CHAPTER 1: PURPOSE OF AND NEED FOR PROJECT

1.1 PURPOSE

The primary purposes of the Caltrain Electrification Program are to:

- Improve train performance,
- Reduce noise,
- Improve regional air quality, and
- Modernize Caltrain.

The population of the Bay Area is increasing and, with it, traffic congestion. Commute traffic between major employment centers in San Francisco and along the San Francisco Peninsula is growing, and there has been a substantial increase in "reverse commute" trips from San Francisco to Peninsula locations over the past decade. Off-peak travel between San Francisco and Peninsula locations is also on the rise. Caltrain has experienced increases in ridership, as people seek alternate ways to meet these travel needs. Caltrain anticipates continued increases in demand for its rail services between now and the year 2020**.** To meet that increasing demand, Caltrain adopted the Rapid Rail Program and is already implementing increases in trackage; Caltrain is also planning to operate more trains, running at higher speeds, and is considering investments in additional rolling stock.

It would be possible for Caltrain to provide increased service levels using either diesel or electric motive power. Electrification, however, offers several advantages in comparison with diesel power, and these benefits serve the primary objectives of the Caltrain Electrification project, as follows:

- Electric trains can accelerate and decelerate at better rates than diesel powered trains, even with longer train consists. Given Caltrain's close-set station stops, a substantial portion of a Caltrain trip is spent accelerating and decelerating between stations. This would be expected to increase under continued diesel operations, as train consists get longer. Thus, electric trains can provide real travel time reductions and improve the overall system by increasing capacity and allowing increased levels of service. These travel time savings are expected to stimulate additional ridership, reducing vehicle miles of travel and congestion on Peninsula roadways. Reducing auto use will also improve regional air quality and reduce parking demand in downtown San Francisco and Peninsula cities.[1]

[1] The Electrification Program identifies the requirement for the existing signal system equipment to be modified/replaced as required for electrification compatibility. In addition, the "Constant Warning" at the grade crossings will have to be replaced with an electrification-compatible system as part of the program. This is anticipated to avoid any increase in "gate-down time" that may be associated with electric rail systems' incompatibility with signal system equipment. See Section 2.3.2.7, Modification or Replacement of Signal System.

- Noise emanating from the passage of electrified train sets is measurably less when compared with diesel operations. With the very substantial increases in peak and off-peak Caltrain service that are either under way or planned for implementation during the next five to 15 years, electrification becomes an important consideration for reducing noise of train pass-bys and maintaining Peninsula quality of life. Train whistles will continue to be sounded at grade crossings, consistent with Public Utilities Commission safety regulations.

- In addition to the air quality benefits of reducing automobile use for commuting by increasing rail ridership, electrified locomotives are expected to produce reductions in corridor air pollution emissions when compared with diesel locomotives.

- An electrified Caltrain system will better address Peninsula commuters' vision of an environmentally friendly, fast, reliable service. This also may stimulate ridership. Additionally, an electrified Caltrain system would set the stage for an expanded modern regional electric express service and potentially, for a statewide high-speed rail service as well. It is anticipated that any high-speed rail service would be fully electrified. The Electrification Program facilities will be designed to accommodate high-speed rail service as well as Caltrain service.

1.2 NEED

Caltrain is the oldest commuter rail operation in the San Francisco Bay Area and the only commuter rail service for the San Francisco Peninsula. It is operated by the Peninsula Corridor Joint Powers Board (JPB), a joint powers agency consisting of San Francisco, San Mateo, and Santa Clara counties. Passenger trains have operated along the 47-mile-long corridor segment between San Jose and San Francisco since 1863. Regularly scheduled service is provided between the South Bay and Peninsula communities of San Jose, Santa Clara, Sunnyvale, Mountain View, Palo Alto, Menlo Park, Atherton, Redwood City, San Carlos, Belmont, Hillsdale, San Mateo, Burlingame, Millbrae, San Bruno, and South San Francisco in Santa Clara and San Mateo counties, and the Bayshore, Paul Avenue, 22nd Street, and Fourth and King Street stations in the City and County of San Francisco. In July 1992, peak period service was extended approximately 30 miles south of downtown San Jose, creating a 77mile-long Caltrain corridor, with new stops in South San Jose, Morgan Hill, San Martin, and Gilroy. Figure 1.2-1 provides a map of the Caltrain system.

Weekday Caltrain ridership in October 1992 was about 21,100 passengers, over half of whom boarded or alighted at the Caltrain San Francisco terminus. By August 2001, weekday Caltrain ridership had increased to about 34,400 passengers, with 38 percent boarding or alighting at the San Francisco terminus. Ridership has since dropped by 22 percent, to 26,858 passengers, as of August 2003. Declines in Caltrain ridership reflect declining Bay Area economic conditions.

The following sections detail current and future transportation needs in the Caltrain corridor that would be addressed by the proposed Electrification Program.

