



**Transportation Concept Report**  
**State Route 87**  
**District 4**  
**June 30, 2016**

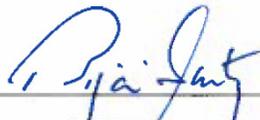


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**California Department of Transportation**

Provide a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability

**Approvals:**

	
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## **Stakeholder Acknowledgement**

District 4 is pleased to acknowledge the time and contributions of stakeholders and partner agencies to this TCR. Development of System Planning documents such as this one is dependent upon the participation and cooperation of key stakeholders. This TCR represents a cooperative planning effort for State Route 87. Representatives of the Santa Clara Valley Transportation Authority, the City of San Jose, and Santa Clara County provided essential information, advice and feedback for the preparation of this document.

This TCR will be posted on the Caltrans District 4 System Planning website at:

<http://www.dot.ca.gov/dist4/systemplanning>

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## ABOUT THE TRANSPORTATION CONCEPT REPORT

System Planning is the long-range Transportation Planning process for the California Department of Transportation (Caltrans). The System Planning process fulfills Caltrans' statutory responsibility as owner/operator of the State Highway System (SHS) (Gov. Code §65086) by identifying deficiencies and proposing improvements to the SHS. Through System Planning, Caltrans focuses on developing an integrated multimodal transportation system that meets Caltrans' goals of safety and health, stewardship and efficiency, sustainability, livability and economy, system performance, and organizational excellence.

The System Planning process is primarily composed of four parts: the District System Management Plan (DSMP), the Transportation Concept Report (TCR), the Corridor System Management Plan (CSMP), and the DSMP Project List. The **DSMP** is strategic policy and planning document that focuses on maintaining, operating, managing, and developing the transportation system. The **TCR** is a multi-jurisdictional planning document that identifies the existing and future route conditions as well as future needs for each route on the SHS. The **CSMP** is a more complex, multi-jurisdictional planning document that identifies future needs within corridors experiencing or expected to experience high levels of congestion. The CSMP serves as a TCR for segments covered by the CSMP. The **DSMP Project List** is an inventory of planned and partially programmed transportation projects used to recommend for funding. These System Planning products are also intended as resources for stakeholders, the public, and partner, regional, and local agencies.

### TCR Purpose

California's State Highway System needs long-range Planning documents to guide the logical development of transportation systems as required by law and as necessitated by the public, stakeholders, and system users. The purpose of the TCR is to evaluate current and projected conditions along the route and communicate the vision for the development of each route in each Caltrans District during a 20-25 year Planning horizon. The TCR is developed with the goals of increasing safety, improving mobility, providing excellent stewardship, and meeting community and environmental needs along the corridor through integrated management of the transportation network, including the highway, transit, pedestrian, bicycle, freight, operational improvements and travel demand management components of the corridor.

## STAKEHOLDER PARTICIPATION

Stakeholder participation was sought throughout the development of the SR 87 TCR. Outreach involved internal and external stakeholders, regional and local agencies. During the initial information resource gathering for the TCR, stakeholders were contacted for input related to their particular specializations and to help verify data accuracy. As the document was finalized, stakeholders were asked to review the document for comments, edits, and for consistency with the intent of existing plans, policies, and procedures. The final document was presented to stakeholders and partner agencies as a method of information sharing and to receive additional comment. The process of including and working closely with stakeholders adds value to the TCR by allowing for outside input and ideas to be reflected in the document.

# EXECUTIVE SUMMARY

## Concept Summary

**Table ES1. Corridor Concept Summary**

Segment	Segment Description	Existing Facility	20-25 Year Capital Facility Concept	20-25 Year System Operations and Management Concept	20-25 Year Facility Concept	Post-25 Year Concept
1	SR 85 to Interstate 280	6F (2HOV)	6F (2E)	Implement Express Lanes	6F (2E)	8F (4E)
2	Interstate 280 to US 101	6F (2HOV)	6F (2E)	Implement Express Lanes	6F (2E)	8F (4E)

**Legend:**

F = Freeway Lane

E = Express Lane

HOV = High-Occupancy Vehicle Lane

State Route (SR) 87 is a six-lane divided freeway located in Santa Clara County in the city of San Jose and unincorporated Santa Clara County. The route begins in southern San Jose at SR 85 and continues north to United States Highway 101 (US 101). The city of Santa Clara is found within close proximity of the route on the northern end.

The route serves as an urban freeway facility with High Occupancy Vehicle (HOV) lanes in both directions between residential southern San Jose and the commercial, administrative, and industrial developments in both central San Jose and northern Santa Clara County. The route also serves regional and interregional traffic, provides a direct connection to the Norman Y. Mineta San Jose International Airport (SJC), Downtown San Jose and San Jose Diridon Rail Station. Due to anticipated high costs and close proximity to SJC, there is no interchange between SR 87 and Interstate 880 (I-880) and no such connection is currently planned. Finally, many multimodal facilities including public transit, bicycle and pedestrian paths are found on or along SR 87.

**Figure ES1. SR 87 Segment Map**



This SR 87 TCR evaluates current traffic conditions along the route using 2013 as the base year and 2040 as the forecast year for projected route conditions and traffic demand. The TCR supports the planned conversion of existing High Occupancy Vehicles (HOV) lanes to Express Lanes (EL) and recommends future expansion of these managed lane facilities. Both the Santa Clara Valley Transportation Authority’s (VTA) Silicon Valley Express Lanes Plan and the Metropolitan Transportation Commission’s (MTC) current Regional Transportation Plan (RTP), “Plan Bay Area,” list the conversion of existing SR 87 HOV lanes to Express Lanes.

## Concept Rationale

The route provides direct access to Downtown San Jose and SJC while also serving as a key commuter route between southern San Jose and the “Golden Triangle” of Silicon Valley found directly north of SR 87. In 2004, the facility was expanded to six lanes, with two HOV lanes, along its entire length. As expected, traffic demands are high for such a centrally located facility and converting the HOV lanes into Express Lanes is a committed RTP project planned for completion by 2020.

The Level Of Service (LOS) F on SR 87 is percentage-wise the worst in Santa Clara County.<sup>1</sup> The northbound HOV lane also experiences LOS F during AM Peak periods between Almaden Road and Alma Avenue. However, traffic using the HOV lane still moves faster (33 mph average) than traffic in the mixed flow lanes (16 mph average).

The central location of the route next to Downtown San Jose and the connection to Silicon Valley explain the high demand for transportation. Planned residential and commercial developments in the area put additional pressure on the transportation network. Adding capacity is a necessity to meet demand, although obtaining additional right of way may be exceedingly complicated for the SR 87 corridor. Even with planned improvements in transit and other modes absorbing some of the increased demand, the expectation is that freeway demand will nevertheless remain high. Changing HOV lane occupancy requirements from 2+ to 3+ passengers-per-vehicle could be a future consideration for maintaining reliability and efficiency in the corridor.

Adding mixed-flow lanes in both directions could address current and future freeway demand, but would also attract new traffic. Along with greater transit use and High Occupancy Vehicle lanes, the post 25 year concept proposes an additional SR 87 Express Lane in each direction. Currently VTA is examining whether four Express Lanes on SR 85 between SR 87 and I-280 and four Express Lanes on US 101 south of SR 85 are needed to handle forecasted traffic demand. In combination with these potential Express Lane improvements along the SR 85 and US 101 corridors, this long-range concept strategy for SR 87 would establish a larger network of double Express Lanes.

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<sup>1</sup> [VTA Congestion Monitoring Report, 2014, accessed October 15, 2015](#)

## Proposed Projects and Strategies

*Table ES2. SR 87 Proposed Projects to Help Achieve Concept*

Segment	Description	Location
<b>Motorized</b>		
1, 2	SR 87 Express Lanes from SR 85 to US 101	PM 0.0 – 9.22
2	Double lane SB US 101 off-ramp to SB SR 87	PM 9.22
1	Improve interchange at Route 87/Capitol Expressway/Narvaez Avenue	PM 1.43
1, 2	Research increasing carpool lane occupancy requirement from 2+ to 3+ persons	PM 0.0 – 9.22
1, 2	Second SR 87 Express Lane in both directions between SR 85 and US 101	PM 0.0 – 9.22
1	Almaden Expressway – Widen Coleman to Blossom Hill	PM 0.0
<b>TOS / ITS</b>		
2	Downtown San Jose Area Freeway Management System	PM 5.16 – 6.90
2	Downtown San Jose Local Street Advanced Traffic Management System	PM 5.16 – 6.90
2	Downtown San Jose Changeable Message Sign Upgrades	PM 5.16 – 6.90
1, 2	San Jose Traffic Signal Interconnect	Entire route
1, 2	San Jose Emergency Vehicle Preemption System	Entire route
1	Almaden/Blossom Hill Area Advanced Traffic Management System	PM 0.0
1	Capitol Expressway – TOS infrastructure	PM 0.0 – 4.36
<b>Transit</b>		
2	BART Phase II Berryessa to Santa Clara	PM 5.86 – 8.37
2	El Camino BRT	SR 82 / downtown
2	Stevens Creek BRT	PM 5.21
1, 2	Caltrain/HSR Electrification and San Jose Diridon Station	PM 4.08 – 9.22
1	Caltrain Improvements South County	South of corridor
2	Santa Clara/Alum Rock Phase I: BRT	PM 5.87
2	Caltrain SJC Airport Connector	PM 8.37
1, 2	Guadalupe Express Light Rail improvements	PM 0.0 – 5.86
2	North First Street light rail improvements	Tamien Station
1	Improve Peak Commuter Express Service at Tamien	In and along corridor
<b>Active Transportation</b>		
1	Almaden Expressway. Bicycle and Pedestrian Overcrossing along Guadalupe River Trail alignment	PM 3.56
2	Los Gatos Creek Trail: Diridon Station Segment	PM 5.87
2	Brokaw - Coleman Airport Bikeway	PM 8.76 – 9.22
2	Park Avenue/San Fernando St. San Antonio Bikeway	PM 5.56 – 5.71
1	Three Creeks Trail from Lonus Street to Coyote Creek	PM 0.0 – 5.87
1, 2	Bird Avenue Pedestrian Corridor	PM 4.07 – 4.54
1, 2	Improve Pedestrian Facilities (see Table 11)	Various locations along route

**Legend:**

RTP = MTC Plan Bay Area (2013)

VTP = VTA Valley Transportation Plan 2040

TOS= Traffic Operations Strategies

ITS= Intelligent Transportation Systems

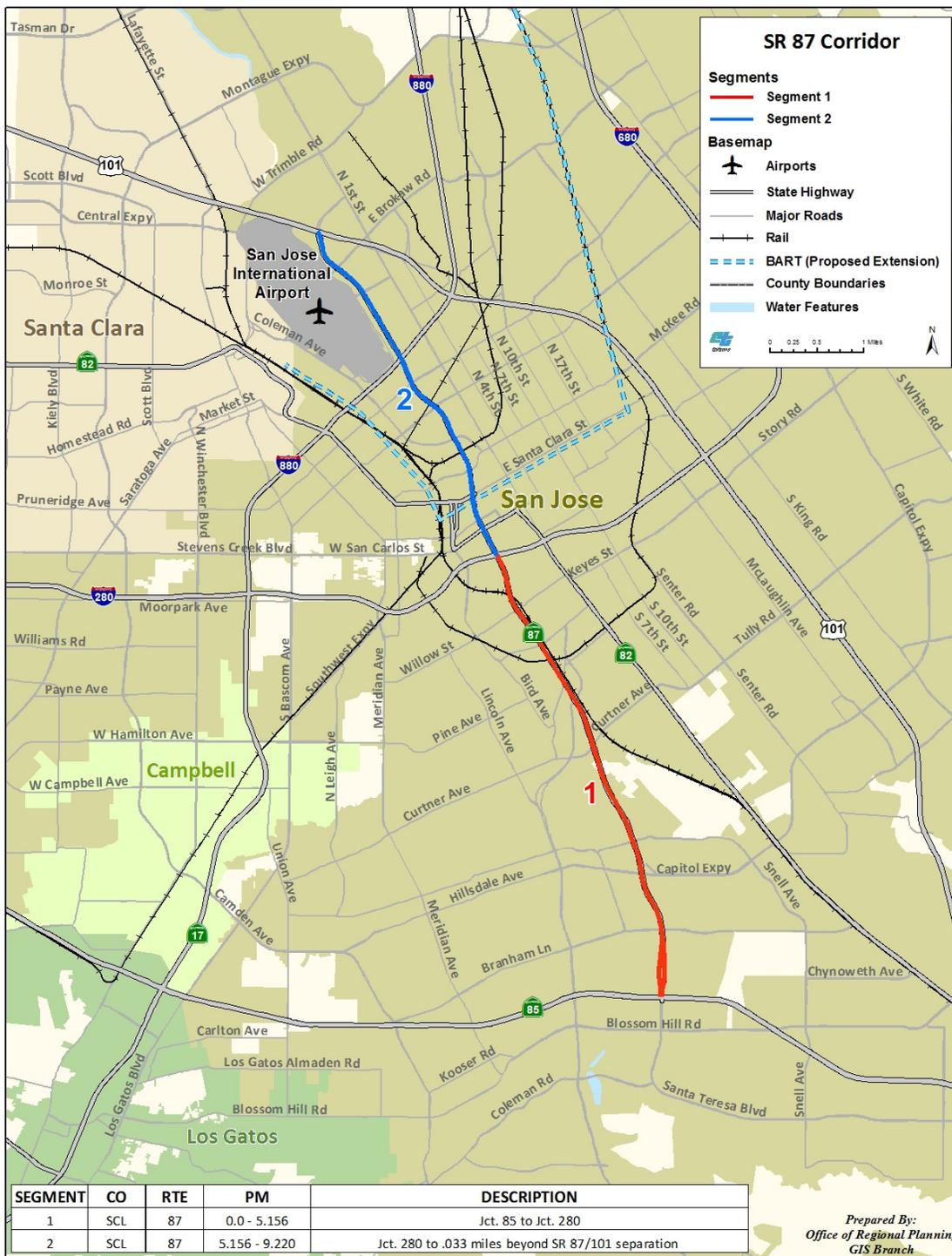
# CORRIDOR OVERVIEW

## ROUTE SEGMENTATION

Table 1. SR 87 TCR Segments

1	SR 85 to Interstate 280	Post Mile 0.000	Post Mile 5.156
2	Interstate 280 to US 101	Post Mile 5.156	Post Mile 9.220

Figure 1. SR 87 Segment Map



## **ROUTE DESCRIPTION**

SR 87, also known as the Guadalupe Freeway, is a south-north route that primarily serves as a commuter connector between residential southern San Jose and the commercial, administrative, and industrial land uses in central San Jose and northern Santa Clara County. The route also serves regional and interregional traffic, and provides a direct connection to SJC located between I-880 and US 101, downtown San Jose and San Jose Diridon Rail Station. Recently relinquished within the city of San Jose, the former SR 82 parallels Segment 1 before passing under SR 87 at Santa Clara Street.

Currently there is no interchange where the SR 87 and I-880 freeways converge and currently there are no plans to develop and fund this project. With the SR 87 and I-880 freeways close to SJC, interchange design would most likely encounter height restrictions and limited right-of-way resulting in a costly project. Also, since such a project would be spaced close to other existing interchanges such as I-880/US 101, the connecting ramps would need to be braided. This is technically difficult given the space restrictions and constrained right-of-way. Utility relocation would add even more cost.

Other transportation assets in this corridor include the generally parallel VTA light rail line which connects southern San Jose with Downtown San Jose and northern Santa Clara County. This line operates in the median of SR 87 between SR 85 and Interstate 280. A four-mile long pedestrian and bicycle path is along portions of SR 87 between SR 85 and Alma Street.

The majority of the route parallels the Guadalupe River. Prior to 2004, before the entire length of the route was upgraded to a freeway, it was known as the Guadalupe Parkway. Today this name has been retained for the frontage roads along SR 87 only.

### **Major Route Features**

SR 87 provides a direct connection between US 101 and SR 85, access to Downtown San Jose, SJC, and the rich employment area located between US 101, I-880 and SR 237 commonly known as the Golden Triangle of Silicon Valley. Passing through many Priority Development (PDA) and Growth Opportunity Areas (shown in Figure 6), this route fulfills many important functions. However, despite its central location, truck traffic accounts for only 2.5 percent of Average Annual Daily Traffic (AADT) on this route. Current HOV lane occupancy requirements are 2+ passengers per vehicle. More route description information is provided in Table 2.

