3.2 Transportation/Traffic

3.2.1 Introduction

This section describes the proposed project's transportation environment both in terms of the base year of 2007 and the forecast year of 2030. It presents data and discussion on existing travel conditions in the traffic study area, type and pattern of trips, and modes of travel on roadways, including freeways, arterial highways, and transit. The general boundary of the traffic study area (study area) is illustrated in Figure 3.2-1 (Study Area and Location of Study Intersections [Revised]). This study area was selected based upon discussions with cities of Culver City, Los Angeles, and Santa Monica. Within the study area, ~~eighty-six~~ninety intersections were selected for analysis. These intersections are listed later in this section in Table 3.2-1 (Existing Study Area Intersection Conditions) and are identified on Figure 3.2-1. This section discusses existing conditions and expected impacts of projected growth in travel demand and impacts of the proposed project on the future transportation system and traffic conditions.

Both local and general impacts on the transportation system are presented as part of the analysis. General impacts include impacts of the proposed project on systemwide transportation performance indicators, while local impacts deal with specific traffic circulation, intersection analysis, neighborhood diversion, parking impacts near the proposed stations, and pedestrian/bicycle access. The analysis provides information relative to the effects of the No-Build, the TSM, and the four LRT Alternatives on the transportation systems within the study area.

Due to the many comment received on the DEIR, additional analysis was conducted in the FEIR to address traffic and parking impacts. In consultation with agencies, key stakeholders, and the community, these efforts involved updated traffic and parking counts, as well as additional intersection and traffic studies. In some cases, this traffic and parking analysis resulted in changes to the project, including modifications to impacts and mitigation measures. A discussion of this analysis and resulting changes are described in this chapter.

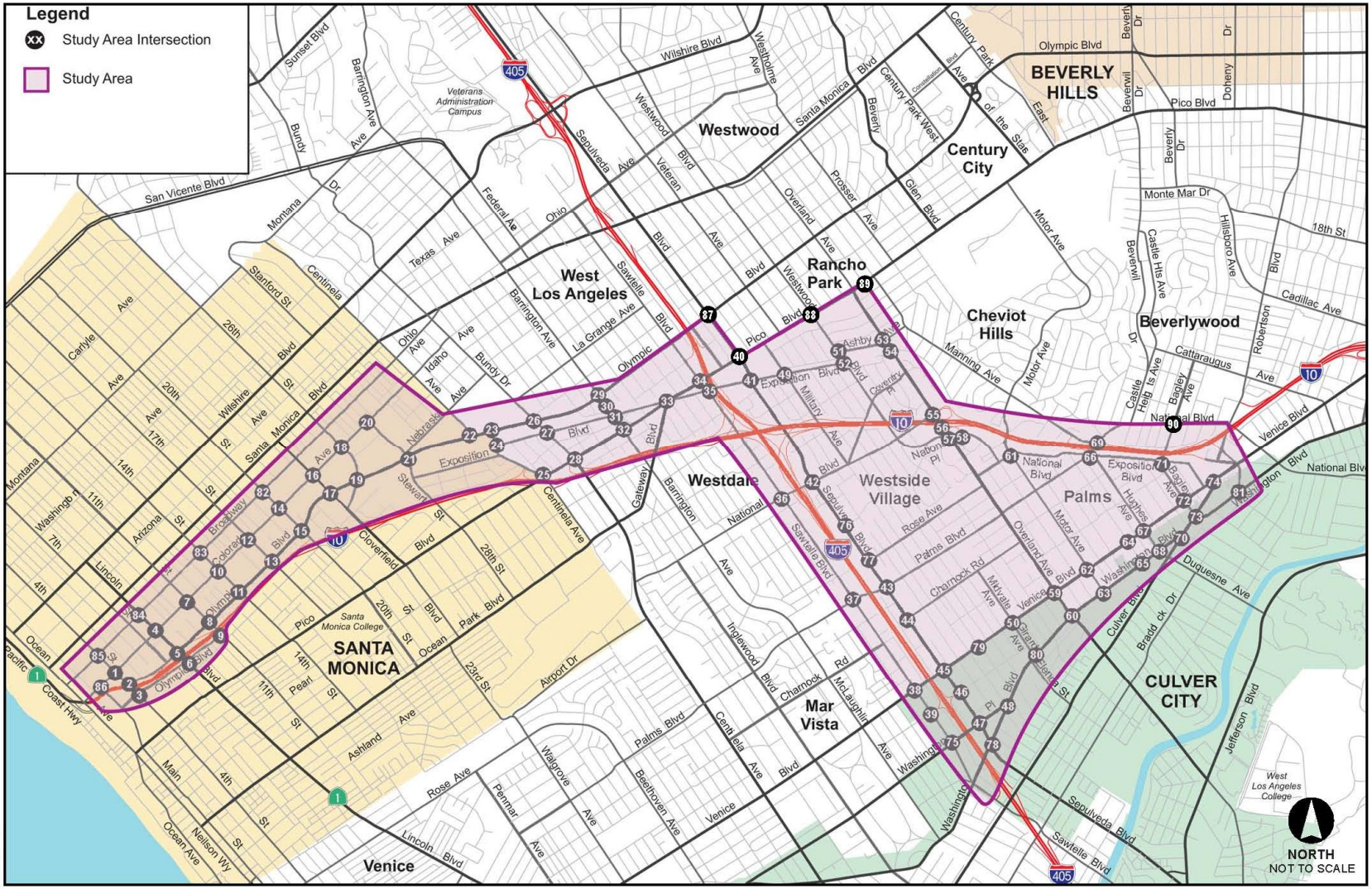
Greater detail on the Transportation/Traffic analysis can be found in the *Transportation/Traffic Technical Background Report*. Full bibliographic references can be found in Appendix B (Bibliography).

3.2.2 Existing Conditions

Freeway and Roadway Networks

The following discussion presents an overview of the transportation system within the study area that would be affected by the proposed project.

The roadway system in the study area is comprised of a grid pattern of arterials, collectors, and freeways generally following a northwest-to-southeast/northeast-to-southwest orientation. The freeway network in the study area includes the San Diego Freeway (I-405) and Santa Monica Freeway (I-10). The study area's freeways and streets carry some of the highest traffic volumes in Southern California as discussed in the following sections.



Source: Iteris, 2009.

Figure 3.2-1 Study Area and Location of Study Intersections [Revised]

Freeway Network

The following is a description of the freeway network within the study area.

Santa Monica Freeway (I-10)

This is a major east/west freeway that traverses the study area from Santa Monica to downtown Los Angeles, and then extends beyond the study area to the east. This freeway is one of the busiest in the nation and carries some of the highest daily traffic volumes in the country. Based on annual counts conducted by the California Department of Transportation (Caltrans), the existing (2007) average daily traffic (ADT) on I-10 ranges from 151,000 (west of Lincoln Boulevard to Pacific Coast Highway [PCH], within the City of Santa Monica,) to 274,000 (east of I-405 to Overland Avenue, within the City of Los Angeles). In most places within the study area, I-10 is a six to ten lane freeway in total. A ten lane freeway can handle approximately 207,000 vehicles per day (based on the Highway Capacity Manual [HCM] standards), indicating that this freeway is operating over-capacity in many segments within the study area. I-10 varies between three and five general-purpose lanes in each direction, with several sections having additional lanes, auxiliary lanes, and/or collector/distributor roadways.

San Diego Freeway (I-405)

This is a major north/south freeway that connects the northern Los Angeles County area of San Fernando Valley to the west side of Los Angeles and continues south to Long Beach and into Orange County. The freeway varies between four to five lanes in each direction with several sections having auxiliary lanes. Based on annual counts conducted by Caltrans, the existing (2007) ADT on I-405 ranges from 280,000 (south of Venice Boulevard to Culver Boulevard) to 308,000 (between Venice Boulevard and Olympic Boulevard). In most places within the study area, I-405 is an eight to ten lane freeway. A ten lane freeway can handle approximately 207,000 vehicles per day (based on HCM standards), indicating that this freeway is operating over-capacity in all segments within the study area. The I-405 has a high-occupancy vehicle (HOV) lane southbound from US-101 to Santa Monica Boulevard.

Construction is scheduled for completion in late 2009 on an extension of the HOV lanes southbound between Santa Monica Boulevard and the Marina Freeway (SR-90), and northbound between the Marina Freeway and I-10.

Roadway Network

Based on the City of Los Angeles' General Plan Circulation Element, roadways have functional classifications that range from Major Highway, to Secondary Highway, to Collector Street. A brief description of these types of roadways is provided below.

- A Major Highway (Class I) has three full-time through lanes in each direction, one part time parking lane in each direction and one median/left turn lane with 12-foot sidewalks on both sides.
- A Major Highway (Class II) has two full-time through lanes in each direction, one part time parking lane in each direction, and one median/left turn lane with 12-foot sidewalks on both sides. Pedestrian priority segments include 17-foot sidewalks on both sides.

- A Secondary Highway has two full-time through lanes in each direction, all-day permitted parking, and one median/left turn lane with 10-foot sidewalks on both sides. Pedestrian priority segments include 15-foot sidewalks on both sides.
- A Standard Collector Street has one full time lane in each direction, one full-time parking lane in each direction and 10-foot sidewalks on both sides.

Based on the City of Santa Monica General Plan Circulation Element, roadways have functional classifications that range from Arterial Street, to Collector Street, to Feeder Street. A brief description of these types of roadways is provided below.

- An Arterial Street carries the majority of traffic entering or traveling through the City. A major arterial would contain either four or six lanes of through traffic, plus left-turn lanes. Minor arterials serve the same function as major arterials, but have four lanes of through traffic and may or may not have separate left-turn lanes.
- A Collector Street carries traffic between residential neighborhoods and the arterial street network. They are two lane roadways and generally have a mixture of residential and commercial land uses along them.
- A Feeder Street is similar to collectors in that they carry traffic between residential neighborhoods and the arterial street network; however, they are almost solely residential in character. Feeder streets generally have single-family or multi-family residences fronting on the street.

The main roadways within the study area (Figure 3.2-1 [Study Area and Location of Study Intersections (Revised)]) are summarized below. Peak hour parking restrictions vary throughout the study area; thus, they are not included below.

Major ~~East/ West~~ Roadways	**~~The following descriptions begin on the west end of the study area and progresses to the east end~~Roadway Description**
Broadway	A Collector Street in Santa Monica that has one lane in each direction. On-street parking is permitted on both sides of the street except west of 6th Street.
Colorado Avenue	A Secondary Highway in Los Angeles and an Arterial Street in Santa Monica that has two lanes in each direction west of 26th Street and one lane in each direction east of 26th Street. On-street parking is permitted on both sides of the street.
Olympic Boulevard	A Major Highway in Los Angeles and an Arterial Street in Santa Monica with two lanes in each direction west of Centinela Avenue and three lanes in each direction east of Centinela Avenue. On-street parking is only permitted on both sides of the street between Lincoln Boulevard and 20th Street, and east of Centinela Avenue to Barrington Avenue.
Pico Boulevard	A Major Highway in Los Angeles and an Arterial Street in Santa Monica with two lanes in each direction. In Los Angeles, morning and evening peak hour parking restrictions provide a third eastbound lane between Centinela Avenue and Bundy Drive, and between Gateway and Sawtelle Boulevards. In addition, peak hour parking restrictions provide a third lane in each direction between Sawtelle Boulevard and Sepulveda Boulevard.
Gateway Boulevard	A Major Highway in Los Angeles with two lanes in each direction. On-street parking is permitted on both sides of the street.

Major ~~East/ West~~ Roadways	~~The following descriptions begin on the west end of the study area and progresses to the east end~~Roadway Description
Exposition Boulevard	A Collector Street between Centinela Avenue and Westwood Boulevard, with one lane in each direction. Exposition Boulevard is split into two streets (Exposition North and South) between Granville Avenue and Barrington Avenue, and between Military Avenue and Westwood Boulevard. Exposition Boulevard also runs between National Boulevard and Durango Avenue with one lane in each direction. On-street parking is permitted on one or both sides of the street(s) along various segments.
National Boulevard/ National Place	A Secondary Highway in Los Angeles with two lanes in each direction west of Overland Avenue and one lane in each direction east of Overland Avenue. On-street parking is permitted on both sides of the street except between the eastbound I-10 off-ramp and Overland Avenue.
Palms Boulevard	A Secondary Highway in Los Angeles with two lanes in each direction. On-street parking is permitted on both sides of the street.
Venice Boulevard	A Major Highway in Culver City and Los Angeles with three lanes in each direction and a median of variable width restricting left-turn access to and from many streets. On-street parking is permitted on both sides of the street.
Culver Boulevard	A Major Highway in Culver City with two lanes in each direction except between Lafayette Place and Main Street where it has three lanes in each direction. On-street parking is permitted on both sides of the street except between Lafayette Place and Main Street on the east side of the street.
Washington Boulevard	A Major Highway in Culver City with two lanes in each direction and with a landscaped median. On-street parking is permitted on both sides of the street except the south side of the street between Overland Avenue and Hughes Avenue.
Washington Place	A Major Highway with two lanes in each direction in Culver City and Los Angeles. On-street parking is permitted on both sides of the street.
Lincoln Boulevard	~~A Major Highway~~An Arterial Street in Santa Monica with two lanes in each direction. On-street parking is permitted on both sides of the street except between Colorado Avenue and Michigan Avenue.
Cloverfield Boulevard	~~A Major Highway~~An Arterial Street in Santa Monica with three lanes in each direction between Colorado Avenue and the I-10 westbound off-ramp. On-street parking is not permitted on both sides of the street.
26th Street	~~A Collector~~An Arterial Street in Santa Monica with one lane in each direction north of Colorado Avenue and two lanes in each direction south of Colorado Avenue. On-street parking is permitted on both sides of the street north of Colorado Avenue.
Stewart Street	A Collector Street in Santa Monica with two lanes in each direction north of Exposition Boulevard and one lane in each direction south of Exposition Boulevard. On-street parking is permitted on both sides of the street.
Centinela Avenue	A Collector Street in ~~Santa Monica~~Los Angeles with one lane in each direction. On-street parking is permitted on both sides of the street.
Bundy Drive	A Major Highway in Los Angeles with two lanes in each direction north of Pico Boulevard. On-street parking is only permitted on both sides of the street between Exposition Boulevard and Pico Boulevard.
Barrington Avenue	A Secondary Highway in Los Angeles with two lanes in each direction south of Olympic Boulevard. On-street parking is permitted on both sides of the street.

Major ~~East/ West~~ Roadways	~~The following descriptions begin on the west end of the study area and progresses to the east end~~Roadway Description
Sawtelle Boulevard	A Secondary Highway in Los Angeles with two lanes in each direction south of Olympic Boulevard. On-street parking is permitted on both sides of the street.
Sepulveda Boulevard	A Major Highway in Los Angeles with two lanes in each direction. On-street parking is permitted on both sides of the street except on the west side between Santa Monica Boulevard and Exposition Boulevard.
Westwood Boulevard	A Secondary Highway in Los Angeles with one lane northbound and two southbound lanes. On-street parking is permitted on both sides of the street.
Overland Avenue	A Major Highway with two lanes in each direction. On-street parking is permitted on both sides of the street except in the vicinity of I-10.
Motor Avenue	A Collector Street in Los Angeles with one lane in each direction north of National Boulevard, a Secondary Highway with two lanes in each direction between National Boulevard and Venice Boulevard, and a Collector Street with one lane in each direction south of Venice Boulevard. On-street parking is permitted on both sides of the street.
Robertson Boulevard	A Secondary Highway in Los Angeles with two lanes in each direction. On-street parking is permitted on both sides of the street.

SOURCE: Iteris, 2008; updated 2009.

Existing Intersection Levels of Service

~~As stated above, a~~A total of eighty-six intersections within the study area were selected for detailed level of service (LOS) analysis in the DEIR. These intersections were selected as they may potentially be affected by a nearby project crossing or are located on or near an access route to a project station with parking. These intersections are numbered in the previously referenced Figure 3.2-1 (Study Area and Location of Study Intersections [Revised]). In response to comments on the DEIR and in consultation with the LADOT, the study area was expanded to include four additional intersections, which are also shown in Figure 3.2-1 (Study Area and Location of Study Intersections [Revised]) and listed in Table 3.2-1 (Existing Study Area Intersection Conditions). As such, a total of ninety intersections were analyzed in the FEIR.

Detailed weekday AM peak period (7:00 a.m. to 9:00 a.m.) and PM peak period (4:00 p.m. to 6:00 p.m.) traffic counts were collected at the eighty-six intersections during April, September, October, and November of 2007 and some additional traffic counts were conducted in February of 2008. In response to comments on the DEIR, additional traffic counts were take in 2009 to support the analysis conducted in the FEIR for the four additional study area intersections and others, as needed. Traffic count sheets are included in Appendix A of the *Transportation/Traffic Technical Background Report* for this ~~D~~FEIR. The current intersection operating conditions were analyzed using the Operational Analysis Methodology of the *2000 Highway Capacity Manual* (HCM). This analysis yields a rating of conditions (referred to as level of service [LOS]) at an intersection based on the average number of seconds of delay for each peak hour experienced by motorists traveling through the intersection. Levels of service range from LOS A (free flow conditions) to LOS F (extreme congestion with very substantial delay). For unsignalized intersections, HCM methodology was used to calculate the average intersection approach delay to determine the LOS.

For the purposes of this ~~D~~FEIR, intersections operating at LOS A through D are considered to be operating at satisfactory LOS and intersections operating at LOS E and F are considered

unsatisfactory. The project is not assumed to be responsible for any capacity improvements if an intersection is currently operating at or is projected to operate at unsatisfactory LOS in the No-Build conditions, unless the intersection is further degraded by the project in accordance with the project criteria.

The results of the current intersection operating conditions analysis, with LOS and average delay for each peak hour, are included in Appendix B of the *Transportation/Traffic Technical Background Report* for this ~~D~~FEIR. Table 3.2-1 (Existing Study Area Intersection Conditions) presents a summary of these results. Among the ~~eighty-six~~ninety intersections analyzed, sixty-two are presently operating at the satisfactory LOS D or better, and twenty-~~six~~eight are currently operating at the unsatisfactorily LOS E or F. Intersections at LOS E or F are shown in bold and italics. The table also describes the existing intersection control, such as signalized or stop controlled.

Figure 3.2-2 (LOS E/F Intersections—Existing [2007] Conditions [Revised]) illustrates the intersections that are currently operating at LOS E and F.

Table 3.2-1 Existing Study Area Intersection Conditions

Intersection	Intersection Control	AM Peak Hour		PM Peak Hour	
		LOS	Delay (sec)	LOS	Delay (sec)
1. 4th St and Colorado Avenue	Signal	C	31.3	C	33.9
2. 4th St/I-10WB and Olympic Boulevard	Signal	C	22.8	C	22.4
3. 4th St/I-10EB and Olympic Boulevard	***Signal***	***E***	***56.7***	***C***	***29.0***
4. Lincoln Boulevard and Colorado Avenue	Signal	D	37.9	D	40.5
5. Lincoln Boulevard/I-10WB and Olympic Boulevard	Signal	C	32.4	C	30.3
6. Lincoln Boulevard/I-10EB and Olympic Boulevard	***Signal***	***F***	***113.8***	***C***	***29.9***
7. 11th St and Colorado Avenue	Signal	B	18.8	C	22.3
8. 11th St (N) and Olympic Boulevard	Signal	B	13.9	B	16.1
9. 11th St (S) and Olympic Boulevard	Signal	B	12.7	B	16.4
10. 14th St and Colorado Avenue	Signal	B	16.8	B	19.2
11. 14th St and Olympic Boulevard	Signal	B	18.6	B	18.1
12. 17th St and Colorado Avenue	Signal	B	16.5	B	17.7
13. 17th St and Olympic Boulevard	Signal	B	17.3	B	18.4
14. 20th St and Colorado Avenue	Signal	C	21.5	B	17.5
15. 20th St and Olympic Boulevard	Signal	D	42.6	C	28.4
16. Cloverfield Boulevard and Colorado Avenue	Signal	D	36.9	D	36.8
17. Cloverfield Boulevard and Olympic Boulevard	Signal	D	48.2	D	39.5
18. 26th St and Colorado Avenue	Signal	B	19.0	C	20.8
19. 26th St and Olympic Boulevard	Signal	D	37.4	D	39.6
20. Stewart St and Colorado Avenue	Signal	B	16.6	B	15.3
21. Stewart St and Olympic Boulevard	Signal	C	32.0	D	38.0

Table 3.2-1 Existing Study Area Intersection Conditions

Intersection	Intersection Control	AM Peak Hour		PM Peak Hour	
		LOS	Delay (sec)	LOS	Delay (sec)
22. Centinela Avenue (W) and Olympic Boulevard	Signal	B	14.8	B	16.3
23. Centinela Avenue (E) and Olympic Boulevard	Signal	B	19.1	B	14.7
24. Centinela Avenue and Exposition Boulevard	TWSC	A	2.6	A	4.2
25. Centinela Avenue and Pico Boulevard	Signal	B	19.5	C	24.0
26. Bundy Dr and Olympic Boulevard	***Signal***	***F***	***174.0***	***E***	***66.7***
27. Bundy Dr and Exposition Boulevard	***TWSC***	***A***	***2.6***	***F***	***300.0***
28. Bundy Dr and Pico Boulevard	Signal	C	33.6	D	38.7
29. Barrington Avenue and Olympic Boulevard	Signal	D	35.7	D	48.3
30. Barrington Avenue and Exposition Boulevard (N)	TWSC	A	8.0	C	24.7
31. Barrington Avenue and Exposition Boulevard (S)	***TWSC***	***A***	***3.8***	***F***	***300.0***
32. Barrington Avenue and Pico Boulevard	Signal	C	24.6	D	37.8
33. Gateway Boulevard/Pico Boulevard and Exposition Boulevard	***Signal***	***F***	***106.5***	***F***	***93.2***
34. Sawtelle Boulevard and Pico Boulevard	***Signal***	***F***	***90.3***	***E***	***77.6***
35. Sawtelle Boulevard and Exposition Boulevard	***TWSC***	***A***	***5.8***	***F***	***300.0***
36. Sawtelle Boulevard and National Boulevard	Signal	C	28.9	C	25.6
37. Sawtelle Boulevard and Palms Boulevard	Signal	B	19.8	C	27.3
38. Sawtelle Boulevard and Venice Boulevard	***Signal***	***E***	***56.8***	***D***	***50.8***
39. Sawtelle Boulevard and I-405 SB Ramps	Signal	C	31.1	C	31.1
40. Sepulveda Boulevard and Pico Boulevard	***Signal***	***D***	***40.4***	***F***	***91.5***
41. Sepulveda Boulevard and Exposition Boulevard	Signal	B	15.6	C	27.4
42. Sepulveda Boulevard and National Boulevard	***Signal***	***D***	***52.6***	***F***	***94.7***
43. Sepulveda Boulevard and Palms Boulevard	***Signal***	***C***	***26.1***	***E***	***63.6***
44. Sepulveda Boulevard and Charnock Rd	Signal	B	15.8	A	8.9
45. Sepulveda Boulevard and Venice Boulevard	***Signal***	***F***	***107.2***	***F***	***90.1***
46. Sepulveda Boulevard and I-405 NB Ramps	Signal	D	39.1	C	23.2
47. Sepulveda Boulevard and Washington Place	Signal	C	23.6	B	15.5
48. Washington Place and Washington Boulevard	Signal	C	32.8	C	25.7
49. Military Avenue and Exposition Boulevard	AWSC	B	11.5	C	15.1
50. Girard Avenue and Venice Boulevard	Signal	C	24.9	C	23.8
51. Westwood Boulevard and Exposition Boulevard (N)	***TWSC***	***C***	***17.3***	***F***	***119.7***
52. Westwood Boulevard and Exposition Boulevard (S)	***TWSC***	***C***	***20.9***	***F***	***129.9***

Table 3.2-1 Existing Study Area Intersection Conditions

Intersection	Intersection Control	AM Peak Hour		PM Peak Hour	
		LOS	Delay (sec)	LOS	Delay (sec)
53. Overland Avenue and Ashby Avenue	Signal	B	16.8	C	23.4
54. Overland Avenue and Northvale Rd	***TWSC***	***F***	***56.0***	***A***	***1.6***
55. Overland Avenue and National Boulevard/I-10 WB Ramps	***Signal***	***F***	***300.4***	***F***	***190.3***
56. Overland Avenue and I-10 EB On-Ramp	Signal	B	19.6	B	16.4
57. Overland Avenue and National Boulevard/National Place	Signal	C	20.1	C	31.4
58. I-10 EB Off-Ramp and National Boulevard	Signal	C	23.8	C	21.2
59. Overland Avenue and Venice Boulevard	***Signal***	***E***	***64.0***	***F***	***98.5***
60. Overland Avenue and Washington Boulevard	***Signal***	***D***	***50.0***	***E***	***57.7***
61. Motor Avenue and National Boulevard	Signal	C	23.6	C	24.3
62. Motor Avenue and Venice Boulevard	Signal	C	23.6	C	22.1
63. Motor Avenue and Washington Boulevard	Signal	B	19.7	B	15.4
64. Clarington Avenue and Venice Boulevard	Signal	C	34.4	D	40.1
65. Clarington Avenue and Washington Boulevard	Signal	C	24.0	C	26.1
66. Palms Boulevard and Exposition Boulevard/National Boulevard	***Signal***	***B***	***17.4***	***E***	***56.8***
67. Hughes Avenue and Venice Boulevard	Signal	D	46.0	D	45.0
68. Hughes Avenue and Washington Boulevard	Signal	B	16.9	B	17.3
69. Manning Avenue and I-10 WB and National Boulevard	***Signal***	***F***	***116.0***	***D***	***37.5***
70. Culver Boulevard/Washington Boulevard/Irving Place	Signal	D	40.6	D	40.6
71. Bagley Avenue and Exposition Boulevard	***AWSC***	***C***	***20.5***	***E***	***48.7***
72. Bagley Avenue/Main St and Venice Boulevard	***Signal***	***C***	***30.8***	***E***	***56.2***
73. Culver Boulevard and Washington Boulevard/Main St	***Signal***	***F***	***290.6***	***F***	***191.4***
74. Culver Boulevard and Venice Boulevard	***Signal***	***F***	***143.0***	***F***	***199.8***
75. Sawtelle Boulevard and Washington Place	Signal	B	15.0	B	17.8
76. Sepulveda Boulevard and Queensland St	Signal	B	14.9	B	14.0
77. Sepulveda Boulevard and Rose Avenue	TWSC	C	23.1	C	15.7
78. Sepulveda Boulevard and Washington Boulevard	Signal	B	19.5	B	19.3
79. Military Avenue and Venice Boulevard	***TWSC***	***F***	***300.0***	***F***	***300.0***
80. Girard Avenue and Washington Boulevard	Signal	B	19.2	B	14.5
81. Robertson Boulevard and Washington Boulevard	Signal	C	26.8	C	24.3

Table 3.2-1 Existing Study Area Intersection Conditions

Intersection	Intersection Control	AM Peak Hour		PM Peak Hour	
		LOS	Delay (sec)	LOS	Delay (sec)
82. 20th St and Broadway	Signal	B	18.0	B	18.4
83. 14th St and Broadway	Signal	B	18.4	C	22.2
84. Lincoln Boulevard and Broadway	Signal	B	16.0	B	17.4
85. 4th St and Broadway	Signal	C	26.8	C	28.9
86. Main St and Colorado Avenue	Signal	B	11.8	B	15.5
87. Sepulveda Boulevard and Olympic Boulevard	***Signal***	***C***	***31.5***	***F***	***81.8***
88. Westwood Boulevard and Pico Boulevard	Signal	C	34.7	D	43.1
89. Overland Avenue and Pico Boulevard	***Signal***	***E***	***65.1***	***F***	***180.9***
90. Bagley Avenue and National Boulevard	Signal	C	27.6	C	22.6

SOURCE: Iteris, 2008; updated 2009.

For unsignalized intersections that are operating at overflow conditions, the delay has been considered as 300 sec.

Intersections at LOS E or F are shown in bold italics.

TWSC = Two-Way Stop Controlled, the average delay has been reported with the corresponding LOS. Delay is shown for the minor street and is the average delay. Thus, significant delay can occur during the peak hour if there is sufficient traffic on both the major and minor street.

