CALIFORNIA HIGH-SPEED TRAIN

Program Environmental Impact Report/Environmental Impact Statement

Bakersfield to Los Angeles

PUBLIC UTILITIES TECHNICAL EVALUATION

January 2004

Prepared for:

California High-Speed Rail Authority

U.S. Department of Transportation
Federal Railroad Administration

CALIFORNIA HIGH SPEED RAIL AUTHORITY

U.S. Department of Transportation
Federal Railroad Administration

CALIFORNIA HIGH-SPEED TRAIN PROGRAM EIR/EIS

Bakersfield to Los Angeles Public Utilities Technical Evaluation

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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
GIS	GEOGRAPHIC INFORMATION SYSTEM
MTA	METROPOLITAN TRANSPORTATION AUTHORITY
RTP	REGIONAL TRANSPORTATION PLAN
USACE	U.S. CORPS OF ENGINEERS
USFWS	U.S. FISH AND WILDLIFE SERVICE

1.0 INTRODUCTION

The California High-Speed Rail Authority (Authority) was created by the Legislature in 1996 to develop a plan for the construction, operation, and financing of a statewide, intercity high-speed passenger train system.[1] After completing a number of initial studies over the past six years to assess the feasibility of a high-speed train system in California and to evaluate the potential ridership for a variety of alternative corridors and station areas, the Authority recommended the evaluation of a proposed high-speed train system as the logical next step in the development of California's transportation infrastructure. The Authority does not have responsibility for other intercity transportation systems or facilities, such as expanded highways, or improvements to airports or passenger rail or transit used for intercity trips.

The Authority adopted a *Final Business Plan* in June 2000, which reviewed the economic feasibility of a 1,127-kilometer-long (700-mile-long) high-speed train system. This system would be capable of speeds in excess of 321.8 kilometers per hour (200 miles per hour [mph]) on a dedicated, fully grade-separated track with state-of-the-art safety, signaling, and automated train control systems. The system described would connect and serve the major metropolitan areas of California, extending from Sacramento and the San Francisco Bay Area, through the Central Valley, to Los Angeles and San Diego. The high-speed train system is projected to carry a minimum of 42 million passengers annually (32 million intercity trips and 10 million commuter trips) by the year 2020.

Following the adoption of the Business Plan, the appropriate next step for the Authority to take in the pursuit of a high-speed train system is to satisfy the environmental review process required by federal and state laws which will in turn enable public agencies to select and approve a high speed rail system, define mitigation strategies, obtain necessary approvals, and obtain financial assistance necessary to implement a high speed rail system. For example, the Federal Railroad Administration (FRA) may be requested by the Authority to issue a *Rule of Particular Applicability*, which establishes safety standards for the high-speed train system for speeds over 200 mph, and for the potential shared use of rail corridors.

The Authority is both the project sponsor and the lead agency for purposes of the California Environmental Quality Act (CEQA) requirements. The Authority has determined that a Program Environmental Impact Report (EIR) is the appropriate CEQA document for the project at this conceptual stage of planning and decision-making, which would include selecting a preferred corridor and station locations for future right-of-way preservation and identifying potential phasing options. No permits are being sought for this phase of environmental review. Later stages of project development would include project-specific detailed environmental documents to assess the impacts of the alternative alignments and stations in those segments of the system that are ready for implementation.

The decisions of federal agencies, particularly the Federal Railroad Administration (FRA) related to high-speed train systems, would constitute major federal actions regarding environmental review under the National Environmental Policy Act (NEPA). NEPA requires federal agencies to prepare an Environmental Impact Statement (EIS) if the proposed action has the potential to cause significant environmental impacts. The proposed action in California warrants the preparation of a Tier 1 Program-level EIS under NEPA, due to the nature and scope of the comprehensive high-speed train system proposed by the Authority, the need to narrow the range of alternatives, and the need to protect/preserve right-of-way in the future. FRA is the federal lead agency for the preparation of the Program EIS, and the Federal Highway Administration (FHWA), the U.S. Environmental Protection Agency (EPA), the U.S. Corps of Engineers (USACE), the Federal Aviation Administration (FAA), the U.S. Fish and Wildlife Service (USFWS), and the Federal Transit Administration (FTA) are cooperating federal agencies for the EIS.

[1] Chapter 796 of the Statutes of 1996; SB 1420, Kopp and Costa

A combined Program EIR/EIS is to be prepared under the supervision and direction of the FRA and the Authority in conjunction with the federal cooperating agencies. It is intended that other federal, state, regional, and local agencies will use the Program EIR/EIS in reviewing the proposed program and developing feasible and practicable programmatic mitigation strategies and analysis expectations for the Tier 2 detailed environmental review process which would be expected to follow any approval of a high speed train system.

The statewide high-speed train system has been divided into five regions for study: Bay Area-Merced, Sacramento-Bakersfield, Bakersfield-Los Angeles, Los Angeles-San Diego via the Inland Empire, and Los Angeles-Orange County-San Diego. This Public Utilities Technical Evaluation for the Bakersfield-to-Los Angeles is one of five such reports being prepared for each of the regions on the topic, and it is one of fifteen technical reports for this region. This report will be summarized in the Program EIR/EIS and it will be part of the administrative record supporting the environmental review of alternatives.

1.1 ALTERNATIVES

1.1.1 No-Project Alternative

The No-Project Alternative serves as the baseline for the comparison of Modal and High-Speed Train alternatives. The No-Project Alternative is shown on Figure 1.1-1. The No-Project 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 No-Project 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). The No-Project Alternative 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 No-Project 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 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 only 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

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

Diego and Sacramento and the Bay Area, and conventional passenger trains (Amtrak) on freight and/or commuter rail tracks. The Modal/System Alternative consists of expansion of highways, airports, and intercity and commuter rail systems serving the markets identified for the High-Speed Train Alternative. Figure 1.1-2 illustrates the Highway Component of the Modal Alternative whereas Figure 1.1-3 illustrates the aviation component. The Modal Alternative uses the same inter-city travel demand (not capacity) assumed under the high-end sensitivity analysis completed for the high-speed train ridership in 2020. This same travel demand is assigned to the highways and airports and passenger rail described under the No-Project Alternative, and the additional improvements or expansion of facilities is assumed to meet the demand, regardless of funding potential and without high-speed train service as part of the system.