**Figure 2. Mineta San Jose International Airport**



**Table 2. Route Description by Segment**

Segment #	1	2
Freeway & Expressway	Yes	Yes
FHWA National Highway System	Yes	Yes
FHWA Strategic Highway Network	No	No
Scenic Highway	No	No
Caltrans Interregional Road System (IRRS)	No	No
Federal Functional Classification	Freeway	Freeway
Goods Movement Route	No	No
Truck Designation	CA Legal Network (CL-40)	CA Legal Network (CL-40)
Rural/Urban/Urbanized	Suburban	Urban
Metropolitan Planning Organization	Metropolitan Transportation Commission (MTC)	MTC
Congestion Management Agency	Santa Clara Valley Transportation Authority (VTA)	VTA
Local Agency	City of San Jose	City of San Jose
Tribes	Ohlone	Ohlone
Air District	Bay Area Air Quality Management District (BAAQMD)	BAAQMD
Terrain	Rolling/Flat	Flat

## **COMMUNITY CHARACTERISTICS**

Santa Clara County encompasses approximately 1,300 square miles (San Jose, 180 square miles). The county population is approximately 1.9 million, with more than one million in San Jose.<sup>2</sup> Santa Clara County was the best-performing metropolitan economy in the nation in 2012 and is expected to stay at or near the top for years to come.<sup>3</sup> Silicon Valley is home to many of the world's largest technology corporations as well as thousands of small startups; San Jose is known as the Capital of Silicon Valley.

Areas along SR 87 and south of I-280 are predominantly suburban in character, while several schools, a number of light industrial sections, and shopping areas lie close to the State routes. Larger shopping areas include the Plant Shopping Center, Westfield Oakridge Mall and the Princeton Plaza Mall that are found near the southern end of SR 87.

Downtown San Jose has many destinations, including arts and entertainment, museums, restaurants, and night clubs. San Jose State University, offering many Bachelor's and Master's Degree programs, is also located within this area. Mineta San Jose International Airport and San Jose Diridon Station are located along the northern segment of SR 87.

While several smaller community parks are found all along SR 87, the largest among them are Columbus Park/Heritage Rose Garden, Kelley Park, and Martial Cottle Park. Along this section of the Guadalupe River a parallel multi-use trail exists for both recreation and commuting.

In 2013, Santa Clara County had the highest median household income in California, while close to 30 percent of the households had incomes less than \$50,000.<sup>4</sup>

Within the Bay Area, Santa Clara County has the largest population of all counties, the most housing units, and the highest number of jobs. The Association of Bay Area Government's (ABAG) Jobs Housing Connection Strategy (Table 3 below) shows Santa Clara County as at the top or close to the highest level in terms of 2040 forecasted growth in all three categories.

**Table 3. Employment, Housing Units, and Population (in 1,000s)**

County	Employment				Housing Units				Population			
	2010	2040	2010-40 change	%	2010	2040	2010-40 change	%	2010	2040	2010-40 change	%
Region	3,385	4,505	1,120	33%	2,786	3,446	660	24%	7,151	9,299	2,148	30%
Alameda	694	948	253	36%	583	731	148	25%	1,510	1,988	478	32%
Contra Costa	345	467	122	35%	400	480	80	20%	1,049	1,335	286	27%
Marin	111	129	18	17%	111	119	8	7%	252	285	33	13%
Napa	71	90	19	27%	55	61	6	11%	136	164	27	20%
San Francisco	569	759	191	34%	377	469	92	25%	805	1,086	280	35%
San Mateo	345	445	100	29%	271	327	56	21%	718	906	188	26%
Santa Clara	926	1,230	304	33%	632	843	211	33%	1,782	2,426	644	36%
Solano	132	180	48	36%	153	176	23	15%	413	511	98	24%
Sonoma	192	257	65	34%	205	236	32	16%	484	598	115	24%

**Source:** Jobs Housing Connection Strategy, ABAG 2012.

<sup>2</sup> [California Department of Finance Population Estimates, 2015](#)

<sup>3</sup> [Mercury News, January 17 2013: Silicon Valley Economy Ranked Best 2012](#)

<sup>4</sup> [Mercury News, undated](#)

The city of San Jose has a diverse population with White, Asian-Pacific Islanders, and Hispanics comprising the largest ethnic groups. A little less than half of San Jose residents speak English at home. More detailed information can be found in Tables 4 and 5 below.

**Table 4. San Jose Demographics Compared to Santa Clara County as a whole**

<b>Demographics</b>	<b>San Jose</b>	<b>Santa Clara County</b>
Total Population	1,015,785	1,894,605
Language Spoken at Home – English Only	44.8%	49.5%
Population Density (people/square mile)	5,359	1,381
Number of Households	301,366	599,652
Average Household Size	3.09	2.89
Number of Housing Units	314,038	633,275
Owner-Occupied Housing Units	58.5%	58.7%
Median Household Income (Estimate, 2006-2010 American Community Survey)	\$80,764	\$89,064

*Source: US Census, 2010.*

**Table 5. San Jose Transportation Characteristics Compared to Santa Clara County as a whole**

<b>Transportation Characteristics</b>	<b>San Jose</b>	<b>Santa Clara County</b>
Drive Alone to Work	78%	76.8%
Carpooling	10.6%	10.1%
Transit	3.4%	3.2%
Bicycling / Walking	2.3% / 2.0%	3.0% / 2.3%
Mean Travel Time to Work (min)	25.3	24.3

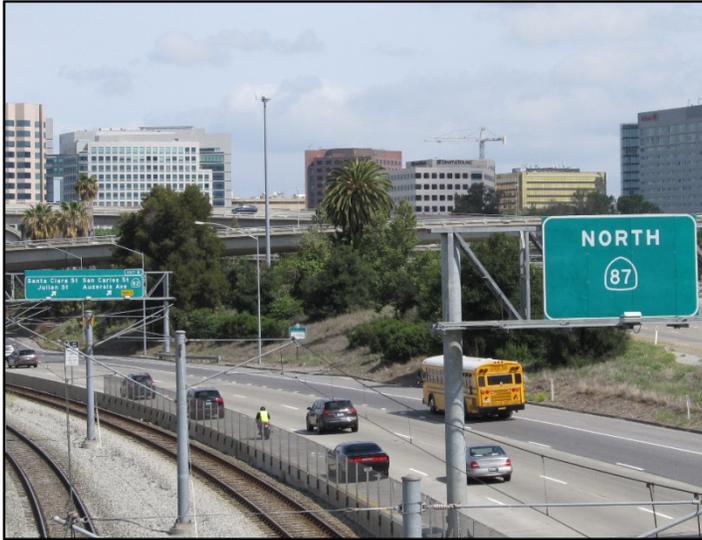
*Source: US Census, 2010.*

Transportation characteristics of San Jose residents are similar to those of Santa Clara County as a whole. In San Jose, a slightly larger number drive to work alone, and a slightly lower number bicycle or walk to work.

In July 2013, ABAG adopted their latest Regional Housing Needs Plan. This plan covers years 2014 through 2022 and contains a projected need of over 35,000 new housing units in the city of San Jose, the largest number for any city in the Bay Area. More than 9,000 new housing units are allocated for the very-low income category (0 to 50 percent of Area Median Income), and more than 14,000 for the above moderate category (120 percent+).

## LAND USE

*Figure 3. SR 87 looking north towards downtown San Jose.*



General land uses along the SR 87 corridor are a mixture of suburban residential to urban commercial, with public land found near the airport and railroad tracks as well as parks and open spaces mostly found along the Guadalupe River.

### **Caltrans Smart Mobility Framework:**

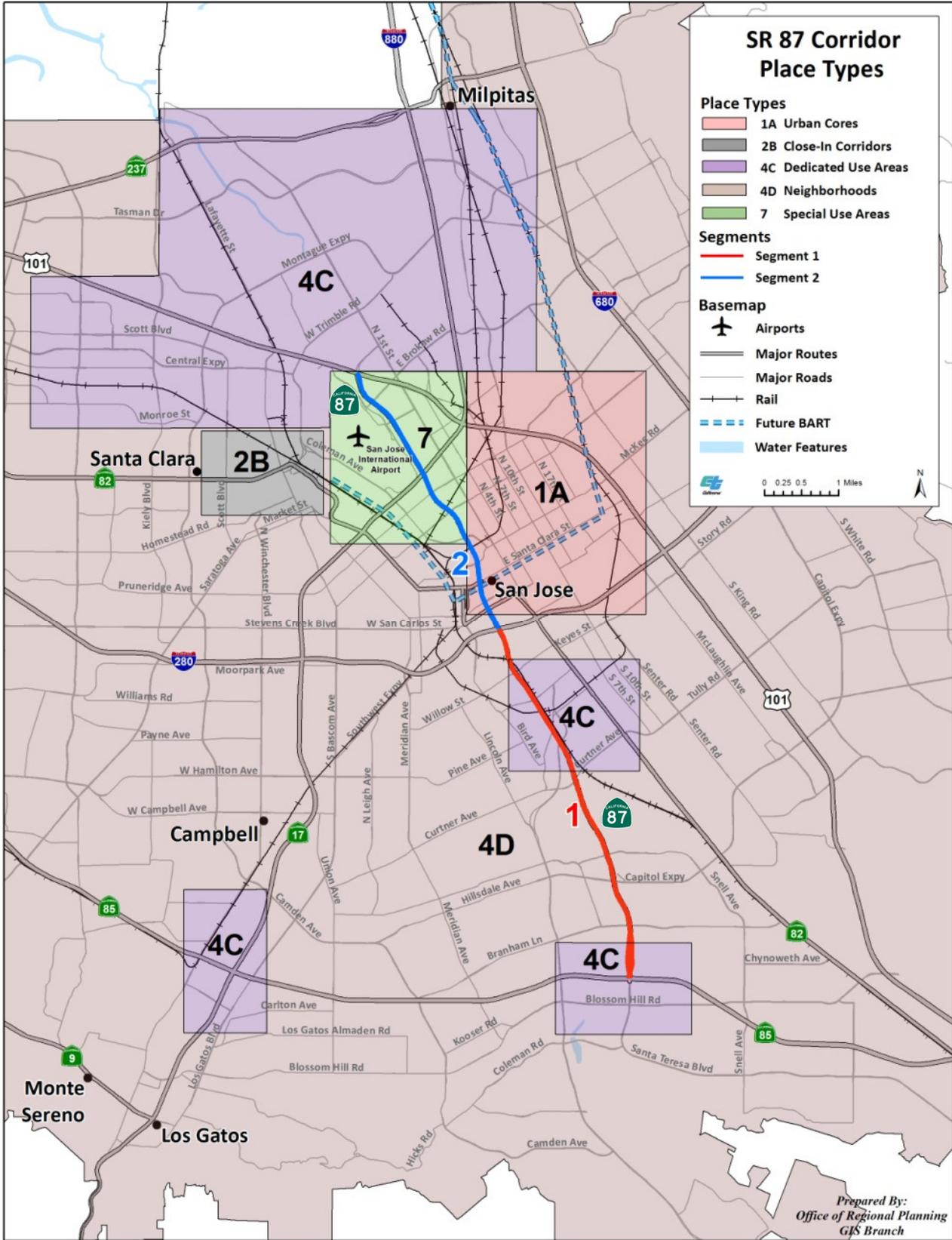
In 2010, Caltrans introduced the concept of Smart Mobility through establishment of the Smart Mobility Framework (SMF). The SMF is a transportation planning guide that includes the notion of place types to further integrate smart growth concepts into transportation and land use development. The goal of this framework is to serve as a guide and assessment tool for determining how well plans, programs, and projects meet the definition of "smart mobility" and ensure

applicability of the framework for both Caltrans as well as partner agencies. Location Efficiency of a place type is measured and ranked based on its Community Design characteristics and Regional Access to the transportation system. The analysis concludes that once likely transportation, development and conservation investment strategies are identified, a Place Type Location Efficiency factor can be applied and further smart mobility benefits can be realized in the future. The Smart Mobility Framework Place Types found along SR 87 are displayed in Figure 4.

Place Types help planners determine transportation needs. By identifying what kind of built environment is most prevalent along a State highway corridor, the interrelated challenges of mobility and sustainability in specific areas can become clearer. Based on this general approach, a SR 87 corridor map (Figure 6) showing Priority Development Areas, Growth Opportunity Areas and SMF Place Types overlays has been provided. Definitions of all Place Types are provided on the next page. Figure 4 helps to show how Silicon Valley (SMF type 4C) plays a dominant role directly north of the SR 87 corridor area.

From a high-level perspective, the map may help identify mobility needs in the region between housing and the Silicon Valley employment centers. In this setting, the role of SR 87 can be clarified, showing the direct connection between the housing areas in the south to both the downtown of San Jose and Silicon Valley between Milpitas and Santa Clara. It may further highlight where pressures exist on housing (SMF type 4D) near the employment centers on the map, including prime location among them, Silicon Valley.

Figure 4. Place Type Designations along SR 87



**Table 6. Place Types as found along SR 87 Segments (as shown in Figure 4)**

Segment	Place Type
1	<p><b>4C-Dedicated Use Areas</b>  <i>Large tracts of lands used for commercial purposes such as business or industrial park or warehousing.</i></p> <p><b>4D- Neighborhoods</b>  <i>Residential subdivisions and complexes including housing, public facilities and local-serving commercial uses, typically separated by arterial corridors.</i></p>
2	<p><b>1 A-Urban Cores</b>  <i>Central cities and large downtowns with full range of horizontally- and vertically-mixed land uses and with high capacity transit stations/corridors present or planned. Urban cores are hubs of transit systems with excellent transit coverage, service levels, and intermodal passenger transfer opportunities including convenient airport access.</i></p> <p><b>2B-Close-in Corridors</b>  <i>Arterial streets with a variety of fronting development types, with frequent transit service and transfer options.</i></p> <p><b>4C-Dedicated Use Areas</b>  <i>Large tracts of lands used for commercial purposes such as business or industrial park or warehousing.</i></p> <p><b>7-Special Use Area</b>  <i>Large tracts of single, special-use lands, e.g., Mineta International Airport.</i></p>

Existing growth trends show continued pressure for industry and housing along SR 87. Though Downtown San Jose has a height restriction due to the close proximity of SJC, both downtowns of San Jose and Santa Clara are prosperous and are expected to expand.

One area for major development is around San Jose Diridon Station. With the arrival of California High Speed Rail and future BART, the surrounding downtown area will have the potential to become what some have called a *Times Square of Silicon Valley* including plans for developing a central entertainment district in the middle of residential and office uses. Though the time frame for beginning High Speed Rail operations is estimated to be at least twenty years away, this area could potentially be developed sooner in conjunction with a new sports and entertainment stadium.<sup>5</sup>

Plan Bay Area (2013 Regional Transportation Plan) emphasizes growth in Downtown San Jose, north San Jose and "urban villages" along existing and planned transit lines such as BART, High-Speed Rail, Caltrain, VTA light rail and dedicated bus lanes. Urban development is typically characterized by medium-density housing, mixed use zoning, good public transit and an emphasis on pedestrians and public space. This focused growth could add additional pressure on the downtowns of San Jose and Santa Clara and lead to expanded demand for all modes in the SR 87 corridor.<sup>6</sup>

SMF also suggests designating areas within suburban communities that could become more compact communities. Meanwhile, investments to improve operational efficiency of existing arterial and freeway corridors include projects that improve connectivity and access to other modes, as well as promotion of Complete Streets and ridesharing together with Traffic Demand Management as advanced in the SMF.

Other suggestions from the Smart Mobility Framework:

- Transit-oriented development along high capacity transit stops and corridors
- Strategic redevelopment of commercial corridors to improve location efficiencies
- Community design factors for all new construction

<sup>5</sup> [Mercury News article on Diridon Development, accessed November 13, 2014](#)

<sup>6</sup> [Mercury News article on Plan Bay Area, accessed November 13, 2014](#)

One example of change (Figure 5), which supports SMF sustainability and mobility principles is the VTA Board supported transit-oriented development (TOD) on land along SR 87 that is currently being used as a parking lot. This proposed TOD, located on the east side of the Caltrain Tamien and VTA Light Rail stations, will feature high-density housing including rental units to support the transit stations. This is one example of the many SMF opportunities that exist along the transit-rich SR 87 corridor. It should be noted, however, that consideration should be given to providing replacement parking for users of the park and ride lot.

