

CHAPTER 1: PURPOSE AND NEED

1.1 BACKGROUND

The Federal Transit Administration (FTA) and Santa Clara Valley Transportation Authority (VTA) have prepared this Environmental Impact Statement (EIS) in accordance with the National Environmental Policy Act (NEPA). The EIS has been developed for three alternatives: the Silicon Valley Rapid Transit Project (SVRTP) Alternative, the Berryessa Extension Project (BEP) Alternative, and the No Build Alternative in the Silicon Valley Rapid Transit Corridor (SVRTC).

The Bay Area Rapid Transit (BART) network that serves the San Francisco Bay Area counties of Alameda, Contra Costa, San Francisco, and San Mateo is a 104-mile, 43-station regional rail system that currently extends south to central Fremont in Alameda County. A 5.4-mile extension of that line to southern Fremont (Warm Springs Extension), just north of the Santa Clara County limit, will begin construction in 2009 and revenue operations in 2014 (see Figure 1-1 BART System Map).

The SVRTP Alternative would continue the BART alignment into Santa Clara County for approximately 16.1 miles and provide six stations. The BEP Alternative, to be evaluated under the FTA's New Starts Program, would be a 9.9-mile, two-station extension of BART. A No Build Alternative also has been formulated as a basis for comparison to the other alternatives. A detailed description of the No Build Alternative, BEP Alternative, and SVRTP Alternative is provided in Chapter 2, Alternatives.

Transit improvements are intended to expand mobility options for Santa Clara County and Bay Area residents and help address serious transportation needs that will only become more critical as the region continues to grow both in population and employment. These improvements would provide a new link in the regional rail network and direct access to the central business district of the region's largest city, San Jose, and into the core employment areas of Silicon Valley (see Figure 1-2 Silicon Valley Rapid Transit Corridor).

1.1.1 SILICON VALLEY—ECONOMIC ENGINE OF THE SAN FRANCISCO BAY AREA

The reference to Santa Clara County as "Silicon Valley" purportedly first occurred in 1971. The name refers to the element silicon that emerged as the key material in making solid state transistors, which had replaced vacuum tubes and their applications in most electronics. Various industries and a multitude of firms had emerged during the late 1950s and 1960s to research and apply this new technology.



Source: BART and VTA, 2008.

Figure 1-1: BART System Map

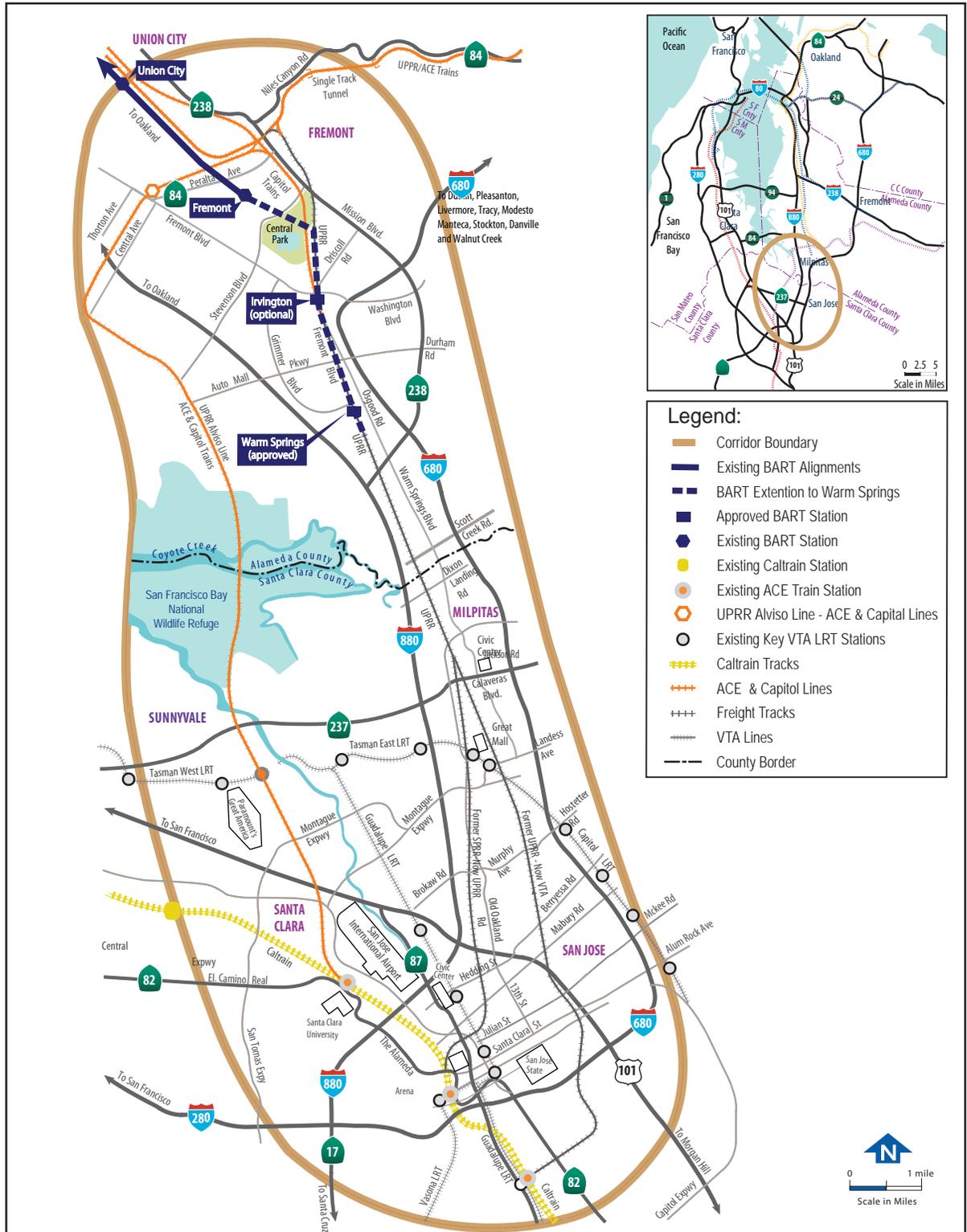


Figure 1-2: Silicon Valley Rapid Transit Corridor

Perhaps the real start of Silicon Valley occurred in 1951, however, when the Stanford Industrial Park was established next to Stanford University and housed the area's first technology firms. Ever since, Silicon Valley has experienced sustained rapid growth to become the business high-technology capital of California, the United States, and without exaggeration, the world. The geographic limits of the Silicon Valley have been steadily expanding. Though difficult to define without some debate, the Silicon Valley now extends continuously from southern San Mateo County, throughout Santa Clara County, and into southern Alameda County. There are extensions or offshoots of Silicon Valley in northwest Santa Cruz County, eastern Alameda County, and even San Francisco County, which is north of San Mateo County on the San Francisco Peninsula, and not contiguous with Santa Clara County.

High-tech industries, based on computer and related networking (e.g., internet) services, continue to dominate the character of Silicon Valley. Thousands of such businesses are headquartered in the Silicon Valley. Among the Fortune 1000 largest companies in the United States, 24 are based in the Silicon Valley.¹ However, high-tech is really only one of several industries in which Silicon Valley is a leader. Two other industries of importance to California and the nation include biotechnology and venture capital services.

Biotechnology growth also was centered on Stanford University and is still concentrated in the lower San Francisco Peninsula. Like high-tech, there are strong offshoots throughout the San Francisco Bay Area. In 2003, among the various business categories of the Life Sciences (where biotechnology would fall), the Bay Area ranked first in employment in instruments manufacturing, second in medical devices manufacturing, and sixth in pharmaceuticals manufacturing (California Technology, 2003). The top 150 U.S. biomedical firms by revenue include twelve that are headquartered in Silicon Valley.

Silicon Valley has long been the leading geographic area for venture capital investment and services in the United States. Venture capital funds have been instrumental in encouraging innovation within many industries, including high-tech and biotechnology. In 2007, over 34 percent of venture capital dollars (over \$10 billion out of \$29.4 billion total) went to Silicon Valley companies, more than twice the level of second place New England. The Silicon Valley is home to the largest concentration of venture capital firms in the U.S. Again, in 2007, of the 55 firms making at least 20 venture capital investments (or deals), 24 were located in Silicon Valley (PriceWaterhouse Coopers, 2008).

¹These firms include: Adobe Systems, Advanced Micro Devices (AMD), Agilent Technologies, Apple Inc., Applied Materials, Business Objects, Cisco Systems, eBay, Electronic Arts, Google, Hewlett-Packard, Intel, Intuit, LSI Logic, Maxtor, National Semiconductor, Network Appliance, Nvidia, Oracle Corporation, SanDisk, Solectron, Symantec, Sun Microsystems, Yahoo!

Largely because of the specialized, highly innovative products produced, Silicon Valley businesses have become important exporters of goods and services to the rest of the world. The value of exports from the San Jose metropolitan region exceeded \$28 billion in 2006, seventh among regions in the U.S. producing high value exports.² Asia is the primary export market, but goods and services flow to many countries via the internet, air freight, or by ships through the Port of Oakland, the sixth largest container port in the U.S.