1.1.3 High-Speed Train Alternative

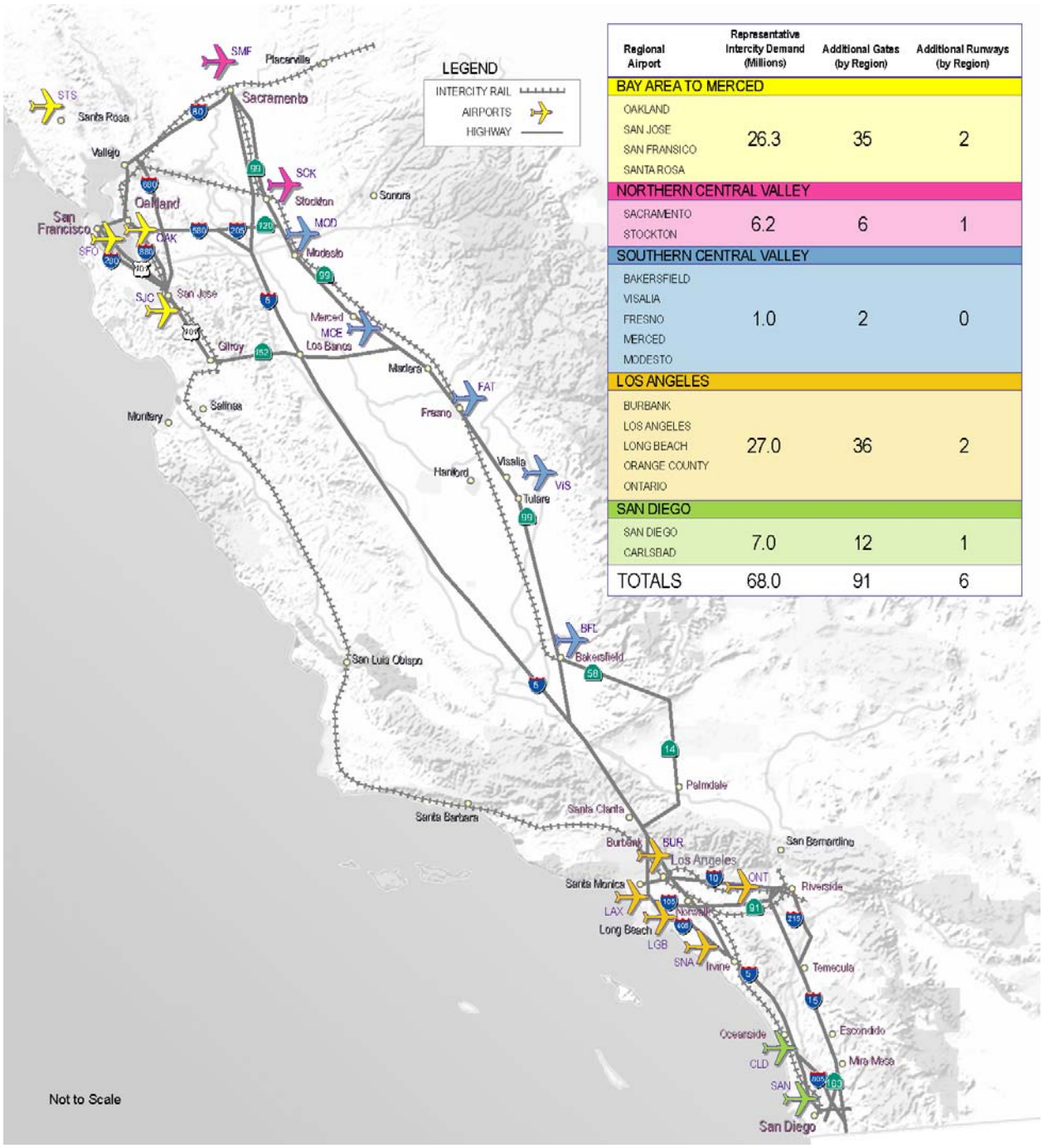
The Authority has defined a statewide high-speed train system capable of speeds in excess of 200 miles per hour (mph) (320 kilometers per hour [km/h]) on dedicated, fully grade-separated tracks, with state-of-the-art safety, signaling, and automated train control systems. State of the art high-speed 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.

The High-Speed Train (HST) Alternative includes several corridor and station options, as shown on Figure 1.1-4. 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. There are no by-pass options in the Bakersfield-to-Los Angeles region.

Figure 1.1-2
Modal Alternative - Highway Component

Figure 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

Figure 1.1-4
High-Speed Train Alternative –
Corridors and
Stations for Continued Investigation

2.0 BASELINE/AFFECTED ENVIRONMENT

2.1 STUDY AREA

There are a number of utility facilities and utility lines in the HST and Modal Alternatives Study Area. The Study Area for public utilities is defined as the area within 100 feet (ft) (approximately 30 meters (m)) from the centerline of alignments and the area that includes the footprint of project facilities and up to 100 ft (approximately 30 m) from the facilities. This is the area in which there would be potential conflicts between utilities and the build alternatives. Possible utility lines that may be affected include electric, natural gas and wastewater transmission. Utility facilities that may potentially be affected include petroleum extraction and processing plants, electrical substations and sewage treatment facilities. A description of the utility providers and a summary of the major existing utility lines and facilities in the study area are provided in this Section of the Report.

2.2 REGULATORY SETTING

2.2.1 California Public Utilities Commission

Utilities within California are primarily regulated by the California Public Utilities Commission (CPUC), which regulates privately owned telecommunications, electric, natural gas, water, railroad, rail transit, and passenger transportation companies. The CPUC is responsible for assuring that California utility customers have safe, reliable, utility services at reasonable rates, protecting utility customers from fraud, and promoting the health of California's economy. The CPUC does not issue permits for utility line crossings. The CPUC does, however, regulate at-grade rail crossings. Thus, any at-grade rail crossing for the HST Alternative will require CPUC approval (CPUC, 2003a and 2003c).

Regarding electricity, Assembly Bill (AB) 970 requires the CPUC to identify constraints in California's transmission and distribution system and to take actions to remove them. In 2001, the CPUC prepared a report that identified 51 constraints on California's transmission and distribution systems that would exist by summer 2001. This report also identified an additional 107 constraints that would affect the system's reliability from 2002 to 2005. The report recommended that utilities complete various projects to increase system capacity to allow more energy to flow to consumers, improve system reliability by making the system more stable, and/or allow access to a wider range of generation sources, some of which may supply cheaper power (CPUC, 2001a). Since these projects have not yet been defined, future HST conflicts could occur that are not noted in this report.

Regarding natural gas facilities, the CPUC regulates the rates and services of California's natural gas utilities, including backbone gas transmission systems, local gas transmission, storage, gas distribution, and gas procurement (CPUC, 2001b). The CPUC does not issue permits for utility crossings.

2.2.2 California Energy Commission

The California Energy Commission (CEC) is the state's primary energy policy and planning agency. Created by the Legislature in 1974 and located in Sacramento, the Commission's five major responsibilities are listed below (CEC, 2003a).

- Forecasting future energy needs and keeping historical energy data
- Licensing thermal power plants of 50 megawatts or larger
- Promoting energy efficiency through appliance and building standards
- Developing energy technologies and supporting renewable energy
- Planning for and directing state response to energy emergency

The CEC does not directly permit utility conflicts; rather the utility companies must comply with CEQA as part of any utility line relocation efforts undertaken resulting from implementation of HST Alternatives. In addition, the utility companies would have to obtain local jurisdiction permits if easements are required as part of utility line relocations (CEC, 2003b).

2.2.3 Federal Energy Regulatory Commission

In addition to the CPUC and CEC, the Federal Energy Regulatory Commission (FERC) approves rates for wholesale electric sales of electricity and transmission in interstate commerce for private utilities, power marketers, power pools, power exchanges, and independent system operators. FERC acts under the legal authority of the Federal Power Act of 1935, the Public Utility Regulatory Policies Act, and the Energy Policy Act (FERC, 2003a).