**Figure 5.** Proposed Transit Oriented Development near Tamien Station.<sup>7</sup>



State Route 87 functions as a commuter route from southern San Jose into Downtown San Jose and the Golden Triangle of Silicon Valley. SR 87 attracts traffic from the neighborhoods and surrounding developments near the SR 87/SR 85 freeway junction. From the US 101 corridor, SR 85 experiences heavy commute traffic that originates from southern Santa Clara County (San Jose, Morgan Hill, Gilroy) and points beyond (San Benito County<sup>8</sup>). To the north, SR 87 connects directly to US 101 while also continuing as Charcot Avenue into the Golden Triangle.

The economic significance of this route is closely tied to the importance of Silicon Valley and Downtown San Jose. Both from a transportation and economic perspective, the corridor plays a significant role in an important urbanized area. San Jose international airport will not only attract future investments, but in effect puts a height restriction to the built environment as well.

The 25-year concept for the SR 87 corridor does not call for additional right-of-way. However, in terms of housing and employment, San Jose and greater Silicon Valley are not expected to reach their projected maximum growth within the Planning horizon of this TCR. The development of Express Lanes along the SR 87 corridor is yet to be defined and proposed double Express Lanes along SR 85 (between SR 87 and I-280) may have an impact upon traffic operations along this corridor. Consequently, these unknowns may result in greater right-of-way needs in spot locations; therefore the potential sale of excess properties owned by the State should be thoroughly scrutinized for the greater right-of-way needs of the post-25 year concept.

<sup>7</sup> [Peninsula Transportation Alternatives publication on Tamien Development, accessed November 13, 2014](#)

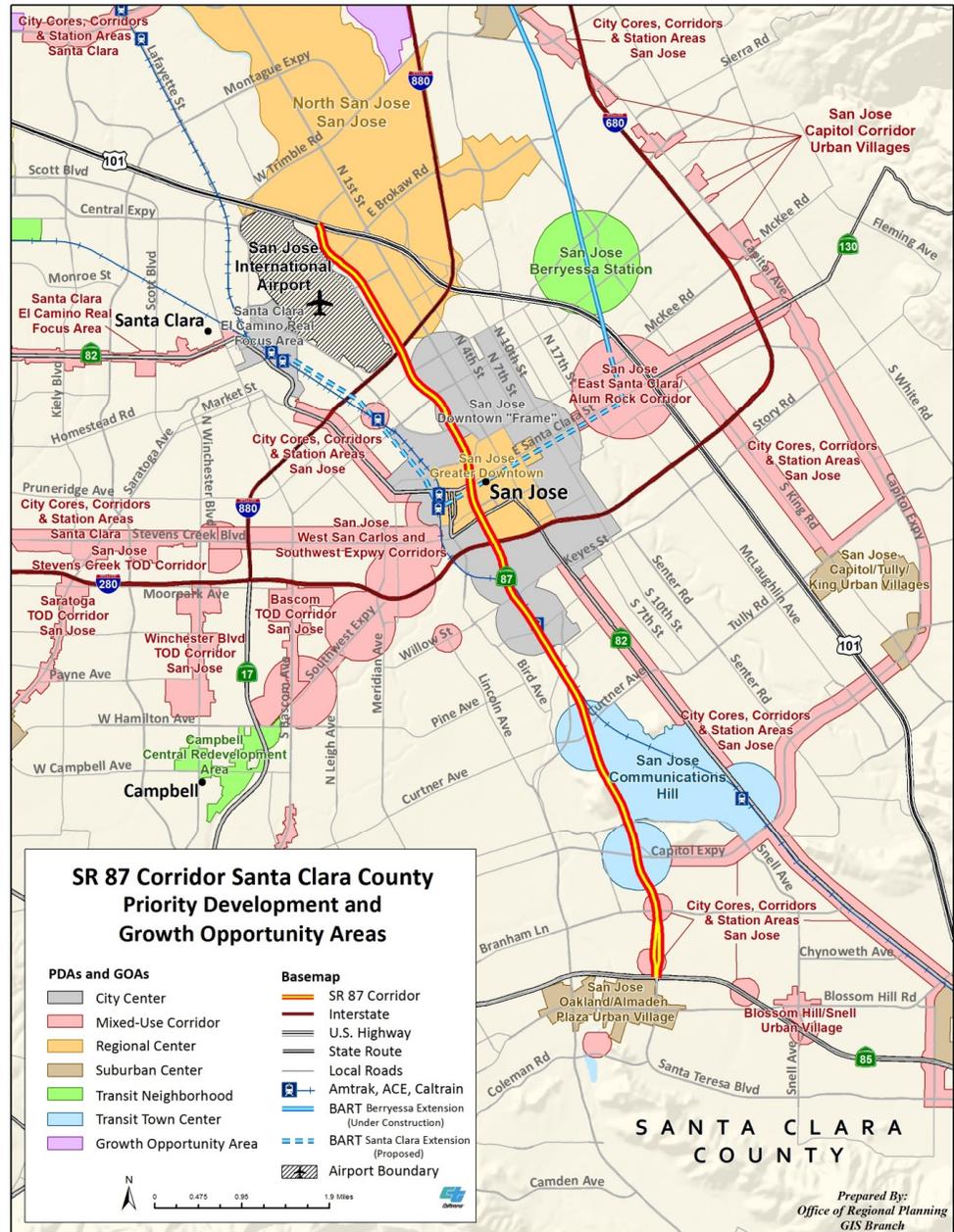
<sup>8</sup> [MTC 2004 Commuter Forecast for San Benito County Commute to Bay Area, accessed November 25, 2014](#)

## Priority Development and Growth Opportunities Areas

Plan Bay Area, approved in 2013, is a long-range integrated transportation and land-use/housing strategy and serves as the RTP for the San Francisco Bay Area. Plan Bay Area responds to Senate Bill 375 (2008) which requires metropolitan regions in the State to develop a Sustainable Communities Strategy (SCS) to accommodate future population growth while reducing greenhouse gas emissions from cars and light trucks. The identification and establishment of local Priority Development Areas (PDA) and Growth Opportunity Areas (GOA) will help focus 80 percent of new housing and 66 percent of new jobs forecast for the region. MTC produced the RTP in concert with ABAG who is responsible for developing regional housing and employment forecasts. Within the Plan's horizon year (2040), population estimates for the Bay Area include two million new residents and a total population topping nine million. PDAs in Santa Clara County are being looked to accommodate a good deal of the forecasted growth for the Bay Area region.

As one of the three major regional centers in District 4, San Jose (in particular the downtown and expanded Golden Triangle areas) is assumed under Plan Bay Area to accommodate much of the future housing demand. Between 2013 and 2040, 32,000 housing units are projected for this area. As shown in Figure 6 on this page, the city of San Jose has a PDA City Center designation around their downtown area. The city of Santa Clara also has a *City Center* designation. Other areas of potential significance in the SR 87 corridor include a Transit Town Center (in blue) and a Suburban Center (in brown); both located in the southern portion of the route, as well as a variety of mixed-uses on both sides of the corridor in close proximity to Downtown San Jose.

Figure 6. Priority Development and Growth Opportunity Areas



## SYSTEM CHARACTERISTICS



Figure 7. Section of map shown on page 2

While both Segments feature six lanes (two HOV), Segment 1 contains a VTA light rail line in the median of the facility. The single HOV lane in each direction requires two or more people per vehicle during weekday peak (traffic) hours. Segment 2, located adjacent to Downtown San Jose and SJC, provides auxiliary lanes to accommodate ingress and egress traffic movements along about 50 percent of the route. Right of way availability ranges from 160 to 500 feet.

At the southern end of the corridor (Segment 1), State Route 87 begins at the interchange with SR 85 (PM 0.00) and Santa Teresa Boulevard. Connections to major arterials such as Coleman Road and Blossom Hill Road are made via Santa Teresa Boulevard. To the north, SR 87 ends at the interchange with US 101 (PM 9.22) and transitions into a local arterial, Charcot Avenue, with connections to Orchard Parkway and North First Street slightly further to the north. Two local expressways, Almaden and Capitol, begin/end near the southern portion of the corridor. No expressways connect to the northern portion of SR 87. Table 7 provides additional existing and future SR 87 system information.

Table 7. Existing and Future Segment Characteristics

Segment #	1	2
<b>Existing Facility</b>		
Facility Type	F	F
Total Lanes	6	6
Total Lane Miles	31.93	26.45
Centerline Miles	5.15	4.07
Median Width	75 feet	30 feet
Median Characteristics	Paved/Light Rail	Paved
HOV Lanes	2	2
HOV Characteristics	2 or more persons per vehicle	2 or more persons per vehicle
Express Lanes	0	0
Auxiliary Lane	10%	50%
ROW	200 - 440 ft	160 - 500 ft
Distressed Pavement <sup>9</sup>	90% Bad Ride	25% Bad Ride
<b>Concept Facility</b>		
Facility Type	F	F
Total Lanes	6	6
Total Lane Miles	31.93	26.45
Centerline Miles	5.15	4.07
Express Lanes	2	2
Aux Lane	10%	50%
<b>Post 25 Year facility</b>		
Facility Type	F	F
Total Lanes	8	8
Total Lane Miles	32 – 42	26 – 32
Centerline Miles	5.15	4.07
Express Lanes	4	4
Aux Lane	0 - 10%	0 – 50%
ROW Needs	Possible	Possible
<b>TMS Elements</b>		
TMS Elements (2013)	CCTV, CMS, TMS, Ramp Metering,	CCTV, CMS, Ramp Metering
TMS Elements (2040)	CCTV, CMS, TMS, Ramp Metering	CCTV, CMS, Ramp Metering

<sup>9</sup> [Caltrans Pavement Program Website](#)

Current ITS infrastructure on SR 87 includes closed circuit television (CCTV) cameras, changeable message signs (CMS), ramp metering (RM) stations and traffic monitoring stations (TMS). ITS elements within Downtown San Jose are used by San Jose Department of Transportation staff to aid traffic management for various events hosted inside the SAP Center. Non-recurrent incident management is partly provided by the MTC Freeway Service Patrol (FSP). In 2013, Caltrans updated the Ramp Meter Development Plan. This plan identifies all ramp metering locations on the State Highway System that are currently in operation planned for operation in the next ten years.<sup>10</sup> The report serves as a Planning tool for the Department to use when working with internal units and external partners to identify future ramp metering projects.

The major change in the long-range concept for the entire corridor facility is the planned conversion of existing HOV lanes into Express Lanes, one in each direction. For the post 25-year facility an additional Express Lane is suggested based on the facility reaching capacity (see Corridor Performance section). With projected growth in the area, other modes within the corridor will most likely not accommodate all future demand.

## **Bicycle Facility**

Bicyclists can use the Highway 87 Bikeway multi-use trail, located along Segment 1. Only a few gaps exist where bicyclists must use local surface streets. The trail parallels SR 87 between SR 85 and I-280. In Segment 2 (between I-280 and US 101) there is an uninterrupted multi-use path known as the Guadalupe Trail. Both trails can be used to commute to Downtown San Jose. Other destinations accessible by bicycle include the Westfield Oakridge Mall, the Guadalupe River Park and Gardens, and SJC. In 2013, the Guadalupe Trail was expanded and now reaches Alviso Marina County Park. Bicyclists can now connect to the Alviso Marina County Park Trail to experience the natural habitat of the Don Edwards San Francisco Bay National Wildlife Refuge.

In 2012, there were approximately 700 daily users on the Guadalupe trail at Park Avenue/San Fernando Street (near Downtown San Jose). Trail surveys<sup>11</sup> also show that many users are regular patrons of the trail system, and half of those mentioned they were using it for commuting. Those using the trails mentioned saving money, concerns for the environment and convenience as most important reasons. These bicyclists also mentioned time savings compared to other modes.

From the Guadalupe Trail bicycle access to the future Berryessa BART station is planned. While it may be necessary to cross some surface streets, due to costs associated with establishing a fully separated bicycle facility, the City of San Jose continues to improve the overall experience for cyclists. For instance, green bike lanes have been installed on Hedding Street together with a road diet.



Figure 8. Highway 87 Bikeway sign

## **Projects**

Further information on bicycle facilities along the SR 87 corridor can be reviewed in Table 8.

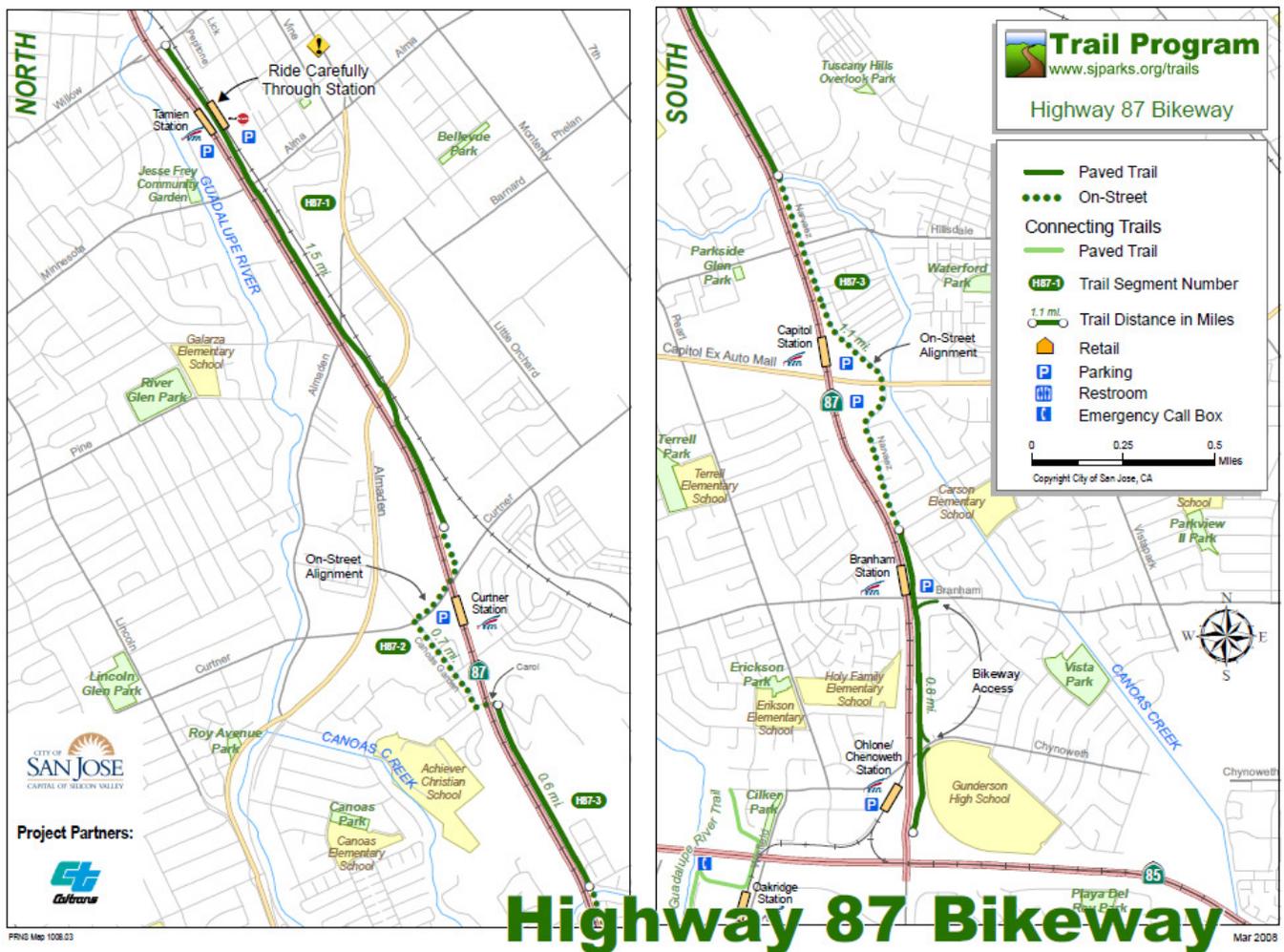
<sup>10</sup> [Caltrans Ramp Meter Document, accessed November 12, 2014](#)

<sup>11</sup> [City of San Jose website, Trail Count 2012, accessed November 14, 2014](#)

**Table 8. Bicycle Facilities by Segment**

Segment	State Bicycle Facility				Parallel Bicycle Facility			
	Subsegment	Post Mile	Location Description	Bicycle Access Prohibited	Parallel Facility Present	Name	Location Description	Class
1	A	0.000-0.895	Junction SR-85 / Faye Park Drive	Yes	Yes	Junction SR-85 / Faye Park Drive	Bidirectional bike path (with signage issues)	I
	B	0.895-1.934	Faye Park Drive to Helzer Road	Yes	Yes	Narvaez Avenue	Bicycle lanes in both directions.	II
	C	1.924-2.512	Helzer Road to Carol Drive	Yes	Yes	Helzer Road to Carol Drive	Bidirectional bike path.	I
	D	2.512-2.81	Carol Drive to Curtner Avenue	Yes	Yes	Carol Drive to Curtner Avenue	Bike route available	III
	E	2.81-3.002	Curtner Avenue to Unified Way Drive Way	Yes	Yes	Curtner Avenue to Unified Way Drive Way	Bicycle lanes in both directions (signage issues)	II
	F	3.002-4.524	Unified Way Drive Way to Willow Street	Yes	Yes	Unified Way Drive Way to Willow Street	Two-way bike path	I
	G	4.524-5.156	Willow Street to I-280	Yes	Yes	Willow Street to I-280	Two-way bike path	I
2	A	5.156-9.220	Junction with I-280 to US 101	Yes	Yes	Guadalupe Trail	Two-way bike path (with connection issues)	I

**Figure 9. Segment 1 Highway 87 Bikeway Map.**



Source: City of San Jose, sanjoseca.gov

VTA’s Countywide Bicycle Plan identifies bikeways and infrastructure improvements that have regional or countywide significance. The plan includes two categories: Cross County Bicycle Corridors (CCBC) and Across Barrier Connections (ABC). CCBCs are defined as long-distance bicycle corridors that provide countywide connectivity. Two CCBCs are found along the SR 87 corridor: the SR 87 Bike Path and the Guadalupe River Trail. Meanwhile, ABCs represent a location where a bicycle need has been identified for improving access across a freeway, creek or railroad. Improved bicycle access could include adding shoulders or a bike lane to an existing roadway crossing a barrier, or building a new bike/pedestrian over/undercrossing. Table 9 identifies ABCs along SR 87. These locations represent areas where better bicycle infrastructure such as bike lanes is proposed. The Active Transportation section of Table 18 lists improvement strategies to address these needs.



