Section 3.0 Transportation Issues and Analysis

3.1 Introduction

The following section of the AA discusses the existing transportation system in downtown Los Angeles that would be affected by the proposed Regional Connector, linking Metro's existing 7th St./Metro Center Station to the Little Tokyo/Arts District Station and Union Station. Two build alternatives have been identified for further study during the environmental phase. A description of potential impacts to the transportation system for each future alternative under consideration (At-Grade Emphasis LRT, Underground Emphasis LRT, TSM, and No Build) will be provided in the following sections.

As a premier attraction and a major employment center of the county and city, downtown Los Angeles currently features high pedestrian activity and multi-modal connections to the regional transportation system, involving Metro Rail lines, freeways, a number of bus routes, and regional commuter rail service to and from other cities. However, fast population growth and increasing congestion are causing the transit facilities, especially transfer stations, to quickly reach their capacities. The system also lacks integral connections between LRT lines. The Regional Connector would link the 1.8-mile gap between the 7th St./Metro Center Station and the Little Tokyo/Arts District Station and thereby provide transfer-free LRT service between Pasadena and Long Beach, and between Culver City and East Los Angeles. The enhanced connectivity would improve the region's mobility and accessibility via public transit.

3.2 Transit Analysis

This section provides a summary of the existing transit services in the PSA, and those provided under the No Build, TSM and proposed build alternative scenarios. The build alternatives consist of LRT links. Other transit technologies such as monorail, personal rail transit, "people mover," commuter rail, heavy rail, and trolley/streetcars were eliminated from consideration because they require a transfer, are incompatible with the current transportation system, or are not cost-effective. In addition, year 2030 transit ridership forecasts for the build alternatives are presented. Only transit lines that parallel the proposed operating plans for the Regional Connector project (between Pasadena and Long Beach, and between East Los Angeles and Culver City) are presented in this section. A more detailed listing of all lines passing through the downtown area, all of which could potentially provide transfers to the Regional Connector, can be found in the Section 1.5.

Figure 3-1 Project Study Area

3.2.1 Existing Service

Downtown Los Angeles has the highest concentration of transit service in the county. Ten transit operators manage three existing rail transit lines, two rail lines currently under construction and scheduled for operation by 2010, and 112 bus routes through the PSA. The transit operators are Antelope Valley Transit Authority (AVTA), Gardena Municipal Bus Lines, City of Santa Clarita, City of Santa Monica (Big Blue Bus), Foothill Transit, City of Los Angeles Department of Transportation (LADOT), Los Angeles County Metropolitan Transportation Authority (Metro), Montebello Bus Lines, Orange County Transportation Authority (OCTA), and Torrance Transit. Services vary considerably in speed, frequency and capacity. The types of service provided include traditional line-haul bus service, peak-hour freeway express buses, downtown circulator shuttles, LRT, and HRT. Although Metro and LADOT carry the majority of the passengers, other operators provide peak-hour, peak direction commuter bus service as well. In addition to public transit services, several high-rise office tenants also offer shuttle bus service to Union Station for their employees.

Almost all streets in the downtown area are served by buses during the peak hours, often with five minute or shorter headways (frequency). Bus service runs in a grid pattern with the predominant flow of passengers traveling in an east-west direction. There are heavily utilized bus lines that run in the north-south direction as well. The most heavily-served

streets are 1st St., the 5th St./6th St. couplet, Hill St., Broadway, the Main St./Spring St. couplet, and the Grand Ave./Olive St. couplet.

A complete listing of the bus routes serving the PSA is provided in Section 1.5. Almost all of these bus lines could potentially double as rail feeder lines and provide transfers to the Regional Connector and the Metro Rail system because the Regional Connector stations would be positioned within two or three blocks of most bus lines serving the downtown area. The following tables show only the lines that currently parallel the rail lines that would feed into the Regional Connector. Each table shows the bus routes with their destinations, hours of operation, and peak hour frequencies.

Table 3-1 Bus Routes Paralleling the Future Gold Line Eastside Extension Service

Operator	Line	Mode	Weekday Hours of Operation	Peak Hour Frequency	Route Description
Metro	18	Local Bus	24 Hours	3 mins	Wilshire Center - Montebello via 6th St. and Whittier Blvd.
Metro	30/31/ 330	Local/Limited Stop Bus	24 Hours	4 mins	Pico-Rimpau - Monterey Park via Pico Blvd. and E 1st St.
Metro	62	Local Bus	5AM-11PM	15 mins	Hawaiian Gardens via Telegraph Rd.
Metro	66/366	Local/Limited Stop Bus	4AM-1AM	2 mins	Wilshire Center - Montebello via 8th St. and Olympic Bl.
Metro	68/84	Local Bus	24 Hours	8 mins	West LA - Montebello via Washington Blvd. and Cesar Chavez Ave.
Metro	720	Rapid Bus	4AM-1AM	4 mins	Wilshire Blvd. - Whittier Blvd. Rapid
Metro	770	Rapid Bus	5AM-9PM	8 mins	Garvey Ave. – Cesar Chavez Ave. Rapid
LADOT	Dash Boyle Heights /East LA	Dash	7AM-7PM	20 mins	Herbert & Whittier via Wabash, Gage Ave. and Rowan
Montebello	40	Local Bus	5AM-10PM	8 mins	Montebello and Whittier via Beverly Blvd.
Montebello	341	Limited Stop Bus	7AM-9AM 4PM-6PM	30 mins	Montebello and Whittier via Beverly Blvd.
Montebello	342	Limited Stop Bus	7AM & 5PM	One Trip	Montebello and Whittier via Beverly Blvd.
Montebello	343	Limited Stop Bus	7AM-8AM 5PM-6PM	30 mins	Montebello and Whittier via Beverly Blvd.

Table 3-2 Bus Routes Paralleling the Existing Pasadena Gold Line Service					
Operator	Line	Mode	Weekday Hours of Operation	Peak Hour Frequency	Route Description
Metro	78/79/ 378	Local/ Limited Stop Bus	5AM-1AM	10 mins	Arcadia via Huntington Dr. and Las Tunas Dr.
Metro	81/381	Local/ Limited Stop Bus	5AM-1AM	7 mins	Eagle Rock – Exposition Park via Figueroa St.
Metro	83	Local Bus	24 Hours	10 mins	Eagle Rock via York Blvd.
Metro	485	Freeway Express Bus	5AM-12AM	20 mins	Altadena via El Monte Busway, Oak Knoll Ave. and Lake Ave.

Table 3-3 Bus Routes Paralleling the Existing Blue Line Service					
Operator	Line	Mode	Weekday Hours of Operation	Peak Hour Frequency	Route Description
Metro	53	Local Bus	24 Hours	6 mins	Carson via Central Ave.
Metro	55/355	Local/Limited Stop Bus	24 Hours	5 mins	Imperial Blue/Green Lines via Compton Ave.
Metro	60	Local Bus	24 Hours	6 mins	Artesia Blue Line via Long Beach Blvd.
Metro	753	Rapid Bus	5AM-9PM	10 mins	Central Ave. Rapid
Metro	760	Rapid Bus	5AM-8PM	8 mins	Long Beach Blvd. Rapid Bus
Metro	445	Freeway Express Bus	5AM-7PM	30 mins	San Pedro via Harbor Transitway, 1st St. and Pacific Ave.
Metro	446/447	Freeway Express Bus	5AM-12AM	15 mins	San Pedro via Harbor Transitway, Avalon Bl. and Pacific Ave.

