CALIFORNIA HIGH-SPEED TRAIN

Program Environmental Impact Report/Environmental Impact Statement

Bakersfield-to-Los Angeles

TRAFFIC, TRANSIT, CIRCULATION & PARKING TECHNICAL EVALUATION

January, 2004

Prepared for:

California High-Speed Rail Authority

U.S. Department of Transportation
Federal Railroad Administration

CALIFORNIA HIGH SPEED RAIL AUTHORITY

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CALIFORNIA HIGH-SPEED TRAIN PROGRAM EIR/EIS

Bakersfield-to-Los Angeles Traffic, Transit, Circulation & Parking Technical Evaluation

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CALIFORNIA HIGH-SPEED RAIL AUTHORITY
U.S. Department of Transportation
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ACRONYMS

AUTHORITY	CALIFORNIA HIGH-SPEED RAIL AUTHORITY
ADT	AVERAGE DAILY TRAFFIC
CEQA	CALIFORNIA ENVIRONMENTAL QUALITY ACT
COG	COUNCIL OF GOVERNMENTS
EIR	ENVIRONMENTAL IMPACT REPORT
EIS	ENVIRONMENTAL IMPACT STATEMENT
EPA	ENVIRONMENTAL PROTECTION AGENCY
FAA	FEDERAL AVIATION ADMINISTRATION
FHWA	FEDERAL HIGHWAY ADMINISTRATION
FRA	FEDERAL RAILROAD ADMINISTRATION
FTA	FEDERAL TRANSIT ADMINISTRATION
HCM	HIGHWAY CAPACITY MANUAL
HCS	HIGHWAY CAPACITY SOFTWARE
HST	HIGH-SPEED TRAIN
LAUS	LOS ANGELES UNION STATION
LOS	LEVEL OF SERVICE
LOSSAN	LOS ANGELES/SAN DIEGO RAIL CORRIDOR
MTA	METROPOLITAN TRANSPORTATION AUTHORITY
RTP	REGIONAL TRANSPORTATION PLAN
SCAG	SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS
V/C	VOLUME TO CAPACITY

1.0 INTRODUCTION

The traffic, transit, circulation and parking analyses for this program-level EIR/EIS were focused on a broad comparison of potential impacts to traffic, transit, circulation and parking along corridors for each of the alternatives (modal and high-speed train alternatives) and around stations. The potential impacts for each of these alternatives were compared with the No-Project Alternative.

Highway, roadways, passenger transportation services (bus, rail, air, and intermodal), transit facilities, goods movements and parking issue were evaluated in the analyses. Transportation facilities, highways and roadways included in the analyses: 1) serve as the primary means of access to proposed rail stations as well as highway/roadway improvements/ airport facilities in the Modal Alternative; and 2) are identified in the No-Project Alternative as intercity highway routes or are major routes parallel to those identified in the No-Project Alternative.

Initial analysis included identifying primary routes to be considered including highways designated in the No-Project and Modal alternatives and all modes of access to the stations areas and airport areas in the Modal and HST Alternatives, respectively. The primary routes/modes of access for the stations and airports considered assumptions for distribution of trips by direction.

Once primary routes were identified, intercity highway screenlines and cordons combining segments of the primary routes that reasonably represent locations for evaluating in the aggregate baseline traffic and public passenger transportation conditions (using data for 2002, 2020 or other similar years as available) in the morning peak-hour were selected. No new traffic counts were made where data was not available, and the respective MPO regional travel forecasting models were assumed sufficiently accurate for purposes of forecasting traffic on the screenlines or cordons chosen. Baseline (2002 and 2020 as available data allowed) ratios of demand to capacity across each intercity highway screenline and cordon for roadway and public transportation facilities were then established using Highway Capacity Manual standards for capacity.

Trip generation was then calculated by adding to baseline volumes forecasted 2020 demand for high-speed rail and (for the Modal alternative) airports, or highways comprising alternatives, plus local trips in 2020 generated by project-related development (as data are available) and trips due to induced growth. Additional trips were distributed to the identified cordons (roadway and public transportation) and added those trips to the appropriate baseline volumes for each cordon. Next, additional trips were distributed for selected intercity highway screenlines (segments/links) on primary regional routes and modes of access to stations and similar facilities by adding No-Project volumes obtained from 2020 forecasts (from regional and local agencies), and 2020 travel demand generated by alternatives, to the key accessing facilities (roadways, transit links). This distribution was done at a screenline level to reduce the subjectivity of assigning trips to specific facilities.

Next, baseline conditions were characterized for goods movement (truck/freight) in the general area of study (primarily to identify key goods movement means/corridors) and for parking in the vicinity of stations and airports. Summary tables for the region were then completed that identify impacts on highways/roadways (at screenline), public transportation services, goods movement, and parking facilities.

The potential impacts for each of these alternatives are compared with the Future Baseline/No-Project (2020) Alternative. This comparison was conducted for highways, roadways, passenger transportation services (bus, rail, air, intermodal), transit facilities, goods movements and parking. Transportation facilities, highways and roadways included in the analyses were those that: 1) serve as the primary means of access to proposed rail stations and airport facilities and 2) are within one mile of proposed rail stations. The HST Alternative assesses the A.M. peak hour traffic demand and compares the network operations to the Future Baseline/No-Project Alternative. Existing traffic counts and future year traffic

forecasts were provided by Caltrans and respective Metropolitan Planning Organizations (MPO). The following section describes in more detail the several components of each of these three alternatives.

1.1 ALTERNATIVES (NO-PROJECT, MODAL, HST)

1.1.1 No-Project Alternative

The No-Project Alternative, or Future Baseline/No-Project (2020) Alternative, serves as the baseline for the comparison of Modal and High-Speed Train alternatives (Figure 1.1-1). This Future Baseline/No-Project (2020) Alternative represents the State's transportation system (highway, air, and conventional rail) as it exists today and as it would after implementation of programs or projects currently programmed for implementation and projects that are expected to be funded by 2020. The Future Baseline/No-Project (2020) Alternative addresses the geographic area serving the same intercity travel market as the proposed high-speed train (generally from Sacramento and the San Francisco Bay Area, through the Central Valley, to Los Angeles and San Diego) and satisfies the statutory requirements under CEQA and NEPA for an alternative that does not include any new action or project beyond what is already committed.

The Future Baseline/No-Project (2020) Alternative transportation system is derived from the following sources of information:

- State Transportation Improvement Program (STIP)
- Regional Transportation Plans (RTPs) for all modes of travel
- Airport plans
- Intercity passenger rail plans (California Rail Plan 2001-2010, Amtrak Five- and Twenty-year Plans)

Recent history and the uncertainties of transportation financing in California point to a reality that many of the improvements identified in those plans will not be implemented, even by 2020. That notwithstanding, the No-Project Alternative is the best projection that can be made of year 2020 conditions, based on current local and regional planning policy.

As with all of the alternatives, the No-Project Alternative will be assessed against the purpose and need topics/objectives for congestion, safety, air pollution, reliability, and travel times.

1.1.2 Modal Alternative

There are currently three main options for intercity travel between the major urban areas of San Diego, Los Angeles, the Central Valley, San Jose, Oakland/San Francisco, and Sacramento: vehicles on the interstate highway system and state highways, commercial airlines serving airports between San Diego and Sacramento and the Bay Area, and conventional passenger trains (Amtrak) on freight and/or commuter rail tracks. The Modal Alternative includes expansion of highways, airports, and intercity and commuter rail systems serving the markets identified for the High Speed Train Alternative (Figures 1.1-2 and 1.1-3). The Modal Alternative uses the same inter-city travel demand (not capacity) as is assumed in the High Speed Train Alternative. This travel demand is assigned to the highways and airports and passenger rail described under the Future Baseline/No-Project (2020) Alternative, with additional improvements or expansion of facilities assumed to meet the demand, regardless of funding potential and without high-speed train service as part of the system.

Figure 1.1-1
No-Project Alternative – California Transportation System

Figures 1.1-2
Modal Alternative – Highway Component

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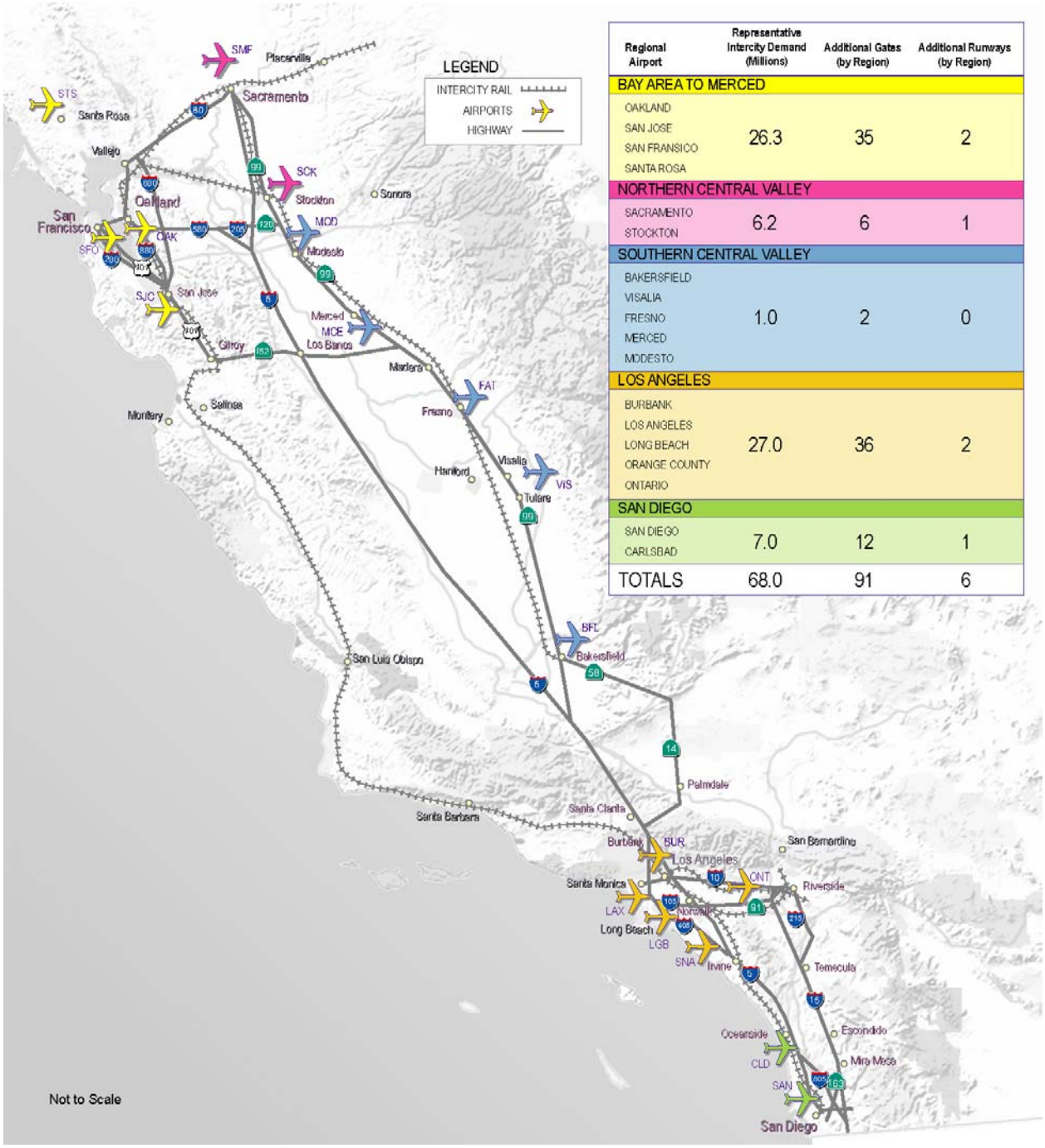
Figures 1.1-3
Modal Alternative – Aviation Component



Regional Airport	Representative Intercity Demand (Millions)	Additional Gates (by Region)	Additional Runways (by Region)
BAY AREA TO MERCED			
OAKLAND SAN JOSE SAN FRANSICO SANTA ROSA	26.3	35	2
NORTHERN CENTRAL VALLEY			
SACRAMENTO STOCKTON	6.2	6	1
SOUTHERN CENTRAL VALLEY			
BAKERSFIELD VISALIA FRESNO MERCED MODESTO	1.0	2	0
LOS ANGELES			
BURBANK LOS ANGELES LONG BEACH ORANGE COUNTY ONTARIO	27.0	36	2
SAN DIEGO			
SAN DIEGO CARLSBAD	7.0	12	1
TOTALS	68.0	91	6

The Modal Alternative adds capacity in discrete amounts to roadways and airports throughout the state. With the implementation of such an alternative, the traveling public is likely to respond to this new capacity by making use of the improved facilities for all trips; not just intercity trips. For example, on roadways where capacity is added traffic congestion may well be eased, making a particular roadway more attractive a route for travel than it had been previously; this new traffic will not necessarily be only intercity traffic but rather shorter trips within a region. An analogous situation at airports would be where transcontinental or international flights make use of the capacity that was added to meet the intercity demand. In the case of both roadways and airports, it is entirely possible that as the forecasted intercity demand is realized it will compete for capacity with non-intercity traffic in the air and on the road. This phenomenon cannot be evaluated quantitatively at the scale of this analysis; suffice it to say that the assessment of the Modal Alternative is likely to give an optimistic picture of the consequences of adding capacity to roadways and airports in terms of congestion and level of service.

1.1.3 High-Speed Train Alternative

The Authority has defined a statewide high-speed train system capable of speeds in excess of 200 miles per hour (mph) (320 kilometers per hour [km/h]) on dedicated, fully grade-separated tracks, with state-of-the-art safety, signaling, and automated train control systems. State of the art high-speed steel-wheel-on-steel-rail technology is being considered for the system that would serve the major metropolitan centers of California, extending from Sacramento and the San Francisco Bay Area, through the Central Valley, to Los Angeles and San Diego. (Figure 1.1-4)

Figure 1.1-4
High-Speed Train Alternative

The High-Speed Train Alternative includes several corridor and station options. A steel-wheel on steel-rail, electrified train, primarily on exclusive right-of-way with small portions of the route on shared track with other rail is planned. Conventional "non-electric" improvements are also being considered along the existing LOSSAN rail corridor from Los Angeles to San Diego. The train track would be either at-grade, in an open trench or tunnel, or on an elevated guideway, depending on terrain and physical constraints.

For purposes of comparative analysis the HST corridors will be described from station-to-station within each region, except where a by-pass option is considered when the point of departure from the corridor will define the end of the corridor segment.

The High-Speed Train Alternative includes several corridor and station options. Steel-wheel on steel-rail, electrified train, primarily on exclusive right-of-way with small portions of the route on shared track with other rail is planned. Conventional "non-electric" improvements are also being considered along the existing LOSSAN rail corridor from Los Angeles to San Diego. The train track would be either at-grade, in an open trench or tunnel, or on an elevated guideway, depending on terrain and physical constraints.

As intercity trips are diverted to the proposed HST system, the highway and aviation facilities will initially become less congested. The traveling public is likely to respond to this newly available capacity by making use of the facilities for all trips; not just intercity trips, similar to the situation described for the additional capacity in the Modal Alternative. Again, this phenomenon cannot be evaluated quantitatively at the scale of this analysis; suffice it to say that the assessment of the HST Alternative is likely to give an optimistic picture of the consequences of relieving congestion on roadways and airports in terms of level of service.

This Program Level Environmental Impact Report (EIR) assesses two possible train routes between Bakersfield and Sylmar. One generally follows the Interstate 5 corridor through the Angeles National Forest, and the other follows the SR 58 to SR 14 corridor through the Antelope Valley. From Sylmar to downtown Burbank, the proposed train alignment generally follows the Metrolink/Union Pacific rail corridor. South of downtown Burbank, there are two possible alignments: the I-5 corridor or the Metrolink/UPRR corridor. Two station locations for Burbank are assessed in this study; there is one at the Burbank Airport and one in downtown Burbank. However, only one of these stations will be constructed. Similarly in downtown Los Angeles, there are three potential station sites in the vicinity of LA Union Station. Again only one of these station sites will be selected.

2.0 BASELINE/AFFECTED ENVIRONMENT

2.1 STUDY AREA

The regional transportation facilities in the study area are critical to statewide and interstate travel and goods movement. I-5 is a very critical link as it is the primary highway link between Southern California and Northern California and the San Joaquin Valley. SR 14, on the west side of the San Gabriel Mountains, is the primary connection between the Antelope Valley, eastern California, and Los Angeles. The study area rail lines are also important not only to goods movement but for commuter travel via the Metrolink system.

This study includes two specific types of traffic analyses to determine potential future impacts as a result of the High-Speed Train Alternative and the Modal Alternative. The first analysis, the "system screenline" or "screenline analysis," assesses the regional highway system between Bakersfield and Los Angeles on a macro level at several different freeway locations, or "screenlines." Screenlines are simply different locations on the freeway network that are analyzed to determine the overall operating characteristic of the area of the screenline. An aggregate weighted average of traffic operations at all screenlines is then made to determine the overall impact to the freeway network between Bakersfield and Los Angeles to provide comparative results for evaluating the various alternatives based on intercity travel.

The second analysis, the "station analysis", focuses on the traffic operations in the immediate vicinity of the proposed train station sites. This involves comparing the forecast operations of the major roadways and highways within a one-mile radius of the proposed station sites to determine potential deficiencies in roadway capacity.

The Bakersfield-to-Los Angeles (LA) High-Speed Train corridor has up to four potential stations along the 109-mile segment. Two potential station locations in Burbank and three potential station locations at Los Angeles Union Station are considered in this report. The station location alternatives analyzed in this study are listed below:

- Palmdale Transportation Center[1]
- Sylmar Station
- Burbank Airport Station
- Burbank Downtown Station
- LA Union Station
- LA Union Station South
- LA Union Station East Bank

The Burbank Airport and LA Union Stations sites are also analyzed in the Modal Alternative. The reason for their inclusion is that airport improvements assumed in the Modal Alternative will result in increased traffic in and around these locations.