1.1.2 THE TRANSPORTATION CHALLENGE

Because of its considerable employment in basic industries, high levels of trade, and potential for continued growth and innovation, Silicon Valley has continued to be the economic engine of Northern California since World War II. Maintaining its economic vitality is key to maintaining the leadership of the U.S. in many key global industries. The Silicon Valley, however, faces several challenges that could constrain its continued expansion. One is the efficient movement of goods and people to, through, and from the Silicon Valley. VTA has implemented or overseen the implementation of a number of transportation capital and operating improvements to this end. It has programmed further improvements over the next several decades that will address bottlenecks in the existing transportation network and expand its capacity.

County residents have continually expressed their support for transportation improvements by passing local funding measures, which have been supplemented by regional and state initiatives. Prior and proposed actions are multimodal, and attempt to maintain a balanced transportation system, providing businesses, local residents, Bay Area commuters and visitors to the Silicon Valley alternate travel options.

The project is one of a number of programmed improvements. It is targeted to address the access problems of Santa Clara County residents and other residents of the Bay Area who work in Santa Clara County. Regional transportation improvements are also anticipated to have broader benefits for other travelers and would help shape development patterns in a corridor with limited open space for new development.

Improved transit is an important element of various local and regional plans, including the *Valley Transportation Plan 2030* (VTP 2030, February 2005), the long-range transportation action plan for Santa Clara County, and the pending new *San Francisco Bay Area Regional Transportation Plan* (RTP 2035, Metropolitan Transportation Commission).³

² Department of Commerce data reported in the Silicon Valley/San Jose Business Journal, February 1, 2008

³The update to VTP 2030 (VTP 2035) is in progress. The SVRTP Alternative is identified in the current MTC regional plan, T2030, as part of a \$3.3 billion construction reserve for corridor improvements. Environmental studies, preliminary engineering, and right-of-way acquisition are included in the plan and fully funded.

1.1.3 OVERVIEW OF THE SVRTC

The SVRTC includes most of Silicon Valley and the urbanized area of northern Santa Clara County and portions of southern Alameda County. It extends from Fremont in southwestern Alameda County through the cities of Milpitas, San Jose, and Santa Clara in Santa Clara County, as shown in Figure 1-2 (previous). Land uses in this large area are diverse, composed of older industrial and light industrial uses, newer high technology company campuses, traditional smaller-scale and downtown commercial/retail uses, large-scale mall retail uses, and single-family and multi-family residential areas.

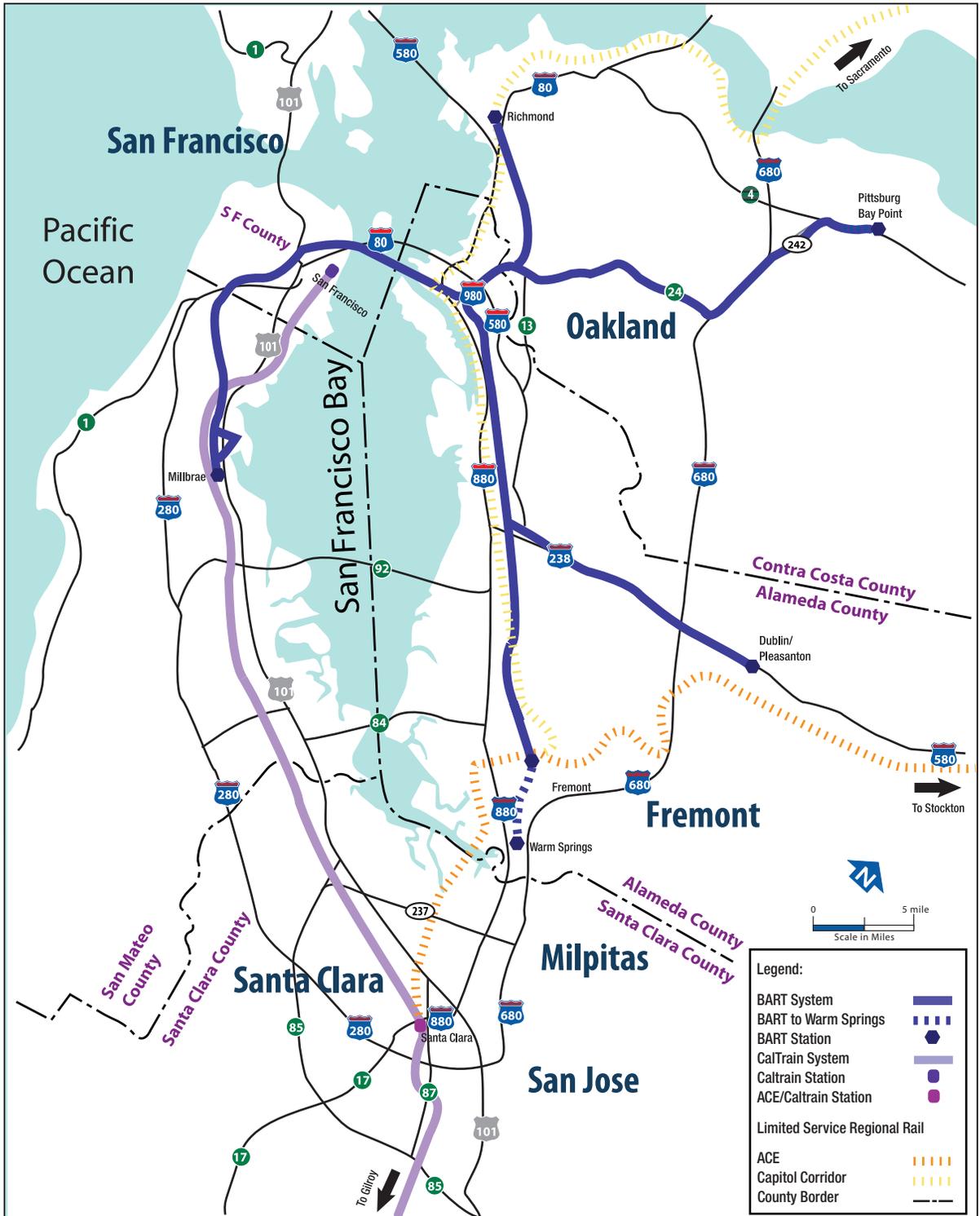
Land use densities are low, with low-rise employment centers and predominantly single-family housing characteristic of the landscape, although new residential units in mid-rise complexes are becoming more common. Residential development for new residents entering the expanding job market in the SVRTC has occurred well beyond Santa Clara County, in both surrounding counties and the Central Valley.

The SVRTC is rich in cultural diversity and history and contains two major educational complexes, San Jose State University (SJSU) in downtown San Jose and Santa Clara University in Santa Clara, and also several community colleges. Stanford University is immediately north of the SVRTC in northwest Santa Clara County. Near the height of the dot.com boom, SVRTC population in 2000 was approximately 119,000. Jobs, or employed workers, in the SVRTC were approximately 1,001,300 in that year. Although employment went down between 2002 and 2005, the number of jobs in the County has steadily increased the past three years and is projected to grow over 20 percent over the next 25 years. (Detailed information on existing SVRTC land uses is presented in Sections 4.9, Land Use, and 4.12, Socioeconomics.)

The SVRTC includes a mix of transportation facilities and modes. As shown in Figure 1-2, it is traversed by two freight railroad mainlines, three commuter rail lines, three light rail lines, BART line service to Fremont, and a number of interstate and state routes, expressways, and major arterials. VTA is the primary transit operator but various other rail and bus operators provide transit services to major activity and employment centers throughout the SVRTC, and the greater San Francisco Bay Area region.

Major public roadways include Interstate I-880, I-280, I-680, US 101 and State Route (SR) 237, SR 262, SR 17, SR 85, and SR 87. The Norman Y. Mineta San Jose International Airport (SJIA) is also located within the SVRTC in north San Jose. (More detail on existing and proposed transportation facilities is presented in Chapter 3, Transportation and Transit.)

Figure 1-3 identifies the Regional Transportation Network near the SVRTC. This network includes East Bay BART service, San Francisco Peninsula Caltrain commuter rail service, as well as other intermodal connections with VTA light rail transit (LRT) and major bus services.



Source: VTA, 2008.

Figure 1-3: Regional Transportation Network

1.2 PURPOSE AND NEED FOR PROJECT

The overall project goal of a major transit improvement in the SVRTC is to improve transit services and increase intermodal connectivity, thereby improving mobility and accessibility. Meeting this overall project purpose would address a variety of related transportation needs in the SVRTC and benefit major portions of the Bay Area.

1.2.1 PURPOSE OF PROPOSED TRANSPORTATION IMPROVEMENTS

The project is intended to achieve the following objectives:

- Improve public transit service in this severely congested corridor by providing increased transit capacity and faster, convenient access to and from major Santa Clara County employment and activity centers for corridor residents and residents from throughout the Bay Area and portions of the Central Valley of California.
- Enhance regional connectivity by expanding and interconnecting BART rapid transit service with VTA light rail, Amtrak, ACE, Caltrain, and VTA bus services in Santa Clara County; improve intermodal transit hubs where rail, bus, auto, bicycle and pedestrian links meet.
- Increase transit ridership by expanding modal options in a corridor with ever-increasing travel demand that cannot be accommodated by existing or proposed roadway facilities; in particular, help alleviate severe and worsening congestion on I-880 and I-680 between Alameda County and Santa Clara County.
- Support transportation solutions that will be instrumental in maintaining the economic vitality and continuing development of Silicon Valley.
- Improve mobility options to employment, education, medical, and retail centers for corridor residents, in particular low-income, youth, elderly, disabled, and ethnic minority populations.
- Improve regional air quality by reducing auto emissions.
- Support local and regional land use plans and facilitate corridor cities' efforts to direct business and residential investments in transit oriented development. More efficient growth and sustainable development patterns are necessary to reduce impacts to the local and global environmental, such as adverse climate change.