FERC also administers the Natural Gas Act (NGA) of 1938, the Natural Gas Policy Act of 1978, the Outer Continental Shelf Lands Act of 1953, the Natural Gas Wellhead Decontrol Act of 1989, and the Energy Policy Act of 1992. These are the primary laws that FERC administers to oversee America's natural gas pipeline industry. Under the NGA, FERC regulates both the construction of pipeline facilities and the transportation of natural gas in interstate commerce. Companies providing services and constructing and operating interstate pipelines must first obtain certificates of public convenience and necessity from FERC. If a project alternative requires the relocation of a certificated interstate pipeline, the utility company will have to obtain approval from FERC for the relocation. If the relocation also requires new easements, local approval will be required (FERC, 2003c).

2.2.4 Office of the State Fire Marshall

The Office of the State Fire Marshal (OSFM), Pipeline Safety Division, regulates the safety of approximately 5,500 miles of intrastate hazardous liquid transportation pipelines and acts as an agent of the Federal Office of Pipeline Safety concerning the inspection of more than 2,000 miles of interstate pipelines. Pipeline Safety staff inspect, test, and investigate to ensure compliance with all federal and state pipeline safety laws and regulations. All spills, ruptures, fires, or similar incidents are responded to immediately; all such accidents are investigated for cause.

Under existing law, the Elder California Pipeline Safety Act of 1981, the State Fire Marshal administers provisions regulating the inspection of intrastate pipelines that transport hazardous liquids. Other regulations the State Fire Marshal implements include the Hazardous Liquids Pipeline Safety Act, Code of Federal Regulations (CFR) Title 49 Part 186-199, AB 592, and Section 51010 of the California Government Code. If a project alternative requires the relocation of a hazardous liquid pipeline, the State Fire Marshal will have to inspect and test the relocated pipeline. If the relocation also requires new easements, local approval will be required (OSFM, 2003a).

2.2.5 Wastewater Regulatory Setting

Numerous regulatory agencies are involved in wastewater treatment oversight. These agencies include the U.S. Environmental Protection Agency (EPA), the California Water Resources Control Board, and Regional Water Quality Control Boards (RWQCB). Primary wastewater regulation occurs via water quality discharge standards that are implemented through National Pollutant Discharge Elimination System (NPDES) permits issued by the various RWQCBs.

Wastewater conveyance and treatment facilities in the study area are owned and/or operated by different agencies and jurisdictions. Any potential conflict with such facility would be coordinated with the respective agency. If the project alternatives encroach on wastewater facility easements, permits from the agency and/or local jurisdiction would be anticipated.

2.3 BAKERSFIELD-LOS ANGELES STUDY AREA SETTING

The alignments of the HST and the Modal Alternatives extend from Los Angeles to Bakersfield. Alignments in this region pass through the cities and communities of Bakersfield, Tehachapi, Mojave, Rosamond, Lancaster, Palmdale, Santa Clarita, San Fernando, Burbank, Glendale, Los Angeles and Vernon, as well as unincorporated Kern and Los Angeles Counties. The HST and Modal Alternatives extend from Los Angeles north to Sylmar, after which there are two main optional routings – I-5/Grapevine and Antelope Valley/SR-58. The I-5/Grapevine HST Alignment option generally follows the same route as the I-5 until approximately 24 miles (39 kilometers) from Bakersfield, where it splits between the Union Avenue Corridor Option and the Wheeler Ridge Corridor Option. The Antelope Valley/SR-58 route generally follows State Routes 14 and 58 to Bakersfield.

There are a number of utility facilities and utility lines in the HST study area. These utility lines are electric, natural gas and wastewater treatment and conveyance. Utility facilities include electrical substations, natural gas pipelines and sewage treatment facilities. A description of the utility providers and a summary of the major existing utility lines and facilities in the study area are provided in this Section

2.3.1 Electricity

A. SERVICE PROVIDERS

The No-Project, Modal and HST alternatives cross the electricity service areas of the Los Angeles Department of Water and Power (LADWP), the City of Burbank, Southern California Edison (SCE) and Pacific Gas & Electric (PG&E).

B. SUBSTATIONS AND MAJOR TRANSMISSION LINES

This technical report includes major transmission lines (over 230 kV), substations and power plants within the study area. The MacNeil substation is located along the Burbank Downtown Siding segment under both the Modal and HST Alternatives. A 42 megawatt natural gas/fuel oil to electricity power plant has also been identified within the City of Burbank under the Modal Alternative. Table 2.3-1 lists the electricity transmission lines of 230 kV or greater that occur within the study area and provides the minimum and maximum voltage of the transmission lines as well as the quantity of occurrences within the study area. Quantity of occurrences are those that cross the study area or those that run parallel to the study area for a distance of greater than 300 feet. Table 2.3-1 also provides a listing of total occurrences under the SR-58/Antelope Valley route versus the I-5 Grapevine route under the Modal Alternative. No transmission lines were found to run in parallel to the Modal or HST within the study area. A partial segment total is also presented for the SR-58 Antelope Valley route versus the I-5 Grapevine route under the High-Speed Rail Alternative but does not provide a complete total due to the combination of routes that could be taken for approaches to the Los Angeles Union Station options.

A number of routing options are available for the HST Alternative. Table 2.3-1 provides totals for segments that create a routing option. From Bakersfield to Sylmar along the I-5, the Union Avenue Corridor and the Wheeler Ridge Corridor present an equal level of impacts with 13 potential conflicts to electrical facilities each. From Bakersfield to Sylmar along the Antelope Valley/SR-58 route would result in 25 potential conflicts to electrical facilities. As such, the Bakersfield to Sylmar along the I-5 presents the lowest level of potential conflicts with electrical facilities.

From Sylmar to Downtown Burbank there is only one set of routing and it would result in 9 potential conflicts to electrical facilities. From Downtown Burbank to Los Angeles Union Station, there are numerous combinations of routings. The routing of the segments Burbank Downtown Siding, I-5:

Glendale and I-5: Silverlake Aerial/Cut and Cover Option present the lowest potential for conflicts with 1 crossing. The largest potential for conflicts occur with the Metrolink/UPRR: Burbank Downtown Siding, Metrolink/ UPRR: Glendale, Metrolink/UPRR: Over and Under I-5 and SR-110, Metrolink/UPRR: Under I-5 and SR-110 with 3 potential crossings of electrical facilities by the HST Alternative.

In terms of routing to the East or South Connection there are also multiple combinations of routings. The routing combination of the LAUS Existing Siding, LAUS Existing South, South Connection, and Maintenance Yard segments present the least potential conflicts with 4 crossings of electrical facilities. Whereas the segments LAUS South Siding, LAUS Existing East, east Connection and maintenance yard comprise the route by which the largest potential conflicts would occur with 22 potential conflicts.