This Program Level Environmental Impact Report (EIR) is assessing two proposed train alignments between Bakersfield and Sylmar. One generally follows the Interstate 5 corridor through the Angeles National Forest, and the other follows the SR 58 to SR 14 corridor through the Antelope Valley. From Sylmar to downtown Burbank, the proposed train alignment generally follows the Metrolink rail corridor. South of downtown Burbank, there are two alternate routes, on generally following I-5 and the other along the Metrolink UPRR tracks.

[1] This report refers to the Palmdale Transportation Center as the Palmdale Station.

The proposed Palmdale Station location is a component of the SR 58 to SR 14 corridor through the Antelope Valley. The two Burbank Station alternatives and the three Union Station alternatives will be assessed and compared with each other to help determine the most suitable location for the high-speed rail stations in Burbank and downtown Los Angeles. It is also possible that either a Sylmar or a Burbank station site would be included in the HST system.

2.2 GENERAL DESCRIPTION OF TRANSPORTATION FACILITIES

For each proposed station site, the transportation network within a one-mile radius was evaluated. The following narrative describes the existing roadway network in the vicinity of each station. Additionally, descriptions of planned improvements in the study area assumed to be in place by 2020 are also provided. Also included in this section is a brief description of all assumed improvements for the Modal Alternative, including airport and corridor improvements that have been assumed for the Future Baseline/No-Project (2020) Alternative and the High-Speed Train Alternative.

2.2.1 Palmdale Station

The proposed Palmdale Station is located along the west side of Sierra Highway, north of the intersection with East Avenue Q. Figure 2.2-1 shows the proposed station location. The Palmdale site is located in close proximity to Palmdale Airport (approximately 2.3 miles) and provides an opportunity for shuttle or people-mover service to connect the two facilities. The proposed site is approximately 1.3 miles east of the SR 14 freeway and is connected by an existing arterial street network. The site is adjacent to the site of the proposed Palmdale Transportation Center.

For the Future Baseline/No-Project (2020) Alternative, there are no programmed improvements within one mile of the proposed Palmdale Station area. It should be noted that the widening of SR 14 between Avenue P-8 and Avenue L to three lanes in each direction is included in both the existing Baseline and Future Baseline calculations. While not programmed, the realignment of SR 138 off of Palmdale Boulevard to north of the Transportation Center site is under consideration. Within the study area, SR 14 will have one additional lane (each direction) in the Modal Alternative. Table 2.2-1 identifies the study road segments within the Palmdale Station study area and the following discussion briefly describes the roadways. The study road segments for the proposed train station include the following:

Table 2.2-1
Study Road Segments – Palmdale Station

Roadway	Section Limits
State Route (SR) 138	SR 14 to 15th Street
Sierra Highway	East Avenue P to East Avenue R
State Route 14	East Avenue P to East Avenue R
East Avenue P	SR 14 to 15th Street
East Avenue Q	Sierra Highway to 15th Street
East Avenue R	SR 14 to 15th Street

Figure 2.2-1
Palmdale Station Location Map

A. Regional Arterials[2]

State Route 138 (SR 138) is the primary east-west route, which also serves as the "main street" in downtown Palmdale. As mentioned previously, the realignment of SR 138 off of Palmdale Boulevard to north of the Transportation Center site is under consideration but not programmed into any study alternatives. SR 138 carries three lanes of traffic in both directions and provides a center turn lane for left-turns. The posted speed along this corridor is 40 mph.

Sierra Highway is a five-lane undivided highway with a posted speed of 55 mph through the study area. Sierra Highway parallels SR 14 to the east from south of Mojave to south of Palmdale. SR 14 extends from the San Fernando Valley in Los Angeles County through Palmdale to the Mojave Desert. SR 14 provides a northeast to southwest link from urban areas in Los Angeles County to newer communities in the Antelope Valley area. Within the study area, this facility has four travel lanes south of Avenue P and six lanes north of Avenue P. The existing average daily traffic observed on State Route 14 is approximately 59,000 vehicles per day with interchanges at East Avenue P and Palmdale Boulevard.

B. Major Arterials

East Avenue P (Rancho Vista Boulevard) is oriented in an east-west direction with a posted speed limit ranging from 50-60 mph. East Avenue P carries two lanes of traffic in either direction and provides a continuous center turn lane for left-turns. East Avenue P is undivided, except for the section from East 8th Avenue to the Sierra Highway where there is a raised median.

East Avenue R is another significant east-west arterial that carries five lanes of traffic from Sierra Highway to the east. Within the study area, the posted speed limit is 40 mph. East Avenue R crosses under State Route 14, but does not have an interchange.

2.2.2 Sylmar Station

The existing Sylmar Metrolink Station is located west of First Street and north of N. Hubbard Avenue in Sylmar. Figure 2.2-2 shows the proposed Sylmar Station location. The Sylmar site is located approximately 9 miles from Burbank Airport in an area where a large number of freeways come together at the base of the Interstate 5 crossing of Tejon Pass. The Sylmar Station site is approximately 1.1 miles east of I-5, 2.1 miles east of I-405, and 1.7 miles north-west of SR-118.

For the Future Baseline/No-Project (2020) conditions and the HST Alternative, there are no programmed improvements within one mile of the Sylmar Station. In the Modal Alternative within the study area, Interstate 5 will have two additional lanes (each direction). Table 2.2-2 identifies the study road segments within the Sylmar Station study area and the following discussion briefly describes the roadways. The study road segments for the proposed station site include the following:

Table 2.2-2
Study Road Segments – Sylmar Station

Roadway	Section Limits
Interstate 5 (I-5)	I-405 to San Fernando Mission Boulevard
Interstate 405 (I-405)	San Fernando Mission to I-5
Hubbard Street	Laurel Canyon Road to Glenoaks Boulevard
San Fernando Road	Polk Street to Maclay Avenue
San Fernando Mission Boulevard	Laurel Canyon Road to Truman Street
Truman Street	Hubbard Street to Maclay Avenue

[2] Functional Classifications are based on the City of Palmdale General Plan Circulation Element (1993).

Figure 2.2-2
Sylmar Station Location Map

A. Freeways

Interstate 5 (I-5) is an interstate regional transportation corridor that also extends the entire length of the United States from Canada to Mexico. Within the California Highway system, I-5 connects the major urban centers of Sacramento, Los Angeles, Orange County, and San Diego. Inside the study area, I-5 provides primary north-south regional access to the station site. The I-5 interchange that provides the most direct access to the site is at San Fernando Mission Boulevard. I-5 carries an average daily traffic (ADT) volume of approximately 88,000 vehicles per day in the vicinity of the project site. Interstate 405 (I-405), also known as the "San Diego Freeway", provides a regional link for intercity travelers through the South Bay and the beach cities of Orange County. I-405 extends from the junction with I-5 in San Fernando, traversing through western Los Angeles and Orange County, and terminating at the I-5 junction near Irvine. Within the study area, I-405 provides north-south regional access to the station site and carries approximately 106,000 vehicles per day.

B. Major Highways[3]

Hubbard Street is a four-lane (two lanes in each direction) undivided facility with a center turn lane. The posted speed limit is 35 mph and parking is permitted on the roadway. Existing traffic volumes on Hubbard Street range from 20,000 to 32,000 ADT in the study area.

San Fernando Road is a four-lane (two lanes in each direction) undivided facility with a center turn lane. The posted speed limit is 35 mph between San Fernando Mission Boulevard and Hubbard Street and 40 mph between Hubbard Street and Polk Street. In the study area, existing traffic volumes range from approximately 25,000 to 42,000 vehicles per day.

C. Secondary Highways

San Fernando Mission Boulevard is an undivided roadway with four travel lanes (two lanes in each direction). The posted speed limit within the study area is 35 mph.

D. Collector Streets

Truman Street is oriented in a north-south direction running parallel and just to the east of San Fernando Road.

First Street is a two-lane undivided road with a posted speed of 30 mph that provides direct access to the existing Sylmar Metrolink Station.

2.2.3 Burbank Airport Station

For the HST Alternative, the Burbank Airport Station is located between San Fernando Boulevard and San Fernando Road, just northwest of N. Hollywood Way and northwest of Burbank Airport. The proposed Burbank Airport Station location is shown on Figures 2.2-3 and 2.2-4. The station site is approximately 1.2 miles from the existing Burbank Airport terminal and 0.5 miles west of I-5. For the Future Baseline/No-Project (2020) conditions, there are no programmed improvements within one mile of the Burbank Airport Station.

[3] Functional Classifications are based on the City of Los Angeles Transportation Element of the General Plan (1999).

Figure 2.2-3
Burbank Airport Station Location Map

Figure 2.2-4
Burbank Airport Location Map

For the Modal Alternative, within the study area, the Burbank Airport will have five new gates and one new runway and Interstate 5 will have two additional lanes (each direction). Table 2.2-3 identifies the study road segments within the Burbank Airport Station study area and the following discussion briefly describes the roadways. The study road segments for this proposed station site include the following:

Table 2.2-3
Study Road Segments – Burbank Airport Station

Roadway	Section Limits
Interstate 5 (I-5)	Sunland Boulevard to Buena Vista Street
Glenoaks Boulevard	Sunland Boulevard to Buena Vista Street
Vanowen Street	Vineland Avenue to N. Hollywood Way
Vineland Avenue	San Fernando Road to Vanowen Street
N. Hollywood Way	Glenoaks Boulevard to Vanowen Street
San Fernando Road	Vineland Avenue to Buena Vista Street

A. Freeways

Within the study area, I-5 provides primary north-south regional access to the station site. I-5 interchanges that provide access to the site are at Sunland Boulevard, N. Hollywood Way, and San Fernando Road. I-5 carries an average daily traffic (ADT) volume of approximately 128,000 vehicles per day in the vicinity of the project site.

B. Major Arterials[4]

Glenoaks Boulevard is oriented in a north-south direction located on the east side of I-5 with four travel lanes and a continuous center turn lane. Within the study area, the posted speed limit ranges from 35 to 45 mph.

Vanowen Street is an east-west oriented facility with four travel lanes and a continuous center turn lane. The existing average daily traffic on Vanowen Street is approximately 27,000 vehicles per day.

Vineland Avenue is a four lane north-south oriented roadway with a posted speed limit of 35 mph, located west of the airport.

N. Hollywood Way is a four lane undivided facility from Glenoaks Boulevard to San Fernando Boulevard and a six lane undivided roadway south of San Fernando Boulevard. Within the study area, the posted speed limit is 35 mph and the existing average daily traffic (ADT) is approximately 44,000 vehicles per day.

2.2.4 Burbank Downtown Station

The Burbank Downtown Station site is located just west of Interstate 5 and south of Olive Avenue at the existing Burbank Metrolink Station. Figure 2.2-5 shows the proposed Burbank Downtown Station location. For the Future Baseline/No-Project (2020) conditions and the HST Alternative, there are no programmed improvements within one mile of the Burbank Downtown Station.

[4] Functional Classifications are based on the City of Burbank Transportation Element, Preliminary Draft (1994).

Figure 2.2-5
Burbank Downtown Station Location Map

In the Modal Alternative, within the study area, Interstate 5 will have two additional lanes (each direction). Table 2.2-4 identifies the study road segments within the Burbank Downtown Station study area and the following discussion briefly describes the roadways. The study road segments for the proposed station site include the following:

Table 2.2-4
Study Road Segments – Burbank Downtown Station

Roadway	Section Limits
Interstate 5 (I-5)	Burbank Boulevard to Alameda Avenue
Glenoaks Boulevard	Magnolia Boulevard to Alameda Avenue
Olive Avenue	N. Victory Boulevard to Glenoaks Boulevard
Alameda Avenue	S. Main Street to Glenoaks Boulevard
Front Street	Magnolia Boulevard to Verdugo Avenue
Magnolia Boulevard	N. Victory Boulevard to Glenoaks Boulevard
E. Verdugo	Front Street to Glenoaks Boulevard
San Fernando Road	Magnolia Boulevard to Alameda Avenue

A. Freeways

Within the study area, I-5 provides primary north-south regional access to the station site. I-5 interchanges that provide access to the site are located at San Fernando Boulevard, Burbank Boulevard, Front Street, and Alameda Avenue. I-5 carries an average daily traffic (ADT) volume of approximately 160,000 vehicles per day in the vicinity of the project site.

B. Major Arterials [5]

Glenoaks Boulevard is a four lane undivided roadway with a continuous center turn lane and a speed limit ranging from 30 to 35 mph in the study area. Glenoaks carries an average daily traffic volume of approximately 18,000 vehicles per day in the vicinity of the project site.

Alameda Avenue is a four lane undivided roadway with a posted speed limit of 35 mph. Alameda Avenue carries approximately 38,000 vehicles per day between Main Street and Glenoaks Boulevard. According to the City Transportation Element, Alameda Avenue is designated as a truck route for vehicles with three or more axles.

Olive Avenue has a posted speed limit of 35 mph with four travel lanes. Olive, Alameda, and Magnolia provide the only continuous east-west (northeast-southwest) access across I-5 and the rail corridor, west of downtown Burbank.

C. Secondary Arterials

Front Street is designated as a secondary arterial from Burbank Boulevard to Verdugo Avenue and is a two lane facility with a posted speed limit of 35 mph. Front Street provides direct access to the existing Metrolink facility.

Magnolia Boulevard is a four lane roadway with a posted speed limit of 35 mph.

East Verdugo Avenue is a four lane facility.

[5] Functional Classifications are based on the City of Burbank Transportation Element, Preliminary Draft (1994).

2.2.5 Los Angeles Station(s)

For the HST Alternative, the three station options for the downtown Los Angeles area include: existing Los Angeles Union Station (LAUS), proposed LAUS South, and proposed LAUS East Bank. Figures 2.2-6, 2.2-7, and 2.2-8 show the three proposed station locations, respectively. The Existing LAUS site is located just north of U.S. 101 and is directly accessed via Cesar Chavez Avenue and Alameda Street. Proposed LAUS South Station is located just south of U.S. 101, east of Alameda Street, and west of the Los Angeles River. The LAUS East Bank Station site is located south of U.S. 101 and east of the Los Angeles River. All three sites are approximately 12.5 miles from Los Angeles International Airport (LAX). The Union Station sites are in close proximity to many freeways including the I-5, I-110, SR-60, and I-10. Because all three proposed HST locations are in close proximity, the study road segments were assumed to be the same for all three Los Angeles station locations.

For the Future Baseline/No-Project (2020) conditions and the HST Alternative, there are no programmed improvements within one mile of the Union Station study areas. In the Modal Alternative, Interstate 5 will have two additional lanes (each direction). Table 2.2-5 identifies the study road segments within the Los Angeles Union station study area and the following discussion briefly describes the roadways.

Table 2.2-5
Study Road Segments – LA Union Station

Roadway	Section Limits
Interstate 5 (I-5)	Mission to I-10
Interstate 10 (I-10)	I-5 to U.S. 101
US Highway 101	Broadway to 1st Street
Cesar Chavez Avenue	Figueroa to Mission
Alameda Street	4th Street to N. Main Street
S. Broadway Street	4th Street to Cesar Chavez Avenue

A. Freeways

Within the study area, I-5 provides primary north-south regional access to the station area with an existing average daily traffic (ADT) of approximately 169,000 vehicles per day.

Interstate 10 (I-10) traverses the United States connecting Jacksonville, Florida and Santa Monica, California. In Southern California, I-10 is a primary east-west facility connecting the Los Angeles County urban areas with San Bernardino and Riverside Counties. I-10 carries a significant amount of interstate passenger and freight traffic through the Southern California region. Within the study area, I-10 provides primary east-west regional access to the site carrying an existing average daily traffic (ADT) of approximately 206,000 vehicles per day.

U.S. Highway 101 is a major intercity roadway, providing interstate access between Los Angeles and Washington State. U.S. 101 is currently carrying approximately 138,000 vehicles per day between Broadway Street and Mission Street.

Figure 2.2-6
Los Angeles Union Station (LAUS) Station Location Map

Figure 2.2-7
Los Angeles Union Station (LAUS) South Station Location Map

Figure 2.2-8
Los Angeles Union Station LAUS East Bank Station Location Map

B. Major Highways[6]

Cesar Chavez Avenue provides direct access to Union Station via a driveway located approximately 350 feet east of Alameda Street. This access point is controlled by a traffic signal and exclusive lanes for left turns are provided. Within the study area, Cesar Chavez Avenue is a four lane undivided roadway with a 35 mph posted speed limit and carries approximately 78,000 vehicles per day.

Alameda Street is oriented in a north-south direction and provides direct access to the existing Los Angeles Union Station.

S. Broadway Street is a four lane facility.

Several key roadways were not included in the station analyses because of a lack of available existing traffic count data and forecasts. In many cases, these roadways will provide direct access to proposed station sites. This includes E. Avenue Q in Palmdale, 1st Street in Sylmar, Sunland Boulevard in Burbank, and 1st and 4th Streets in downtown Los Angeles. Many of these streets are not arterial roadways or regionally significant, so they are not included in the regional traffic model. These roadways should be examined in future analysis of transportation impacts around the station sites.

