

CALIFORNIA HIGH-SPEED TRAIN

Program Environmental Impact Report/Environmental Impact Statement

Bay Area to Merced

Public Utilities TECHNICAL EVALUATION

January 2004

Prepared for:

California High-Speed Rail Authority

U.S. Department of Transportation
Federal Railroad Administration



U.S. Department
of Transportation
**Federal
Railroad
Administration**

CALIFORNIA HIGH-SPEED TRAIN PROGRAM EIR/EIS

Bay Area to Merced **Public Utilities Technical Evaluation**

Prepared by:

Parsons

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Acronyms

AUTHORITY	CALIFORNIA HIGH-SPEED RAIL AUTHORITY
BART	SAN FRANCISCO BAY AREA RAPID TRANSIT
BNSF	BURLINGTON NORTHERN SANTA FE
CEC	CALIFORNIA ENERGY COMMISSION
CEQA	CALIFORNIA ENVIRONMENTAL QUALITY ACT
CPAU	CITY OF PALO ALTO UTILITIES
CPUC	CALIFORNIA PUBLIC UTILITIES COMMISSION
EIR	ENVIRONMENTAL IMPACT REPORT
EIS	ENVIRONMENTAL IMPACT STATEMENT
EPA	U.S. ENVIRONMENTAL PROTECTION AGENCY
FAA	FEDERAL AVIATION ADMINISTRATION
FERC	FEDERAL ENERGY REGULATORY COMMISSION
FHWA	FEDERAL HIGHWAY ADMINISTRATION
FRA	FEDERAL RAILROAD ADMINISTRATION
FTA	FEDERAL TRANSIT ADMINISTRATION
GIS	GEOGRAPHIC INFORMATION SYSTEM
HST	HIGH-SPEED TRAIN
I	INTERSTATE
LAVWMA	LIVERMORE-AMADOR VALLEY WATER MANAGEMENT AGENCY
LOSSAN	LOS ANGELES TO SAN DIEGO CORRIDOR
MTC	METROPOLITAN TRANSPORTATION AUTHORITY

NEPA	NATIONAL ENVIRONMENTAL POLICY ACT
NGA	NATURAL GAS ACT
RTP	REGIONAL TRANSPORTATION PLAN
SCVWD	SANTA CLARA VALLEY WATER DISTRICT
SFO	SAN FRANCISCO INTERNATIONAL AIRPORT
SFPUC	SAN FRANCISCO PUBLIC UTILITIES COMMISSION
STIP	STATE TRANSPORTATION IMPROVEMENT PROGRAM
SR	STATE ROUTE
SVP	SILICON VALLEY POWER
UPRR	UNION PACIFIC RAILROAD
USACE	U.S. ARMY 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.

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,

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

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 Cultural Resources Technical Evaluation for the Bay Area – Merced Region 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 (No-Project, Modal, HST)

1.1.1. No-Project Alternative

The No-Project Alternative serves as the baseline for the comparison of Modal and High-Speed Train alternatives (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 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 shows the modal alternative for the Bay Area-to-Merced Corridor. 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.

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The Modal Alternative for the Bay Area-to-Merced region consists of two major sets of proposed improvements (see Figure 1.1-2):

- **Improvements to Highways:** Consisting of additional highway lanes to provide sufficient highway capacity and associated interchange reconfiguration, crossing bridge widening, ramp widening, cross street and intersection widening (Figure 1.1-2). Within the region, these improvements, therefore, would occur along proposed portions of Interstate (I) 5, I-880, I-580, I-80, and State Route (SR) 152. Table 1.1-1 lists the proposed highway improvements in the Bay Area-to-Merced region.
- **Improvements to Airports:** Primarily consisting of improvements to terminal gates and runways to provide sufficient landside and airside capacity and associated taxiways, ground access, parking, terminal and support facilities and airports that can serve the same geographic area and demand as the proposed High-Speed Train (HST) Alternative. Within the study area corridor, these proposed improvements would occur at San José International Airport and Oakland International Airport (Figure 1.1-2). Table 1.2-2 lists the airport improvements associated with the airports.

**Table 1.1-1: Proposed Modal Alternative Highway Improvements
Bay Area to Merced**

Highway Corridor	Segment (From – To)	No. of Additional Lanes ¹ (Total – Both Directions)	No. of Existing Lanes (Total - Both Directions)	Type of Improvement
Segment 1: Merced to San José				
SR 152	SR 99 to I-5	2	1-2	widening
SR 152	I-5 to US 101	2	1-2	widening
US 101	SR 152 to Gilroy	2	2-3	widening
US 101	Gilroy to I-880	2	2-5	widening
Segment 2: San José to San Francisco				
US 101	I-880 to Redwood City	2	4-5	widening
US 101	Redwood City to SFO	2	4-5	widening
US 101	San Francisco International Airport (SFO) to San Francisco	2	4-6	widening
Segment 3: San José to Oakland				
I-880	US 101 to Fremont/Newark	2	3-4	widening
I-880	Fremont/Newark to I-238	2	3-4	widening
I-880	I-238 to I-80	2	2-4	widening
Segment 4: I-580 to I-5 (via I-238)				
I-580	I-880 to I-5 (via I-238)	2	4-6	widening
Segment 5: San Francisco to Sacramento				
I-80	San Francisco to I-880	2	5-6	widening
I-80	I-880 to I-5 (Sacramento)	2	4-6	widening

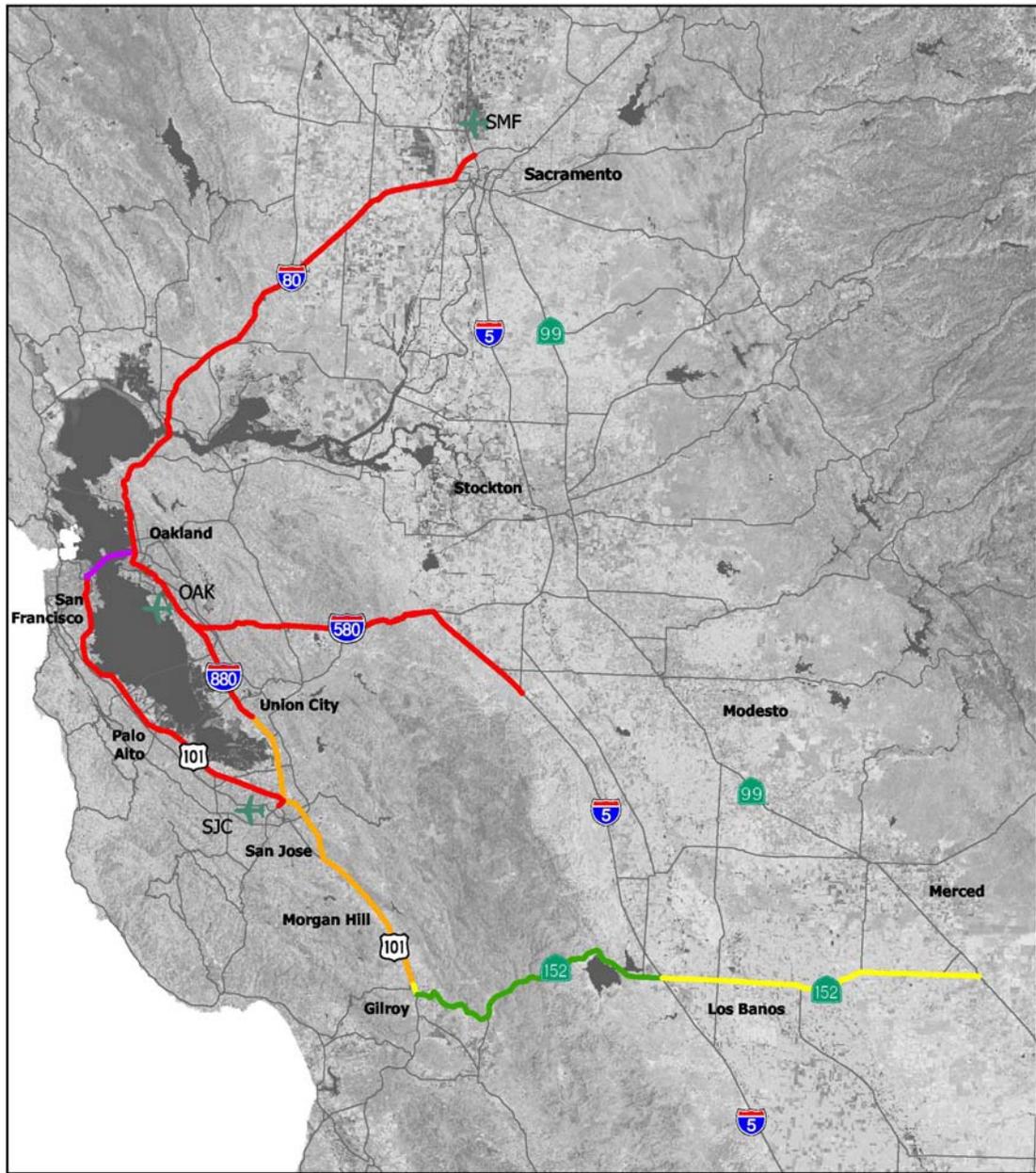
¹ Represents the number of through lanes in addition to the total number of existing lanes that approximate an equivalent level of capacity to serve the representative demand.

**Table 1.1-2: Proposed Modal Alternative Airport Improvements – Year 2020
Bay Area to Merced**

Airport Name	Additional Gates	Additional Runways
San José International Airport	14	one
Oakland International Airport	19	one

Source: Parsons Brinckerhoff, November 2002

Figure 1.1-2: Modal Alternative – Bay Area-to-Merced Region



Source: Landsat 1985

March 11, 2003

California High Speed Train Program EIR/EIS



Legend

Existing Number of Lanes (both dir.)

- 12 Lanes
- 10 Lanes
- 8 Lanes
- 6 Lanes
- 4 Lanes

Modal Alignment Airports



**Modal Alternative
Bay Area to Merced Region**

Figure 1

1.1.3 High Speed Train Alternative

The Authority has defined a statewide high speed train (HST) 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 1.1-3 shows the High Speed Train Alternative for the Bay Area-to-Merced Corridor.

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 Bay Area-to-Merced corridor can be broadly divided into three regional segments. Each segment has several alternative alignments for all or a portion of the length of the segment. Each segment may be further subdivided for analyzing and reporting potential impacts. The various segment options, along with station locations, are described below.

1.1.3.1 Segment 1 – Merced to San José

In this segment, all alignments would be on an exclusive guideway with separate tracks for high-speed trains and would connect to the Sacramento-to-Bakersfield high-speed train corridor. Two separate corridors are being studied:

Corridor 1A. This corridor would run between Merced and San José, via Pacheco Pass and Gilroy. Two options for the alignment are being considered:

- Gilroy Option: This alignment would extend from Merced through the San Joaquin Valley and Pacheco Pass, through Gilroy, and then north along the Caltrain/Union Pacific Railroad (UPRR) rail corridor. Within this option, two suboptions are under consideration – the alignment of each is a reflection of the design speed.

Stations would include Los Baños (near I-5) in the San Joaquin Valley, Gilroy (near the existing Caltrain Station), and the existing San José (Diridon) Station.

- Gilroy Bypass Option: This alignment would extend from Merced through the San Joaquin Valley and Pacheco Pass and then north along the Caltrain/UPRR rail corridor.

Stations would include Los Baños (near I-5) in the San Joaquin Valley, Morgan Hill (near the existing Caltrain Station), and the existing San José (Diridon) Station.

