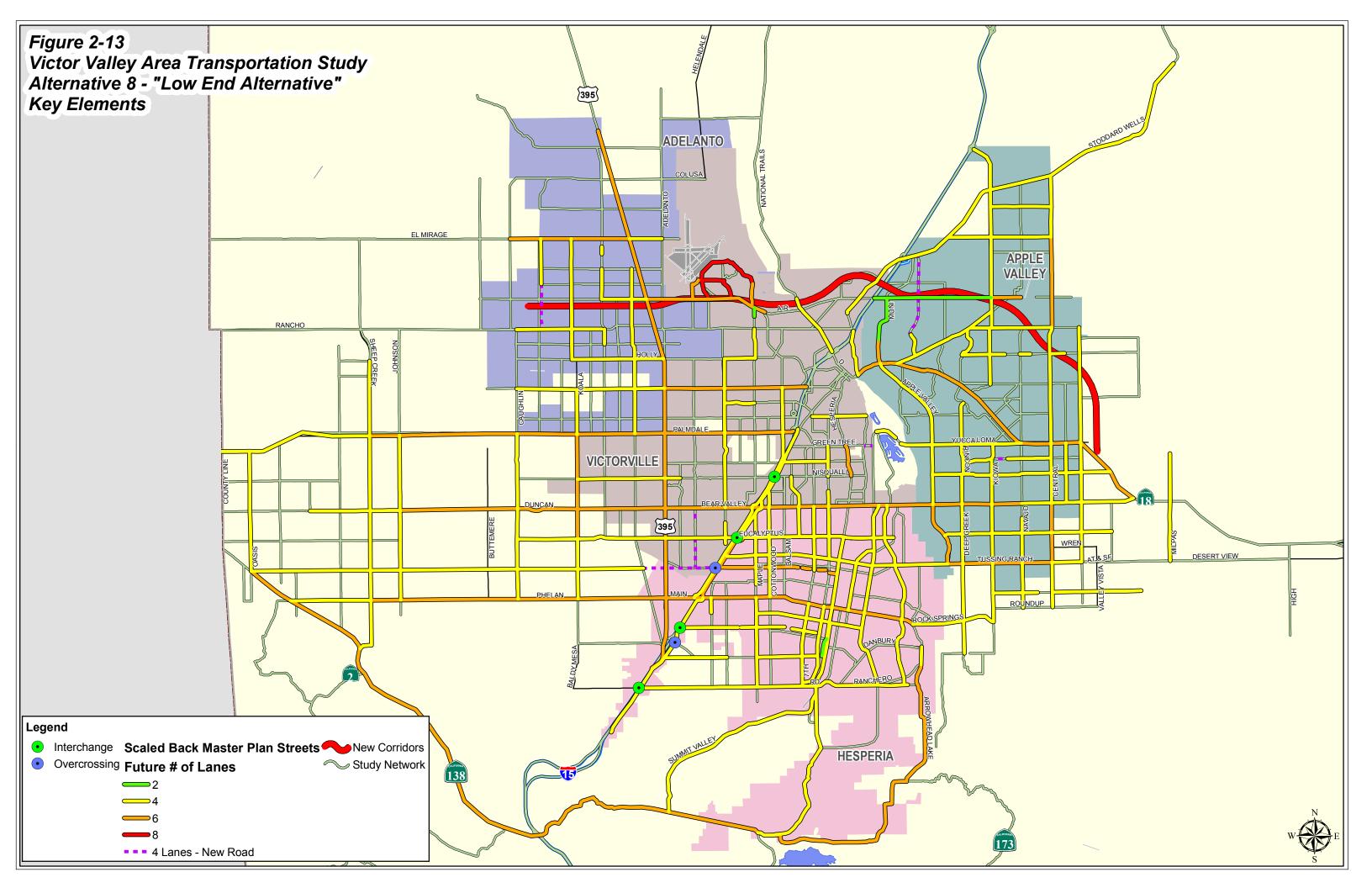


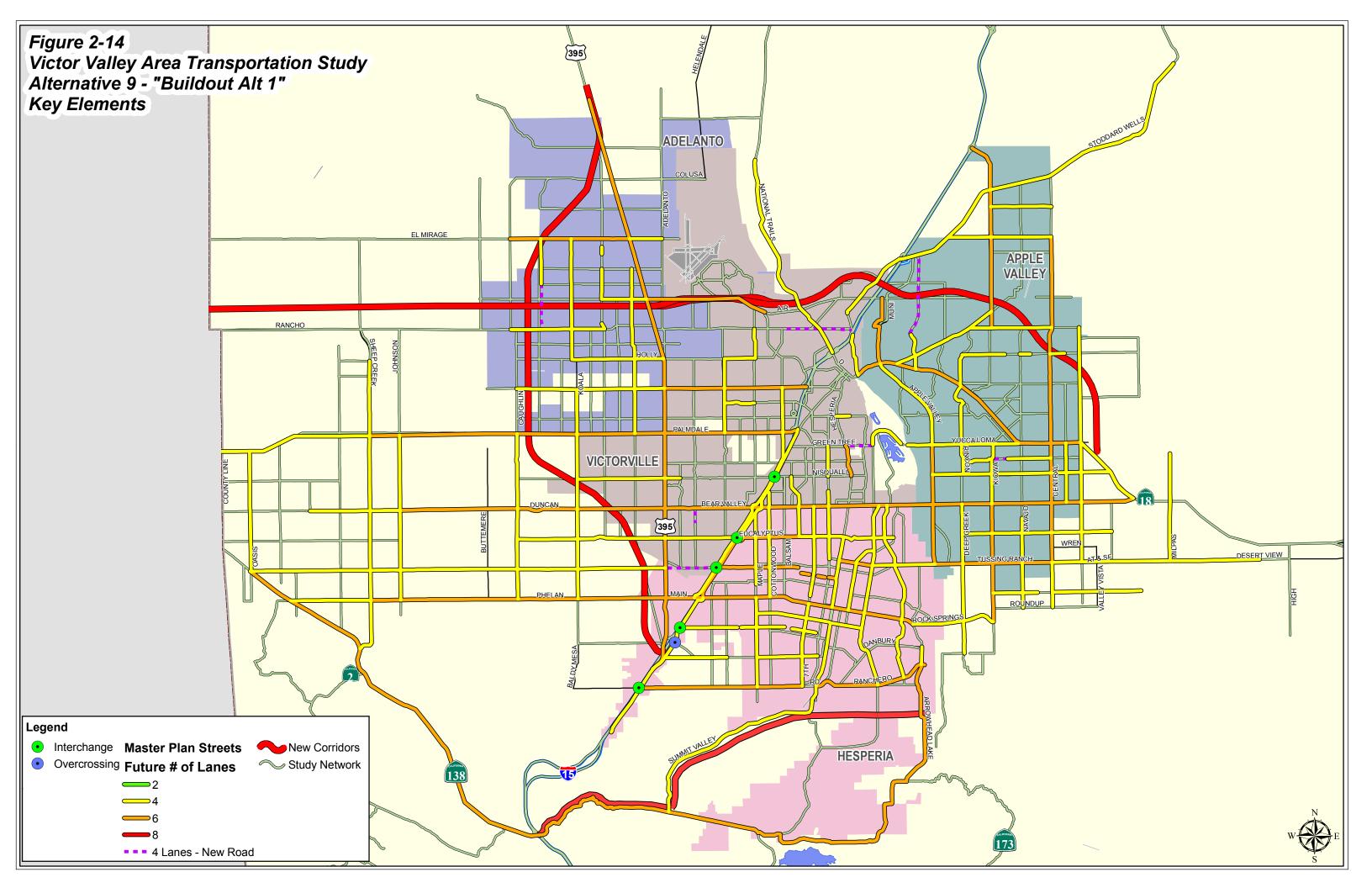


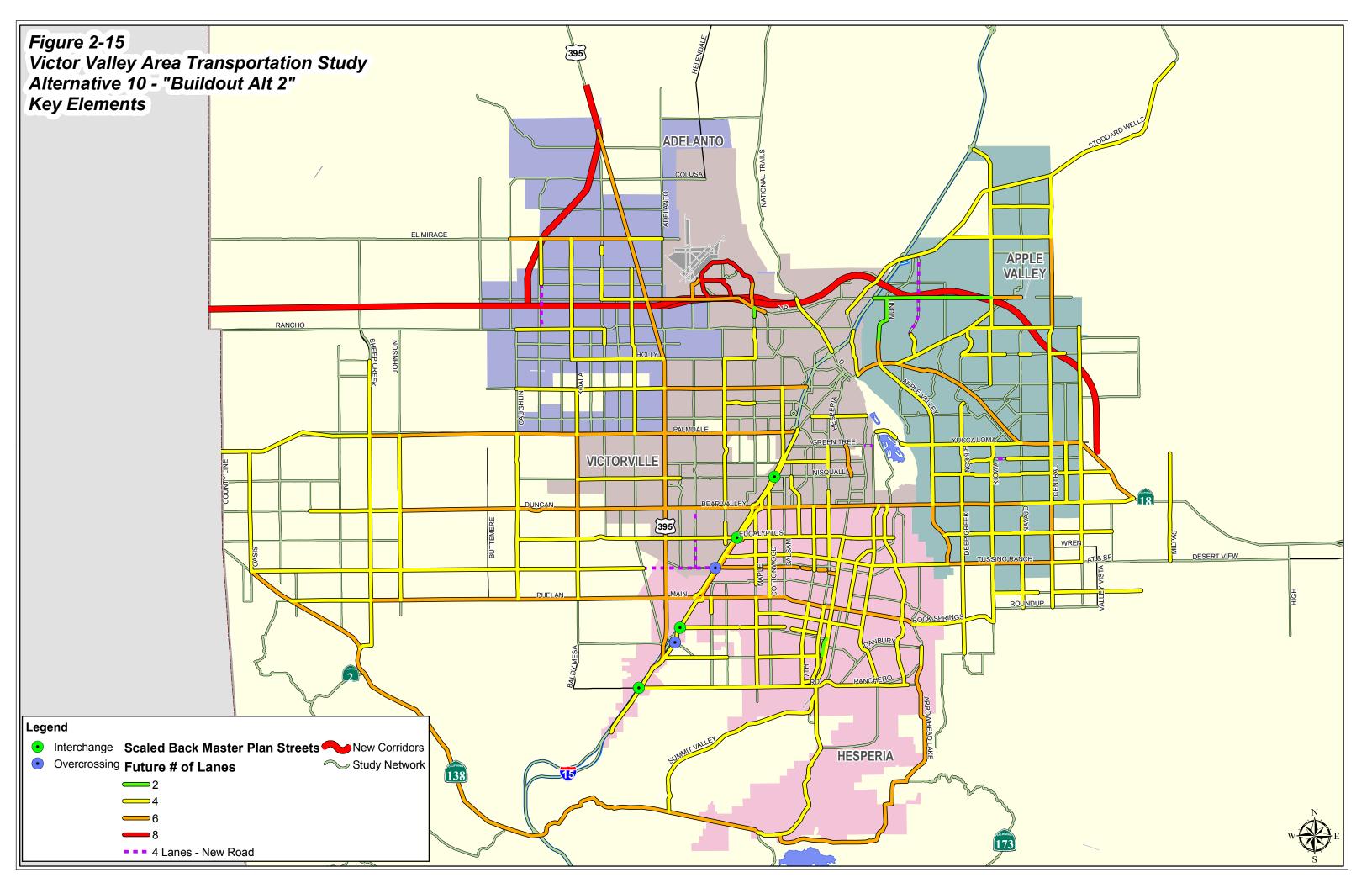












#### **Table 2-2 - Alternatives Matrix**

		Land	d Use	New	I-15 O	vercros	sings (O	) & Int	erchang	ges (I)	US-395 A	lignment	US-395 C	onnections	HDC T	ermination	Southeast Belt	way Alignment	Art	erial Syst	em	Yucca Lo	ma Bridge		Tolls	
Alternative	Description	2035	Buildout	Ranchero Rd	Joshua	Muscatel	Mojave/ Smoketree	Eucalyptus	La Mesa/ Nisqualli	Rancho Rd	Alignment 1 (Alternative F)	Alignment 2 (Alternative H)	Existing I-15 Connection	I-15 Connection at Ranchero	End West of US 395	Extends to Palmdale (SR-14)	Alignment 1 (SR-138)	Alignment 2 (Oak Hills)	Existing & Committed	Scaled Back Master Plan	Master Plan	YES	ON	нрс	395	SEB
Baseline		X			I														X							
Alternative 1	Full System	X		I	О	I	I	I	I	I	X			X	X		X				X	X				
Alternative 2	Corridor Alignment Alternatives*	X		I	О	I	I	I	I	I		X	X			X		X			X	X				
Alternative 3	Corridor Tolls	X		I	О	I	I	I	I	I	X			X	X		X				X	X		X	X	X
I Alternative 4	Minimal I-15 Interchanges/ Overcrossings	X		I	I	О		I	I			X	X		X						X	X				
Alternative 5	No US-395 or Southeast Beltway	X		I	О	I	I	I	I	I					X						X	X				
Alternative 6	High End Alternative**	X		I	О	I	I	I	I		X		X			X	X			X		X				
Alternative 7	High End Alternative w/ Tolls**	X		I	О	I	I	I	I		X		X			X	X			X		X		X	X	X
Alternative 8	Low End Alternative***	X		I	О	I	О	I	I						X					X			X			
Alternative 9	Buildout Alt 1**		X	I	О	I	I	I	I			X	X			X	X				X	X				
Alternative 10	Buildout Alt 2***		X	I	О	I	О	I	I							X				X		X				

#### NOTES:

Alternatives 1 and 2 compare the effects of alternative corridor alignments for both US-395 and Southeast Beltway.

Alternatives 1 and 3 compares the effects of toll roads on the three corridors, US-395, High Desert and Southeast Beltway.

Alternative 4 evaluates minimal I-15 interchanges/overcrossings and no SE Beltway

Alternatives 1 and 5 compares the effects of no US-395 or SE Beltway

Alternatives 1 (or 2) and 6 compare the effects of scaled back arterial street system for 2035.

Alternatives 6 and 7 compare the effects of tolls with scaled back arterial streets on the three corridors, US-395, High Desert and Southeast Beltway for 2035.

Alternative 8 evaluates minimal I-15 interchanges/overcrossings, no SEB and no US-395 for 2035

Alternatives 9 and 10 compare the effects of no SEB, US-395, Yucca Loma Bridge and scaled back arterial street system for buildout.

\*The High Desert Corridor (HDC) is coded as a freeway to the eastern terminus of Palmdale Boulevard in Alternative 2. All other scenarios with HDC (extension to Palmdale) it is coded as a freeway all the way to SR-14.

\*\*The southeastern beltway will terminate west of the river crossing.

\*\*\*In alternatives with No new US-395 alignment, existing US-395 alignment will be coded as a freeway from SR-58 to the High Desert Corridor where it will terminate.

Trip distributions performed with Baseline Network for Baseline Alternative and Alternative 5. Trip Distribution for all other scenarios performed with Full System Network.



# 2.4 Alternatives Evaluation Results

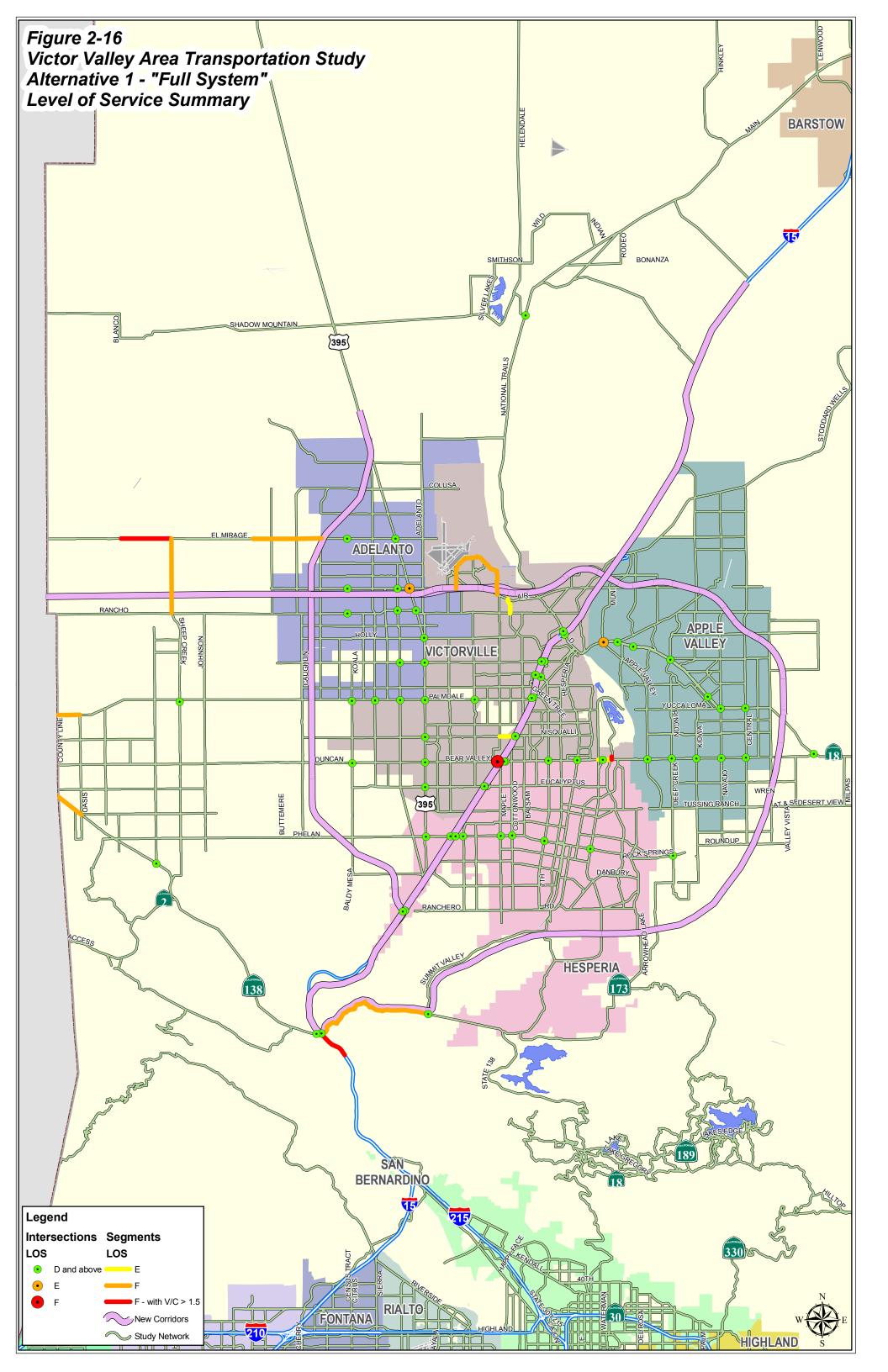
Analysis of the ten alternatives compared the effects of different corridor alignments and tolls as well as whether there is a need for all three corridors. The analysis also helped determine which I-15 interchanges and Mojave River crossings will be necessary to meet the future demand, and if the full master plan arterial street system is sufficient for Year 2035 and Buildout.