Improved transit in the SVRTC is consistent with the goals established in prior studies (See Section 1.3, Project History) and responds to the long-range *Valley Transportation Plan 2030* (VTP 2030), adopted by VTA in February 2005. The primary goal of the long-range plan is to provide transportation facilities and services that support and enhance Santa Clara County's high quality of life and vibrant economy.

Transportation improvements in the SVRTC would address issues identified in the Metropolitan Transportation Commission's (MTC) Regional Transportation Plans (T-2030 and pending T-35), including the need to improve access and thereby preserve economic vitality and the need to link transportation to community development around transit nodes. Improved transit also is consistent with the policy directions of VTA's *Short-Range Transit Plan* and *Santa Clara County 2000 Measure A*. That measure, approved by 70.6 percent of Santa Clara County voters, provides a 30-year, ½-cent sales tax beginning in 2006 for a set of transit improvements in Santa Clara County.

1.2.2 ASSOCIATED NEEDS

Various deficiencies in the SVRTC transportation network and growing transportation needs of businesses and residents have prompted VTA to pursue the proposed project. Implementing improvements that meet the project purpose described above would respond to the following needs:

Continuing Rapid Growth in Travel Demand

Growth in travel demand is occurring in an area already experiencing major constraints on mobility. Travel is increasing due to both employment growth and population—or household—growth. Table 1-1 and Table 1-2 provide an overview of these trends and show households and jobs, respectively, in 2000 and their projected levels in 2030, for first Santa Clara County and then the three SVRTC cities of Milpitas, San Jose, and Santa Clara. For broader context, the tables show the same information for Alameda County and Fremont, the largest city southern Alameda County.

Table 1-1: Households, 2000 to 2030 (in Housing Units)

Jurisdiction	2000	2030	Growth	% Change
<i>Santa Clara County</i>	<i>565,863</i>	<i>769,750</i>	<i>203,887</i>	<i>36</i>
City of Milpitas	17,167	25,500	8,333	49
City of San Jose	291,370	422,720	131,350	45
City of Santa Clara	38,526	53,810	15,284	40
<i>Alameda County</i>	<i>523,366</i>	<i>671,700</i>	<i>148,334</i>	<i>28</i>
City of Fremont	68,237	82,520	14,283	21

Source: Association of Bay Area Governments, 2007.

Table 1-2: Employment Growth, 2000 to 2030 (in Jobs)

Jurisdiction	2000	2030	Growth	% Change
<i>Santa Clara County</i>	<i>1,044,130</i>	<i>1,272,950</i>	<i>228,820</i>	<i>22</i>
City of Milpitas	53,980	62,560	8,580	16
City of San Jose	432,480	592,110	159,630	37
City of Santa Clara	131,690	146,000	14,310	11
<i>Alameda County</i>	<i>750,160</i>	<i>1,037,730</i>	<i>287,570</i>	<i>38</i>
City of Fremont	104,830	137,240	32,410	31

Source: Association of Bay Area Governments, 2007.

Households in Santa Clara County are expected to grow by 36 percent over the period. The highest percentage growth is in Milpitas; the greatest absolute growth is in San Jose. In terms of employment, Santa Clara County jobs are projected to increase by 22 percent, with San Jose experiencing the largest percentage (37 percent) as well as absolute growth (159,630 new jobs). Aggressive city actions are encouraging this growth to be concentrated in downtown and the North First Street corridor.

Alameda County household growth is expected to be somewhat lower than in Santa Clara County while employment growth will be higher. City of Fremont job growth is expected to be higher than household growth, both of which will occur in the southern portion of the city where land is still available.

Focusing in on the SVRTC, Table 1-3 and 1-4 illustrate household and job growth, respectively, between 2000 and 2030 for:

Santa Clara County—

- Milpitas and northeast San Jose (corresponding to District 12 for purposes of land use projections and associated travel demand)
- Central San Jose, including downtown (District 11), and
- Sunnyvale, Santa Clara and Alviso (District 9).

Alameda County—

- Fremont (District 16)
- Dublin, Livermore, Pleasanton (District 15).

Table 1-3: Households Growth in SVRTC, 2000 to 2030 (in Housing Units)

SVRTC Travel Zone	County	2000	2030	Growth	% Change
Milpitas/NE San Jose (District 12)	Santa Clara	99,518	136,748	37,230	37
Central San Jose (District 11)	Santa Clara	92,005	140,851	48,846	53
Sunnyvale, Santa Clara, Alviso (District 9)	Santa Clara	88,742	140,882	52,140	59
Dublin, Pleasanton, Livermore (District 15) ^a	Alameda	60,487	101,149	40,662	67
Fremont, Newark, Union City (District 16)	Alameda	99,510	123,864	24,354	24
Total	Santa Clara/ Alameda	440,262	643,494	203,232	46

^a Cities are not within SVRTC but within the Silicon Valley commutershed.

Source: Association of Bay Area Governments, 2007.

Table 1-4: Employment Growth in SVRTC, 2000 to 2030 (in Jobs)

SVRTC Travel Zone	County	2000	2030	Growth	% Change
Milpitas/NE San Jose (District 12)	Santa Clara	126,292	141,763	15,471	12
Central San Jose (District 11)	Santa Clara	159,593	211,824	52,231	33
Sunnyvale, Santa Clara, Alviso (District 9)	Santa Clara	415,420	457,232	41,812	10
Dublin, Pleasanton, Livermore (District 15) ^a	Alameda	119,075	200,820	81,745	69
Fremont, Newark, Union City (District 16)	Alameda	145,263	204,820	59,557	41
Total	Santa Clara/ Alameda	965,643	1,216,459	250,816	26

^a Cities are not within SVRTC but within the Silicon Valley commutershed.

Source: Association of Bay Area Governments, 2007.

Growth forecasts are by the Association of Bay Area Governments (ABAG) using current land use projections adopted in 2007. The expected increase in households in the SVRTC is dramatic, over 162,000. The increase in jobs is somewhat higher, approximately 169,000, and highest in Fremont/Newark/Union City. The Dublin/Pleasanton/Livermore district is actually outside the SVRTC but within its commutershed. It will experience on a percentage basis the greatest growth in both households and jobs.

The job growth in the heart of Silicon Valley is on top of a very large base. Therefore the percentage growth tends to understate the extent of ongoing development. Over 40,000 new jobs between 2000 and 2030 are projected in the Santa Clara/Sunnyvale/Alviso district alone. Alviso includes the corridor immediately north of central San Jose.

The SVRTC through Santa Clara County contains a majority of Silicon Valley's current employment, almost 70 percent in 2000. The Sunnyvale/Santa Clara/Alviso district itself accounted for approximately 40 percent of all Silicon Valley jobs. Office and research/development land uses have continued to expand rapidly in the area over the past few years. Santa Clara County and especially Silicon Valley has historically been job-rich and housing-poor, relying on workers who live outside the county to fill jobs within the county. Milpitas and Santa Clara have two of the highest jobs-housing imbalances in Santa Clara County, with Milpitas at 3.14 and Santa Clara at 3.42 in 2000.⁴ Overall, Santa Clara County had 1.85 jobs per household.

In the future, because households in the Santa Clara County portion of the SVRTC are projected to grow somewhat more than employment, the jobs-housing imbalance will improve but not sufficiently to reverse the strong in-commuting patterns. In fact, many of the new households in the Santa Clara County portion of the SVRTC will have one or more workers traveling outside the county for employment opportunities. This explains regional forecasts that indicate strong commuting from Santa Clara County to Alameda County alongside continued growth in commuting from Alameda County to Santa Clara County.

An analysis of year 2000 and 2030 forecast travel, summarized in Table 1-5 indicates that approximately 88,000 total daily work trips were made in 2000 by Alameda County residents to and from employment opportunities in the three Santa Clara County districts that cover the SVRTC. Approximately 57,000 (64 percent) were destined to the Sunnyvale/Santa Clara/Alviso district, 20,000 (23 percent) to Milpitas and northeast San Jose, and the remaining 12,000 (13 percent) to central San Jose. By 2030, the volumes are expected to increase by approximately 22,000 to a total demand of approximately 110,000 trips. Figure 1-4 provides a schematic diagram of inbound work trips from Alameda County to the within Santa Clara County in 2030.

⁴ Expressed as the number of jobs in a geographic area divided by number of households in the same area.

Table 1-5: Estimated Weekday (Home Based) Work Trips, 2000 to 2030 (From/To Alameda County)

SVRTC Travel Zone	Year 2000 From	Year 2000 To	Year 2030 From	Year 2030 To	% Change From	% Change To	Year 2000 Total	Year 2030 Total	% Change Total
Milpitas/NE San Jose (District 12)	19,817	24,175	22,938	43,522	16	80	43,992	66,460	51
Central San Jose (District 11)	11,562	8,068	17,538	20,964	52	160	19,630	38,502	96
Sunnyvale, Santa Clara, Alviso (District 9)	56,632	6,505	69,593	18,881	23	190	63,137	88,474	40
Total	88,011	38,748	110,069	83,367	25	115	126,759	193,436	53

Source: Travel Demand Forecasts, Hexagon Transportation Consultants, Inc., February 2008.