Figure 1.1-3a: High Speed Rail Alternative – Bay Area-to-Merced Region

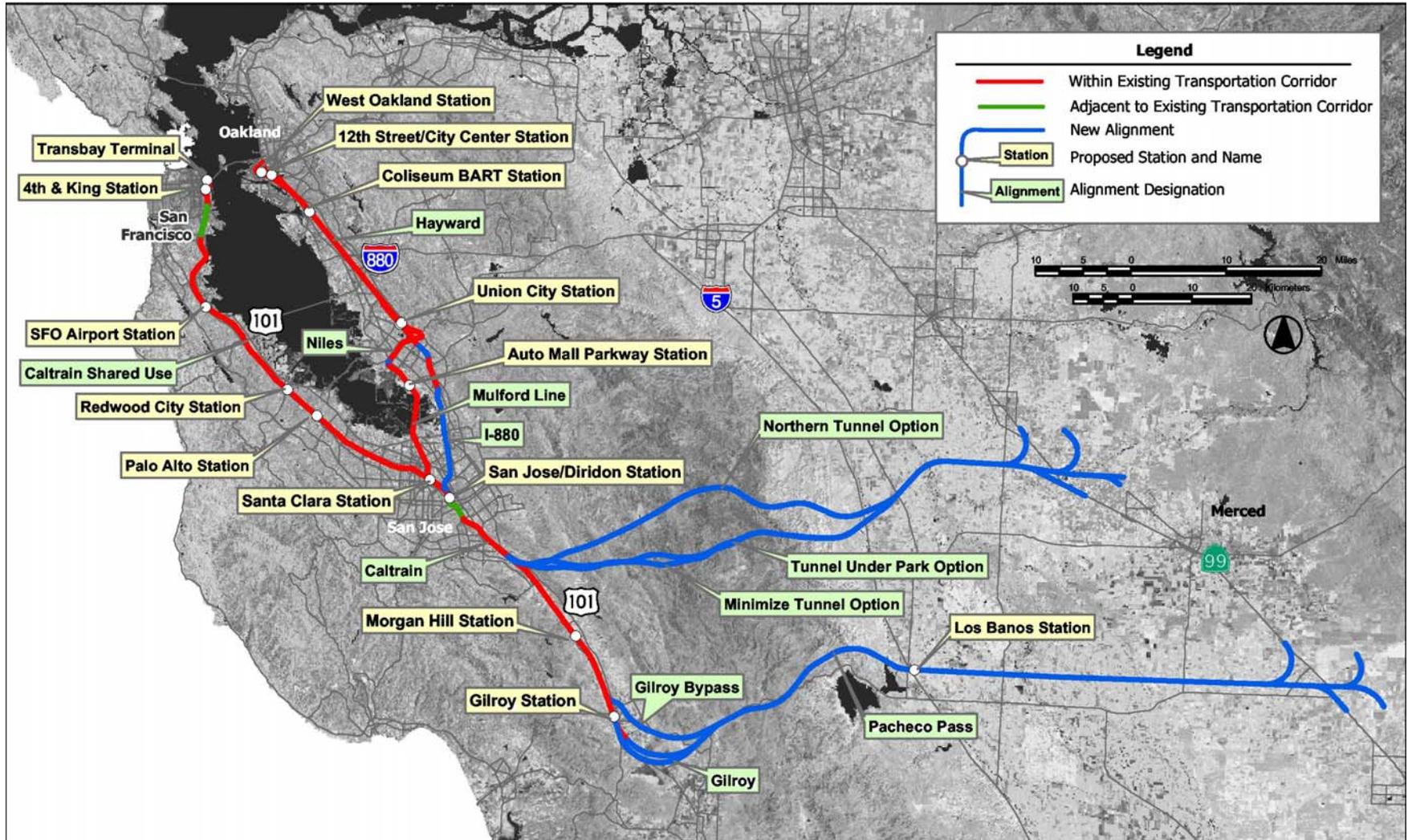
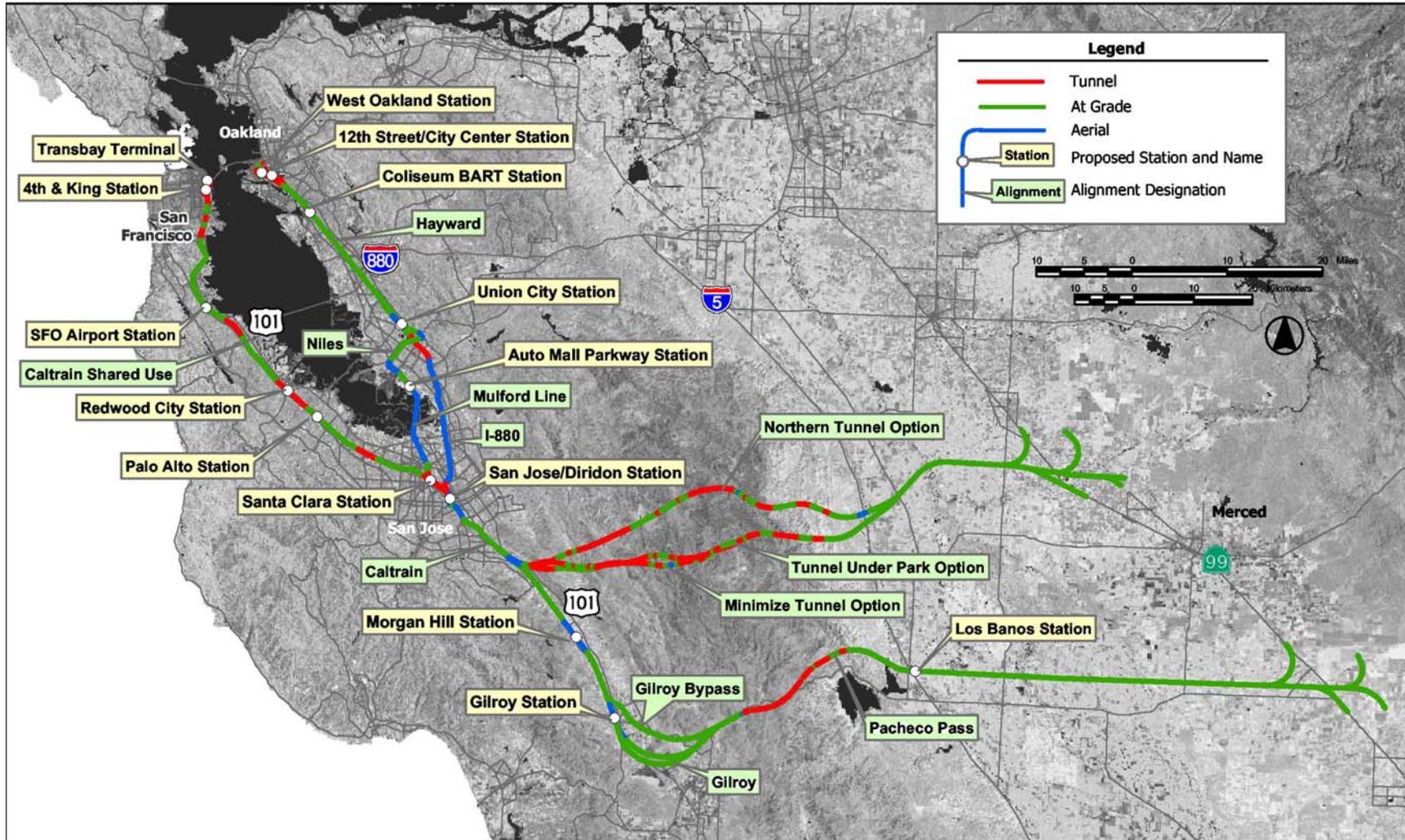


Figure 1.1-3b: High Speed Rail Alternative – Bay Area-to-Merced



Corridor 1B. This corridor would run between Merced and San José, via Atwater and across the Diablo Mountain Range and would include one station – at the existing San José (Diridon) Caltrain Station. Three options for the alignment are being considered:

- **Northern Tunnel Option:** This alignment would emanate from the BNSF rail corridor or the UPRR corridor near the town of Atwater, north of Merced. The alignment would extend west across the San Joaquin Valley passing north of the town of Newman. The tracks would cross the Diablo Mountain Range in a series of tunnels, passing north of Henry Coe State Park. The alignment then would connect with the Caltrain/UPRR rail corridor north of SR 85.
- **Tunnel Under Park Option:** This alignment is similar to the Northern Tunnel Option except that the segment through the Diablo Mountain Range would cross Henry W. Coe State Park primarily in tunnel. The alignment then would connect with the Caltrain/UPRR rail corridor north of SR 85.
- **Minimize Tunnel Option:** This alignment is similar to the Tunnel Under Park Option except that the segment through the Diablo Mountain Range would cross Henry W. Coe State Park primarily at-grade. The alignment then would connect with the Caltrain/UPRR rail corridor north of SR 85.

1.1.3.2 Segment 2 –San José to San Francisco

There is one alignment being considered in this segment; it would provide for high-speed trains sharing tracks with Caltrain commuter trains. The entire alignment would be grade-separated, and all Caltrain stations would have four tracks or by-pass tracks.

Stations would include an optional station at Santa Clara; a station in either Palo Alto or Redwood City; a station in Millbrae near the San Francisco International Airport; and in San Francisco, a station at Fourth and King streets and at the lower level of the proposed new Transbay Terminal.

1.1.3.3 Segment 3 –San José to Oakland

There are two options under consideration for the alignment in this segment.

- **I-880 Option:** From San José, this alignment would follow north along I-880 and then transition to UPRR's Hayward rail line.

Stations would include the planned Warm Springs Bay Area Rapid Transit (BART) Station in Fremont or the Union City BART Station; the Oakland Airport/Coliseum BART Station; and either the West Oakland Station or the 12th Street/City Center Station in Oakland.

- **Mulford Line Option:** From San José, this alignment would travel north along UPRR's Mulford rail line to the UPRR's Niles Line and then onto UPRR's Hayward line.

Stations would include the Auto Mall Parkway Station or the Union City BART Station; the Oakland Airport/Coliseum BART Station; and in Oakland, either the West Oakland Station or the 12th Street/City Center Station.

2.0 BASELINE/AFFECTED ENVIRONMENT

This section describes the affected environment for the alternatives under consideration. The study area encompasses various jurisdictions in north and central California, which include the counties of Merced, Stanislaus, Santa Clara, San Mateo, San Francisco, Alameda, Contra Costa, Solano, Yolo, and Sacramento, as well as many of the cities within those counties.

2.1 STUDY AREA

For purposes of this technical report, the Study Area for the build alternatives has been defined to encompass the area within 100 feet of the centerline of the alignments of the alternatives and 100 feet around facilities such as stations (High-Speed Train Alternative) or facilities (such as the San José International Airport under the Modal Alternative). Therefore, utility conflicts are defined as any major utility located within 100 feet of an alignment or station. Potential utility conflicts could include utility crossings (of the alternative alignments) regardless of depth or height. Where scale of the data makes resolution unclear, a potential conflict is identified.

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.

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. 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.

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.

- 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.

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 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.

2.2.4 Office of the State Fire Marshal

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 Division 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.

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 BAY AREA-TO-MERCED STUDY AREA SETTING

This section presents the general electricity, natural gas, oil, and wastewater utility settings within the study area. Information on wastewater treatment plants, trunk lines, and water facilities is provided where data are readily available.

PG&E Corporation markets energy services and products through its PG&E National Energy Group (NEG). PG&E NEG is one of the nation's leading power producers, with 27 power plants in 16 states, more than

7,000 megawatts in new power plant construction, a generation portfolio of 8,500 megawatts, and interconnects to six natural gas pipelines. Gas Transmission Northwest (GTN) consists of more than 1,350 miles of natural gas transmission pipeline with a capacity of more than 2.7 billion cubic feet of natural gas per day. PG&E Corporation's businesses also include Pacific Gas and Electric Company, the northern and central California utility that delivers natural gas and electricity service.

Headquartered in San José, Calpine Corporation has an energy portfolio comprised of 76 energy centers, with net ownership capacity of more than 19,000 megawatts. Located throughout the United States, these centers produce enough energy to meet the electrical needs of close to 19 million households. Calpine uses two types of fuel to produce electricity: natural gas and geothermal steam. Natural gas-fired generating facilities represent the fastest-growing segment of the U.S. power market and use one of the cleanest and most fuel-efficient technologies in the world. Calpine is developing the world's largest network of natural gas-fired energy centers in North America and also uses renewable geothermal energy to provide "green" power to consumers throughout California. Underground heat produces steam that is used to generate electricity at Calpine's 19 power plants at The Geysers, north of Santa Rosa in northern California. Calpine sells its products to a variety of end-users, such as electric utilities, municipalities, industrial companies and government institutions.

Calpine Corporation owns and operates the Gilroy Power Plant. Electricity generated by the Gilroy Power Plant is sold to PG&E under a power sales agreement terminating in 2018. In July 1999, Calpine announced a renegotiation of its Gilroy power sales agreement with PG&E. The amendment provides for the termination of the remaining 18 years of the long-term contract in exchange for a fixed long-term payment schedule. The amended agreement was approved by the California Public Utilities Commission (CPUC) in December 1999. Since November 2002, Calpine has been marketing the Gilroy plant output in the California wholesale power market. Calpine recently won state approval to begin construction of the Russell City Energy Center, a 600-megawatt power plant, at a 14.7-acre site at the corner of Enterprise and Whitesell streets adjacent to the Hayward Shoreline area, but the project faces an uncertain timetable.

The City of Santa Clara's Electric Department – known as Silicon Valley Power (SVP) – owns and operates two power generation plants: the Gianera Clara Power Plant located at 4948 Centennial Drive and a cogeneration plant located at the corner of De La Cruz Boulevard and Robert Avenue. In November 2002, the California Energy Commission voted to begin a formal "fast track" review of SVP's proposed Pico Power Project. The Pico Power Project is proposed as a 147-megawatt power plant to be built by SVP. The proposed project would be located west of the intersection of Lafayette Street and Duane Avenue and immediately north of SVP's Kifer Receiving Station in the City of Santa Clara, Santa Clara County, California. The power plant would occupy approximately 2.86 acres.

2.3.1 Electricity

California is part of a larger power grid with connections to Oregon, Washington, Nevada, and Arizona. Electricity within the study area is supplied via a web of transmission lines and electrical substations by a number of regional utility providers.