AWSC = All-Way Stop Controlled

Bus Services

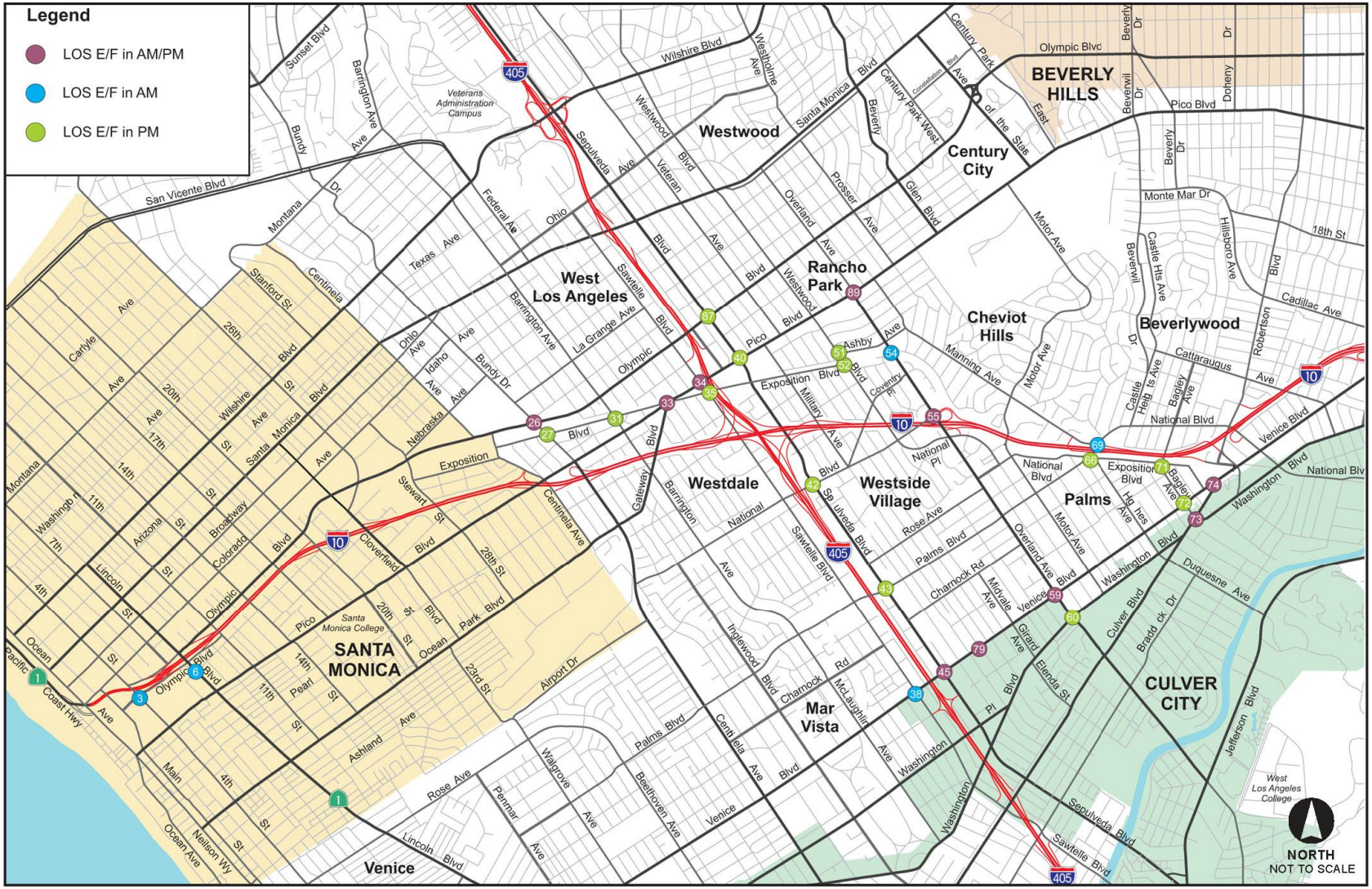
The transit system serving the study area is comprised of an integrated system of many bus services provided by several operators including Metro, Santa Monica Big Blue Bus, Culver CityBus, and LADOT. Study area existing transit services are fully described in Chapter 2 (Project Alternatives) ~~(Figure 2.2-2 [No-Build Alternative—Study Area Routes] and~~ in Table 2.2-2 ~~([~~No-Build Alternative—Study Area Routes~~]~~).

Transportation Centers and Hubs

The study area is served by a network of bus transit services; however, there are few supporting transportation system facilities, such as transit centers or park-and-ride lots. The only transit center located in the vicinity of the study area is the West LA Transit Center located near the intersection of Washington Boulevard and Fairfax Avenue. The West LA Transit Center provides bus transfer and layover space for Metro and Culver City buses. Santa Monica has created a transit hub in its downtown area on Broadway and Santa Monica Boulevard between 2nd and 4th streets to serve several Metro and Santa Monica bus lines.

Bicycle Access

The cities of Los Angeles, Santa Monica, and Culver City have bicycle plans that identify existing and planned bikeway corridors, both on-street and off-street. The plans also provide guidelines and policies for connections to transit, bicycle parking, and other ancillary facilities. There are three classes of bikeways as defined by Caltrans: Class I bike paths (off-street),



Source: Iteris, 2009.

Figure 3.2-2 LOS E/F Intersections—Existing (2007) Conditions [Revised]

Class II bike lanes (on-street), and Class III bike routes (on-street). Existing bikeways in the vicinity of the study area are illustrated in Figure 3.2-3 (Study Area Bikeways).

Parking Inventory

On-Street Parking

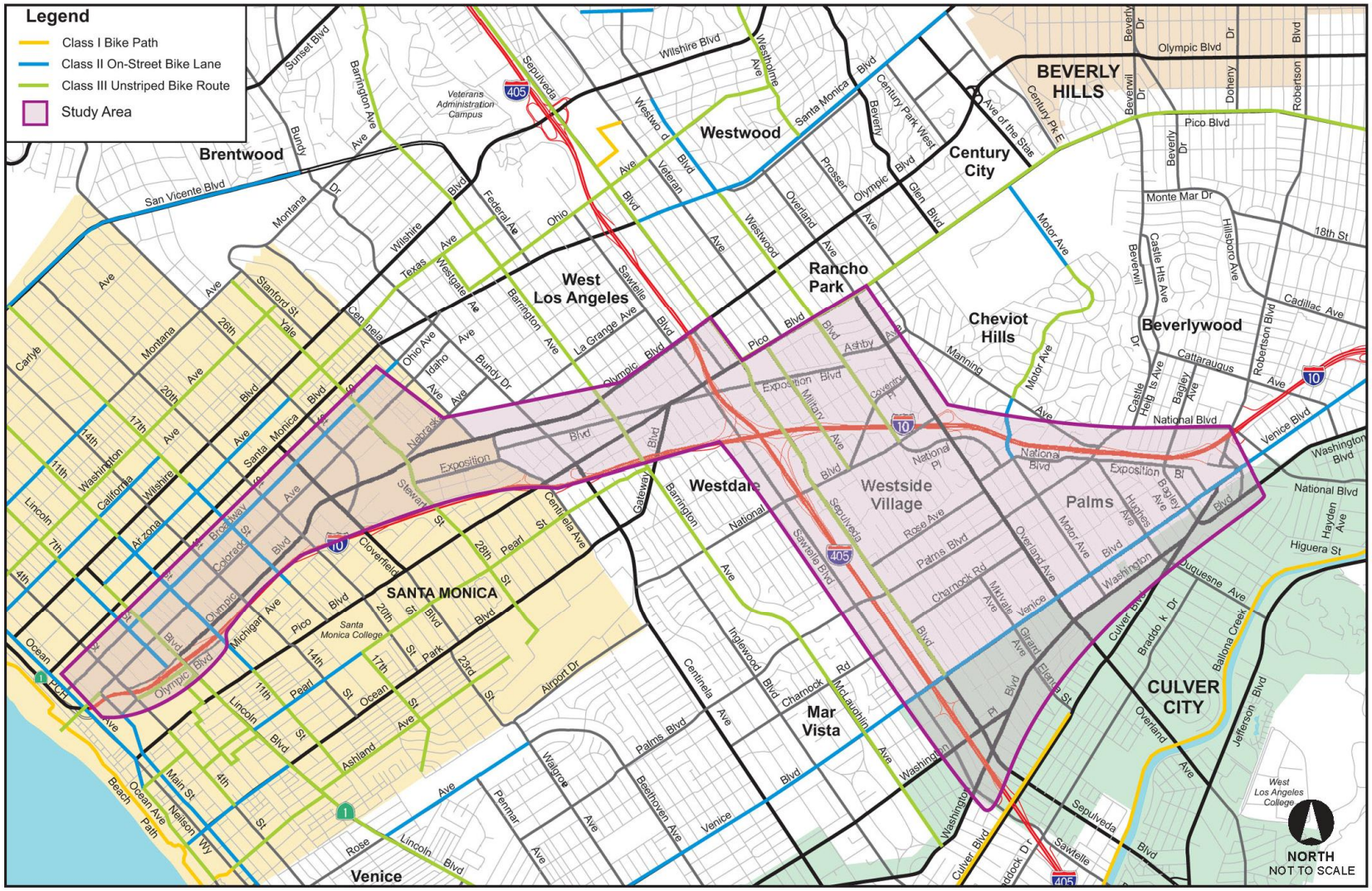
Improvements proposed as part of the project, as described in Chapter 2 (Project Alternatives), could potentially impact on-street parking within the study area. On-street parking spaces that could potentially be impacted along the LRT Alternatives are presented in Table 3.2-2 (Existing Parking Availability within Potentially Impacted Areas). The number of removed spaces was modified in the FEIR to reflect changes to the project that emerged in response to community concerns (i.e., at Westwood Boulevard, Sepulveda Boulevard, Centinela Avenue). ~~Only t~~Those parking spaces that could potentially be removed were inventoried and the utilization of these spaces was assessed. Parking availability on adjacent streets was also inventoried to determine whether these could serve as ~~along with nearby spaces to assess the demand and~~ potential ~~for~~ replacement parking areas. Potential parking replacement options were determined based on the number of removed spaces that were utilized and not on the total number of spaces removed.

The~~se~~e parking inventories were initially completed during weekday, daytime hours in August 2007 and May 2008. In response to comments on the DEIR, supplemental surveys were conducted in certain areas for both daytime and nighttime hours to confirm the validity of the utilization rates and potential parking restrictions (e.g., time limits, metered parking, parking permits, etc.) in May, June, and August 2009. In general, the utilization rates of the initial and supplemental surveys were found to be consistent. In addition, the areas of the surveys were expanded to further clarify the parking availability and restrictions on adjacent streets. As noted in Table 3.2-2 (Existing Parking Availability within Potentially Impacted Areas), t~~T~~he utilization rate in these areas varies from 5 to 78 percent.

The ~~D~~detailed parking analysis is discussed in later sections, with more information found in the *Transportation/Traffic Technical Background Report*. ~~As a part of the next phase of the project, Preliminary Engineering (PE), more detailed surveys will be completed to refine the number of parking spaces to be replaced.~~

Off-Street Parking

A variety of land use exists along the entire length of the LRT Alternatives, including commercial, industrial, residential, recreational, and institutional. As mandated by zoning codes relative to parking requirements, these uses provide off-street parking facilities separate from on-street parking, such as private parking lots/structures. The use of such private parking facilities was not assumed for replacement of impacted on-street parking.



Source: Iteris, 2009.

Figure 3.2-3 Study Area Bikeways

Table 3.2-2 Existing Parking Availability within Potentially Impacted Areas

Project Segment	Potentially Impacted Areas	Limits	Total Parking Spaces Removed	Total Removed Parking Spaces Occupied	% Utilization
Segment 1: Expo ROW	West side of Overland Avenue	Cushdon Avenue to Exposition Boulevard	28	13	46.4%
	East side of Overland Avenue	Exposition Boulevard to Coventry Place	20	1	5.0%
	West side of Westwood Boulevard	Ashby Avenue to ~~700~~400 feet north of Ashby Avenue	10~~24~~	5~~12~~	50.0%
	East side of Westwood Boulevard	Cushdon Avenue to Ashby Avenue	14~~15~~	5	35.7~~33.3~~%
	Westwood Boulevard*	Exposition Boulevard to Richland Avenue	17~~19~~	3	17.6~~15.8~~%
	South Exposition Boulevard*	120 feet west of~~Midvale Avenue to~~ Westwood Boulevard	12~~22~~	5~~11~~	41.7~~50.0~~%
	South Exposition Boulevard*	East of Westwood Boulevard	16~~13~~	3~~2~~	18.8~~15.4~~%
	North Exposition Boulevard*	East of Westwood Boulevard	9	7	77.8%
Segment 1a: Venice/Sepulveda	Venice Boulevard*	Robertson Boulevard to Sepulveda Boulevard	339~~302~~	175~~154~~	51.6~~51.0~~%
	Sepulveda Boulevard*	Venice Boulevard to Exposition Boulevard	397	169	42.6%
Segment 2: Sepulveda to Cloverfield	Exposition Boulevard*	300 feet west of Sepulveda Boulevard ~~to Sawtelle Boulevard~~	26~~69~~	20~~33~~	76.9~~47.8~~%
	Sepulveda Boulevard*	~~Pico Boulevard to 150 feet south of Pearl Street~~ Tennessee Avenue to Richland Avenue	48~~25~~	26~~8~~	54.2~~32.0~~%
	Exposition Boulevard*	Sepulveda Boulevard to Tilden Avenue	43	23	53.5%
	East side of Barrington Avenue	North of Exposition Boulevard	16	7	43.8%
	West side of Barrington Avenue	Tennessee Avenue to Pico Boulevard	3	1	33.3%

Table 3.2-2 Existing Parking Availability within Potentially Impacted Areas

Project Segment	Potentially Impacted Areas	Limits	Total Parking Spaces Removed	Total Removed Parking Spaces Occupied	% Utilization
	~~West side of Centinela Avenue~~	~~Olympic Boulevard to Exposition Boulevard~~	~~21~~	~~20~~	~~95.2%~~
	~~East side of Centinela Avenue~~	~~Exposition Boulevard (East) to Exposition Boulevard (West)~~	~~2~~	~~2~~	~~100.0%~~
	Stewart Street*	Olympic Boulevard to Exposition Boulevard	22	2	9.1%
Segment 3: Olympic	Olympic Boulevard*	20th Street to Euclid Street	123	59	48.0%
Segment 3a: Colorado	Colorado Avenue*	14th Street to 4th Street	56	35	62.5%
Grand Total			***~~1,229~~1,119***	***~~567~~559***	***46.~~1~~6%***

SOURCE: DMJM Harris and Iteris, 2008; updated 2009.

* Both sides of the street were inventoried.

3.2.3 Regulatory Setting

Transportation planning for Los Angeles County at the regional level is the responsibility of the Southern California Association of Governments (SCAG), which is the designated Metropolitan Planning Organization for the six-county Southern California region, which consists of Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties. Under federal law, SCAG must prepare a Regional Transportation Plan (RTP). The RTP demonstrates how the region will meet federal mandates, including air quality requirements, and must be approved by federal agencies in order for the region to continue receiving federal transportation funds. Only projects and programs included in the RTP are eligible for federal funding. The 2008 RTP was adopted in May 2008 and includes the Expo Phase 2 project among the list of projects with already-committed funding. Los Angeles County Metropolitan Transportation Authority (Metro), as the state-designated planning and programming agency for Los Angeles County, submits recommended projects and programs to SCAG for inclusion in the RTP. The approved 2001 Long Range Transportation Plan (LRTP), developed by Metro, included the Expo Phase 2 project in the Constrained Plan. The ~~Draft 2008~~ LRTP approved in October 2009 ~~has been circulated for public review and~~ also includes the Expo Phase 2 project in the Constrained Plan.

The Los Angeles County Congestion Management Plan (CMP) was created statewide as a result of Proposition 111 and has been implemented locally by Metro. The CMP for Los Angeles County requires that the traffic impact of individual development projects of potential regional significance be analyzed. A specific system of arterial roadways plus all freeways comprise the CMP system. Los Angeles County's CMP also has been developed to meet the federal requirements for a Congestion Management System (CMS) initially enacted in the *Intermodal*

Surface Transportation Efficiency Act of 1991 (ISTEA) and continued in the *Transportation Equity Act for the 21st Century* (TEA-21) in 1998 and SAFETEA-LU in 2005.

The Metro Grade Crossing Policy was used to conduct an evaluation of all LRT Alternative grade crossings (MTA Grade Crossing Policy for Light Rail Transit, December 2003). The Policy is intended to provide a structured process for the evaluation of grade crossings along light-rail lines. The Policy includes three levels of review. In addition to the three levels of review, engineering and environmental concerns are also taken into account before a final recommendation is reached.

The first level is Milestone 1, which is a planning-level review resulting in classifying the crossings into one of the following three categories:

- At-grade operation should be feasible
- Possible at-grade operation (further engineering study required to define at-grade operation)
- Grade separation usually required (further engineering study required to define at-grade operation)

Milestone 2 involves detailed operational evaluation taking into account peak period, movement-by-movement analysis of roadway traffic in conjunction with assessment of potential impacts to rail operations due to priority control.

Milestone 3 involves developing consensus regarding the proposed design solution with local constituencies including other involved agencies and the community as appropriate. This step may include PE studies and cost estimates for alternative treatments. It is expected at this point that all technical analyses will have been completed leading to a final recommendation by the Exposition Metro Line Construction Authority (Expo Authority) for the crossing configuration.

Notwithstanding the recommendations resulting from application of the Policy, the California Public Utilities Commission (CPUC) will give the final regulatory approval before a decision is reached.

3.2.4 Analytic Methodology

Travel Forecast Methodology

Traffic conditions for the design year of 2030 were forecasted and evaluated for the No-Build, TSM, and each of the LRT Alternatives. The No-Build Alternative represents the projected design year traffic volumes in the study area in the absence of any transit improvements along the Exposition Corridor, beyond the Expo Phase 1 project to Culver City.

Traffic volume forecasts for the design year 2030 conditions (No-Build, TSM, and LRT Alternatives) are based upon the results of Metro's regional travel demand forecasting model (Metro Travel Demand Model). The Metro Travel Demand Model was updated and refined specifically for use in this study. The Metro Travel Demand Model was used to forecast travel characteristics and ridership for the project design year of 2030. Within the study area, the only major project that the Metro Travel Demand Model includes as it is listed in the 2006 Regional Transportation Improvement Program (RTIP) is the High Occupancy Vehicle (HOV) lane on the I-405 Freeway from I-10 to SR-101 Freeways (RTIP ID# LA0B408). Another major project listed

in the RTIP, but not included in the model, is the widening of the west side of Overland Avenue Bridge over I-10, from National Boulevard/I-10 Westbound Ramps to National Boulevard/National Place (RTIP ID# LA0B7234).

Travel forecasting models, such as the Metro Travel Demand Model, are mathematical models, which describe the relationships between land use and demographics, causes of personal travel, and the resultant amount and location of that travel. These models are statistically derived from observations of individual travel choices obtained through extensive surveys of a region's trip-making characteristics of travelers and their households.

The Metro Travel Demand Model receives its demographic inputs from the SCAG Regional Travel Demand Model. The Metro Travel Demand Model predicts future travel demand based upon several input data items that include the following:

- SCAG forecasts of regional growth in population and employment in the six county region
- SCAG forecast changes in the socio-demographic characteristics of travelers
- Future characteristics of the roadway and transit systems including travel times, costs, and system capacity reflective of the planned system (No-Build Alternative) and TSM and LRT Alternatives

To estimate the more localized traffic impacts associated with the proposed project, intersection traffic volume projections for each Alternative were developed using the following process:

- Development of future base traffic volumes reflecting 2005~~0~~ –2030 background traffic growth, and changes due to auto trip reduction and other shifts in traffic as a direct result of the proposed project
- Development of additional peak hour auto access trips to stations related to station parking trips and drop-off trips
- Estimation of trip diversions due to cross-street and/or left-turn closures and their potential impact on the study area intersection turning movement volumes

The model used to develop traffic volumes is a regional model. In order to ensure that the trips due to station parking and drop-offs are accurately reflected in the analysis, the above methodology was employed. Use of this methodology allowed for a "true" impact analysis, which reflects both macro-level reductions and/or shifts in background traffic due to the proposed project as well as the micro-level additional local impacts created by station-access traffic and transit vehicle delays.

Background Traffic Growth Factors

To develop the "base" traffic volumes, ~~for~~ the first step was to use~~,~~ a growth-factoring process ~~was used~~. Traffic growth factors were calculated for the study area arterials by comparing traffic volume results from the Metro Travel Demand Model for the No-Build Alternative with the TSM Alternative and each of the LRT Alternatives. These results included AM and PM peak hour volumes at key intersections in the study area for the base year 2005 and forecast year 2030. 2005 is the base year in the Metro Travel Demand Model.

Due to a noticeable difference in traffic growth patterns in various subareas within the study area, the traffic volumes for intersections were grouped into six subareas depicted on Figure 3.2-4 (Growth Factor Subareas). A summary of these growth factors for the 2030 No-Build, TSM, and the LRT Alternatives is shown in Table 3.2-3 (Growth Factors for Study Area between 2007 and 2030). The growth factors for the TSM Alternative are marginally less than the No-Build Alternative, reflecting the small mode shift to transit that is expected to be associated with the TSM Alternative. These growth factors were then applied to the existing year 2007, 2008, and 2009 intersection traffic counts to develop future background (base) volumes at each of the study intersections for each Alternative.

Table 3.2-3 Growth Factors for Study Area between 2007 and 2030

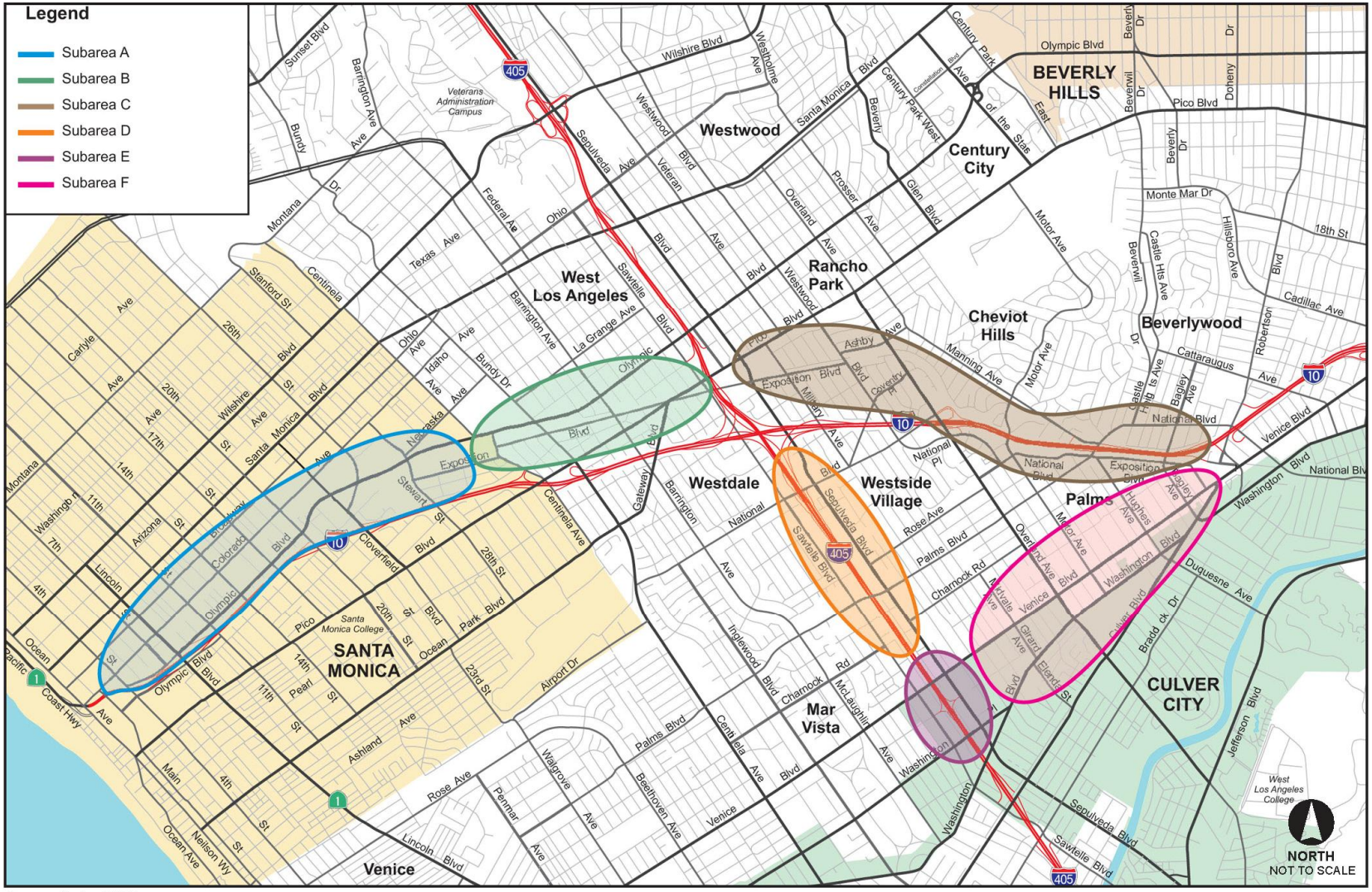
Subarea	AM Peak Hour			PM Peak Hour		
	No-Build	TSM	LRT Alternatives	No-Build	TSM	LRT Alternatives
A	12.6%	11.5%	11.2%	11.4%	11.4%	10.8%
B	19.3%	18.9%	19.1%	19.4%	18.8%	18.2%
C	13.1%	12.6%	12.1%	13.8%	12.6%	13.1%
D	32.3%	30.4%	30.5%	31.1%	30.5%	29.8%
E	18.8%	17.7%	17.8%	19.8%	19.6%	19.7%
F	18.4%	18.3%	17.7%	20.1%	19.5%	19.9%

SOURCE: Iteris, 2008

As can be seen from the table, the model predicts the greatest growth in traffic to be along the Sepulveda and Sawtelle Boulevards corridor, parallel to I-405 (Subarea D). The greatest growth along the Exposition and Olympic Boulevards corridor occurs west of I-405 (Subarea B). The growth in traffic along the Expo ROW corridor, east of I-405 and north of I-10 (Subarea C), is comparatively less (approximately 0.50 percent per year) than other areas in the study area. The Metro Travel Demand Model also predicts considerable growth (approximately 0.80 percent per year) in the Culver City area, along Venice Boulevard and Washington Boulevard (Subareas E and F).

All traffic volume development worksheets are included in Appendix C of the *Transportation/Traffic Technical Background Report*.

As seen on the table, the TSM and LRT Alternatives show lower growth rates than the No-Build Alternative. This reflects a reduction in auto trips due to a shift to transit. Comparing the TSM and LRT Alternatives, it can be seen that generally in most subareas, the LRT Alternatives growth factors are lower than the TSM. It should be noted that these growth factors are calculated as an average over a number intersections over the entire subarea. Hence in some cases, the growth factor in LRT Alternatives is estimated to be slightly higher than for the TSM Alternative. This is due to the fact that the reduction of traffic due to shift in transit trips may not be clearly evident at every intersection and/or roadway segment in the study area.



Source: Iteris, 2009.

Figure 3.2-4 Growth Factor Subareas

Intersection Delay Measure of Impact

The impact threshold for intersections used in this ~~D~~FEIR utilizes the *Highway Capacity Manual* (HCM) operations analysis methodology to quantify existing and future (2030) conditions at all intersections with and without the proposed project. For this study, the threshold is based on the amount of change in average vehicular delay incurred by vehicles through the intersection (as opposed to the change in volume/capacity [V/C] ratios). This provides a more accurate assessment of the effect of signal operational changes, such as signal timing and phasing, changing cycle lengths, various signal progression assumptions, lengthening clearance intervals (when pulling back stop bars behind a parallel rail line), etc. These traffic operational improvements require calculation of intersection and/or approach delay for impacts as well as mitigation measures, which cannot be performed with a straight V/C to LOS range.

For this ~~D~~FEIR, the definition of impact is as follows per the HCM methodology:

An intersection is considered to be impacted if the project traffic is projected to cause deterioration in level of service to LOS E or worse. An intersection is also considered to be impacted if the intersection is already operating at LOS E or F and the project results in an increase in the average vehicle delay of 4 seconds or more at the intersection compared to the No-Build condition.

For this project, a threshold of 4 seconds of delay has been assumed for all intersections; this is slightly more conservative than the 5-second value used for the Expo Phase 1 project and the Canoga Transportation Corridor Project due to the higher traffic volumes in the Expo Phase 2 study area. The criteria for LOS based on average delay are shown in Table 3.2-4 (LOS Criteria Based on Average Delay—Intersections).

Table 3.2-4 LOS Criteria Based on Average Delay—Intersections

Level of Service	Average Delay per Vehicle (sec)—Signalized intersections	Average Delay per Vehicle (sec)—Unsignalized intersections
A	≤10	<10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 50

SOURCE: *2000 Highway Capacity Manual*, Average Delay is the delay experienced by every vehicle in an average in an hour.

While some commenters on the DEIR disagreed with the use of the HCM methodology due to oversaturated intersections in the study area, it is the best available tool for such analysis in an environmental document. The traffic analysis methodology applied for this project is sound in its applicability and consistent with other LRT projects throughout the state and the country where congested or oversaturated intersection conditions exist. To name a few, the following projects utilized the HCM methodology during the environmental process: South Sacramento Corridor Project in Sacramento; Purple Line in Maryland; North Corridor Light Rail Transit Project in

Houston; South Corridor Project in Portland; and East Link Project in Seattle. In addition, the approach to calculating LOS using HCM methods is a commonly accepted practice amongst all of the jurisdictions involved in this project, including the cities of Los Angeles, Santa Monica, Culver City, and the County of Los Angeles. The same methodology was used in the Expo Phase 1 project. Further, the HCM methodology is accepted by the FTA for use in environmental documents.

Even for oversaturated conditions, the impact assessment would not have changed at any of the intersections. Once the intersections are at LOS E or LOS F, the threshold of significance for an impact is the same, 4 seconds increase in delay. Consistent with CEQA, the EIR analysis uses thresholds of significance to determine impacts. Thus, the conclusions of the EIR analysis would not change in terms of the locations of significant impacts and mitigation requirements for oversaturated intersections.

Experts can differ in their opinion regarding the exact procedure to accurately reflect "existing" traffic conditions through the HCM methodology. However, per CEQA, the EIR assesses project impacts under "future" conditions. In this manner, the EIR evaluates the impacts of the project alternatives against projected future traffic conditions in the year 2030. The HCM methodology provides a consistent application in a study area that covers three cities and ninety intersections, identifying impacts both "with" and "without" the project in accordance with CEQA. This is necessary so that the public and the decision-makers may understand the future impacts on traffic of approving or not approving the project.

On-Street Parking

The LRT Alternatives will create parking demand at and around stations and will require, for some LRT Alternatives, the reduction of existing, on-street parking supply. Parking is therefore evaluated with respect to demand for parking as well as to changes to existing on-street parking supply. Project parking demand was predicted using the Metro Travel Demand Model, while existing utilization was determined by physical survey. Permanent loss of existing on-street parking spaces would be considered an impact if the spaces had been consistently utilized to meet the parking demands of nearby land uses and if there were no nearby alternate off-street or on-street parking.

3.2.5 Criteria, Impact Evaluation, and Mitigation Measures

Criterion	**Would the project cause a substantial increase in regional vehicle miles traveled (VMT) or vehicle hours traveled (VHT)?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. The minor improvements in bus service on existing routes that would be implemented under the No-Build Alternative would have a small but positive impact on vehicle miles traveled (VMT) and vehicle hours traveled (VHT). Nevertheless, the No-Build Alternative would still result in continued deterioration of regionwide and study area mobility with falling average travel speeds and increased VMT and VHT in association with future growth in population and jobs. Therefore, the impact is ***significant and unavoidable***.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. The TSM Alternative would reduce regional VMT and VHT relative to the No-Build Alternative. Minor improvements to study are mobility and travel speeds would be noted in association with future growth of population and jobs. Therefore, the impact would be ***beneficial***.