Table 2.3-1
Electrical Facilities within the Study Area

	Minimum kV	Maximum kV	Quantity Crossing	Quantity Parallel	Electrical Sub or Power Stations
No-Project Alternative					
Highways					
I-5: SR-99 to SR-14 (no programmed improvements)	0	0	0	0	0
I-5: SR-14 to I-405 (no programmed improvements)	0	0	0	0	0
I-5: I-405 to Burbank (no programmed improvements)	0	0	0	0	0
I-5: Burbank to LA Union Station (no programmed improvements)	0	0	0	0	0
SR-58/14: SR-99 to Palmdale (programmed widening in Antelope Valley done in existing ROW)	0	0	0	0	0
SR-14: Palmdale to I-5 (no programmed improvements)	0	0	0	0	0
Airports					
Burbank (no change)	0	0	0	0	0
Modal Alternative					
Highways					
I-5: SR-99 to SR-14 (Widen 2 lanes)	230	500	14	0	0
I-5: SR-14 to I-405 (Double-deck 4 lanes)	230	500	6	0	0
I-5: I-405 to Burbank (Widen 4 lanes)	230	500	11	0	1
I-5: Burbank to LA Union Station (Widen 4 lanes)	230	230	4	3	1
SR-58/14: SR-99 to Palmdale (No widening)	0	0	0	0	0
SR-14: Palmdale to I-5 (Widen 2 lanes)	230	500	20	0	0
Airports					
Burbank (9.9 additional MAP, 19 new gates, 1 new runway, 1 new access)	230	500	2	2	0
Route Totals					
Bakersfield to Los Angeles (SR-58/Antelope Valley Route)					
SR-58/14: SR-99 to Palmdale (No widening)	0	0	0	0	0
SR-14: Palmdale to I-5 (Widen 2 lanes)	230	500	20	0	0
Los Angeles to Sylmar	230	500	23	3	0
Total Route	230	500	43	3	0
Bakersfield to Los Angeles (I-5 Grapevine Route)					
I-5: SR-99 to SR-14 (Widen 2 lanes)	230	500	14	0	0
Los Angeles to Sylmar	230	500	23	3	0
Total Route	230	500	37	3	0
HST Corridor & Station Options					

	Minimum kV	Maximum kV	Quantity Crossing	Quantity Parallel	Electrical Sub or Power Stations
Alignments					
Antelope Valley Corridor	0	0	0	0	0
Burbank Airport to Downtown	0	0	0	0	0
East Connection	230	230	3	3	0
I-5: Tehachapi Corridor	230	500	12	12	0
I-5: Glendale	230	230	1	1	0
I-5: Silverlake Aerial/Cut and Cover Option	0	0	0	0	0
LAUS East Bank: North	0	0	0	0	0
LAUS Existing: East	230	230	8	0	0
LAUS Existing: South	230	230	4	0	0
Metrolink/UPRR: Glendale	230	230	1	1	0
Metrolink/UPRR: Over I-5 and SR-110	0	0	0	0	0
Metrolink/UPRR: Over and Under I-5 and SR-110	0	0	0	0	0
Metrolink/UPRR: Sylmar Station North	0	0	0	0	0
Metrolink/UPRR: Sylmar Station to Metrolink	0	0	0	0	0
Metrolink/UPRR: Under I-5 and SR-110	0	0	0	0	0
SR-58 Corridor	230	500	2	2	0
Soledad Canyon Corridor	230	500	23	23	0
South Connection	0	0	0	0	0
Union Avenue Corridor	500	500	1	1	0
Wheeler Ridge Corridor	500	500	1	1	0
Stations (including station approach tracks)					
Burbank Airport Siding	230	500	3	3	1
Burbank Downtown Siding	0	0	0	0	0
I-5: Burbank Downtown Siding	230	230	2	2	0
LAUS East Bank Siding	230	230	4	4	0
LAUS Existing Siding	0	0	0	0	0
LAUS South Siding	0	0	0	0	0
Maintenance Yard	230	230	3	3	0
Metrolink/UPRR: Burbank Downtown Siding	230	230	2	2	0
Metrolink/UPRR: Sylmar Station Siding	230	500	4	4	0
Palmdale Siding	0	0	0	0	0
Union Station East	230	230	8	8	0
Union Station South	230	230	8	8	0
Route Totals					
Bakersfield to Sylmar					
Union Avenue Corridor	500	500	1	1	0
I-5: Tehachapi Corridor	230	500	12	12	0
Total	230	500	13	13	0
Wheeler Ridge Corridor	500	500	1	1	0
I-5: Tehachapi Corridor	230	500	12	12	0
Total	230	500	13	13	0
SR-58 Corridor	230	500	2	2	0
Soledad Canyon Corridor	230	500	23	23	0
Palmdale Siding	0	0	0	0	0
Antelope Valley Corridor	0	0	0	0	0
Total	230	500	25	25	0
Sylmar to Downtown Burbank					
Metrolink/UPRR: Sylmar Station North	0	0	0	0	0
Metrolink/UPRR: Sylmar Station Siding	230	500	4	4	0
Burbank Airport Siding	230	500	3	3	0
Metrolink/UPRR: Sylmar Station to Metrolink	0	0	0	0	0
Burbank Airport to Downtown	0	0	0	0	0
I-5: Burbank Downtown Siding	230	230	2	2	0
Total	230	500	9	9	0

	Minimum kV	Maximum kV	Quantity Crossing	Quantity Parallel	Electrical Sub or Power Stations
Downtown Burbank to Los Angeles					
Burbank Downtown Siding	0	0	0	0	1
I-5: Glendale	230	230	1	1	0
I-5: Silverlake Aerial/Cut and Cover Option	0	0	0	0	0
Total	230	230	1	1	1
Metrolink/UPRR: Burbank Downtown Siding	230	230	2	2	1
Metrolink/UPRR: Glendale	230	230	1	1	0
Metrolink/UPRR: Over and Under I-5 and SR-110	0	0	0	0	0
Metrolink/UPRR: Over I-5 and SR-110	0	0	0	0	0
Total	230	230	3	3	1
Metrolink/UPRR: Burbank Downtown Siding	230	230	2	2	1
Metrolink/UPRR: Glendale	230	230	1	1	0
Metrolink/UPRR: Over and Under I-5 and SR-110	0	0	0	0	0
Metrolink/UPRR: Under I-5 and SR-110	0	0	0	0	0
Total	230	230	3	3	1
LAUS Existing Siding	0	0	0	0	0
LAUS Existing: South	230	230	4	0	0
South Connection	0	0	0	0	0
Total	230	230	4	0	0
LAUS Existing Siding	0	0	0	0	0
LAUS Existing: East	230	230	8	0	0
East Connection	230	230	3	3	0
Maintenance Yard	230	230	3	3	0
Total	230	230	14	6	0
LAUS South Siding	0	0	0	0	0
LAUS Existing: East	230	230	8	0	0
East Connection	230	230	3	3	0
Maintenance Yard	230	230	3	3	0
Union Station South	230	230	8	8	0
Total	230	230	22	14	0
LAUS East Bank: North	0	0	0	0	0
LAUS East Bank Siding	230	230	4	4	0
Union Station East	230	230	8	8	0
South Connection	0	0	0	0	0
Maintenance Yard	230	230	3	3	0
Total	230	230	15	15	0

2.3.2 Natural Gas

A. SERVICE PROVIDERS

The No-Project, Modal and HST alternatives cross the natural gas service areas of the Kinder Morgan Energy (SFPPLP), Southern California Gas (SCG) and Mobil, Mojave, Pacific Gas & Electric (PG&E), Plainall, Shell, and Unocal.