2.3.1.1 Service Providers

Within the region, electrical service is provided by the following three utilities:

- Pacific Gas & Electric Company. Pacific Gas & Electric Company serves 13 million people throughout a 70,000-square-mile service area in northern and central California, specifically from Eureka in the north to Bakersfield in the south, and from the Pacific Ocean in the west to the Sierra Nevada in the east, including the Bay Area-to-Merced region. PG&E's service area includes 131,000 circuit miles of electric lines, 43,000 miles of natural gas pipelines, 4.5 million electric customer accounts, and 3.7 million gas customer accounts.

- Silicon Valley Power. The City of Santa Clara's Electric Department - Silicon Valley Power – owns, operates and participates in more than 380 megawatts of electric generating resources and serves a peak load of about 430 megawatts. VP generates 3.6 percent of the city's need for electricity, and purchases the remaining electricity needs from joint power agencies (38.8 percent), Western Area Power Administration (51.6 percent), and PG&E (6.0 percent).
- The City of Palo Alto Utilities (CPAU). CPAU has 40-year contract with Western Area Power Administration, providing 90 percent of the city's need for electricity. The contract expires at the end of 2004. CPAU has entered into a new contract with Western, which will meet 34 percent of the city's needs. CPAU has identified another 21 percent of its future supply, but expects to negotiate for the remaining 45 percent. The city operates its own electric services.

There are two power generating facilities within the region:

- The Santa Clara Power Plant, located at 5401 Lafayette in Santa Clara, is owned and operated by Pacific Energy, based in Los Angeles. The facility was installed in 1986 and has one generation unit. With an internal combustion prime mover, the facility uses waste as its energy source and has a total net generation of one megawatt hour.
- The Gilroy Cogen Plant LP, a gas-fired cogeneration facility located at 1400 Pacheco Pass Highway in Gilroy, is owned and operated by Calpine Corporation. The plant, originally installed in 1987, has two generation units: one uses a steam prime mover and the other uses a diesel prime mover.

2.3.1.2 Substations and Major Transmission Lines

Each of the electricity service providers in the study area maintains a series of transmission lines and substations of various voltages. This report focuses on the major transmission lines and substations (see Figure 2.3-1). For purposes of this report, transmission lines and substations are defined as major if they meet or exceed a power rating of 220 kilovolts (kV). There are three voltage levels for the major transmission lines, 220-287 kV, 500 kV, and 500 kV DC (direct current). In addition, transmission lines may be overhead lines or underground lines.

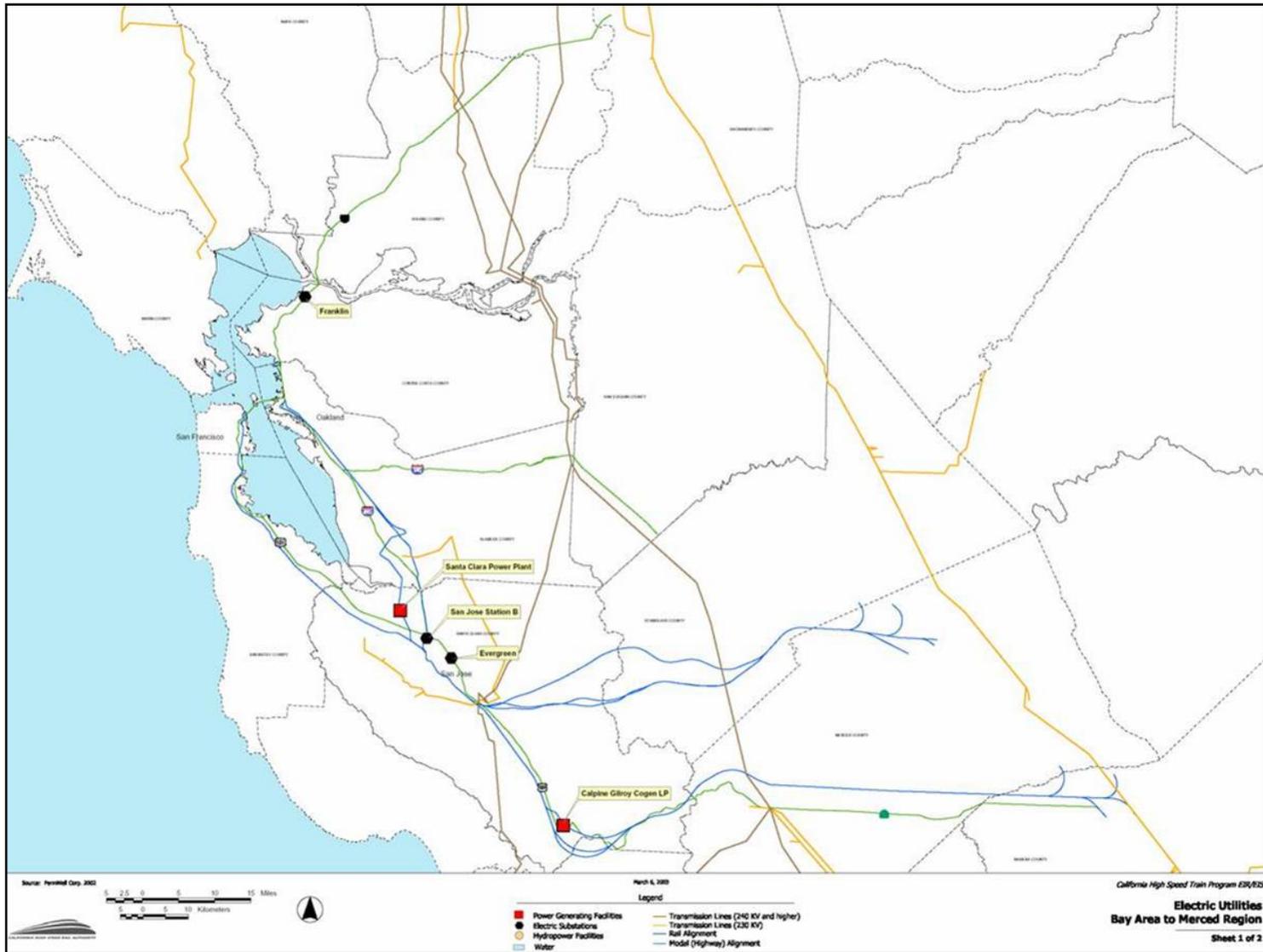
The major transmission lines are located along distinct corridors that traverse large areas. Transmission lines transmit high-voltage electricity from the transformer to the electric distribution system. A substation is an electrical installation containing power conversion (and sometimes generation) equipment, such as transformers, compensators, and circuit breakers. A substation switches, changes, or regulates voltage in the electric transmission and distribution system. Substations have fixed boundaries and are generally not expected to conflict with project segments.

Pacific Gas & Electric Company, the major electricity distributor in the region, owns and operates three electric substations, all active, within the region:

- The Franklin Substation is located in Hercules (northwestern Contra Costa County)
- The San José B is located in San José
- The Evergreen Substation is located in San José.

The transmission lines that originate at these substations are alternating current.

Figure 2.3-1 Major Transmission Lines and Substations



2.3.2 High Pressure Natural Gas Major Facilities and Distribution Lines

Numerous natural gas transmission lines are located throughout the region, including the study area. Natural gas pipelines generally are subsurface lines, but do occur aboveground at some crossings.

Natural gas in the study area is provided by Pacific Gas & Electric Company, except within the City of Palo Alto – CPAU purchases gas from gas commodity suppliers; the gas commodity is transported via PG&E's gas transportation system to CPAU's distribution system.

In addition, pressurized oil pipelines owned and operated by various oil companies extend along corridors throughout the northern California area, including the study area. The various owners are:

- Chevron Pipeline Company (Chevron)
- Santa Fe Pacific Pipeline Partners LP (Santa Fe)
- Shell Oil/Shell Pipe Line Corporation/Shell Pipeline Company
- Simmons
- Standard Pacific Gas Line, Inc.
- Unocal Corporation

Refer to Figure 2.3-2 for a map of major facilities.

2.3.3 Wastewater and Water Facilities

2.3.3.1 Overview

Wastewater trunk lines and treatment plants convey and treat sewage from throughout the study area. Conveyance pipelines owned and operated by numerous jurisdictions extend throughout the study area, and are quite extensive in the urbanized portions of the study area.

Wastewater treatment services are provided by cities, counties, and special agencies along the study area. Wastewater treatment plants are relatively large facilities generally located close to bodies of water or rivers where effluent is discharged. Wastewater treatment and reclamation plants also have distinct site boundaries and generally are not expected to pose conflicts.

Water and reclaimed water pipelines owned and operated by numerous jurisdictions also extend throughout the study area with more lines in the more urbanized portions of the study area.

Wastewater and water service providers in the vicinity of the study area include the cities of Los Baños, Gilroy, Morgan Hill, San José, Palo Alto, Redwood City, San Mateo, Burlingame, Millbrae, San Bruno, South San Francisco, Brisbane, San Francisco, Milpitas, Hayward, San Leandro, Pleasanton, Livermore, Richmond, Pinole, Vallejo, Fairfield, Vacaville, Dixon, Davis, and West Sacramento; and many special districts – Santa Clara Valley Water District, South Bayside System Authority, West Bay Sanitary District, California Water Service, Alameda County Water District, Union Sanitary District, Oro Loma Sanitary District, East Bay Municipal Utility District, Castro Valley Sanitary District, East Bay Dischargers Authority, Livermore-Amador Valley Water Management Agency, Dublin San Ramon Services District, Zone 7 Water Agency, Stege Sanitary District, West County Wastewater District, Rodeo Sanitary District, Crockett-Valona Sanitary District, and Vallejo Sanitation and Flood Control District. The services of each are described in the next subsection.

