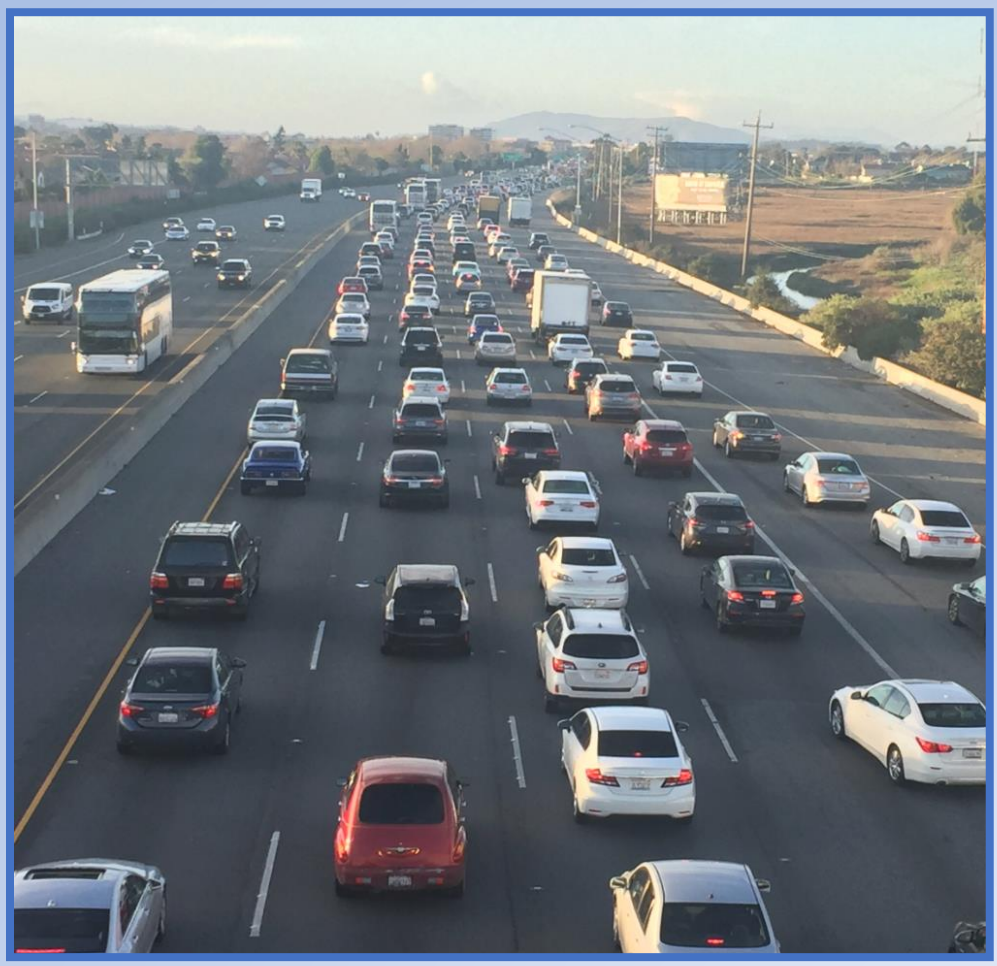
US 101 SOUTH

Comprehensive Multimodal Corridor Plan



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US 101

US 101 SOUTH
Comprehensive Multimodal Corridor Plan

APPROVED BY:

7/3/2020

TONY TAVARES
District 4 Director
California Department of Transportation

Date

I accept this Comprehensive Multimodal Corridor Plan for the US 101 South Corridor as a document informing the regional transportation planning process.

ACCEPTED BY:

7/14/2020

THERESE W. McMILLAN — Date
Executive Director
Metropolitan Transportation Commission

7/8/20

NURIA I. FERNANDEZ — Date
General Manager/CEO
Santa Clara Valley Transportation Authority

7-14-20

SANDY WONG — Date
Executive Director
City/County Association of Governments of San Mateo County

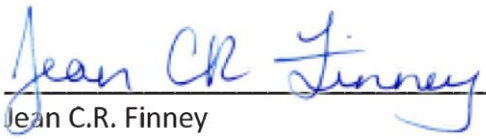
07/30/2020

TILLY CHANG — Date
Executive Director
San Francisco County Transportation Authority

7/7/2020

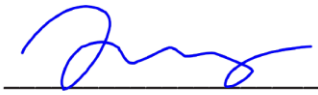
JIM HARTNETT — Date
Executive Director
San Mateo County Transportation Authority

Approval Recommended by:



Jean C.R. Finney
Deputy District Director
Division of Transportation Planning and Local Assistance

Stephen Yokoi, AICP
Office Chief
System and Regional Planning



Zhongping "John" Xu, AICP
Branch Chief
System Planning East Bay and Santa Clara County

Acknowledgments

Caltrans
Brian Johnson, Associate Transportation Planner
Zachary Chop, Associate Transportation Planner
Fredrick Schermer, Associate Transportation Planner

MTC
Therese Trivedi, Assistant Planning Director
Adam Noelting, Principal Planner/Analyst

VTA
Casey Emoto, Deputy Director, Mobility & Project Development
Marcella Rensi, Deputy Director, Programming & Grants
Amin Surani, Principal Transportation Planner
Eugene Maeda, Senior Transportation Planner

C/CAG
Sean Charpentier, Program Director
Susy Kalkin, Transportation Programs Specialist

SMCTA
Joe Hurley, Director, Transportation Authority Program

SamTrans and Caltrain
Peter Skinner, Manager, Grants and Fund Programming

SamTrans
Millie Tolleson, Principal Planner

SFCTA
Eric Cordoba, Deputy Director for Capital Projects
Mike Tan, Administrative Engineer

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Executive Summary

The US 101 South Comprehensive Multimodal Corridor Plan (CMCP) presents a holistic approach for managing congestion, improving safety and maximizing flow for all modes and incorporates measures to reduce air pollution and greenhouse gases. Key strategies include the addition of managed/express lanes to maximize the efficient use of the existing highway for motorists, the development of express bus services, rail and local transit improvements and improved bicycle/pedestrian facilities.

The CMCP was developed pursuant to the statutory mandate for Caltrans to conduct long-range corridor planning, as well as in response to the Road and Repair Accountability Act of 2017, also known as Senate Bill 1 (SB 1), that was passed in April 2017. Among the multiple programs established by SB 1 is the Solutions for Congested Corridors Program (SCCP). This program provides $250 million annually on a competitive basis to Caltrans and regional agencies for projects designed to achieve a balanced set of transportation, environmental, and community access improvements within highly- congested travel corridors throughout the State. Eligible projects should make specific performance improvements and must be included in a CMCP. The program also identifies the "Route 101 and Caltrain corridor connecting Silicon Valley with San Francisco" as an example of the kind of congested corridor intended for funding from the SCCP.

In response to the significant changes within the Corridor recently and the SCCP requirements, Caltrans in coordination with stakeholders along US 101 determined that the US 101 South Corridor is a priority route in the region, and that the CMCP should be developed to capture all the anticipated changes, identify multimodal needs and recommend improvement projects and strategies. The US 101 South CMCP corridor limits are from US 101 from the San Benito/Santa Clara County line to the end of the Central Freeway in San Francisco. It also includes Interstate 280 (I-280) from the US 101/I-280 Interchange to the end of I-280 in San Francisco. With input from the stakeholders, the CMCP includes eight corridor goals:

1. Provide a safe transportation system to all users within the Corridor
2. Reduce recurring freeway congestion and improve freeway efficiency in moving people
3. Improve trip time reliability within the Corridor
4. Support an accessible and inter-connected multimodal transportation system within the Corridor
5. Reduce pollutants and GHG emissions within the Corridor
6. Support economic prosperity
7. Efficiently manage transportation assets within the Corridor to protect existing and future investment
8. Efficient Land Use improving Job/Housing imbalance

The US 101 South Corridor is a major south-north connector between Silicon Valley in the South Bay and San Francisco, two Bay Area centers of great significance to the State's economy. The portion of the Corridor running through Santa Clara, San Mateo, and San Francisco Counties is home to some of the world's most innovative and fastest-growing companies that contribute economic strength to the State and national economies. Land uses along the Corridor include State/regional parks, agricultural lands, residential uses in urban and suburban communities, commercial uses in dense urban centers and office parks as well as industrial uses and a number of institutional uses and sports venues. The Corridor serves local, regional, interregional and even international traffic of people and movement of goods. US 101 is

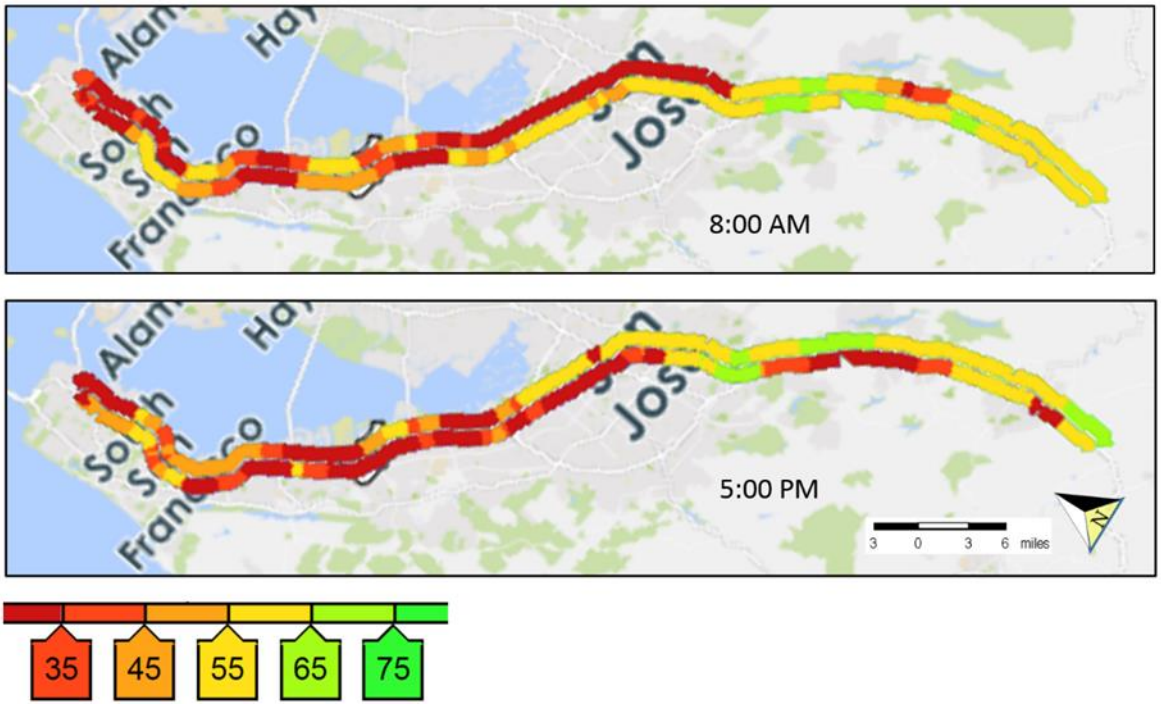
the main access route to the San Francisco International Airport and the Norman Y. Mineta San Jose International Airport.

In addition to demographics and a list of major trip generators along the Corridor, the US 101 South CMCP includes a place type analysis based on Caltrans Smart Mobility Framework and recommends appropriate transportation strategies for each place type within the Corridor. The CMCP also documents Priority Development Areas and communities of concern within the Corridor as identified in Plan Bay Area 2040 (2017), the San Francisco Bay Area's Regional Transportation Plan (RTP) and Sustainable Communities Strategy (SCS).

As a multimodal transportation corridor, the US 101 South Corridor serves the movement of people and goods with a variety of transportation modes. This CMCP describes public transit services, Park and Ride facilities, private commuter shuttle services, and bicycle and pedestrian facilities as critical transportation modes within the US 101 South Corridor. It identifies programmed, planned and in some cases proposed projects within the Corridor. In addition, it summarizes the Transportation Systems Management and Operations (TSMO) strategies and equipment that are currently deployed within the Corridor and examines the networks and major trip generators for freight movement.

US 101 South is among the most congested corridors in the Bay Area. According to the San Mateo County Economic Development Association (SAMCEDA), an estimated $5.4 billion in economic productivity is lost due to traffic congestion along the Corridor. **Figure ES-1** shows the congestion locations on US 101 for March 2016 (Tuesdays, Wednesdays and Thursdays). Eight locations within the US 101 South Corridor were listed in the Top 50 Congested Locations of 2017 as reported by Metropolitan Transportation Commission's (MTC) Vital Signs, and they are shown in **Table ES-1**.

Figure ES-1. *US 101 South Congestion March 2016*



Source: INRIX, accessed by Caltrans December 18, 2019

Table ES-1. *MTC Top 50 Congested Locations for US 101 South in 2017*

Rank	County	Direction	Daily Delay in hours	Congestion Duration	Location
1	San Francisco	US 101 NB and I-80 EB	14,660	12:20 PM–10:30 PM	Cesar Chavez to Treasure Island Tunnel
3	Santa Clara	SB	7,260	2:10 PM–8:25 PM	Fair Oaks Avenue to Oakland Road
13	San Mateo	NB	4,230	2:40 PM–7:55 PM	Whipple Avenue to East Hillsdale Boulevard
15	Santa Clara	NB	3,970	6:25 AM–11:00 AM	Story Road to North Fair Oaks Avenue
30	San Mateo	SB	1,590	7:00 AM–10:55 AM	Broadway/Airport Blvd to Hillsdale Blvd
31	Santa Clara	NB	1,590	6:25 AM–9:30 AM	Blossom Hill Rd/Silver Creek Vly Rd to Tully Rd
41	San Francisco	NB	1,340	6:50 AM–11:15 AM	Third Street to Cesar Chavez Street
46	San Mateo	SB	960	7:20 AM–10:35 AM	SR 84/Woodside Road to University Avenue
50	Santa Clara	NB	870	5:35 AM–8:25 AM	San Martin Avenue to East Dunne Avenue

Due to time and resource constraints, this CMCP utilizes a "hybrid" approach as described in the California Transportation Commission's (CTC) 2018 Comprehensive Multimodal Corridor Plan Guidelines. As such, the CMCP is primarily based on the US 101 South Comprehensive Corridor Plan (2018), but also integrates existing plans, studies, reports and project-specific information with limited new analysis. Some examples of the existing plans/reports being integrated include MTC's Plan Bay Area 2040, Caltrans District 4 Bike Plan, countywide transportation plans from the three counties along the Corridor, project-level documents for the managed lanes projects within the Corridor, as well as local development plans and studies.

The freeway performance analysis mainly focuses on bottleneck locations, queue length and changes in some of the network performance measures such as travel times, vehicle occupancy rate, person-throughput and vehicle miles traveled, as a result of implementing the three managed lanes projects listed above. The recommended strategies include highway and transit projects, active transportation projects and maintenance and operational projects. See Chapter 7 for short, medium and long-term highway and transit projects, bicycle and pedestrian projects and State Highway Operation and Safety Program (SHOPP) projects. Chapter 7 also includes a qualitative evaluation of short-term highway and transit projects, with respect to how they would contribute to the corridor goals.

This CMCP will help fulfill Caltrans statutory responsibility of identifying deficiencies within and proposing improvements to the US 101 South Corridor and serve the purpose of supporting funding applications for the SCCP.

The US 101 South CMCP was developed during the COVID-19 pandemic. Future travel patterns, mode preferences, and transportation needs may change as a result of modified behaviors directly linked to this pandemic.

Chapter 1: Introduction

1.1 Caltrans Policy Development

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 System Planning products that address integrated multimodal transportation system needs and help advance Caltrans Mission, Vision and Goals. Over the past several years, especially with the passage of county-level sales tax measures for transportation funding, Caltrans has worked closely with local agencies such as the Alameda County Transportation Commission (Alameda CTC) and the Metropolitan Transportation Commission (MTC) to conduct system planning for the SHS.

This Comprehensive Multimodal Corridor Plan (CMCP) was developed in alignment with the goals, objectives and performance targets outlined in Caltrans Strategic Management Plan 2015-2020.[1] It is consistent with recommendations from the System Planning to Programming (SP2P) study and the Planning for Operations (P4Ops) Strategic Work Plan, both developed in 2017 by Caltrans Headquarters to help redefine System Planning's roles and products. It also follows the corridor planning process described in Caltrans Corridor Planning Process Guide, adopted in 2020[2]

1.2 Senate Bill 1 and the Solutions for Congested Corridors Program[3]

The Road and Repair Accountability Act of 2017, also known as Senate Bill 1 (SB 1), provides the first significant, stable, and on-going increase in State-directed transportation funding in more than two decades. SB 1 presents a balance of new resources and reasonable reforms to ensure efficiency, accountability, and performance from each dollar invested to improve California's transportation system.

Among the multiple programs established by SB 1 is the Solutions for Congested Corridors Program (SCCP). This program provides $250 million annually on a competitive basis to Caltrans and regional agencies for projects designed to achieve a balanced set of transportation, environmental, and community access improvements within highly-congested travel corridors throughout the State. Eligible projects should make specific performance improvements and must be part of a Comprehensive Multimodal Corridor Plan (CMCP) designed to reduce congestion in highly-traveled corridors by providing more transportation choices for residents, commuters and visitors to the area while preserving the character of the local community and creating opportunities for neighborhood enhancements.

SCCP-eligible projects include improvements to State highways, local streets and roadways, public transit facilities, bicycle and pedestrian facilities, and restoration or preservation work that protects critical local habitats or open spaces. To temper increases in vehicle miles traveled (VMT), greenhouse gases (GHG)

[1] https://dot.ca.gov/-/media/dot-media/programs/sustainability/documents/caltrans-strategic-mgmt-plan-033015-a11y.pdf

[2] https://dot.ca.gov/programs/transportation-planning/multi-modal-system-planning/guidelines-procedures/corridor-planning-process-guide

[3] http://www.catc.ca.gov/programs/SB1.html

and air pollution, highway lane capacity-increasing projects funded by the program are limited to high-occupancy vehicle (HOV) lanes, managed lanes, and other non-general purpose lane improvements such as auxiliary lanes, truck-climbing lanes and dedicated bicycle lanes.

The California Transportation Commission (CTC) adopted the 2018 Comprehensive Multimodal Corridor Plan Guidelines on December 5, 2018. The Guidelines prescribe a corridor planning process that largely mirrors what is outlined in the draft Caltrans Corridor Planning Guidebook. They also include sections and topics a CMCP should consider as well as performance measures that are consistent with the 2018 Solutions for Congested Corridors Program Guidelines.

1.3 US 101 South Corridor Planning

The United States (US) 101 South Corridor (Corridor) is a major south-north link between Silicon Valley in the South Bay and San Francisco, two Bay Area centers of great significance to the State's economy. The Corridor serves local, regional, interregional and even international traffic of people and movement of goods. It is truly a multimodal corridor that accommodates all modes of transportation, from freeway mainline that carries vehicular traffic to bicycle and pedestrian facilities across and parallel to the freeway, and from existing commuter rail, rapid transit, light rail and bus services to the planned ferry service and to the future high-speed rail. Two major planning efforts were carried out during the last decade that covered either a significant portion of or the entire Corridor.

US 101 Peninsula/South Corridor System Management Plan

In 2010, Caltrans District 4 developed a Corridor System Management Plan (CSMP) for US 101 between US 101/State Route (SR) 85 Interchange in San Jose and the San Mateo/San Francisco County line.[4] CSMPs were Transportation Planning documents that examined the mobility of an urban freeway facility in a comprehensive manner based on a performance assessment. A wide range of projects were included to show how the improved mobility from previous investments could be preserved within this Corridor. However, there was generally a lack of emphasis on multimodal improvements in the CSMPs.

US 101 South Comprehensive Corridor Plan

in response to the SB 1 SCCP Cycle 1 requirements, Caltrans, in collaboration with stakeholders along the US 101 South Corridor, developed a Comprehensive Corridor Plan (CCP) in February 2018. The US 101 South CCP was an update to the 2010 CSMP, and the corridor limits were expanded to include US 101 from the San Benito/Santa Clara County line to the end of the Central Freeway in San Francisco. It also included Interstate 280 (I-280) from the US 101/I-280 Interchange to the end of I-280 in San Francisco. The CCP captured all the anticipated changes within the Corridor, identified multimodal needs and recommended improvement projects and strategies. It was also used to support the funding application to SCCP Cycle 1 for the San Mateo and Santa Clara US 101 Managed Lanes Project, which was subsequently awarded Program funding.

Since the development of the US 101 South CCP, several planning studies have been completed or initiated within the Corridor. These include, but are not limited to, San Francisco Country Transportation Authority's (SFCTA) San Francisco Freeway Performance Initiative/Freeway Corridor Management Study, Phase 2 (December 2018), San Mateo County Transit District's (SamTrans) US 101 Express Bus Feasibility

[4] http://d4web/tpa/SRP/files/csmp/US101S_CSMP_Fulldocument.pdf

Study (November 2018) and the US 101 Mobility Action Plan (currently underway). In addition, in Fall 2018, the San Mateo County Express Lanes Joint Powers Authority (JPA) initiated an Equity Study for the San Mateo Express Lane corridor that will be completed in the spring of 2021, and the City/County Association of Governments of San Mateo County (C/CAG) is in the process of updating the San Mateo County Comprehensive Bicycle and Pedestrian Plan, which will be completed in the fall of 2020. County Transportation Agencies along the Corridor also identified existing projects to be carried over and new projects to be added to the next Regional Transportation Plan (RTP).

With the adoption of the CTC 2018 Comprehensive Multimodal Corridor Plan Guidelines, Corridor stakeholders agreed that a CMCP should be developed for the Corridor that is based on the existing CCP but also meets the new CMCP requirements, reflects new planning studies, incorporates new projects, and continues to support future SCCP funding applications.

1.4 Document Structure

The US 101 South CMCP includes the following chapters:

- Chapter 1 – Introduction
- Chapter 2 – Corridor Goals, Objectives and Performance Metrics
- Chapter 3 – Corridor Overview
- Chapter 4 – Multimodal Facilities
- Chapter 5 – Freeway Performance
- Chapter 6 – Public Outreach
- Chapter 7 – Recommended Strategies

Long-Term Corridor Planning

It is acknowledged among the stakeholders that one of the main goals for this CMCP is to document funding needs consistent with SCCP for shovel-ready projects in the Corridor. Therefore, this CMCP is focused on what is attainable and is primarily based on information, data, studies and reports that are already available. It addresses the longer-term planning needs of the Corridor and will be revised and updated as needed.

The US 101 South CMCP was developed during the COVID-19 pandemic. Future travel patterns, mode preferences, and transportation needs may change as a result of modified behaviors directly linked to this pandemic.

1.5 Stakeholders

Current CMCP development and its future updates are dependent upon the close participation and cooperation of all major stakeholders along the Corridor. A Corridor Development Team (CDT) was formed and met regularly to collaborate on the document development, provide strategic guidance at key decision points and ensure the on-time delivery of the US 101 South CMCP. The CDT included representatives from the following agencies:

- Caltrans
- Metropolitan Transportation Commission (MTC)
- City/County Association of Governments of San Mateo County (C/CAG)
- San Francisco County Transportation Authority (SFCTA)
- San Mateo County Transportation Authority (SMCTA)
- San Mateo County Transit District (SamTrans)
- Santa Clara Valley Transportation Authority (VTA)
- Peninsula Corridor Joint Powers Board (Caltrain)

Chapter 2: Corridor Goals, Objectives and Performance Measures

The goals, objectives and performance measures for the US 101 South CMCP were developed with the input from the Corridor Development Team and represent a consensus that was reached through a collaborative process. The San Mateo County Economic Development Association (SAMCEDA) also provided performance metrics and statistics that helped gauge the impacts of transportation system performance on economic productivity, job creation and retention. Information from a variety of sources helped inform the development of this chapter. The most notable sources include:

- The Caltrans Strategic Management Plan 2015-2020
- Final Guidelines for the 2018 Solutions for Congested Corridors Program, California Transportation Commission (CTC), December 2017
- The San Mateo US 101 Managed Lanes Project Study Report – Project Development Support (PSR-PDS), May 2015
- US 101 Express Lanes Project Report, Valley Transportation Authority, March 2015
- Final Report for the San Francisco Freeway Corridor Management Study Phase 2, 2018
- Plan Bay Area 2040 Final Performance Assessment Report, July 2017
- Final 2018 Comprehensive Multimodal Corridor Plan Guidelines, December 2018

Table 2-1 lists the corridor goals, objectives and performance measures. While existing sources contain data on a number of measures (including the number of collisions on freeways, vehicle-hours of delay [VHD], person throughput, occupancy rate, transit ridership, VMT, and traffic operations system [TOS] element inventory), there is not sufficient data to report on every quantifiable performance measure due to time and resource constraints. This comprehensive list of metrics represents targets and measurements that can be carried into CMCP updates in the future, helping illustrate how the corridor performance changes over time. While equity is not specifically listed as a corridor goal, every effort should be made to ensure that the concerns of the disadvantaged communities are considered, and no segment of the population is disproportionately affected when advancing a transportation strategy or project.

Table 2-1. *US 101 South CMCP Goals, Objectives and Performance Measures*

Goals	Objectives	Performance Measures
1. Provide a safe transportation system to all users within the Corridor	1.1 Reduce the number of incidents within the Corridor	• Number of collisions on freeways • Number of bicycle collisions in the Corridor • Number of pedestrian collisions in the Corridor
2. Reduce recurring freeway congestion and improve freeway efficiency in moving people	2.1 Reduce recurring delays on US 101	• Vehicle-hours of delay (VHD) • Person-hours of delay (PHD) • Average delay per vehicle • Average speed • Person-throughput • Vehicle-throughput
	2.2 Improve productivity of US 101	• Person-throughput • Vehicle-throughput
	2.3 Increase vehicle occupancy rate	• Vehicle occupancy rate • Percentage of users in HOV/Express Lanes (e.g. Percentage of single occupancy vehicle (SOVs) using Express Lanes, Percentage of 3+ carpoolers, Percentage of buses, Percentage of motorcyclists) • Travel time savings for managed lane vehicles
	2.4 Promote alternative modes of travel and reduce reliance on single occupancy vehicles	• Mode split • Transit ridership • Bike ridership • 2+ carpoolers
3. Improve trip reliability within the Corridor	3.1 Improve freeway travel time reliability	• Buffer time index (BTI)* • Planning time Index (PTI)* • Travel time during peak periods
	3.2 Reduce non-recurring delays on US 101	• Average number of incidents by type • Major incident clearing time

	3.3 Improve transit on-time performance	• Percentage of transit trips on-time
		• Number of transit operations access improvements
		  ▪ Queue-jump lanes
		  ▪ Transit-only lanes
		  ▪ Signal prioritization/timing
		  ▪ All-door boarding
		  ▪ Pre-boarding payment stations
		• Estimated travel time savings compared with current on-time performance

Goals	Objectives	Performance Measures
4. Support an accessible and inter-connected multimodal transportation system within the Corridor	4.1 Improved access and connections to existing or future multimodal transportation hubs	• Number of transit operations access improvements compared to number of existing transit operations access improvements • Estimated travel time savings compared with current on-time performance
	4.2 Reduce gaps in the bicycle network	• Percent of bicycle facility lane miles as a share of total lane miles by facility classification
	4.3 Reduce gaps in the pedestrian network	• Number of pedestrian walkway miles, including bike/pedestrian overcrossings
5. Reduce pollutants and GHG emissions within the Corridor	5.1 Reduce Vehicle-Miles Traveled (VMT)	• Total VMT • VMT per capita • Percentage of zero-emission vehicles
	5.2 Reduce criteria pollutants	• Emissions of criteria pollutants, including carbon monoxide (CO), lead, nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM), and sulfur dioxide (SO_2)
	5.3 Reduce greenhouse gas emissions	• Emissions of greenhouse gases
6. Support economic prosperity	6.1 Increase freight efficiency	• Per-capita delay on freight network
	6.2 Reduce economic productivity lost due to congestion	• Lost economic productivity due to freeway congestion
7. Efficiently manage transportation assets within the Corridor to protect existing and future investment	7.1 Increase coverage of TOS elements, such as Ramp Metering, Vehicle Detection Sites, Closed-Circuit Television Cameras, and Changeable Message Signs.	• Number of TOS elements installed
	7.2 Ensure good TOS functionality	• Decrease TOS elements downtime percentage • Percentage of TOS elements inspected or maintained within the last 3 years
	7.3 Fiber Communication	• Ensure good repair of communications network connecting TOS elements and traffic management centers. • Ensure detailed mapping and inventory of fiber infrastructure as built to prevent construction related disruptions.

Goals	Objectives	Performance Measures
8. Support efficient Land Use	8.1 Promote multimodal travel that supports efficient land use	• Increase in non-single-occupant-vehicle mode share • Increase in non-vehicle-mode share (e.g. walking, cycling, public transit use, rail use)

* Buffer time index (BTI) is defined as the amount of extra "buffer" time needed to be on-time 95 percent of the time
Planner time index (PTI) is defined as the total amount of time needed to be on-time 95 percent of the time

Chapter 3: Corridor Overview

3.1 Corridor Limits

The study area for the US 101 South Comprehensive Multimodal Corridor Plan is an approximately 90-mile segment of the larger US 101 that traverses the states of California, Oregon, and Washington. For the purpose of this CMCP, the US 101 South Corridor is defined as starting from the San Benito (SBT)/Santa Clara County (SCL) line, continuing through the Counties of Santa Clara, San Mateo (SM) and San Francisco (SF), and ending at the Central Freeway (US 101) at the intersection of US 101/Market Street/Octavia Boulevard. The CMCP also includes a segment of I-280 between US 101 and King Street in San Francisco. The segment of I-280 is included because this segment serves the same travel markets of people and goods and is affected by similar transportation needs and issues as US 101. Within the corridor limits, US 101 intersects with multiple State highways, including SR 25, SR 152, SR 85, I-280, I-680, I-880, SR 87, SR 237, SR 109, SR 114, SR 84, SR 92, I-380 and I-80.

The Corridor also includes major parallel arterials such as Old Monterey Road/Monterey Highway in south and central Santa Clara County, Central Expressway in north Santa Clara County, Bayshore Boulevard in northern San Mateo County and San Francisco, and most importantly, El Camino Real (SR 82) that runs parallel within close proximity to US 101 between San Jose and South San Francisco. US 101 was originally built to serve increased development and travel demand between San Francisco and Santa Clara Counties, once served primarily by SR 82. Due to time and resource constraints, vehicular traffic analysis within this CMCP will be limited to the freeway facilities.

Worth noting is the on-going effort called Grand Boulevard Initiative (GBI) for SR 82, a collaboration of 19 cities within Santa Clara and San Mateo counties as well as regional agencies. The goal of GBI is to ensure that El Camino Real achieves its full potential as a place for residents to work, live, shop and play, by creating links between communities that promote walking and transit and promoting an improved and meaningful quality of life.

The US 101 South Corridor is a multimodal corridor. Various transit services are operated by several transit agencies and bicycling and walking are all important modal options within the Corridor, providing alternatives to vehicular travel. The transit section includes existing services and planned improvements both on and parallel to the freeways. For bicycle and pedestrian travel, the discussion focuses on freeway crossings.

For the purposes of this CMCP, the Corridor has been divided into seven segments, as shown below in **Table 3-1** and **Figure 3-1**. Route segmentation is primarily based on political boundaries, lane configuration and planned and programmed projects within the Corridor.

Table 3-1. *US 101 South CMCP Segments*

Segment	Location Description	County Route Beg. PM	County Route End PM	Configuration
1	SBT/SCL Co line – East Dunne Avenue in Morgan Hill	SCL 101 0.0	SCL 101 R16.0	4 – 6 lanes
2	East Dunne Avenue in Morgan Hill – SCL/SM Co Line	SCL 101 R16.00	SCL 101 52.55	6 – 10 lanes (0 – 4 HOV lanes)
3*	SCL/SM Co Line – Whipple Avenue in Redwood City	SM 101 0.0	SM 101 6.62	8 lanes (2 HOV lanes)
4*	Whipple Avenue in Redwood City – I-380	SM 101 6.62	SM 101 R20.72	8 lanes (2 HOV lanes))
5	I-380 – SM/SF Co Line	SM 101 R20.72	SM 101 26.11	8 – 10 lanes
6	SM/SF Co Line – end of Central Freeway at Market Street/Octavia Boulevard	SF 101 0.0	SF 101 M5.45	6 – 8 lanes
7	On I-280, US 101 – King Street in San Francisco	SF 280 R4.34	SF 280 T7.54	4 – 6 lanes

Segment 1 of the US 101 South Corridor is a four to six-lane expressway/freeway that begins at the San Benito/Santa Clara County border and ends at East Dunne Avenue in Morgan Hill. This portion of US 101 traverses both Gilroy and a portion of Morgan Hill.

Segment 2 is a six to ten-lane freeway, with one to two High-Occupancy Vehicle (HOV) lanes in each direction. This segment begins at East Dunne Avenue and ends at the Santa Clara/San Mateo County border at the San Francisquito Creek near Palo Alto. This portion of US 101 traverses the cities of Morgan Hill, San Jose, Santa Clara, Sunnyvale, Mountain View and Palo Alto.

Segment 3 is an eight-lane freeway with one HOV lane in each direction, traversing the cities of East Palo Alto, Menlo Park and Redwood City.

Segment 4 is an eight to ten-lane freeway that begins at Whipple Avenue and ends at the US 101/I-380 Interchange. Segment 4 traverses the cities of Redwood City, San Carlos, Belmont, San Mateo, Burlingame, Millbrae and South San Francisco.[5]

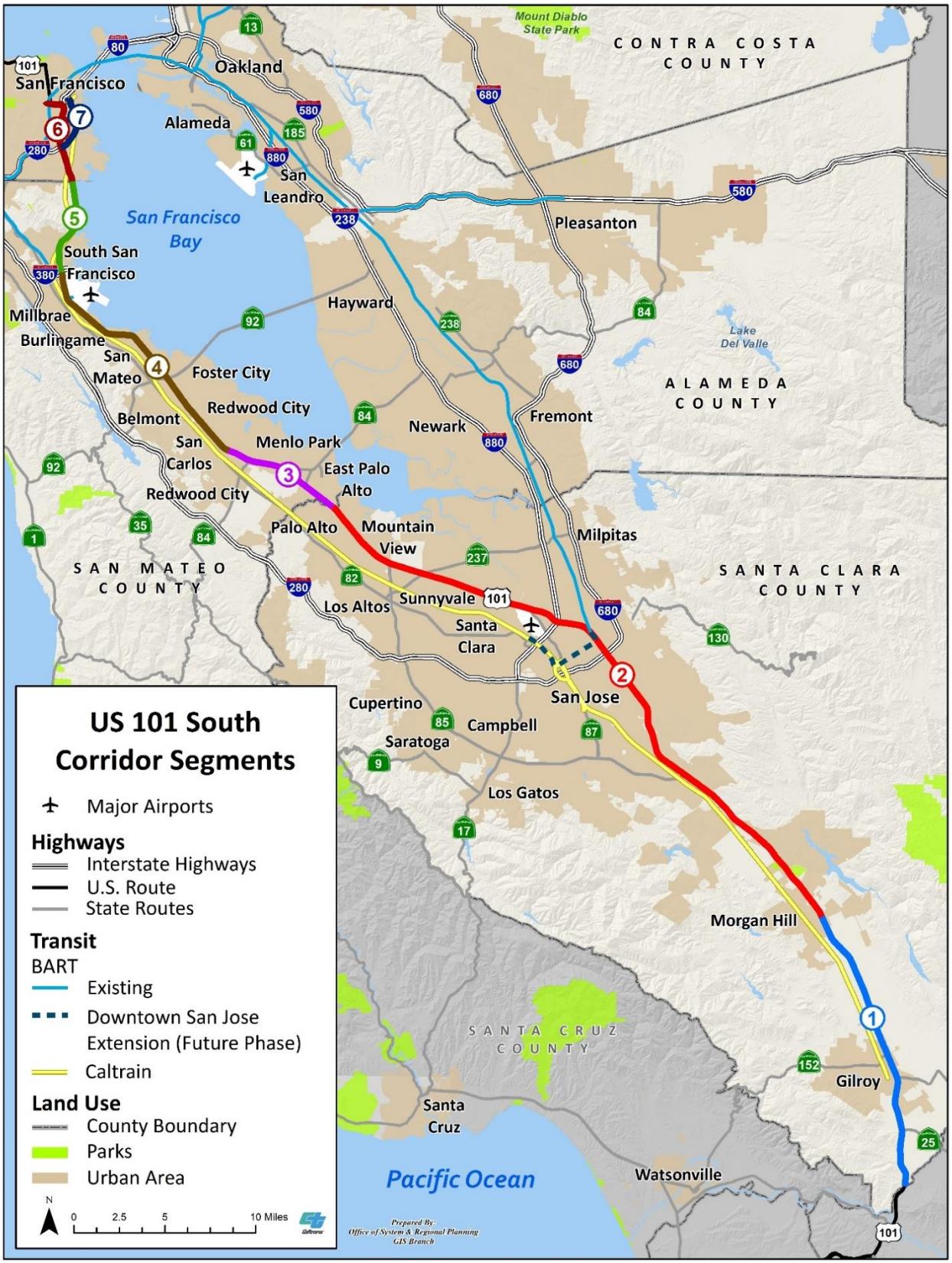
Segment 5 is an eight to ten-lane freeway that begins at the US 101/I-380 Interchange and terminates at the San Mateo/San Francisco County border at Alana Way. This segment traverses the cities of South San Francisco and Brisbane.

Segment 6 is a four to ten-lane freeway located entirely within the City and County of San Francisco. Starting at the County border, it traverses a number of neighborhoods in San Francisco before terminating at the intersections of Market Street and Octavia Boulevard, and at Mission Street and South Van Ness Avenue.

Segment 7 is on I-280. It is a four to six-lane freeway that begins at the northern junction of US 101 and I-280 and terminates at the end of I-280 in San Francisco.

[5] The Silicon Valley Express Lanes Program Phase 3 and the San Mateo County Express Lanes Project that are both currently underway will construct Express Lanes between SR 237 and I-380 (a portion of Segment 2 as well as Segments 3 and 4).

Figure 3-1. *Corridor Segmentation US 101 South*



Source: Caltrans, District 4, GIS and Technical Support Branch, 2017

3.2 Route Significance

The US 101 South Corridor is primarily urban in character except for the portion between the San Benito/Santa Clara County line and San Jose in southern Santa Clara County. It is a major south-north connector between the Silicon Valley in the South Bay and San Francisco, two of the Bay Area's most significant economic centers. The US 101 South Corridor running through Santa Clara, San Mateo, and San Francisco Counties is home to some of the world's most innovative and fastest-growing companies that contribute economic strength to the State and national economies. Businesses along the Corridor account for 14 percent of California's Gross Domestic Product, twenty percent of the State's tax revenue, 1.6 million jobs, and 54 percent of the patents in California.[6]

The Corridor serves local, regional, interregional and even international traffic of people and goods. US 101 is the main access route to the San Francisco International Airport (SFO) and the Norman Y. Mineta San Jose International Airport (SJC). It links with the East Bay across the San Francisco Bay via the Dumbarton Bridge (SR 84), the San Mateo-Hayward Bridge (SR 92), and the San Francisco-Oakland Bay Bridge (I-80). The Corridor also serves as an important freight corridor for the movement of agricultural products from the Central Valley and provides access to the Ports of San Francisco and Redwood City. Unfortunately, this corridor is also home to some of the California's worst traffic congestion. Along the Corridor, an estimated $5.4 billion in economic productivity is lost due to traffic congestion, and the average delay per person has reached 67 hours per year.[7]

3.3 Route Designations

Within the US 101 South Corridor, the six segments of US 101 and the one segment of I-280 are part of the California Freeway and Expressway System. They are part of the National Highway System (NHS) and the Strategic Highway Network (STRAHNET). US 101 is functionally classified as a freeway and expressway, while I-280 is classified as an Interstate highway.

US 101 has been identified as one of the 93 statutory Interregional Road System (IRRS) routes, established in 1989 by the Blueprint Legislation (a ten-year transportation funding package created by AB 471, State Bill 300, and AB 973). The 2015 Interregional Transportation Strategic Plan (ITSP) identifies eleven Strategic Interregional Corridors statewide. US 101 is part of two Strategic Interregional Corridors: the San Jose/San Francisco Bay Area – North Coast Corridor, and the Central Coast – San Jose/San Francisco Bay Area Corridor. Within these Strategic Interregional Corridors, US 101 is identified as a Priority Interregional Highway that is critical in supporting interregional transportation and is expected to be the focus of Interregional Transportation Improvement Program (ITIP) investment in the future. I-280 is not an IRRS route and therefore is not part of the Strategic Interregional Corridors. Caltrans is currently updating the ITSP, to be approved in 2021.

US 101 serves as one of the primary south-north freight routes for the San Francisco Bay Area, providing direct access to other Bay Area goods movement corridors via SR 152, I-880 and I-80. As part of the NHS and a designated Surface Transportation Assistance Act (STAA) route,[8] large trucks are allowed to operate on US 101. The California Freight Mobility Plan defines US 101 as a multimodal freight route, connecting

[6] Information provided by San Mateo Economic Development Association (SAMCEDA), November of 2017

[7] Information provided by San Mateo Economic Development Association (SAMCEDA), November of 2017

[8] The Surface Transportation Assistance Act of 1982 allows large trucks, referred to as STAA trucks, to operate on routes that are part of the National Network. The Federal Highway Administration (FHWA) provides standards for STAA trucks based on the Code of Federal Regulations Title 23 Part 658.

several maritime ports and airport facilities, and paralleling rail lines.[9] The Corridor's freight facilities are described in Chapter 5. **Table 3-2** lists route designations for the US 101 Corridor, including I-280 in San Francisco.

Table 3-2. *US 101 South Route Designations*

	US 101 (Segments 1-6)	I-280 (Segment 7)
California Freeway and Expressway System[10]	Yes	Yes
National Highway System	Non-Interstate STRAHNET Route	Interstate Freeway
Strategic Highway Network	Non-Interstate STRAHNET Route	Interstate STRAHNET Route
Scenic Highway[11]	No	Eligible
Strategic Interregional Corridor	San Jose/SF Bay Area – North Coast San Jose/SF Bay Area – Central Valley – Los Angeles	N/A
Federal Functional Classification	Other Freeway or Expressway	Interstate
Truck Designation[12]	National Network (STAA)	National Network (STAA)
Metropolitan Planning Organization	Metropolitan Transportation Commission (MTC)	MTC
Congestion Management Agency/ County Transportation Agency	Santa Clara Valley Transportation Authority (VTA), City/County Association of Governments of San Mateo County (C/CAG), San Mateo County Transportation Authority (SMCTA) and San Francisco County Transportation Authority (SFCTA)	SFCTA
Air District	Bay Area Air Quality Management District (BAAQMD)	BAAQMD
Native American Tribes	Ohlone	n/a
Terrain	Rolling and flat	Flat
Land Use	Urbanized in San Francisco and San Mateo counties, and urban and rural in Santa Clara County.	Urbanized

3.4 Demographics

The combined population of the counties of Santa Clara, San Mateo, and San Francisco totals nearly 3.5 million people, roughly half of the population of the entire San Francisco Bay Area. **Table 3-3** shows demographics of the counties of Santa Clara, San Mateo and San Francisco.

[9] Caltrans California Freight Mobility Plan (2016)

[10] California Street and Highways Code, Article 2. The California Freeway and Expressway System https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=SHC&division=1.&title=&part=&chapter=2.&article=2., Accessed Oct of 2017

[11] http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/index.htm, accessed Oct of 2017

[12] Caltrans District 4 Truck Network Map, http://www.dot.ca.gov/trafficops/trucks/truck-network-map.html

Santa Clara County

Santa Clara County has the highest population – over one million more than San Francisco County – and the lowest population density among the three counties. The County has the highest median household income compared to the other two counties and a high percentage of the population that commutes by single-occupant vehicle to work. Santa Clara County has a high percentage of individuals (more than fifty percent) whose first language is not English, resulting in an increased need for a multilingual approach when conducting public outreach during project development.

San Mateo County

San Mateo County has the smallest population of the three counties along the Corridor. It has a slightly higher population density than Santa Clara County and a relatively lower percentage of single-occupancy vehicle (SOV) commuters.

San Francisco County

San Francisco County has the highest population density of the three counties along the US 101 South Corridor. In proportion to the County's size, it has the lowest percentage of commuters who drive alone to work. The County also has the lowest median household income of the three, which coupled with population density, low car ownership rate, and low single-occupancy vehicle commuters, supports transit and Active Transportation investment in the Corridor.

Table 3-3. *Demographic Data of US 101 South Corridor*

	San Francisco County	San Mateo County	Santa Clara County
Total Population (2017)	864,263	763,450	1,911,226
Hispanic or Latino (2017)	132,232 (15.3 %)	190,009 (24.9 %)	498,829 (26.1 %)
White Alone (2017)	352,619 (40.8 %)	304,616 (39.9 %)	623,060 (32.6 %)
Black or African American Alone (2017)	45,805 (5.3 %)	18,323 (2.4 %)	47,780 (2.5 %)
Asian Alone (2017)	295,577 (34.2 %)	210,712 (27.6 %)	670,840 (35.1 %)
*Other (2017)	38,637 (4.6 %)	39,729 (5.3 %)	72,731 (3.9 %)
English Only (2017)	56.2%	53.8%	47.6%
Population Density (people/square mile) (2017)	18,459.27	1,026.27	1,465.66
Number of Households	358,772	261,726	630,451
Average Household Size (Owner-Occupied) (2017)	2.74	2.92	3.05
Average Household Size (Renter-Occupied) (2017)	2.12	2.82	2.88
Renter-Occupied Housing Units (2017)	224,960	105,396	271,724
Owner-Occupied Housing Units (2017)	133,812	156,400	358,726
Median Household Income (2017)	$96,265	$105,667	$106,761
Drive Alone to Work (2017)	34.3%	68.7%	75.1%
Mean Travel Time to Work (minutes)	32.8	28.2	28.0

Source: Data compiled from the American Community Survey (2017), and U.S. Census Bureau. Accessed August 2019.

* Other includes: American Indian and Alaska Native Alone, Native Hawaiian and Other Pacific Islander Alone, Some Other Race Alone, and Two or More Races.

3.5 Commute Patterns and Trip Generators

Commute Choice by Mode

As shown in **Table 3-4**, the automobile is the dominant commute mode in the San Francisco Bay Area, accounting for nearly 75 percent of all commute trips. Both San Mateo and Santa Clara Counties show greater reliance on the automobile and less on the use of alternative modes of transportation for commute purposes than the regional average. San Francisco, in contrast, shows the lowest share of auto use at around 40 percent with significant higher use of other modes.

Table 3-4. *Commute Choice by Mode*

Commute Mode	San Francisco County	San Mateo County	Santa Clara County	Bay Area
Auto	40.4%	79.0%	84.9%	74.7%
Transit	34.3%	11.4%	4.4%	11.9%
Walk	11.1%	2.4%	2.3%	3.7%
*Other**	7.9%	2.3%	2.9%	3.5%
Work from Home	6.4%	5.0%	5.4%	6.3%

Source: MTC Vital Signs, 2016

* Other includes bicycle, motorcycle, taxi, and other modes of transportation.

Land Uses and Major Trip Generators

The US 101 South Corridor traverses three counties with various land uses that include State/regional parks, agricultural lands, residential uses in urban and suburban communities, commercial uses in dense urban centers and office parks as well as industrial uses. There are also a number of institutional uses and sports venues along the Corridor. The terrain along the Corridor ranges from rolling hills to flatlands, and a large portion of the Corridor abuts San Francisco Bay. The route serves local and regional traffic, links commuters to major employment centers of economic significance and supports interregional travel and goods movement.

Santa Clara County Trip Generators

- Norman Y. Mineta San Jose International Airport (SJC)
- Shopping centers
- Educational facilities (Stanford University, San Jose State University, Santa Clara University)
- Medical facilities and hospitals
- Major sports facilities, including Levi's Stadium and SAP Center at San Jose
- Major employers, including Google, Adobe Systems, Advanced Micro Devices, Apple, HP, eBay, Cisco Systems, Intel, Lockheed Martin, Microsoft, NASA, etc.