Table 3-4 Bus Routes Paralleling the Future Exposition Line Phase 1 Service					
Operator	Line	Mode	Weekday Hours of Operation	Peak Hour Frequency	Route Description
Metro	33/333	Local/Limited Stop Bus	24 Hours	2 mins	Santa Monica via Venice Blvd.
Metro	35/335	Local/Limited Stop Bus	4AM-12AM	10 mins	West LA via Washington Blvd.
Metro	37	Local Bus	4AM-11PM	10 mins	Beverly Hills via Beverly Blvd./West LA via Adams Blvd.
Metro	40	Local Bus	24 Hours	10 mins	Redondo Beach via Hawthorne Blvd.
Metro	42	Local Bus	5AM-12AM	12 mins	LAX via Martin Luther King Jr. Blvd.
Metro	439	Freeway Express Bus	5AM-9PM	40-60 mins	Aviation Green Line via Culver City
Metro	740	Rapid Bus	6AM-9PM	15 mins	Hawthorne Blvd. Rapid
LADOT	CE437	Freeway Express Bus	7AM-9AM 4PM-6PM	15-30 mins	Venice/Marina del Rey/Culver City
Big Blue Bus	10	Freeway Express Bus	6AM-9PM	15 mins	Santa Monica (Nonstop) via I-10

3.2.2 No Build Alternative

Transit service under the No Build Alternative is focused on the preservation of existing services and projects. By the projection year of 2030, the Metro Expo Line and the Metro Gold Line Eastside Extension Phase 1 will have opened, and some bus service will have been reorganized and expanded to provide connections with the new rail lines, the transit network within the PSA will be largely the same as it is now. The anticipated year 2030 No Build transit services are summarized in the following sections:

Rail Lines:

- Metro Gold Line from Union Station to Pasadena. This route is a 13.6-mile light rail transit line along the northeastern edge of the study area.

- Metro Blue Line from Downtown Long Beach to 7th St./Metro Center Station. This 22-mile LRT line travelling south from the PSA is the first modern light rail system in Los Angeles.

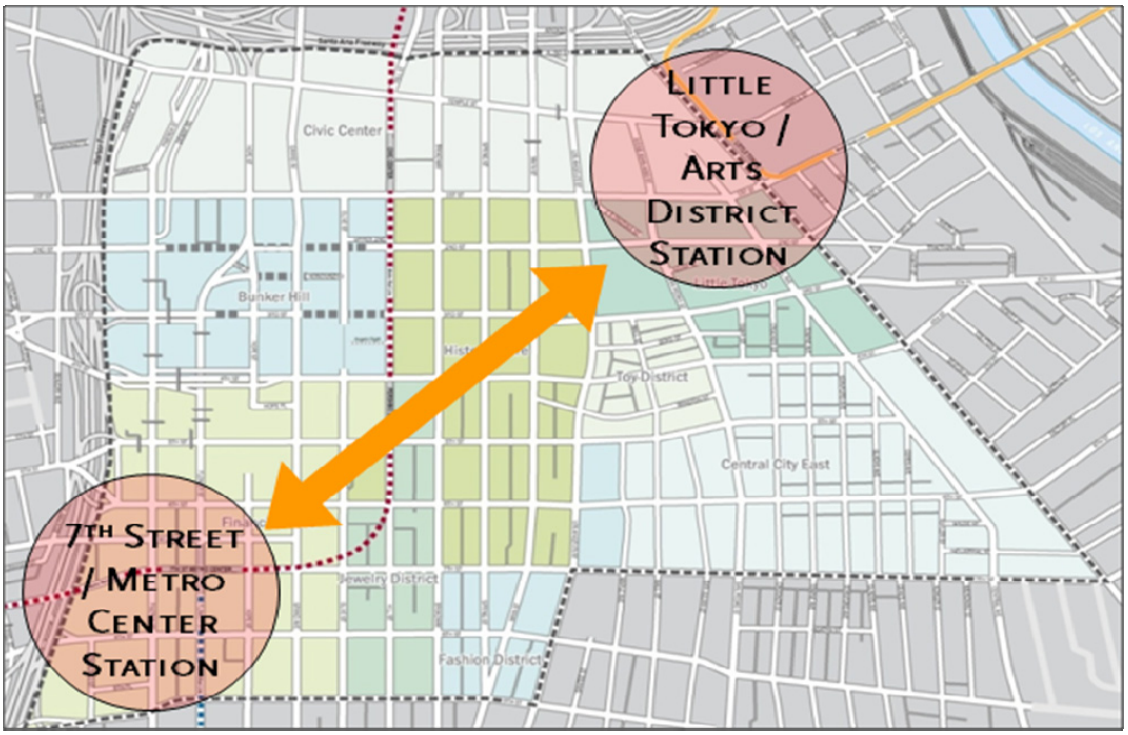
- Metro Red and Purple Lines from North Hollywood and Wilshire/Western to Union Station through the 7th St./Metro Center Station. These routes comprise a 17.4-mile HRT system that connects 7th St./Metro Center Station to Union Station and other major destinations in downtown Los Angeles, Hollywood, and the San Fernando Valley. The two lines share tracks within the PSA. Because light rail trains cannot operate on heavy rail tracks, LRT passengers wishing to travel between 7th St./Metro Center Station and Union Station are required to transfer to the Metro Red and Purple Lines or buses such as Metro Local or LADOT DASH routes.

- Metro Gold Line Eastside Extension from Union Station to East Los Angeles. Lying to the east of Downtown Los Angeles, this six-mile long LRT line is expected to be complete and operational in 2009.

- Metro Expo Line from 7th St./Metro Center Station to Culver City. This 8.5-mile route is scheduled to open in 2010, directly connecting Downtown Los Angeles with the dynamic Westside.

The Metro Blue Line, which ends at 7th St./Metro Center Station, does not directly connect to the Metro Gold Line, as seen in Figure 3-2. Currently, passengers have to use the Metro Red and Purple Lines or surface buses to travel between 7th St./ Metro Center Station and the Metro Gold Line at Union Station.

Figure 3-2 Gap in the Light Rail System



Bus Lines:
It is anticipated that the bus service in the PSA will predominantly remain the same through the year 2030 No Build condition with increased headways for some of the heavily travelled lines. Increases along the lines listed in Tables 3-1 through 3-4 would help feed more passengers into the downtown area along the rail corridors that would be joined by the Regional Connector.

Commuter Service:
Similar to today, Amtrak and Metrolink will continue to provide commuter rail services to Union Station from other cities in the region. Arriving passengers have the choice of transferring to the Metro Red and Purple Lines, LADOT DASH bus service or other buses/shuttles while continuing their trips to the central business district or other parts of the Los Angeles area.

3.2.3 Transportation System Management (TSM) Alternative

This alternative proposes shuttle bus routes instead of a light rail link between the 7th St./Metro Center Station and Union Station. Two shuttle routes are designed to move passengers between the two stations:

Grand/Temple/Los Angeles Alignment: The alignment is assumed to follow the same route as part of the existing LADOT DASH Route B service, proceeding from Union Station to 7th St./Metro Center using Los Angeles St., Temple St., and Grand Ave. Shuttle buses will run less than eight minutes apart, providing coverage of the Bunker Hill and Civic Center areas.

Figueroa/Flower/2nd/3rd/Alameda Alignment: This route will utilize the existing northbound bus-only lanes on Figueroa Street and 2nd Street and 3rd Street which are lightly used by other bus lines. The alignment passes by both the Little Tokyo/Arts District Station and Union Station, and provides good coverage of Little Tokyo and the southern edge of the Civic Center.