Figure 2.3-2 High Pressure Natural Gas Major Facilities and Distribution Lines

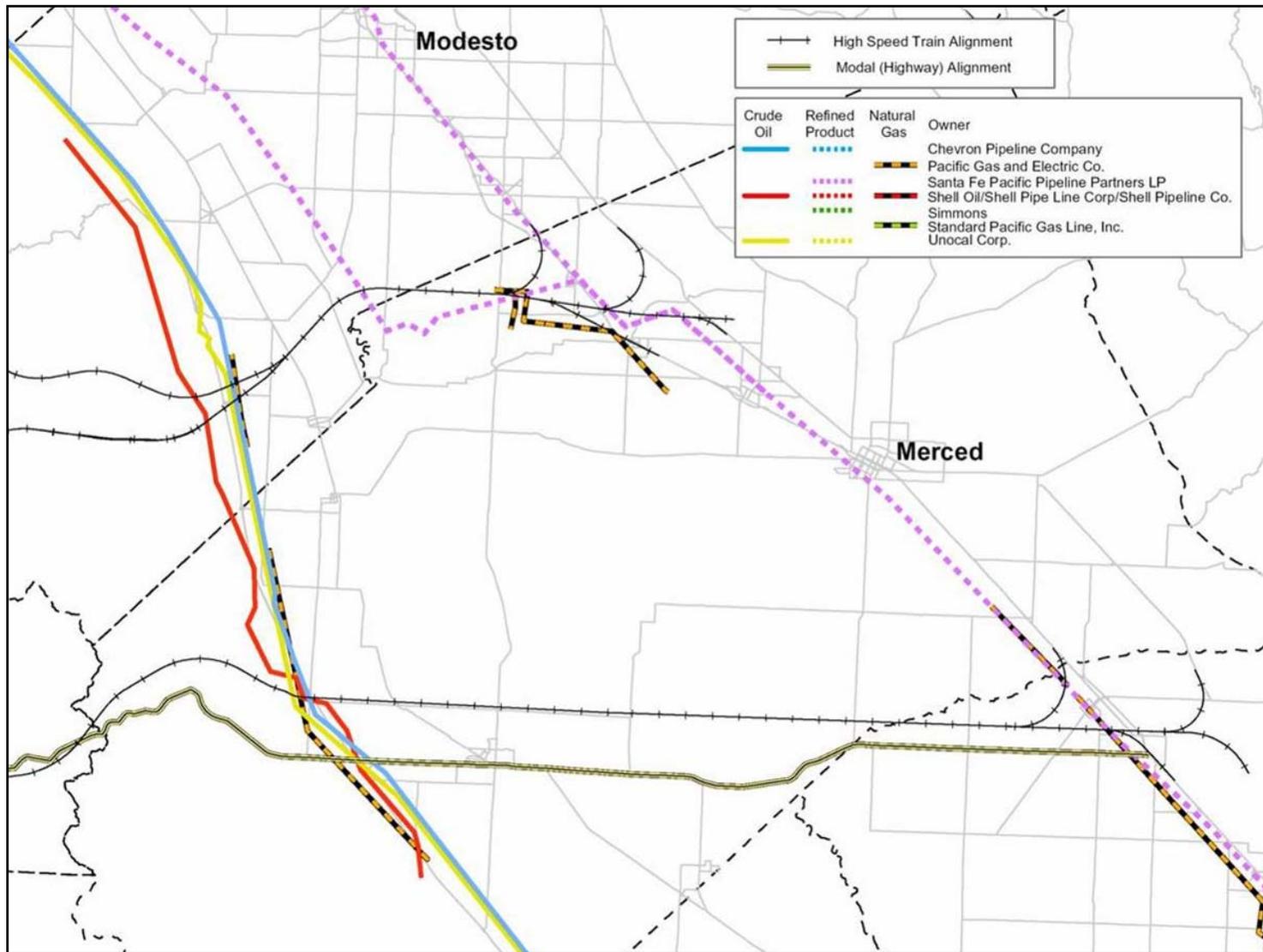


Figure 2.3-2b High Pressure Natural Gas Major Facilities and Distribution Lines

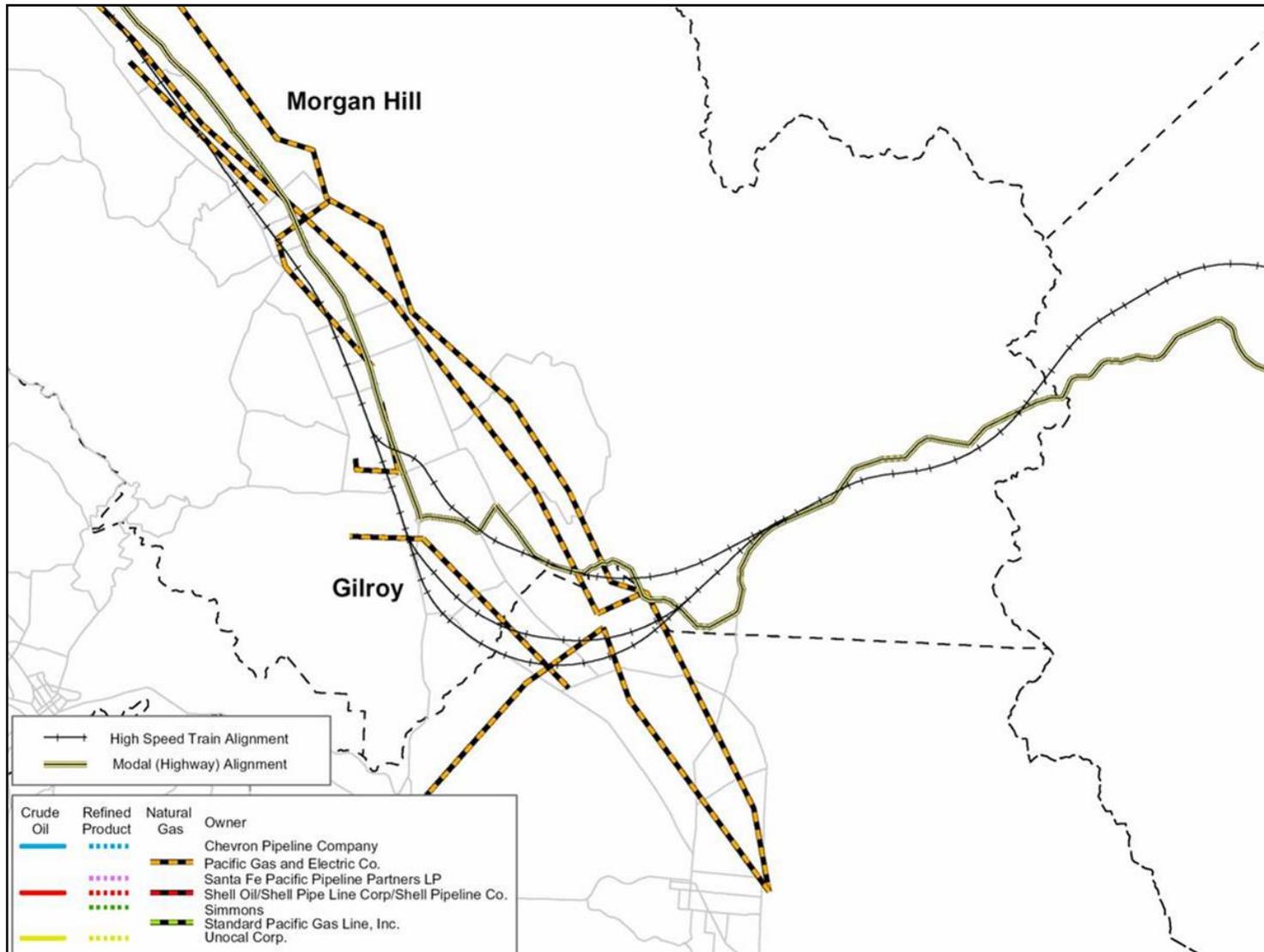


Figure 2.3-2c High Pressure Natural Gas Major Facilities and Distribution Lines

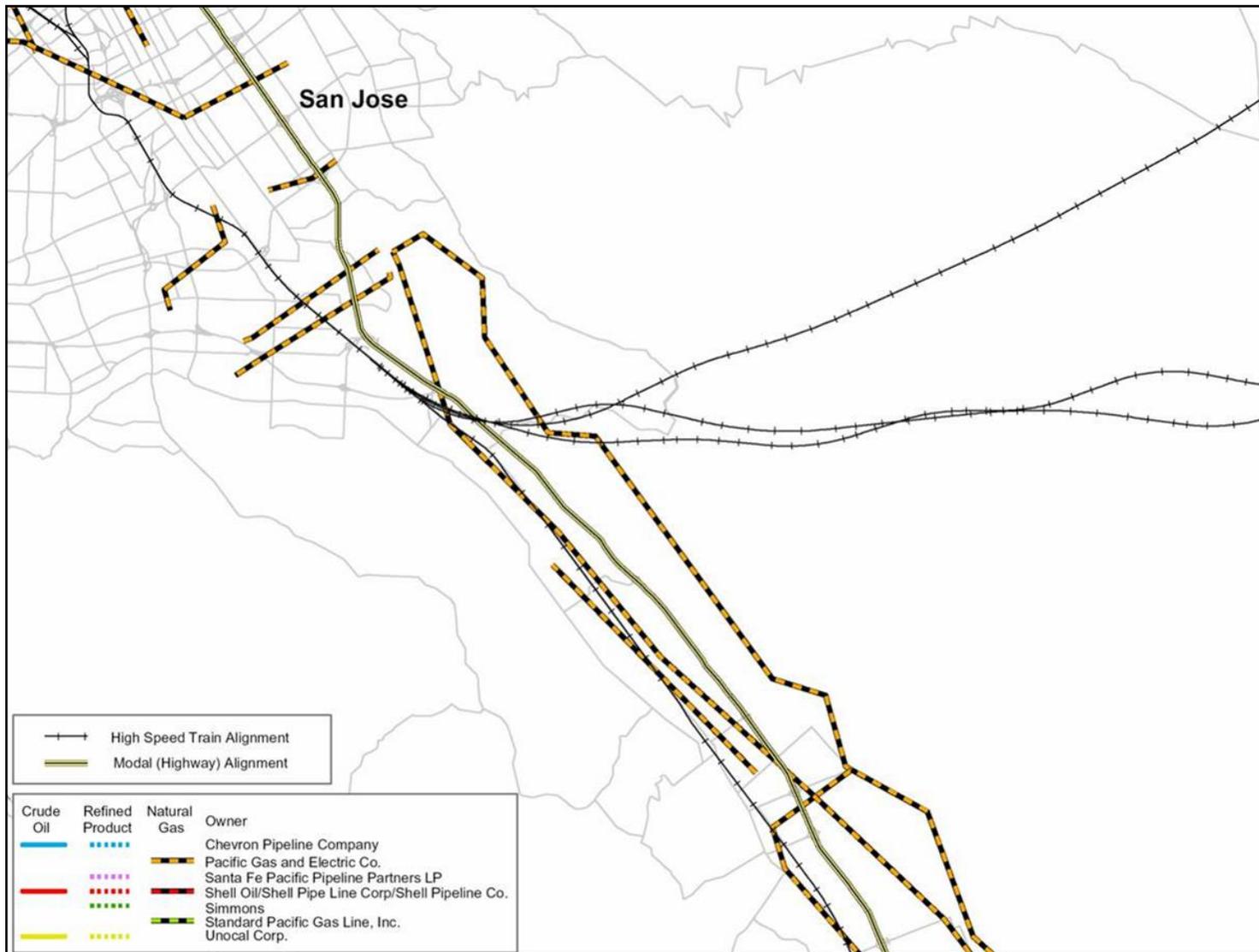


Figure 2.3-2d High Pressure Natural Gas Major Facilities and Distribution Lines

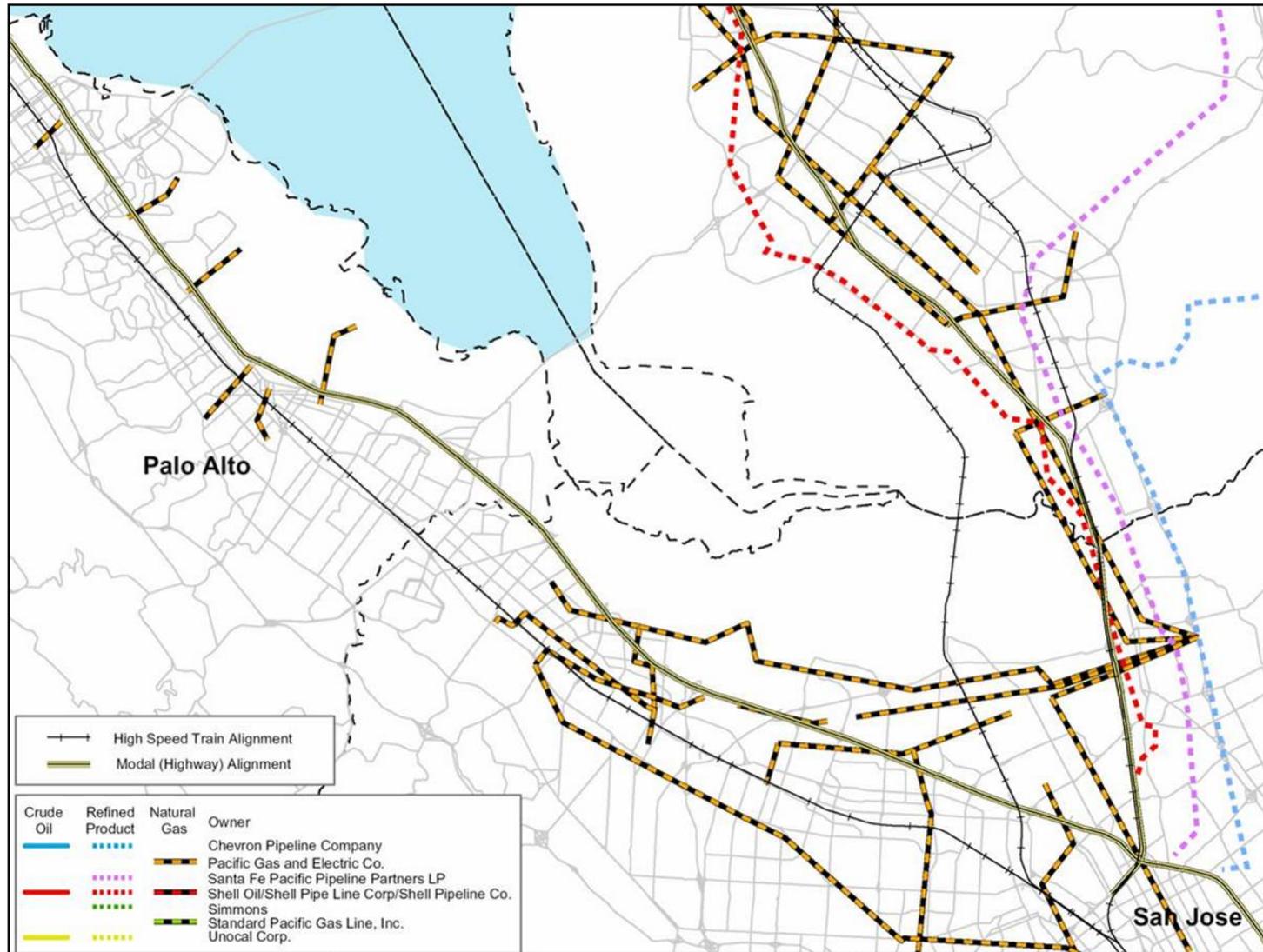


Figure 2.3-2e High Pressure Natural Gas Major Facilities and Distribution Lines

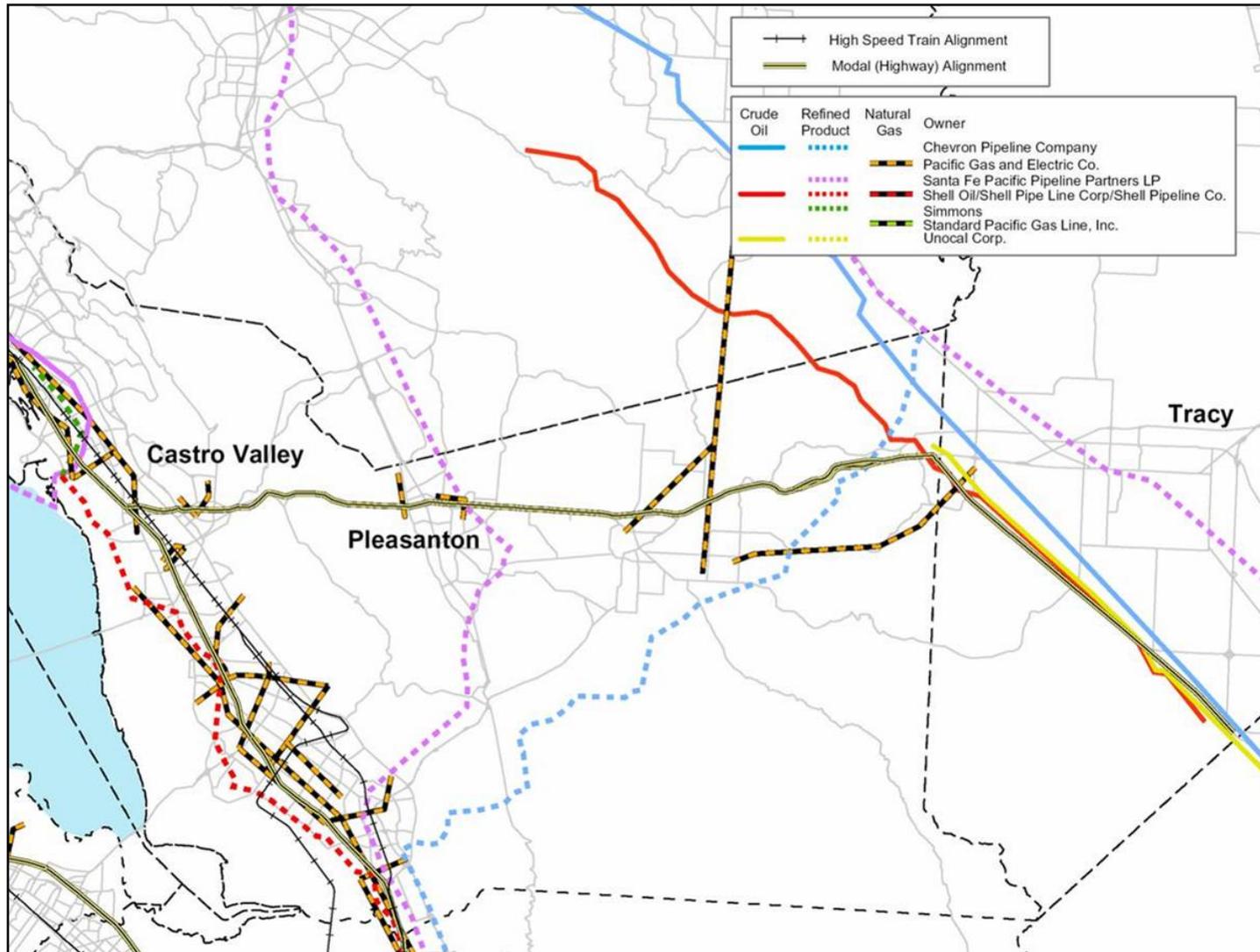


Figure 2.3-2f High Pressure Natural Gas Major Facilities and Distribution Lines

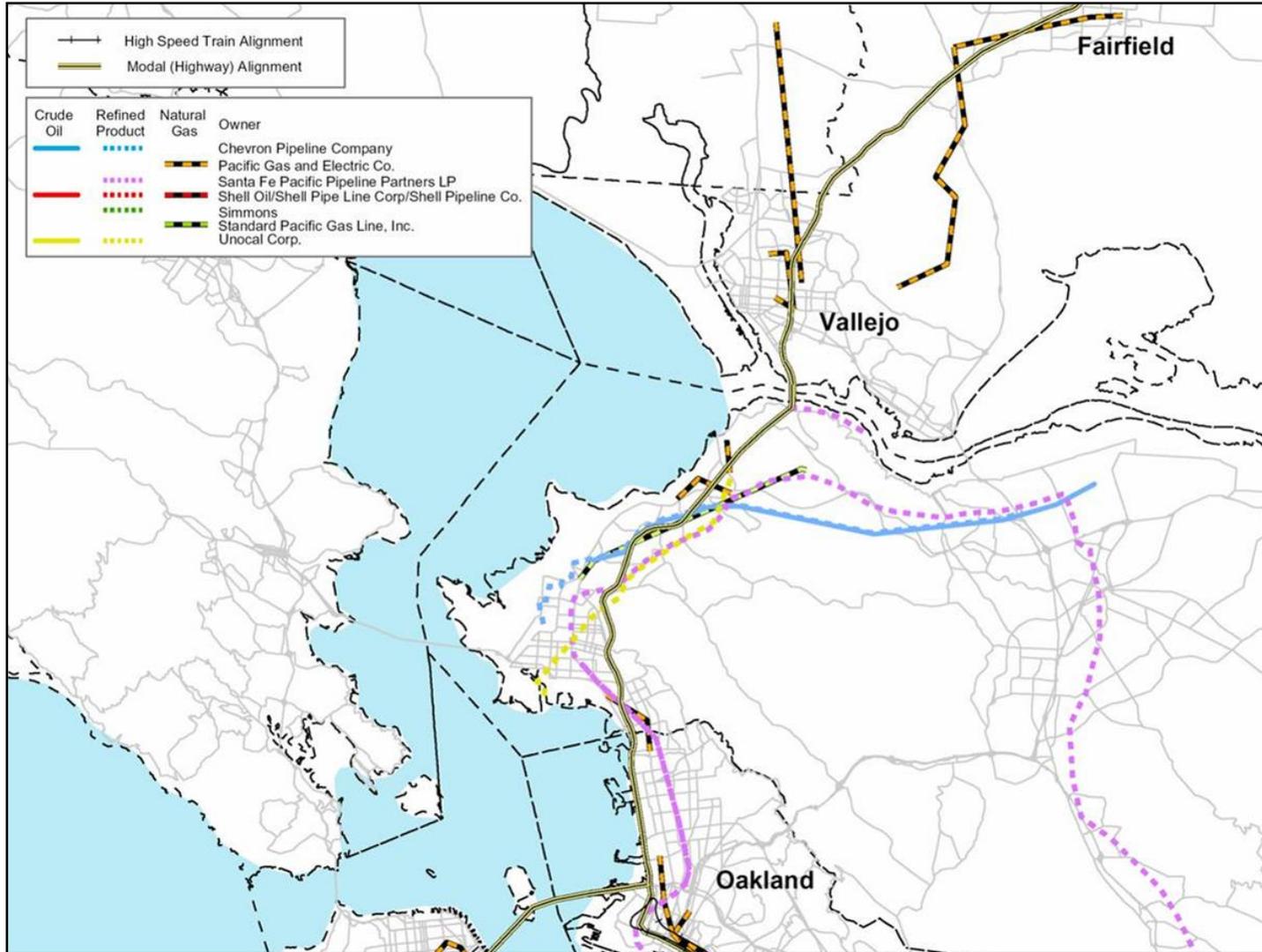
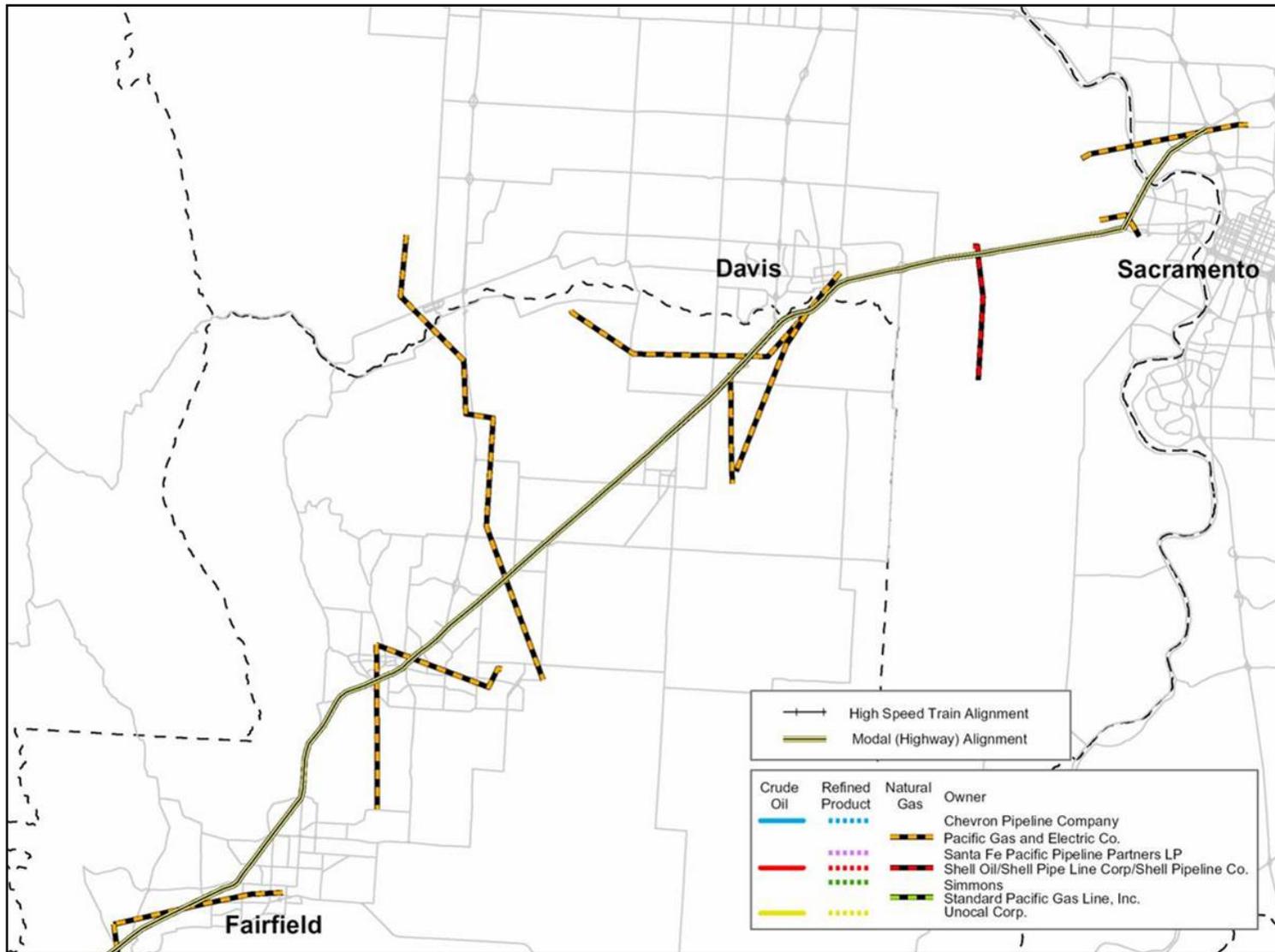


Figure 2.3-2g High Pressure Natural Gas Major Facilities and Distribution Lines



2.3.3.2 Service Providers

The City of Los Baños operates its own water distribution (over 132 miles) and wastewater collection (approximately 108 miles) services. Wastewater is conveyed to a city-operated treatment facility located on the south side of Henry Miller Road, east of South Mercey Springs Road.

The City of Gilroy obtains its water by pumping from underground aquifers at varying depths. The aquifers are monitored and maintained by the Santa Clara Valley Water District. The City's sewer system connects to the South County Regional Wastewater Treatment Plant which is owned and operated by the South County Regional Wastewater Authority (SCRWA), under a Joint Powers Agreement with the cities of Morgan Hill and City of Gilroy. The treatment facility is located at 1500 Southside Drive, over one mile east of US 101 and south of SR 152.

The City of Morgan Hill supplies water to approximately 10,000 residences and commercial/industrial establishments. The water is supplied from 12 wells located in, and adjacent to, the city. The city also operates city-owned wastewater collection services. Wastewater is conveyed to the treatment plant in Gilroy.