**Figure 10.** Guadalupe River Trail near SR 87  
**Source:** Grey3k, obtained via Wikimedia.

**Table 9.** Identified ABCs along SR 87

SR 87	
Airport Parkway*	Alma Avenue*
Hedding Street*	Almaden Road
Almaden Boulevard*	Mill Pond Drive
Santa Clara Street	Carol Drive*
San Fernando Street*	Hillsdale Avenue
San Carlos Street	Branham Lane*
Virginia Street	Chynoweth Avenue*

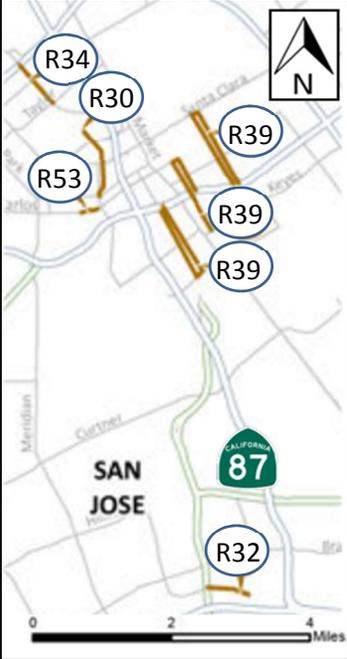
\* indicates a CCBC

SR 87 also has CCBCs. They are found at Branham Lane, Curtner Avenue, Minnesota and Alma Avenues, West San Carlos Street, Park Avenue, Coleman Avenue, and Hedding Street and Airport Parkway. However, due to bicycle crossings between Hedding Street and Airport Parkway being more than a mile apart, a new connection should be a future consideration.

Road crossings of SR 87 that need wider shoulders or bike lanes (as of the 2008 Countywide Bike Plan): Chynoweth Avenue, Branham Lane, Hillsdale Avenue, Carol Drive, Masonic Drive, Almaden Road, Alma Avenue, Virginia Street, San Carlos Street, San Fernando Street, The Alameda, Almaden Boulevard, Hedding Street, and Airport Parkway.

The City of San Jose has made great strides to better accommodate pedestrian and bicycle movements including greening of bike lanes and creating buffer zones on a variety of SR 87 underpasses. In addition to CCBC projects, the following local streets projects near the SR 87 corridor are shown in Table 10.

**Table 10.** Local Street Projects identified by VTP 2040 number — found within close proximity of the corridor

<p>R30: Autumn Parkway: Improvement from Union Pacific Railroad to San Carlos Street, Plan Bay Area #230200 involving circulation improvements around San Jose Diridon Station: Planned for 2015 – 2017.</p>	
<p>R32: Chynoweth Avenue Extension: Almaden Expressway to Winfield Boulevard. Plan Bay Area #240636 2015 – 2016.</p>	
<p>R34: Coleman Avenue widening from I-880 to Taylor Street. Plan Bay Area #230201 New Commitment</p>	
<p>R39: Downtown Couplet Conversion Projects Plan Bay Area #230452 from one way to two ways, adding bike lanes. Tenth &amp; Eleventh, Second &amp; Third Streets, Vine Street &amp; Almaden Avenue, 2013 – 2018</p>	
<p>R53: San Carlos Street Bridge Replacement and Widening at Caltrain Diridon/Vasona LRT Plan Bay Area #230637 2015 – 2017 New Commitment</p>	

**PEDESTRIAN FACILITY**

For Segment 1, the Highway 87 Bikeway can be used by pedestrians as well. This means that pedestrians can walk close to the entire length of Segment 1 on this bikeway. Additional pedestrian facilities can also be found along local streets and on parts of the Almaden Expressway. The same is true for Segment 2: The more natural walkway is found closer to SR 87 with the shared walk and bikeway along the Guadalupe River. With downtown San Jose in close vicinity of SR 87, the corridor provides ample opportunity for pedestrians to also walk the length of the route in an urbanized environment.

**Figure 11.** West Fernando Street, San Jose



**Source:** Google Streetview

When crossing the freeway, pedestrians can use either over- or underpasses, and in general a pedestrian is able to cross the State Route at most locations. However, modifications may be needed at Carroll Drive and at the Almaden Expressway. Table 11 highlights potential locations for pedestrian improvements.

**Table 11. Pedestrian Needs along SR 87**

Location	Proposed Needs
Santa Teresa, directly south of SR 87/SR 85	Pedestrian movements are facilitated, yet not across Santa Teresa Boulevard
SR 87, directly north of SR 85	Pedestrian movements are facilitated in three directions (not four)
Carole Drive	No pedestrian facilities
Curtner Avenue	Pedestrian movements are facilitated on just one side of the roadway
Almaden Expressway	No pedestrian facilities (but Almaden Road close by)
Willow Street	Pedestrian movements are facilitated on just one side of the roadway other side undeveloped area
Bassett Street	Pedestrian movements are facilitated on just one side of the roadway other side undeveloped area
Coleman Avenue	Pedestrian movements are facilitated on just one side of the roadway
Skyport Drive	Pedestrian movements are facilitated on just one side of the roadway
Charcot Avenue and O'Nel Drive	Pedestrian movements are facilitated in three directions (not four)

In Santa Clara County, it is not uncommon for pedestrians wanting to cross roadways to walk across many lanes of traffic with at times only an island in the median. The city has done much to upgrade and improve conditions for all modes. More roads in Santa Clara County are also using road diets that better facilitate pedestrian movements and needs.<sup>12</sup>

## **TRANSIT FACILITY**

SR 87 is located in a transit rich environment. Transit options include local VTA light rail, bus, and Bus Rapid Transit (BRT), and regional rail modes providing services throughout the Silicon Valley. However, mass transit services and connections will need to be expanded due to planned BART and High-Speed Rail coming to this area. VTA ridership for bus and light rail is expected to grow. According to the 2010 US census, about 3.5 percent of the population in Santa Clara County currently uses public transportation to travel to work. A detailed map highlighting available transit options near the SR 87 corridor is provided on the following page.

**Figure 12. VTA Light Rail Santa Clara Street Station in Downtown San Jose.**



Source: xAtsukex, obtained via Wikimedia.

<sup>12</sup> [Mercury News, Road Diets, accessed April 23, 2015](#)

Figure 13. Transit along SR 87



A large variety of transit lines are operating in the SR 87 corridor including light rail, regional rail, and bus lines. All modes allow passengers to bring their bikes with them as long as there is storage capacity. Table 12 shows route begin and end points, transit line operation times, and peak ridership figures. Additional information by transit mode is provided in the text following Table 12; sources listed in Appendix D.

**Table 12. Transit Modes and Facilities by SR 87 Segment**

Segment	Mode & Collateral Facility	Name	Route End Points	Total Weekday Ridership	Operating Period (apprx.)	Bikes Allowed on Transit
1	Light Rail In median	Alum Rock - Santa Teresa	Alum Rock – Santa Teresa	20,031	4:45 AM to 1:00 AM	Yes
		Express Service	Baypointe – Santa Teresa	530	Commute hours	Yes
1	Caltrain	Tamien	local	807	5:00 AM – 11:15 PM	Yes
		Tamien, Capitol	Limited	851	5:45 AM – 8:15 PM	Yes
		Tamien	Baby Bullet	807	6:00 AM – 7:45 PM	Yes
1	Bus	Route 64	Almaden LRT – McKee & White	3,369	5:15 AM – 11:15 PM	Yes
		Route 66	Kaiser SJ – Milpitas/Dixon Rd	5,865	5:15 AM – midnight	Yes
		Route 68	Gilroy TC – SJ Diridon TC	5,364	4:00 AM – 1:30 AM	Yes
		Route 168	Gilroy TC – SJ Diridon TC	277	5:30 AM – 9:00 AM 3:30 PM – 6:45 PM	Yes
		Route 304	South San Jose – Sunnyvale TC	187	6:00 AM – 8:45 AM 3:30 PM – 7:00 PM	Yes
2	Light Rail Through Downtown San Jose	Alum Rock – Santa Teresa	Alum Rock – Santa Teresa	20,031	4:45 AM to 1:00 AM	Yes
		Peak Commuter Express Service	Baypointe – Santa Teresa	530	Commute hours	Yes
		Mountain View – Winchester	Mountain View – Winchester	13,144	5:00 AM to 12:30 AM	Yes
	Caltrain	Diridon, College Park, Santa Clara	Local	4,398	4:30 AM – 1:30 AM	Yes
		Diridon, College Park, Santa Clara	Limited	4,398	6:00 AM – 8:15 PM	Yes
		Diridon, Santa Clara	Baby Bullet	4,311	6:00 AM – 7:30 PM	Yes
2	Bus	Route 10	Free Airport Flyer	1,137	5:00 AM – 11:30 PM	Yes
		Route 66	Kaiser SJ – Milpitas/Dixon Rd	5,865	5:15 AM – midnight	Yes
		Route 68	Gilroy TC – SJ Diridon TC	5,364	4:00 AM – 1:30 AM	Yes
		Route 168	Gilroy TC – SJ Diridon TC	277	5:30 AM – 9:00 AM 3:30 PM – 6:45 PM	Yes
		Route 304	South San Jose – Sunnyvale TC	187	6:00 AM – 8:45 AM 3:30 PM – 7:00 PM	Yes
		DASH (201)	Free Downtown Area Shuttle	575	6:30 AM – 9:30 PM	Yes

## Light Rail

All three VTA light rail lines operate within the SR 87 corridor. Between SR 85 and I-280 (Segment 1), the median of SR 87 is physically shared with VTA light rail. From I-280 to US 101 (Segment 2), VTA light rail is also found in close proximity to SR 87. At the southern end of the SR 87 corridor a VTA light rail spur leads to Almaden Station and another spur leads to Santa Teresa Station with both lines terminating at Alum Rock Station. North of I-280, the Winchester-Mountain View line also shares the rails with these two previously mentioned lines.

In 2010, VTA began providing light rail operations through their Peak Commuter Express Service. This service operates between the Baypointe and Santa Teresa Stations and bypasses several stations with smaller numbers of boarding passengers. The Peak Commuter Express Service has helped to improve transit operations and increase the attractiveness of the VTA light rail network. Since inception, ridership along the entire line has increased sharply.

The single Caltrain station on the Alum Rock/Santa Teresa LRT line, Tamien Station, is bypassed by the Peak Commuter Express Service. This can particularly affect the interregional traveler. Out of 62 VTA light rail stations, Tamien Station ranks 13<sup>th</sup> with serving 790 passengers a day. For Caltrain, Tamien Station is an average performing station with 807 passengers served, but this result is achieved with fewer than half of all Caltrain trains making a stop here; an indication it is an important transfer node.<sup>13</sup> Tamien Station is also the final destination for the Caltrain Electrification project.<sup>14</sup>

A light-rail/Caltrain transfer at Tamien may be desired by individuals traveling longer distances, a reason to include Tamien Station in future light-rail Peak Commuter Express Services.



**Figure 14.** Bikes on Caltrain

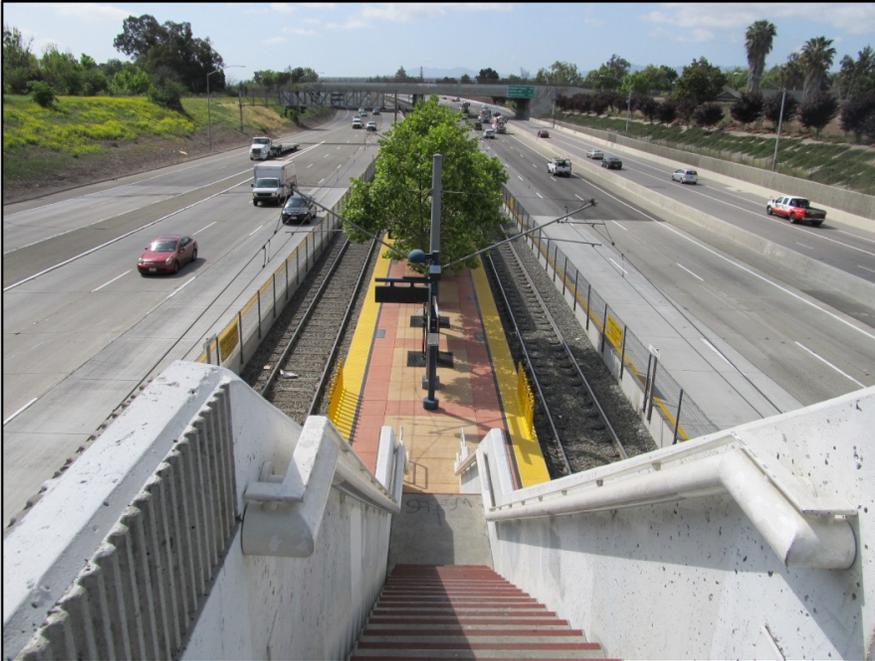
**Source:** Yukihiko Matsuda, obtained via Wikimedia.

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<sup>13</sup> [Caltrain Ridership Report, accessed November 17, 2014](#)

<sup>14</sup> [Caltrain Electrification Notification, accessed November 10, 2015](#)

**Figure 15.** Light rail station in SR 87 median at West Virginia Street.



## Bus

VTA buses service the entire SR 87 corridor, with Downtown San Jose being one of the main destinations. BRT lines are being planned and may be implemented in the coming years. Planned VTA BRT lines are shown on the SR 87 Corridor Transit Map (Figure 13). Their east-west alignments indicate that these services may not affect traffic much on SR 87, but indirectly they help improve the entire bus and light rail networks.<sup>15</sup> SR 87 HOV lanes are also used by the VTA 168 bus line.

**Figure 16.** Example of a VTA Express Bus



*Source: Snty-tact, obtained via Wikimedia.*

<sup>15</sup> [VTA, Bus Rapid Transit Program, accessed April 2, 2015](#)

## Regional and Interregional Rail

The regional and interregional San Jose Diridon Station is located roughly a quarter mile away from SR 87. This rail hub is served by Amtrak, Capitol Corridor, Caltrain, Altamont Commuter Express (ACE), VTA bus and light rail. Currently Capitol Corridor train services provide connections between Auburn/Sacramento and San Jose Diridon Station while the Amtrak Coast Starlight operates from Seattle to Los Angeles and makes a stop at Diridon.

