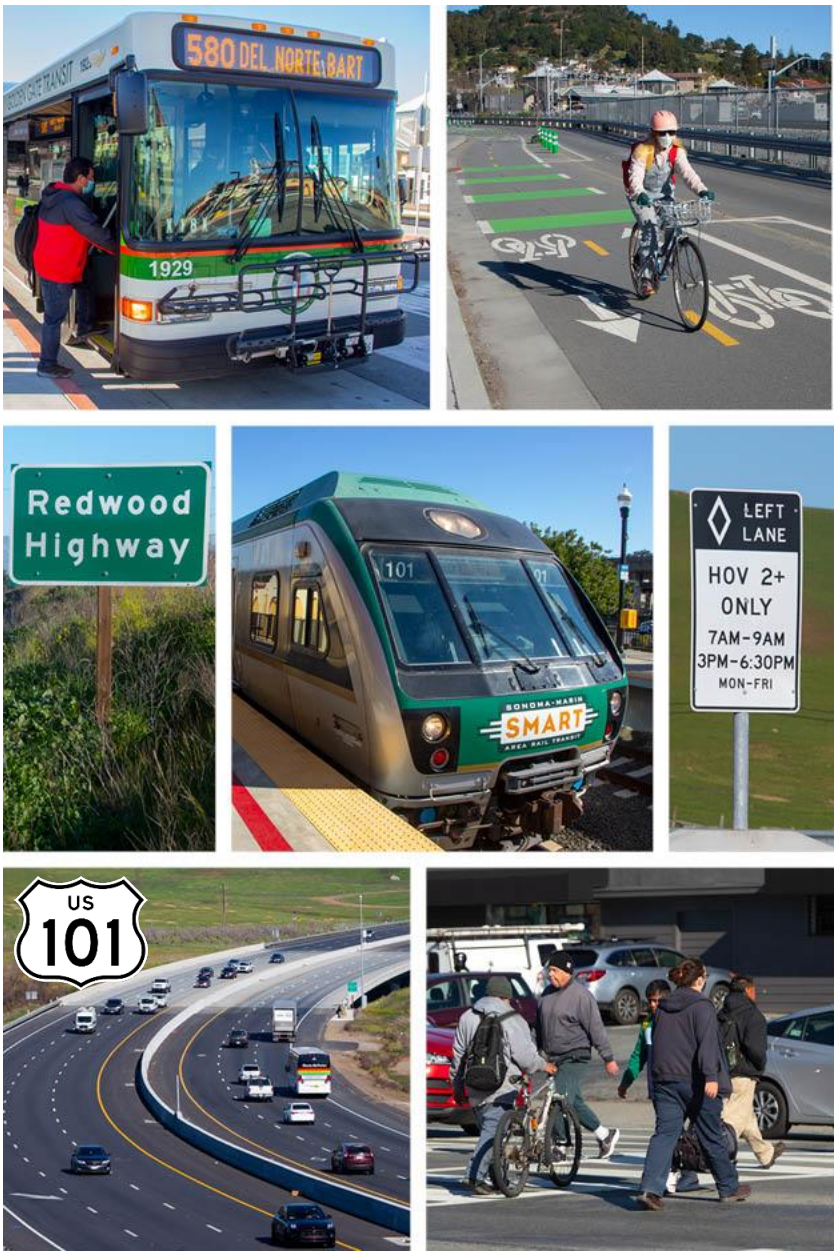
US 101 North

Comprehensive Multimodal Corridor Plan



Caltrans District 4

May 2023

Caltrans

US 101 North

Comprehensive Multimodal Corridor Plan

APPROVED BY:

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California Department of Transportation

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

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US 101 North

Comprehensive Multimodal Corridor Plan

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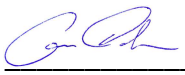

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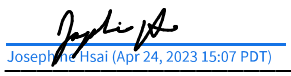

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CALTRANS MISSION & GOALS

MISSION	**Provide a safe and reliable transportation network that serves all people and**				
CORE VALUES	ENGAGEMENT	EQUITY	INNOVATION	INTEGRITY	PRIDE
	We inspire and motivate one another through effective communication, collaboration, teamwork, and partnership.	We strive to eliminate disparities while improving outcomes for all.	We are empowered to seek creative solutions and take informed risks.	We promote trust and accountability through our consistent and ethical actions.	As one Caltrans family, we are proud of our work and strive for excellence in public service.
STRATEGIC IMPERATIVES	STRATEGIC IMPERATIVE 1	STRATEGIC IMPERATIVE 2	STRATEGIC IMPERATIVE 3		
	Improve and expand community partnerships, especially in underserved communities.	To the maximum extent feasible, align financial investments to deliver on State goals and Caltrans' strategic outcomes while maintaining a fix-it-first approach and staying within existing funding frameworks.	Commit to equity-focused actions that make advancements in the areas of People, Programs and Projects, Partnerships, and Planet, as referenced in Caltrans' Equity Statement.		
GOALS	Safety first	Cultivate excellence	Enhance and connect the multimodal transportation network		
	Strengthen stewardship and drive efficiency	Lead climate action	Advance equity and livability in all communities		

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EXECUTIVE SUMMARY

INTRODUCTION

Comprehensive Multimodal Corridor Plans

With the passage of Senate Bill (SB) 1 and the introduction of the Solutions for Congested Corridor Program (SCCP), Caltrans District 4 sees a unique opportunity to support the System Planning Program update and promote the legislatively required Comprehensive Multimodal Corridor Plans (CMCP) as a critical component of the next generation of System Planning products. A CMCP is recommended for the most congested State highway corridors within the District and includes a multimodal needs analysis for identifying improvement projects and strategies that help inform project programming and funding needs.

Caltrans updated its Mission, Vision and Goals in 2020, which shifted focus from automobile-centric operations and capital expansion to multi-modal system management, operations, equity, and sustainability. The Caltrans Strategic Management Plan 2020-2024 (SMP) links strategic goals with corresponding performance measures that the Department is responsible for achieving.

Senate Bill 1 Overview and the Solutions for Congested Corridors Program

The Road and Repair Accountability Act of 2017, also known as SB 1, provides the first significant, stable, and on-going increase in State 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 SCCP. This program provides $250 million a year 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 enhancement.

To mitigate increases in vehicle miles traveled (VMT), greenhouse gas (GHG) emissions, and air pollution, highway capacity-increasing projects funded by the program are limited to managed lanes, such as high-occupancy vehicle lanes and other non-capacity increasing improvements such as auxiliary lanes, truck-climbing lanes and dedicated bicycle lanes. Projects may include improvements to State highways, local streets and roads, public transit facilities, bicycle and pedestrian facilities, and restoration or preservation work that protects critical local habitat or open space.

2011 US 101 North Corridor System Management Plan (CSMP)

In 2011, Caltrans District 4 developed a Corridor System Management Plan (CSMP) for the United States (US) 101 North Corridor from the Golden Gate Bridge, at the San Francisco/Marin County line, to the State Route (SR) 128 Interchange in Cloverdale, Sonoma County. CSMPs were developed throughout the State for corridors where funding from the Corridor Mobility Improvement Account (CMIA), created by the Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006 and approved by voters as Proposition 1B in November 2006, was allocated. Approximately $4.5 billion in general obligation bond proceeds were deposited in the CMIA for performance improvements on the State Highway System (SHS) or major access routes to the SHS, to provide congestion relief, enhanced mobility, improved safety, and stronger connectivity. The US 101 North CSMP was developed to satisfy the requirements for funding under CMIA and examine the mobility of the freeway in a comprehensive manner based on a performance assessment.

Since the completion of the 2011 North CSMP, significant growth in vehicular traffic has occurred within the Corridor and a number of projects included in the 2011 CSMP have been completed. The Sonoma-Marin Area Rail Transit (SMART) started Phase 1 service in August 2017 along a portion of the corridor. Since 2011, there have also been additional highway, transit, and bicycle/pedestrian projects planned and proposed to accommodate growth in travel demand. In 2017, SB 1 legislation named US 101 and the SMART rail corridor in Marin and Sonoma Counties as an example of a congested corridor.

Caltrans, in coordination with stakeholders along US 101, has determined that the US 101 North Corridor is an interregional priority for the region and a Comprehensive Corridor Plan (CCP) was developed in February 2018 to document changes from the CSMP, identify multimodal needs, and recommend multi-modal improvement projects. The US 101 North CCP also extended the corridor limits north to the Sonoma/Mendocino County line to cover US 101 in its entirety in both counties. The US 101 North CCP served as an update and supplement to the 2011 CSMP bringing a more multimodal approach to corridor analysis by evaluating the needs of all corridor users. As a result, Cycle 1 of the SCCP funded improvements on US 101 and helped complete the High Occupancy Vehicle (HOV) network in Sonoma County.

Since the release of the California Transportation Commission's (CTC) 2018 CMCP Guidelines, the CCP was reviewed and updated in 2020 to meet the requirements of the guidelines as a CMCP. With the update, the remaining HOV lane project for the Marin Sonoma Narrows Project was successfully funded in Cycle 2. In preparation for Cycle 3 in 2022, the CMCP was updated once again to include a broader audience of stakeholders, tribal governments, and the public through an extensive public engagement process to reassess travel needs. During this period, the SMART Windsor rail extension project was nominated as a priority project by Caltrans and submitted for SCCP Cycle 3.