There are three water service providers for the San José area: the San José Water Company; the San José Municipal Water System; and the Great Oaks Water Company. San José Water Company is a full service water utility operator providing water to over one million customers in portions of San José, as well as the cities of Los Gatos, Monte Sereno, Saratoga, Campbell and Cupertino.

The San José Municipal Water System (SJMWS) is owned and operated by the City of San José. It serves four different areas in the City of San José: North San José/Alviso, Evergreen, Edenvale and Coyote. This area serves over 20,000 customers – 10 percent of the City's population. SJMWS purchases a blend of Hetch Hetchy water supply and treated water from San Francisco Public Utilities Commission (SFPUC) and delivers it to Alviso and North San Jose customers. SJMWS purchases treated water from Santa Clara Valley Water District (SCVWD) and delivers it to Evergreen customers. All of the water for the Edenvale and Coyote service areas comes from deep, local water wells.

The Great Oaks Water Company provided public water utility service to the Blossom Valley - Santa Teresa - Edenvale - Coyote Valley area of the City of San Jose, over 20,000 customers.

The San José/Santa Clara Water Pollution Control Plant, located at 700 Los Esteros Road in San José near Alviso, is a regional wastewater treatment facility serving eight tributary sewage collection agencies. The Water Pollution Control Plant is administered and operated by the City of San José's Department of Water Pollution Control. It treats and cleans the wastewater of over 1,500,000 people that live and work in the 300-square mile area encompassing San José, Santa Clara, Milpitas, Campbell, Cupertino, Los Gatos, Saratoga, and Monte Sereno.