LRT Alternatives

Table 3.2-5 (Performance Measures for Current Year [2005] and Project Alternatives for Year 2030) shows performance by Alternative for a number of typical indicators for the 6-county region, Los Angeles County, and for the study area. These performance measures are used to indicate the effectiveness of each Alternative in improving mobility.

The table shows that LRT Alternative 1 provides the best overall transportation performance in terms of reduced VMT and VHT and increased average highway speeds, both regionwide and throughout the study area. LRT Alternative 3 shows lesser reductions in VMT and VHT, both regionwide and throughout the study area. LRT Alternatives 2 and 4 show increases in regionwide VMT and VHT, likely due to the reduction in lane capacity along Colorado Avenue associated with those Alternatives. All four LRT Alternatives show a ***beneficial impact*** in terms of reduction of VMT and VHT in Los Angeles County and the study area.

FEIR Design Options

Implementation of the Colorado Parking Retention, Sepulveda Grade Separation, Colorado/4th Parallel Platform and South Side Parking, Maintenance Facility Buffer, or Expo/Westwood Station No Parking design options would not cause a substantial increase in regional VMT or VHT. As such, no impact beyond that discussed above for the LRT Alternatives would occur with implementation of any of the identified design options. Impacts would remain ***beneficial*** with implementation of the design options.

Table 3.2-5 Performance Measures for Current Year (2005) and Project Alternatives for Year 2030

Performance Measures	Existing (2005)	No-Build Alternative	TSM Alternative	LRT 1: Expo ROW–Olympic Alternative	LRT 2: Expo ROW–Colorado Alternative	LRT 3: Venice/ Sepulveda–Olympic Alternative	LRT 4: Venice/ Sepulveda–Colorado Alternative
Six County Region							
Daily Auto VMT	325,651,489	454,216,941	454,283,158	454,141,039	454,249,551	454,190,217	454,259,139
		% Diff from No-Build	0.01%	-0.02%	0.01%	-0.01%	0.01%
Daily Auto VHT	10,381,384	20,161,579	20,163,440	20,155,624	20,165,425	20,159,001	20,169,954
		% Diff from No-Build	0.01%	-0.03%	0.02%	-0.01%	0.04%
Daily Avg. Speed (mph)	31	23	23	23	23	23	23
		-25.81%	0.00%	0.00%	0.00%	0.00%	0.00%
Los Angeles County							
Daily Auto VMT	168,623,923	223,164,138	223,163,833	223,073,743	223,120,245	223,147,690	223,152,265
		% Diff from No Build	-0.001%	-0.04%	-0.02%	-0.01%	-0.01%
Daily Auto VHT	5,173,085	9.363,595	9,362,004	9,342,867	9,354,590	9,360,651	9,351,369
		% Diff from No Build	-0.02%	-0.22%	-0.10%	-0.03%	-0.13%
Daily Avg. Speed (mph)	33	24	24	24	24	24	24
		-27.20%	0.00%	0.00%	0.00%	0.00%	0.00%
Expo Study Area							
Daily Auto VMT	2,121,209	2,695,854	2,693,804	2,684,231	2,685,511	2,686,360	2,685,540
		% Diff from No-Build	-0.08%	-0.43%	-0.38%	-0.35%	-0.38%
Daily Auto VHT	65,586	114,091	113,809	112,476	112,701	112,831	112,605
		% Diff from No-Build	-0.25%	-1.42%	-1.22%	-1.10%	-1.30%
Daily Avg. Speed (mph)	32	24	24	24	24	24	24
		% Diff from No-Build	0.00%	0.00%	0.00%	0.00%	0.00%
AM Peak Auto VMT	415,390	547,294	546,294	543,442	543,929	545,044	543,896
		% Diff from No-Build	-0.18%	-0.70%	-0.61%	-0.41%	-0.62%

Table 3.2-5 Performance Measures for Current Year (2005) and Project Alternatives for Year 2030

Performance Measures	Existing (2005)	No-Build Alternative	TSM Alternative	LRT 1: Expo ROW–Olympic Alternative	LRT 2: Expo ROW–Colorado Alternative	LRT 3: Venice/ Sepulveda–Olympic Alternative	LRT 4: Venice/ Sepulveda–Colorado Alternative
AM Peak Auto VHT	14,673	28,348	28,197	27,709	27,824	27,999	27,844
		% Diff from No-Build	-0.53%	-2.25%	-1.85%	-1.23%	-1.78%
AM Peak Avg. Speed (mph)	28	19	19	20	20	20	20
		% Diff from No-Build	0.00%	5.26%	5.26%	5.26%	5.26%
PM Peak Auto VMT	613,998	802,765	802,229	798,904	799,348	799,156	798,301
		% Diff from No-Build	-0.07%	-0.48%	-0.43%	-0.45%	-0.56%
PM Peak Auto VHT	23,918	49,036	48,911	48,233	48,336	48,271	48,158
		% Diff from No-Build	-0.25%	-1.64%	-1.43%	-1.56%	-1.79%
PM Peak Avg. Speed (mph)	26	16	16	17	17	17	17
		% Diff from No-Build	0.00%	6.25%	6.25%	6.25%	6.25%

SOURCE: AECOM and Iteris, 2008.

VMT = Vehicle Miles Traveled; VHT = Vehicle Hours Traveled

Criterion **Would the project cause a substantial decrease in daily transit trips, daily boardings, or transit mode share?**

No-Build Alternative

There will be roadway and transit service improvements in association with the No-Build Alternative and only limited on-street transit improvements. The No-Build Alternative results in a small increase in transit use over current conditions based upon the Metro Travel Demand Model. There would be ***no impact*** associated with the No-Build Alternative. However, the No-Build Alternative is inconsistent with the SCAG RTP, which includes the Expo Phase 2 project. The No-Build Alternative results in lower transit ridership than the TSM Alternative or any of the LRT Alternatives.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. The TSM Alternative results in an increase in transit use relative to the No-Build Alternative based upon the Metro Travel Demand Model. There would be a ***beneficial*** impact associated with the TSM Alternative.

LRT Alternatives

As can be seen from Table 3.2-6 (Comparison of Transit Performance Measures for 2030), all the Alternatives show an increase in total transit trips and the transit mode share as compared to the No-Build Alternative and have a ***beneficial impact*** in terms of increase in transit trips and transit mode share with LRT Alternatives 1 and 2~~3~~ providing a slightly higher level of benefits.

Table 3.2-6 Comparison of Transit Performance Measures for 2030

Regionwide	No-Build Alternative	TSM Alternative	LRT 1: Expo ROW–Olympic Alternative	LRT 2: Expo ROW–Colorado Alternative	LRT 3: Venice/ Sepulveda–Olympic Alternative	LRT 4: Venice/ Sepulveda–Colorado Alternative
Daily Boardings	—	—	36,653	36,412	35,880	35,849
Daily Transit Trips	1,528,323	1,531,723	1,542,727	1,542,709	1,541,975	1,542,055
	% Diff from No-Build	0.22%	0.94%	0.94%	0.89%	0.90%
Transit Mode Share	1.963%	1.967%	1.981%	1.981%	1.980%	1.980%
	% Diff from No-Build	0.22%	0.94%	0.94%	0.89%	0.90%

Daily Boardings = The total project LRT boardings within the study area; Daily Transit Trips = The total transit trips in the entire county; Transit Mode Share = The % of transit trips compared to the total trips.

The statistics for the TSM and LRT Alternatives are compared to the No-Build Alternative.

FEIR Design Options

Implementation of the Colorado Parking Retention, Sepulveda Grade Separation, Colorado/4th Parallel Platform and South Side Parking, or Maintenance Facility Buffer would not change daily transit trips, daily boardings, or transit mode share. As such, impacts would remain ***beneficial*** with implementation of these design options.

The Expo/Westwood Station No Parking Design Option would cause a decrease in daily boardings and transit trips commensurate with the elimination of 170 parking spaces, as transit patrons would no longer be able to drive and park at this station. However, some passengers may drive to another nearby Expo Phase 2 station to board the system or they may access the Expo/Westwood Station by walking, biking or taking the bus. Overall, impacts to the LRT Alternatives would still remain ***beneficial*** with implementation of this design option, as there would still be an increase in daily boardings, transit trips and transit mode share in comparison to the No-Build Alternative.

Criterion	**Would the project's at-grade crossings substantially disrupt traffic operations and/or substantially affect emergency vehicle response?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. There are no at-grade crossings proposed in the No-Build Alternative. Therefore, ***no impact*** would occur.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. Buses would operate in traffic, using standard intersection signalization. There are no ~~gated~~ at-grade crossings proposed in the TSM Alternative. Therefore, ***no impact*** would occur.

LRT Alternatives

The Metro Grade Crossing Policy for Light Rail Transit (December 2003) was used to perform an analysis of all potential at-grade crossings for the LRT Alternatives as described in Section 3.2.3 (Regulatory Setting). Engineering and environmental concerns were also taken into account in developing the final recommendations for at-grade versus grade-separated crossings.

Since the release of the DEIR, additional studies and discussions with LADOT regarding the evaluation of additional grade separations have occurred in response to comments received on the DEIR. As a result, the at-grade crossings at Overland Avenue, Westwood Boulevard, Sepulveda Boulevard, Barrington Avenue, and Centinela Avenue were reconsidered and reanalyzed using the Metro Grade Crossing Policy, engineering, and EIR thresholds of significance. CPUC standards were also taken into consideration, as well as other environmental factors such as parking impacts, tree removal, property acquisitions, etc. Both at-

grade improvements and grade-separated options were discussed. Refer to the Appendix D of the *Transportation/Traffic Technical Background Report* for the detailed traffic analysis.

These additional studies can be considered an attainment of Milestone 3 under the Grade Crossing Policy, which typically occurs during the final portion of the environmental review process. This additional analysis is consistent with the guidelines, as outlined in the Metro Grade Crossing Policy. As stated in the Metro Grade Crossing Policy (Appendix A, page 1), "If the agency and the local jurisdiction or other involved party such as the CPUC cannot agree on the status of a grade crossing after a detailed analysis has been conducted, then other studies may be used to reach a final technical recommendation on the classification of the crossing." The policy further states that "Traffic simulation modeling may be used to demonstrate how the crossings will operate at grade and verify the effects of traffic and train operations that were predicted in the detailed analysis."

The additional studies included Synchro analysis based on the 95th percentile queue and the existing signal timing plans, as provided by LADOT. The Synchro model and software represent a tool that is geared toward roadway level traffic analysis and visual simulation of traffic conditions. As part of the Milestone 3 analysis, Synchro was used to assess in detail and refine some of the roadway improvements and mitigations that were built into the project description, as proposed in the DEIR. Synchro illustrates how queues develop and dissipate and sometimes extend between intersections affecting one another. It provides statistics such as travel time and average speed on roadways between specified points. The Synchro tool was used as part of the grade crossing Milestone 3 analysis to assess traffic conditions on Overland Avenue, where overall travel time conditions between Pico Boulevard and the I-10 Freeway were of concern to the public under various alternative striping configurations. It was also used to assess the interplay of queues between the two intersections of Centinela Avenue with Olympic Boulevard, where the intersections are offset, but closely spaced. The Synchro analysis of the Overland Avenue and Centinela Avenue crossings is summarized below, with more detailed information found in the *Transportation/Traffic Technical Background Report*.

A summary of the additional analyses and coordination efforts with LADOT is provided below:

Overland Avenue

As part of Milestone 3 (verification stage) of the Metro Grade Crossing Policy, a detailed Synchro analysis model was developed to assess the LOS and queuing impacts on the overall Overland Avenue from the I-10 Freeway to Pico Boulevard. The corridor analysis along Overland Avenue shows that the travel times for the LRT Alternatives would be higher than the No-Build Alternative. Under the LRT Alternatives, additional delays of 40 seconds for the LRT phase and 7 seconds for a clearance phase have been added for every 90 seconds. The increase in travel time along Overland Avenue between the I-10 ramps and Pico Boulevard would be about 47 seconds in the northbound direction and 20 seconds in the southbound direction during the AM peak hour. The increase during the PM peak hour would be approximately 17 seconds in the northbound direction and 5 seconds in the southbound direction. This would be primarily due to the additional lane in the southbound direction between Cushdon Avenue and Coventry Place assumed for the LRT Alternatives. Also, the additional traffic signal at the LRT crossing would only affect the adjacent intersections at Ashby Avenue and Coventry Place. The signal at the intersection of Overland Avenue/Ashby Avenue would be pre-empted and a queue cutter would be installed at the crossing/Northvale Road.

Intersection level analyses show that based on the DEIR traffic impact threshold criteria, none of the intersections along Overland Avenue would be significantly impacted. The difference in the intersection delay between the No-Build and LRT Alternatives would be less than the significant impact threshold of 4 seconds at each location. The Overland Avenue intersections at Ashby Avenue and Coventry Place would have less intersection delay in the LRT Alternatives than in the No-Build.

Based on queuing analysis, the queues for most of the movements would be the same in the No-Build and LRT Alternatives. For the LRT Alternatives, the queues at Ashby Avenue and Coventry Place would be shorter than the No-Build Alternative. The southbound through queues would be significantly shorter in the LRT Alternatives. This would be primarily due to an additional lane in the southbound direction and the proximity to the LRT crossing, which would shift the queues to the LRT crossing. The east/west queues at Ashby Avenue would be less in the LRT Alternatives compared to the No-Build Alternative.

The results of the additional analysis were consistent with the DEIR, and in consultation with LADOT, the improvements identified in the DEIR were determined adequate for the Overland Avenue crossing to operate safely at-grade.

Westwood Boulevard

As documented in the DEIR, an at-grade crossing at Westwood Boulevard would eliminate some on-street parking, as well as impact trees and sidewalks, but reconstruct inadequate sidewalks to a larger width. As part of discussions with LADOT, many alternatives were examined to minimize these impacts, including removing the center two-way left turn lane or eliminating bus traffic from the street. Based on this analysis and subsequent discussions with LADOT, these alternatives would have resulted in other safety and grade crossing impacts and, therefore, were not considered further. As such, the improvements identified in the DEIR were determined adequate for the Westwood Boulevard crossing to operate safely at-grade.

However, the signal phasing at the intersection of Westwood Boulevard and Exposition Boulevard North was refined, resulting in a revised LOS and delay that are shown later in this section in Table 3.2-14 (Segment 1 Study Area Intersections—Year 2030 LOS [AM Peak Hour]) and Table 3.2-15 (Segment 1 Study Area Intersections—Year 2030 LOS [PM Peak Hour]). The revised LOS and delay would remain at acceptable levels, as the change in signal phasing would not cause the LOS to deteriorate below LOS E or LOS F or increase the average vehicle delay for the intersection by 4 seconds or more for intersections that are already operating at LOS E or LOS F. As such, the change in signal phasing would result in a less-than-significant impact at this intersection.

Sepulveda Boulevard

As described in the DEIR, the Metro Grade Crossing Policy Milestone 2 analysis indicated that the southbound gate spillback queue from the LRT grade crossing at Sepulveda Boulevard to Pico Boulevard would be insufficient. Therefore, the DEIR recommended adding a third southbound lane between Pico Boulevard and Richland Avenue to accommodate the long queues. The Milestone 2 analysis also showed that the northbound influence zone queue from Pico Boulevard to the LRT crossing would be sufficient by only 66 feet, which would be the difference between the estimated average peak queue of 484 feet and the available storage space of 550 feet. Although the operational queuing check predicted that there could be influence zone queuing storage deficiencies, based on the above calculations, the DEIR

concluded that the existing two northbound lanes on Sepulveda Boulevard between the LRT grade crossing and Pico Boulevard would be sufficient to handle the typical queuing conditions.

In close consultation with LADOT, the Expo Authority conducted the Milestone 3 analysis for the LRT grade crossing at Sepulveda Boulevard. The forecast 2030 PM peak hour operations at the intersection of Pico Boulevard at Sepulveda Boulevard (the closest controlling intersection to the LRT crossing) showed an LOS F, an average delay per vehicle of 149.8 seconds and a very high volume/capacity ratio of 2.09. These extremely high current and projected future peak hour congestion levels and failing LOS at the Pico/Sepulveda intersection, increase the chance of the southbound influence zone queue calculations exceeding the calculated 484 feet. Furthermore, LADOT indicated that in the event the northbound queues on Sepulveda Boulevard exceed the 550 feet of available storage space, it would not be possible to preempt east/west traffic signals at the Pico/Sepulveda intersection to clear northbound queues on Sepulveda Boulevard due to the need to maintain signal coordination along Pico Boulevard, which is a major City of Los Angeles arterial.

Based on the ongoing discussions with LADOT and Milestone 3 analysis, it was determined that an additional northbound lane on Sepulveda Boulevard between the LRT crossing and Pico Boulevard (similar to the additional southbound lane recommended in the DEIR), would provide a “balanced” symmetrical cross-section for Sepulveda Boulevard. It would also improve the highly congested forecast operating condition of Pico/Sepulveda intersection by reducing average PM peak hour delay per vehicle by 11 percent. Further, this third southbound lane would significantly decrease the chances of violating the influence zone queues, since it would reduce the PM peak southbound storage requirements from 484 feet to a manageable 319 feet, within the available 550 feet.

Therefore, the FEIR adds a third northbound through lane on Sepulveda Boulevard between the LRT crossing and Pico Boulevard. Furthermore, the third northbound lane would be extended north of Pico Boulevard, with proper transition lengths provided back to two lanes north of Pico Boulevard. This would ensure that the additional third northbound lane at this intersection would provide sufficient traffic capacity, operating as a third through-lane.

In addition to the proposed traffic and grade crossing improvements proposed for Sepulveda Boulevard, the Expo Authority has evaluated the issues associated with a potential future grade separation of Sepulveda Boulevard, along with an aerial station at the same location as the at-grade station (i.e., just east of Sepulveda Boulevard). The Expo Authority has included the Sepulveda Boulevard grade separation and aerial station as a design option in response to community comments and the potential development of commercial and /or residential properties on the property generally known as the Casden parcel. This parcel is located just west of Sepulveda Boulevard and immediately north of the Expo ROW. An aerial station would provide better joint development opportunities, as well as better pedestrian, auto, and commercial vehicle circulation. Since the station would be located in close proximity to Sepulveda Boulevard, a grade separation of the LRT guideway would also be required. Thus, the Expo Authority has included the aerial station and grade separation of Sepulveda Boulevard as a design option in this FEIR, which could be constructed subject to the provision of additional funding by others.

Barrington Avenue

Upon further discussion and consultation, LADOT agreed with the proposed grade crossing analysis and configuration at Barrington Avenue, as originally proposed in the DEIR.

Centinela Avenue

As part of Milestone 3 (verification stage) of the Metro Grade Crossing Policy, a detailed Synchro analysis model was developed to assess the LOS and queuing impacts at Centinela Avenue. Based on the Synchro and SimTraffic simulation analysis, it was concluded that both spillback queues and influence zone queues would be a potential problem between the LRT crossing and the Centinela (E)/Olympic intersection. In addition, the westbound left turning queues at Centinela (E)/Olympic intersection would have the potential to block the westbound through and left-turn vehicles, disrupting traffic operations on Olympic Boulevard.

In addition, in order to assess the feasibility of signal preemption at the intersection of Centinela (E)/Olympic, a numerical evaluation was performed to determine the impact of signal preemption on traffic flow progression on Olympic Boulevard. This evaluation was done based on calculations given in the Metro Grade Crossing Policy. The Metro Grade Crossing Policy provides a procedure to evaluate the potential impact of preemption on progressive traffic movements. The evaluation is based upon the degree of cross street traffic progression required to be present and the adjusted volume/capacity (V/C) ratio of the controlling intersection. The results of the evaluation indicate that signal preemption of Centinela (E)/Olympic intersection would result in significant reduction in the quality of traffic flow progression on Olympic Boulevard. This analysis shows that the impact of 24 preemptions per hour is sufficient to raise the V/C at the controlling intersection Centinela (E)/Olympic from 0.85 to 1.97. Using the methodology, traffic operational performance would be considered a “FAIL” if a moderate or high degree of progression is present, or required to be maintained, on the cross street. Extenuating factors would need to be considered in order to accept pre-emption at this location.

Based on this additional analysis, it was concluded that an at-grade crossing is not feasible at this location. As such, a grade separation at Centinela Avenue is recommended in the FEIR.

LADOT Concurrence Regarding Key Locations

After extensive collaborative efforts working with the Expo Authority, the LADOT issued a follow-up letter on October 15, 2009 regarding the Expo Phase 2 project. In this letter, LADOT provided a comparison of at-grade and grade separated operations, summarizing the general impacts of at-grade crossings. Overall, LADOT concurred with the Expo Authority’s FEIR at-grade and grade separated recommendations at various locations along the Exposition ROW, acknowledging that the CPUC would ultimately need to approve the proposed at-grade crossings. Further, they acknowledge that delays and queuing at the at-grade crossings would be within manageable limits. In addition, they acknowledge that on-street parking losses can be accommodated on adjacent streets. The LADOT’s October 15, 2009 letter is included in the *Transportation/Traffic Technical Background Report*, Appendix D (Milestone 3 Analysis).

CPUC Progress Summary

On December 4, 2009, the CPUC also issued a follow-up letter to the Expo Authority that provided a progress summary of the Expo Phase 2 project crossings since the release of the

DEIR. This letter acknowledges the extensive coordination and consultation by the Expo Authority with the CPUC, LADOT, and the City of Santa Monica in response to the CPUC and other comments on the DEIR. Further, the CPUC recognizes the additional work and analysis that was conducted on the crossings, which resulted in proposed project revisions and mitigation measures to further reduce impacts. Accordingly, they state that "the Expo Authority has been responsive to issues raised by the CPUC staff and LADOT concerning the impacts of the proposed crossings." However, the CPUC also acknowledges that they have not made a final determination regarding compliance with CPUC regulatory requirements, which would be made after certification of the FEIR and completion of the CPUC Rail Crossing Hazard Analysis process outlined in GO 164-D. As further noted, the Expo Authority, LADOT, City of Santa Monica, and CPUC will continue to work together during the next steps of the CPUC approval process. The CPUC's December 4, 2009 letter is also included in the *Transportation/Traffic Technical Background Report*, Appendix D (Milestone 3 Analysis).

The detailed grade crossing analysis, including additional studies conducted as part of Milestone 3 is included as part of Appendix D of the *Transportation/Traffic Technical Background Report*. Table 3.2-7 (Grade Crossing Analysis—Results for Milestones 1, ~~and~~ 2, and 3) provides a summary of the analysis results and Table 3.2-8 (Grade Crossing Analysis—Proposed Improvements) provides a detailed summary of the improvements identified to allow an at-grade operation. These tables have been updated in the FEIR to reflect the results of the additional studies, coordination efforts, and project changes.

The improvements identified in Table 3.2-7 (Grade Crossing Analysis—Results for Milestones 1, 2, and 3) and Table 3.2-8 (Grade Crossing Analysis—Proposed Improvements) are essential to provide acceptable at-grade operations per the Metro Grade Crossing Policy; hence, they are assumed to be part of the project and included in each LRT Alternative as appropriate. The impact assessment results summarized later in this section include all of these proposed improvements.

Table 3.2-7 Grade Crossing Analysis—Results for Milestones 1, ~~and~~ 2, and 3

Segment	Grade Crossing	Preliminary Disposition[a]	Remarks
Segment 1: Expo ROW	Bagley Avenue/Exposition Boulevard/Expo ROW	At-Grade, Signal	
	Overland Avenue/Expo ROW	At-Grade, Signal	Proposed Improvements (Table 3.2-8)
	Westwood Boulevard/Expo ROW	At-Grade, Signal	Proposed Improvements (Table 3.2-8)
	Military Avenue/Expo ROW	At-Grade, Signal	
	Sepulveda Boulevard/Exposition Boulevard/Expo ROW	At-Grade	Proposed Improvements (Table 3.2-8)
Segment 1a: Venice/Sepulveda	Culver Boulevard/Venice Boulevard	Grade Separated	Grade Separated due to engineering issues
	Bagley Avenue/Main St/Venice Boulevard	Grade Separated	Grade Separated due to engineering issues
	Hughes Avenue/Venice Boulevard	At-Grade	
	Clarington Avenue/Venice Boulevard	At-Grade	
	Motor Avenue/Venice Boulevard	At-Grade	
	Overland Avenue/Venice Boulevard	Grade Separated	
	Girard Avenue/Midvale Avenue/Venice Boulevard	At-Grade	
	Military Avenue/Venice Boulevard	Grade Separated	Grade Separated due to engineering issues
	Sepulveda Boulevard/Venice Boulevard	Grade Separated	
	Sepulveda Boulevard/Charnock Road (South)	At-Grade, Signal	
	Sepulveda Boulevard/Charnock Road (North)	Grade Separated	Grade Separated due to engineering issues
	Sepulveda Boulevard/Palms Boulevard	Grade Separated	
	Sepulveda Boulevard/Rose Avenue	Grade Separated	Grade Separated due to engineering issues

Table 3.2-7 Grade Crossing Analysis—Results for Milestones 1, ~~and~~ 2, and 3

Segment	Grade Crossing	Preliminary Disposition[a]	Remarks
	Sepulveda Boulevard/National Boulevard	Grade Separated	
	Sepulveda Boulevard/Exposition Boulevard	At-Grade	Proposed Improvements (Table 3.2-8)
Segment 2: Sepulveda to Cloverfield	Sawtelle Boulevard/Exposition Boulevard/Expo ROW	Grade Separated	Grade Separated due to engineering issues
	Gateway Boulevard/Pico Boulevard/Expo ROW	Grade Separated	
	Barrington Avenue/Expo ROW	At-Grade, Signal	Proposed Improvements (Table 3.2-8)
	Bundy Drive/Expo ROW	Grade Separated	
	Centinela Avenue/Expo ROW	~~At-~~Grade Separated	~~Proposed Improvements (Table 3.2-8)~~Results of Metro Grade Crossing Policy: Milestone 3
	Stewart Street/Expo ROW	At-Grade, Signal	Proposed Improvements (Table 3.2-8)
	26th Street/Olympic Boulevard/Expo ROW	At-Grade	
	Cloverfield Boulevard/Olympic Boulevard/Expo ROW	Grade Separated	
Segment 3: Olympic	Median of Olympic Boulevard	Grade Separated	Grade Separated due to engineering issues
	20th Street/Olympic Boulevard	At-Grade, Signal	
	19th Street/Colorado Avenue	At-Grade, Signal	
	17th Street/Olympic Boulevard	At-Grade	
	14th Street/Olympic Boulevard	At-Grade	
	11th Street/Olympic Boulevard	Grade Separated	Grade Separated due to engineering issues
	Lincoln Boulevard/Olympic Boulevard	Grade Separated	

Table 3.2-7 Grade Crossing Analysis—Results for Milestones 1, ~~and~~ 2, and 3

Segment	Grade Crossing	Preliminary Disposition[a]	Remarks
Segment 3a: Colorado	Olympic Boulevard	Grade Separated	Grade Separated due to engineering issues
	20th Street/Colorado Avenue	At-Grade	
	17th Street/Colorado Avenue	At-Grade	
	14th Street/Colorado Avenue	At-Grade	
	11th Street/Colorado Avenue	At-Grade	
	Lincoln Boulevard/Colorado Avenue	At-Grade	Proposed Improvements (Table 3.2-8)

SOURCE: Iteris, 2008; updated 2009.

a. The term "At-Grade" refers to a crossing where the roadway and the LRT tracks are at the same level. The term "Grade Separated" refers to a crossing where the roadway and LRT tracks are at different levels (through use of a bridge or a tunnel).