Long-Term Corridor Planning

It is acknowledged among the stakeholders that one of the main goals for this CMCP is to document funding needs for shovel-ready projects in the Corridor. Therefore, the update is limited in scope and is primarily based on information, data, studies, and reports that are already available. This CMCP, however, will also address the longer-term planning needs of the Corridor, and will be revised and updated as needed.

Stakeholders

The technical advisory committee (TAC) includes representatives from the following agencies:

- Caltrans
- Metropolitan Transportation Commission (MTC)
- Transportation Authority of Marin (TAM)
- Sonoma County Transportation Authority (SCTA)
- Sonoma-Marin Area Rail Transit District (SMART)
- Golden Gate Bridge, Highway and Transportation District (GGBHTD)
- Marin Transit
- Petaluma Transit
- Santa Rosa City Bus

County Transportation Agencies (CTAs) such as TAM and SCTA, also regularly coordinate with local jurisdictions and transit agencies to ensure their concerns are addressed and incorporated into the CMCP.

US 101 NORTH CMCP GOALS, OBJECTIVES, AND PERFORMANCE MEASURES

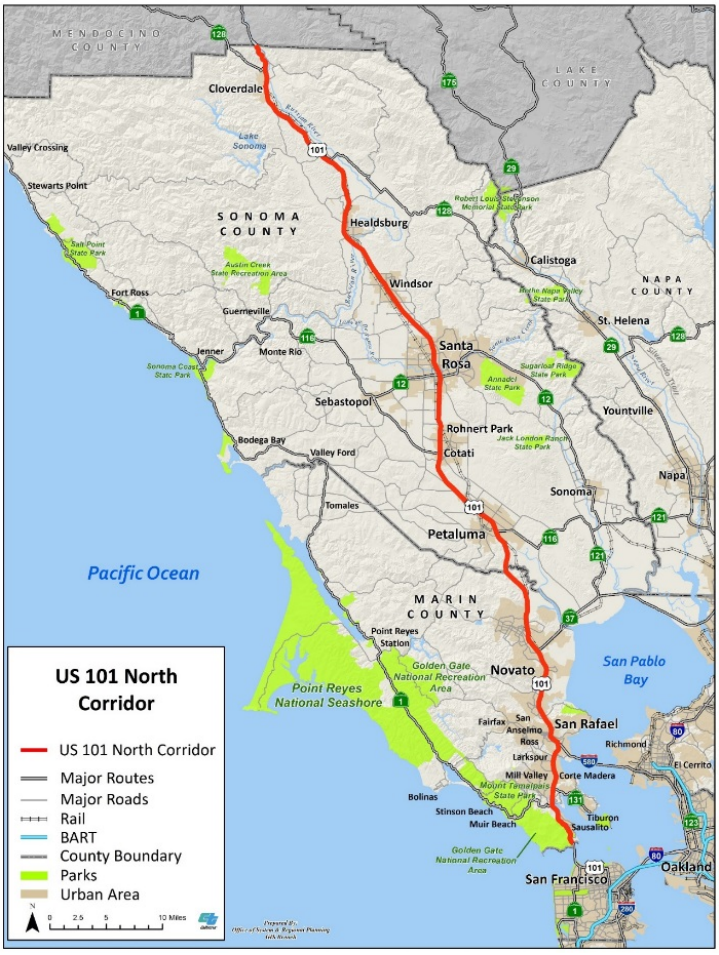
- Provide a safe transportation system to all users;
- Reduce recurring freeway congestion and improve freeway efficiency
- Improve trip reliability within the Corridor;
- Support an accessible and inter-connected multimodal transportation system;
- Reduce pollutants and greenhouse gas (GHG) emissions;
- Support economic prosperity;
- Efficiently manage transportation assets within the Corridor to protect existing and future investment;
- Support land use efficiency and climate adaptation;
- Advance equity; and
- Address climate change vulnerabilities to transportation facilities.

The California Transportation Agency's (CalSTA) (2021) Climate Action Plan for Transportation Infrastructure (CAPTI), Caltrans (2021) California Transportation Plan (CTP) 2050, and California Air Resources Board (ARB) 2022 Scoping Plan, provide the frameworks for California to meet State targets for reducing GHG emissions, improving quality of life, and advancing sustainable

transportation. CAPTI efforts will support the CTP 2050 goals to meet State climate change targets, mandates, and policies. CAPTI is also closely aligned with the Caltrans 2020-2024 Strategic Management Plan which showcases a fundamental shift for Caltrans to lead climate action as a top priority. In preparation of the 2022 Scoping Plan update, ARB conducted multiple workshops in 2021 to gather stakeholder input and studies to assess ambitious carbon reduction scenarios to achieve net zero emissions by 2045. The plan assessed progress towards achieving at least 40 percent below 1990 emissions by 2030 provided through SB 32 and laid out a path to achieve carbon neutrality for every sector of the economy no later than 2045.

The goals of this CMCP align with the afore mentioned statewide plans and pursues implementation of these goals and policies through coordination and collaboration with partner agencies, stakeholders, and the public throughout planning and project development for both current and future transportation improvements.

Based on corridor goals and objectives, a series of performance measures were identified collaboratively with State and local public agencies from the TAC to qualitatively evaluate project performance of all projects along the corridor. Travel Model One, the San Francisco Bay Area region's activity-based travel demand model, was also used to estimate future travel levels in the corridor, and traffic analyses were conducted to determine the benefits of recommended strategies based on those travel levels.



CORRIDOR OVERVIEW

The US 101 North Corridor is a north-south route starting midspan of the Golden Gate Bridge (Marin County) and ending at the Sonoma/Mendocino County line, north of the SR 128 Interchange in Cloverdale (Sonoma County). The Corridor travels through Marin and Sonoma Counties and is approximately 83 miles in length.

US 101 North intersects SRs 1, 37, 131, and Interstate 580 in Marin County and SRs 12, 116, and 128 in Sonoma County.

US 101 is the principal freeway and the primary north-south freight route linking Sonoma and Marin Counties to San Francisco County to the south and Mendocino County to the north.

MULTIMODAL FACILITIES - EXISTING CONDITION AND NEEDS IDENTIFICATION

As a multimodal transportation corridor, the US 101 North Corridor serves the movement of people and goods in a variety of transportation modes. This chapter describes bus and ferry transit services, Park-and-Ride facilities, private commuter shuttle services, passenger and freight rail, and bicycle and pedestrian facilities as critical transportation modes within the US 101 North Corridor.

Transit Services and Park-and-Ride

Transportation in the San Francisco Bay Area region relies on a complex multimodal system consisting of roads, bridges, highways, rail, tunnels, airports, and bike and pedestrian paths. The Bay Area Rapid Transit (BART) is a heavy-rail public transit system and the primary regional transit operator. Its extensive rail network connects San Francisco with the Peninsula and East Bay cities and two international airports (San Francisco International Airport and Oakland International Airport). Marin County withdrew from participation in this rail system in 1962, and therefore is not served by BART today. Consequently, greater reliance is placed on US 101, with agencies such as Golden Gate Transit, Marin Transit, Sonoma County Transit, Mendocino Transit, Santa Rosa Transit, and more to fill the public transportation needs along the US 101 North Corridor.

Sonoma-Marin Area Rail Transit (SMART) offers passenger rail service in Sonoma and Marin Counties along the US 101 North Corridor. The initial 43 miles of rail corridor includes ten stations, from downtown San Rafael to the Charles M. Schulz-Sonoma County Airport, began passenger service operations in 2017. In December 2019, SMART added two new stations at Larkspur and Downtown Novato and extended two miles south to connect to Golden Gate Ferry transit services at Larkspur Landing. SMART also facilitates short line rail freight service which is described later. The SMART system also includes multi-use bicycle/pedestrian pathways generally running within or adjacent to the entire rail corridor. These continuous bicycle/pedestrian pathways include a combination of Class I and Class II bicycle facilities. The pathways are fully planned to connect with the surrounding bicycle and pedestrian network and are currently being constructed segment by segment.

Additionally, SMART has reviewed the technical feasibility of implementing passenger rail service between Novato and Suisun City. The proposed service would connect the existing Novato Hamilton station with the Capitol Corridor passenger rail system at its Suisun-Fairfield station. Other transportation services near the Corridor include ferry and other mobility services such as private shuttles, senior and mobility impaired services, and transportation demand management programs. In addition, there are more than twenty Park-and-Ride lots and fifteen transit bus pads near the US 101 Corridor that provide parking for drivers to join carpools and vanpools, or to connect to public transit.

Bicycle and Pedestrian Facilities

Bicycle and pedestrian facilities are vital components of the multi-modal transportation network. Active transportation is integral to corridor planning, encompassing a myriad of individual and societal benefits. Due in part to the mountainous topography of Marin and Sonoma Counties, the US 101 North Corridor bicycle/pedestrian network is not always contiguous. Many bicycle and pedestrian projects have been implemented in the corridor due to support from local sales taxes and State and federal funding. The built and planned bicycle-pedestrian projects along the US 101 North Corridor comprise a robust larger network. This larger network has been deemed essential by community members, and is called for by various regional planning efforts, including the North-South Greenway, San Francisco Bay Trail, Great Redwood Trail, and the afore mentioned SMART Pathway. Each of these regionwide efforts was founded from a broad coalition of community groups, residents, elected officials, and regional and local planning agencies to create a more extensive, connected, and inviting network for non-motorized transportation. In the case of the SMART Pathway, the facility is considered an integral part of the railroad, both as first/last-mile connection to SMART stations and as a railroad safety feature to provide publicly accessible non-motorized access and discourage trespassing on railroad right-of-way. Additionally, identified projects and needs from both the Caltrans District 4 Bike Plan and Pedestrian Plan were used for the CMCP recommended strategies.