The total daily volume of work-related travel in the reverse direction (i.e., from the SVRTC within Santa Clara County to Alameda County) was much smaller in 2000 but will more than double by 2030. Figure 1-5 is a schematic of outbound work trips in 2030.

Daily non-work trips between 2000 and 2030 will also increase substantially. Approximately 8,000 additional non-work trips from Alameda County to Silicon Valley are forecast, an increase of 9 percent. Non-work trips in the opposite direction would increase by almost 15,000 or 38 percent during the same timeframe. From 2000 to 2030, total non-work trips to, from and within the SVRTC are projected to grow by 18 percent.

Increased travel demand will place additional burdens on the transportation network. The flows into and out of the SVRTC and travel internal to the SVRTC will largely be made on existing freeways, expressways, major arterials, and, to a lesser extent, on existing and planned transit services. The roadway network in particular is not adequate and does not have the capacity even with planned improvements to accommodate growth in longer distance travel.

Improved transit service (rail and bus) in the SVRTC would provide needed additional capacity to address the anticipated 53 percent growth in work travel and 18 percent growth in non-work travel between the years 2000 and 2030.

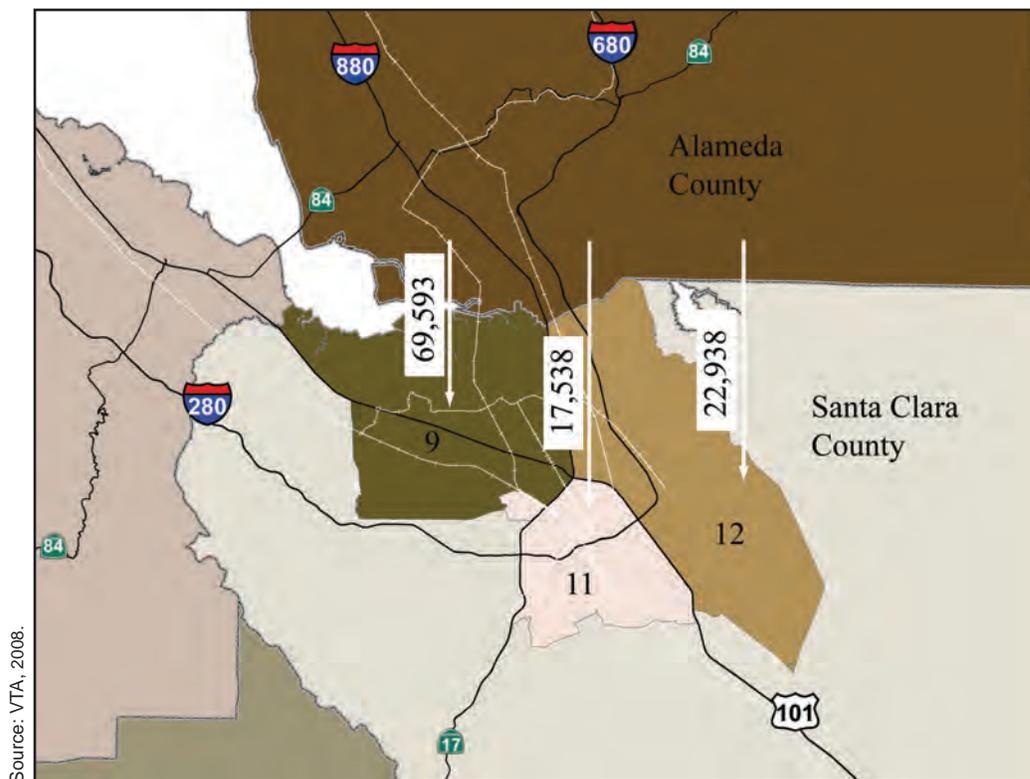


Figure 1-4: Year 2030 Work Trips from Alameda County to Superdistricts 9, 11, and 12

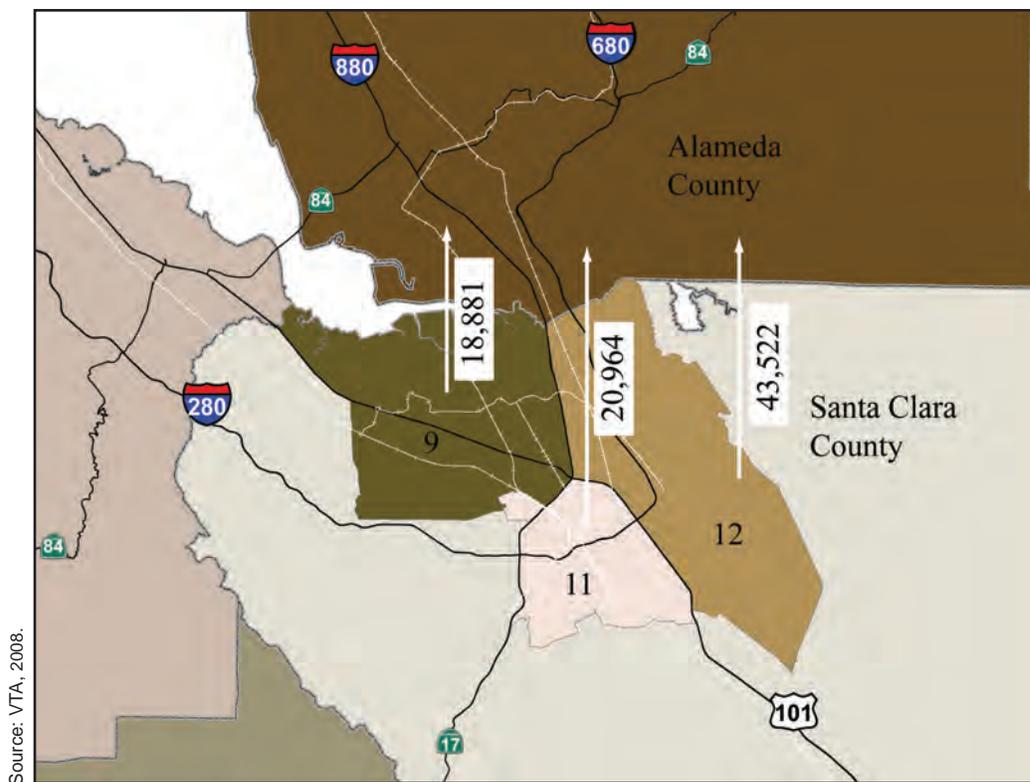


Figure 1-5: Year 2030 Work Trips from Superdistricts 9, 11, and 12 to Alameda County

Increasing Roadway Congestion

As a consequence of rapid growth in jobs and households, the SVRTC is one of the most congested in Northern California. Especially within the roadway network, as travel has grown, congestion is spreading from the peak period into the off peak. Figure 1-6 shows segments of the existing roadway network in northern Santa Clara County and southern Alameda County that are experiencing severe levels of peak period congestion and therefore poor levels of service (or substantially degraded operation in terms of speed and throughput capacity).

Clearly, existing capacity is fully utilized in many segments of the roadway network. Even future improvements will not be sufficient to carry projected future demand at an acceptable level of service. Despite planned construction of high occupancy vehicle (HOV) lanes on I-680 and I-880, projections indicate that traffic congestion in these already congested corridors will worsen because of expected growth patterns discussed previously. Current levels of service are “F” (LOS F) in the peak hour, with future level of service anticipated to continue to be LOS F. LOS F describes failure conditions, with unacceptable delays to most vehicles, long queues, and stop-and-go flow.