Table 3.2-8 Grade Crossing Analysis—Proposed Improvements

Project Segment	Grade Crossing	Proposed Improvements
Segment 1: Expo ROW	Overland Avenue/ Expo ROW	• Add one southbound through and one northbound through lane between Coventry Place and Cushdon Avenue • Prohibit on-street parking on the west side of Overland between Cushdon Avenue and Expo ROW, and on the east side of Overland between Expo ROW and Coventry Place between 7:00 a.m. and 7:00 p.m. to accommodate additional lanes • Add a signal at the Expo ROW crossing to facilitate pedestrian/bikeway access across Overland Avenue; to be cleared and funded by others • Eliminate eastbound left turn lane on Exposition Boulevard (South) • Eliminate westbound left turn lane on Northvale Road • Pre-empt signal at intersection of Overland Avenue/Ashby Avenue; install queue cutter at the crossing/Northvale Road
	Westwood Boulevard/ Expo ROW	• Signalize intersections of Westwood and Exposition Boulevards (South and North) • Add a northbound through lane between Ashby Avenue and Richland Avenue • Prohibit on-street parking in the vicinity of north and south bus zones near the Expo ROW crossing[a] • Restrict west leg of Exposition Boulevard (South) to right-out only and east leg to right-in/right-out only for access to proposed station parking • Allow northbound and eastbound lefts at Exposition Boulevard (North) but restrict east leg to right-out only • ~~Add a signal at the Expo ROW crossing to facilitate pedestrian access across Westwood Boulevard~~

Table 3.2-8 Grade Crossing Analysis—Proposed Improvements

Project Segment	Grade Crossing	Proposed Improvements
	Sepulveda Boulevard/ Exposition Boulevard/ Expo ROW	• Add one southbound through lane between Pico and Richland Avenues (taper to end at Richland) • Add one northbound through lane from south of Exposition Boulevard to Tennessee Avenue (taper to end at Tennessee) • Prohibit on-street parking on the east side of Sepulveda Boulevard between ~~Pico Boulevard~~ Tennessee Avenue and Pearl Street, and on the west side of Sepulveda Boulevard between Tennessee Avenue and Pico Boulevard and ~~from 400' north of the Expo ROW to south of Pearl Street~~ between Exposition Boulevard and Richland Avenue to accommodate additional lanes • Provide exclusive eastbound and westbound left turn lanes on Exposition Boulevard to Sepulveda Boulevard • Grade separate as a design option
Segment 1a: Venice/Sepulveda	Sepulveda Boulevard/ Exposition Boulevard	• Add one southbound through lane between Pico and Richland Avenues (taper to end at Richland) • Prohibit on-street parking between Pico Boulevard and Exposition Boulevard to accommodate additional lane • Provide exclusive eastbound and westbound left turn lanes on Exposition Boulevard to Sepulveda Boulevard
Segment 2: Sepulveda to Cloverfield	Barrington Avenue/ Expo ROW	• Elongate the northbound left turn lane between the Expo ROW crossing and Olympic Boulevard • Add a dedicated northbound right turn lane at Olympic Boulevard • Add a dedicated southbound right turn lane at Pico Boulevard • Exposition Boulevard (North) and the driveway on east side just north of the Expo ROW crossing would operate as a right-in/right-out access only • Close the east leg of Exposition Boulevard (South) and prohibit eastbound left turns • Prohibit on-street parking generally on the west side of Barrington Avenue between Exposition Boulevard (North) and Tennessee Avenue • Add a signal at the Expo ROW crossing to facilitate pedestrian/bikeway access across Barrington Avenue; to be cleared and funded by others

Table 3.2-8 Grade Crossing Analysis—Proposed Improvements

Project Segment	Grade Crossing	Proposed Improvements
	~~Centinela Avenue/ Expo ROW~~	• ~~Add one northbound lane between the Expo ROW and Olympic Boulevard~~ • ~~Add two northbound lanes between Exposition Boulevard and the Expo ROW~~ • ~~Signalize Exposition Boulevard (North) and prohibit southbound left turns~~ • ~~Prohibit on-street parking on both sides of Centinela Avenue between Olympic Boulevard and Exposition Boulevard~~
	Stewart Street/ Expo ROW	• Add a southbound through lane between Olympic Boulevard and Exposition Boulevard ~~(south of the Expo ROW)~~ • Add a dedicated eastbound right turn lane on Olympic Boulevard • Add a westbound left turn lane on Olympic Boulevard • Move the existing stop bars south of Expo ROW crossing • Prohibit on-street parking on both sides of Stewart Street between Olympic Boulevard and Exposition Boulevard • Add a signal at the Expo ROW crossing to facilitate pedestrian/bikeway access across Stewart Avenue; to be cleared and funded by others
~~Segment 3a: Colorado~~	~~Lincoln Boulevard/ Colorado Avenue~~	• ~~Add an eastbound right-turn lane on Colorado Avenue at Lincoln Boulevard~~

SOURCE: Iteris, 2008; updated 2009.

a. Refer to Table 3.2-32 (Westwood Boulevard Area—Parking Utilization and Replacement Parking Options [Years 2008/09]).

The detailed geometric drawings of the proposed improvements for the recommended at-grade crossings are illustrated in Appendix E (Plans and Profiles). With the proposed improvements at the grade crossings, there will be some residual queuing impacts at ~~two locations, Centinela Avenue/Expo ROW and~~ Stewart Street/Expo ROW in the southbound direction (north of ~~Exposition Boulevard~~Expo ROW). But since ~~these intersections are~~this intersection is operating at satisfactory levels of service, the eastbound right turns can be held on Olympic Boulevard at the signal to reduce the southbound queues. The Centinela/Expo ROW crossing is no longer impacted since it is now proposed to be grade separated.

To evaluate the extent of additional traffic delay due to the at-grade crossings, an analysis was conducted to calculate the average vehicular delay (in seconds) at the proposed crossings. Based on projected vehicular volumes (year 2030) at the planned LRT crossings and train activities, average vehicular delays at all the crossings were calculated and are summarized in Table 3.2-9 (Average Vehicle Delay at Selected At-Grade Crossings [seconds] with Improvements and Mitigations). The results are presented in terms of average vehicle delay in seconds. This analysis was conducted for the peak hour volumes for vehicular traffic and LRT frequency of 5-minute headways (expected peak hour service) and 10-minute headways (expected mid day service).

Table 3.2-9 Average Vehicle Delay at Selected At-Grade Crossings (seconds) with Improvements and Mitigations

	AM Peak Hour		PM Peak Hour	
LRT Crossing Location	**5-Minute Headways**	**10-Minute Headways**	**5-Minute Headways**	**10-Minute Headways**
Overland Avenue	8.09	4.04	8.70	4.35
Westwood Boulevard	8.98	4.49	10.17	5.08
Sepulveda Boulevard	9.52	4.76	9.23	4.62
Barrington Avenue	10.43	5.22	12.48	6.24
~~Centinela Avenue~~	~~10.56~~	~~5.28~~	~~9.53~~	~~4.77~~
Stewart St	7.61	3.81	7.94	3.97
26th St	7.52	3.76	7.57	3.79

SOURCE: Iteris, 2008; updated 2009.

As can be seen from the table, with 5-minute headways~~,~~ the average vehicular delay ranges from 7.5 seconds to 12.5 seconds. With 10-minute headways, the average vehicular delay ranges from 3.8 seconds to 6.2 seconds. This analysis is based on the fact that in any given hour, based on the timing of vehicular arrivals, some vehicles will never experience any delays due to the trains, and some vehicles will experience the entire total gate down time period of ~~42~~ 40 seconds on average (per Metro Grade Crossing Policy for Light Rail Transit, December 2003). Should an inbound and outbound LRT train approach a crossing less than 30 seconds apart from one another, the total gate down time for that particular crossing event could last as long as 82 seconds. However, this delay would not occur simultaneously at adjacent crossings due to the spacing of the LRT trains and, in the event that such an extended delay were to occur at a particular crossing, it would be offset by the extended period for which the gates

would then remain up until the next LRT train crossing. Thus, there would be no change in the average delay discussed in this section. The highest delays are experienced at Barrington Avenue in both ~~the PM~~ peak hours ~~and at Centinela Avenue in the AM peak hour~~.

Emergency vehicles traveling on streets that cross the at-grade LRT Alternatives crossings will experience some additional delay above the level experienced prior to the implementation of LRT Alternatives. Unlike at intersections with traffic signals where emergency vehicles can pass through the intersections at reduced speeds even when receiving a red signal indication, they will not be able to cross through the at-grade crossings when the railroad gates are down. This may cause some minor delay to emergency vehicles, but the impacts would be considered less than significant, as noted in Section 3.15 (Safety and Security).

In order to improve traffic, circulation, and safety, changes would be implemented as described in Table 3.2-10 (Proposed Road Closures and Limited Turning Movements by Segments). This includes an analysis of existing signalized pedestrian crossings. The analysis of the improvements' impacts on the delivery of community safety services is discussed in Section 3.15 (Safety and Security)

Table 3.2-10 Proposed Road Closures and Limited Turning Movements by Segments

Intersection	Proposed Road Closures and Limited Turning Movements
Segment 1: Expo ROW	
Expo ROW at Overland Ave	At the NE corner of the crossing, eliminate existing left turns from Northvale Rd WB onto Overland Ave SB At the SW corner of the crossing, eliminate existing left turn from Exposition Blvd EB onto Overland Ave NB
Exposition Blvd (North & South) at Westwood Blvd	At the NE corner of the crossing, eliminate all turning movements except the right turn from Exposition Blvd WB onto Westwood Blvd NB. Existing alley would become one-way between Ashby Ave and Westwood Blvd At the SE corner of the crossing, eliminate all turning movements except the right turn from Westwood Blvd NB onto Exposition Blvd EB and the right turn from Exposition Blvd WB onto Westwood Blvd NB At the SW corner of the crossing, eliminate all turning movements except the right turn from Exposition Blvd EB onto Westwood Blvd SB. Exposition Blvd would become one-way between Westwood Blvd and alley to the west
Segment 1a: Venice/Sepulveda	
Watseka Ave	Eliminate existing left turn from Venice Blvd WB onto Watseka Ave SB
Jasmine Ave	Eliminate existing left turn from Venice Blvd WB onto Jasmine Ave SB
Mentone Ave	Eliminate existing left turn from Venice Blvd EB onto Mentone Ave NB
Glendon/Midway Ave	Eliminate existing NB and SB thru traffic across Venice Blvd, existing left turn from Venice Blvd WB onto Midway Ave SB, and existing left turn from Venice Blvd EB onto Glendon Ave NB
Military Ave/Huron Ave	Eliminate existing left turn from Venice Blvd WB onto Huron Ave SB and existing left turn from Venice Blvd EB onto Military Ave NB; provide NB/SB crossing at Tilden
Regent St	Eliminate existing left turn from Sepulveda Blvd NB onto Regent St WB and existing left turn from Regent St EB onto Sepulveda Blvd NB

Table 3.2-10 Proposed Road Closures and Limited Turning Movements by Segments

Intersection	Proposed Road Closures and Limited Turning Movements
Charnock Road (South)	Eliminate existing left turn from Sepulveda Blvd NB onto Charnock Rd WB
Charnock Road (North)	Eliminate existing left turn from Sepulveda Blvd SB onto Charnock Rd EB, existing left turn from Charnock Rd WB onto Sepulveda Blvd SB; move existing east/west pedestrian crossings across Sepulveda Blvd to Charnock Road (South)
Westminster Ave	Eliminate existing left turn from Sepulveda Blvd NB onto Westminster Ave WB and existing left turn from Westminster Ave EB onto Sepulveda Blvd NB
400' N of National Blvd to 200' S of Sardis Ave	Eliminate existing left turns to/from Sepulveda Blvd median lane to/from properties along Sepulveda Blvd
Sardis Ave	Eliminate existing WB and EB thru traffic across Sepulveda Blvd, existing left turns from Sardis Ave WB and EB onto Sepulveda Blvd, and existing left turns from Sepulveda Blvd NB and SB onto Sardis Ave
Pearl St (W of Sepulveda)	Eliminate existing left turn from Pearl St EB onto Sepulveda Blvd NB and from Sepulveda Blvd NB onto Pearl St WB
Segment 2: Sepulveda to Cloverfield	
Exposition Blvd (E of Barrington)	Eliminate vehicle movements between Barrington Ave and Exposition Blvd (E of Barrington Ave)
~~Centinela Ave at Exposition Blvd~~	~~Eliminate existing left turn from Centinela Ave. SB to Exposition Blvd EB~~
Segment 3: Olympic	
No Proposed Road Closures or Limited Turning Movements	
Segment 3a: Colorado	
Colorado Ave	Eliminate one lane of traffic both WB and EB between 17th St and 4th St
16th St	Eliminate 16th St NB and SB thru traffic across Colorado Ave, existing left turns from 16th St NB and SB onto Colorado Ave, existing left turns from Colorado Ave WB and EB onto 16th St, and existing pedestrian crossings across Colorado Ave
15th St	Eliminate existing left turn from Colorado Ave EB onto 15th St NB and existing left turn from 15th St SB onto Colorado Ave EB
14th St	Eliminate existing left turns from Colorado Ave EB and WB onto 14th St
Euclid St	Eliminate existing left turn from Colorado Ave EB onto Euclid St NB and existing left turn from Euclid St SB onto Colorado Ave EB
12th St	Eliminate existing left turn from Colorado Ave EB onto 12th St NB and existing left turn from 12th St SB onto Colorado Ave EB
11th St	Eliminate existing left turns from Colorado Ave EB and WB onto 11th St
10th St	Eliminate existing left turn from Colorado Ave EB onto 10th St NB and existing left turn from 10th St SB onto Colorado Ave EB
9th St	Eliminate existing left turn from Colorado Ave EB onto 9th St NB and existing left turn from 9th St SB onto Colorado Ave EB
Lincoln Blvd	Eliminate existing left turns from Colorado Ave EB and WB onto Lincoln Blvd

Table 3.2-10 Proposed Road Closures and Limited Turning Movements by Segments

Intersection	Proposed Road Closures and Limited Turning Movements
7th St	Eliminate existing left turns from Colorado Ave WB and EB onto 7th St
6th St	Eliminate left turns from Colorado Ave WB and EB onto 6th St except for left turns for Santa Monica Big Blue Bus from Colorado Ave WB onto 6th St SB
5th St	Eliminate left turns from Colorado Ave EB and WB onto 5th St

SOURCE: DMJM, June, 2008; updated 2009.

* WB = westbound, NB = northbound, EB = eastbound, SB = southbound

Based on the information discussed under this criterion, and as detailed in the *Transportation/Traffic Technical Background Report* and Section 3.15 (Safety and Security), the project would result in changes to traffic operations as a result of project-related changes to local circulation, station access traffic, and grade crossing delays. However, as identified in Table 3.2-7 (Grade Crossing Analysis—Results for Milestones 1, ~~and~~ 2, and 3) and Table 3.2-8 (Grade Crossing Analysis—Proposed Improvements) as well as in Appendix E (Plans and Profiles), the project also includes a large number of roadway improvements at the grade crossings and other locations and in the vicinity of stations. As a result, there would be ***less-than-significant*** impacts at the at-grade crossings and nearby intersections, and the proposed project would not substantially disrupt traffic operations or affect emergency vehicle response.

FEIR Design Options

Implementation of the Sepulveda Grade Separation Design Option would result in a grade-separated crossing at Sepulveda Boulevard. Thus, traffic operations or emergency vehicle response would remain the same as compared to the No-Build Alternative, resulting in ***no impact***.

The Colorado Parking Retention, Colorado/4th Parallel Platform and South Side Parking, Maintenance Facility Buffer, and Expo/Westwood Station No Parking design options would not result in changes to the at-grade crossings proposed for the LRT Alternatives. Hence, these design options would not substantially disrupt traffic operations or emergency vehicle access. As such, no impact beyond that discussed above with the LRT Alternatives would occur with implementation of any of the identified design options, and impacts would remain ***less than significant***.

Criterion	Would the project cause a substantial diversion of traffic onto a residential street?

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. The No-Build Alternative is not expected to result in the diversion of traffic to local streets; therefore, ***no impact*** would occur.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. The TSM Alternative is not expected to result in the diversion of traffic to local streets; therefore, ***no impact*** would occur.

LRT Alternatives

Segment 1: Expo ROW (LRT Alternatives 1 and 2)

The LRT Alternatives will not create major changes in overall circulation patterns, because along this segment the LRT will be located in the Expo ROW and vehicular traffic will cross the ROW at existing street crossings.

To accommodate at-grade crossings at Overland Avenue and Westwood Boulevard, improvements have been identified as discussed in the previous section. These improvements, coupled with the fact that there is a proposed station between Overland Avenue and Westwood Boulevard, require certain turn restrictions resulting in some redistribution of traffic into adjacent neighborhoods or onto nearby parallel streets/arterials like Exposition Boulevard and Ashby Avenue. The possible redistribution of traffic due to expected restricted movements has been accounted for in the analysis of study intersections with the project. A percentage of project-related trips could attempt detours around the congested areas to reach stations, especially ones with station parking, using side streets through residential neighborhoods. Since project-related traffic is expected to be distributed across the entire peak period and parking lot sizes are relatively small (170 spaces at Expo/Westwood station and 260 spaces at Expo/Sepulveda station), this diversion of traffic is ~~not~~ expected to cause a~~n~~ ***less-than-significant*** impact.

FEIR Design Options

The Sepulveda Grade Separation Design Option would not result in any conflict between vehicular traffic and the Expo Phase 2 line in Segment 1 (Expo ROW), with minimal diversion of traffic onto residential streets. As such, the impacts would remain ***less than significant*** with implementation of the Sepulveda Grade Separation Design Option in Segment 1 (Expo ROW).

The Expo/Westwood Station No Parking Design Option would eliminate the 170 parking spaces that were dedicated to transit patrons at the Expo/Westwood Station. While 20 parking spaces would be dedicated to neighborhood residents, the potential for the redistribution of traffic onto adjacent streets would be less than for the LRT Alternatives. Some transit patrons may choose to drive to a nearby station, thereby redistributing traffic to another neighborhood. However, a ***less-than-significant*** impact would remain with implementation of this design option in Segment 1 (Expo ROW).

Segment 1a: Venice Sepulveda (LRT Alternatives 3 and 4)

The operation of the LRT Alternatives may result in the redistribution of traffic along Sepulveda and Venice Boulevards into adjacent neighborhoods and onto adjacent parallel streets or arterials, primarily due to the left-turn restrictions and proposed closures of existing median openings. Along Venice Boulevard, the crossing at Military Avenue/Huron Avenue will be closed. In addition, left turns from Venice Boulevard onto Watseka, Jasmine, Mentone, and

Glendon Avenues will be eliminated. Some crossings along Sepulveda Boulevard, like Regent Street, Charnock Road (North), Westminster Avenue, Sardis Avenue, and Pearl Street will be closed allowing only right-turn movements to/from these streets.

Both Sawtelle Boulevard, which is parallel to Sepulveda Boulevard, and Washington Boulevard, which is parallel to Venice Boulevard, may be affected by possible traffic diversion. Some drivers will adjust their travel patterns by making U-turns at subsequent intersections and doubling back to their destination. Others may turn right onto an adjacent street and go around the block to reach the street onto which they would otherwise have turned left. Due to the variability and expected relatively small volumes of these movements, it is not feasible to quantify all of these changes in local travel patterns.

The possible impacts of diverting left turns to/from the major signalized intersections has already been quantified in the LOS analysis presented in this section. However, the diversion impacts at the relatively minor intersections are not assessed. This is based on the observation of relatively low volumes at these small streets, good operating conditions, and the fact that the left turn restrictions on major streets are limited in nature, leading to the expectation that the diversion of traffic on to minor streets is not expected to cause an impact.

FEIR Design Options

The Sepulveda Grade Separation Design Option would not be implemented with LRT Alternatives 3 and 4, and as such, would not result in any diversion of traffic in Segment 1a (Venice/Sepulveda).

Segment 2: Sepulveda to Cloverfield (LRT Alternatives 1 through 4)

The LRT Alternatives along Segment 2 will not create any major changes in overall circulation patterns since along this segment the LRT will be located in the existing Expo ROW and vehicular traffic will cross the ROW at existing crossings.

The proposed parking at the Expo/Bundy Station is designed for one-way traffic flow with access from only the major arterials on either side of the station and parking facility. With traffic accessing the parking lot only from arterials with a simple one-way operation, it is not expected that there would be any traffic diverted into adjacent residential neighborhoods.

FEIR Design Options

The Sepulveda Grade Separation Design Option would not result in any conflict between vehicular traffic and the Expo Phase 2 line in Segment 2 (Sepulveda to Cloverfield), with minimal diversion of traffic onto residential streets. As such, the impacts would remain ***less than significant*** with the Sepulveda Grade Separation Design Option in Segment 2 (Sepulveda to Cloverfield).

Parking spaces for approximately 65 employee vehicles would remain the same for the Maintenance Facility Buffer Design Option, and the main entrance for employee and visitor access would be in approximately the same location along Exposition Boulevard as the original Maintenance Facility concept. As such, implementation of the Maintenance Facility Buffer Design Option would not result in substantial redistribution of traffic into adjacent neighborhoods, as described above with the LRT Alternatives. Therefore, impacts would remain ***less than significant*** in Segment 2 (Sepulveda to Cloverfield).

Segment 3: Olympic (LRT Alternatives 1 and 3)

Along Segment 3, the LRT Alternatives will be at-grade or in an aerial structure in the Olympic Boulevard median or in the Caltrans ROW. No turning restrictions are anticipated for vehicular traffic as a result of the LRT alignment along this segment; therefore, the overall circulation patterns in the area are expected to remain unchanged from the No-Build conditions, resulting in ***no impact***.

FEIR Design Options

None of the five contemplated design options would occur within Segment 3 (Olympic). As such, ***no impact*** would occur with implementation of any of the identified design options along Segment 3 (Olympic).

Segment 3a: Colorado (LRT Alternatives 2 and 4)

In this segment, the number of through lanes in each direction is proposed to be reduced from the existing two lanes to one lane on Colorado Avenue. The left turn movements along Colorado Avenue will be prohibited from 5th Street to 16th Street. In addition, left turn access from cross streets on to Colorado Avenue will only be allowed at 5th Street, 6th Street, 7th Street, Lincoln Boulevard, 11th Street, 14th Street, and 17th Street.

To estimate the amount of diversion resulting from the lane reductions on Colorado Avenue, a separate traffic model run was performed using the Metro Travel Demand Model for 2030 conditions. Traffic diversions are expected to occur from Colorado Avenue to other parallel streets, including Olympic Boulevard and Broadway as a result of this lane reduction and turn prohibitions. Based on the model results, it is estimated that traffic on Colorado Avenue could be reduced by approximately 9 percent in the AM peak hour and 11 percent in the PM peak hour as a result of the lane reduction. At the same time, traffic on Olympic Boulevard is expected to increase by approximately 1.8 percent in the AM peak hour and 2.6 percent in the PM peak hour. Since Broadway is a relatively smaller street, traffic is expected to only increase by 0.8 percent in the AM peak hour and 1.7 percent in the PM peak hour based on the results of the model run.

In addition to the expected increase in traffic on the parallel streets, the north/south roadways are also projected to show an expected increase in traffic due to these trip diversions. The overall average increase in traffic was estimated to be 1.5 percent in the AM peak hour and approximately 7 percent in the PM peak hour for the connecting north/south streets. These projected increases in traffic have been accounted for in resulting traffic volumes and included in the intersection analyses for this scenario.

In summary, it is not anticipated that the operation of any of the LRT Alternatives will cause substantial redistribution of traffic into adjacent neighborhoods or onto nearby parallel streets or arterials as described above. Therefore, the impacts would be ***less than significant***.

FEIR Design Options

The Colorado Parking Retention and Colorado/4th Parallel Platform and South Side Parking may redistribute traffic patterns along Colorado Avenue, as the available on-street parking would be different than under the LRT Alternatives. However, the potential diversion of traffic onto residential streets would remain a ***less-than-significant*** impact in Segment 3a (Colorado).

Criterion	**Would the project cause an intersection's level of service (LOS) under the No-Build Alternative to deteriorate from acceptable LOS to below LOS E or LOS F, or would the proposed project increase the average vehicle delay for the intersection by 4 seconds or more for intersections that are already operating at LOS E or LOS F under No-Build conditions?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. Table 3.2-11 (LOS E/F Intersections—Current and Year 2030 No-Build Alternative) presents thirty-~~six~~eight intersections that are expected to operate at LOS E or F during AM, PM, or both peak hours in year 2030 without the development of the proposed project. This compares to twenty-~~six~~eight intersections currently operating at LOS E or F. The analysis supporting this table assumed that traffic signal operating specifications (cycle lengths, phases, etc.) will be generally the same as those of existing conditions. The growth factors were applied to existing peak hour movements at the study area intersections to develop estimated 2030 No-Build intersection traffic volumes for weekday AM and PM peak hours. The table also shows the existing conditions for comparison purposes.

Table 3.2-11 LOS E/F Intersections—Current and Year 2030 No-Build Alternative

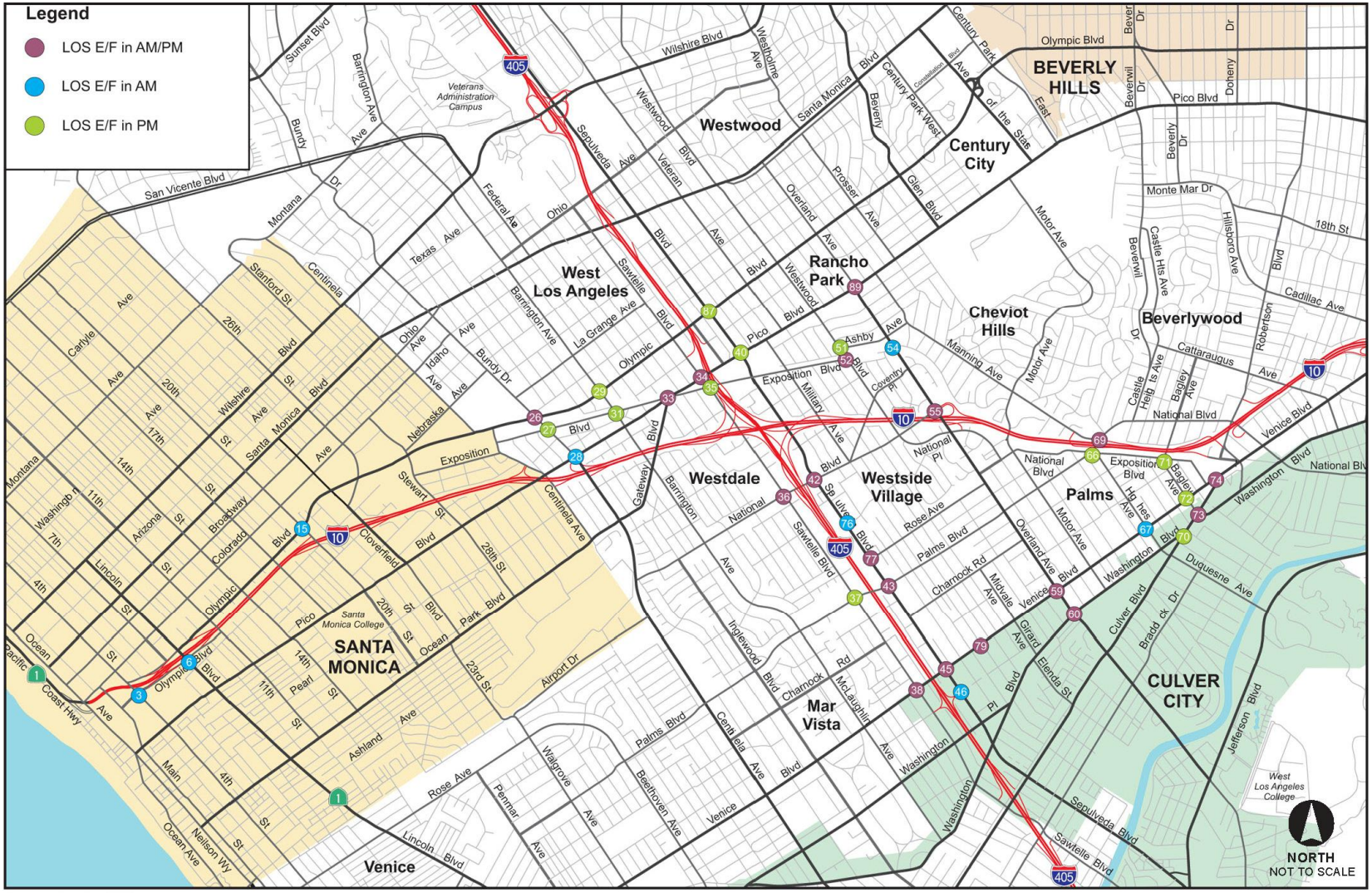
	Existing LOS E or F		**2030 No-Build LOS E or F**	
Intersection	**AM**	**PM**	**AM**	**PM**
3. 4th St/I-10EB and Olympic Boulevard	E	C	E	C
6. Lincoln Boulevard/I-10EB and Olympic Boulevard	F	C	F	C
15. 20th St and Olympic Boulevard	D	C	E	C
26. Bundy Dr and Olympic Boulevard	F	E	F	F
27. Bundy Dr and Exposition Boulevard	A	F	A	F
28. Bundy Dr and Pico Boulevard	C	D	E	D
29. Barrington Avenue and Olympic Boulevard	D	D	D	E
31. Barrington Avenue and Exposition Boulevard (S)	A	F	A	F
33. Gateway Boulevard/Pico Boulevard and Exposition Boulevard	F	F	F	F
34. Sawtelle Boulevard and Pico Boulevard	F	E	F	F
35. Sawtelle Boulevard and Exposition Boulevard	A	F	C	F
36. Sawtelle Boulevard and National Boulevard	C	C	E	F
37. Sawtelle Boulevard and Palms Boulevard	B	C	D	E
38. Sawtelle Boulevard and Venice Boulevard	E	D	F	F
40. Sepulveda Boulevard and Pico Boulevard	D	D	D	F
42. Sepulveda Boulevard and National Boulevard	D	F	F	F
43. Sepulveda Boulevard and Palms Boulevard	C	E	F	F
45. Sepulveda Boulevard and Venice Boulevard	F	F	F	F

Table 3.2-11 LOS E/F Intersections—Current and Year 2030 No-Build Alternative

Intersection	Existing LOS E or F		2030 No-Build LOS E or F	
	AM	PM	AM	PM
46. Sepulveda Boulevard and I-405 NB Ramps	D	C	E	C
51. Westwood Boulevard & Exposition Boulevard (N)	C	F	D	F
52. Westwood Boulevard & Exposition Boulevard (S)	C	F	E	F
54. Overland Avenue & Northvale Rd	F	A	E	A
55. Overland Avenue & National Boulevard/I-10 WB Ramps	F	F	F	F
59. Overland Avenue and Venice Boulevard	E	F	F	F
60. Overland Avenue and Washington Boulevard	D	E	E	F
66. Palms Boulevard/Exposition Boulevard/National Boulevard	B	E	B	E
67. Hughes Avenue and Venice Boulevard	D	D	E	D
69. Manning Avenue/I-10 WB and National Boulevard	F	D	F	E
70. Culver Boulevard and Washington Boulevard	D	D	D	E
71. Bagley Avenue and Exposition Boulevard	C	E	B	F
72. Bagley Avenue/Main St and Venice Boulevard	C	E	D	F
73. Culver Boulevard and Washington Boulevard/Main St	F	F	F	F
74. Culver Boulevard and Venice Boulevard	F	F	F	F
76. Sepulveda Boulevard and Queensland St	B	B	E	C
77. Sepulveda Boulevard and Rose Avenue	C	C	F	F
79. Military Avenue and Venice Boulevard	F	F	F	F
87. Sepulveda Boulevard and Olympic Boulevard	C	F	D	F
89. Overland Avenue and Pico Boulevard	E	F	E	F

SOURCE: Iteris, 2008; updated 2009.

Figure 3.2-5 (LOS E/F Intersections—Year 2030 [No-Build] [Revised]) illustrates the study area intersections which are projected to operate at LOS E or F under year 2030 No-Build conditions. As a result of the increase in the number of LOS E or F intersections over current conditions, the No-Build Alternative would have ***significant and unavoidable*** level of service impacts in the study area.



Source: Iteris, 2009.