B. HIGH PRESSURE NATURAL GAS MAJOR FACILITIES AND DISTRIBUTION LINES

Natural gas providers with facilities in the study area include Southern California Gas (SCG) Company and PG&E. SCG includes natural gas service areas which extend primarily within central and

southern California. PG&E has service areas which are predominantly in central and northern California. Natural gas utilities in the study area include smaller pipelines with diameters between 3-12 inches to larger pipelines with diameters between 33-42 inches. Table 2.3-1 lists the natural gas pipelines in the study area and provides the minimum and maximum pipe diameters as well as the quantity of occurrences within the study area. Quantity of occurrences are those that cross the study area or those that run parallel to the study area for a distance of greater than 300 feet. Table 2.3-2 also provides a listing of total occurrences under the SR-58 Antelope Valley route versus the I-5 Grapevine route under the Modal Alternative. A partial segment total is also presented for the SR-58 Antelope Valley route versus the I-5 Grapevine route under the High-Speed Rail Alternative but does not provide a complete total due to the combination of routes that could be taken as approaches to the three Los Angeles Union Station options. Two pipelines were identified in the study I-405 to Burbank.

A number of routing options are available for the HST Alternative. Table 2.3-2 provides totals for segments that create a routing option. From Bakersfield to Sylmar along the I-5, the Union Avenue Corridor and the Wheeler Ridge Corridor present a comparable level of impacts with 98 and 90 potential conflicts to natural gas facilities, respectively. From Bakersfield to Sylmar along the Antelope Valley/SR-58 route would result in 35 potential conflicts to natural gas facilities. As such, the Bakersfield to Sylmar along the Antelope Valley/SR-58 presents the lowest level of potential conflicts with natural gas facilities.

From Sylmar to Downtown Burbank there is only one set of routing and it would result in 14 potential conflicts to natural gas facilities.

From Downtown Burbank to Los Angeles Union Station, there are numerous combinations of routings. The routing of the segments Burbank Downtown Siding, I-5: Glendale and I-5: Silverlake Aerial/Cut and Cover Option present the lowest potential for conflicts with 8 crossings. The largest potential for conflicts occur with the Metrolink/UPRR: Burbank Downtown Siding, Metrolink/ UPRR: Glendale, Metrolink/UPRR: Over and Under I-5 and SR-110, Metrolink/UPRR: Under I-5 and SR-110 with 12 potential crossings of natural gas facilities by the HST Alternative.

In terms of routing to the East or South Connection there are also multiple combinations of routings. The routing combination of the LAUS Existing Siding, LAUS Existing: South, South Connection, and Maintenance Yard segments present the least potential conflicts with 13 crossings of natural gas facilities. Whereas the segments LAUS East Bank: North, LAUS East Bank Siding, South Connection, and Maintenance yard comprise the route by which the largest potential conflicts would occur with 26 potential conflicts.

Table 2.3-2
Natural Gas Pipelines within the Study Area

	Minimum (inches)	Maximum (inches)	Quantity Crossing	Quantity Parallel
No-Project Alternative				
Highways				
I-5: SR-99 to SR-14 (no programmed improvements)	0	0	0	0
I-5: SR-14 to I-405 (no programmed improvements)	0	0	0	0
I-5: I-405 to Burbank (no programmed improvements)	0	0	0	0
I-5: Burbank to LA Union Station (no programmed improvements)	0	0	0	0
SR-58/14: SR-99 to Palmdale (programmed widening in Antelope Valley done in existing ROW)	0	0	0	0
SR-14: Palmdale to I-5 (no programmed improvements)	0	0	0	0
Airports				
Burbank (no Change)	0	0	0	0

	Minimum (inches)	Maximum (inches)	Quantity Crossing	Quantity Parallel
Modal Alternative				
Highways				
I-5: SR-99 to SR-14 (Widen 2 lanes)	3	34	88	8
I-5: SR-14 to I-405 (Double-deck 4 lanes)	10	30	5	2
I-5: I-405 to Burbank (Widen 4 lanes)	6	30	17	0
I-5: Burbank to LA Union Station (Widen 4 lanes)	14	14	4	0
SR-58/14: SR-99 to Palmdale (No widening)	0	0	0	0
SR-14: Palmdale to I-5 (Widen 2 lanes)	10	30	14	0
Airports				
Burbank (9.9 additional MAP, 19 new gates, 1 new runway, 1 new access)				
Route Totals				
Bakersfield to Los Angeles (SR-58/Antelope Valley Route)				
SR-58/14: SR-99 to Palmdale (No widening)	0	0	14	0
Los Angeles to Sylmar	6	30	26	2
Total Route	6	30	40	2
Bakersfield to Los Angeles (I-5 Grapevine Route)				
I-5: SR-99 to SR-14 (Widen 2 lanes)	3	34	88	8
Los Angeles to Sylmar	6	30	26	2
Total Route	3	34	114	10
HST Corridor & Station Options				
Alignments				
Antelope Valley Corridor	1	8	4	2
Burbank Airport to Downtown	26	26	1	1
East Connection	2	26	2	0
I-5: Tehachapi Corridor	1	34	75	38
I-5: Glendale	12	14	3	1
I-5: Silverlake Aerial/Cut and Cover Option	0	0	0	0
LAUS East Bank: North	2	8	2	0
LAUS Existing: East	1	16	5	2
LAUS Existing: South	12	16	4	0
Metrolink/UPRR: Glendale	12	14	2	0
Metrolink/UPRR: Over I-5 and SR-110	12	12	1	1
Metrolink/UPRR: Over and Under I-5 and SR-110	12	12	2	1
Metrolink/UPRR: Sylmar Station North	0	0	0	0
Metrolink/UPRR: Sylmar Station to Metrolink	26	26	2	1
Metrolink/UPRR: Under I-5 and SR-110	12	16	3	3
SR-58 Corridor	3	42	8	7
Soledad Canyon Corridor	1	26	21	9
South Connection	1	16	7	3
Union Avenue Corridor	1	42	23	7
Wheeler Ridge Corridor	3	42	15	4
Stations (including station approach tracks)				0
Burbank Airport Siding	8	26	2	3
Burbank Downtown Siding	12	26	5	5
I-5: Burbank Downtown Siding	3	26	4	2
LAUS East Bank Siding	12	16	7	5
LAUS Existing Siding	2	2	2	0
LAUS South Siding	1	16	6	5
Maintenance Yard	1	26	10	6
Metrolink/UPRR: Burbank Downtown Siding	3	26	5	1
Metrolink/UPRR: Sylmar Station Siding	1	26	5	3
Palmdale Siding	1	4	2	0
Route Totals				
Bakersfield to Sylmar				
Union Avenue Corridor	1	42	23	7