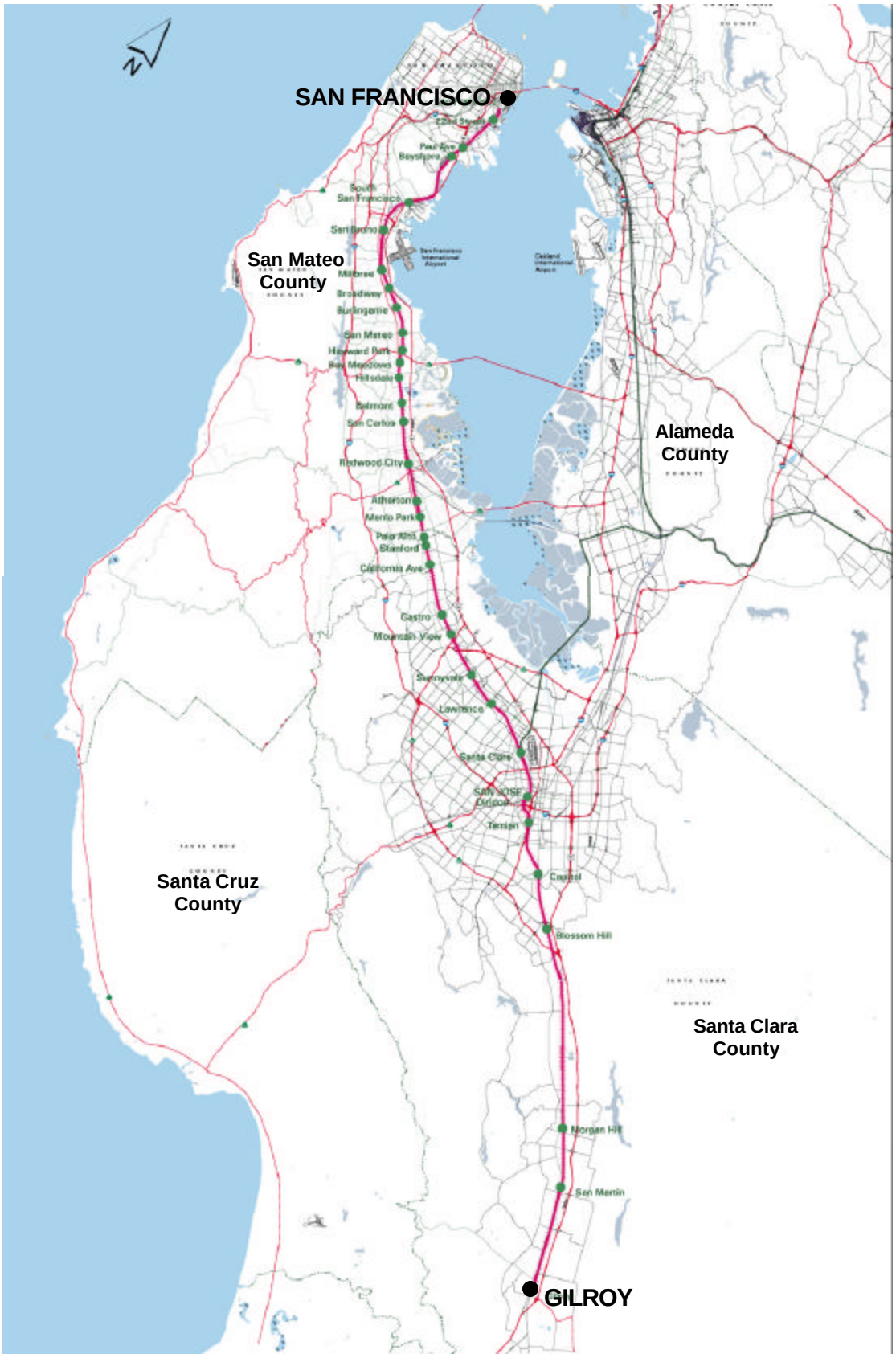

Figure 1.2-1
CALTRAIN SYSTEM WITH STATIONS
CALTRAIN ELECTRIFICATION PROGRAM

1.2.1 CURRENT AND FUTURE TRANSPORTATION DEMAND IN THE CALTRAIN SERVICE AREA

1.2.1.1 Current and Future Employment in the Caltrain Corridor

Current Downtown Area Employment. During the decade from 1980 to 1990, San Francisco experienced a 5.4 percent increase in employment while between 1990 and 2000, the increase was 9.5 percent. Data for the Year 1990 show the San Francisco Central Business District (CBD) containing nearly 60 percent of downtown area employment, and the downtown area accounted for 60 percent of total San Francisco employment. More recent data indicate a shift in San Francisco employment from the CBD to the South of Market area. The San Francisco downtown area extends from the San Francisco Bay west to South Van Ness Avenue and south to Townsend Street. The downtown area also contains the Union Square, Market Street Downtown Retail, and Embarcadero Center shopping districts. According to the San Francisco Planning Department, the downtown area provided approximately 321,000 jobs, or 51 percent of San Francisco's total employment in the Year 2000. Nearly one-third of the total employment was located in the City's CBD.

Anticipated Future San Francisco Employment. Based on San Francisco Planning Department data, employment is expected to continue to grow by nearly 16 percent during the next 20 years, but anticipated growth is concentrated in a few areas. The area east of Twin Peaks and south of Townsend Street to the County line – which is beyond the "downtown" area identified for this study – is projected to experience an increase in employment of about 30 percent. Additionally, the downtown south of Market Street will grow faster than other parts of the downtown. These changes will shift the balance of downtown San Francisco employment concentration somewhat southward, although the CBD will retain its lead in all City employment. As of 2000, the CBD contained about 30 percent of all employment citywide. The San Francisco Planning Department anticipates that by 2020, this area will contain about 27 percent of citywide employment. Table 1.2-1 summarizes anticipated changes in San Francisco employment by workplace location.

Table 1.2-1: Anticipated Changes in San Francisco Employment

District Workplace	2000 Employment	% of Total	2020 Employment	% of Total	% Change 2000-2020
CBD	187,082	29.7	198,170	27.1	5.9
Remainder of Downtown	133,923	21.3	148,513	20.3	10.9
Remainder of City	307,855	49.0	384,976	52.6	25.1
San Francisco Total	628,860	100.0%	731,659	100.0%	16.3%

Source: San Francisco Planning Department, 2001.