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. In July 2021, Governor Gavin Newsom signed historic broadband legislation, SB 156. The legislation expands the State's broadband fiber infrastructure and increases internet connectivity to help bridge the digital divide and provide reliable and affordable internet access to all Californians through the Middle-Mile Broadband Network (MMBN). With US 101 in Marin and Sonoma counties identified as part of the MMBN, the planned delivery date for the full buildout of the broadband mile middle network for the US 101 North Corridor is expected in 2025.

TAM has identified several projects to be considered for MTC Regional Measure 3 funding. The US 101/I-580 Direct Connector Project is planned to include installation of fiber communications infrastructure along Sir Francis Drake Blvd between the two freeways that may be implemented when funding is identified. All SMART rail projects have included the installation of dark fiber, a strand of which has been reserved free for public agency use as part

of a public private partnership. This partnership will extend north as part of the future SMART rail extensions.

The regional broadband consortia for Marin, Mendocino, Napa, and Sonoma Counties is called the North Bay/North Coast Broadband Consortium (NBNCBC). In March 2018, the NBNCBC identified areas in both Marin and Sonoma Counties as being high priority areas for California Advanced Services Fund (CASF)-Infrastructure Account funding. One of the target communities that will be prioritized for funding is the Hamilton Community near the city of Novato in Marin County. This community is located near the US 101 North Corridor. Sonoma County's coastal region was also identified as a priority area due to concerns for safety, education, business, agricultural, healthcare, and tourism industries.

Transportation Systems Management and Operations (TSMO)

TSMO strategies include, but are not limited to, ramp metering, traffic signal synchronization, intelligent transportation systems/traffic operations systems (ITS/TOS), and managed lanes. Greater efficiency can often be achieved by operational improvements through ITS deployments. These strategies would support the Transportation Demand Management of regional express buses, carpooling, and vanpooling along the US 101 North Corridor.

Existing ITS infrastructure on the US 101 North Corridor includes ramp meters, Traffic Monitoring Stations (TMS), Close Circuit Television (CCTV), Changeable Message Signs (CMS), Variable Message Signs (VMS), Extinguishable Message Signs (EMS), and Highway Advisory Radio (HAR).

Freight Facilities

Freight movement is a vital component of the regional economy and transportation system. US 101 provides access for major interregional and regional freight movement in Northern California. US 101 links with I-80, I-580, and I-880 (and I-5 via some of these routes) and serves as the primary freight route through Marin and Sonoma Counties. The route connects the San Francisco Bay Area to the Pacific Northwest via the counties of Mendocino, Humboldt, and Del Norte. US 101 North, SR 12, SR 116, and SR 37 are federally designated Surface Transportation Assistance Act (STAA) Terminal Access routes and I-580 is a National Network route where federal STAA and California Legal trucks are permitted.

While trucks generally avoid peak periods, increasing demands for on-time delivery of goods have become increasingly difficult for freight service providers to avoid the peak period. The San Francisco Bay Area Goods Movement Plan (2016) identifies the US 101 Marin-Sonoma Narrows project as a high priority to addresses needs, deficiencies and gaps in the region's goods movement system.

SMART's publicly owned rail facility is also a critical component of the multi-modal transportation approach to the US 101 North Corridor. SMART's tracks accommodate both passenger rail and a Class III freight short line rail. SMART became the freight common carrier

on the railroad with federal Surface Transportation Board approval to assume freight operator responsibilities from the private freight operator on the corridor (June 11, 2021, STB Docket 1310X). In March 2022, SMART's Board authorized the hiring of freight-only employees to operate the short-line freight services through the hiring of a Freight Rail Manager and initiation of freight service operations. Additional rail freight business development is underway and full staffing is anticipated in Summer 2022. Additionally, the benefits of completing SMART rail extensions further north to Cloverdale and potentially an east-west rail line would reduce truck traffic along the US 101 North Corridor.

FREEWAY PERFORMANCE

Corridor performance assessment is a quantitative or qualitative analysis of how a freeway corridor is functioning and begins with analyzing existing travel data. With an adequate traffic detection system in place, a corridor performance assessment serves to evaluate the existing system management practices and identify possible causes of performance problems. Modeling is then used to forecast future travel conditions along the corridor. To assess the impacts of a variety of operational strategies and investment scenarios, traffic analysis methods are used, allowing the corridor team to evaluate and recommend operational strategies, capital improvement projects, and opportunities to integrate transportation technology.

To assess the freeway performance of US 101 in Marin and Sonoma Counties, planners and engineers used a combination of sources including ramp metering reports, Caltrans Performance Measurement System (PeMs), and MTC's Travel Model One. Ramp metering reports were used to identify existing bottlenecks, and PeMs was used to measure freeway speeds and volumes. MTC's Travel Model One was used to provide a bigger picture of future freeway performance. Performance analysis included identifying the existing freeway bottlenecks, along with other corridor mobility performance measures such as:

- Vehicle Miles Traveled (VMT), which is a measurement of travel demand within a corridor
- Vehicle Hours Traveled (VHT), or total time for a corridor to process the VMT demand
- Vehicle Hours of Delay (VHD), which is a measure of how much additional VHT it took for the corridor to process the VMT demand, assuming nominal VHT is at 35 mile per hour (mph) speed
- Number of Incidents to determine any potential correlation between incidents and any mobility degradation resulting from increases in VMT, VHT, or VHD

PUBLIC OUTREACH

On April 26th, 2022, an online survey was released to the public on ArcGIS Online that asked about travel behavior, travel preferences, and transportation challenges when traveling on the US 101 corridor. Word of the online survey was spread by periodic announcements on the Caltrans District 4 Twitter page and announcing it at public outreach events such as the Community Based Organization (CBO) workshop held on May 12th, individual tribal outreach in

May, the Marin County Fair on July 1st and 2nd, and the public webinar on July 21st. A total of 101 respondents participated in the survey.

A summary of the findings from the data received shows that respondents view congestion as the biggest challenge and is the top improvement wanted to be seen. Comments pertaining to congestion illustrate how it affects other modes from being able to perform reliably, such as bus transit and carpooling. Other comments related to driving demonstrate a concern of safety due to poor roadway conditions as well as driving behavior. Congestion being viewed as the biggest challenge to address on the corridor is also the result of driving alone being the dominant mode of choice for respondents.

While it is the dominant mode, most respondents expressed wanting to shift to another mode of travel along the corridor but choose not to due to a few challenging factors that come with using an alternative mode. Respondents noted reasons such as poor bike/pedestrian network condition as well as gaps and safety concerns for not riding their bike or walking. For bus transit, many commented on its unreliability and poor service schedule. For passenger rail, respondents complained of expensive fares, poor scheduling, an incomplete multi-use pathway, a lack of first/last mile service connections, the station being too far from the ferry, and a need for better connections to the airport.

The survey is a snapshot of the current behavior and challenges the corridor faces. While these findings are not news to many, the needs identified through the survey reinforces our current CMCP goals to address congestion and multimodal transportation needs.

Based on early discussion with the technical advisory committee of how to enhance neighborhoods and preserve the local community character of the surrounding areas along the Corridor, the following initial strategies were suggested:

- Provide “options” to the community to travel by walking, biking, or taking transit through Complete Streets projects.
- Incorporate public art or beautification projects with transportation improvements.
- Improve safe access and traffic calming measures.
- Reconnect communities who had their communities divided by past transportation projects.

RECOMMENDED STRATEGIES

A total of 183 projects were proposed by Caltrans, TAM, and SCTA, grouped into seven categories: High Occupancy Vehicle (HOV) lanes, Intelligent Transportation System (ITS) such as ramp metering, interchange modernization, Park-and-Ride construction, SMART rail extensions, and improvements to transit and bike/pedestrian facilities. Since March 19, 2020, traffic has improved throughout the State due to the Governor's Shelter-In-Place Order for COVID-19 but is temporary and not reflective of normal traffic conditions. The long-term benefits of the US 101 North Corridor projects are still needed. The short-term projects would act as a regional economic stimulus for job creation.

HOV Lanes

The Bay Area's HOV lane network delivers significant benefits in terms of increased person-throughput, higher speeds, and travel time savings as compared to general-purpose lanes. The remaining Marin-Sonoma Narrows projects will complete the existing HOV lane gap within the US 101 North Corridor.

Ramp Metering

Ramp metering is an effective traffic management strategy to maintain an efficient freeway operation. Ramp queue detection to avoid backup onto local roads is included as part of the proposed ramp metering projects in Marin County.

Freeway Interchange Modernization

Many interchanges on US 101 were constructed in the 1950s, and ramps and intersecting local streets experience recurring traffic congestion throughout the day. Some interchanges may not meet Americans with Disabilities Act (ADA) standards and need modernizations in bike, pedestrian, and transit facilities. This CMCP includes interchange modernization projects to improve local traffic circulation and regional traffic operation, improve multimodal access and connectivity, and improve overall safety of the facilities.