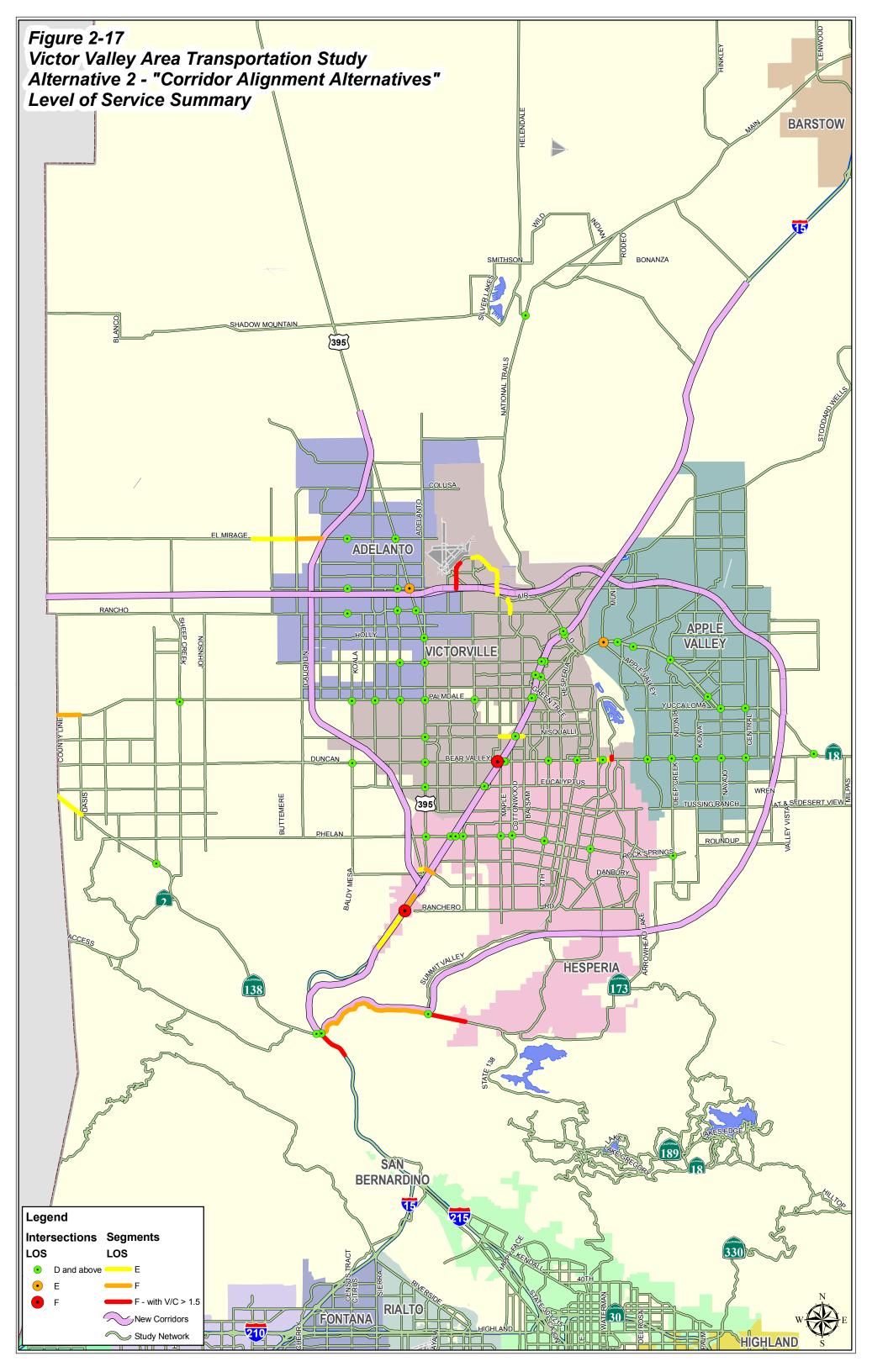
The evaluation criteria for the alternatives analysis included:

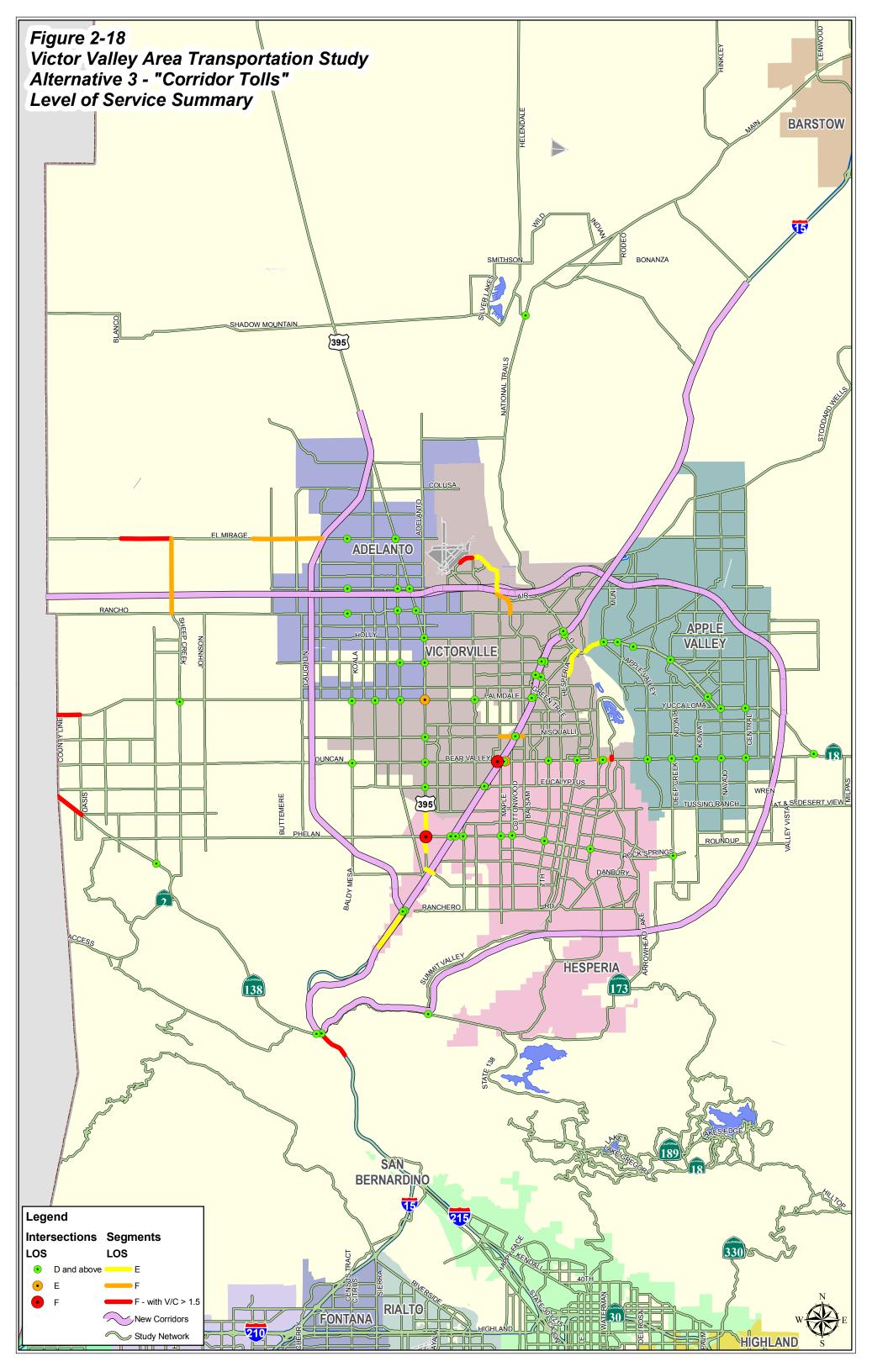
- Traffic Congestion:
  - study intersections at peak hour LOS F (HCM intersection LOS)
  - highways and arterials at ADT LOS F (segment v/c)
  - congestion levels on highway corridors: I-15, realigned US-395, HDC, SE Beltway, existing US-395, SR-18
  - congestion levels at critical locations: I-15 interchanges and crossings, UPRR crossings,
     Mojave River crossings
- Usage of new highways (US-395, HDC, SE Beltway)
  - ADT on new facilities at selected locations
- Capital costs of improvements
  - Order-of-magnitude costs, based on typical unit costs per lane-mile or cost estimates already prepared by agencies
- Revenue from User Fees
  - Toll revenue potential
- Environmental factors
  - Displacement of residences and businesses (qualitative)
  - Potential disruption of rare or endangered species habitat (qualitative)
  - Any other noteworthy environmental or community benefits/impacts that differentiate alternatives

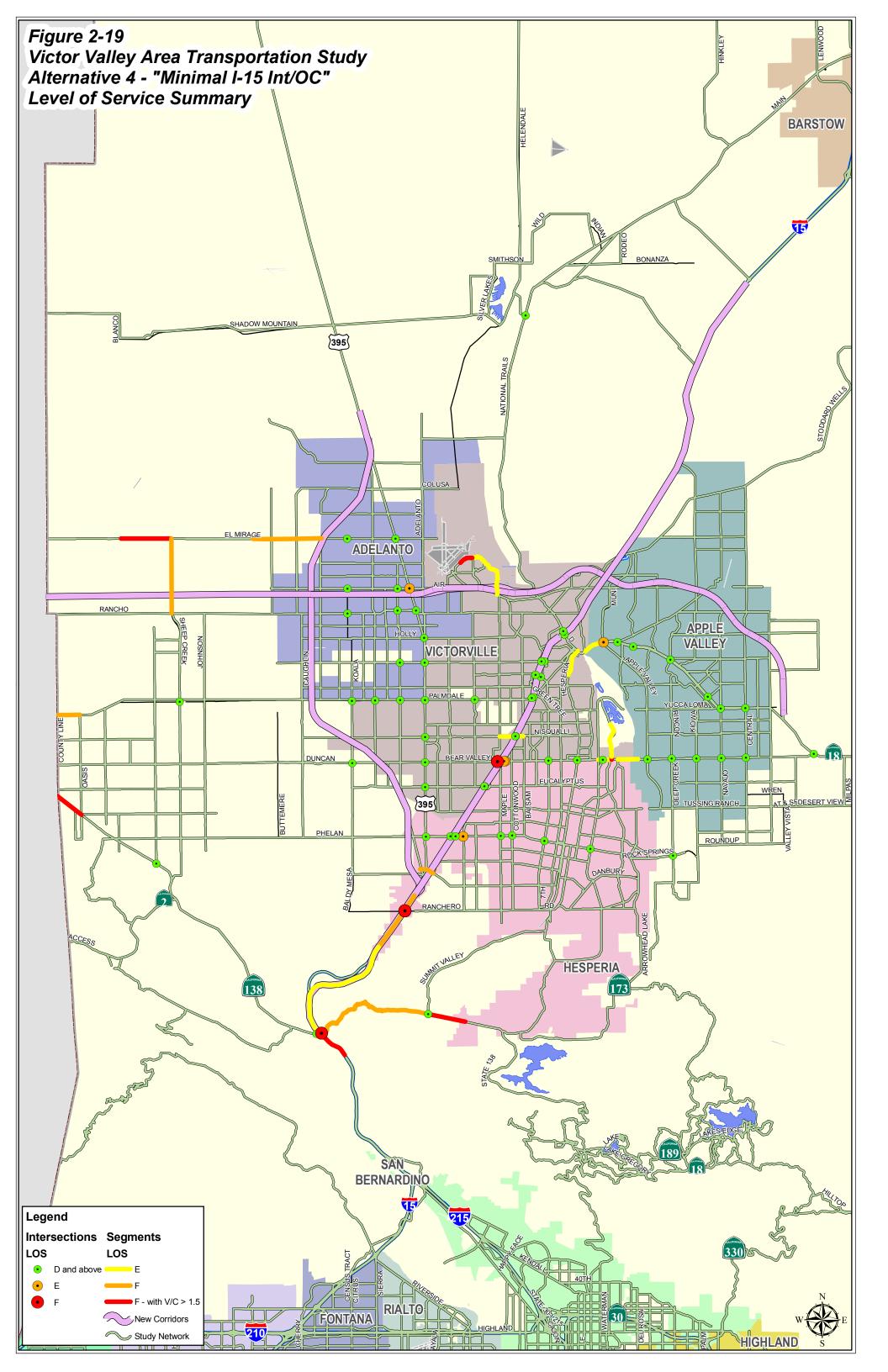
# 2.4.1 Level of Service on Roadway Segments

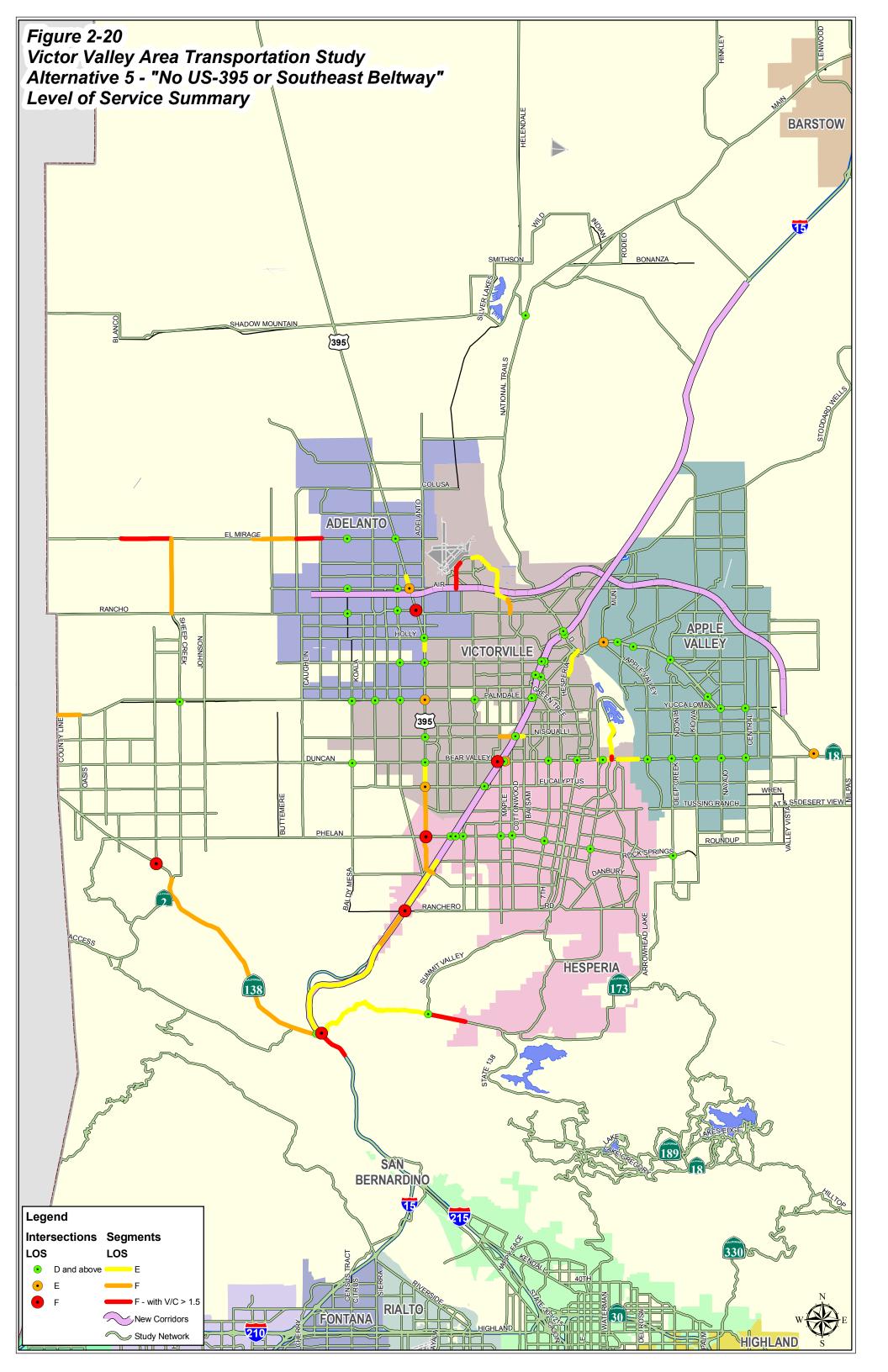
**Figures 2-16** through **2-25** show the levels of service on the study area roadway segments where the future daily traffic volume is projected to approach or exceed the segment capacity for each alternative. Alternatives 1-5 include the master plan system of arterial streets, and forecast congestion along I-15 and at the I-15 interchanges. The severity level and location of congestion varies between the alternatives based on the different elements such as, tolls on the corridors, Southeast Beltway Alignments, and new I-15 interchanges and overcrossings. Alternatives 6-8 have the scaled back master plan street system and show more congestion on the arterials as well as on I-15 and the three corridors. Alternatives 9 and 10 are buildout alternatives which include about 500,000 more people. Both alternatives show congestion on I-15, existing US-395, major arterials and on all three corridors, with heavier congestion in many areas of Alternative 10.