Current Peninsula Employment. In both 1990 and 2000, Santa Clara County, with its fast-growing, high-technology companies, had the greatest number of jobs of all Bay Area counties. During each decade from 1980 to 2000, San Mateo and Santa Clara counties each experienced employment increases of almost 23 percent. This regional growth emphasizes the fast-growing, two-directional nature of corridor travel demand and the potential for Caltrain to serve both of these travel markets. These trends have become more pronounced during the decade from 1990 to 2000. For example, in February 2001, morning peak period Caltrain ridership (that is, before 9:00 a.m.) was 60 percent northbound and 40 percent southbound. The reverse commute is the fastest growing half of Caltrain's commute ridership, growing by 20 percent in the year between 2000 and 2001 alone.

Future Peninsula Employment. *ABAG Projections 2003* forecasts similar growth rates for the decades after 2000 than before for San Mateo and Santa Clara counties. Between 2000 and 2020, San Mateo County employment is expected to grow by 22 percent while Santa Clara County employment growth is forecast at 23 percent. In 2020, Santa Clara County employment is expected to total 1.3 million jobs, 28 percent of the total Bay Area employment. San Mateo County is expected to have 0.5 million jobs in 2020. The three counties of the Peninsula Corridor are projected to have 2.6 million jobs in 2020, over half of the employment in the Bay Area. Because of the constraining geography of the Peninsula, most of these jobs will be within a short distance of the Caltrain tracks.

1.2.1.2 Characteristics of Work Trips in the Peninsula Corridor

Journeys to Downtown San Francisco Employment. Both the 1990 and 2000 U.S. Census journey-to-work data indicate that 14 percent of work trips to San Francisco come from San Mateo and Santa Clara counties while over half come from San Francisco. The overall 1990 mode split for journeys to work in downtown San Francisco was 54 percent transit, 30 percent drive alone, and 16 percent ride share.[2] San Francisco-originating work trips had the highest transit mode share (61 percent transit) of all Bay Area residence regions. Commuters from the East Bay were next with a 55 percent transit mode share. San Francisco-destined commuters from the South Bay had the highest drive alone mode share (44 percent), and the lowest transit mode share (37 percent) compared with commuters from the other primary regions.

[2] "Commute Patterns to Downtown San Francisco," a memorandum to the Transbay Study Technical Advisory Committee from the San Francisco Planning Department (Badiner, 6/30/95). Mode split data from the 2000 U.S. Census are not yet available.