Transit Improvements

Transit and HOV lane improvements provide a great incentive for travelers to carpool or take transit by offering travel time savings and reliability and represent a great opportunity to enhance existing transit services.

The US 101 North Corridor historically serves over 20,000 riders per day with regional and local bus service. Relocating the San Rafael Bettini Transit Center, which serves 9,000 daily riders, is a high priority to improve operational functionality and customer experience. This facility is the largest transit center in Marin County and serves all transit operators in the county.

Enhancing Marin's Park-and-Ride facilities along US 101 can increase transit usage and support higher occupancy use of highways. Protecting facilities from sea level rise is a current challenge in locations such as the Manzanita Park-and-Ride.

SMART Passenger and Freight Rail Extensions

Traffic congestion along the US 101 North Corridor has increased dramatically in the last decade and it is now ranked as one of the most congested freeways in the Bay Area. More than 80 percent of all North Bay commercial, residential, and educational facilities are located along the SMART Corridor. SMART train service located approximately adjacent to the US 101 North Corridor provides an alternative for travel in the Corridor. Future extensions and new infill stations for SMART include: Petaluma North, Windsor; Healdsburg; and Cloverdale.

Bike and Pedestrian Facility Improvements

For non-motorized travelers, US 101 is a major physical barrier to cross. By providing safe and accessible bike and pedestrian facilities along the Corridor, more trips can be made by bike and pedestrian modes. The CMCP proposes projects that connect the existing and proposed

bikeway and pedestrian networks and offer a more comfortable alternative for bicyclists and pedestrians crossing or riding parallel to US 101.

Project Evaluation and Project List

All proposed projects are evaluated against performance measures and rated as “High Positive Impact”, “Medium Positive Impact”, and “Low Positive Impact” to show how strongly the projects support the goals of the CMCP. Project evaluations were developed in collaboration with the CMCP Technical Advisory Committee. Short-term projects that could be implemented within four years, Medium-term projects that could be implemented within the next four to ten years, and long-term projects that could be implemented beyond ten years are identified and evaluated in the CMCP to prioritize projects for future funding and collaboration among stakeholders. Additionally, current and future State Highway Operation and Protection Program (SHOPP) projects are also included. It should be noted that while SHOPP projects are listed in this document, they are not evaluated against the identified performance measures since they are funded by a separate program. These projects are included to help complete a picture of corridor improvements.

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 to 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 County Transportation Agencies (CTAs) 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 and strategies outlined in the Caltrans Strategic Management Plan 2020-2024.[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, Trade Corridor Enhancement Program, and Local Partnership Program[3]

The Road and Repair Accountability Act of 2017, also known as Senate Bill (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 a year 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

[1] https://dot.ca.gov/-/media/dot-media/programs/risk-strategic-management/documents/sp-2020-16p-web-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

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

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) and greenhouse gases (GHG) 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. Projects may include improvements to State highways, local streets and roads, public transit facilities, bicycle and pedestrian facilities, and restoration or preservation work that protects critical local habitat or open space. Projects were scored by the following criteria:

- Safety
- Congestion
- Accessibility
- Economic development, job creation and retention
- Furtherance of State and federal ambient air quality and greenhouse gas emissions reduction standards pursuant to Assembly Bill (AB) 32 and SB 375
- Efficient land use
- Matching funds
- Project deliverability

Additional areas that were considered in the overall evaluation of the projects include:

- Climate Change Resilience and Adaptation
- Protection of Natural and Working Lands, and Enhancement of the Built Environment
- Natural or Green Infrastructure Solutions
- Public Health

SB 1 also establishes the Trade Corridor Enhancement Program (TCEP) to fund infrastructure improvements on federally-designated Trade Corridors of National and Regional Significance, on the National Highway Freight Network as identified in the California Freight Mobility Plan, and along other corridors that have high volumes of freight movement as determined by the

CTC. TCEP will receive approximately $600 million per year in State funding and approximately $200 million will be received from the federal National Highway Freight Program.

SB 1 also establishes the Local Partnership Program (LPP). The objective of LPP is to reward counties, cities, districts, and regional transportation agencies in which voters have approved fees or taxes solely dedicated to transportation improvements or that have enacted fees solely dedicated to transportation. This program intends to balance the need to direct increased revenue to the State's highest transportation needs while fairly distributing the economic impact of increased funding. Besides SB 1 funding, there are many other potential funding programs such as the Bipartisan Infrastructure Law (BIL) and the Inflation Reduction Act (IRA) that may be pursued to fulfill the corridor transportation needs. These programs are listed in Appendix G.

1.3 Corridor Planning History of US 101 North

In 2011, Caltrans District 4 developed a Corridor System Management Plan (CSMP)[4] for the United States (US) 101 North Corridor from the Golden Gate Bridge at the San Francisco/Marin County line to the SR 128 Interchange in Sonoma County. The Corridor Mobility Improvement Account (CMIA) was created by the passage of the Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006, approved by the voters as Proposition 1B in November 2006. CSMPs were developed throughout the State for corridors within which the funding was being used. $4.5 billion in general obligation bond proceeds were deposited in the CMIA for performance improvements on the state highway system or major access routes to the state highway system to provide congestion relief, enhanced mobility, improved safety, and stronger connectivity. The US 101 North CSMP was developed to satisfy the requirements for funding under CMIA and examine the mobility of the freeway in a comprehensive manner based on a performance assessment.

The CSMP provides both a description of the route as of 2010 as well as a future (2030) concept with congestion mitigation strategies, including implementing Intelligent Transportation Systems (ITS), ramp metering, auxiliary lanes, and High Occupancy Vehicle (HOV) lanes. A wide range of projects were included in the 2011 CSMP showing how the improved mobility from previous investments can be preserved within this Corridor.

Since the completion of the 2011 North CSMP, significant growth in vehicular traffic has occurred within the Corridor. A number of projects included in the 2011 CSMP have been completed. The Sonoma-Marin Area Rail Transit (SMART) started local commuter service in August 2017.[5] Since 2011, there have also been additional highway, transit, and

[4] https://dot.ca.gov/caltrans-near-me/district-4/d4-programs/d4-transplanning-local-assistance/d4-office-of-system-and-regional-planning/d4-osrp-documents

[5] http://www.sonomamarintrain.org/node/120

bicycle/pedestrian projects planned and proposed to accommodate growth and travel demand. In 2017, SB 1 legislation named US 101 and the SMART rail corridor in Marin and Sonoma Counties as an example of a congested corridor.

Caltrans in coordination with stakeholders along US 101 had determined that the US 101 North Corridor is an interregional priority for the region and a Comprehensive Corridor Plan (CCP) was developed in February 2018 to document changes from the CSMP, identify multimodal needs, and recommend multi-modal improvement projects. The US 101 North CCP extends the corridor limits north to the Sonoma/Mendocino County line to cover US 101 in its entirety in both counties. The US 101 North CCP served as an update and supplement to the 2011 CSMP bringing a more multimodal approach to corridor analysis by evaluating the needs of all users. As a result, Cycle 1 of the Solutions for Congested Corridor Program (SCCP) funded improvements on US 101 to complete the HOV network in Sonoma County. Since the release of the California Transportation Commission's (CTC) 2018 Comprehensive Multimodal Corridor Plan Guidelines, the CCP was reviewed and updated in 2020 to meet the requirements of the guidelines as a Comprehensive Multimodal Corridor Plan (CMCP). With the update, the remaining HOV lane project for the Marin Sonoma Narrows Project was successfully funded in Cycle 2. In preparation for Cycle 3 in 2022, the CMCP was updated once again to include a broader audience of stakeholders, tribal governments, and the public through an extensive public engagement process to reassess travel needs. During this period, the SMART Windsor Extension project was nominated and submitted for SCCP Cycle 3 by Caltrans.

1.4 Stakeholders

Current CMCP development and its future updates are dependent upon close coordination and participation of major stakeholders along the Corridor. A technical advisory committee (TAC) has been formed to provide strategic guidance throughout document development and to ensure the on-time delivery of the US 101 North CMCP. The TAC includes representatives from the following agencies:

- Caltrans
- MTC
- Transportation Authority of Marin (TAM)
- Sonoma County Transportation Authority (SCTA)
- Sonoma-Marin Area Rail Transit District (SMART)
- Golden Gate Bridge, Highway and Transportation District (GGBHTD)
- Marin Transit
- Petaluma Transit
- Santa Rosa City Bus

The County Transportation Agencies (CTAs) regularly coordinate with local jurisdictions and transit agencies to ensure local concerns are addressed and incorporated into the CMCP.

Document Structure

The US 101 North CMCP includes the following chapters.

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

Long-Term Corridor Planning

It is acknowledged among the stakeholders that one of the main goals for this CMCP is to document funding needs for shovel-ready projects in the Corridor. Therefore, the update is limited in scope and is primarily based on information, data, studies and reports that are already available. This CMCP, however, will also address the longer-term planning needs of the Corridor, and will be revised and updated as needed.