San Mateo County Trip Generators

- San Francisco International Airport (SFO)
- Shopping plazas
- Medical facilities and hospitals
- Major employers, including Kaiser Permanente, U.S. Department of the Interior, Genentech, Facebook, Electronic Arts, Instagram, Visa, etc.

San Francisco County Trip Generators

- Major employment centers/downtown
- Medical facilities and hospitals
- Entertainment auditoriums
- Educational facilities (University of California San Francisco, University of San Francisco, San Francisco State University)
- AT&T Park (San Francisco Giants)

3.6 Smart Mobility Framework, Regional Transportation Plan & Communities of Concern

Smart Mobility Framework

In 2010, Caltrans introduced the concept of Smart Mobility through the establishment of the Smart Mobility Framework (SMF).[13] The SMF is a transportation planning guide that includes place types to further integrate Smart Growth concepts into transportation and land use development. The SMF establishes seven place types based on the Location Efficiency of a place, which takes into consideration a community's design characteristics and its access to the regional transportation system. Within each place type, there are also sub-categories to further differentiate one place from another. The seven place types are:

1. Urban Centers
2. Close-in Compact Communities
3. Compact Communities
4. Suburban Communities
5. Rural and Agricultural Lands
6. Protected Lands
7. Special Use Areas

Place Types along the US 101 South Corridor

Figure 3-2 provides an example of the place types along the Corridor. The full set of place type maps can be found in **Appendix A**. Some modifications were made to the original place type definitions to help improve clarity in the place type analysis. For example, business parks are classified as Dedicated Use Areas (Type 4c), which is a very broad category that also includes places that do not necessarily share the same characteristics as a business park. This CMCP introduces two additional place types:

- Place Type 7a, Commercial SMF: tracts of land used for commercial purposes such as business or industrial parks, warehousing/distribution, light manufacturing/repair, and heavy manufacturing with significant numbers of employees.
- Place Type 7b, Commercial Non-SMF: large tracts of commercial/industrial single use lands with low employment that are poorly integrated with their surroundings. Including low intensity recreational activities, such as golf courses (but not sports stadiums), and low employment public utilities like water treatment plants or electrical substations.

As shown on the maps, Suburban Communities (Type 4) dominate much of the Corridor. In Santa Clara County, there are fewer established downtowns or transit-oriented communities. The maps show that

[13] http://www.dot.ca.gov/hq/tpp/offices/ocp/smf.html

Downtown San Jose is Urban Core (Type 1a) with relatively good transit connections and efficient land uses, while the majority of places along the US 101 South Corridor is Suburban Communities (Type 4d). Retail and small businesses are focused along Suburban Corridors (Type 4b, not shown on the maps). The maps also identify the large tracts of office parks in the South Bay (shown as Commercial SMF, Type 7a). South of San Jose there are significant areas of farmland and ranches. However, the clusters of small communities are today largely suburban in nature.

Much of the development in the Corridor between San Francisco and San Jose was originally shaped by its access to Caltrain and public transit on El Camino Real. While there has been much auto-centric infill since 1945, a string of downtowns, clustered around their railroad stations, remain vibrant. Some of the larger downtowns are classified as Close-in Centers (Type 2a), but the surrounding neighborhoods are better depicted as Suburban Neighborhoods (Type 4d) than Close-in Neighborhoods (Type 2c). Many places along El Camino Real are Close-in Corridors (Type 2b, not shown on the map) as they are well integrated with their surrounding neighborhoods, while other parts are less so, resulting in a Suburban Corridors place type designation (Type 4b).

In contrast to much of the maps, San Francisco is shown as largely urban. While most of the city locations are shown as Close-in Neighborhoods (Type 2c), there are also numerous Close in-Corridors for the commercial arterials (Type 2b, not shown on the map). Many San Francisco neighborhoods are also shaped by the transit routes connecting them to the downtown area.

Transition Areas

Caltrans SMF place type analysis helps identify areas where transition from one place type to another could potentially occur. The following transition zones do not represent "plans" for these areas. Rather, they reflect the potential changes that may occur due to transportation investment and local land use plans, such as transit projects and the designation of Priority Development Areas (PDA) by local jurisdictions. See page 27 for an in-depth discussion of PDAs. Potential transition areas include:

- Gilroy High Speed Rail Station (Suburban Center, Type 4a, to Close-in Center, Type 2a)
- San Jose Corridors (Suburban Corridors, Type 4b, to Close-in Corridors, Type 2b)
- Peninsula Communities (Suburban Communities, Type 4d, to Close-in Communities, Type 2c)

1) Gilroy High Speed Rail Station

Located thirty miles from the Diridon Station and Downtown San Jose, Gilroy holds much potential as a gateway High Speed Rail (HSR) station between the Bay Area and Monterey and Santa Cruz counties. These two counties have a combined population of over 800,000, and a Gilroy HSR station will give them nearby access to trains to Bakersfield/Los Angeles, the San Francisco Bay Area and Sacramento. Potential connecting rail services from Monterey, Salinas and further south, as well as from Watsonville and Santa Cruz, may help Gilroy transition from a Suburban Center into a Close-in Center.

2) San Jose Transit Corridors

While many neighborhoods outside downtown San Jose (Urban Core) are designated as Suburban Communities, transit improvements such as the Bay Area Rapid Transit (BART), Caltrain and Bus Rapid Transit (BRT) will have a significant impact when integrated with PDA development, pushing the place type designations towards Close-in Compact Communities. This particularly applies to existing Suburban Corridors in the older areas with great potential to become Close-in Corridors. Older neighborhoods may

also transition, albeit at a slower rate, to Close-in Neighborhoods, mainly through more accessible transit alternatives.

3) Peninsula Communities/Caltrain Stations

Many neighborhoods on the Peninsula, though relatively dense, are somewhat disconnected from their downtowns. The perceived lack of parking coupled with "big box" stores have resulted in neighborhoods that feel suburban, rather than urban. A lack of robust transit services contributes to this disconnection, resulting in less location efficiency. However, with the electrification of Caltrain and the provision of modern trains, the location efficiency of these neighborhoods will improve; even more so when local bus service improvements enhance the intermodal connectivity to Caltrain. With these transit improvements and the development of PDAs, it is assumed that many of the residential neighborhoods near Caltrain and/or El Camino will develop into Close-in Neighborhoods, while significantly more of El Camino will become Close-in Corridors.

Figure 2-2. *Example Place Type Map*

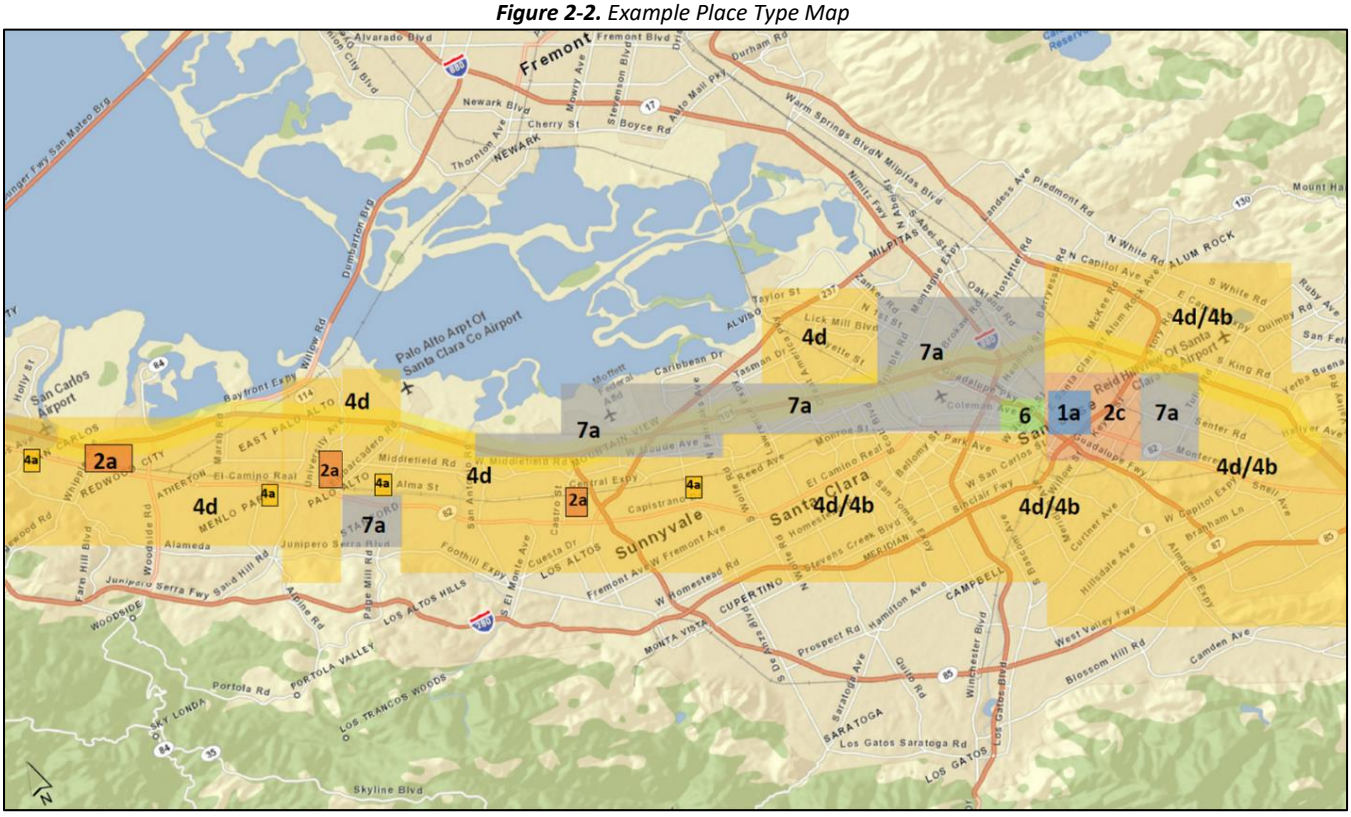


Table 3-5. *Place Type Descriptions*

Place Type	Place Type Description
1a. Urban Cores	Central cities and large downtown 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.
2a. Close-in Centers	Small and medium sized downtowns, Transit Oriented Developments, institutions, lifestyle centers, and other centers of activity.
2c. Close-in Neighborhoods	Walkable neighborhoods with housing in close proximity to shops, services, and public facilities, as well as good multi-modal connections to urban centers, Housing density varies from medium to high. Fine-grained circulation network of streets with high comfort for pedestrians and bicyclists.
4a. Suburban Communities - Centers	Mid-size and small downtowns, lifestyle centers, or other activity centers embedded within suburban communities.
4b. Suburban Communities – Corridors	Arterial streets with a variety of fronting development types, frequently characterized by inadequate walk and bike environments, low land use efficiency and poor aesthetics.
4d. Suburban Communities - Neighborhoods	Residential subdivisions and complexes including housing, public facilities and local-serving commercial uses, typically separated by arterial corridors.
6. Protected Lands	Lands protected from development by virtue of ownership, long-term regulation, or resource constraints.
7. Special Use Areas	Large tracts of single use lands that are outside of, or poorly integrated with, their surroundings.

Transportation Investment Recommendations

Place Types help determine transportation needs. SMF identifies transportation strategies to each place type so a greater location efficiency can be achieved and more Smart Mobility benefits can be realized in the future. **Table 3-6** lists Place Types along the Corridor and identifies examples of transportation strategies. See **Appendix B** for a complete list of strategies.

Table 3-6. *Transportation Strategies Examples*

Segment	Place Type	Transportation Strategies
1	4A: Suburban Communities – Centers 4D: Suburban Communities – Neighborhoods	• Promote transit service and rideshare programs near concentrated employment centers
	5B: Rural and Agricultural Lands – Rural Settlements and Agricultural Lands	• Network connectivity enhancements within towns
2	1A: Urban Centers – Urban Cores	• Convenient opportunities for multi-modal and transit transfers for all urban center users
	2A: Close-In Compact Communities – Close-In Centers 2C: Close-In Compact Communities – Close-In Neighborhoods	• High capacity transit
	4A: Suburban Communities - Centers 4B: Suburban Communities - Corridors 4D: Suburban Communities – Neighborhoods	• Identify centers and corridors that can be transformed into more location-efficient places • Investments that improve the operational efficiency of existing arterial and freeway corridors

Segment	Place Type	Transportation Strategies
	5B: Rural and Agricultural Lands – Rural Settlements and Agricultural Lands	• Inside towns, walking and bicycling facilities focused on connectivity and comfort
	6: Protected Lands	• Where public access and recreational use is permitted, bicycle facility, and trail projects
	7A: Special Use Areas – Commercial SMF 7B: Special Use Areas – Non-Commercial SMF	• Provide access and connectivity improvements that are specific to use and location
3	2A: Close-In Compact Communities – Close-In Centers	• Addition of HOV systems on freeways that provide access to urban centers.
	4A: Suburban Communities - Centers 4D: Suburban Communities – Neighborhoods	• Promote transit service and rideshare programs near concentrated employment centers
	7A: Special Use Areas – Commercial SMF	• Provide access and connectivity improvements that are specific to use and location
4	2A: Close-In Compact Communities – Close-In Centers	• Transit centers and high capacity transit stations accessed primarily by multi-modal travel
	4A: Suburban Communities - Centers 4D: Suburban Communities – Neighborhoods	• Invest in projects that improve connectivity leading to shorter average trip lengths and increased non-auto mode share
	7A: Special Use Areas – Commercial SMF	• Provide access and connectivity improvements that are specific to use and location
5	4A: Suburban Communities - Centers 4D: Suburban Communities – Neighborhoods	• Invest in projects that improve connectivity leading to shorter average trip lengths and increased non-auto mode share
	6: Protected Lands	• Where public access and recreational use is permitted, bicycle facility, and trail projects
	7A: Special Use Areas – Commercial SMF 7B: Special Use Areas – Non-Commercial SMF	• Provide access and connectivity improvements that are specific to use and location
6	1A: Urban Centers – Urban Cores	• Convenient opportunities for multi-modal and transit transfers for all urban center users
	2B: Close-In Compact Communities – Close-In Corridors 2C: Close-In Compact Communities – Close-In Neighborhoods	• High capacity transit • Local transit with excellent coverage providing connections to high capacity transit lines
	4D: Suburban Communities – Neighborhoods	• Invest in complete streets and safe routes to school measures
7	1A: Urban Centers – Urban Cores	• Direct service by high capacity and high-speed transit serving local and regional destinations
	2B: Close-In Compact Communities – Close-In Corridors 2C: Close-In Compact Communities – Close-In Neighborhoods	• High capacity transit • Local transit with excellent coverage providing connections to high capacity transit lines

Plan Bay Area 2040

Plan Bay Area 2040 (PBA 2040), approved July 2017, is the RTP/SCS for the Bay Area, and responds to Senate Bill 375 (2008), which requires each of the State's 18 metropolitan regions to develop a Sustainable Communities Strategy (SCS) to accommodate future population growth while reducing greenhouse gas emissions from cars and light trucks. MTC produced the RTP/SCS in concert with the Association of Bay Area Governments (ABAG) which is responsible for developing regional housing and employment forecasts. The Plan charts a course for reducing per-capita greenhouse gas emissions through the promotion of more compact, mixed-use residential and commercial neighborhoods near transit. MTC is currently in the process of developing PBA 2050, (planned adoption 2021), an update to the RTP/SCS.

CTC's CMCP Guidelines require CMCPs be consistent with the goals and objectives of the RTP including the forecasted development pattern identified in the SCS.

The regional forecast shows that between 2010 and 2040, the Bay Area is projected to grow from 3.4 to 4.7 million jobs, while the population is projected to grow from 7.2 to 9.5 million people. As of 2015, almost half of the projected jobs have been added and nearly a quarter of the projected population growth has occurred. During the same period, only 13 percent of projected household growth has occurred, held back in part by financial conditions as a result of the Great Recession.[14]

Priority Development Areas and Priority Conservation Areas

PBA 2040 establishes Priority Development Areas (PDA) and Priority Conservation Areas (PCA). PDAs are areas within existing communities that local city or county governments have identified and approved for future growth. These areas typically are transit accessible and are located near established job centers, shopping districts and other services. PCAs are locations designated for the protection of natural habitats and the preservation of open space for future generations, including farming, ranching, recreational and resource lands. PCAs are identified through consensus by local jurisdictions and Park/Open Space Districts. Unlike SMF place types that are based on existing characteristics, PDAs and PCAs point to a future growth pattern supported by plans adopted by local governments.

With the development of PBA 2050, MTC is updating the regional growth framework by refreshing PDAs and PCAs as well as introducing a new pilot designation called Priority Production Area (PPA). PPAs are areas zoned for industrial use or have a high concentration of industrial activities such as production, advanced manufacturing, distribution, or related activities that local jurisdictions can nominate for inclusion into PBA 2050. The updated PDAs and PCAs and the newly designated PPAs will help focus new housing and job growth in the region. PDAs in the Counties of Santa Clara, San Mateo, and San Francisco help accommodate a large share of the forecast growth in the Bay Area. Below is a list of PDAs located immediately adjacent to US 101, including those in the current PBA 2040 and those that have been submitted to MTC for inclusion into PBA 2050. A complete list of PDAs within the Corridor can be found in **Appendix C**. MTC is updating the PDA framework as part of the PBA 2050 development, so some of the PDAs may change. Newly proposed PPAs along US 101 are listed separately.

Santa Clara County PDAs

- North Bayshore (Mountain View)
- Moffett Park Priority Development Area (Santa Clara County)
- Whisman Station (Mountain View)
- East Sunnyvale (Sunnyvale)
- Tasman Crossing (Sunnyvale)
- Freedom Circle (Santa Clara)
- North San Jose (San Jose)
- Berryessa Station (San Jose)
- East Santa Clara/Alum Rock Corridor (San Jose)
- Capital/Tully/King Urban Villages (San Jose)
- Cottle Transit Village (Hitachi) (San Jose)

[14] MTC, Plan Bay Area 2040 Draft (2017): http://2040.planbayarea.org/forecasting-the-future

- City Cores, Corridors & Station Areas (San Jose)
- Downtown (Gilroy)
- City Cores, Corridors & Station Areas (Throughout County)

San Mateo County PDAs

- San Francisco/San Mateo Bi-County Area
- Downtown (South San Francisco)
- Transit Corridors (San Bruno)
- Transit Station Area (Millbrae)
- Rail Corridor (San Mateo)
- Villages of Belmont (Belmont)
- Broadway/Veterans Boulevard Corridor (Redwood City)

San Francisco County PDAs

- Downtown/Van Ness/Northeast Neighborhoods
- Market-Octavia
- Eastern Neighborhoods
- Bayview/Southeast Neighborhoods
- San Francisco/San Mateo Bi-County Area

Proposed Priority Production Areas within the larger US 101 South Corridor include:

Santa Clara County PPAs

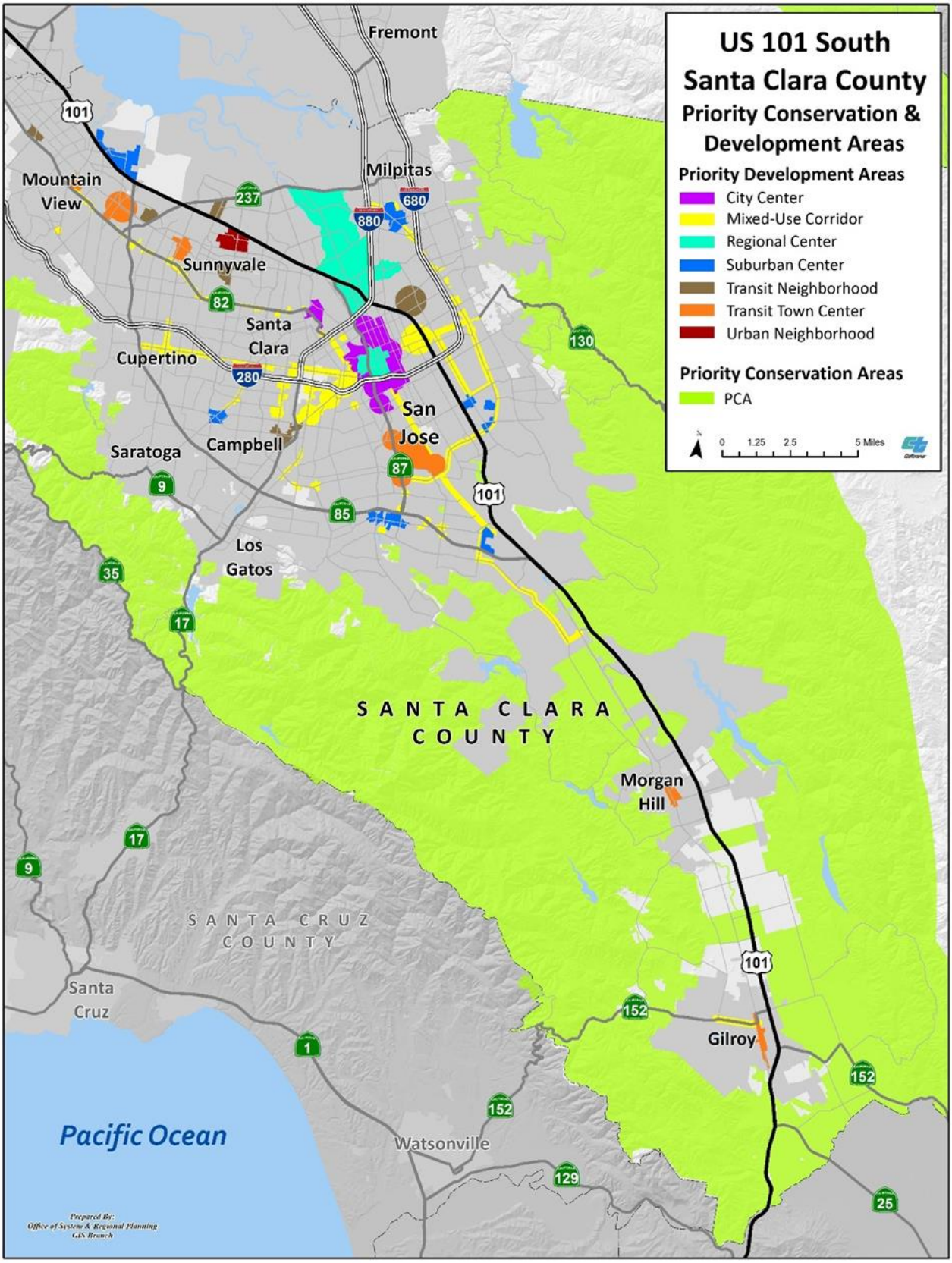
- Monterey Business Corridor (San Jose)
- Central Manufacturing Area (Milpitas)
- Southwestern Employment Area (Milpitas)
- Morgan Hill PPA (Morgan Hill)

San Francisco County PPAs

- Bayshore/Central Waterfront/Islais Creek

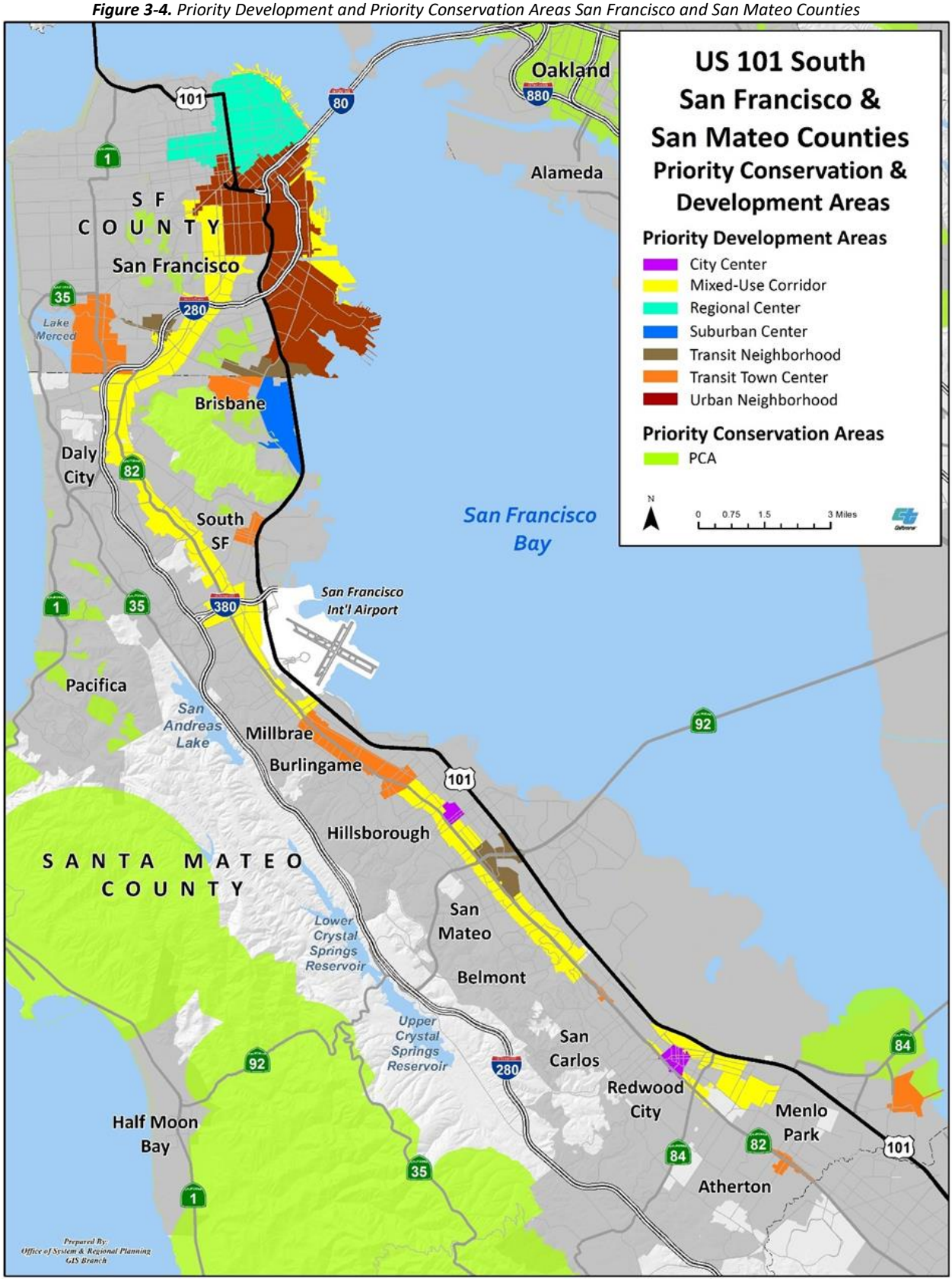
See **Figures 3-3 and 3-4** for PDAs and PCAs along the US 101 South Corridor.

Figure 3-3. *Priority Development and Priority Conservation Areas Santa Clara County*



Source: Caltrans, District 4, GIS and Technical Support Branch, 2017

Figure 3-4. *Priority Development and Priority Conservation Areas San Francisco and San Mateo Counties*



Source: Caltrans, District 4, GIS and Technical Support Branch, 2017

Communities of Concern

Communities of Concern have been identified using MTC's online GIS portal.[15] The data has been conveyed via the use of census tracts along the US 101 South Corridor. MTC uses the term "Communities of Concern" to represent a cross section of the population that is considered disadvantaged or vulnerable to current conditions and potential impact of growth and urban development. PBA 2040 defines disadvantaged populations as having a high concentration of minority and low-income households, in addition to a concentration of three or more additional factors.[16] The eight factors to identify communities of concern include:

1. Minority
2. Low Income (<200% federal poverty level)
3. Limited English Proficiency
4. Zero-Vehicle Household
5. Seniors 75 Years and Over
6. People with Disability
7. Single-Parent Family
8. Severely Rent-Burdened Household

Additional analysis has been conducted to identify communities of concern via CalEnviroScreen 3.0.[17] CalEnviroScreen is a screening methodology that is used to identify communities burdened by multiple sources of pollution. The tool utilizes various sources of data as shown below to determine the level of risk a community faces:

- Pollutants, such as Particulate Matter 2.5, ozone, diesel emissions, pesticides, toxic releases, traffic, poor drinking water, brownfield remediation (cleanup) sites, groundwater threats, hazardous waste, impaired water, and solid waste
- Asthma, low birth rates, cardiovascular risks, education levels, linguistic Isolation, poverty, unemployment rate, and housing burden

High Risk Cities/Areas within the US 101 South Corridor include:

Santa Clara County: Gilroy, San Martin, South East San Jose, and Santa Clara, see **Figure 3-5**

San Mateo County: East Palo Alto, Redwood City, San Mateo, San Bruno, South San Francisco, and Brisbane, see **Figure 3-6**

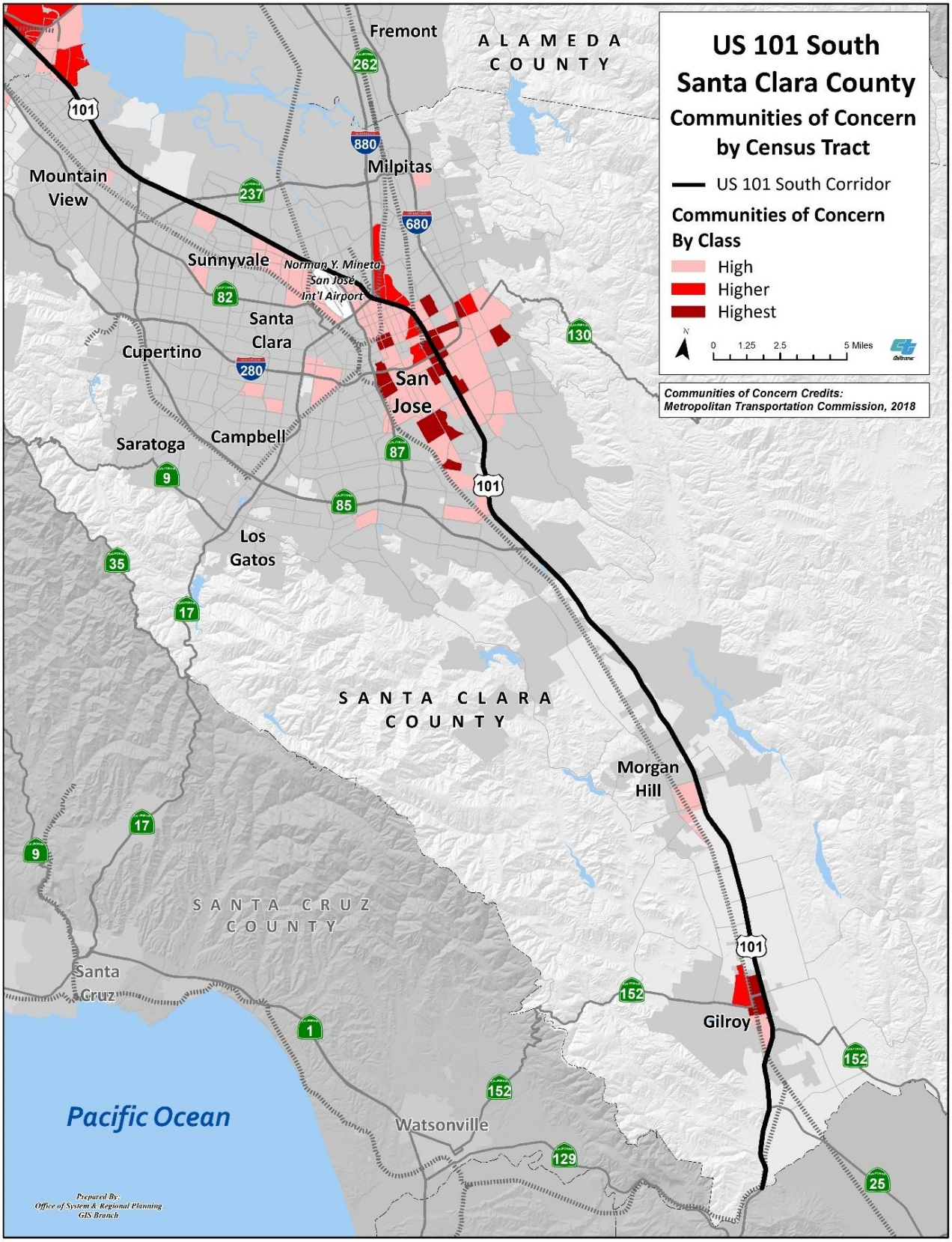
San Francisco County: Hunters Point, Mission District, Potrero District, and at the ends of both I-280 and the US 101 Central Freeway, see **Figure 3-6**

[15] http://opendata.mtc.ca.gov/datasets/mtc-communities-of-concern-in-2018-acs-2012-2016?geometry=-122.963%2C37.564%2C-121.656%2C37.755

[16] http://www.planbayarea.org/2040-plan/plan-details/equity-analysis

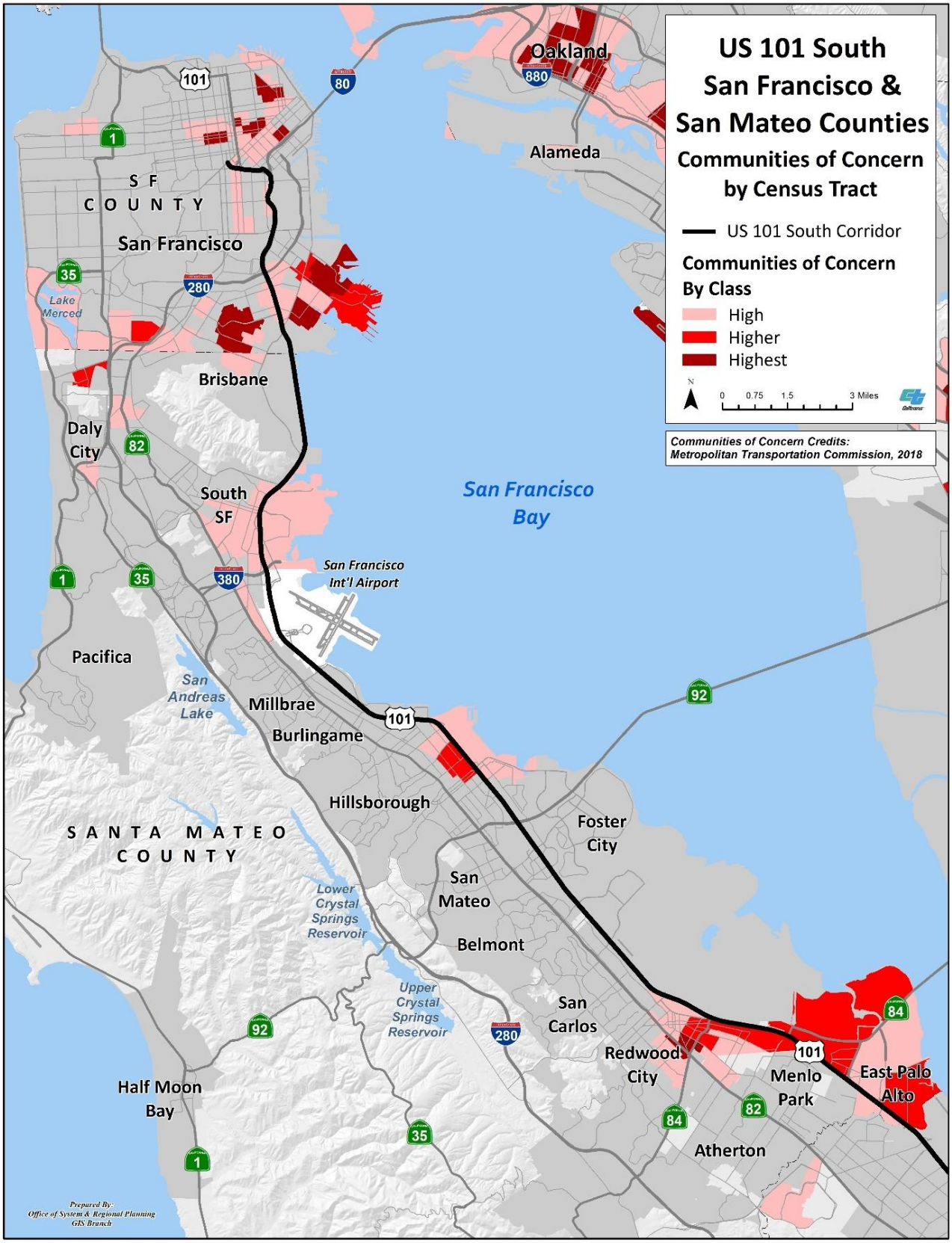
[17] https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30

Figure 3-5. *MTC's 2017 Communities of Concern Santa Clara County*



Source: MTC, 2017

Figure 3-6. *MTC's 2017 Communities of Concern San Francisco and San Mateo Counties*



Source: MTC, 2017

3.7 Environmental Considerations and Sea Level Rise

Environmental Considerations

The purpose of this environmental scan is to conduct a high-level identification of potential environmental factors that may require future analysis in the project development process. This information may not represent all environmental considerations that exist within the Corridor vicinity. The factors are categorized based on a scale of a Low-Medium-High probability of an environmental issue. **Table 3-7** shows some environmental considerations within the US 101 South Corridor.

For the purposes of the CMCP, the most important environmental considerations for funding include "direct mitigation," restoration, and/or protection of critical habitat and open space.

Table 3-7. *Environmental Consideration for the US 101 South Corridor*

	Segment						
	1	**2**	**3**	**4**	**5**	**6**	**7**
Section 4(f) Land[18]	*Low*	*Medium*	*Low*	*High*	*High*	*Low*	*Low*
Coastal Zone	*No*	*No*	*No*	*Yes*	*Yes*	*No*	*Yes*
Farm/Timberland[19]	*Yes*	*Yes*	*No*	*No*	*No*	*No*	*No*
Floodplain[20]	*100 year*	*100 year*	*100 Year*	*100 Year*	*100 year*	*n/a*	*n/a*
Climate Change/Sea Level Rise	*Low*	*Low*	*High*	*High*	*High*	*Low*	*High*
Waters and Wetlands	*Low*	*Medium*	*Low*	*Medium*	*Medium*	*Low*	*Low*

Air Quality

The California Legislature created the Bay Area Air Quality Management District (BAAQMD) in 1955, as the first regional air pollution control agency in the country. BAAQMD is tasked with regulating stationary sources of air pollution in the nine counties that surround San Francisco Bay: Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, southwestern Solano, and southern Sonoma counties. It is governed by a 24-member Board of Directors composed of locally-elected officials from each of the nine Bay Area counties, with the number of board members from each county being proportionate to its population.

Any project's design concept, scope, and open-to-traffic date assumptions need to be consistent with the regional emissions analysis performed for the current RTP and Transportation Improvement Program (TIP).

Sea Level Rise

Sea level rise (SLR) is perhaps the best documented and most accepted impact of climate change, which can be directly tied to increased levels of Greenhouse Gas (GHG) emissions. Executive Order B-18-12[21] has

[18] CDFW Owned & Operated Lands & Conservation Easements, https://map.dfg.ca.gov/bios/, accessed Oct of 2017
[19] ftp://ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/statewide/2012/fmmp2012_wallsize.pdf, accessed Oct of 2016.
[20] NFHL 1% (100 year) Flood, https://map.dfg.ca.gov/bios/
Caltrans Executive Order B-18-12
[21] https://www.climatechange.ca.gov/climate_action_team/documents/Executive_Order_B-18-12.pdf

directed State agencies to reduce GHG emissions by twenty percent by 2020. Observations of sea levels along the California coast, and global climate models indicate that California's coast will experience rising sea levels over the next century and beyond (unless GHG emissions are dramatically reduced from current levels). The effects of SLR will have impacts on all modes of transportation located near the coast, significantly increasing the challenge to transportation managers in ensuring reliable transportation routes are available. Inundation of even small segments of the intermodal transportation system can render much larger portions impassable, disrupting connectivity and access to the wider transportation network.[22] Caltrans seeks to address SLR and GHG emissions reductions by partnering with local and regional stakeholders to promote climate change responses on the SHS and local streets and roads projects.

If left unmanaged, the impacts from future flooding and coastal erosion could pose considerable risks to life, safety, critical infrastructure, natural and recreational assets, and the economy. US 101 in the counties of San Francisco, San Mateo, and Santa Clara are vulnerable to the effects of rising sea levels. Current projections published by the Ocean Protection Council in 2018 suggest that sea levels at the San Francisco tide gauge could rise by 1.9 feet by 2050 and 6.9 feet by 2100 (under the Medium-High Risk Aversion (1-in-200 chance) scenario).[23] Based on sea level rise mapping data from the Bay Conservation and Development Commission, a vast portion of the US 101 corridor in San Mateo County is expected to be impacted by sea level rise by the year 2100. For example, over 34 miles of highway centerline miles of US 101 in San Mateo County will be inundated by seven feet of sea level rise. The entire US 101 corridor through all three counties (San Francisco, San Mateo and Santa Clara) will likely see 0.18 highway-miles inundated by 2050 (24 inches of SLR), and 41.11 highway-miles impacted by 2100 (84 inches of SLR). See **Table 3-8** below for a breakdown of highway centerline miles impacted by SLR in each county under different scenarios. **Figure 3-7** also illustrates the highway segment locations that will be subject to inundation.

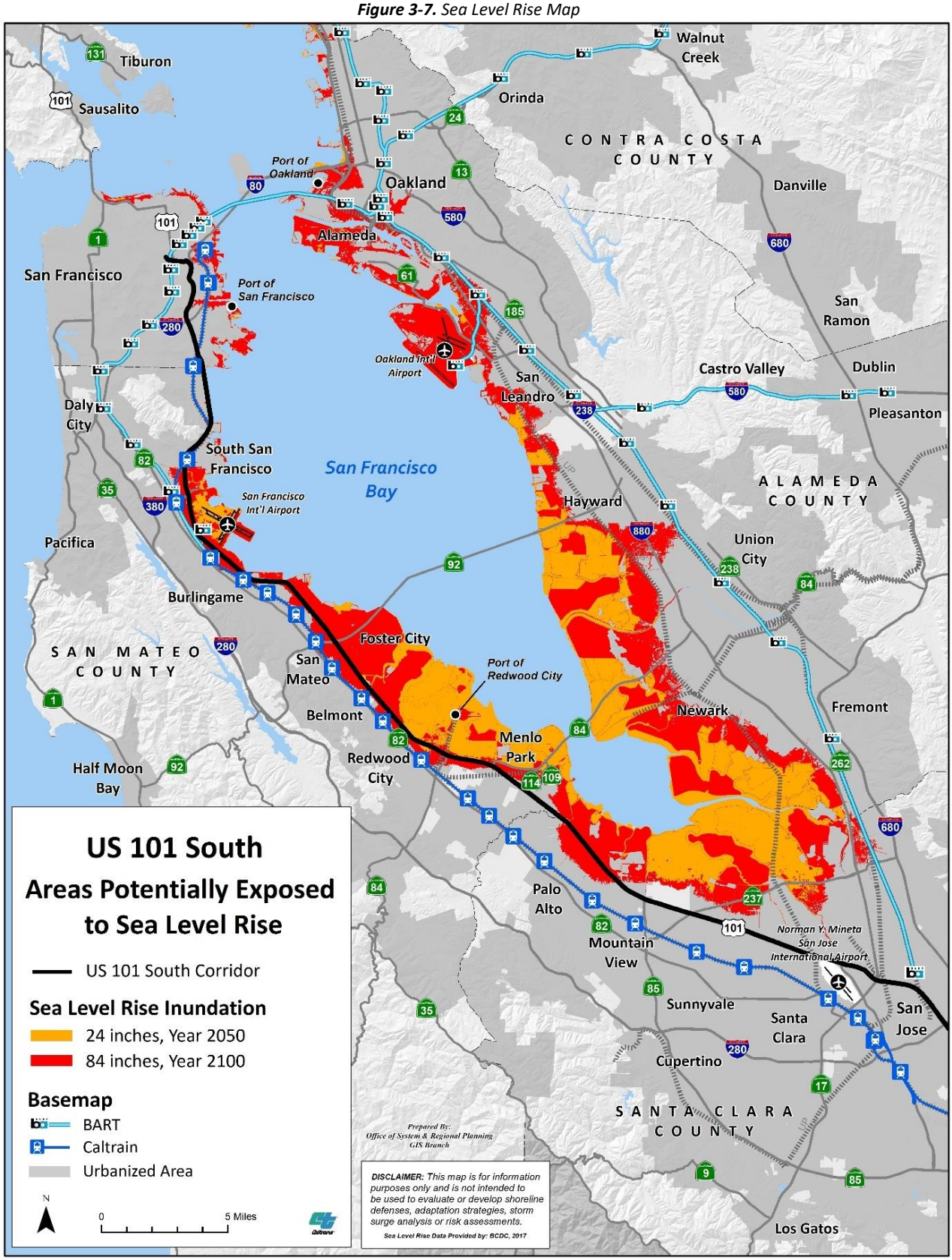
Table 3-8. *US 101 Highway Centerline Miles Vulnerable to Sea Level Rise*

Sea Level Rise Scenario	County	Centerline-Miles Impacted
2-Feet (2050)	San Francisco	0.02
	San Mateo	0.16
	Santa Clara	0.00
	Total:	0.18
7-Feet (2100)	San Francisco	0.87
	San Mateo	34.42
	Santa Clara	5.82
	Total:	41.11

[22] Caltrans Climate Change *Vulnerability Assessment Map*, May 2018. http://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=517eecf1b5a542e5b0e25f337f87f5bb

[23] California Ocean Protection Council, *State of California Sea-Level Rise Guidance*, 2018 http://www.opc.ca.gov/webmaster/ftp/pdf/agenda_items/20180314/Item3_Exhibit-A_OPC_SLR_Guidance-rd3.pdf

Figure 3-7. *Sea Level Rise Map*



Source: Caltrans, District 4, GIS and Technical Support Branch, 2019

Chapter 4: Multimodal Facilities

As a multimodal transportation corridor, the US 101 South Corridor serves the movement of people and goods with a variety of transportation modes. This chapter describes public transit services, Park and Ride facilities, the private commuter shuttle services, and pedestrian and bicycle facilities as critical transportation modes within the US 101 South Corridor. It also identifies programmed, planned and in some cases proposed projects within the Corridor. In addition, the chapter summarizes the Transportation Systems Management and Operations (TSMO) strategies and equipment that are currently deployed within the Corridor and examines the networks and major trip generators for freight movement.

At the State level, Caltrans Deputy Directive DD-64-R2 requires Caltrans to provide for the needs of travelers of all ages and abilities in all planning, programming, design, construction, operations, and maintenance activities and products of the State Highway System. It requires Caltrans to develop integrated multimodal projects and facilitate bicycle, pedestrian, and transit travel by creating a network of "Complete Streets".[24] At the regional level, the Bay Area's Metropolitan Planning Organization, MTC, has developed policy and guidance on Complete Streets as well. Each of the County Transportation Agencies along the US 101 South Corridor has also adopted their Complete Streets policies.

4.1 Transit Services

A number of public transit agencies provide services within the US 101 South Corridor. Some agencies are specialized in one type of service, such as rail, while others provide a variety of transit services.

Santa Clara Valley Transportation Authority

VTA operates and provides bus and light rail service to fifteen cities and towns in Santa Clara County for its 1.9 million County residents.[25] In addition, VTA is also a partner in providing other transportation services. These services include commuter rail, inter-county express bus lines, and rail feeder services such as the Altamont Corridor Express (ACE) with Alameda County, Caltrain Intercity Rail Service with counties of San Mateo and San Francisco, Dumbarton Express with Alameda-Contra Costa Transit District (AC Transit), Highway 17 Express with Santa Cruz County, and the soon to open Silicon Valley BART commuter rail service in 2020 with the BART District. VTA also manages paratransit and shuttle services. In FY 2019, VTA carried a combined total ridership of 46.97 million passengers, about 2.5% less than in FY 2018 (approximately 48.20 million passengers) which was consistent with transit ridership trend in the adjacent counties. [26]

In December 2019, VTA implemented a new transit service plan to coordinate with the new BART service that will extend from the Warm Springs Station in the City of Fremont to the Milpitas and Berryessa Stations in the cities of Milpitas and San Jose, respectively. The new stations are scheduled to open for revenue service in 2020. In addition, the new service plan increased efficiency of VTA's bus and light rail service along corridors with high ridership.