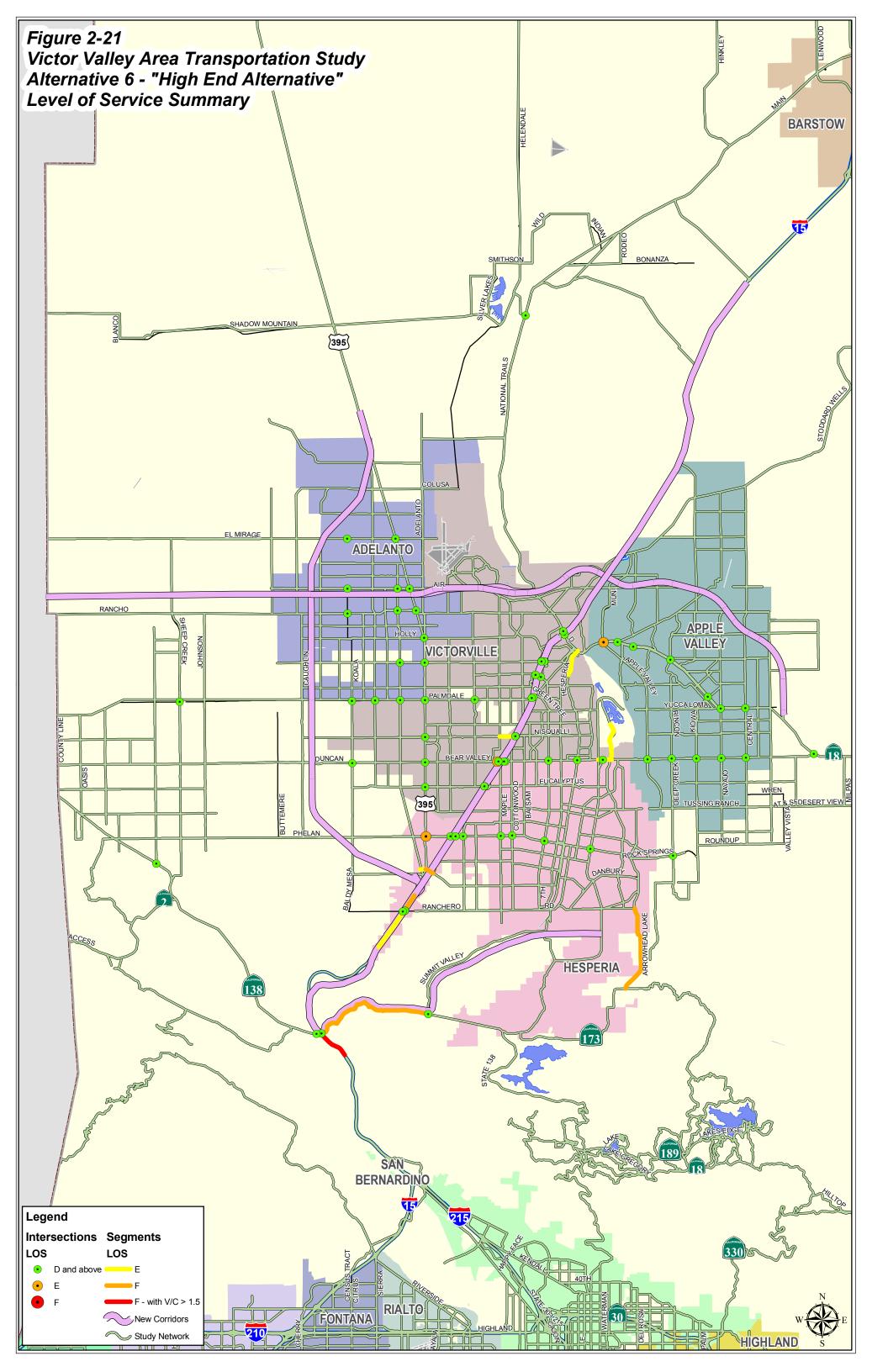


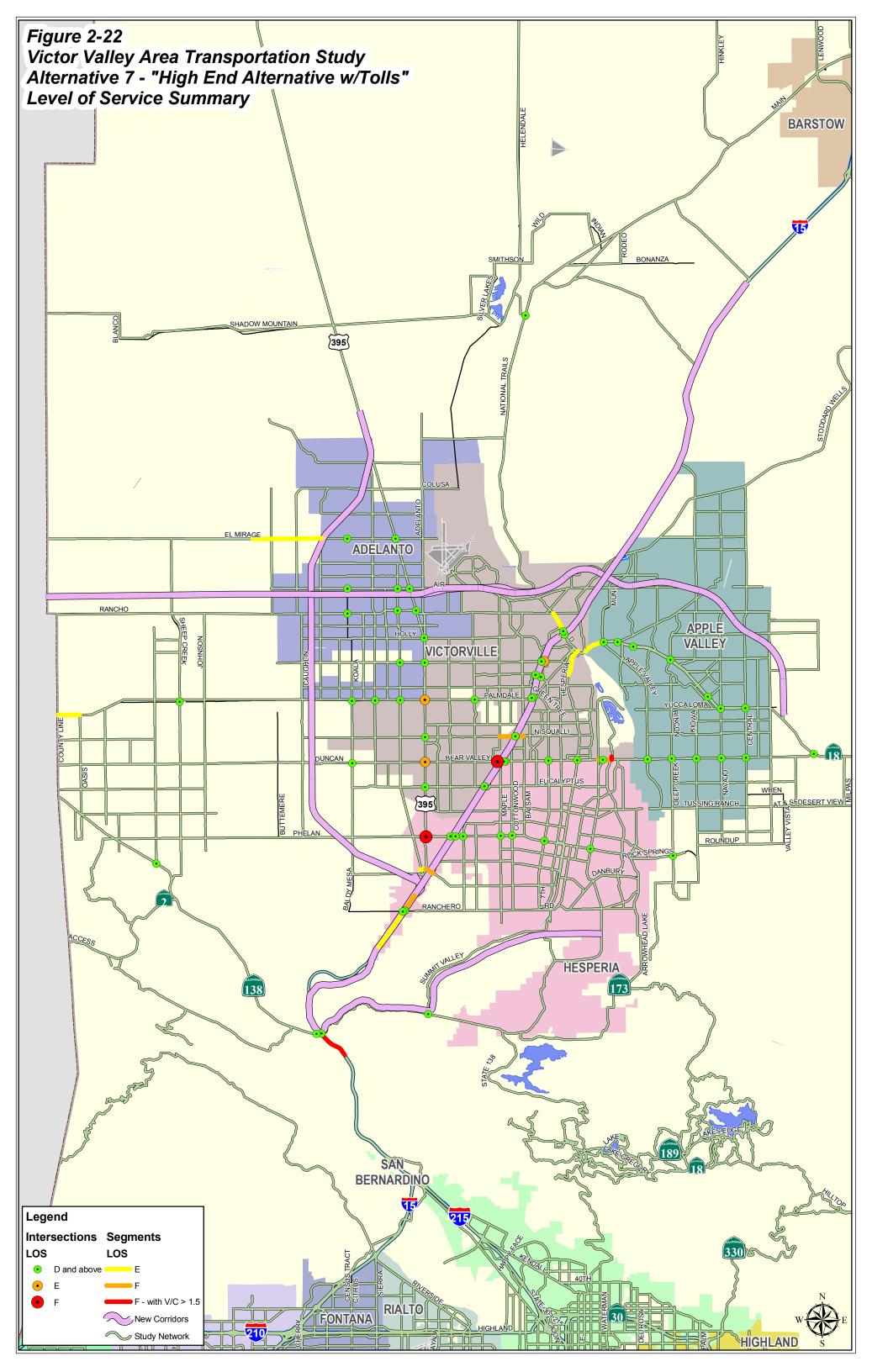


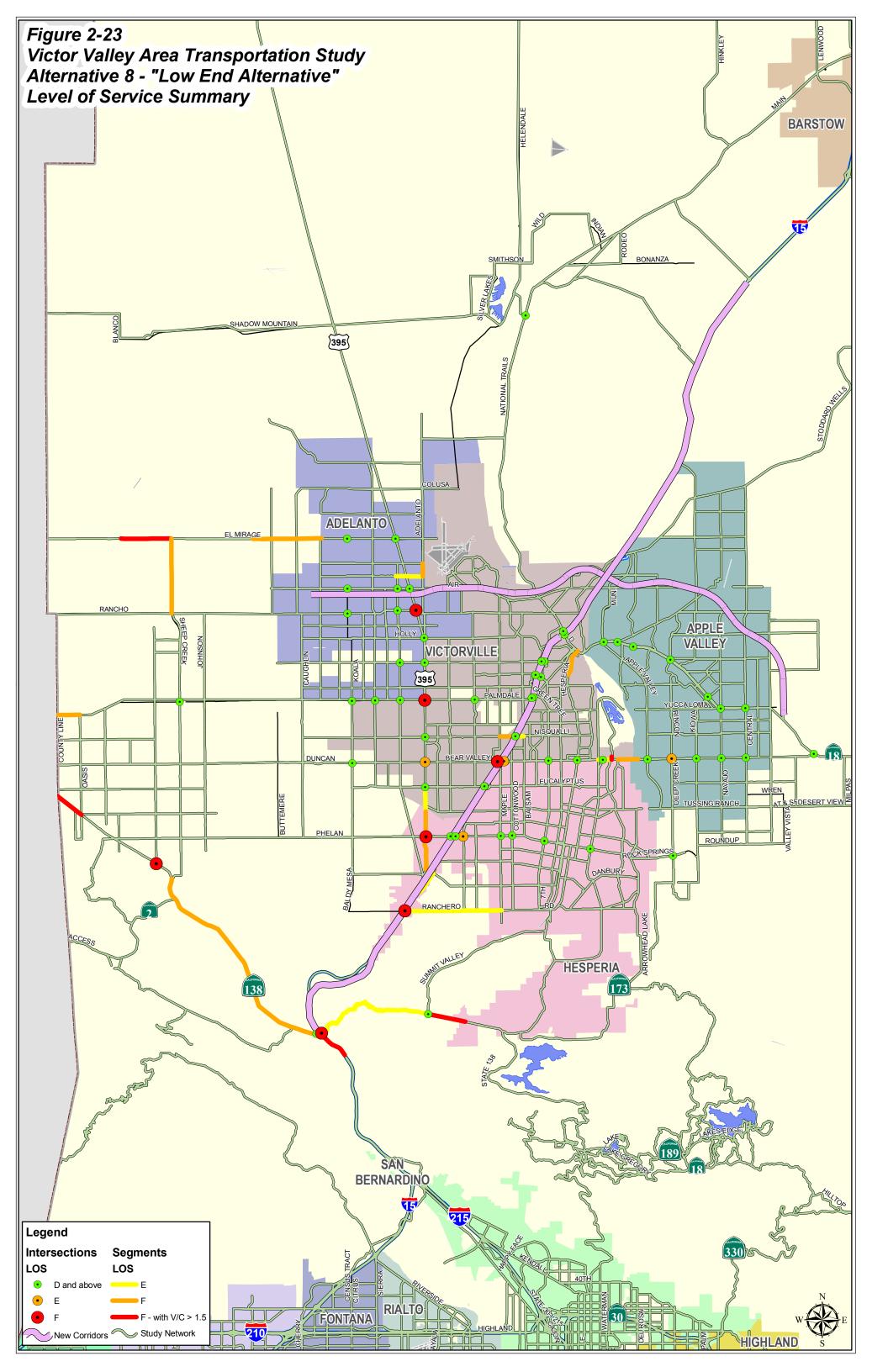


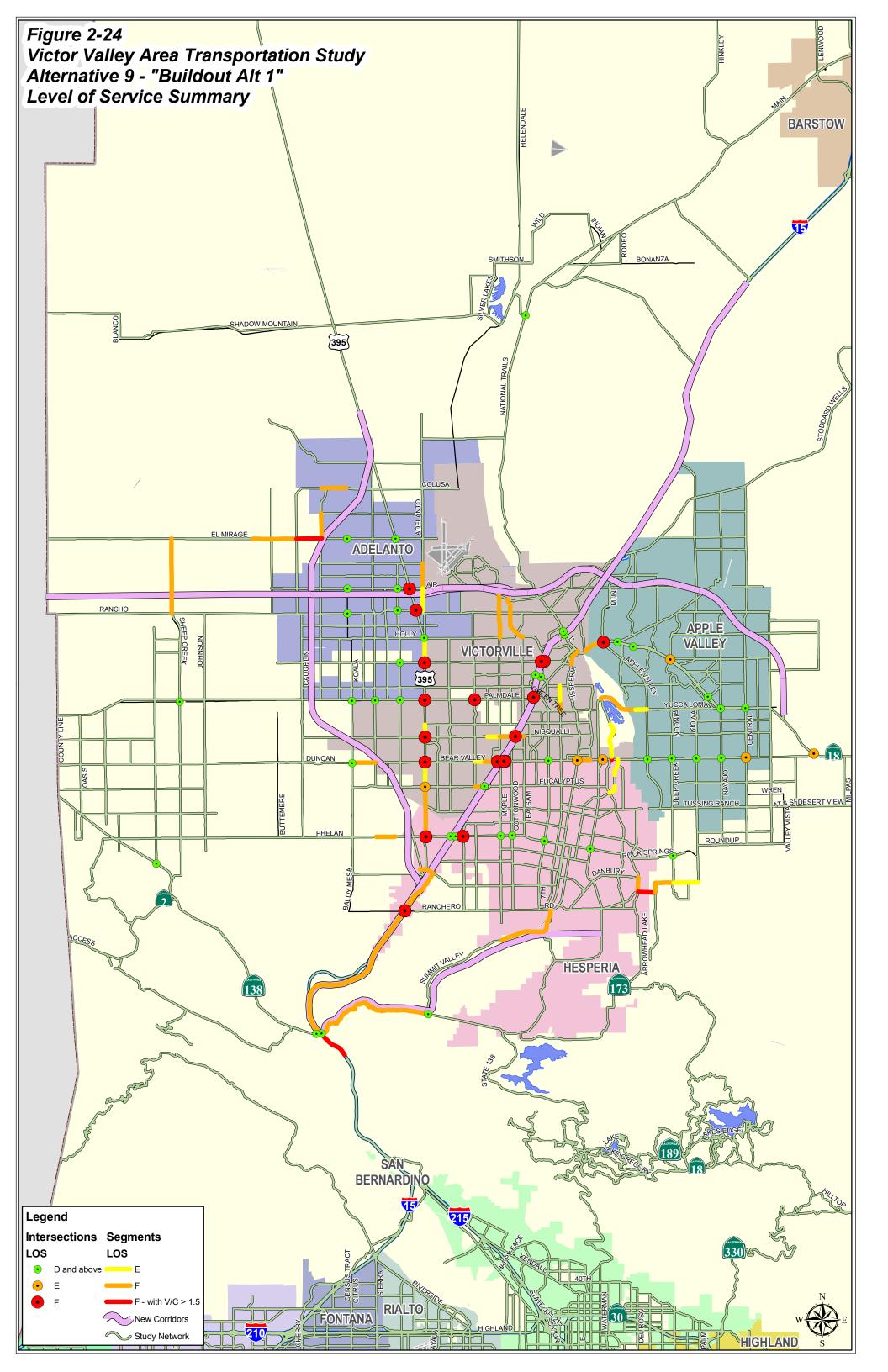


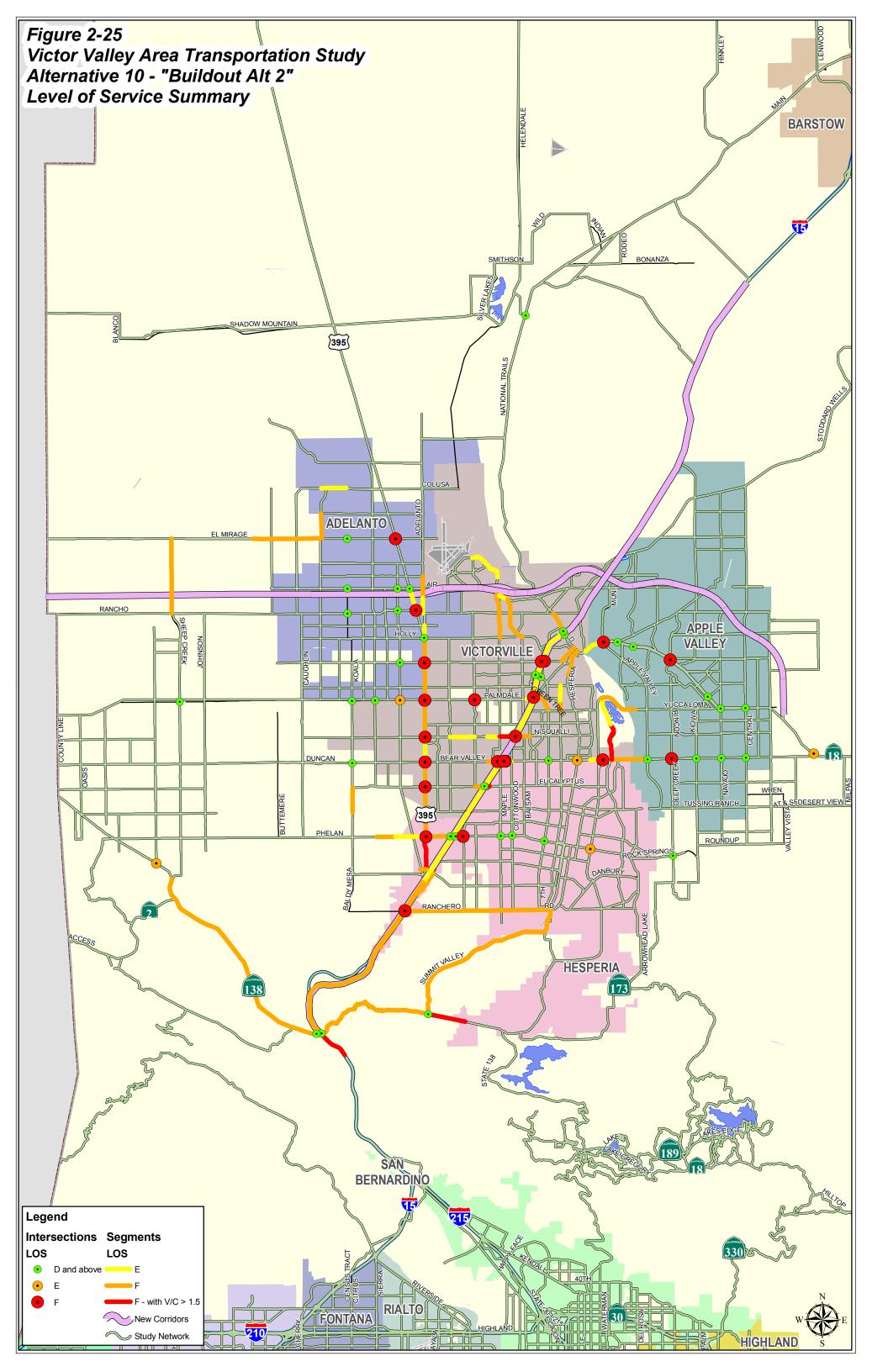














### 2.4.2 Intersection Characteristics

The future intersection analysis includes 72 of the key study intersections in the Victor Valley area including two new intersections on US-395 at Eucalyptus Street and La Mesa Road and four new interchanges (Ranchero Road, Mojave Street, Eucalyptus Street and La Mesa/Nisqualli) on I-15. The future analysis assumes that all of the study intersections will be signalized and assumes through lanes and turn lanes consistent with the arterial system assumed for each alternative.

### 2.4.3 Peak Hour Traffic Volumes at Intersections

Afternoon peak hour intersection turning movement volumes were estimated for the 10 "build" alternatives using the post-processing methodology previously described.

# 2.4.4 Peak Hour Levels of Service at Intersections

The future intersection LOS analysis was performed using the Highway Capacity Manual (HCM) methodology, implemented using the TRAFFIX analysis software using the same assumptions applied in the Existing and Future Baseline Conditions analysis (consistent with the San Bernardino County Congestion Management Program).

**Table 2-3** summarizes analysis results of the study intersections under each of the 10 "build" alternatives. **Table 2-4** provides a level of service comparison between the 10 alternatives for the study intersections. As shown in the table, the number of intersections operating at unacceptable levels of service (E or F) is larger in the Year 2035 scenarios that don't include all three new corridors (Alternatives 4, 5, and 8), and is substantially larger in the two buildout alternatives, Alternatives 9 and 10. **Figures 2-16** through **2-25**, previously referenced, present the levels of service at the study intersections for each future alternative. TRAFFIX analysis worksheets are provided in **Appendix I**.

Table 2-3 - Summary of Intersection Operations for 2035 and Buildout Future Alternatives PM Peak Hour

Int.#	Intersection	Control	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7	Alternative 8	Alternative 9	Alternative 10
			LOS									
1	Koala Rd at Air Expressway	S	С	C	C	С	В	A	A	A	С	A
2	Bellflower St at Air Expressway	S	С	С	С	С	С	С	С	С	С	С
3	US 395 at Air Expressway	S	Е	E	D	E	E	D	D	C	F	C
4	Koala Rd at El Mirage	S	С	C	С	C	D	C	C	C	D	C
5	US 395 at El Mirage	S	С	C	С	В	C	В	С	C	C	F
6	Bellflower St at Mojave Dr	S	С	C	C	C	C	C	C	C	C	D
7	Aster at Palmdale Rd	S	A	A	A	A	A	A	A	A	A	A
8	Bellflower St at Palmdale Rd	S	В	В	В	В	C	В	В	В	D	E
9	US 395 at Palmdale Rd	S	D	D	E	D	E	D	E	F	F	F
10	Koala Rd at Rancho Rd	S	С	C	C	C	D	C	C	C	C	C
11	Bellflower St at Rancho Rd	S	C	C	C	C	C	C	C	D	C	D
12	US 395 at Rancho Rd	S	C	C	D	C	F	C	C	F	F	F
13	Apple Valley at Highway 18	S	E	E	D	E	E	E	D	D	F	F
14	Corwin Rd at Highway 18	S	В	В	C	В	В	В	C	В	C	C
15	Tao Rd at Highway 18	S	С	C	В	С	C	C	C	C	С	С
16	Rancherias Rd at Highway 18	S	D	D	D	D	D	D	D	D	Е	F
17	Kiowa Rd at Highway 18	S	С	C	C	C	C	C	C	C	C	C
18	Navajo Rd at Highway 18	S	С	C	C	C	C	C	C	C	C	C
19	Central Rd at Highway 18	S	С	С	C	С	C	С	С	С	C	С
20	Apple Valley Rd at Bear Valley Rd	S	С	С	С	С	С	С	С	С	D	D
21	Deep Creek Rd at Bear Valley Rd	S	В	В	В	В	В	В	D	Е	С	F
22	Kiowa Rd at Bear Valley Rd	S	С	С	С	С	С	С	С	С	D	С
23	Navajo Rd at Bear Valley Rd	S	С	С	С	D	D	С	С	D	D	D
24	Central Rd at Bear Valley Rd	S	C	C	C	D	D	D	C	С	Е	D
25	SH-18 at Bear Valley Cutoff	S	D	D	D	D	Е	D	D	D	Е	Е
26	Beekley Rd at SH-138	S	D	С	D	D	F	С	D	F	С	Е
27	Deep Creek Rd at Rock Springs Rd	S	В	В	В	В	В	В	В	В	В	В
28	Vista Rd at National Trails Hwy	S	C	C	C	C	C	C	C	C	C	C
29	US 395 at Phelan Rd	S	D	D	F	D	F	E	F	F	F	F
30	Sheep Creek Rd at SH-18	S	C	C	C	C	C	C	C	C	C	C
31	Summit Valley Rd at SH-138	S	В	A	C	A	A	C	C	A	D	В
32	Escondido at Main Street	S	C	C	C	E	C	C	C	E	F	F
33	Maple at Main Street	S	C	C	C	C	C	C	C	C	D	D
34	Cottonwood at Main Street	S	C	C	C	C	C	C	C	C	D	D
35	Seventh at Main Street	S	C	C	C	C	C	C	C	C	D	D
36	I Avenue at Main Street	S	C	C	C	C	C	C	C	C	D	E
37	7th Street at Bear Valley Rd	S	C	C	C	C	C	C	C	C	C	D
38	Hesperia Road at Bear Valley Rd	S	D	D	D	D	D	D	D	D	E	E
39	I Avenue at Bear Valley Rd	S	D	D	D	D	D	D	D	D	E	F
40	Mariposa Road at Ranchero Rd	S	C	E	C	F	F	C	D	F	F	F
41	US 395 at Eucalyptus St	S	C	C	C	C	E	В	В	C	E	F
41	US 395 at Eucalyptus St US 395 at Bear Valley Rd	S	D	D	D	D	D E	D D	E	E	E F	F F
43	US 395 at Bear Valley Rd US 395 at La Mesa Rd		C	C	C	C	C	C	C	C	F	F
43		S	C	C	D	C	D	C	D	D	F	F
45	US 395 at Mojave Dr			В	В	В	C	В	В	В	B B	B B
	US 395 at Hopland Rd	S	В	С	С		C	С	С	C	B F	B F
46	Amethyst Rd at Palmdale Rd	S	С	_		C						
47	Baldy Mesa Rd at Palmdale Rd	S	С	С	C	C	С	С	С	С	C	С
48	Mariposa Road at Bear Valley Rd	S	D	D	E	E	E	D	D	D	F	F
49	Amargosa Rd at Bear Valley Rd	S	F	F	F	F	F	Е	F	F	F	F
50	Baldy Mesa Rd at Bear Valley Rd	S	С	С	С	С	С	С	С	C	D	D
51	I-15 Ramps NB at SH-138	S	В	D	В	F	F	В	В	F	В	В