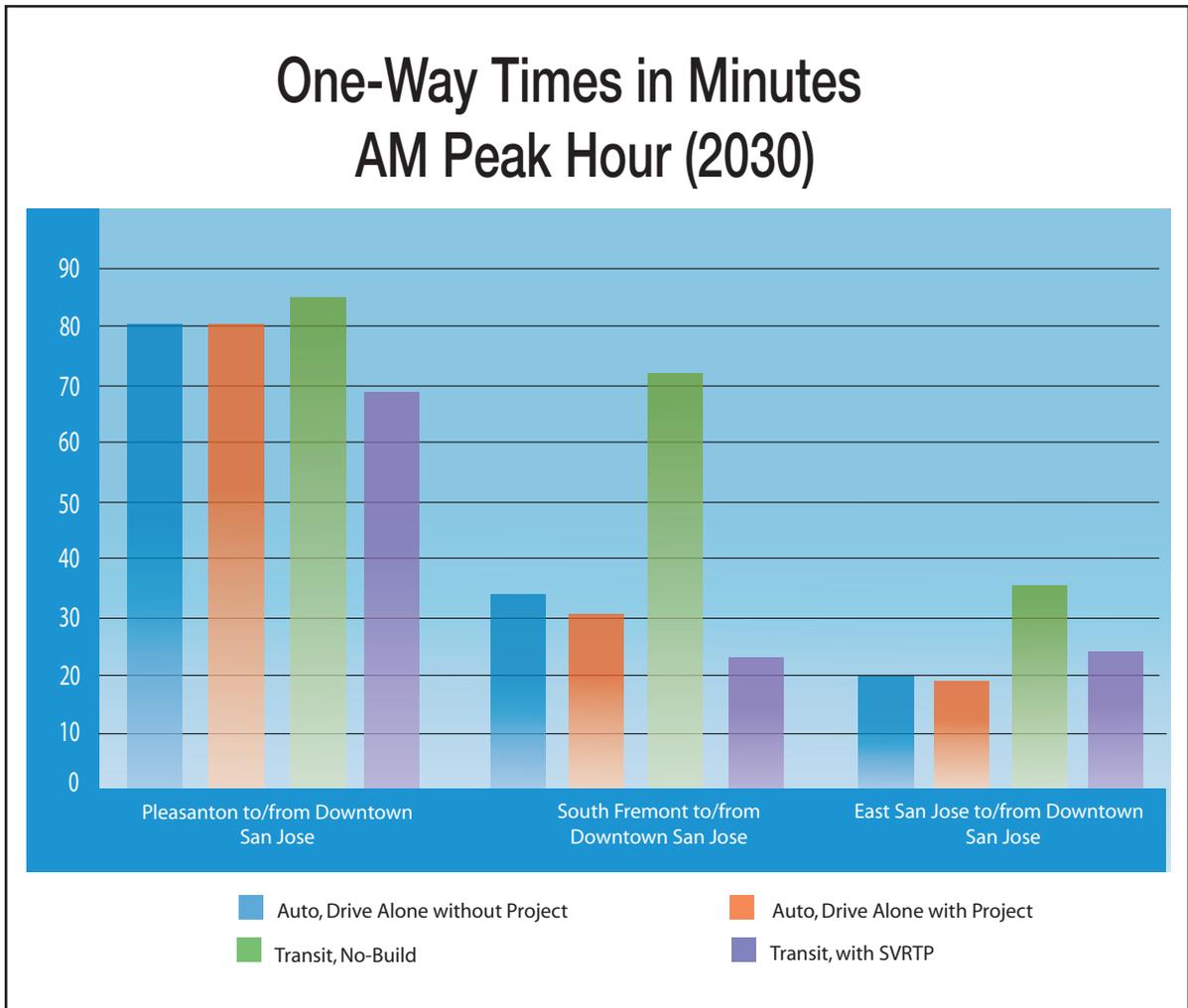
Programmed and planned improvements to transit service in the SVRTC, including the BART extension to Warm Springs, an increased number of Altamont Commuter Express (ACE) trains from three to eight each way, increased express transit service, and an increased Capitol Corridor train round trips to 11 per day from the current five round trips per day, are not expected to keep up with the demand for quality transit service, given the expected increase in highway congestion.

Rapid rail and other transportation improvements would complement other transit services and, in the critical I-880 and I-680 highway corridors connecting Santa Clara and Alameda counties, expand modal options. In the year 2000, morning peak-hour traffic at the border between Santa Clara and Alameda screenline (i.e., vehicle trips crossing the county line on major roadways) was over 15,000 vehicles per hour (vph) in the southbound “to Santa Clara” direction and about 11,000 vph in the northbound “to Alameda” direction. By 2030, these morning peak-hour volumes are expected to increase by 28 percent to about 19,500 vph in the southbound direction and by 45 percent to almost 15,900 vph in the northbound direction.

As a competitive alternative to the private auto (in terms of both the cost and time for travel), improved transit service would divert auto trips and, if not ease, at least would limit the worsening of traffic congestion on I-880 and I-680 (see Figure 1-7).



Figure 1-6: 2008 Existing Santa Clara County Traffic Congestion



Source: VTA, 2008.

Figure 1-7: Travel Time Comparison

Congested Roadways and Transit Performance

Traffic congestion adversely affects transit performance when buses and LRT vehicles must operate within public rights-of-way. Average speeds of buses, for instance, tend to be lower than that of autos due to multiple stops for passenger loading and unloading. Average speeds degrade further when mixed-flow traffic lanes are congested (the average bus speed on local VTA bus routes is now below 12.6 miles per hour) when operating at-grade in the street or when frequently crossed by city streets. As traffic volumes grow, average transit speeds tend to fall, making transit less competitive and less attractive compared to auto travel.

VTA has taken several steps to improve transit operational performance with particular attention on increasing vehicle speeds and therefore reducing passenger trip times. New bus rapid transit (BRT) services that offer buses priority through traffic signals and dedicated lanes to avoid operation in the mixed-flow lane are in planning and design. Recently implemented and planned LRT lines incorporate features, including grade separations where practicable, that help avoid operational bottlenecks. Further studies to enhance LRT and bus speed and efficiency are underway.

However, the potential for these efforts to markedly affect transit speeds in the travel SVRTC is limited. The key major roadways (I-680, I-880 and SR 237) and their access routes are, as described above, simply too congested, which limits the benefits that can be realized with expanded express bus service, for example. Grade separated transit improvements in the SVRTC would be capable of high average speeds even with stops, and offer travel times for longer trip lengths competitive with private autos and often better times for certain trips.

Incomplete Regional Transit Connectivity

Despite the extensive existing and programmed transit network—a combination of light rail, commuter rail, express and local bus—that serves Santa Clara County, there are some critical gaps that limit travel. The most evident need for improved connectivity is to the BART regional rail system, which, somewhat comparable to Caltrain commuter rail service through the western portion of Santa Clara County, offers a rapid, regional spine line along the eastern side of San Francisco Bay. BART also extends east into the Livermore Valley. A BART extension into Santa Clara County would extend the regional BART system and connect with Caltrain commuter rail through the San Francisco Peninsula. This would effectively complete a high-speed, high capacity rail system along the lower San Francisco Bay. Transit improvements would connect the Central Business Districts of the Bay Area's four largest cities: San Jose⁵ (pop. 974,000), San Francisco (pop. 809,000), Oakland (pop. 415,500), and Fremont (pop. 212,000).

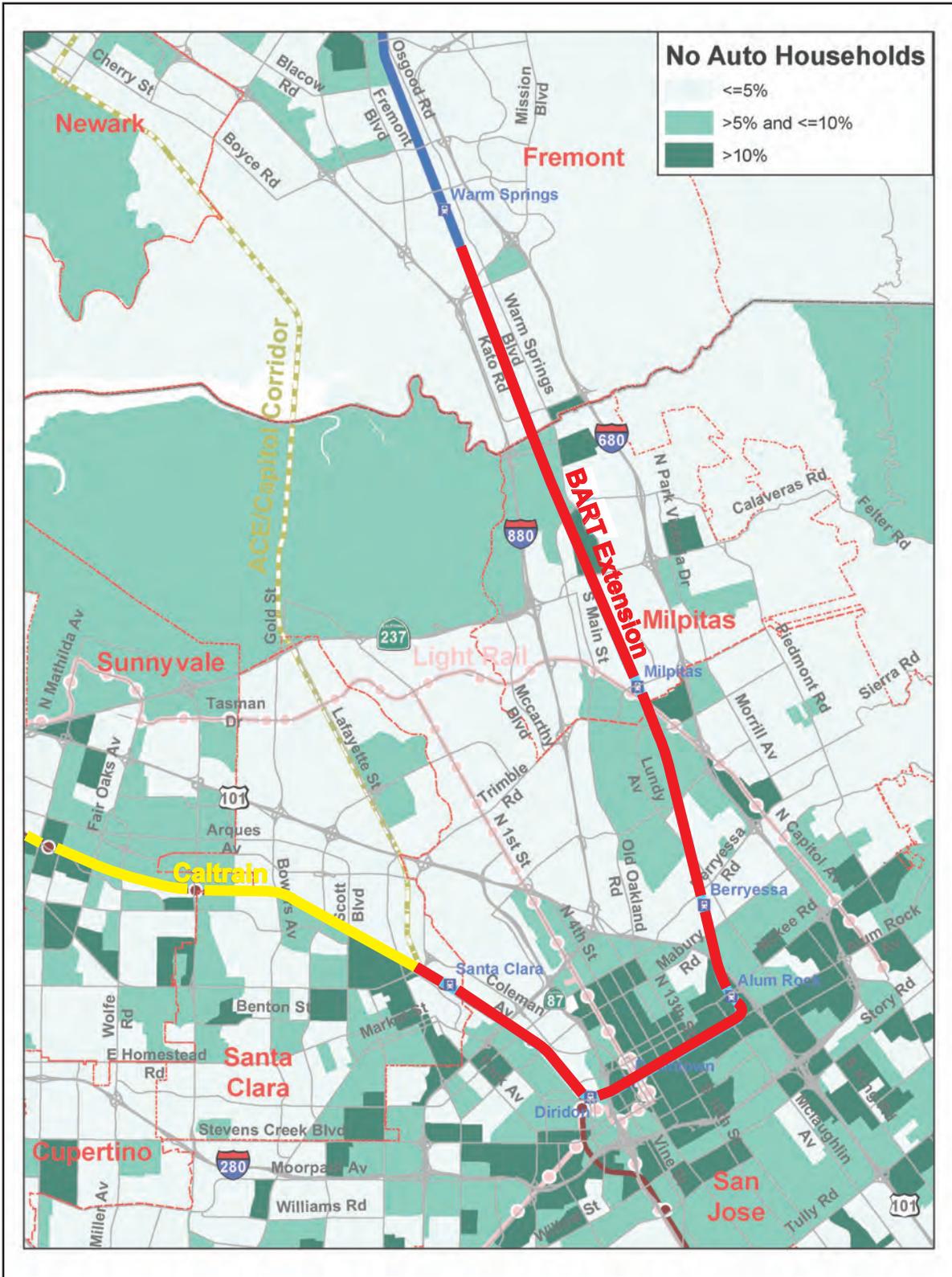
⁵ Population estimate for 2007 by the California Department of Finance.