VTA currently operates several Local and Express Bus Lines (55, 86, 104, 121, 122 and 168) that travel

[24] http://www.dot.ca.gov/hq/tpp/offices/ocp/docs/dd_64_r2.pdf
[25] US Census Bureau, July 2016 (https://www.census.gov/quickfacts/fact/table/santaclaracountycalifornia/PST045216)
[26] VTA FY 2019 Annual Transit Operations Performance Report

directly on US 101 as part of their routes. Other lines that operate within the US 101 Corridor are as follows: four Local Lines (72 and 73), one Bus Rapid Transit Line (522), and one Community Bus Line (42). These bus lines provide service along a fifty-mile corridor from the City of Palo Alto to the City of Gilroy.[27]

VTA also operates a 42-mile Light Rail Transit System with three light rail lines (Mountain View-Winchester Line, Alum Rock-Santa Teresa, and Almaden-Ohlone/Chynoweth) serving 62 stations and 21 Park & Ride lots with segments operating within the US 101 South Corridor.[28]

Within the US 101 South Corridor, VTA is currently undertaking or participating in a number of transportation studies and plans, including:

- El Camino Real Bus Rapid Transit (BRT) Project
- BART Silicon Valley Phase II Extension Project (See the BART section below)
- Gilroy Station Area Plan (Implementation)
- Diridon Station Area Plan (Implementation)
- Santa Clara Station Area Plan
- Lawrence Station Area Plan (Implementation)
- Mountain View North Bayshore Precise Plan (Implementation)
- Santa Clara Transportation Technology Strategic Plan
- US 101 Mobility Action Plan
- Express Bus Partnership Program Service Plan

Worth noting is the Express Bus Partnership Program invites third party partnerships to provide more effective and focused express bus service. In addition, this program also includes a 12-month pilot vanpool subsidy program for markets that will not be served by express bus service. Routes for both programs will evolve over time based on ridership demand.

San Mateo County Transit District

The San Mateo County Transit District operates SamTrans fixed-route and paratransit bus services, as well as Caltrain fixed-rail service. SamTrans currently operates 70 fixed-route bus routes and one on-demand route throughout San Mateo County. Of these routes, 39 are community routes associated with service to schools, 27 routes are local routes, many of which connect to BART or Caltrain stations, and three are mainline routes providing long-distance transit service. SamTrans currently runs one express bus service (the FX route) which operates on US 101 and connects San Francisco with the Foster City and northern San Mateo communities. In addition, SamTrans currently operates an on-demand pilot route in Pacifica. SamTrans carried approximately 10.7 million passengers in Fiscal Year (FY) 2019. This figure represents a 4.2 percent decrease compared to ridership in FY 2018 (11.1 million).[29]

Peninsula Corridor Joint Powers Board

The Peninsula Corridor Joint Powers Board (JPB) is a joint powers authority that was formed to oversee the operation and funding of Caltrain commuter rail service. It is comprised of three member agencies: the City and County of San Francisco, the San Mateo County Transit District and the Santa Clara Valley

[27] VTA Bus-Rail Map (http://www.vta.org/getting-around/maps/bus-rail-map, December 2019)
[28] VTA Short Range Transit Plan FY2014-2023, (http://www.vta.org/srtp)
[29] http://www.samtrans.com/Assets/__Agendas+and+Minutes/SamTrans/Board+of+Directors/Presentations/2019/End-of-Year+Performance+Report+FY+2019.pdf

Transportation Authority. The San Mateo County Transit District is the managing partner of Caltrain. Caltrain commuter rail provides a convenient and cost- effective alternative to driving, connecting passengers to jobs and housing in San Francisco, San Mateo, and Santa Clara counties.

US 101 Express Bus Feasibility Study

SamTrans completed its US 101 Express Bus Feasibility Study (EBFS) in December 2018. The EBFS explored and developed a regional express bus master plan for the Peninsula, including San Mateo, San Francisco, and Santa Clara counties. The EBFS included a detailed evaluation of the financial and operational needs of a regional express bus network operating on US 101, with and without a potential managed lane on the freeway. Over the course of the project, staff conducted two rounds of outreach held in summer 2017 and summer 2018 throughout the three-county study area.

The final EBFS recommended implementing six new express routes over three phases.

- Phase 1 includes two routes recommended for launch in 2019/2020:
  - Foster City – downtown San Francisco (bi-directional)
  - Palo Alto – Western SF (bi-directional)
- Phase 2 routes recommended for opening with the US 101 express lanes in 2022:
  - San Mateo (SR 92/US 101 park-and-ride) – downtown San Francisco (one-directional)
  - San Bruno BART – East Palo Alto (bi-directional)
- Phase 3 identified for further growth in 2023 or beyond:
  - San Mateo – Western San Francisco (bi-directional)
  - Burlingame to downtown San Francisco (one-directional)[30]

SamTrans launched the first route from the EBFS in August 2019 between Foster City and downtown San Francisco (Route FCX).

US 101 Mobility Action Plan

The US-101 Mobility Action Plan (MAP) project, which began in December 2018 with a study of the US 101 corridor, is a joint effort by a range of local agencies and organizations, including SamTrans, SFCTA, C/CAG, VTA, MTC, Caltrans and Transform. The purpose of the MAP is to build on infrastructure and mobility improvements already planned along the corridor and identify near-term policies, programs, and technological solutions that address unreliable and inequitable mobility challenges on the corridor, including the fact that it is not moving people as well as it could, travel times are unreliable, increasing congestion reduces job accessibility, and US 101 also imposes mobility constraints and health burdens, particularly for vulnerable communities.

The MAP has the following three goals:

- Offer reliable travel times for all people, regardless of how they travel
- Prioritize high-capacity mobility options for all, such as buses and carpools
- Foster healthy and sustainable communities along the US-101 right-of-way

The MAP, projected to be completed in Summer 2020, has two intended outcomes. First is a comprehensive list of strategies including policy changes and/or transportation demand management

[30] http://www.samtrans.com/Planning/Planning_and_Research/US_101_Express_Bus_Feasibility_Study.html

programs that meet each of their three goals. Second, the plan intends to describe how the action list will be promoted and advanced in the future.

San Francisco Municipal Transportation Authority

The San Francisco Municipal Railway (Muni) transit system, comprised of buses, historic street cars, light rail vehicles, and cable cars, provides local service within the City of San Francisco and is operated by the San Francisco Municipal Transportation Authority (SFMTA). There are approximately 3,500 transit stops maintained by SFMTA within San Francisco. While most routes terminate within the city boundaries, some service is available into Daly City, terminating at or near the Daly City BART station. As of August 2017, Muni averaged 725,080 weekday boardings, representing a decrease from 743,020 weekday boardings during August of 2016[31].

Some of the longest Muni bus routes include Lines 8, 8AX, 9, 9R, 14, 14R, 29, and 49. Bus lines 8, 8AX, 8BX, 9, and 9R run from downtown San Francisco to Visitacion Valley parallel to US 101. Lines 14, 14R, and 49 operate on surface streets parallel to BART. Of these lines, 8AX, 8BX, and 14X use the freeway for a portion of their route. Line 29 begins in the Bayview District, crosses both US 101 and I-280, and continues northeast to serve the Sunset and Richmond Districts, before terminating in the Presidio.

The Muni Metro light rail service operates both street level and subway service underneath Market Street. The light rail lines J-Church and M-Ocean View have the same terminal points (Embarcadero Station and Balboa Park Station), but the lines branch out between Market/Church Street and Balboa Park serving different parts of the city between terminals. The KT line, which also has a terminus at the Balboa Park Station, begins with the K-Ingleside line heading towards the West Portal Muni Metro Station. The service then changes to the KT line, which continues towards the Embarcadero Muni Metro/BART Station. Beyond the Embarcadero Station, the service changes to the T-Third line going towards King Street and serves the San Francisco Caltrain Station at 4th/King Street. The T-Third line goes along 3rd Street, generally parallel to I-280 and US 101, and terminates at the Bayshore Boulevard/Sunnydale Avenue stop.

BART

The Bay Area Rapid Transit system consists of 112 miles of heavy rail and 46 stations located throughout Alameda, Contra Costa, San Francisco, San Mateo, and soon Santa Clara County. Four of the downtown San Francisco locations are a combination of BART and MUNI Metro subway stations. BART currently has 669 revenue vehicles to provide service on weekdays and weekends. Between Market Street in San Francisco and SFO/Millbrae, BART generally runs parallel to US 101 and I-280. BART averaged 433,000 weekday trips in 2016, including nearly 70,000 trips through the Transbay Tube in each direction during peak commute hours. Embarcadero and Montgomery Stations are the busiest in the system, with 180,000 trips made to and from these stations each weekday in 2016. BART is currently the fifth busiest heavy rail rapid transit system in the United States.[32,33,34]

[31] https://www.sfmta.com/about-sfmta/reports/performance-metrics/goal-3-environment-and-quality-life/estimated-economic
[32] http://www.bart.gov/about/history/facts
[33] https://www.bart.gov/sites/default/files/docs/BARTfactsheet_Apr17_0.pdf
[34] http://www.apta.com/resources/statistics/Documents/Ridership/2016-q4-ridership-APTA.pdf

Extension to the Warm Springs District in Fremont was opened in 2017 and the Phase 1 extension to Milpitas and San Jose will began revenue service in June 2020. Phase II extension to downtown San Jose and Santa Clara is currently in the environmental phase with a target date for passenger service of no later than 2030.

Along with the planned extensions listed above, BART has other key planned projects to enhance the system.[35] These enhancements include:

- New train cars
- Train control modernization
- New Hayward maintenance complex
- Station modernization program
- Investment in Transit Oriented Development
- Earthquake safety upgrade
- New Transbay Rail Crossing (Modes to be determined)

Caltrain

Caltrain is a fixed guideway commuter rail system serving San Francisco, San Mateo and Santa Clara counties that spans 77.3 miles and includes 32 stations — 29 of which are weekday service, 24 are weekend service (including two weekend-only stations), and one special event service station which serves Stanford Stadium. The alignment in its entirety runs parallel to US 101. Caltrain operates 92 diesel locomotive-hauled trains on Weekdays between San Francisco and San Jose with limited service further south to Gilroy. Caltrain operates 28 trains on Saturdays and 24 trains on Sundays between San Francisco and San Jose. Service includes a mix of express/Baby Bullet (stops at six to nine stations), limited (stops at 11 to 26 stations), and local (all station stops) trains. Caltrain's average weekday ridership has significantly increased since 2010. In FY 2018, the railroad carried an average of 64,022 riders each weekday, representing an increase of approximately 83 percent since FY2010 when the railroad carried 35,061 riders each average weekday.[36]

Caltrain is working on enhancing and improving the system through the following projects and plans:

- The Peninsula Corridor Electrification Project (PCEP) is a $1.98 billion project that will upgrade the performance, efficiency, capacity, safety and reliability of Caltrain's service. PCEP includes electrification of the existing Caltrain corridor between San Francisco and San Jose, as well as the replacement of a majority of Caltrain's diesel trains with high-performance electric trains called Electric Multiple Units. Delivery of PCEP is currently underway, with electric trains anticipated to be in service in 2022.[37]
- The Caltrain Business Plan is a substantial, comprehensive planning effort currently being undertaken by the agency to develop a long-term service vision for the railroad. The completed Caltrain Business Plan will identify a service vision for the railroad through 2040, including train service patterns, infrastructure needs, estimated costs and outcomes, and an implementation plan.

[35] http://www.bart.gov/about/projects
[36] Federal Transit Administration (FTA) National Transit Database (NTD), Fiscal Year End Submittal, 2010 & 2018
[37] Caltrain Corridor Electrification

- Caltrain's Positive Train Control project is a project currently under construction and includes the introduction of a new train control and signal system on the rail corridor to comply with legal mandates.
- The 25th Avenue Grade Separation Project is currently under construction in the City of San Mateo and includes the reconstruction of Caltrain's Hillsdale Station, as well as three new vehicular crossings under the Caltrain corridor (25th Avenue, 28th Avenue, and 31st Avenue).
- The South San Francisco Improvement project includes the reconstruction of the South San Francisco Caltrain Station and the introduction of a new bicycle and pedestrian undercrossing. It is currently under construction and anticipated to be complete in 2020.
- Caltrain's Capital Program includes multiple projects to maintain the Caltrain system in a state of good repair, including bridge enhancement and replacement, signal optimization, station enhancement and improvement, and system maintenance.[38]

Ferry Service

The Water Emergency Transportation Agency (WETA) is a regional public transit agency tasked with operating and expanding ferry service on the San Francisco Bay and with coordinating the water transit response to regional emergencies. Under the brand name San Francisco Bay Ferry, WETA carries over two million passengers annually utilizing a fleet of twelve high speed passenger-only ferry vessels. San Francisco Bay Ferry currently serves the cities of Alameda, Oakland, San Francisco, South San Francisco, and Vallejo.[39]

WETA currently has three terminals generally within the vicinity of the US 101 South Corridor: AT&T Park, San Francisco Ferry Building and South San Francisco terminals. Although not a near-term project, a proposed Redwood City ferry service was identified in the Implementation and Operations Plan to provide service between Redwood City and Downtown San Francisco. The Redwood City project is currently funded through the conceptual design and environmental review phases only.

Amtrak/Capitol Corridor

The Capitol Corridor, which began service in 1991, is a 168-mile intercity passenger train route that connects San Jose to Oakland and Sacramento. This is one of three intercity passenger train corridors Caltrans provides the necessary funds to operate the service. Additionally, Caltrans owns the rolling stock. Since 1998, the route has been administered by the Capitol Corridor Joint Powers Authority (CCJPA). The service also provides connections to Auburn, Roseville, and San Francisco (via thruway bus service). Additionally, connections to BART service exist at the Richmond and Oakland Coliseum Stations, and a connection to Caltrain can be made in San Jose, when VTA and BART complete the BART to Silicon Valley Phase 2 Project. As the service is recognized as a priority corridor in the Interregional Transportation Strategic Plan, there will be a focus over the next two decades to expand intercity passenger rail service to Monterey County. The Capitol Corridor service has the third-highest passenger rail corridor ridership in the entire national Amtrak system, having carried 1,560,814 passengers during FY 2016.[40]

[38] http://www.caltrain.com/projectsplans/Projects/Caltrain_Capital_Program.html
[39] http://sanfranciscobayferry.com/weta
[40] Caltrans *Interregional Transportation Strategic Plan* (ITSP), June 2015.

CCJPA is currently working on a project that will decrease travel times between Oakland and San Jose, potentially providing an improved rail alternative for some drivers on US 101. The project, South Bay Connect, will relocate Capitol Corridor service between Oakland and Newark from the Niles Subdivision to the Coast Subdivision, and will inversely relocate freight operations from the Coast Subdivision to the Niles Subdivision. Enhancements to the Coast Subdivision will include track and tie replacements, security fencing, signal upgrades and a new passing siding, and intermodal station at the Ardenwood Park & Ride. Freight enhancements could include a new connection between the Niles and Oakland Subdivisions at Industrial Parkway and a new connection at the Shinn District in Fremont.

California High-Speed Rail

The California High-Speed Rail Authority is responsible for planning, designing, building and operating the first high-speed rail system in the nation. California high-speed rail will connect the mega-regions of the State, contribute to economic development and a cleaner environment, create jobs and preserve agricultural and protected lands. Construction on Phase 1 of the project began in Fresno in early 2015. Since then, construction has been underway on the first leg of the phase, a 119-mile segment of track extending from the Central Valley to San Jose, expected to be completed by 2025. The second leg will extend from San Jose to San Francisco's Transbay Terminal, (a blended system using Caltrain's tracks) and from Bakersfield (through Los Angeles Union Station) to Anaheim in Southern California, with passenger service expected to begin in 2029. Phase 2 will connect Los Angeles Union Station to San Diego and Merced to Sacramento. Both the second leg of Phase 1 and the entire Phase 2 are currently in the environmental and planning stages.[41]

4.2 Park-and-Ride Facilities

The Caltrans Park-and-Ride (P&R) Program facilitates access to transit and ride sharing along freeway corridors with the goal to reduce congestion and vehicle miles traveled. A mode shift, away from single-occupancy vehicles helps reduce congestion, improves air quality, and helps Caltrans meet its sustainability goal. Due to the ineligibility of P&R projects for Interregional Transportation Improvement Program (ITIP) funds and the low priority given to P&R for State Highway Operations and Protection Program (SHOPP) funds, there is little funding available for Caltrans. Therefore, Caltrans is focusing on collaboration with local jurisdictions, regional and transit agencies to develop partnership opportunities to enhance, expand, and/or construct P&R facilities.

Existing P&R Inventory along US 101 South Corridor

Throughout the San Francisco Bay Area, there are 150 public P&R facilities available to commuters. Caltrans has fifty P&R facilities with a capacity of 5,606 parking spaces. Along the US 101 South Corridor, there are three P&R facilities owned and maintained by Caltrans, totaling 239 parking spots. More information about the current P&R inventory can be seen below in **Table 4-1**.

[41] http://www.hsr.ca.gov/

Table 4-1. *Caltrans Owned Park-and-Ride Facilities*

Lot Name	County	Route	Location	Parking Spaces
Whipple	SM	101	West of US 101 at Veterans/Whipple	52
101/92	SM	101	Under Route US 101/SR 92 Interchange	174
3rd Avenue	SM	101	Northeast Quadrant of US 101 and 3rd Avenue	13
			Total	*239*

In addition, there are five major multimodal transit stations within the Corridor in Santa Clara County that provide P&R lots as well as bicycle parking facilities:[42]

- Palo Alto Transit Center (two Rapid/Express Bus lines, seven local bus lines, four local shuttle lines, one regional commuter rail)
- Mountain View Transit Center (one light rail line, three local bus lines)
- Santa Clara Transit Center (one Rapid Bus line, five local bus lines, three commuter rail lines)
- San Jose Diridon Transit Center (four Express Bus lines, four local bus lines, three commuter rail lines)
- Gilroy Transit Center (six Express/Regional bus lines, five local bus lines, one commuter rail line)

Table 4-2 shows additional Park & Ride facilities located in vicinity of US 101.

Table 4-2. *Other US 101 Park-and-Ride Facilities*

Lot Name	County	Route	Location	Parking Spaces
Mountain View	SCL	101	Central Expressway and SR 87 Interchange	338
California Avenue	SCL	101	Alma Street and Oregon Expressway	159
San Antonio	SCL	101	Alma Street and San Antonio Road	199
Sunnyvale	SCL	101	West Evelyn Avenue and North Mathilda Avenue	477
Santa Clara	SCL	101	SR 82 and Railroad Avenue	321
Lawrence	SCL	101	Lawrence Expressway and San Zeno Way	122
Palo Alto	SCL	101	SR 82 and Alma Street	385
Capitol	SCL	101	Capitol Expressway and SR 82 Interchange	378
Blossom Hill	SCL	101	Blossom Hill Road and SR 82	425
San Martin	SCL	101	San Martin Avenue and Monterey Road	167
Gilroy	SCL	101	Monterey Road and West 8th Street	471
Morgan Hill	SCL	101	Butterfield Boulevard and East Main Avenue	486
			Total	*3,928*

<u>Planned P&R Facilities in US 101 South Corridor</u>

The planned P&R projects within the Corridor are listed in **Table 4-3.**

[42] VTA Bus-Rail Map (http://www.vta.org/getting-around/maps/bus-rail-map, January 2016)

Table 4-3. *Planned Park-and-Ride Facilities*

County	Route	Post Mile	Location	New Parking Spaces
San Francisco	101	3.9	US 101/16th Street	116
San Mateo	101	11.9	US 101/SR 92	90
San Mateo	92	R12.4	Eastern side of Norfolk Street under SR 92	82
San Mateo	92	R12.4	Western side of Norfolk Street under SR 92	128
			Total	***416***

4.3 Private Commuter Shuttle Services

As job growth in the US 101 South Corridor has outpaced housing growth in recent years, the spatial mismatch between housing and jobs has increased. Private Commuter Shuttles (Shuttle), which have been in operation since 2004, are the private sector's response to this issue in the San Francisco Bay Area.[43] A Shuttle operator essentially provides a direct, one-seat transit service from multiple pick-up locations to an employer's company campus. Companies primarily select shuttle pick-up locations based on high density clusters of employee residences, then provide a shuttle to those areas, and transport employees to and from work each day. That means that the origins and the routes of Shuttle trips can change with the location of the employees' residences. The Shuttle services are typically operated under a number of models such as by private charter bus companies in contract with a sole employer, by the employer directly, or by third parties working with bus companies to serve multiple employers.

In November 2015, the SFMTA Board approved a one-year Commuter Shuttle Program to become effective on April 1, 2016. The program included regulations on where the loading zones should be located and where large shuttles should operate. It also stipulated shuttle service providers phase-in cleaner vehicles over time and provide real-time GPS tracking information, among others. Staff from SFCTA and SFMTA conducted the *Commuter Shuttle Hub Study*[44] (2016) that explored an alternative reduced-stop hub-based approach. The analysis revealed several tradeoffs between hub scenarios and the existing program. While a hub-model might result in less shuttle vehicle travel on the city's surface streets, the study predicted this model would lead to a 24 - 45 percent drop in shuttle ridership, with nearly all of those riders switching to driving. The SFMTA Board used the findings from this study along with findings from a six-month review of the Commuter Shuttle Program to reauthorize the program in February 2017. The SFMTA continues to monitor the sector through its permanent shuttle coordinator.

The Shuttle services have seen a lot of recent growth due to significant growth in employment in the Bay Area. In 2016, the combined 16 Shuttle providers that operate in San Francisco transported about 9,800 daily riders, up from 8,500 riders two years earlier.[45] MTC also conducted a regional Shuttle census in 2016. **Table 4-4** lists the daily round trips of the 35 companies that participated. If the 35 companies were

[43] *Policy Analysis Memo to County of San Francisco Board of Supervisors*, March 2014.
[44] *Commuter Shuttle Hub Study*, 2016, SFMTA & SFCTA.
[45] *Commuter Shuttle Program: April – September 2016 Status* Report, October 2016 https://www.sfmta.com/sites/default/files/projects/2016/Commuter%20Shuttle%20Program%20Mid%20Term%20Status%20Report.pdf

a single transit agency, their combined annual total passenger counts would rank them the seventh largest transit agency in the Bay Area.[46]

Table 4-4. *Origins and Destinations of Private Commuter Shuttles by County*

Round Trips between:		Number of Trips
San Francisco	Santa Clara	**308**
San Francisco	San Francisco	**18**
San Francisco	Marin	2
Alameda	Santa Clara	119
Alameda	Alameda	19
Alameda	San Mateo	11
San Mateo	San Mateo	**77**
San Mateo	San Francisco	**65**
San Mateo	Santa Clara	**44**
San Mateo	Solano	4
Santa Clara	Santa Clara	**81**
Marin	Santa Clara	6
Marin	San Mateo	3
Contra Costa	San Mateo	9
Contra Costa	Contra Costa	2
Contra Costa	Santa Clara	2
Contra Costa	Alameda	1
Contra Costa	San Francisco	1
Sacramento	Santa Clara	1
Santa Cruz	Santa Clara	31
Total Round Trips:		**804**

Source: MTC Bay Area Shuttle Census via Mercury News, September 2016

4.4 Bicycle and Pedestrian Facilities

Policy Overview: District and Countywide Plans

In addition to the State and regional policies on Complete Streets, each county along the US 101 South Corridor has adopted their own bicycle or pedestrian and bicycle plan, outlining the policy goals as well as identifying pedestrian and bicycle needs within the county.

Caltrans District 4 Bike Plan

The Caltrans District 4 Bike Plan (2018), evaluates bicycle needs on and across the Bay Area's State transportation network and identifies infrastructure improvements to enhance bicycle safety and mobility and by removing barriers to bicycling in the region. This Plan complements and builds on statewide, regional, and local planning efforts to help create a connected, comfortable, and safer bicycle network for the Bay Area. The Bike Plan provided a needs analysis and identified priority improvements. The needs analysis is based on multiple data sources to rank highway segments on Level of Traffic Stress (LTS), low stress connectivity (permeability), collision history, and potential bicycling demand. Improvements are classified by prioritization categories of top, mid, and low tiers. Recommended projects along the US 101 South Corridor from the Bike Plan are included in Chapter 7.

[46] http://mtc.ca.gov/sites/default/files/2016%20Bay%20Area%20Shuttle%20Census.pdf, MTC Memorandum re: Bay Area Shuttle Census, September 2016

Caltrans District 4 Pedestrian Plan

Caltrans District 4 is currently developing a Pedestrian Plan. The Pedestrian Plan will complement the Bike Plan and will identify and prioritize pedestrian needs on and across the State Transportation Network in the Bay Area. The Final Plan is expected to be approved in 2020.

Santa Clara Countywide Bicycle Plan

Santa Clara County's Bicycle Plan[47] was completed and adopted by VTA's Board of Directors in June 2018. The vision for the Santa Clara Countywide Bicycle Plan is "to establish, protect and enhance bicycling as a viable transportation mode and to assure that bicycling is a practical and safe mode of travel, by itself and in combination with other modes." This vision of a bicycle network is to be achieved by collaborating with local communities including adjacent county, state and regional agencies, identifying, planning and designing projects to close gaps in the network, implementing Complete Streets elements to make the network safe, and securing funding.

San Mateo County Comprehensive Bicycle and Pedestrian Plan

The 2011 San Mateo County Comprehensive Bicycle and Pedestrian Plan (CBPP)[48] provides a list of policy goals, and policies to achieve those goals. The goals include a comprehensive countywide system of facilities for bicyclists and pedestrians, more people riding and walking for transportation and recreation, improved safety for bicyclists and pedestrians, Complete Streets and routine accommodation of bicyclists and pedestrians, and strong local support for non-motorized transportation. By analyzing pedestrian demand based on land use, proximity to transit, employment and residential densities, and other factors, the CBPP concludes that pedestrian activity is most concentrated along the US 101 Corridor. C/CAG is updating the San Mateo County Comprehensive Bicycle and Pedestrian Plan, to be completed in Fall 2020.

San Francisco Bicycle Plan

The San Francisco Bicycle Plan (2009)[49] recognizes bicycling as a critical component to improving the future health and prosperity of the City and helping achieve numerous policy goals, including reducing greenhouse gas emissions, conserving energy, improving the health and physical fitness of residents, mitigating the negative effects of traffic congestion, improving air quality, providing affordable transportation alternatives and creating more livable neighborhoods. The City aims to make bicycling a more viable mobility option and identifies action items that will ensure a major increase in the number of people that use bicycles safely as transportation.

Pedestrian and Bicycle Facility Needs and Projects

The pedestrian and bicycle facility needs assessment was developed utilizing a variety of sources, including:

- A high-level geo-photographic survey (via Google Maps) conducted by Caltrans District 4 Planning
- Approved Countywide pedestrian and bicycle plans,
- *Caltrans District 4 Bicycle Plan*

Existing Conditions

[47] https://www.vta.org/projects/santa-clara-countywide-bike-plan-update-2018)
[48] http://ccag.ca.gov/wp-content/uploads/2014/07/CBPP_Main-Report__Sept2011_FINAL.pdf
[49] https://www.sfmta.com/projects-planning/projects/2009-san-francisco-bicycle-plan

A high-level geo-photographic survey was conducted via Google Maps to determine the existing conditions of the pedestrian and bicycle facilities along the US 101 South Corridor. Due to time and resource constraints, this CCP only focuses on freeway crossings for bicycles and pedestrians within the Corridor. An inventory of intersections, interchanges, and over- and under-crossings along US 101 and I-280 within the Corridor limits was created and included in **Appendix D**. A total of 116 crossings have been identified. In addition to the physical description of the active transportation facilities, the inventory incorporates nearby transit facilities and the posted speed limits of each vehicle crossing. Crossings at interchange locations are highlighted as they are often an obstacle in the active transportation networks due to conflicts with vehicular traffic, and because freeways act as a barrier to walking and bicycling, and there are often few opportunities to cross freeways. See **Figures 4-1 and 4-2** for bicycle facilities within the US 101 South Corridor.

Needs Assessment and Project List

In addition to the bicycle projects identified in each County's most current pedestrian and bicycle plan and the updated project list from each CMA as part of the District 4 Bike Plan, District 4 staff conducted additional analysis to identify bicycle needs along the Corridor. The analysis complements the needs assessment from the District 4 Bike Plan and takes into consideration the existing conditions of the bicycle facilities within the Corridor as discussed earlier. Improvements from existing plans and project lists were supplemented by additional locations that require improvement based on the analysis.

For pedestrian facilities, the projects list is mainly based on the current countywide pedestrian and bicycle plans as well as data from the existing conditions inventory where challenges to pedestrian travel have been identified.

The combined pedestrian and bicycle project list is included in Table 56 under Recommended Strategies. Caltrans has endorsed pedestrian and bicycle oriented design in various guidelines and standards such as Design Information Bulletin (DIB) 84[50], the Highway Design Manual[51], the Complete Intersections: A Guide to Reconstructing Intersections and Interchanges for Bicyclists and Pedestrians (2010)[52], and National Association of City Transportation Officials (NACTO) Urban Bikeway Design and Urban Street Design Guides.[53] In general, the following strategies should be implemented to ensure the safety of bicyclists and pedestrians and provide connections for multi-modal travel.[54, 55]

- Complete Streets Strategies:
    - Reconstruct ramps to intersect crossroad at 90-degree angle with as small a radius as possible and install a stop or signal control
    - Encourage slower vehicle speeds until past ramp entry
    - Limit on-ramps to a single entry lane, where feasible

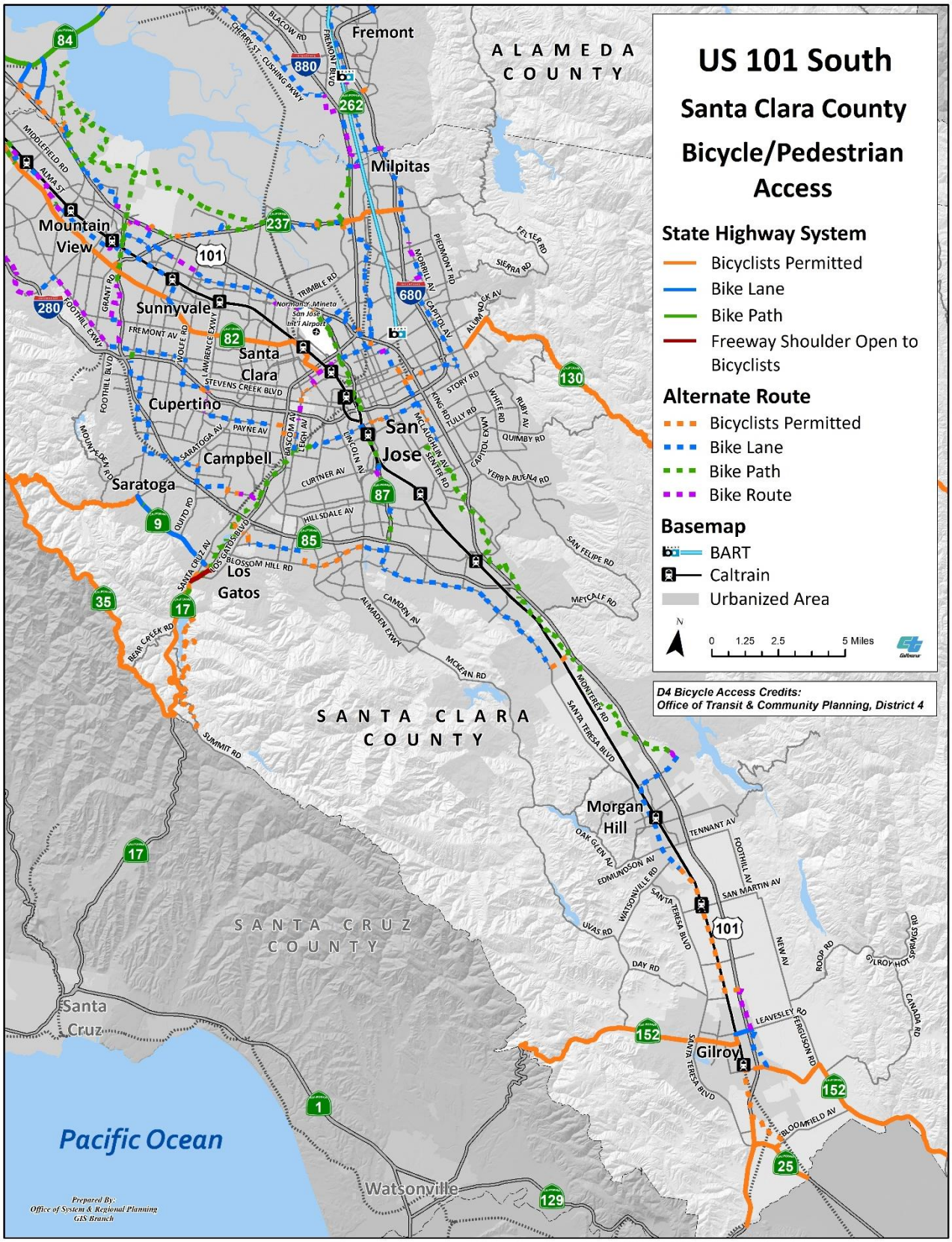
[50] http://www.dot.ca.gov/design/stp/dib/dib84-01.html
[51] http://www.dot.ca.gov/design/manuals/hdm.html
[52] https://nacto.org/docs/usdg/complete_intersections_caltrans.pdf
[53] https://nacto.org/2014/04/11/california-officially-endorses-nacto-urban-street-design-guide-and-urban-bikeway-design-guide/
[54] https://altaplanning.com/wp-content/uploads/Complete-Intersections-A-Guide-to-Reconstructing-Intersections-and-Interchanges-for-Bicyclists-and-Pedestrians.pdf
[55] http://www.divergingdiamond.com/

- Provide single, rather than dual, right-turn only lanes, or minimize conflicts where dual right turn lanes are needed
- If a dual right-turn only lane is needed, channelize it and split into two separate movements
- Widen sidewalks and shoulders to standard widths, with in general the minimum being 5 feet and 4 feet, respectively.

- Pedestrian-Specific Strategies:
  - Locate crosswalks appropriately, considering speed, sight lines, and crossing distance
  - Leading Pedestrian Interval
  - Shorten crossing distance
  - Install pedestrian warning signs, yield signs, pedestrian-actuated beacons, and high-visibility crosswalks where crossings are uncontrolled or yield-controlled
  - Provide sidewalks on both sides of overcrossings and undercrossings, where feasible
  - For ramp crossings, add pedestrian signals, coordinated with adjacent traffic signals
  - Install accessible pedestrian signals
  - Lighting at uncontrolled crossings, pedestrian scaled lighting
  - Provide "no right-turn on red" signs where there are two right turn-lanes and a pedestrian crossing

- Bicycle-Specific Strategies:
  - Provide context sensitive bicycle facilities on all roads crossing 101, including those through interchanges. Ensure the quality of the bicycle facility is maintained or improved through the interchange.
  - Provide a bicycle pocket or bike lane to the left of dedicated right turn lanes or a Class IV separated bikeway to the right with a protected crossing
  - Widen/add buffers to existing and proposed bike lanes, minimum width 18 inches

Figure 4-1. *Bicycle Facilities in 2017 in Santa Clara County*



Source: Caltrans, District 4, GIS and Technical Support Branch, 2017

Figure 4-2. *Bicycle Facilities in 2017 in San Mateo and San Francisco Counties*

Source: Caltrans, District 4, GIS and Technical Support Branch, 2017

4.5 Transportation Systems Management and Operations

Caltrans is committed to effective TSMO to optimize the performance of California's transportation systems for all users and modes of travel. Successful TSMO requires proactive integration of the transportation systems to efficiently move people and goods along highly congested urban corridors. Examples of TSMO strategies include, but are not limited to, ramp metering, traffic signal synchronization, Intelligent Transportation Systems/Traffic Operations Systems (ITS/TOS), and managed lanes. Efficiency can often be achieved by operational improvements through ITS deployments. These include four types of management for improving throughput:

- System management for recurring localized congestion (ramp metering, managed lanes, traveler information, dynamic speed limits, traffic signals and transit priority, parking management system, automated vehicles).
- Incident management for non-recurrent congestion (detection-verification-response, closed-circuit television (CCTV), changeable message signs (CMS), highway advisory radio (HAR), weather detection, traveler information system).
- Event management for emergencies, disasters and other occurrences (through system monitoring, evacuation management, route selection).
- Asset Management for managing existing infrastructure and other assets to deliver an agreed standard of service. One of the first steps in the efficient management of the transportation system will be the completion and implementation of a Transportation Asset Management Plan.

As TSMO strategies are developed and implemented, additional ITS/TOS elements within the corridor are often required. Caltrans Strategic Management Plan 2015–2020 has as Strategic Objective to "effectively manage transportation assets by implementing the asset management plan and embracing a fix-it-first philosophy." The plan specifies a target of maintaining ninety percent or better ITS/TOS element health by 2020. Operations and maintenance (O&M) resources are essential to achieve this fix-it-first target. As more ITS/TOS elements are implemented, O&M resource needs will continue to grow.

Traffic Signal Coordination and Communication

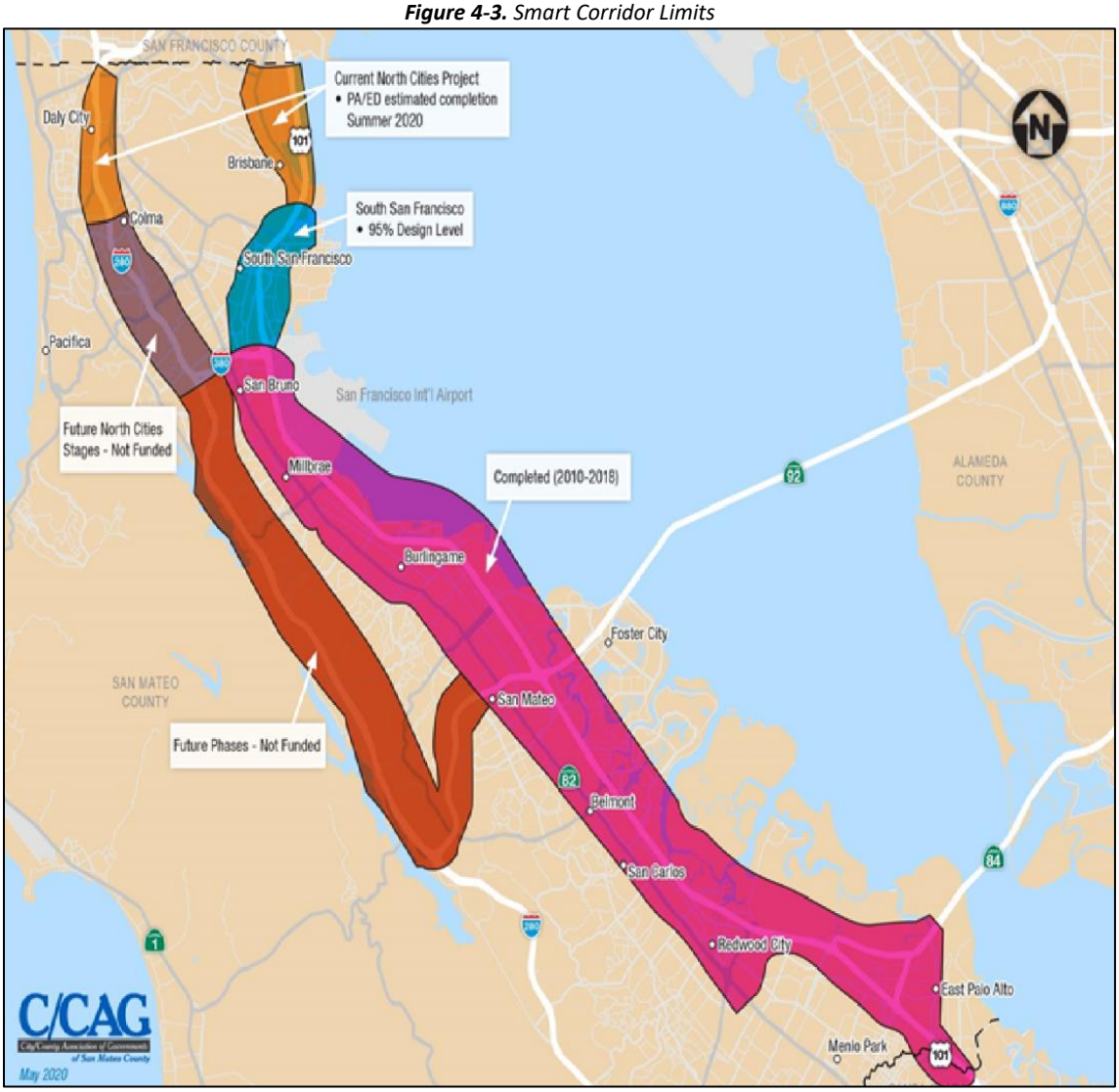
With emerging new technologies, local agencies along the Corridor are exploring projects related to traffic signal coordination and communications to improve traffic flow to and from the local streets and expressways to the highway system.

Smart Corridor Project

Another example of the TSMO strategies within the US 101 South Corridor is the interagency Smart Corridor Project that was launched in 2007. The project limits are US 101 (and parallel facilities SR 82, SR 84, SR 114, and SR 109) between the Santa Clara/San Mateo County line and I-380, as shown in **Figure 4-3**. There are currently two projects under development to extend the Smart Corridor Project limits: the South San Francisco project and the northern cities expansion project. The South San Francisco project is from San Bruno city border to South San Francisco city border. It includes major and minor arterials that extend north-south parallel to US 101. The other Smart Corridor project under development covers the cities of Brisbane, Colma and Daly City, and will cover arterials adjacent to US 101 and I-280. The project objectives include monitoring real time traffic conditions and adjusting signal timing remotely, enabling shared control and operation, improving traffic flow and mobility, optimizing vehicle throughput, reducing traffic delays, and improving travel time reliability. Project stakeholders include local cities, law enforcement, and Caltrans. ITS/TOS elements implemented for the Smart Corridor Project include:

- Directional signs and arterial changeable message signs
- Center-to-center communications between San Mateo County Hub and Caltrans District 4 Traffic Management Center
- Communications (conduit, fiber, copper, wireless, software, and associated equipment)
- Fixed or pan-tilt-zoom CCTV cameras
- Power supply lines and equipment
- Vehicle detection systems

Figure 4-3. *Smart Corridor Limits*



Source: C/CAG 2019

Ramp Metering

As required by Caltrans Deputy Directive DD-35-R1 Ramp Metering, each District that currently operates, or expects to operate ramp meters within the next ten years, shall prepare a District Ramp Metering Development Plan (RMDP). The RMDP contains a list of ramp metering locations currently in operation or planned for operation in the next ten years. According to the 2017 RMDP, District 4 has 734 existing and/or programmed ramp meters and 561 planned ramp meter projects as of October 2017. **Figure 4-4** on the

next page shows operational, non-operational, partially constructed, and planned ramp metering locations along the US 101 South Corridor.

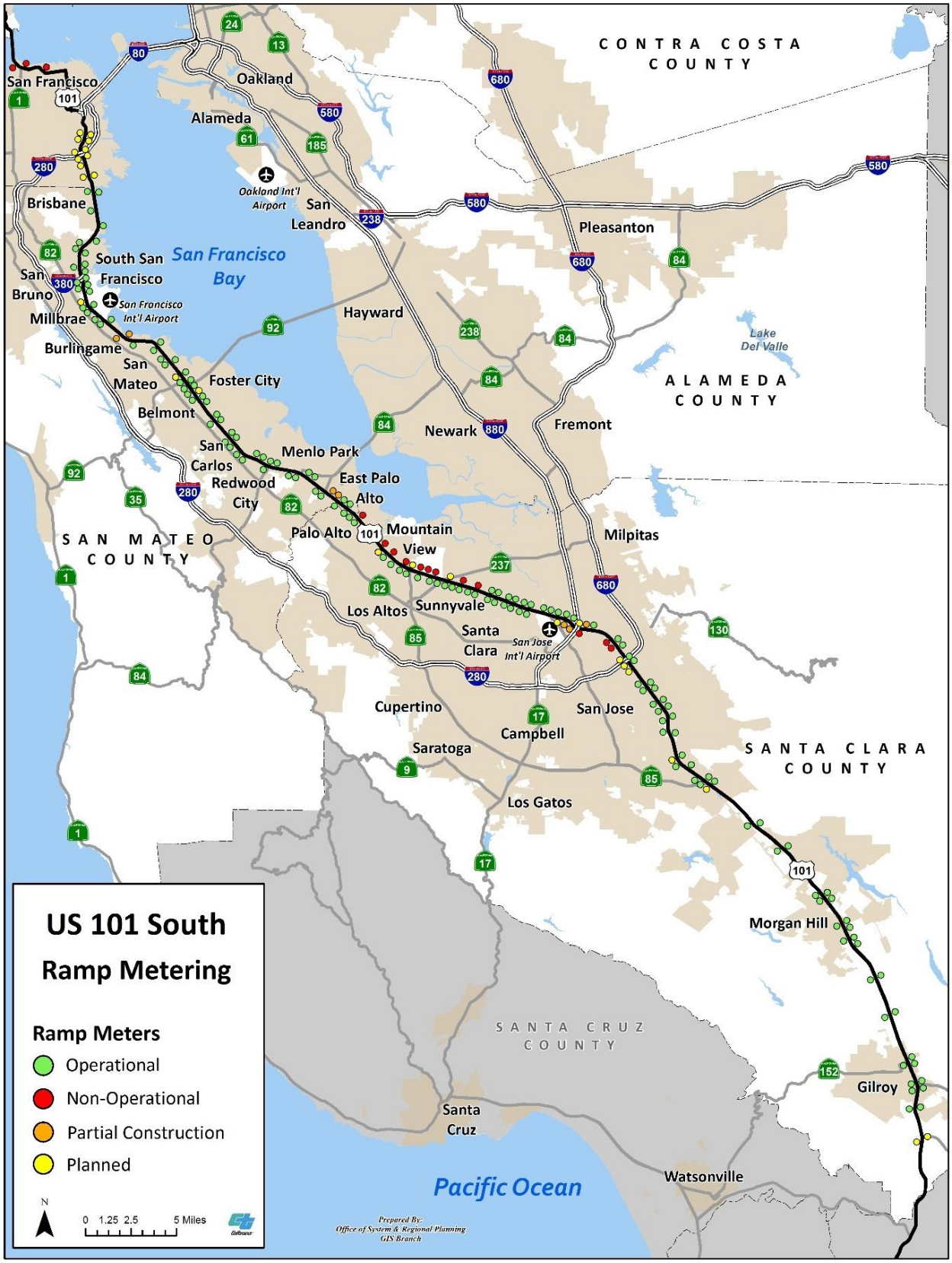
Other ITS/TOS Elements

Table 4-5 below summarizes other ITS/TOS elements in addition to ramp metering within the Corridor. They include: CCTV, CMS, Extinguishable Message Signs (EMS), Informational Message Signs (IMS), Variable Message Signs (VMS), HAR, and Traffic Monitoring Stations (TMS).

Table 4-5. *Other ITS/TOS Elements*

TOS Element	Direction	Seg 1 & 2 (SCL 101, 52.5 miles)	Seg 3, 4 &5 (SM 101, 26.1 miles)	Seg 6 (SF 101, 4.5 miles)	Seg 7 (SF 280, 3.2 miles)
CCTVs	NB	44	34	6	6
	SB	28	35	7	4
CMS/EMS	NB	5/5	3/2	5/2	-
	SB	6/5	5/4	2/2	-
IMS/VMS	NB	-	8/2	-	-
	SB	-	3/1	-	-
HAR	-	5	4	*1*	
TMS	NB	68	23	1	-
	Both	50	63	13	1
	SB	65	23	-	-

Figure 4-4. *Ramp Metering Locations*



Source: Caltrans, District 4, GIS and Technical Support Branch, 2017

4.6 Transportation Demand Management

Transportation demand management (also known as traffic demand management or travel demand management, all TDM) is a broad application of projects and strategies aimed at reducing travel demand or shifting the demand to other modes, other routes, or other times.

Policy and program driven projects include:

- Alternative mode travel incentives
- Carpool vanpool incentives
- Subsidized transit passes
- Parking management programs
- Guaranteed ride home programs
- Alternate mode trip planning websites and applications

TDM can also include infrastructure and operational projects. Already mentioned in paragraphs 4.1 to 4.4 are shuttle services, bike parking, park-and-ride lots, paratransit services, and Complete Street designs on local streets.