The Santa Clara Valley Water District (SCVWD) is the primary water resources agency for Santa Clara County. It acts as the county's water wholesaler, and as its flood protection agency and is the steward of the county's more than 700 miles of streams and 10 district-built reservoirs. It has three treatment plants: Penitencia on Whitman Way in the Berryessa area of northeast San José; Rinconada in the Los Gatos area; and Santa Teresa in the Almaden Valley.

The City of Palo Alto Utilities (CPAU) operates city-owned water and wastewater collection services. Its treatment facility, known as the Regional Water Quality Control Plant, is located at 2501 Embarcadero Road. Treatment plant operations are administered by the City of Palo Alto, in partnership with the cities of Mountain View and Los Altos. The plant also provides wastewater treatment for the East Palo Alto Sanitary District, Los Altos Hills, and Stanford.

Redwood City purchases treated water from the San Francisco Public Utilities Commission (SFPUC).

The South Bayside System Authority operates the wastewater treatment facility for the cities of Belmont, San Carlos, Redwood City, and for the West Bay Sanitary District, which serves Menlo Park, Portola

Valley, and portions of Atherton, Woodside, East Palo Alto and San Mateo County. It serves 215,000 residents and businesses. The treatment plant is located at 1400 Radio Road in Redwood City, along the shoreline.

The San Mateo Waste Water Treatment Plant, located at 2050 Detroit Avenue, serves more than 130,000 people and businesses in its service area, which includes San Mateo, Foster City, half of Hillsborough, and parts of Belmont and unincorporated San Mateo County.

California Water Service provides water to San Carlos, San Mateo, and portions of Mountain View

The City of Burlingame operates city-owned water distribution services. Through city-owned wastewater collection service (service area includes parts of Hillsborough), USFilter Operating Service operates and maintains the city's treatment facility located at 1103 Airport Boulevard.

The City of Millbrae operates city-owned water distribution and wastewater collection services and operates its own wastewater treatment plant, located at 400 East Millbrae Avenue.

The City of San Bruno operates city-owned water and combined wastewater and storm water collection services.

A jointly-owned (cities of South San Francisco and San Bruno) wastewater and storm water treatment facility is located at Belle Air Road just north of San Francisco International Airport in the City of South San Francisco. Located adjacent to San Francisco Bay on Colma Creek, the Water Quality Control Plant provides secondary wastewater treatment for the cities of South San Francisco, San Bruno, and Colma. It also provides the dechlorination treatment of chlorinated effluent for the cities of Burlingame, Millbrae, and the San Francisco International Airport prior to discharging the treated wastewater into San Francisco Bay.

The City of Brisbane operates city-owned water and wastewater collection services.

The San Francisco Public Utilities Commission (SFPUC) owns and operates its water distribution system. In addition, it collects, treats, and discharges wastewater and stormwater flows generated within the City and County of San Francisco. The SFPUC serves – on a contractual basis – certain municipal customers including North San Mateo County Sanitation District, the Bayshore Sanitary District, and the City of Brisbane, all of which are located outside of the City limits. Storm and wastewater are treated at one of several plants around the city. The Southeast Treatment Plant, the closest treatment facility to the study area, is located on Jerrold Avenue near the corner of Evans and Third streets. There are two wastewater facilities near the study area which permit storage of wastewater and storm flow until the wastewater can be treated at the Southeast Plant: the Sunnysdale Transport/Storage Structure adjacent to US 101 south of Candlestick Park and the Yosemite Fitch Facilities in the Bayview area.

The City of Santa Clara operates city-owned water distribution and wastewater collection services. Water is purchased from the Santa Clara Valley Water District and the San Francisco Public Utilities Commission Hetch-Hetchy System. Wastewater is treated at the San José/Santa Clara Water Pollution Control Plant, described above.

The City of Milpitas Maintenance Services provides for the operation, maintenance and repair of the City's water and sewer systems and facilities which include 193 miles of water main, five water tanks with a capacity of 15.64 million gallons, four water pump stations, two wells, 163 miles of sewer main, and two sewer pump stations. The program also provides for the operation, maintenance and repair of the recycled water system and facilities including 7.5 miles of water main.

Alameda County Water District (ACWD) supplies water to the residents and businesses in the cities of Fremont, Newark, and Union City, southern Alameda County. ACWD has two facilities, both in Fremont: the Mission San Jose Water Treatment Plant off Vargas Road in the hills above Mission San José, and the Water Treatment Plant No. 2 located at 42436 Mission Boulevard near I-680.

Union Sanitary District is an independent special district which provides wastewater collection (760 miles), treatment and disposal services to the residents and businesses in the cities of Fremont, Newark and Union City. Wastewater generated within the district is collected and conveyed by gravity sewers to three major pump stations. The Irvington Pump Station serves the southern portion of the service area, the Newark Pump Station serves the central portion and the Alvarado Pump Station serves the northern portion. Wastewater collected in the southern and central areas is transported to the Alvarado Wastewater Treatment Plant (Alvarado WWTP) in Union City via dual 33-inch and 39-inch force mains. The northern drainage area wastewater is pumped directly to the WWTP headworks from the Alvarado Pump Station. The Alvarado WWTP is located at 5072 Benson Road in Union City.

The City of Hayward owns its own water distribution and wastewater collection services. Wastewater is treated at the Hayward Water Pollution Control Facility, 3700 Enterprise Avenue near the Hayward Shoreline.

The Oro Loma Sanitary District (OLSD) encompasses 13 square miles, serving the communities of San Lorenzo, Ashland, Cherryland, Fairview, portions of Castro Valley, Hayward, and San Leandro. There are approximately 300 miles of sewer line located and maintained in the district. The treatment plant located at 2600 Grant Avenue, San Lorenzo in Alameda County, is operated by OLSD and jointly owned with the Castro Valley Sanitary District.

The East Bay Municipal Utility District (EBMUD) provides water to a 325-square-mile area extending from Crockett on the north, southward to San Lorenzo (encompassing the major cities of Oakland and Berkeley), eastward from San Francisco Bay to Walnut Creek, and south through the San Ramon Valley. Communities in EBMUD's water service area include: Albany, Berkeley, Castro Valley, Crockett, El Cerrito, El Sobrante, Emeryville, Hayward, Hercules, Oakland, Pinole, Richmond, Rodeo, San Leandro, San Lorenzo, and San Pablo. Two of its local reservoirs are located in the East Bay Hills east of San Leandro; two others are located north of SR 24 and Orinda, and the fifth reservoir is located in Lafayette, south of SR 24. The water treatment plants are Upper San Leandro in Oakland, San Pablo in Kensington, Sobrante in El Sobrante, and plants located in and named for Orinda, Lafayette and Walnut Creek.

EBMUD also provides wastewater treatment for parts of Alameda and Contra Costa counties. The wastewater system serves approximately 600,000 people in an 83-square-mile area along the east shore of San Francisco Bay, including the cities of Emeryville, Oakland, Berkeley, Albany, and El Cerrito. Within the region, its main wastewater treatment plant is located in Oakland, near the entrance of the San Francisco-Oakland Bay Bridge and outside of the study area.

In San Leandro, wastewater from homes, offices, stores, and factories is collected and carried through 125 miles of sewer lines to its Water Pollution Control Plant, located at 3000 Davis Street, near the shoreline.

The Castro Valley Sanitary District (CVSD) has responsibility for the operation and maintenance of the sanitary sewer collection system within the unincorporated community of Castro Valley. CVSD collects and conveys all wastewater produced within the district to the Oro Loma/Castro Valley Wastewater Treatment Plant in San Lorenzo. The collection system maintains approximately 150 miles of wastewater sewer mains and eight sewage lift stations.

OLSD and CVSD are members of East Bay Dischargers Authority (EBDA), a joint exercise of powers agency. Other participating agencies include the cities of Hayward and San Leandro, and the Union Sanitary District. Each member agency individually owns and operates its collection system and wastewater treatment facility. EBDA combines and transports the treated wastewaters from its member agencies to its dechlorination station near the San Leandro Marina (Marina Dechlorination Facility) and thence to its combined deepwater outfall in Lower San Francisco Bay, west of the Oakland Airport.

The Livermore-Amador Valley Water Management Agency (LAVWMA) is a joint powers agency created by the cities of Livermore and Pleasanton and the Dublin San Ramon Services District. The agency has a capacity of 21 million gallons a day (mgd) of treated wastewater. The treatment plant is owned and

operated by Dublin San Ramon Services District, a special district that provides water service to the residents of Dublin, and wastewater collection and treatment services to the residents of Dublin and south San Ramon. The district also provides wastewater treatment services under contract to the City of Pleasanton. The wastewater is conveyed via a 16-mile pipeline from Pleasanton to San Leandro and enters the East Bay Dischargers Authority (EBDA) system for dechlorination and discharge.

The City of Pleasanton's Water Division operates 16 pump stations throughout the city of which three are groundwater well pump stations used to augment the treated water that is distributed. In addition the division operates six treated water stations where the final fluoridation process takes place. The Water Division operates and maintains 22 storage reservoirs spread throughout the city. These reservoirs vary in size from 20,000 gallons to over eight million gallons each.

Zone 7 Water Agency (of the Alameda County Flood Control and Water Conservation District), the water wholesaler of the Livermore-Amador Valley, includes all of eastern Alameda County, consisting of approximately 425 square miles occupying a major portion of the Alameda Creek Watershed above Niles. The area includes the cities of Dublin, Livermore and Pleasanton and the communities of Sunol, Altamont, and Mountain House. It also includes small areas of the cities of Fremont, Union City, and Hayward. Zone 7 thus comprises all of Murray and Pleasanton Townships and small portions of Washington and Eden Townships.

The City of Livermore's Water Resources Division includes responsibility for water and wastewater. The Water Utility delivers water to more than 18,500 Livermore residents (Cal Water provides water to the balance of Livermore's residents) and also distributes reclaimed water produced by the wastewater utility. The Wastewater Utility treats all of the sewage in the City of Livermore at 101 West Jack London Boulevard and then sends the treated wastewater (which is not reclaimed for reuse) through LAVWMA pipeline to the East Bay Dischargers Authority in San Leandro. The Wastewater Utility also administers numerous mandated regulatory requirements and programs.

The City of Emeryville provides wastewater collection and conveyance services to its City customers.

The City of Berkeley provides wastewater collection and conveyance services to its City customers.

The City of Oakland, Public Works Agency, Design and Construction Sewer section provides wastewater collection and conveyance services to City customers.

The City of Richmond operates its own wastewater collection and treatment services. Its Waste Water Pollution Control Plant is located at 601 Canal Boulevard, south of I-580 in Richmond.

The Stege Sanitary District provides wastewater collection services to Kensington, El Cerrito and a portion of Richmond known as the Richmond Annex. The District operates and maintains 150 miles of sanitary sewers and two pumping stations serving over 40,000 residents residing within the District boundaries. Wastewater treatment and disposal services are provided by East Bay Municipal Utility District, Special District No. 1.

West County Wastewater District provides sewage collection, treatment and disposal services for the City of San Pablo, all of the northern subdivisions of Richmond, portions of the City of Pinole, the communities of El Sobrante, East Richmond Heights, Tara Hills, Rollingwood, and Bayview, and other portions of unincorporated Contra Costa County. Its treatment facility is located at 2377 Garden Tract Road in Richmond, near the shoreline.

The Pinole/Hercules Water Pollution Control Plant, located at the foot of Tennent Avenue in Pinole, provides secondary treatment for the City of Hercules and a portion of the City of Pinole.

Rodeo Sanitary District provides wastewater collection and treatment services in the community of Rodeo. The treatment plant is located at 800 San Pablo Avenue in Rodeo.

The Crockett-Valona Sanitary District (CVSD) provides wastewater collection and transport services for approximately 3,200 customers in the unincorporated area of Crockett. The sewage is treated at the Joint Treatment Plant, which is partly owned by the CVSD and managed and operated by the C&H Sugar Company.

The City of Vallejo provides water its own water distribution service. Water is treated at its Green Valley Water Treatment Plant located at the end of Green Valley Road, west of Fairfield, or at its Fleming Hill Water Treatment Plant located on the hilltop above Six Flags Marine World.

The Vallejo Sanitation and Flood Control District serves a population of about 120,000 in both the City of Vallejo and the unincorporated area in the greater Vallejo area. This includes areas such as Mare Island, Glen Cove, Homeacres, and Sky Valley. Sewerage is conveyed to a wastewater treatment plant at 450 Ryder Street in southwestern Vallejo.

The City of Fairfield's Municipal Utilities Division provides its own water distribution and sewer collection services. There are over 270 miles of water mains and over 270 miles of sewer mains within the city. Water treatment is provided at one of three plants: the Waterman Treatment Plant located at 2900 Vista Grande west of I-80 in Fairfield; at the North Bay Regional Water Treatment Plant located at 5110 Peabody Road near Travis Air Force Base in Vacaville; and at the Dixon Hill Water Treatment Plant located at 3220 North Texas Street in Fairfield. Sewerage treatment is provided by the Fairfield Suisun Sewer District at the Fairfield-Suisun Wastewater Treatment Facility located at 1010 Chadbourne Road in Fairfield.