	Minimum (inches)	Maximum (inches)	Quantity Crossing	Quantity Parallel
I-5: Tehachapi Corridor	1	34	75	38
Total	1	42	98	45
Wheeler Ridge Corridor	3	42	15	4
I-5: Tehachapi Corridor	1	34	75	38
Total	1	42	90	42
SR-58 Corridor	3	42	8	7
Soledad Canyon Corridor	1	26	21	9
Palmdale Siding	1	4	2	0
Antelope Valley Corridor	1	8	4	2
Total	1	42	35	18
Sylmar to Downtown Burbank				
Metrolink/UPRR: Sylmar Station North	0	0	0	0
Metrolink/UPRR: Sylmar Station Siding	1	26	5	3
Burbank Airport Siding	8	26	2	3
Metrolink/UPRR: Sylmar Station to Metrolink	26	26	2	1
Burbank Airport to Downtown	26	26	1	1
I-5: Burbank Downtown Siding	3	26	4	2
Total	1	26	14	10
Downtown Burbank to Los Angeles				
Burbank Downtown Siding	12	26	5	5
I-5: Glendale	12	14	3	1
I-5: Silverlake Aerial/Cut and Cover Option	0	0	0	0
Total	12	26	8	6
Metrolink/UPRR: Burbank Downtown Siding	3	26	5	1
Metrolink/UPRR: Glendale	12	14	2	0
Metrolink/UPRR: Over and Under I-5 and SR-110	12	12	2	1
Metrolink/UPRR: Over I-5 and SR-110	12	12	1	1
Total	3	26	10	3
Metrolink/UPRR: Burbank Downtown Siding	3	26	5	1
Metrolink/UPRR: Glendale	12	14	2	0
Metrolink/UPRR: Over and Under I-5 and SR-110	12	12	2	1
Metrolink/UPRR: Under I-5 and SR-110	12	16	3	3
Total	3	26	12	5
LAUS Existing Siding	2	2	2	0
LAUS Existing: South	12	16	4	0
South Connection	1	16	7	3
Total	1	16	13	3
LAUS Existing Siding	2	2	2	0
LAUS Existing: East	1	16	5	2
East Connection	2	26	2	0
Maintenance Yard	1	26	10	6
Total	1	26	19	8
LAUS South Siding	1	16	6	5
LAUS Existing: East	1	16	5	2
East Connection	2	26	2	0
Maintenance Yard	1	26	10	6
Total	1	26	23	13
LAUS East Bank: North	2	8	2	0
LAUS East Bank Siding	12	16	7	5
South Connection	1	16	7	3
Maintenance Yard	1	26	10	6

	Minimum (inches)	Maximum (inches)	Quantity Crossing	Quantity Parallel
Total	1	26	26	14

2.3.3 Wastewater Treatment

A. SERVICE PROVIDERS

Wastewater treatment providers in the study area are listed in Table 2.3-3. Areas that are not served by these providers are generally served by septic tanks.

Table 2.3-3
Wastewater Treatment Providers

Wastewater Treatment Provider	Service Area
Los Angeles County Sanitation Districts	Los Angeles County
Los Angeles City	Los Angeles City
Rosamond Community Services District	Rosamond
City of Tehachapi Public Works Dept.	Tehachapi
Mojave Public Utility District (MPUD)	Mojave

B. WASTEWATER TREATMENT PLANTS AND WASTEWATER PIPELINES

Table 2.3-3 lists the wastewater pipelines of 36 inches in diameter or greater in the study area and provides the minimum and maximum pipe diameters as well as the quantity of occurrences within the study area. Table 2.3-2 also provides a listing of total occurrences under the SR-58 Antelope Valley route versus the I-5 Grapevine route under the Modal Alternative. No pipelines running parallel to the HST or Modal Alternative were identified. A partial segment total is also presented for the SR-58 Antelope Valley route versus the I-5 Grapevine route under the High-Speed Rail Alternative but does not provide a complete total due to the combination of routes that could be taken approaching the various options for Los Angeles Union Station. The HST Alternative also crosses through a Lancaster Water Reclamation Plant alongside the existing the right-of-way for Sierra Highway and the Union Pacific Railroad. The HST would be located on the east side of the right-of-way which bisects the Plant.

A number of routing options are available for the HST Alternative. Table 2.3-4 provides totals for segments that create a routing option. From Bakersfield to Sylmar along the I-5, the Union Avenue Corridor present the highest level of potential impacts with 2 potential conflicts to wastewater pipelines facilities. The Wheeler Ridge option from Bakersfield to Sylmar presents the least potential for impacts with no anticipated crossings with major natural gas lines. The Bakersfield to Sylmar along the Antelope Valley/SR-58 route would result in a single potential conflict to wastewater pipelines facilities.

From Sylmar to Downtown Burbank there is only one set of routing and it would result in no identified potential conflicts to wastewater pipeline facilities.

From Downtown Burbank to Los Angeles Union Station, there are numerous combinations of routings. The routing of the segments Burbank Downtown Siding, I-5: Glendale and I-5: Silverlake Aerial/Cut and Cover Option present the lowest potential for conflicts with no identified crossings. The largest potential for conflicts occur with the Metrolink/UPRR: Burbank Downtown Siding, Metrolink/ UPRR: Glendale, Metrolink/UPRR: Over and Under I-5 and SR-110, Metrolink/UPRR: Under

I-5 and SR-110 as well as the Metrolink/UPRR: Under I-5 and SR-110 option with 2 potential crossings of wastewater pipeline facilities each.

In terms of routing to the East or South Connection there are also multiple combinations of routings. The routing combination with the segments LAUS East Bank: North, LAUS East Bank Siding, South Connection, and Maintenance yard comprise the route by which the largest potential conflicts would occur with 2 potential conflicts. The other routing combinations would result in 1 potential crossing all of which occur within the maintenance yard.

Table 2.3-4
Wastewater Pipelines within the Study Area

	Minimum (inches)	Maximum (inches)	Quantity Crossing
No-Project Alternative			
Highways			
I-5: SR-99 to SR-14 (no programmed improvements)	0	0	0
I-5: SR-14 to I-405 (no programmed improvements)	0	0	0
I-5: I-405 to Burbank (no programmed improvements)	0	0	0
I-5: Burbank to LA Union Station (no programmed improvements)	0	0	0
SR-58/14: SR-99 to Palmdale (programmed widening in Antelope Valley done in existing ROW)	0	0	0
SR-14: Palmdale to I-5 (no programmed improvements)	0	0	0
Airports			
Burbank (no Change)	0	0	0
Modal Alternative			
Highways			
I-5: SR-99 to SR-14 (Widen 2 lanes)	36	48	2
I-5: SR-14 to I-405 (Double-deck 4 lanes)	0	0	0
I-5: I-405 to Burbank (Widen 4 lanes)	0	0	0
I-5: Burbank to LA Union Station (Widen 4 lanes)	0	0	0
SR-58/14: SR-99 to Palmdale (No widening)	0	0	0
SR-14: Palmdale to I-5 (Widen 2 lanes)	0	0	0
Airports	0	0	0
Burbank (9.9 additional MAP, 19 new gates, 1 new runway, 1 new access)	0	0	0
Route Totals			
Bakersfield to Los Angeles (SR-58/Antelope Valley Route)			
SR-58/14: SR-99 to Palmdale (No widening)	0	0	0
Los Angeles to Sylmar	0	0	0
Total Route	0	0	0
Bakersfield to Los Angeles (I-5 Grapevine Route)			
I-5: SR-99 to SR-14 (Widen 2 lanes)	0	0	0
Los Angeles to Sylmar	0	0	0
SR-58/14: SR-99 to Palmdale (No widening)	0	0	0
Total Route	0	0	0
HST Corridor & Station Options			
Alignments			
Antelope Valley Corridor	0	0	0
Burbank Airport to Downtown	0	0	0
East Connection	0	0	0
I-5: Tehachapi Corridor	0	0	0
I-5: Glendale	0	0	0
I-5: Silverlake Aerial/Cut and Cover Option	0	0	0
LAUS East Bank: North	54	54	1
LAUS Existing: East	0	0	0
LAUS Existing: South	0	0	0