CHAPTER 2: GOALS, OBJECTIVES, AND PERFORMANCE MEASURES

The goals, objectives and performance metrics for the US 101 North CMCP were developed with input from the US 101 North Corridor technical advisory committee (TAC) and represent a consensus that was reached through a collaborative process. Information from a variety of sources helped inform the development of this CMCP. The most notable sources, among others, include:

- Caltrans Strategic Management Plan 2020-2024
- Caltrans Equity Statement
- California Transportation Plan (CTP) 2050
- Climate Action Plan for Transportation Infrastructure (CAPTI), California State Transportation Agency (CalSTA)
- 2018 Comprehensive Multimodal Corridor Plan Guidelines, California Transportation Commission (CTC)
- 2022 Solutions for Congested Corridors Program Guidelines, CTC
- US 101 North Corridor System Management Plan (CSMP), Caltrans, 2011
- Sonoma Comprehensive Transportation Plan (2021) and Countywide Bicycle and Pedestrian Master Plan (2014)
- Plan Bay Area 2050, Regional Transportation Plan (RTP) and the Sustainable Communities Strategy (SCS) for the Nine-County San Francisco Bay Area, MTC
- Bicycle and pedestrian plans in Marin County (Various)
- Caltrans District 4 Bike and Pedestrian Plans
- 2023 California State Rail Plan, Caltrans
- TAM Congestion Management Program (2017)
- TAM Strategic Vision Plan (2017) Sonoma-Marin Area Rail Transit (SMART) Strategic Plan (2019)
- SMART Short-Range Transportation Plan FY 2022 – 2029 (2021)

The Moving Ahead for Progress in the 21st Century Act (MAP-21) transformed the Federal-aid highway program by establishing new requirements for performance management to promote the most efficient investment of Federal transportation funds. Performance management increases the accountability and transparency of the Federal-aid highway program and provides for a framework to support improved investment decision making through a focus on performance outcomes for key national transportation goals. MAP-21 established national Federal-aid Highway Program performance goals as outlined in 23USC §150(b):

- **Safety** - To achieve a significant reduction in traffic fatalities and serious injuries on all public roads.
- **Infrastructure Condition** - To maintain the highway infrastructure asset system in a state of good repair

- **Congestion Reduction** - To achieve a significant reduction in congestion on the National Highway System
- **System Reliability** - To improve the efficiency of the surface transportation system
- **Freight Movement and Economic Vitality** - To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.
- **Environmental Sustainability** - To enhance the performance of the transportation system while protecting and enhancing the natural environment.
- **Reduced Project Delivery Delays** - To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices

These goals overlap and are in alignment with State and regional goals outlined in CTP 2050 and PBA 2050. For example, CTP 2050 goals also focuses on a safe transportation system, high-quality and resilient transportation system, the ability to support a vibrant economy, environmental health, and reducing the negative impacts associated with transportation. Similarly, PBA 2050's guiding principles are in alignment by aiming to create a well-functioning, connected transportation system, reducing the region's environmental footprint, and creating a vibrant economy for all. Travel Model One – the San Francisco Bay Area region's activity-based travel demand model was used to assess existing and future traffic conditions along the Corridor. Travel Model One analyzes daily travel patterns as a result of various transportation scenarios and their investments and land use patterns.

Table 1 lists the corridor goals and objectives. Based on corridor goals and objectives, a series of performance measures were developed collaboratively with State and local public agencies such as TAM and SCTA. While existing sources contain data on a number of metrics, there is not sufficient data to report on every quantifiable performance metric 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.

The US 101 North TAC evaluated proposed transportation projects to determine how strongly the projects support the goals of the CMCP. Projects are rated as "Highly Positive Impact", "Medium Positive Impact", and "Low Positive Impact. Please see Chapter 7 for a detailed description of the project evaluation process.

Table 1: Corridor Objectives and Performance Metrics

Goals	Objectives	Performance Metrics
1. Provide a safe transportation system to all users within the Corridor	Safety Improvement	Number of incidents within the Corridor
2. Reduce recurring freeway congestion and improve freeway efficiency in moving people	Reduce recurring delays on US 101 N Improve productivity of US 101 Increase vehicle occupancy rate	Personal Hours of Delay Travel time savings AM/PM Peak Period Vehicle Miles Traveled AM/PM Peak Period Vehicle Hours Traveled AM/PM Peak Period Congested Travel Time AM/PM Peak Period Vehicle Hours of Delay
3. Improve trip multi-modal reliability within the Corridor	Changes in travel time reliability	Planning Time Index
	Reduce non-recurring delays on US 101	Average number of incidents by type Major incident clearing time
	Improve transit on-time performance	Percentage of transit trips on-time Estimated travel time savings compared with current on-time performance
4. Support an accessible and interconnected multimodal transportation system within the Corridor, encourage mode shift to active, transit	Improved access and connections to existing or future multimodal transportation hubs	Estimated travel time savings compared with current on-time performance
	Reduce gaps in the bicycle and pedestrian network	Percent of bicycle/pedestrian facility lane-miles as a share of total lane-miles by facility classification
	Reduce transit trip time and improve reliability	Time between local stops Overall express route time
5. Reduce pollutants and GHG emissions within the Corridor	Reduction in GHG emissions Reduce Vehicle Miles Traveled (VMT)	Total VMT VMT per capita
	Reduce criteria pollutants	Emissions of criteria pollutants, including carbon monoxide (CO), lead, nitrogen dioxide (NO2), ozone (O3), particulate matter (PM), and sulfur dioxide (SO2)
6. Support economic prosperity	Increase freight efficiency	Per capita delay on freight network
	Promote access to jobs	Share of jobs accessible in congested conditions
7. Efficiently manage transportation assets within US 101 North Corridor to protect existing and future investment	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 and activated
	Ensure good TOS functionality	TOS elements downtime percentage Percentage of TOS elements inspected or maintained within the last five years
8. Efficient Land Use	Supports mixed-use and in-fill development with multimodal choices Supports interconnected streets and corridor access management policies Addresses climate adaptation	Employment to Housing Ratio Low-wage jobs vs. low cost Number of non-single-occupant-vehicle mode share options Number of non-vehicle mode share (e.g. walking, cycling, public transit use, rail use) Priority Development Area

9. Advance equity	Invest in underserved communities Address past harms of transportation projects	Target investments in Equity Priority Communities, SB 535 Disadvantaged Communities, AB 1550 Low-Income Communities, and other burdened populations. Number of projects from Community-based Transportation Plans Document and address concerns through public engagement
10. Address climate change vulnerabilities to transportation facilities	Ensure investments are resilient to climate change	Incorporate climate change resiliency and adaptation to projects in areas of projected Sea Level Rise Ensure multimodal emergency evacuation routes are available

2.1 Statewide Goals and Policies

The following plans provide a framework for California to meet State legislation targets in reducing GHG emissions, improving quality of life, and advancing sustainable transportation. The corridor goals of this CMCP aligns with these statewide plans and pursues implementation of these statewide goals and policies through coordination and collaboration with partner agencies, stakeholders, and the public throughout planning and project development for current and future transportation improvements.

California Climate Scoping Plan

In preparation of the 2022 Scoping Plan update, the California Air Resources Board (ARB) conducted multiple workshops in 2021 to gather stakeholder input and studies to assess ambitious carbon reduction scenarios to achieve net zero emissions by 2045. The plan assessed progress towards achieving at least 40 percent below 1990 emissions by 2030 provided through SB 32 legislation and laid out a path to achieve carbon neutrality for every sector of the economy no later than 2045. For the transportation sector, this means rapidly moving to zero-emission transportation; electrifying the cars, buses, trains, and trucks that now constitute California's single largest source of planet-warming pollution. The plan charts a path to a future where race and class are no longer predictors of disproportionate burdens from harmful air pollution and climate impacts. Additionally, the plan ensures our communities are provided with sustainable options for walking, biking, and public transit to reduce reliance on cars and their associated expenses. As stated in Governor's Executive Order (EO) D-55-18, achieving carbon neutrality by 2045 should be considered the minimum level of GHG reductions needed in the State, and more rapid progress towards carbon neutrality prior to 2045 may be considered. Early actions taken now to reduce emissions from transportation, vehicles, and buildings, will not only help ensure that the State is on track to meet its ambitious 2030 climate goals, but will also reduce the risk of missing the carbon neutrality target.

California Transportation Plan 2050

Adopted in 2021, the California Transportation Plan 2050 (CTP 2050) presents a vision for California's future transportation system and articulates strategic goals, policies, and recommendations to improve multimodal mobility and accessibility while reducing greenhouse gas emissions. The Plan is committed to addressing the immediate threats of COVID-19, and long-standing systemic injustice, as well as California's firm commitment to combatting climate change and the many risks it poses to our infrastructure and communities. SB 391 requires CTP 2050 to address how the State will achieve maximum feasible emissions reductions in order to attain a statewide reduction of GHG emissions to 1990 levels by 2020 and eighty percent below 1990 levels by 2050. CTP 2050 demonstrates how advancements in clean fuel technologies, continued shift toward active travel, transit, and shared mobility, more efficient land use and development practices, and continued shifts to telework can collectively reduce transportation emissions to support these goals. CTP 2050 also reinforces long-held values such as improving system safety, improving mobility and accessibility, advancing environmental health and justice, and enhancing quality of life.[6]

Climate Action Plan for Transportation Infrastructure

Developed and adopted in 2019 by CalSTA, the Climate Action Plan for Transportation Infrastructure (CAPTI)[7] is an overarching framework and statement of intent for aligning State transportation infrastructure investments with California's climate, health, and social equity goals with priority given to "fix-it-first" as stated in SB 1. CAPTI serves as statewide policy to meet the Newsom Administration's climate goals and directs CalSTA, Caltrans, and the CTC to address climate change as described in EO N-79-20 and EO N-19-19.