Caltrain provides daily service between San Francisco and San Jose, with all local, limited-stop, and baby-bullet trains stopping at San Jose Diridon Station. Six commuter trains arrive or go on to Gilroy Station and make stops at the Capitol, Tamien, and Santa Clara Stations which are all located within the vicinity of SR 87. College Park Station, located between San Jose Diridon and Santa Clara Stations, serves four Caltrain trains per day.

In 2013, daily Caltrain ridership averaged 47,000 daily passengers, an 11 percent increase over the previous year. The 2013 annual passenger counts show about 60 percent of the commuters take the train in the traditional peak direction (northbound in the AM, southbound in the PM). About 42 percent of Caltrain ridership originates in Santa Clara County. Additionally, Santa Clara County showed a 13 percent increase in ridership (over 2012) which is higher growth than San Mateo and San Francisco County. Planned electrification of Caltrain, from San Francisco to Tamien Station, is planned for completion in 2019.

ACE provides commuter train services with eight daily trains operating between Stockton and San Jose, four westbound morning and four eastbound evening trains (weekdays only). Plans are to expand ACE service as demand grows.

A future BART station is also planned for the San Jose Diridon Station. Construction of the first phase of the BART Silicon Valley Extension Project (to Berryessa Station) has begun. Service is scheduled to begin in 2018 while work on the second phase to Downtown San Jose will start as soon as additional funding is secured.

The future California High-Speed Rail line being planned between Los Angeles and San Francisco is also scheduled to stop at San Jose Diridon Station.

## **FREIGHT**

With the diminishment of manufacturing-related land uses along the corridor, goods movement is not prominent on SR 87 today. The main freight facility in the corridor is SJC Airport. The airport is the State's sixth largest air cargo airport, yet handles just 6 percent of Bay Area air cargo due to limited space and facility constraints.<sup>16</sup> However, by 2035 air cargo tonnage at SJC is expected to increase by 65 percent.<sup>17</sup>

SR 87 is mostly located next to the San Jose Enterprise Zone, a State designated area in which businesses may receive tax benefits. Established in 2006, the San Jose Enterprise Zone could lead to a greater need for freight services along SR 87, depending on the



*Figure 17. San Jose Enterprise Zone.  
Source: www.kbkg.com*

<sup>16</sup> [San Francisco Bay Area Freight Mobility Study, accessed November 25, 2014](#)

<sup>17</sup> [Caltrans/air cargo/San Jose Fact Sheet, accessed November 17, 2014](#)

industries attracted by San Jose’s designation of the area. These enterprise zones are set to expire in 2019. Additional freight information for the SR 87 corridor is provided in Table 13 below.

**Table 13. Major Freight Facilities along SR 87.**

<b>Facility Type/Freight Generator</b>	<b>Location</b>	<b>Mode</b>	<b>Name</b>	<b>Major Commodity/ Industry</b>	<b>Comments/Issues</b>
<i>Passenger and Air Cargo Airport</i>	<i>NW of Downtown San Jose</i>	<i>Airplane and trucks</i>	<i>Mineta San Jose International Airport (SJC)</i>	<i>Largest carriers FedEx and UPS</i>	<i>42, 000 tons of cargo processed in 2012</i>

Overall, the amount of trucks on SR 87 is low with less than three percent trucks. Only one in seven trucks has five or more axles. In 2012, both US 101 and I-880 carried three times more trucks than SR 87. SR 85 has similar truck traffic numbers as SR 87.

Between San Jose and Gilroy, Caltrain uses tracks owned by the Union Pacific Railroad (UP). Within this segment, existing passenger and freight rail activity is straining the corridor’s single and double-track infrastructure. However, UP has expressed guarded interest in additional passenger rail activity in this corridor and has been discussing the potential for increased passenger rail services with the Coast Rail Coordinating Council. Proposed Amtrak Coast Daylight service and an option to extend Capitol Corridor operations to Salinas would strain this rail segment between San Jose and Gilroy even further.

# ENVIRONMENTAL CONSIDERATIONS

Figure 18. SR 87 Environmental Factors

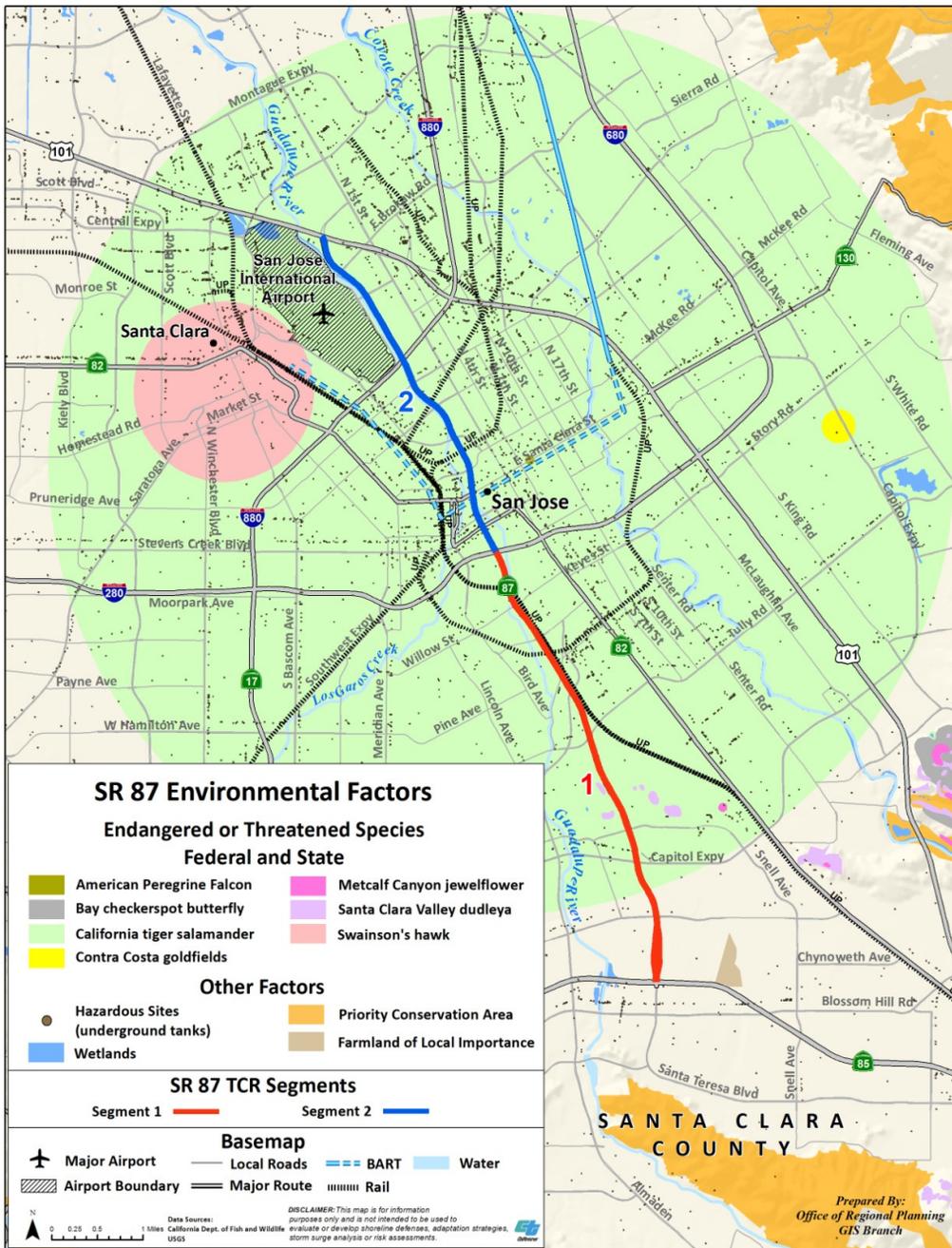


Figure 19. The Threatened Swainson's Hawk  
Source: Larry Ridenhour, Bureau of Land Management, obtained via Wikimedia.

Figure 20. The California Tiger Salamander



Source: John Cleckler, obtained via Wikimedia.

SR 87 has one federally recognized endangered species within its vicinity: the California Tiger Salamander (Figure 20). Nearby, west of SJC in the city of Santa Clara, habitat for the State designated threatened Swainson's Hawk (Figure 19) has been identified.

The purpose of the following environmental scan is to conduct a high level identification of potential environmental factors that may require future analysis in the project development process. Table 14 provides an overview of a variety of important environmental considerations and was determined by District 4 Transportation Planning staff. The colors indicate vulnerability. Orange indicates a high level of environmental significance, yellow a moderate level of significance. Note this graph is meant to provide a short review only. For instance, in Segment 1, a historic burial area is found (high), while in segment 2 cultural resources are present at a moderate level. In residential areas, historic buildings over 50 years old are mixed in with modern offices and at times used as offices and commercial buildings, thus a medium evaluation.

**Table 14. Environmental Considerations**

Segment	Cultural Resources	Geology/Soils/ Seismic	Floodplain	Climate Change and Sea Level Rise Vulnerability	Hazardous Materials	Air Quality			Noise	Waters and Wetlands	Special Status Species	Fish Passage	Habitat Connectivity	
						Ozone	PM							CO
						2.5	10							
1	High	Med	Bypass created	N/A	Med	Non-Attainment	Non-Attainment	Attainment	Attainment	Low	Med	Med	Med	Low
2	Med	High	Protection, access, restoration		Med	Non-Attainment	Non-Attainment	Attainment	Attainment	Low	Med	Med	Med	Low

Technological innovations in automobiles and trucks help reduce emission levels. However, ozone and PM 2.5 levels continue to be in nonattainment for the region as a whole. PM 10 is within attainment.

Santa Clara County is proactively managing its water supply and watershed. Since the early 1980s, the Santa Clara Valley Water District has invested more than a billion dollars in flood protection programs, including constructing major flood protection projects, and has protected more than 93,000 properties in previously flood-prone areas. The Santa Clara Valley Water District is now working on the Upper Guadalupe River Project.<sup>18</sup> When complete in 2019, these projects will ultimately provide flood protection along a 5.7 mile stretch of the river, from I-280 to Blossom Hill Road, protecting 7,500 homes from 100-year flood event. Projects built so far include flood protection, habitat restoration, and fish passages. SR 87 is completely within the Guadalupe River Watershed.

**Noise**

Since SR 87 is contained within an urban and suburban setting, the route has sound walls and has minimal sensitive receptors. However, noise coming from SJC has led to complaints particularly during the first hour of the overnight curfew period.<sup>19</sup>

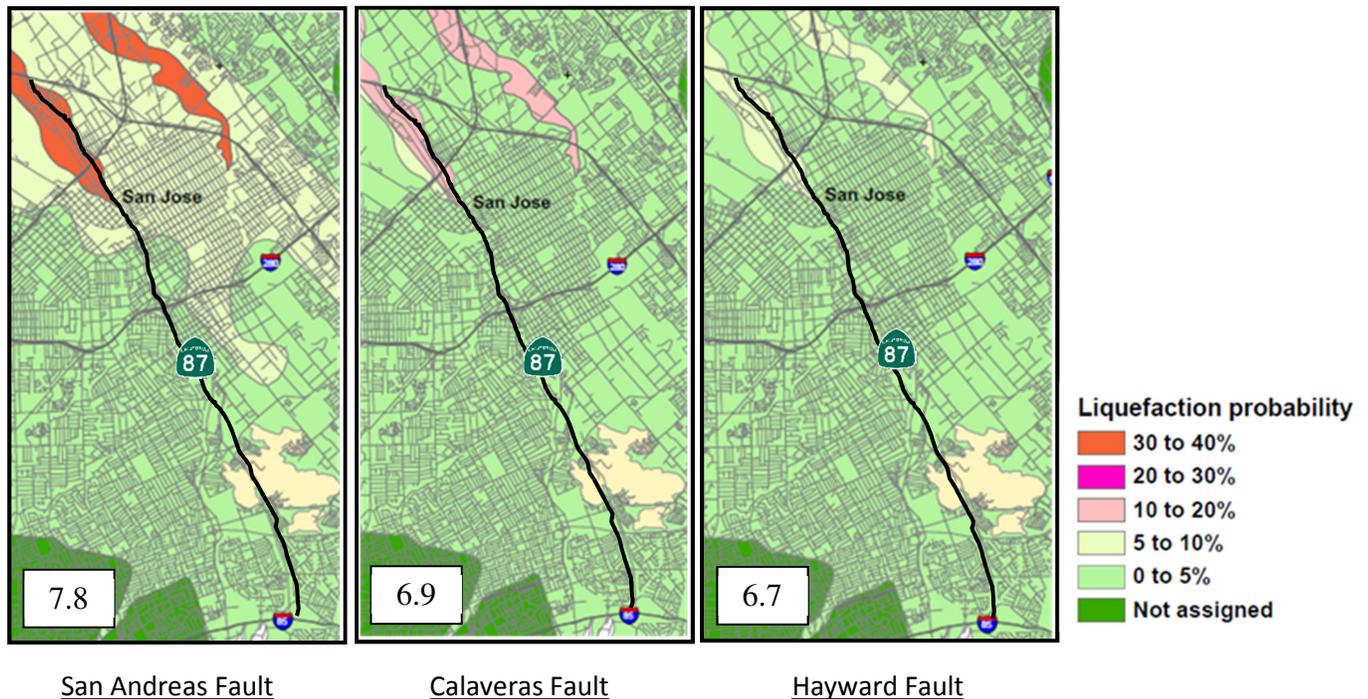
**Geology**

<sup>18</sup> [Santa Clara Valley Water District, Guadalupe River Project, accessed November 18, 2014](#)

<sup>19</sup> [Mineta Airport, 2012 Annual Airline Compliance and Noise Control Report, accessed November 19, 2014](#)

SR 87 is located in a seismically active area. The northern segment of the route may be subjected to increased liquefaction potential during higher magnitude earthquakes. Seismic probability levels of the San Andreas, Calaveras (located to the east, outside the mapped area), and Hayward faults are shown in Figure 21 below. The 2008 data, taken from the US Geological Survey (USGS) liquefaction maps, illustrates the three fault lines during different magnitude earthquakes. The colored areas in Figure 21 display the various potential liquefaction areas.<sup>20</sup> The San Andreas Fault line on the left shows the liquefaction probability for a 7.8 magnitude earthquake. The probability for the Calaveras Fault line shows a magnitude 6.9 earthquake, while a 6.7 magnitude earthquake on the Hayward Fault line is shown on the right.

**Figure 21.** Liquefaction probabilities along SR 87 for various earthquake scenarios



**Source:** United States Geological Survey (USGS), 2008

Areas containing more water and alluvial deposits can result in liquefaction, such as the river sheds found on both bank sides, north of Downtown San Jose. These deposits are most likely from the Guadalupe River and Coyote Creek water systems. Earthquakes can cause surface manifestations of liquefaction such as sand boils and ground cracking.<sup>21</sup>

## CORRIDOR PERFORMANCE

Vehicular traffic performance for SR 87 is based on VTA's 2013 Travel Demand Model. Segment 1, from SR 85 north to I-280, carried the most traffic in base year 2013 and is expected to carry the most traffic in forecast year 2040, see Table 15. Segment 2, from I-280 to US 101 through Downtown San Jose, is projected to experience more growth than Segment 1. Heaviest traffic conditions are experienced during the AM peak hour in the

<sup>20</sup> [United States Geological Survey - Regional Liquefaction, accessed November 18, 2014](#)

<sup>21</sup> [United States Geological Survey - Regional Liquefaction, accessed November 18, 2014](#)

northbound direction (shown in green) and during the PM peak hour in the southbound direction (shown in orange).

Table 15 shows a northbound AM traffic forecast for Segment 1 in 2040 that is virtually the same as in 2013. The reason for this can be found with traffic demand being 18 percent over that of capacity already in 2013. The evening commute is heaviest also in Segment 1 for the PM peak hour, yet demand is foreseen to grow further in 2040, from 6384 vehicles in 2013 (with demand six percent greater than capacity) to 6949 in 2040 (16 percent greater demand than capacity). It shows Segment 1 is beyond capacity for the peak hour in both commute directions in 2013 and 2040. For calculating the Volume over Capacity rate, an assumption of 2,000 vehicles per lane per hour was used.