2.3 SCREENLINES OR CORDONS COMBINING SEGMENTS OF THE PRIMARY ROUTES

The intercity highway routes potentially affected by the proposed Bakersfield to Los Angeles High-Speed Train corridor include I-5, SR 99, SR 58 and SR 14. For the screenline analysis, these freeway facilities were divided up into links as shown on Table 2.3-1. The links were chosen at logical break points, in many cases either just north or south of an interchange with a major regional route or freeway. Seven locations were chosen along I-5, from Lakeview in the Central Valley to downtown Los Angeles. Three locations were chosen along SR 14 from Palmdale to Santa Clarita. No data or forecasts were available on SR 99, SR 58, and SR 14 (north of Palmdale). Therefore, these segments will not be included in the system screenline analysis. The following table gives the locations of the screenlines on the primary routes used in the system screenline analysis:

Table 2.3-1
System Screenline Analysis Segments

Roadway	Location	Southbound # of Lanes
Interstate 5	S/o SR 138 – Gorman	2
Interstate 5	N/o SR 14 – Santa Clarita	4
Interstate 5	N/o I-405 – San Fernando	6
Interstate 5	Sun Valley	4
Interstate 5	Downtown Burbank	4
Interstate 5	S/o SR 134 – Glendale	5
Interstate 5	S/o SR 110 – Los Angeles	4
State Route 14	N/o E. Avenue P – Palmdale	3
State Route 14	S/o SR 138 – Palmdale	3
State Route 14	N/o I-5 – Santa Clarita	5

[6] Functional Classifications are based on the City of Los Angeles Transportation Element of the General Plan (1999).

These corridors are all freeway facilities with medians and access control. Table 2.3-1 shows the number of southbound travel lanes that are currently on each of the facilities.

2.4 BASELINE RATIOS OF DEMAND TO CAPACITY ACROSS SCREENLINES OR CORDONS

Following the methodologies outlined in Section 3.0, existing baseline ratios of demand (volume) to capacity (V/C) were calculated for the freeway links in the screenline analysis assuming the existing infrastructure. This analysis will be discussed in further detail in Section 4.0. Table 2.4-1 summarizes the V/C ratios on the freeway facilities assessed in the screenline analysis.

Table 2.4-1
Existing Conditions System Screenline Analysis

Roadway	Location	V/C
Interstate 5	S/o SR 138 – Gorman	0.24
Interstate 5	N/o SR 14 – Santa Clarita	0.75
Interstate 5	N/o I-405 – San Fernando	1.18
Interstate 5	Sun Valley	1.54
Interstate 5	Downtown Burbank	1.96
Interstate 5	S/o SR 134 – Glendale	1.25
Interstate 5	S/o SR 110 – Los Angeles	1.37
State Route 14	N/o E. Avenue P – Palmdale	0.29
State Route 14	S/o SR 138 – Palmdale	0.36
State Route 14	N/o I-5 – Santa Clarita	0.82

The A.M. peak hour was chosen for all traffic analyses as it corresponds to the peak period of HST trip generation. The southbound direction is analyzed for all screenlines since the predominant movement in the A.M. on I-5 and SR 14 is in the southbound direction. Figure 2.4-1 shows the southbound A.M. peak hour volume from Table 2.4-1 at the ten locations along I-5 and SR 14. The results of the existing analysis, showing the baseline level of service on the roadways in each proposed station and airport study area, are shown on Figures 2.4-2 through 2.4-7.

Figure 2.4-1
System Screenline Analysis – Baseline Travel Volumes

Figure 2.4-2
Palmdale Station – Baseline Level of Service

Figure 2.4-3
Sylmar Station – Baseline Level of Service

Figure 2.4-4
Burbank Airport Station – Baseline Level of Service

Figure 2.4-5
Burbank Airport – Baseline Level of Service

Figure 2.4-6
Burbank Downtown Station – Baseline Level of Service

Figure 2.4-7
Los Angeles Union Station (LAUS) – Baseline Level of Service

2.5 BASELINE CONDITIONS FOR TRANSIT IN THE VICINITY OF STATION SITES

The proposed Palmdale station site is currently served by the Antelope Valley Transit Authority (AVTA) Routes 2 and 3. The current Sylmar Metrolink station is served by four local METRO bus routes (92/93, 94/394, 230, and 239) and three express routes (410, 561, and 574). The current Burbank Metrolink station is served by eight local METRO bus routes (94/394, 96, 152, 154, 164, 165, 183, and 410), the Media District and Downtown Burbank Shuttles, and Santa Clarita Transit Route 794.

The Los Angeles Union Station (LAUS) area is served by an extensive existing network of bus and rail routes. In the study area, the following transit agencies operate bus and/or rail services.

- Los Angeles County Metropolitan Transportation Authority (MTA)
- Foothill Transit
- City of Los Angeles Department of Transportation (LADOT)
- Santa Monica Municipal Bus Lines
- Torrance Transit
- Orange County Transportation Authority (OCTA)
- Santa Clarita Transit
- Antelope Valley Transportation Authority
- Metrolink
- Amtrak

2.6 BASELINE CONDITIONS FOR GOODS MOVEMENT (TRUCK/FREIGHT) IN THE STUDY AREA

2.6.1 Palmdale Station

The City of Palmdale's General Plan Circulation Element (1993) has adopted an ordinance which establishes truck routes within the City. Vehicles exceeding 10,000 pounds gross weight are required to use roadways designated as truck routes, except when delivering or otherwise servicing uses on other streets. Within the study area, Avenue P, Palmdale Boulevard, Avenue R, and Sierra Highway are designated as truck routes. In the immediate vicinity of the Palmdale Station site, rail traffic uses the Valley Mainline rail line which parallels Sierra Highway. The majority of the rail traffic on this line is used for freight by the UPRR. Metrolink also uses this rail line for commuter rail service to Los Angeles.

2.6.2 Sylmar Station

The existing Sylmar Metrolink Station is adjacent to the Antelope Valley Line which is part of the regional rail system of Metrolink. The Antelope Valley Line provides commuter rail services from the Sylmar area through Burbank and into Los Angeles Union Station. This rail line is also used for freight movement by the UPRR.

2.6.3 Burbank Airport Station

The Burbank Airport Station is adjacent to the Antelope Valley Line which is part of the regional rail system of Metrolink. The Antelope Valley Line provides commuter rail services from the Burbank area into Los Angeles Union Station. This rail line is also used for freight movement by the UPRR.

2.6.4 Burbank Downtown Station

The Burbank Downtown Station is adjacent to the Antelope Valley Line which is part of the regional rail system of Metrolink and is also used by Amtrak. This rail line is also used for freight movement by the UPRR.

2.6.5 LA Union Station

LA Union Station is primarily a multi-modal transit hub serving Metrolink and Amtrak trains with various transit options. The rail lines around the station connect freight routes that serve the southern California region. Freight is typically handled at other transfer facilities, while Union Station generally deals with passenger traffic.

2.7 BASELINE CONDITIONS FOR PARKING IN THE VICINITY OF STATIONS AND AIRPORTS

The proposed site for the Palmdale Station is mostly vacant land. The parking demand in the vicinity of the station is "low," as there few existing land uses in the vicinity of the station. In Sylmar, the proposed High-Speed Train station is located near the existing Metrolink Station. Little vacant land exists adjacent to the existing station, as the area surrounding the station is mostly built out. The parking for the Metrolink facility will not be available to the High-Speed Train patrons.

The proposed Burbank Airport Station will be adjacent to the airport, providing efficient access to the airport terminal from the station. Burbank Airport is located north of the City of Burbank and just west of I-5. The existing airport facility has two runways, 14 boarding gates, and approximately 5,200 parking spaces. The proposed location of the Burbank Airport Station is currently vacant land along the existing rail corridor, north of the airport. There is a residential neighborhood on the northeast side of the track which could experience spillover parking if insufficient parking is provided at the HST station site.

Under the Modal Alternative, there would be a major expansion of the Burbank Airport to accommodate inter-city trips. It is assumed that this expansion would include provision of additional on-airport parking. However this Alternative has the potential for parking impacts to the Burbank Airport area.

In downtown Burbank, the proposed High-Speed Train station is located near the existing Metrolink Station. Little vacant land exists adjacent to the existing station, as the land surrounding the station is mostly built out or railroad/freeway right-of-way. The parking for the Metrolink facility, as in Sylmar, will not be available to the High-Speed Train patrons. Los Angeles Union Station provides parking for the existing patrons of the heavy-rail, commuter rail, light-rail, and bus transit and transfer facility. The existing parking will not be available to the High-Speed Train patrons, and new parking will be necessary. At all proposed stations, it is assumed that new parking will be constructed for the High-Speed Train patrons.

3.0 EVALUATION METHODOLOGY

The traffic, transit, circulation and parking analyses for this program-level EIR/EIS were focused on a broad comparison of potential impacts to traffic, transit, circulation and parking along corridors for each of the alternatives (modal and high-speed train alternatives) and around stations. The potential impacts for each of these alternatives were compared with the No-Project/No-Action Alternative.

Highway, roadways, passenger transportation services (bus, rail, air, intermodal), transit facilities, goods movements and parking issue were evaluated in the analyses. Transportation facilities, highways and roadways included in the analyses: 1) serve as the primary means of access to proposed rail stations and airport facilities as well as highway/roadway improvements/new facilities in the Modal Alternative; and 2) are within one mile of proposed rail stations and (in the Modal Alternative) airports and major routes along alignment/highway corridors.

Initial analysis included identifying primary routes to be considered including highways designated in the No-Project and Modal alternatives and all modes of access to the stations areas and airport areas in the Modal and HST Alternatives, respectively. The primary routes/modes of access for the stations and airports considered assumptions for distribution of trips by direction.

Once primary routes were identified, screenlines or cordons combining segments of the primary routes which reasonably represent locations for evaluating in the aggregate baseline traffic and public passenger transportation conditions (using data for 2002, 2020 or other similar years as available) in the morning peak-hour were selected. The use of screenlines or cordons is necessitated by the scale of this analysis with its requirement to evaluate roadway conditions throughout the state. A more detailed analytical framework must necessarily be reserved for future analyses of individual projects.

Screenlines, especially on intercity highway links, have been selected to represent typical conditions. The data used in the evaluation of traffic volumes and capacities at the screenlines therefore are typical values based on averages over time and represented in traffic forecasting tools used by the regional transportation planning agencies. As such, the conditions indicated in the evaluation may not always reflect the experiences of travelers at any particular place at any specific time. For example, localized capacity restrictions (e.g., bottlenecks at a given interchange) are not well-represented in those regional traffic models. In addition, incidents on the road such as accidents and vehicle breakdowns (non-recurring congestion) are not represented in regional traffic models. This unpredictable type of incident is responsible for the majority of congestion in urban highway networks. The result of these limitations of the methodology and data used in this analysis is that many times the level of service shown in the evaluation may be more optimistic than what would actually be experienced on the roadway under the forecasted conditions. Thus, it is important to consider the differences between the alternatives compared versus focusing on the absolute value of the indicators (v/c, level of service).

No new traffic counts were made where data was not available, and the respective MPO regional travel forecasting models were assumed sufficiently accurate for purposes of forecasting traffic on the screenlines or cordons chosen. Next baseline conditions were evaluated using the following methodology:

- Baseline (2002 and 2020 as available data allowed) ratios of demand to capacity across each screenline or cordon for roadway and public transportation facilities were established using Highway Capacity Manual standards for capacity.

- Baseline conditions (2002, 2020) were established for roadways based on available counts of existing weekday-morning peak-hour traffic volumes on roadway segments (not intersections) to be analyzed. This involved comparing existing volumes to capacity (V/C) to determine level of service at link level.

- Baseline conditions were established through available counts of existing weekday-morning peak-hour loading on public transportation links and services. No new traffic counts were assumed when data was not available. This entailed comparing existing loading to theoretical capacity of service or facility to determine load factor at the link level; using standard Highway Capacity Manual for Capacity

- Baseline conditions (2002, 2020) were characterized for goods movement (truck/freight) in the general area of study (primarily to identify key goods movement means/corridors) and for parking in the vicinity of stations and airports. Parking conditions are based on any 2002 parking reserves, local plans for major parking expansion, and adequacy of local parking codes for meeting No-Project growth in demand.

Trip generation was then calculated by adding to baseline volumes forecasted 2020 demand for high-speed rail and (for the Modal alternative) airports, or highways comprising alternatives, plus local trips in 2020 generated by project-related development (as data are available) and trips due to induced growth. Additional trips were distributed to the identified screenlines or cordons (roadway and public transportation) and added those trips to the appropriate baseline volumes for each screenline or cordon. Next, additional trips were distributed for selected segments/links on primary regional routes and modes of access to stations and similar facilities by adding No-Project volumes obtained from 2020 forecasts (from regional and local agencies), and 2020 travel demand generated by alternatives, to the key accessing facilities (roadways, transit links). This distribution was done at a screenline level to reduce the subjectivity of assigning trips to specific facilities. This involved the following methodology:

- For each screenline or cordon (roadway and public transportation), new ratios or demand to capacity were calculated. Demand is the baseline volumes plus additional trip generation that is available (i.e., trips from project-related development and induced growth may not be available initially); screenline or cordon (roadway and public transportation) capacity will be the baseline capacity plus any improvements included in the alternative being analyzed.

- Link-level analysis of impacts was performed to roadways for weekday morning peak-hour conditions:

- Future No-Project link-capacity conditions were established through available plans from local and regional agencies.

- Screenlines or cordons were evaluated, qualitatively, if alternatives would change link capacity (street closure, grade separation, etc.).

- Future roadway V/C on selected segments by comparing future volumes with and without alternatives with future capacity were determined. Future V/C with and without alternatives were analyzed. This assessment was done at a screenline level for major facilities accessing stations or airports. Capacity levels were based on the Highway Capacity Manual, 1996.

- Link-level analysis of impacts was performed to public transportation services for weekday morning peak-hour conditions.

- Future no-project service or link capacity through available plans from local and regional agencies was established.

- Future link load factor by comparing the future volumes with and without alternatives with future capacity of selected links and services were determined.

- Impacts were determined by comparing future load factors with and without alternatives.

Summary tables for the region were then completed that identify impacts on highways/roadways (at screenline), public transportation services, goods movement, and parking facilities. The impacts are described and ranked as 'high', 'medium', or 'low' in the summary table according to the potential extent of change to traffic, transit, circulation and parking.

The final step included identifying mitigation strategies for avoidance of potential impacts related to traffic, circulation and parking. Most mitigations involved subsequent analysis of traffic, circulation or parking in the next phase of work.

3.1 TRAFFIC ANALYSIS SCENARIOS

The following analysis scenarios were analyzed:

- Existing Conditions – Using the best available existing traffic data.
- Future Baseline/No-Project Alternative – Represents the 2020 traffic conditions without the High-Speed Train or Modal Alternative.
- Modal Alternative – Represents the Future Baseline/No-Project traffic conditions plus the influence of selected highway and airport improvements.
- High-Speed Train Alternative (HST) – Represents the Future Baseline/No-Project traffic conditions plus the influence of the high-speed train.

3.2 TRAFFIC DATA AND FORECASTS

The traffic data used for this analysis was obtained from several sources. The Southern California Association of Governments' (SCAG) regional model was the primary source for existing traffic volumes and future baseline forecasts. Existing traffic volumes on Caltrans' facilities (state highways and freeways) were obtained directly from Caltrans. The Caltrans existing volumes obtained are for 1999. There were three local jurisdictions involved in this study; City of Palmdale, City of Burbank, and City of Los Angeles. Existing traffic volumes and forecasts for facilities where SCAG or Caltrans volumes were unavailable were obtained from these jurisdictions.

The traffic volumes and forecasts are bi-directional link volumes for the A.M. peak hour. The A.M. peak hour was assumed to be uniform across each study area, even though the actual A.M. peak may vary by location. Often in suburban areas of a metropolitan region the A.M. peak hour occurs earlier than that of urban centers. For the purpose of this analysis, the A.M. peak is consistent for all study areas.

3.2.1 SCAG Travel Model

The Southern California Association of Governments (SCAG) is a voluntary association of six counties in the Southern California area comprising of the counties of Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial. SCAG uses computer programs to forecast travel behaviors for the Southern California region. Model results are evaluated and correlated to model estimates from previous SCAG forecasts and other independent sources of travel data from within the region (i.e. transit ridership survey data, traffic counts, etc.). The current SCAG model implements data from the 1991 Southern California Origin-Destination (O-D) survey. The 1991 O-D survey database was used to develop trip generation, trip distribution, and mode choice. The base year for the current SCAG Model is 1997 and the future baseline traffic volumes are for the year 2025.

3.2.2 Caltrans Traffic Volumes

The Caltrans 1999 existing traffic volumes used in this analysis were obtained from the extensive Caltrans traffic count database for the California state highway system. These volumes are used in the Existing conditions analysis for most of the state highways and freeways in the various station study areas. The future baseline traffic forecasts for these Caltrans facilities were calculated using a 2% per annum growth factor over 25 years to yield Future Baseline/No-Project traffic forecasts.

The 2020 forecasts cited in this study are based on year 2020 ridership estimates and year 2025 Future Baseline traffic forecasts from the SCAG model. The year 2025 Future Baseline traffic forecasts may be conservative, but they are based on the best available data. In order to avoid confusion, all references to future year forecasts will be for the year 2020.

3.2.3 Local General Plan Traffic Volumes

On facilities in study areas where SCAG data and Caltrans data was unavailable, local General Plans were consulted for existing traffic counts and future traffic forecasts. In the City of Los Angeles and the City of Burbank, SCAG and Caltrans provided traffic counts and forecasts for all the facilities in these areas. For the City of Palmdale, the City's General Plan provided traffic forecasts for a few key facilities in the study area.

3.3 CAPACITY ANALYSIS

This analysis studies proposed high speed train stations that are located in three local jurisdictions; Palmdale, Burbank, and Los Angeles. Each jurisdiction has adopted their own capacity assumptions for various classifications of roadways. For instance, the 2002 Congestion Management Program (CMP) for Los Angeles County assumes a capacity of 800 vehicles per hour per lane for primary highways (major arterials) unless local conditions warrant the use of other values, while the City of Palmdale assumes a capacity of 900 vehicles per hour per lane for major arterials. For the purpose of this analysis, the capacities of various classifications of roadways were standardized for all jurisdictions.