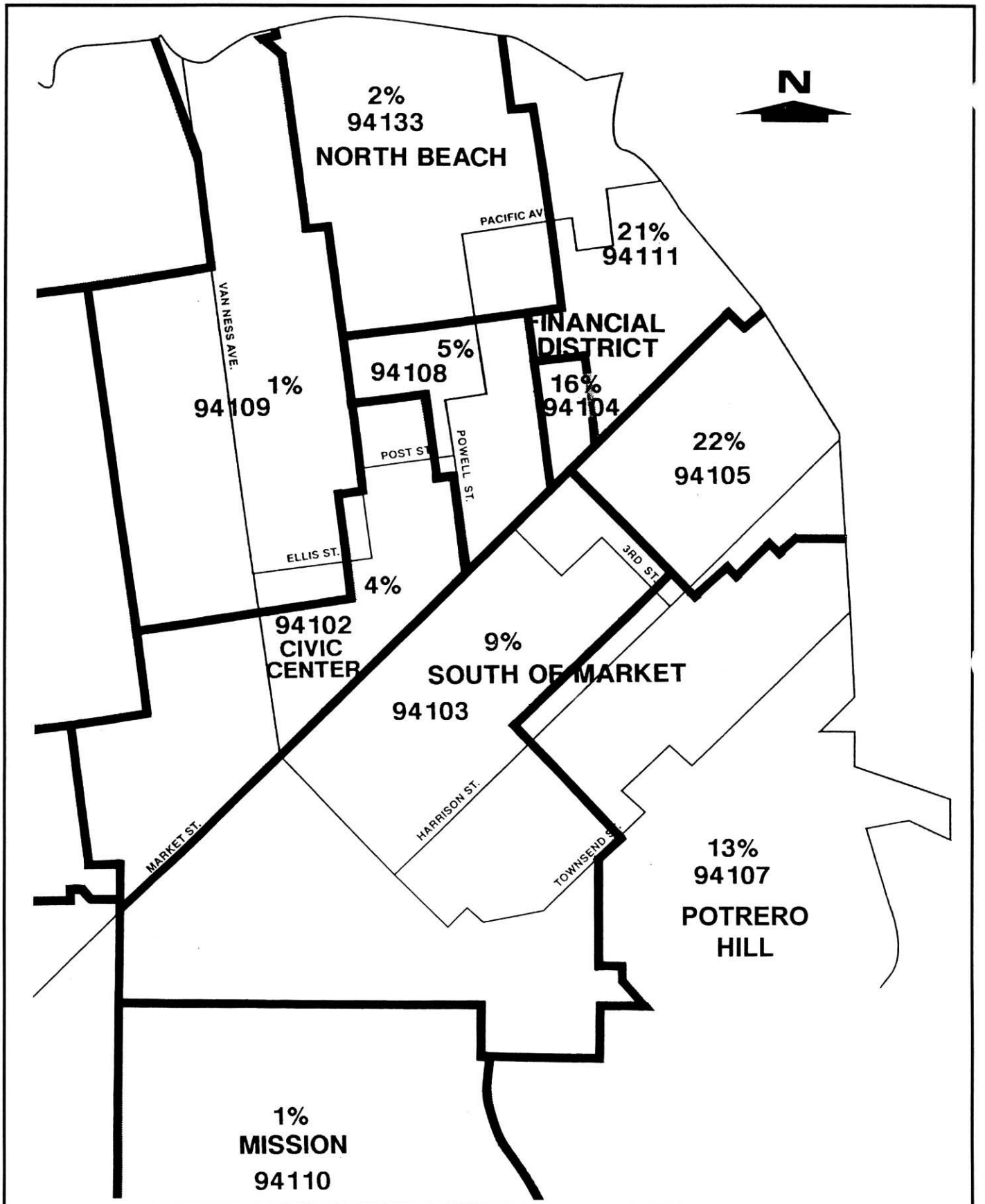

Figure 1.2-2
MAJOR DESTINATIONS OF CALTRAIN RIDERS
CALTRAIN ELECTRIFICATION PROGRAM

This modal split information reflects the superiority of high-quality, high-capacity, direct transit access to downtown San Francisco for San Francisco and East Bay residents relative to that afforded South Bay residents. Figure 1.2-2 shows the major destinations by zip code area of northbound Caltrain commuters. The CBD centered along Market Street (zip code zones 94104, 94105, and 94111) dominates with 58 percent of all destinations. The Electrification Program would help modernize the Caltrain service as well as reduce the transit travel times, thereby improving the service. The high transit mode share among San Francisco residents highlights the potential for the improved Caltrain to capture San Francisco riders "reverse commuting" to South Bay jobs as well as increasing its share of San Francisco-bound workers.

Journeys to Other Peninsula Employment. According to the 2000 Census, relatively high proportions of San Mateo and Santa Clara county jobs are filled by county residents. Fifty-eight percent of San Mateo County employment comes from within the county, with San Francisco and Santa Clara counties each providing 12 percent, as illustrated in Figure 1.2-3. Seventy-seven percent of Santa Clara County jobs are filled by county residents, with six percent coming from San Mateo County and two percent from San Francisco.

Figure 1.2-3: Origin County of Workers in San Mateo and Santa Clara Counties (2000 Census)

Use of transit for work trips to other destinations on the Peninsula is much lower than within San Francisco itself. According to the 1990 Census, travel to work by San Jose residents included only 3.5 percent on public transit, compared with 33.5 percent of work trips on public transit by residents of San Francisco. The high-tech employment boom in the Caltrain Corridor from San Jose to South San Francisco has, however, increased the absolute demand for transit, if not the mode share. Caltrain boardings in Santa Clara and San Mateo counties grew by 92 percent between 1992 and 2001, 33 percent faster than overall Caltrain ridership. Currently 55 percent of Caltrain riders travel solely within or between Santa Clara or San Mateo counties (compared with the situation in 1992 when 60 percent of Caltrain riders either boarded or alighted at the Fourth and King Station in San Francisco). Another six percent of the Caltrain

riders currently commute from San Francisco to the South Bay as part of the reverse commute. The total morning and evening peak-period ridership in the reverse commute direction makes up 30 percent of the Caltrain ridership and grew by 20 percent between February 2000 and February 2001. By supporting improved Caltrain – in concert with other Rapid Rail improvements – the Electrification Program will better serve this Peninsula-based and reverse commuter ridership.

1.2.1.3 Other Peninsula Travel That May be Served by Caltrain

Off-peak trips comprise about half of the person trips made in the region daily. Caltrain provides an important service to off-peak travel, especially since it increased the frequency of the daytime off-peak trains from one hour to one-half hour in 2000. Off-peak trips are the fastest growing segment of the Caltrain ridership. Between 2000 and 2001, off-peak boardings on Caltrain increased by 26 percent, from 6,935 to 8,713 per day. The Electrification Program will serve this growing ridership segment by modernizing the service and reducing travel time.

1.2.2 CURRENT AND FUTURE ROADWAY CONGESTION IN THE CALTRAIN CORRIDOR

Economic growth and the corresponding demand for transportation services in the San Francisco Bay Area have exceeded the region's ability to increase roadway capacity. Existing demand for north-south travel along the Peninsula via U.S. 101 and I-280 regularly exceeds existing highway capacities and results in congestion that is increasing in both frequency and duration. U.S. 101 is the most severely congested freeway through the corridor (*Transactions*, MTC, August 2001). Between San Francisco and San Jose a number of roadway segments are at or over capacity during the peak commute hour. Caltrans travel time and speed studies indicate that major delays occur on both U.S. 101 and I-280. The peak congestion generally occurs going into Silicon Valley in the morning and going out in the afternoon.

In San Mateo County, U.S. 101 experienced peak-hour delays in 1999 of almost eight minutes between SR 85 and Willow Road (Menlo Park). This means that the total travel time for this six-mile segment increased from 5.6 minutes to over 13 minutes as a result of congestion, an increase in travel time of 135 percent. All delays are computed with respect to travel time at 65 mph. Also in 1999, peak-hour delays reached over five minutes between Willow Road and SR 92 (70 percent increase in travel time), SR 92 and Broadway in Burlingame (120 percent increase), and Broadway and I-380 (140 percent increase). Delays on I-280 were of comparable magnitude north of I-380, doubling the travel time between I-380 and U.S. 101 from about 10 minutes to over 20 minutes.

Likewise in Santa Clara County, almost all segments of U.S. 101 were very congested from SR 152 in Gilroy to the SR 85 interchange in Mountain View. Peak-hour travel times in 1999 on almost all of this 43-mile length of U.S. 101 were double, or in some cases, triple, travel times experienced at 65 mph. The parallel I-280 also experienced a doubling or near doubling of

peak-hour travel time in the 14 miles between SR 87 in San Jose to El Monte Avenue in Los Altos Hills.[3]

Without future roadway improvements, congestion on corridor freeways is bound to worsen to the point where travel is diverted and the peak periods spread into the midday and to later in the evening. Bottlenecks will constrain movement through the corridor. *ABAG Projections 2002* indicates that that job growth in the corridor is expected to continue at around one percent per year. The resultant new transportation demand will lead to high levels of congestion that will take a toll on economic development by constraining goods and people movements.