In Segment 2, the largest traffic demand is found in the northbound direction during morning commute hours, with both 2013 and 2040 demand nearing capacity. The largest increase in the entire performance chart, from 4252 vehicles to a forecast of 5647 vehicles, is found in Segment 2 for the southbound PM peak hour. In 2040, this part of SR 87 will be nearing capacity as well.

**Table 15. Corridor Performance by Segment, 2013 VTA Travel Demand Model**

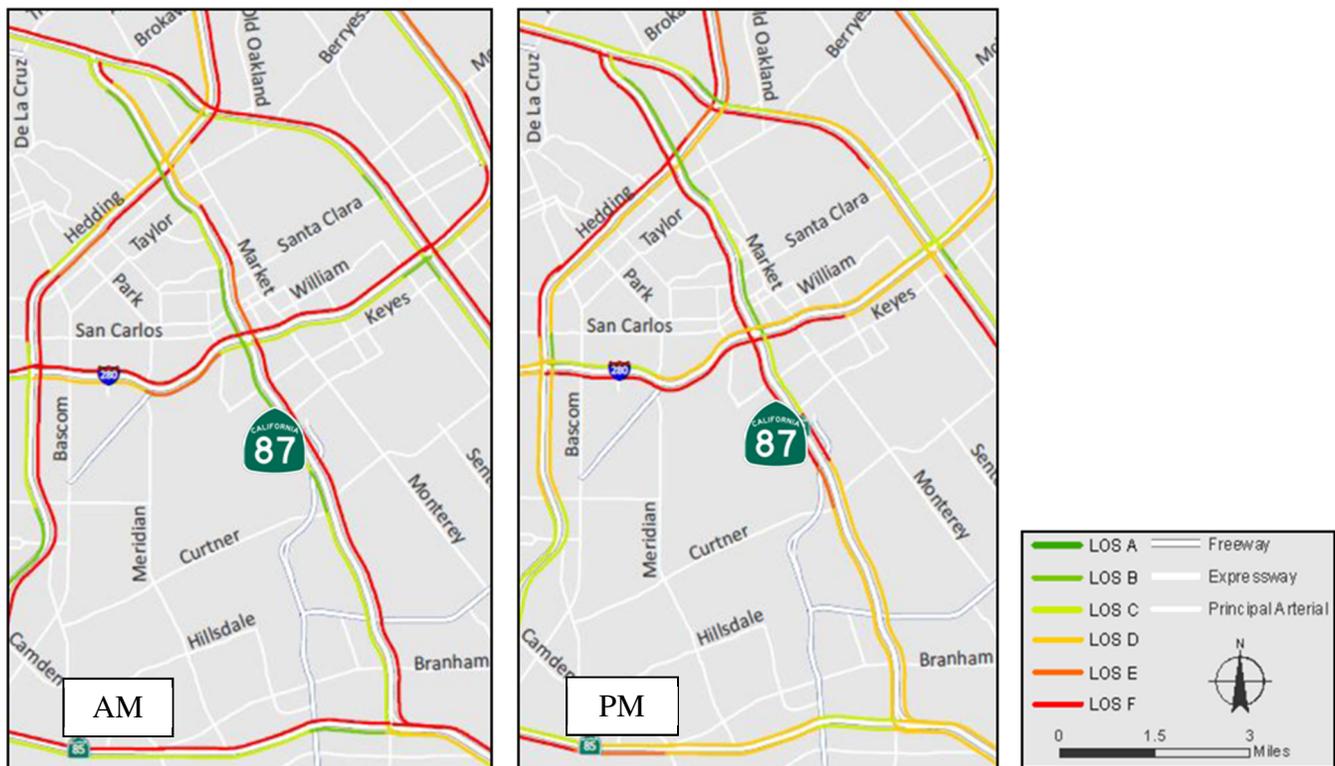
Segment	1	2
<b>Basic System Operations</b>		
AADT 2013	171,000	125,500
AADT 2040	175,500	137,000
AADT: Growth Rate/Year (%)	0.1	0.3
VMT 2013 per day	881,676	510,032
VMT 2040 per day	904,878	556,768
<b>Truck Traffic 2013</b>		
Total Average Annual Daily Truck Traffic	2436	3419
Total Trucks (% of AADT)	1.4	2.7
5+ Axle Average Annual Daily Truck Traffic	314	485
5+ Axle Trucks (as % of AADTT)	12.9	14.2
<b>Truck Traffic 2040</b>		
Total Average Annual Daily Truck Traffic	2723	2771
Total Trucks (% of AADT)	1.6	2.0
5+ Axle Average Annual Daily Truck Traffic	394	409
5+ Axle Trucks (as % of AADTT)	14.5	14.8
<b>Peak Hour Traffic Data 2013</b>		
AM NB Peak Hour Volume	7087	5839
AM SB Peak Hour Volume	3939	3222
AM Peak Hour Directional Split	<b>64/36</b>	<b>64/36</b>
PM Peak Hour Directional Split	<b>44/56</b>	<b>47/53</b>
PM NB Peak Hour Volume	4974	3703
PM SB Peak Hour Volume	6384	4252
Peak Hour V/C (2000 vehicles per lane)	0.656 – 1.181	0.537 – 0.973
<b>Peak Hour Traffic Data 2040</b>		
AM NB Peak Hour Volume	7099	5951
AM SB Peak Hour Volume	4461	3613
AM Peak Hour Directional Split	<b>61/39</b>	<b>62/38</b>
PM Peak Hour Directional Split	<b>42/58</b>	<b>41/59</b>
PM NB Peak Hour Volume	5021	3894
PM SB Peak Hour Volume	6949	5647
Peak Hour V/C (2000 vehicles per lane)	0.745 – 1.183	0.602 – 0.992

The AM peak hour directional split percentages shows a 64/36 percentage split for both segments for 2013, with the majority of cars traveling northbound. By 2040, a move is forecast towards somewhat more balanced percentages of 61/39 for Segment 1, and 62/38 for Segment 2. The PM peak hour directional percentages for 2040 will, however, move further apart with a projected directional split of 42/58 for Segment 1, and a projected directional split of 41/59 for Segment 2. Where the AM commute direction flattens in comparison to the counter-flow direction in the projections, the PM commute direction increases in importance over the counter-flow direction, forecasting all directional splits to be more similar in 2040.

Demand being greater than available capacity underscores how important the corridor is as an important transportation route in central Santa Clara County.

The number of trucks using SR 87 is relatively low with percentages between 1.4 and 2.7 percent. Trucking is not forecast to grow much by 2040, with 1.6 and 2.0 percent forecast numbers remaining close to today's numbers. About one in seven trucks has five or more axles and this figure is expected to remain steady as well. Figures 22a and 22b below provide a snapshot of AM and PM peak LOS for mixed flow lanes on SR 87 as well as other adjacent roadways.

**Figures 22a and 22b.** Freeway AM and PM Peak Hour Level Of Service Mixed Flow Lanes 2014.



**Source:** VTA 2014 Congestion Management Program, 2015

According to VTA, general HOV lane usage<sup>22</sup> operated within expected levels in 2013. During the typical PM peak hour (5:00 to 6:00 PM) nearly 14 percent of all vehicles used the HOV lanes and close to 23 percent of all travelers along SR 87. The violation rate was estimated at four percent.

<sup>22</sup> [2013 Bay Area Managed Lanes, Caltrans, accessed April 13, 2015](#)

## KEY CORRIDOR ISSUES

### **Near Tamien Station**

During rain storms, drainage issues occur near Tamien Station with water standing for long periods before the water drains away naturally. Continued monitoring is needed to understand the drainage issues as well as for developing an appropriate solution. Caltrans Maintenance is aware of the situation.

In the vicinity of Tamien Station, bus operators coming from Lelong Street entering SR 87 have difficulty with merging cars simultaneously approaching the on-ramp. VTA traffic engineers have suggested that the T-intersection ramp close to Tamien Station should be studied more closely.

### **Traffic Management**

HOV lanes along Santa Clara County expressways are located in the right-hand lane. Many of the Caltrans metered freeway on-ramps have HOV bypass lanes located in the left lane. The Caltrans Strategic Plan has a 2020 goal of increasing transit, HOV lane efficiency as well as assisting to reduce localized congestion at key freeway connection locations, should consider modifying on-ramps and placing HOV bypass lanes on the right-hand side for SR 87. In cooperation with VTA, Caltrans has placed HOV lanes at on-ramps on the right side at other locations in Santa Clara County.

Recurrent weekend congestion continues and is primarily due to adjacent shopping areas and retail based traffic demand. Popular shopping areas (Westfield Oakridge Mall, Almaden Plaza Shopping Center) are located near the SR 87/SR 85 Interchange. One project, MTC RTP ID #240579, identified southbound SR 85 to Almaden Expressway improvements near SR 87, including a partial cloverleaf modification of the Almaden Expressway/SR 85 Interchange. This project is not included in the current RTP (Plan Bay Area) list of projects, but may be part of the upcoming Santa Clara County's Expressway Plan 2040. Other large attractions and special events occur at the SAP Center at San Jose just off West Julian Street and the Plant Shopping Center near Curtner Avenue.

### **Ramp Meter Delays**

Implementation of ramp metering has provided for smoother and more efficient traffic flow along and onto the freeway, yet some delays are now experienced on local expressways. Data gathered by Santa Clara County shows that average delays of more than 10 minutes during peak hours are found along SR 87 at two expressway connection locations (Capitol and Almaden Expressways) in 2014. The County concluded that if the existing northbound auxiliary lane from the Capitol Expressway freeway entrance were extended north to Curtner Avenue exit, then a more rapid metering cycle could be allowed to decrease the queue. At this specific location, the hillside topography of Communications Hill on SR 87 reduces lane capacity with slowing vehicles, a situation exacerbated by merging traffic from the on-ramp. Extending the auxiliary lane to the Curtner off ramp would help alleviate this congestion. Also in 2014, at the northbound Almaden Expressway on-ramp to SR 87, delays of 12 minutes were experienced. While southbound SR 87 has four lanes, and five lanes where the frontage road from I-280 exists, the northbound direction provides only three lanes up to Leland Street (north of Alma Avenue). Extending an auxiliary lane to I-280 would provide relief. One possibility is to mirror the southbound set-up in the northbound direction.

### **HOT/Express Lanes**

Express lanes are specially-designated highway lanes that offer toll-free travel for carpools, vanpools, motorcycles, buses and eligible clean-air vehicles. Solo drivers also have the choice to pay to use the lanes for reliable travel times. For SR 87, Express Lanes are planned, though the express-lane program is rolled out slower than first anticipated.

## CORRIDOR CONCEPT

*Table 16. Concept Report*

Segment	Segment Description	Existing Facility	20-25 Year Capital Facility Concept	20-25 Year System Operations and Management Concept	20-25 Year Facility Concept	Post-25 Year Concept
1	SR 85 to Interstate 280	6F (2HOV)	6F (2E)	Implement Express Lanes	6F (2E)	8F (4E)
2	Interstate 280 to US 101	6F (2HOV)	6F (2E)	Implement Express Lanes	6F (2E)	8F (4E)

**Legend:**

*F = Freeway Lane*

*E = Express Lane*

*HOV = High-Occupancy Vehicle Lane*

### CONCEPT RATIONALE

The route provides direct access to Downtown San Jose and SJV while also serving as a key commuter route between southern San Jose and the “Golden Triangle” of Silicon Valley found directly north of SR 87. In 2004, the facility was expanded to six lanes, with two HOV lanes, along its entire length. As expected, traffic demands are high for such a centrally located facility and converting the HOV lanes into Express Lanes is a committed RTP project planned for completion by 2020.

The Level Of Service (LOS) F on SR 87 is percentage-wise the worst in Santa Clara County.<sup>23</sup> The northbound HOV lane also experiences LOS F during AM Peak periods between Almaden Road and Alma Avenue. However, traffic using the HOV lane still moves faster (33 mph average) than traffic in the mixed flow lanes (16 mph average).

The central location of the route next to Downtown San Jose and the connection to Silicon Valley explain the high demand for transportation. Planned residential and commercial developments in the area put additional pressure on the transportation network. Adding capacity is a necessity to meet demand, although obtaining additional right of way may be exceedingly complicated for the SR 87 corridor. Even with planned improvements in transit and other modes absorbing some of the increased demand, the expectation is that freeway demand will nevertheless remain high. Changing HOV lane occupancy requirements from 2+ to 3+ passengers-per-vehicle could be a future consideration for maintaining reliability and efficiency in the corridor.

Adding mixed-flow lanes in both directions could address current and future freeway demand, but would also attract new traffic. Along with greater transit use and High Occupancy Vehicle lanes, the post-25 year concept proposes an additional SR 87 Express Lane in each direction. Currently VTA is examining whether four Express Lanes on SR 85 between SR 87 and I-280 and four Express Lanes on US 101 south of SR 85 are needed to handle forecast traffic demand. In combination with these potential operational strategies along the SR 85 and US 101 corridors, this long-range concept strategy for SR 87 would establish a larger network of double Express Lanes.

Tables 17 and 18 highlight planned and programmed projects on the SR 87 corridor as well as future strategies to achieve the SR 87 concept.

<sup>23</sup> [VTA Congestion Monitoring Report, 2014, accessed October 15, 2015](#)

## PLANNED AND PROGRAMMED PROJECTS AND STRATEGIES

**Table 17. Planned and Programmed Projects and Strategies**

Segment	Description	Planned or Programmed	Location	Source	Implementation Phase
1	Pavement repair.	Programmed	SR 85 to I-280	SHOPP	2016
1	Soundwall repair.	Programmed	SB I-280 to SB SR 87	SHOPP	2017
1	Replace K-rail barrier with metal beam guard rail and concrete barrier.	Programmed	PM 9.0-9.2	SHOPP	2017
1/2	Convert HOV lanes to Express Lanes from SR 85 to US 101	Planned	PM 0.0-9.22	Plan Bay Area (RTP ID 240464)	2017/2018
1	Improve interchange at SR 87/Capitol Expressway/Narvaez Avenue.	Planned	PM 1.43	Plan Bay Area (RTP ID 230425)	2015-2020
2	Double lane SB US 101 off-ramp to SB SR 87	Planned	PM 9.22	Plan Bay Area (RTP ID 240570)	2017
1/2	Research carpool lane occupancy requirement from 2+ to 3+ persons.	-	PM 0.0 – 9.22	TCR Strategy	-
1/2	Second SR 87 Express Lane between SR 85 and US 101 in both directions.	-	PM 0.0 – 9.22	TCR Strategy	-
1	Almaden Expressway – Widen Coleman to Blossom Hill	Planned	PM 0.0	Plan Bay Area (22175)	2022/2024

## OFF-FREEWAY PROJECTS AND STRATEGIES THAT HELP ACHIEVE CONCEPT

**Table 18. Off-Freeway Projects and Strategies to Achieve Concept**

Segment	Description	Location	RTP # / VTP #
<b>TOS / ITS</b>			
2	Downtown San Jose Area Freeway Management System	PM 5.16 – 6.90	240494 / S30
2	Downtown San Jose Local Street Advanced Traffic Management System	PM 5.16 – 6.90	240494 / S31
2	Downtown San Jose Changeable Message Sign Upgrades	PM 5.16 – 6.90	240494 / S32
1, 2	San Jose Traffic Signal Interconnect	Entire route	240494 / S37
1, 2	San Jose Emergency Vehicle Preemption System	Entire route	240494 / S41
1	Almaden/Blossom Hill Area Advanced Traffic Management System	PM 0.0	240494 / S45
1	Capitol Expressway – TOS infrastructure	PM 0.0 – 4.36	230242 / X2
<b>Transit</b>			
2	BART Phase II Berryessa to Santa Clara	PM 5.86 – 8.37	240375 / T4
2	El Camino BRT	SR 82 / downtown	240119 / T5