With a BART extension into Santa Clara County, numerous opportunities would be available for transfers to destinations throughout the San Francisco Bay Area and beyond. There is a need for intermodal connections to existing and future services such as VTA's light rail and buses throughout Santa Clara County, Caltrain to San Francisco, ACE commuter rail to the Central Valley, Capitol intercity rail to Sacramento, Amtrak interstate service to San Diego and Seattle, Washington, the planned High Speed Rail service, and a planned Automated People Mover (APM) to Norman Y. Mineta San Jose International Airport.

Possibly most important, given worker and travel demand associated with the continuing economic expansion of Silicon Valley, is the rapid, high capacity public transit access to Alameda County and the greater East Bay, which extends to Livermore in eastern Alameda County and Pittsburgh/ Antioch in Contra Costa County. Commuters from the Central Valley would be able to use this transit system. The reverse commute and general travel opportunities for SVRTC residents is also important. Fremont is already more a part of Silicon Valley and its economy than the San Francisco/Oakland metropolitan area. With transit improvements, Santa Clara County residents would be offered better access to jobs in Fremont and points north and east. The ABAG and MTC forecasts project expanding travel demand by Santa Clara County residents choosing to work outside the county.

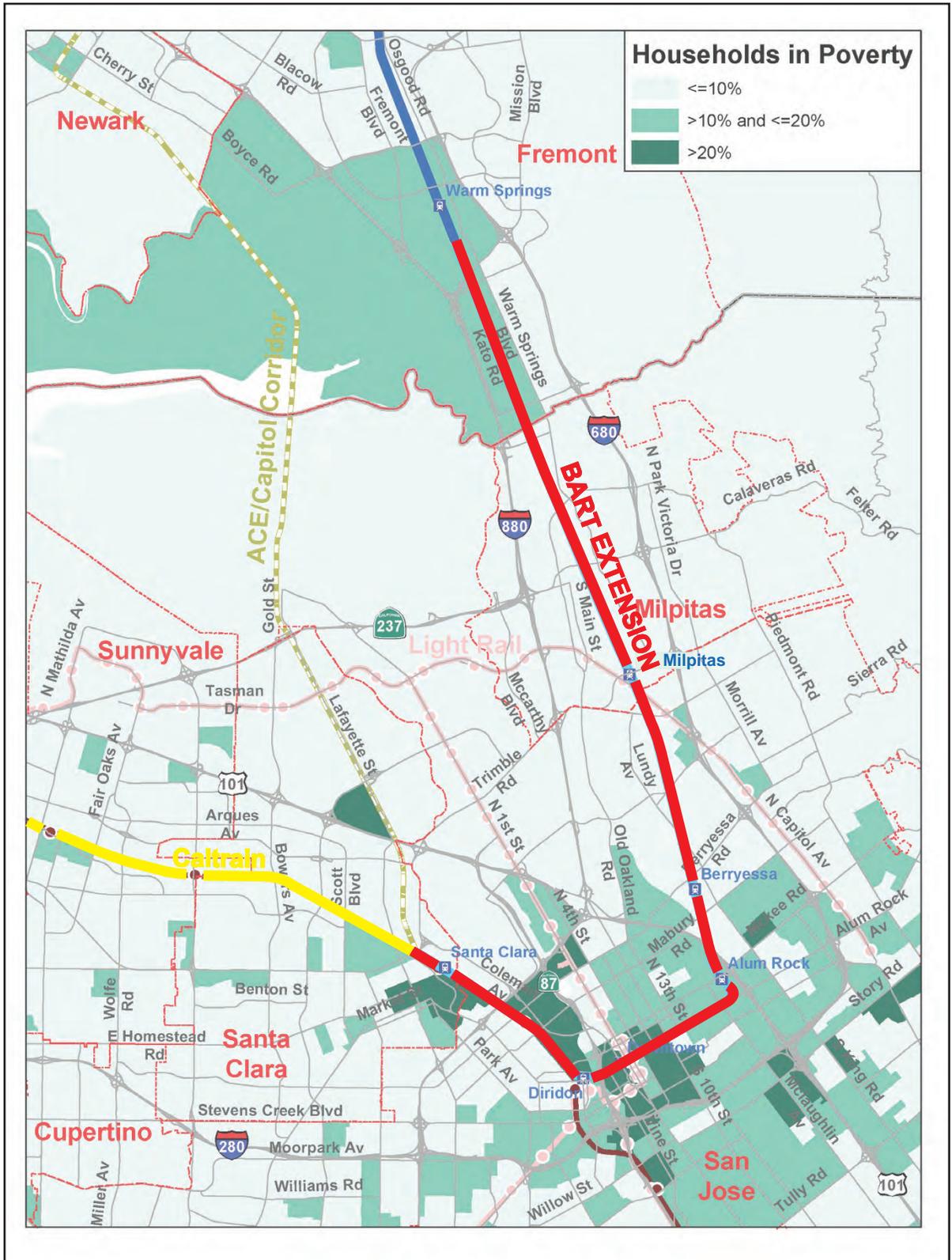
Limited Travel Options for Low Income and Transit Dependent Populations

Based on 2000 U.S. Census data, 11 percent of the households in the SVRTC do not have private transport compared with 6 percent for Santa Clara County, 11 percent for Alameda County, and 6 percent for the city of Fremont (see Figure 1-8). Likewise, 10 percent of its households have incomes below the poverty level, compared with 6 percent for Santa Clara County, 10 percent for Alameda County, and 4 percent for the City of Fremont (see Figure 1-9). Lack of private transport, which is highly correlated with low household income, is a strong indicator of transit dependency. These individuals rely on transit not just for trips to and from work but for social, medical, and recreational travel. Access to the proposed high speed, high capacity BART extension would allow individuals traveling through the SVRTC much faster access to their destinations compared to travel on bus or light rail lines. The project has the potential to substantially benefit the mobility needs of these special user groups.



Source: VTA, 2008.

Figure 1-8: SVRTC No Auto Households



Source: VTA, 2008.

Figure 1-9: SVRTC Low Income Populations

The SVRTC population is only 28 percent Caucasian compared with 44 percent for Santa Clara County and 41 percent for both Alameda County and the City of Fremont, indicating high percentages of minority groups (see Figure 1-10). The largest minority or ethnic group is individuals of Hispanic ancestry. The SVRTC and Santa Clara County have large populations of Asian ancestry as well. Transit improvements would greatly benefit these populations by offering expanded travel options and facilitating economic development in their communities, and providing additional travel options for populations accessing high concentrations of job centers within the SVRTC (see Figure 1-11).

Worsening Air Quality and Excessive Greenhouse Gas Emissions

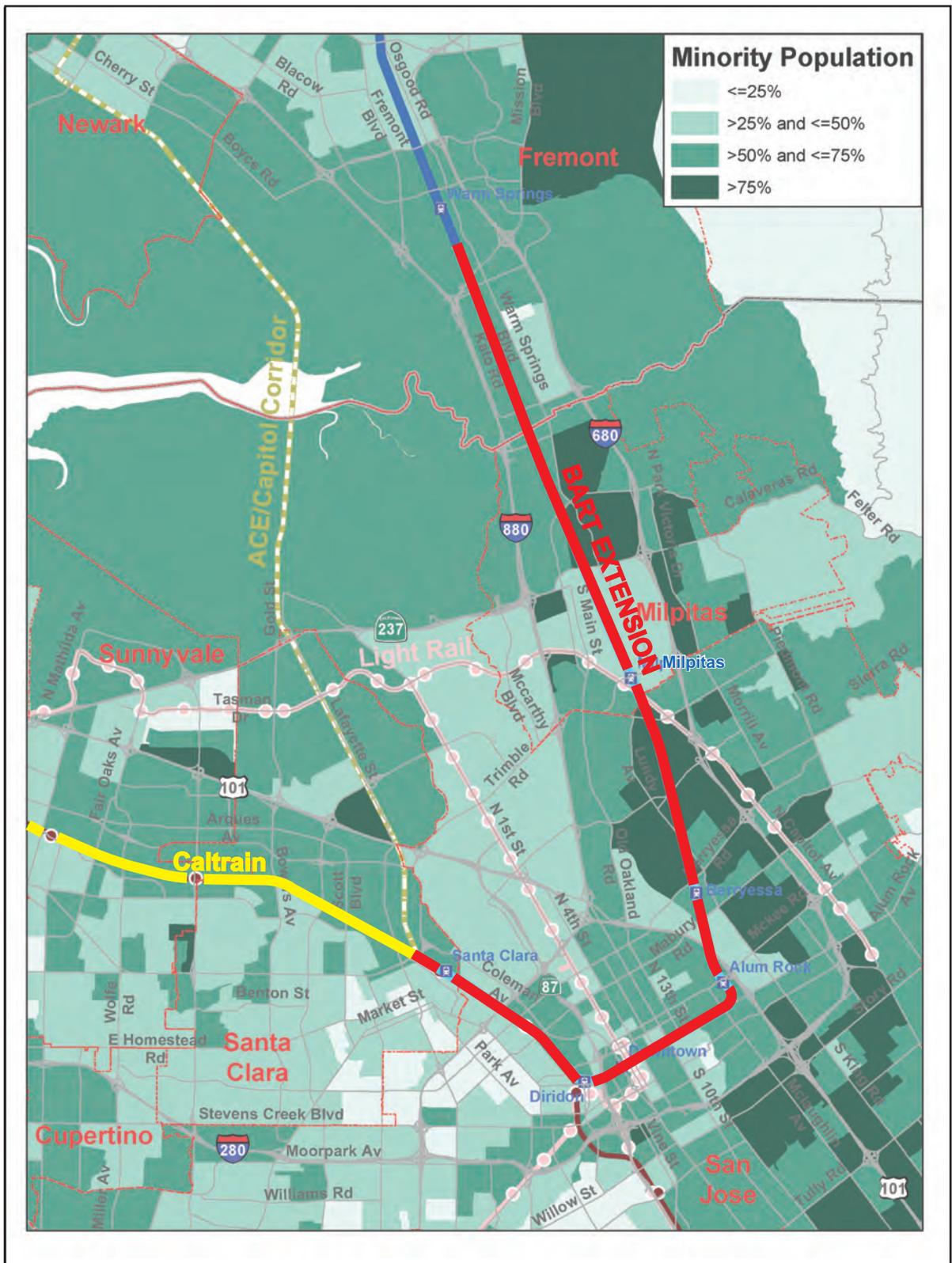
Although the San Francisco Bay Area has made great strides in improving air quality over the last few decades, several problems remain. The Bay Area Air Quality Management District (District) (covering the nine-county Bay Area) is in nonattainment relative to the federal 8-hour and the state of California 1-and 8-hour standards for ozone, a contributor to smog and respiratory problems. The District is also in non-attainment relative to the state standards for particulates, both PM₁₀ and PM_{2.5} (particulate matter under 10 and 2.5 microns, respectively), which also can cause respiratory problems. Santa Clara County is the second worst region of the Bay Area for ozone and the worst for particulates. Mobile emissions are the primary source of these and other air pollutants in the SVRTC. With steadily increasing travel, it will become more difficult to substantially improve air quality. Congestion and slowing travel speeds tend to worsen the problem because there is a direct relationship between vehicle miles traveled (VMT), travel speed, and air pollution.