Opportunities to improve highway capacity are constrained by a number of factors, including the need for extensive and costly right-of-way acquisitions and potentially significant environmental impacts, such as displacements of residences, businesses, and natural resources. For these reasons, substantial capacity improvements to U.S. 101 and I-280 cannot be assumed to address long-term travel demands in the corridor, and Caltrain provides a vital transportation alternative to costly highway capacity expansion. By reducing trip times and increasing transit ridership, the Caltrain Electrification Program would ease congestion on Peninsula freeways.

1.2.3 CORRIDOR AIR QUALITY

High rates of auto ownership and vehicle miles of travel have contributed to air quality problems throughout California. Several of the pollutants of concern include ozone; nitrogen oxides and sulfur dioxides (precursors of smog); carbon monoxide; and particulate matter.

The San Francisco Bay Area's air quality has improved in recent years, largely in response to technological improvements in motor vehicles and fuels that are less polluting. The project study area is within the Bay Area Air Basin (BAAB), for which air quality conditions are monitored by the Bay Area Air Quality Management District (BAAQMD). According to the BAAQMD, the BAAB is in attainment with national standards for carbon monoxide (CO), nitrogen oxides (NO_x), sulfur dioxide (SO_x), and annual particulate matter (PM_{10}).[4] It is designated non-attainment for ozone (O_3) and unclassified for $PM_{2.5}$[5] and 24-hour PM_{10}. With respect to California standards, the BAAB has attainment status for CO, NO_x, and SO_x. It is designated non-attainment for O_3 and PM_{10}.

[3] California Department of Transportation, District 4, Office of Highway Operations, Travel Times and Speed Profiles, 1999.

[4] Particulate matter less than 10 microns in diameter and small enough to be inhaled into the deepest parts of the lungs.

[5] Particulate matter less than 2.5 microns in diameter, included in PM_{10}.

A number of ambient air quality monitoring stations, maintained by BAAQMD, are located in the Bay Area to monitor progress toward air quality standards attainment. Six BAAQMD monitoring stations are on or near the Caltrain route. Table 1.2-2 shows a five-year summary (1998-2002) of data collected at these stations for monitored air pollutants and the total number of days that state and federal ambient air quality standards were exceeded. In the five-year period, the federal one-hour ozone standard was violated on 17 days, the state one-hour ozone standard was violated on 92 days, and the federal eight-hour ozone standard was violated on 43 days. In the same five-year period, the federal 24-hour PM_{10} standard was not violated, and the state 24-hour PM_{10} standard was violated on 40 days.

Because transportation is the major contributor to O_3, increasing auto travel threatens the area's improvement in air quality. Growing congestion will add to the potential problems because of increased emissions of vehicles operating in stop-and-go traffic. Shifting commuters and other travelers to higher occupancy modes is highly desirable to restrain the growth in auto travel. An improved Caltrain will serve this goal. Improved Caltrain service offers the greatest potential for increased high occupancy travel along the San Francisco Peninsula, particularly in southern San Mateo and Santa Clara counties, the areas with the most severe air quality problems in the corridor. Based upon projections of potential Caltrain use in 2020, about 59,000 Vehicle Miles of Travel (VMT) would be removed from corridor roadways daily as a result of electrifying the Caltrain service (see Section 3.15.5, Future Rail and Bus Transit and Projected Impacts).

Equally important, the Electrification Program would also eliminate the diesel train emissions from over 9,000 miles of daily train travel in the Caltrain Corridor. This would be an annual saving of the emissions generated by 2.7 million train miles in 2020, more than double 2001 levels. Elimination of the diesel emissions would reduce both O_3 and $PM_{10}/PM_{2.5}$.

Table 1.2-2: Summary of NAAQS and CAAQS Exceedences in the Caltrain Corridor, 1998-2002

	OZONE							CARBON MONOXIDE			NITROGEN DIOXIDE			SULFUR DIOXIDE			PM_{10}				
BAAQMD MONITORING STATION	Max 1-Hr (pphm)	Nat'l Days[1]	Cal Days[1]	3-Yr Avg	Max 8-Hr	Nat'l Days	3-Yr Avg	Max 1-Hr (ppm)	Max 8-Hr (ppm)	Nat'l Days[1]	Max 1-Hr (pph)	Ann Avg	Cal Day[1]	Max 24-hr (ppb)	Ann Avg	Cal Days[1]	Ann Geo Mean (mg/m^3)	Ann Avg	Max 24-Hr	Nat'l Days	Cal Days[2]
Year 1998																					
San Francisco	5	0	0	0	-	-	-	-	4	0	8	-	0	-	-	-	20.1	-	-	0	1
Redwood City	7	0	0	0	-	-	-	-	4.1	0	6	-	0	-	-	-	20.7	-	-	0	0
Mountain View	10	0	2	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
San Jose, 4th St	15	1	4	0.3	-	-	-	-	6	0	8	-	0	-	-	-	22.5	-	-	0	3
San Martin	14	3	15	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gilroy	14	2	10	0.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Year 1999																					
San Francisco	8	0	0	0.0	6	0	4.5	5.4	3.7	0	10	2.1	0	7	2.0	0	22.7	26.4	78	0	6
Redwood City	8	0	0	0.0	6	0	4.9	8.0	3.8	0	10	1.9	0	-	-	-	22.4	25.1	85	0	3
Mountain View	11	0	7	0.0	9	1	6.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
San Jose, 4th St	11	0	3	0.3	8	0	6.5	8.8	5.9	0	13	2.6	0	-	-	-	5.3	28.7	114	0	5
San Martin	3	1	7	1.7	10	3	8.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gilroy	11	0	3	0.7	8		7.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Year 2000																					
San Francisco	6	0	0	0.0	4	0	4.4	5.5	3.2	0	7	2.0	0	8	2.4	0	21.7	24.0	63	2	2
Redwood City	8	0	0	0.0	6	0	4.7	9.8	4.4	0	7	1.8	0	-	-	-	23.8	26.7	76	0	7
Mountain View[3]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
San Jose, 4th St	7	0	0	0.3	6	0	6.2	8.4	6.3	0	11	2.5	0	-	-	-	23.8	26.7	76	0	7
San Martin	11	0	4	1.3	10	1	8.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gilroy[4]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 1.2-2: Summary of NAAQS and CAAQS Exceedences in the Caltrain Corridor, 1998-2002