The City of Vacaville's Public Works Department provides water treatment and distribution, and collects and treats wastewater. Water treatment is conducted at the North Bay Regional Water Treatment Plant on Peabody Road. Wastewater treatment is performed at the Easterly Wastewater Treatment Plant located just outside of the community of Elmira on the east edge of Vacaville.

The City of Dixon provides wastewater collection and treatment services. Its wastewater treatment plant is located on Pedrick Road at Casey Road south of Dixon. Water service is provided by California Water Service Company through nine wells, 32 miles of pipeline, and one storage tank.

The City of Davis draws water from 22 wells located throughout the city. The water in the distribution system does not go through a central treatment or distribution facility. Raw sewage from the Davis area is collected by a 42- and 48- inch trunk sewer. It increases to 66 inches and terminates at the influent pumping station structure of the City's water pollution control plant, located at Road 28H and 105 (one-mile east of the Yolo County landfill), north of I-80.

The City of West Sacramento's Public Works Department is responsible for the operation, maintenance, and management of the City's water treatment and distribution and wastewater collection and treatment. The City's water treatment plant is located at 400 North Harbor Boulevard and its wastewater treatment plant is located at 1991 South River Road. Sometime between the years 2006 and 2010, although the City will continue to operate and maintain the local collector system, local treatment will be terminated and the existing plant will be decommissioned and wastewater treatment services will be turned over to the Sacramento Regional County Sanitation District (SRCSD), whose treatment facility is located at 8521 Laguna Station Road, in Elk Grove. The routing for SRCSD's proposed Lower Northwest Interceptor is under environmental review. The preferred route would pass through West Sacramento and would provide an interconnect to the City of West Sacramento's wastewater collection system.

3.0 EVALUATION METHODOLOGY FOR PUBLIC UTILITIES

The study area for the project alternatives traverses various jurisdictional boundaries of cities, counties, agencies, and utility companies. The evaluation methodology involved collecting general setting information and identifying and quantifying utility facilities that could be physically affected by the project alternatives.

3.1 METHODOLOGY FOR SETTING

In gathering appropriate setting information for the study area, the following steps were taken.

- Review of the project GIS system to identify cities and counties in the study area
- Exploration of the identified city and county websites to gather appropriate setting information
- Examination of applicable utility system maps and websites to gain a better understanding of facility distribution

3.1.1 Project GIS Review

To identify the cities and counties along the study area, city and county boundaries within the GIS were reviewed. A list of cities and counties was then compiled. Wastewater treatment services typically are provided by cities, counties, or special-purpose agencies. In many instances, smaller cities contract with counties or special agencies to provide treatment services. Where a larger jurisdiction provides treatment services to smaller jurisdictions, only the larger jurisdiction was identified. In addition, special-purpose agencies were identified based on pre-existing knowledge of the agencies or through identification of the agencies in the city/county websites or phone conversations.

3.1.2 Website Exploration

Following compilation of the cities, counties, and agencies along the study area, information was gathered from their respective websites regarding facility locations and sizes.

3.1.3 Examination of Utility Maps

The California Energy Commission (CEC) regulates utilities such as electrical transmission lines, electrical substations, and natural gas lines and has mapped these facilities. Major electrical transmission lines and substations, as well as natural gas lines in the study area, were identified through review of state maps.

Regarding wastewater facilities, maps available online were reviewed to identify facility locations.

3.2 METHODOLOGY FOR IMPACTS

3.2.1 Electricity, Gas, and Oil Utility Conflicts

GIS information with electrical transmission lines and gas and oil pipelines compiled by MapSearch were reviewed to identify potential electrical, natural gas, and oil utility conflicts. Because the map scales and the segment locations were such that detailed information could not be definitively determined in some cases, some of the facilities that were identified as potential conflicts may be determined to be nonexistent or easily resolved when a closer, more detailed analysis is conducted at the project level.

To facilitate segment comparisons and comparisons between alternatives, the number of potential utility crossings or conflicts has been noted on a segment-by-segment basis.

3.2.2 Wastewater and Water Facility Conflicts

Potential conflict for wastewater treatment plants, trunk lines, and water facilities followed a different methodology, which involved the following steps.

- Facility locations were noted along the study area
- Facilities close to project alternatives were identified
- Potential wastewater treatment plant conflicts, if any, were noted

Because wastewater and water facility information is managed by numerous agencies and jurisdictions in the project area and the level of available information varies from agency to agency, only readily available data is presented here.

The locations of wastewater and water treatment facilities, where available from the identified agencies, were identified. Segments for the build alternatives were reviewed and wastewater and water facility conflicts were noted. For each of the segments of the project alternatives, the number of potential conflicts is provided where readily available.

4.0 PUBLIC UTILITY IMPACTS

Table 4.0-1 summarizes the number and type of potential utility conflicts for the various project alternatives. The L, M, or H ranking denotes low, medium, or high potential for utility conflicts, respectively. The numbers indicate the number of utility crossings in a segment.

Table 4.0-1 Summary of Potential Public Utility Conflicts

Alternative	Electrical Transmission Lines	Electrical Sub or Power Stations	Natural Gas Lines	Oil Pipelines	Water/Wastewater Treatment Plants
No-Project Alternative	L	L	L	L	L
Modal Alternative					
Segment 1: Merced to San José	L, 4	L, 2	M, 12	L, 4	L, 0
Segment 2: San José to San Francisco	L, 0	L, 0	H, 19	L, 2	L, 0
Segment 3: San José to Oakland	L, 0	L, 0	H, 22	M, 5	L, 0
Segment 4: I-580 to I-5 (via I-238)	L, 1	L, 0	M, 8	M, 6	L, 0
Segment 5: San Francisco to Sacramento	L, 3	L, 1	H, 19	M, 8	L, 0
High-Speed Train Alternative					
Segment 1: Merced to San José					
Corridor 1A					
• Gilroy Option	L, 3	L, 0	H, 23	L, 4	L, 0
• Gilroy Bypass Option	L, 3	L, 1	H, 21	L, 4	L, 0
Corridor 1B					
• Northern Tunnel Option	L, 3	L, 0	M, 9	M, 8	L, 0
• Tunnel Under Park Option	L, 3	L, 0	M, 9	M, 8	L, 0
• Minimize Tunnel Option	L, 3	L, 0	M, 9	M, 8	L, 0
Segment 2: San José to San Francisco	L, 0	L, 0	H, 24	L, 2	L, 0
Segment 3: San José to Oakland					
• I-880 Option	L, 1	L, 1	H, 20	M, 9	L, 0
• Mulford Option	L, 0	L, 1	H, 18	M, 7	L, 0

Table 4.0-1 Summary of Potential Public Utility Conflicts

Alternative	Electrical Transmission Lines	Electrical Sub or Power Stations	Natural Gas Lines	Oil Pipelines	Water/Wastewater Treatment Plants
Stations					
Los Baños					
Gilroy					
Morgan Hill			■		
San José/Diridon					
Santa Clara			■		
Palo Alto			■		
Redwood City			■		
Millbrae/SFO			■		
Fourth & King			■		
Transbay Terminal			■		
Auto Mall Parkway					
Union City					
Oakland Airport/ Coliseum BART					
12 th Street/City Center			■		
West Oakland					

L = Low potential for conflicts (0 to 4 crossings)

M = Medium potential for conflicts (5 to 14 crossings)

H = High potential for conflicts (15 or greater crossings).

The L Ranking under the No-Project Alternative is a qualitative ranking of the alternative when compared to the HST and Modal alternatives.

■ Represents a potential conflict of one or more utilities.

4.1 NO-PROJECT ALTERNATIVE

Aside from programmed/funded highway projects, airport projects, and passenger rail projects, the No-Project Alternative would not result in the construction and operation of any transportation projects. Some of the programmed/funded projects are expected to occur within existing rights-of-way while others may require new rights-of-way.

Because various electrical transmission lines, natural gas pipelines, oil pipelines, and wastewater and water utilities are likely to cross or be located next to existing highways, rail corridors, and airports, utility conflicts under the No-Project Alternative are likely to occur. However, the extent of the programmed and funded projects under the No-Project Alternative are expected to be less than the highway, rail, and airport components of the Modal and HST alternatives because programmed and funded construction projects are generally near-term projects (within the next five years or so), whereas the components of the Modal and HST alternatives would be longer-term projects implemented over the next 20 years or so. In addition, because of fiscal constraints within the transportation improvement planning and funding

system, it is likely that currently programmed and funded projects represent smaller segment improvements than the corridor and longer-term improvements for the Modal and HST alternatives. Consequently, the No-Project Alternative is considered generally to have a low potential for public utility conflicts when compared to either the Modal Alternative or the HST Alternative.

In addition, each of the individual programmed projects under the No-Project Alternative is expected to have project-level environmental documents prepared that analyzed the environmental impacts of the respective projects.

4.2 MODAL ALTERNATIVE

Impacts under the Modal Alternative are described by segments that generally correspond to the primary segments for the High-Speed Train Alternative. There are five segments for the Modal Alternative, Segment 1: Merced to San José; Segment 2: San José to San Francisco; Segment 3, San José to Oakland; Segment 4, I-580 to I-5 (via I-238), and Segment 5, San Francisco to Sacramento.

4.2.1 Segment 1: Merced to San José

Segment 1 includes SR 152 from SR 99 to US 101 and US 101 from SR 152 to the I-880 interchange. There are numerous electrical, natural gas, oil, and wastewater trunk line crossings along this segment. Figure 4.2-1 depicts the electrical, natural gas, and oil pipelines in the vicinity of Segment 1.

- Electrical Utilities. There appear to be four locations along Segment 1 that cross overhead electrical transmission lines owned by PG&E. All are rated at a minimum of 230 kV. PG&E's Evergreen and substation and Calpine's Gilroy power plant are within the Segment 1 study area.
- Natural Gas Utilities. There is a potential for 12 conflicts with PG&E's natural gas pipelines within this segment.
- Oil Pipelines. There is a potential for four conflicts with oil pipelines in this segment. Three are crude oil lines and are separately owned by Chevron, Shell, Unocal, and Santa Fe. The fourth line carries a refined product and is owned by Santa Fe.
- Water and Wastewater Facilities. Although some wastewater and water treatment plants are located in the vicinity of the Segment 1 study area, none of the plants appears to be close enough to the proposed highway improvements to cause conflicts. There may be wastewater or water trunk line crossings in this segment, operated by the cities of Los Baños, Gilroy, Morgan Hill, and San José; as well as the Great Oaks Water Company and San José Water Company.

4.2.2 Segment 2: San José to San Francisco

Segment 2 includes US 101. There are numerous electrical, natural gas, and wastewater trunk line crossings along this segment. Figure 4.2-2 depicts the electrical, natural gas, and oil pipelines in the vicinity of Segment 2.

- Electrical Utilities. There appear to be no locations along Segment 2 that cross overhead electrical transmission lines with a minimum rating of 230 kV. PG&E's San José B substation appears to be within the study area; there appear to be no power generating facilities.
- Natural Gas Utilities. There is a potential for 19 conflicts with PG&E's natural gas pipelines within this segment.
- Oil Pipelines. There is a potential for two conflicts with oil pipeline crossings in this segment.
- Water and Wastewater Facilities. Although some wastewater and water treatment plants are located in the vicinity of Segment 2 study area, none of the plants appears to be close enough to US 101 to cause conflicts. The Sunnydale Transport/Storage Structure is immediately adjacent to US 101 south

of Candlestick Park. There may be wastewater or water trunk line crossings in this segment, operated by the cities of Palo Alto, Redwood City, Burlingame, Millbrae, San Bruno, South San Francisco, and Brisbane; as well as the San José Water Company, California Water Service, West Bay Sanitary District, and San Francisco Public Utilities Commission.

4.2.3 Segment 3: San José to Oakland

Segment 3 includes I-880 and the San José and Oakland International airports. There are numerous electrical, natural gas, oil, and wastewater trunk lines crossings along this segment. Figure 4.2-3 depicts the electrical, natural gas, and oil pipelines in the vicinity of this segment.

- Electrical Utilities. There appear to be no locations along Segment 3 that cross overhead electrical transmission lines with a minimum rating of 230 kV. There appear to be no power generating facilities or substations within the study area.
- Natural Gas Utilities. There is a potential for 22 conflicts with PG&E's natural gas pipelines within this segment.
- Oil Pipelines. There is a potential for five conflicts with refined product pipeline crossings in this segment. Three are owned by Santa Fe, one by Shell, and one by Simmons.
- Wastewater Treatment Facilities. Although several wastewater and water treatment plants are located in the vicinity of Segment 3 study area, none of the plants appears to be close enough to I-880 to cause conflicts. There may be wastewater or water trunk line crossings in this segment, operated by the cities of San José, Santa Clara, Milpitas, Hayward, and San Leandro; and the Alameda County Water District, the Union Sanitary District, the Oro Loma Sanitary District, and the East Bay Municipal Utilities District (EBMUD).
- Airports. San José International Airport would be expanded by one runway and various terminal improvements. Oakland International Airport would be expanded by one runway and various terminal improvements. The additional runway and other airport improvements for both airports are assumed to occur within the context of the airport master plan and footprint. Consequently, utility conflicts are not anticipated.