Adding to the list of pollutants are greenhouse gas emissions, most of which have not been previously monitored as part of federal and state air quality regulatory programs. These include carbon dioxide, methane, nitrous oxide, and refrigerants, with CO₂ contributing the most to the greenhouse effect. Emissions of CO₂ are largely transportation related and proportional to vehicle miles of travel. Only by changing fuel types or reducing VMT will CO₂ emissions be reduced.

Need for Better Land Use Development—Smart Growth

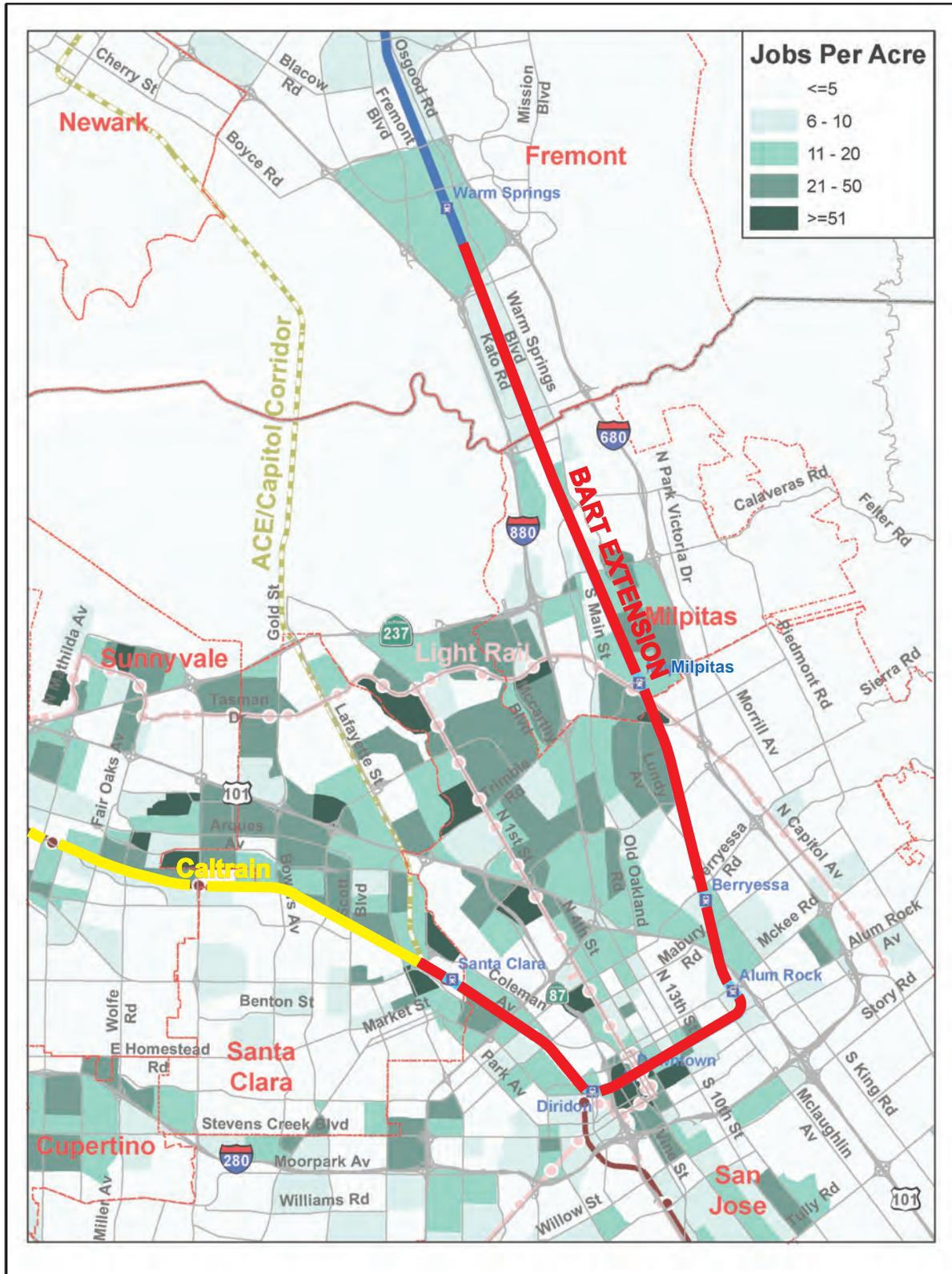
Promoting transit ridership requires more than providing a high level of service. Land use patterns must support use of transit. Densities along transit corridors must be relatively high; non-home destinations in particular must be concentrated and attractive for access by transit—that is, easily walkable from transit stops or convenient by short shuttles. Land uses in Silicon Valley and the SVRTC have been slowly changing to forms that would encourage greater transit and travel by non-auto modes. But, it is clear that development patterns must continue to change.

The SVRTC cities of Milpitas, San Jose, and Santa Clara have established plans and policies that support transit-oriented development, particularly around planned transit stations. Improved transit in the SVRTC would be consistent with these plans and policies (see Section 5.9, Land Use). Elsewhere, BART station areas have become



Source: VTA, 2008.

Figure 1-10: SVRTC Ethnic Minority Populations



Source: VTA, 2008.

Figure 1-11: SVRTC Job Density

nodes for higher density mixed commercial and housing development. Recent success stories on the Fremont line that would be extended into Santa Clara County include the Union City, Hayward, and Fruitvale stations.

Improved transit is fully consistent with, for example, San Jose's redevelopment strategy for downtown. Improved transit to downtown would serve trips originating outside the area and Santa Clara County to reach new jobs, and serve trips originating from new downtown housing. Planned downtown redevelopment, with higher densities of housing, office/research, and retail, is supportive of increased transit use. Improved transit would also allow further increases in land use densities, enhancing both transit ridership and land use efficiency.

Transit improvements present considerable opportunity to change the form of development along the SVRTC. Despite leading to increased transit use, compact development would allow growth to continue and not be limited by constraints on available land.

1.3 PROJECT HISTORY

The alternatives are outcomes of various prior studies that have evaluated transportation needs in the SVRTC and advanced a set of major capital improvements intended to expand transit service.

Prior studies of note include the

- Fremont-South Bay Corridor Final Report, 1994
- Commuter Rail Study, Fremont-South Bay Corridor, Final Report, 1999
- Major Investment Study/ Alternatives Analysis (MIS/AA), November 2001.

These studies constitute a comprehensive, systematic study of transportation conditions in the SVRTC, including existing and future need. They also established transportation goals and objectives that would guide the development of transportation solutions that address identified needs.

The studies satisfied federal requirements for system and corridor level transportation needs assessment. The MIS served as a federal alternatives analysis of the various transportation investment options for the SVRTC. The MIS focused on transit options that were consistent with the following goals:

- **Goal 1: Congestion Relief.** To reduce the level and extent of travel delay that is occurring on the corridor and regional highway system.
- **Goal 2: Mobility Improvements and Regional Connectivity.** To improve transit service to, from, and within the corridor by enhancing service quality (comfort, safety, and reliability) and quantity (improved service frequencies, travel times,

operating speeds, and capacity); to improve regional connections that ease transferring between systems, by developing multi-modal centers, and by using multiple-agency tickets and fares.