Figure 3.2-5 LOS E/F Intersections—Year 2030 (No-Build) [Revised]

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. To develop traffic volume forecasts for the TSM Alternative, growth factors presented in Table 3.2-3 (Growth Factors for Study Area between 2007 and 2030) corresponding to the TSM Alternative were used. No other trips were added, nor adjustments made, to intersection traffic signal operations for the TSM Alternative. Table 3.2-12 (LOS E/F Intersections—Year 2030 TSM Alternative) summarizes the results of these analyses.

A review of Table 3.2-12 (LOS E/F Intersections—Year 2030 TSM Alternative) shows thirty-~~six~~eight intersections projected to operate at LOS E or F during the peak hours, all of which are the same under the No-Build Alternative. The pattern of congestion is similar to the No-Build Alternative. However, all study intersections are expected to operate slightly better than the No-Build Alternative. This is mostly due to reduction of vehicle trips from the highway system as a result of any potential auto trips diverted to the improved bus services and redistribution of auto trips as a result of changes in bus services. Overall, most intersections experience a slight improvement in operations, hence the impacts of the TSM Alternative are ***less than significant*** as compared to the No-Build Alternative.

LRT Alternatives

The analysis of the study area intersections along the various segments involved the following assumptions and modifications~~steps~~:

- Auto access trips to each proposed LRT station were developed assuming that all of the station parking spaces would be filled in the peak period. To provide a worst-case assessment, it was assumed all traffic to the station would be inbound to the station in the AM peak hour and outbound from the station in the PM peak hour. Additionally, those values were increased approximately 20 percent to account for cars dropping off or picking up transit patrons.
- Station access auto traffic was distributed to the roadway system for each station area based on the Metro Travel Demand Model trip distribution characteristics and probable travel patterns based on major origin-destination patterns. The resulting station access traffic movements at each of the study area intersections were added to the 2030 traffic volumes specifically developed for the LRT Alternatives using the growth factors discussed in Section 3.2.4 (Analytic Methodology).
- Specific signal timing as well as geometric modifications were assumed at the study area intersections that are along and/or immediately adjacent to the LRT Alternatives. These include items such as improvements identified during the grade crossing analysis (Table 3.2-8 [Grade Crossing Analysis—Proposed Improvements]), additional turn phases to stop the vehicles from turning across the LRT at-grade crossings and elimination of access due to the LRT at-grade or aerial crossings (i.e., left turns or closure of cross streets).
- Impacts of preemption at certain locations (less than 200 feet from the LRT crossing) were also taken into account.

Table 3.2-12 LOS E/F Intersections—Year 2030 TSM Alternative

Study Area Intersections	AM Peak Hour						PM Peak Hour					
	No-Build (NB)		TSM Alternative			Impact	No-Build (NB)		TSM Alternative			Impact
	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No
3. 4th St/I-10EB and Olympic Boulevard	E	69.3	E	67.2	-2.1	No	C	32.6	C	32.6	0.0	No
6. Lincoln Boulevard/I-10EB and Olympic Boulevard	F	115.5	F	111.8	-3.7	No	C	34.7	C	34.7	0.0	No
15. 20th St and Olympic Boulevard	E	60.5	E	58.2	-2.3	No	C	34.5	C	34.5	0.0	No
26. Bundy Dr and Olympic Boulevard	F	217.6	F	216.6	-1.0	No	F	95.3	F	94.1	-1.2	No
27. Bundy Dr and Exposition Boulevard	A	2.9	A	2.8	-1.0	No	F	300.0	F	300.0	0.0	No
28. Bundy Dr and Pico Boulevard	E	62.8	E	61.9	-0.9	No	D	48.7	D	48.1	-0.6	No
29. Barrington Avenue and Olympic Boulevard	D	53.7	D	53.8	0.1	No	E	77.4	E	75.7	-1.7	No
31. Barrington Avenue and Exposition Boulevard (S)	A	7.4	A	7.1	-0.3	No	F	300.0	F	300.0	0.0	No
33. Gateway Boulevard/Pico Boulevard and Exposition Boulevard	F	168.8	F	167.3	-1.5	No	F	156.4	F	154.6	-1.8	No
34. Sawtelle Boulevard and Pico Boulevard	F	134.1	F	133.3	-0.8	No	F	131.8	F	129.9	-1.9	No
35. Sawtelle Boulevard and Exposition Boulevard	C	15.6	C	15.1	-0.5	No	F	300.0	F	300.0	0.0	No
36. Sawtelle Boulevard and National Boulevard	E	63.2	E	60.5	-2.7	No	F	93.5	F	92.2	-1.3	No
37. Sawtelle Boulevard and Palms Boulevard	D	47.3	D	45.3	-2.0	No	E	67.5	E	66.3	-1.2	No
38. Sawtelle Boulevard and Venice Boulevard	F	158.5	F	151.8	-6.7	No	F	102.3	F	101.0	-1.3	No

Table 3.2-12 LOS E/F Intersections—Year 2030 TSM Alternative

Study Area Intersections	AM Peak Hour						PM Peak Hour					
	No-Build (NB)		TSM Alternative			Impact	No-Build (NB)		TSM Alternative			Impact
	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No
40. Sepulveda Boulevard and Pico Boulevard	D	44.5	D	43.8	-0.7	No	F	152.9	F	148.4	-4.5	No
42. Sepulveda Boulevard and National Boulevard	F	116.7	F	111.8	-4.9	No	F	195.7	F	193.3	-2.4	No
43. Sepulveda Boulevard and Palms Boulevard	F	95.3	F	92.8	-2.5	No	F	119.4	F	117.6	-1.8	No
45. Sepulveda Boulevard and Venice Boulevard	F	109.1	F	105.2	-3.9	No	F	211.1	F	210.0	-1.1	No
46. Sepulveda Boulevard and I-405 NB Ramps	E	66.5	E	64.6	-1.9	No	C	30.0	C	29.9	-0.1	No
51. Westwood Boulevard & Exposition B oulevard (N)	D	26.6	D	26.2	-0.4	No	F	185.0	F	176.6	-8.4	No
52. Westwood Boulevard & Exposition Boulevard (S)	E	41.6	E	39.5	-2.1	No	F	186.8	F	175.0	-11.8	No
54. Overland Avenue & Northvale Road	E	42.6	E	41.7	-0.9	No	A	2.4	A	2.3	-0.1	No
55. Overland Avenue & National Boulevard/I-10 WB Ramps	F	343.2	F	341.0	-2.2	No	F	232.8	F	228.0	-4.8	No
59. Overland Avenue and Venice Boulevard	F	136.7	F	136.5	-0.2	No	F	144.0	F	141.9	-2.1	No
60. Overland Avenue and Washington Boulevard	E	76.1	E	75.7	-0.4	No	F	108.0	F	106.1	-1.9	No
66. Palms Boulevard/Exposition Boulevard/National Boulevard	B	18.0	B	17.9	-0.1	No	E	60.8	E	58.2	-2.6	No

Table 3.2-12 LOS E/F Intersections—Year 2030 TSM Alternative

Study Area Intersections	AM Peak Hour						PM Peak Hour					
	No-Build (NB)		TSM Alternative			Impact	No-Build (NB)		TSM Alternative			Impact
	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No
67. Hughes Avenue and Venice Boulevard	E	60.2	E	59.8	-0.4	No	D	52.9	D	52.5	-0.4	No
69. Manning Avenue/I-10 WB and National Boulevard	F	139.5	F	138.9	-0.6	No	E	57.4	D	54.6	-2.8	No
70. Culver Boulevard and Washington Boulevard	D	50.9	D	50.8	-0.1	No	E	67.8	E	66.8	-1.0	No
71. Bagley Avenue and Exposition Boulevard	B	13.7	B	13.6	-0.1	No	F	52.4	E	49.4	-3.0	No
72. Bagley Avenue/Main St and Venice Boulevard	D	46.1	D	45.8	-0.3	No	F	95.8	F	93.9	-1.9	No
73. Culver Boulevard and Washington Boulevard/Main St	F	314.2	F	313.9	-0.3	No	F	290.0	F	287.5	-2.5	No
74. Culver Boulevard and Venice Boulevard	F	148.6	F	148.0	-0.6	No	F	266.4	F	264.7	-1.7	No
76. Sepulveda Boulevard and Queensland St	E	75.1	E	69.2	-5.9	No	C	32.5	C	31.8	-0.7	No
77. Sepulveda Boulevard and Rose Avenue	F	133.4	F	123.1	-10.3	No	F	64.2	F	63.0	-1.2	No
79. Military Avenue and Venice Boulevard	F	300.0	F	300.0	0.0	No	F	300.0	F	300.0	0.0	No
87. Sepulveda Blvd and Olympic Blvd	D	35.8	D	35.4	-0.4	No	E	93.7	E	92.8	-0.9	No
89. Overland Ave and Pico Blvd	E	71.4	E	70.4	-1.0	No	E	213.0	E	211.3	-1.7	No

SOURCE: Iteris, 2008; updated 2009.

- According to the Metro Grade Crossing Policy, the total gate down time depends upon the speed of the train, warning time, train passage time, station proximity, etc. The train passage time is between 3 to 4 seconds, 3 seconds for a 2-car train and 4 seconds for a 3-car train. For consistency of calculations, a 40 second total gate down time was assumed in the traffic, delay, and queue calculations.

The above assumptions and modifications were assumed to be part of the LRT Alternatives and are reflected in the intersection LOS calculations.

Segment 1: Expo ROW (LRT Alternatives 1 and 2)

This segment is proposed to have two stations: National/Palms Station and Expo/Westwood Station. Daily station trip generation, as estimated from the Metro Travel Demand Model for each station, is summarized in Table 3.2-13 (Daily Station Trip Generation—Segment 1). Parking demand at stations based on the Metro Travel Demand Model results is discussed later in the section.

Table 3.2-13 Daily Station Trip Generation—Segment 1

Station	Total Daily Passengers	Daily Walk/Transit Access	Daily Auto Access	% of Passengers by Auto Access	Provided Station Parking
National/Palms Station	1,861	1,772	89	5%	0
Expo/Westwood Station	5,237	4,895	342	6%	170

SOURCE: AECOM, 2008.

An peak hour LOS analysis was conducted for all of the study area intersections in this segment. Results of intersection operating conditions for this segment, with LOS and average vehicle delay for each peak period, are included in Appendix B to the *Transportation/Traffic Technical Background Report*. Table 3.2-14 (Segment 1 Study Area Intersections—Year 2030 LOS [AM Peak Hour]) and Table 3.2-15 (Segment 1 Study Area Intersections—Year 2030 LOS [PM Peak Hour]) summarizes the LOS analysis results for the No-Build and LRT Alternatives of the study area intersections within this segment for year 2030 in the AM and PM peak hours, respectively. A review of Table 3.2-14 and Table 3.2-15 shows a total of fivesix intersections are projected to operate at LOS E or F during either or both the peak hours. Figure 3.2-6 (LOS E/F Intersections—Year 2030 With Project [LRT Alternatives] [Revised]) illustrates the study area intersections which are projected to operate at LOS E or F under year 2030 project conditions (Expo ROW). Compared to the No-Build Alternative, the same six five intersections are projected to operate at LOS E or F during either or both the peak hours. Based on a comparison to the No-Build conditions, it can be seen that none of the intersections are affected by the LRT Alternatives in this segment.

The complete LOS tables are in Appendix E of the *Transportation/Traffic Technical Background Report*.

Table 3.2-14 Segment 1 Study Area Intersections—Year 2030 LOS (AM Peak Hour)

Study Area Intersections	No-Build (NB)		LRT Alternative			Impact	Remarks
	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No	
40. Sepulveda Boulevard and Pico Boulevard	D	44.5	D	~~43.8~~39.0	~~-0.7~~5.5	No	The project includes additional lanes as described in Table 3.2-8.
41. Sepulveda Boulevard and Exposition Boulevard*	C	20.5	D	55.0	34.5	No	The project includes ~~an~~ additional lanes as described in Table 3.2-8.
49. Military Avenue and Exposition Boulevard	B	11.5	B	~~10.9~~14.0	~~-0.6~~2.5	No	Traffic signal to be installed.
51. Westwood Boulevard and Exposition Boulevard (N)*	D	26.6	~~A~~D	~~4.0~~38.0	~~-22.6~~11.4	No	The project includes an additional lane as described in Table 3.2-8.
52. Westwood Boulevard and Exposition Boulevard (S)*	E	41.6	~~A~~B	~~5.1~~11.5	~~-36.5~~30.1	No	Traffic signal to be installed.
53. Overland Avenue and Ashby Avenue*	C	20.1	B	16.3	-3.8	No	The project includes additional lanes as described in Table 3.2-8.
54. Overland Avenue and Northvale Rd*	E	42.6	C	34.6	-8.0	No	The project includes additional lanes as described in Table 3.2-8. Pedestrian/Bicycle signal to be cleared and funded by others.~~installed.~~
55. Overland Avenue and I-10 WB Ramps	F	343.2	F	338.3	-4.9	No	
56. Overland Avenue and I-10 EB On-Ramp	C	31.4	C	30.2	-1.2	No	
57. Overland Avenue and National Boulevard/National Place	C	22.2	C	21.9	-0.3	No	
58. I-10 EB Off-Ramp and National Boulevard	C	25.2	C	24.9	-0.3	No	
61. Motor Avenue and National Boulevard	C	25.0	C	24.9	-0.1	No	Existing grade separation at this location.
66. Palms Boulevard/Exposition Boulevard and National Boulevard	B	18.0	B	17.9	-0.1	No	Existing grade separation at this location.
69. Manning Avenue/I-10 WB and National Boulevard	F	139.5	F	138.4	-1.1	No	

Table 3.2-14 Segment 1 Study Area Intersections—Year 2030 LOS (AM Peak Hour)

Study Area Intersections	No-Build (NB)		LRT Alternative			Impact	Remarks
	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No	
71. Bagley Avenue and Exposition Boulevard	B	13.7	B	~~13.8~~16.7	3.0~~.1~~	No	Traffic signal to be installed.
87. Sepulveda Boulevard and Olympic Boulevard	D	35.8	D	36.0	0.2	No	
88. Westwood Boulevard and Pico Boulevard	D	37.0	D	36.8	-0.2	No	
89. Overland Avenue and Pico Boulevard	E	71.4	E	71.2	-0.2	No	
90. Bagley Avenue and National Boulevard	C	32.1	C	31.2	-0.9	No	

SOURCE: Iteris, 2008; updated 2009.

* Intersection is to be preempted

Table 3.2-15 Segment 1 Study Area Intersections—Year 2030 LOS (PM Peak Hour)

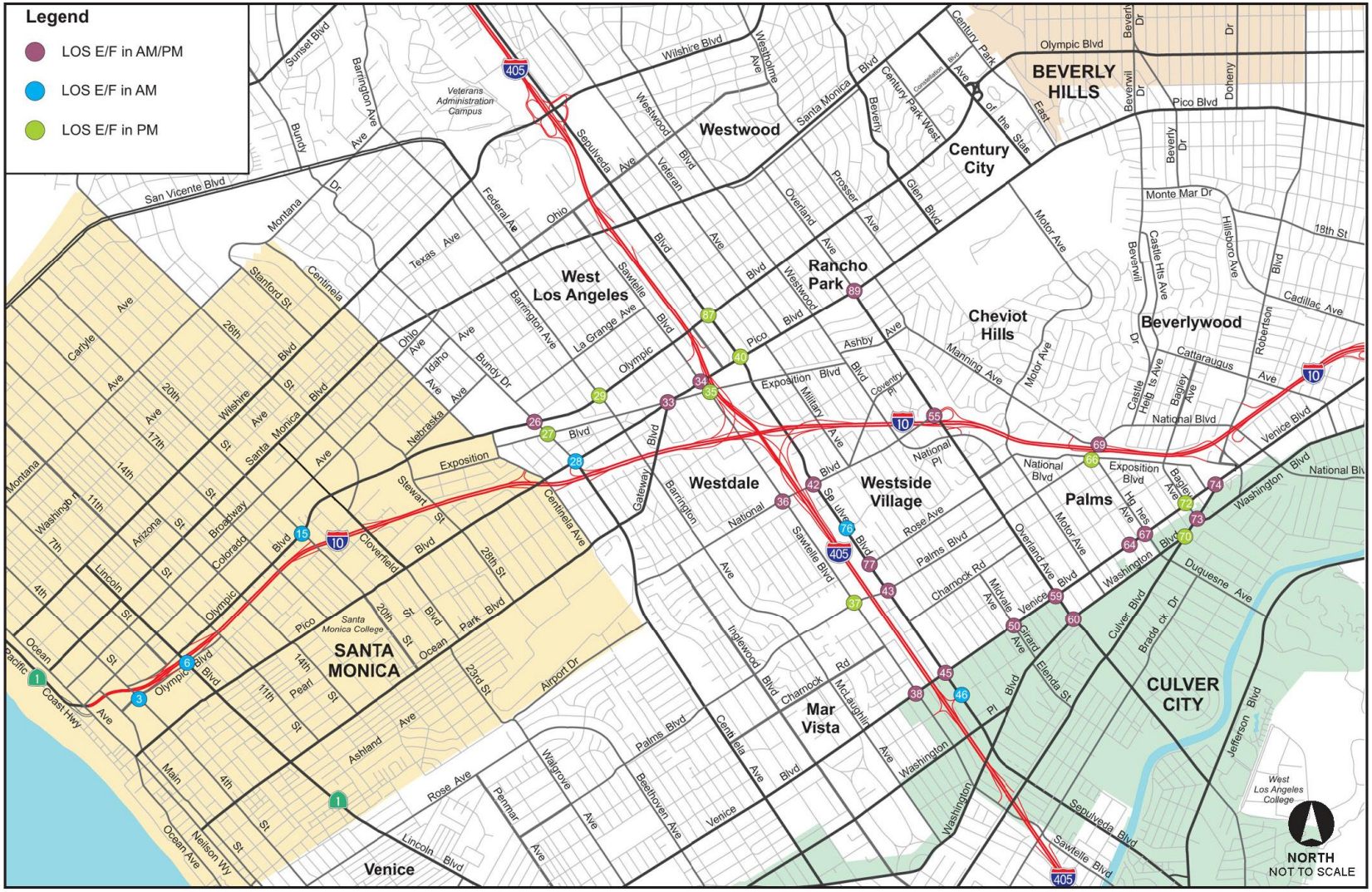
Study Area Intersections	No-Build (NB)		LRT Alternative			Impact	Remarks
	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No	
40. Sepulveda Boulevard and Pico Boulevard	F	152.9	F	~~149.8~~133.2	~~-3.1~~19.7	No	The project includes additional lanes as described in Table 3.2-8.
41. Sepulveda Boulevard and Exposition Boulevard*	C	23.0	C	32.4	9.4	No	The project includes ~~an~~ additional lanes~~lane~~ as described in Table 3.2-8.
49. Military Avenue and Exposition Boulevard	C	17.3	C	~~18.1~~21.0	~~0.8~~3.7	No	Traffic signal to be installed.
51. Westwood Boulevard and Exposition Boulevard (N)*	F	185.0	~~B~~C	~~10.9~~23.4	-~~174~~161.~~16~~	No	The project includes an additional lane as described in Table 3.2-8. Traffic signal to be installed.
52. Westwood Boulevard and Exposition Boulevard (S)*	F	186.8	~~A~~B	~~9.8~~15.3	-~~177~~171.~~05~~	No	
53. Overland Avenue and Ashby Avenue*	D	37.1	C	24.5	-14.9	No	The project includes additional lanes as described in Table 3.2-8.
54. Overland Avenue and Northvale Rd*	A	2.4	C	30.6	28.2	No	The project includes additional lanes as described in Table 3.2-8. Pedestrian/Bicycle signal to be cleared and funded by others~~installed~~.
55. Overland Avenue and I-10 WB Ramps	F	232.8	F	230.6	-2.2	No	
56. Overland Avenue and I-10 EB On-Ramp	C	20.5	B	20.0	-0.5	No	
57. Overland Avenue and National Boulevard/National Place	D	48.6	D	47.3	-1.3	No	
58. I-10 EB Off-Ramp and National Boulevard	C	21.0	C	20.9	-0.1	No	
61. Motor Avenue and National Boulevard	C	27.1	C	28.2	1.1	No	Existing grade separation at this location.

Table 3.2-15 Segment 1 Study Area Intersections—Year 2030 LOS (PM Peak Hour)

Study Area Intersections	No-Build (NB)		LRT Alternative			Impact	Remarks
	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No	
66. Palms Boulevard/Exposition Boulevard and National Boulevard	E	60.8	E	59.6	-1.2	No	Existing grade separation at this location.
69. Manning Avenue/I-10 WB and National Boulevard	E	57.4	E	56.3	-1.1	No	
71. Bagley Avenue and Exposition Boulevard	F	52.4	~~F~~C	~~55.2~~22.3	~~2.8~~-30.1	No	Traffic signal to be installed.
87. Sepulveda Boulevard and Olympic Boulevard	F	93.7	F	94.5	0.8	No	
88. Westwood Boulevard and Pico Boulevard	D	52.8	D	51.9	-0.9	No	
89. Overland Avenue and Pico Boulevard	F	213.0	F	210.1	-2.9	No	
90. Bagley Avenue and National Boulevard	C	31.7	C	31.1	-0.6	No	

SOURCE: Iteris, 2008; updated 2009.

* Intersection is to be preempted



Source: Iteris, 2009.

Figure 3.2-6 LOS E/F Intersections—Year 2030 With Project (LRT Alternatives) [Revised]

FEIR Design Options

To determine the impacts of the implementation of the Sepulveda Grade Separation Design Option, LOS and delays have been calculated at nearby intersections to determine project impacts. A review of Table 3.2-14 (Segment 1 Study Area Intersections—Year 2030 LOS [AM Peak Hour]) and Table 3.2-15 (Segment 1 Study Area Intersections—Year 2030 LOS [PM Peak Hour]) shows that under year 2030 No-Build conditions in the AM peak hour, the delay at the intersection of Sepulveda Boulevard and Exposition Boulevard is projected to be 20.5 seconds at LOS C, and in the PM peak hour, the delay is projected to be 23 seconds at LOS C. With the implementation of the Sepulveda Grade Separation Design Option, the delay is projected to be 20 seconds in the AM peak hour at LOS B and 25.1 seconds in the PM peak hour at LOS C. Based on a comparison to the No-Build Alternative, the intersection of Sepulveda Boulevard and Exposition Boulevard is not affected by the implementation of the Sepulveda Grade Separation Design Option, resulting in ***no impact*** in Segment 1 (Expo ROW).

The Expo/Westwood Station No Parking Design Option would eliminate the 170 surface parking spaces that were dedicated to transit patrons at the Expo/Westwood Station. However, 20 parking spaces would be dedicated to neighborhood residents. Given the elimination of transit patron parking, daily auto access to the station would be reduced. As such, ***no impact*** beyond that discussed above for the LRT Alternatives would occur with implementation of the Expo/Westwood Station No Parking Design Option.

Segment 1a: Venice/Sepulveda (LRT Alternatives 3 and 4)

This segment will have three stations: Venice/Motor Station, Venice/Sepulveda Station, and Sepulveda/National Station. Daily station trip generation, as estimated from the Metro Travel Demand Model for each station, is summarized in Table 3.2-16 (Daily Station Trip Generation—Segment 1a).

Table 3.2-16 Daily Station Trip Generation—Segment 1a

Station	Total Daily Passengers	Daily Walk/Transit Access	Daily Auto Access	% of Passengers by Auto Access	Provided Station Parking
Venice/Motor Station	2,045	1,970	75	3%	0
Venice/Sepulveda Station	3,292	3,204	88	3%	0
Sepulveda/National Station	2,367	2,070	297	13%	250

SOURCE: AECOM, 2008.

An LOS analysis was conducted for all of the study area intersections in this segment. Results of intersection operating conditions for this segment, with levels of service and average vehicle delay for each peak period, are included in Appendix B to the *Transportation/Traffic Technical Background Report*. Table 3.2-17 (Segment 1a Study Area Intersections—Year 2030 LOS [AM Peak Hour]) and Table 3.2-18 (Segment 1a Study Area Intersections—Year 2030 LOS [PM Peak Hour]) summarize the LOS analysis results for the No-Build and LRT Alternatives of the study area intersections within this segment for year

Table 3.2-17 Segment 1a Study Area Intersections—Year 2030 LOS (AM Peak Hour)

Study Area Intersections	No-Build (NB)		LRT Alternative			Impact	Remarks
	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No	
36. Sawtelle Boulevard and National Boulevard	E	63.2	E	61.2	-2.0	No	
37. Sawtelle Boulevard and Palms Boulevard	D	47.3	D	45.5	-1.8	No	
38. Sawtelle Boulevard and Venice Boulevard	F	158.5	F	153.7	-4.8	No	
39. Sawtelle Boulevard and I-405 SB Ramps	D	36.7	D	36.1	-0.6	No	
41. Sepulveda Boulevard and Exposition Boulevard	C	20.5	D	47.7	27.2	No	The project includes additional lanes as described in Table 3.2-8.
42. Sepulveda Boulevard and National Boulevard	F	116.7	E	79.7	-37.0	No	Grade Separated at this location.
43. Sepulveda Boulevard and Palms Boulevard	***F***	***95.3***	***F***	***105.7***	***10.4***	***Yes***	Grade Separated at this location. However, left turn closures at other locations divert traffic to this location increasing the delay.
45. Sepulveda Boulevard and Venice Boulevard	F	109.1	F	110.4	1.3	No	Grade Separated at this location.
46. Sepulveda Boulevard and I-405 NB Ramps	E	66.5	E	64.7	-1.8	No	
47. Sepulveda Boulevard and Washington Place	D	43.1	D	41.1	-2.0	No	
48. Washington Place and Washington Boulevard	C	31.7	C	31.4	-0.3	No	

Table 3.2-17 Segment 1a Study Area Intersections—Year 2030 LOS (AM Peak Hour)

Study Area Intersections	No-Build (NB)		LRT Alternative			Impact	Remarks
	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No	
50. Girard Avenue and Venice Boulevard	***D***	***46.8***	***F***	***206.0***	***159.2***	***Yes***	Left turn closures at other locations divert traffic to this location. Additional protected phasing increases the delay.
59. Overland Avenue and Venice Boulevard	F	136.7	F	137.9	1.2	No	Grade Separated at this location.
60. Overland Avenue and Washington Boulevard	E	76.1	E	74.5	-1.6	No	
62. Motor Avenue and Venice Boulevard	C	31.1	D	45.6	14.5	No	
63. Motor Avenue and Washington Boulevard	C	21.6	C	21.4	-0.2	No	
64. Clarington Avenue and Venice Boulevard	***D***	***44.4***	***E***	***58.1***	***13.7***	***Yes***	Change in phasing to protected left turn phasing increases the delay.
65. Clarington Avenue and Washington Boulevard	C	24.9	C	24.8	-0.1	No	
67. Hughes Avenue and Venice Boulevard	***E***	***60.2***	***E***	***74.9***	***14.7***	***Yes***	Change in phasing to protected left turn phasing increases the delay.
68. Hughes Avenue and Washington Boulevard	C	21.2	C	21.0	-0.2	No	
70. Culver Boulevard and Washington Boulevard	D	50.9	D	50.2	-0.7	No	
72. Bagley Avenue/Main Street and Venice Boulevard	D	46.1	D	46.0	-0.1	No	Grade Separated at this location.
73. Culver Boulevard and Washington Boulevard	F	314.2	F	312.0	-2.2	No	
74. Culver Boulevard and Venice Boulevard	F	148.6	F	146.1	-2.5	No	Grade Separated at this location.

Table 3.2-17 Segment 1a Study Area Intersections—Year 2030 LOS (AM Peak Hour)

Study Area Intersections	No-Build (NB)		LRT Alternative			Impact	Remarks
	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No	
75. Sawtelle Boulevard and Washington Place	B	16.8	B	16.7	-0.1	No	
76. Sepulveda Boulevard and Queensland Street	E	75.1	E	78.0	2.9	No	Grade Separated at this location.
77. Sepulveda Boulevard and Rose Avenue	F	133.4	F	137.2	3.8	No	Grade Separated at this location.
78. Sepulveda Boulevard and Washington Boulevard	C	29.8	C	29.0	-0.8	No	
80. Girard Avenue and Washington Boulevard	B	19.9	B	19.8	-0.1	No	
81. Robertson Boulevard and Washington Boulevard	C	27.7	C	27.4	-0.3	No	

SOURCE: Iteris, 2008.

Bold italics indicate intersections impacted by the project and forecast to operate at unsatisfactory levels of service.