	Minimum (inches)	Maximum (inches)	Quantity Crossing
Metrolink/UPRR: Glendale	0	0	0
Metrolink/UPRR: Over I-5 and SR-110	54	54	1
Metrolink/UPRR: Over and Under I-5 and SR-110	54	54	1
Metrolink/UPRR: Sylmar Station North	0	0	0
Metrolink/UPRR: Sylmar Station to Metrolink	0	0	0
Metrolink/UPRR: Under I-5 and SR-110	54	54	1
SR-58 Corridor	48	48	1
Soledad Canyon Corridor	0	0	0
South Connection	0	0	0
Union Avenue Corridor	36	54	2
Wheeler Ridge Corridor	0	0	0
Stations (including station approach tracks)	0	0	0
Burbank Airport Siding	0	0	0
Burbank Downtown Siding	0	0	0
I-5: Burbank Downtown Siding	0	0	0
LAUS East Bank Siding	0	0	0
LAUS Existing Siding	0	0	0
LAUS South Siding	0	0	0
Maintenance Yard	54	54	1
Metrolink/UPRR: Burbank Downtown Siding	0	0	0
Metrolink/UPRR: Sylmar Station Siding	0	0	0
Palmdale Siding	0	0	0
Route Totals			
Bakersfield to Sylmar			
Union Avenue Corridor	36	54	2
I-5: Tehachapi Corridor	0	0	0
Total	36	54	2
Wheeler Ridge Corridor	0	0	0
I-5: Tehachapi Corridor	0	0	0
Total	0	0	0
SR-58 Corridor	48	48	1
Soledad Canyon Corridor	0	0	0
Palmdale Siding	0	0	0
Antelope Valley Corridor	0	0	0
Total	48	48	1
Sylmar to Downtown Burbank			
Metrolink/UPRR: Sylmar Station North	0	0	0
Metrolink/UPRR: Sylmar Station Siding	0	0	0
Burbank Airport Siding	0	0	0
Metrolink/UPRR: Sylmar Station to Metrolink	0	0	0
Burbank Airport to Downtown	0	0	0
I-5: Burbank Downtown Siding	0	0	0
Total	0	0	0
Downtown Burbank to Los Angeles			
Burbank Downtown Siding	0	0	0
I-5: Glendale	0	0	0
I-5: Silverlake Aerial/Cut and Cover Option	0	0	0
Total	0	0	0
Metrolink/UPRR: Burbank Downtown Siding	0	0	0
Metrolink/UPRR: Glendale	0	0	0
Metrolink/UPRR: Over and Under I-5 and SR-110	54	54	1
Metrolink/UPRR: Over I-5 and SR-110	54	54	1
Total	54	54	2
Metrolink/UPRR: Burbank Downtown Siding	0	0	0

	Minimum (inches)	Maximum (inches)	Quantity Crossing
Metrolink/UPRR: Glendale	0	0	0
Metrolink/UPRR: Over and Under I-5 and SR-110	54	54	1
Metrolink/UPRR: Under I-5 and SR-110	54	54	1
Total	54	54	2
LAUS Existing Siding	0	0	0
LAUS Existing: South	0	0	0
South Connection	0	0	0
Maintenance Yard	54	54	1
Total	54	54	1
LAUS Existing Siding	0	0	0
LAUS Existing: East	0	0	0
East Connection	0	0	0
Maintenance Yard	54	54	1
Total	54	54	1
LAUS South Siding	0	0	0
LAUS Existing: East	0	0	0
East Connection	0	0	0
Union Station South	0	0	0
Maintenance Yard	54	54	1
Total	54	54	1
LAUS East Bank: North	54	54	1
LAUS East Bank Siding	0	0	0
South Connection	0	0	0
Union Station East	0	0	0
Maintenance Yard	54	54	1
Total	54	54	2

3.0 METHODOLOGY FOR PUBLIC UTILITIES

The physical impacts of the build alternatives related to public services facilities will be largely limited to the area of disturbance. Affected public services providers of electrical, natural gas and wastewater treatment service were contacted via mail and asked to provide the locations of their current and planned services and facilities in the study area. Direct impacts to public services facilities were determined by identifying facilities near the build alternatives, overlaying the alternatives on a Geographic Information System for natural gas and electricity infrastructure. GIS data sets were obtained from MapSearch which compiles electricity and petroleum utility data. For wastewater infrastructure, the alignment was overlaid upon maps of major sewer systems obtained by city and county agencies.

The Study Area for public utilities is defined as the area within 100 feet (ft) (30 meters (m)) from the centerline of alignments and the area that includes the footprint of project facilities and up to 100 ft (30 m) from the facilities. This is the area in which there would be potential conflicts between utilities and the build alternatives.

It is assumed that utilities that are within this study area could potentially be impacted during construction of the project alternatives, although types of mitigation are provide in Section 5.0 that would reduce the potential for service to be interrupted.

Ratings of high, medium and low were used in evaluating potential impacts. These ratings are defined below.

Electrical Facilities

High - one or more 230 kV or greater facility is within the study area.
Medium - not applicable
Low - no 230kV or greater facility is within the study area.

Natural Gas Facilities

High - 31 or more gas lines are within the study area.
Medium - 16 to 30 gas lines are within the study area.
Low - 1 to 15 gas lines are within the study area.

Wastewater Treatment Facilities

High - wastewater pipelines of 36 inch diameter or greater or treatment facilities are in the study area.
Medium - not applicable
Low - no wastewater pipelines of 36 inches or greater or treatment facilities are in the study area.

4.0 PUBLIC UTILITY IMPACTS

As described in Section 2.0, there are a number of utility lines and utility facilities in the study area. The public utilities that are evaluated are electric, natural gas and wastewater. Table 4.0-1 provides the potential impacts to these types of utilities for the build alternatives and rates the impacts for each segment of each build alternative as high (H), medium (M) or low (L). The definitions of high, medium and low potential impacts were provided in Section 3.0.