TDM Examples

Local jurisdictions and transportation agencies in Santa Clara County have multiple TDM programs in place. One example is the Multi-Family Residential TDM Program in Sunnyvale that has incentives for reducing single occupancy trips, including help from onsite TDM coordinators. VTA is working on bus stop and shelter upgrades to support the Rapid Transit project on Stevens Creek Boulevard and San Carlos Street. Hotel TDM targets the hotel guests in Santa Clara County and may include pre-loaded Clipper Cards, information on reaching the hotel without using a car, and bicycle parking for guests and personnel.

A TDM example in San Mateo County is the local community and employer-based commuter shuttle services. Most of these shuttle routes facilitate movement in and near the US 101 Corridor and provide access to adjacent Caltrain, BART, or Ferry stations. In addition, Commute.org, the countywide TDM agency for San Mateo County provides vanpool, carpool, and multimodal commute incentives and bicycle safety training in San Mateo County. A carpool incentive pilot program is also being implemented by the City/ County Association of Governments of San Mateo County.

San Francisco has identified a climate program in the regional transportation plan that includes TDM and Emission Reduction Technology. Projects in this category implement strategies and programs that reduce emissions, encourage alternative transportation modes, and manage transportation demand including but not limited to projects such as TDM program implementation, parking management, local area shuttle and paratransit services.

4.7 Broadband

California Governor's Executive Order S-23-06 Twenty-first Century Government directed establishment of the California Broadband Task Force to bring together Caltrans and public and private stakeholders to identify opportunities to facilitate broadband installation across the state. Assembly Bill 1549 of 2016 requires Caltrans to notify broadband deployment organizations on construction methods suitable for broadband installation through their internet website to bring together private and public partnership for opportunities to increase advanced communication technologies. Caltrans developed the "Incorporating

Wired Broadband Facility on State Highway Right-of-Way User Guide," providing guidelines on Caltrans' processes for wired broadband providers to incorporate wired broadband facilities in State highway right-of-way.

In 2018, the California Transportation Commission's (CTC) Comprehensive Multimodal Corridor Plan Guidelines identify the need to install conduit along certain California highways for future deployment of broadband fiber to service the needs and demands of a wide range of users. The California Advanced Services Fund (CASF) funded 17 regional broadband consortia across the state to identify "Strategic Broadband Corridors" that should become part of future Caltrans' planning in an effort to provide broadband services to areas currently without broadband access and build out facilities in underserved areas.

US 101 South is among the proposed strategic broadband corridors recommended by the regional broadband consortia. See **Figure 4-5** for a map of strategic broadband corridors.

MTC's Regional Communication Strategic Investment Plan

Building on the strategies to enhance the regional communications network outlined in previous iterations, the 2013 Bay Area Regional Communications Plan was updated to factor in additional programs (Express Lanes, Integrated Corridor Management, Freeway Performance Initiative), and to consider new priorities from local and regional stakeholders throughout the Bay Area. This Plan introduced a "Regional Communication Fiber Ring" around the San Francisco Bay, aimed to reduce lease-line recurring costs, upgrade existing infrastructure and share data among agencies.

The Bay Area Regional Communications Plan is now being updated to create a Regional Communication Strategic Investment Plan. This project will propose projects and create a roadmap for future investments. It will enable MTC, Caltrans, and other regional stakeholders to develop a regional communications network which will provide a foundation of shared infrastructure. This foundation can potentially support future broadband deployment in the Bay Area. The proposed "fiber ring" includes US 101, I-80, I-580, I-880 and other priority corridors, and is among the first implementation phases recommended by the plan.

Regional Communications Infrastructure

The existing regional communications infrastructure includes the following components.

- 17 Bay Loop Microwave sites owned and operated by the Bay Area Regional Interoperable Communications Systems Authority (BayRICS) throughout the nine-county Bay Area.
- BART fiber communications infrastructure along their right-of-way throughout the Bay Area. Caltrans has 16 access points to BART fiber strands. The City of San Jose, City of San Francisco, City of Oakland, and the City of Dublin also have connections to BART fiber communications infrastructure.
- Caltrain Positive Train Control Project. Caltrain right-of-way/infrastructure is currently the most available alignment for shared infrastructure, but other systems like the possible High-Speed Rail alignment may be additional sources as the opportunities arise in the future.

Sub-Regional Communications Infrastructure

There is also sub-regional infrastructure found within the US 101 South Corridor, as discussed below.

Peninsula

Existing communications infrastructure within the Peninsula sub-region consists of approximately 20 miles of conduit and fiber along El Camino Real (SR 82) between San Bruno and Palo Alto, and several

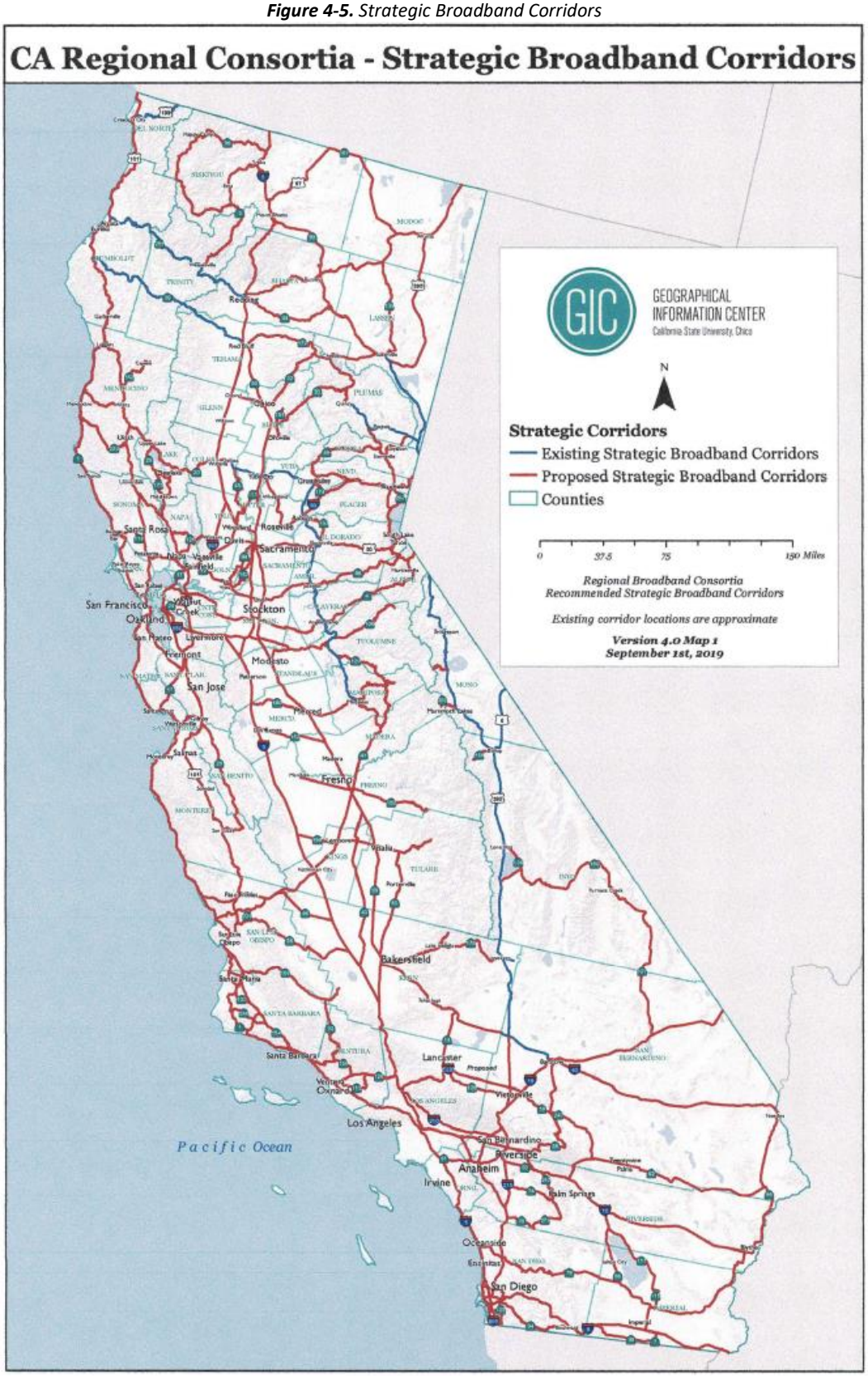
miles of fiber along Caltrain's right-of-way. The existing communications infrastructure described above serves the C/CAG US 101 Smart Corridor. Most of the Smart Corridor fiber is installed along El Camino Real and Bayfront Expressway, within Caltrans right-of-way.

South Bay

Existing communications infrastructure within the South Bay sub-region consists of fiber cable and conduit on portions of US 101 and El Camino Real installed by VTA and Caltrans. As part of the I-880 HOV Widening Project, communications conduits were installed on I-880 between SR 237 and US 101. In addition, many local principal arterials, and almost all the expressways have fiber communications infrastructure installed. A large portion of the existing fiber communications network in the South Bay was installed by the Silicon Valley – ITS (SV-ITS) program as a traffic management strategy.

In addition to the existing infrastructure, future transportation projects such as express lanes projects may also opportunities to help support broadband expansion. See Chapter 7 for future transportation projects within the Corridor.

Figure 4-5. *Strategic Broadband Corridors*



4.8 Freight Network, Facilities and Trip Generators

US 101 is identified on the federally-designated National Highway Freight Network (NHFN) as a 'Primary Highway Freight System (PHFS) route. The route is a major gateway between Silicon Valley and San Francisco and serves as a primary access route to San Francisco International Airport, the Norman Y. Mineta San Jose International Airport and for intraregional goods movement. The route in its entirety is part of the STAA National Network and identified as a Tier 2 facility in the California Freight Mobility Plan (CFMP), a route critical to freight movement with a medium freight network priority for project investments. I-280 is identified as a 'Non-PHFS Interstate' route in the NHFN, and as a Tier 3 facility. Tier 3 routes, while still critical to freight movement and needs investment, have the relatively lowest freight network priority.[1] The State is committed to a broader, long-term vision for accelerating the transition of California's multimodal freight system from its already robust stature, to being a safer, more efficient and reliable, less polluting freight system. California Freight Mobility Plan 2020, to be approved in Summer 2020, responds to these needs through various initiatives and contains an extensive set of projects.

US 101 is included in the 2016 San Francisco Bay Area Goods Movement Plan. The route is also part of the study called Northern California Megaregion Goods Movement Study by MTC, with support from Caltrans, the San Joaquin Council of Governments (SJCOG), the Sacramento Area Council of Governments (SACOG) and the Association of Monterey Bay Area Governments (AMBAG). The mega-region contains many goods movement clusters (also known as freight-dependent industries), and US 101 is critical in connecting the Bay Area to the Central Valley (via SR 152) and San Benito and Monterey Counties.

Approximately three percent of total vehicular traffic can be attributed to trucks along most of US 101 in San Francisco, San Mateo, and Northern Santa Clara County. South of the US 101/SR 85 south interchange, truck traffic percentage is up to 8.5 percent, although the total traffic volumes are lower. Expected increases in air cargo would translate to an increase in truck volumes on US 101 coming into and out of the San Francisco International Airport and the Norman Y. Mineta San Jose International Airport.[2]

Major freight traffic generators within the Corridor include:

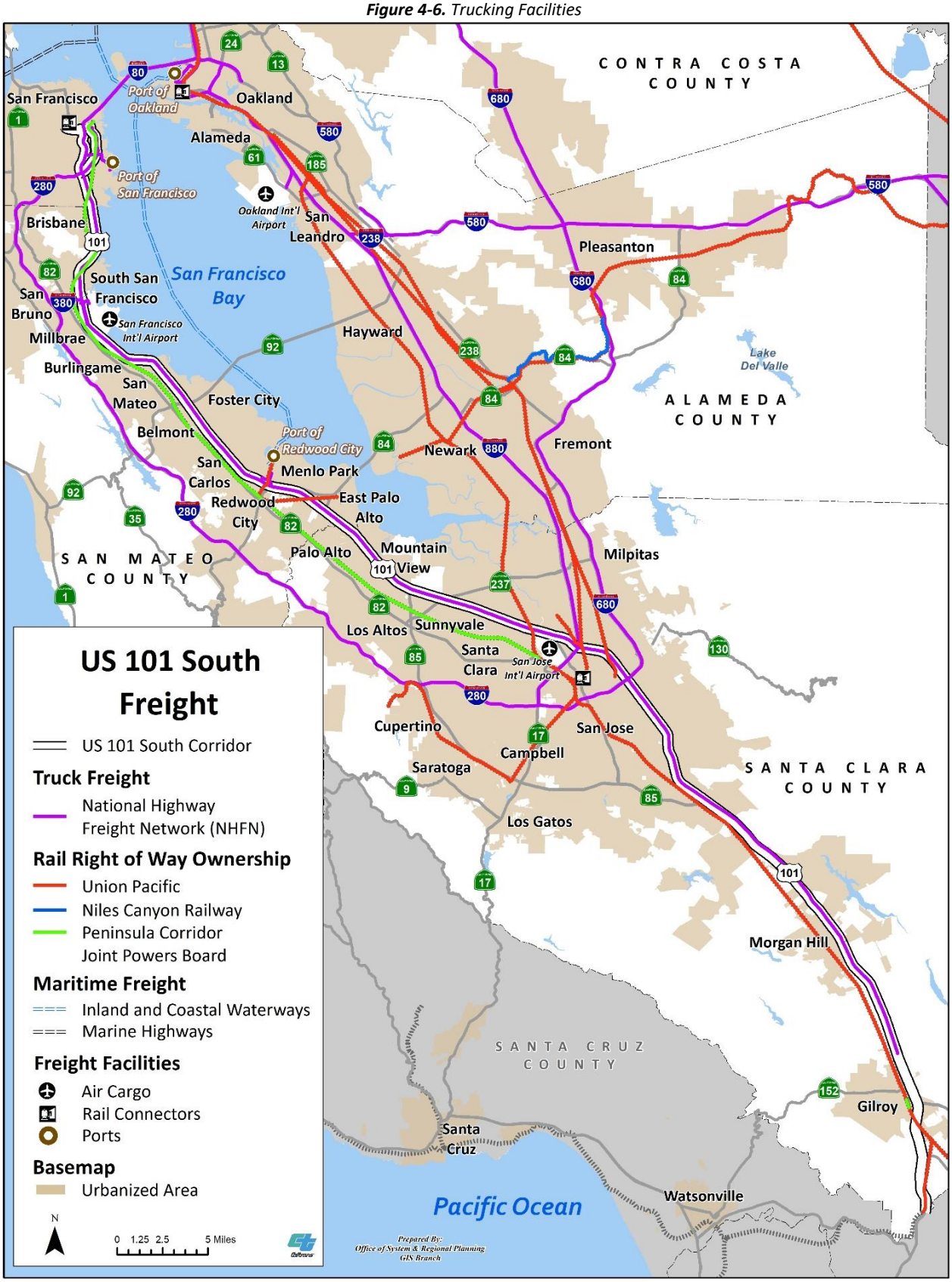
- San Francisco International Airport
- Norman Y. Mineta San Jose International Airport
- Port of San Francisco
- Port of Redwood City

The railways within the Corridor are Tier 2 facilities. United Pacific Railroads (UP) owns the railway tracks between San Benito/Santa Clara County line and Tamien Station in San Jose (and then crossing US 101 toward the East Bay). Caltrain operates a locally vital passenger rail service within the Corridor and owns the tracks between San Francisco and Tamien Station in San Jose. Caltrain allows freight trains to access its tracks. There are also short-lines railroads between the Ports of San Francisco and Redwood City and the other rail networks. A short-line railroad provides ~~a~~ freight rail services for bulk based and containerized freight to be transported from cargo ships to and from nearby intermodal hubs. **Figure 4-6** shows freight facilities with the US 101 South Corridor.

[1] California Freight Mobility Plan, December 2014

[2] http://www.dot.ca.gov/hq/tpp/offices/ogm/factsheets/aircargo/AirCargo_SanFrancisco_092616.pdf http://www.dot.ca.gov/hq/tpp/offices/ogm/factsheets/D4-Contact-Only-Update/pdfs/SanJose_Factsheet_070512_(contact_update_091316).pdf

Figure 4-6. *Trucking Facilities*



Source: Caltrans, District 4, GIS and Technical Support Branch, 2017

Chapter 5: Freeway Performance

5.1 Existing Conditions

The existing conditions for the US 101 South Corridor were derived from the following reports:

- *The Project Report (August 2015) and the accompanying Final Traffic Operations Analysis Report (June 2014) for the US 101 Express Lanes Project in Santa Clara County*. The study limits are from the US 101/Tennant Avenue Interchange in Morgan Hill (SCL, US 101, PM 15.1) to the San Mateo County line just north of the Embarcadero Road interchange in Palo Alto (SCL, US 101, PM 52.6).
- *The Santa Clara County US 101 Ramp Metering Implementation Plan* (January 2017). The study limits are from the US 101/SR 25 Interchange (SCL, US 101, PM 3.2) to the US 101/SR 85 Interchange in San José (SCL, US 101, PM R26.8).
- *The Draft Final Traffic Operations Analysis Report for the US 101 Managed Lanes Project in San Mateo County (August 2017).* The study limits are from Rengstorff Avenue, Mountain View in Santa Clara County (SCL, US 101, PM 50.6) to East Grand Avenue, South San Francisco in San Mateo County (SM, US 101, PM 21.8).
- *Final Report for the San Francisco Freeway Corridor Management Study Phase 2 (2018),* prepared by the San Francisco County Transportation Authority. The study limits are from the US 101/I-380 interchange in San Bruno (SM, US 101, PM 20.7) to the US 101/I-80 interchange (SF, US 101, PM 4.2), and I-280 within San Francisco (SF, I-280, PM 0.0-7.5).
- *2016 Congestion Management Program Monitoring and Conformance Report*, Santa Clara County.

Where data was not available in the reference sources listed above, Caltrans Traffic Census, (**Table 5-1**) INRIX and Traffic Accident Surveillance and Analysis System-Transportation Systems Network (TASAS-TSN) were used to fill-in the gaps to provide a general assessment of freeway the performance and to complement existing project reports and studies.

Santa Clara County

This section documents the existing condition of Segments 1 and 2 of the US 101 South Corridor from San Benito/Santa Clara County line to Santa Clara/San Mateo County line just north of Oregon Expressway/Embarcadero Road.

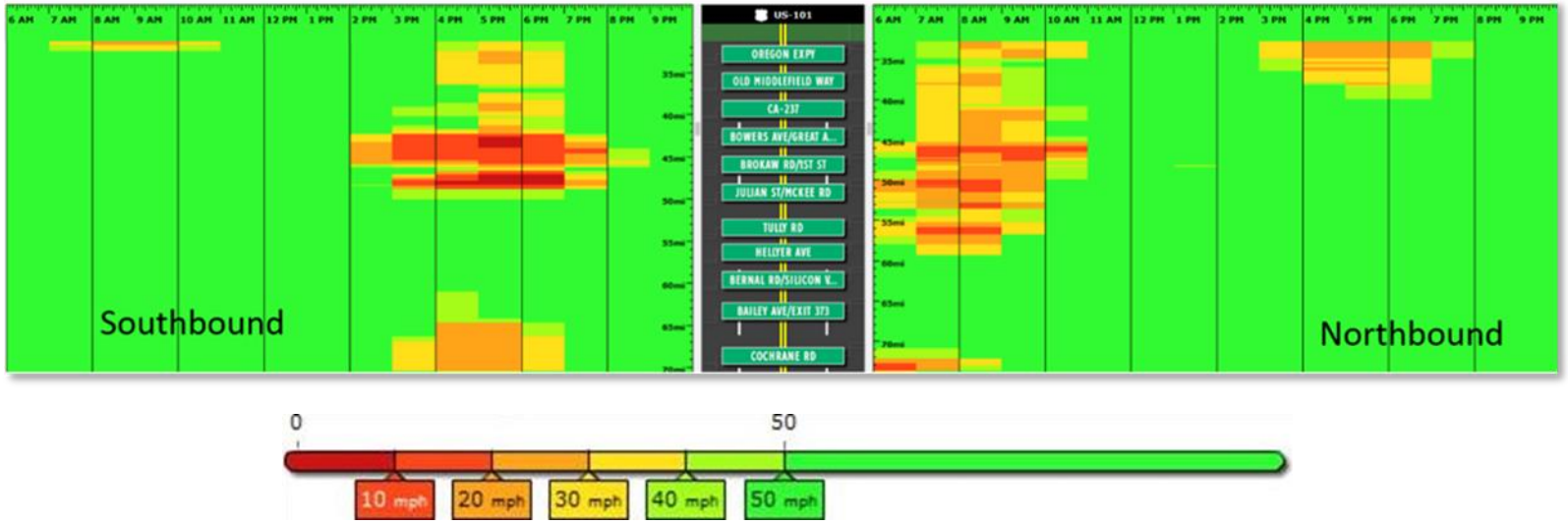
Tennant Avenue to San Mateo County Line

US 101 within the study limits of the Project Report is a full access-controlled freeway consisting typically of three general purpose (GP) lanes and one HOV lane in each direction. Auxiliary lanes are found in various locations along US 101 to facilitate merging and weaving operations between interchanges. There are currently no HOV lanes between Tennant Avenue and Cochrane Road in Morgan Hill, while two HOV lanes exist between the US 101/SR 85 North Interchange in Mountain View and just north of Loma Verde Avenue in Palo Alto (PM SCL 51.10). **Figures 5-1 and 5-2** show speed contours derived from INRIX data.

From the Caltrans US 101 Project Report (August 2015, pp 49 – 55), the AM peak hour traffic demand in 2009 was 4,273 – 9,086 vehicles for the northbound (NB) with the greatest traffic demand occurring between Capitol Expressway Diagonal On and Tully Road Diagonal NB On. For the southbound (SB) direction AM peak hour traffic demand was 2,770 – 7,690 vehicles, with the greatest traffic demand occurring between north of Oregon Expressway/Embarcadero Road and Shoreline Boulevard/SR 85 off.

Figure 5-1. *INRIX March 2011 Speed Contours US 101 from Cochrane Road to Oregon Expressway*

Figure 5-2. *INRIX March 2016 Speed Contours US 101 from Cochrane Road to Oregon Expressway*



The PM peak hour demand was 2,050 – 6,850 vehicles for NB with the greatest traffic demand occurring between San Antonio off and north of Oregon/Embarcadero. For the SB direction PM peak hour traffic demand was 2,770 – 8,150 with the greatest traffic demand occurring between Oakland off and I-280/680.

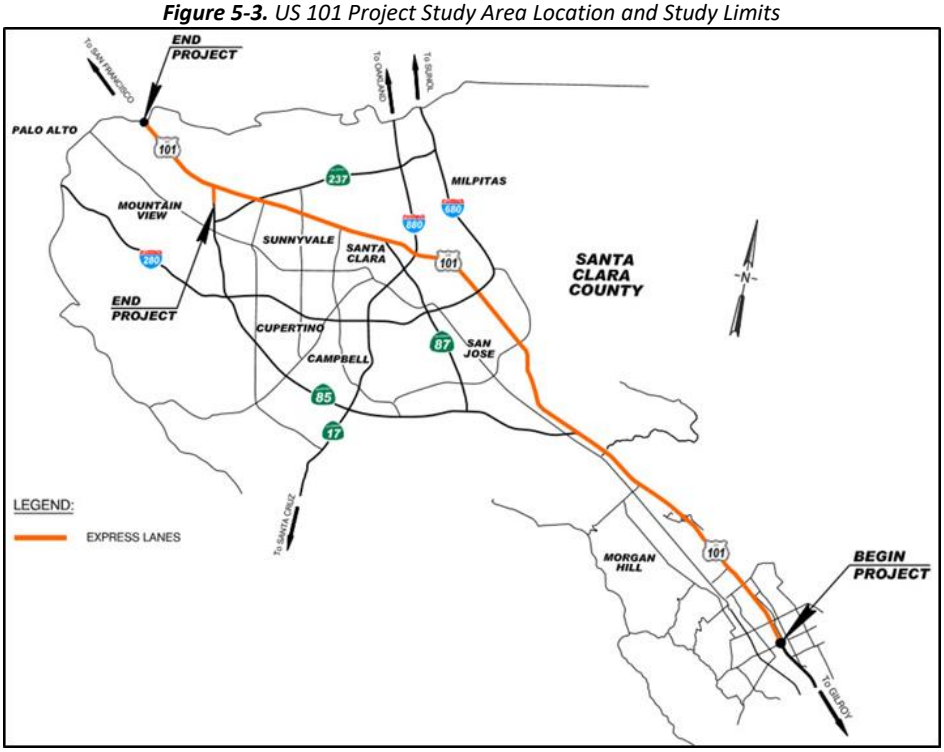
Truck percentages ranged from four to five percent towards the northern study limit to eight to nine percent towards the southern study limit. HOV accounted for eleven to 21 percent of the traffic volumes during peak periods (generally 6:00-9:00 AM for AM peak period and 3:00-6:00 PM for PM peak period). In 2011, US 101 within the study limits carried up to 245,000 vehicles per day including HOV traffic. According to Caltrans Traffic Census, the highest Average Annual Daily Traffic (AADT) in 2015 was 258,000, observed at the Tully Road Interchange.[56] The project study area location and study limits are depicted in **Figure 5-3**.

Table 5-1. *2015 AADT*

County	US 101 Post Miles	Location	2015 AADT Volumes
SCL	R16.006	EAST DUNNE AVENUE	132000
	R26.78	SAN JOSE, SR 85	138000
	30.097	HELLYER AVENUE	180000
	31.695	SAN JOSE, CAPITOL EXPRESSWAY	219000
	33.034	SAN JOSE, TULLY ROAD	258000
	34.87	SAN JOSE, I-280, I-680	200000
	38.3	SAN JOSE, I-880	147000
	39.925	SR 87, GUADALUPE PARKWAY	201000
	43.85	SUNNYVALE, LAWRENCE EXPRESSWAY	181000
	48.103	MOUNTAIN VIEW, SR 85	227000
	52.55	SANTA CLARA/SAN MATEO COUNTY LINE	222000

Source: Caltrans Traffic Census Database http://www.dot.ca.gov/trafficops/census/

Figure 5-3. *US 101 Project Study Area Location and Study Limits*



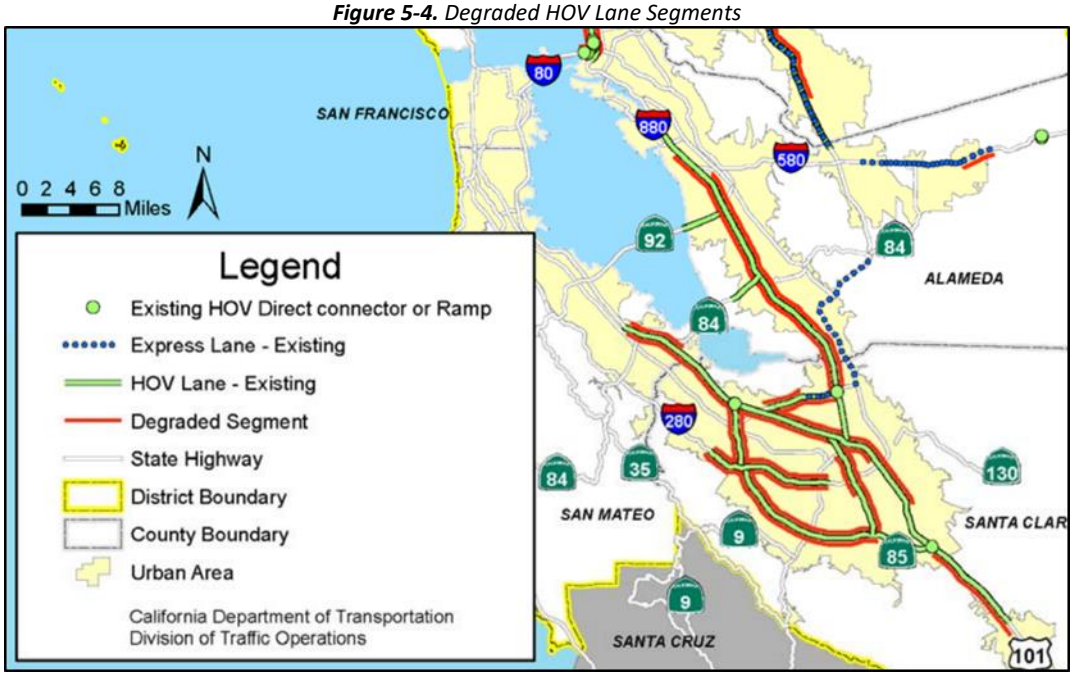
[56] http://www.dot.ca.gov/trafficops/census/

Freeway Congestion

MTC's Vital Signs report ranks southbound US 101 from Fair Oaks Avenue in Sunnyvale to Oakland Road in San José as the third most congested segment in the Bay Area in 2017. Other congested areas in this section listed in the Top 50 Congested Locations include northbound from Story Road in San José to North Fair Oaks Avenue in Sunnyvale (#15), northbound from Blossom Hill/Silver Creek Valley Road to Tully Road (#31) and northbound between San Martin Avenue in Gilroy and East Dunne Avenue in Morgan Hill (#50).[57]

According to VTA's 2016 Monitoring and Conformance Report, nearly 20 miles of HOV lanes in the northbound direction during the AM peak period and nearly 11 miles in the southbound direction during the PM peak period were operating at or below Level of Service F (i.e. under 35 miles per hour). In **Figure 5-4,** degraded HOV lane segments are shown in red.

Figure 5-4. *Degraded HOV Lane Segments*



Source: Caltrans Managed Lane Degradation report

Table 5-2 shows observed general purpose (GP) lane bottlenecks within the Corridor and **Table 5-3** shows the congestion locations in HOV lanes.

[57] https://mtc.ca.gov/sites/default/files/top_50_congestion_locations-2017.pdf

Table 5-2. *Bottlenecks*

Direction/Time	Location	Queue Length	End of the Queue
NB/AM	Tully Road loop on-ramp to Tully Road Diagonal on-ramp	3.6 miles	Hellyer Avenue
	McKee Road on-ramp to Old Oakland Road off-ramp	1.5 miles	Alum Rock Avenue
	Trimble Road on-ramp to Montague Expressway off-ramp	2.5 miles	Old Bayshore Highway
	Shoreline Boulevard on-ramp to NB Rengstorff Avenue off-ramp	1.5 miles	Moffett Boulevard
	Between Dunne diagonal on and Cochrane off*	5.1 miles	Masten Avenue
SB/AM	University Avenue on-ramp to Oregon Expressway off-ramp	5.0 miles	Woodside Road
	Oregon Expressway on-ramp to San Antonio Road off-ramp	0.5 miles	North of Embarcadero Road
NB/PM	San Antonio Road on-ramp to Oregon Expressway/Embarcadero Road off-ramp	3.8 miles	Ellis Street
	Oregon Expressway/Embarcadero Road on-ramp to University Avenue off-ramp	1.5 miles	Oregon Expressway/ Embarcadero Road
SB/PM	Oregon Expressway on-ramp to San Antonio Road off-ramp	4.0 miles	Between Marsh and Woodside Roads
	Rengstorff Avenue on-ramp to Old Middlefield Way on-ramp	1.0 miles	San Antonio Road
	De La Cruz Boulevard on-ramp and SR 87 off-ramp	3.6 miles	Lawrence Expressway
	Oakland Road on-ramp to McKee Road off-ramp	2.0 miles	Fourth Street
	I-280/I-680 on-ramp to Tully Road off-ramp	2.0 miles	Santa Clara Street
	Tully Road on-ramp to Capitol Expressway off-ramp	2.2 miles	Story Road
	US 101 a GP lane drop south of SR 85 I/C*	1.5 miles	SR 85 connector ramp
	HOV lane drop before Cochrane off-ramp*	2.5 miles	Bailey Avenue
	Tennant Avenue ramp*	2.0 miles	Cochrane (Bailey Avenue)

Source: Santa Clara County US 101 Project Report–4.3.1, pp. 29 – 30, and Santa Clara County US 101 Ramp Metering Implementation Plan, Table 4, p. 20, and Table 15, p. 39

* 2017 figures

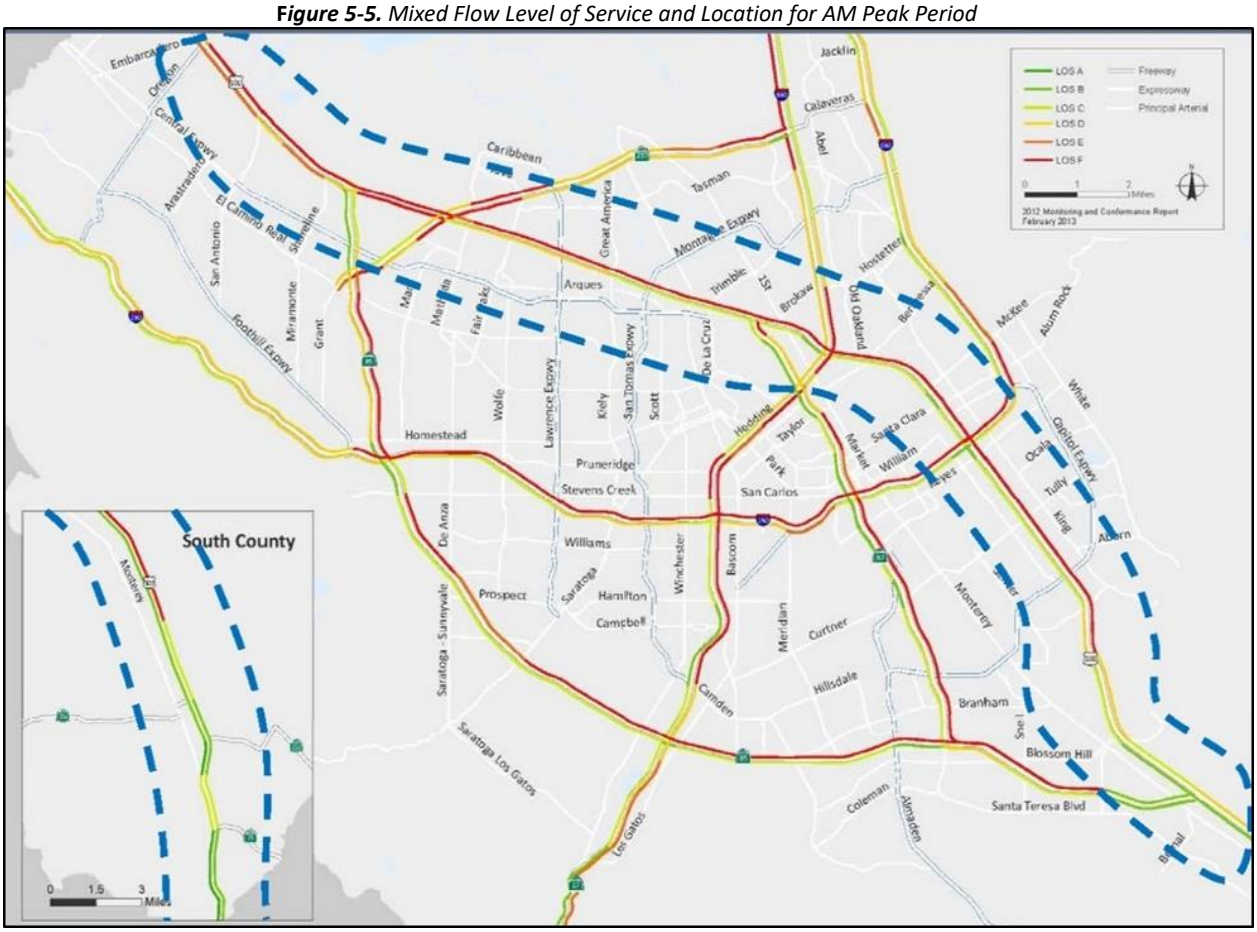
Table 5-3. *Congestion Locations in HOV Lanes*

Direction/Time	Location
NB/AM	Capitol Expressway off-ramp to Tully Road on-ramp
	I-680 on-ramp to Old Oakland Road off-ramp
	North 1st Street on-ramp to Trimble Road off-ramp
	SR 85 HOV connector to Rengstorff Avenue off-ramp
SB/AM	n/a
NB/PM	Ellis Street off-ramp to San Antonio on-ramp
	Between Oregon Expressway/Embarcadero off and on-ramps
SB/PM	Marsh Road on-ramp to Rengstorff Avenue on-ramp
	Great America Parkway off-ramp to De La Cruz Boulevard on-ramp
	North 4th Street on-ramp to Old Oakland Road on-ramp
	East Santa Clara Street on-ramp to Tully Road on-ramp

Source: Santa Clara County US 101 Project Report–4.3.1, pp. 29 – 30

Figures 5-5 and 5-6 show the Level of Service (LOS), queue length and congested locations for the AM Peak Period and PM Peak Period respectively in the GP lanes. In general, traffic congestion in Santa Clara has steadily increased from 2012 to 2016 for segments operating at LOS E and F. This occurs to about 55% to 60% of all mixed flow traffic.

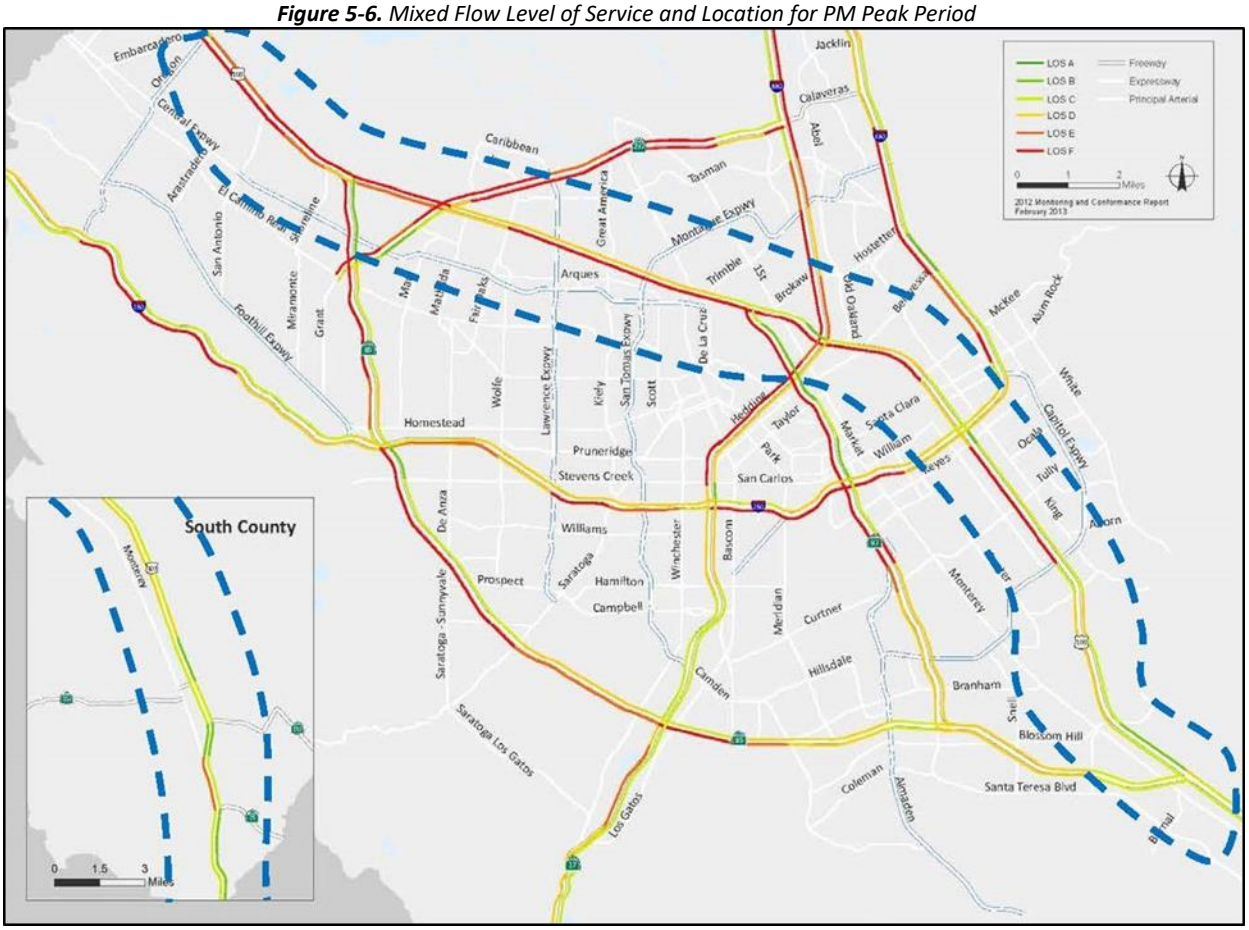
Figure 5-5. *Mixed Flow Level of Service and Location for AM Peak Period*



Source: VTA 2016 Monitoring and Conformance Report, Mixed-Flow Level of Service Analysis, P. 50

The Level of Service, queue length and congested locations in the HOV lanes along the US 101 Corridor (not shown) indicate that congestion is occurring at a high level, particularly during the AM Peak Period. The number of lane miles operating at LOS E and F increased by nearly 10% between 2012 and 2016.

Figure 5-6. *Mixed Flow Level of Service and Location for PM Peak Period*



Source: VTA 2016 Monitoring and Conformance Report, Mixed-Flow Level of Service Analysis, p.51

Travel Times

Table 5-4 shows travel times through the Corridor under existing conditions. General purpose lanes experienced major delays in NB direction during AM peak hour and in both directions during PM peak hour, while HOV lanes offered significant time savings compared to the GP lanes.

Table 5-4. *Peak Hour Travel Times in Minutes*

Direction/Time	Lane Type	Segment Group	Free Flow	Existing
NB AM	GP	Dunne Avenue on-ramp to Embarcadero Road on-ramp	*33.4*	*45.5*
	HOV	Cochrane NB on-ramp to Embarcadero Road on-ramp	31.7	32.9
SB AM	GP	Oregon Expwy/Embarcadero on-ramp to Dunne Avenue off-ramp	32.9	34.8
	HOV	San Antonio off-ramp to end of HOV lane	29.3	27.4
NB PM	GP	Dunne Avenue on-ramp to Embarcadero Road on-ramp	33.4	47.5
	HOV	Cochrane NB on-ramp to Embarcadero Road on-ramp	31.7	32.7
SB PM	GP	Oregon Expwy/Embarcadero on-ramp to Dunne Avenue off-ramp	32.9	54.1
	HOV	San Antonio off-ramp to end of HOV lane	29.3	32.8

Source: Santa Clara County US 101 Project Report–Table 5.2.16-3, pp. 93-94

Safety

Accident data for US 101 within the study limits was provided by TASAS-TSN for the three-year period from August 1, 2012 through July 31, 2015. **Table 5-5** summarizes the accident data.

Table 5-5. *Three-Year Accident Analysis for US 101 Mainline from August 1, 2012 to July 31, 2015*

Location	Post Miles	Number of Collisions Total	Actual Collision Rate per million vehicle miles			Average Collision Rate per million vehicle miles		
			Total	F	F + I*	Total	F	F + I
SCL US 101	15.10 – R26.78 R26.78 – 48.10 48.10 – 52.55	4,478	0.30 to 0.90	0.002 to 0.005	0.11 to 0.26	0.68 to 1.03	0.004	0.22 to 0.32

Source: Caltrans, TASAS-TSN report

* F = Fatal, I = Injury

San Benito County Line to Tennant Avenue

US 101 in Santa Clara County outside the study limits of the Project Report is a full access-controlled freeway north of Monterey Road (PM R4.95), consisting of three GP lanes in each direction. South of Monterey Road, the facility is an expressway with two GP lanes in each direction. No auxiliary lanes are found in this stretch of US 101.

Data from Caltrans Traffic Census and INRIX was used to further describe this section's performance, while the Santa Clara County US 101 Ramp Metering Implementation Plan (January 2017), with traffic data collected in 2015 and 2016, was used to highlight the specific performance of the freeway in light of ramp meter implementation. The Traffic Census shows that in 2011 the AADT between the San Benito County line and East Dunne Avenue ranged from 50,000 to 125,000 and in 2015 from 56,000 to 132,000. The INRIX speed contour maps, both directions shown in **Figure 5-7,** indicate there was no bottleneck in this section in 2011, but a NB AM bottleneck emerged at Dunne Avenue, and queues extend into this segment. There was also some minor slow down during the PM peak period in the SB direction near SR 25 in 2015, see **Figure 5-8. Table 5-6** shows 2015 AADT below.

Table 5-6. *2015 AADT*

County	US 101 Post Miles	Location	2015 AADT Volumes
SCL	0.03	SAN BENITO/SANTA CLARA COUNTY LINE	56000
	3.16	SR 25	79000
	R7.53	GILROY, SR 152 WEST	105000
	R16.01	EAST DUNNE AVENUE	132000

Source: Caltrans Traffic Census Database http://www.dot.ca.gov/trafficops/census/

Figure 5-7. *INRIX March 2011 Speed Contours US 101 San Benito County Border to Bailey Avenue*

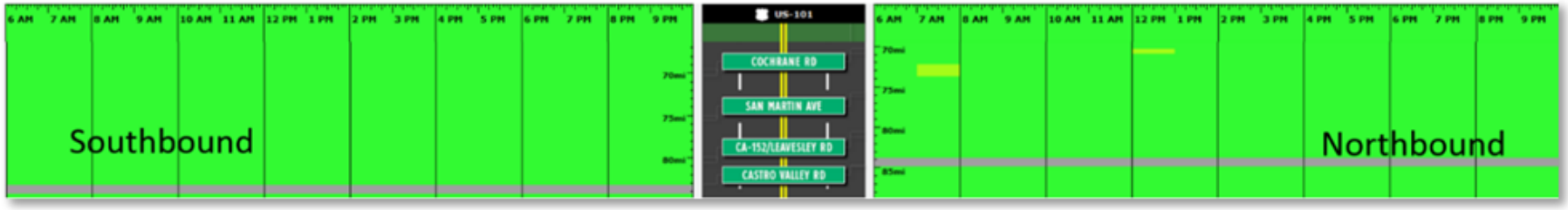
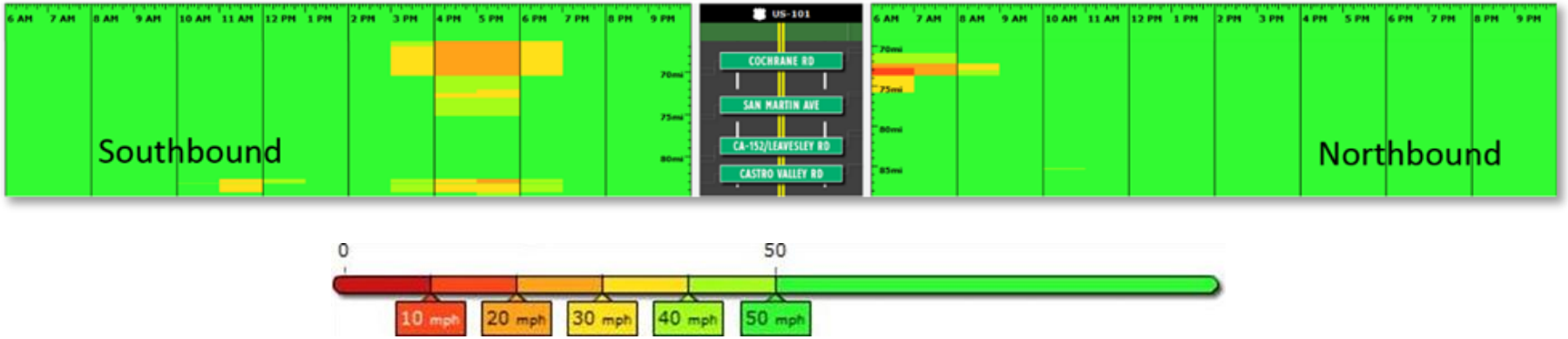


Figure 5-8. *INRIX March 2016 Speed Contours US 101 San Benito County Border to Bailey Avenue*



Safety

Accident data for US 101 within the study limits was provided by Caltrans for the three-year period from August 1, 2012 through July 31, 2015. **Table 5-7** summarizes the accident data.