Table 3.2-18 Segment 1a Study Area Intersections—Year 2030 LOS (PM Peak Hour)

Study Area Intersections	No-Build (NB)		LRT Alternative			Impact	Remarks
	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No	
36. Sawtelle Boulevard and National Boulevard	F	93.5	F	90.0	-3.5	No	
37. Sawtelle Boulevard and Palms Boulevard	E	67.5	E	65.3	-2.2	No	
38. Sawtelle Boulevard and Venice Boulevard	F	102.3	F	101.0	-1.3	No	
39. Sawtelle Boulevard and I-405 SB Ramps	D	37.4	D	37.0	-0.4	No	
41. Sepulveda Boulevard and Exposition Boulevard	C	23.0	D	40.5	17.5	No	The project includes additional lanes as described in Table 3.2-8.
42. Sepulveda Boulevard and National Boulevard	F	195.7	F	135.3	-60.4	No	Grade Separated at this location.
43. Sepulveda Boulevard and Palms Boulevard	***F***	***119.4***	***F***	***339.1***	***219.7***	***Yes***	Grade Separated at this location. However, left turn closures at other locations divert traffic to this location increasing the delay.
45. Sepulveda Boulevard and Venice Boulevard	F	211.1	F	213.6	2.5	No	Grade Separated at this location.
46. Sepulveda Boulevard and I-405 NB Ramps	C	30.0	C	29.9	-0.1	No	
47. Sepulveda Boulevard and Washington Place	C	20.0	B	20.0	0.0	No	
48. Washington Place and Washington Boulevard	C	30.8	C	30.8	0.0	No	
50. Girard Avenue and Venice Boulevard	***D***	***45.3***	***F***	***214.5***	***169.2***	***Yes***	Left turn closures at other locations divert traffic to this location. Additional protected phasing increases the delay.
59. Overland Avenue and Venice Boulevard	F	144.0	F	147.9	3.9	No	Grade Separated at this location.
60. Overland Avenue and Washington Boulevard	F	108.0	F	107.1	-0.9	No	
62. Motor Avenue and Venice Boulevard	C	27.0	D	36.2	9.2	No	
63. Motor Avenue and Washington Boulevard	B	18.5	B	18.5	0.0	No	

Table 3.2-18 Segment 1a Study Area Intersections—Year 2030 LOS (PM Peak Hour)

Study Area Intersections	No-Build (NB)		LRT Alternative			Impact	Remarks
	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No	
64. Clarington Avenue and Venice Boulevard	***D***	***40.7***	***E***	***60.4***	***19.7***	***Yes***	Change in phasing to protected left turn phasing increases the delay.
65. Clarington Avenue and Washington Boulevard	C	27.4	C	27.3	-0.1	No	
67. Hughes Avenue and Venice Boulevard	***D***	***52.9***	***F***	***92.5***	***39.6***	***Yes***	Change in phasing to protected left turn phasing increases the delay.
68. Hughes Avenue and Washington Boulevard	B	18.1	B	18.1	0.0	No	
70. Culver Boulevard and Washington Boulevard	E	67.8	E	67.3	-0.5	No	
72. Bagley Avenue/Main St and Venice Boulevard	F	95.8	F	95.1	-0.7	No	Grade Separated at this location.
73. Culver Boulevard and Washington Boulevard	F	290.0	F	289.0	-1.0	No	
74. Culver Boulevard and Venice Boulevard	F	266.4	F	265.7	-0.7	No	Grade Separated at this location.
75. Sawtelle Boulevard and Washington Place	C	21.8	C	21.7	-0.1	No	
76. Sepulveda Boulevard and Queensland Street	C	32.5	C	34.8	2.3	No	Grade Separated at this location.
77. Sepulveda Boulevard and Rose Avenue	F	64.2	F	65.8	1.6	No	Grade Separated at this location.
78. Sepulveda Boulevard and Washington Boulevard	C	32.8	C	32.7	-0.1	No	
80. Girard Avenue and Washington Boulevard	B	14.4	B	14.4	0.0	No	
81. Robertson Boulevard and Washington Boulevard	C	33.9	C	33.8	-0.1	No	

SOURCE: Iteris, 2008.

Bold italics indicate intersections impacted by the project and forecast to operate at unsatisfactory levels of service.

2030 in the AM and PM peak hours, respectively. In the No-Build Alternative, sixteen intersections are projected to operate at LOS E or F during either or both the peak hours under this LRT Alternative segment. With the project, two additional intersections are projected to operate at LOS E or F under this LRT Alternative segment. These additional intersections are Girard Avenue/Venice Boulevard and Clarington Avenue/Venice Boulevard. Previously referenced Figure 3.2-6 (LOS E/F Intersections—Year 2030 With Project [LRT Alternatives] [Revised]) illustrates the study area intersections which are projected to operate at LOS E or F under year 2030 project conditions.

Based on a comparison to the No-Build conditions the LRT Alternatives can be expected to impact four intersections along this segment. These intersections are Sepulveda Boulevard/Palms Boulevard, Girard Avenue/Venice Boulevard, Clarington Avenue/Venice Boulevard, and Hughes Avenue/Venice Boulevard. The impacted intersections are illustrated in Figure 3.2-7 (Year 2030 Impacted Intersections With Project [LRT Alternatives]).

Three of the four impacted intersections are along Venice Boulevard. This can be attributed to the fact that the intersections currently operate with permitted left-turn east/west phasing on Venice Boulevard, but, with the LRT Alternatives, these intersections will have exclusive left-turn phasing added to the signal cycle, which increases the average vehicle delay. An increase in delay at the intersection of Sepulveda and Palms Boulevards is due to the fact that some traffic is being diverted to Palms Boulevard from Charnock Road (North), which is being limited to right-in and right-out movements due to the project. These additional left turns have a substantial impact on the overall intersection delay, especially in the PM peak hour. Similarly, with Military Avenue at Venice Boulevard restricted to right-in and right-out, traffic is diverted to Girard Avenue, impacting its intersection with Venice Boulevard. Additionally, the east/west permitted phasing at this intersection changes to protected phasing increasing the overall intersection delay. The complete LOS tables are in Appendix E of the *Transportation/Traffic Technical Background Report*.

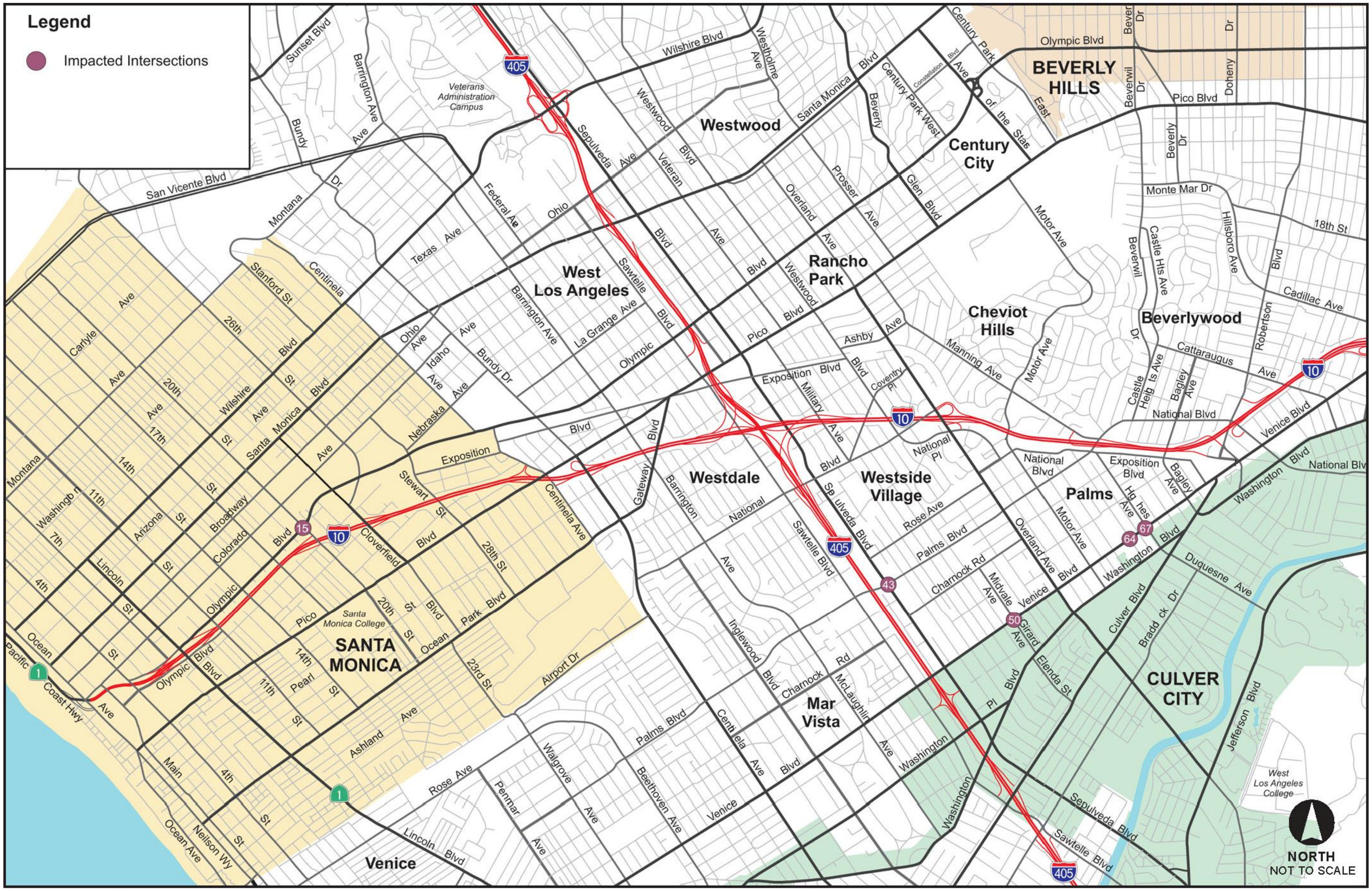
FEIR Design Options

The Sepulveda Grade Separation Design Option would not be implemented with LRT Alternatives 3 and 4. As such, the impacts would not change in Segment 1a (Venice/Sepulveda) relative to LOS and delays.

Segment 2: Sepulveda to Cloverfield (LRT Alternatives 1 through 4)

This segment will have three stations: Expo/Sepulveda Station, Expo/Bundy Station, and Olympic/26th Street Station. Daily trip generation, as estimated from the Metro Travel Demand Model for each station, is summarized in Table 3.2-19 (Daily Station Trip Generation—Segment 2).

The additional LRT vehicles that will be added to the Metro light-rail fleet to serve the LRT Alternatives will require maintenance and overnight storage. The light-rail vehicle maintenance facility site is proposed between Stewart Street and Centinela Avenue with automobile access on Exposition Boulevard (in response to community concerns, access could possibly be provided on Stewart Street). Parking will be provided based on the number of employees at the site at any given time and is estimated to be 65 ~~to 70~~ parking spaces. Although many of the employees will arrive and depart the site in the off-peak hours, for traffic analysis purposes, it is



Source: Iteris, 2009.

Figure 3.2-7 Year 2030 Impacted Intersections With Project (LRT Alternatives)

Table 3.2-19 Daily Station Trip Generation—Segment 2

Station	Total Daily Passengers	Daily Walk/Transit Access	Daily Auto Access	% of Passengers by Auto Access	Provided Station Parking
Expo/Sepulveda Station	5,096	4,681	415	8%	260
Expo/Bundy Station	2,863	~~2569~~2,469	393	13%	250
Olympic/26th Station	2,113	~~2957~~2,057	56	~~0%~~2%	0

SOURCE: AECOM, 2008; revised 2009.

assumed that all the employees would arrive in the peak period. This employee-generated traffic was included in the intersection analysis.

An LOS analysis was conducted for all of the study area intersections in this segment. Results of intersection operating conditions for this segment, with levels of service and average vehicle delay for each peak period, are included in Appendix B to the *Transportation/Traffic Technical Background Report*. Table 3.2-20 (Segment 2 Study Area Intersections—Year 2030 LOS [AM Peak Hour]) and Table 3.2-21 (Segment 2 Study Area Intersections—Year 2030 LOS [PM Peak Hour]) summarize the LOS analysis results for the No-Build and LRT Alternatives of the study area intersections within this segment for year 2030 in the AM and PM peak hours, respectively. A review of Table 3.2-20 and Table 3.2-21 shows a total of eight intersections are projected to operate at LOS E or F during either or both the peak hours under the No-Build Alternative. For the LRT Alternatives, seven of these eight intersections are projected to operate at LOS E or F while one intersection shows an improvement from LOS F to LOS B. Previously referenced Figure 3.2-6 (LOS E/F Intersections—Year 2030 With Project [LRT Alternatives] [Revised]) illustrates the study area intersections that are projected to operate at LOS E or F under year 2030 project conditions. Therefore, the LRT Alternatives do not result in impacts to intersections in this segment.

The complete LOS tables are in Appendix E of the *Transportation/Traffic Technical Background Report*.

FEIR Design Options

Implementation of the Sepulveda Grade Separation Design Option would also result in ***no impact*** to intersection delay and LOS in Segment 2 (Sepulveda to Cloverfield).

Implementation of the Maintenance Facility Design Option would not result in any change in the LOS and delay results reported in Table 3.2-20 (Segment 2 Study Area Intersections—Year 2030 LOS [AM Peak Hour]) and Table 3.2-21 (Segment 2 Study Area Intersections—Year 2030 LOS [PM Peak Hour]) since the number of proposed parking spaces would remain the same in the design option. This design option would not result in any additional impacts beyond what is discussed above for the LRT Alternatives. As such, impacts would remain ***less than significant***.

Table 3.2-20 Segment 2 Study Area Intersections—Year 2030 LOS (AM Peak Hour)

Study Area Intersections	No-Build (NB)		LRT Alternative			Impact	Remarks
	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No	
16. Cloverfield Boulevard and Colorado Avenue	D	38.1	D	37.8	-0.3	No	
17. Cloverfield Boulevard and Olympic Boulevard	D	47.6	D	46.7	-0.9	No	Grade Separated at this location.
18. 26th St and Colorado Avenue	C	20.1	B	19.9	-0.2	No	
19. 26th St and Olympic Boulevard*	D	38.6	D	41.8	3.2	No	
20. Stewart St and Colorado Avenue	B	17.1	B	17.0	-0.1	No	
21. Stewart St and Olympic Boulevard*	C	34.2	D	49.0	14.8	No	The project includes additional lanes as described in Table 3.2-8.
22. Centinela Avenue (W) and Olympic Boulevard	B	16.9	B	17.0	0.1	No	
23. Centinela Avenue (E) and Olympic Boulevard	C	21.4	~~B~~C	~~17.4~~21.2	~~-~~4.0.2	No	~~The project includes additional lanes as described in Table 3.2-8.~~
24. Centinela Avenue and Exposition Boulevard~~*~~	A	3.3	~~A~~B	~~8.4~~11.2	~~5.1~~7.9	No	~~The project includes additional lanes as described in Table 3.2-8. Signal to be installed.~~ Grade Separated at this location.
25. Centinela Avenue and Pico Boulevard	C	26.5	C	26.0	-0.5	No	
26. Bundy Dr and Olympic Boulevard	F	217.6	F	216.0	-1.6	No	
27. Bundy Dr and Exposition Boulevard	A	2.9	A	3.4	0.5	No	Grade Separated at this location.
28. Bundy Dr and Pico Boulevard	E	62.8	E	60.6	-2.2	No	

Table 3.2-20 Segment 2 Study Area Intersections—Year 2030 LOS (AM Peak Hour)

Study Area Intersections	No-Build (NB)		LRT Alternative			Impact	Remarks
	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No	
29. Barrington Avenue and Olympic Boulevard	D	53.7	D	50.7	-3.0	No	The project includes additional lanes as described in Table 3.2-8.
30. Barrington Avenue and Exposition Boulevard (N)*	C	20.4	A	5.0	-15.4	No	The project includes additional lanes as described in Table 3.2-8. Pedestrian/Bicycle signal to be cleared and funded by others.~~installed.~~
31. Barrington Avenue and Exposition Boulevard (S)*	A	7.4	A	2.8	-4.6	No	
32. Barrington Avenue and Pico Boulevard	C	27.1	C	27.1	0.0	No	The project includes additional lanes as described in Table 3.2-8.
33. Gateway Boulevard and Pico Boulevard	F	168.8	F	167.8	-1.0	No	Grade Separated at this location.
34. Sawtelle Boulevard and Pico Boulevard	F	134.1	F	130.9	-3.2	No	
35. Sawtelle Boulevard and Exposition Boulevard	C	15.6	D	34.5	18.9	No	Grade Separated at this location.

SOURCE: Iteris, 2008; updated 2009.

* Intersection to be preempted

Table 3.2-21 Segment 2 Study Area Intersections—Year 2030 LOS (PM Peak Hour)

Study Area Intersections	No-Build (NB)		LRT Alternative			Impact	Remarks
	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No	
16. Cloverfield Boulevard and Colorado Avenue	D	37.3	D	37.2	-0.1	No	
17. Cloverfield Boulevard and Olympic Boulevard	D	39.3	D	39.2	-0.1	No	Grade Separated at this location.
18. 26th St and Colorado Avenue	C	23.6	C	23.3	-0.3	No	
19. 26th St and Olympic Boulevard*	D	47.1	D	53.5	6.4	No	
20. Stewart St and Colorado Avenue	B	16.4	B	16.3	-0.1	No	
21. Stewart St and Olympic Boulevard*	D	44.6	D	50.7	6.1	No	The project includes additional lanes as described in Table 3.2-8.
22. Centinela Avenue (W) and Olympic Boulevard	B	18.0	B	17.9	-0.1	No	
23. Centinela Avenue (E) and Olympic Boulevard	B	17.7	B	~~14.2~~18.4	~~-3.5~~0.7	No	~~The project includes additional lanes as described in Table 3.2-8.~~
24. Centinela Avenue and Exposition Boulevard*	A	6.7	B	~~12.9~~11.4	~~6.2~~4.7	No	~~The project includes additional lanes as described in Table 3.2-8. Signal to be installed.~~Grade Separated at this location.
25. Centinela Avenue and Pico Boulevard	C	27.1	C	27.7	0.6	No	
26. Bundy Dr and Olympic Boulevard	F	95.3	F	93.5	-1.8	No	
27. Bundy Dr and Exposition Boulevard	F	300.0	F	300.0	0.0	No	Grade Separated at this location.
28. Bundy Dr and Pico Boulevard	D	48.7	D	48.7	0.0	No	

Table 3.2-21 Segment 2 Study Area Intersections—Year 2030 LOS (PM Peak Hour)

Study Area Intersections	No-Build (NB)		LRT Alternative			Impact	Remarks
	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No	
29. Barrington Avenue and Olympic Boulevard	E	77.4	E	74.4	-3.0	No	The project includes additional lanes as described in Table 3.2-8.
30. Barrington Avenue and Exposition Boulevard (N)*	C	16.5	A	8.2	-8.3	No	The project includes additional lanes as described in Table 3.2-8. Pedestrian/Bicycle signal to be cleared and funded by others.~~installed.~~
31. Barrington Avenue and Exposition Boulevard (S)*	F	300.0	B	10.4	-289.6	No	
32. Barrington Avenue and Pico Boulevard	D	41.8	D	37.0	-4.8	No	The project includes additional lanes as described in Table 3.2-8.
33. Gateway Boulevard and Pico Boulevard	F	156.4	F	152.9	-3.5	No	Grade Separated at this location.
34. Sawtelle Boulevard and Pico Boulevard	F	131.8	F	134.1	2.3	No	
35. Sawtelle Boulevard and Exposition Boulevard	F	300.0	F	300.0	0.0	No	Grade Separated at this location.

SOURCE: Iteris, 2008; updated 2009.

* Intersection to be preempted

Segment 3: Olympic (LRT Alternatives 1 and 3)

This segment will include two stations: Olympic/17th Street Station and Colorado/4th Street Station. Daily trip generation, as estimated from the Metro Travel Demand Model at each station, is summarized in Table 3.2-22 (Daily Station Trip Generation—Segment 3).

Table 3.2-22 Daily Station Trip Generation—Segment 3

Station	Total Daily Passengers	Daily Walk/Transit Access	Daily Auto Access	% of Passengers by Auto Access	Provided Station Parking
Olympic/17th Street Station	2,643	2,586	57	2%	0
Colorado/4th Street Station	3,333	3,085	249[a]	7%	~~2500~~[a]

SOURCE: AECOM, 2008.

[a] Parking demand at the Colorado/4th Street Station could be accommodated in adjacent existing public parking facilities in downtown Santa Monica.

An LOS analysis was conducted for all of the study area intersections in this segment. Results of intersection operating conditions for this segment, with levels of service and average vehicle delay for each peak period, are included in Appendix B to the *Transportation/Traffic Technical Background Report*. Table 3.2-23 (Segment 3 Study Area Intersections—Year 2030 LOS [AM Peak Hour]) and Table 3.2-24 (Segment 3 Study Area Intersections—Year 2030 LOS [PM Peak Hour]) summarizes the LOS analysis results for the No-Build and LRT Alternatives of the study area intersections within this segment for year 2030 in the AM and PM peak hours, respectively. A review of Table 3.2-23 and Table 3.2-24 shows a total of three intersections are projected to operate at LOS E or F during either or both the peak hours. For the LRT Alternatives, the same three intersections are projected to operate at LOS E or F. Previously referenced Figure 3.2-6 (LOS E/F Intersections—Year 2030 With Project [LRT Alternatives] [Revised]) illustrates the study area intersections that are projected to operate at LOS E or F under year 2030 project conditions. Based on a comparison to the No-Build conditions, one of the intersections can be expected to be impacted (i.e., 20th Street and Olympic Boulevard), illustrated in Figure 3.2-7 (Year 2030 Impacted Intersections With Project [LRT Alternatives]).

Most of the intersections on Olympic Boulevard currently operate on permitted left-turn east/west phasing, but with the LRT project, these intersections will need to have exclusive left-turn phasing, which increases the average delay. However, other intersections, like 17th Street and 14th Street, do not experience substantial impacts due to unused capacity, which lets them operate at better than LOS E/F.

The complete LOS tables are in Appendix E of the *Transportation/Traffic Technical Background Report*.

Table 3.2-23 Segment 3 Study Area Intersections—Year 2030 LOS (AM Peak Hour)

Study Area Intersections	No-Build (NB)		LRT Alternative			Impact	Remarks
	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No	
1. 4th St and Colorado Avenue	C	31.2	C	32.0	0.8	No	
2. 4th St/I-10WB and Olympic Boulevard	C	26.2	C	26.0	-0.2	No	Grade Separated at this location
3. 4th St/I-10EB and Olympic Boulevard	E	69.3	E	66.6	-2.7	No	Grade Separated at this location
4. Lincoln Boulevard and Colorado Avenue	D	53.3	D	51.1	-2.2	No	
5. Lincoln Boulevard/I-10WB and Olympic Boulevard	D	39.1	D	41.2	2.1	No	Grade Separated at this location
6. Lincoln Boulevard/I-10EB and Olympic Boulevard	F	115.5	F	110.9	-4.6	No	
7. 11th St and Colorado Avenue	C	21.0	C	20.5	-0.5	No	
8. 11th St (N) and Olympic Boulevard	B	14.1	B	14.0	-0.1	No	Grade Separated at this location
9. 11th St (S) and Olympic Boulevard	B	11.2	B	11.1	-0.1	No	
10. 14th St and Colorado Avenue	B	17.1	B	17.0	-0.1	No	
11. 14th St and Olympic Boulevard	B	19.4	C	25.3	5.9	No	Change in phasing to protected left turn phasing increases the delay
12. 17th St and Colorado Avenue	B	17.2	B	17.1	-0.1	No	
13. 17th St and Olympic Boulevard	B	18.4	C	27.3	8.9	No	Change in phasing to protected left turn phasing increases the delay
14. 20th St and Colorado Avenue	C	22.0	C	21.2	-0.8	No	
15. 20th St and Olympic Boulevard	***E***	***60.5***	***F***	***81.6***	***21.1***	***Yes***	***Change in phasing to protected left turn phasing increases the delay***

SOURCE: Iteris, 2008.

Bold italics indicate intersections impacted by the project and forecast to operate at unsatisfactory levels of service.

Table 3.2-24 Segment 3 Study Area Intersections—Year 2030 LOS (PM Peak Hour)

Study Area Intersections	No-Build (NB)		LRT Alternative			Impact	Remarks
	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No	
1. 4th St and Colorado Avenue	C	34.7	D	35.7	1.0	No	
2. 4th St/I-10WB and Olympic Boulevard	C	27.8	C	28.1	0.3	No	Grade Separated at this location
3. 4th St/I-10EB and Olympic Boulevard	C	32.6	C	32.7	0.1	No	Grade Separated at this location
4. Lincoln Boulevard and Colorado Avenue	D	52.3	D	54.7	2.4	No	
5. Lincoln Boulevard/I-10WB and Olympic Boulevard	D	35.2	D	38.4	3.2	No	Grade Separated at this location
6. Lincoln Boulevard/I-10EB and Olympic Boulevard	C	34.7	C	34.2	-0.5	No	
7. 11th St and Colorado Avenue	C	29.5	C	28.9	-0.6	No	
8. 11th St (N) and Olympic Boulevard	B	16.7	B	16.6	-0.1	No	Grade Separated at this location
9. 11th St (S) and Olympic Boulevard	B	17.9	B	17.8	-0.1	No	
10. 14th St and Colorado Avenue	B	19.6	B	19.6	0.0	No	
11. 14th St and Olympic Boulevard	B	18.7	C	25.0	6.3	No	Change in phasing to protected left turn phasing increases the delay
12. 17th St and Colorado Avenue	B	17.5	B	17.5	0.0	No	
13. 17th St and Olympic Boulevard	B	18.9	C	27.0	8.1	No	Change in phasing to protected left turn phasing increases the delay
14. 20th St and Colorado Avenue	B	18.3	B	18.2	-0.1	No	
15. 20th St and Olympic Boulevard	C	34.5	D	46.3	11.8	No	Change in phasing to protected left turn phasing increases the delay

SOURCE: Iteris, 2008.

FEIR Design Options

Implementation of any of the identified design options would not result in any impacts along Segment 3 (Olympic).

Segment 3a: Colorado (LRT Alternatives 2 and 4)

This segment will include two stations: Colorado/17th Street Station and Colorado/4th Street Station. Daily trip generation, as estimated from the Metro Travel Demand Model at each station, is summarized in Table 3.2-25 (Daily Station Trip Generation—Segment 3a).

Table 3.2-25 Daily Station Trip Generation—Segment 3a

Station	Total Daily Passengers	Daily Walk/Transit Access	Daily Auto Access	% of Passengers by Auto Access	Provided Station Parking
Colorado/17th Street Station	2,912	2,623	289	10%	70
Colorado/4th Street Station	2,557	2,422	135[a]	5%	~~225~~0[a]

SOURCE: AECOM, 2008; updated 2009.

[a] Parking demand at the Colorado/4th Street Station could be accommodated in adjacent existing public parking facilities in downtown Santa Monica.

An LOS analysis was conducted for all of the study area intersections in this segment. Results of intersection operating conditions for this segment, with levels of service and average vehicle delay for each peak period, are included in Appendix B to the *Transportation/Traffic Technical Background Report*. Table 3.2-26 (Segment 3a Study Area Intersections—Year 2030 LOS [AM Peak Hour]) and Table 3.2-27 (Segment 3a Study Area Intersections—Year 2030 LOS [PM Peak Hour]) summarizes the LOS analysis results for the No-Build and LRT Alternatives of the study area intersections within this segment for year 2030 in the AM and PM peak hours, respectively. A review of Table 3.2-26 and Table 3.2-27 shows a total of three intersections are projected to operate at LOS E or F during either or both the peak hours. For the LRT Alternatives, the same three intersections are projected to operate at LOS E or F. Previously referenced Figure 3.2-6 (LOS E/F Intersections—Year 2030 With Project [LRT Alternatives] [Revised]) illustrates the study area intersections that are projected to operate at LOS E or F under year 2030 project conditions. Therefore, the LRT Alternatives do not result in impacts to intersections in this segment.

FEIR Design Options

Implementation of the Colorado Parking Retention and the Colorado/4th Parallel Platform and South Side Parking design options would not result in any LOS or delay changes. As such, ***no impact*** beyond that discussed above for the LRT Alternatives would occur with implementation of any of the identified design options along Segment 3a (Colorado).

Table 3.2-26 Segment 3a Study Area Intersections—Year 2030 LOS (AM Peak Hour)

Study Area Intersections	No-Build (NB)		LRT Alternative			Impact	Remarks
	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No	
1. 4th St and Colorado Avenue	C	31.2	C	33.6	2.4	No	Reduced capacity on Colorado Avenue increased the delay
2. 4th St/I-10WB and Olympic Boulevard	C	26.2	C	26.8	0.6	No	
3. 4th St/I-10EB and Olympic Boulevard	E	69.3	E	69.6	0.3	No	
4. Lincoln Boulevard and Colorado Avenue	D	53.3	C	29.6	-23.7	No	
5. Lincoln Boulevard/I-10WB and Olympic Boulevard	D	39.1	D	40.6	1.5	No	
6. Lincoln Boulevard/I-10EB and Olympic Boulevard	F	115.5	F	116.2	0.7	No	
7. 11th St and Colorado Avenue	C	21.0	C	27.9	6.9	No	Reduced capacity on Colorado Avenue increased the delay
8. 11th St and Olympic Boulevard	B	14.1	B	14.1	0.0	No	
9. 11th St (S) and Olympic Boulevard	B	11.2	B	11.3	0.1	No	
10. 14th St and Colorado Avenue	B	17.1	C	20.3	3.2	No	Reduced capacity on Colorado Avenue increased the delay
11. 14th St and Olympic Boulevard	B	19.4	B	19.5	0.1	No	
12. 17th St and Colorado Avenue	B	17.2	C	34.6	17.4	No	Reduced capacity on Colorado Avenue increased the delay
13. 17th St and Olympic Boulevard	B	18.4	B	18.4	0.0	No	
14. 20th St and Colorado Avenue	C	22.0	C	21.7	-0.3	No	
15. 20th St and Olympic Boulevard	E	60.5	E	61.3	0.8	No	
82. 20th St and Broadway	B	18.2	B	18.3	0.1	No	
83. 14th St and Broadway	B	18.9	B	19.0	0.1	No	
84. Lincoln Boulevard and Broadway	B	16.4	B	16.6	0.2	No	

Table 3.2-26 Segment 3a Study Area Intersections—Year 2030 LOS (AM Peak Hour)

Study Area Intersections	No-Build (NB)		LRT Alternative			Impact	Remarks
	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No	
85. 4th St and Broadway	C	27.3	C	27.3	0.0	No	
86. Main St and Colorado Avenue	A	8.3	A	8.7	0.4	No	

SOURCE: Iteris, 2008.