The CAPTI Guiding Principles are:

- Building toward an integrated, statewide rail and transit network
- Investing in networks of safe and accessible bicycle and pedestrian infrastructure
- Addressing social and racial equity by reducing public health and economic harms and maximizing community benefits
- Building toward an integrated, statewide rail and transit network
- Investments in light, medium, and heavy-duty zero-emission vehicle (ZEV) infrastructure
- Making safety improvements to reduce fatalities and severe injuries of all users towards zero
- Promoting projects that do not significantly increase passenger vehicle travel
- Promoting compact infill development while protecting residents and businesses from displacement

[6] https://dot.ca.gov/programs/transportation-planning/division-of-transportation-planning/state-planning-equity-and-engagement/california-transportation-plan

[7] https://calsta.ca.gov/-/media/calsta-media/documents/capti-2021-calsta.pdfation Infrastructure

- Protecting natural and working lands
- Assessing physical climate risk

CAPTI strategies include cultivating and accelerating sustainable transportation by leading with State investments and advancing State transportation leadership on climate and equity through improved planning and project partnerships. CAPTI efforts support CTP 2050 goals to meet State climate change targets, mandates, and policies. CAPTI is also closely aligned with the Caltrans 2020-2024 Strategic Management Plan which showcases a fundamental shift for Caltrans to lead climate action as a top priority. CAPTI will also be a living document that will evolve over time.

CHAPTER 3: CORRIDOR OVERVIEW

3.1 Corridor Description and Limits

The US 101 North Corridor is a north-south route starting at the midspan of the Golden Gate Bridge (Marin County) and ending at the Sonoma/Mendocino County line north of the State Route (SR) 128 Interchange in Cloverdale. The Corridor travels through two counties and is approximately 83 miles in length. As there are no parallel highways and few parallel surface roads, US 101 is the main north-south arterial connecting communities throughout Marin and Sonoma Counties. US 101 North intersects SRs 1, 37, 131 and Interstate 580 in Marin County and SRs 12, 116, and 128 in Sonoma County. See Figure 1 for the location of the Corridor. US 101 is the principal freeway and the primary north-south freight route linking Sonoma and Marin Counties to San Francisco County to the south and Mendocino County to the north.

3.2 Route Designations

Through suburban Sausalito, Corte Madera, San Rafael and Novato in Marin County, US 101 North is an eight-lane freeway. US 101 narrows from six to four lanes in northern Marin County. Traveling north through portions of southern and central Sonoma County, it is a six-lane freeway. US 101 narrows to four lanes as it passes through the small towns of Windsor, Healdsburg, and Cloverdale in northern Sonoma County. Except for the portion of northbound and southbound High Occupancy Vehicle (HOV) lanes that will be completed in summer 2025 between northern Novato and the Sonoma/Marin County line, there are HOV lanes between SR 1 in Mill Valley and Atherton Avenue in Novato (Marin County) to Old Redwood Highway in Windsor (Sonoma County). Upon completion of the Marin-Sonoma Narrows HOV Project, the Corridor will have 55 miles of continuous northbound and southbound carpool lanes.

The US 101 North Corridor serves as the primary freight route through Marin and Sonoma Counties, providing access to other Bay Area freight corridors via I-580 and SR 37, and serves as a key access route to San Francisco and coastal Northern California. As part of the National Highway System (NHS) and a designated Surface Transportation Assistance Act (STAA) route,[8] large trucks are allowed to operate on US 101. US 101 acts as a multimodal freight route, connecting several maritime ports and airport facilities, and paralleling rail. The Corridor's Freight System is described in Chapter 4.

[8] Surface Transportation Assistance Act (1982) allows large "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.

US 101 is designated as a California Interregional Road System (IRRS) route. The IRRS defines a series of interregional State highway routes that provide access to the State's economic centers, major recreation areas, and urban and rural regions.

The 2021 Interregional Transportation Strategic Plan (ITSP) identifies eleven Strategic Interregional Corridors statewide. US 101 and the SMART passenger rail and multi-use pathways are part of the San Jose/San Francisco Bay Area – North Coast Corridor and are also identified as Priority Interregional Facilities that are critical in supporting interregional transportation. Transportation projects on these facilities are expected to be the focus of the Interregional Transportation Improvement Program (ITIP) investment in the future.[9]

Table 2: US 101 North - Route Characteristics

National Highway System	Non-Interstate Strategic Highway Network (STRAHNET) Route
Scenic Highway	No, however a short portion of the route near SR 37 is eligible.
Interregional Road System	Yes
California Road System Functional Classification	Other Freeway or Expressway
Goods Movement Route	National Freight Network – Primary Route & Other Route, Multimodal Freight Route
Truck Designation	Primary Highway Freight System Route, through Marin County and the southern portion of Sonoma County, with the designation of "Terminal Access" [10] Surface Transportation Assistance Act (STAA) Route
Metropolitan Planning Organization/ Regional Transportation Planning Agency	Metropolitan Transportation Commission (MTC)
Local Agencies	Cities of Sausalito, Mill Valley, Corte Madera, Larkspur, San Rafael, Novato, and unincorporated Marin County & Cities of Petaluma, Cotati, Rohnert Park, Santa Rosa, Healdsburg, Windsor, Cloverdale, and unincorporated Sonoma County
Congestion Management Agency/ County Transportation Agency	Transportation Authority of Marin (TAM) and Sonoma County Transportation Authority (SCTA)
Air District	Bay Area Air Quality Management District & Northern Sonoma County Air Pollution Control District
Native American Tribes	Four federally-recognized tribes are located near the US 101 North Corridor in Sonoma County[11]
Terrain	Rolling and flat, with rugged terrain near the northern terminus in Sonoma County

[9] Caltrans five- year ITIP is prepared pursuant to Government Code 14526, Streets and Highways Code Section 164, and the California Transportation Commission's (CTC) State Transportation Improvement Program (STIP) Guidelines. See Caltrans Interregional Transportation Strategic Plan (2021): https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/system-planning/systemplanning/2021-itsp-oct21-a11y.pdf

[10] Terminal Access designated routes are "T" signed routes where STAA trucks may exit off the Interstate and travel onto State and local routes

[11] See Section 3.9 Native American Tribes, for additional information

Land Use	Urbanized and rural in Marin County and Sonoma County with regionally-recognized priority development areas clustered around rail stations and certain highway facilities.

Figure 1: US 101 North Corridor

3.3 Demographics and Land Use

The US 101 North Corridor traverses two counties and a variety of land uses that include national, State and regional parks, agricultural lands, and urban and rural communities. The corridor terrain shifts between rolling hills and flatlands interspersed with several waterways. The arterial road network is discontinuous due to topography; areas west of the Corridor have generally more rolling terrain, and San Pablo Bay is situated east of the Corridor through most of Marin County. The cities of Sausalito, San Rafael, Novato, Petaluma, and Santa Rosa are the main urban centers along the Corridor.

3.3.1 Marin County

Land Use

In Marin County, US 101 travels through urban areas in the cities of Sausalito, Corte Madera, San Rafael, and Novato. It traverses multiple urbanized and suburbanized areas as well as various State/Regional Parks, open lands, and commercial and light industrial areas. Most of Marin's populated areas are adjacent to US 101, in the eastern part of the County. Since a high percentage of the population lives within three miles of US 101/SMART, the Corridor serves as the County's primary route for northbound and southbound travel and freight movement. US 101/SMART in Marin County also serves as a connection for northern counties to access regional job centers in Oakland via the Richmond-San Rafael Bridge/transit connections at Bettini Transit Center in San Rafael, and San Francisco via the Golden Gate Bridge/ ferry service at Larkspur Landing.

Several of the Marin SMART Station areas are in communities originally developed to be oriented around rail service, creating smaller, grid streets and more walkable neighborhoods. Examples include Downtown San Rafael and Downtown Novato. Other SMART Station areas in Marin are in suburban communities developed around suburban commercial and residential developments. Examples include Novato San Marin, Novato Hamilton, and Marin Civic Center Stations. The SMART Larkspur Station area is unique in that it was considered a pioneering "mixed use" development in the early 1980s, though it prioritizes automobiles in many of the mixed-use features.

With the San Pablo Bay and San Francisco Bay located to the east and rolling-to-steep terrain to the west, the arterial network has limited east-west connectivity and limited north-south arterials due to the topography. There is also limited access to a number of communities such as Sausalito, Mill Valley, Marin City, the Tiburon Peninsula, Bel Marin Keys, and others as right-of-way available for motor vehicle transportation infrastructure expansion is limited.