The level of service (LOS) concept was used to evaluate the operating conditions of components of a transportation circulation system. The *Highway Capacity Manual* (HCM)[7] defines LOS as a qualitative measure which describes operational conditions within a traffic stream, generally in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience. LOS is rated from "A" to "F", with LOS "A" representing the best operating conditions and LOS "F" representing the worst. Table 3.3-1 describes the traffic conditions and volume/capacity (V/C) range assumed for each of the level of service ratings.

[7] Transportation Research Board, *Highway Capacity Manual 2000*, Special Report 209.

Table 3.3-1
Level of Service Criteria for Urban Streets

LOS	Description	V/C
A	Primarily free-flow operations at average travel speeds, usually about 90% of the Free-Flow Speed (FFS) for the given street class. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Control delay at signalized intersections is minimal.	0.00 to 0.60
B	Reasonably unimpeded operations at average travel speeds, usually about 70% of the FFS for the street class. The ability to maneuver within the traffic stream is only slightly restricted, and control delays at signalized intersections are not significant.	0.61 to 0.70
C	Stable operations; however, ability to maneuver and change lanes in midblock locations may be more restricted than at LOS "B", and longer queues, adverse signal coordination, or both may contribute to lower average travel speeds of about 50% of the FFS for the street class.	0.71 to 0.80
D	A range in which small increases in flow may cause substantial increases in delay and decreases in travel speed. LOS "D" may be due to adverse signal progression, inappropriate signal timing, high volumes, or a combination of these factors. Average travel speeds are about 40% of FFS.	0.81 to 0.90
E	Characterized by significant delays and average travel speeds of 33% or less of the FFS. Such operations are caused by a combination of adverse progression, high signal density, high volumes, extensive delays at critical intersections, and inappropriate signal timing.	0.91 to 1.00
F	Urban street flow at extremely low speeds, typically one-third to one-fourth of the FFS. Intersection congestion is likely at critical signalized locations, with high delays, high volumes, and extensive queuing.	Above 1.00

Source: Transportation Research Board, *Highway Capacity Manual 2000*, Special Report 209.

In establishing standard capacities for the various roadway classifications analyzed in this analysis, the capacity of a given roadway is assumed to be the point at which LOS "D" becomes LOS "E". This analysis evaluates six different roadway classifications. These roadway classifications are:

- Freeways
- 6-lane divided principal arterials
- 4-lane divided principal arterials
- 4-lane undivided principal arterials
- 4-lane secondary arterials
- Collector streets

The analysis looks at the primary intercity freeways (screenline analysis) and the major local and regional arterials within the one-mile cordon area of each proposed station (station analysis). A capacity for collector roadways was established because there are a few existing roadways that fall into this classification. The planning analysis module for arterial roadways in the 2000 Highway Capacity Software (HCS)[8] was used to determine capacities for each of the four arterial roadway classifications. The capacity analysis results for arterials are contained in the Appendix A – D. Table 3.3-2 and the following text discuss the HCS input values for urban arterials.

[8] HCS Version 4.1a. Developed and maintained by the McTrans Center, University of Florida. The HCS Software implements the same procedures used in the HCM.

Table 3.3-2
Required Input Data for Urban Streets

Item	Value
Traffic Characteristics	
Planning Analysis Hour Factor, K	0.100
Directional Distribution Factor, D	0.600
Peak-hour Factor, PHF	0.950
Adjusted Saturation Flow Rate	1800 pcphgpl[9]
Percent Turns from Exclusive Lanes	75 %
Roadway Characteristics	
Free Flow Speed, FFS	45 mph
Urban Class	II
Section Length	0.50 miles
Median	Yes, where applicable
Left-turn Bays	Yes, where applicable
Signal Characteristics	
Signalized Intersections	4
Arrival Type, AT	3
Signal Type	Actuated
Cycle Length, C	90.0 sec
Effective Green Ratio, g/C	0.510

3.3.1 Description of Input Values

Specific criteria are used to define LOS for different types of facilities as discussed below.

A. Traffic Characteristics

- Planning Analysis hour factor, K: The proportion of the Average Annual Daily Traffic (AADT) occurring in the analysis hour is the K-factor, expressed as a decimal fraction. A K value of 0.10 is a typical value.
- Directional Distribution Factor, D: The directional distribution of hourly volume on a roadway facility, expressed in percentages.
- Peak Hour Factor, PHF: This is a measure of traffic demand fluctuation occurring over the hour which focuses on the peak flow period within the peak hour. A peak hour factor close to 1.0 represents a uniform distribution of traffic over the hour.
- Adjusted saturation flow rate: The saturation flow rate is the number of vehicles (typically expressed in vehicles per hour per lane) that can traverse an intersection approach assuming that a green signal is available for one hour. An ideal saturation flow rate of 1,900 passenger cars per hour per lane is assumed, but this must be adjusted for various traffic conditions (i.e. area type, lane width, percentage of trucks, etc…). For this analysis, an adjusted saturation flow rate of 1,800 passenger cars per hour per lane was used.
- Percent turns from exclusive lanes: This is the percentage of turns from exclusive lanes, both left and right turns, that is an average of all signalized intersections on the arterial being analyzed.

B. Roadway Characteristics

- Free Flow Speed, FFS: The FFS is the average speed of vehicles over an urban street segment without signalized intersections, under conditions of low volumes. FFS can be measured in the field, but for this study, FFS were assumed.

[9] Passenger Cars Per Hour Green Per Lane.

- Urban Class: The HCM defines four urban street classes designated by the numbers I, II, III, and IV. The classes vary by speed and access control, with Class I carrying higher travel speeds, with the most restrictive access control.
- Section Length: This is the portion, in miles, of the urban street being analyzed. The HCM suggests the length be at least 1 mile for the LOS speed criteria to be meaningful.
- Median: This specifies whether the arterial is divided by a raised median or not.
- Left-turn bays: This input is chosen when left-turn lanes are provided at intersections or along a continuous lane (two-way left-turn lane).

C. Signal Characteristics

- Signalized Intersections: This is the number of signalized intersections located within the analyzed section length. This study assumes eight signalized intersections per mile.
- Arrival Type, AT: The HCM approximates the quality of progression between intersections by defining six types of arrival types (1–6). Arrival type 1 represents a poor rate of progression while arrival type 6 is excellent progression under near ideal conditions. For this study, an arrival type of 3 was assumed.
- Signal Type: This specifies whether the signals along the corridor are actuated or pre-timed.
- Cycle Length: This is the total time in seconds to complete a sequence of signal indications (greens, yellows, reds) for all approaches.
- Effective green ratio, g/C: This describes the ratio of green time per cycle that is dedicated to the traffic on the major arterial.

The planning analysis module for freeways in the 2000 Highway Capacity Software (HCS)[10] was used to determine capacities per lane for a typical freeway facility. The capacity analysis results for generalized freeway sections are contained in Appendix E. The capacity for a two-lane collector street was determined using the generalized capacity values found in a table provided by the Bureau of Mulit-Modal System Planning, Florida Department of Transportation (1987), which is also contained in Appendix F.

The LOS "D"/"E" capacities for each of the six street classifications were compared to capacity guidelines from other sources. The Los Angeles County CMP does not specifically define capacities for different types of arterials, but the range of capacity values are consistent with the generalized arterial capacity used in the CMP. The Transportation Element of the General Plan for the City of Los Angeles (adopted by City Council, September 9, 1999) lists the capacity of 800 vehicles per hour per lane for both Major Highways of Class I (four travel lanes in each direction) and Major Highways of Class II (three travel lanes in each direction). Secondary Highways (two travel lanes in each direction) have a capacity of 700 vehicles per hour per lane. The Bureau of Mulit-Modal System Planning, Florida Department of Transportation (1987), provides generalized capacity values for freeways, principal arterials, minor arterials, and collectors that were consistent with the calculated capacities.

Table 3.3-3 shows the resulting standardized capacities per travel lane for the six roadway classifications assessed in this report.

[10] HCS Version 4.1a. Developed and maintained by the McTrans Center, University of Florida. The HCS Software implements the same procedures used in the Highway Capacity Manual.

Table 3.3-3
Maximum Hourly Traffic Capacity (Veh/Hr/Ln)

Street Classification	Lane Configuration	LOS E (V/C = 1.0)
Freeway	4 Lanes +	1940
Principal Arterial	6 Lanes Divided *	975
Principal Arterial	4 Lanes Divided *	930
Principal Arterial	4 Lanes Undivided	876
Secondary Arterial	4 Lanes Undivided	640
Collector Arterial	2 Lanes Undivided	580

Source: P&D Consultants, Inc.
* The divided configuration includes a raised median

In this study, LOS for roadway segments was determined by comparing traffic volumes and forecasts to the calculated capacity. This comparison yields a volume-to-capacity (V/C) ratio from which the level of service is estimated. The various LOS designations and corresponding V/C ranges for road sections, as shown on Table 3.3-1, were computed for each roadway section analyzed.

3.4 PROJECT TRIP GENERATION

Trip generation estimates for the HST Alternative and the Modal Alternative were developed by Kaku Associates. For this project, trip generation for the Modal Alternative is defined as trips generated by selected improvements to airports and highways, plus the trips due to induced growth. For the HST Alternative, trip generation is composed of the forecasted demand for high-speed rail, plus the trips due to induced growth as a result of the HST system. Induced growth is defined as the additional demand attracted to the roadway and air systems, resulting from the capacity added to the entire multi-modal system by the HST and Modal Alternatives.

Kaku Associates developed two spreadsheets that provide future year (2020) forecasts for intercity travel for the entire state of California. One spreadsheet, “Intercity HST Ridership by Source”, provides the source (by mode) of annual high speed train ridership (HST Alternative), while the second, “Total Intercity Trips by Mode without HST (No-Project)”, provides the forecast number of intercity passenger trips by existing modes, without the HST system. These two spreadsheets are contained in the Appendix G – H.

The information contained in these spreadsheets for Palmdale, Sylmar, Burbank, and LA Union Station was used in this analysis to estimate total trips generated by these regions for the HST and No-Project alternatives. A third spreadsheet, developed by Kaku, forecasts the “Estimated HST Station Access Requirements” from the “Intercity HST Ridership by Source” forecasts to give trip generation estimates by mode for each proposed train station location. Trip generation characteristics for each alternative are described in the following sections.

3.4.1 HST ALTERNATIVE

The “Estimated HST Station Access Requirements” spreadsheet forecasts the average number of daily boardings at the proposed high speed train stations, the assumed mode split at each station, and parking space requirements for each station. The K-factor, or planning analysis hourly factor, as described in the

preceding section on capacity analysis, was assumed to be 0.10. This factor was used to compute the A.M. peak hour trip generation from the daily trip generation estimates.

Some proposed station locations were not included in the ridership forecasts table, including Downtown Burbank. As a result, Kaku Associates provided some generalized mode splits and other information to derive trip generation forecasts for these other stations. This information is included in Table 3.4-1 and Table 3.4-2.

Table 3.4-1
Generalized Mode Splits

MODE SPLIT							
					Auto		
Station Type	Air	Rail	Bus/ Shuttle	Taxi	Self-Park	Drop-Off	Pedestrian
Airport Connection	40%	0%	15%	15%	20%	10%	0%
Urban Hub	0%	15%	25%	20%	10%	10%	20%
Urban Intermediate	0%	5%	20%	10%	35%	30%	0%
Suburban Hub	0%	0%	20%	10%	40%	30%	0%
Suburban Intermediate	0%	0%	15%	5%	60%	20%	0%

Table 3.4-2
Peak Hour and Occupancy Factors by Mode

Mode Type	% Daily Passengers in Peak Hour	# Pass per Vehicle
Bus	15%	20
Shuttle	15%	7
Bus/Shuttle	15%	14
Taxi	15%	2.5
Self	20%	1.9
Drop-off	20%	1.9
TG = (% Passengers in Peak Hour) x (Daily Boardings (By Mode)) / (# of Passengers Per Vehicle) [11]		

To calculate the outbound A.M. peak hour trip generation for each station, the inbound bus/shuttle volume was added to the inbound taxi and inbound auto drop-offs, plus a percentage of the auto-self. The percentage of "auto-self" inbound trips varied depending on the station type. For Airport Connections and Urban Hubs, 100% of inbound auto-self was assumed as outbound. For Urban Intermediates, 60% of the inbound auto-self was assumed as outbound. For Suburban Hubs and Suburban Intermediates, 50% and 30% of the inbound auto-self were assumed as outbound traffic,

[11] Where:
TG = A.M. Peak Hour Trip Generation for Each Train Station (vehicles per hour)
Daily Boardings (By Mode) = The estimated average daily boardings. This was provided by the Program Management Team, refer to "Estimated High Speed Train Station Access Requirements" in Appendix I.
Number of Passengers Per Vehicle = As per Table 3.4-2.

respectively. The theory behind this is that the suburban stations may typically generate more "commuter-style" traffic (arriving in the A.M./leaving in the P.M.), while the Airport and Urban Hubs may generate both commuter and regional connection trips.

Vehicle trips generated by the Downtown Burbank Station was estimated from the Kaku Associate's spreadsheet, "Estimated High Speed Train Station Access Requirements", since this information was not included in the forecasts. For this analysis, 5,000 daily boardings were assumed at the Downtown Burbank Station. This number is in the range of forecast average daily boardings for similar "suburban hub" stations found in the "Estimated High-Speed Train Station Access Requirements." The resulting inbound A.M. peak hour trip generation for each of the train stations was estimated from the following equation.

5% x (Bus/Shuttle + Taxi + Drop Off) + (Bus/Shuttle + Taxi + Drop Off)

Table 3.4-3 summarizes the inbound, outbound, and total peak hour trip generation for the five different station locations assessed in this study.

Table 3.4-3
Project Trip Generation – Peak Hour 2020

	MODE				TRIPS GENERATED BY HSR		
			Auto				
	Bus/Shuttle	Taxi	Self	Drop Off	TOTAL INBOUND	TOTAL OUTBOUND	TOTAL A.M. TRIPS
Palmdale Airport	2	12	63	63	141	78	282
Sylmar Metrolink	9	13	185	139	346	161	563
Burbank Airport	11	40	140	175	366	226	731
Downtown Burbank	8	15	211	158	391	286	678
LA Union Station	30	112	394	631	1,168	774	2,336

3.4.2 Modal Alternative

Trip generation estimates for the Modal Alternative were developed using Kaku Associates' spreadsheet of "Total Intercity Trips by Mode without HST (No-Project)". The Modal Alternative includes two components which are added to the Future Baseline/No-Project forecasts to calculate trip generation. The first component is the highway component, which forecasts the number of highway trips generated by selected capacity improvements to the highway system. For the Bakersfield to Los Angeles segment, the Modal Alternative assumes two additional lanes (in each direction) on I-5 from State Route 14 (SR 14) in Santa Clarita to downtown Los Angeles. On SR 14, the Modal Alternative assumes one additional lane in each direction from Palmdale to Interstate 5. The associated volume of traffic generated by the highway improvements is shown on Table 3.4-4.

Table 3.4-4
Highway Trips Generated by the Highway Component

Highway Segment	# of Additional Lanes (Each Direction)	Peak Hour Trips
SR 14: SR 138 to I-5	1	1,050
I-5: SR 14 to I-405	2	2,419
I-5: I-405 to Burbank	2	2,419
I-5: Burbank to Union Station	2	2,736

The second trip generation component of the Modal Alternative is the airport component. Selected airport improvements at Burbank Airport (BUR) and Los Angeles International Airport (LAX) are assumed to generate additional passenger trips in the vicinity of the airport that are captured by the area surrounding the proposed HST stations (if the Modal Alternative is built). The airport improvements include additional gates and, in some cases, additional runways.

The passenger trips generated by the airport component were compared with the total intercity trips found in the "Total Intercity Trips by Existing Modes without HST (No-Project)" spreadsheet. The difference between the total number of intercity trips for the No-Project scenario and the total number of intercity trips generated by the airport component yields the net increase in passenger trips that can be attributed to the airport improvement component of the Modal Alternative.

Using the mode split and occupancy factors developed for the HST Alternative, the increase in intercity passenger trips was converted to equivalent trips by mode, generated by the airport improvements. The K factor of 0.10 was used to compute the peak hour trips. The calculations showing the peak hour trips generated by the airport improvements are shown in Appendix J.

3.5 PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

Trip distribution and assignment is the process of identifying the routes that traffic associated with a project would use to travel into and out of a study area. Project trip distribution was determined for the HST Alternative by making assumptions based on the A.M. peak forecasts on the various links within each study area. The distribution assumptions were developed by comparing the volumes on the adjacent arterials that would be used to access the stations and the ease of access to regional facilities (freeways and state highways).

For the Modal Alternative, trips generated by the highway component are already assigned to the major freeway links. These trips, and the links they are assigned to, are shown on Table 3.4-4. Additional trips generated by the airport component have to be distributed to the local street network in the vicinity of the airports and proposed station areas. For the Burbank Airport Station, the trips generated by airport improvements were distributed to the adjacent roadway system in the same manner as they were distributed for the HST Alternative. However, the Modal Alternative trips were distributed to/from the airport and not the proposed station location. For the Downtown Burbank Station area, approximately 25% of the additional trips generated by the airport improvements at Burbank Airport were distributed to the Downtown Station area for distribution to the rail system. For the LA Union Station area, additional trips generated by the airport improvements at LAX were distributed to the station area. The Appendix K – M contain spreadsheet calculations that support these distribution assumptions.