Int.#	Intersection	Control	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7	Alternative 8	Alternative 9	Alternative 10
1111. #	Intersection	Control	LOS									
52	I-15 Ramps SB at SH-138	S	A	A	A	A	A	A	A	A	A	A
53	I-15 Ramps NB at Ranchero Rd	S	С	F	C	F	F	В	C	F	F	F
54	I-15 Ramps SB at Ranchero Rd	S	В	С	В	C	C	С	С	C	D	D
55	I-15 Ramp SB at Main St	S	С	C	C	C	C	С	D	C	C	С
56	I-15 Ramp NB at Main St	S	A	A	A	A	В	A	A	A	В	В
57	I-15 Ramp SB at Mojave St	S	С	C	C	N/A	C	С	C	N/A	D	N/A
58	I-15 Ramp NB at Mojave St	S	С	C	C	N/A	C	В	В	N/A	D	N/A
59	I-15 Ramps NB at Eucalyptus St	S	С	В	В	В	В	В	В	В	В	В
60	I-15 Ramps SB at Eucalyptus St	S	С	C	В	C	В	В	В	В	C	С
61	I-15 Ramps NB at Bear Valley	S	В	В	D	E	D	С	D	E	F	F
62	I-15 Ramps SB at Bear Valley	S	В	В	В	В	В	В	В	В	В	В
63	I-15 Ramps NB at La Mesa-Nisqualli	S	С	C	C	C	C	С	C	C	F	F
64	I-15 Ramps SB at La Mesa-Nisqualli	S	С	C	C	C	C	С	C	C	D	D
65	I-15 Ramp NB at Palmdale	S	С	С	C	C	C	С	С	C	F	F
66	I-15 Ramps SB at Palmdale	S	В	В	В	В	В	В	В	В	В	В
67	I-15 Ramps NB at Roy Rogers	S	В	В	В	В	В	В	В	В	C	C
68	I-15 Ramps SB at Roy Rogers	S	В	В	В	В	A	В	В	A	В	В
69	I-15 Ramps NB at Mojave Dr	S	C	С	D	C	C	C	Е	D	F	F
70	I-15 Ramps SB at Mojave Dr	S	С	С	C	C	C	С	C	C	F	F
71	I-15 Ramps NB at D Street	S	С	С	C	C	C	C	C	C	C	С
72	I-15 Ramps SB at D Street	S	C	C	C	C	C	C	D	C	C	С

S = Signalized, U = Unsignalized

<sup>\*\*</sup>When the capacity has been reached or exceeded the delay equation grows exponentially, resulting in very high delays, which do not accurately represent the actual delay.

In some cases the range limits in the TRAFFIX program have been exceeded for the HCM Analysis, and no delay is provided, which results in LOS F. Intersection delay is expressed in average seconds of delay per vehicle during the peak hour.



 $\begin{tabular}{ll} Table 2-4-Intersection Level of Service Comparison for Alternatives $1-10$ \end{tabular}$ 

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7	Alternative 8	Alternative 9	Alternative 10
LOS A	3	4	3	4	4	4	4	6	2	3
LOS B	13	11	13	11	10	16	12	9	8	9
LOS C	44	43	40	36	35	40	37	33	22	18
LOS D	9	9	12	10	10	9	14	10	15	12
LOS E	2	3	2	5	6	3	3	4	6	5
LOS F	1	2	2	4	7	0	2	8	19	23
TOTAL	72	72	72	70	72	72	72	70	72	70



# 2.4.5 Usage of New Highways

**Table 2-5** summarizes the forecast volumes on the three proposed corridors at selected locations. All three corridors carry in excess of 70,000 vehicles per day in 2035 when assumed to be non-toll facilities. In the toll scenarios (Alternatives 3 and 7) the volumes are lower as many drivers elect to drive on non-tolled facilities with somewhat longer travel times. In the Buildout condition, all three corridors are projected to carry in excess of 90,000 vehicles per day.

Table 2-5 – Forecast Daily Volumes (in Thousands) on New Corridors

	HDC w/o Phantom W	HDC @ LA Co Line	Realigned US-395 n/o I-15	Realigned US- 395 n/o Mojave Dr.	SEB e/o I-15	SEB @ Mojave R.
Alt. 1	68	n/a	71	64	80	37
Alt. 2	73	61	76	82	60	38
Alt. 3	24	n/a	44	29	56	16
Alt. 4	67	n/a	68	62	n/a	n/a
Alt. 5	63	n/a	n/a	n/a	n/a	n/a
Alt. 6	75	93	94	96	80	n/a
Alt. 7	26	63	52	40	59	n/a
Alt. 8	26	n/a	n/a	n/a	n/a	n/a
Alt. 9	117	107	117	129	91	n/a
Alt. 10	111	94	n/a	n/a	n/a	n/a

# 2.4.6 Capital Costs of Improvements

Capital cost estimates were developed for each alternative by applying unit cost factors to lanemiles of improvement, or using project cost estimates available from the participating agencies where available. Table 2-6 summarizes the cost elements for each of the ten alternatives. Total costs range from \$2.8 billion (Alternative 8) to \$5.8 billion (Alternative 7, which is slightly higher than the other full-system "build" alternatives because it includes the cost of tolling equipment).



# **Table 2-6 – Capital Costs of Alternatives**

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Arterial Street System Construction	\$1,059,020,303	\$1,059,020,303	\$1,059,020,303	\$1,059,020,303	\$1,059,020,303
Arterial Street System ROW	\$419,372,040	\$419,372,040	\$419,372,040	\$419,372,040	\$419,372,040
New I-15 Interchanges, Overcrossings and Bridges Total Cost	\$629,000,000	\$629,000,000	\$629,000,000	\$392,000,000	\$629,000,000
New Corridor Interchanges	\$835,400,000	\$760,400,000	\$835,400,000	\$675,400,000	\$1,373,400,000
Realigned US-395 Construction	\$899,087,354	\$865,451,354	\$944,041,722	\$865,451,354	\$0
Realigned US-395 ROW	\$89,312,452	\$85,971,160	\$89,312,452	\$85,971,160	\$0
New HDC Construction	\$664,559,850	\$1,264,407,850	\$697,787,843	\$664,559,850	\$664,559,850
New HDC ROW	\$75,774,743	\$135,361,718	\$75,774,743	\$75,774,743	\$75,774,743
New SEB Construction	\$889,303,075	\$889,303,075	\$933,768,228	\$0	\$0
New SEB ROW	\$85,239,564	\$85,239,564	\$85,239,564	\$0	\$0
TOTAL	\$5,646,069,381	\$6,193,527,063	\$5,768,716,895	\$4,237,549,450	\$4,221,126,936

	Alternative 6	Alternative 7	Alternative 8	Alternative 9	Alternative 10
Arterial Street System Construction	\$1,070,294,246	\$1,070,294,246	\$1,070,294,246	\$1,072,810,606	\$1,070,294,246
Arterial Street System ROW	\$424,453,800	\$424,453,800	\$424,453,800	\$425,450,280	\$424,453,800
New I-15 Interchanges, Overcrossings and Bridges Total Cost	\$569,000,000	\$569,000,000	\$487,000,000	\$569,000,000	\$527,000,000
New Corridor Interchanges	\$710,400,000	\$685,400,000	\$115,400,000	\$760,400,000	\$115,400,000
Realigned US-395 Construction	\$899,087,354	\$944,041,722	\$0	\$865,451,354	\$0
Realigned US-395 ROW	\$89,312,452	\$89,312,452	\$0	\$85,971,134	\$0
New HDC Construction	\$1,264,407,850	\$1,327,628,242	\$664,559,850	\$1,264,407,850	\$1,264,407,850
New HDC ROW	\$135,361,718	\$135,361,718	\$75,774,743	\$135,361,682	\$211,136,443
New SEB Construction	\$489,811,900	\$514,302,495	\$0	\$489,811,900	\$0
New SEB ROW	\$45,555,379	\$45,555,379	\$0	\$45,554,784	\$0
TOTAL	\$5,697,684,698	\$5,805,350,054	\$2,837,482,639	\$5,714,219,589	\$3,612,692,339



### 2.4.7 Revenue from User Fees

Revenue estimates were prepared by Cambridge Systematics for the system alternatives that assume tolling on the three new corridors (Alternatives 3 and 7). The toll revenue evaluation methodology is described below in the section on funding options (3.4.2.1). The toll revenue potential for each corridor is as follows:

- High Desert Corridor: The initial tolling analysis estimated a maximum of \$366 million in capital could be leveraged from tolls.
- US-395: The initial tolling analysis estimated a maximum of \$229 million in capitalized funding could be leveraged from tolls.
- Southeast Beltway The initial tolling analysis estimated a maximum of \$204 million in capitalized funding could be leveraged from tolls.

#### 2.4.8 Environmental Factors

Environmental databases were reviewed and field checks were conducted to identify environmental factors that could inhibit or affect development of the alternative roadway improvements being studied in the ten alternatives. The first section summarizes the methods that were used to identify potential environmental issues, and the second section summarizes the results, identifying potential environmental constraints and the alternatives.

#### 2.4.8.1 Methods

# **Sensitive Species**

 An alternative was said to potentially impact sensitive species if improvements were to be constructed through areas of undeveloped desert.

# Wildlife Corridor

 A county designated wildlife corridor follows the area and path of the Mojave River. An alternative may potentially impact the Wildlife Corridor if a portion of improvements crossed the path of the River.

### Mojave River

The Mojave River transects the study area along the border between Victorville and Apple Valley. Potential impacts would exist along the Mojave River if a portion of the improvements crossed the path of the River.



# **Open Space**

• If improvements were to be constructed in an area designated by a zoning code or General Plan as Open Space, then potential impacts to open space could exist.

#### Relocation of Residences

• An alternative was said to potentially involve the relocation of residences if a portion of the improvements are within an area designated by a General Plan or Zoning Code to be residential.

#### **Relocation of Businesses**

An alternative was said to potentially involve the relocation of businesses if a
portion of the improvements are within an area designated by a General Plan or
Zoning Code to be commercial, industrial, or office.

# **Environmental Justice**

Areas of concern regarding environmental justice were considered if a portion of the improvements fell within a census tract that housed a larger concentration (based on percentages) of a minority group or population with income below the poverty line (1999) than the County of San Bernardino as a whole.

# **2.4.8.2** Findings

# **Constraints Common to All Alternatives**

- Sensitive species habitat may be present in the area of the I-15 interchange and overcrossing locations, and along the potential alignment of the High Desert Corridor.
- All Alternatives cross the Mojave River and a wildlife corridor, along the potential alignments for the High Desert Corridor.
- Designated open space is present in the area of the I-15 interchange and overcrossing locations as well as potential alignments of the High Desert Corridor.
- Residential and/or commercially zoned areas exist within the I-15 interchanges and overcrossings, and potential alignment of the High Desert Corridor. The construction of those improvements may lead to the relocation of residences and/or businesses. Some of these areas may involve environmental justice issues.

# Constraints Common to Alternatives 1-3, 6, 7, and 9

- Sensitive species habitat may be present along all potential alignments of the US-395 and the Southeastern Beltway.
- Residential and/or commercially zoned areas may exist within all of the potential alignments of US-395 and the Southeastern Beltway. Construction of those



improvements may lead to the relocation of residences and/or businesses. Environmental justice issues may come into play for the US-395 alignments.

#### Alternative 4

- Sensitive species habitat may be present along the US-395 alignment.
- Relocation of residences and/or businesses may be required. Environmental justice could be an issue.

# Alternative 5, 8, and 10

 The High Desert Corridor improvements may impact a designated wildlife corridor.

No fatal flaws were identified that would likely preclude development of any of the improvements under consideration in the ten alternatives.

# 2.5 Findings from the Alternatives Analysis

- Overall, the analysis results for the 10 alternatives show that the number of lanes in the
  master plan of streets is generally sufficient to accommodate Year 2035 volumes. In some
  less-developed areas (particularly some unincorporated areas) full development of arterial
  capacity per the master plan of streets may provide more capacity than is needed for 2035.
- Several interchanges on I-15 are projected to experience congestion in 2035 and Buildout.
  This indicates that it will be desirable to develop new interchanges and overcrossings at the
  locations evaluated in Alternative 6, and that design studies for these interchanges should
  evaluate capacity needs to accommodate the forecast volumes at these locations.
- In review of the alternative alignments studied for the Southeast Beltway, the preferred alignment is the one that goes through Summit Valley and connects with I-15 near the existing SR-138 interchange. This alignment carries a larger traffic volume and provides more congestion relief to arterial streets than the northerly alignment that connects with I-15 near Oak Hills.
- The Southeast Beltway is projected to carry substantial volumes to I-15, sufficient to justify development of a highway corridor. Demand is lower east of the Mojave River, so that development of a complete beltway connecting to the High Desert Corridor does not appear justified.
- If a realigned US-395 highway corridor is not developed, existing US-395 is projected to experience congestion in Year 2035 even if it is widened to six lanes as planned. In the Buildout scenario, the six-lane US-395 is projected to experience congestion comparable to the Year 2035 level even with a realigned US-395 highway corridor. This indicates that the realigned US-395 corridor will be an essential component of the future highway system.



- US-395 alternative alignments don't substantially affect the traffic volumes on the remainder
  of the roadway system, so the preferred alignment should be selected based on other factors
  to be evaluated in the corridor alignment studies.
- If tolls are collected on the new highway corridors, a percentage of traffic would be diverted to use non-tolled routes, but the forecast volumes on the new corridors would still be substantial.
- All three new corridors will be needed to provide sufficient capacity for the Buildout scenario, though the full beltway connection will not be essential in the area south of Apple Valley and east of Hesperia.



#### 3 DEVELOPMENT OF FINANCIALLY BALANCED PLAN

The objective of VVATS is to develop a financially constrained plan for the future roadway system, with the financial needs in balance with identified funding sources. This chapter presents a discussion of available funding sources for the roadway system, an evaluation of the system costs by component, and a comparison of the available funding sources with the types of improvements they can fund.

# 3.1 Funding Sources

# 3.1.1 Measure I – Local Streets and Roads and Major Local Highways

Measure I Funding for the Mountain/Desert Expenditure Plan is divided into three categories: Local Street Projects, Major Local Highway Projects, and Senior and Disabled Transit Service. For the Victor Valley Subarea Expenditure Plan, which is one of five subarea expenditure plans in the Mountain/Desert area, the forecast of approximately \$1.192 million in available funding was divided among the three categories as shown in **Table 3-1** below.

Table 3-1 – Measure I 2010-2040 Victor Valley Subarea Expenditure Plan (SCHEDULE E, updated to \$2007)

Project Category	Measure I Share	Total Amount (Millions)
Local Street Projects	70%	\$834
Major Local Highway Projects	25%	\$298
Senior and Disabled Transit Service	5%	\$60
Victor Valley Subarea Total Revenue	100%	\$1,192
Sources: SANBAG		

For the Local Street Project funds, this account is supplemented by State and Federal revenues and contributions from new development. **Table 3-2** shows these shares.



Table 3-2 – Measure I 2010-2040 Victor Valley Expenditure Plan Local Street Projects (updated to\$2007)

Project Category	Amount (Millions)
Local Street Projects Measure "I" Revenue	\$834
State and Federal Revenues	\$39
Contribution from New Development, Major Streets	\$281
Total Local Street Projects Revenues	\$1,154

For the Major Local Highway (MLH) funds, this account is supplemented by State and Federal revenues and contributions from new development. **Table 3-3** shows these shares

Table 3-3 – Measure I 2010-2040 Major Local Highway Projects

Project Category	Amount (Millions)
Major Local Highway Projects Measure "I" Revenue	\$298
State and Federal Revenues	\$112
Contribution from New Development, Freeway Interchanges	\$88
Total Major Local Highway Projects Revenues	\$498

It should be noted that to the Measure I Expenditure Plan indicates that the Major Local Highway (MLH) program will include contributions to specific projects and is not a commitment to full funding from the MLH program funds. Projects listed in the Expenditure Plan include, but are not limited to:

- 1. New Interchanges at I-15 and Ranchero, Eucalyptus, and La Mesa/Nisqualli
- 2. High Desert Corridor,
- 3. I-15 Widening through Victor Valley,
- 4. SR-138 Widening and Improvements,
- 5. US-395 Widening and Improvements



# 3.1.2 SANBAG Development Mitigation Program

The SANBAG Measure I 2010-2040 Ordinance requires all local jurisdictions in San Bernardino County, including the Victor Valley jurisdictions and their spheres of influence, to adopt, implement and maintain a development mitigation program that requires development to pay its fair share for needed transportation facilities. A Nexus Study was prepared by SANBAG to provide development mitigation fair share percentages for local jurisdictions in the San Bernardino Valley and Victor Valley on arterial, interchange and grade separation projects in the Victor Valley. All local jurisdictions have adopted and are currently implementing mitigation programs designed to collect the minimum development mitigation required. It is the responsibility of the local jurisdictions to establish the fee levels, collect the fees and to prioritize the expenditure of the fees on projects included in their programs.

# 3.1.3 Other Development Mitigation

Other development-based funding is derived from requirements of local jurisdictions for new development to fund (or construct) widening of arterials adjacent to their property. This requirement stems from Subdivision Ordinances of most jurisdictions and includes requirements to dedicate a curb lane, curb, gutter and sidewalk along all arterials abutting a new subdivision or commercial development. In addition, other developer mitigation funding may come from direct negotiations through a development agreement, mitigation required through CEQA, or local impact fee programs.

The requirements for widening of adjacent arterials vary by jurisdiction.

- Hesperia requires the developers to construct frontage improvements but they are given credit on the local DIF.
- Victorville reserves a portion of the DIF for interchanges, but the curb lane is assigned to the developer.
- Apple Valley developers are responsible for everything along their project frontage to the centerline. They may receive credit for improvements outside their frontage.

# 3.1.4 State and Federal

As presented above in the discussion of Measure I Local Street Projects and Major Local Highway Projects, State and Federal sources of funding can be expected to complement local revenues from Measure I and development fees. These funds consist of Proposition 42 funding from the State Transportation Improvement Program (STIP) funds and Federal Surface Transportation Program (STP) and Congestion Mitigation and Air Quality (CMAQ) revenues. As specified in the Measure I 2010-2040 Expenditure Plan, \$39 million of State and Federal



resources are anticipated to be available for Local Street projects (see Table 3.2) and \$112 million of State and Federal resources are anticipated to be available for MLH projects (see Table 3.3), for a total of \$151 million.

# 3.2 Funding Scenarios

For the purpose of identifying funding sources in relation to improvement costs, three infrastructure improvement scenarios (high, moderate, low) were developed for the Year 2035 roadway system including different assumptions for each scenario for corridors and interchanges/overcrossings. The assumptions for each improvement scenario are outlined below.

## 3.2.1 High End Improvement Scenario

The high end improvement scenario includes the following assumptions for corridors and interchanges/overcrossings:

- High Desert Corridor
  - Cost from LA County line to eastern terminus
  - Fully grade separated
  - Full freeway-to-freeway interchange at I-15
- US-395, realigned to the west of the current location (existing US-395 as a six-lane arterial)
  - Fully grade separated
  - Direct connector ramps at I-15
- Southeast Beltway
  - I-15 to east side of Mojave River
  - Fully grade separated
  - Direct connector ramps at I-15
- I-15 Interchanges and Overcrossings
  - I-15/Ranchero: new interchange
  - I-15/Muscatel: new interchange, Joshua overcrossing remains
  - I-15/Mojave: new interchange
  - I-15/Eucalyptus: new interchange
  - I-15/LaMesa/Nisqualli: new interchange

**Table 3-4** summarizes the costs for improvements assumed in this scenario, together with projected available funding by source. The high end scenario will cost approximately \$6.1 billion, but available funding totals only \$2.4 billion, leaving \$3.7 billion unfunded.