Table 5-7. *Three-Year Accident Analysis for US 101 Mainline from August 1, 2012 to July 31, 2015*

Location	Post Miles	Number of Collisions Total	Actual Collision Rate per million vehicle miles			Average Collision Rate per million vehicle miles		
			Total	F	F + I*	Total	F	F + I
SCL US 101	0.00 – 15.10	571	0.39	0.005	0.14	0.76	0.007	0.27

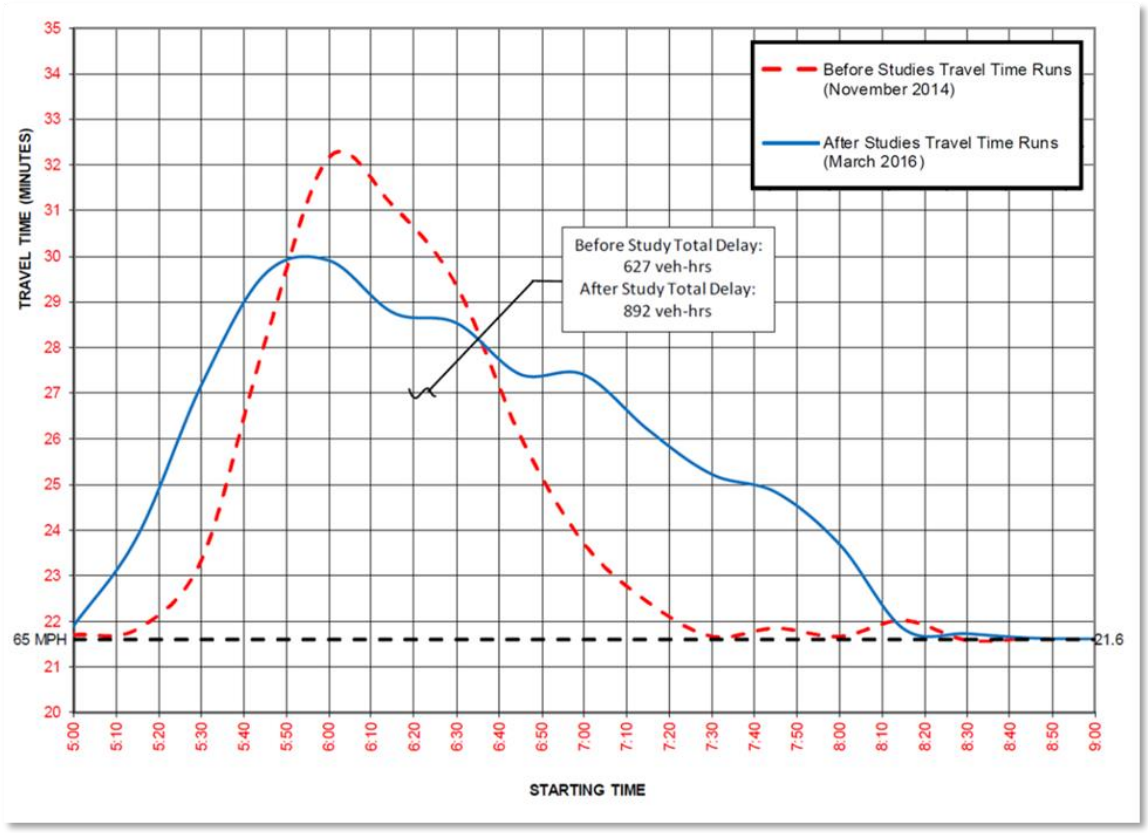
Source: Caltrans, TASAS-TSN report

* F = Fatal, I = Injury

Ramp Metering Implementation between SR 25 in Gilroy and SR 85 in San José

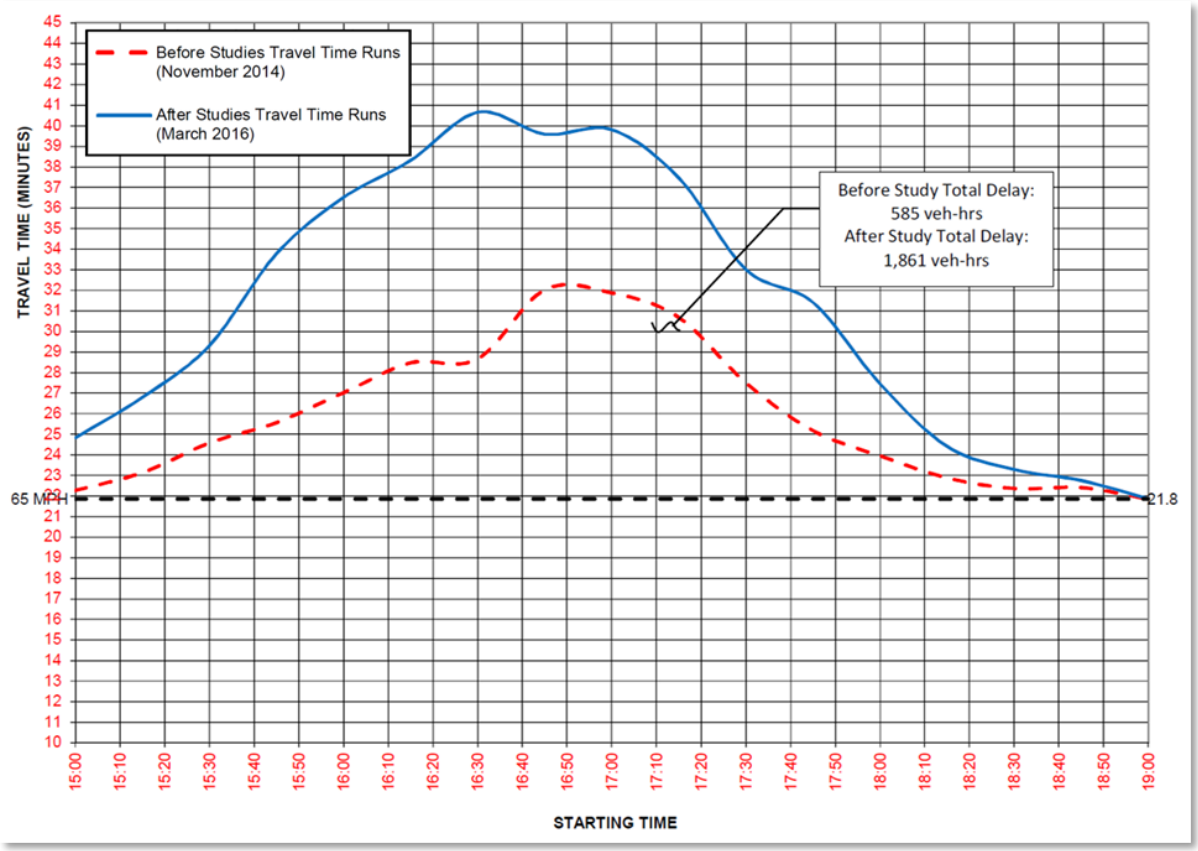
Ramp meters were implemented between SR 25 and SR 85 in October of 2015 as a management tool to improve the functioning of the freeway mainline. Driving uninterrupted at 65 miles per hour, it takes 21.6 minutes to drive northbound from SR 25 in Gilroy to Bernal Road in San José, as shown in **Figure 5-9**. During commute hours mainline congestion slows traffic down. Travel time runs carried out during November 2014 show a single peak of more than 32 minutes during commute hours compared to the runs taken after ramp metering was put in place. Within a two-month time frame of the 2015 implementation (data not shown in graph), the average travel time dropped from 25.5 minutes to 22.8 minutes. The 2016 figures show an overall increase in traffic congestion, though ramp metering helped to flatten the peak.

Figure 5-9. *NB US 101 (SR 25 in Gilroy to Bernal Road in San José)*



Source: Santa Clara County US 101 Ramp Metering Implementation, Figure E4, p. E8

Figure 5-10. *SB US 101 (SR 85 in San José to SR 25 in Gilroy)*



Source: Santa Clara County US 101 Ramp Metering Implementation, Figure E5, p. E12

Driving southbound from SR 85 in San José to SR 25 in Gilroy, it takes for the entire stretch 21.8 minutes at 65 miles per hour, as shown in **Figure 5-10**. Where the northbound AM commute peaked below 33 minutes, the southbound PM commute shows a wider setting also just below 33 minutes, indicating the evening commute was the busier commute of the two in 2014. The graph further indicates that traffic increased significantly between November 2014 and March 2016 and that the duration of the trip has become much longer. This complicates establishing the benefit of ramp meter implementation. However, within a two-month time frame of the 2015 implementation (data not shown in graph), the average travel time did improve slightly, from 23.7 minutes to 23.6 minutes.

Northbound, ramp metering continues to provide better driving times for traffic using US 101, while southbound traffic still benefits from ramp metering, yet the overall capacity is being reached.

A new bottleneck was observed in the southbound direction, south of the SR 85 connector where a general purpose lane drop occurs. This new bottleneck is attributed to increased traffic demands.

San Mateo County

This section documents the current conditions of the US 101 South Corridor in Segment 3 from the Santa Clara County line to Whipple Avenue in Redwood City and Segment 4 from Whipple Avenue to the US 101/I-380 interchange, as shown in **Figure 5-11**. Information presented in this section is mostly derived from the Traffic Operations Analysis Report (TOAR) for the US 101 Managed Lanes Project in San Mateo County. The study limits of the TOAR is from the US 101/Rengstorff Avenue interchange in Mountain View to the US 101 /East Grand Avenue in South San Francisco, north of I-380. It should be noted that there is an overlap (from Rengstorff Avenue to Santa Clara/San Mateo County line) between this TOAR and the study limits of the Santa Clara US 101 Express Lanes Project Report discussed earlier. The study uses the 2013 C/CAG travel demand model, yet additional traffic counts were obtained to balance the model to reflect demand volumes experienced in 2015. HOV data was provided by the 2015 MTC HOV Occupancy Survey.

Between Oregon Expressway/Embarcadero Road in Santa Clara County and Whipple Avenue in San Mateo County, US 101 typically consists of one HOV lane and three general purpose lanes in each direction. The northbound HOV lane ends at the Whipple Avenue interchange while the southbound HOV lane begins just north of the Whipple Avenue Overcrossing. From Whipple Avenue to the San Francisco County line, US 101 is typically an eight-lane freeway (four GP lanes in each direction). Auxiliary lanes are constructed between most interchanges. **Figures 5-12** & **5-13** show INRIX speed contour maps for the two segments.

Freeway Congestion

MTC's Vital Signs report has three areas in this section listed in the Top 50 Congested Locations of the Bay Area in 2017. The congested areas occur in the northbound direction from Whipple Avenue in Redwood City to East Hillsdale Boulevard in San Mateo (#13), from south of Broadway/Airport Boulevard in Burlingame to East Hillsdale Boulevard (#30), and in the southbound direction between SR 84/Woodside Road in Redwood City and University Avenue in East Palo Alto (#46).

Figure 5-11. *US 101 Project Study Area Location and Study Limits*

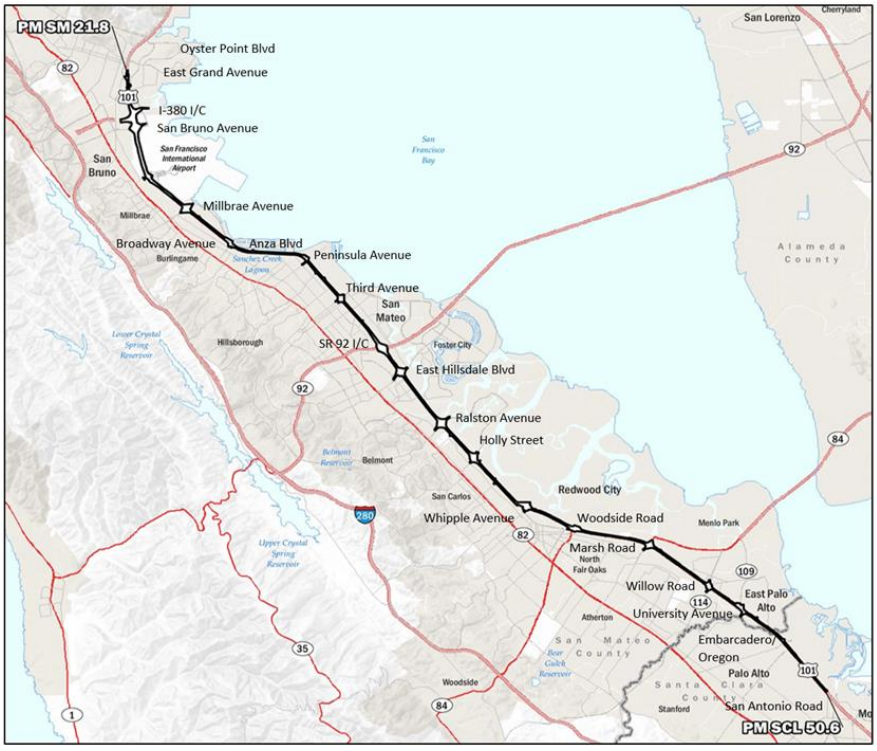
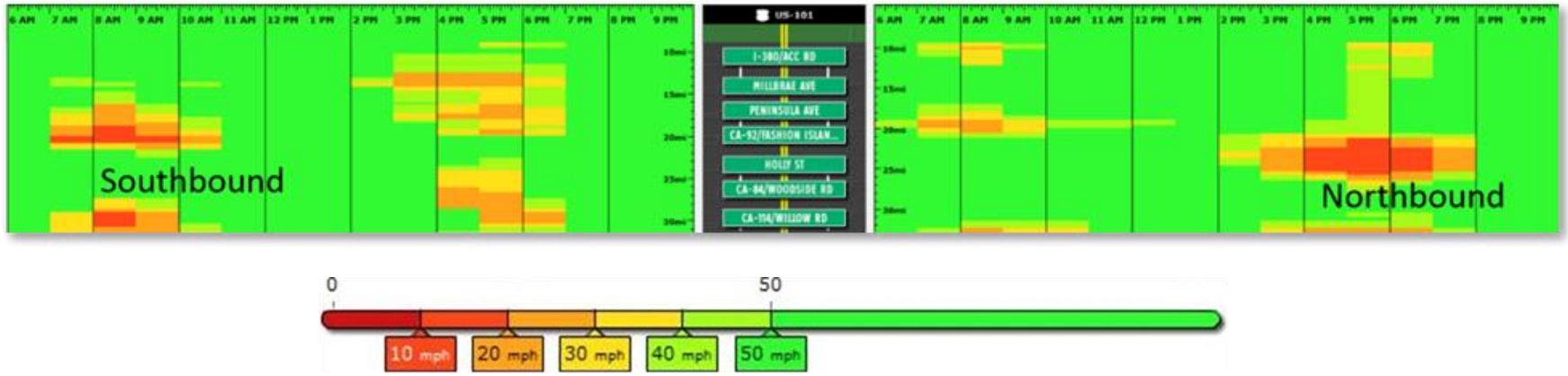


Figure 5-12. *INRIX March 2011 Speed Contours US 101 from Willow Road to I-380*

Figure 5-13. *INRIX March 2016 Speed Contours US 101 from Willow Road to I-380*



Traffic Volumes

The traffic volumes dataset was derived from several sources listed below.

- Caltrans Traffic Census database (2009-2015)
- Caltrans Performance Measurement System (PeMS)
- 2014 Caltrans Annual Average Daily Truck Traffic Database
- 2015 MTC HOV Occupancy Survey, and
- Project-specific traffic volume counts conducted in 2015

HOV lane usage information for the study area was derived from MTC HOV Occupancy Data. The HOV percentage represents the relative proportion of vehicles using the HOV lanes over the vehicles using all lanes. In the Year 2005, the California Vehicle Code (CVC) began allowing qualified single occupancy low-emission vehicles to legally use HOV lanes (CVC 5205.5 and 21655.9). Based on the 2009 Caltrans HOV Lane Report, those vehicles accounted for up to 10 percent of the HOV lane traffic on certain segments of US 101. During the AM peak period, HOV volumes on US 101 accounted for 22 to 30 percent of the total volume in the northbound direction and 18 percent in the southbound direction. During the PM peak period, HOV volumes accounted for 20 to 27 percent of the total volume in the northbound direction and 25 to 33 percent in the southbound direction.

According to Caltrans Annual Average Daily Truck Traffic Database, truck traffic accounted for three to five percent of the total traffic volume in this section of US 101 in 2014.

Bottlenecks

Table 5-8 summarizes the existing bottlenecks in the general purpose lanes as identified in the TOAR for the San Mateo US 101 Express Lanes Project and their respective queue lengths. HOV lanes (not shown) also experienced congestion due to operational degradation of the GP lanes (with HOV vehicles slowing down, unable to move in and out of HOV lane).

Table 5-8. *2015 Bottlenecks*

Direction/Time	Location	Queue Length	End of the Queue
NB/AM	WB Rengstorff Avenue off-ramp and Rengstorff Avenue on-ramp	1.0+ miles	Extends beyond the study area
	Oregon Expressway/Embarcadero Road to University	1.3 miles	Merges with Rengstorff bottleneck
	3rd Avenue off-ramp and the 3rd Avenue on-ramp	3.9 miles	Ralston Avenue I/C
SB/AM	Westbound and eastbound Hillsdale Boulevard onramps	3.2 miles	Near Poplar Avenue I/C
	- Secondary bottleneck observed SR 92 EB on-ramp and Hillsdale off-ramp		
	University Avenue to Oregon Expressway/ Embarcadero Road	1.3 miles	Near Woodside Road off-ramp
	- Secondary bottleneck observed at Willow Road ramps		
NB/PM	Oregon Expressway/Embarcadero Road to University	1.3+ miles	Extends beyond the study area
	Hillsdale Boulevard on-ramp to SR 92 off-ramp	0.75 miles	Near Woodside Road I/C
SB/PM	Millbrae Avenue ramps	2.6 miles	Near San Bruno Avenue
	Poplar Avenue ramps	2.4 miles	Near Broadway off-ramp
	Third and Fourth Avenue to SR 92/Fashion Island off-ramp	1.6 miles	Overlaps Poplar Avenue bottleneck
	Woodside Road to Marsh Road off-ramp	3.0 miles	Whipple Avenue I/C
	Rengstorff Avenue on-ramp merge	6.5 miles	Overlaps with Marsh Road bottleneck

Source: US 101 Managed Lanes Report–3.4, pp. 26 – 28

Travel Times

Table 5-9 shows the travel times for general purpose lane and HOV lane users during both peak periods in both directions. While HOV lanes only exist between San Antonio Road and Whipple Avenues, they still offered a time saving compared to the general purpose lane during the most congested periods of the day.

Table 5-9. *US 101 Travel Times*

Direction	Limits	Peak Period	Travel Time in Minutes	
			GP Lane	HOV Lane
NB	San Antonio Road to I-380 (22.65 miles)	6:00-10:00 AM	22-39	22-34
		3:00-7:00 PM	27-42	26-35
SB	I-380 to San Antonio Road (23.10 miles)	6:00-10:00 AM	21-53	21-33
		3:00-7:00 PM	27-71	25-50

Source: US 101 Managed Lanes Report–5.2, Tables 3-16 to 3-19, p. 38

Safety

Accident data for US 101 within the study limits provided by Caltrans for the three-year period from August 1, 2012 through July 31, 2015. **Table 5-10** summarizes the accident data.

Table 5-10. *Three-Year Accident Analysis for US 101 Mainline from August 1, 2012 to July 31, 2015*

Location	Post Miles	Number of Collisions Total	Actual Collision Rate per million vehicle miles			Average Collision Rate per million vehicle miles		
			Total	F	F + I*	Total	F	F + I
SM US 101	0.00 – 6.62 6.62 – R20.72 R20.72 – 26.11	3,548	0.35 to 0.74	0.001 to 0.002	0.14 to 0.23	0.95 to 1.01	0.004	0.29 to 0.31

Source: Caltrans, TASAS-TSN report

* F = Fatal, I = Injury

San Francisco County and Northern San Mateo County

This section documents the current conditions for Segments 5, 6 and 7 of the US 101 South Corridor. Segments 5 and 6 are US 101 from the US 101/I-380 Interchange in San Mateo County to I-80, continuing onto the Central Freeway section in San Francisco. Segment 7 is I-280 from the US 101/I-280 interchange to the end of the freeway, including both the 5th Street/King Street and 6th Street/Brannan Street ramps.

The information in this section is derived from the Freeway Corridor Management Study (FCMS) Phase 2 Final Report (November 2018). As part of the study, speed and travel time data to assess congestion was obtained from INRIX and PeMS. The main focus of the FCMS report is to recommend a set of Managed Lanes (HOV/Express lanes) and complementary system management strategies for the US 101 and I-280 corridors in San Francisco that will help San Francisco achieve its economic competitiveness, environmental, social and equity goals while maximizing person throughput, through a performance-based analysis and stakeholder consultation. While there is an overlap (from I-380 to Grand Avenue) between this FCMS Final Report and the study limits of the TOAR for the San Mateo US 101 Express Lanes Project discussed earlier, the main focus of the 2018 FCMS is on US 101 and I-280 in the City and County of San Francisco.

Within the study limits, US 101 is primarily an eight-lane freeway in San Mateo County and a six to ten-lane freeway in San Francisco. US 101 is a six-lane freeway through the I-280 interchange that widens up to eight lanes until the I-80 interchange, where the roadway continues as I-80 as a six-lane facility. The Central Freeway ending at Market Street in San Francisco is a four-lane facility.

For the purpose of this CMCP, I-280 is primarily a standard six-lane facility with auxiliary lanes north of the US 101/I-280 interchange.

Weekday data from March and April 2015 was extracted from INRIX and PeMS, while floating car runs were conducted during peak periods in April and in June 2016. **Figures 5-14** through **5-17** show speed contour data.

Traffic Demand

In 2015, during the AM peak hour (7:00-8:00 AM), estimated traffic demand on US 101 ranged from 4,971 to 9,017 in the northbound direction and 6,435 to 8,150 in the southbound direction; estimated demand on I-280 ranged from 2,106 to 6,328 in the northbound direction and 985 to 3,368 in the southbound direction. During the PM peak hour (5:00-6:00 PM), estimated traffic demand on US 101 ranged from 3,834 to 8,151 in the northbound direction and 5,831 to 8,930 in the southbound direction; estimated demand on I-280 ranged from 2,913 to 5,659 in the northbound direction and 1,330 to 5,203 in the southbound direction.

Figure 5-14. *INRIX March 2011 Speed Contours US 101 from I-380 to Bacon Street*

Figure 5-15. *INRIX March 2016 Speed Contours US 101 from I-380 to Bacon Street*

Figure 5-16. *INRIX March 2011 Speed Contours I-280 from Monterey Boulevard to Fifth Street*

Figure 5-17. *INRIX March 2016 Speed Contours I-280 from Monterey Boulevard to Fifth Street*

Vehicle Occupancy Rate

To determine existing vehicle occupancy rates, manual peak period counts were conducted at ramps on I-280 in San Francisco. Weekday peak period volume and occupancy data for mainline US 101 were obtained from the Bay Area Managed Lane Implementation Plan project, which was collected between March and mid-May of 2015. No mid-day or off-peak vehicle occupancy data was available or collected. Based on the occupancy data gathered, vehicles with two or more persons represent about 13 to 22 percent of all vehicles on US 101 mainline and 18 to 26 percent on I-280 in the study area. Increasing the HOV definition to three or more persons per vehicle would reduce the percentage of HOV-eligible vehicles to around three percent on US 101 mainline and seven to nine percent on I-280. Eligible users of high occupancy vehicle lanes include buses, vanpools, clean air vehicles, and motorcycles. The data also shows that on US 101, truck traffic represented about four to six percent of the total traffic volume during the AM peak period and one to three percent during the PM peak period; at I-280 ramps, trucks traffic generally accounted for less than five percent of the total traffic volume, but the on-ramp from Cesar Chavez Street carried a significant higher percentage of trucks at 15 percent. See **Table 5-11** for vehicle occupancy and truck percentage.

Table 5-11. *Vehicle Occupancy and Truck Percentage*

Route	Time/Direction	2+ HOV %	3+ HOV %	Truck %
US 101	AM NB	16-17%	2-3%	5-6%
	AM SB	11-13%	2-3%	4-5%
	PM NB	20-23%	3%	1-3%
	PM SB	20-23%	3%	3%
I-280	AM NB	24-25%	6-8%	3%
	AM SB	17-26%	5-11%	2-16%
	PM NB	28-33%	8-10%	1%
	PM SB	14-30%	3-11%	1-5%

Source: Freeway Corridor Management Study, Phase 2, Appendix B, Tables 5 and 6 pp. 11 and 12

Freeway Congestion

MTC's Vital Signs report ranks northbound US 101 to I-80 San Francisco-Oakland Bay Bridge as the most congested corridor in 2017. The area from Third Street to Cesar Chavez Street in the northbound direction on US 101 is also listed in the Top 50 Congested Locations of the Bay Area (#41).

Bottlenecks

This section of US 101 is one of the most congested freeways in the region, with the segment in San Francisco from the US 101/I-280 interchange to I-80 and the Bay Bridge ranked as the fourth most congested freeway section in MTC's 2015 Vital Signs report. Some of the bottlenecks are outside of the CMCP study limits but need to be considered as they affect traffic conditions within the Corridor. **Table 5-12** lists the bottlenecks under the existing conditions.

Table 5-12. *2016 Bottlenecks*

	Location	End of Queue
NB/AM		
US 101	Hospital Curve	Third Street
I-280	Connector to NB US 101	Ocean Avenue
	23rd Street on-ramp	Islais Creek
	Off-ramps at 6th Street/Brannan Street and 5th Street/King Street	25th Street/Mariposa I/C
NB/PM		
I-80	Lower Deck Bay Bridge (outside Corridor limits)	US 101/I-280 I/C
US 101	Sierra Point Parkway	Beyond study limits
I-280	Off-ramps 6th/Brannan Street and 5th/King Street	6th Street off-ramp gore point
SB/AM		
US 101	Bayshore Boulevard	US 101/I-280 I/C
I-280	None (6th/Brannan and 5th/King Street intersections constraining flow)	- -
SB/PM		
US 101	Hospital Curve	Upper Deck Bay Bridge
I-280	None within study limits	-

Source: Freeway Corridor Management Study, Phase 2, Appendix B, pp. 3 – 5. Bottlenecks outside study limits that don't affect the study area not included.

Travel Times

Table 5-13 summarizes the existing travel times through this portion of the Corridor, based on the floating car runs conducted by AECOM in April 2016.

Table 5-13. *Travel Times*

Route	Time/Direction	Free Flow Travel Time (min)	Travel Time during Peak (min)
US 101 (Harney Way – I-80)	AM NB	4.3	14.0
	AM SB	4.0	7.7
	PM NB	4.3	19.4
	PM SB	4.0	7.8
I-280 (US 101 – 5th/King)	AM NB	4.1	11.5
	AM SB	3.5	3.6
	PM NB	4.1	6.1
	PM SB	3.5	6.7

Source: Freeway Corridor Management Study, Phase 2, Appendix B, Figure 3, p. 6

Safety

Accident data for US 101 within the study limits was provided by Caltrans for the three-year period from August 1, 2012 through July 31, 2015. **Table 5-14** summarizes the accident data.

Table 5-14. *Three-Year Accident Analysis for US 101 Mainline from August 1, 2012 to July 31, 2015*

Location	Post Miles	Number of Collisions Total	Actual Collision Rate per million vehicle miles			Average Collision Rate per million vehicle miles		
			Total	F	F + I*	Total	F	F + I
SM US 101 SF US 101 SF I-280	R20.72 – 26.11 0.00 – R5.07 0.00 – T7.45	429 1,769 684	0.35 to 1.47	0.002	0.14 to 0.47	0.92 to 1.18	0.004 to 0.006	0.29 to 0.37

Source: Caltrans, TASAS-TSN report

* F = Fatal, I = Injury

5.2 Future Operating Conditions and Alternatives

This section describes the future US 101 Corridor performance mainly derived from the following reports:

- *The Project Report (August 2015) and the accompanying Final Traffic Operations Analysis Report (June 2014) for the US 101 Express Lanes Project in Santa Clara County*. The study limits are from the US 101/Tennant Avenue Interchange in Morgan Hill (SCL, US 101, PM 15.1) to the San Mateo County line just north of the Embarcadero Road interchange in Palo Alto (SCL, US 101, PM 52.6).
- *The Draft Final Traffic Operations Analysis Report for the US 101 Managed Lanes Project in San Mateo County (August 2017).* The study limits are from Rengstorff Avenue, Mountain View in Santa Clara County (SCL, US 101, PM 50.6) to East Grand Avenue, South San Francisco in San Mateo County (SM, US 101, PM 21.8).
- *Final Report for the San Francisco Freeway Corridor Management Study Phase 2 (2018),* prepared by the San Francisco County Transportation Authority. The study limits are from the US 101/I-380 interchange in San Bruno (SM, US 101, PM 20.7) to the US 101/I-80 interchange (SF, US 101, PM 4.2), and I-280 within San Francisco (SF, I-280, PM 0.0-7.5).

Because these reports were developed for specific projects, the analyses include a comparison of the Build project conditions to the No-Build project conditions. In the San Francisco Freeway Corridor Management Study, two project alternatives are included for comparison.

Where data was not available in the reference sources listed above, data from the 2015 MTC Travel Demand Model and the 2013 VTA Travel Demand Model was used to provide a high-level overview of future freeway performances.

US 101 in Santa Clara County

This section documents the future conditions of Segments 1 and 2 of the US 101 South Corridor from San Benito/Santa Clara County line to Santa Clara/San Mateo County line just north of Oregon Expressway/Embarcadero Road.

Tennant Avenue to San Mateo County Line

This section summarizes the future conditions of the US 101 segment from Tennant Avenue in Morgan Hill to the San Mateo County line just north of Oregon Expressway/Embarcadero Road. The information is mainly derived from the Santa Clara County US 101 Express Lanes Project Report (March 2015) and the accompanying TOAR (June 2014). The traffic analysis examines both near-term conditions in 2015 and long-term conditions in 2035, based on VISSIM micro-simulation models. For the purpose of this CMCP, however, only the future conditions in 2035 are reported.

The future condition analysis includes an evaluation of the US 101 Express Lanes Project and compares the conditions under the Build scenario to those under the No Build scenario. The proposed Express Lanes Project will maintain mixed flow lanes as is and convert the existing HOV lanes along US 101 to Express Lanes. A second Express Lane will be added in both directions from Cochrane Road in Morgan Hill to SR 85 in San José and from Blossom Hill Road in San José to North Fair Oaks Avenue in Sunnyvale. The Express Lanes Project includes converting US 101/SR 85 HOV direct connectors in both directions in Mountain View to Express Lane connectors, creating an operational network with the Express Lanes proposed by

the SR 85 Project. Total length of the project is 37.65 miles, which consists of 36.55 miles on US 101 and 1.1 miles on SR 85.

Travel Demand

Table 5-15 shows the forecast peak hour travel demand on US 101 in 2035 under two scenarios. In general, implementing the Express Lanes project will attract more vehicles to US 101 as the project is expected to reduce freeway congestion. The peak hours are defined as between 7:00 to 8:00 AM and between 5:00 and 6:00 PM.

Table 5-15. *2035 Peak Hour Traffic Demand Volumes*

Direction/Time	No-Build	Build
NB/AM	5,382-11,126	5,950-11,752
SB/AM	4,378-11,156	4,373-11,534
NB/PM	2,722-8,877	3,009-9,499
SB/PM	5,416-10,934	6,238-11,791

Source: Santa Clara County US 101 Project Report–4.5.2, pp. 62 – 68, 2015

Travel Times

Table 5-16 shows the peak hour travel times under different scenarios in 2035. In the peak directions (AM NB and PM SB), HOV lanes/Express Lanes will offer significant time savings compared to GP lanes. During the AM peak hour in the northbound direction, the general purpose lanes show a 12.3-minute travel time saving between the No Build and Build scenarios, while the HOV/Express Lanes show an 11.9-minute travel time saving.

Table 5-16. *2035 Peak Hour Travel Time in Minutes*

Direction/ Time	Segment Group	Free Flow	Lane Type	No-Build	Build	Difference
NB/AM	Dunne Avenue on-ramp to Embarcadero Road on-ramp	33.4	GP	183.5	*171.2*	*-12.3*
			HOV	47.2	35.3	-11.9
SB/AM	San Antonio off-ramp to Dunne Avenue off-ramp	31.5	GP	40.8	39.4	-1.4
			HOV	32.4	31.8	-0.6
NB/PM	Dunne Avenue on-ramp to Embarcadero Road on-ramp	33.4	GP	40.5	40.4	-0.1
			HOV	32.9	33.1	0.2
SB/PM	San Antonio off-ramp to Dunne Avenue off-ramp	31.5	GP	100.5	109.7	9.2
			HOV	41.3	37.7	-3.6

Source: Santa Clara County US 101 Project Report–Table 5.2.18-3, pp. 117 – 118, 2015

During the PM peak hour in the southbound direction, there is a slight increase in travel time for the general purpose lanes and a moderate time saving of 3.6 minutes in the HOV/ Express Lanes between the No Build and Build scenarios. There are minimum or no travel time savings from the Express Lanes project in the non-peak directions (AM SB and PM NB).

Person-Throughput

To assess the impact of the proposed Express Lanes on the person-carrying capacity of the route, person throughput was measured at four locations along US 101. As shown in **Table 5-17**, the 2035 Build scenario is expected to produce higher person-throughput in both directions during both AM and PM peak hours at all locations, most notably through the middle of the Corridor.

Table 5-17. *Vehicle and Person-Throughput in 2035*

Location	Scenario	AM Peak Hour		PM Peak Hour	
		Vehicles	Persons	Vehicles	Persons
Northbound					
1. Coyote Creek on – Baily off	No-Build	7,154	9,626	5,176	6,729
	Build	8,602	11,092	5,348	7,048
2. Old Oakland on – NB I-880 off	No-Build	6,200	8,193	6,212	7,893
	Build	6,745	9,058	6,923	8,883
3. San Tomas/ Montague on – Great America off	No-Build	6,886	8,608	7,655	9,703
	Build	7,277	9,592	8,668	10,830
4. Rengstorff on – San Antonio off	No-Build	7,841	10,102	7,968	10,446
	Build	8,796	11,642	8,306	10,620
Southbound					
1. Rengstorff on – Middlefield on	No-Build	7,823	10,255	4,884	7,038
	Build	8,247	11,031	5,476	7,723
2. De La Cruz on – SR 87 off	No-Build	7,361	9,006	8,527	11,460
	Build	7,868	9,643	10,029	12,593
3. McKee/Julian off – Santa Clara off	No-Build	5,451	6,859	7,225	9,152
	Build	5,824	7,183	8,604	10,654
4. Coyote Creek on – Cochrane off	No-Build	6,497	8,360	7,940	10,385
	Build	6,701	8,239	9,169	11,438

Source: US 101 Express Lanes, TOAR 2014, 7.1.4, p. 70

Network Performance Measures

The 2035 performance measures for the Build and No Build scenarios are summarized in **Table 5-18** for the AM peak period and **Table 5-19** for the PM peak period. Overall, the 2035 traffic operations analysis shows the following improvement in operations in peak directions.

NB AM Peak Period:

- 4% reduction in total hours of delay
- 6% reduction in average delay
- 11% increase in average speed

SB PM Peak Period:

- 13% reduction in total hours of delay
- 18% reduction in average delay
- 23% increase in average speed

Table 5-18. *2035 AM Peak Period Network Performance*

Performance Measure	NB			SB		
	No-Build	Build	% Difference	No-Build	Build	% Difference
Total Distance Traveled (VMT) (mi)	949,052	1,033,145	9%	1,374,606	1,435,235	4%
Total Travel Time (VHT) (hr)	71,167	69,760	-2%	37,846	35,118	-7%
Total Delay (VHD) (hr)	55,893	53,580	-4%	14,786	11,285	-24%
Average Delay per Vehicle (sec)	1,397	1,314	-6%	357	269	-25%
Average Speed (mph)	13	15	11%	36	41	13%

Source: US 101 Express Lanes, TOAR 2014, Tables 7.1 and 7.2, p. 65

Table 5-19. *2035 PM Peak Period Network Performance*

Performance Measure	NB			SB		
	No-Build	Build	% Difference	No-Build	Build	% Difference
Total Distance Traveled (VMT) (mi)	917,408	1,005,987	10%	1,472,285	1,729,834	17%
Total Travel Time (VHT) (hr)	19,330	17,774	-8%	81,346	77,929	-4%
Total Delay (VHD) (hr)	3,211	2,681	-16%	56,599	49,398	-13%
Average Delay per Vehicle (sec)	71	62	-13%	1,119	914	-18%
Average Speed (mph)	52	52	1%	18	22	23%

Source: US 101 Express Lanes, TOAR 2014 Tables 7.6 and 7.7, pp. 74 – 75

Summary of 2035 Conditions

Overall, the proposed project produces significant benefits along the US 101 Corridor in 2035. These benefits include increases in both vehicle and person-throughput, average speed, reductions in total travel time, along with total delay and average delay.

Vehicle-hours traveled (VHT), vehicle-hours of delay (VHD), average delay, and speed benefits all reflect the reduced congestion levels achieved under the Build scenario where the US 101 Express Lanes Project is implemented. During the AM peak period, the proposed Project reduces the total delay by 2,314 hours (-4%) in the northbound direction and 3,501 hours (-24%) in the southbound direction. Significant delay reductions are also achieved in the PM peak period (-530 hours northbound and -7,201 hours southbound). Overall, the proposed US 101 Express Lanes are expected to produce a combined reduction of 13,546 vehicle hours of delay during the AM and PM peak periods on a typical weekday in 2035. It is important to recognize that these results are achieved while serving higher vehicular and person-throughput.

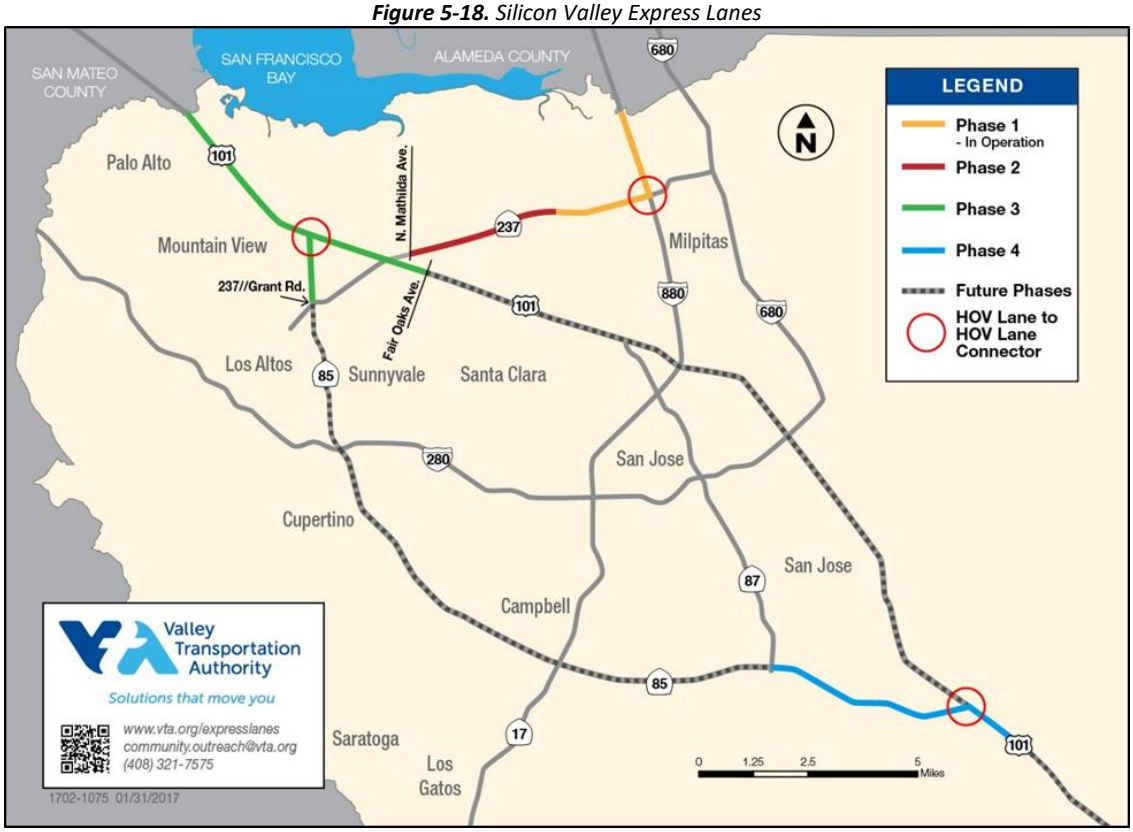
The project may result in an increase in VMT. This increase is a reflection of two factors: 1) with the reduced congestion, vehicles can more easily travel through the network and reach their destination; and 2) under the Build scenario, demand volumes on US 101 increase which in turn can lessen demand and improve conditions on other facilities. In other words, while there is an undesired increase in VMT on US 101, the global net increase in VMT within the US 101 Corridor may be mitigated due to route shifting from other routes to US 101.

Silicon Valley Express Lanes Program

Santa Clara VTA has an express lanes program that ties into the Bay Area region's planned 550-mile express lanes network, shown in **Figure 5-18** The current program includes the following projects on or near US 101:

- Phase 2 – SR 237 Express Lanes Project (extension to Mathilda Avenue, Sunnyvale), Opened December 2019
- Phase 3 – US 101/SR 85 Express Lanes Project (from San Mateo/Santa Clara County Line to Fair Oaks Avenue, Sunnyvale and SR 85 to SR 237/Grant Road, Mountain View that includes US 101/SR 85 Connector, Summer 2021
- Phase 4 – SR 85/SR 87 Interchange to US 101 that includes US 101/SR 85 Connector, Fall 2021
- Future Phases – US 101 Mountain View to Santa Clara/San Benito County line

Figure 5-18. *Silicon Valley Express Lanes*



Source: VTA.org, VTA Silicon Valley Express Lanes Program

VTA's 2025 Transportation Model shows that approximately 25 percent to 35 percent of travelers using the I-880/SR 237 Express Lanes Connector will continue to their destination using US 101 and are likely to use the express lanes network.

San Benito County Line to Tennant Avenue

This section documents the future condition of the US 101 segment from the San Benito County line to Tennant Avenue in Morgan Hill. The information is derived from the MTC Travel Demand Model and the VTA Travel Demand Model that is based on the MTC Model. Both models assume the current four-lane facility south of the Monterey Road interchange will become a six-lane facility in 2040. **Table 5-20** shows peak volumes in 2040.

Table 5-20. *2040 Peak Hour Volumes*

US 101 locations	2015 AADT	2013 AM Peak Hour	2013 PM Peak Hour	2040 AM Peak Hour	2040 PM Peak Hour
San Benito County line	54,000	3253	3247	6258	6090
SR 25	77,000	3112	3129	5026	4640
Monterey Road	72,000	4105	4144	6758	6909
Gilroy, SR 152 East	95,000	4315	4084	6868	7066
Gilroy, SR 152 West	102,000	5791	5904	7930	8315
Masten Avenue	113,000	6929	7256	8252	8393
San Martin	114,000	7594	8025	8717	8938
Tennant Avenue	122,000	8069	8294	9141	9350

Source: MTC Travel Demand Model, 2017 and VTA Travel Demand Model, 2017

US 101 in San Mateo County

This section summarizes the future conditions of the US 101 South Corridor in Segment 3 from the Santa Clara County line to Whipple Avenue in Redwood City and Segment 4 from Whipple Avenue to the US 101/I-380 interchange. Information presented in this section is mostly derived from the TOAR for the US 101 Managed Lanes Project in San Mateo County. The study limits of the TOAR is from the US 101/Rengstorff Avenue interchange in Mountain View to the US 101 /East Grand Avenue in South San Francisco, north of I-380. Note that there is an overlap (from Rengstorff Avenue to Santa Clara/San Mateo County line) between this TOAR and the study limits of the Santa Clara US 101 Express Lanes Project Report discussed earlier.

The San Mateo Managed Lanes Project will convert the existing HOV lane to Express Lanes between Matadero Creek in Palo Alto (Santa Clara County) and Whipple Avenue in both directions and will add a new Express Lane from Whipple Avenue to Interstate-380 in both directions. The anticipated opening of the portion south of Whipple Avenue in Fall 2021 and the section between Whipple Avenue and I-380 in the Fall of 2022. The future condition analysis in this CMCP includes an evaluation of the US 101 Express Lanes Project and compares the conditions under the Build scenario to those under the No-Build scenario. The analysis examines both near-term 2020 conditions (opening year) and future 2040 conditions, using the VISSIM microsimulation tool with assumptions regarding the influence of dynamic pricing on demand, implemented during the AM and PM peak periods for both years.

2020 Operating Conditions

Traffic operating conditions for the US 101 Managed Lanes Project were analyzed using VISSIM simulation models. To create the 2020 models, the calibrated Existing Condition models were modified to reflect the 2020 forecasted demands and network improvements.

Bottlenecks

Tables 5-21 and **5-22** list 2020 bottlenecks in the general purpose lanes and their respective queue lengths under the No-Build and Build scenarios. **Figures 5-19 and 5-20** illustrate bottleneck and congestion locations. In addition, HOV lanes experienced congestion in the northbound direction during the AM peak period and in both directions during the PM peak period due to operational degradation of the GP lanes.