	OZONE							CARBON MONOXIDE			NITROGEN DIOXIDE			SULFUR DIOXIDE			PM_{10}				
BAAQMD MONITORING STATION	Max 1-Hr (pphm)	Nat'l Days[1]	Cal Days[1]	3-Yr Avg	Max 8-Hr	Nat'l Days	3-Yr Avg	Max 1-Hr (ppm)	Max 8-Hr (ppm)	Nat'l Days[1]	Max 1-Hr (pph)	Ann Avg	Cal Day[1]	Max 24-hr (ppb)	Ann Avg	Cal Days[1]	Ann Geo Mean (mg/m^3)	Ann Avg	Max 24-Hr	Nat'l Days	Cal Days[2]
Year 2001																					
San Francisco	8	0	0	0	5	0	4.6	4	3.3	0	7	1.9	0	7	2.1	0	22.9	26.426 .4	67	0	7
Redwood City	11	0	1	0	7	0	4.9	7.1	3.9	0	7	1.7	0	-	-	-	19.9	22.6	65	0	4
San Jose, 4th St	11	0	2	0	7	0	6	7.6	5.1	0	11	2.4	0	-	-	-	25.6	28.9	77	0	4
San Martin	12	0	7	0.3	9	2	7.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gilroy	12	0	3	0	10	2	7.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Year 2002																					
San Francisco	5	0	0	0	8	0	6.3	3.5	2.6	0	8	1.9	0	7	2.1	0	21	24.7	74	0	2
Redwood City	9	0	0	0	6	0	5.3	5.8	2.8	0	7	1.7	0	-	-	-	19.5	22	53	0	1
San Jose, Central[5]	-	-	-	-	-	-	-	5.3	4.5	0	8	-	0	-	-	-	-	-	70	0	2
San Martin	12	0	8	0	10	5	8.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gilroy	12	0	6	-	9	2	5.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-

pphm = parts per hundred million ppm = parts per million ppb = parts per billion

[1] Days over standard.

[2] PM_{10} is sampled every sixth day. Actual days over standard can be estimated as six times the number shown.

[3] Closed in 2000.

[4] Out of service in 2000 only.

[5] Station relocated from San Jose 4th Street to San Jose, Central, in April 2002.

Source: BAAQMD 2003.

1.2.4 CURRENT CALTRAIN SERVICE AND FACILITY DEFICIENCIES

A major deficiency of the Caltrain service has been its image of an outmoded service that dates back to many years of little or no improvement under the more freight rail-oriented Southern Pacific Transportation Company. Diesel locomotives and their relatively slow train operations have supported this image even as the JPB has put newly purchased rolling stock into operation and increased service. Electrifying the Caltrain service would enhance its consumer appeal and would likely increase ridership beyond estimates based upon improved travel time alone (see Section 3.15.5). Improving the appearance of Caltrain to potential consumers has long been suggested as a means of increasing ridership.[6]

Electrification would also help reduce travel times on Caltrain by speeding up acceleration and deceleration operations. The Electrification Program would address many of these current deficiencies and meet Caltrain riders' vision of an updated, clean, high-tech type Caltrain.

1.2.5 ACCOMMODATING FUTURE HIGH SPEED RAIL

In June 2000, the California High Speed Rail Authority (CHSRA) issued its *Final Business Plan for Building a High-Speed Train System for California*. This document recommends that the Governor and state legislature initiate a state-level program EIR and federal-level EIS for a statewide high-speed train network. The Caltrain corridor is presented as an alignment for Bay Area access. In addition, the California High Speed Rail Commission identified San Francisco as the preferred destination for a bullet train from Los Angeles to the Bay Area.

An electrified Caltrain system would set the stage for an expanded modern regional electric express train service and for a statewide high-speed rail service as well. It is anticipated that any high-speed rail service would be fully electrified. The Electrification Program facilities evaluated herein will be designed to accommodate high-speed rail service as well as Caltrain service.

The CHSRA's *Business Plan* states that terminating the high-speed trains at the Transbay Terminal in San Francisco should be included in environmental studies. Extension of Caltrain from its present Fourth and King Streets terminus to the site of the Transbay Terminal is being evaluated in a separate environmental document, the *Transbay Terminal / Caltrain Downtown Extension / Redevelopment Project EIS/EIR,* being prepared by the Federal Transit Administration (FTA), the City and County of San Francisco, the San Francisco Redevelopment Agency, and the Peninsula Corridor Joint Powers Board. This document was circulated during

[6] Lovelock, Christopher H., *Consumer Oriented Approaches to Marketing Urban Transit,* Ph.D. Thesis, Stanford University, 1972.

October 2002; the final EIS/EIR is currently in preparation with issuance anticipated in early 2004.

1.3 OTHER RELATED PROJECTS

The following paragraphs highlight a few related projects for their coordination or cumulative impact issues and their potential to support or be served by the Caltrain Electrification. Section 3.17.5, Future Rail Transit and Bus Services and Projected Impacts, describes projects planned by individual transit operators.