3.6 SIGNIFICANT IMPACT CRITERIA

This study uses two methods to assess impacts on study area roadways. The screenline impacts are defined in terms of V/C on the intercity facilities, while the station impacts are defined in terms of V/C and level of service. The tables in the following sections show the computed V/C ratio for each intercity screenline and the computed V/C ratio and resulting level of service for each station location. The V/C thresholds for level of service rating are summarized on Table 3.6-1.

Table 3.6-1
Level of Service Thresholds

LOS Rating	Volume/Capacity(V/C)
A	0.0 – 0.6
B	0.6 – 0.7
C	0.7 – 0.8
D	0.8 – 0.9
E	0.9 – 1.0
F	> 1.0

For the screenline analysis, impacts to the primary intercity roadways are defined in terms of volume to capacity. Station impacts on the roadways adjacent to the proposed train stations are classified in terms of level of service. The V/C ratio and resulting level of service will be shown on all the roadways within the station impact screenline for all the alternatives. The HST and Modal Alternatives' results will be compared to the Future Baseline/No-Project results, to determine the net effect on roadways in the study areas.

For goods movement and transit impacts, the ratings are more subjective. A low rating corresponds with little to no interference with a freight/transit route (rail line or truck route). A high rating corresponds to obvious interference of a freight/transit route, such as closing a railroad grade. Medium impact on goods movement is anything that falls between "high" and "low".

Parking impacts are also defined in more subjective terms. This report presents qualitative discussion of the impacts on parking in the vicinity of the proposed high-speed train stations.

4.0 TRAFFIC, TRANSIT, CIRCULATION AND PARKING IMPACTS

4.1 NO-PROJECT ALTERNATIVE

The No-Project Alternative, or Future Baseline/No-Project (2020) Alternative, serves as the baseline for the comparison of Modal and High-Speed Train alternatives. This Future Baseline/No-Project (2020) Alternative represents the State's transportation system (highway, air, and conventional rail) as it existed in 1999-2000 and as it would be after implementation of programs or projects currently programmed for implementation and projects that are expected to be funded by 2020. The Future Baseline/No-Project (2020) Alternative addresses the geographic area serving the same intercity travel market as the proposed high-speed train (generally from Sacramento and the San Francisco Bay Area, through the Central Valley, to Los Angeles and San Diego) satisfies the statutory requirements under CEQA and NEPA for an alternative that does not include any new action or project beyond what is already committed.

The Future Baseline/No-Project (2020) Alternative defines the existing and future statewide intercity transportation system based on programmed and funded (already in funded programs/financially constrained plans) improvements to the intercity transportation system through 2020, according to the following sources of information:

- State Transportation Improvement Program (STIP)
- Regional Transportation Plans (RTPs) for all modes of travel
- Airport plans
- Intercity passenger rail plans (California Rail Plan 2001-2010, Amtrak Five- and Twenty-year Plans)

As with all of the alternatives, the Future Baseline/No-Project (2020) Alternative will be assessed against the purpose and need topics/objectives for congestion, safety, air pollution, reliability, and travel times.

4.1.1 Existing Conditions

The Existing Conditions analysis provides a survey of the current southbound A.M. peak hour operations on roadways in each of the station areas, excluding roadway improvements along the primary intercity routes. The existing traffic volumes on I-5 and SR 14 were obtained from SCAG and Caltrans and are shown in Table 4.1-1.

Table 4.1-1
Existing Conditions System Screenline Analysis

Roadway	Location	V/C
Interstate 5	S/o SR 138 – Gorman	0.24
Interstate 5	N/o SR 14 – Santa Clarita	0.75
Interstate 5	N/o I-405 – San Fernando	1.18
Interstate 5	Sun Valley	1.54
Interstate 5	Downtown Burbank	1.96
Interstate 5	S/o SR 134 – Glendale	1.25
Interstate 5	S/o SR 110 – Los Angeles	1.37
State Route 14	N/o E. Avenue P – Palmdale	0.29
State Route 14	S/o SR 138 – Palmdale	0.36
State Route 14	N/o I-5 – Santa Clarita	0.82

Table 4.1-1 shows that the travel conditions during the A.M. peak hour are all close to free-flow V/C ratios for all of the roadway segments north of the I-5/SR 14 interchange, near Santa Clarita. The higher V/C ratios occur on Interstate 5 between Santa Clarita and downtown Los Angeles. The table shows that the section of I-5 through Burbank experiences the highest V/C ratio of nearly 2.0 during the A.M. peak hour. Figure 4.1-1 summarizes the existing condition or *baseline* travel volumes across the freeway system.

The following is a discussion of the current traffic operations in the five station study areas.

A. Palmdale Station

The Palmdale Station is proposed to be located on the Sierra Highway, west of the intersection of Sierra Highway and E Avenue Q in Palmdale. Currently, the Metrolink serves the Antelope Valley on the Southern Pacific rail line that parallels Sierra Highway. Existing V/C ratios were calculated for the roadway segments in the study area. These calculations, along with their corresponding levels of service, are summarized in the table below and on Figure 4.1-2. Refer to Appendix O for the station level of service analysis.

Figure 4.1-1
System Screenline Analysis – Baseline Travel Volumes

Figure 4.1-2
Palmdale Station – Baseline Level of Service

Table 4.1-2
Existing Conditions Roadway Levels of Service (Palmdale Station)

Roadway	AM Peak V/C	LOS
SR 138 (SR 14 to Sierra Highway)	0.60	B
SR 138 (Sierra Highway to 15th)	0.95	E
Sierra Highway (E. Avenue P to SR 138)	0.11	A
Sierra Highway (SR 138 to E. Avenue R)	0.04	A
SR 14 (E. Avenue P to SR 138)	0.73	C
SR 14 (SR 138 to E. Avenue R)	0.67	B
East Avenue P (SR 14 to Sierra Highway)	*	*
East Avenue P (Sierra Highway to 15th)	*	*
East Avenue R (SR 14 to Sierra Highway)	2.24	F
East Avenue R (Sierra Highway to 15th)	1.66	F

* Existing Counts Not Available.
V/C < 0.6 : LOS "A", 0.6 < V/C < 0.7 : LOS "B", 0.7 < V/C < 0.8 : LOS "C",
0.8 < V/C < 0.9 : LOS "D", 0.9 < V/C < 1.0 : LOS "E", V/C > 1.0 : LOS "F"

Within the Palmdale study area, East Avenue R from SR 14 to 15th Street is the only facility that operates at LOS "F" during the A.M. peak. The segment of SR 138 from Sierra Highway to 15th Street operates at LOS "E". All the other facilities in the study area currently operate at LOS "C" or better. The existing roadway levels of service are shown for the Palmdale study area on Figure 4.1-2.

B. Sylmar Station

The existing Metrolink Station in Sylmar is the location of the proposed High-Speed Train station. Access to this station is provided exclusively by 1st Street. Existing V/C ratios were calculated for the roadway segments in the study area. These calculations, along with their corresponding levels of service, are summarized in Table 4.1-3. No existing or forecast traffic information was available for 1st Street.

Table 4.1-3
Existing Conditions Roadway Levels of Service (Sylmar Station)

Roadway	AM Peak V/C	LOS
Hubbard (Laurel Canyon to Truman)	1.25	F
Hubbard (Truman to Glenoaks)	0.76	C
San Fernando Mission (Laurel Canyon to Truman)	0.53	A
San Fernando Road (Polk to Hubbard)	1.21	F
San Fernando Road (Hubbard to Maclay)	0.71	C
Truman (Hubbard to Maclay)	0.13	A
I-5 (San Fernando Mission to I-405)	0.35	A
I-405 (South of I-5)	0.50	A

V/C < 0.6 : LOS "A", 0.6 < V/C < 0.7 : LOS "B", 0.7 < V/C < 0.8 : LOS "C",
0.8 < V/C < 0.9 : LOS "D", 0.9 < V/C < 1.0 : LOS "E", V/C > 1.0 : LOS "F"

During A.M. peak hour traffic demand, Hubbard (Laurel Canyon to Truman), and San Fernando Road (Polk to Hubbard) currently operate at LOS "F". The remaining streets and freeways within the study area currently operate at LOS "C" or better in the A.M. peak hour. A.M. peak hour levels of service are shown on Figure 4.1-3.

C. Burbank Airport Station

The proposed Burbank Airport Station will be located north of the airport along San Fernando Boulevard. Access to this station will be provided exclusively by San Fernando Boulevard. The existing V/C ratios were computed for the roadways in the study area and are summarized with their corresponding levels of service in Table 4.1-4.

Table 4.1-4
Existing Conditions Roadway Levels of Service (Burbank Airport Station)

Roadway	AM Peak V/C	LOS
Glenoaks (Sunland to Buena Vista)	0.60	B
San Fernando (Vineland to N. Hollywood)	0.30	A
San Fernando (N. Hollywood to Buena Vista)	1.18	F
Vanowen (Vineland to N. Hollywood)	1.05	F
Vineland (San Fernando to Vanowen)	1.35	F
N. Hollywood (Glenoaks to San Fernando)	1.33	F
N. Hollywood (San Fernando to Vanowen)	0.68	B
I-5 (Sunland to Buena Vista)	0.76	C
V/C < 0.6 : LOS "A", 0.6 < V/C < 0.7 : LOS "B", 0.7 < V/C < 0.8 : LOS "C", 0.8 < V/C < 0.9 : LOS "D", 0.9 < V/C < 1.0 : LOS "E", V/C > 1.0 : LOS "F"		

San Fernando (N Hollywood to Buena Vista), Vanowen, Vineland, and N Hollywood Way (Glenoaks to San Fernando) currently operate at LOS "F" in the A.M. peak hour. The remaining streets and freeways within the study area currently operate at LOS "C" or better. The existing roadway conditions for the Burbank Airport study area is shown on Figure 4.1-4 and 4.1-5.

D. Burbank Downtown Station

The existing Metrolink Station in downtown Burbank is a proposed location for the high-speed train station providing access to Burbank. The current Metrolink facility is a suburban transportation hub that feeds numerous local bus routes. Access to this station is provided exclusively by Front Street. Front Street has direct connections to southbound Interstate 5, and Verdugo Street provides access to the ramps to/from northbound I-5. No existing traffic information was available for Front Street. The existing V/C ratios were computed for the roadways in the study area and are summarized with their corresponding levels of service in Table 4.1-6.

Figure 4.1-3
Sylmar Station – Baseline Level of Service

Figure 4.1-4
Burbank Airport Station – Baseline Level of Service

Figure 4.1-5
Burbank Airport – Baseline Level of Service

Table 4.1-5
Existing Conditions Roadway Levels of Service (Burbank Downtown Station)

Roadway	AM Peak V/C	LOS
Glenoaks (Magnolia to Olive)	0.26	A
Glenoaks (Olive to Verdugo)	0.52	A
Glenoaks (Verdugo to Alameda)	0.31	A
San Fernando (Magnolia to Olive)	0.76	C
San Fernando (Olive to Alameda)	0.58	A
Front (Magnolia to Verdugo)	*	*
Magnolia (N. Victory to 1st)	0.16	A
Magnolia (1st to Glenoaks)	0.54	A
Olive (N. Victory to Glenoaks)	1.71	F
Verdugo (Front to Glenoaks)	1.22	F
Alameda (S. Main to Glenoaks)	1.11	F
I-5 (Burbank to Olive)	0.90	E
I-5 (Olive to Alameda)	0.98	E

* Existing Counts Not Available.
V/C < 0.6 : LOS "A", 0.6 < V/C < 0.7 : LOS "B", 0.7 < V/C < 0.8 : LOS "C",
0.8 < V/C < 0.9 : LOS "D", 0.9 < V/C < 1.0 : LOS "E", V/C > 1.0 : LOS "F"

During A.M. peak hour traffic demand, Olive (Verdugo to Glenoaks), Verdugo (Front to Glenoaks), and Alameda (S Main to Glenoaks) currently operate at LOS "F". The two segments of I-5 through downtown Burbank operate at LOS "E" during the A.M. peak hour. The remaining streets within the study area currently operate at LOS "C" or better. Figure 4.1-6 shows the A.M. peak hour levels of service from the table above.

E. LA Union Station

Existing access to Union Station is provided from Alameda Street and Cesar E Chavez Avenue. The primary access is located on Alameda, where North Los Angeles Street intersects with Alameda. The second access is to the north of Union Station on Cesar E Chavez Avenue, located approximately 350 feet east of the intersection of Chavez/Alameda. Both access points are controlled by traffic signals and provide exclusive lanes for left turns. Alameda and North Los Angeles Streets provide direct access to US 101, which is the primary east-west freeway facility north of downtown Los Angeles. From US 101, connections to Interstate 5, Interstate 10, and Interstate 110 can be made within two miles. The existing V/C ratios were computed for the roadways in the study area and are summarized with their corresponding impacts in Table 4.1-6.

Figure 4.1-6
Burbank Downtown Station – Baseline Level of Service

Table 4.1-6
Existing Conditions Roadway Levels of Service
(LA Union Station)

Roadway	AM Peak V/C	LOS
U.S. 101 (Broadway to I-10)	0.66	B
U.S. 101 (I-10 to 1st Street)	0.40	A
Cesar E Chavez (Figueroa to Mission)	2.24	F
I-10 (U.S. 101 to I-5)	0.98	E
Broadway (1st Street to Chavez)	0.73	C
Alameda (4th Street to 1st Street)	0.64	B
Alameda (1st Street to Chavez)	1.58	F
Alameda (Chavez to Main)	0.95	E
I-5 (I-10 to Mission)	0.80	D
V/C < 0.6 : LOS "A", 0.6 < V/C < 0.7 : LOS "B", 0.7 < V/C < 0.8 : LOS "C", 0.8 < V/C < 0.9 : LOS "D", 0.9 < V/C < 1.0 : LOS "E", V/C > 1.0 : LOS "F"		

The two roadways that provide direct vehicular access to Union Station, Alameda and Cesar E Chavez, presently operate at LOS "F" in the A.M. peak hour. Interstate 10, from US 101 to 1st Street, and Alameda Avenue, north of Chavez currently operate at LOS "E". The remaining streets and freeways within the study area currently operate at LOS "D" or better during A.M. peak hour traffic demand. The levels of service for roadways in the LA Union Station study area are shown on Figure 4.1-7.

4.1.2 Future Baseline/No-Project Alternative

The Future Baseline/No-Project (2020) Alternative provides the standard to which the Modal and HST alternatives will be tested for potential traffic, transit, circulation, and parking impacts in the study areas. The roadway system analyzed in the Future Baseline/No-Project Alternative represents the state's transportation system (highway, air, and conventional rail) as it exists today and as it would after implementation of programs or projects currently programmed for implementation and projects that are expected to be funded by 2020.

The system screenline analysis for the Future Baseline/No-Project conditions assesses A.M. peak hour traffic in the southbound direction only from Bakersfield to Los Angeles. The traffic forecasts on I-5 and SR 14 were obtained from SCAG and Caltrans.

The only capacity improvement planned along the Interstate 5 corridor is for two additional travel lanes in each direction at the screenline south of SR 138 continuing to the four lane per direction section in Santa Clarita. No improvements are planned on SR 14 between the existing and 2020. The forecasts were used to calculate the V/C ratios for 2020 on the segments in the screenline analysis, which are summarized in Table 4.1-7.

Figure 4.1-7
Los Angeles Union Station (LAUS) – Baseline Level of Service

Table 4.1-7
Future Baseline/No-Project System Screenline Analysis

Roadway	Location	V/C
Interstate 5	S/o SR 138 – Gorman	0.23
Interstate 5	N/o SR 14 – Santa Clarita	1.77
Interstate 5	N/o I-405 – San Fernando	1.95
Interstate 5	Sun Valley	2.53
Interstate 5	Downtown Burbank	3.24
Interstate 5	S/o SR 134 – Glendale	1.48
Interstate 5	S/o SR 110 – Los Angeles	1.77
State Route 14	N/o E. Avenue P – Palmdale	0.91
State Route 14	S/o SR 138 – Palmdale	0.59
State Route 14	N/o I-5 – Santa Clarita	1.94

Table 4.1-7 shows that the V/C ratios during the A.M. peak hour are severely impacted by the forecast growth in traffic and lack of substantial capacity upgrades between the existing and future baseline analysis years. Refer to Appendix P for the system screenline analysis.

A significant bottleneck occurs on I-5 between Sylmar (San Fernando) and Burbank. The two segments of the intercity corridors that are forecast to operate near free-flow conditions include I-5 (S/o SR 138) and SR 14 through Palmdale as can be seen in Figure 4.1-8.

For the station analysis portion of the Future Baseline/No-Project Alternative, the best available forecasts were used to estimate future operational conditions on the roadways within the study area. The forecasts were obtained from SCAG, Caltrans, and local municipalities. The Appendix Q contains detailed capacity and level of service tables for each station for the Future Baseline/No-Project Alternative.

Figure 4.1-8
System Screenline Analysis – Future Baseline/No-Project (2020) Travel Volumes

A. Palmdale Station

The Future Baseline/No-Project Alternative assumes two additional lanes (one lane in each direction) for E Avenue R (from SR 14 to Sierra Highway) and for SR 14 through the study area. The Future Baseline/No-Project V/C ratios were computed and are summarized with their corresponding levels of service for the Palmdale Station study area in Table 4.1-8.