Table 3.2-27 Segment 3a Study Area Intersections—Year 2030 LOS (PM Peak Hour)

Study Area Intersections	No-Build (NB)		LRT Alternative			Impact	Remarks
	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No	
1. 4th St and Colorado Avenue	D	34.7	D	38.8	4.1	No	Reduced capacity on Colorado Avenue increased the delay
2. 4th St/I-10WB and Olympic Boulevard	C	27.8	C	30.7	2.9	No	
3. 4th St/I-10EB and Olympic Boulevard	C	32.6	D	36.6	4.0	No	
4. Lincoln Boulevard and Colorado Avenue	D	52.3	D	49.4	-2.9	No	
5. Lincoln Boulevard/I-10WB and Olympic Boulevard	D	35.2	D	44.3	9.1	No	
6. Lincoln Boulevard/I-10EB and Olympic Boulevard	C	34.7	D	41.1	6.4	No	
7. 11th St and Colorado Avenue	C	29.5	D	53.4	23.9	No	Reduced capacity on Colorado Avenue increased the delay
8. 11th St and Olympic Boulevard	B	16.7	B	16.9	0.2	No	
9. 11th St (S) and Olympic Boulevard	B	17.9	B	18.6	0.7	No	
10. 14th St and Colorado Avenue	B	19.6	C	26.1	6.5	No	Reduced capacity on Colorado Avenue increased the delay
11. 14th St and Olympic Boulevard	B	18.7	B	19.0	0.3	No	
12. 17th St and Colorado Avenue	B	17.5	D	41.9	24.4	No	Reduced capacity on Colorado Avenue increased the delay
13. 17th St and Olympic Boulevard	B	18.9	B	19.4	0.5	No	
14. 20th St and Colorado Avenue	B	18.3	B	18.6	0.3	No	
15. 20th St and Olympic Boulevard	C	34.5	D	37.8	3.3	No	
82. 20th St and Broadway	B	19.3	B	20.0	0.7	No	
83. 14th St and Broadway	C	20.8	C	22.1	1.3	No	
84. Lincoln Boulevard and Broadway	C	20.7	C	24.4	3.7	No	

Table 3.2-27 Segment 3a Study Area Intersections—Year 2030 LOS (PM Peak Hour)

Study Area Intersections	No-Build (NB)		LRT Alternative			Impact	Remarks
	LOS	Delay (sec)	LOS	Delay (sec)	Change from NB	Yes or No	
85. 4th St and Broadway	C	29.2	C	29.8	0.6	No	
86. Main St and Colorado Avenue	B	12.6	B	13.1	0.5	No	

SOURCE: Iteris, 2008.

Mitigation Measures

Mitigation measures need to be implemented at five intersections, depending on the LRT Alternative considered. These intersections are summarized in Table 3.2-28 (Impacted Study Area Intersections Without Mitigations—Year 2030).

Table 3.2-28 Impacted Study Area Intersections Without Mitigations—Year 2030

LRT Alternatives	Segment	Intersection
LRT 3 and LRT 4	Segment 1a: Venice/Sepulveda	43. Sepulveda Boulevard and Palms Boulevard
		50. Girard Avenue & Venice Boulevard
		64. Clarington Avenue and Venice Boulevard
		67. Hughes Avenue and Venice Boulevard
LRT 1 and LRT 3	Segment 3: Olympic	15. 20th Street and Olympic Boulevard

SOURCE: Iteris, 2008.

For each LRT Alternative, improvements, such as the grade separations, roadway and signal modifications described in Table 3.2-8 (Grade Crossing Analysis—Proposed Improvements), are proposed as part of the project description contained in Chapter 2 (Project Alternatives). As a result of the incorporation of the improvements only the five intersections below are impacted.

The approach used to develop mitigation measures at the intersections began by considering operational improvements, followed by physical improvements. Operational improvements included signal timing and phasing changes. The cycle lengths for the study area intersections were adjusted and the green times for each approach were fine-tuned to satisfy the forecast traffic demand. If that step did not mitigate the effect, physical improvements to the intersections were then developed. The following intersection improvements were developed to help mitigate the residual traffic impacts.

Segment 1a: Venice/Sepulveda (LRT Alternatives 3 and 4)

The following mitigation measures are required to reduce the level of impact to less than significant:

MM TR-1 Clarington Avenue/Venice Boulevard. *Adjust signal timing and add a southbound left-turn lane. This additional lane will require the removal of on-street parking on both sides of Clarington Avenue. Property would have to be acquired to provide replacement parking. Potential parcels at the northwest and southwest corners of the Hughes Avenue/Venice Boulevard intersection have been identified.*

MM TR-2 Hughes Avenue/Venice Boulevard. *Adjust signal timing and add a northbound left-turn lane, a southbound left-turn lane, and an eastbound right-turn lane. These additional lanes will require the removal of on-street parking on both sides of Hughes Avenue. Property would have to be acquired to provide replacement parking. Potential parcels at the northwest and southwest corners of the Hughes Avenue/Venice Boulevard intersection have been identified.*

Two intersections in this segment cannot be mitigated to a less-than-significant impact. No feasible mitigation measures could be identified to reduce the level of impact to an acceptable level.

The intersection at Sepulveda Boulevard and Palms Boulevard along Segment 1a (LRT Alternatives 3 and 4) is projected to operate at saturated conditions under year 2030 No-Build conditions. Under LRT Alternatives 3 and 4, added traffic due to left turn closures at parallel streets will be diverted to this intersection. Addition of turn lanes would not reduce the delays to an acceptable level and addition of through lanes is not feasible due to right-of-way constraints. There would be a significant unavoidable impact at this location.

The intersection of Girard Avenue/Midvale Avenue/Venice Boulevard would degrade substantially under LRT Alternatives 3 and 4. No feasible mitigation measure could be identified to reduce the level of impact to an acceptable level. This intersection is projected to operate at satisfactory levels of service under year 2030 No-Build conditions. Under LRT Alternatives 3 and 4, provision of left turn phasing and addition of traffic due to left-turn closures at parallel streets, will divert traffic to this intersection. Addition of turn lanes would not reduce the delays to an acceptable level and addition of through lanes is not feasible due to right-of-way constraints. There would be a significant unavoidable impact at this location.

Segment 3: Olympic (LRT Alternatives 1 and 3)

The following mitigation measure is required to reduce the level of impact to less than significant.

MM TR-3 20th St/Olympic Boulevard. *Adjust signal timing and add a northbound right-turn lane. To make it a feasible mitigation, partial acquisitions may~~will~~ be required for corner cuts at all four corners of the intersection.*

Table 3.2-29 (Impacted Study Area Intersections with Mitigation Measures—Levels of Service—Year 2030 With Project) summarizes the level of service with the implementation of the above-mentioned mitigation measures for the affected study area intersections.

Table 3.2-29 Impacted Study Area Intersections with Mitigation Measures—Levels of Service—Year 2030 With Project

Study Area Intersection	Control	AM Peak Hour		PM Peak Hour	
		LOS	Delay (sec)	LOS	Delay (sec)
15. 20th St and Olympic Boulevard	Signal	D	51.4	D	40.6
43. Sepulveda Boulevard and Palms Boulevard	***Signal***	***F***	***105.7***	***F***	***339.1***
50. Girard Avenue & Venice Boulevard	***Signal***	***F***	***206.0***	***F***	***214.5***
64. Clarington Avenue and Venice Boulevard	Signal	D	49.5	D	40.5
67. Hughes Avenue and Venice Boulevard	Signal	D	54.9	D	36.6

SOURCE: Iteris, 2008.

LOS = level of service; Delay = average vehicle delay (seconds)

Bold Italics indicates an unavoidable impact.

In summary, implementation of LRT Alternatives 1 and 2 would result in ***less-than-significant*** impacts, and implementation of LRT Alternatives 3 and 4 would result in two ***significant and unavoidable*** impacts.

Criterion	**Would the project cause parking intrusion into adjacent neighborhoods or commercial areas where the demand for parking at a station exceeds the proposed parking lot capacity?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. Without service to new areas or major changes in existing bus service routes, the No-Build Alternative is not anticipated to result in additional parking demand. Therefore, the No-Build Alternative is not anticipated to result in an increased burden on existing parking and would not require the construction of new parking lots or the expansion of existing ones; therefore, ***no impact*** would occur.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. Introducing new bus routes within the project area could result in some additional transit riders, a small percentage of which might desire to access the routes via automobile and park near a bus stop. However, the incremental increase in new park-and-ride demand would not be expected to result in a substantial amount of on-street parking or the need to expand an existing parking lot. Therefore, the TSM Alternative is not anticipated to result in an increased burden on existing parking facilities and would not require the construction of new parking lots or the expansion of existing ones; therefore, ***no impact*** would occur.

LRT Alternatives

Table 3.2-30 (Parking Supply and Demand at Stations—Year 2030) below illustrates the daily passenger forecasts and mode of access at each station along the segments for both the daily amount and peak period. At stations where no dedicated station parking is proposed to be provided~~,~~ only drop-off auto access is forecasted in addition to walk/transit ~~and walk/bike~~ access. At stations where there is proposed dedicated station parking, the table indicates the number of autos expected to arrive and park in the peak period (i.e., does not include drop-off), and compares that demand to the number of spaces available. ~~The daily station parking demand is also indicated in the table where there is proposed station parking.~~ There is likely to be some turnover of parkers during the peak period that would free up spaces to accommodate midday parking demand, so the peak parking demand represents a conservative estimate of the parking demand. At the Expo/Westwood Station, Expo/Sepulveda Station, Expo/Bundy Station, ~~and~~ Colorado/17th Street Station, and Colorado/4th Street Station, the proposed supply of parking would be less than the forecasted peak period demand.

Table 3.2-30 Parking Supply and Demand at Stations—Year 2030

Segment	Station	Total Daily Passengers	Mode of Access (Daily)		Mode of Access (Peak Period)		Auto Access Demand (Daily)		Auto Access Demand (Peak Period)	Park & Ride Lot Capacity
			Walk/ Transit	Auto	Walk/ Transit	Auto	Station Parking	Drop-Off		
Segment 1: Expo ROW	National/Palms Station	1,861	1,772	89	1,329	67	0	89	0	0
	Expo/Westwood Station	5,237	4,895	342	3,671	257	286	56	215	170
Segment 1a: Venice/Sepulveda	Venice/Motor Station	2,045	1,970	75	1,478	56	0	75	0	0
	Venice/Sepulveda Station	3,292	3,204	88	2,403	66	0	88	0	0
	Sepulveda/National Station	2,367	2,070	297	1,553	223	244	53	183	250
Segment 2: Sepulveda to Cloverfield	Expo/Sepulveda Station	5,096	4,681	415	3,511	311	354	61	266	260
	Expo/Bundy Station	2,863	2,469	393	1,852	295	337	56	253	250
	Olympic/26th Street Station	2,113	2,057	56	1,543	42	0	56	0	0
Segment 3: Olympic	Olympic/17th Street Station	2,643	2,586	57	1,940	43	0	57	0	0
	Colorado/4th Street Station	3,333	3,085	249	2,314	187	214[a]	35	161	~~2500~~[a]
Segment 3a: Colorado	Colorado/17th Street Station	2,912	2,623	289	1,967	217	240	49	180	70
	Colorado/4th Street Station	2,557	2,422	135	1,817	101	109[a]	26	82	~~2250~~[a]

SOURCE: AECOM, 2008.

[a]Parking demand at the Colorado/4th Street Station could be accommodated in nearby public parking facilities in downtown Santa Monica.

No parking is proposed at National/Palms Station, Venice/Motor Station, Venice/Sepulveda Station, Olympic/26th Street Station, ~~and~~ Olympic/17th Street Station, and Colorado/4th Street Station. With the exception of the Colorado/4th Street Station (where LRT station parking demand could be accommodated in adjacent existing public parking facilities), the ridership model projections for the project have assumed that no station parking would be provided at these stations, and no ridership would be generated for these trips. However, drop-offs are still included in the ridership. Nevertheless, i~~I~~t can be expected that some LRT patrons will attempt to park in the neighborhoods or commercial areas surrounding each of these stations. Some of the excess parking demand may be met in existing off-street parking facilities (e.g., an office worker may park in his/her office parking lot and take the train Downtown), but most will likely attempt to park on streets within walking distance of the stations.

The Sepulveda/National ~~and Colorado/4th Street Station~~s ~~are~~ is expected to have adequate parking and would not be expected to have spillover parking in the ~~neighborhoods~~ commercial areas surrounding it~~them~~. ~~The Colorado/4th Street Station may in fact have the opposite problem; people bound for alternate destinations in downtown Santa Monica may park in the station parking lot if mechanisms are not in place to prevent non-LRT-related parking.~~

Spillover parking in the neighborhoods or commercial areas around the stations can be expected to occur around all of the stations except the Sepulveda/National Station ~~and Colorado/4th Street Stations~~. Some of the residential neighborhoods near proposed stations have existing residential permit parking districts, such as north of the Expo/Westwood Station, which will reduce the potential for LRT-related parking impacts in those neighborhoods. Other station areas, such as Colorado/17th Street Station and Colorado/4th Street Station, have time-restricted metered on-street parking which will also reduce the impact of spillover parking demand from the stations. However, some station areas do not have residential permit parking districts or time-restricted on-street parking (e.g., south of the Expo/Westwood Station, south of the Expo/Sepulveda Station) and could be impacted by spillover parking.

Mitigation Measures

The following mitigation measure has been revised in consultation with the local agencies and is recommended for locations which are affected by station spillover parking:

MM TR-4 *In the quarter mile area surrounding each station where spillover parking is anticipated, a program shall be established to monitor the on-street parking activity in the area prior to the opening of service and shall monitor the availability of parking monthly for six months following the opening of service. If a parking shortage is determined to have occurred (i.e., existing parking space utilization increases to 100 percent) due to the parking activity of the LRT patrons, Metro shall work with the appropriate local jurisdiction and affected communities to assess the need for and specific elements of a permit parking program for the impacted neighborhoods. The guidelines established by each local jurisdiction for the assessment of permit parking programs and the development of community consensus on the details of the permit program shall be followed. Metro shall reimburse the local jurisdictions for the costs associated with developing the local permit parking programs within one-quarter mile of the stations and for the costs of the signs posted in the neighborhoods. Metro will not be responsible for the costs of permits for*

residents desiring to park on the streets in the permit districts. For those locations where station spillover parking cannot be addressed through implementation of a permit program, alternative mitigation options include time-restricted, metered, or shared parking arrangements. Metro will work with the local jurisdictions to determine which option(s) to implement.

Implementation of the above mitigation measure would reduce the impacts associated with station spillover parking to ***less than significant***.

FEIR Design Options

Implementation of the Sepulveda Grade Separation, Maintenance Facility Buffer, Colorado Parking Retention, and the Colorado/4th Parallel Platform and South Side Parking design options would not cause additional parking intrusion into adjacent neighborhoods or commercial areas where the demand for parking at a station exceeds the proposed parking lot capacity. Impacts would remain ***less than significant*** with implementation of these design options.

Implementation of the Expo/Westwood Station No Parking Design Option would eliminate the 170 surface parking spaces that were dedicated to transit patrons at the Expo/Westwood Station. Implementation of mitigation measure MM TR-4 would reduce the impacts associated with station spillover parking to ***less than significant***.

Criterion	**Would the project exceed, either individually or cumulatively, a level of service standard established by the County Congestion Management Plan for designated roads or highways?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. The No-Build Alternative roadway improvements are intended to improve roadway operation and reduce vehicle delay. The Caltrans I-405 FEIS/EIR assumes that the improvements will help the delay condition, but does not complete regional modeling to determine future CMP roadway level of service. The No-Build Alternative would have a ***less-than-significant*** impact on CMP roadway level of service.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. Introduction of new bus routes within the study area could result in additional buses on the Congestion Management Plan (CMP) facilities resulting in increased congestion. At the same time, these additional routes would reduce automobile traffic on the CMP roadways. Hence, impacts would be ***less than significant***.

LRT Alternatives

As can be seen from Table 3.2-3 (Growth Factors for Study Area between 2007 and 2030), in all of the LRT Alternatives, the traffic growth rates are lower than the No-Build Alternative,

indicating that with the project, traffic volumes in the study area are expected to decrease on an overall basis. There are certain locations which are projected to have higher delays and increased V/Cs[48] because of reduced capacity or turn restrictions. In addition, there would be some additional traffic near the stations to access the parking facilities. However, the project is not expected to generate any additional regional auto trips on CMP freeways, hence, it is not expected that there would be impacts associated with CMP freeways which would increase the V/Cs by more than 2 percent of the capacity. The 2 percent increase in capacity threshold is the standard established by the Los Angeles County CMP.

LRT Alternatives 1 (Expo ROW–Olympic) and 2 (Expo ROW–Colorado)

LRT Alternatives 1 and 2 do not include any CMP intersections. Thus, ***no impact*** would occur.

LRT Alternatives 3 (Venice Sepulveda–Olympic) and 4 (Venice Sepulveda–Colorado)

LRT Alternatives 3 and 4 include one CMP intersection, located at Sepulveda Boulevard and Venice Boulevard. This intersection is projected to operate at V/C greater than 1.00 (LOS F) under year 2030 No-Build conditions. The V/C at this location is not projected to increase by more than 2 percent of capacity as a result of the project. The projected V/C at this location is 1.30 in the AM peak hour and 2.24 in the PM peak hour. This is not an impact according to CMP significance criteria; hence the impact would be considered ***less than significant***.

FEIR Design Options

Implementation of the Sepulveda Grade Separation, Maintenance Facility Buffer, Colorado Parking Retention, the Colorado/4th Parallel Platform and South Side Parking, or Expo/Westwood Station No Parking design options would not result in any additional impacts to CMP intersections beyond what is discussed above with the LRT Alternatives. Impacts would remain ***less than significant*** with implementation of the design options.

Criterion Would the project result in inadequate on-street parking capacity?

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. The I-405 widening at the Expo Phase 2 ROW would not result in any changes to the local supply of on-street parking in the project alignment, and ***no impact*** would occur.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. The TSM Alternative would not result in any changes to the street profile or supply of on-street parking, and ***no impact*** would occur.

[48] Volume/Capacity ratio; V/C is a conventional level-of-service measure for roadways, comparing roadway demand (vehicle volumes) with roadway supply (carrying capacity).

LRT Alternatives

The following sections describe the impacts to on-street parking in the various segments of the LRT Alternatives, and identifies where proposed replacement parking could be located. As noted previously, the number of removed spaces was modified in the FEIR to reflect changes to the project that emerged in response to community concerns (i.e., at Westwood Boulevard, Sepulveda Boulevard, Centinela Avenue). Those parking spaces that could potentially be removed were inventoried and the utilization of these spaces was assessed. Parking availability on adjacent streets was also inventoried to determine whether these could serve as potential replacement parking areas. Potential replacement parking options were determined based on the number of removed spaces that are utilized and not on the total number of spaces removed.

The parking inventories were initially completed during weekday, daytime hours. Supplemental surveys were conducted in certain areas for both daytime and nighttime hours to confirm the validity of the utilization rates and potential parking restrictions (e.g., time limits, metered parking, parking permits, etc.). In general, the utilization rates of both the initial and supplemental surveys were found to be consistent. In addition, the areas of the surveys were expanded to further clarify the parking availability and restrictions on adjacent streets. ~~As a part of the next phase of the project more detailed surveys will be completed to refine the number of parking spaces to be replaced.~~

Segment 1: Expo ROW (LRT Alternatives 1 and 2)

Overland Avenue would be widened and reconstructed within the public right-of-way between Cushdon Avenue (north of Expo ROW) and Coventry Place (south of Expo ROW) to accommodate two additional lanes of traffic, one northbound and one southbound. This would require the removal of on-street parking from 7:00 a.m. to 7:00 p.m. along portions of Overland.[49] Table 3.2-31 (Overland Avenue—Parking Utilization and Replacement Parking Options [Years 2008/09]) provides a summary of parking utilization along Overland Avenue and replacement parking options along adjacent streets. A field survey determined that these spaces are relatively lightly used, and available on-street parking on the adjacent side streets could serve as replacement parking for the spaces lost on Overland Avenue. However, parking on some of the side streets is metered and limited to two hours and/or ~~for vehicles without a~~ has an existing neighborhood permit program. Therefore, a permit may be required for replacement parking on the adjacent side streets. LRT Alternatives using this portion of Segment 1 are not expected to impact on-street parking based upon the utilization and adjacent available parking surveys. ~~Modification of the current on-street parking limitations to address the loss of unlimited-time spaces will be required.~~

[49] The additional northbound lane may be incorporated into a proposed LADOT project that would provide a third northbound lane from National Boulevard to Pico Boulevard. Implementation of the LADOT project would require the removal of on-street parking from 7:00 a.m. to 7:00 p.m. along a longer portion of Overland Avenue.

Table 3.2-31 Overland Avenue—Parking Utilization and Replacement Parking Options (Years 2008/09)

Affected Sections along Overland Avenue	Total Removed Parking Spaces Occupied	Total Parking Spaces Removed	Potential Replacement Parking Options
West side of Overland Avenue, between Cushdon Avenue and Expo ROW	13	28	Residential ~~D~~demand could be met on Cushdon, Esther, and Ashby Avenues, but permit is required or may be required; business demand could be met on east side of Overland Avenue, between Esther Avenue and Ayres Avenue, utilizing 2-hour metered parking. ~~Hence, mitigation required.~~
East side of Overland Avenue, between Expo ROW and Coventry Place	1	20	Demand could be met on Coventry Place and Dunleer Place, but permit may be required. ~~Hence, mitigation required~~.
Total	***14***	***48***	
Overall Utilization	29%		

SOURCE: DMJM Harris, 2008; updated 2009.~~,~~

Westwood Boulevard would be widened by approximately 4 feet within the public ROW between Ashby Avenue (north of Expo ROW) and Richland Avenue (south of Expo ROW) to allow for two northbound lanes of traffic and bus stops on both sides of the street in close proximity to the proposed LRT station. This would require the removal of on-street parking on both sides of Westwood Boulevard, between 400 ~~700~~ feet north of Ashby Avenue to Richland Avenue; on South Exposition Boulevard, east and west of Westwood Boulevard; and on North Exposition Boulevard, to the east of Westwood Boulevard. A field survey determined that these spaces are relatively lightly used, and that on-street parking on adjacent side streets and/or new spaces created within the Expo ROW could replace these spaces. Table 3.2-32 (Westwood Boulevard Area—Parking Utilization and Replacement Parking Options [Years 2008/09]) provides a summary of parking utilization along the affected sections of Westwood Boulevard and replacement parking options along adjacent streets and the Expo ROW.

Table 3.2-32 Westwood Boulevard Area—Parking Utilization and Replacement Parking Options (Years 2008/09)

Affected Sections along Westwood Boulevard	Total Removed Parking Spaces Occupied	Total Parking Spaces Removed	Potential Replacement Parking Options
West side of Westwood Boulevard, 700 feet north of Ashby Avenue	5~~12~~	10~~24~~	Demand could be met on Cushdon, Esther and Ashby Avenues, but permit required or may be required
West side of Westwood Boulevard, between South Exposition Boulevard and Richland Avenue	2	10~~12~~	Demand could be met farther south along Westwood Boulevard ~~Avenue~~, but permit is required
East side of Westwood Boulevard, between Cushdon and Esther Avenues	4	6~~7~~	Demand could be met on Cushdon and Esther Avenues, but permit is required
East side of Westwood Boulevard, between Esther and Ashby Avenues	1	8	Demand could be met on ~~south side of~~ Esther or Ashby Avenues, but permit is required or may be required
East side of Westwood Boulevard, between South Exposition Boulevard and Richland Avenue	1	7	Replacement parking could be accommodated along Richland Avenue east of Westwood Boulevard, but permit may be required
North side of South Exposition Boulevard, ~~between Midvale Avenue and~~ 120' west of Westwood Boulevard	3~~4~~	5~~13~~	~~Not all of the spaces would have to be removed; enough could be maintained to meet this demand~~ Demand could be shifted west on Exposition Boulevard or demand could be met on Midvale Avenue
North side of South Exposition Boulevard, east of Westwood Boulevard	3~~2~~	10~~7~~	Replacement parking could be accommodated within ~~Expo/Westwood Station~~on Richland Avenue, but permit may be required
South side of South Exposition Boulevard, ~~between Midvale Avenue and~~120' west of Westwood Boulevard	2~~7~~	7~~9~~	~~Not all of the spaces would have to be removed; remaining demand could be met on Midvale Avenue~~Demand could be shifted west on Exposition Boulevard or could be met on Midvale Avenue

Table 3.2-32 Westwood Boulevard Area—Parking Utilization and Replacement Parking Options (Years 2008/09)

Affected Sections along Westwood Boulevard	Total Removed Parking Spaces Occupied	Total Parking Spaces Removed	Potential Replacement Parking Options
South side of South Exposition Boulevard, east of Westwood Boulevard	0	6	~~Replacement parking could be accommodated within Expo/Westwood Station~~No replacement parking required
North side of North Exposition Boulevard, east of Westwood Boulevard	3	5~~4~~	Replacement parking could be accommodated ~~within Expo/Westwood Station~~on Ashby Avenue, but permit may be required
South side of North Exposition Boulevard, east of Westwood Boulevard	4	4~~5~~	Replacement parking could be accommodated ~~within Expo/Westwood Station~~ on N. Exposition Boulevard between Midvale Avenue and Westwood Boulevard, but permit may be required
Total	***28~~40~~***	***78~~102~~***	
Overall Utilization	36~~39~~%		

SOURCE: DMJM Harris, 2008; updated 2009.

Sepulveda Boulevard would be widened ~~in the vicinity of the Expo ROW~~ between Tennessee Avenue and Richland Avenue to accommodate an additional southbound through lane and an additional northbound through lane. This would also require the removal of on-street parking on the west side of Sepulveda Boulevard from ~~Exposition Boulevard~~Tennessee Avenue to ~~approximately 100 feet south of Pearl Street.~~Richland Avenue. On-street parking would also need to be removed on the east side between ~~Pico Boulevard~~Tennessee Avenue and Pearl Street. In addition, on-street parking would also be removed along Exposition Boulevard on the blocks on either side of Sepulveda Boulevard, which need to be reconfigured to accommodate left-turn lanes. ~~A F~~field surveys determined that ~~there is moderate~~ demand for these spaces ~~that~~ could be served by available on-street parking on adjacent side streets.

Table 3.2-33 (Sepulveda Boulevard Area—Parking Utilization and Replacement Parking Options [Years 2008/09]) provides a summary of parking utilization along the affected sections of Sepulveda Boulevard and replacement parking options.

Table 3.2-33 Sepulveda Boulevard Area—Parking Utilization and Replacement Parking Options (Years 2008/09)

Affected Sections along Sepulveda Boulevard	Total Removed Parking Spaces Occupied	Total Parking Spaces Removed	Potential Replacement Parking Options
North side of Exposition Boulevard, 300' west of between Sepulveda and Sawtelle Boulevards	1119	1345	Demand on eastern end where parking would be removed could be shifted west on Exposition Boulevard, but permit may be required
North side of Exposition, between Sepulveda Boulevard and Tilden Avenue	7	21	Demand on western end where parking would be removed could be shifted east on Exposition Boulevard or could be accommodated on Bentley Avenue, but permit may be required
South side of Exposition Boulevard, between 300' west of Sepulveda and Sawtelle Boulevards	914	1324	Demand on eastern end where parking would be removed could be accommodated to the south shifted west on Pearl Street Exposition Boulevard, but permit may be required
South side of Exposition Boulevard, between Sepulveda Boulevard and Tilden Avenue	16	22	Demand on western end where parking would be removed could be shifted east on Exposition Boulevard or could be accommodated on Bentley Avenue, but permit may be required
West side of Sepulveda Boulevard, between Tennessee Avenue and Pico Boulevard	6	6	Business demand could be accommodated on the adjacent side streets including Tennessee Avenue, South Bentley Avenue and the alley between Tennessee Avenue and Pico Boulevard, but subject to time restrictions
East side of Sepulveda Boulevard between Tennessee Avenue and Pico Boulevard	2	5	Business demand could be accommodated on the adjacent side streets including Tennessee Avenue, South Bentley Avenue and the alley between Tennessee Avenue and Pico Boulevard, but subject to time restrictions

Table 3.2-33 Sepulveda Boulevard Area—Parking Utilization and Replacement Parking Options (Years 2008/09)

Affected Sections along Sepulveda Boulevard	Total Removed Parking Spaces Occupied	Total Parking Spaces Removed	Potential Replacement Parking Options
West side of Sepulveda, between Exposition Boulevard and Pearl Street	2	6	Demand could be accommodated to the south ~~between~~ on Pearl Street ~~and Richland Avenue~~, but permit may be required
West side of Sepulveda Boulevard, ~~150 feet South of~~ between Pearl Street and Richland Avenue	~~1~~11	416	Demand on northern end where parking would be removed could be shifted south on Sepulveda Boulevard, but permit may be required
East side of Sepulveda Boulevard, between Pico and Exposition Boulevards	3	9	Replacement parking could be accommodated ~~in the proposed Expo/Sepulveda station parking structure~~on Exposition Boulevard, but permit may be required
East side of Sepulveda Boulevard, between Exposition Boulevard and Pearl Street	2	6	Demand on northern end where parking would be removed could be shifted south on Sepulveda Boulevard, but permit may be required
Total	***~~64~~69***	***~~137~~117***	
Overall Utilization	59~~47~~%		

SOURCE: DMJM Harris, 2008; updated 2009.

FEIR Design Options

Implementation of the Sepulveda Grade Separation would eliminate the need for changes to the lane configurations on Sepulveda Boulevard. Therefore, the design option would eliminate impacts to on-street parking along Sepulveda Boulevard. However, impacts would remain ***less than significant***, as on-street parking would still need to be removed along Exposition Boulevard to accommodate the LRT Alternatives.

Implementation of the Expo/Westwood Station No Parking Design Option would include the provision of 20 parking spaces dedicated to neighborhood residents east of Westwood Boulevard and north of the LRT line. This would address community concerns regarding the loss of on-street parking spaces along Westwood Boulevard, and impacts would remain ***less than significant***.

Segment 1a: Venice/Sepulveda (LRT Alternatives 3 and 4)

Implementation of LRT Alternatives 3 and 4, and their related street improvements, would eliminate much of the existing on-street parking on both Venice and Sepulveda Boulevards. This loss of parking capacity cannot be mitigated by on-street parking on side streets because of the high overall demand for parking in the adjacent neighborhoods, which are characterized by multi-family dwellings. Replacement parking would be accommodated in off-street lots on properties along Venice Boulevard. In general, these off-street lots would be located in reasonable proximity (approximately 1,500 feet) to the displaced on-street parking. The required size of the off-street lots would be based on the number of utilized spaces that would be removed and assumes a lot size requirement of 350 square feet per parking space; this allows for the size of each parking space, as well as the aisle width requirements to access the space. Many of these parcels would already be acquired to accommodate the LRT guideway and street improvements, but others would have to be acquired specifically for replacement parking.