The shuttle routes would be operated by Metro, and could use vehicles ranging from 30-foot shuttle buses to 60-foot articulated buses. They would run every few minutes during peak periods, and peak hour bus-only lanes would be created where possible by restricting parking on streets that do not already have dedicated all-day bus lanes. Similar to the Metro Rapid Bus lines, a Transit Priority System (TPS) will also be employed where possible to increase bus speed and efficiency.

3.2.4 At-Grade Emphasis LRT Alternative

The following alternative was one of the alternatives that went through the initial screening process and was selected as a promising alternative for further evaluation out of the original eight. The alignment extends from the underground 7th St./Metro Center Station, heads north under Flower St., resurfaces to at grade north of 4th St. in the case of Option A (or potentially just north of 5th St. in the case of Option B), enters Bunker Hill, and turns northeast through a new entrance to the existing 2nd St. tunnel. The alignment continues along 2nd St. and it splits into an at-grade couplet configuration traveling north Main and Los Angeles Sts. (one track on each roadway). Then it heads east on Temple St., realigns into a dual track configuration just north of the Little Tokyo/Arts District Station on Alameda St. Due to the high volume of trains that will traverse the Regional Connector, an automobile underpass and pedestrian overpass will be constructed at the intersection of Temple and Alameda Sts. to eliminate pedestrian-train and automobile-train conflicts.

This alignment includes both underground and at-grade configurations, with 46% of the route underground (38% if the underground tracks on Flower St. surface at 5th St. instead of 4th St.), serving the Civic Center, Grand Ave., and the Financial District. Conversion of 2nd St. to a pedestrian-friendly transit mall is assumed. This alternative will reduce the number of traffic lanes and on-street parking spaces. Under this plan, at-grade LRT construction activities will reduce the automobile capacity of 2nd St. As a result, traffic is likely to divert to adjacent parallel streets such as 1st St. and 3rd St., but the roadway capacity along these streets will remain unchanged, as with the No Build condition. Congestion along these streets will likely increase.

3.2.5 Underground Emphasis LRT Alternative

Heading east, this alignment begins at the underground 7th St./Metro Center Station and heads north under Flower St., then turns northeast under the Grand Avenue Project development and heads east under the 2nd St. tunnel. It continues east under 2nd St. until it rises to street level on the lot northeast of 2nd St. and Central Ave. and crosses Alameda St. to connect to the Metro Gold Line tracks. This alignment is 94% underground, with a single at-grade crossing at 1st and Alameda Sts. This grade crossing will feature an automobile underpass and pedestrian overpass so as to remove nearly all conflicts

between pedestrians, automobiles, and trains at this intersection. The underground stations provide service to the Civic Center, Little Tokyo, Grand Ave., and Financial Districts. Due to the fact that this alignment is predominantly underground, permanent impacts on traffic operations, roadway capacity and mobility along 2nd St. will be minimized. Construction impacts would occur at station sites, portals, and above cut and cover tunnel sections, but would be temporary.

3.2.6 Ridership

For all of the alternatives under consideration, ridership is affected by travel time, fares, length of segments, and choice of alignment and configuration. One major benefit of a project like this is the increase in the overall transit ridership that the new service produces. The ridership change is estimated for all relevant transit services in the area including buses and rail.

Ridership generated by each alternative, based on year 2030 forecasts, is then compared to that produced by the No Build and TSM Alternatives. Model runs were performed for the No Build, TSM, At-Grade Emphasis LRT and Underground Emphasis LRT Alternatives. The following table shows the projected year 2030 total transit trips for each alternative.

The table shows that the build alternatives would increase ridership on urban rail (Metro Rail) while reducing bus ridership and slightly reducing commuter rail (Metrolink) ridership, which can be explained as a shift from other transit services to rail when the Regional Connector is built. For example, a small share of the riders currently using Metrolink's Cal State LA, Montebello, Commerce, and Norwalk stations may switch to the Metro Gold Line Eastside Extension or the Metro Blue and Green Lines to take advantage of the improved trip times to the downtown Los Angeles central business district. The data presented in Table 3-5 suggests that fewer than 400 passengers would make this switch.

The Regional Connector links 7th St./Metro Center Station with the Little Tokyo/Arts District Station and Union Station, attracting ridership and cross town trips that can be taken without transferring between transit lines. Since the new rail riders outnumber the lost bus riders, the Regional Connector is anticipated to attract more commuters to the transit system. For urban rail trips, the net increases over the No Build Alternative range from 12,197 daily trips for the At-Grade Emphasis LRT Alternative Option A, 13,466 for the At-Grade Emphasis LRT Alternative Option B, to 16,048 for the Underground Emphasis LRT Alternative. When compared to the TSM Alternative, the added daily trips range from 13,014 for the At-Grade Emphasis LRT Alternative Option A, 14,283 for the At-Grade Emphasis LRT Alternative Option B, to 16,865 for the Underground Emphasis LRT Alternative. Commuter rail would experience only a slight decrease in ridership.

Overall, total transit trips under the build alternatives increase by 0.5% to 0.7%, or 7,600 to 10,200 new daily trips, when compared to the No Build and TSM alternatives due to the improved transit connectivity and frequency provided by the Regional Connector project. The increase in boardings on the light rail lines feeding into the Regional Connector will be 7% to 10% compared to No Build because more people will be attracted to the system by the faster service, and the new reduced transfer light rail service will eliminate 17,000 to 20,000 daily transfers to and from the Metro Red and Purple Lines. Of the two build alternatives, the Underground Emphasis LRT Alternative tends to capture the greatest amount of new transit trips, in terms of both urban rail trips and total transit trips, while the At-Grade Emphasis LRT Alternative follows closely behind.

Table 3-5 Year 2030 Daily Transit Trips

	No Build	TSM	At-Grade LRT (Option A)	At-Grade LRT (Option B)	Underground LRT
Local Bus	839,375	839,166	837,009	836,702	836,181
Express Bus	30,787	30,512	30,723	30,716	30,698
Transitway Bus	102,396	101,866	101,655	101,597	101,563
Rapid Bus	211,266	214,022	210,295	210,185	209,886
BRT	7,463	7,463	7,428	7,413	7,458
Bus Subtotal	**1,191,287**	**1,193,029**	**1,187,110**	**1,186,613**	**1,185,786**
Urban Rail	248,194	247,377	260,391	261,660	264,242
Commuter Rail	76,337	76,362	75,934	75,934	75,989
Transit Subtotal	**1,515,818**	**1,516,768**	**1,523,435**	**1,524,207**	**1,526,017**

When comparing the TSM and No Build Alternatives, the TSM Alternative results in a nominal increase in bus ridership of about 1,700 additional daily trips, which appears to be the effect of increased frequency coupled with the shuttle bus connection between 7th St./Metro Center and Union Station. Since a high concentration of bus service already exists in the downtown area linking the two stations, the proposed shuttle bus service is unlikely to function as an essential improvement. The difference in total transit ridership between the TSM and No Build Alternatives is only 950, which is not as dramatic as the increases associated with the LRT build alternatives. Accordingly, the proposed build alternative shows much better ridership performance than the No Build and TSM Alternatives, with the Underground Emphasis LRT Alternative expected to produce the highest amount of new ridership.

Urban Rail Boardings:

The following table displays the year 2030 forecasted rail line daily boardings for each of the alternatives. The Daily Boardings column represents the total number of boardings in the North-South Line and East-West Line connected by the Regional Connector, including the Metro Gold Line to Pasadena, the Metro Gold Line Eastside Extension, the Metro Blue Line and the Metro Expo Line. New boardings are presented for each alternative as increments over the No Build and TSM alternatives.