Table 3-4 – Summary of Costs and Hypothetical Funding Plan for High End Improvement Scenario

Year 2035 High End Improvement Scenario (millions of 2007 dollars)									
	Cost	DIF/ Developer Funded	Measure I	State/ Federal	Unfunded				
Arterial Streets	\$1,494	\$1,343	\$151	\$0	\$0				
Interchanges/Overcrossings	\$569	\$269	\$233	\$67	\$0				
I-15 Widening	\$400	\$0	\$119	\$28	\$253				
New Highway Corridors	\$3,634	\$0	\$98	\$56	\$3,480				
TOTAL	\$6,097	\$1,612	\$601	\$151	\$3,733				

# 3.2.2 Moderate Improvement Scenario

The moderate improvement scenario includes the following assumptions for corridors and interchanges/overcrossings:

- High Desert Corridor
  - Cost from LA County line to eastern terminus
  - Expressway with at-grade intersections
  - Conventional interchange at I-15 with loop ramps
- US-395 realigned to the west of the current location
  - Expressway with at-grade intersections
  - Direct connector ramps at I-15 (same as High-End Scenario)
- Southeast Beltway
  - I-15 to east side of Mojave River
  - Expressway with at-grade intersections
  - Direct connector ramps at I-15 (same as High-End Scenario)
- I-15 Interchanges and Overcrossings
  - I-15/Ranchero: new interchange
  - I-15/Muscatel: new interchange, Joshua overcrossing remains
  - I-15/Mojave: new interchange
  - I-15/Eucalyptus: new interchange
  - I-15/LaMesa/Nisqualli: new interchange



**Table 3-5** summarizes the costs for improvements assumed in the moderate scenario. The moderate scenario will cost approximately \$4.8 billion. In the moderate scenario the \$1.1 billion cost reduction is attributable to the new highway corridors being built initially as expressways with at-grade intersections. The cost reduction leaves an unfunded total of \$2.4 billion in the moderate improvement scenario.

Table 3-5 – Summary of Costs and Hypothetical Funding Plan for Moderate Improvement Scenario

Year 2035 Moderate Improvement Scenario (millions of 2007 dollars)								
	Cost	DIF/ Developer Funded	Measure I	State/ Federal	Unfunded			
Arterial Streets	\$1,494	\$1,343	\$151	\$0	\$0			
Interchanges/Overcrossings	\$569	\$269	\$233	\$67	\$0			
I-15 Widening	\$400	\$0	\$119	\$28	\$253			
New Highway Corridors	\$2,308	\$0	\$98	\$56	\$2,154			
TOTAL	\$4,771	\$1,612	\$601	\$151	\$2,407			

# 3.2.3 Low End Improvement Scenario

The low end improvement scenario includes the following assumptions for corridors and interchanges/overcrossings:

- High Desert Corridor
  - Cost from realigned US-395 to eastern terminus
  - Standard four-lane arterial with at-grade intersections
  - Conventional interchange at I-15
- US-395 realigned to the west of the current location
  - Standard four-lane arterial in the realigned US-395 alignment
- Southeast Beltway
  - Widen existing SR-138 and Summit Valley Road to 4 lanes
  - Improve I-15/SR-138 interchange
  - New 4-lane arterial to Mojave River, bridge across Mojave River
- I-15 Interchanges and Overcrossings
  - I-15/Ranchero: new interchange
  - I-15/Muscatel: new interchange, Joshua overcrossing remains
  - I-15/Mojave: new overcrossing only



- I-15/Eucalyptus: new interchange

- I-15/LaMesa/Nisqualli: new interchange

**Table 3-6** summarizes the costs for improvements assumed in the low end scenario. The low end scenario will cost approximately \$2.9 billion. In the low end scenario the three corridors are built initially as arterials, which could save \$2 billion compared when compared to full freeway construction. Even in the low end scenario there is an unfunded amount of over \$500 million.

Table 3-6 – Summary of Costs and Hypothetical Funding Plan for Low End Improvement Scenario

Year 2035 Low End Improvement Scenario (millions of 2007 dollars)								
	Cost	DIF/ Developer Funded	Measure I	State/ Federal	Unfunded			
Arterial Streets	\$1,494	\$1,343	\$151	\$0	\$0			
Interchanges/Overcrossings	\$527	\$269	\$191	\$67	\$0			
I-15 Widening	\$400	\$0	\$119	\$28	\$253			
New Highway Corridors	\$445	\$0	\$140	\$56	\$249			
TOTAL	\$2,866	\$1,612	\$601	\$151	\$502			

Detailed cost worksheets for each scenario are included in **Appendix J**.

## 3.3 Financial Constraints/Shortfalls

The preceding analysis indicates the substantial challenge required to develop a roadway plan for the Victor Valley that is both effective and financially viable. The alternatives analysis indicates that development of the full highway system is the most effective way to achieve level of service objectives, yet the high level of investment required would result in a funding shortfall of \$3.7 billion. Even if the level of investment in the new corridors is scaled back substantially, there is a funding shortfall of over \$500 million.

Clearly, current funding sources will not be sufficient to achieve a future roadway system that provides acceptable levels of service. To achieve an effective and financially viable plan, it is necessary to carefully evaluate the roadway capacity needs and to identify additional sources of funding for those improvements that are essential for the Valley to maintain an effective roadway circulation system.



# 3.4 Possible Solutions to Funding Shortfall

Possible ways to address the imbalance between infrastructure needs and funding include: eliminating non-essential roadway improvements, accepting a lower level of service with attendant congestion, and identifying new sources of funding. Acceptance of lower service levels was not deemed an appropriate way to resolve the issue, so the study focused its attention on eliminating unnecessary roadway capacity and identifying new funding sources.

## 3.4.1 Roadway Improvement Reductions

Since the new highway corridors represent such a large component of the unfunded system, a detailed evaluation was conducted of the need for the Southeast Beltway and the realignment of the realigned US-395 corridor by the year 2035. If arterial streets on the master plan could accommodate the demand in that timeframe, the high cost of corridor construction could be delayed until a later time. In addition, arterials in less-developed areas with excess capacity were identified, so that expansion of some arterials could be delayed beyond 2035.

## 3.4.1.1 Southeast Beltway Corridor (Year 2035)

SR-138 west of Summit Valley Road: For the alternatives without a Southeast Beltway (SEB), the highest PM peak hour volume eastbound (EB) on SR-138 is 2000 (in Alternative 8). Given that there will be virtually no development or cross-traffic along this segment of SR-138, the arterial that has been designed by Caltrans (two lanes each direction) should function with the capacity of an expressway, and would be able to accommodate the PM peak hour EB demand of 2000 vehicles/lane/hour in 2035.

<u>SR-138 east of Summit Valley Road</u>: Without a SE Beltway, peak hour EB volumes are forecast in the range of 1500-1600. An arterial with two lanes in each direction would accommodate that volume.

<u>Summit Valley Road</u>: Without a SE Beltway, forecast EB peak hour volumes on Summit Valley Road range from 300 to 450, so it could handle the demand with just one lane in each direction. Given that the Rancho Las Flores and SunCal projects will utilize this road, and it may attract through traffic that wishes to avoid Ranchero Road and Main Street, it is recommended that it be built with two lanes in each direction by 2035.

<u>Mojave River crossings</u>: The two southerly crossings of the Mojave River (Rock Springs and Ranchero Road have a maximum EB peak hour volume of 1350 (in Alternative 6 with SEB), with less (750-950) in the alternatives without a SE Beltway (5 and 8). Two arterial lanes in each direction will handle this volume in 2035.



If all three planned crossings south of Bear Valley Road are considered, the EB PM peak hour volume is 2050 in Alternative 6 and 1450-1800 in Alternatives 5 and 8. This volume could be accommodated in three lanes of arterial capacity in each direction.

It is therefore recommended that by 2035 two of the three planned bridges south of Bear Valley Road should be built. Since the Lemon Street crossing will more effectively relieve Bear Valley Road, it is recommended that the Lemon Street and Rock Springs Road bridges be built, and the most southerly crossing (Ranchero Road or SEB) be deferred beyond 2035.

Ranchero Road: If the SEB is not built in 2035, Ranchero Road will attract significantly more traffic than if it is built: EB Ranchero carries 450 vehicles in the PM peak hour in 2035 with the Beltway (Alternative 6), and 1350-1650 without the Beltway (Alternatives 5 and 8). With two arterial lanes each direction, Ranchero would be running close to capacity in 2035 if a Beltway hasn't been built. This indicates that, without a SE Beltway, Ranchero Road should be built to its planned capacity of three lanes each direction by 2035.

Other east-west streets: Although the bulk of the SEB volume shifts to SR-138 and Ranchero Road if the Beltway is not built, a few hundred PM peak hour vehicles are also added to each of the other E-W streets north of Ranchero, as far north as Bear Valley Road. In 2035 there is sufficient capacity on these east-west arterials to accommodate the additional traffic.

<u>Conclusions</u>: The Southeast Beltway will not be needed by 2035 if the following improvements are made:

- SR-138 is straightened and widened to four lanes from I-15 to Rancho Las Flores.
- The Lemon Street and Rock Springs Road bridges across the Mojave River are built.
- Ranchero Road is built to six lanes.
- Other east-west arterials south of Bear Valley Road are built to their planned capacity.

# 3.4.1.2 Southeast Beltway Corridor (Buildout)

SR-138 west of Summit Valley Road: The EB PM peak hour demand in this corridor is 3250 without the SE Beltway (Alternative 10) and 5300 with it (Alternative 9). There is potential for an additional 2000-2500 EB trips on the corridor (trips that the model shows approaching the Victor Valley from the basin on mountain roads due to high congestion levels forecast on I-15). That means a Buildout peak hour demand in the SR-138 corridor that could be as high as 5250-7800 vehicles, which would require 3 or 4 freeway lanes.

However, it may not be possible for that much traffic to actually use the SR-138 Corridor, since the volume of traffic able to access the SE Beltway would be constrained by the capacity of I-15 coming up through the Cajon Pass. The model shows that as much as 25-30% of the forecast



volume on I-15 would turn east into the SR-138 corridor. Assuming that I-15 is widened to 6 lanes in the peak direction, it could carry as many as 13,200 vehicles NB in the peak hour, and the volume turning east into the SR-138 corridor would be 3300-3900 vehicles, which could be accommodated by three expressway lanes or two freeway lanes.

Because Buildout conditions have potential for freeway-level demands, it is recommended that a corridor be preserved for an ultimate Southeast Beltway limited access highway facility of 2-3 lanes each direction from I-15 to Summit Valley Road.

<u>SR-138</u> east of <u>Summit Valley Road</u>: EB PM peak hour demand ranges from 1800 with the corridor (Alternative 9) to 2300 without (Alternative 10), which is 2-3 lanes of arterial capacity. The potential additional demand referred to in the SE Beltway discussion would also affect this portion of SR-138, so this street should be planned as a six lane arterial at buildout (as it is currently planned).

<u>Summit Valley Road</u>: Buildout volumes forecast on Summit Valley Road are approximately half the volumes on SR-138 east of Summit Valley. The forecast peak hour EB volume is 950 without a SE Beltway. So, even if additional traffic is attracted to this route to avoid Ranchero Road and Main Street, a four-lane arterial should be adequate to accommodate Buildout volumes on Summit Valley Road.

Mojave River crossings: Forecast EB peak hour volumes at Buildout are 1350-1450 at Lemon Street, 900-950 at Rock Springs Road, and 1100-1600 at Ranchero Road. The demand forecasts do not justify new crossings for both Ranchero Road and the SE Beltway, and the potential Beltway crossing location appears to be more implementable due to a narrower width of the Mojave River in that area. Therefore the recommended long-range plan for river crossings south of Bear Valley Road is four-lane bridges at Lemon Street, Rock Springs Road, and the Southeast Beltway.

Conclusions: The recommendations for Buildout include:

- Preserve right-of-way to build a four-lane or six-lane limited access highway (Southeast Beltway) from I-15 to Summit Valley Road
- Widen SR-138 to six lanes between Summit Valley Road and Rancho Las Flores.
- Provide four lanes on Summit Valley Road.
- Provide four-lane bridges across the Mojave River at Lemon Street, Rock Springs Road, and the Southeast Beltway



## 3.4.1.3 US-395 Corridor (Year 2035)

If the realigned US-395 corridor is not built by 2035, the roadway segments forecasted to exceed capacity include most of the existing US-395 between Phelan Road and Bear Valley Road.

In alternatives without a realigned US-395 corridor (Alternatives 5 and 8), NB US-395 is projected to carry about 2800 PM peak hour vehicles in the segment north of Phelan Road. This is at the high end of capacity for a typical arterial with three lanes in each direction, which is what is planned for US-395 in this area. If additional turn-lane capacity is provided at key intersections, the planned six-lane arterial should be able to accommodate the forecast Year 2035 volumes. In fact, the intersection forecast for US-395/Phelan Road shows LOS D can be achieved in 2035 with intersection widening to provide dual left turn lanes all directions and a westbound right turn lane.

NB PM peak hour volumes exiting I-15 onto US-395 range from 1200-1600. Although the single-lane ramps to/from I-15 could probably accommodate these volumes if traffic operated in a free-flow manner, the NB traffic will be controlled by the nearby signalized intersection and Joshua Lane and the SB traffic may be metered as it enters I-15. The interchange of I-15 and US-395 should be improved by 2035 to handle the traffic volumes to/from this six-lane arterial street.

To maximize the capacity on existing US-395 the Cities of Adelanto, Hesperia and Victorville need to manage access to the highway and signal spacing. A memorandum of understanding (MOU) regarding the existing US-395 among Adelanto, Hesperia, Victorville, San Bernardino County, SANBAG and Caltrans became effective on October 18,2002. The MOU established US-395 in the local agency general plans as a 6-lane conventional highway with the minimum right-of-way width as 130-feet. Typical cross sections for segments and signalized intersections are included in the MOU. Development projects adjacent to or with significant impacts to US-395 are required to submit a traffic report to the Caltrans District 8 Intergovernmental Review California Environmental Quality Act (ICR/CEQA). Projects subject to the IGR/CEQA review process are required to reasonably mitigate impacts.

While the MOU provides a typical cross section for US-395, the MOU deals with neither turn lane requirements at intersections nor access control and signal spacing. The MOU should be amended to identify specific turn lane requirements at intersections, define access control, and specify minimum signal spacing if a realigned US-395 is to not be built until after 2035.

<u>Conclusions</u>: The realigned US-395 Corridor will not be needed by 2035 if the following improvements are made:

• The existing US-395 is widened to six lanes as planned.



- Arterial intersections along existing US-395 (particularly at Phelan Road) are widened to provide dual left turn lanes, plus separate right turn lanes where demand justifies
- Access controls are implemented, and signal spacing of at least ½ mile.
- The High Desert Corridor is constructed from US-395 to I-15. The HDC will provide a truck bypass to existing US-395.

## 3.4.1.4 US-395 Corridor (Buildout)

In the Buildout scenario forecasts, existing US-395 operates at capacity with a PM peak hour NB volume around 2800 and the proposed realigned US-395 corridor carries 5700. In the Buildout scenario there is clearly a need for the realigned corridor, though the system can function effectively in 2035 without it.

**Conclusions**: The recommendations for Buildout include:

- Construct a six-lane limited access highway around the western side of the Victor Valley.
   Alignment studies will need to be completed to identify the most appropriate location for the corridor.
- When the future alignment is identified, begin preservation of right-of-way for that corridor.
   The right-of-way preservation process identified in Chapter 5 will need to be implemented with a detailed right-of-way preservation plan focused on US-395 immediately upon completion of the environmental process by Caltrans.

# 3.4.1.5 Other Roadways

The High Desert Corridor should be developed by the Year 2035, desirably from existing US-395 to Dale Evans Parkway. If necessary to reduce costs, the HDC could be initially developed as an expressway between existing US-395 and I-15. Completion of Phase 1a of the High Desert Corridor between I-15 and Phantom East would essentially accomplish this, with some additional widening required along Air Expressway west of SCLA.

Roadway improvements that could be deferred until after 2035 include widening of the following segments:

- Central Road: Stoddard Wells Road to Round Up Way
- Happy Trails Highway: Corwin Road to Bear Valley Cutoff
- Joshua Road: Waalew Road to Tussing Ranch Road
- Navajo Road (Cholla Road): Thunderbird Road to Round Up Way
- Stoddard Wells Road: Happy Trails Highway to Sorrel Trail



# 3.4.2 Additional Funding Sources

Three funding sources have been evaluated as possible ways to address the funding shortfalls. These sources involve tolling on the new highway corridors, an increase in the Measure I sales tax dedicated to transportation, and additional developer mitigation fees. These sources represent the most plausible sources, since they essentially fall within the decision-making authority of local elected officials and voters. However, tolling would require state legislative approval, an additional sales tax would require voter approval, and a more aggressive development mitigation program than is already adopted by the five local jurisdictions would be required to increase funds from development mitigation. These three potential new sources are described in more detail in the following subsections.

# 3.4.2.1 Tolling Revenue

During the analysis of alternatives, the consultant team evaluated tolling on the three new corridors: Realigned US-395, Southeast Beltway, and the High Desert Corridor. An initial tolling analyses of all three facilities determined that all three facilities could accommodate tolling, but their potential revenue generation would vary significantly and none of them would generate sufficient toll revenues to fund more than one-quarter of their capital cost. A brief explanation of the assumptions follows:

- 1. Gross Toll Revenues (1989 dollars) for 2030 were calculated from travel demand model results. The model results were for the PM period.
- 2. A factor of 3.5 was applied to convert to daily volumes and 320 to convert to annual volumes.
- 3. To estimate revenues over the bonding period, it was assumed that traffic will increase at 4 percent per year from opening year through 2030, and at 2 percent thereafter. Opening year was assumed to be 2015.
- 4. Gross toll revenue in 1989 dollars were converted to nominal dollars assuming a 3 percent inflation factor after 2006; actual inflation from 1989 through 2006 was based on Bureau of Labor Statistics data on CPI (which averages about 2.9 percent per year over that period).
- 5. Gross toll revenues (nominal dollars) were adjusted to account for:
  - a. Toll evasion (5 percent);
  - b. O&M costs (20 percent of total revenues) as a conservative (high) estimate and based on other projects.
- 6. Annual debt service was calculated assuming a debt service coverage ratio of 1.75.
- 7. Bonds will be issued at the beginning of construction (in 2012) and that construction will be completed within three years.
- 8. Only interest payments will be made over the construction period.



- 9. Annual debt service payments were discounted to 2006 dollars using the bond interest rate (5.4 percent), and added to estimate the par amount.
- 10. The toll contribution for construction was calculated by adjusting the par amount to account for reserve funds (10 percent), capitalized interests, and expenses related to bond issuance (underwriting, etc.).

The financial capacity framework is based on traditional municipal bond financing. A public-private partnership (PPP) or concession could probably yield higher capacity and should be further evaluated to determine if they are appropriate for these new corridors and if they are financially viable. Each of the individual projects will need to further analyze the potential toll strategies should this be a source of funding that is pursued for the project.

The tolling parameters are as follows:

- Toll levels equivalent to the per-mile toll rate on the SR-241 in Orange County. Total toll amounts are \$2.65 (2006 dollars converted from \$1.63 in \$1989).
- 22 cents per mile in current dollars (13 cents per mile in 1989 dollars).
- The tolls are coded to be accurate for both short distance and long distance users.
- Each mainline link either before or after an interchange coded with a factional full toll
- Electronic (or manual) toll booths will calculate the distance each vehicle has traveled on the tolled facility.
- Single toll for all vehicles; no difference for toll rate for trucks

The initial tolling analyses of all three facilities used these assumptions and parameters to forecast the maximum amount of capitalized cost that could be leveraged using toll revenues. The estimates for the three facilities are as follows:

- High Desert Corridor: The initial tolling analysis estimated a maximum of \$366 million in capital could be leveraged from tolls. When the HDC is assumed to be shortened (existing US-395 to Dale Evans Parkway) this estimate is reduced to \$121 million, or one-third the maximum amount.
- US-395: The initial tolling analysis estimated a maximum of \$229 million in capitalized funding could be leveraged from tolls.
- Southeast Beltway: The initial tolling analysis estimated a maximum of \$204 million in capitalized funding could be leveraged from tolls.