4.2.4 Segment 4: I-580 to I-5 (via I-238)

Segment 4 includes I-580 (via I-238) from I-880 to I-5. There are numerous electrical, natural gas, oil, and wastewater trunk lines crossings along this segment. Figure 4.2-4 depicts the electrical, natural gas, and oil pipelines in the vicinity of this segment.

- Electrical Utilities. There appears to be one location along Segment 4 that crosses overhead electrical transmission lines with a minimum rating of 230 kV. It is owned by PG&E. There appear to be no power generating facilities or substations within the study area.
- Natural Gas Utilities. There is a potential for eight conflicts with PG&E's natural gas pipeline crossings within this segment.
- Oil Pipelines. There is a potential for four conflicts with crude oil pipelines in this segment, three owned by Shell and one owned by Unocal. In addition, there is a potential for two conflicts with refined products pipelines – one Chevron line and one Santa Fe line.
- Water and Wastewater Treatment Facilities. Although some wastewater and water treatment plants are located in the vicinity of Segment 4 study area, none of the plants appears to be close enough to the freeway to cause conflicts. There may be wastewater or water line crossings in this segment, operated by the cities of Hayward, Pleasanton, and Livermore; and the Oro Loma and Castro Valley Sanitary districts, Livermore-Amador Valley Water Management Agency, Dublin San Ramon Services District, and Zone 7 Water Agency.

4.2.5 Segment 5: San Francisco to Sacramento

Segment 5 includes I-80. There are numerous electrical, natural gas, oil, and wastewater trunk lines crossings along this segment. Figure 4.2-5 depicts the electrical, natural gas, and oil pipelines in the vicinity of this segment.

- Electrical Utilities. There appear to be three locations along Segment 5 that cross overhead electrical transmission lines with a minimum rating of 230 kV. All are owned by PG&E. There appear to be no power generating facilities and one substation (Franklin) within the study area.
- Natural Gas Utilities. There are 19 potential natural gas pipeline conflicts within this segment – 18 will require coordination with PG&E and one with Shell.
- Oil Pipelines. There is a potential for two conflicts with Chevron crude oil pipelines in this segment. There is also a potential for six conflicts with refined product pipelines – two are Chevron, three are Shell, and one is Unocal.
- Water and Wastewater Treatment Facilities. Although some wastewater and water treatment plants are located in the vicinity of the Segment 5 study area, none of the plants appears to be close enough to the freeway to cause conflicts. There may be wastewater or water line crossings in this segment, operated by the cities of Emeryville, Oakland, Berkeley, Albany, El Cerrito, Richmond, Hercules, Pinole, Vallejo, Fairfield, Vacaville, Dixon, Davis, and West Sacramento; as well as the Stege Sanitary District, West County Wastewater District, Rodeo Sanitary District, Crockett-Valona Sanitary District, Vallejo Sanitation and Flood Control District, Fairfield Suisun Sanitary District, and California Water Service Company.

4.3 HIGH-SPEED TRAIN ALTERNATIVE

Impacts under the High-Speed Train Alternative are described by segment, following the designations described in Section 1.2.3.

4.3.1 Segment 1: Merced to San José

Segment 1 extends from Merced to San José. The impacts of the alignment alternatives within this route are described below. Figure 4.2-1 shows the major electrical, natural gas, and oil lines in the vicinity of this route. The two corridors under consideration are:

4.3.1.1 Corridor 1A – between Merced and San José, via Pacheco Pass and Gilroy

Gilroy Option.

- Electrical Utilities. There are three locations along the Gilroy Option that cross overhead transmission electrical lines with a minimum rating of 230 kV. There appear to be no power generating facilities or substations in the study area.
- Natural Gas Utilities. There is a potential for 23 conflicts with PG&E's natural gas pipelines within this option's study area.
- Oil Pipelines. There is a potential for three conflicts with crude oil pipeline crossings within this option's study area – one each with Chevron, Shell, and Unocal. There is also a potential conflict with one crossing of Santa Fe's refined product pipeline.
- Wastewater and Water Facilities. Although some wastewater and water treatment plants are located in the vicinity of the Gilroy Option study area, none of the plants appears to be close enough to the proposed high-speed corridor. There may be wastewater and water line crossings in this option's study area, operated by the cities of Los Baños, Gilroy, Morgan Hill, and San José;

as well as the San José Water Company, San José Municipal Water System, and the Great Oaks Water Company.

- Stations. There may be conflicts with natural gas pipelines at the Morgan Hill station. There appear to be no conflicts at the Gilroy and San José/Diridon stations.

Gilroy Bypass Option.

- Electrical Utilities. There are three locations along the Gilroy Bypass Option that cross overhead transmission electrical lines with a minimum rating of 230 kV. There appear to be no power generating facilities or substations within the study area.
- Natural Gas Utilities. There is a potential for 21 conflicts with PG&E's natural gas pipeline crossings within this option's study area.
- Oil Pipelines. There is a potential for three conflicts with crude oil pipeline crossings within this option's study area – one each with Chevron, Shell, and Unocal. There is also a potential conflict with one crossing of Santa Fe's refined product pipeline.
- Wastewater and Water Facilities. Although some wastewater and water treatment plants are located in the vicinity of the Gilroy Bypass Option study area, none of the plants appears to be close enough to the proposed high-speed corridor. There may be wastewater and water line crossings in this option's study area, operated by the cities of Los Baños, Morgan Hill, and San José; as well as the San José Water Company, San José Municipal Water System, and the Great Oaks Water Company.
- Stations. There may be conflicts with natural gas pipelines at the Morgan Hill Station. There appear to be no conflicts at the San José/Diridon Station.

4.3.1.2 Corridor 1B – between Merced and San José, via Atwater and across the Diablo Mountain Range

Northern Tunnel Option.

- Electrical Utilities. There are three locations along the Northern Tunnel Option that cross overhead transmission electrical lines with a minimum rating of 230 kV. There appear to be no power generating facilities or substations in the study area.
- Natural Gas Utilities. There is a potential for nine conflicts with PG&E's natural gas pipeline crossings within this option's study area.
- Oil Pipelines. There is a potential for three conflicts with crude oil pipeline crossings within this option's study area – one each with Chevron, Shell, and Unocal. There is also a potential conflict with five crossings of Santa Fe's refined product pipeline.
- Wastewater and Water Facilities. Although some wastewater and water treatment plants are located in the vicinity of the Northern Tunnel Option study area, none of the plants appears to be close enough to the proposed high-speed corridor. There may be wastewater line crossings operated by the City of San José; and water line crossings operated by the San José Water Company, San José Municipal Water System, and the Great Oaks Water Company, in this option's study area.
- Stations. There appear to be no conflicts at the San José/Diridon Station.

Tunnel Under Park Option.

- Electrical Utilities. There are three locations along the Tunnel Under Park Option that cross overhead transmission electrical lines with a minimum rating of 230 kV. There appear to be no power generating facilities or substations in the study area.
- Natural Gas Utilities. There is a potential for nine conflicts with PG&E's natural gas pipeline crossings within this option's study area.
- Oil Pipelines. There is a potential for three conflicts with crude oil pipeline crossings within this option's study area – one each with Chevron, Shell, and Unocal. There is also a potential conflict with five crossings of Santa Fe's refined product pipeline.
- Wastewater and Water Facilities. Although some wastewater and water treatment plants are located in the vicinity of the Tunnel Under Park Option study area, none of the plants appears to be close enough to the proposed high-speed corridor. There may be wastewater line crossings operated by the City of San José; and water line crossings operated by the San José Water Company, San José Municipal Water System, and the Great Oaks Water Company, in this option's study area.
- Stations. There appear to be no conflicts at the San José/Diridon Station.

Minimize Tunnel Option.

- Electrical Utilities. There are three locations along the Minimize Tunnel Option that cross overhead transmission electrical lines with a minimum rating of 230 kV. There appear to be no power generating facilities or substations in the study area.
- Natural Gas Utilities. There is a potential for nine conflicts with PG&E's natural gas pipeline crossings within this option's study area.
- Oil Pipelines. There is a potential for three conflicts with crude oil pipeline crossings within this option's study area – one each with Chevron, Shell, and Unocal. There is also a potential conflict with five crossings of Santa Fe's refined product pipeline.
- Wastewater and Water Facilities. Although some wastewater and water treatment plants are located in the vicinity of the Minimize Tunnel Option study area, none of the plants appears to be close enough to the proposed high-speed corridor. There may be wastewater line crossings operated by the City of San José; and water line crossings operated by the San José Water Company, San José Municipal Water System, and the Great Oaks Water Company, in this option's study area.
- Stations. There appear to be no conflicts at the San José/Diridon Station.

4.3.2 Segment 2: San José to San Francisco

Segment 2 extends from San José to San Francisco. The impacts of the alignment alternatives within this route are described below. Figure 4.2-1 shows the major electrical, natural gas, and oil lines in the vicinity of this route.

- Electrical Utilities. There are no locations along this segment that cross overhead transmission electrical lines with a minimum rating of 230 kV. There appear to be no power generating facilities or substations within the study area.
- Natural Gas Utilities. There is a potential for 24 conflicts with PG&E's natural gas pipeline crossings within the study area.

- Oil Pipelines. There is a potential for two conflicts with Santa Fe's refined product pipeline within this segment.
- Wastewater and Water Facilities. Although some wastewater and water treatment plants are located in the vicinity of the Segment 2 study area, none of the plants appears to be close enough to the proposed high-speed corridor. There may be wastewater or water trunk line crossings in this segment, operated by the cities of Santa Clara, Palo Alto, Redwood City, Burlingame, Millbrae, San Bruno, South San Francisco, and Brisbane; as well as the San José Municipal Water System, San José Water Company, California Water Service, West Bay Sanitary District, and San Francisco Public Utilities Commission. Because the high-speed alignment is proposed to use the existing Caltrain corridor, conflicts are not likely.
- Stations. There may be conflicts with natural gas pipelines at the Santa Clara, Palo Alto, Redwood City, Millbrae/SFO, Fourth & King, and the Transbay Terminal stations.

4.3.3 Segment 3: San José to Oakland

Segment 3 extends from San José to Oakland. The impacts of the alignment alternatives within this route are described below. Figure 4.2-1 shows the major electrical, natural gas, and oil lines in the vicinity of this route.

4.3.3.1 I-880 Option

- Electrical Utilities. There is one location along the I-880 Option that crosses overhead transmission electrical lines with a minimum rating of 230 kV. There appear to be one substation (San José B) and no power generating facilities in the study area.
- Natural Gas Utilities. There is a potential for 20 conflicts with PG&E's natural gas pipeline crossings within this option's study area.
- Oil Pipelines. There is a potential for nine conflicts with refined product pipelines within this option's study area – seven Santa Fe crossings, one Shell, and one Simmons.
- Wastewater and Water Facilities. Although some wastewater and water treatment plants are located in the vicinity of the I-880 Option study area, none of the plants appears to be close enough to the proposed high-speed corridor. There may be wastewater and water line crossings in this segment operated by the cities of San José, Santa Clara, Milpitas, Hayward, San Leandro, and Oakland, as well as Alameda County Water District, Union Sanitary District, Oro Loma Sanitary District, East Bay Dischargers Authority, and East Bay Municipal Utilities District. Because the high-speed alignment is proposed to follow an existing railroad corridor for part of its alignment, conflicts are not likely in that portion of the option's study area.
- Stations. There may be conflicts with natural gas lines at the 12th Street/City Center Station. There appear to be no conflicts at the Union City, Oakland Airport/Coliseum BART, or West Oakland stations.

4.3.3.2 Mulford Option

- Electrical Utilities. There are no locations along the Mulford Option that cross overhead transmission electrical lines with a minimum rating of 230 kV. There appears to be one power generating facility (Santa Clara Power Plant) and no substations in the study area.
- Natural Gas Utilities. There is a potential for 18 conflicts with PG&E's natural gas pipeline crossings within this option's study area.
- Oil Pipelines. There is a potential for seven conflicts with refined product pipelines within this option's study area – five Santa Fe crossings, one Shell, and one Simmons.

- Wastewater and Water Facilities. Although some wastewater and water treatment plants are located in the vicinity of the Mulford Option study area, none of the plants appears to be close enough to the proposed high-speed corridor. There may be wastewater and water line crossings in this segment operated by the cities of San José, Santa Clara, Milpitas, Hayward, San Leandro, and Oakland, as well as Alameda County Water District, Union Sanitary District, Oro Loma Sanitary District, East Bay Dischargers Authority, and East Bay Municipal Utilities District. Because the high-speed alignment is proposed to use an existing railroad corridor, conflicts are not likely.
- Stations. There may be conflicts with natural gas lines at the 12th Street/City Center Station. There appear to be no conflicts at the Auto Mall, Union City, Oakland Airport/Coliseum BART, or West Oakland stations.

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