Table 3-6 Year 2030 Urban Rail Boardings on LRT Lines Joined by the Regional Connector				
Alternative	Daily Boardings	Incremental New Urban Rail Boardings		Boardings at New Stations
		Over No Build	Over TSM	
No Build	154,805	N/A	962	N/A
TSM	153,843	N/A	N/A	N/A
At-Grade Emphasis LRT Option A	165,691	10,886	11,848	15,098
At-Grade Emphasis LRT Option B	167,615	12,810	13,772	15,057
Underground Emphasis LRT	169,288	14,483	15,445	12,457

Although the TSM Alternative has a total daily ridership higher than the No Build Alternative, it has the fewest urban rail boardings, resulting from the additional transfers needed when using the new shuttle buses to link 7th St./Metro Center Station and Union Station. The build alternatives will result in significant increases in rail boardings along the North-South and East-West LRT lines, compared to both the No Build and TSM Alternatives, ranging from 10,886 to 15,445 daily boardings. As for total daily ridership on the entire transit system, the Underground Emphasis LRT Alternative is expected to produce the highest number of boardings each day, though it will yield fewer boardings at the new stations than the at-grade alternative.

3.3 Roadway Analysis

This section presents the traffic operating conditions at key roadway segments and intersections within the Regional Connector study area. The locations of the intersections being studied were determined based on the alternative alignments and the potential effects each may have on the adjacent transportation network. The implementation of any alternative that has grade crossings or street-running segments is expected to affect traffic operations as well as change current traffic flow patterns. Existing daily, AM peak and PM peak traffic volumes were obtained from data provided by LADOT. An existing conditions level of service (LOS) analysis was performed for the key roadway segments using daily traffic volumes and the key intersections using AM and PM peak hour turning movement data.

The roadway segment analysis was performed using a Volume-to-Capacity (V/C) ratio of the average daily traffic (ADT). Existing volumes were obtained from LADOT and the capacity was based on the roadway's general plan facility type classification. For intersections, the AM and PM peak hour volumes were analyzed using the Intersection Capacity Utilization (ICU) methodology, which determines a v/c ratio based on the critical intersection approach movements and a corresponding level of service. The LOS is a qualitative measure used to describe traffic flow conditions, ranging from excellent flow (LOS A) to overloaded, stop-and-go conditions (LOS F). Level of service definitions and corresponding V/C ranges are presented below.

TABLE 3-7 LEVEL OF SERVICE DEFINITIONS		
Level of Service	Volume/Capacity Ratio	Definition
A	0.000 - 0.600	EXCELLENT. No vehicle waits longer than one red light and no approach phase is fully used.
B	0.601 - 0.700	VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.
C	0.701 - 0.800	GOOD. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.
D	0.801 - 0.900	FAIR. Delays may be substantial during portions of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.
E	0.901 - 1.000	POOR. Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.
F	>1.000	FAILURE. Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Tremendous delays with continuously increasing queue lengths.
Source: Transportation Research Board, *Transportation Research Circular No. 212, Interim Materials on Highway Capacity*, 1980		

Tables 3-8 and 3-9 summarize the existing operating conditions for the key intersections, roadway segments, and freeways in the PSA. All the key study intersections currently operate at LOS D or better during both the AM and PM peak hours. The only exception is the intersection of Alameda and 1st Sts., which currently operates at LOS F in the AM peak hour. Most of the key roadway segments currently operate at LOS D or better except for three locations which operate at LOS E. Two of these locations are on 2nd St. and the third location is on Alameda St.

Table 3-8 Existing (2007) Intersection Level of Service				
Intersection	AM Peak Hour		PM Peak Hour	
	V/C Ratio	LOS	V/C Ratio	LOS
Hill St. / 1st St.	0.62	B	0.73	C
Broadway / 1st St.	0.63	B	0.56	A
Spring St. / 1st St.	0.54	A	0.45	A
Main St. / 1st St.	0.44	A	0.55	A
Los Angeles St. / 1st St.	0.53	A	0.58	A
Judge John Aiso St. / 1st St.	0.60	A	0.69	B
Alameda St. / 1st St.	1.03	F	0.88	D
Broadway / 2nd St.	0.84	D	0.46	A
Spring St. / 2nd St.	0.48	A	0.40	A
Main St. / 2nd St.	0.30	A	0.62	B
Los Angeles St. / 2nd St.	0.46	A	0.59	B
San Pedro St. / 2nd St.	0.40	A	0.52	A
Central Ave. / 2nd St.	0.39	A	0.54	A
Alameda St. /2nd St.	0.67	B	0.67	B
Broadway / 3rd St.	0.72	C	0.60	A
Spring St. / 3rd St.	0.59	A	0.55	A
Main St. / 3rd St.	0.53	A	0.73	C
Los Angeles St. / 3rd St.	0.66	B	0.57	A
San Pedro St. / 3rd St.	0.63	B	0.44	A
Central Ave. / 3rd St.	0.58	A	0.41	A
Alameda St. / 3rd St.	0.78	C	0.57	A
Figueroa St. / 3rd St.	0.65	B	0.84	D
Hope St. / Temple St.	0.75	C	0.82	D
Grand Ave. / Temple St.	0.65	B	0.68	B
Broadway / Temple St.	N/A	N/A	0.76	C
Spring St. / Temple St.	0.58	A	0.42	A
Main St. / Temple St.	0.39	A	0.69	B
Los Angeles St. / Temple St.	0.55	A	0.63	B
Judge John Aiso St. / Temple St.	0.36	A	0.50	A
Alameda St. / Temple St.	0.64	B	0.65	B

Table 3-9 Existing (2007) ROADWAY SEGMENT AVERAGE DAILY TRAFFIC (ADT) ANALYSIS							
Primary Street	Cross Street	Facility Type	Number of lanes	Capacity	ADT	V/C Ratio	LOS
Flower St.	3rd St.	Secondary	4	28,000	11,177	0.399	A
	5th St.	Secondary	6	45,000	19,920	0.443	A
	6th St.	Secondary	4	30,000	17,386	0.580	A
	Wilshire Bl.	Secondary	4	30,000	19,434	0.648	B
	7th St.	Secondary	4	30,000	18,908	0.630	B
2nd St.	Alameda St.	Secondary	3	21,000	8,176	0.389	A
	Central Ave.	Secondary	2	14,000	10,452	0.747	C
	Los Angeles St.	Secondary	3	21,000	16,244	0.774	C
	Main St.	Secondary	3	21,000	19,630	0.935	E
	San Pedro St.	Secondary	2	14,000	13,371	0.955	E
	Spring St.	Secondary	4	28,000	14,394	0.514	A
Los Angeles St.	1st St.	Secondary	4	28,000	18,559	0.663	B
	2nd St.	Secondary	4	28,000	17,156	0.613	B
	Temple St.	Secondary	5	35,000	22,036	0.630	B
Main St.	1st St. 1-Way	Major Class II	3	25,500	12,079	0.474	A
	2nd St. 1-Way	Major Class II	3	25,500	13,711	0.538	A
	Temple St.	Major Class II	4	34,000	25,626	0.754	C
Temple St.	Judge John Aiso St.	Major Class II	4	32,000	17,114	0.535	A
	Los Angeles St.	Major Class II	4	32,000	16,809	0.525	A
	Main St.	Major Class II	4	32,000	17,032	0.532	A
1st St.	Alameda St.	Secondary	4	28,000	21,538	0.769	C
	Central Ave.	Secondary	4	28,000	23,081	0.824	D
	Los Angeles St.	Secondary	6	42,000	22,099	0.526	A
	Main St.	Secondary	6	42,000	23,908	0.569	A
	Spring St.	Secondary	6	42,000	20,205	0.481	A
3rd St.	Flower St.	Secondary	4	30,000	19,133	0.638	B
	Spring St.	Secondary	3	22,500	17,564	0.781	C
	Los Angeles St.	Secondary	3	22,500	17,965	0.798	C
	Main St.	Secondary	3	22,500	16,151	0.718	C
Alameda St.	1st St.	Major Class II	4	32,000	30,514	0.954	E
	2nd St.	Major Class II	4	32,000	27,881	0.871	D