Table 4.1-8
Future Baseline/No-Project Alternative Roadway Levels of Service (Palmdale Station)

Roadway	AM Peak V/C	LOS
SR 138 (SR 14 to Sierra Highway)	1.46	F
SR 138 (Sierra Highway to 15th)	2.13	F
Sierra Highway (E. Avenue P to SR 138)	0.06	A
Sierra Highway (SR 138 to E. Avenue R)	0.12	A
SR 14 (E. Avenue P to SR 138)	0.80	D
SR 14 (SR 138 to E. Avenue R)	0.73	C
East Avenue P (SR 14 to Sierra Highway)	1.43	F
East Avenue P (Sierra Highway to 15th)	1.03	F
East Avenue R (SR 14 to Sierra Highway)	2.09	F
East Avenue R (Sierra Highway to 15th)	2.17	F
V/C < 0.6 : LOS "A", 0.6 < V/C < 0.7 : LOS "B", 0.7 < V/C < 0.8 : LOS "C", 0.8 < V/C < 0.9 : LOS "D", 0.9 < V/C < 1.0 : LOS "E", V/C > 1.0 : LOS "F"		

Anticipated growth in the Palmdale area has caused the three major east-west arterials (E Avenue P, SR 138, and E Avenue R) to operate at LOS "F" during Future Baseline/No-Project A.M. peak traffic demand, even with capacity improvements to E Avenue R (SR 14 to Sierra). The remaining streets and freeways are forecast to operate at LOS "D" or better in the A.M. peak hour. The roadway level of service results in the Palmdale Station area for the Future Baseline/No-Project (2020) Alternative are shown on Figure 4.1-9.

B. Sylmar Station

The roadway network for the Future Baseline/No-Project Alternative was assumed to be the same as for the Existing conditions in the Sylmar Station study area.

Figure 4.1-9
Palmdale Station – Future Baseline/No-Project (2020) Level of Service

The Future Baseline/No-Project V/C ratios were computed for the roadways in the study area and are summarized with their corresponding levels of service in Table 4.1-9.

Table 4.1-9
Future Baseline/No-Project Alternative Roadway Levels of Service
(Sylmar Station)

Roadway	AM Peak V/C	LOS
Hubbard (Laurel Canyon to Truman)	2.08	F
Hubbard (Truman to Glenoaks)	1.87	F
San Fernando Mission (Laurel Canyon to Truman)	0.29	A
San Fernando Road (Polk to Hubbard)	2.17	F
San Fernando Road (Hubbard to Maclay)	1.38	F
Truman (Hubbard to Maclay)	0.56	A
I-5 (San Fernando Mission to I-405)	0.58	A
I-405 (South of I-5)	0.83	D
V/C < 0.6 : LOS "A", 0.6 < V/C < 0.7 : LOS "B", 0.7 < V/C < 0.8 : LOS "C", 0.8 < V/C < 0.9 : LOS "D", 0.9 < V/C < 1.0 : LOS "E", V/C > 1.0 : LOS "F"		

Without any capacity improvements to the roadways in the study area, traffic growth in the Sylmar area causes LOS "F" operations on Hubbard Street and San Fernando Road during A.M. peak hour traffic demand. The remaining streets and freeways in the study area are forecast to operate at LOS "D" or better in the A.M. peak. The level of service results for the Future Baseline/No-Project Alternative in the Sylmar Station area are shown on Figure 4.1-10.

C. Burbank Airport Station

The same roadway network was assumed for the Future Baseline/No-Project Alternative as was used in the Existing Alternative analysis, with no capacity improvements. The Future Baseline/No-Project V/C ratios were computed for the roadways in the study area and are summarized with their corresponding levels of service in Table 4.1-1.

Table 4.1-10
Future Baseline/No-Project Alternative Roadway Levels of Service
(Burbank Airport Station)

Roadway	AM Peak V/C	LOS
Glenoaks (Sunland to Buena Vista)	1.25	F
San Fernando (Vineland to N. Hollywood)	1.12	F
San Fernando (N. Hollywood to Buena Vista)	2.33	F
Vanowen (Vineland to N. Hollywood)	1.99	F
Vineland (San Fernando to Vanowen)	1.68	F
N. Hollywood (Glenoaks to San Fernando)	1.82	F
N. Hollywood (San Fernando to Vanowen)	1.05	F
I-5 (Sunland to Buena Vista)	1.26	F
V/C < 0.6 : LOS "A", 0.6 < V/C < 0.7 : LOS "B", 0.7 < V/C < 0.8 : LOS "C", 0.8 < V/C < 0.9 : LOS "D", 0.9 < V/C < 1.0 : LOS "E", V/C > 1.0 : LOS "F"		

Figure 4.1-10
Sylmar Station – Future Baseline / No-Project (2020) Level of Service

Forecast traffic growth in the vicinity of the Burbank Airport has caused all of the roadways and freeways in the study area to operate at LOS "F" during A.M. peak traffic demand. There is an obvious lack of capacity on all roadways in the study area during the A.M. peak hour that may be contributed to heavy forecast growth near the Burbank Airport for the future baseline year. The level of service results for the Future Baseline/No-Project Alternative in the Burbank Airport Station area are shown on Figure 4.1-11 and 4.1-12.

D. Burbank Downtown Station

The same roadway network was assumed for the Future Baseline/No-Project Alternative as was used in the Existing Alternative analysis in the downtown Burbank Station study area. The existing V/C ratios were computed for the roadways in the study area and are summarized with their corresponding levels of service in the Table 4.1-11.

Table 4.1-11
Future Baseline/No-Project Alternative Roadway Levels of Service
(Burbank Downtown)

Roadway	AM Peak V/C	LOS
Glenoaks (Magnolia to Olive)	0.98	E
Glenoaks (Olive to Verdugo)	1.24	F
Glenoaks (Verdugo to Alameda)	0.74	C
San Fernando (Magnolia to Olive)	1.23	F
San Fernando (Olive to Alameda)	0.69	B
Front (Magnolia to Verdugo)	1.07	F
Magnolia (N. Victory to 1st)	0.58	A
Magnolia (1st to Glenoaks)	1.16	F
Olive (N. Victory to Glenoaks)	1.96	F
Verdugo (Front to Glenoaks)	3.57	F
Alameda (S. Main to Glenoaks)	1.37	F
I-5 (Burbank to Olive)	1.48	F
I-5 (Olive to Alameda)	1.62	F
V/C < 0.6 : LOS "A", 0.6 < V/C < 0.7 : LOS "B", 0.7 < V/C < 0.8 : LOS "C", 0.8 < V/C < 0.9 : LOS "D", 0.9 < V/C < 1.0 : LOS "E", V/C > 1.0 : LOS "F"		

The majority of the streets and freeways in the study area are forecast to operate at LOS "F" during A.M. peak hour traffic demand. Glenoaks (Magnolia to Olive) is forecast to operate at LOS "E". Glenoaks (Verdugo to Alameda), San Fernando (Olive to Alameda), and Magnolia (N. Victory to 1st) are forecast to operate at LOS "C" or better. The level of service results for the Future Baseline/No-Project Alternative in the Downtown Burbank Station area are shown on Figure 4.1-13.

Figure 4.1-11
Burbank Airport Station – Future Baseline/No-Project (2020) Level of Service

Figure 4.1-12
Burbank Airport – Future Baseline/No-Project (2020) Level of Service

Figure 4.1.13
Burbank Downtown Station - Future Baseline/No-Project (2020) Level of Service

E. LA Union Station

No capacity improvements are assumed for the roads and freeways in the LA Union Station study area. The existing V/C ratios were computed for the roadways in the study area and are summarized with their corresponding impacts in Table 4.1-12.

Table 4.1-12
Future Baseline/No-Project Alternative Roadway Levels of Service
(LA Union Station)

Roadway	AM Peak V/C	LOS
U.S. 101 (Broadway to I-10)	1.08	F
U.S. 101 (I-10 to 1st Street)	0.66	B
Cesar E Chavez (Figueroa to Mission)	1.70	F
I-10 (U.S. 101 to I-5)	1.62	F
Broadway (1st Street to Chavez)	0.83	D
Alameda (4th Street to 1st Street)	0.59	A
Alameda (1st Street to Chavez)	2.13	F
Alameda (Chavez to Main)	1.27	F
I-5 (I-10 to Mission)	1.33	F
V/C < 0.6 : LOS "A", 0.6 < V/C < 0.7 : LOS "B", 0.7 < V/C < 0.8 : LOS "C", 0.8 < V/C < 0.9 : LOS "D", 0.9 < V/C < 1.0 : LOS "E", V/C > 1.0 : LOS "F"		

In addition to Chavez and Alameda Avenue adjacent to Union Station, many of the freeways to operate at LOS "F" under A.M. peak hour traffic demand. Without any capacity improvements to the existing roadway network, the forecast traffic growth causes U.S. 101 (Broadway to I-10), I-10 (U.S. 101 to I-5), I-5 (I-10 to Mission), and the segment of Alameda north of Cesar Chavez to operate at LOS "F". The remaining roadways in the study area are expected to operate at LOS "D" or better. The A.M. peak hour level of service results for Future Baseline/No-Project Alternative in the LA Union Station study area are shown on Figure 4.1-14.

The following table summarizes the Existing Baseline analysis results with the Future Baseline/No-Project analysis results to show the baseline traffic impacts that are expected without the High-Speed Train or Modal alternatives. The aggregate V/C was computed for each study area and across the intercity highway links.

Figure 4.1.14
Los Angeles Union Station (LAUS) – Future Baseline/No-Project (2020) Level of Service

The percent change in V/C for the freeway system, and change in V/C for the station areas is also summarized on Table 4.1-13.

Table 4.1-13
Summary of Levels of Service
(Existing vs. Future Baseline/No-Project)

Location	Existing V/C	Existing LOS	2020 No Project V/C	2020 No Project LOS	% Change from Existing
Intercity Segment					
I-5 (S/o SR-138) Gorman	0.24	A	0.23	A	-5%
I-5 (N/o SR-14) Santa Clarita	0.75	C	1.77	F	135%
I-5 (N/o I-405) San Fernando	1.18	F	1.95	F	65%
I-5 (Sun Valley)	1.54	F	2.53	F	65%
I-5 (Burbank)	1.96	F	3.24	F	65%
I-5 (S/o SR-134) Glendale	1.25	F	1.48	F	19%
I-5 (S/o SR-110) Los Angeles	1.37	F	1.77	F	30%
SR-14 (N/o E. Avenue P) N. Palmdale	0.29	A	0.91	E	217%
SR-14 (S/o SR-138) Palmadle	0.36	A	0.59	A	65%
SR-14 (N/o I-5) Santa Clarita	0.82	D	1.94	F	135%
HST Stations					
Palmdale	0.70	C	1.20	F	71%
Sylmar	0.68	B	1.22	F	79%
Burbank Airport	0.91	E	1.52	F	67%
Burbank Downtown	0.72	C	1.36	F	89%
LA Union Station	0.94	E	1.19	F	27%
Airports					
Burbank Airport	0.85	D	1.33	F	56%

Between the existing year and the future baseline year, the forecast traffic growth causes the systemwide V/C ratio to increase by over 70%. Within each study area, the growth in traffic ranges from 61% to 79% except for near Union Station in downtown Los Angeles, where the growth in traffic volumes represents only a 27% increase in V/C between existing and future baseline years. The aggregate V/C in each study area is well over 1.0, so LOS "F" operations are forecast to be common through all the study areas and on the intercity links.

4.2 MODAL ALTERNATIVE

The traffic generated by the Modal Alternative, which is added to the Future Baseline/No-Project forecasts, is generated by two sources. A portion of this traffic, the "highway component", is generated by capacity improvements to Interstate 5 and SR 14. This includes one additional lane in each direction on SR 14 from Palmdale to Interstate 5 and two additional lanes in each direction on Interstate 5 from SR 14 to downtown Los Angeles.

The second portion of this traffic, the "airport component", is generated by improvements to airports that are near the station study areas. This includes improvements at Burbank Airport (BUR) and Los Angeles International Airport (LAX). The airport improvements include additional gates and, in some cases, additional runways. Only the proposed Burbank Airport Station, Downtown Burbank Station, and LA Union Station are affected by the "airport component" of the Modal Alternative. No improvements are planned to the Palmdale Airport, so no traffic is generated by the "airport component" of the Modal Alternative in the Palmdale and Sylmar study areas.

The Modal Alternative assumes improvements to Burbank Airport and Los Angeles International Airport. The Burbank Airport is programmed to have five new gates and one new runway, while LAX is programmed to have 19 new gates and one new runway. Burbank Airport is located north of the City of Burbank and just west of Interstate 5. The existing airport facility has two runways, 14 boarding gates, and approximately 5,200 parking spaces. The Burbank Airport facilities are directly accessed via two traffic lanes from Empire Avenue and two traffic lanes from Hollywood Way

4.2.1 Trip Generation by Airport

A. Burbank Airport Station Area

The airport improvements at Burbank Airport are forecast to generate trips to the area surrounding Burbank Airport and to the downtown Burbank study areas. Approximately 2,313,648 total annual passengers[12] are forecast to be generated by Burbank Airport with the Modal Alternative improvements. A little over a quarter of these trips were assumed to travel through the Downtown Burbank Station study area. When compared with intercity trips forecast for the Future Baseline/No-Project Alternative, the net increase in passenger trips due to air traffic is 665,807 annual passenger trips in the Burbank Airport area.

The "airport component" increase of the Modal Alternative equates to 1,824 additional daily trips and 52 additional A.M. peak hour trips generated by the area surrounding the proposed Burbank Airport Station. These trips were assumed to use the two airport accesses on N Hollywood Way and Empire Avenue. See Appendix K for the forecast peak hour trips by mode as a result of the "airport component" of the Modal Alternative.

B. Burbank Downtown Station

For the Burbank Downtown Station area, about 28% of the trips generated by the airport improvements at Burbank Airport were assumed to reach the Burbank Downtown Station study area. This equates to 15 additional A.M. peak hour trips. These trips were assumed to use the airport access on N Hollywood Way to access Interstate 5 to travel to/from the Burbank downtown area. See Appendix L for the forecast peak hour trips by mode as a result of the Modal Alternative's airport improvements.

C. LA Union Station

The Modal Alternative's airport improvements at LAX are forecast to generate 4,259,588 annual passengers[13] from the LA Union Station area in 2020. When compared with intercity trips forecast for the Future Baseline/No-Project Alternative from the Union Station area, the net increase in passenger trips due to air traffic is 1,276,405 annual passenger trips. This equates to 3,497 daily trips and 112 A.M. additional peak hour trips generated by the area surrounding Union Station. These trips were assumed to enter downtown via Interstate 110 to US 101 and

[12] "Modal Alternative Airport Component", Kaku Associates.
[13] "Modal Alternative Airport Component", Kaku Associates.

be distributed to the freeways and arterials surrounding the Union Station study area. See Appendix M for the forecast peak hour trips by mode as a result of the Modal Alternative's airport improvements.

4.2.2 Distribution of Trips to/from Airport or Along Roadway

Figures 4.2-1, 4.2-2, 4.2-3 and 4.2-4 show the assumed traffic distributions for the "Airport Component" of the Modal Alternative to the area surrounding the Burbank Airport, Downtown Burbank, and LA Union Station study areas. Also included on these figures are the forecast A.M. peak hour highway volumes that are attributed to the "highway component" of the Modal Alternative. This volume represents the additional peak hour trips that would use the system as a result of the additional highway lanes included in the Modal Alternative.

4.2.3 Roadway Impacts by Screenline or Cordon

The screenline analysis for the Modal Alternative assesses A.M. peak hour traffic in the southbound direction only from Bakersfield to Los Angeles. The traffic forecasts on I-5 and SR 14 that were used for the Future Baseline analysis were adjusted to reflect the additional traffic on the intercity system as a result of the "highway component" and "airport component" of the Modal Alternative. The revised forecasts were used to calculate V/C ratios for the Modal Alternative on the segments in the screenline analysis, which are summarized in Table 4.2-1.

Table 4.2-1
Modal Alternative System Screenline Analysis

Roadway	Location	V/C
Interstate 5	S/o SR 138 – Gorman	0.23
Interstate 5	N/o SR 14 – Santa Clarita	1.77
Interstate 5	N/o I-405 – San Fernando	1.61
Interstate 5	Sun Valley	1.88
Interstate 5	Downtown Burbank	2.35
Interstate 5	S/o SR 134 – Glendale	1.25
Interstate 5	S/o SR 110 – Los Angeles	1.40
State Route 14	N/o E. Avenue P – Palmdale	0.81
State Route 14	S/o SR 138 – Palmdale	0.56
State Route 14	N/o I-5 – Santa Clarita	1.70

The Modal Alternative assumes two additional travel lanes in each direction on I-5 from downtown Los Angeles to the SR 14 interchange. One additional travel lane in each direction is assumed on SR 14 from the I-5 interchange to Palmdale. With the extra capacity on the intercity routes, additional traffic is forecast to use these routes. The volume of traffic added to each segment due to the "highway component" is shown on Table 3.4-4.

As was the case with the Future Baseline/No-Project Alternative, a significant bottleneck occurs on I-5 between Sylmar (San Fernando) and Burbank. These V/C ratios are lower than they are for the Future Baseline. The two segments of the intercity corridors that are forecast to operate near free-flow conditions include I-5 (S/o SR 138) and SR 14 through Palmdale. Figure 4.2-5 summarizes the Modal Alternative's travel volumes across the freeway system.

Figure 4.2-1
Burbank Airport Station Trip Distribution – Modal Alternative

Figure 4.2-2
Burbank Airport Trip Distribution – Modal Alternative

Figure 4.2-3
Burbank Downtown Station Trip Distribution – Modal Alternative

Figure 4.2-4
Los Angeles Union Station (LAUS) Trip Distribution – Modal Alternative

Figure 4.2-5
System Screenline Analysis – Modal Alternative Travel Volumes

For the station analysis portion of the Modal Alternative, the best available forecasts were used to estimate future operational conditions on the roadways within the study area with the Modal Alternative. The Appendix S contains detailed capacity and level of service tables for each station for the Modal Alternative.

A. Burbank Airport Station

The roadways in the study area of the proposed Burbank Airport Station will be impacted by the "highway" and "airport" components of the Modal Alternative. The V/C ratios for the Modal Alternative will generally be identical to the Future Baseline/No-Project Alternative, with few exceptions. The V/C ratios were computed for the roadways in the study area and are summarized with their corresponding impacts in Table 4.2-2.