1.3.1 NEW TRANSBAY TERMINAL/CALTRAIN DOWNTOWN EXTENSION/TERMINAL AREA DEVELOPMENT

The Federal Transit Administration (FTA), the JPB, the City and County of San Francisco, and the San Francisco Redevelopment Agency are completing a combined Final Environmental Impact Statement/Environmental Impact Report (EIS/EIR) for the San Francisco Transbay Terminal / Caltrain Downtown Extension / Redevelopment Area Project. The Final EIS/EIR will address alternatives for:

(1) a new, multi-modal transportation facility at the site of the current Transbay Terminal at First and Mission Streets,

(2) an extension of Caltrain commuter rail service from its current San Francisco terminus at Fourth and King Streets to the new Transbay Terminal, and

(3) development of a mix of new and transit-oriented uses on publicly-owned property in the vicinity of the new terminal to help defray project costs.

Other project features include an off-site bus storage facility, new bus ramps connecting to the Bay Bridge, construction and operation of a temporary bus facility for the construction period, and a reconfigured Caltrain layover yard.

This study builds upon the recently completed Transbay Terminal Study (Metropolitan Transportation Commission, 2001); associated technical reports regarding such subjects as Transbay Terminal design options, joint development options, and terminal operations; and the original *Draft Environmental Impact Statement/Draft Environmental Impact Report (DEIS/DEIR) for the Caltrain San Francisco Downtown Extension Project* (FTA-U.S. DOT/ Peninsula Corridor Joint Powers Board, 1997).

The proposed project is located in the central business district of the City of San Francisco in the South of Market Area. The Draft EIS/EIR was circulated in October of 2002; the Final EIS/EIR is anticipated in early 2004. Construction is expected to start in 2005 with completion in 2010.

1.3.2 DUMBARTON RAIL CORRIDOR

An extension of Caltrain commuter rail service in the 11-mile Dumbarton Rail Corridor is planned for implementation within the next three to five years. This extension would link Alameda County with San Mateo County via the Dumbarton Railroad Bridge. Funding from Santa Clara County, San Mateo County, and Alameda County has been secured or is pending for 86 percent of the estimated capital cost of project. A total of $19.2 million in needed funding is not yet identified. MTC has included the project in Track 1 of the 2001 update to the Regional Transportation Plan. The project includes approximately 11 miles of mostly single-track railroad, signals, grade crossings, railroad trestles and two swing bridges. The San Mateo County Transportation Authority purchased the right of way in 1994. Service would operate between Redwood Junction and Newark Junction on the Centerville Line, continuing on the Centerville Line from Newark Junction to the Union City BART station.

The recommended service plan proposes to operate 12 trains each non-holiday weekday. Three morning peak commuter trains would operate from Union City to Millbrae and three trains between Union City and downtown San Jose (Diridon); in the evening peak commute hours, reciprocal service would be provided from San Jose and Millbrae to Union City. A study completed in 1999 indicates that the Dumbarton project compares favorably to current Caltrain service and the Altamont Commuter Express (ACE), as measured by cost per passenger, cost per train mile, and passengers per car hour.

1.3.3 LICK TO GILROY RAIL CORRIDOR

An essential element to protect the investment in electrification of the southern, San Jose-to-Gilroy segment of the Caltrain corridor is to ensure a dedicated right-of-way for Caltrain use far into the future. Purchase of the western half of the right-of-way from the UPRR, with UPRR retaining the eastern portion for continued freight rail operations, and construction of one or more dedicated Caltrain tracks is currently under investigation by the Santa Clara Valley Transportation Authority (VTA). Alternatively, the JPB and UPRR could execute an additional agreement to ensure continued Caltrain operations within the UP portion of the corridor that also addresses ownership and use of the electrification facilities. Negotiations between JPB, VTA and UPRR are ongoing. This project will be addressed in a separate environmental document.

1.3.4 VASONA LIGHT RAIL

The Vasona Light Rail Project is a 6.8-mile extension to the existing 30.5-mile VTA light rail system. It is anticipated the project will be built in two phases adding 11 new stations between Woz Way in downtown San Jose and Los Gatos. Vasona Light Rail will operate primarily on the existing Union Pacific Railroad right-of-way between the San Jose Diridon Station and Vasona Junction, with the segment between the San Fernando and San Jose Diridon stations operating within a tunnel alignment.

Phase One is a 5.3-mile section from downtown San Jose to Winchester Station in Campbell and includes the following features:

- Stations: San Fernando, San Jose Diridon, Race, Fruitdale, Bascom, Hamilton, Downtown Campbell, and Winchester. A future station is proposed for West San Carlos Street in the Midtown area of San Jose.
- Parking: 102 spaces at Bascom Station, and 55 spaces at Winchester Station.

Phase Two will be a 1.5-mile section from Winchester in Campbell to Vasona Junction in Los Gatos. Stations will be at Hacienda and Vasona Junction, including 163 to 220 parking spaces at the Vasona Junction Station. Travel time from the Winchester Station to Downtown San Jose will be approximately 16 minutes. Expected daily ridership is 8,000 to 9,000 riders. Phase One is under construction and is expected to begin revenue service in January 2006.

1.3.5 FUTURE HIGHWAY IMPROVEMENTS IN THE CALTRAIN CORRIDOR

In the face of rapid growth in Silicon Valley, a variety of highway improvements are planned. Major programmed (committed and Track 1) highway improvements in the corridor are listed below. [7]

- Widen U.S 101 from four lanes to six lanes between Metcalf Road and Cochrane Road;
- Widen Guadalupe Expressway (Route 87) from four-lane expressway to six-lane freeway, including two High Occupancy Vehicle (HOV) lanes from U.S. 101 to Julian Street;
- Add HOV lanes on Route 87 from Julian Street to I-280 and from I-280 to Route 85;
- Complete Route 85 and U.S 101 interchange and connector ramps in South San Jose and widen U.S 101 to eight lanes from Bernal Road to Metcalf Road;
- Widen U.S 101 from six lanes to eight lanes (HOV lanes) from Metcalf Road to Cochrane Road;
- Add U.S 101 auxiliary lane from Route 87 to Montague Expressway;
- Construct Route 85/U.S 101 interchange improvements in Mountain View; and
- Add U.S 101 auxiliary lanes from the Santa Clara County line to Marsh Road, from Marsh Road to Route 92, from Third Avenue to Millbrae, from San Bruno Avenue to Grand Avenue, and from Sierra Point to the San Francisco County line.