All of the freeways serving downtown Los Angeles operate at LOS F during peak hours in at least one direction. As evidenced by the previous tables, traffic congestion on the local freeways is worse than on PSA streets. This is largely because freeways congregate both downtown-bound traffic and traffic passing through to other areas. On I-10 east of downtown, and on SR-60 and US-101, traffic operates at a speed acceptable for urban settings in the reverse peak direction during peak hours (i.e. away from downtown in the mornings and toward downtown in the evenings). However, I-10 west of downtown and I-110/SR-110 operate at LOS F in both directions during both commute peaks.

Table 3-10 Existing (2003) Peak Hour Freeway Traffic and Level of Service										
Freeway	Cross Street	Capacity (VPH)	North/East AM (VPH and LOS)		North/East PM (VPH and LOS)		South/West AM (VPH and LOS)		South/West PM (VPH and LOS)	
I-5	Stadium Way	10,000	9,206	D	12,600	F	13,600	F	10,353	F
I-10	Budlong Ave.	12,500	17,000	F	18,250	F	18,250	F	18,250	F
I-10	East LA City Limits	12,000	6,618	C	12,120	F	11,100	D	8,879	C
SR-60	Indiana St.	12,000	4,989	B	15,120	F	16,320	F	6,317	B
US-101	Vignes St.	10,000 N/B	13,600	F	6,561	C				
US-101	Vignes St.	8,000 S/B					5,228	C	10,880	F
SR-110	US-101	8,000	8,121	F	11,771	F	10,913	F	10,913	F

Source: Metro 2004 Congestion Management Program for Los Angeles County

In order to estimate the impacts of the proposed alternatives on the downtown roadway system, future traffic volumes were developed for the year 2030. The travel demand model was used to identify the annual growth rate at key intersections and roadway segments between the model base year and the 2030 forecast year. At most of the key locations, the model's annual growth rate was found to be around one percent or less. Consequently, a conservative annual growth rate of one percent was used to forecast the existing (2007) traffic volumes over 23 years to the year 2030 horizon. However, at several locations where the model growth rate substantially exceeded one percent, the greater rates from the model were utilized. This occurred along Flower St., where an annual growth rate of 1.4 percent was used, and in the southbound direction on Alameda St., where an annual growth rate of 1.75 percent was used.

Based on the future daily and peak hour traffic volumes that were developed, the future level of service at each key intersection and roadway segment location was calculated for the No Build, TSM and, build alternatives. In general, the difference in future traffic volumes between the No Build and TSM alternatives is minimal, and for purposes of this analysis, it is assumed that they will remain the same. For each build alternative, the traffic impacts were compared to the No Build and TSM alternatives. Vehicular circulation through the downtown area will be affected by the proposed project, but the level of impact will depend on the alternative alignment being evaluated, as noted in the following sections.

At-Grade Emphasis LRT Alternative

For the at-grade segments of the At-Grade Emphasis LRT Alternative, the two LRT tracks will typically occupy a 26-foot wide surface right-of-way bordered by mountable curbs. It is expected that this width will increase to 39 feet at center platform station locations. Vehicular and pedestrian crossings would be limited to traffic signal-controlled

intersections, with the signal phasing modified to provide adequate green time for the LRT vehicles to safely cross. For safety reasons, no uncontrolled mid-block vehicular crossings of the tracks would be permitted. Access to existing parking structures, parking lots, loading docks and commercial frontage will be affected by the at-grade LRT facilities. Left-turn parking access and egress is presently allowed at many downtown sites. However, the at-grade LRT facilities will eliminate uncontrolled mid-block left-turns, and thus modify existing approach and departure traffic patterns.

The proposed At-Grade Emphasis LRT alignment travels at-grade along 2nd St., and it is assumed that this street would be dedicated as a transit-only roadway between the tunnel and Los Angeles St. This segment of 2nd St. would be closed to through traffic and provide only emergency vehicle access and local access to adjacent properties. As a result of this proposed change in street circulation, through traffic currently using 2nd St. would be diverted to parallel roadways such as 1st and 3rd Sts. East of Los Angeles St., 2nd St. would maintain its current physical features and operating characteristics. The one-way transit couplet near City Hall along Main and Los Angeles Sts. between 2nd and Temple Sts. would consist of a single LRT track along each roadway. Both Main and Los Angeles Sts. are wide enough to accommodate a single track and maintain acceptable vehicular operations. The curb-to-curb width of Temple St., between Main and Alameda Sts., is 62 to 71 feet, leaving one lane of traffic in each direction with potentially mountable curbs for use by emergency vehicles. Traffic operations along this segment of Temple St. will be affected by the lane reduction.

To minimize conflicts between rail, vehicular, and pedestrian traffic, and to minimize delays at the intersection of Temple and Alameda Sts., a vehicular underpass and a pedestrian overpass are proposed along Alameda Str. to route the through traffic beneath the rail tracks and Temple St. traffic. Temple St. and the rail tracks would remain at-grade and the existing at-grade segment of Alameda St. would be lowered to pass under Temple St. Through traffic traveling north and south on Alameda St. would operate unimpeded without being stopped or delayed at the intersection. Through traffic traveling east and west on Temple St. would continue to operate at-grade with a signal to control the movements between the vehicular and rail modes of transportation. In addition, a one-lane southbound at-grade frontage road would be provided along Alameda St. to maintain access to the businesses and properties on the west side of the street.

Underground Emphasis LRT Alternative

The Underground Emphasis LRT Alternative alignment does not affect surface traffic except at the intersection of Alameda and 1st Sts., where the LRT alignment operates in an at-grade configuration. Consequently, vehicular circulation patterns along downtown streets adjacent to most of the alignment will continue to operate at current traffic flow patterns. The future roadway levels of service for this alternative will be the same as the No Build and TSM alternatives except at the intersection of Alameda and 1st St., where a vehicular underpass and pedestrian overpass are proposed to separate the heavy traffic volumes along Alameda St. from rail traffic to minimize delays. The proposed underpass would result in uninterrupted flow along Alameda St. in the north and south directions between 2nd and Temple Sts. Through traffic traveling east and west on 1st St. would continue to operate at-grade with a signal to control the movements between the

vehicular and rail modes of transportation. In addition, at-grade frontage roads would be provided along on both sides of Alameda St. south of the intersection, and on the southbound side of the street north of the intersection to maintain access to adjacent businesses and properties. A full northbound frontage road is infeasible because of the location of the rail tracks and the Metro Gold Line Eastside Extension's Little Tokyo/Arts District Station on the east side of Alameda St.