Table 3.2-34 (Segment 1a: Venice Boulevard Area—Parking Utilization and Replacement Parking Options [Year 2008]) provides a summary of parking utilization along the affected sections along Venice Boulevard in Segment 1a. The table divides the portion of Venice Boulevard between Robertson and Sepulveda into four sections, each with a north and south side.

Table 3.2-34 Segment 1a: Venice Boulevard Area—Parking Utilization and Replacement Parking Options (Year 2008)

Affected Sections along Venice Boulevard	**Total Removed Parking Spaces Occupied**	**Total Parking Spaces Removed**	**Potential Replacement Parking Options**
Section A: Venice Boulevard, Robertson Boulevard to Watseka Avenue			
North side of Venice Boulevard, between Robertson Boulevard and Watseka Avenue	12	36	Parking not available on adjacent streets. Hence, mitigation required.
South side of Venice Boulevard, between Robertson Boulevard and Watseka Avenue	10	39	
~~East and West sides of Clarington Avenue, 250 feet north of Venice Boulevard[a]~~	~~5~~	~~15~~	
~~West side of Hughes Avenue, 250 feet north of Venice Boulevard[b]~~	~~12~~	~~12~~	
Total	***22~~39~~***	***75~~102~~***	
Overall Utilization	29~~38~~%		

Table 3.2-34 Segment 1a: Venice Boulevard Area—Parking Utilization and Replacement Parking Options (Year 2008)

Affected Sections along Venice Boulevard	Total Removed Parking Spaces Occupied	Total Parking Spaces Removed	Potential Replacement Parking Options
Section B: Venice Boulevard, Watseka Avenue to Jasmine Avenue			
North side of Venice Boulevard, between Watseka Avenue and Jasmine Avenue	12	35	Parking not available on adjacent streets. Hence, mitigation required.
South side of Venice Boulevard, between Watseka Avenue and Jasmine Avenue	14	28	
East and West sides of Clarington Avenue, 250 feet north of Venice Boulevard[a]	5	15	
West side of Hughes Avenue, 250 feet north of Venice Boulevard[b]	12	12	
Total	***~~26~~43***	***~~63~~90***	
Overall Utilization	~~41~~48%		
Section C: Venice Boulevard, Jasmine Avenue to Glendon Avenue/Midway Avenue			
North side of Venice Boulevard, between Jasmine Avenue and Glendon Avenue	17	30	Parking not available on adjacent streets. Hence, mitigation required.
South side of Venice Boulevard, between Jasmine Avenue and Midway Avenue	29	45	
Total	***46***	***75***	
Overall Utilization	61%		
Section D: Venice Boulevard, Glendon Avenue/Midway Avenue to Sepulveda Boulevard			
North side of Venice Boulevard, between Westwood Boulevard and Bentley Avenue	36	52	Parking not available on adjacent streets. Hence, mitigation required.
South side of Venice Boulevard, between Westwood Boulevard and Bentley Avenue	28	47	
Total	***64***	***99***	
Overall Utilization	65%		

SOURCE: DMJM Harris, 2008.

a. As noted previously, mitigation measure MM TR-1 will require the removal of on-street parking along a portion of Clarington Avenue, north of Venice Boulevard.

b. As noted previously, mitigation measure MM TR-2 will require the removal of on-street parking along a portion of Hughes Avenue, north of Venice Boulevard

Table 3.2-35 (Segment 1a: Sepulveda Boulevard Area~~Portion~~—Parking Utilization and Replacement Parking Options [Year 2008]) provides a summary of parking utilization along the affected sections of Sepulveda Boulevard in Segment 1a. The table divides portions of Sepulveda Boulevard into five sections.

Table 3.2-35 Segment 1a: Sepulveda Boulevard Area—Parking Utilization and Replacement Parking Options (Year 2008)

Affected Sections along Venice Boulevard	**Total Removed Parking Spaces Occupied**	**Total Parking Spaces Removed**	**Potential Replacement Parking Options**
Section A: Sepulveda Boulevard, Venice Boulevard to Charnock Road			
East side of Sepulveda, between Venice Boulevard and Charnock Road	28	51	Parking not available on adjacent streets. Hence, mitigation required.
West side of Sepulveda, between Venice Boulevard and Charnock Road	18	31	
Total	***46***	***82***	
Overall Utilization	56%		
Section B: Sepulveda Boulevard, Charnock Road to Sepulveda Channel			
East side of Sepulveda, between Charnock Road and Sepulveda Channel	15	45	Parking not available on adjacent streets. Hence, mitigation required.
West side of Sepulveda, between Charnock Road and Sepulveda Channel	29	45	
Total	***44***	***90***	
Overall Utilization	49%		
Section C: Sepulveda Boulevard, Sepulveda Channel to Clover Avenue			
East side of Sepulveda, between Sepulveda Channel and Clover Avenue	30	52	Parking not available on adjacent streets. Hence, mitigation required.
West side of Sepulveda, between Sepulveda Channel and Clover Avenue	9	40	
Total	***39***	***92***	
Overall Utilization	42%		

Table 3.2-35 Segment 1a: Sepulveda Boulevard Area—Parking Utilization and Replacement Parking Options (Year 2008)

Affected Sections along Venice Boulevard	Total Removed Parking Spaces Occupied	Total Parking Spaces Removed	Potential Replacement Parking Options
Section D: Sepulveda Boulevard, Clover Avenue to I-10			
East side of Sepulveda, between Clover Avenue and I-10	16	58	Parking not available on adjacent streets. Hence, mitigation required.
West side of Sepulveda, between Clover Avenue and I-10	14	43	
Total	***30***	***101***	
Overall Utilization	30%		
Section E: Sepulveda Boulevard, I-10 to Exposition Boulevard			
West side of Sepulveda, between I-10 and Exposition Boulevard	10	32	Parking not available on adjacent streets. Hence, mitigation required.
Overall Utilization	31%		

SOURCE: DMJM Harris, 2008.

FEIR Design Options

Implementation of any of the proposed design options would not alter the impacts to on-street parking along Segment 1a (Venice/Sepulveda).

Segment 2: Sepulveda to Cloverfield (All LRT Alternatives)

At the intersection of Barrington Avenue and Olympic Boulevard, a northbound right-turn pocket is proposed requiring the removal of existing on-street parking on the east side of Barrington Avenue. At the intersection of Barrington Avenue and Pico Boulevard, a southbound right-turn pocket is proposed requiring on-street parking to be removed on the west side of Barrington between Tennessee Avenue and Pico Boulevard. A field survey determined that there is only moderate demand for these spaces and that their removal could be mitigated by available on-street parking in the surrounding commercial area~~neighborhood neighborhood and/or parking proposed to be built within the Expo ROW~~.

Centinela Avenue is now proposed to be grade separated in Segment 2 (Sepulveda to Cloverfield). As such, ~~The required provision of an additional northbound lane on Centinela Avenue where it crosses the Expo ROW would require~~ the removal of on-street parking on the west side of the street and a loading zone on the east side would no longer be required. ~~A field survey determined intensive use of these spaces but their removal could be mitigated by introducing new spaces within the Expo ROW.~~

The provision of an additional southbound lane on Stewart Street where it crosses the Expo ROW would require the removal of on-street parking on both sides of the street between Olympic and Exposition Boulevards. A field survey determined that these spaces are lightly used. The removals could be mitigated by available on-street parking in the surrounding ~~neighborhood~~commercial area.

Table 3.2-36 (Segment 2—Parking Utilization and Replacement Parking Options [Years 2008/09]) provides a summary of parking utilization along the affected sections along Segment 2 and replacement parking options.

Table 3.2-36 Segment 2—Parking Utilization and Replacement Parking Options (Years 2008/09)

Affected Sections along Barrington Avenue, ~~Centinela Avenue~~ and Stewart St	**Total Removed Parking Spaces Occupied**	**Total Parking Spaces Removed**	**Potential Replacement Parking Options**
Barrington Avenue			
East side of Barrington Avenue, ~~north of Exposition Boulevard~~between Olympic and Exposition Boulevards	7 0 (loading)	16 2 (loading)	Replacement parking could be accommodated on Barrington Avenue between Mississippi Avenue and Olympic Boulevard~~within Expo/Bundy Station parking facility~~
West side of Barrington Avenue, between Tennessee Avenue and Pico Boulevard	1	3	Replacement parking could be accommodated on Barrington Avenue, between Exposition Boulevard and Tennessee Avenue
Total	***8***	***19***	
Overall Utilization	42%		
~~Centinela Avenue~~			
~~West side of Centinela Avenue, between Olympic and Exposition Boulevards~~	~~20~~	~~21~~	~~Replacement parking could be accommodated within Expo/Bundy Station parking facility~~
~~East side of Centinela Avenue, between Exposition (E) and Exposition (W) Boulevards~~	~~2 (loading)~~	~~2 (loading)~~	~~Loading zone relocated to Exposition Boulevard east of Centinela Avenue~~
~~***Total***~~	~~***22***~~	~~***23***~~	
~~Overall Utilization~~	~~96%~~		
Stewart Street			
West side of Stewart Street, between Olympic and Exposition Boulevards	2	12	Demand could be accommodated on ~~Exposition Boulevard~~Stewart Street north of Olympic Boulevard

Table 3.2-36 Segment 2—Parking Utilization and Replacement Parking Options (Years 2008/09)

Affected Sections along Barrington Avenue~~, Centinela Avenue~~ and Stewart St	Total Removed Parking Spaces Occupied	Total Parking Spaces Removed	Potential Replacement Parking Options
East side of Stewart Street, between Olympic and Exposition Boulevards	0	10	~~Demand could be accommodated on Exposition Boulevard~~No replacement parking required
Total	***2***	***22***	
Overall Utilization	9%		

SOURCE: DMJM Harris, 2008; updated 2009.

FEIR Design Options

Implementation of any of the proposed design options would not alter the impacts to on-street parking along Segment 2 (Sepulveda to Cloverfield).

Segment 3: Olympic (LRT Alternatives 1 and 3)

To accommodate the LRT Alternatives using Olympic Boulevard, all on-street parking would be eliminated between 20th and Euclid Streets. A field survey determined a moderate level of use of these on-street parking spaces that is greater than excess capacity of adjacent side streets. As a result, replacement parking would have to be accommodated in off-street locations, potentially requiring property acquisitions. In general, these off-street lots would be located in reasonable proximity (approximately 1,500 feet) to the displaced on-street parking. The required size of the off-street lots would be based on the number of utilized on-street spaces that would be removed and assumes a lot size requirement of 350 square feet per parking space; this allows for the size of each parking space as well as the aisle width requirements to access the space.

Table 3.2-37 (Segment 3—Parking Utilization and Replacement Parking Options [Year 2008]) provides a summary of parking utilization along the affected sections of Olympic Boulevard and replacement parking options. The table divides Olympic Boulevard into two sections.

Table 3.2-37 Segment 3—Parking Utilization and Replacement Parking Options (Year 2008)

Affected Sections along Olympic Boulevard	Total Removed Parking Spaces Occupied	Total Parking Spaces Removed	Potential Replacement Parking Options
Section A: 20th Street to 17th Street			
North side of Olympic Boulevards, between 20th and 19th Streets	1	8	Parking not available on adjacent streets. Hence, mitigation required.

Table 3.2-37 Segment 3—Parking Utilization and Replacement Parking Options (Year 2008)

Affected Sections along Olympic Boulevard	Total Removed Parking Spaces Occupied	Total Parking Spaces Removed	Potential Replacement Parking Options
North side of Olympic Boulevard, between 19th and 18th Streets	8	9	
South side of Olympic Boulevard, between 20th and 17th Streets	16	31	
Total	***25***	***48***	
Overall Utilization	52%		
Section B: 17th Street to Euclid Street			
North side of Olympic Boulevard, between 17th and 16th Streets	1	11	Parking not available on adjacent streets. Hence, mitigation required.
North side of Olympic Boulevard, between 16th and 14th Streets	4	21	
North side of Olympic Boulevard, between 14th and Euclid Streets	6	6	
South side of Olympic Boulevard, between 17th and 14th Streets	15	28	
South side of Olympic Boulevard, between 14th and Euclid Streets	8	9	
Total	***34***	***75***	
Overall Utilization	45%		

SOURCE: DMJM Harris, 2008.

FEIR Design Options

Implementation of any of the proposed design options would not alter the impacts to on-street parking along Segment 3 (Olympic).

Segment 3a: Colorado (LRT Alternatives 2 and 4)

Reconstruction of Colorado Avenue to accommodate the LRT Alternatives would eliminate on-street parking on the south side of the street between 14th Street and Lincoln Boulevard and 4th Streets. Aalso, eliminate on-street parking on either the north or south side of the street between Lincoln Boulevard and 4th Street. A Ffield surveysand 4th Streets. A field survey determined moderate to intensive use of these spaces, and little excess capacity on adjacent side streets. As a result, replacement parking would have to be accommodated in off-street lots

with various options along Colorado Avenue or through other options such as the implementation of diagonal parking on adjacent streets.

Table 3.2-38 (Segment 3a—Parking Utilization and Replacement Parking Options [Years 2008/09]) provides a summary of parking utilization along the affected sections of Colorado Avenue and replacement parking options. The table divides Colorado Avenue into two sections.

Table 3.2-38 Segment 3a—Parking Utilization and Replacement Parking Options (Years 2008/09)

Affected Sections along Colorado Avenue	Total Removed Parking Spaces Occupied	Total Parking Spaces Removed	Potential Replacement Parking Options
Section A: 14th Street to 11th Street			
South side of Colorado Avenue, between 14th and 11th Streets	13	21	Parking not available on adjacent streets. Hence, mitigation required.
Total	***13***	***21***	***62% overall utilization***
Section B: 11th Street to 4th Street			
South side of Colorado Avenue, between 11th and 9th Streets	14	14	Parking not available on adjacent streets. Hence, mitigation required.
South side of Colorado Avenue, between Lincoln Boulevard and 7th Street	4	5	
South side of Colorado Avenue, between 7th and 4th Streets	4	16	
Total	***22***	***35***	***63% overall utilization***

SOURCE: DMJM Harris, 2008; updated 2009.

In summary, the utilization data for all segments illustrate that the supply of 1,199266 potentially affected spaces along all the segments are on average 46.6 percent utilized (559588 spaces), indicating that there is not an existing severe parking shortage in the study area.

Mitigation Measures

In most segments, there is sufficient alternate on-street parking available to reduce the effect ofaccommodateof the removed utilized on-street parking spaces.removal to an acceptable impact level. Available, underutilized on-street parking on adjacent side streets would mitigate the impacts of the displaced parking spaces.

In areas where there is insufficient on-street availability, the following mitigation measures would be implemented to reduce the impacts of displaced on-street parking spaces along the affected segments. The proposed replacement parking lot locations were selected based upon the approximate distance of 1,500 feet between the area of impact and the lot. In consultation with the local agencies, some of these mitigation measures were revised, as shown. Before

~~implementing, detailed analyses are required for sections where replacement parking is not available on adjacent streets.~~ Also, the size of the parking lots to be developed for the purposes of providing replacement parking will be analyzed as part of PE.

~~Segment 1: Expo ROW (LRT Alternatives 1 and 2)~~

~~*MM TR-5* Overland Avenue. *The parking time limit of adjacent streets should be lengthened to accommodate parking spaces being displaced on Overland Avenue.*~~

Segment 1a: Venice/Sepulveda (LRT Alternatives 3 and 4)

MM TR-6 Venice Boulevard. *The loss of on-street parking on Venice Boulevard cannot be accommodated on adjacent streets due to the high overall parking demand in adjacent neighborhoods. Replacement parking would be required along the affected sections of Venice Boulevard. The potential replacement parking lots are listed below:*

MM TR-6(a) South Side of Venice Boulevard, between Robertson Boulevard to Watseka Avenue. *Property would have to be acquired to provide replacement parking. A potential parcel at the southeast corner of Venice Boulevard and Main Street has been identified.*

MM TR-6(b) North side of Venice Boulevard, between Robertson Boulevard and Watseka Avenue. *Property would have to be acquired to provide replacement parking. A potential parcel at the northeast corne~~-~~r of the Canfield Avenue and Venice Boulevard intersection has been identified.*

MM TR-6(c) Venice Boulevard, between Watseka Avenue and Jasmine Avenue. *Property would have to be acquired to provide replacement parking. Potential parcels at the northwest and southwest corners of the Hughes Avenue/Venice Boulevard intersection have been identified.*

MM TR-6(d) Venice Boulevard, between Jasmine Avenue and Glendon Avenue/Midway Avenue. *Property would have to be acquired to provide replacement parking. Potential parcels at the northwest corners of Venice Boulevard/Motor Avenue and Venice Boulevard/Keystone Avenue have been identified.*

MM TR-6(e) Venice Boulevard, between Glendon Avenue/Midway Avenue and Sepulveda Boulevard. *Property would have to be acquired to provide replacement parking. Potential parcels on the south side of Venice Boulevard have been identified.*

MM TR-7 Sepulveda Boulevard. *Replacement parking would be required along the affected portions of Sepulveda Boulevard. The potential replacement parking lots are listed below:*

MM TR-7(a) Sepulveda Boulevard, between Venice Boulevard and Charnock Road. *Property would have to be acquired to provide replacement parking. Potential parcels at the northeast corner of Venice Boulevard and Sepulveda Boulevard, northwest corner of Regent Street and Sepulveda Boulevard, and*

northwest corner of Charnock Road (South) and Sepulveda Boulevard, have been identified.

MM TR-7(b) Sepulveda Boulevard, between Charnock Road and Sepulveda Channel. *Property would have to be acquired to provide replacement parking. Potential parcels at the northeast corner of Venice Boulevard and Sepulveda Boulevard, northwest corner of Regent Street and Sepulveda Boulevard, and northwest corner of Charnock Road (South) and Sepulveda Boulevard, have been identified.*

MM TR-7(c) Sepulveda Boulevard, between Sepulveda Channel and Clover Avenue. *Property would have to be acquired to provide replacement parking. A potential parcel at the northwest corner of Clover Avenue and Sepulveda Boulevard has been identified.*

MM TR-7(d) Sepulveda Boulevard, between Clover Avenue and I-10. *Property would have to be acquired to provide replacement parking. Potential parcels on the west side of the street have been identified.*

MM TR-7(e) Sepulveda Boulevard, between I-10 and Exposition Boulevard. *Property would have to be acquired to provide replacement parking. Potential parcels along the east side of the street have been identified.*

Segment 3: Olympic (LRT Alternatives 1 and 3)

MM TR-8 Olympic Boulevard (20th Street to Euclid Street). *Property would have to be acquired to provide replacement parking. Potential parcels at the southwest corners of 17th Street/Olympic Boulevard and 16th Street/Olympic Boulevard have been identified.*

Segment 3a: Colorado (LRT Alternatives 2 and 4)

MM TR-9 Colorado Avenue. *Replacement parking would be required along the impacted portions of Colorado Avenue. The potential replacement parking lots are listed below. Additional replacement options could include implementation of diagonal parking on adjacent streets (after extensive neighborhood outreach) or the implementation of design options, which would reduce the extent of parking impacts:*

MM TR-9(a) South side of Colorado Avenue, between 14th Street and 11th Street. *Property would have to be acquired to provide replacement parking. Potential parcels on the south side of Colorado Avenue between 18th Street and 16th Street have been identified.*

MM TR-9(b) South side of Colorado Avenue, between 11th Street and 4th Street. *Property would have to be acquired to provide replacement parking. A ~~P~~potential parcel~~s~~ at the ~~south~~northwest~~southwest~~ corner of 6th Street~~Lincoln Boulevard~~ and Colorado Avenue has~~ave~~have ~~been~~ identified.*

Implementation of the above mitigation measures would reduce the impacts of displaced on-street parking spaces along the affected segments to be ***less than significant*** for all LRT Alternatives.

FEIR Design Options

The Colorado Parking Retention Design Option would reduce the track centers and sidewalk widths to create room for parking between Lincoln Boulevard and 4th Street along the both sides of Colorado Avenue. Impacts to on-street parking along Segment 3a (Colorado) would remain ***less than significant***.

The Colorado/4th Parallel Platform and South Side Parking Design Option would reconfigure the Colorado/ 4th Street Station so that the platform would be parallel with 4th Street. If implemented, this design option would create room for parking between Lincoln Boulevard and 6th Street along the south side of Colorado Avenue. Impacts to on-street parking along Segment 3a (Colorado) would remain ***less than significant***.

Criterion	**Would the project result in loss of off-street parking areas where the City requirements are no longer met (taking into account the proximity to mass transit) and replacement parking is no longer available (assuming that City requirements were met prior to the project)?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. Within the Expo Phase 2 ROW, the No-Build Alternative would not result in any land acquisitions or relocation requiring parking displacement, and ***no impact*** would occur.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. The TSM Alternative would not result in any land acquisitions or relocation, and ***no impact*** would occur.

LRT Alternatives

There would be no off-street parking impacts associated with any of the LRT Alternatives. Any changes in off-street parking requiring property acquisition would be addressed by the *Uniform Relocation Assistance and Real Property Acquisition Policies Act* and the *California Relocation Assistance Act*; hence ***no impact*** would occur.

FEIR Design Options

Implementation of the Sepulveda Boulevard Grade Separation, Maintenance Facility Buffer, Colorado Parking Retention, Colorado/4th Parallel Platform and South Side Parking, and

Expo/Westwood Station No Parking design options would not result in loss of off-street parking. As such, ***no impact*** would occur with implementation of any of the identified design options.

Criterion	**Would the project result in conflicts with the pedestrian safe routes to school, resulting in unsafe conditions ~~(applicable only in the City of Los Angeles)~~?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. The No-Build Alternative would not result in any changes in the existing pedestrian routes to school program as it pertains to the area within the Phase 2 ROW, and ***no impact*** would occur.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. The TSM Alternative would not result in any changes in the pedestrian routes to school, and ***no impact*** would occur.

LRT Alternatives

Based on the existing pedestrian system, recommended pedestrian safe routes to schools have been developed by LADOT. The routes focus on providing access to schools via specially marked crosswalks, intersections with stop signs or traffic signals, and avoiding unsignalized/unmarked intersections and mid-block crossings. Table 3.2-39 (Safe Routes to School within City of Los Angeles) shows the segments of roadways within the study area that are pedestrian safe routes to schools and which intersect with the LRT Alternatives at at-grade crossings.

There are other pedestrian safe routes to school within the ~~study area~~LADOT jurisdiction, but they are not listed here because either the LRT Alternative crossing is within the median of an existing roadway/intersection or the crossing is grade separated.

The City of Santa Monica has ongoing collaborations with the Safe Routes to School (SRTS) program. Some of the routes used by school children walking and cycling across the Exposition ROW in the City of Santa Monica include Stewart Street, 26th Street, Cloverfield Boulevard, 20th Street, 17th Street, 14th Street, 11th Street, Lincoln Boulevard, and 4th Street.

Table 3.2-39 Safe Routes to School within City of Los Angeles

LRT Alternative	Safe Route to School
LRT Alternative 1 and LRT Alternative 2	• Exposition Boulevard between Durango Avenue and Palms Boulevard • Bagley Avenue between the Expo ROW and Venice Boulevard • Overland Avenue between Pico Boulevard and National/I-10 WB ramps • Westwood Boulevard between Pico Boulevard and Coventry Place • Exposition Boulevard (N) and (S) between Military Avenue and Westwood Boulevard • Barrington Avenue between Exposition Boulevard (S) and Pico Boulevard
LRT Alternative 3 and LRT Alternative 4	• Bagley Avenue between the Expo ROW and Venice Boulevard • Barrington Avenue between Exposition Boulevard (S) and Pico Boulevard

SOURCE: Iteris, 2008.

As part of the Grade Crossing Safety Program initiated by Metro in 1992, several innovative features and demonstration projects have been introduced to address safety concerns and evaluate the effectiveness of methods designed to discourage illegal ~~encroachment~~ crossings onto at-grade LRT crossings by both motorists and pedestrians. They include pedestrian swing gates, "~~second train coming~~look both ways" signage, pedestrian automatic gates, automated photo enforcement, and four-quadrant gates.

Pedestrian safety and conflicts with all of the proposed LRT Alternatives at-grade crossings could be addressed in the following manner and are part of the project:

- Signs that display a train icon and warn pedestrians to "LOOK BOTH WAYS" will be placed at each LRT at-grade crossing.
- The use of pavement delineation and barriers will direct pedestrians to a designated crossing location, and will control pedestrian movement.
- ADA-approved tactile warning strips that provide visual warning of the dynamic envelope of the train will be used at stations to warn pedestrians at the edge of the platform and will be installed at all designated pedestrian crossings, marking the limits of pedestrian occupancy. Dynamic envelope is the clearance required for the train and its cargo overhang due to any combination of loading, lateral motion, or suspension failure.
- Swing gates that are gravity-operated will be installed at pedestrian crossings that warrant their use. They require a positive action by the pedestrian entering the crossing, thereby forcing awareness of the light-rail vehicle and the possible presence of an approaching train.
- Pedestrian gates that operate in the same manner as a vehicular gate will be installed at pedestrian crossings wherever their use is warranted—they block pedestrian approach in the presence of a train, especially in locations with high train volume and limited sight distance.

- "~~SECOND TRAIN APPROACHING~~LOOK BOTH WAYS" signs will be installed at crossings where two or more LRT tracks are present, and the light-rail vehicle headways are short—these signs warn pedestrians to make sure that they look both ways and are not surprised by a second train that may be coming from the opposite direction while they are occupied by watching the first train.

Additionally, Metro's Rail Safety Education Program will help to educate community members, especially school children, on important safety precautions as trains travel through the neighborhoods. Also, Metro's Rail Safety Orientation Program offers guided tours for students and site-specific presentations in a classroom setting, using photos and videos of LRT crossings.

The measures described above have been very effective in providing for both pedestrian and vehicular safety. These measures have been implemented on the Pasadena Gold Line where, in the approximate ~~4.5~~ 5.7 million train miles of operation since opening in the summer of 2003, there have been seven auto/train collisions at gated crossings; ~~seven~~ eight auto/train collisions at nongated, traffic-signal-controlled crossings; and, one nongated crossing incident that involved a pedestrian.

Implementation of Metro's Grade Crossing Safety Program and Rail Safety Education Program will help to ensure pedestrian safety at the LRT Alternatives at-grade crossings near pedestrian safe routes to schools; hence, the impacts would be considered ***less than significant***.

FEIR Design Options

Implementation of the Sepulveda Boulevard Grade Separation, Maintenance Facility Buffer, Colorado Parking Retention, Colorado/4th Parallel Platform and South Side Parking, or Expo/Westwood Station No Parking design options would not result in any additional impacts beyond what is discussed above for the LRT Alternatives. Impacts would remain ***less than significant*** with implementation of the design options.

Criterion	**Would the project result in unsafe conditions for pedestrians or bicyclists through the elimination of pedestrian/bicycle facilities or by making such facilities substandard, unsafe, or inaccessible?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. However, the only improvement that would change the physical environment in the Expo Phase 2 ROW would be the I-405 Widening project. The No-Build Alternative within the Expo Phase 2 ROW would not eliminate any pedestrian/bicycle facilities or make them substandard, unsafe, or inaccessible within the proposed project corridor. Hence, ***no impact*** would occur.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus

stops and additional buses. The TSM Alternative would not eliminate any pedestrian/bicycle facilities or make them substandard, unsafe, or inaccessible. Hence, ***no impact*** would occur.

LRT Alternatives

The LRT Alternatives would not eliminate any of the existing bicycle or pedestrian facilities. Moreover, bicycle and pedestrian facilities will be provided as part of station access area near the proposed stations.

Since all the existing bicycle/pedestrian facilities would be maintained and additional facilities would be added, there would be no change in current safety conditions. Hence, the development of the LRT Alternatives would have ***no impact*** related to the elimination of pedestrian/bicycle facilities.

FEIR Design Options

Implementation of the Sepulveda Boulevard Grade Separation, Maintenance Facility Buffer, Colorado Parking Retention, Colorado/4th Parallel Platform and South Side Parking, or Expo/Westwood Station No Parking design options would not result in unsafe conditions for pedestrians or bicyclists. As such, ***no impact*** would occur with implementation of any of the identified design options.

Criterion	**Would the project conflict with adopted policies supporting alternative transportation (e.g., bus turnouts, bicycle racks)?**

No-Build Alternative

There would be roadway and transit service improvements associated with the No-Build Alternative. The No-Build Alternative is in conflict with the SCAG RTP, the 2007 AQMD, and the Metro Long Range Transportation Plan supporting the development of alternative transportation. The impact would be ***significant and unavoidable***.

Transportation Systems Management (TSM) Alternative

The TSM Alternative would include all of the improvements under the No-Build Alternative and new on-street bus services to directly serve the Expo Phase 2 community transit needs. Those additional improvements would include minor physical modifications such as upgraded bus stops and additional buses. The TSM Alternative results in an increase in transit use relative to the No-Build Alternative based upon the Metro Travel Demand Model. There would be ***beneficial impact*** associated with the TSM Alternative.

LRT Alternatives

All the LRT Alternatives support the alternative transportation policies of the cities involved and region. The LRT Alternatives would enhance the multi-modal transportation system in the area that is expected to improve air quality and reduce automobile congestion while ensuring overall safety and accessibility to transportation facilities. The project facilities are affordable and represent a more sustainable mode of travel which is expected to help reduce automobile dependency. The development of the LRT Alternatives would be in accordance with the adopted alternative transportation policies. In addition, the LRT Alternatives would be developed

in accordance with the *Metro Design Criteria*, which require the provision of bicycle facilities at LRT stations. Hence, the LRT Alternatives would have a ***beneficial impact***.

FEIR Design Options

Implementation of the Sepulveda Boulevard Grade Separation, Maintenance Facility Buffer, Colorado Parking Retention, Colorado/4th Parallel Platform and South Side Parking, or Expo/Westwood Station No Parking design options would not conflict with adopted policies supporting alternative transportation. As such, no impact beyond that discussed above for the LRT Alternatives would occur with implementation of any of the identified design options. Impacts would remain ***beneficial*** with implementation of the design options.