Table 5-21. *2020 Bottlenecks No Build Scenario*

Direction / Time	Location	Queue Length	End of the Queue
NB/AM	Rengstorff Avenue loop off-ramp/diagonal	1.0+ miles	Extends beyond the study area
	Third Avenue off-ramp and 3rd Avenue on-ramp	16.4 miles	Merge with Rengstorff bottleneck
	Peninsula Avenue ramps	1.2 miles	Third Avenue
	Grand Avenue ramps	4.2 miles	Millbrae Avenue I/C
SB/AM	Grand Avenue and South Airport Boulevard ramps	4.0+ miles	Extends beyond the study area
	Westbound and eastbound Hillsdale Blvd onramps	5.4 miles	Broadway I/C
	Whipple Avenue lane drop	2.9 miles	Ralston Avenue
	Willow Road ramps	0.2 miles	-
NB/PM	Hillsdale Boulevard on-ramp to SR 92 off-ramp	1.3+ miles	Extends beyond the study area
	Peninsula Avenue ramps	2.8 miles	Merges with SR 92 bottleneck
	SFO and San Bruno Avenue ramps	1.3 miles	South of Millbrae Avenue
SB/PM	Millbrae Avenue ramps	8.2+ miles	Extends beyond the study area
	Third and Fourth Avenue to SR 92/Fashion Island off-ramp	1.6 miles	Merges with Millbrae Avenue bottleneck
	Woodside Road to Marsh Road off-ramp	4.8 miles	Holly Street
	Rengstorff Avenue on-ramp merge	2.6 miles	Embarcadero Road
	Willow Road (SR 114) ramps	0.2 miles	-

Source: San Mateo US 101 Managed Lanes, TOAR 2017, 5.1, pp. 79 – 81

Table 5-22. *2020 Bottlenecks Build Scenario*

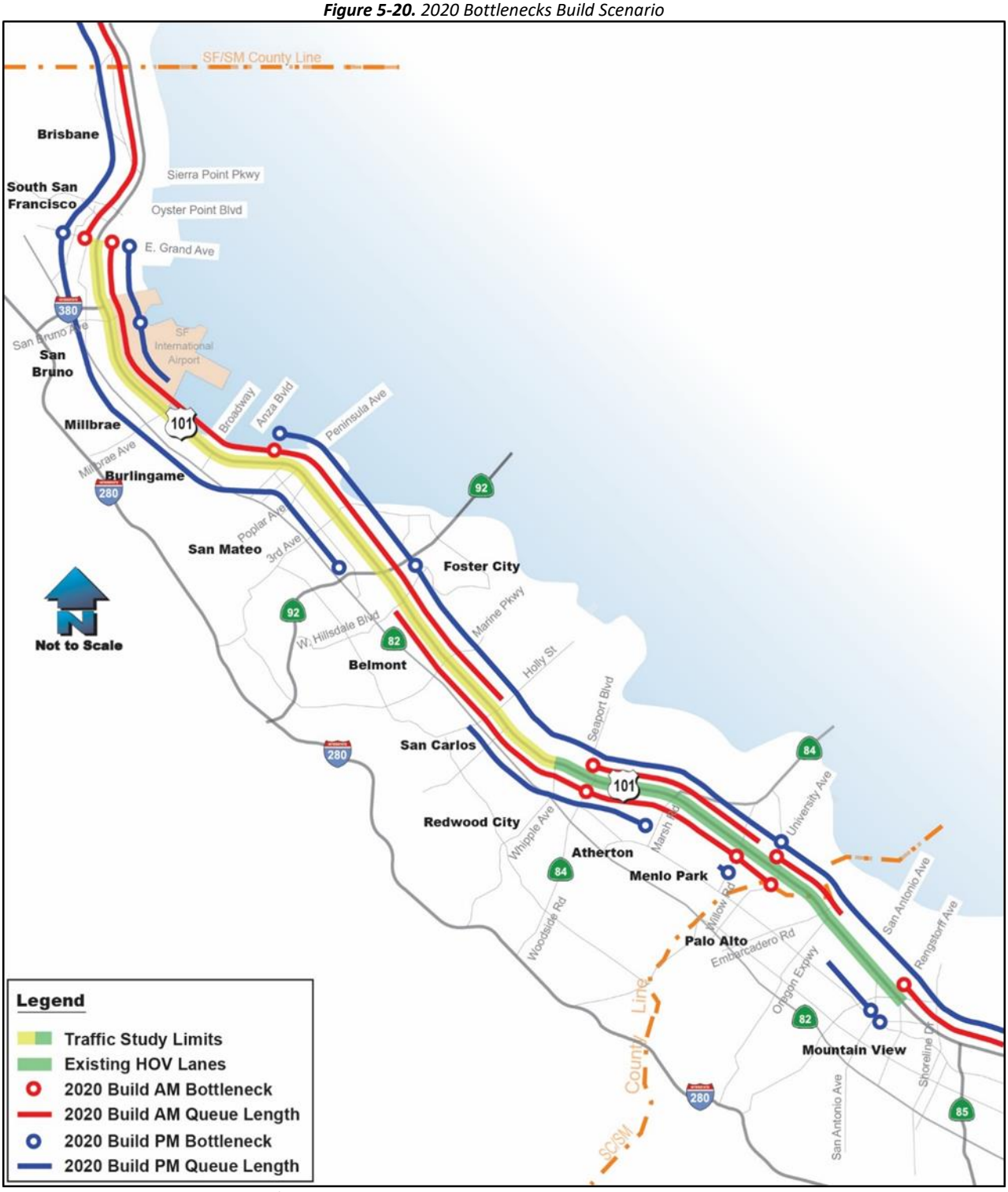
Direction/ Time	Location	Queue Length	End of the Queue
NB/AM	Rengstorff Avenue ramps	1.0+ miles	Extends beyond the study area
	University Avenue (SR 109) ramps	2.1 miles	Near San Antonio Road
	Woodside Road (SR 84) ramps	3.5 miles	Willow Road
	Peninsula Avenue and Anza Boulevard ramps	6.3 miles	Holly Street
	Grand Avenue ramps	7.4 miles	Merge with Peninsula Avenue bottleneck
SB/AM	Grand Avenue/South Airport Boulevard ramps	4.4+ miles	Extends beyond the study area
	Woodside Road ramps	5.8 miles	Hillsdale Boulevard
	University Avenue ramps	4.5 miles	Merge with Woodside Road bottleneck
NB/PM	University Avenue ramps	4.8+ miles	Extends beyond the study area
	Hillsdale Boulevard on-ramp to SR 92 off-ramp	0.75 miles	Merge with University Avenue bottleneck
	Peninsula Avenue and Anza Boulevard ramps	2.8 miles	Merge with SR 92 bottleneck
	San Francisco Airport and San Bruno ramps	1.3 miles	South of SFO I/C
	Grand Avenue ramps	2.3 miles	Merge with upstream bottleneck
SB/PM	Grand Avenue/South Airport Boulevard ramps	4.4+ miles	Extends beyond the study area
	Third and Fourth Avenue to SR 92/Fashion Island off-ramp	10.2 miles	Grand Avenue
	Woodside Road to Marsh Road (SR 84) off-ramp	5.0 miles	Holly Street
	Willow Road (SR 114) ramps	0.2 miles	-
	Rengstorff Avenue ramps	2.6 miles	Embarcadero Road

Source: San Mateo US 101 Managed Lanes, TOAR 2017, 5.2, pp. 83 – 85

Figure 5-19. *2020 Bottlenecks No Build Scenario*

Source: San Mateo US 101 Managed Lanes, TOAR 2017—Figure 5.1, p. 82

Figure 5-20. *2020 Bottlenecks Build Scenario*



Source: San Mateo US 101 Managed Lanes, TOAR 2017—Figure 5.2, p. 86

Travel Times

Table 5-23 shows the travel time comparison between the proposed No-Build and Build scenarios during the AM peak period in 2020. In the northbound direction for the entire length of the segment, the Build scenario offers anywhere between four to 27 minutes of travel time savings in the general purpose lanes and between four minutes and 38 minutes in the HOV/Express Lane compared to the No-Build alternative. In the southbound direction for the entire length of the segment, the Build scenario offers between zero and five minutes of travel time savings for vehicles traveling in the general purpose lane between 6:00 AM and 9:00 AM compared to the No-Build scenario. Vehicles traveling after 9:00 AM in the southbound direction would experience longer travel times compared to the No-Build scenario, due to an increase of 35 to 37 percent more traffic on US 101 (mostly arriving from SR 92). The Build scenario offers travel time savings anywhere between one minute and 22 minutes in the HOV/ Express Lane compared to the No-Build scenario. The Express Lanes are expected to operate with little or no delay relative to the free-flow conditions and will offer significant time savings compared to the general purpose lanes in both directions.

Table 5-23. *2020 AM Peak Travel Time Comparison*

Segment	Distance (Miles)	Free-Flow (Mins)	Hour	GP Lane Travel Time (Mins)			HOV/Express Lane Travel Time (Mins)		
				No-Build	Build	% Difference	No-Build	Build	% Difference
Northbound									
San Antonio Road to I-380	22.65	21	6:00	25	21	-16%	25	21	-16%
			6:30	28	21	-25%	28	21	-25%
			7:00	36	24	-33%	35	21	-40%
			7:30	49	37	-24%	47	22	-53%
			8:00	67	52	-22%	61	23	-62%
			8:30	84	63	-25%	59	25	-58%
			9:00	87	68	-22%	59	25	-58%
			9:30	74	47	-36%	44	24	-45%
Southbound									
I-380 to San Antonio Road	23.10	21	6:00	22	21	-5%	22	21	-5%
			6:30	22	22	0%	22	21	-5%
			7:00	26	24	-8%	25	21	-16%
			7:30	35	31	-11%	33	22	-33%
			8:00	46	41	-11%	44	22	-50%
			8:30	45	44	-2%	43	23	-47%
			9:00	40	45	13%	38	23	-39%
			9:30	33	49	48%	32	24	-25%

Source: San Mateo US 101 Managed Lanes, TOAR 2014, Tables 5.5 and 5.6, pp. 93 – 94

Table 5-24 shows the travel time comparison between the No-Build and Build scenarios during the PM peak period in 2020. In the northbound direction and for the entire length of the segment, the Build scenario offers anywhere between twelve minutes and 59 minutes of travel time savings in the general purpose lanes and between 17 minutes and 67 minutes in the HOV/Express Lane compared to the No-Build alternative. In the southbound direction, for the entire length of the segment, the Build scenario has minor positive or negative travel time impacts for vehicles in the general purpose lanes. The Build scenario offers travel time savings anywhere between three minutes and 36 minutes in the HOV/Express Lane

compared to the No-Build scenario. The Express Lanes are expected to operate with relatively little or no delay relative to the free-flow conditions and will offer significant time savings compared to the general purpose lanes in both directions.

Table 5-24. *2020 PM Peak Travel Time Comparison*

Segment	Distance (Miles)	Free-Flow (Mins)	Hour	GP Lane Travel Time (Mins)			HOV/Express Lane Travel Time (Mins)		
				No Build	Build	% Difference	No Build	Build	% Difference
Northbound									
San Antonio Road to I-380	22.65	21	3:00	38	26	-32%	38	21	-45%
			3:30	50	33	-34%	45	22	-51%
			4:00	74	48	-35%	53	23	-57%
			4:30	138	79	-43%	82	26	-68%
			5:00	162	131	-19%	101	34	-66%
			5:30	156	134	-14%	99	41	-59%
			6:00	149	127	-15%	95	43	-55%
			6:30	140	122	-13%	90	42	-53%
Southbound									
I-380 to San Antonio Road	23.10	21	3:00	25	24	-4%	24	21	-13%
			3:30	29	29	0%	27	22	-19%
			4:00	34	35	3%	31	22	-29%
			4:30	46	47	2%	40	22	-45%
			5:00	62	60	-3%	50	25	-50%
			5:30	71	74	4%	61	25	-59%
			6:00	68	72	6%	57	24	-58%
			6:30	58	55	-5%	52	24	-54%

Source: San Mateo US 101 Managed Lanes, TOAR 2017, Tables 5.7 and 5.8, pp. 95 – 96

Network Performance Measures

Table 5-25 summarizes the 2020 AM peak period network performance for the No-Build and Build scenarios. In the northbound direction, the Build scenario produces significant benefits compared to the No-Build scenario, including a twelve percent reduction in VHT, a reduction of 23 percent in VHD, 24 percent reduction in average delay per vehicle, and a five mph increase in average speed. The Build scenario is also expected to result in a 33 percent increase in HOV person-throughput and a 13 percent increase in total person-throughput. In the southbound direction, the Build scenario does not produce improvements in average speed but has a greater HOV and total person-throughput. However, because of the predicted higher traffic demand in the Build scenario, it will also result in an increase in VHT, VHD, and Average Delay.

Table 5-25. *2020 AM Peak Period Network Performance Measure Results*

Performance Measure	Northbound			Southbound		
	No Build	Build	% Difference	No Build	Build	% Difference
Vehicle Throughput						
Total Distance Traveled (VMT) (veh/mi)	1,121,388	1,142,978	2%	1,001,085	1,373,701	37%
Total Travel Time (VHT) (veh/hr)	38,474	33,947	-12%	24,732	35,409	43%
Total Delay (VHD) (veh/hr)	21,498	16,642	-23%	9,462	14,567	54%
Average Delay per Vehicle (sec/veh)	599	453	-24%	276	400	45%
Average Speed (mph)	29	34	16%	41	39	-4%
Person Throughput						
HOV (HOV 2, 3+ and Buses)	49,531	65,819	33%	49,830	63,251	27%
HGV (Trucks)	5,244	4,921	-6%	5,276	4,729	-10%
Cars (SOV or Drive Alone)	91,486	94,731	4%	92,040	91,034	-1%
Total Person Throughput	146,261	165,471	13%	147,146	159,014	8%

Source: San Mateo US 101 Managed Lanes, TOAR 2017—Tables 5.1 and 5.2, p. 88

Table 5-26 summarizes the 2020 PM peak period network performance for the No-Build and Build scenarios. In the northbound direction, the Build scenario produces significant benefits compared to the No-Build scenario, including a seventeen percent reduction in VHT, a reduction of 26 percent in VHD, 29 percent reduction in average delay per vehicle, and a six mph increase in average speed. The Build scenario is expected to result in a 61 percent increase in HOV person-throughput and a twenty percent increase in total person-throughput. In the southbound direction, the Build scenario produces improvements in HOV and total person-throughput. However, it will also result in an increase in VHT, VHD, Average Delay and Average Speed similar to the AM peak period results.

Table 5-26. *2020 PM Peak Period Network Performance Measure Results*

Performance Measure	Northbound			Southbound		
	No Build	Build	% Difference	No Build	Build	% Difference
Vehicle-Throughput						
Total Distance Traveled (VMT) (veh/mi)	1,028,374	1,185,034	15%	1,000,654	1,349,330	35%
Total Travel Time (VHT) (veh/hr)	68,422	57,131	-17%	34,595	43,918	27%
Total Delay (VHD) (veh/hr)	52,722	39,068	-26%	19,178	23,263	21%
Average Delay per Vehicle (sec/veh)	1,290	916	-29%	479	557	16%
Average Speed (mph)	15	21	38%	29	31	6%
Person-Throughput						
HOV (HOV 2, 3+ and Buses)	41,382	66,422	61%	47,007	67,507	44%
HGV (Trucks)	5,321	3,869	-27%	6,044	5,455	-10%
Cars (SOV or Drive Alone)	96,362	101,890	6%	109,459	107,739	-2%
Total Person-Throughput	143,064	172,182	20%	162,509	180,701	11%

Source: San Mateo US 101 Managed Lanes, TOAR 2017—Tables 5.3 and 5.4, pp. 89 – 90

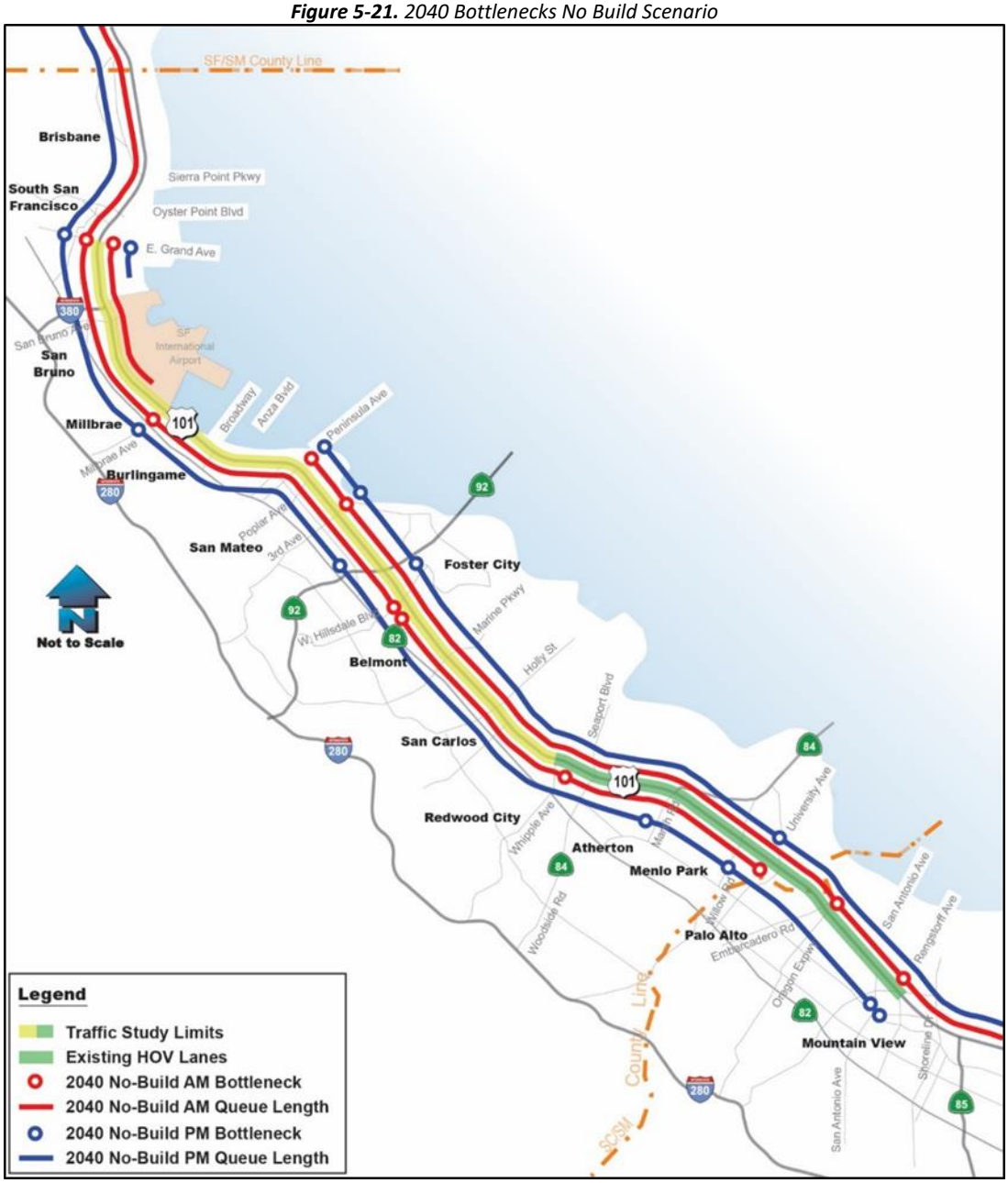
2040 Operating Conditions

Traffic operating conditions for the US 101 Managed Lanes Project were analyzed using VISSIM simulation models. To create the 2040 models, the calibrated 2020 models were modified to reflect the 2040 network change and future forecasted demands.

Bottlenecks

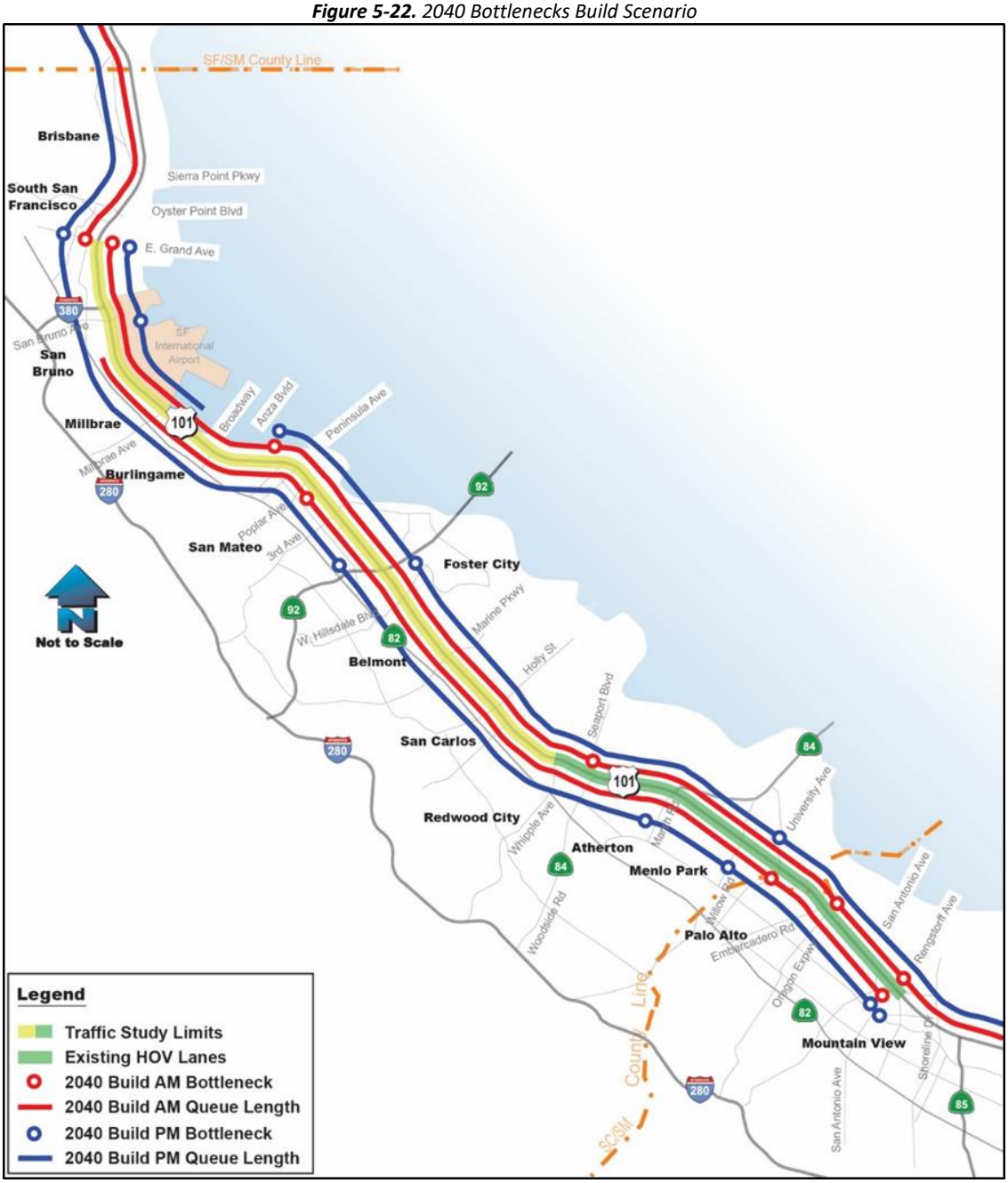
As shown in **Figure 5-21** and **Figure 5-22**, congestion will continue to grow in the Corridor in 2040 and queues from most of the bottlenecks in the general purpose lanes are forecasted to grow and merge with each other both under the No Build and Build scenarios.

Figure 5-21. *2040 Bottlenecks No Build Scenario*



Source: San Mateo US 101 Managed Lanes, TOAR 2017—Figure 6.1, p. 124

Figure 5-22. *2040 Bottlenecks Build Scenario*



Source: San Mateo US 101 Managed Lanes, TOAR 2017—Figure 6.2, p. 128

Travel Times

Table 5-27 shows the travel time comparison between the No-Build and Build scenarios during the AM peak period in 2040. In the northbound direction and for the entire length of the segment, the Build scenario offers anywhere between nine minutes and 67 minutes of travel time savings for vehicles traveling in the general purpose lane between 6:00 AM and 9:00 AM compared to the No-Build scenario. The vehicles traveling after 9:00 AM would experience longer travel times. The Build scenario offers travel time savings between eleven minute and 65 minutes in the HOV/Express Lane compared to the No-Build scenario. The Express Lanes are expected to operate with little or no delay relative to the free-flow conditions between 6:00 AM and 9:00 AM, but they will experience some congestion after 9:00 AM.

In the southbound direction and for the entire length of the segment, the Build scenario offers travel time savings much of the time in the general purpose lanes, but not always. The Build scenario offers travel time savings between one minute and 103 minutes in the HOV/Express Lane compared to the No-Build alternative. The Express Lanes are expected to operate with little or no delay relative to the free-flow conditions.

Express lanes offer significant travel time savings regardless of congestion as compared to the general purpose lanes.

Table 5-27. *2040 AM Peak Travel Time Comparison*

Segment	Distance (Miles)	Free-Flow (Mins)	Hour	GP Lane Travel Time (Mins)			HOV/Express Lane Travel Time (Mins)		
				No Build	Build	% Difference	No Build	Build	% Difference
Northbound									
San Antonio Road to I-380	22.65	21	6:00	32	23	-28%	32	21	-34%
			6:30	43	23	-47%	43	21	-51%
			7:00	71	32	-55%	68	22	-68%
			7:30	111	56	-50%	80	24	-70%
			8:00	150	86	-43%	93	28	-70%
			8:30	143	111	-22%	88	34	-61%
			9:00	124	132	6%	80	42	-48%
			9:30	107	135	26%	64	48	-25%
Southbound									
I-380 to San Antonio Road	23.10	21	6:00	23	23	0%	22	21	-5%
			6:30	23	23	0%	22	21	-5%
			7:00	30	28	-7%	28	22	-21%
			7:30	51	50	-2%	41	23	-44%
			8:00	83	91	10%	63	26	-59%
			8:30	119	106	-11%	95	29	-69%
			9:00	146	110	-25%	124	30	-76%
			9:30	152	126	-17%	131	28	-79%

Source: San Mateo US 101 Managed Lanes, TOAR 2017, Tables 6.5 and 6.6, pp. 136 – 137

Table 5-28 shows the travel time comparison between the No-Build and Build scenarios during the PM peak period in 2040. In the northbound direction and for the entire length of the segment, the Build scenario offers anywhere between twenty minutes and 99 minutes of travel time savings in the general purpose lanes and between 26 minutes and seventy minutes in the HOV/Express Lane compared to the No-Build alternative.

In the southbound direction, for the entire length of the segment, the Build scenario offers travel time savings anywhere between one minute and 43 minutes in the HOV/Express Lane compared to the No-Build scenario. However, the general purpose lanes are expected to have slower times compared to the No-Build scenario. In both directions, Express Lanes offer significant travel time savings regardless of congestion compared to the general purpose lanes.

Table 5-28. *2040 PM Peak Travel Time Comparison*

Segment	Distance (Miles)	Free-Flow (Mins)	Hour	GP Lane Travel Time (Mins)			HOV/Express Lane Travel Time (Mins)		
				No Build	Build	% Difference	No Build	Build	% Difference
Northbound									
San Antonio Road to I-380	22.65	21	3:00	49	29	-41%	47	21	-55%
			3:30	71	41	-42%	58	23	-60%
			4:00	114	60	-47%	72	24	-67%
			4:30	206	107	-48%	99	29	-71%
			5:00	235	143	-39%	102	43	-58%
			5:30	213	147	-31%	102	47	-54%
			6:00	187	142	-24%	98	48	-51%
			6:30	190	138	-27%	98	45	-54%
Southbound									
I-380 to San Antonio Road	23.10	21	3:00	25	30	20%	24	23	-4%
			3:30	32	43	34%	29	23	-21%
			4:00	43	66	53%	35	26	-26%
			4:30	62	97	56%	42	28	-33%
			5:00	84	151	80%	51	33	-35%
			5:30	108	194	80%	64	40	-38%
			6:00	118	176	49%	79	39	-51%
			6:30	105	195	86%	78	35	-55%

Source: San Mateo US 101 Managed Lanes, TOAR 2017, Tables 6.7 and 6.8, pp. 138 - 139

Network Performance Measures

Table 5-29 summarizes the 2040 AM peak period network performance for the No-Build and Build scenarios. In the northbound direction, the Build scenario produces significant benefits compared to the No-Build scenario, including a six percent reduction in VHT, a reduction of 16 percent in VHD, 21 percent reduction in average delay per vehicle, and a five mph increase in average speed. The Build scenario is also expected to result in a 35 percent increase in HOV person-throughput and a 15 percent increase in total person-throughput.

In the southbound direction, the Build scenario produces improvements in Average Delay as well as HOV and total person-throughput. However, it will also result in negligible change in VHT, VHD, and Average Speed because of the predicted high demand in the Build scenario. This occurs most notably near the start of the traffic study limits during the AM peak period due to increased output volumes of upstream bottlenecks reaching the downstream segment.

Table 5-29. *2040 AM Peak Period Network Performance Measure Results*

Performance Measure	NB			SB		
	No Build	Build	% Difference	No Build	Build	% Difference
Vehicle-Throughput						
Total Distance Traveled (VMT) (veh-mi)	1,242,004	1,495,678	20%	1,420,125	1,416,991	0%
Total Travel Time (VHT) (veh-hr)	65,956	62,275	-6%	56,635	56,617	0%
Total Delay (VHD) (veh-hr)	47,169	39,668	-16%	35,053	35,127	0%
Average Delay per Vehicle (sec/veh)	1,279	1,011	-21%	952	908	-5%
Average Speed (mph)	19	24	28%	25	25	0%
Person-Throughput						
HOV (HOV 2, 3+ & Buses)	45,620	61,381	35%	45,153	60,956	35%
HGV (Trucks)	4,830	4,589	-5%	4,781	4,557	-5%
Cars (SOV or Drive Alone)	84,263	88,343	5%	83,400	87,731	5%
Total Person-Throughput	134,713	154,313	15%	133,334	153,244	15%

Source: San Mateo US 101 Managed Lanes, TOAR 2017, Tables 6.1 and 6.1, p. 130

Table 5-30 summarizes the 2040 PM peak period network performance for the No-Build and Build scenarios. In the northbound direction, the Build scenario produces significant benefits compared to the No-Build scenario, including a twelve percent reduction in VHT, a reduction of 19 percent in VHD, 23 percent reduction in average delay per vehicle, and a four mph increase in average speed. The Build scenario is also expected to result in a 58 percent increase in HOV person-throughput and an 18 percent increase in total person-throughput.

In the southbound direction, the Build scenario produces improvements in average speed as well as HOV and total person-throughput. However, it will also result in an increase in VHT, VHD, and Average Delay because of the improvement at the westbound Hillsdale on-ramp bottleneck and the increase in the output volumes of upstream bottlenecks that would allow additional demand to reach downstream locations.

Table 5-30. *2040 PM Peak Period Network Performance Measure Results*

Performance Measure	NB			SB		
	No Build	Build	% Difference	No Build	Build	% Difference
Vehicle-Throughput						
Total Distance Traveled (VMT) (veh-mi)	1,120,030	1,266,545	13%	1,422,641	1,557,701	9%
Total Travel Time (VHT) (veh-hr)	77,070	68,185	-12%	68,210	82,187	20%
Total Delay (VHD) (veh-hr)	60,004	48,888	-19%	46,439	58,426	26%
Average Delay per Vehicle (sec/veh)	1,439	1,110	-23%	1,062	1,327	25%
Average Speed (mph)	15	19	28%	21	19	-9%
Person-Throughput						
HOV (HOV 2, 3+ & Buses)	42,149	66,605	58%	46,000	62,644	36%
HGV (Trucks)	5,419	3,880	-28%	5,914	5,062	-14%
Cars (SOV or Drive Alone)	98,147	102,171	4%	107,115	99,978	-7%
Total Person-Throughput	145,715	172,657	18%	159,029	167,684	5%

Source: San Mateo US 101 Managed Lanes, TOAR 2017, Tables 6.3 and 6.4, p. 132

Summary of 2020 and 2040 Conditions

While the performance results from the proposed San Mateo US 101 Managed Lanes Project vary in terms of VHT, VHD, Average Delay per Vehicle and Average Speed, depending on the direction of travel, the peak period and the traffic analysis time frame, in most cases the Project will result in travel time savings in the general purpose lanes. In addition, implementing the managed lanes will produce greater total person-throughput and especially HOV person-throughput for all scenarios under both 2020 and 2040 conditions. Express lane users are also expected to enjoy significant time savings compared to the general purpose lane users. While there is an increase in VMT due to the project, the results are based on Vissim simulation model that examines only US 101 without taking into account the effect on the entire roadway network. For example, according to the Alternative Screening Memorandum for the San Mateo Managed Lanes Project (September 2017), when compared to the No-Build scenario, the network-wide VMT increase from the project is 1.3 percent during the AM peak period and 1.6 percent during the PM peak period in 2020, much lower than the VMT increase on US 101. In other words, the increase in VMT on US 101 is offset by a reduction in VMT on parallel routes within the Corridor due to route shifting to US 101.

US 101 in San Francisco and Northern San Mateo County

This section documents the future conditions for Segments 5, 6 and 7 of the US 101 South Corridor. Segments 5 and 6 are US 101 segments from the US 101/I-380 interchange in San Mateo County to I-80, including the Central Freeway section in San Francisco. Segment 7 is I-280 in San Francisco from the US 101/I-280 Interchange to the end of I-280.

The information in this section is mostly derived from the Freeway Corridor Management Study (FCMS) Phase 2 Final Report (November 2018). There is an overlap (from I-380 to Grand Avenue) between the FCMS Final Report and the study limits of the TOAR for the San Mateo US 101 Express Lanes Project discussed earlier.

The future conditions analysis includes an evaluation of the US 101/I-280 Express Lanes Project and compares the conditions under the Build scenario to those under the No-Build scenario.

The FCMS proposes a continuous managed lane be created through the conversion of the left-most general purpose lane from the I-280/5th Street/King on-ramp to the US 101/I-280 Interchange, continuing on US 101 to the County line in the southbound direction. In the northbound direction, two segments are proposed: a lane conversion on US 101 to extend the proposed San Mateo US 101 managed lane to Harney Street, and an additional lane conversion from 18th Street to 5th Street on I-280. **Figure 5-23** details the location.

The study examined three Build alternatives with different operational configurations in addition to the No Build alternative:

- HOV lane with requirement of two people per vehicle (HOV 2+)
- HOV lane with requirement of three people per vehicle (HOV 3+)
- Express Lane with a three-person minimum requirement to access the lane at no cost, and a demand based, variable toll for others to access the lane (HOT 3+)

The Project Initiation Document (PID) for this managed lanes project was an approved on October 10, 2019. Both San Mateo County and the City and County of San Francisco mutually agreed to divide the project into two and have identified logical termini near the San Mateo/San Francisco County Line. Both Counties are proceeding with the environmental phase of their respective segment of the managed lanes.

Figure 5-23. *Proposed US 101/I-280 Conversion to Managed Lane*

Source: Freeway Corridor Management Study, Phase 2, Figure 4, p. 10

Travel Demand and Vehicle Occupancy

Travel demand in the future No-Build scenario will be different from the existing conditions described earlier and peak hour traffic growth is estimated to be in the order of two to four percent. The bottleneck locations will remain largely the same, but delay from these bottlenecks will increase. This may result in an additional 2 to 5 minutes of increase in travel time. No changes are foreseen in the share of HOV with two or more people in the 2020 No-Build scenario compared to 2015.

Transit

All three Build alternatives included projected increases in transit service utilizing the lane, which were developed in coordination with Muni and SamTrans. This is important to help boost person-throughput and ensure that the managed lanes are accessible to all uses, particularly low-income travelers. These changes include routing modifications for existing routes like the 8BX, implementation of planned routes like the Hunter's Point and Candlestick Express services, and incorporation of the preliminary results of SamTrans's 101 Express Bus study.

For the purpose of this analysis, private buses are expected to use the carpool or express lane where they would achieve time savings over their current routes; these results are considered in person throughput calculations, but changes to ridership or frequency of any private shuttle service was not evaluated.

Bottlenecks

In **Table 5-31** the bottlenecks and their respective queue lengths for the No-Build scenario and the three Build alternatives are compared, while **Figures 5-24 to 5-27** provide illustration.

Figure 5-24. *Expected Congestion Locations 2020 No Build*

Source: FCMS Draft Final Report 2018, Figure 6, p. 15

Table 5-31. *Bottleneck Conditions, All 2020 Scenarios*

Direction/ Time	Route	Bottleneck Location	No-Build	HOV 2+	HOV 3+	HOT 3+	Change
NB/AM	US 101	Bay Bridge lower deck	Yes	Yes	Yes	Yes	No change
		Hospital Curve	Yes	Yes	Yes	Yes	No change
	I-280	Between US 101 NB on-ramp and Cesar Chavez St. off-ramp	Yes	Yes	Yes	Yes	Shorter queue length with three Build alternatives compared to No-Build
NB/PM	US 101	Bay Bridge lower deck	Yes	Yes	Yes	Yes	No change
	I-280	5th St./King St. and 6th St./Brannan St.	Yes	Yes	Yes	Yes	No change
		Between US 101 NB on-ramp and Cesar Chavez St. off-ramp	Yes	Yes	No	Yes	Not present under HOV 3+ scenario
SB/AM	US 101	Between Alana Way on-ramp and Sierra Point Pkwy off-ramp	Yes	Yes	Yes	Yes	Longer queue length with three Build alternatives compared to No-Build
		Hospital Curve	Yes	Yes	Yes (hidden)	Yes	Under HOV 3+ scenario, queue from Alana way bottleneck reaches Hospital Curve and upstream
	I-280	None*					
SB/PM	US 101	Multiple locations: Produce Ave, Airport Blvd, Sierra Point Pkwy and Alana Way	No	No	Yes	No	Only present under HOV 3+ scenario
		Hospital Curve**	Yes	Yes	Yes	Yes	No Change
	I-280	Monterey Blvd off-ramp	Yes	Yes	Yes	Yes	Shorter queue length with three Build alternatives compared to No-Build
		Between Pennsylvania Ave on-ramp and off-ramp to US 101	Yes (hidden)	Yes	Yes	Yes	Under No-Build scenario, queue from Monterey Blvd bottleneck reaches Pennsylvania Ave and upstream

Source: Freeway Corridor Management Study, Phase 2, Appendix C, pp. 11 – 16

* During AM, traffic volumes entering SB I-280 are constrained by the capacity of the intersections at 5th Street/King Street and 6th Street/Brannan Street. Downstream sections are able to accommodate the constrained flow.

** During PM, traffic volumes entering SB US 101 are constrained by the Hospital Curve bottleneck.

Figure 5-25. *Expected Congestion Location in 2020 2+HOV Lane Conversion*

Source: FCMS Draft Final Report 2018, Figure 7, p. 15

Figure 5-26. *Expected Congestion Location in 2020 3+HOV Lane Conversion*

Source: FCMS Draft Final Report 2018, Figure 8, p. 15

Figure 5-27. *Expected Congestion Location in 2020 3+HOV Lane Conversion*

Source: FCMS Draft Final Report 2018, Figure 9, p. 15

Travel Times

HOV time savings were calculated for the four scenarios. **Table 5-32** shows times compared to the No-Build scenario for the managed lane users with the three Build alternatives.

Table 5-32. *Travel Time*

Route	Direction/time	No Build	HOV 2+		HOV 3+		HOT 3+	
			GP	HOV	GP	HOV	GP	HOT
Between US 101/I-380 and Downtown SF/I-280	NB/AM	24	22	17	22	17	21	17
	SB/AM	17	***19***	11	***27***	11	***21***	11
	NB/PM	20	***23***	12	***26***	11	***22***	12
	SB/PM	15	***17***	11	***28***	11	12	11

Source: Freeway Corridor Management Study, Phase 2, Appendix C, Table 3, p. 10

Numbers in bold and italic: increased travel time when compared to the No-Build scenario due to loss of GP lanes

Person Throughput

Table 5-33 shows percentage change in person throughput for the three Build alternatives when compared to the No Build scenario. All three Build alternatives are estimated to improve the total person throughput, with the exception of US 101 under HOV 3+ scenario, where person throughput would decrease due to the underutilization of the managed lanes and the severity of bottlenecks in the general purpose lanes.

Table 5-33. *Percentage Change in Person Throughput in 2020 – Base Year 2015*

Route	Direction/time	HOV 2+	HOV 3+	Express 3+
US 101	NB/AM	+14%	- 12%	+7%
	SB/AM	+17%	- 5%	+11%
	NB/PM	+13%	- 9%	+14%
	SB/PM	+19%	- 8%	+26%
I-280	AM/NB	+40%	+33%	+24%
	AM/SB	+16%	+7%	+2%
	PM/NB	+18%	+10%	+8%
	PM/SB	+43%	+19%	+43%

Source: Freeway Corridor Management Study, Phase 2, Appendix C, Table 2, p. 10

Summary of 2020 Conditions

Under the 2020 conditions, the bottleneck locations will largely remain the same in the Build scenarios compared to the No-Build scenario. A series of new bottlenecks near the interchanges of Produce Avenue, Airport Boulevard, Sierra Point Parkway and Alana Way would occur during the PM peak hour on SB US 101 in the HOV3+ scenario. A hidden bottleneck on SB I-280 between Pennsylvania Avenue on-ramp and the off-ramp to US 101 would also show up under the Build scenarios.

The travel time results indicate that under all three Build scenarios, the managed lane travel times would be substantially better than the GP lane travel times, however there are differences in how the GP lanes are affected in each scenario compared to the No-Build conditions. Of the build scenarios, the GP lanes would perform the best under the HOT lane scenario, while the GP lane travel times would increase the most under the HOV3+ scenario.

All Build scenarios show an improvement in the total person throughput, with the exception of HOV3+ scenario where the person throughput would decrease on US 101, primarily because there wouldn't be enough HOV3+ traffic so the HOV lanes would be underutilized. This would create new bottlenecks on the GP lanes, reducing the number of people traveling through the Corridor. The HOV2+ and HOT lane scenarios show similar levels of improvement in person throughput, with the HOV2+ performing slightly better. Transit ridership, travel times and reliability will substantially increase in all the managed lane scenarios.

Chapter 6: Public Outreach

The following includes a review of public outreach efforts and activities that have occurred in Santa Clara, San Mateo and San Francisco Counties concerning plans or projects with implications to the US 101 Corridor. **Table 6-1** below summarizes the outreach that is described throughout this chapter. **Appendices E, F and G** offer a more detailed breakdown of efforts and activities in each of the three counties, respectively.

Table 6-1. *Summary of Public Outreach*

Source Title	Plan/Study/Project
Santa Clara County Valley Transportation Plan 2040	Plan
San Mateo Countywide Transportation Plan 2040	Plan
San Francisco Transportation Plan 2040	Plan
Plan Bay Area 2040	Plan
Plan Bay Area 2050	Plan
Caltrans District 4 Bike Plan	Plan
US 101 Mobility Action Plan	Plan
US 101 Express Bus Feasibility Study	Study
Silicon Valley Express Lanes Program	Project
San Mateo US 101 Managed Lanes Project	Project

6.1 Santa Clara County Valley Transportation Plan 2040

VTA developed a long-range countywide transportation plan called Valley Transportation Plan (VTP) 2040 in 2014, an update to VTP 2035 adopted in 2009. VTP 2040 provides programs, projects and policies for roadways, transit, Intelligent Transportation Systems (ITS)/Systems Operations Management (SOM), bicycle and pedestrian facilities, and land use/transportation integration. VTP 2040 projects serve as VTA's recommendations for the RTP.

The development of VTP 2040 project lists included outreach to VTA Member Agencies, community organizations, public officials, and the general public to help determine which projects should move forward. Project lists were initially developed from existing lists and priorities set by VTA Member Agencies. Initial lists were refined through a review process involving VTA committees and Board of Directors as well as public meetings and workshops. Among a menu of public outreach activities, three public meetings were held in Mountain View (March 19), Gilroy (March 21) and San Jose (March 25), respectively, in 2013. Other public engagement efforts included Social media (Facebook and Twitter), VTP 2040 public outreach webpage as well as community outreach email /phone calls for input and questions. The Draft Final Plan was presented at various VTA committees before adopted by the VTA Board of Directors.

6.2 San Mateo Countywide Transportation Plan 2040

The San Mateo Countywide Transportation Plan 2040 (SMCTP 2040) was adopted by the C/CAG Board of Directors on February 9, 2017. A vision statement was adopted for the SMCTP 2040, supported by specific statements and goals for each element of the plan. A coordinated, multi-modal approach that relies on advanced technologies and management practices was used to meet the growing and changing transportation needs of San Mateo County.

As part of the public outreach process, a project webpage was created for posting information regarding the SMCTP 2040 project including the draft document for review and receiving comments online. Notices regarding the availability of the draft SMCTP 2040 for review and comment period were also posted in local newspapers. Public workshops were held in South San Francisco (September 27), Pacifica (September 28), and Menlo Park (September 29) in 2016. Presentations of the Draft SMCTP 2040 were also provided to the San Mateo County Economic Development Association (SAMCEDA) as well as various C/CAG committees in October 2016. Deadline for public comments was October 31, 2016.

C/CAG received comments from individual public members, public agencies, and organizations. Comments were received through the following sources: 1) Project website (Survey Monkey) – 36 responses and 26 written comments; 2) Public workshops – 36 individuals signed in, 62 written comments; and 3) Letters/E-mails – 31 letters and emails were received. To categorize the wide array of comments from the public, themes were developed to group similar comments together. The themes included the following:

- Projects and initiatives in development
- Investment in BART in San Mateo County
- Setting VMT and GHG reduction targets/measures as part of the Plan
- Performance measures
- Public input and approval process
- Projects and funding to achieve modal balance objectives
- Financial analysis
- Safe Routes to School
- Incorporation of shared, electric, connected and automated vehicle technologies
- Information on climate change and sea level rise
- Equity analysis
- Other suggestions, comments and corrections

6.3 San Francisco Transportation Plan 2040

The San Francisco Transportation Plan (SFTP) 2040, adopted in 2013, is the 30-year blueprint for the future of our city's transportation system. The SFTP articulated two transportation investment scenarios through 2040, identified potential new revenues and established an Early Action Program for the first five years of investments. In addition, the 2013 plan includes policy recommendations and strategic initiatives to complement the investment scenarios and as well as an overview of existing and future conditions such as population and employment growth, traffic congestion and components that impact San Francisco's transportation system. In order to ensure that the SFTP was inclusive and reflected public priorities, SFCTA launched a total of five public outreach rounds. As a result, SFCTA was able to record input from residents, merchants, community organizations, business associations, elected bodies, and other important constituents. Input was solicited multiple ways, including through:

- Opinion surveys
- Calls for submission of transportation candidates
- An interactive website
- Tabling events
- Meeting with neighborhoods, business, civic, and advocacy groups
- Briefings to government boards and councils

Special efforts were made to ensure full participation and equal representation of low-income and minority community members, including particular focus on neighborhood meetings, newspaper advertisements and fact sheet distribution in neighborhoods designated as 'Community of Concerns' by MTC. Materials were also distributed in at least three languages: English, Spanish, and Chinese and in certain instances, materials were produced in additional languages, such as Tagalog and Russian, to further reach underrepresented minority communities. A total of five rounds of public outreach was conducted from 2010 to 2013.

6.4 Plan Bay Area 2040

The MTC and the Association of Bay Area Governments (ABAG) began working in 2014 to update Plan Bay Area, the RTP for the San Francisco Bay Area. The Plan Bay Area 2040 (PBA 2040, 2017 considers how and where the region should accommodate growth projected to 2040[58].

A comprehensive program of public involvement activities was a key part of MTC's long-range planning process. Many participated in RTP public open houses and other meetings, telephone and internet surveys, and more. The region's cities and counties also participated in the development of the Plan, as did regional agencies, including the Bay Conservation and Development Commission and the Bay Area Air Quality Management District. Community-based organizations and advocacy groups representing the diverse interests of the Bay Area were active participants throughout the process, as were regional transportation partners. Native American Tribes were also consulted. RTP projects along the US 101 Corridor are included in Chapter 7.

6.5 Plan Bay Area 2050

As discussed earlier, MTC is developing Plan Bay Area 2050 (PBA 2050), the region's next RTP/SCS and an update to PBA 2040. As part of the update, public meetings were held in Summer 2019 and Spring 2020 by each of the County Transportation Agencies along the Corridor to discuss and seek approval for projects that should be considered in PBA 2050. These projects were then submitted to MTC/ABAG. Projects within the US 101 Corridor are included in Chapter 7 of this CMCP. MTC/ABAG will adopt the project list for PBA 2050 in 2021.

6.6 Caltrans District 4 Bike Plan

Caltrans developed the District 4 Bike Plan in 2018, first in the State. With the assistance from a public engagement consultant, Caltrans District 4 staff designed and carried out an inclusive outreach process in 2017 with the goal of collecting input from a broad cross-section of Bay Area communities to help identify bicycle needs on and across the State highways and prioritize recommended projects. The tools used for public outreach included focus group discussion to engage with traditionally under-represented communities, creating a Technical Advisory Committee, community workshops, online survey, webinars and online project comment tools. One of the highlights from these public outreach activities is the use of technology to assist with gathering additional input from Bay Area residents. For instance, an interactive mapping survey recorded over 3,490 respondents to answer questions and provided 20,157 map "pins" to indicate their bicycling experience across the State transportation system.

[58] Plan Bay Area 2040: Public Engagement Report, dated 2017.

6.7 US 101 Mobility Action Plan

The US 101 Mobility Action Plan (MAP) is a multi-jurisdiction collaborative that included Santa Clara, San Mateo and San Francisco counties, Caltrans, MTC, and Transform, a non-profit environmental and social justice organization, to explore strategies for improving people throughput in the US 101 Corridor. The goals of the MAP are to offer reliable travel times for all people regardless of how they travel on US 101, prioritize high-capacity mobility options for all, and foster healthy and sustainable communities.

These goals as well as the recommended strategies were developed with stakeholder and community input. Stakeholders included a Project Management Team, a Technical Advisory Committee and a Stakeholder Advisory Group. Community engagement included presentations, meetings, tabling events, e-blasts, fliers, a survey, and focus groups across all three counties in the study area. As part of the community engagement, a survey was conducted in June-July 2019 in both online and on paper formats in five languages: English, Spanish, Chinese, Vietnamese, Tagalog. The survey results highlighted the needs within the study area and helped the project team identify strategies to address such needs. Some survey results are summarized below.

- Over 75% of respondents indicate it is stressful to drive on US 101
- Over 70% of respondents indicate it is hard to know how long a trip will take on US 101
- Over 40% of respondents indicate congestion on US 101 limits access to job opportunities
- Mode split: 66% drive alone, 25% carpool, and 5% use other modes

6.8 US 101 Express Bus Feasibility Study

The Study examined the financial and operational feasibility of a network of long-distance express buses operating on US 101 through San Mateo County, potentially integrated with managed lanes that provide access to high-occupancy vehicles. SamTrans launched this study in April 2017 and completed a final report in November 2018. Over the course of the study, the team completed a detailed market analysis and identified an initial set of 15 potential express bus routes throughout the three-county study area. Over two rounds of evaluation, the initial routes were screened against a set of goals and performance metrics such as anticipated ridership, ability to serve new transit markets, and cost per passenger. Of the 15 initial route concepts, the study is recommending a phased implementation of six new express routes. The new express service will be funded in part through SB1 funds.