Demographics

After San Francisco County, by land area, Marin County is the second smallest county in the Bay Area (520.31 square miles). It is the second least populated county in the San Francisco Bay

Area after Napa County, with a 2020 US Census estimate of 262,321[12]. The population density is approximately 504 people per square mile, compared to 2,281.8 and 18,634.6 in Alameda and San Francisco counties, respectively (2019 American Community Survey Census estimates). The population of Marin County has increased slightly between 2010 and 2019[13] and it is important to note that seniors (persons over 65 years of age) make up 21.6 percent of the county population. By comparison, seniors represent 13.5 percent and 15.4 percent of the populations of Alameda and San Francisco Counties, respectively.

while employment is predicted to decrease by 14 percent Marin County is expected to absorb 2 percent of Bay Area housing growth and lose 1 percent of Bay Area job growth by 2050[14]. Marin County currently employs 128,800 people with a 2.4 percent unemployment rate as of March 2022[15](2022 EDD).

A majority of residents in Marin County work within the county (85,839) followed by San Francisco (28,844), Sonoma (4,739), and Alameda (3,791) counties.[16]Marin has a median household income at approximately $118,000[17] and median home value of $1.2 million (January 2022)[18]. 6.7 percent of residents are living in poverty.[19]

3.3.2 Sonoma County

Land Use

At a length of 56 miles in Sonoma County, US 101 traverses the cities and rural lands of Sonoma County. It serves as the County's primary north-south highway linking to Marin County and San Francisco County to the south and Mendocino County to the north. Much of the US 101 Corridor was constructed as a rural highway in the 1950s and 1960s.

Many communities in Sonoma County were originally developed around the railroad, resulting in many grid-patterned local streets, creating mixed-use walkable neighborhoods. Examples include the cities of Cloverdale, Healdsburg, Santa Rosa (Railroad Square area), and Petaluma. Several communities along the corridor were developed without operating rail service and began developing a more transit-oriented land use pattern in anticipation of the return of passenger rail service. Examples of these types of land use transitions include the cities of Windsor, Rohnert Park and Cotati.

[12] Marin County Profile, Census.gov
[13] https://data.census.gov/cedsci/profile?g=0500000US06041
[14]Plan Bay Area 2050 Forecasting Modeling Report
[15] 2022 EDD Unemployment Rate by County
[16] http://www.marineconomicconsulting.com/RegionalReports/Marin_County/Commutes_Marin_County.pdf
[17] https://www.census.gov/quickfacts/fact/table/marincountycalifornia,US
[18] https://www.realtor.com/realestateandhomes-search/Marin-County_CA/overview
[19] https://data.census.gov/cedsci/table?g=0500000US06041&tid=ACSST1Y2019.S1701

Sonoma County's SMART stations were developed in communities oriented around the US 101, where most of the county's population resides. There are six stations along the corridor from Petaluma to Sonoma County Airport. There are currently four future stations planned at Petaluma North, Windsor, Healdsburg, and Cloverdale. Close proximity to the US 101 in addition to the ongoing development of a multiuse path and bicycle and pedestrian network will facilitate multimodal travel to SMART stations.

Sonoma County is bounded on the west by the Pacific Ocean and has 76 miles of coastline. The southern edge of Sonoma County comprises the northern shore of San Pablo Bay between the Marin County border and the Solano County line. The county stretches from the Pacific Ocean in the west to the Mayacamas Mountains in the east and is geographically the largest county in the Bay Area. With rugged terrain to the east and west, population settlement patterns have largely followed geographic constraints, and most growth is centered in cities along the US 101 Corridor. The remainder of the County is generally rural, including vineyards and orchards. The Russian River flows through a large portion of the County, traveling generally south from Mendocino County and west toward the Pacific Ocean through West County. The northern terminus of the US 101 North Corridor is less developed and passes through rugged terrain.

There are nine incorporated cities: Cloverdale, Cotati, Healdsburg, Petaluma, Rohnert Park, Santa Rosa, Sebastopol, Sonoma, and the Town of Windsor, seven of which are located along the US 101 Corridor. The corridor provides access to the two incorporated cities (Sebastopol and Sonoma) not directly on US 101. Major services, educational facilities, shopping centers, and approximately 75 percent of the total population are in the corridor-adjacent cities.

Demographics

Sonoma County covers a relatively large geographic area of over 1,750 square miles, with a population of approximately 488,863 people.[20] By 2050, Sonoma County's number of households are predicted to grow by 17 percent (from 2015), while employment is predicted to grow by 14 percent.[21] Due to increases in population and jobs, countywide travel is expected to increase by more than one-third.

The County's median household income ($87,828) is slightly higher than the State's median income, but lower than any other county in the San Francisco Bay Area.[22] Sonoma County's population density is approximately 310 people per square mile with Santa Rosa as the most populous city in the county and the fifth most populous city in the San Francisco Bay Area[23]

[20] Sonoma County Census Profile, 2020 Census
[21] Plan Bay Area 2050 Forecasting Modeling Report
[22] US Census, ACS 2019 1 Year Estimate
[23] US Census 2010, 2016 estimate

3.4 Major Traffic Generators and Travel Mode Share

Linking San Francisco to Santa Rosa and the North Coast, US 101 serves local and regional traffic, giving commuters access to major employment centers, supporting, interregional travel, and goods movement, and providing access to medical, educational institutions, and recreational attractions.

The CMCP presents an overview of not only the US 101 freeway, but also transit, active transportation facilities, parallel and perpendicular arterials, and other corridor characteristics.

3.4.1 Commute Modes and Times

As shown in Table 3, the automobile is the dominant commute mode in the San Francisco Bay Area, accounting for nearly 84 percent of all commute trips. Both Marin and Sonoma Counties show reliance on the automobile equal to or greater than the Bay Area average and less on the use of more sustainable modes of transportation for commute purposes than the regional average, similar to other less urbanized counties. San Francisco, in contrast, shows the lowest share of auto use at around 37 percent with significant higher bicycle and pedestrian commuters.

Denser mixed-use urbanized areas, such as those in San Francisco and parts of Oakland and San Jose, generate fewer motor vehicle trips per capita than low-density, dispersed counties such as Marin, Sonoma, and other Bay Area Counties. Varying commute distances to employment centers also impact traffic and maintaining a balance between housing and jobs is optimal for lowering the impact to highways and local roads. Trip generators such as major employers, schools, shopping centers, and town centers in both counties are primarily within a few miles of the US 101 corridor.

Table 3: Commute Characteristics

COMMUTE MODE (percent)	MARIN COUNTY	SONOMA COUNTY	BAY AREA
Car, Truck, Van	70.1	84.7	74.4
Carpool	7.5	10.4	9.8
Transit	7.9	1.6	5.3
Walk	3.2	2.5	3.4
Bicycle	1.2	0.7	1.3
Work from Home	16.8	9.1	10.2
Work in County	66.0	84.7	80.0
Work Out of County	33.4	14.1	28.7
Mean Travel Time (minutes)	31.8	25.6 m	31.1

Data Source: https://data.census.gov/ (2020 American Community Survey 5-year estimates)

3.4.2 Marin County

Trip Generators

The Marin County segment of US 101 runs from the Golden Gate Bridge up the east side of the county, which is bordered by San Francisco Bay. The largest incorporated cities in the county

are San Rafael and Novato. Others are Belvedere, Corte Madera, Fairfax, Larkspur, Mill Valley, Novato, Ross, San Anselmo, San Rafael, Sausalito, and Tiburon. Notable employment centers include Downtown Novato, Hamilton Air Force Base Redevelopment Area, Terra Linda (north San Rafael), Smith Ranch, downtown San Rafael and southeastern San Rafael, as well as areas in Larkspur, Corte Madera and northern Sausalito.[23] The County of Marin administration, another major employer, with approximately 2,400 employees, is housed in a landmark Frank Lloyd Wright Building in the Terra Linda area of San Rafael.

Staff, customers, and freight deliveries at large shopping malls in Mill Valley, Larkspur, Corte Madera, and San Rafael (Terra Linda), and downtown commercial areas in San Rafael, Mill Valley, San Anselmo, and Novato all impact the US 101 corridor. Because of the county's steep terrain, there are no driving routes that continuously parallel the freeway, and surface streets linking the county's urbanized areas can be circuitous. Bike paths face similar topographic challenges.

Many educational and medical institutions are also located along the Corridor, including the Golden Gate Baptist Theological Seminary, College of Marin and College of Marin's Indian Valley Campus, San Francisco Theological Seminary and Dominican University, as well as Marin General Hospital, Novato Community Hospital, and Kaiser Medical Center in San Rafael.

The west side of the county is primarily open space, parks, agriculture, and a few small towns. Marin County's popular natural areas, including Muir Woods, Marin Headlands, Stinson Beach, the Point Reyes National Seashore, and Mount Tamalpais, attract weekend recreational visitors from much of the San Francisco Bay Area, primarily from San Francisco. Marin County's roads, paths, and trails are very popular with San Francisco cyclists and tourists bicycling across the bridge. Golden Gate National Recreation Area,[24] along the coast of Marin and San Francisco Counties, is one of the most heavily used National Recreation Areas in the country with approximately 15 million annual visitors. Additional recreational trip generators include Mt. Tamalpais State Park and National Monument, and various State and regional parks and beaches. These areas are generally accessed through southern Marin County via US 101, Sir Francis Drake Boulevard, and SR 1. Many visitors to the popular wine growing regions in both Sonoma and Napa Counties use US 101 to reach their destinations.

Below is a list of major employers and other trip generators in county that influence travel within the Corridor.

Top employers in the county are:

- County of Marin
- Kaiser Permanente
- Marin Health Medical Center
- Fireman's Fund Insurance
- Autodesk
- The Village at Corte Madera

- Town Center Corte Madera
- Biomarin
- College of Marin
- Glassdoor, inc.