Table 4.0-1
Analysis/Comparison Table
Impacts to Public Utilities Bakersfield-to-Los Angeles

	Electrical Facilities (H, M, L)	Natural Gas Lines (H, M, L)	Waste Treatment Facilities (H, M, L)
No-Project			
Highways			
I-5: SR-99 to SR-14 (No programmed improvements)	L, 0	L, 0	L, 0
I-5: SR-14 to I-405 (No programmed improvements)	L, 0	L, 0	L, 0
I-5: I-405 to Burbank (No programmed improvements)	L, 0	L, 0	L, 0
I-5: Burbank to LA Union Station (LAUS) (No programmed improvements)	L, 0	L, 0	L, 0
SR-58/14: SR-99 to Palmdale (Widen SR 99 in ROW)	L, 0	L, 0	L, 0
SR-14: Palmdale to I-5 (No programmed improvements)	L, 0	L, 0	L, 0
Airports			
Burbank (No programmed improvements)	L, 0	L, 0	L, 0
Modal			
Highways			
I-5: SR-99 to SR-14 (widen 2 lanes)	H, 14	H, 88	H, 2
I-5: SR-14 to I-405 (double-deck 4 lanes)	H, 6	L, 5	L, 0
I-5: I-405 to Burbank (widen 4 lanes)	H, 11	M, 17	L, 0
I-5: Burbank to LAUS (widen 4 lanes)	H, 4	L, 4	L, 0
SR-58/14: SR-99 to Palmdale (no widening)	L, 0	L, 0	L, 0
SR-14: Palmdale to I-5 (widen 2 lanes)	H, 20	L, 14	L, 0
Airports			
Burbank (9.9 additional MAP, 19 new gates, 1 new runway, 1 new access)	H, 2	H, 1	L, 0
HST Corridor & Station Options			
Bakersfield to Los Angeles			
Alignments			
Antelope Valley Corridor	L, 0	L, 4	L, 0
Burbank Airport to Downtown	L, 0	L, 1	L, 0
East Connection	H, 3	L, 2	L, 0
I-5: Glendale	H, 1	L, 3	L, 0
I-5: Silverlake Aerial/Cut and Cover	L, 0	L, 0	L, 0

	Electrical Facilities (H, M, L)	Natural Gas Lines (H, M, L)	Waste Treatment Facilities (H, M, L)
Option			
I-5: Silverlake Cut-and-Cover Option	L, 0	L, 0	L, 0
I-5: Tehachapi Corridor	H, 12	H, 75	L, 0
LAUS East Bank North	L, 0	L, 2	H, 1
LAUS Existing: East	H, 8	L, 5	L, 0
LAUS Existing: South	H, 4	L, 4	L, 0
Metrolink/UPRR: Over and under I-5 and SR-110	L, 0	L, 2	H, 1
Metrolink/UPRR: Over I-5 and SR-110	L, 0	L, 1	H, 1
Metrolink/UPRR: Glendale	H, 1	L, 2	L, 0
Metrolink/UPRR: Under I-5 and SR-110	L, 0	L, 3	H, 1
Metrolink/UPRR: Sylmar Metrolink Station to Metrolink	L, 0	L, 2	L, 0
Metrolink/UPRR: Sylmar Station North	L, 0	L, 0	L, 0
Soledad Canyon Corridor	H, 23	M, 21	L, 0
South Connection	L, 0	L, 8	L, 0
SR-58 Corridor	H, 2	L, 8	H, 1
Union Avenue Corridor	H, 1	M, 23	H, 2
Wheeler Ridge Corridor	H, 1	L, 15	L, 0
Stations (including station approach tracks)			
Burbank Airport Siding	H, 3	L, 2	L, 0
Burbank Downtown Siding	L, 0	L, 5	L, 0
I-5: Burbank Downtown Siding	H, 2	L, 4	L, 0
LAUS East Bank Siding	H, 4	L, 7	L, 0
LAUS Existing Siding	L, 0	L, 2	L, 0
LAUS South Siding	L, 0	L, 6	L, 0
Maintenance Yard	H, 3	L, 10	L, 0
Metrolink/UPRR: Burbank Downtown Siding	H, 2	L, 5	L, 0
Metrolink/UPRR: Sylmar Station Siding	H, 4	L, 5	L, 0
Palmdale Siding	L, 0	L, 2	L, 0

4.1 NO-PROJECT ALTERNATIVE

The No-Project Alternative includes one road improvement which is the widening SR-58/14 in the segment from SR-99 to Palmdale. This programmed widening within Antelope Valley would occur in the existing roadway right-of-way and the only potential for utility impacts would be within the right-of-way. As shown in Table 4.0-1, the SR-58/14 widening and the other future approved projects under the No-Project Alternative would result in low potential impacts to utilities

4.2 MODAL ALTERNATIVE

As shown in Table 4.0-1, roadway expansions projected under the Modal Alternative would result in potential impacts to electricity, natural gas and wastewater treatment infrastructure in the study area. The potential impacts ranged from low to high for all the analyzed utilities.

4.2.1 Electricity Infrastructure

The Modal Alternative would result in high potential impacts related to electrical facilities for all of the project segments except SR-58/14: SR-99 to Palmdale which would be low.

4.2.2 Natural Gas Infrastructure

The Modal Alternative would result in high, medium and low potential impacts related to natural gas pipelines in the study area, depending on the segment involved as shown in Table 4.0-1. High impacts would occur along the I-5 between SR-14 and SR-99 and at Burbank Airport.

4.2.3 Wastewater Treatment Infrastructure

As shown on Table 4.0-1, wastewater infrastructure is considered to have a low impact due to the Modal Alternative with the exception of I-5: SR-99 to SR-14 segment where there is a major sewage pipeline within the study area.

4.3 HIGH-SPEED TRAIN ALTERNATIVE

As shown in Table 4.0-1, implementation of the HST Alternative would result in potential impacts to electricity, natural gas and wastewater treatment infrastructure in the study area.

4.3.1 Electricity Infrastructure

Many of the HST Alternative corridor and station options would result in high potential impacts to electricity infrastructure, as shown on table 4.0-1

4.3.2 Natural Gas Infrastructure

Most of the HST Alternative corridor and station options would result in low potential impacts to natural gas infrastructure. However, Union Avenue Corridor and Soledad Canyon Corridor segments would have medium impacts and the I-5. Tehachapi Corridor segment would have high impacts.

4.3.3 Wastewater Treatment Infrastructure

Most of the HST Alternative corridor and station options would result in low potential impacts to wastewater treatment infrastructure. However, Union Avenue Corridor and SR-58 Corridor segments would have high impacts.

5.0 REFERENCES

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

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

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

Pennwell MAPSearch, GIS files of Petroleum Resources, 2003.

Pennwell MAPSearch, GIS files of Electricity Resources, 2003.

Mojave Public Utility District, Sewer Facilities Map, February 1988.
City of Tehachapi, Sewer Base Map, July 2000
City of Los Angeles Sewer Map
City of Bakersfield Sewer Mains Map, July 1996
County of Los Angeles Sewer Plan Maps
Rosamond Community Services District, Sewer System Map, May 1992

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