The results of the future LOS analysis at the key intersections and roadway segments for the No Build, TSM and build alternatives are presented in the following tables. During the AM peak hour, five intersections operate at LOS E or F for the No Build, TSM and Underground Emphasis LRT Alternatives, while this number increases to seven the At-Grade Emphasis LRT Alternative. Similarly, during the PM peak hour, five intersections operate at LOS E or F for the No Build and TSM Alternatives, versus only four for the Underground Emphasis LRT Alternative and 13 for the At-Grade Emphasis LRT Alternative. The roadway segment analysis provides similar results, with 12 segments operating at LOS E or F for the No Build, TSM and Underground Emphasis LRT Alternatives, and 14 for the At-Grade Emphasis LRT Alternative. It should be noted that the No Build, TSM and Underground Emphasis LRT Alternatives have 6 of the 12 locations operating at LOS F while the At-Grade Emphasis LRT Alternative has 11 of the 14 locations operating at LOS F.

Intersection	Table 3-11Furure (2030) Intersection Level of Service AM Peak Hour									
	No Build		TSM		Couplet A		Couplet B		Underground	
	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
Hill St. / 1st St.	0.76	C	0.76	C	0.76	C	0.76	C	0.76	C
Broadway / 1st St.	0.78	C	0.78	C	0.87	D	0.87	D	0.78	C
Spring St. / 1st St.	0.67	B	0.67	B	0.81	D	0.81	D	0.67	B
Main St. / 1st St.	0.54	A	0.54	A	0.69	B	0.69	B	0.54	A
Los Angeles St. / 1st St.	0.66	B	0.66	B	0.71	C	0.71	C	0.66	B
Judge John Aiso St. / 1st St.	0.74	C	0.74	C	0.80	C	0.80	C	0.74	C
Alameda St. / 1st St.	1.36	F	1.36	F	1.36	F	1.36	F	0.96	E
Broadway / 2nd St.	1.05	F	1.05	F	0.82	D	0.82	D	1.05	F
Spring St. / 2nd St.	0.59	A	0.59	A	0.54	A	0.54	A	0.59	A
Main St. / 2nd St.	0.36	A	0.36	A	0.53	A	0.53	A	0.36	A
Los Angeles St. / 2nd St.	0.57	A	0.57	A	0.71	C	0.71	C	0.57	A
San Pedro St. / 2nd St.	0.50	A	0.50	A	0.38	A	0.38	A	0.50	A
Central Ave. / 2nd St.	0.48	A	0.48	A	0.48	A	0.48	A	0.48	A
Alameda St. / 2nd St.	0.91	E	0.91	E	0.91	E	0.91	E	0.91	E
Broadway / 3rd St.	0.90	D	0.90	D	1.20	F	1.20	F	0.90	D
Spring St. / 3rd St.	0.73	C	0.73	C	0.83	D	0.83	D	0.73	C
Main St. / 3rd St.	0.66	B	0.66	B	0.81	D	0.81	D	0.66	B
Los Angeles St. / 3rd St.	0.82	D	0.82	D	0.90	D	0.90	D	0.82	D
San Pedro St. / 3rd St.	0.78	C	0.78	C	0.84	D	0.84	D	0.78	C
Central Ave. / 3rd St.	0.72	C	0.72	C	0.72	C	0.72	C	0.72	C
Alameda St. / 3rd St.	1.04	F	1.04	F	1.04	F	1.04	F	1.04	F
Figueroa St. / 3rd St.	0.80	C	0.80	C	0.80	C	0.80	C	0.80	C
Hope St. / Temple St.	0.98	E	0.98	E	0.98	E	0.98	E	0.98	E
Grand Ave. / Temple St.	0.76	C	0.76	C	0.76	C	0.76	C	0.76	C
Broadway / Temple St.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Spring St. / Temple St.	0.67	B	0.67	B	0.67	B	0.67	B	0.67	B
Main St. / Temple St.	0.44	A	0.44	A	0.50	A	0.50	A	0.44	A
Los Angeles St. / Temple St.	0.68	B	0.68	B	1.00	E	1.00	E	0.68	B
Judge John Aiso St. / Temple St.	0.44	A	0.44	A	0.86	D	0.86	D	0.44	A
Alameda St. / Temple St.	0.79	C	0.79	C	1.12	F	1.12	F	0.79	C
No. of LOS E Intersections	2		2		3		3		3	
No. of LOS F Intersections	3		3		4		4		2	

Table 3-12 Future (2030) Intersection Level of Service PM Peak Hour										
Intersection	No Build		TSM		Couplet A		Couplet B		Underground	
	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
Hill St. / 1st St.	0.91	E	0.91	E	0.91	E	0.91	E	0.91	E
Broadway / 1st St.	0.70	B	0.70	B	0.78	C	0.78	C	0.70	B
Spring St. / 1st St.	0.56	A	0.56	A	0.62	B	0.62	B	0.56	A
Main St. / 1st St.	0.67	B	0.67	B	0.91	E	0.91	E	0.67	B
Los Angeles St. / 1st St.	0.71	C	0.71	C	0.88	D	0.88	D	0.71	C
Judge John Aiso St. / 1st St.	0.85	D	0.85	D	1.06	F	1.06	F	0.85	D
Alameda St. / 1st St.	1.10	F	1.10	F	1.10	F	1.10	F	0.87	D
Broadway / 2nd St.	0.57	A	0.57	A	0.54	A	0.54	A	0.57	A
Spring St. / 2nd St.	0.49	A	0.49	A	0.44	A	0.44	A	0.49	A
Main St. / 2nd St.	0.77	C	0.77	C	0.85	D	0.85	D	0.77	C
Los Angeles St. / 2nd St.	0.73	C	0.73	C	0.82	D	0.82	D	0.73	C
San Pedro St. / 2nd St.	0.75	C	0.75	C	0.59	A	0.59	A	0.75	C
Central Ave. / 2nd St.	0.67	B	0.67	B	0.67	B	0.67	B	0.67	B
Alameda St. / 2nd St.	0.89	D	0.89	D	0.89	D	0.89	D	0.89	D
Broadway / 3rd St.	0.74	C	0.74	C	0.92	E	0.92	E	0.74	C
Spring St. / 3rd St.	0.67	B	0.67	B	0.82	D	0.82	D	0.67	B
Main St. / 3rd St.	0.90	D	0.90	D	1.04	F	1.04	F	0.90	D
Los Angeles St. / 3rd St.	0.70	B	0.70	B	0.74	C	0.74	C	0.70	B
San Pedro St. / 3rd St.	0.54	A	0.54	A	0.62	B	0.62	B	0.54	A
Central Ave. / 3rd St.	0.51	A	0.51	A	0.51	A	0.51	A	0.51	A
Alameda St. / 3rd St.	0.70	B	0.70	B	0.70	B	0.70	B	0.70	B
Figueroa St. / 3rd St.	1.22	F	1.22	F	1.22	F	1.22	F	1.22	F
Hope St. / Temple St.	0.96	E	0.96	E	0.96	E	0.96	E	0.96	E
Grand Ave. / Temple St.	0.87	D	0.87	D	0.87	D	0.87	D	0.87	D
Broadway / Temple St.	0.92	E	0.92	E	0.92	E	0.92	E	0.92	E
Spring St. / Temple St.	0.51	A	0.51	A	0.51	A	0.51	A	0.51	A
Main St. / Temple St.	0.85	D	0.85	D	1.00	E	1.00	E	0.85	D
Los Angeles St. / Temple St.	0.77	C	0.77	C	1.34	F	1.34	F	0.77	C
Judge John Aiso St. / Temple St.	0.61	B	0.61	B	0.93	E	0.93	E	0.61	B
Alameda St. / Temple St.	0.80	C	0.80	C	1.04	F	1.04	F	0.80	C
No. of LOS E Intersections	3		3		7		7		3	
No. of LOS F Intersections	2		2		6		6		1	