Table 4.2-2
Modal Alternative Roadway Levels of Service (Burbank Airport Station)

Roadway	AM Peak V/C	LOS
Glenoaks (Sunland to Buena Vista)	1.25	F
San Fernando (Vineland to N. Hollywood)	1.12	F
San Fernando (N. Hollywood to Buena Vista)	2.33	F
Vanowen (Vineland to N. Hollywood)	1.99	F
Vineland (San Fernando to Vanowen)	1.68	F
N. Hollywood (Glenoaks to San Fernando)	1.83	F
N. Hollywood (San Fernando to Vanowen)	1.05	F
I-5 (Sunland to Buena Vista)	0.93	E
V/C < 0.6 : LOS "A", 0.6 < V/C < 0.7 : LOS "B", 0.7 < V/C < 0.8 : LOS "C", 0.8 < V/C < 0.9 : LOS "D", 0.9 < V/C < 1.0 : LOS "E", V/C > 1.0 : LOS "F"		

The additional lanes (two) in each direction on I-5 from SR 14 to downtown Los Angeles produce a lower V/C ratio for the Modal Alternative, even with the addition of 2,420 A.M. peak hour trips to this facility. However, I-5 is only improved to LOS "E" for the Modal Alternative from LOS "F" in the Future Baseline/No-Project analysis. The other facilities achieve the same levels of service for this alternative as they do for the Future Baseline/No-Project Alternative. Refer to Figures 4.2-6 and 4.2-7 for the level of service results for the Modal Alternative in the Burbank airport station area.

B. Burbank Downtown Station

The roadways in the study area of the proposed Downtown Burbank Station will be impacted by both components of the Modal Alternative. The V/C ratios for the Modal Alternative will generally be identical to the Future Baseline/No-Project Alternative, except for along Interstate 5.

Figure 4.2-6
Burbank Airport Station – Modal Alternative Level of Service

The V/C ratios were computed for the roadways in the study area and are summarized with their corresponding impacts in Table 4.2-3.

Table 4.2-3
Modal Alternative Roadway Levels of Service
(Burbank Downtown Station)

Roadway	AM Peak V/C	LOS
Glenoaks (Magnolia to Olive)	0.98	E
Glenoaks (Olive to Verdugo)	1.24	F
Glenoaks (Verdugo to Alameda)	0.74	C
San Fernando (Magnolia to Olive)	1.23	F
San Fernando (Olive to Alameda)	0.70	C
Front (Magnolia to Verdugo)	1.07	F
Magnolia (N. Victory to 1st)	0.58	A
Magnolia (1st to Glenoaks)	1.16	F
Olive (N. Victory to Glenoaks)	1.96	F
Verdugo (Front to Glenoaks)	3.58	F
Alameda (S. Main to Glenoaks)	1.37	F
I-5 (Burbank to Olive)	1.08	F
I-5 (Olive to Alameda)	1.19	F
V/C < 0.6 : LOS “A”, 0.6 < V/C < 0.7 : LOS “B”, 0.7 < V/C < 0.8 : LOS “C”, 0.8 < V/C < 0.9 : LOS “D”, 0.9 < V/C < 1.0 : LOS “E”, V/C > 1.0 : LOS “F”		

The additional lanes in each direction on I-5 from SR 14 to downtown Los Angeles produce a lower V/C ratio for the Modal Alternative, even with the addition of 2,740 A.M. peak hour trips to this facility. However, this is not enough to improve the operations to LOS “E” – I-5 remains at LOS “F” for the Modal Alternative. The other facilities achieve the same impact rating for this alternative as they do for the Future Baseline/No-Project Alternative, with subtle differences in V/C ratios due to the influence of “airport component” traffic. Refer to Figure 4.2-8 for the Modal Alternative level of service results for the Burbank Downtown station area.

C. LA Union Station

The roadways in the Union Station study area will be impacted by both components of the Modal Alternative. The V/C ratios for the Modal Alternative will generally be the same as they are for the Future Baseline/No-Project Alternative, except for along Interstate 5. The V/C ratios were computed for the roadways in the study area and are summarized with their corresponding impacts in Table 4.2-4.

Figure 4.2-7
Burbank Airport – Modal Alternative Level of Service

Figure 4.2-8
Burbank Downtown Station – Modal Alternative Level of Service

Table 4.2-4
Modal Alternative Roadway Levels of Service (LA Union Station)

Roadway	AM Peak V/C	LOS
U.S. 101 (Broadway to I-10)	**1.08**	**F**
U.S. 101 (I-10 to 1st Street)	0.66	B
Cesar E Chavez (Figueroa to Mission)	**1.70**	**F**
I-10 (U.S. 101 to I-5)	**1.62**	**F**
Broadway (1st Street to Chavez)	0.84	D
Alameda (4th Street to 1st Street)	0.59	A
Alameda (1st Street to Chavez)	**2.14**	**F**
Alameda (Chavez to Main)	**1.28**	**F**
I-5 (I-10 to Mission)	**1.04**	**F**
V/C < 0.6 : LOS "A", 0.6 < V/C < 0.7 : LOS "B", 0.7 < V/C < 0.8 : LOS "C", 0.8 < V/C < 0.9 : LOS "D", 0.9 < V/C < 1.0 : LOS "E", V/C > 1.0 : LOS "F"		

Under the Modal Alternative, the roadway impacts in the vicinity of Union Station are the same as they are for the Future Baseline/No-Project Alternative. Slight changes in V/C ratios occur with this alternative; but generally, the roads are forecast to operate identically in both alternatives. Along I-5 under this alternative, the V/C ratio improves from a 1.33 to 1.04 with the added capacity to the highway, but the level of service remains as it is for the Future Baseline/No-Project Alternative (LOS "F"). Refer to Figure 4.2-9 for the Modal Alternative roadway levels of service for the LA Union Station area.

Table 4.2-5 compares the Modal Alternative analysis results with the Future Baseline/No-Project analysis results to show the impacts to traffic that are expected under the Modal Alternative. The aggregate V/C was computed for each study area and across the intercity highway links. This gives a weighted V/C from which an overall level of service was calculated for the station analysis.

Between the Future Baseline Alternative and the Modal Alternative, the improvements to the highway system and the corresponding additional traffic demand causes the systemwide V/C ratio to decrease between 0 and 26%. Within each station study area, there's a 1% – 4% decrease in V/C ratios. The aggregate V/C in each study area is well over 1.0, so LOS "F" operations are forecast to be common through all the study areas and on the intercity links.

Figure 4.2-9
Los Angeles Union Station (LAUS) – Modal Alternative Level of Service

Table 4.2-5
Summary of Levels of Service
(Future Baseline/No-Project vs. Modal)

Location	2020 No Project V/C	2020 No Project LOS	Modal Alt. V/C	Modal Alt. LOS	% Change from No Project
Intercity Segment					
I-5 (S/o SR-138) Gorman	0.23	A	0.23	A	0%
I-5 (N/o SR-14) Santa Clarita	1.77	F	1.77	F	0%
I-5 (N/o I-405) San Fernando	1.95	F	1.61	F	-18%
I-5 (Sun Valley)	2.53	F	1.88	F	-26%
I-5 (Burbank)	3.24	F	2.35	F	-27%
I-5 (S/o SR-134) Glendale	1.48	F	1.25	F	-16%
I-5 (S/o SR-110) Los Angeles	1.77	F	1.40	F	-21%
SR-14 (N/o E. Avenue P) N. Palmdale	0.91	E	0.81	D	-11%
SR-14 (S/o SR-138) Palmdale	0.59	A	0.56	A	-4%
SR-14 (N/o I-5) Santa Clarita	1.94	F	1.70	F	-12%
HST Stations					
Palmdale	1.20	F	1.18	F	-2%
Sylmar	1.22	F	1.21	F	-1%
Burbank Airport	1.52	F	1.46	F	-4%
Burbank Downtown	1.36	F	1.33	F	-2%
LA Union Station	1.19	F	1.17	F	-2%
Airports					
Burbank Airport	1.33	F	1.14	F	-14%

4.2.4 Public Transit Impacts by Screenline or Cordon

In Palmdale, the new Palmdale Transportation Center and Metrolink station should improve transit mobility. The impacts to the roadways servicing transit will be the same or better (SR 14 and I-5) as they are for the Future Baseline/No-Project Alternative.

In the Burbank Airport, Downtown Burbank, and LA Union Station study areas, public transit impacts may only be impacted by the increased capacity on Interstate 5. With no other known roadway or transit improvements in the study areas, the impacts to the public transit system should be similar to the roadway impacts found for the Future Baseline/No-Project Alternative.

4.2.5 Goods Movement Impacts

In the Palmdale and Sylmar study areas, the Modal Alternative does not create any improvements affecting the movement of goods through the study areas. Due to the capacity improvements on I-5 and SR 14 under the Modal Alternative, highway freight movement may actually improve across the system. The impacts to the roadways will be the same or better (SR 14 and I-5) as they are for the Future Baseline/No-Project Alternative.

The impacts to goods movement are assumed to be the same as they are for the Future Baseline/No-Project Alternative. In this case, the goods movement impacts in each station area under the Modal Alternative are "low."

In the Burbank Airport, Downtown Burbank, and LA Union Station study areas, goods movement corridors may be beneficially affected by the increased capacity provided by the Modal Alternative on Interstate 5. The other freight corridors should not see any major impacts (beneficial or adverse) beyond the roadway impacts found for the Future Baseline/No-Project Alternative.

4.2.6 Parking Impacts and Issues

The proposed location of the Burbank Airport Station is currently vacant land along the existing rail corridor, north of the airport. There is a residential neighborhood on the northeast side of the track which could experience spillover parking if insufficient parking is provided at the HST station site. Under the Modal Alternative, there would be a major expansion of the Burbank Airport to accommodate inter-city trips. As such, the Modal Alternative has the potential for parking impacts to the Burbank Airport area and so this station receives a "medium" impact rating.

Los Angeles Union Station provides parking for the existing patrons of the heavy-rail, commuter rail, light-rail, and bus transit and transfer facility. There are no parking structures planned for the Modal Alternative in downtown Los Angeles, although parking will probably be built at LAX. As a result, the LA Union Station receives a "medium" impact rating. All other parking impact ratings are considered "low."

4.3 HIGH-SPEED TRAIN ALTERNATIVE

The analysis of the High-Speed Train (HST) Alternative assumes the same roadway network as the Future Baseline/No-Project Alternative. This network includes the existing infrastructure with few capacity improvements to the roads and freeways in the study areas. The HST Alternative assesses the A.M. peak hour traffic demand and compares the network operations to the other alternatives examined in this study.

4.3.1 Trip Generation by Rail Station

Table 4.3-1 shows the number of trips generated by mode, the total number of inbound and outbound trips, and the total A.M. peak hour trips. As the table shows, LA Union Station generates the highest number of total A.M. trips of approximately 2,300 trips during the A.M. peak hour, or 40 trips per minute.

Table 4.3-1
Project Trip Generation by Rail Station

Station	Mode Auto				Trips Generated By HST		Total A.M. Trips Generated By Station
	Bus/ Shuttle	Taxi	Self	Drop Off	Total Inbound	Total Outbound	
Palmdale Station	2	12	63	63	141	141	282
Sylmar Metrolink	9	13	185	139	346	217	563
Burbank Airport	11	40	140	175	366	366	731
Burbank Downtown	8	15	211	158	391	286	678
LAUS	30	112	394	631	1,168	1,168	2,336

4.3.2 Distribution of Trips to/from Rail Station

Figures 4.3-1 thru 4.3-6 display the assumed trip distributions for each train station under the HST Alternative to the area surrounding Palmdale Station, Sylmar Station, Burbank Airport Station, Burbank Airport, Burbank Downtown Station, and Los Angeles Union Station.

Figure 4.3-1
Palmdale Station – Trip Distribution – HST Alternative

Figure 4.3-2
Sylmar Station – Trip Distribution – HST Alternative

Figure 4.3-3
Burbank Airport Station – Trip Distribution – HST Alternative

Figure 4.3-4
Burbank Airport – Trip Distribution – HST Alternative

Figure 4.3-5
Burbank Downtown Station – Trip Distribution – HST Alternative

Figure 4.3-6
Los Angeles Union Station (LAUS) – Trip Distribution – HST Alternative

4.3.3 Roadway Impacts by Screenline or Cordon

The system screenline analysis for the HST Alternative assesses A.M. peak hour traffic in the southbound direction only from Bakersfield to Los Angeles. The traffic forecasts on I-5 and SR 14 were obtained from SCAG and Caltrans. As mentioned previously, the 2020 forecasts cited in this study are based on year 2020 ridership estimates and year 2025 Future Baseline traffic forecasts.

The only capacity improvement planned along the Interstate 5 corridor is for two additional travel lanes in each direction within the existing right-of-way on the northernmost segment (south of SR 138). No improvements are planned on SR 14 between the existing and the HST/future baseline year (2020). Table 4.3-2 shows that the V/C ratios during the A.M. peak hour are nearly identical to the V/C ratios that are expected in the future baseline analysis. The forecasts were used to calculate V/C ratios for the HST Alternative on the segments in the screenline analysis, which are summarized in the table below.

Table 4.3-2
HST Alternative System Screenline Analysis

Roadway	Location	V/C
Interstate 5	S/o SR 138 – Gorman	0.23
Interstate 5	N/o SR 14 – Santa Clarita	1.77
Interstate 5	N/o I-405 – San Fernando	1.95
Interstate 5	Sun Valley	2.55
Interstate 5	Downtown Burbank	3.26
Interstate 5	S/o SR 134 – Glendale	1.50
Interstate 5	S/o SR 110 – Los Angeles	1.80
State Route 14	N/o E. Avenue P – Palmdale	0.91
State Route 14	S/o SR 138 – Palmdale	0.59
State Route 14	N/o I-5 – Santa Clarita	1.94

A significant bottleneck occurs on I-5 between Sylmar (San Fernando) and Burbank. The two segments of the intercity corridors that are forecast to operate near free-flow conditions include I-5 (S/o SR 138) and SR 14 through Palmdale. Figure 4.3-7 summarizes the HST Alternative volumes across the freeway system. The aggregate V/C for the intercity routes is 1.20, the same as it is for the Future Baseline/No-Project Alternative. Refer to Appendix T for the system screen analysis.

For the station analysis portion of the High-Speed Train Alternative, the forecasts used in the Future Baseline/No-Project analysis were used to estimate future operational conditions on the roadways within the study areas with the addition of traffic generated by the High-Speed Train Alternative. The Appendix U contains detailed capacity and level of service tables for each station for the High-Speed Train Alternative.

Figure 4.3-7
System Screenline Analysis – HST Alternative Travel Volumes

A. Palmdale Station

Based on ridership estimates, approximately 500 parking spaces for the High-Speed Train patrons will be needed at the Palmdale Station. The V/C ratios for the High-Speed Train Alternative were computed for the roadways in the study area and are summarized with their corresponding levels of service in Table 4.3-3.

Table 4.3-3
HST Alternative Roadway Levels of Service (Palmdale Station)

Roadway	AM Peak V/C	LOS
SR 138 (SR 14 to Sierra Highway)	1.47	F
SR 138 (Sierra Highway to 15th)	2.15	F
Sierra Highway (E. Avenue P to SR 138)	0.08	A
Sierra Highway (SR 138 to E. Avenue R)	0.18	A
SR 14 (E. Avenue P to SR 138)	0.80	D
SR 14 (SR 138 to E. Avenue R)	0.74	C
East Avenue P (SR 14 to Sierra Highway)	1.44	F
East Avenue P (Sierra Highway to 15th)	1.03	F
East Avenue R (SR 14 to Sierra Highway)	2.09	F
East Avenue R (Sierra Highway to 15th)	2.17	F
V/C < 0.6 : LOS "A", 0.6 < V/C < 0.7 : LOS "B", 0.7 < V/C < 0.8 : LOS "C", 0.8 < V/C < 0.9 : LOS "D", 0.9 < V/C < 1.0 : LOS "E", V/C > 1.0 : LOS "F"		

The HST Alternative only slightly increases the V/C ratios on the roads in the study area, primarily those providing direct access to the station. Sierra Highway, the primary road providing access to the station, maintains the LOS "A" operations even though all the site traffic is added to this facility. The roadways in the study area all operate at the same level of service as they do under the Future Baseline/No-Project conditions. The aggregate V/C for the study area increases from 1.20 to 1.22. The roadway level of service results in the Palmdale Station area for the HST Alternative are shown on Figure 4.3-8.

The proposed Palmdale Station location is a component of the SR 58 to SR 14 corridor through the Antelope Valley. With this additional Palmdale Station, the SR 58 to SR 14 corridor will have more localized station impacts than will the I-5 route due to the greater number of stations. However, on a regional basis, this impact will be offset by the greater accessibility to stations that the SR 58 to SR 14 corridor affords. This increase in accessibility should reduce vehicle miles traveled on the study freeway network that will offset the localized impacts around the Palmdale Station.

B. Sylmar Station

The traffic generated by the HST Alternative at the proposed Sylmar Station will use Hubbard Street for primary access to 1st Street. It is estimated that approximately 1,400 parking spaces will be needed to accommodate the High-Speed Train patron parking demand. The parking demand is in addition to parking demands from Metrolink and other transit users in the area. No capacity improvements are assumed in the study area. The V/C ratios were computed for the roadways in the study area and are summarized with their corresponding levels of service in the Table 4.3-4 following Figure 4.3-8.