Two phases of public outreach were undertaken for this study. The first phase took place in the summer of 2017 and involved two popup events, one community open house, and a social media campaign. The second phase took place in the summer of 2018, included four pop up events, and a community open house. In addition to outreach events, SamTrans created and maintained a project webpage to publicize the outreach events and provide a location for project materials and updates for the duration of the study.

Over 500 members of the public were engaged over the two rounds of public outreach. Strategies included:

- Social media campaign (Facebook, Twitter, Instagram, Nextdoor, Pintrest, YouTube, Snapchat, newsletter/blogs)
- Media Coverage (KQED, Friends of Caltrain weekly email, Streets blog SF blog post)
- Meeting materials were printed in multiple languages
- Street fairs/Flea Market (Sunday Streets SF & San Mateo & San Jose Flea Markets)

- Community Open house (SamTrans HQ) Dot exercises
- Pop up outreach events (Northern & Southern end of Study area) Interpreters provided

Participants placed highest value on bus frequency, speed and reliability, followed by convenience factors, (real-time arrival, Clipper card use, etc)

6.9 Silicon Valley Express Lanes Program

VTA began seeking public input on express lanes for US 101 in Santa Clara County in 2004. A study prepared for VTA during early express lane planning, "Assessing the Equity Implications of HOT Lanes" (2004) examines fairness and equity issues, and provides strategies to address equity concerns, including public outreach and education, documentation of equity analysis in project planning, and project design elements and approaches that increase equity in express lane benefits and costs.

In 2008, VTA conducted a research, public outreach, and education program to gauge public sentiment about the adoption of express lanes. The program consisted of polling and interviewing approximately 750 Santa Clara County citizens, four focus groups of HOV users and solo drivers, 13 one-on-one interviews with community stakeholders, and ten one-on-one interviews with VTA managers and staff.

The Draft Initial Study/Environmental Assessment (IS/EA) was prepared and made public for review and was discussed at open house meetings across Santa Clara County. Three open forum meetings were held for the Phase 3 portion on January 22, 2015 in Mountain View, and January 28, 2015 and February 4, 2015 in San Jose. In addition to the open houses, the public was invited to submit written comments via email to Caltrans District 4. Copies of the IS/EA were made available on-line, and at nine physical locations during regular business hours. The Notice of Availability that informed members of the public of the open houses, comment submission, and location of IS/EA was written in a variety of languages in addition to English.

6.10 San Mateo US 101 Managed Lanes Project

The scoping period and meeting notification of the US 101 Managed Lanes Project in San Mateo County were made public through Facebook, a Notice of Preparation filed with the California Governor's Office of Planning and Research State Clearinghouse and posted on the project website, a press release, and direct mailers. A public scoping meeting and open house was held on October 27, 2016 at San Mateo City Hall to inform the public about the status of the project and to request public comments regarding the scope of the environmental document. Comments were used to inform technical studies and the environmental document.

Public informational meetings were also held at the San Mateo City Hall on May 31, 2017 and at the City of Redwood City Hall on June 5, 2017 to present the proposed Managed Lanes Project and considered alternatives. Public meetings announcing the release of the Draft EIR were held on December 6, 2017 at San Mateo City Hall, December 11 at Redwood City Hall and, and January 11, 2018 at Millbrae City Hall. Specific target email notifications were sent to about 50 community-based organizations in San Mateo County. The DEIR/EA was made available at various public libraries throughout the county and also available online. Interest groups such as Transform and Friends of Caltrain have attended meetings and have been engaged since the early development of this project in 2013. Several local newspaper articles were also published to inform the public about the proposed project.

In addition, on June 2, 2016 MTC hosted a focus group meeting in San Mateo through the Managed Lanes Implementation Plan (MLIP) to identify and address the opinions, concerns, and acceptance issues key stakeholders and the public may have with all Managed Lanes in the Bay Area.

Chapter 7: Recommended Strategies

7.1 Project Lists

This section presents the recommended projects within the US 101 South Corridor. There are three major project categories: 1) highway and transit projects, 2) active transportation projects, and 3) projects in the SHOPP and the Ten-Year SHOPP Plan/Project Book.

Highway and Transit Projects and Multi-County Programs

As shown in **Table 7-1**, the first group of projects include highway and transit projects. The list includes projects in Plan Bay Area 2040 (2017), the Bay Area's current regional transportation plan, as well as additional projects submitted by VTA, SMCTA, C/CAG, Caltrain and SFCTA to be included in future RTP updates such as the current on-going update, Plan Bay Area 2050.

Highway and Transit Projects

The recommended highway strategies include managed lane projects, other operational improvements such as auxiliary lanes, interchange reconfiguration, and local arterial projects that will help improve the safety and operations of the Corridor.

The recommended transit strategies consist of a variety of projects. Among others, new capital projects include the BART extension to San Jose, the Caltrain Downtown Extension to the Salesforce Transit Center, VTA light rail extensions, several BRT and express bus service projects both on US 101 and along parallel arterials, a new ferry terminal in Redwood City and at Mission Bay/16th Street in San Francisco, the California High Speed Rail project and a pilot hovercraft ferry service from Foster City. Other projects focus on efficiency improvement and service expansion of existing transit services to make transit a more competitive alternative to driving. Caltrain Enhanced Growth Scenario improvements represent the largest investment in this category within the Corridor. In Santa Clara County, there are projects to improve the speed of light rail service as well as to improve existing bus stops; In San Mateo County, a proposed project will Improve existing guideway between Millbrae and SFO transit stations; In San Francisco, a number of multimodal improvements are planned, focusing on major transit corridors and areas surrounding major transit hubs.

Table 7-1 also includes information on when a project is expected to be ready for construction. Projects are grouped into short, medium and long-term time frames based on the following criteria:

- Short-term: within four years (by Fiscal Year 2023/2024)
- Mid-term: between four and ten years (by Fiscal Year 2029/2030)
- Long-term: more than ten years

Table 7-1. *US 101 South Corridor Recommended Future Highway and Transit Projects (not in priority order)*

Co.	Route	Begin Post mile	End Post mile	Title	Description	Cost* ($M)	Short-Term** (0-4 Years)	Medium-Term (4-10 Years)	Long-Term (10+ Years)	RTP ID
Santa Clara County Highway Projects										
SCL	101	R6.10	R10.26	US 101 Express Lanes: Masten Ave. to 10th St.	New HOV/EL in both directions	$68.0			X	MTC PBA 2050***
SCL	101	2.53	R6.10	US 101 Express Lanes: 10th St. to SR 25	New HOV/EL in both directions	$50.0			X	MTC PBA 2050***
SCL	101	R9.12	R9.12	US 101/Buena Vista Ave. Interchange Improvements	Improve interchange at U.S. 101/Buena Vista Avenue.	$40			X	17-07-0035
SCL	101	3.17	3.17	US 101/SR 25 Interchange	The project consists of reconfiguring the interchange at US 101 and SR 25 just south of the City of Gilroy in Santa Clara County, connecting SR 25 and Santa Teresa Boulevard, and widening the existing freeway from 4 to 6 lanes from the Monterey Street interchange to the US 101/SR 25 interchange.	$250	X			17-07-0069
SCL	101	R6.10	R6.10	US 101/SR 152/10th St. Ramp and Intersection Improvements	Modify SB US 101 off-ramp to 10th St. and intersection in Gilroy. (Project extracted from PBA 2040 project ID 17-07-0079) Minor Projects Program	$15.0		X		17-07-0079
SCL	101	R10.26	R17.75	US 101 Express Lanes: Cochrane Rd. to Masten Ave.	New HOV/EL in both directions (Part of Santa Clara County Express Lanes - Environmental and Design Phase for Future Segments)	$200.0			X	17-07-085
SCL	Various	Various	Various	Noise Abatement Program (Countywide)	General noise abatement program for countywide	$54.0	X			17-07-0064
SCL	Various	Various	Various	Hwy. Transportation Operations System/Freeway Performance Initiative Phase 1 & 2	This project will implement traffic control systems based on the Regional Freeway Performance Initiative.	$58.0		X		17-07-0010
SCL	Various	Various	Various	Santa Clara County Express Lanes - Environmental and Design Phase for Future Segments	This program includes environmental and design phases for future express lane segments in Santa Clara County, including along I-880, US 101 south of Morgan Hill, and for Highway 17	$129			X	17-07-0085

Co.	Route	Begin Post mile	End Post mile	Title	Description	Cost* ($M)	Short-Term** (0-4 Years)	Medium-Term (4-10 Years)	Long-Term (10+ Years)	RTP ID
SCL	101	49.60	50.32	US 101 Interchanges Improvements: San Antonio Rd. to Charleston Rd./Rengstorff Ave.	Improve southbound U.S. 101 between San Antonio Road to Charleston Road/Rengstorff Avenue.	$40.0		X		17-07-0034
SCL	101	48.59	48.59	US 101/Shoreline Blvd. Interchange Improvements	Realignment of the northbound Shoreline Boulevard off-ramp from US 101 to connect to L' Avenida rather than directly to Shoreline Boulevard.	$16.0		X		17-07-0040
SCL	101	40.69	40.69	US 101 Southbound/Trimble Rd./De La Cruz Blvd./Central Expwy. Interchange Improvements	Improve interchange at U.S. 101 southbound Trimble Road/De la Cruz Boulevard/Central Expressway.	$68	X			17-07-0031
SCL	101	39.96	39.96	Double Lane SB US 101 off-ramp to Southbound SR 87	Widen Southbound US 101 freeway connector to Southbound SR 87 to add a second lane and install TOS.	$3.0	X			17-07-0044
SCL	101	38.90	38.90	US 101/Zanker Rd./Skyport Dr./Fourth St. Interchange Improvements	Construct a new interchange at U.S. 101/Zanker Road/Skyport Drive/Fourth Street.	$184		X		17-07-0023
SCL	101	37.73	37.73	US 101/Old Oakland Rd. Interchange Improvements	Improve interchange at U.S. 101/Old Oakland Road.	$27.0		X		17-07-0039
SCL	101	36.94	36.94	US 101/Mabury Rd./Taylor St. Interchange Construction	Construct interchange at U.S. 101/Mabury Road/Taylor Street.	$76.0		X		17-07-0027
SCL	101	R28.60	R28.60	US 101/Blossom Hill Rd. Interchange Improvements	Widen interchange at U.S. 101/Blossom Hill Road.	$27.0	X			17-07-0038
SCL	101	37.73	37.73	Widen Oakland Road from 4-lanes to 6-lanes between U.S. 101 and Montague Expressway	Provides median island landscaping and operational improvements in roadway corridor between North San Jose and Downtown San Jose area. Widens Oakland Rd. from 4 to 6 lanes.	$25		X		17-07-0091

Co.	Route	Begin Post mile	End Post mile	Title	Description	Cost* ($M)	Short-Term** (0-4 Years)	Medium-Term (4-10 Years)	Long-Term (10+ Years)	RTP ID
SM SCL	101	SM 6.60	SCL 17.81	US 101 Express Lanes: Whipple Ave. in San Mateo County to Cochrane Rd. in Morgan Hill.	Convert HOV Lanes to EL and add EL in some segments.	$524	X	X	X	17-07-0075
SCL	101	Various	Various	South County US 101 Ramp Metering	South County US 101 Ramp Metering	$78.0		X		MTC PBA 2050***
SCL	101	47.02	47.02	US 101/Ellis St Interchange Improvement	US 101/Ellis St interchange improvement	$25.0		X		MTC PBA 2050***
SCL	101	46.06	46.06	US 101/SR 237 Interchange Project	US 101/SR-237 Interchange Improvement	$150.0			X	MTC PBA 2050***
SCL	101	47.78	47.78	US 101/Moffett Blvd. Interchange Improvements	US 101/Moffett Blvd. Interchange Improvements	$81.0		X		MTC PBA 2050***
SCL	101	41.97	41.97	US 101/Montague Expwy. Interchange Improvements	US 101/Montague Expwy. Interchange Improvements	$64.0		X		MTC PBA 2050***
SCL	101	38.38	38.38	US 101 / I-880 Interchange Project	US 101 / I-880 Interchange Project	$1,000			X	MTC PBA 2050***
Santa Clara County Transit Projects										
SCL	Various	Various	Various	Affordable Fares Program	Program objective is to increase ridership by reducing the cost of transit services for low-income populations including seniors, persons with disabilities, youth and students.	$44.0			X	17-07-0007
SCL	Various	Various	Various	Bus Stop Improvements	Create comfortable and dignified transit waiting environments by improving accessibility and amenities at VTA bus stops.	$47.0	X			17-07-0056
SCL	OFF	N/A	N/A	Caltrain Grade Separations	This project includes grade separations of the Caltrain right of way at priority locations throughout Santa Clara County	$800.0	X			17-07-0002
SCL	OFF	N/A	N/A	West San Carlos Light Rail Station (SJ)	In the City of San Jose construct a new light rail station to support new development on West San Carlos Street. (Not in VTA 2050)	$12.1			X	17-07-0003

Co.	Route	Begin Post mile	End Post mile	Title	Description	Cost* ($M)	Short-Term** (0-4 Years)	Medium-Term (4-10 Years)	Long-Term (10+ Years)	RTP ID
SCL	OFF	N/A	N/A	Implement Mineta San Jose International Airport APM connector (SJ)	The proposed project will provide transit link to San Jose International Airport from VTA´s Guadalupe Light Rail Transit (LRT) Line, and from Caltrain and future BART in Santa Clara, using Automated People Mover (APM) technology. (Planning & Environmental Phases)	$50.0			X	17-07-0063
SCL	OFF	N/A	N/A	BART Silicon Valley Extension - San Jose (Berryessa) to Santa Clara	The Berryessa Station to San Jose Extension Project would physically extend BART from the future BART Berryessa Station in San Jose to Downtown San Jose and then into Santa Clara. Project includes four new stations - Alum Rock, Downtown San Jose, Diridon, and Santa Clara.	$5,581.0		X		17-07-0012
SCL	OFF	N/A	N/A	New Grade Separations	Project would grade separate light rail tracks from the existing roadway in the following 3 locations: Central Expressway, Lawrence Expressway, and Alum Rock Avenue. (Not in VTA 2050)	$150.3			X	17-07-0002
SCL	OFF	N/A	N/A	North First Street light rail speed Improvements	This project would improve light rail service and reliability along North First Street. Some of the problems in this area include signal timing issues, slow speeds (maximum speed currently restricted to 35mph), and unscheduled stops. Fencing along this corridor would allow maximum speeds to increase to 45 mph, and combined with improvements to signal timing.	$12.0	X			17-07-0060
SCL	OFF	N/A	N/A	Extend Capitol Expressway light rail to Eastridge Transit Center - Phase II	Provides light rail extension in the East Valley. Extends the Capitol Avenue light rail line 2.6 miles from the existing Alum Rock Transit Center to a rebuilt Eastridge Transit Center. Includes the removal of HOV lanes on Capitol Expressway between Capitol Avenue and Tully Road in San Jose.	$453.0		X		17-07-0061
SCL	82	Various	Various	Implement El Camino Rapid Transit Project	Implement Rapid line 522 improvements in the El Camino Real/The Alameda corridor including: dedicated guideways, signal prioritization, low-floor boarding, ticket vending machines,	$24.0	X			17-07-0013

Co.	Route	Begin Post mile	End Post mile	Title	Description	Cost* ($M)	Short-Term** (0-4 Years)	Medium-Term (4-10 Years)	Long-Term (10+ Years)	RTP ID
					premium stations, real-time information, and specialized vehicles.					
SCL	OFF	N/A	N/A	Stevens Creek Bus Rapid Transit	Implement Rapid Transit improvements in the Stevens Creek corridor including: dedicated guideways, signal prioritization, low-floor boarding, ticket vending machines, premium BRT stations, real-time information, and specialized vehicles.	$151.0		X		17-07-0059
SCL	OFF	N/A	N/A	Mountain View Transit Center Improvements	Improvements to accommodate the increased number of Caltrain and light rail riders by adding underground parking and expanding bus/shuttle transfer area.	$150			X	MTC PBA 2050***
SCL	Various	Various	Various	Fast Transit Implementation	System-wide improvements that prioritize transit to improve speed and reliability. Improvements could include but not limited to: Hardware and software upgrades to support TSP pilot projects; upgrading signal controllers, and bus lane and bus stop improvements.	$500			X	MTC PBA 2050***
SCL	Various	Various	Various	High Capacity Transit Corridors	Construction of the first phase of high capacity transit corridors that will come out of the Strategic Plan for Advancing High Capacity Transit Corridors.	$500			X	MTC PBA 2050***
SCL	OFF	N/A	N/A	Downtown Coordinated Area Plan and Transit Center Improvements	Planning and construction of Palo Alto Avenue grade separation and multimodal Transit Center improvements, including bike/pedestrian undercrossing upgrades and new Everett bike/ped crossing between Alma and El Camino Real. Includes offsite access improvements such as improved multi-modal facilities/Complete Streets on routes to the station.	$300			X	MTC PBA 2050***
SCL	OFF	N/A	N/A	Diridon Station Improvements Planning and Engineering	VTA's BART Diridon Station will be located adjacent to the south side of West Santa Clara Street, between Autumn Street and the San José Diridon Caltrain Station. This station would	$500			X	MTC PBA 2050***

Co.	Route	Begin Post mile	End Post mile	Title	Description	Cost* ($M)	Short-Term** (0-4 Years)	Medium-Term (4-10 Years)	Long-Term (10+ Years)	RTP ID
					consist of a below-ground concourse and boarding platform. Street-level pedestrian connections will be provided to the Diridon Caltrain Station and VTA's Diridon Light Rail Station. This station will also include bicycle facilities. The station area will be integrated with mixed use development, creating a transit-oriented community.					
SCL	OFF	N/A	N/A	Systemwide LRT Grade Separation Program		$7,500		X		MTC PBA 2050***
SCL	OFF	N/A	N/A	Downtown San Jose Subway		$1,400		X		MTC PBA 2050***
San Mateo County Highway Projects										
SM	84	R25.81	R28.19	Improve access to and from the west side of Dumbarton Bridge on Route 84 connecting to U.S. 101 per Gateway 2020 Study - Phased	Improve access to /from the west side of Dumbarton Bridge (Route 84 connecting to U.S. 101) per Gateway 2020 Study (Phased implementation of short-term projects. Environmental phase only for long term projects).	$60.0			X	17-06-0016
SM	101	5.39	5.39	Improve U.S. 101/Woodside Road interchange	Modifies the Woodside Road Interchange at US 101.	$236.0	X			17-06-0010
SM	101	0.89	0.89	101/University Ave. Interchange Improvements	On University Avenue across US 101, between Woodland Avenue and Donohoe Street; Add bike lanes and sidewalk and modify the NB and SB off-ramps to eliminate pedestrian/bicycle conflicts and improve traffic operations.	$15	X			17-06-0025
SM	101	0.0	R20.63	US 101 Express Lanes: I-380 to Santa Clara County Line	Modify existing lanes on US 101 to accommodate a managed lane	$581	X			17-06-0007

Co.	Route	Begin Post mile	End Post mile	Title	Description	Cost* ($M)	Short-Term** (0-4 Years)	Medium-Term (4-10 Years)	Long-Term (10+ Years)	RTP ID
SM	101	R20.63	26.11	Implementation of managed lanes on US 101 from I-380 to San Francisco County line	Implementation of managed lanes on US 101 from I-380 to San Francisco County line	$418	X			17-06-0008
SM	101	11.89	11.89	Improve operations at US 101/SR 92 Interchange- Phase I Area Improvements	Construct less complex operational improvements at four areas at the US 101/SR 92 Interchange and vicinity	$25.6	X			17-06-0009
SM	101	11.89	11.89	Improve operations and US 101/SR 92 Interchange Phase 2: Direct Connector	Construct new direct connector at the US 101/SR 92 Interchange	$242.4		X		17-06-0009
SM	101	14.69	14.69	U.S. 101 Interchange at Peninsula Avenue	Construct southbound on and off ramps to US 101 at Peninsula Ave to add on and off ramps from southbound 101.	$91.0		X		17-06-0012
SM	101	8.40	8.40	Route 101/Holly St Interchange Access Improvements	The proposed project would convert the existing full cloverleaf configuration to a partial cloverleaf design by eliminating two of the existing loop off-ramps of the interchange, and realign the diagonal on- and off-ramps into signalized T-intersections with local streets. A new pedestrian and bicycle over crossing will be constructed in the south side of Holly Street Interchange.	$36.0	X			17-06-0017
SM	101	17.94	17.94	Widen Millbrae Avenue between Rollins Road and U.S. 101 southbound on-ramp and resurface intersection of Millbrae Avenue and Rollins Road	Widen Millbrae Avenue between Rollins Road and US101 Southbound On Ramp and resurface the intersection of Millbrae Avenue and Rollins Road.	$16.0		X		17-06-0037
SM	101	21.47	21.47	US 101 Produce Avenue Interchange	Construct a new interchange on US 101 at Produce Avenue, connecting Utah Avenue on the east side of US 101 to San Mateo Avenue on the west side of US 101. This will allow for reconfiguration of the existing southbound	$159.0		X		17-06-0011

Co.	Route	Begin Post mile	End Post mile	Title	Description	Cost* ($M)	Short-Term** (0-4 Years)	Medium-Term (4-10 Years)	Long-Term (10+ Years)	RTP ID
					ramps at Produce Ave and Airport Blvd, as well incorporation of the northbound off- and on-ramps at S. Airport Blvd into the interchange design.					
SM	101	24.84	24.84	Reconstruct U.S. 101/Sierra Point Parkway interchange (includes extension of Lagoon Way to U.S. 101)	Reconstruct a partial interchange and provide improved access to Brisbane, Bayshore Blvd and proposed Brisbane Baylands project. Lagoon Way extension connects to the reconstructed interchange and provides improved access to Brisbane, Daly City, and the pending 600-acre Brisbane Baylands development.	$21.0			X	17-06-0024
SM	101	26.03	26.03	Environmental for 101/Candlestick Interchange	Planning and environmental analysis of the reconstruction of 101/Candlestick Interchange to full all-directional interchange with a single point cross street connection. Project would provide all-direction ramp movements controlled by new signalized intersections at the cross street connections. Interchange would join an improved Harney Way to the east, and would join the Geneva Avenue Extension to the west. Accommodate E/W crossing of planned BRT facility.	$28.0			X	17-06-0021
SM	101	26.03	26.03	Construct a 6-lane arterial from Geneva Avenue/Bayshore Boulevard intersection to U.S. 101/Candlestick Point interchange - Environmental phase	Planning and environmental analysis of a 6-lane arterial from the Geneva Avenue at Bayshore Boulevard to 101/Candlestick Interchange. Grade separation at the Caltrain and Tunnel Ave, Class II bike lanes, on-street parking (travel lanes during peak periods), and sidewalks. Sections will be reserved for an exclusive lane BRT facility that connects to the Bayshore Multimodal Station and provides through service to BART Balboa Station.	$19.0			X	17-06-0038
SM	101	21.80	21.80	Grand Avenue off ramp realignment	Grand Avenue off ramp realignment	$35		X		MTC PBA 2050***
SM	101	13.45	13.45	3rd Ave. / US 101 Interchange	3rd Ave. / US 101 Interchange reconstruction	$65		X		MTC PBA 2050***

Co.	Route	Begin Post mile	End Post mile	Title	Description	Cost* ($M)	Short-Term** (0-4 Years)	Medium-Term (4-10 Years)	Long-Term (10+ Years)	RTP ID
SM	101 & 280	Various	Various	Northern Cities Smart Corridor Project	Install Intelligent Transportation System (ITS) equipment to address recurring and non-recurring traffic congestion.	$19.5	X			17-06-0006
SM	82	Various	Various	El Camino Real Road Diet	El Camino Real currently has three lanes in each direction with high traffic speeds and volume. The improvement concept for El Camino Real reflects the objectives of the Grand Boulevard Initiative, which focuses on making the corridor more comfortable for all road users from motorists and bus riders to bicyclists and pedestrians by reducing travel lane, widening sidewalks, and adding bike lanes. (Note: Project Sponsor is City of Millbrae)	$82	X			MTC PBA 2050***
SM	82	Various	Various	El Camino Real Complete Streets Improvements	El Camino Real currently has three lanes in each direction and though there are transit stops, it does not have bike lanes or pedestrian facilities to access. The improvement concept for El Camino Real reflects the objectives of the Grand Boulevard Initiative, which focuses on making the corridor more comfortable for all road users from motorists and bus riders to bicyclists and pedestrians by reducing travel lanes, providing dedicated facilities for active transportation modes (cyclists and pedestrians). (Note: Project Sponsor is Town of Atherton)	$15		X		MTC PBA 2050***
SM	Various	Various	Various	Minor Highway Improvements	Project types include: minor highway extension, or new lane (less than ¼ mile) and interchange modification (No additional capacity)	$300		X		MTC PBA 2050***
SM	OFF	N/A	N/A	Railroad Ave. Extension	Construct a new local road connection between Littlefield Avenue and Linden Avenue, include a two lane facility that crosses US 101 and Caltrain ROW. (Note: Project Sponsor is City of SSF)	$261.0			X	MTC PBA 2050***
SM	OFF	N/A	N/A	Local Road Connection from I-380/Terminus N. Access Rd to the East side of South SF	Construct a new local road connection between the I-380 terminus/ N. Access Road with the "The East Side" area of South San Francisco. This project will include a water bridge connection. (Note: Project Sponsor is City of SSF)	$128			X	MTC PBA 2050***

Co.	Route	Begin Post mile	End Post mile	Title	Description	Cost* ($M)	Short-Term** (0-4 Years)	Medium-Term (4-10 Years)	Long-Term (10+ Years)	RTP ID
SM	OFF	N/A	N/A	Sierra Point Connection	Construct a new local road connection between the Veterans Blvd. and Shoreline Court, include a two-lane bridge connection. (Note: Project Sponsor is City of SSF)	$20			X	MTC PBA 2050***
San Mateo County Transit Projects										
SM	82	0.00	24.85	Add new rolling stock and infrastructure to support SamTrans bus rapid transit along El Camino Real- Phase	This project will institute new rolling stock and infrastructure necessary to accommodate BRT along El Camino Real	$352.0	X	X		17-06-0029
SM	OFF	N/A	N/A	Environmental Clearance and Design of the Redwood City Ferry Terminal and Service	Planning and environmental analysis of the construction of a new ferry terminal, purchase of 3 new high-speed ferry vessels, and operation of new ferry service between Redwood City and San Francisco.	$9.0		X		17-06-0030
SM	OFF	N/A	N/A	Implement incentive programs to support transit-oriented development	Implement an incentive programs to support transit-oriented developments in San Mateo County.	$106.0	X	X		17-06-0026
SM	Various	Various	Various	Introduce Network of Regional Express Bus Routes	Purchase electric buses to use in running expanded express bus service utilizing the San Mateo County Express Lanes project; construct improvements at the US 101/SR-92 interchange park-and-ride; add secure bike parking and improved bus stop facilities at key stop locations.	$42	X			MTC PBA 2050***
SM	OFF	N/A	N/A	Redwood City Transit Center Expansion Project	Expand and potentially relocate Redwood City Caltrain Station (Note: Project Sponsor is City of Redwood City)	$112			X	MTC PBA 2050***

Co.	Route	Begin Post mile	End Post mile	Title	Description	Cost* ($M)	Short-Term** (0-4 Years)	Medium-Term (4-10 Years)	Long-Term (10+ Years)	RTP ID
SM	OFF	N/A	N/A	Pilot Hovercraft Ferry Service from Foster City	Implement a pilot hovercraft service from Foster City (destination TBD) to relieve congestion and reduce carbon emissions. Includes: 2x 30 person high speed hovercraft, two basic hoverports, supporting infrastructure, and all feasibility study, environmental and regulatory costs. O&M costs will be partially offset by farebox recovery (Note: Project Sponsor is City of Foster City)	$182	X			MTC PBA 2050***
SM	OFF	N/A	N/A	HSR Millbrae SFO Station	Construct 4-level underground parking structure podium in preparation for future High Speed Rail Millbrae SFO station at the northeast corner of Millbrae Ave and El Camino Real as part of the Millbrae Station Area Specific Plan. Project will include electronic wayfinding signage along US101 and Interstate 280 providing direction and real time transit information to attract SOV and promote transit use in the region. (Note: Project Sponsor is City of Millbrae)	$251			X	MTC PBA 2050***
SM	OFF	N/A	N/A	Millbrae SFO Guideway Improvement	Improve existing guideway between Millbrae Station and SFO Station to accommodate new trains to provide seamless transit between Millbrae Station/future High Speed Rail Station and SFO Station. (Note: Project Sponsor is City of Millbrae)	$502			X	MTC PBA 2050***
SM	OFF	N/A	N/A	Hillsdale Transit Center	Build multimodal station access for relocated Hillsdale Caltrain station. Plan is envisioned to include station area access, bicycle station, kiss and ride, bus/shuttle access, and potential mixed-use development (Note: Project Sponsor is City of San Mateo)	$70		X		MTC PBA 2050***

Co.	Route	Begin Post mile	End Post mile	Title	Description	Cost* ($M)	Short-Term** (0-4 Years)	Medium-Term (4-10 Years)	Long-Term (10+ Years)	RTP ID
San Francisco County Highway Projects										
SF	101	2.1	2.1	Alemany Roadway redesign and ramp reconstruction	Redesign of Alemany Blvd from St Mary's footbridge in the west, to US 101/I-280 Interchange to the east, and the relocation of US 101 off-ramp.	$250.0		X		MTC PBA 2050***
SF	101/ 280	0.0 R4.5R	1.7 T7.5	101/280 Managed Lane	Development of High Occupancy, priority lanes between where the US 101 crosses the San Mateo County line and where the I-280 enters downtown San Francisco at 3rd Street. The lanes will support express transit as well as expanded local service routes.	$190.0	X			17-05-0020
SF	Various	Various	Various	SoMa Freeway Ramp Intersection Safety Phase 1	Addressing safety issues at 5 freeway ramp intersections in the San Francisco South of Market (SoMa) neighborhood by proposing design improvements for near-term implementation. These intersections are on the city's Vision Zero High-Injury network	$4.50	X			MTC PBA 2050***
SF	Various	Various	Various	SoMa Freeway Ramp Intersection Safety Phase 2	Improve safety at 10 freeway ramp intersections in the SoMa neighborhood for all travelers and to support progress towards the City's Vision Zero goal.	$10.80	X			MTC PBA 2050***
San Francisco County Transit Projects										
SF	101	6.7	14.8	Van Ness Avenue Bus Rapid Transit	Implement Van Ness Avenue Bus Rapid Transit (Van Ness BRT) to improve approximately two miles of a major north-south urban arterial in San Francisco. Project would include a dedicated lane for BRT buses in each direction between Mission and Lombard Streets. There will be nine BRT stations, with platforms on both sides for right-side passenger boarding and drop-off. While there are many associated projects working in concert with the Van Ness	$225.2	X			17-05-0033

Co.	Route	Begin Post mile	End Post mile	Title	Description	Cost* ($M)	Short-Term** (0-4 Years)	Medium-Term (4-10 Years)	Long-Term (10+ Years)	RTP ID
					Improvement Project, cost reflects the Core BRT scope only.					
SF	OFF	N/A	N/A	Mission Bay Ferry Landing	Establish New Ferry terminal to serve Mission Bay and Central Waterfront neighborhoods	$58.4	X			17-05-0019
SF	OFF	N/A	N/A	Geneva-Harney Bus Rapid Transit	Initial Phase (east of Bayshore/Arleta): Provides exclusive bus lanes, transit signal priority, and high-quality stations along Tunnel Avenue, Beatty Avenue, Alana Way, Harney Way, and Crisp Avenue, and terminating at the Hunters Point Shipyard Center. Future Phase (west of Bayshore/Arleta): Continuation of exclusive bus lanes, transit signal priority, and high-quality stations west to Santos St., connecting with Muni Forward transit priority improvements. This near-term alternative does not rely on the full extension of Geneva Avenue across US 101 to Harney Way. The project includes pedestrian and bicycle improvements in support of Vision Zero.	$68.1	X			17-05-0032
SF	OFF	N/A	N/A	Historic Streetcar Extension - Fort Mason to 4th & King	The project would extend historic streetcar service by extending either the E-line or the F-line service from Fisherman's Wharf to Fort Mason, using the historic railway tunnel between Van Ness Ave. and the Fort Mason Center. The project will seek non-transit specific funds and will seek to improve the historic streetcar operation as an attractive service for tourists and visitors.	$68.90		X		17-05-0042
SF	Various	Various	Various	Climate Program: TDM and Emission Reduction Technology	Projects in this category implement strategies and programs that reduce emissions, encourage alternative transportation modes, and manage transportation demand including but not limited to projects such as TDM program	$93.0	X			17-05-0002

Co.	Route	Begin Post mile	End Post mile	Title	Description	Cost* ($M)	Short-Term** (0-4 Years)	Medium-Term (4-10 Years)	Long-Term (10+ Years)	RTP ID
					implementation, parking management, local area shuttle and paratransit services					
SF	OFF	N/A	N/A	Arena Transit Capacity Improvements	Identifies transit improvements needed to accommodate growth in Mission Bay. Improvements might include track crossovers to allow for trains to be staged; a 6-inch raised area along existing tracks; a platform extension to accommodate crowds; other trackway modifications; and a traction power study to ensure that the power grid can accommodate a large number of idling vehicles.	$137.0	X			17-05-0034
SF	OFF	N/A	N/A	Bayshore Station Multimodal Planning and Design	Planning, Preliminary Engineering, and Environmental Review to re-locate the Bayshore Caltrain station and potentially extend the T-Line to the station. The project would also include inter-modal facilities and additional supporting structures and utilities.	$13.0		X		17-05-0026
SF	Various	Various	Various	Core Capacity Implementation - Planning and Conceptual Engineering	Advance planning and evaluation of recommendations that emerge from the Core Capacity Transit Study. Examples of projects under consideration include HOV lanes on the Bay Bridge for buses and carpools; BART/Muni/Caltrain tunnel turnbacks, crossover tracks, grade separations, or other operational improvements; and a second transbay transit crossing.	$335.0		X		17-05-0017
SF	Various	Various	Various	County Safety, Security and Other	Projects in this category address safety and security needs including Vision Zero improvements at ramps, local road safety and security, India Basin roadway transportation improvements, and transit safety and security	$41.0	X			17-05-0003
SF	OFF	N/A	N/A	Rail Capacity Long Term Planning and Conceptual Design - All	Rail capacity long term planning and conceptual design for Muni, BART, and Caltrain. Planning and conceptual engineering phase for study of major corridor and infrastructure investments along existing and potential expansion rail	$130.0		X		17-05-0015

Co.	Route	Begin Post mile	End Post mile	Title	Description	Cost* ($M)	Short-Term** (0-4 Years)	Medium-Term (4-10 Years)	Long-Term (10+ Years)	RTP ID
					corridors that either expand the system or provide significant increases in operating capacity to the existing rail system.					
SF	Various	Various	Various	Regional/Local Express Bus to Support Express Lanes in SF	A 5-year regional/local express bus pilot to provide service to/from downtown San Francisco to/from San Francisco neighborhoods, Marin, Contra Costa, Alameda, San Mateo and Santa Clara counties to complement other freeway corridor management strategies. Some service to be funded with HOT lane revenues. See HOV/HOT Lanes on U.S. 101 and I-280 in San Francisco project. Includes vehicles.	$82.0	X			17-05-0036
SF	OFF	N/A	N/A	San Francisco Late Night Transportation Improvements	New routes and increased frequency for all-night regional and local bus service, including Muni, AC Transit, Golden Gate Transit, and SamTrans routes. This is a pilot for 5 years. (Includes O & M)	$146.0	X			17-05-0011
SF	OFF	N/A	N/A	Southeast San Francisco Caltrain Station - Environmental	Planning and environmental analysis of Caltrain infill station to replace Paul Ave Station in Southeast San Francisco (e.g. Oakdale).	$11.0	X			17-05-0028
SF	Various	Various	Various	Downtown SF Congestion Pricing	Congestion pricing system for northeast San Francisco streets (approximate area is north of 18th Street and east of Laguna Street). Includes a set of street improvements to support transit operations and cycling and pedestrian safety and comfort to support the anticipated mode shift due to the implementation of congestion pricing. and comfort to support the anticipated mode shift due to the implementation of congestion pricing.	$1,089.0		X		17-05-0029
SF	OFF	N/A	N/A	Southeast Waterfront Transportation Improvements - Phase 1	Create a 5 mile multi-modal corridor of streets, transit facilities, pedestrian paths, and dedicated bicycle lanes to link the Candlestick/Hunters Point Shipyard project area to BART, T-Third light rail, Caltrain, local bus lines and future ferry	$659.0		X		17-05-0031

Co.	Route	Begin Post mile	End Post mile	Title	Description	Cost* ($M)	Short-Term** (0-4 Years)	Medium-Term (4-10 Years)	Long-Term (10+ Years)	RTP ID
					service. A BRT system (included in a RTPID 17-05-0032) would use exclusive transit right-of-way, station and shelter facilities, and transit signal priority infrastructure. This project also includes express bus and enhances transit service between the Southeast Waterfront and downtown San Francisco.					
SF	OFF	N/A	N/A	Muni Forward (Transit Effectiveness Project)	Includes transit priority improvements along Rapid and High Frequency transit corridors, service increases, transfer and terminal investments, overhead wire changes, and street improvements in support of Vision Zero.	$612.0	X	X		17-05-0014
SF	OFF	N/A	N/A	Caltrain/HSR Downtown San Francisco Extension	The Downtown Rail Extension (DTX) will extend Caltrain commuter rail from its current terminus at Fourth and King streets and deliver the California High-Speed Rail Authority's future high-speed service to the new Transit Center. The 1.95-mile rail extension will be constructed principally below grade underneath Townsend and Second streets. The design includes an underground station at Fourth and Townsend streets, utility relocations, rail systems work, and structures for emergency exit, ventilation at six locations along the alignment, and an underground pedestrian bridge connecting the Transbay Terminal to the Embarcadero BART station. Cost includes operating expenses - capital cost is $3.935 billion	$6,000.0		X		17-10-0038
SF	OFF	N/A	N/A	Pennsylvania Avenue Extension	Grade separation of the Caltrain (and future California High Speed Train) rail crossings at 16th Street and Mission Bay Drive to improve safety, expand high capacity rail operations and improve vehicular access to essential services in the Mission Bay neighborhood.	$1000.0		X		MTC PBA 2050***

Co.	Route	Begin Post mile	End Post mile	Title	Description	Cost* ($M)	Short-Term** (0-4 Years)	Medium-Term (4-10 Years)	Long-Term (10+ Years)	RTP ID
SF	Various	Various	Various	SFgo Integrated Transportation Management System	SFgo is San Francisco's Citywide ITS program. It identifies signalized and non-signalized intersections located along arterials and the Muni transit system and prioritizes them for ITS upgrades, such as controllers, cabinets, transit signal priority, fiber optic or wireless communications, traffic cameras, and variable message signs. Also improves arterial safety and pedestrian safety.	$89.0	X			17-05-0012
SF	Various	Various	Various	Transit Preservation/ Rehabilitation	This project provides additional funding to transit capital preservation and rehabilitation beyond what is included in the regional transit capital project (RTPID 17-10-0026)	$1,871.0	X			17-05-0007
SF	Various	Various	Various	22 Fillmore Transit Priority Project	As part of Muni Forward, the SFMTA is planning transit priority and pedestrian safety improvements for the 22 Fillmore route along 16th Street, including transit-only lanes, transit bulbs and islands, new traffic signals, and several pedestrian safety upgrades. This project will correlate with several infrastructure upgrades along 16th Street, including repaving and utility work, and will also include extending the overhead contact system (OCS) from Kansas Street to Third Street to allow for zero-emission transit service into Mission Bay.	$67.1	X			SFMTA
SF	Various	Various	Various	Candlestick Point / Hunters Point Shipyard Transit Operating Plan	Re-alignment of transit service in Southeast San Francisco to accommodate development and projected growth in the Candlestick Point/Hunters Point development area, including the introduction of two new express bus routes using the 101 and 280 freeways.	$168.0		X		17-05-0027
SF	Various	Various	Various	San Bruno Avenue Multimodal Improvement Project	The San Bruno Ave Multimodal Improvement Project includes pedestrian safety, transit priority and parking management proposals that will make the street safer for people walking, increase the reliability of Muni, and address	$4.1	X			SFMTA

Co.	Route	Begin Post mile	End Post mile	Title	Description	Cost* ($M)	Short-Term** (0-4 Years)	Medium-Term (4-10 Years)	Long-Term (10+ Years)	RTP ID
					parking availability in the neighborhood. This project has been approved by the SFMTA Board of Directors in October 2016.					
SF	OFF	N/A	N/A	Expand SFMTA Transit Fleet Buses	This project entails future expansion of the SFMTA bus fleet. The purpose is to meet projected future transit demand, as indicated in the SFMTA Transit Fleet Plan, as well as operational changes needed for a 100% electric fleet. Cost presented includes expansion vehicles only.	$259.5	X			MTC PBA 2050***
SF	OFF	N/A	N/A	Expand SFMTA Transit Fleet - LRV	This project entails additional expansion of the SFMTA light rail vehicle fleet, beyond the currently wrapping up 68-car expansion. The purpose is to meet projected future transit demand, as indicated in the SFMTA Transit Fleet Plan. It will facilitate the future provision of additional service through the procurement of transit vehicles.	$204.3		X		MTC PBA 2050***
SF	OFF	N/A	N/A	Expand SFMTA Transit Fleet Facilities	This project entails future expansion of the SFMTA transit facilities to house and maintain transit expansion vehicles. The purpose is to meet projected future transit demand, as indicated in the SFMTA Transit Fleet Plan. It will facilitate the future provision of additional service through the procurement of transit vehicles as well as the development of needed modern transit facilities. Cost represents only expanded facilities capacity, above and beyond replacement of existing capacity.	$293	X			MTC PBA 2050***
Multi-County Projects/Programs										
Var.	OFF	N/A	N/A	California HSR in the Bay Area	This project implements the segment of California High Speed Rail that is in the Bay Area.	$5,200.0		X		17-10-0007
Var.	OFF	N/A	N/A	BART Transbay Core Capacity Project	The Transbay Corridor Core Capacity Project is a multi-pronged effort to address capacity issues in the Transbay corridor and is in coordination	$3,564.0	X			17-10-0006

Co.	Route	Begin Post mile	End Post mile	Title	Description	Cost* ($M)	Short-Term** (0-4 Years)	Medium-Term (4-10 Years)	Long-Term (10+ Years)	RTP ID
					with the BART Metro Program project. The project elements are: *Communication-based train control (CBTC) system to safely enable closer headways and allow BART to operate more frequent service (12 minute frequencies); *Expansion of the rail car fleet by 306 vehicles to add cars to existing trains and operate more frequent trains; *Added traction power substations to allow more frequent service; *Expansion of the Hayward Maintenance Complex (HMC) to provide storage and maintenance capability for the expanded fleet; *Other (Unallocated contingency) Financing cost is included in RTPID 17-10-0016. $50M (SF Portion)					
Var.	Various	Various	Various	Bay Area Forward	This program includes a variety of operational and multimodal improvements, including: active traffic management - upgrades to all existing ramp meters to adaptive, implementing hard shoulder running lanes, contra-flow lanes, queue warning, and ramp modifications; arterial operations - implementation of traditional time-of-day signal timing coordination, adaptive traffic signal control systems, transit signal priority, real-time traffic monitoring devices, ped/bike detection, queue-jump lanes, etc; connected vehicles - pilot deployments of vehicle-to-infrastructure (V2I) strategies; Managed Lanes Implementation Plan - pilot express bus service for routes not currently served by operators; expands park-and-ride facilities throughout the region; and supports pilot deployment of shared-mobility solutions.	$995.0	X	X		17-10-0033
SCL SM SF	OFF	N/A	N/A	Caltrain Enhanced Growth Scenario	The project includes enhanced service levels that will maximize the use of available infrastructure and more fully serve expected market demand on the Caltrain corridor over the next decade and beyond. It envisions	(Capital costs) $1,211	X	X	X	MTC PBA 2050***

Co.	Route	Begin Post mile	End Post mile	Title	Description	Cost* ($M)	Short-Term** (0-4 Years)	Medium-Term (4-10 Years)	Long-Term (10+ Years)	RTP ID
					growing in 2022 (FY23) to 6, 7-car trains per peak hour per direction (tphpd) (~168 trains per day), and in 2027 (FY28) to 8, 7-car trains per peak hour per direction (~204 trains per day). The project includes capital improvements needed to support growth in train service, such as additional electric train fleet, more train storage, and station improvements. The total cost is $1.211 billion, including VTA's share ($400M).					
Var.	OFF	N/A	N/A	Regional Hovercraft Ferry Network	Implement a region-wide hovercraft ferry network connecting all 9 bay area counties, as well as OAK and SFO; to relieve congestion and reduce carbon emissions. Includes: 18 new hoverports, 25 locally-built high speed 80 passenger hovercraft, all supporting infrastructure, and all environmental and regulatory costs. O&M costs will be offset by farebox recovery, with target ratio of 80%. (Note: Project Sponsor is City of Foster City)	$2,600			X	MTC PBA 2050***
SM SF	OFF	N/A	N/A	Muni Metro T Third Extension to South SF	Extend from current terminal at Bayshore Boulevard/Sunnydale in SF, along Bayshore Blvd, which eventually joins with Airport Blvd, then cross US 101 below or above grade, and connect to South SF ferry terminal (Note: Project Sponsor is City of South San Francisco)	$1,800			X	MTC PBA 2050***

* Cost estimates in current dollars

** Expected for construction to begin

*** Projects submitted to MTC for consideration in Plan Bay Area 2050, the Bay Area's next Regional Transportation Plan/Sustainable Communities Strategy, to be adopted in 2021

Active Transportation Projects

Table 7-2 lists recommended bicycle and pedestrian projects within the US 101 South Corridor, such as regional trails and improvements at freeway crossings. Bicycle projects are based on projects from the District 4 Bike Plan, as well as existing countywide and local active transportation plans.