Table 3-13 Future (2030) Roadway Segment Average Daily Traffic (ADT) Analysis No Build, TSM and Underground Emphasis LRT Alternative							
Primary Street	Cross Street	Facility Type	Number of lanes	Capacity	ADT	V/C Ratio	LOS
Flower St.	3rd St.	Secondary	4	28,000	15,389	0.550	A
	5th St.	Secondary	6	45,000	27,426	0.609	B
	6th St.	Secondary	4	30,000	23,938	0.798	C
	Wilshire Bl.	Secondary	4	30,000	26,757	0.892	D
	7th St.	Secondary	4	30,000	26,033	0.868	D
2nd St.	Alameda St.	Secondary	3	21,000	10,279	0.489	A
	Central Ave.	Secondary	2	14,000	13,140	0.939	E
	Los Angeles St.	Secondary	3	21,000	20,421	0.972	E
	Main St.	Secondary	3	21,000	24,679	1.175	F
	San Pedro St.	Secondary	2	14,000	16,810	1.201	F
	Spring St.	Secondary	4	28,000	18,095	0.646	B
Los Angeles St.	1st St.	Secondary	4	28,000	23,331	0.833	D
	2nd St.	Secondary	4	28,000	21,568	0.770	C
	Temple St.	Secondary	5	35,000	27,703	0.792	C
Main St.	1st St. 1-Way	Major Class II	3	25,500	15,185	0.595	A
	2nd St. 1-Way	Major Class II	3	25,500	17,237	0.676	B
	Temple St.	Major Class II	4	34,000	32,216	0.948	E
Temple St.	Judge John Aiso St.	Major Class II	4	32,000	21,516	0.672	B
	Los Angeles St.	Major Class II	4	32,000	21,132	0.660	B
	Main St.	Major Class II	4	32,000	21,412	0.669	B
1st St.	Alameda St.	Secondary	4	28,000	27,077	0.967	E
	Central Ave.	Secondary	4	28,000	29,016	1.036	F
	Los Angeles St.	Secondary	6	42,000	27,783	0.661	B
	Main St.	Secondary	6	42,000	30,056	0.716	C
	Spring St.	Secondary	6	42,000	25,401	0.605	B
3rd St.	Flower St.	Secondary	4	30,000	24,053	0.802	D
	Spring St.	Secondary	3	22,500	22,080	0.981	E
	Los Angeles St.	Secondary	3	22,500	22,585	1.004	F
	Main St.	Secondary	3	22,500	20,304	0.902	E
Alameda St.	1st St.	Major Class II	4	32,000	42,364	1.324	F
	2nd St.	Major Class II	4	32,000	38,338	1.198	F

Roadway Segments with LOS E = 6
Roadway Segments with LOS F = 6
Total of LOS E & F =12

Table 3-14 Future (2030) Roadway Segment Average Daily Traffic (ADT) Analysis At-Grade Emphasis LRT Alternative							
Primary Street	Cross Street	Facility Type	Number of lanes	Capacity	ADT	V/C Ratio	LOS
Flower St.	3rd St.	Secondary	3	21,000	15,389	0.733	C
	5th St.	Secondary	6	45,000	27,426	0.609	B
	6th St.	Secondary	4	30,000	23,938	0.798	C
	Wilshire Bl.	Secondary	4	30,000	26,757	0.892	D
	7th St.	Secondary	4	30,000	26,033	0.868	D
2nd St.	Alameda St.	Secondary	3	21,000	10,279	0.489	A
	Central Ave.	Secondary	2	14,000	13,140	0.939	E
	Los Angeles St.	Secondary	1	7,000	4,084	0.583	A
	Main St.	Secondary	1	7,000	4,936	0.705	C
	San Pedro St.	Secondary	2	14,000	16,810	1.201	F
	Spring St.	Secondary	1	7,000	3,619	0.517	A
Los Angeles St.	1st St.	Secondary	3	21,000	23,331	1.111	F
	2nd St.	Secondary	4	28,000	21,568	0.770	C
	Temple St.	Secondary	4	28,000	27,703	0.989	D
Main St.	1st St. 1-Way	Major Class II	3	25,500	15,185	0.595	A
	2nd St. 1-Way	Major Class II	3	25,500	17,237	0.676	B
	Temple St.	Major Class II	3	25,500	32,216	1.263	F
Temple St.	Judge John Aiso St.	Major Class II	2	16,000	21,516	1.345	F
	Los Angeles St.	Major Class II	2	16,000	21,132	1.321	F
	Main St.	Major Class II	3	24,000	21,412	0.892	D
1st St.	Alameda St.	Secondary	4	28,000	27,077	0.967	E
	Central Ave.	Secondary	4	28,000	29,016	1.036	F
	Los Angeles St.	Secondary	6	42,000	35,952	0.856	D
	Main St.	Secondary	6	42,000	39,928	0.951	E
	Spring St.	Secondary	6	42,000	32,639	0.777	C
3rd St.	Flower St.	Secondary	4	30,000	24,053	0.802	D
	Spring St.	Secondary	3	22,500	29,318	1.303	F
	Los Angeles St.	Secondary	3	22,500	30,754	1.367	F
	Main St.	Secondary	3	22,500	30,176	1.341	F
Alameda St.	1st St.	Major Class II	4	32,000	42,364	1.324	F
	2nd St.	Major Class II	4	32,000	38,338	1.198	F

Roadway Segments with LOS E = 3
Roadway Segments with LOS F = 11
Total of LOS E & F =14

3.3.1 Parking Evaluation

A preliminary parking analysis was performed to assess the number of on-street parking spaces that may be removed for the build alternatives. This section presents the effects that each alternative may have on the curb parking supply. In order to estimate parking losses, a field survey was performed to inventory the number of available on-street parking spaces. The street segments with an at-grade transit alignment were surveyed to collect the number of spaces and parking restriction information.

No Build, TSM, and Underground Emphasis LRT Alternatives

Neither the No Build nor the TSM Alternative would displace any existing parking spaces. The build alternatives will each have different parking impacts. With the proposed alignment almost completely underground, the Underground Emphasis LRT Alternative does not result in any loss of on-street parking spaces along 2nd or Flower Streets. However, the proposed underpass at 1st and Alameda Sts. will result in the loss of existing parking spaces along the east side of Alameda Street near the intersection. Approximately 20 on-street spaces would be displaced. Construction of the Underground Emphasis LRT Alternative would temporarily displace parking spaces along the alignment, but they would be restored once work is completed.

At-Grade Emphasis LRT Alternative

The construction of at-grade tracks along 2nd St. and the need for adequate street widths to provide local access lanes will require the elimination of existing on-street parking and loading spaces to accommodate the At-Grade Emphasis LRT Alternative. This loss of parking may result in spill over to adjacent streets if parking on these streets is readily available. The total number of parking spaces lost under the At-Grade Emphasis LRT Alternative will total 88, with 35 of the spaces located on 2nd St. between Hill and Los Angeles Sts. All of the lost parking spaces would be in the Civic Center area, and no parking would be displaced in Little Tokyo. The data, organized by roadway segment, is presented in the following table. In addition, nine spaces may also be lost along the south side of Temple St. west of Alameda St. due to the proposed underpass.