#### 3.4.2.2 Additional Measure I Sales Tax

With voter approval, the local option transportation sales tax in San Bernardino County, Measure I, could be modified to increase the funding dedicated to transportation improvements. Such a supplemental tax would not require the State Legislature to enact legislation authorizing an



increase in the State Constitution ceiling of 8.9 percent, but it would need to be enacted on a countywide basis. Individual cities within the Victor Valley subarea could approve a local option transportation sales tax ordinance for transportation improvements. It has been estimated that a ½ cent increase in the sales tax could generate capital funding of approximately \$545 million for the Victor Valley over 15 years.. For purposes of the financial analysis contained in this report, any supplemental transportation sales tax measure has been assumed to fund regional transportation projects. Currently 70% of Measure I 2010-2040 flows directly to the local jurisdictions for expenditure on projects based on local prioritization.

# 3.4.2.3 Additional Development Mitigation Fees

Additional funding could come from new development mitigation fees assessed in the Victor Valley jurisdictions. This is a logical source as it is the new development that generates the need for the transportation infrastructure examined in this report. However, additional fees on development can impact housing affordability, and substantial increases in development impact fees or other forms of development mitigation are politically difficult. The current development mitigation requirements are sufficiently conservative to allow a legal basis for additional impact fees, assessment districts, or CEQA mitigation. The effects of any of these additional funding requirements on the pace of new development is difficult to predict and highly dependent on market conditions.

Ensuring adequate levels of funding from new development is a significant challenge facing the Victor Valley, and this problem is one that all rapidly growing areas of California face. State and federal sources of transportation revenue are unlikely to be sufficiently increased for some time, which would be required to provide the share of funding these revenue sources historically did. If or when state and federal sources become available, the needs of rapidly growing areas will have to compete with urbanized areas where transportation infrastructure requires significant attention. In addition, the competition for funding is not simply a rural-urban issue. Statewide there are a number of rapidly urbanizing areas that will inevitably be competing against each other for scarce state and federal resources.

Thus, the funding for future transportation infrastructure for the Victor Valley is at a crossroads, and a brief summary of the experience of other rapidly growing areas may help policy makers and stakeholders see their choices more clearly. The experience of other rapidly growing areas may be laid out on a continuum, albeit rather simplistically: at one end are communities that require new development to fund all of the infrastructure needed to maintain the current conditions (or level-of-service) and were prepared to accept lower growth as a consequence of imposing this cost. At the other end are communities that required very little of new development either because they had ample capacity on their existing transportation infrastructure or because they were anxious about discouraging growth and its boost to their economic development. While



every example has special circumstances and may not present a clear case for success or failure, the collective experience seems to show two consistent outcomes:

- The communities that have required aggressive funding of additional transportation infrastructure have held on to or even improved their economic competitiveness over the long term. This seems to be so because the most critical advantage to economic growth involved good access to labor, customers and suppliers, which can be had by building enough capacity to minimize congestion. This advantage is often in tension with the strategy of keeping burdens on new development low; such as taxes, regulations, and development mitigation requirements. The states of Washington, Oregon, Wisconsin, and Florida, for example, have had or are beginning to implement policies to require funding of new capacity (a.k.a. Concurrency). The practice is far more prevalent at the regional and local level in individual communities, including areas closer to Victor Valley such as Santa Clarita, Pasadena, Burbank, and Long Beach, as well as Orange County and northern San Diego County. While nowhere perfect, these states and communities have less congestion and more economic growth than those at the other end of the spectrum.
- Communities at the other end of the spectrum have experienced rapid growth and economic development, but the latter has often not been sustained over the long term. The reasons for this are varied and often tied to business cycles. Nevertheless, some have seen a high correlation between increasing congestion and more erratic economic growth. States such as Nevada, Arizona, Georgia, and Texas provide examples. Areas closer to the Victor Valley also provide some noteworthy experience. Fresno and Riverside, for example, have changed their mitigation requirements from laissez-faire to requiring new development to maintain levels-of-service (i.e., concurrency). While these transitions are recent, the evidence suggests that these areas have not seen significant downturns in their economic growth since imposing more aggressive funding requirements of new development.

Several different approaches to providing additional development mitigation fees for the Victor Valley could be pursued. Ultimately, the Victor Valley as a whole or jurisdiction by jurisdiction will need to identify a particular approach should additional development mitigation fees be used to supplement the traditional revenue sources. In addition, should fees be adopted for freeway mainline or state highway improvements, such as the High Desert Corridor, Interstate 15, US-395 or the Southeast Beltway, this would be a radical change from the current fee programs implemented in the Victor Valley and throughout the State of California.

## 3.5 Selected Options for a Fundable System

Two supplemental funding options have been identified for the recommended system based on the discussion in Section 3.4.1 and the project's Technical Advisory Committee. The only differences between the two options are the type and extent of construction of the High Desert Corridor by Year 2035. Option 1 includes a fully grade separated facility from existing US-395



to Dale Evans Parkway. Option 2 includes an at-grade expressway with an arterial-type interchange at I-15.

A funding plan was identified for each system option, so that the infrastructure costs are fully covered by the proposed funding sources. Funding for Option 1 includes existing sources, as well as tolling of the High Desert Corridor, an increased sales tax, and an increased development impact fee for transportation. Funding for Option 2 includes existing sources, as well as tolling on the High Desert Corridor, and either an increased sales tax or an increased development impact fee. The costs and funding sources for each funding option are summarized below.

# 3.5.1 Option 1 (HDC as a freeway)

- New Corridor Infrastructure
  - High Desert Corridor: full grade separated 6-lane highway from existing US-395 to Dale Evans Parkway; full interchange at I-15; ROW preservation
  - High Desert Corridor west of US-395 assumed to be 100% toll funded. No costs or revenue are assigned to the HDC west of existing US-395
  - Realigned US-395: ROW preservation
  - Southeast Beltway: ROW preservation (I-15 to Summit Valley Road)
- Additional Funding Sources
  - Tolls on High Desert Corridor
  - Additional ½ cent sales tax starting in 2025
  - Additional development fee (\$800/DU)

Table 3-7 – Costs and Funding Sources: Option 1 (HDC as a freeway, \$2007 in millions)

New funding sources: ½ cent sales tax + \$800/DU DIF + tolls

	DIF/ Develop	er	Meası	Measure		e/ <b>I</b>	New sal tax + toll Dev. fe	ls +	Total		
Arterials	\$1,192	M	\$145	M	\$0	M	\$0	M	\$1,337	M	
Interchanges/ Overcrossings	\$269	M	\$238	M	\$67	M	\$0	M	\$574	M	
I-15 Widening	\$0	M	\$47	M	\$28	M	\$325	M	\$400	M	
New Highways	\$0	M	\$120	M	\$56	M	\$770	M	\$946	M	
TOTAL	\$1,461	M	\$550	M	\$151	M	\$1,095	M	\$3,257	M	



**Table 3-7** summarizes the costs and funding sources for Option 1. The total cost for Recommended Plan Option 1 would be \$3.3 billion (2007 dollars), and would be funded with tolls on the High Desert Corridor, the additional  $\frac{1}{2}$  cent sales tax and the additional development fee of \$800/DU.

## 3.5.2 Option 2a (HDC as an expressway)

- New Corridor Infrastructure
  - High Desert Corridor: 4-lane expressway from existing US-395 to I-15; arterial-type interchange at I-15; ROW preservation
  - High Desert Corridor west of US-395 assumed to be 100% toll funded. No costs or revenue are assigned to the HDC west of existing US-395.
  - Realigned US-395: ROW preservation
  - Southeast Beltway: ROW preservation (I-15 to Summit Valley Road)
- Additional Funding Sources
  - Tolls on High Desert Corridor
  - Additional ½ cent sales tax starting in 2025

Table 3-8 – Costs and Funding Sources: Option 2a (HDC as an expressway, \$2007 in millions)

New funding sources: ½ cent sales tax + tolls

	DIF/ Develop	er	Measure		State Fed		New sa tax + t + Dev.	olls	Total		
Arterials	\$1,192	M	\$145	M	\$0	M	\$0	M	\$1,337	M	
Interchanges/ Overcrossings	\$269	M	\$238	M	\$67	M	\$0	M	\$574	M	
I-15 Widening	\$0	M	\$47	M	\$28	M	\$325	M	\$400	M	
New Highways	\$0	M	\$120	M	\$56	M	\$238	M	\$414	M	
TOTAL	\$1,461	M	\$550	M	\$151	M	\$563	M	\$2,725	M	

**Table 3-8** summarizes the costs and funding sources for Option 2a. The total cost for Recommended Plan Option 2a will be \$2.7 billion which will be fully funded with tolls on the High Desert Corridor and the additional ½ cent sales tax.



# 3.5.3 Option 2b (HDC as an expressway)

- New Corridor Infrastructure
  - High Desert Corridor: 4-lane expressway from existing US-395 to I-15; arterial-type interchange at I-15; ROW preservation
  - High Desert Corridor west of US-395 assumed to be 100% toll funded. No costs or revenue are assigned to the HDC west of existing US-395.
  - Realigned US-395: ROW preservation
  - Southeast Beltway: ROW preservation (I-15 to Summit Valley Road)
- Additional Funding Sources
  - Tolls on High Desert Corridor
  - Additional \$4000/DU development fee

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# Table 3-9 - Costs and Funding Sources: Option 2b

(HDC as expressway, \$2007 in millions)

New funding sources: \$4000/DU development fee + tolls

	DIF/ Developer Measure		State Fed		New sa tax + tol Dev. fo	ls +	Total			
Arterials	\$1,192	M	\$145	M	\$0	M	\$0	M	\$1,337	M
Interchanges/ Overcrossings	\$269	M	\$238	M	\$67	M	\$0	M	\$574	M
I-15 Widening	\$0	M	\$47	M	\$28	M	\$325	M	\$400	M
New Highways	\$0	M	\$120	M	\$56	M	\$238	M	\$414	M
TOTAL	\$1,461	M	\$550	M	\$151	M	\$563	M	\$2,725	M

**Table 3-9** summarizes the costs and funding sources for Option 2B. The total cost for the Recommended Plan Option 2B will be \$2.7 billion, which will be fully funded with the tolls on the High Desert Corridor and the additional \$4000/DU development fee. If it is possible to obtain additional state and federal funds for the system, the development feed could be reduced by \$500/DU for each \$65 million of additional state/federal funds obtained.



#### 4 RECOMMENDED PLAN

The analyses presented in the previous chapter were used to develop two roadway plans for the Victor Valley: a Year 2035 plan and a General Plan Buildout. The 2035 plan was designed to satisfy the level of service objectives with projected 2035 levels of development using funding from current sources to the greatest extent possible. The Buildout plan was designed to satisfy the level of service objectives with full buildout of the Victor Valley as envisioned in the General Plans of the four incorporated areas and the County of San Bernardino.

## 4.1 Year 2035 Recommendations

The shortfall in available funding compared to the capital costs of the high-level scenarios that include all three new transportation corridors made it clear that the recommended Year 2035 system would not be able to include full development of the new corridors. The system would need to be scaled back to a capacity level consistent with the Year 2035 travel demands. This was accomplished by enhancing capacity in areas projected to experience congestion in Alternative 8 (2035 Low-End Alternative), and reducing the number of lanes planned on arterial streets in the outlying unincorporated portions of the Victor Valley where the traffic forecast showed that the number of lanes could be reduced without creating congestion.

The recommended roadway system plan for Year 2035 is shown in **Figure 4-1**. It includes the following elements:

- Increased capacity on I-15 consistent with the adopted locally preferred strategy (LPS) for the I-15 corridor (one additional general purpose lane plus one high occupancy vehicle lane in each direction from US-395 to the High Desert Corridor, and two reversible managed lanes from US-395 to SR-210).
- Construct the High Desert Corridor as a limited access highway from US-395 to Dale Evans Parkway, and as an expressway from Dale Evans Parkway to SR-18.
- US-395 is developed as a high capacity six-lane arterial, with limited driveway access and enhanced intersection capacity at major intersections including dual left turn lanes and in some locations separate right turn lanes.
- SR-138 between I-15 and Summit Valley Road will need to be widened to four lanes and realigned to a higher design speed and capacity.
- New freeway interchanges constructed on I-15 at the locations shown on Figure 4-1.
- Arterial streets developed with the number of lanes indicated in Figure 4-1, including new bridges across the Mojave River (at Yucca Loma Road, Lemon Street/Tussing Ranch Road, and Rock Springs Road) and new grade-separated crossings of the BNSF rail line.

Following the identification of the Recommended Plan, a final model run was performed.. Prior to conducting the final model run, the following changes were made to the VVATS model:



- Modified socio-economic data for traffic analysis zones in the Helendale area and in the
  Apple Valley sphere of influence near SR-18, based on input from the County of San
  Bernardino Planning Department. Generally, residential development was increased in
  these areas based on development application activity. Slight reductions were made in
  other unincorporated areas to maintain the same control totals.
- Added improvements to I-15
  - Added one General Purpose lane + 1 HOV lane in each direction from US-395 to
     Mojave River (total of 4 mixed flow lanes + 1 HOV lane each direction)
  - Added two reversible lanes from US-395 to SR-210 (southbound in the AM peak, northbound in the PM peak)
- Reflected the recommended 2035 roadway system, specifically including the following:
  - Reduced the number of lanes on streets identified as not needing the full buildout number of lanes
  - No realigned US-395
  - o No SE Beltway, but a four-lane SR-138 from I-15 to Rancho Las Flores
  - High Desert Corridor coded as freeway from US-395 to Dale Evans Pkwy and as an expressway from Dale Evans Pkwy. To SR-18.
  - o Adjusted the High Desert Corridor alignment to reflect the most recent version
  - Coded four lanes on SR-18 through Apple Valley
  - Recoded arterials in Rancho Las Flores area to better reflect the planned roadway system
- Recoded Village Drive as a secondary arterial; verifying that the model network reflects the Victorville street plan in area around Village Drive
- Added heavy duty truck trips to/from SCLA that are not reflected in the model's trip generation
- Added lanes to SR-14 to reflect current long-range plan
- Ensured proper coding of the High Desert Corridor connection to existing US-395
- Coded all arterials within City limits as urban

The final model run includes all of the changes and updates recommended by the technical advisory committee. Forecast Average Daily Traffic volumes at key locations for the recommended system are shown in **Figure 4-2** for Year 2035. All of the traffic volumes in Figure 4-2 have been post-processed. The model's forecasts of the 2035 Recommended Plan daily traffic volumes for the entire Victor Valley area (not post-processed) are provided in **Appendix M**.

**Figure 4-3** shows the roadway segments projected to experience PM peak period congestion in Year 2035 with the recommended plan. With the recommended improvements, the only roadways projected to experience Levels of Service E or F are the highways through the Cajon



Pass area (I-15 and SR-138), as well as a few localized congestion hot spot locations, mostly through interchanges along I-15 and intersections on US-395. **Table 4-1** shows the projected intersection levels of service for 2035 with the recommended plan. TRAFFIX analysis worksheets for the study intersections are provided in **Appendix H.** 

The estimated construction cost of the recommended Year 2035 roadway system is approximately \$3.06 billion. **Table 4-2** shows the system construction costs in relation to funding sources anticipated to be available for the recommended system. The construction costs and revenues are expressed in 2007 dollars. Of the total system cost, approximately \$2.22 billion is projected to be available from current funding sources including development fees, Measure I 2010-2040, and state and federal sources.

The funding sources anticipated to be available through 2035 represent 72.5% of the total system cost, approximately \$800 million less than the \$3.06 billion needed. The recommended system is has been derived by substantially cutting back on what was originally conceived as a more robust transportation network. The recommended system meets the anticipated 2035 needs, with the exception of a few "hot spot" locations mainly at interchanges along I-15, but does not leave substantial room for additional growth beyond 2035. In other words, there is little more to cut from the network and still retain a functional system, and the funding gap cannot be easily closed by cutting additional costs.

A hypothetical distribution of funding resources was developed as part of the VVATS financial analysis to illustrate how the magnitude of the shortfall could affect various types of projects. As the hypothetical distribution of resources in **Table 4-2** indicates, the funding anticipated to be available could fully fund interchanges, overcrossings, river crossings, railroad crossings and arterial roadways identified in local jurisdiction general plans. The funding could also make strategic contributions to the other projects listed in the table, but in this scenario, supplemental funding would be required for construction of the High Desert Corridor, widening of I-15, and right-of-way acquisition for the future corridors (Realigned US-395 and Southeast Beltway).

It is important to note that the funding scenario contained in **Table 4-2** represents only one hypothetical funding scenario and should not be interpreted as a prioritization of projects, as a recommended allocation of funds, or an endorsement of an allocation scenario for Measure I 2010-2040, state or federal funding. The future allocation of Measure I 2010-2040, state or federal funds will be made by the SANBAG Board based on a recommendation by the Mountain/Desert Committee. The SANBAG Board has only recently adopted a set of guiding principles for the allocation of Measure I 2010-2040 Major Local Highway, state and federal funds that are anticipated in the Victor Valley subarea. The next step in the process will be for the Victor Valley subarea to begin discussions on project prioritization as directed by the Board at its February 6, 2008 meeting and for the Mountain/Desert Committee to make a recommendation on project priorities or funding policies to the SANBAG Board of Directors as part of the



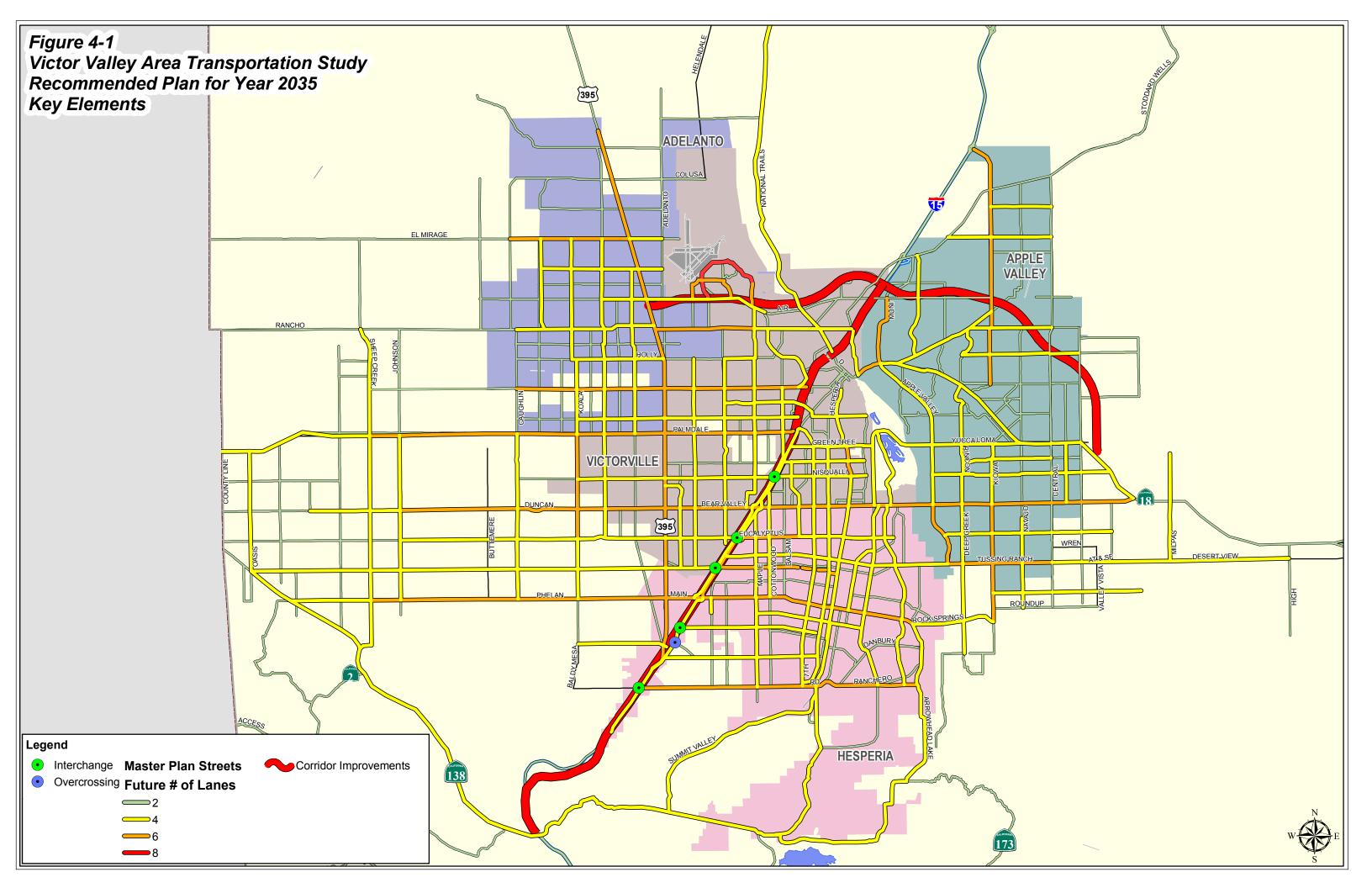
Measure I 2010-2040 strategic planning process. The information contained in the VVATS Final Report is intended to inform the prioritization discussion, not to establish a schedule for the allocation of Measure I 2010-2040, state and federal funding.