**Table 18 continued. Off-Freeway Projects and Strategies to Achieve Concept**

Segment	Description	Location	RTP # / VTP #
<b>Transit (continued)</b>			
2	Stevens Creek BRT	PM 5.21	240118 / T6
1, 2	Caltrain/HSR Electrification and San Jose Diridon Station	PM 4.08 – 9.22	21627 / T7 240063 / T15
1	Caltrain Improvements South County	South of corridor	21760 / T11
2	Santa Clara/Alum Rock Phase I: BRT	PM 5.87	240117 / T19
2	Caltrain SJV Airport Connector	PM 8.37	21922 / T27
1, 2	Guadalupe Express Light Rail improvements	PM 0.0 – 5.86	240512 / T30
2	North First Street light rail improvements	Tamien Station	240519 / T32
1	Improve Peak Commuter Express Service at Tamien	In and along corridor	SR 87 TCR Strategy
1	Require TOD mitigation for using P+R space	Tamien Station	SR 87 TCR Strategy
<b>Active Transportation</b>			
1	Modify Hillsdale Avenue striping at SR 87 underpass to accommodate bicyclists	PM 1.73	SR 87 TCR Strategy
1	Widen roadway Carol Drive at SR 87 underpass to create bicycle lanes	PM 2.51	SR 87 TCR Strategy
1	Widen roadway Mill Pond Drive at SR 87 underpass to create bicycle lanes	PM 2.64	SR 87 TCR Strategy
1	Almaden Expressway. Bicycle and Pedestrian Overcrossing along Guadalupe River Trail alignment	PM 3.56	240509 / B45
1	Review roadway Almaden Road at SR 87 underpass, widen where possible to create bicycle lanes	PM 3.95	SR 87 TCR Strategy
1	Add bike ramps to accommodate use of sidewalk at SR 87 underpass of Alma Avenue, widen roadway where possible to create bicycle lanes	PM 4.07	SR 87 TCR Strategy
2	Review and improve roadway Auzerais Avenue at SR 87 underpass, create bike lanes	PM 5.36	SR 87 TCR Strategy
2	Review and improve San Carlos underpass for bicyclists	PM R7.70	SR 87 TCR Strategy
2	Los Gatos Creek Trail: Diridon Station Segment	PM 5.87	240509 / B48
2	Brokaw - Coleman Airport Bikeway	PM 8.76 – 9.22	240509 / B55
2	Park Avenue/San Fernando St. San Antonio Bikeway	PM 5.56 – 5.71	240509 / B63
2	Review and improve Julian Street SR 87 underpass for bicyclists	PM 6.15	SR 87 TCR Strategy
2	Modify Airport Parkway striping at SR 87 underpass to accommodate bicyclists	PM T8.76	SR 87 TCR Strategy
1	Three Creeks Trail from Lonus Street to Coyote Creek	PM 0.0 – 5.87	240509 / B66
1, 2	Bird Avenue Pedestrian Corridor	PM 4.07 – 4.54	230642 / R48
1, 2	Improve Pedestrian Facilities (see Table 11)	Various locations along route	SR 87 TCR Strategy

**Legend:**

RTP = MTC Plan Bay Area (2013)

VTP = VTA Valley Transportation Plan 2040

TOS= Traffic Operations Strategies

ITS= Intelligent Transportation Systems

# APPENDIX

## APPENDIX A GLOSSARY OF TERMS AND ACRONYMS

### Acronyms

AADT – Annual Average Daily Traffic  
AB – Assembly Bill  
ABAG – Association of Bay Area Governments  
ADA – Americans with Disabilities Act of 1990  
ADT – Average Daily Traffic  
BAAQMD – Bay Area Air Quality Management District  
BART – Bay Area Rapid Transit  
BCDC – Bay Conservation and Development Commission  
BY – Base Year  
CAA – Federal Clean Air Act  
Caltrans – California Department of Transportation  
CARB – California Air Resources Board  
CCAA – California Clean Air Act  
CEQA – California Environmental Quality Act  
CHP – California Highway Patrol  
CMA – Congestion Management Agencies  
CMP – Congestion Management Plan  
CO – Carbon Monoxide  
CSMP – Corridor System Management Plan  
CSS – Context Sensitive Solutions  
CTP – California Transportation Plan  
DD – Deputy Directive  
DSMP – District System Management Plan  
ECA – Essential Connectivity Areas  
EIR – Environmental Impact Report  
EIS – Environmental Impact Statement  
EPA – Environmental Protection Agency  
FHWA – Federal highway Administration  
FSR – Feasibility Study Report  
FSTIP – Federal Statewide Transportation Improvement Program  
FTA – Federal Transit Administration  
FTIP – Federal Transportation Improvement Program  
GHG – Greenhouse Gas  
GIS – Geographic Information System  
HCP – Habitat Conservation Plan  
HOV – High occupancy vehicle lane  
HY – Horizon Year  
I – Interstate  
IGR – Intergovernmental Review  
ITIP – Interregional Transportation Improvement Program  
ITS – Intelligent Transportation System  
ITSP – Interregional Transportation Strategic Plan  
KPRA – Kingpin-to-Rear-Axle

LOS – Level of Service  
LRT – Light Rail Transit  
MPO – Metropolitan Planning Organizations  
MTC – Metropolitan Transportation Commission  
NOA – Naturally Occurring Asbestos  
NCCP – Natural Community Conservation Plan  
NEPA – National Environmental Policy Act  
PCA – Priority Conservation Area  
PDA – Priority Development Area  
PID – Project Initiation Document  
PM – Post Mile  
PPM – Parts Per Million  
PSR – Project Study Report  
PTSF – Percent Time Spent Following  
RHNA – Regional Housing Needs Allocation  
RTP – Regional Transportation Plan  
RTIP – Regional Transportation Improvement Program  
RTPA – Regional Transportation Planning Agencies  
SAFETEA-LU – Safe, Accountable, Flexible and Efficient Transportation Equity Act, a Legacy for Users  
SB – Senate Bill  
SCS – Sustainable Community Strategies  
SHOPP – State Highway Operation Protection Program  
SHS – State Highway System  
SMF – Smart Mobility Framework  
SR – State Route  
STIP – State Transportation Improvement Program  
TEA-21 – Transportation Equity Act for the 21st Century  
TCR – Transportation Concept Report  
TDM – Transportation Demand Management  
TMS – Transportation Management System  
TSN – Transportation System Network  
V/C – Volume to Capacity  
VMT – Vehicle Miles Traveled  
VPH – Vehicles per Hour  
VTA – Santa Clara Valley Transportation Authority

Acronym Guide: <http://www.dot.ca.gov/hq/LocalPrograms/training/Acronyms.doc>

## **Definitions**

AADT – Annual Average Daily Traffic is the total volume for the year divided by 365 days. The traffic count year is from October 1st through September 30<sup>th</sup>. Traffic counting is generally performed by electronic counting instruments moved from location throughout the state in a program of continuous traffic count sampling. The resulting counts are adjusted to an estimate of annual average daily traffic by compensating for seasonal influence, weekly variation and other variables which may be present. Annual ADT is necessary for presenting a statewide picture of traffic flow, evaluating traffic trends, computing accident rates, planning and designing highways and other purposes.

Base Year – The year that the most current data is available to the Districts

**Bikeway Class I (Bike Path)** – Provides a completely separated right of way for the exclusive use of bicycles and pedestrians with cross flow by motorists minimized.

**Bikeway Class II (Bike Lane)** – Provides a striped lane for one-way bike travel on a street or highway.

**Bikeway Class III (Bike Route)** – Provides for shared use with pedestrian or motor vehicle traffic.

**Bottlenecks** – A bottleneck is a location where traffic demand exceeds the effective carrying capacity of the roadway. In most cases, the cause of a bottleneck relates to a sudden reduction in capacity, such as a lane drop, merging and weaving, driver distractions, a surge in demand, or a combination of factors.

**Capacity** – The maximum sustainable hourly flow rate at which persons or vehicles reasonably can be expected to traverse a point or a uniform section of a lane or roadway during a given time period under prevailing roadway, environmental, traffic, and control conditions.

**Capital Facility Concept** – The 20-25 year vision of future development on the route to the capital facility. The capital facility can include capacity increasing, State Highway, bicycle facility, pedestrian facility, transit facility (Intercity Passenger Rail, Mass Transit Guideway etc.), grade separation, and new managed lanes.

**Conceptual Project** – A conceptual improvement or action is a project that is needed to maintain mobility or serve multimodal users, but is not currently included in a fiscally constrained plan and is not currently programmed. It could be included in a General Plan or in the unconstrained section of a long-term plan.

**Corridor** – A broad geographical band that follows a general directional flow connecting major sources of trips that may contain a number of streets, highways, bicycle, pedestrian, and transit route alignments. Off system facilities are included as informational purposes and not analyzed in the TCR.

**Facility Concept** – Describe the Facility and strategies that may be needed within 20-25 years. This can include capacity increasing, State Highway, bicycle facility, pedestrian facility, transit facility, Non-capacity increasing operational improvements, new managed lanes, conversion of existing managed lanes to another managed lane type or characteristic, TMS field elements, Transportation Demand Management and Incident Management.

**Facility Type** – The facility type describes the State Highway facility type. The facility could be freeway, expressway, conventional, or one-way city street.

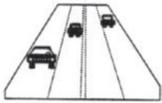
**Freight Generator** – Any facility, business, manufacturing plant, distribution center, industrial development, or other location (convergence of commodity and transportation system) that produces significant commodity flow, measured in tonnage, weight, carload, or truck volume.

**Horizon Year** – The year that the future (20-25 years) data is based on.

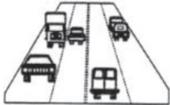
**Intermodal Freight Facility** – Intermodal transport requires more than one mode of transportation. An intermodal freight facility is a location where different transportation modes and networks connect and freight is transferred (or “transloaded”) from one mode, such as rail, to another, such as truck.

**ITS** – Intelligent Transportation System improves transportation safety and mobility and enhances productivity through the integration of advanced communications technologies into the transportation infrastructure and in vehicles. Intelligent transportation systems encompass a broad range of wireless and wire line communications-based information and electronics technologies to collect information, process it, and take appropriate actions.

LOS – Level of Service is a qualitative measure describing operational conditions within a traffic stream and their perception by motorists. A LOS definition generally describes these conditions in terms of speed, travel time, freedom to maneuver, traffic interruption, comfort, and convenience. Six levels of LOS can generally be categorized as follows:



**LOS A** describes free flowing conditions. The operation of vehicles is virtually unaffected by the presence of other vehicles, and operations are constrained only by the geometric features of the highway.



**LOS B** is also indicative of free-flow conditions. Average travel speeds are the same as in LOS A, but drivers have slightly less freedom to maneuver.



**LOS C** represents a range in which the influence of traffic density on operations becomes marked. The ability to maneuver with the traffic stream is now clearly affected by the presence of other vehicles.



**LOS D** demonstrates a range in which the ability to maneuver is severely restricted because of the traffic congestion. Travel speed begins to be reduced as traffic volume increases.



**LOS E** reflects operations at or near capacity and is quite unstable. Because the limits of the level of service are approached, service disruptions cannot be damped or readily dissipated.



**LOS F** is a stop and go, low speed conditions with little or poor maneuverability. Speed and traffic flow may drop to zero and considerable delays occur. For intersections, LOS F describes operations with delay in excess of 60 seconds per vehicle. This level, considered by most drivers unacceptable often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection.

Multi-modal – The availability of transportation options using different modes within a system or corridor, such as automobile, subway, bus, rail, or air.

System Operations and Management Concept – Describe the system operations and management elements that may be needed within 20-25 years. This can include Non-capacity increasing operational improvements (auxiliary lanes, channelization's, turnouts, etc.), conversion of existing managed lanes to another managed lane type or characteristic (e.g. HOV land to HOT lane), TMS Field Elements, Transportation Demand Management, and Incident Management.

Peak Hour – The hour of the day in which the maximum volume occurs across a point on the highway.

**Peak Hour Volume** – The hourly volume during the highest hour traffic volume of the day traversing a point on a highway segment. It is generally between 6 percent and 10 percent of the ADT. The lower values are generally found on roadways with low volumes.

**Planned Project** – A planned improvement or action is a project in a fiscally constrained section of a long-term plan, such as an approved Regional or Metropolitan Transportation Plan (RTP or MTP), Capital Improvement Plan, or measure.

**Post Mile** – A post mile is an identified point on the State Highway System. The milepost values increase from the beginning of a route within a county to the next county line. The milepost values start over again at each county line. Milepost values usually increase from south to north or west to east depending upon the general direction the route follows within the state. The milepost at a given location will remain the same year after year. When a section of road is relocated, new milepost (usually noted by an alphabetical prefix such as "R" or "M") are established for it. If relocation results in a change in length, "milepost equations" are introduced at the end of each relocated portion so that mileposts on the remainder of the route within the county will remain unchanged.

**Programmed Project** – A programmed improvement or action is a project in a near-term programming document identifying funding amounts by year, such as the State Transportation Improvement Program or the State Highway Operations and Protection Program.

**Route Designation** – A route's designation is adopted through legislation and identifies what system the route is associated with on the State Highway System. A designation denotes what design standards should apply during project development and design. Typical designations include but not limited to National Highway System (NHS), Interregional Route System (IRRS), Scenic Highway System,

**Rural** – Fewer than 5,000 in population designates a rural area. Limits are based upon population density as determined by the U.S. Census Bureau

**TDM** – Transportation Demand Management programs designed to reduce or shift demand for transportation through various means, such as the use of public transportation, carpooling, teleworking, and alternative work hours. Transportation Demand Management strategies can be used to manage congestion during peak periods and mitigate environmental impacts.

**TMS** – Transportation Management System is the business processes and associated tools, field elements and communications systems that help maximize the productivity of the transportation system. TMS includes, but is not limited to, advanced operational hardware, software, communications systems and infrastructure, for integrated Advanced Transportation Management Systems and Information Systems, and for Electronic Toll Collection System.

**Urban** – 5,000 to 49,999 in population designates an urban area. Limits are based upon population density as determined by the U.S. Census Bureau.

**Urbanized** – Over 50,000 in population designates an urbanized area. Limits are based upon population density as determined by the U.S. Census Bureau.

**VMT** – Is the total number of miles traveled by motor vehicles on a road or highway segments.

## APPENDIX B FEDERAL, STATE, AND REGIONAL PLANS AND POLICIES

### FEDERAL

#### ***Moving Ahead for Progress in the 21st Century Act (MAP-21)***

P.L. 112-141, MAP-21 was signed into law in July 2012. This federal act provides funding for surface transportation programs for fiscal years (FY) 2013 and 2014. MAP-21 is the first long-term highway authorization enacted since 2005. MAP-21 creates a streamlined, performance-based, and multimodal program to address the many challenges facing the U.S. transportation system. These challenges include improving safety, improving and/or maintaining infrastructure condition, reducing traffic congestion, improving efficiency of the system and freight movement, protecting the environment, and reducing delays in project delivery.

#### ***Federal Transportation Improvement Program (FTIP)***

All federally funded projects, and regionally significant projects (regardless of funding), must be listed in the FTIP per federal law. A project is not eligible to be programmed in the FTIP until it is programmed in the *State Transportation Improvement Program (STIP)* or in the *State Highway Operations and Protection Program (SHOPP)*. Other types of funding (Federal Demonstration, Congestion Mitigation and Air Quality (CMAQ), Transportation Enhancement Activities (TEA), and Surface Transportation Program (STP) must be officially approved before the projects can be included in the FTIP.

### STATE

#### ***California Transportation Plan (CTP)***

The CTP is a long-range policy framework to meet California's future multi-modal mobility needs and reduce greenhouse gas and particulate matter (PM) emissions. The CTP defines goals, performance-based policies, and strategies to achieve a collective vision for California's future Statewide, integrated, multimodal transportation system. An update of the CTP (CTP 2040) is currently underway and is expected to be finalized in 2015. It will focus on meeting new trends and challenges, such as economic and job growth, climate change, freight movement, and public health. In addition, performance measures and targets will be developed to assess performance of the transportation system to meet the requirements of MAP-21.

#### ***California Interregional Blueprint (CIB)***

Responding to Senate Bill 391 of 2009, CIB informs and enhances the State's transportation planning process. Similar to requirements for regional transportation plans under Senate Bill 375, SB 391 requires the State's long-range transportation plan to meet California's climate change goals under Assembly Bill 32. In response to these statutes, Caltrans is preparing a state-level transportation blueprint to inform CTP 2040 and articulate the State's vision for an integrated, multi-modal interregional transportation system that integrates the Regional Blueprint Program (see the Regional appendix section) and complements regional transportation plans. The CIB will integrate the State's long-range multi-modal plans and Caltrans-sponsored programs with the latest technology and tools to enhance our ability to plan for and manage a transportation system that will expand mode choices and meet future increases in transportation needs and still meet the GHG-reduction targets or SB 375.