Table 3-15 Number of Existing Parking Spaces on 2nd Street

Street	Side	Hill to Broadway			Broadway to Spring			Spring to Main			Main to Los Angeles			TOTAL		
		Park	Load	Drive-Way	Park	Load	Drive-way	Park	Load	Drive-way	Park	Load	Drive-way	Park	Load	Drive-way
2nd St	North	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
	South	9	1	0	7	0	1	4	4	1	10	0	9	30	5	11
TOTAL		9	1	0	7	0	2	4	4	1	10	0	9	30	5	12

Consequently, it will be necessary to implement mitigation measures, such as off-street parking facilities to replace the lost curb spaces. After the selection of a preferred alternative, Metro will work closely with the affected entities to develop plans to minimize the parking losses.

3.4 Summary of Transportation Analysis

In an effort to better inform decisions made on such a significant investment, this section provides a summary of major transportation issues such as ridership, traffic impacts and parking losses related to each alternative based on a comparative evaluation.

No Build Alternative

Implementation of the No Build Alternative will result in the lowest total daily transit ridership of 1,515,818 and the second fewest urban rail daily combined boardings of 154,805 for the Blue Line, Pasadena Gold Line, Gold Line Extension, and Expo Line.

For the No Build Alternative, two key intersections operate at LOS E and three operate at LOS F during the AM peak hour. The remaining intersections operate at LOS D or better. The number of intersections operating at LOS E and F is three and two respectively during the PM peak hour. In addition, 12 roadway segments operate at LOS E or LOS F.

This alternative will not displace any existing on-street parking or loading spaces or reduce the number of traffic lanes.

TSM Alternative

This alternative has the fewest daily urban rail boardings, 153,843, for the Blue Line, Pasadena Gold Line, Gold Line Extension, and Expo Line combined, due to the implementation of shuttle buses connecting the 7th St./Metro Center Station with Union Station. Although the TSM Alternative results in fewer rail boardings, it will produce 1,516,768 total transit trips each day, 950 more daily trips than the No Build Alternative. Thus, the TSM Alternative is expected to slightly improve overall transit service.

Like the No Build Alternative, the TSM Alternative has two key intersections operating at LOS E and three operating at LOS F during the AM peak hour. The remaining intersections operate at LOS D or better. The number of intersections operating at LOS E and F changes to three and two respectively during the PM peak hour. In addition, 12 roadway segments will operate at LOS E or LOS F.

Like the No Build Alternative, the TSM Alternative would not require the displacement of any existing on-street parking or loading spaces, or a reduction in traffic lanes.

At-Grade Emphasis LRT Alternative Option A

The At-Grade Emphasis Alternative with Option A ranks lowest with regard to ridership of the build LRT alternatives, with 1,523,435 total daily transit trips. However, it still creates 7,617 more daily trips than the No Build Alternative and 6,667 daily trips over the TSM Alternative. It also results in the fewest daily urban rail boardings of 165,691 compared to Option B and the Underground Emphasis LRT Alternative, but far more than the No Build and TSM Alternatives.

The at-grade operation along 2nd St. will result in the reduction of roadway capacity and the diversion of through traffic to adjacent roadways such as 1st St. to the north and 3rd St. to the south. However, local access will be maintained to serve the adjacent businesses and

office buildings. This shift in traffic flow patterns will cause seven key intersections to operate at LOS E or LOS F in the AM peak hour, and 13 during the PM peak hour. A total of 14 roadway segments will operate at LOS E or F, with the majority operating at LOS F.

The operation of at-grade LRT service along 2nd St., will necessitate the removal of 35 on-street parking and loading spaces. In addition, approximately 9 spaces may also be lost along the south side of Temple St. just west of Alameda St.

At-Grade Emphasis LRT Alternative Option B

Alternative with Option B ranks second in ridership and urban rail boardings, with 1,524,207 total trips and 167,615 boardings each day. A comparison to the No Build and TSM Alternatives reveals that it will produce 8,389 and 7,439 additional daily transit trips, respectively.

Option B is practically identical to Option A, except it has a longer at-grade section along Flower St. and an at-grade center platform station at the World Trade Center. As noted previously, at-grade operation along 2nd St. will result in the reduction of roadway capacity and the diversion of through traffic to adjacent roadways such as 1st St. to the north and 3rd St. to the south. However, local access will be maintained to serve the adjacent businesses and office buildings. Consequently, seven key intersections will operate at LOS E or LOS F in the AM peak hour, 13 during the PM peak hour. A total of 14 roadway segments will operate at LOS E or F with the majority of these locations operating at LOS F.

The at-grade LRT service along 2nd St. will displace a total of 35 on-street parking and loading spaces. In addition, approximately 9 spaces may be lost along the south side of Temple St. just west of Alameda St.

Underground Emphasis LRT Alternative

The ridership evaluation shows the Underground Emphasis LRT Alternative to be the best performer, producing a total of 1,526,017 daily transit trips. This alternative would result in 10,199 more daily transit trips than the No Build Alternative, and 9,249 more than TSM. It would also yield the most daily urban rail boardings at 169,288.

Due to its mostly underground configuration, this alternative will not compromise existing roadway capacity. Similar to the No Build and TSM Alternatives, five key intersections will operate at LOS E or LOS F during the AM peak period, four during the PM peak hour. The proposed Alameda St. underpass at 1st St. will help improve the operation of the intersection. Like the No Build and TSM Alternatives, a total of 12 roadway segments operate at LOS E or LOS F. Minor diversions of several turn movements at the intersection of Alameda and 1st Sts. will occur due to the proposed underpass and associated frontage road configurations.

The proposed underpass along Alameda St. is expected to displace about 20 parking spaces in the northbound direction south of 1st St.

3.5 Conclusions

Each of the alternatives was evaluated in terms of ridership, potential traffic impacts and parking losses. As explored above, the build LRT alternatives will result in significant increases in total transit ridership and urban rail boardings, with the Underground Emphasis LRT Alternative achieving the highest ridership performance.

From a roadway and intersection evaluation perspective, the Underground Emphasis LRT Alternative runs mostly underground, so there will be minimal disruption to traffic operations and flow patterns. The existing downtown roadway capacity will be maintained, and access to businesses and office buildings will not be compromised. In most cases, existing turn movements will be permitted, except at the proposed Alameda St. underpass and frontage roads, where several turn movements will be prohibited and traffic will need to use alternate routes. Overall, the operating conditions at the key intersections and roadway segments will mirror those of the No Build and TSM Alternatives.

On the other hand, the At-Grade Emphasis LRT Alternative will reduce roadway capacity along several segments due to the addition of grade crossings and street-running tracks. The proposed dedication of 2nd St. as a transit roadway will alter traffic flow patterns in the vicinity of the alignment. Local access will be maintained, but through traffic will be diverted to adjacent parallel streets, such as 1st and 3rd Sts. Crossing the rail tracks will be prohibited except at controlled signalized intersections. A vehicular underpass and pedestrian overpass are proposed near the junction with the Metro Gold Line Eastside Extension tracks at 1st and Alameda Sts. to minimize vehicular, pedestrian, and rail conflicts as wells as reduce potential delays along Alameda St. Operating conditions at the key intersections and roadway segments will be worse than the No Build and TSM Alternatives.

With respect to on-street parking and loading spaces, the At-Grade Emphasis LRT Alternative will displace 35 spaces along 2nd St. An additional 9 spaces may be removed along the south side of Temple Street in the block west of Alameda St. to accommodate the underpass. The Underground Emphasis LRT Alternative is expected to displace about 20 parking spaces along the east side of Alameda Street south of 1st St. to accommodate the proposed underpass and frontage roads.