Table 7-2. *Recommended Active Transportation Improvement Projects (not in priority order)*

County	Route	Post Mile	Location	Project Description	Mode	Planned or Proposed	D4 Bike Plan ID Number
SCL	US 101	R5.28	Luchessa Avenue	Pedestrian improvements (narrow sidewalk)	Ped	Proposed	
SCL	US 101	R6.29	Old Gilroy Street	Across Barrier Connection	Bike/Ped	Planned	
SCL	US 101	R6.561/R7.533	Leavesley to Gilman	Bike lanes	Bike	Planned	
SCL	US 101	R7.07	IOOF Avenue	Bike/Ped Bridge	Bike/Ped	Planned	
SCL	US 101	R6.6/R7.5	Leavesley to East 6th	Corridor Improvements Class I	Bike	Planned	SC-101-C02
SCL	US 101	R8.28	Las Animas Avenue	Bike/Ped Bridge	Bike/Ped	Proposed	
SCL	US 101	R9.13/M10.277	Buena Vista to Leavesley	Bike lanes	Bike	Planned	
SCL	US 101	R9.13/R10.284	Masten to Buena Vista	Bike lanes	Bike	Planned	
SCL	US 101	R10.284/R11.158	Church to Masten	Bike lanes	Bike	Planned	
SCL	US 101	R11.158/R12.461	San Martin to Church	Bike lanes	Bike	Planned	
SCL	US 101	R12.461/R13.747	Middle to San Martin	Bike lanes	Bike	Planned	
SCL	US 101	R13.747/R15.069	Tennant to Middle	Bike lanes	Bike	Planned	
SCL	US 101	R15.068/R15.996	Dunne to Tennant	Bike lanes	Bike	Planned	
SCL	US 101	R16.778/R17.833	Cochrane to Main	Bike lanes	Bike	Planned	
SCL	US 101	R17.8	Cochrane Rd	Interchange reconstruction - ramps only- Class II	Bike	Planned	SC-101-X05
SCL	US 101	R21.274	Coyote Creek Golf Drive	Pedestrian improvements (no sidewalk)	Ped	Proposed	
SCL	US 101	R25.312	Metcalf Road	Pedestrian improvements (narrow sidewalk)	Ped	Proposed	
SCL	US 101	R25.314/27.024	Bernal to Metcalf	Bike lanes	Bike	Planned	
SCL	US 101	R27.024	Blossom Hill/Silver Creek Road to Bernal	Bike lanes	Bike	Planned	
SCL	US 101	R28.607/29.73	Coyote Creek Road to Blossom Hill/Silver Creek Valley Rd	Bike lanes/ Pedestrian improvements	Bike/Ped	Planned	
SCL	US 101	28.6	Blossom Hill Road	Interchange reconstruction - ramps only- Class IV	Bike	Planned	SC-101-X03
SCL	US 101	29.731	Coyote Road	Pedestrian improvements (narrow sidewalk)	Ped	Proposed	

County	Route	Post Mile	Location	Project Description	Mode	Planned or Proposed	D4 Bike Plan ID Number
SCL	US 101	29.731	Coyote Road	Pedestrian improvements (narrow sidewalk)	Ped	Proposed	
SCL	US 101	30.096	Hellyer Avenue	Pedestrian improvements (narrow sidewalk)	Ped	Planned	
SCL	US 101	31.697/33.029	Tully to Capitol Expressway	Bike lanes	Bike	Planned	
SCL	US 101	31.764/32.527	Freni Court to North of East Capitol Expressway	Bike lanes	Bike	Proposed	
SCL	US 101	33	Tully Road	Minor interchange improvements (signage and striping)- Class IV	Bike	Planned	SC-101-X07
SCL	US 101	34.5	Story Road	Interchange reconstruction - full reconstruction- Class IV	Bike	Planned	SC-101-X08
SCL	US 101	33.038/34.546	Story to Tully	Bike lanes	Bike	Planned	
SCL	US 101	33.812	Havana Drive/Holly Hill Drive	Bike/ped bridge	Bike/Ped	Planned	
SCL	US 101	35.2/R35.6	East San Antonio Street	Corridor Improvement- Class II	Bike	Planned	SC-101-C01
SCL	US 101	R35.8	Alum Rock	Minor interchange improvements (signage and striping)- Class IV	Bike	Planned	SC-101-X09
SCL	US 101	34.279/R36.285	McKee Road to Story Road	Bike lanes	Bike	Proposed	
SCL	US 101	R36.1	McKee Road	Minor interchange improvements (signage and striping)- Class IV	Bike	Planned	SC-101-X10
SCL	US 101	36.9	East Taylor	Interchange reconstruction - full reconstruction- Class IV	Bike	Planned	SC-101-X04
SCL	US 101	37.34	Mabury Road to North Bayshore Road West	Minor interchange improvements (signage and striping)	Bike	Planned	
SCL	US 101	37.4	East Hedding Street	Minor interchange improvements (signage and striping)- Class II	Bike	Planned	SC-101-X12
SCL	US 101	37.7	Old Oakland Road	Interchange reconstruction - ramps only- Class IV	Bike	Planned	SC-101-X02
SCL	US 101	37.513/38.259	Nimitz Freeway to East Hedding Street	Bike lanes	Bike	Proposed	
SCL	US 101	38.095/39.303	North First to North Tenth	Bike lanes	Bike	Planned	
SCL	US 101	38.787/39.753	East of Guadalupe Freeway to West of Nimitz Freeway	Bike lanes	Bike	Proposed	

County	Route	Post Mile	Location	Project Description	Mode	Planned or Proposed	D4 Bike Plan ID Number
SCL	US 101	39.44	Airport Parkway	Minor interchange improvements (signage and striping)	Bike	Planned	SC-101-X11
SCL	US 101	41.083	Lafayette Street	Overcrossing	Bike/Ped	Planned	
SCL	US 101	40.015/41.255	Basset Street to Guadalupe Freeway	Bike lanes	Bike	Proposed	
SCL	US 101	40.7	De la Cruz Boulevard	Interchange reconstruction including Class IV cycle track	Bike	Planned	
SCL	US 101	40.7	De la Cruz Boulevard	Interchange reconstruction - full reconstruction- Class IV	Bike/Ped	Planned	SC-101-X01
SCL	US 101	41.07/41.98	San Tomas/Montague Expressway to Lafayette	Bike lanes	Bike	Planned	
SCL	US 101	41.759/42.273	Interchange at Montague Expressway	Bike lanes/ramp realignment/signal-controlled	Bike	Proposed	
SCL	US 101	42.506/43.771	Lawrence Expressway to Bowers Avenue	Bike lanes	Bike	Proposed	
SCL	US 101	44.83	North Fair Oaks Avenue	Pedestrian improvements (no sidewalk)	Ped	Proposed	
SCL	US 101	44.84	Ahwanee	East Channel Trail ABC	Bike	Planned	
SCL	US 101	45.682/47.034	Ellis to Mathilda	Bike lanes	Bike	Planned	
SCL	US 101	46	Mary Avenue	ABC	Bike/Ped	Planned	
SCL	US 101	46.506/46.759	South of Moffett Field	Bike lanes	Bike	Proposed	
SCL	US 101	48.599/49.615	Rengstorff/Amphitheater to Shoreline	Bike lanes	Bike	Planned	
SCL	US 101	48.599	Shoreline Boulevard	New bridge with fully separated path for pedestrians and bicyclists	Bike/Ped	Planned	
SCL	US 101	50.324	San Antonio Street	Overcrossing	Bike/Ped	Planned	
SCL	US 101	50.325/51.998	Oregon Expressway Crossing to San Antonio Road	Bike lanes	Bike	Planned	
SCL	US 101	50.66	Crossing between San Antonio and Oregon Expressway	Bike/Ped crossing	Bike/Ped	Planned	
SCL	US 101	50.888	Matadero Creek Trail	New undercrossing	Bike/Ped	Planned	
SCL	US 101	51.391	Adobe Creek Overcrossing	New bike/ped overcrossing	Bike/Ped	Planned	SC-101-X06
SCL	West Branch Llagas Creek Trail	R7.5	West of US 101 between Leavesley Road and 6th Street	Multi-use trail	Bike/Ped	Planned	

County	Route	Post Mile	Location	Project Description	Mode	Planned or Proposed	D4 Bike Plan ID Number
SCL	Diana Avenue	R16.53	Butterfield Boulevard to US 101	Bike lanes	Bike	Planned	
SCL	Branham Lane	N/A	Camden Avenue to Coyote Creek Trail	Bike lanes	Bike	Partially Completed	
SCL	Lower Silver Creek Trail	R25.36	Coyote Creek Trail to Berryessa B Capitol Light Rail	Trail	Bike/Ped	Planned	
SCL	Coyote Creek Trail	36.799	Watson Park to Williams Street Park	Paved trail	Bike/Ped	Planned	
SCL	Coyote Creek Trail	37.73	Old Oakland Road to Watson Park	Paved trail	Bike/Ped	Planned	
SCL	Calabazas Creek Trail	N/A	SR 237 to Lochinar Avenue	Trail	Bike/Ped	Partially Completed	
SCL	Lafayette Street	41.94	Agnew Road to Reed Street	Bike lanes	Bike	Planned	
SCL	Fair Oaks Avenue	44.88	Old San Francisco Road to Ahwanee Avenue	Bike lanes	Bike	Planned	
SCL	Mathilda Avenue	N/A	US 101 to El Camino Real	Bike lanes	Bike	Partially Completed	
SCL/SM	US 101	SCL 52.164/ SM 0.866	University to Embarcadero	Bike lanes	Bike	Planned	
SM	Clarke Avenue	0.457	Clarke Avenue at US 101	Overcrossing	Bike/Ped	Planned	
SM	E. Bayshore Road	0.73	E. Bayshore Road at US 101	Overcrossing	Bike/Ped	Planned	
SM	University Avenue	0.886	University Avenue at US 101	Overcrossing (existing facility)	Bike/Ped	Planned	SM-101-X16
SM	US 101	0.891	University Avenue	Pedestrian improvements (no sidewalk)	Ped	Proposed	
SM	US 101	1.954/1.704	Interchange at Willow Road	Bike lanes	Bike	Proposed	
SM	Carlton Avenue	2.003	Carlton Avenue at US 101	Overcrossing	Bike/Ped	Planned	
SM	US 101	3.595	US 101 and Marsh Road	Intersection improvements	Bike/Ped	Planned	SM-101-X07
SM	US 101	3.7	US 101 and Marsh Road	New separated crossing	Bike/Ped	Planned	SM-101-X14
SM	Whipple Road	4.813	Whipple Road at US 101	Overcrossing	Bike/Ped	Planned	
SM	US 101	5.003	US 101 and Willow Road	Intersection improvements	Bike/Ped	Proposed	
SM	SR 114/US 101 interchange	5.002	North side overpass to south side overpass	Class II/III bikeway	Bike	Planned	
SM	US 101	5.186/6.713	East Bayshore Road to Charter Street	Bike lanes	Bike	Proposed	
SM	US 101	5.386	US 101 and SR 84	Interchange improvement	Bike/Ped	Proposed	
SM	US 101	5.386	Woodside Road	Bike lanes	Bike	Planned	
SM	US 101	5.5	Chestnut/Seaport	New separated crossing	Bike/Ped	Planned	SM-101-X09
SM	US 101	6.572	Holly Street	Interchange improvement	Bike/Ped	Planned	
SM	Holly Street	6.572	Holly Street at US 101	Overcrossing	Bike/Ped	Planned	

County	Route	Post Mile	Location	Project Description	Mode	Planned or Proposed	D4 Bike Plan ID Number
SM	US 101	6.626	Whipple Avenue	Pedestrian improvements (narrow sidewalk)	Ped	Proposed	
SM	US 101	6.626	Whipple Avenue	Minor interchange improvements (signage and striping)- Class II	Bike	Planned	SM-101-X08
SM	US 101	8.213/8.703	North of Holly Street to South of Holly Street	Bike lanes and pedestrian improvements (narrow sidewalk)	Bike/Ped	Proposed	
SM	US 101	9.5	Ralston Ave	Minor interchange improvements (signage and striping)- Class II	Bike	Planned	SM-101-X13
SM	US 101	10.955/11.458	Claudia Avenue to La Selva Circle	Bike lanes	Bike	Proposed	
SM	E. Hillsdale Boulevard	11.148	E. Hillsdale Boulevard at US 101	Overcrossing	Bike/Ped	Planned	SM-101-X10
SM	US 101	11.612/11.991	Adams Street to South of SR 92	Bike lanes	Bike	Proposed	
SM	US 101	11.89	US 101 and SR 92	Interchange improvement	Bike/Ped	Proposed	
SM	Lodi Avenue	12.517	Lodi Avenue at US 101	Overcrossing	Bike/Ped	Planned	
SM	E. 3rd/E. 4th Street	13.463	E. 3rd/E. 4th Street at US 101	Interchange improvement	Bike	Planned	SM-101-X12
SM	US 101	14.7	Peninsula Ave	Minor interchange improvements (signage and striping)- Class IV	Bike	Planned	SM-101-X04
SM	US 101	15.9	Winchester Dr	New separated crossing	Bike/Ped	Planned	SM-101-X15
SM	US 101	16.1	Rollins Road	New separated crossing	Bike/Ped	Planned	SM-101-X03
SM	US 101	16.611	Broadway	Interchange improvement	Bike/Ped	Planned	
SM	US 101	17.94	US 101/Millbrae Avenue	Bicycle/Pedestrian overcrossing linking the Bay Trail to the Millbrae BART/Caltrain transit station.	Bike/Ped	Planned	SM-101-X02
SM	San Bruno Avenue	R20.39	San Bruno Avenue at US 101	Overcrossing	Bike/Ped	Planned	SM-101-X01
SM	US 101	21.702	South Airport Boulevard	Pedestrian improvements (narrow sidewalk)	Ped	Proposed	
SM	US 101	21.706/21.942	East Grand Avenue to South Airport Boulevard	Bike lanes	Bike	Proposed	
SM	Grand Avenue	22.024	Grand Avenue at US 101	Interchange improvement	Bike	Planned	SM-101-X05
SM	Oyster Point Boulevard	22.723	US 101 at Oyster Point Boulevard	Interchange improvement	Bike	Planned	SM-101-X06

County	Route	Post Mile	Location	Project Description	Mode	Planned or Proposed	D4 Bike Plan ID Number
SM	Airport Boulevard/ Bayshore Boulevard	23.04	Airport Boulevard/Bayshore Boulevard at US 101	Overcrossing	Bike/Ped	Planned	
SM	US 101 bike path	23.653/26.028	Beatty Road to Sierra Point	Class I bikeway	Bike	Planned	
SM	US 101	23.672	Sierra Point Parkway	Pedestrian improvements (no sidewalk)	Ped	Proposed	
SM	US 101	1.07	Overcrossing located 300' N. of Donahoe Street to Woodland Avenue	Class II bikeway	Bike/Ped	Planned	
SM	Marsh Road	N/A	Bay Road to US 101	Class II/III bikeway	Bike	Planned	
SM	Maple Street	2.97	El Camino Real to Blomquist Street	Class II/III bikeway	Bike	Planned	
SM	illsdaleWoodside Road	5.69	El Camino Real to Seaport Center	Class II bikeway	Bike	Planned	
SM	Woodland	N/A	Menlo Park Line to US 101 overcrossing	Class II/III bikeway	Bike	Planned	
SM	Marsh Road	3.83	US 101 to Haven Avenue	Class III bikeway	Bike	Planned	
SM	Newbridge Street	1.85	US 101 overcrossing to Bay Road	Class II bikeway	Bike	Planned	
SM	Stein Am Rhein Ct	5.47	Seaport Boulevard to US 101	Class II/III bikeway	Bike	Planned	
SM	Bay Road	2.2	Windermere Avenue to US 101	Class III bikeway	Bike	Planned	
SM	Ringwood Avenue	5	Bay Road to US 101 overcrossing	Class II/III bikeway	Bike	Planned	
SM	Oak Grove/Winchester	16.03	Anza Boulevard to Farringdon Lane	Class II/III bikeway	Bike	Planned	
SM	Old Bayshore Boulevard	N/A	Coast Guard Road to Burlingame Line	Class II/III bikeway	Bike	Planned	
SM	East Hillsdale Boulevard	10.06	Foster City Line to Norfolk Street	Class II bikeway	Bike	Planned	
SM	Peninsula Avenue	15.04	N. Delaware Street to Coyote Point Drive	Class II/III bikeway	Bike	Planned	
SM	Ralston Avenue	N/A	Belmont Line to Marine Parkway	Class II/III bikeway	Bike	Planned	
SM	Chestnut to Seaport undercrossing	N/A	Chestnut Street to Stein Am Rhein Court	Class I bikeway	Bike	Planned	
SM	E. Grand Avenue	15.58	Airport Boulevard to Gateway Boulevard	Class II bikeway	Bike	Planned	

County	Route	Post Mile	Location	Project Description	Mode	Planned or Proposed	D4 Bike Plan ID Number
SM	US 101 Bike Path	22.99	Oyster Point Boulevard	Bike path	Bike	Planned	
SM	Airport Boulevard/ US 101/ I-380 overcrossing	6.59	South San Francisco to Airport Boulevard	Class I bikeway	Bike	Planned	
SM	Hillsdale Ave.	N/A	City of San Mateo	Hillsdale Corridor Improvements	Bike/Ped	Planned	
SM	Spruce Ave.	N/A	South San Francisco	Spruce Avenue Pedestrian Safety Improvement Project	Bike/Ped	Planned	
SM	Bermuda Dr.	N/a	City of San Mateo	Bermuda Drive Bridge Replacement	Bike/Ped	Planned	
SM	Marsh Road	N/A	Atherton	Marsh Road Shared Use Trail	Bike/Ped	Planned	
SM	Ralston Ave.	N/A	Belmont	Ralston Ave Corridor Improvement Projects	Bike/Ped	Planned	
SM	School Ave.	N/A	Burlingame	School Ave Pedestrian Enhancement Project	Bike/Ped	Planned	
SM	Various	N/A	Burlingame	Lyon-Hoag Neighborhood Traffic Calming and Pedestrian Phase I, II, & III Improvements	Bike/Ped	Planned	
SM	California Drive	N/A	Burlingame	California Drive Class I Bike Path	Bike/Ped	Planned	
SM	Bay Trail	N/A	Foster City	O'Neill Slough Trail at the Cities of Belmont/Foster City limit line to the Bay Trail in Foster City	Bike/Ped	Planned	
SM	El Camino Real/Middle Ave.	N/A	Menlo Park	Middle Ave Pedestrian/Bicycle Undercrossing	Bike/Ped	Planned	
SM	Monterey St.	N/A	Millbrae	Class 1,2 &3 - Improvements to the Monterey St. Bike Trail pathways	Bike/Ped	Planned	
SM	Various	N/A	Millbrae	Millbrae Transit Center to Spur Trail Connection Gap Closure Project.	Bike/Ped	Planned	
SM	Millbrae Ave.	N/A	Millbrae	Class 4 - Raised dedicated pedestrian and bike route connecting from Millbrae Transit Center to Old Bayshore Highway on Millbrae Ave.	Bike/Ped	Planned	

County	Route	Post Mile	Location	Project Description	Mode	Planned or Proposed	D4 Bike Plan ID Number
SM	San Mateo Ave	N/A	San Bruno	Pedestrian Scale and Streetlight Upgrades in Downtown San Bruno	Bike/Ped	Planned	
SF	US 101	0.178	Blanken Avenue	Pedestrian improvements (narrow sidewalk)	Ped	Proposed	
SF	US 101	0.37	Alana Way	Pedestrian improvements (no sidewalk)	Ped	Proposed	
SF	US 101	0.847/1.357	Wayland Street to Ordway Street	Bike lanes	Bike	Proposed	
SF	US 101	1.598/2.338	Cortland Avenue to Thornton Avenue	Bike lanes	Bike	Proposed	
SF	US 101	2.1	Alemany Blvd	Minor interchange improvements (signage and striping)- Class I	Bike	Planned	SF-101-X02
SF	US 101 and I-280	1.97 (US 101) R4.32R (I-280)	Bayshore Boulevard	Minor interchange improvements (signage and striping)	Bike	Planned	
SF	US 101	2.582/3.339	23rd Street to Faith Street	Bike lanes	Bike	Proposed	
SF	US 101	3.851/ M5.45	Market/Octavia to 19th Street	Bike lanes	Bike	Proposed	
SF	Cesar Chavez Street	3.01	I-280 to US 101	Bike lanes and pedestrian improvements	Bike/Ped	Planned	
SF	US 101	3	US 101 at Cesar Chavez	Interchange reconstruction - full reconstruction- Class IV	Bike	Planned	SF-101-X01
SF	Cesar Chavez Street/26th Street	3.062	Sanchez Street to US 101	Bike lanes	Bike	Planned	
SF	US 101	T4.51R	Mission Street	Minor interchange improvements (signage and striping)	Bike	Planned	
SF	I-280	R3.681/R4.693L	Ellsworth Street to Revere Avenue	Bike lanes	Bike	Proposed	
SF	I-280	R5.415R/R6.115	Evans Avenue to 22nd Street	Bike lanes	Bike	Proposed	
SF	I-280	R5.6R	Cesar Chavez	Minor interchange improvements (signage and striping)- Class II	Bike	Planned	SF-280-X01
SF	I-280	R5.44L/R5.80L	Napoleon Street to 25th Street	Minor interchange improvements (signage and striping)	Bike	Planned	

County	Route	Post Mile	Location	Project Description	Mode	Planned or Proposed	D4 Bike Plan ID Number
SF	I-280	R6.39/6.68	20th Street to Mariposa Street	Minor interchange improvements (signage and striping)	Bike	Planned	
SF	I-280	R6.7	Mariposa Street	Minor interchange improvements (signage and striping)- Class II	Bike	Planned	SF-280-X03
SF	I-280	T7.296	I-280 and 6th Street	Intersection improvements	Bike/Ped	Proposed	
SF	Division Street	R4.8	9th Street to 11th Street	Bike lanes	Bike	Planned	
SF	Market Street	M5.45	17th Street to Octavia Boulevard	Bike lanes	Bike	Planned	
SF	Market Street	M5.45	Octavia Boulevard to Van Ness Avenue	Bike lanes	Bike	Planned	
SF	23rd Street	3.77	Kansas Street to Potrero Avenue	Bike lanes	Bike	Planned	
SF	Alemany Boulevard	0.513	Bayshore Boulevard to Rousseau Street	Bike lanes	Bike	Planned	
SF	Bayshore Boulevard	1.76	Cesar Chavez Street to Silver Avenue	Bike lanes	Bike	Planned	
SF	Potrero Avenue and Bayshore Boulevard	2.9	25th Street to Cesar Chavez Street	Bike lanes	Bike	Planned	

State Highway Operations and Protection Program (SHOPP)

SHOPP is a four-year program for operating and maintaining the State Highway System (SHS) that is updated every two years. It is Caltrans primary tool to implement the fix-it-first policy for the SHS. Within each SHOPP cycle, priorities are evaluated to match funding and performance measures as they relate to the goals established in the Caltrans Strategic Management Plan, such as Safety, Sustainability, Livability, Economy and System Performance. As projects are selected and developed, they must also address Complete Streets, the Americans with Disabilities Act (ADA), Sea Level Rise, and issues such as wildlife connectivity and fish passage. The SHOPP is limited to maintenance, safety, and rehabilitation projects on existing State highways and bridges, with generally no projects that add new traffic capacity. In addition to managing the condition of the physical infrastructure, SHOPP projects also include safety improvements, operational improvements, environmental mitigation, TOS, freight improvements and system resiliency and adaptation to climate change.

In accordance with Assembly Bill 515, Caltrans also prepares a ten-year State Highway System Management Plan (SHSMP) that is updated every two years. The SHSMP presents a performance-driven and integrated management plan for the SHS in California. It operationalizes the California Transportation Asset Management Plan (TAMP), mandated by Senate Bill 486. The 2019 SHSMP was approved on May 16, 2019 and describes the SHS needs, investments and resulting performance projects for the 10-year period spanning July 2019 to June 2029. A ten-year project book called 2019 Ten-Year Project Book has been developed to accompany the SHSMP. It lists projects to be carried out by existing and future SHOPP programs within the 10-year period.

The SHOPP project list shown in **Table 7-3** includes projects in 2020 SHOPP program to be adopted by CTC in 2020 as well as projects from the 2019 Ten-Year Project Book that accompanies the 2019 SHSMP.

Table 7-3. *SHOPP Projects*

County	Route	Postmile	SHOPP ID/ EA	Description/ Activity Category	Project Cost* ($K)	SHOPP Cycle
Programmed SHOPP Projects						
SCL	101	0.03/49.61	16754/ 0K110	Safety/In Santa Clara County in various Routes at various locations - Replace/upgrade Bridge Transition Metal Beam Guard Railings	$14,826	2020
SCL	101	R18.7	20706/ 2Q570	Drainage/Rehabilitate pump stations in Santa Clara County in San Jose, at the Route 130 separation and Cochrane Road, and near Morgan Hill, at Burnett Avenue, 37-0342W, 37-0290W, and 37-0341W	$15,622	2020
SCL	101	.08	17230/ 4J030	Major Damage/In Santa Clara County, near Gilroy, at Sargent Bridge	$3,600	2018
SCL	101	R26.4/46.4	16043/ 4J930	Roadside/In Santa Clara County on Routes 85, 101, and 237 at Various Locations	$3,587	2018
SM	101	0/26.107	13745/ 0Q070	Mobility/Relocate/Upgrade RM Signals at top 20 locations with frequent knock-downs. SB ALA 880/92 IC relocate RM signals. SB SM101/Hillsdale Loop on-ramp relocate RM signals. NB SM280/Hickey Blvd Loop on-ramp relocate RM signals.	$15,686	2020
SM	101	0/21.8	20505/ 1Q580	Pavement/SM 101 from Santa Clara County Line to South San Francisco Belt Railway Overhead. CAPM Resurfacing, install RM, TOS , & Fiber Communications.	$216,174	2020
SM	101	7.13	9224/ 2J730	Bridge/Cordilleras Creek #35-0019	$48,480	2018
SM	101	0.1/23.4	9250/ 2J740	Bridge/Millbrae Slough BR#35-0126, Belmont Cr 35-0018, Sierra Point Off-Ramp Sep 35-0131S, University Ave N. OC 35-0155, Woodside Rd. 35-0081G, University Ave. S. OC 35-0113, Maple St OC 35-0087, Transmission Canal 35-0017, Rail	$12,310	2016
SF	101	4.12/R5.12	19052/ 0Q020	Bridge/Bayshore Viaduct Br. No. 34-0088: Br Health Poor & Central Via Br. No. 34-0077: Bridge Health Fair	$44,720	2020
SF	101	0/T4.86	20320/ 1Q820	Pavement/SM/SF County Line (PM 0.0) to touchdown to Market Street (PM T4.86).	$60,130	2020
SF	101	2/2.84	17980/ 2K190	Bridge/Br. Rail Replacement Paloma Ave OC 35-0187, Alemany Circle UC (SB 101 On-ramp) 34-0064K, Alemany Circle UC (NB 101 On-ramp) 34-0063S, Bayshore Blvd UC 34-0047S	$9,848	2018
SF	101	4.2	17020/ 2K950	Facilities/325 San Bruno Avenue, San Francisco	$19,588	2018
SF	101	3.37	19051/ 2Q460	Bridge/23rd St. OC, Br No 34-0035 and 3rd St. UC, Br No 34 0030S: Bridge Baluster Rails	$6,288	2020
SF	101	0.5/R5.2	16071/ 4J870	Roadside/In San Francisco County on Routes 101 and 280 at Various Locations	$9,764	2018

Planned SHOPP Projects						
SF	101	1.7/4.2	199959/ 2Q600	Roadside	$3,210	2022
SM	101	11.9	20666	Mobility/Operational Improvements	$4,910	2022
SM	101	12.325	18233	Mobility/Operational Improvements	$3,010	2022
SM	101	23.0	20645/ 0AA40	Pavement	$12,365	2024
SCL	101	38.1	19024/ 1K530	Drainage	$2,142	2024
SCL	101	34.65	20405	Roadside	$4,210	2024
SCL	101	40.2	15908/ 4Q650	Pavement	$41,474	2024
SCL	101	R0.81	18583	Bridge	$2,010	2024
SCL	101	R9.7	20158	Mobility/WIM Scales & CVEFs	$2,210	2024

*Project cost are subject to change

7.2 Project Evaluation

A qualitative evaluation was conducted to gauge how a project would help meet the Corridor Goals outlined in Chapter 2 Corridor Goals, Objectives and Performance Measures. Depending on the level of impact, a project would receive a high (H), medium (M) or low (L) grade under each of the eight goals.

Project evaluation was based on a qualitative application of the performance objectives and in consultation with the Corridor Development Team. Generally, a project received a "high" rating if it would meet most of the objectives associated with the goal. Projects were assumed to reduce VMT and increase person throughput if they provided infrastructure or transit service that supports carpooling, taking transit, walking or biking. The largest multimodal projects in terms of size were assumed to significantly reduce vehicle demand or alleviate bottlenecks such that traffic would flow smoothly, leading to lower likelihood of rear-end collisions and increases in safety. Projects that directly improved conditions on US 101 were also considered to most strongly advance the Corridor Goals. Interchange improvement projects were crossed compared to **Table 7-2** and bike and pedestrian improvements were assumed to be part of the interchange project scope when applicable. Projects of the same type generally received similar ratings.

Due to time and resource constraints, the Corridor Development Team agreed to evaluate short-term projects only. **Tables 7-4** and **7-5** present the evaluation results for short-term highway and transit projects, respectively. Because of the differences in assumptions and evaluation methodology, a comparison between project types would not yield a meaningful conclusion. Instead, the evaluation results mainly help demonstrate how projects would likely advance the Corridor Goals.

Table 7-4. *Short-Term Highway Project Evaluation Results*
(not in priority order)

Co.	Title	Description	RTP ID	Goal #1 Safety*	Goal #2 Congestion Reduction	Goal #3 Reliability	Goal #4 Accessible/ Multimodal System	Goal #5 Pollution & GHG Reduction	Goal #6 Economic Prosperity	Goal #7 Asset Management	Goal #8 Efficient Land Use
SCL	US 101/SR 25 Interchange	The project consists of reconfiguring the interchange at US 101 and SR 25 just south of the City of Gilroy in Santa Clara County, connecting SR 25 and Santa Teresa Boulevard, and widening the existing freeway from 4 to 6 lanes from the Monterey Street interchange to the US 101/SR 25 interchange.	17-07-0069	Low	Medium	Medium	Low	Low	High	Low	Low
SCL	Noise Abatement Program (Countywide)	General noise abatement program for countywide	17-07-0064	Low	Low	Low	Low	Low	Low	Medium	Low
SCL	US 101 Southbound/ Trimble Rd./De La Cruz Blvd./Central Expwy. Interchange Improvements	Improve interchange at U.S. 101 southbound Trimble Road/De la Cruz Boulevard/Central Expressway.	17-07-0031	High	Medium	Medium	Low	Low	Medium	Low	Low
SCL	Double Lane Southbound US 101 off-ramp to Southbound SR 87	Widen Southbound US 101 freeway connector to Southbound SR 87 to add a second lane and install TOS.	17-07-0044	Low	Medium	Medium	Low	Low	Medium	Low	Low
SCL	US 101/Blossom Hill Rd. Interchange Improvements	Widen interchange at U.S. 101/Blossom Hill Road, including bicycle lanes.	17-07-0038	High	Medium	Medium	High	Medium	Medium	Low	Low
SCL SM	US 101 Express Lanes: Whipple Ave. in San Mateo County to Cochrane Rd. in Morgan Hill.	Convert HOV Lanes to EL and add EL in some segments.	17-07-0075	Medium	High	High	Medium	Medium	High	High	High

Co.	Title	Description	RTP ID	Goal #1 Safety*	Goal #2 Congestion Reduction	Goal #3 Reliability	Goal #4 Accessible/ Multimodal System	Goal #5 Pollution & GHG Reduction	Goal #6 Economic Prosperity	Goal #7 Asset Management	Goal #8 Efficient Land Use
SM	Improve U.S. 101/Woodside Road interchange	Modifies the Woodside Road Interchange at US 101.	17-06-0010	High	Medium	Medium	High	Medium	Medium	Low	Medium
SM	101/University Ave. Interchange Improvements	On University Avenue across US 101, between Woodland Avenue and Donohoe Street; Add bike lanes and sidewalk and modify the NB and SB off-ramps to eliminate pedestrian/bicycle conflicts and improve traffic operations.	17-06-0025	High	Medium	Medium	High	Medium	Medium	Low	Medium
SM	US 101 Express Lanes: I-380 to Santa Clara County Line	Modify existing lanes on US 101 to accommodate a managed lane	17-06-0007	Medium	High	High	Medium	Medium	High	High	High
SM	Implementation of managed lanes on US 101 from I-380 to San Francisco County line	Implementation of managed lanes on US 101 from I-380 to San Francisco County line	17-06-0008	Medium	High	High	Medium	Medium	High	High	High
SM	Improve operations at US 101/SR 92 Interchange - Phase I Area Improvements	Construct operational improvements at four areas at the US 101/SR 92 Interchange and vicinity	17-06-0009	High	Medium	Medium	High	Medium	Medium	Low	Medium
SM	Route 101/Holly St Interchange Access Improvements	The proposed project would convert the existing full cloverleaf configuration to a partial cloverleaf design by eliminating two of the existing loop off-ramps of the interchange, and realign the diagonal on- and off-ramps into signalized T-	17-06-0017	High	Medium	Medium	High	Medium	Medium	Low	Medium

Co.	Title	Description	RTP ID	Goal #1 Safety*	Goal #2 Congestion Reduction	Goal #3 Reliability	Goal #4 Accessible/ Multimodal System	Goal #5 Pollution & GHG Reduction	Goal #6 Economic Prosperity	Goal #7 Asset Management	Goal #8 Efficient Land Use
		intersections with local streets. A new pedestrian and bicycle over crossing will be constructed in the south side of Holly Street Interchange.									
SM	Northern cities Smart Corridor Project	There are two projects under development to extend the smart corridor project limits: the South San Francisco project and northern cities expansion project. The South SF project is from San Bruno city border to South SF city border. It includes major and minor arterials that extend north-south parallel to US101. The other Smart Corridor project under development covers the cities of Brisbane, Colma and Daly City, and will cover arterials adjacent to US101 and I-280. The project will improve mobility during non-recurring traffic incidents along the US-101 and I-280 freeways.	MTC PBA 2050	High	High	High	Low	Medium	Medium	High	Low
SM	El Camino Real Road Diet	El Camino Real currently has three lanes in each direction with high traffic speeds and volume. The improvement concept for El Camino Real reflects the objectives of the Grand Boulevard Initiative, which focuses on making the	MTC PBA 2050	High	Low	Medium	High	High	High	Medium	High

Co.	Title	Description	RTP ID	Goal #1 Safety*	Goal #2 Congestion Reduction	Goal #3 Reliability	Goal #4 Accessible/ Multimodal System	Goal #5 Pollution & GHG Reduction	Goal #6 Economic Prosperity	Goal #7 Asset Management	Goal #8 Efficient Land Use
		corridor more comfortable for all road users from motorists and bus riders to bicyclists and pedestrians by reducing travel lane, widening sidewalks, and adding bike lanes. (Note: Project Sponsor is City of Millbrae)									
SF	US 101/280 Managed Lanes	Development of High Occupancy, priority lanes between where the US 101 crosses the San Mateo County line and where the I-280 enters downtown San Francisco at 3rd Street. The lanes will support express transit as well as expanded local service routes.	17-05-0020	Medium	High	High	Medium	Medium	High	High	High
SF	SoMa Freeway Ramp Intersection Safety Phase 1	Addressing safety issues at 5 freeway ramp intersections in the San Francisco South of Market (SoMa) neighborhood by proposing design improvements for near-term implementation. These intersections are on the city's Vision Zero High-Injury network	MTC PBA 2050	High	Medium	High	High	Medium	High	Low	High
SF	SoMa Freeway Ramp Intersection Safety Phase 2	Improve safety at 10 freeway ramp intersections in the SoMa neighborhood for all travelers and to support progress towards the City's Vision Zero goal.	MTC PBA 2050	High	Medium	High	High	Medium	High	Low	High

* Corridor Goals are paraphrased. See Chapter 2 for complete description.

Table 7-5. *Short-Term Transit Project Evaluation Results*
(not in priority order)

Co.	Title	Description	RTP ID	Goal #1 Safety*	Goal #2 Congestion Reduction	Goal #3 Reliability	Goal #4 Accessible/ Multimodal System	Goal #5 Pollution & GHG Reduction	Goal #6 Economic Prosperity	Goal #7 Asset Management	Goal #8 Efficient Land Use
SCL	Bus Stop Improvements	Create comfortable and dignified transit waiting environments by improving accessibility and amenities at VTA bus stops.	17-07-0056	Medium	Low	Low	Medium	Low	Low	Low	Low
SCL	Caltrain Grade Separations	This project includes grade separations of the Caltrain right of way at priority locations throughout Santa Clara County	17-07-0002	High	Medium	High	Medium	Low	Low	Low	Medium
SCL	North First Street light rail speed Improvements	This project would improve light rail service and reliability along North First Street. Some of the problems in this area include signal timing issues, slow speeds (maximum speed currently restricted to 35mph), and unscheduled stops. Fencing along this corridor would allow maximum speeds to increase to 45 mph, and combined with improvements to signal timing.	17-07-0060	High	Medium	Medium	Low	Low	Medium	Medium	High
SCL	Implement El Camino Rapid Transit Project	Implement Rapid line 522 improvements in the El Camino Real/The Alameda corridor including: dedicated guideways, signal prioritization, low-floor boarding, ticket vending machines, premium stations, real-time information, and specialized vehicles.	17-07-0013	High	High	High	High	High	High	High	High
SM	Add new rolling stock and infrastructure to support SamTrans bus	This project will institute new rolling stock and infrastructure necessary to accommodate BRT along El Camino Real	17-06-0029	High	High	High	High	High	High	High	Medium

Co.	Title	Description	RTP ID	Goal #1 Safety*	Goal #2 Congestion Reduction	Goal #3 Reliability	Goal #4 Accessible/ Multimodal System	Goal #5 Pollution & GHG Reduction	Goal #6 Economic Prosperity	Goal #7 Asset Management	Goal #8 Efficient Land Use
	rapid transit along El Camino Real- Phase										
SM	Implement incentive programs to support transit-oriented development	Implement an incentive programs to support transit-oriented developments in San Mateo County.	17-06-0026	Low	Low	Low	Medium	High	Medium	Low	High
SM	Introduce Network of Regional Express Bus Routes	Purchase electric buses to use in running expanded express bus service utilizing the San Mateo County Express Lanes project; construct improvements at the US 101/SR-92 interchange park-and-ride; add secure bike parking and improved bus stop facilities at key stop locations.	MTC PBA 2050	High	High	High	High	High	High	High	High
SM	Pilot Hovercraft Ferry Service from Foster City	Implement a pilot hovercraft service from Foster City (destination TBD) to relieve congestion and reduce carbon emissions. Includes: 2x 30 person high speed hovercraft, two basic hoverports, supporting infrastructure, and all feasibility study, environmental and regulatory costs. O&M costs will be partially offset by farebox recovery (Note: Project Sponsor is City of Foster City)	MTC PBA 2050	Medium	Medium	Medium	Medium	Low	Medium	Low	Low

Co.	Title	Description	RTP ID	Goal #1 Safety*	Goal #2 Congestion Reduction	Goal #3 Reliability	Goal #4 Accessible/ Multimodal System	Goal #5 Pollution & GHG Reduction	Goal #6 Economic Prosperity	Goal #7 Asset Management	Goal #8 Efficient Land Use
SF	Van Ness Avenue Bus Rapid Transit	Implement Van Ness Avenue Bus Rapid Transit (Van Ness BRT) to improve approximately two miles of a major north-south urban arterial in San Francisco. Project would include a dedicated lane for BRT buses in each direction between Mission and Lombard Streets. There will be nine BRT stations, with platforms on both sides for right-side passenger boarding and drop-off. While there are many associated projects working in concert with the Van Ness Improvement Project, cost reflects the Core BRT scope only.	17-05-0033	Medium	High	High	High	High	High	Medium	High
SF	Mission Bay Ferry Landing	Establish New Ferry terminal to serve Mission Bay and Central Waterfront neighborhoods	17-05-0019	Medium	Low	Medium	Medium	Low	Medium	Medium	Medium
SF	Geneva-Harney Bus Rapid Transit	Initial Phase (east of Bayshore/Arleta): Provides exclusive bus lanes, transit signal priority, and high-quality stations along Tunnel Avenue, Beatty Avenue, Alana Way, Harney Way, and Crisp Avenue, and terminating at the Hunters Point Shipyard Center. Future Phase (west of Bayshore/Arleta): Continuation of exclusive bus lanes, transit signal priority, and high-quality	17-05-0032	High	High	High	High	High	Medium	High	High

Co.	Title	Description	RTP ID	Goal #1 Safety*	Goal #2 Congestion Reduction	Goal #3 Reliability	Goal #4 Accessible/ Multimodal System	Goal #5 Pollution & GHG Reduction	Goal #6 Economic Prosperity	Goal #7 Asset Management	Goal #8 Efficient Land Use
		stations west to Santos St., connecting with Muni Forward transit priority improvements. This near-term alternative does not rely on the full extension of Geneva Avenue across US 101 to Harney Way. The project includes pedestrian and bicycle improvements in support of Vision Zero.									
SF	Climate Program: TDM and Emission Reduction Technology	Projects in this category implement strategies and programs that reduce emissions, encourage alternative transportation modes, and manage transportation demand including but not limited to projects such as TDM program implementation, parking management, local area shuttle and paratransit services	17-05-0002	Medium	High	Low	Medium	High	Low	High	Medium
SF	Arena Transit Capacity Improvements	Identifies transit improvements needed to accommodate growth in Mission Bay. Improvements might include track crossovers to allow for trains to be staged; a 6-inch raised area along existing tracks; a platform extension to accommodate crowds; other trackway modifications; and a traction power study to ensure that the power grid can accommodate a large number of idling vehicles.	17-05-0034	Medium	Medium	High	Medium	Low	High	High	Low

Co.	Title	Description	RTP ID	Goal #1 Safety*	Goal #2 Congestion Reduction	Goal #3 Reliability	Goal #4 Accessible/ Multimodal System	Goal #5 Pollution & GHG Reduction	Goal #6 Economic Prosperity	Goal #7 Asset Management	Goal #8 Efficient Land Use
SF	County Safety, Security and Other	Projects in this category address safety and security needs including Vision Zero improvements at ramps, local road safety and security, India Basin roadway transportation improvements, and transit safety and security	17-05-0003	High	Low	Low	Medium	Low	Low	Medium	Low
SF	Regional/Local Express Bus to Support Express Lanes in SF	A 5-year regional/local express bus pilot to provide service to/from downtown San Francisco to/from San Francisco neighborhoods, Marin, Contra Costa, Alameda, San Mateo and Santa Clara counties to complement other freeway corridor management strategies. Some service to be funded with HOT lane revenues. See HOV/HOT Lanes on U.S. 101 and I-280 in San Francisco project. Includes vehicles.	17-05-0036	Medium	High	High	High	High	High	High	High
SF	San Francisco Late Night Transportation Improvements	New routes and increased frequency for all-night regional and local bus service, including Muni, AC Transit, Golden Gate Transit, and SamTrans routes. This is a pilot for 5 years.	17-05-0011	High	Low	Medium	High	Low	Medium	Medium	Low
SF	Southeast San Francisco Caltrain Station - Environmental	Planning and environmental analysis of Caltrain infill station to replace Paul Ave Station in Southeast San Francisco (e.g. Oakdale).	17-05-0028	High	Medium	Medium	High	Medium	High	High	Medium

Co.	Title	Description	RTP ID	Goal #1 Safety*	Goal #2 Congestion Reduction	Goal #3 Reliability	Goal #4 Accessible/ Multimodal System	Goal #5 Pollution & GHG Reduction	Goal #6 Economic Prosperity	Goal #7 Asset Management	Goal #8 Efficient Land Use
SF	Muni Forward (Transit Effectiveness Project)	Includes transit priority improvements along Rapid and High Frequency transit corridors, service increases, transfer and terminal investments, overhead wire changes, and street improvements in support of Vision Zero.	17-05-0014	High	Medium	Medium	High	Medium	Medium	High	High
SF	SFgo Integrated Transportation Management System	SF go is San Francisco's Citywide ITS program. It identifies signalized and non-signalized intersections located along arterials and the Muni transit system and prioritizes them for ITS upgrades, such as controllers, cabinets, transit signal priority, fiber optic or wireless communications, traffic cameras, and variable message signs. Also improves arterial safety and pedestrian safety.	17-05-0012	High	Low	Medium	Medium	Low	Low	High	High
SF	Transit Preservation/ Rehabilitation	This project provides additional funding to transit capital preservation and rehabilitation beyond what is included in the regional transit capital project (RTPID 17-10-0026)	17-05-0007	Low	Low	Medium	High	Medium	Medium	High	Low
SF	22 Fillmore Transit Priority Project	As part of Muni Forward, the SFMTA is planning transit priority and pedestrian safety improvements for the 22 Fillmore route along 16th Street, including transit-only lanes, transit bulbs and islands, new traffic signals, and several pedestrian safety upgrades. This	17-05-0014	High	Low	Low	Medium	Low	Medium	Medium	High

Co.	Title	Description	RTP ID	Goal #1 Safety*	Goal #2 Congestion Reduction	Goal #3 Reliability	Goal #4 Accessible/ Multimodal System	Goal #5 Pollution & GHG Reduction	Goal #6 Economic Prosperity	Goal #7 Asset Management	Goal #8 Efficient Land Use
		project will correlate with several infrastructure upgrades along 16th Street, including repaving and utility work, and will also include extending the overhead contact system (OCS) from Kansas Street to Third Street to allow for zero-emission transit service into Mission Bay.									
SF	San Bruno Avenue Multimodal Improvement Project	The San Bruno Ave Multimodal Improvement Project includes pedestrian safety, transit priority and parking management proposals that will make the street safer for people walking, increase the reliability of Muni, and address parking availability in the neighborhood. This project has been approved by the SFMTA Board of Directors in October 2016.	17-06-0031	High	Medium	Medium	High	Medium	Medium	Medium	High
SF	Expand SFMTA Transit Fleet Buses	This project entails future expansion of the SFMTA bus fleet. The purpose is to meet projected future transit demand, as indicated in the SFMTA Transit Fleet Plan, as well as operational changes needed for a 100% electric fleet. Cost presented includes expansion vehicles only.	MTC PBA 2050	Low	Low	Medium	High	Medium	Medium	High	Medium
SF	Expand SFMTA Transit Fleet Facilities	This project entails future expansion of the SFMTA transit facilities to house and maintain transit expansion vehicles. The purpose is to meet projected future transit demand, as	MTC PBA 2050	Low	Low	Medium	High	Medium	Medium	High	Medium

Co.	Title	Description	RTP ID	Goal #1 Safety*	Goal #2 Congestion Reduction	Goal #3 Reliability	Goal #4 Accessible/ Multimodal System	Goal #5 Pollution & GHG Reduction	Goal #6 Economic Prosperity	Goal #7 Asset Management	Goal #8 Efficient Land Use
		indicated in the SFMTA Transit Fleet Plan. It will facilitate the future provision of additional service through the procurement of transit vehicles as well as the development of needed modern transit facilities. Cost represents only expanded facilities capacity, above and beyond replacement of existing capacity.									
Var.	BART Transbay Core Capacity Project	The Transbay Corridor Core Capacity Project is a multi-pronged effort to address capacity issues in the Transbay corridor and is in coordination with the BART Metro Program project. The project elements are: *Communication-based train control (CBTC) system to safely enable closer headways and allow BART to operate more frequent service (12 minute frequencies); *Expansion of the rail car fleet by 306 vehicles to add cars to existing trains and operate more frequent trains; *Added traction power substations to allow more frequent service; *Expansion of the Hayward Maintenance Complex (HMC) to provide storage and maintenance capability for the expanded fleet; *Other (Unallocated contingency)	17-10-0006	Medium	High	High	High	High	High	Medium	High

Co.	Title	Description	RTP ID	Goal #1 Safety*	Goal #2 Congestion Reduction	Goal #3 Reliability	Goal #4 Accessible/ Multimodal System	Goal #5 Pollution & GHG Reduction	Goal #6 Economic Prosperity	Goal #7 Asset Management	Goal #8 Efficient Land Use
		Financing cost is included in RTPID 17-10-0016. $50M (SF Portion)									
Var.	Bay Area Forward	This program includes a variety of operational and multimodal improvements, including: active traffic management - upgrades to all existing ramp meters to adaptive, implementing hard shoulder running lanes, contra-flow lanes, queue warning, and ramp modifications; arterial operations - implementation of traditional time-of-day signal timing coordination, adaptive traffic signal control systems, transit signal priority, real-time traffic monitoring devices, ped/bike detection, queue-jump lanes, etc; connected vehicles - pilot deployments of vehicle-to-infrastructure (V2I) strategies; Managed Lanes Implementation Plan - pilot express bus service for routes not currently served by operators; expands park-and-ride facilities throughout the region; and supports pilot deployment of shared-mobility solutions.	17-10-0033	High	High	High	High	High	High	High	High
Var.	Caltrain Enhanced Growth Scenario	The project includes enhanced service levels that will maximize the use of available infrastructure and more fully serve expected market demand on the Caltrain corridor over the next decade and beyond. It	MTC PBA 2050	Medium	High	High	High	High	High	High	High

Co.	Title	Description	RTP ID	Goal #1 Safety*	Goal #2 Congestion Reduction	Goal #3 Reliability	Goal #4 Accessible/ Multimodal System	Goal #5 Pollution & GHG Reduction	Goal #6 Economic Prosperity	Goal #7 Asset Management	Goal #8 Efficient Land Use
		envisions growing in 2022 (FY23) to 6, 7-car trains per peak hour per direction (tphpd) (~168 trains per day), and in 2027 (FY28) to 8, 7-car trains per peak hour per direction (~204 trains per day). The project includes capital improvements needed to support growth in train service, such as additional electric train fleet, more train storage, and station improvements.									

* Corridor Goals are paraphrased. See Chapter 2 for complete description.