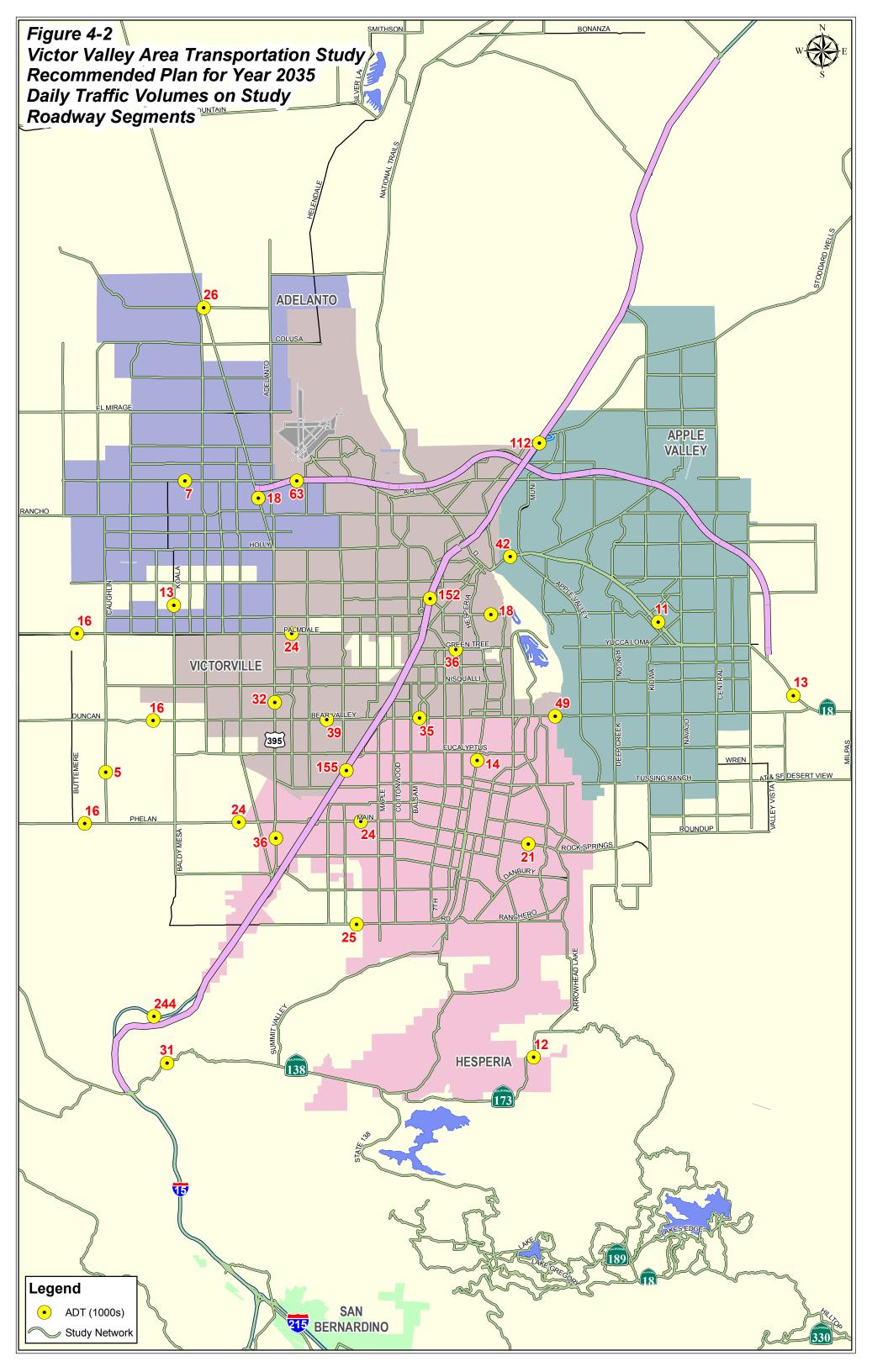
As discussed more thoroughly in Chapter 3 Development of a Financially Balanced Plan, the Recommended Plan is roughly \$806 million underfunded and a series of additional funding sources will be needed to provide a transportation system that is financially constrained. One potential source of additional revenue would be user fees or toll revenues, if the High Desert Corridor is developed as a toll road. Potential toll revenues that could be generated by the High Desert Corridor through the Year 2035 are estimated to be approximately \$148 million based on the toll revenue methodology presented in Chapter 3, Section 3.4.2.1. The potential forecast of toll revenue has been slightly increased from the \$121 million identified in Chapter 3 to \$148 million because the eastern terminus of the High Desert Corridor is recommended to be SR-18 by 2035. If tolls are included in the assumed funding scenario, the remaining funding shortfall is about \$685 million.

While the infusion of toll revenue in the funding matrix for the High Desert Corridor provides approximately one-fourth of the revenue shortfall anticipated in the Recommended Plan, current High Desert Corridor project development activities have not anticipated the facility to be toll financed. The inclusion of a more detailed analysis of toll revenue as well as toll plaza locations and interchange spacing designed to maximize efficiency of toll revenue collection should be considered during the project development process.

One component of the strategy to address the funding shortfall should be that SANBAG and its member agencies work to secure additional state and federal funding. However, it should be recognized that many urban and rapidly urbanizing areas are also seeking additional state and federal transportation funds. State and federal funding beyond what has already been assumed in the Recommended Plan is limited, and competition for these funds will be fierce. Therefore, additional state and federal funds cannot be counted on to fill the shortfall. Consideration should also be given to identifying additional funding from local sources over which SANBAG and its member agencies have more control.

Two additional local sources were evaluated in Chapter 3, including a discussion on their potential as additional revenue sources to supplement the known sources of transportation funding: (1) a 10-year increase in the Measure I sales tax (a 0.5% tax from 2025 to 2040) for jurisdictions in the Victor Valley could generate an additional \$545 million for the Victor Valley. (2) an additional increment of transportation development impact fees to \$4,000 per single family dwelling unit (or equivalent), between now and 2035 would generate approximately \$520 million. Both approaches carry with them their own challenges, but deferral on the development of a preferred strategy will only compound the problem by reducing the number of years for which to collect the additional revenue.





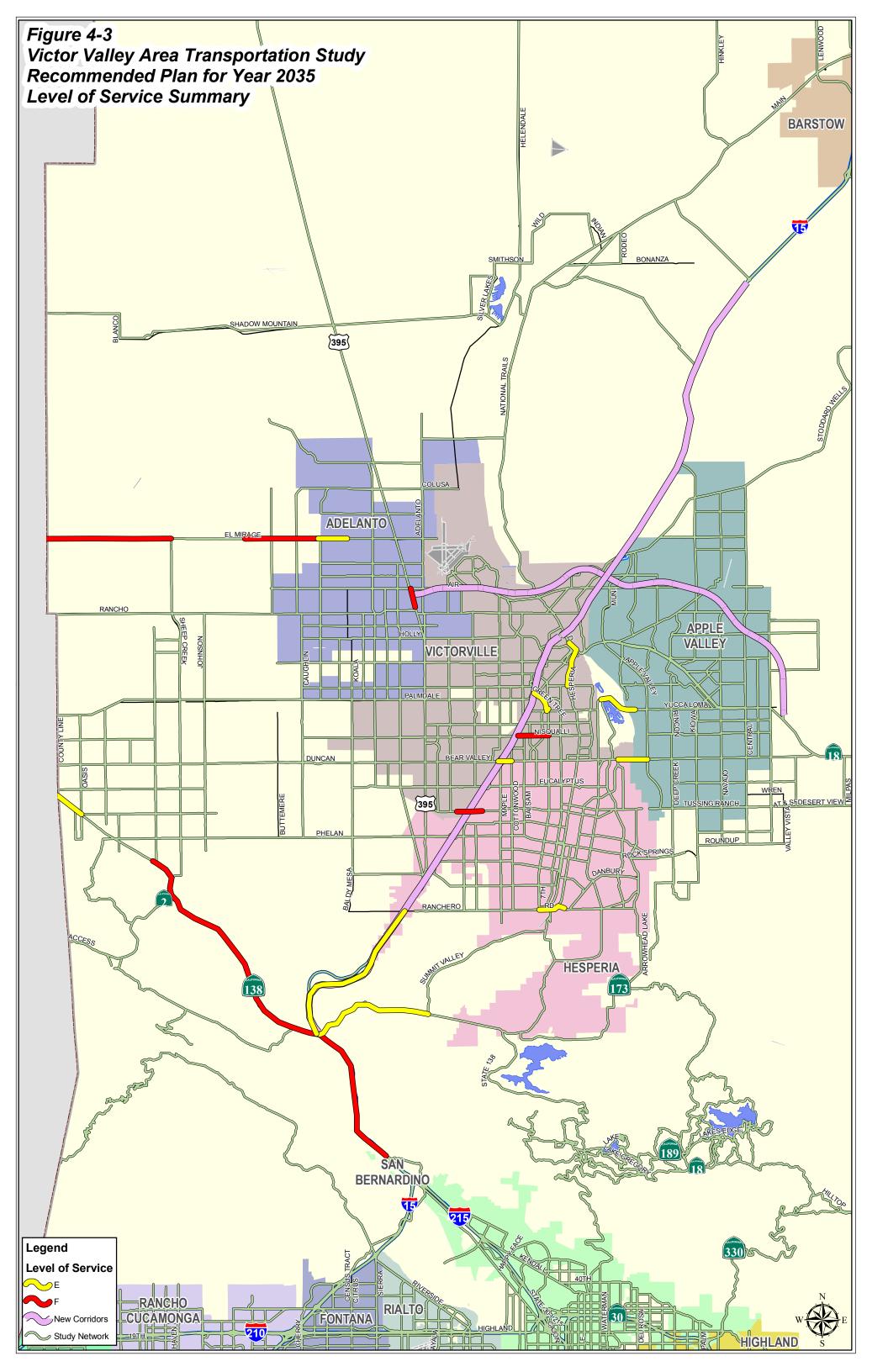




Table 4-1 –Summary of Intersection Operations for 2035 Recommended Plan, PM Peak Hour

Int. #	Intersection	Re	ecommendec	l Plan
		LOS	Del/Veh	V/C*
1	Koala/Air Expressway	С	22.1	0.153
2	Bellflower/Air Expressway	D	43.1	0.670
3	US-395/Air Expressway	F	219.7	1.180
4	Koala/El Mirage	С	27.9	0.473
5	US-395/El Mirage	F	121.2	1.367
6	Bellflower/Mojave	С	27.1	0.328
7	Aster/Palmdale	В	19.1	0.131
8	Bellflower/Palmdale	С	28.3	0.464
9	US-395/Palmdale Rd	D	40.6	0.877
10	Koala/Rancho	С	24.8	0.105
11	Bellflower/Rancho	С	30.5	0.457
12	US-395/Rancho	С	32.3	0.690*
13	Apple Valley/Hwy 18	E/F	74.9	1.067
14	Corwin/Hwy 18	D	35.7	0.738
15	Tao/Hwy 18	С	21.6	0.387
16	Rancherias/Hwy 18	D	54.2	0.910
17	Kiowa/Hwy 18	С	29.0	0.384
18	Navajo/Hwy 18	С	28.2	0.544
19	Central/Hwy 18	С	25.1	0.313
20	Apple Valley/Bear Valley	С	34.5	0.581
21	Deep Creek/Bear Valley	В	18.6	0.491
22	Kiowa/Bear Valley	С	27.6	0.538
23	Navajo/Bear Valley	С	30.6	0.570
24	Central/Bear Valley Road	D	35.8	0.660
25	Bear Valley Cutoff/Hwy 18	С	23.9	0.228
26	Beekley/SR-138	D	38.2	0.597
27	Deep Creek/Rock Springs	В	12.1	0.299
28	Vista/National Trails Hw	С	21.2	0.322
29	US-395/Phelan	E/F	63.1	1.087*
30	Sheep Creek/Hwy 18	С	32.7	0.174
31	SR-138/Summit Valley	В	13.6	0.420
32	Escondido/Main	D	35.5	0.753
33	Maple/Main	С	31.7	0.499
34	Cottonwood/Main	С	33.4	0.865
35	Seventh/Main	С	31.0	0.616
36	I Ave/Main	С	30.5	0.626
37	Seventh/Bear Valley	С	29.4	0.790
38	Hesperia/Bear Valley	D	51.7	0.903
39	I Ave/Bear Valley	D	48.7	0.845
40	Mariposa/Ranchero	С	32.9	0.739
41	US-395/Eucalyptus	С	21.4	0.527



42	US-395/Bear Valley	D	35.1	0.785
43	US-395/La Mesa	С	23.2	0.720
44	US-395/Mojave Dr	С	33.2	0.696
45	US-395/Hopland	В	18.0	0.266
46	Amethyst/Palmdale	С	26.0	0.561
47	Baldy Mesa/Palmdale	С	29.0	0.438
48	Mariposa/Bear Valley	D	47.4	0.875
49	Amargosa/Bear Valley	F	98.2	0.579
50	Baldy Mesa/Bear Valley	С	31.8	0.494
51	I-15 NB Ramps/SR-138	F	120.1	1.132
52	I-15 SB Ramps/SR-138	С	22.0	0.725
53	I-15 NB Ramps/Ranchero	С	29.9	0.730
54	I-15 SB Ramps/Ranchero	С	31.0	0.480
55	I-15 SB Ramps/Main St	В	19.1	0.533
56	I-15 NB Ramps/Main St	С	31.6	0.790
57	I-15 SB Ramps/Mojave St	D	39.5	0.591
58	I-15 NB Ramps/Mojave St	D	35.6	0.901
59	I-15 NB Ramps/Eucalyptus St	С	23.6	0.670
60	I-15 SB Ramps/Eucalyptus	С	25.4	0.739
61	I-15 NB Ramps/Bear Valley	D/F	49.2	1.044*
62	I-15 SB Ramps/Bear Valley	В	15.7	0.472
63	I-15 NB Ramps/La Mesa-Nisqualli	D/F	52.1	1.010*
64	I-15 SB Ramps/La Mesa-Nisqualli	С	22.7	0.707
65	I-15 NB Ramps/Palmdale	С	30.2	0.931
66	I-15 SB Ramps/Palmdale	С	22.6	0.606
67	I-15 NB Ramps/Roy Rogers-La Paz	С	25.1	0.867
68	I-15 SB Ramps/Roy Rogers	В	12.2	0.694
69	I-15 NB Ramps/Mojave Dr	D/F	50.5	1.019
70	I-15 SB Ramps/Mojave Dr	С	25.1	0.790
71	I-15 NB Ramps/D Street	С	25.6	0.492
72	I-15 SB Ramps/D Street	С	22.8	0.655

\*Intersections with a V/C ratio greater than 1 where automatically identified as LOS F per the SANBAG Congestion Management Program.

TABLE 4-2 Hypothetical Cost and Revenue Summary of Recommended System

					REVE	NUE BY SO	URCE		SUPPLE	MENTAL F	UNDING	
					Other	Local	MLH*					
NEW COR	RIDORS	illions of Dollars		DIF	Developer	Funds	Measure I	State/Fed	Tolls	Unfunded		TOTAL
High Dese	rt Corridor											
e/o 395	Construction	\$364										
0,0 000	Interchanges	*										
	Right-of-Way		\$553				50	30	148	325		553
w/o 395	Construction		*									
	Interchanges											
	Right-of-Way		\$0							0		
US-395												
	Construction	0										
	Interchanges	. 0										
	Right-of-Way	. 89	\$89				0	0		89		89
Southeast												
	Construction	0										
	Interchanges	. 0										
	Right-of-Way	. 12	\$12							12		12
I-15 Widen	ing (SR-138 to Mojave River)											
	Mojave River to Bear Valley (Construction + ROW)	. 116					0	0		116		116
	Bear Valley to US-395 (Construction + ROW)	174					15	0		159		174
	US-395 to Oak Hills (Construction + ROW)	110	\$400				45	0		65		110
INTERCHA	ANGES, OVERCROSSINGS AND BRIDGES											
	I-15 Interchanges and Overcrossings	449		180	0	(	189	80		0		449
	River Crossings			49	0	20				0		80
	Railroad Crossings		\$649	40		50	0	30		0		120
ΑΡΤΕΡΙΛΙ	STREET IMPROVEMENTS											
ANTENIAL	Construction curb lane only	767			767					n		767
	Right-of-way				316	40				0		356
	Construction interior lanes			90		90	1			0		180
	Intersection widening: construction			25		20	1			0		45
	Intersection widening: right-of-way		\$1,352	3		1				0		4
	TOTAL	\$3,055		\$387	\$1,083	\$221	\$299	\$151	\$148	\$766	\$0	\$3,055
	TOTAL	<b>გა,</b> 055		φ387	φ1,083	<b>Φ</b> ΖΖ Ι	φ299	1010	φ148	Φ1 00	Φ0	და,∪ეე

#### **ASSUMPTIONS**

High Desert Corridor

from existing US-395 to Dale Evans Parkway as freeway from Dale Evans Parkway to SR-18 as expressway

US-395

not built; ROW preserved; 6 lanes on existing US-395 upgraded interchange at US-395/I-15

Southeast Beltway

not built; ROW preserved; SR-138 straightened and widened to 4 lanes improve I-15/SR-138 interchange

I-15 Interchanges and Overcrossings

I-15/Ranchero: new interchange

I-15/Muscatel: new interchange, Joshua overcrossing remains

I-15/Mojave: new interchange I-15/Eucalyptus: new interchange I-15/LaMesa/Nisqualli: new interchange

,	* Does not constitute any official recommendation for the distribution of Measure I Major Local Highway
	funding. This only serves as hypothetical method of distribution. All allocation decisions will be made
	by the SANBAG Board based on a recommendation from the Mountain/Desert Committee.

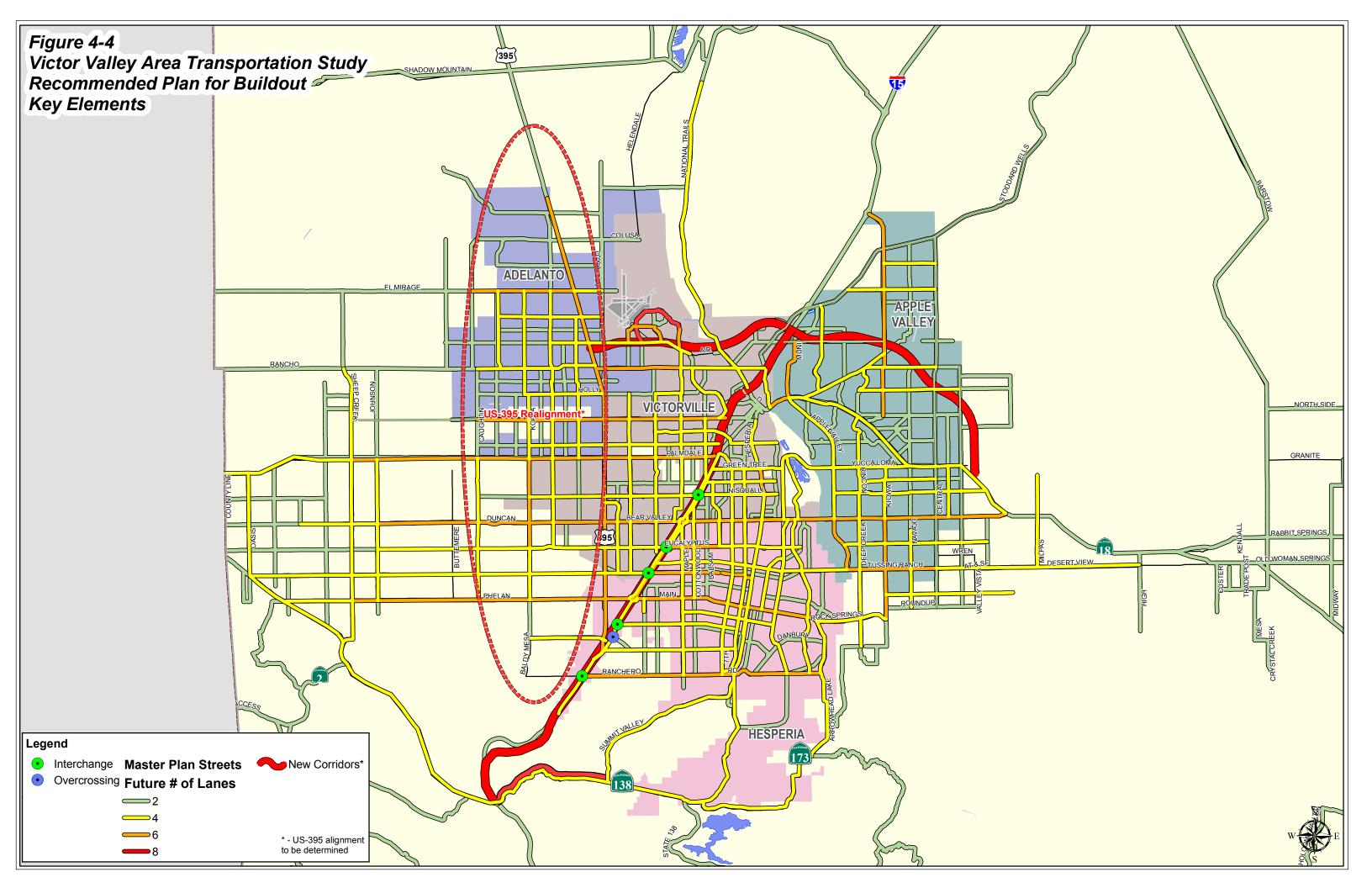


## 4.2 General Plan Buildout Recommendations

The recommended roadway system for General Plan Buildout is shown in **Figure 4-4**. It includes all the improvements recommended for Year 2035, plus new highway corridors (the realigned US-395 and the Southeast Beltway), and full development of the roadway systems planned in the local agencies' general plans.