- **Goal 3: Environmental Benefits.** To provide transit improvements that enhance and preserve the social and physical environment and minimize potential negative impacts resulting from implementation of the transit alternatives.
- **Goal 4: Transit Supportive Land Use.** To ensure the compatibility of transportation improvements with local jurisdiction land use plans and policies so that transit ridership can be maximized and the number of auto trips reduced.
- **Goal 5: Operating Efficiencies.** To produce future resource savings for VTA relative to existing and planned transit service improvements.
- **Goal 6: Cost Effectiveness.** To provide benefits from transportation improvements in relation to the costs.
- **Goal 7: Local Financial Commitment.** To maintain VTA's contribution to the cost of constructing, operating, and maintaining the Preferred Investment Strategy/Recommended Project and the stability and reliability of its capital and operating funding sources for implementing the strategy.
- **Goal 8: Community and Stakeholder Acceptance.** To provide a transportation system that reflects the needs and desires of the residents and businesses in the corridor, is compatible with local planning initiatives, and generates widespread political support.
- **Goal 9: Environmental Justice.** To provide an equitable amount of transit service and mobility benefits to transit dependent residents, who are generally from low-income or minority communities or households not having access to a private automobile.
- **Goal 10: Safety and Security.** To implement transit improvements without creating undue safety and security risks that cannot be mitigated.
- **Goal 11: Construction Impacts.** To minimize the extent and the duration of construction impacts on the surrounding community resulting from implementing transportation improvements.

Eleven alternatives were identified that potentially addressed these goals and corridor needs. They were analyzed for consistency in meeting goals and needs, capital and operating costs, possible environmental effects (scan level detail), and eight performance measures. Results of the MIS were reviewed by the VTA Board of Directors, which on November 9, 2001, approved a locally preferred alternative that would extend BART service through Milpitas, San Jose and into Santa Clara.

A combined Draft Environmental Impact Statement/Environmental Impact Report (EIS/EIR) and Draft 4(f) Evaluation was prepared in accordance with the requirements of NEPA and the California Environmental Quality Act (CEQA) and released for public review and comment in March 2004. Subsequent to the public review period for the Draft EIS/EIR, the BART began NEPA clearance of the BART Warm Springs Extension, a 5.4-mile project extending south from the Fremont BART station. FTA had concerns about environmental clearance actions on the SVRTC Project when the Warm Springs Extension project, a vital connection to the SVRTC Project, was under federal environmental review. VTA chose to pursue federal and state environmental clearance of the project on independent paths and suspended the EIS process.

In December 2005, due to FTA concerns about the funding for operations of the SVRTP Alternative, VTA withdrew the SVRTC Project (referred to as the BART Extension to Milpitas, San Jose and Santa Clara) from FTA's New Starts project qualification and funding program. This included formal withdrawal from the FTA preliminary engineering phase of project development. VTA continues to identify sources that would close the gap in available/committed funding and the total project cost.

VTA continued the project environmental review process under CEQA. A final EIR was prepared and certified by the VTA Board in December 2004, and a supplemental EIR (updating the prior EIR to address project design refinements) was certified by the VTA Board in June 2007.

In mid 2007, VTA determined to request of FTA approval to begin the NEPA process again and FTA concurred. On September 21, 2007, FTA published in the Federal Register (accompanied by additional written notifications to local, regional, and other federal agencies having an interest in or possible approval authority over actions necessary to implement the project) a Notice of Intent to Prepare an EIS on the project. VTA and FTA held public scoping meetings in October 2007 to solicit comment on the scope of project improvements and issues for evaluation as part of the environmental studies.

VTA intends to secure FTA's approval to re-enter the New Starts qualification and funding process. New Starts Locally Preferred Alternative Silicon Valley Berryessa Extension Project was submitted to FTA in September 2009. Receipt of a New Starts project rating by FTA allowed VTA to request approval to move through the project development phases. These actions and approvals would establish the basis for federal funding for this project.

1.4 INTENDED USES OF THIS DOCUMENT

This Final EIS has been prepared in accordance with NEPA and the Council on Environmental Quality regulations implementing NEPA. It presents alternatives for improving transit services in the SVRTC, discloses the environmental impacts of those alternatives, and provides mitigation to minimize unavoidable impacts. The VTA Recommended Project is the BEP Alternative to extend BART to Milpitas and San Jose.

Alternatives analyzed in this document are the No Build Alternative, the BEP Alternative and the SVRTP Alternative. Impacts of the alternatives for achieving the proposed project (see Chapter 2, Alternatives) are identified wherever possible and compared relative to the No Build— or no project—condition. The analysis year for impacts assessment is 2030.

The VTA is the local project sponsor intending to fund and implement the BEP Alternative. VTA is the local lead agency for preparation of the EIS. In November 2001, the VTA and BART District governing boards approved a cooperative agreement regarding the institutional, project implementation, and financial issues related to the SVRTP Alternative. This agreement identified VTA as the local lead agency for preparation of the EIS. The FTA is the lead federal agency for preparation of this document and possibly a partner in the funding of a portion of the proposed improvements. BART is a Cooperating Agency on the EIS.

Information reported in this document will enable decision makers, interested parties, and the public to evaluate and identify a preferred alternative for addressing the project purpose and needs described previously. This document will be used by federal, state, regional, and local agencies to assess the environmental impacts of the BEP and SVRTP alternatives on resources under their jurisdiction or to make discretionary decisions regarding the project. FTA, the State of California, and the San Francisco Bay Area's metropolitan planning organization, the Metropolitan Transportation Commission, will use this document in deciding whether and how to fund the project.

Once FTA approves the Final EIS, the agencies listed in Chapter 11, Agency and Community Participation, can use the EIS as the basis for their decisions to issue permits and other approvals necessary to construct the project. When the FTA Regional Administrator signed the Draft EIS, NEPA scoping was concluded. At that time, VTA applied to FTA to advance the Recommended Project into the New Starts phase of preliminary engineering, which further informed the NEPA evaluation. The FTA will use this document when preparing the Record of Decision (ROD). The ROD formalizes the final selection of the preferred alternative. It is a written public record explaining why an agency has taken a particular course of action, and it must include the following:

- Statement explaining the decision;
- Explanation of alternatives that were considered and those that are environmentally preferable;
- Factors considered by the agency in making the decision;
- Explanation of which mitigation measures, if any, were adopted, and if mitigation measures were not adopted, an explanation of why not; and
- Monitoring and enforcement program for any adopted mitigation measures.

When the ROD is issued, VTA would be able to proceed with final design, right-of-way acquisition, and construction of the federally funded portion of the project, subject to federal funding requirements. VTA intends to complete the NEPA process through issuance, certification of the Final EIS, and issuance of the ROD by FTA before proceeding with any portion of the Recommended Project.

1.5 CONTENTS OF THIS DOCUMENT

From this point forward, the contents of this document include the following chapters including supporting maps and graphics found in the appendices:

Chapter 2: Alternatives. This chapter describes the physical and operating characteristics of project alternatives, including the No Build Alternative, the BEP Alternative, and the SVRTP Alternative. It also provides a discussion of the alternatives that were considered and withdrawn from further evaluation.

Chapter 3: Transportation and Transit. This chapter describes existing conditions and identifies impacts and mitigation measures associated with the alternatives.

Chapter 4: Affected Environment. This chapter describes the existing conditions and applicable regulations associated with the environmental issue areas, including air quality, biological resources and wetlands, community facilities, cultural and historic resources, electromagnetic fields, energy, geology, soils and seismicity, hazardous materials, land use, noise and vibration, safety and security, socioeconomics (including environmental justice), utilities, visual quality and aesthetics, and water resources.

Chapter 5: Environmental Consequences. This chapter covers the environmental impacts of the No Build, BEP and SVRTP alternatives and discusses actions to reduce or eliminate such impacts.

Chapter 6: Construction Methods and Impacts. This chapter describes the construction activities that would occur during implementation of the alternatives and the impacts and mitigation measures associated with these activities.

Chapter 7: Section 4(f) Evaluation. This chapter complies with Section 4(f) of the Department of Transportation Act to ensure that special efforts are made to protect public park and recreations lands, wildlife and waterfowl refuges, and historic sites.

Chapter 8: BART Core System Parking Analysis. This chapter addresses the additional parking demand at BART core system stations necessary to support the BEP Alternative and the SVRTP Alternative.

Chapter 9: Financial Considerations. This chapter presents cost information and an evaluation of alternatives, as well as a proposed financial plan.

Chapter 10: Evaluation of Alternatives. This chapter compares the performance of EIS alternatives in seven major areas (Mobility Benefits, Environmental

Benefits/Impacts, Operating Efficiencies, Cost Effectiveness, Land Use, Local Financial Commitment, and Other) by applying a number of evaluation criteria. The evaluation is presented in two parts: the first compares the No Build Alternative, BEP Alternative, and SVRTP Alternative to one another; the second compares the proposed New Starts BEP Alternative to a Baseline Alternative.

Chapter 11: Agency and Community Participation. This chapter identifies the process for consultation and coordination with federal, state, regional, and local agencies, as well as with elected officials, community leaders, organizations, and other individuals within the SVRTC. Scoping activities are also described.

Chapter 12: Distribution of the Final EIS. This chapter identifies the process for making the Final EIS available for public circulation, including a list of the various agencies, organizations, and individuals who were notified of its release. This chapter identifies the FTA, VTA, and consultant team staff involved in the preparation of the EIS.

Chapter 13: Definitions, Abbreviations and Acronyms. This chapter provides a list and description of the various definitions, abbreviations, and acronyms that are used throughout the EIS.

Chapter 14: References. This chapter provides a list of the working papers, technical reports, and other documents used in preparing the EIS.

Chapter 15: List of Preparers. This chapter identifies the contributors to the document.