These projects are not enough to solve the transportation problems in the corridor. The final *2001 Regional Transportation Plan EIR* indicates that even with these projects in place, increasing congestion is expected on U.S 101 and I-280 in the Caltrain corridor. Thus, there is a need for additional transit in the corridor to reduce future congestion and improve travel opportunities. Improved Caltrain service would help meet this need.

[7] MTC, *Final EIR, 2001 Regional Transportation Plan,* December 2001.

1.4 USES OF THIS DOCUMENT

This document is a Draft Environmental Assessment / Draft Environmental Impact Report (Draft EA/EIR), prepared pursuant to the requirements of the National Environmental Policy Act (NEPA), the Council on Environmental Quality regulations implementing NEPA, the California Environmental Quality Act (CEQA), and the CEQA Guidelines, 2001.

This document will be used by federal, state, regional, and local agencies to assess the environmental impacts of the project on resources under their jurisdiction or to make discretionary decisions regarding the project. The Federal Transit Administration, the State of California, and the Metropolitan Transportation Commission will use this document and the Finding of No Significant Impact / Final EIR in deciding whether and how to fund the project.

1.5 PERMITS AND APPROVALS NEEDED

Pursuant to SamTrans' enabling legislation (Public Utilities Code § 103200 et seq.) and the 1991 Interstate Commerce Commission's approval of the JPB acquisition of the Caltrain line, JPB activities within the Caltrain right-of-way are exempt from local building and zoning codes and other land use ordinances. Nonetheless, the JPB will cooperate with local government agencies in performing improvements within its right-of-way and will attempt to comply with local regulations affecting any of its activities outside the JPB right-of-way.

Anticipated permits and approvals that would be required for this project are shown in Table 1.5 -1.

Table 1.5-1: Permits and Approvals Anticipated To Be Required

Agency	Approval or Permit
U.S. Army Corps of Engineers	Approval of nationwide permit for effects to wetlands and other waters of the U.S. under Section 404 of the Clean Water Act.
State Water Resources Control Board	General Construction Activity Stormwater Permit or Section 402 National Pollutant Discharge Elimination System (NPDES) permit.
California Public Utilities Commission	Permits required for public safety considerations of Caltrain Electrification facilities.
State Department of Fish and Game	Review and approval of 1601 Streambed Alteration Agreement for placement of power pole foundations affecting waterways.
Caltrans	Encroachment Permit for overbridge barriers on State roadways.
Regional Water Quality Control Board	Water quality certification and waste discharge requirements for

Table 1.5-1: Permits and Approvals Anticipated To Be Required

Agency	Approval or Permit
	placement of power pole foundations affecting waterways.
Bay Conservation and Development Commission (BCDC)	Permit for construction of facilities within 100-foot shoreline band (at Brisbane Lagoon).
Peninsula Corridor Joint Powers Board	Certification of CEQA environmental document.
Union Pacific Railroad (UPRR)	JPB/VTA will solicit UPRR approval of the electrification design and installation of facilities on the UPRR-owned portion of the rail corridor.
San Francisco Bureau of Environmental Health	Permit required for drilling or other subsurface exploration.
San Francisco Department of Public Works	Approval required for construction in public rights-of-way. Batch Industrial Wastewater Discharge Permit required for de-watering effluent discharge to the combined sewer system providing the quality of the effluent meets the NPDES General Permit discharge standards. Article 20 of San Francisco Municipal Code requires preparation of a Site Mitigation Plan if soil sampling and analysis indicate presence of hazardous waste in soil subject to construction disturbance.
San Francisco Planning Department/ Commission	Certificate of Appropriateness for modification of historic resources.
San Mateo County	No permitting requirements identified.
City of Brisbane	Encroachment Permit.
City of South San Francisco	Encroachment Permit.
City of San Bruno	Department of Public Works may issue a permit in order to monitor impacts to city sewer lines and storm drains.
City of Millbrae	Encroachment Permit for overbridge barrier. If spoils are hauled off-site in Millbrae, a haul permit would be required.
City of Burlingame	Encroachment Permit.
City of San Mateo	Encroachment Permit.
City of Belmont	Encroachment Permit. If more than 50 c.y. of spoils are removed via Belmont streets, a haul permit is required.
City of San Carlos	No permitting requirements identified.
City of Redwood City	Encroachment Permit for substation and overbridge protection barrier.
Town of Atherton	No permitting requirements identified.
City of Menlo Park	Encroachment Permit required for construction in the city right-of-way.
Santa Clara County	No permitting requirements identified.

Table 1.5-1: Permits and Approvals Anticipated To Be Required

Agency	Approval or Permit
Santa Clara Valley Water District	NPDES general permit for construction related activities. Includes developing and implementing a Storm Water Prevention Plan (SWPPP). SCVWD encroachment permit if need to access any District lands or if any construction comes within 50 feet of the top of bank of any Santa Clara County stream.
City of Palo Alto	Encroachment Permit required for construction in the city right-of-way.
City of Mountain View	Encroachment Permit required for construction in the city right-of-way.
City of Sunnyvale	General Encroachment Permit required for construction in the city right-of-way.
City of Santa Clara	Street Opening Permit requirement for construction in the city right-of-way.
City of San Jose	Encroachment Permit for construction in city right-of-way.
City of Morgan Hill	Encroachment Permit required for construction in the city right-of-way.
City of Gilroy Community Development Department	Encroachment Permit required for construction in the city right-of-way.
Note: Activities within the Caltrain right-of-way are not subject to the jurisdiction of local governments.	