A number of alternative alignments have been identified for the realigned US-395 but a preferred alignment will be determined through additional studies to be conducted at a later date.

The Buildout peak period demand in the SR-138 corridor would require additional capacity from I-15 to Summit Valley Road. West of Summit Valley Road the two arterials would provide sufficient capacity. Therefore it is recommended that the Southeast Beltway limited access highway be constructed from I-15 to Summit Valley Road.





#### 5 RIGHT-OF-WAY PRESERVATION

# 5.1 Background and Purpose

The rapid pace of land development in the Victor Valley is creating severe barriers to development of an adequate long-term transportation system. Already, development of properties in the US-395 corridor has significantly encroached on potential alignments for a possible future US-395 freeway. As a result, alignment studies for a future freeway have been focusing on routes even further to the west, now in the vicinity of Caughlin Road, approximately five miles west of the present alignment.

The situation with US-395 is not unique. Planning for the High Desert Corridor, a planned east-west highway from Palmdale to Apple Valley, has also faced challenges from the emergence of new development near the preferred alignment. Local jurisdictions are searching for ways to protect from development land that they expect will be needed for freeway interchanges or major arterial intersections.

If development continues to occur in areas needed for future transportation improvements, the effects will range from substantially higher right-of-way costs to construction of inadequate facilities (due to avoidance of expensive right-of-way).

A major stumbling-block to right-of-way preservation is that the local land use authorities (Cities and County) either do not have the tools needed to preserve property when development proposals are submitted or do not have adequate information on how to best use those tools. They have the ability to require dedication of land for future arterial streets based on the adopted general plan and typical arterial rights-of-way, but they face much greater challenges for preserving new highway corridors, new or widened freeway interchanges, and enhanced intersections. The project design and environmental review process for corridors and interchanges can take years to complete, and until the environmental review process is complete there is no official documentation and approval of the needed transportation project and its planned footprint. Without that documentation, local jurisdictions do not have the legal ability to prevent a property owner from developing his property in a way that may inhibit a future transportation project.

The purpose of this right-of-way preservation strategy, therefore, is to provide local jurisdictions with the tools (information and procedures) for preserving needed right-of-way prior to completion of environmental clearance for the proposed improvement. This involves a two-step process: (1) adopting the improvements in the local general plan; and (2) taking actions to protect needed land from development encroachment. Each of these steps is discussed in the sections below.



# 5.2 Adoption in Local General Plans

For a local jurisdiction to be able to exercise its land use authority to preserve parcels needed for transportation facilities, the facilities need to be shown on the local general plan. This is accomplished by adopting the planned future transportation system (needed to serve development envisioned in the General Plan Land Use Element) in the Circulation Element and showing it on the Master Plan of Streets map.

Typically the Master Plan of Streets includes freeways and arterial streets, showing their general alignment and typical cross-section. With this information the local jurisdiction is able to preserve the right-of-way for the ultimate street free from development, even if the street is not fully built out at present, subject to the rights property owners have under state law.

To preserve new corridors, new or expanded interchanges, and enhanced intersections, this same logic applies. The local jurisdiction needs to make a determination that the facility is needed to provide adequate circulation for the General Plan, then adopt a General Plan amendment to incorporate it into the plan (including preparing the requisite environmental documentation for a General Plan amendment).

VVATS is a subregional transportation study for the Victor Valley, and will result in a recommended roadway plan to support travel demand in the Year 2035 and with buildout of the general plan land use in Adelanto, Apple Valley, Hesperia, Victorville, and surrounding areas of the County. This study is therefore an appropriate technical basis from which to identify improvements needed for future subregional circulation.

Since the general plan amendment process differs somewhat for new corridors, freeway interchanges, and enhanced intersections, the following discussion addresses each type of improvement separately. Table 1 lists the steps required to adopt each type of facility into a local general plan, along with the information that will be provided by VVATS.

## **New Corridors**

A new corridor is unique because it crosses multiple jurisdictional boundaries, has regional impacts, and will need to be shown consistently on adjacent local general plans. Because of the regional nature of the facility, it would be ideal if a program-level environmental document could be prepared for the entire corridor prior to initiation of local general plan amendments, so the impacts that extend beyond jurisdictional boundaries could be addressed in a more comprehensive fashion, leaving the environmental analysis for the local General Plan amendments to address the more localized impacts in and around the corridor within each particular jurisdiction. However, if a corridor-level environmental study has not been completed,



a new corridor can still be included in a local general plan amendment by including a programlevel evaluation of impacts associated with developing the corridor.

First, the need for a new corridor must be identified and documented. Since the need for a new corridor will be driven by regional development, the study will by definition be a regional or subregional study of transportation needs. The needs analysis also supplies information on the general alignment, interchange locations, and number of lanes (from which the right-of-way cross-section can be derived).

Since the local general plans typically do not include a major highway corridor or expressway of this type, a new facility designation and cross-section will need to be added to the local Master Plan of Streets and Highways as part of the General Plan amendment.

In order to adopt the General Plan amendment, program-level environmental documentation will need to be performed. This will entail either using a corridor-specific environmental document as the basis for the amendment, or preparing a program-level analysis for the General Plan amendment.

In addition to adopting the corridor into local general plans, it should be included in the Regional Transportation Plan. This step is not essential for the right-of-way preservation process, but is important as a predecessor to subsequent steps to develop the corridor. **Table 5-1** summarizes the steps explained above.



Table 5-1 - Adoption in General Plans - New Corridors

New Corridors (e.g., US-395, High Desert Corridor, Southeast Beltway)

Steps to Adoption	Information Provided by VVATS
Identify need for new corridor.	Alternatives analysis will determine need for
	Southeast Beltway. Other efforts are addressing
	a realigned US-395 and the High Desert
	Corridor.
2. Identify needed lanes/ROW.	Alternatives analysis demand forecasts will
	determine lane and ROW requirements.
3. Identify general alignment	Engineering analysis will identify conceptual
	alignments.
4. Perform general plan level	Either a general plan EIR or an approved
environmental analysis.	corridor environmental document will be needed
	to adopt the corridor into the general plan.
5. Adopt recommended corridor into local	
general plans.	
6. Adopt recommended corridor into	
RTP.	

#### **Arterials and Enhanced Intersections**

Since local jurisdictions routinely address arterial right-of-way needs, this discussion focuses on incorporating enhanced intersections into the local General Plan. Increasingly, local jurisdictions are finding that the addition of extra lanes (dual left turn lanes, separate right turn lanes, and sometimes through lanes that drop on the far side of the intersection) at critical intersections can improve the traffic operations and obviate the need for widening entire segments of arterial streets. However, these additional lanes usually require right-of-way beyond what is provided in the typical arterial cross-section. Incorporating these "enhanced intersections" in the general plan (at locations where traffic forecasts indicate high traffic volumes and heavy turning movements) will enable the local jurisdiction to preserve extra right-of-way from development encroachment at these critical locations.

First, a technical study needs to document which intersections will need additional lanes and what the ultimate lane geometry should be. If the local jurisdiction wishes to designate specific lane geometry requirements for individual intersections (rather than indicating more generic categories of enhanced intersections on its Master Plan of Streets), it can use a single symbol on the Master Plan of Streets to indicate the location of an enhanced intersection and develop a separate listing of geometric lane requirements for each enhanced intersection on the Master Plan of Streets map.

In order to adopt the General Plan amendment, environmental documentation will need to be performed. This will entail preparing a program-level analysis for the particular components of



the General Plan amendment. **Table 5-2** summarizes the steps explained above for adoption of arterials and enhanced intersections into local General Plans.

Table 5-2 – Adoption in General Plans – Arterials and Enhanced Intersections

Arterials and Enhanced Intersections (Nexus Study arterial network)

Steps to Adoption	Information Provided by VVATS
1. Arterials: Identify needed lanes and	Demand forecasts will identify needed lanes on
ROW	recommended roadway system.
2. Intersections: Identify needed lane	LOS analysis will identify turn lane
geometry.	requirements at key study intersections.
3. Intersections: Identify locations with	VVATS recommendations will include types of
enhanced ROW requirements.	enhanced intersections, and locations on the
	Nexus network.
4. Perform general plan level	
environmental analysis.	
5. Adopt enhanced intersections into	
local general plans.	

# **Freeway Interchanges**

Freeway interchanges are a critical part of the transportation system in the Victor Valley because they serve heavy volumes of traffic accessing or crossing the freeway. The heaviest congestion in the Victor Valley currently occurs around the interchanges with I-15, and some of the most urgent transportation improvement needs involve construction of new interchanges or widening existing interchanges to add capacity. However, the land areas adjoining freeway interchanges are often prime parcels for development because of their convenient freeway access, so preservation of needed land can keep interchange costs down and minimize possible disruption of developed land.

The typical process for preserving interchange right-of-way involves completion of a Project Report and Environmental Document (PR/ED) for the project. At the end of this process, a preferred interchange configuration has been selected and environmental documentation has been prepared, so the local jurisdiction knows the required footprint for the improvement. If this process has not been completed, the local jurisdiction can still amend its General Plan to include needed interchange improvements on its Master Plan of Streets based on technical studies of future needs.

Interchange configurations (and the associated right-of-way needs) vary substantially depending on the traffic volumes and directionality of access and egress, so it is important to develop a realistic forecast of future volumes and identify an appropriate interchange configuration to handle them. Typically this analysis is performed during a Project Study Report (PSR), which evaluates the benefits and costs of alternative interchange configurations at a conceptual design



level. If a PSR has been prepared for a future interchange (or for widening an existing interchange), the local jurisdiction can designate the future interchange on its Master Plan of Streets and preserve right-of-way to accommodate the viable alternatives identified in the PSR.

If a PSR has not been prepared, the local jurisdiction needs to prepare a technical study to document the future need for the interchange and identify the type and configuration needed to serve the future demand. In order to adopt the General Plan amendment, environmental documentation will need to be performed. This will entail preparing a program-level analysis for the particular components of the General Plan amendment. VVATS will not provide environmental analysis relative to the interchange improvements. **Table 5-3** summarizes the steps explained above for adoption of freeway interchanges into local General Plans.

Table 5-3 – Adoption in General Plans – Freeway Interchanges

**Freeway Interchanges** 

Steps to Adoption	Information Provided by VVATS
Identify needed ramp configuration.	Recommendations will include ramp configurations at interchanges.
2. Identify ROW requirements for interchange. Interchange designations should be identified for locations with a completed PSR. For other locations the appropriate ramp configuration should be identified.	Recommendations will include typical footprint for each type of interchange configuration.
3. Perform general plan level environmental analysis.	
4. Adopt interchange designations into local general plans.	

## 5.3 Preservation

Once the local agency has amended its General Plan and Master Plan of Streets to show the corridor, enhanced intersection, or interchange, it is able to implement actions to preserve the needed right-of-way from development encroachment. This can be accomplished through openmarket acquisition or through application of the local agency's land use regulatory authority.

**Figures 5-1, 5-2 and 5-3** depict the process involved in right-of-way preservation for corridors, enhanced intersections, and interchanges, respectively. Since many of the elements are common to each type of project, the discussion below elaborates on the important elements of each type of process, and also highlights the differences between them. This process of ROW preservation assumes that environmental clearance of the project is not yet completed but the local General Plan has been amended to include the project on the Master Plan of Streets.



Figure 5-1 – ROW Preservation Process for Corridors

# STEP 2: PRESERVATION CORRIDORS

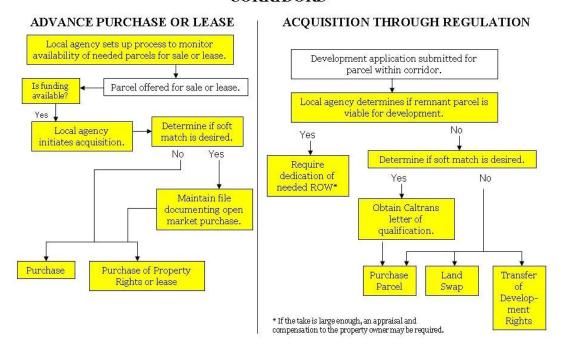




Figure 5-2 – ROW Preservation Process for Enhanced Intersections

# STEP 2: PRESERVATION ENHANCED INTERSECTIONS

# ACQUISITION THROUGH REGULATION

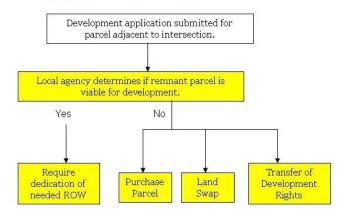
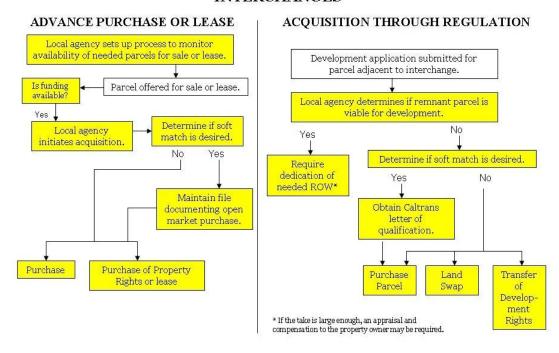




Figure 5-3 – ROW Preservation Process for Interchanges

# STEP 2: PRESERVATION INTERCHANGES





## **Advance Purchase or Lease**

Acquisition of a parcel through an open-market purchase or lease is a proactive strategy to obtain vacant (or not intensely-developed) property at a relatively low cost (compared to the future price when the transportation project is to be constructed). This type of acquisition has not been included in the process for preserving enhanced intersections since they are likely to need relatively small slivers of land from adjacent parcels, which would leave sufficient land for development after dedication.

Since this type of acquisition is an open-market process, the local agency would need to set up a process to monitor the availability of potentially needed parcels on the market. After a parcel comes on the market, the local agency needs to determine that it has a source of funding for the acquisition (see discussion of funding below), and initiate the process to purchase the property.

In addition to open market real estate transactions, parcels may be obtained through a tax sale. An annual list is produced by the County Assessor's office.

Rather than outright purchase of the parcel, the agency may consider leasing or purchase of property rights, which could involve less up-front investment but does not permanently protect the parcel from development. Purchase of property rights would involve obtaining an option to purchase or a development easement. In practice these methods may be almost as expensive as outright purchase of the parcel, so purchase is usually preferable in cases where the parcel is likely to be needed for the improvement and the local agency desires to preclude any possibility of future development.

If the parcel in question is not needed for all of the possible improvement alternatives, the local agency risks needless spending if another alternative is selected. Also, if the local agency is counting on "reimbursement" of the parcel acquisition cost through a soft match credit toward its share of the improvement cost, the parcel acquisition must meet certain requirements (see soft match discussion below).

## Regulation

Acquisition of right-of-way through regulation utilizes the local agency's role as land use regulatory authority to preserve land needed for transportation improvements when an applicant requests local agency approval of a tract map, parcel map, site plan, or conditional use permit for a needed parcel.

A critical point is whether the land will still be viable for development after the land needed for the transportation improvement has been removed. If a developable parcel remains, the local agency may require dedication; if not, the local agency must reimburse the property owner.



Reimbursement could be in the form of purchasing the parcel, orchestrating a land swap, or a transfer of development rights.

Purchase of the parcel involves paying the fair market value to the owner. In a land swap, the City (or Redevelopment Agency) purchases an equivalent parcel and exchanges it with the owner of the parcel needed for the transportation improvement. Transfer of development rights is appropriate when the property owner owns another parcel within the same local jurisdiction that has potential for additional development intensity.

## **Qualification for Soft Match**

The alternatives for right-of-way acquisition prior to environmental approval for local agency projects on the state system is outlined in Caltrans Local Programs Reference file number LP-04-01, dated November 2, 2004. There are three alternatives:

- 1. Open Market Transactions
- 2. Early Acquisition
- 3. Hardship and Protection Acquisitions

In cases of an open market acquisition, a local agency may be able to use the purchase of needed right-of-way to contribute toward its share (the local "match") of the cost of a project involving state and federal funds. Since this does not involve the contribution of dollars directly to the project cost it is termed a "soft match". For a local agency right-of-way purchase to qualify for consideration as credit toward a soft match, several criteria must be satisfied:

- The parcel acquired must not influence the environmental document (limit the choice of interchange alternatives).
- The agency must condition its future use of the site on CEQA/NEPA compliance.
- There must be documentation that the parcel was acquired in an open market transaction.
- A cooperative agreement between the City and the State must be executed prior to the acquisition, and the State must provide a letter of qualification. (Note: it may be possible to obtain a soft match if the agreement and letter are not obtained prior to acquisition of the parcel by the local agency, however approval of the soft match is not certain in this situation.
- The purchase must be made with local funds.
- The Federal Uniform Relocation Assistance and Real Properties Acquisition Policies Act must be followed in the acquisition process.
- The land would be donated to the State Highway System.

The letter of qualification is required for a soft match on Early Acquisition. Unfortunately, under the State guidelines, early acquisition can only be used if the preferred alternative has been made



public at a public hearing or in a public forum. It can only be used lat in a project level environmental process and there are 16 criteria to satisfy.

Hardship and Protection acquisitions are described in the Caltrans Right-of-Way Manual, Chapter 5.

# **Funding Options for Purchases**

To purchase a parcel (or a comparable parcel for a land swap) the local agency must have an available source of funds for the transaction. Identifying funding for advanced purchase of right-of-way is always a challenging proposition, since local agencies have many competing priorities with more immediate urgency than advance property acquisition for a transportation improvement that is several years in the future. Local general funds could be used, but as a practical matter it is not realistic to expect that advance right-of-way acquisition will ever be a high priority use for general funds.

If the planned transportation improvement lies within a redevelopment area, local redevelopment funds could be used for advance right-of-way purchase as part of the infrastructure investment necessary to support and facilitate redevelopment.

All of the local jurisdictions in the Victor Valley assess development impact fees (DIF) to help fund the cost of transportation improvements needed to serve new development. If a local agency includes the cost of right-of-way for interchanges or a new corridor in its DIF calculation and nexus study, it could then use its local DIF funds to purchase the right-of-way when it becomes available or when it needs to be purchased to preserve the land from new development. At this time, however, no local jurisdiction includes new corridors in their development impact fee list and calculation. Therefore as currently structured, local jurisdictions cannot spend DIF on corridor preservation. Other areas in the state, such as Kern County, however, do include new corridor right-of-way in their DIF calculation and use it to purchase right-of-way as new development is permitted. Ultimately, these funds are subject to the policies established by local jurisdictions and the local jurisdiction will determine the legal use of the funds.

Another option would be for SANBAG to establish a process or a fund in the Measure I Strategic Plan to enable local jurisdictions to use Measure I monies for advance right-of-way acquisition. Such a process or fund would need to be incorporated into the ongoing development of the Strategic Plan, and adopted by the SANBAG Board.