#### ***State Transportation Improvement Program (STIP)***

The STIP is a multi-year capital improvement program of transportation projects on and off the State Highway System, funded with revenues from the Transportation Investment Fund and other funding sources. Caltrans and the regional planning agencies prepare transportation improvement plans for submittal. Local agencies work

through their Regional Transportation Planning Agency (RTPA), County Transportation Commission, or Metropolitan Planning Organization (MPO), as appropriate, to nominate projects for inclusion in the STIP.

#### ***Interregional Transportation Improvement Program (ITIP)***

The Interregional Transportation Improvement Program (ITIP) is a state-funding program for the Interregional Improvement Program (IIP) and is a sub-element of the State Transportation Improvement Program. The IIP is a state funding category created in SB 45 for intercity rail, interregional road or rail expansion projects outside urban areas, or projects of statewide significance, which include projects to improve State highways, the intercity passenger rail system, and the interregional movement of people, vehicles, and goods. Caltrans nominates and the California Transportation Commission approves a listing of interregional highway and rail projects for 25 percent of the funds to be programmed in the STIP (the other 75% are Regional Improvement Program funds). Only projects planned on State highways are to be included in this program.

#### ***District System Management Plan (DSMP)***

The DSMP provides a vehicle for the development of multi-modal and multi-jurisdictional transportation strategies. These strategies must be based on an analysis that is developed in partnership with regional and local agencies. The DSMP is the State's counterpart to the Regional Transportation Plan (RTP) for the region.

#### ***State Highway Operation and Protection Program (SHOPP)***

Caltrans prepares the SHOPP for the expenditure of transportation funds for major capital improvements necessary to preserve and protect the State Highway System. The SHOPP is a four-year funding program. SHOPP projects include capital improvements for maintenance, safety, and rehabilitation of State highways and bridges. The 10-Year SHOPP anticipates long-term projected expansion and maintenance needs.

#### ***10-Year SHOPP***

The 10-year SHOPP is a state plan for the rehabilitation and reconstruction, or both, of state highways and bridges by the SHOPP. The purpose of the plan is to identify needs for the upcoming 10 years. The plan is updated every two years. It includes specific milestones, quantifiable accomplishments and strategies to control cost and improve the efficiency of the program. 10-year SHOPP differs from SHOPP, as it has no funding constraints assigned.

#### ***Senate Bill 45 (SB 45)***

SB 45 establishes guidelines for the California Transportation Commission to administer the allocation of funds appropriated from the Public Transportation Account for capital transportation projects designed to improve transportation facilities.

#### ***California Strategic Growth Plan***

The Governor and Legislature have initiated the first phase of a comprehensive Strategic Growth Plan to address California's critical infrastructure needs over the next 20 years. California faces over \$500 billion in infrastructure needs to meet the demands of a population expected to increase by 23 percent over the next two decades. In November 2006, the voters approved the first installment of that 20-year vision to rebuild California by authorizing a series of general obligation bonds totaling \$42.7 billion.

#### ***Smart Mobility Framework***

Caltrans released *Smart Mobility 2010: A Call to Action for the New Decade* in February 2010. SMF was prepared in partnership with US Environmental Protection Agency, the Governor's Office of Planning and Research, and the California Department of Housing and Community Development to address both long-range challenges and short-term pragmatic actions to implement multi-modal and sustainable transportation strategies in California. *Smart Mobility 2010* provides new tools and techniques to improve planning. It links land use "place types," considers growth scenarios and how growth will best gain the benefits of smart mobility. The SMF emphasizes travel choices, healthy, livable communities, reliable travel times for people and freight, and safety for all

users. This vision supports the goals of social equity, climate change intervention, and energy security as well as a robust and sustainable economy.

#### ***Caltrans Complete Streets - Integrating the Transportation System, 2008***

This Deputy Directive (DD64-R2) expresses Caltrans commitment to provide for the needs of all travelers including pedestrians, bicyclists and persons with disabilities in all programming, planning, maintenance, construction, operations, and project development activities and products.

#### ***State Assembly Bill 32 (AB 32) Global Warming Solutions Act, September 2006***

This bill requires the State's greenhouse gas emissions to be reduced to 1990 levels by the year 2020. Caltrans' strategy to reduce global warming emissions has two elements. The first is to make transportation systems more efficient through operational improvements. The second is to integrate emission reduction measures into the planning, development, operations and maintenance of transportation elements.

#### ***Senate Bill 375 (SB-375) Addressing Greenhouse Gas Emissions from the Transportation Sector***

SB 375 provides a means for achieving AB 32 goals from cars and light trucks. The transportation sector contributes over 40 percent of the GHGs throughout the state. Automobiles and light trucks alone contribute almost 30 percent. SB-375 requires the California Air Resources Board (ARB) to develop regional greenhouse gas (GHG) emission reduction targets for cars and light trucks for each of the 18 Metropolitan Planning Organizations (MPOs). Through their planning processes, each of the MPOs is required to develop plans to meet their regional GHG reduction target. This would be accomplished through either the financially constrained "sustainable communities strategy" as part of their regional transportation plan (RTP) or an unconstrained alternative planning strategy. SB-375 also provides streamlining of California Environmental Quality Act (CEQA) requirements for specific residential and mixed-use developments.

#### ***Caltrans - Climate Action Plan***

Greenhouse gas (GHG) emissions and the related subject of global climate change are emerging as critical issues for the transportation community. Caltrans recognizes the significance of cleaner, more energy efficient transportation. On June 1, 2005 the State established climate change emissions reduction targets for California that lead to development of the Climate Action Program. This program highlights reducing congestion and improving efficiency of transportation systems through smart land use, operational improvements, and Intelligent Transportation Systems (objectives of the State's Strategic Growth Plan). The Climate Action Plan approach also includes institutionalizing energy efficiency and GHG emission reduction measures and technology into planning, project development, operations, and maintenance of transportation facilities, fleets, buildings, and equipment.

#### ***Corridor Mobility Improvement Account (CMIA)***

The California Transportation Commission adopted the \$4.5 billion Corridor Mobility Improvement Account (CMIA) program, the first commitment of funds from the \$19.9 billion transportation infrastructure bond approved by California voters as Proposition 1B in November 2006. The statewide CMIA program includes nearly \$1.3 billion in Bay Area projects, plus an additional commitment of \$405 million through the State Highway Operations and Protection Program (SHOPP) for replacement of Doyle Drive in San Francisco. This brings the total amount programmed for Bay Area transportation projects to roughly \$1.7 billion.

Source: [www.mtc.ca.gov](http://www.mtc.ca.gov)

#### ***Corridor System Management Plans (CSMP)***

In 2007, the California Transportation Commission adopted a resolution stating "...the Commission expects Caltrans and regional agencies to preserve the mobility gains of urban corridor capacity improvements over time that will be described in Corridor System Management Plans (CSMPs)." A CSMP is a transportation planning document that will study the facility based on comprehensive performance assessments and evaluations. The strategies are phased and include both operational and more traditional long-range capital expansion strategies. They take into account transit usage, projections, and interactions with arterial network, and connection to State

Highways. Each CSMP presents an analysis of existing and future traffic conditions and proposes traffic management strategies and capital improvements to maintain and enhance mobility within each corridor.

#### ***Trade Corridors Improvement Fund (TCIF)***

In November 2006, voters approved Proposition 1B, a roughly \$20 billion Transportation Bond. It established the Trade Corridors Improvement Fund that included a total of \$3.1 billion for goods movement-related programs, of which \$2 billion was set aside for infrastructure improvements statewide.

#### ***Freeway Performance Initiative (FPI)***

This is the Metropolitan Transportation Commission's effort to improve the operations, safety and management of the Bay Area's freeway network by deploying system management strategies, completing the HOV lane system, addressing regional freight issues, and closing key freeway infrastructure gaps.

## **REGIONAL**

#### ***Regional Transportation Plan (RTP) "Plan Bay Area"***

Plan Bay Area is a long-range integrated transportation and land-use/housing strategy through 2040 for the San Francisco Bay Area. On July 18, 2013, the Plan was jointly approved by the Association of Bay Area Governments (ABAG) Executive Board and by the Metropolitan Transportation Commission (MTC). The Plan includes the region's Sustainable Communities Strategy and the 2040 Regional Transportation Plan and represents the next iteration of a planning process that has been in place for decades. Plan Bay Area marks the nine-county region's first long-range plan to meet the requirements of California's landmark 2008 Senate Bill 375, which calls on each of the state's 18 metropolitan areas to develop a Sustainable Communities Strategy to accommodate future population growth and reduce greenhouse gas emissions from cars and light trucks. Working in collaboration with cities and counties, the Plan advances initiatives to expand housing and transportation choices, create healthier communities, and build a stronger regional economy.

#### ***Regional Transportation Improvement Program (RTIP)***

The Regional Transportation Improvement Program is a sub-element of the State Transportation Improvement Program (STIP). The Metropolitan Transportation Commission is responsible for developing regional project priorities for the RTIP for the nine counties of the Bay Area. The biennial RTIP is then submitted to the California Transportation Commission for inclusion in the STIP.

#### ***Regional Blueprint Planning Program***

The Regional Blueprint Planning Program supports the smart growth element of the Strategic Growth Plan by promoting smart land use choices at the regional and local levels. The Regional Blueprint Planning Program was a grant program that supported Metropolitan Planning Organizations (MPOs) and Regional Transportation Planning Agencies (RTPAs) to conduct comprehensive scenario planning. Using consensus-building and a broad-based visioning approach its goal was to envision future land use patterns and their potential impacts on a region's transportation system, housing supply, jobs/housing balance, resource management and other protections. The Blueprint planning effort in the San Francisco Bay Area is the Focus our Vision (FOCUS) program, which is led by the Association of Bay Area Governments (ABAG) and the Metropolitan Transportation Commission (MTC) with support from the Bay Area Air Quality Management District (BAAQMD) the Bay Conservation and Development Commission (BCDC), and Caltrans. These agencies and local governments participated in the Regional Blueprint Planning Program since the program's inception in 2005, receiving grants for all four years, and now carry on regional blueprint goals through the FOCUS program.

**APPENDIX C  
FACTSHEETS**

Factsheets used during the initial SR 87 outreach meeting:

**Transportation Concept Report (TCR)  
Discussion Factsheet  
State Route 87 Santa Clara County**



**Introduction**

State Route 87 (SR 87), known as the “Guadalupe Parkway”, traverses north through the City of San Jose and follows the Guadalupe River through most of its 9.2 mile length. The route is a six-lane freeway that begins at SR 85 and continues under the I-280/I-680 interchange. After the I-280 junction, the route crosses above SR 82 and I-880. The route continues past downtown and the Norman Y. Mineta San Jose International Airport, terminating at US 101. HOV lanes operate southbound and northbound the entire length. Two tracks of the VTA light rail system run in the right-of-way for SR 87 south of I-280. SR 87 serves local, interregional, business, and recreational traffic.

**What is a Transportation Concept Report (TCR)?**

A Caltrans System Planning document that:

- Evaluates current and projected conditions along a route.
- Provides a long range 25-year concept or vision for a route.
- Communicates that vision for future development of a route.

The TCR also informs:

- Caltrans engagement in the RTP and VTP process.
- Early communication with local agencies and CMAs concerning specific issues and significance of a route.
- Early stages of project development process.

**TCR Considerations and Discussion Topics**

- System Characteristics
- Community Characteristics
- Land Use
- Bicycle Facility
- Pedestrian Facility
- Transit Facility
- Freight
- Environmental Considerations
- Corridor Performance
- Airport

**Proposed Route Segmentation**

Segment	Begin PM	End PM
1	0.00/SR 85	5.15/I-280
2	5.15/I-280	9.22/US 101

**Stakeholder Outreach**

July 2013 ..... TCR Briefing  
 Beginning 2014..... Draft External Review  
 Early 2014.....Final TCR Delivery

**Next Steps**

- Corridor Concept Development

**Caltrans District 4 is responsible for preparing a TCR for each State Highway within the Bay Area Region.**

*continued on the back*

# Transportation Concept Report (TCR) Discussion Factsheet

## State Route 87 Santa Clara County

**Proposed Segment 1: Jct. 85 to Jct. 280**  
Traffic Volumes AADT 2011:

84,000 – 157,000

**Proposed Segment 2: Jct. 280 to US 101**  
Traffic Volumes AADT 2011:

68,000 – 104,000

**Locations experiencing LOS F\***

Capital Expws to I-280 AM / NB

Julian to US-101 AM / NB  
\*VTA 2012 Monitoring and Conformance Report

**Planned Transit Project:**

- Construct Rapid Transit System BART: Berryessa to Santa Clara St.

**STIP/SHOPP Project:**

- Highway Planting: Julian St. to Taylor Street. (STIP) Finished Fall 2014
- Improve Traffic Operations (TOS). (STIP) summer 2014 – 2016

**Planned Projects:**

- Express Lanes: Rte 85 to US 101 (VTP2040)
- SR87/Capitol Exp/Narvaez Ave I/C Improvements (VTP2040)
- Widen offramp at Trimble Road on Route 87 (PlanBayArea)



For questions and continued discussion regarding the development of the SCL 87 TCR, please contact:

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## APPENDIX D RESOURCES

City of San Jose, Diridon Station Area Plan

<http://www.sanjoseca.gov/?nid=1743>

City of San Jose, Highway 87 Bikeway

<http://sanjoseca.gov/DocumentCenter/View/874>

VTA, BART extension

<http://www.vta.org/bart/index.html>

General Plan San Jose

<http://www.sanjoseca.gov/index.aspx?nid=3962>

Regional Housing Need Plan for the San Francisco Bay Area: 2014-2022

<http://www.sanjoseca.gov/DocumentCenter/View/19628>

San Jose State University

[http://www.sjsu.edu/about\\_sjsu/](http://www.sjsu.edu/about_sjsu/)

San Jose downtown

<http://sjdowntown.com/>

Social and Health Inequities in Santa Clara County

[http://www.sccgov.org/sites/sccphd/en-us/Partners/Data/Documents/SHIP%20Poster\\_final.pdf](http://www.sccgov.org/sites/sccphd/en-us/Partners/Data/Documents/SHIP%20Poster_final.pdf)

Caltrain data

<http://www.caltrain.com/Assets/Stats+and+Reports/Ridership/2013+Annual+Ridership+Counts.pdf>

VTA Bus and Light Rail data

[http://www.vta.org/brochures\\_publications/pdf/atasp.pdf](http://www.vta.org/brochures_publications/pdf/atasp.pdf)

<http://www.vta.org/sfc/servlet.shepherd/version/download/068A0000001FZVM>

Santa Clara Valley Water District

<http://www.scvwd.dst.ca.us/>

Caltrain Electrification

<http://www.caltrain.com/projectsplans/CaltrainModernization.html>

BAAQMD

[http://hank.baaqmd.gov/pln/air\\_quality/ambient\\_air\\_quality.htm](http://hank.baaqmd.gov/pln/air_quality/ambient_air_quality.htm)

Guadalupe Watershed

<http://www.valleywater.org/services/guadalupe.aspx>

Guadalupe Environment

<http://www.icfi.com/insights/projects/environment/guadalupe-river-flood-control-projects>

<http://www.scvwd.dst.ca.us/Services/HealthyCreeksandEcoSystems.aspx>

Almaden SR 85 Plan

<http://www.sccgov.org/rda/expressways2/almaden.pdf>

US Geological Survey site on liquefaction

[http://pubs.usgs.gov/of/2008/1270/of2008-1270\\_San\\_Andreas\\_scenario.pdf](http://pubs.usgs.gov/of/2008/1270/of2008-1270_San_Andreas_scenario.pdf)

California State Rail Plan

[http://californiastaterailplan.dot.ca.gov/docs/Final\\_Copy\\_2013\\_CSRP.pdf](http://californiastaterailplan.dot.ca.gov/docs/Final_Copy_2013_CSRP.pdf)

Pedestrian Map Almaden Expressway

<http://www.sccgov.org/rda/expressways2/pedalmaden.htm>

San Jose Enterprise Zone

<http://www.kbkg.com/ez/san-jose-enterprise-zone-2012>

California Replaces Enterprise Zones

<http://www.kbkg.com/ez/new-legislation-replaces-california-enterprise-zones>

Guadalupe River Floodplain

<http://www.grpg.org/flood-control>

Cultural Resources along SR 87

<https://www.sanjoseca.gov/DocumentCenter/View/2191>

Communications Hill Specific Plan Area Development Policy

<http://www.sanjoseca.gov/DocumentCenter/View/31695>