Figure 4.3-8
Palmdale Station – HST Alternative Level of Service

Table 4.3-4
HST Alternative Roadway Levels of Service (Sylmar Station)

Roadway	AM Peak V/C	LOS
Hubbard (Laurel Canyon to Truman)	2.11	F
Hubbard (Truman to Glenoaks)	1.89	F
San Fernando Mission (Laurel Canyon to Truman)	0.30	A
San Fernando Road (Polk to Hubbard)	2.25	F
San Fernando Road (Hubbard to Maclay)	1.41	F
Truman (Hubbard to Maclay)	0.56	A
I-5 (San Fernando Mission to I-405)	0.58	A
I-405 (South of I-5)	0.83	D
V/C < 0.6 : LOS "A", 0.6 < V/C < 0.7 : LOS "B", 0.7 < V/C < 0.8 : LOS "C", 0.8 < V/C < 0.9 : LOS "D", 0.9 < V/C < 1.0 : LOS "E", V/C > 1.0 : LOS "F"		

The level of service results for all the roads in the study area are the same as they are for the Future Baseline/No-Project Alternative. The increase in V/C is highest on the facilities that provide the best access to the proposed station (Hubbard, San Fernando Road), but the increase is not high enough to cause a change in the level of service. The aggregate V/C for the Sylmar study area increases from 1.22 to 1.24. The level of service results in the Sylmar Station area for the HST Alternative are shown on Figure 4.3-9.

C. Burbank Airport Station

No capacity improvements were assumed for the HST Alternative. Approximately 1,100 additional parking spaces will be needed to accommodate the High-Speed Train patron parking demand. The V/C ratios for the HST Alternative will generally be identical to the Future Baseline/No-Project Alternative, with few exceptions. The V/C ratios were computed for the roadways in the study area and are summarized with their corresponding levels of service in Table 4.3-5.

Table 4.3-5
HST Alternative Roadway Levels of Service (Burbank Airport Station)

Roadway	AM Peak V/C	LOS
Glenoaks (Sunland to Buena Vista)	1.25	F
San Fernando (Vineland to N. Hollywood)	1.33	F
San Fernando (N. Hollywood to Buena Vista)	2.36	F
Vanowen (Vineland to N. Hollywood)	1.99	F
Vineland (San Fernando to Vanowen)	1.71	F
N. Hollywood (Glenoaks to San Fernando)	1.86	F
N. Hollywood (San Fernando to Vanowen)	1.06	F
I-5 (Sunland to Buena Vista)	1.26	F
V/C < 0.6 : LOS "A", 0.6 < V/C < 0.7 : LOS "B", 0.7 < V/C < 0.8 : LOS "C", 0.8 < V/C < 0.9 : LOS "D", 0.9 < V/C < 1.0 : LOS "E", V/C > 1.0 : LOS "F"		

Figure 4.3-9
Sylmar Station – HST Alternative Level of Service

The levels of service as a result of the HST Alternative are identical to those computed for the Future Baseline/No-Project Alternative. Several facilities achieve a higher V/C under this alternative, but the overall levels of service are the same for both alternatives, "F" in all cases. San Fernando Road, which will serve as the primary station access, experiences the greatest increase in V/C of 1.12 (Future Baseline/No-Project) to 1.33 (HST). The aggregate V/C for the study area increases from 1.52 to 1.55. The roadway level of service results in the Burbank Airport Station area and airport for the HST Alternative are shown on Figure 4.3-10 and 4.3-11 respectively.

D. Burbank Downtown Station

Access to the proposed Downtown Burbank Station will be provided off of Front Street. No improvements to the remaining streets in the study area will be assumed for the HST Alternative. Approximately 1,100 additional parking spaces will be needed to accommodate the High-Speed Train patron parking demand. This parking demand is the same as for the Burbank Airport Station. The V/C ratios were computed for the roadways in the study area and are summarized with their corresponding levels of service in the table below.

Table 4.3-6
HST Alternative Roadway Levels of Service
(Burbank Downtown Station)

Roadway	AM Peak V/C	LOS
Glenoaks (Magnolia to Olive)	0.98	E
Glenoaks (Olive to Verdugo)	1.24	F
Glenoaks (Verdugo to Alameda)	0.75	C
San Fernando (Magnolia to Olive)	1.23	F
San Fernando (Olive to Alameda)	0.70	C
Front (Magnolia to Verdugo)	1.65	F
Magnolia (N. Victory to 1st)	0.60	B
Magnolia (1st to Glenoaks)	1.19	F
Olive (N. Victory to Glenoaks)	1.97	F
Verdugo (Front to Glenoaks)	3.66	F
Alameda (S. Main to Glenoaks)	1.37	F
I-5 (Burbank to Olive)	1.49	F
I-5 (Olive to Alameda)	1.63	F
V/C < 0.6 : LOS "A", 0.6 < V/C < 0.7 : LOS "B", 0.7 < V/C < 0.8 : LOS "C", 0.8 < V/C < 0.9 : LOS "D", 0.9 < V/C < 1.0 : LOS "E", V/C > 1.0 : LOS "F"		

The V/C ratio on Front Street increases from 1.07 under the Future Baseline/No-Project to 1.65 under the HST Alternative, remaining at LOS "F". The slight increase in A.M. peak hour traffic on San Fernando (Olive to Alameda) and Magnolia (N. Victory to 1st) causes the levels of service on these facilities to increase to LOS "C" and "B", respectively. The other facilities in the study area achieve the same level of service for this alternative as they do for the Future Baseline/No-Project Alternative, with subtle differences in V/C ratios due to forecast HST demand. The aggregate V/C for the study area increases from 1.36 to 1.45, an increase of 7%. The level of service results in the Downtown Burbank Station area for the HST Alternative are shown on Figure 4.3-12.

Figure 4.3-10
Burbank Airport Station – HST Alternative Level of Service

Figure 4.3-11
Burbank Airport – HST Alternative Level of Service

Figure 4.3-12
Burbank Downtown Station – HST Alternative Level of Service

E. LA Union Station

The roadways in the Union Station study area will experience an increase in traffic growth due to the influence of the proposed HST Station. Approximately 3,000 additional parking spaces will be needed to accommodate the High-Speed Train patron parking demand. This demand is the same for all three of the station alternatives. The V/C ratios were computed for the roadways in the study area and are summarized with their corresponding levels of service in Table 4.3-7.

Table 4.3-7
HST Alternative Roadway Levels of Service (LA Union Station)

Roadway	AM Peak V/C	LOS
U.S. 101 (Broadway to I-10)	1.10	F
U.S. 101 (I-10 to 1st Street)	0.67	C
Cesar E Chavez (Figueroa to Mission)	1.83	F
I-10 (U.S. 101 to I-5)	1.63	F
Broadway (1st Street to Chavez)	0.83	D
Alameda (4th Street to 1st Street)	0.65	B
Alameda (1st Street to Chavez)	2.45	F
Alameda (Chavez to Main)	1.34	F
I-5 (I-10 to Mission)	1.34	F
V/C < 0.6 : LOS "A", 0.6 < V/C < 0.7 : LOS "B", 0.7 < V/C < 0.8 : LOS "C", 0.8 < V/C < 0.9 : LOS "D", 0.9 < V/C < 1.0 : LOS "E", V/C > 1.0 : LOS "F"		

The impact ratings for the HST Alternative are identical to the impact ratings for the Future Baseline/No-Project Alternative, with the exception of U.S. 101 (I-10 to 1st Street) and Alameda (4th Street to 1st Street). The level of service on these two facilities increases to LOS "C" and "B", respectively, with the effect of the traffic generated by the High-Speed Train Alternative. Subtle changes in V/C occur on most of the roadways and freeways, but the overall levels of service on the facilities remain unchanged. The aggregate V/C for the study area increases from 1.19 to 1.25. The A.M. peak hour roadway level of service results for the LA Union Station study area for the HST Alternative are shown on Figure 4.3-13.

4.3.4 High Speed Train Options

A. Burbank Station Options

The impacts attributed to the two Burbank Station alternatives analyzed in this report were compared to determine which one may best serve the Burbank area. The aggregate V/C ratio raised 2% for the airport alternative and 7% for the downtown alternative. However, the aggregate V/C computed near the airport was about 0.10 higher than the V/C computed for the downtown location. This means that the roadways surrounding the airport are forecast to be relatively more congested than those near the downtown station in the future baseline year. Most of the roadways in both study areas, however, are forecast to operate above capacity in the A.M. peak hour with or without the HST project.

The Burbank Amtrak stop is at the Burbank Airport but that stop so located on the Ventura line on the south side of the Burbank Airport and well away from the potential HST Burbank Airport station site. The location of the downtown Burbank Station may be preferable from a systemwide respect because the proposed station at the Burbank Airport is only about six miles south of the proposed Sylmar Station. The downtown Burbank location is closer to the midpoint

Figure 4.3-13
Los Angeles Union Station (LAUS) – HST Alternative Level of Service

between Sylmar and LA Union Station, and it also provides access to the Metrolink system, offering High-Speed Train riders a link to another regional mode of travel.

Under the Burbank Airport station option, the link to the airport is important for multi-modal access, but the High-Speed Train system is meant to serve as an alternate to the intrastate air travel system. There is a higher probability of High-Speed Train ridership coming from vehicles and other non-air modes rather than the airports. The Burbank Airport is currently served by a Metrolink line that also has a stop in downtown Burbank.

B. LA Union Station Options

For the South LA Union Station option, access to the station will be provided exclusively from Alameda Avenue, via Commercial Street or Temple Street. The proximity of the station to U.S. 101 and existing Union Station will continue to concentrate the majority of the traffic on Alameda Avenue. The East Bank LA Union Station option would use Mission Road as the primary access facility. Mission currently provides direct access to U.S. 101, but is a narrow, two-lane street that serves a mostly industrial area. Considerable roadway upgrades to Mission Road would be necessary for this alternative.

For the South LA Union and East Bank LA Union Station options, this report assumes that a "people-mover" link would be established, connecting the High-Speed Train terminal to LA Union Station. This would allow for more parking opportunities and facilitate mode transfers. For each LA Union Station option, a large multi-level parking garage will be constructed to accommodate HST parking demand.

C. Alternative Rail Alignments

The proposed Palmdale Station location is a component of the SR 58 to SR 14 corridor through the Antelope Valley. With this additional Palmdale Station, the SR 58 to SR 14 corridor will have more localized station impacts than will the I-5 route due to the greater number of stations. However, on a regional basis, this impact will be offset by the greater accessibility to stations that the SR 58 to SR 14 corridor affords. This increase in accessibility should reduce vehicle miles traveled on the study freeway network that will offset the localized impacts around the Palmdale Station.

Table 4.3-8 compares the HST analysis results with the Future Baseline/No-Project analysis results to show the traffic impacts that are expected with the High-Speed Train Alternative. The aggregate V/C was computed for each study area. This gives a weighted V/C from which an overall level of service was calculated for the station analysis.

Table 4.3-8
Summary of Levels of Service
(Future Baseline / No-Project vs. HST)

Location	2020 No Project V/C	2020 No Project LOS	HST Alt. V/C	HST Alt. LOS	% Change From No Project
Intercity Segment					
I-5 (S/o SR-138) Gorman	0.23	A	0.23	A	0%
I-5 (N/o SR-14) Santa Clarita	1.77	F	1.77	F	0%
I-5 (N/o I-405) San Fernando	1.95	F	1.95	F	0%
I-5 (Sun Valley)	2.53	F	2.55	F	1%
I-5 (Burbank)	3.24	F	3.26	F	1%
I-5 (S/o SR-134) Glendale	1.48	F	1.50	F	1%
I-5 (S/o SR-110) Los Angeles	1.77	F	1.80	F	2%
SR-14 (N/o E. Avenue P) N. Palmdale	0.91	E	0.91	E	0%
SR-14 (S/o SR-138) Palmdale	0.59	A	0.59	A	1%
SR-14 (N/o I-5) Santa Clarita	1.94	F	1.94	F	0%
HST Stations					
Palmdale	1.20	F	1.22	F	2%
Sylmar	1.22	F	1.24	F	2%
Burbank Airport	1.52	F	1.55	F	2%
Burbank Downtown	1.36	F	1.45	F	7%
LA Union Station	1.19	F	1.25	F	5%
Airports					
Burbank Airport	1.33	F	1.36	F	2%

The difference between the Future Baseline/No-Project Alternative and the HST Alternative is very small, with the largest impacts occurring on the roadways that will serve as the primary accesses to the stations. Within each station study area, the increase in traffic due to the high-speed train causes a 2% to 7% increase in the aggregate V/C ratios. The Burbank Downtown Station experiences the highest aggregate V/C increase (7%), while the Burbank Airport Station experiences the highest overall aggregate V/C ratio (under the HST Alternative) of 1.55. The aggregate V/C in each study area is well over 1.0, so LOS "F" operations are forecast to be common through all the study areas and on the intercity links.

4.3.5 Public Transit Impacts by Screenline or Cordon

In all station study areas, the HST Alternative is expected to create "medium" impacts to the public transit system. The rail corridor used from Palmdale to Los Angeles is also used by the Metrolink system, as well as other transit and freight uses. The speed that the high-speed train is capable of requires an exclusive track for operations. The construction of such a facility will impact the current use of the corridor but operation should have a negligible impact on Metrolink service. Impacts may occur to existing bus routes in as much as ridership may increase and route schedules may need to be adjusted to accommodate the arrival of the HST. However, this impacts would be offset by the higher multi-model mobility afforded by the HST Alternative.

4.3.6 Goods Movement Impacts

In the Palmdale and Sylmar study areas, the HST Alternative does not create any improvements for the movement of goods through the study areas. The rail corridor used from Palmdale to Los Angeles is also used for freight movement. The final design of the HST Alternative could have an adverse impact on freight movement a railroad grade crossing is eliminated. The HST will provide the ability to quickly ship light, high-valued freight. In this case, the goods movement impacts in each station area under the HST Alternative are considered "medium."

4.3.7 Parking Impacts and Issues

Parking requirements for each proposed High-Speed Train station were calculated based on the daily trip generation assumed at each station. This study assumes that the parking provided by each high-speed train station will be adequate to serve the station parking demand. Parking impacts are considered "low" for the Palmdale station site under the HST Alternative because the availability of land for parking facilities in the immediate vicinity of the proposed site is high.

Under the Modal Alternative, there would be a major expansion of the Burbank Airport to accommodate inter-city trips. As such, the Modal Alternative has the potential for parking impacts to the Burbank Airport area and the parking impact are rated as "medium." The proposed location of the Burbank Airport Station is currently vacant land along the existing rail corridor, north of the airport. There is a residential neighborhood on the northeast side of the track which could experience spillover park if insufficient parking is provided at the HST station site. As such, the HST Alternative impacts to the Burbank Airport area and the parking impact are also rated as "medium."

The impacts to parking at Sylmar and Burbank Downtown are rated "medium", as these locations are currently stations on the existing Metrolink commuter-rail system. Adequate parking to meet the forecast high-speed train ridership demand is assumed to be provided in parking structures at both locations. At LA Union Station, the impacts to parking received a "medium" rating. The available parking demand at LA Union Station is used by the patrons of the various transit services that serve the station. Parking for the high-speed train and Modal Alternative at Union Station will likely be provided by structure parking, as available land in the station vicinity for surface parking does not exist. Due to the dense development associated with this area of downtown and the high forecasted demand for parking at LA Union Station, the impact to parking due to the high-speed train station and the Modal Alternative is "median" at LA Union Station.

A summary of impacts to transit, goods movement, and parking for each of the alternatives is in Table 4.3-9.

Table 4.3-9
Impacts to Public Transit, Goods Movement, and Parking

	EXISTING CONDITION (H, M, L)	FUTURE BASELINE CONDITION (H, M, L)	MODAL ALTERNATIVE (H, M, L)	HST ALTERNATIVE (H, M, L)
Public Transit				
PALMDALE	L	L	L	M
SYLMAR	L	L	L	M
BURBANK AIRPORT	L	L	L	M
BURBANK DOWNTOWN	L	L	L	M
LA UNION STATION	L	L	L	M
Goods Movement				
PALMDALE	L	L	L	M
SYLMAR	L	L	L	M
BURBANK AIRPORT	L	L	L	M
BURBANK DOWNTOWN	L	L	L	M
LA UNION STATION	L	L	L	M
Parking				
PALMDALE	L	L	L	L
SYLMAR	L	L	L	M
BURBANK AIRPORT	L	L	M	M
BURBANK DOWNTOWN	L	L	L	M
LA UNION STATION	L	L	M	M

As Table 4.3-9 shows, the impacts to public transit, goods movement, and parking are “low” for all station locations and screenlines for the existing and Future Baseline/No-Project Modal Alternative with the exception of parking around Burbank Airport and LA Union Station which are “medium.” The impacts to public transit and goods movement for all station locations and screenlines for the HST Alternative are “medium”.

5.0 PREPARERS

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6.0 SOURCES OF DATA / INFORMATION

City of Burbank, *City of Burbank* Transportation Element. Adopted in 1994.

City of Los Angeles, *City of Los Angeles* Transportation Element. Adopted in 1999.

City of Palmdale, *City of Palmdale* Circulation Element. Adopted January 25, 1993.

Metropolitan Transportation Authority, 2002 Congestion Management Program for Los Angeles County. 2002.

P&D Consultants and DMJM+HARRIS, *Plans and Profiles*. Prepared for the California High-Speed Rail Authority, November 2002.

Parsons-Brinckerhoff, *Final Draft Environmental Analysis Methodologies*. Prepared for California High-Speed Rail Authority, November 7, 2002.

Parsons-Brinckerhoff, *Plans and Profiles*. Prepared for California High-Speed Rail Authority, November 2002.

Parsons-Brinckerhoff, *Screening Report*. Prepared for California High-Speed Rail Authority, April 2002.

Southern California Association of Governments, 1997 Model Validating and Summary Regional Transportation Model. 1997.

Thomas Brothers Guide, Los Angeles and Orange Counties. 2002.

Appendix A