Multi-Modal Options

Marin County commuters who work in the county drive approximately 17 miles per day and non-resident workers drive approximately 49 miles per day. Meanwhile, the average Bay Area driver commutes 15.3 miles per day.[24] The county mean travel time to work is 31.8 minutes.

Marin's General Plan, the 2007 Countywide Plan (updated 2015) states "This County transportation vision calls for an integrated, multimodal system that relies on travel by bus, rail, ferry, bicycle, and foot to supplement and supplant automobile use. Increasing transportation choices can help reduce traffic congestion and improve air quality."

Each city in Marin County and its unincorporated area has its own Climate Action Plan[25] since climate-influenced challenges are different depending on the location and elevation of the town. More information on Climate Adaptation can be found in Section 3.8.2 Climate Change.

Transit is provided by an extensive network of local and express buses. Marin Transit provides local bus services, including fixed route services to provide connections within the county. Golden Gate Transit buses connect Marin locations with downtown San Francisco and Sonoma County destinations. Golden Gate Ferries travel from Larkspur and Sausalito to the Ferry Building in San Francisco. Sonoma-Marin Area Rail Transit (SMART) provides passenger service between Larkspur and Sonoma County Airport stopping at all Marin and Sonoma cities along the US 101 corridor. In conjunction with SMART, pedestrian and bicycle trails are being constructed along the rail route. Transit is discussed in more detail in Chapter 4.

3.4.3 Sonoma County

Sonoma is the largest county in the Bay Area, with over 2,600 miles of public roadway countywide, which is far greater than other counties in the region including those with much higher populations. Over half of the roadway mileage is in the unincorporated county. Caltrans owns and maintains more than 230 centerline miles of highway, with more than three-quarters of it in the rural portions of the county. The State highways are among the most heavily traveled routes (e.g., Highway 101), and because of this, carry over half of the daily traffic, measured in vehicle miles traveled (VMT).

[24] Bay Area Air Quality Management District, Vehicle Miles by Jurisdiction (2015)
[25] https://marinclimate.org/climate-action-plans/

Trip Generators

US 101 runs roughly north/south through a wide valley between the Mayacama Mountains on the east and the coastal range on the west. Approximately 500,000 people live in Sonoma County. More than half of the population resides in cities along the US 101 corridor, where government facilities, major health services, and shopping centers are also located. Development in the unincorporated areas is far more dispersed and is spread throughout a very large geographic area.

Major institutional trip generators include County and City government offices, Sonoma State University in Rohnert Park, Santa Rosa Junior College, Charles M. Schulz–Sonoma County Airport in Santa Rosa, Santa Rosa Memorial Hospital, Kaiser Medical Center in Santa Rosa, as well as industrial zones throughout Santa Rosa. Sonoma County has a high concentration of small businesses predominantly agriculture, tourism, and retail services which are dispersed throughout the County.

Recreational and tourism traffic generators throughout the County also represent dispersed jobs and goods movement. These include four-hundred-plus Sonoma County wineries, resorts and restaurants, regional and State parks, historic towns, and resort areas such as Lake Sonoma and Guerneville along the Russian River. Sonoma is the largest producer of California wines, home to almost 60,000 acres of vineyards and more than 400 wineries. Within the County are 17 American Viticultural Areas.[26] The hospitality and tourism of Sonoma's wine industry comprises one out of ten jobs and provides almost $150 million in revenue for local and State governments.[27] Tourism is highest during weekends and summer months.

Moving Forward 2050 (2021)[28] is Sonoma County's comprehensive transportation plan. It states: "Travel in Sonoma County is dominated by the private automobile and is expected to remain so into the future if transportation policy, funding, and attitudes do not change." Also, "Traffic volumes and congestion continue to increase in Sonoma County. Increased traffic congestion can lead to lost productivity due to increased delay, increased fuel consumption and pollution, reduced accessibility, longer emergency response times, higher traffic collision rates, and impacts to quality of life."

The stated vision is to transition the transportation network to zero emissions by 2050. SCTA commissioned *The Sonoma County Travel Behavior* Study [29] in 2020 (Fehr and Peers). The study found that the largest number of bi-directional vehicles (roughly 81,000) was observed on U.S.

[26] http://www.sonomacounty.com/destinations/wine-regions

[27] Sonoma County Economic Development Board, Sonoma County Indicators (2016): http://edb.sonoma-county.org/documents/sotc_2016/2016_Abridged_Indicators_Web_Draf_ADA.pdf

[28] https://scta.ca.gov/wp-content/uploads/2021/09/SCTA-CTP21_v8.pdf

[29] https://scta.ca.gov/wp-content/uploads/2020/02/Sonoma_TBS_2-7-2020_web.pdf

101 at the Sonoma/Marin County Line, and AM and PM peak period traffic counts each comprised roughly 25 percent of total daily traffic at county gateways.

The study found this data about the daily trip generating areas within Sonoma County:

- 44% of Sonoma County vehicle trips start or end within the City of Santa Rosa
- 15% of Sonoma County vehicle trips start or end within the City of Petaluma
- Roughly 517,000 (31 percent of total Sonoma County vehicle trips) vehicle trips start and end within the City of Santa Rosa on an average weekday

The five largest daily trip generators are: 1. Rohnert Park West Side Commercial – roughly 41,000 daily trip origins 2. Downtown Santa Rosa & Plaza Mall – roughly 35,000 daily trip origins 3. Sonoma Central – roughly 22,000 daily trip origins 4. Santa Rosa Airway Industrial Area – roughly 21,000 daily trip origins 5. Rohnert Park Expressway Commercial – roughly 21,000 daily trip origins. Please refer to the study for more detailed travel pattern data.

Top employers in the county are:

- County of Sonoma
- Kaiser Permanente
- Santa Rosa Junior College
- Santa Rosa Memorial Hospital
- Graton Resort and Casino (Rohnert Park)
- Sonoma State University
- St. Joseph Healthcare System
- City of Santa Rosa
- Keysight Technologies

Multi-Modal Options

As a result of dispersed land use and an extensive road network, travel in Sonoma County is heavily oriented towards private vehicles, with a higher vehicle ownership rate than the Bay Area average (See Table 3 above).

The Shift Sonoma County Low Carbon Transportation Action Plan, a collaboration between Sonoma County, the SCTA and the Regional Climate Protection Authority (RCPA), offers solutions to reduce the County's GHG emissions from transportation by half, while providing more mobility options to residents.[30] Building on the countywide Comprehensive Transportation Plan and Regional Climate Action Plan, Shift Sonoma explores barriers, opportunities, and actions to implement transportation demand management programs, shared mobility, and expand the use of electric vehicles. Since the Plan's implementation in Fall

[30] http://scta.ca.gov/wp-content/uploads/2017/09/Shift-Sonoma-Plan_9-27-17-web.pdf

2017, the County has been pursuing an electric bike-share program centered around the SMART stations from north of Santa Rosa to Larkspur (Marin County).

Sonoma County Transit provides local and intercity public transportation services in Sonoma County. SMART provides passenger service from Sonoma County Airport to Larkspur, near the Larkspur Ferry terminal. In conjunction with SMART, pedestrian and bicycle trails are also being constructed along the rail route. Travelers to Marin and San Francisco destinations also use Golden Gate Transit. Transit is discussed in more detail in Chapter 4.

3.5 Plan Bay Area 2050

Plan Bay Area 2050 (PBA 2050) is the Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) for the nine-county San Francisco Bay Area. It is a long-range plan used to chart the course for future growth of the region. Plan Bay Area 2050 focuses on four key issues—economy, environment, housing, and transportation. MTC and the Association of Bay Area Governments (ABAG), working with local partners and the public, adopted PBA 2050 on October 21, 2021.

PBA 2050 represents a financially constrained plan and serves as a "roadmap" for the region's future by articulating policies and investments necessary to advance the goal of a more affordable, connected, diverse, healthy, and vibrant Bay Area. PBA 2050 identifies a path for future investment – including infrastructure to improve our transportation system and to protect communities from Climate Change, including rising sea levels – as well as addressing equity in realizing future growth for housing and jobs. PBA 2050 must also be in conformity with regional and national air quality standards. The plan reflects a shared vision to be implemented through partnerships with State, local, and federal governments, as well as businesses and non-profit organizations. All projects funded in the region need to be consistent with PBA 2050.

MTC updated their regional growth framework by refreshing Priority Development Areas (PDAs) and Priority Conservation Areas (PCAs) as well as introducing a new designation called Priority Production Area (PPA). PPAs are defined as 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 nominated for inclusion into PBA 2050. There is one PPA in Sonoma County, Cotati PPA, and no PPAs in Marin County. The updated PDAs and PCAs and the newly designated PPAs will help focus new housing and job growth in the region.

PBA 2050 analyzes four types of Growth Geographies: PDAs, PPAs, Transit-Rich Areas (TRA), and High-Resource Areas (HRA) which are used to guide where future growth in housing and jobs would be focused under the plan's strategies over the next 30 years. PDAs are places near public transit that are planned for new homes, jobs, and community amenities to help Bay Area residents live a car-free or car-light lifestyle. PDAs are locally nominated growth geographies and are broken up into two different types, Transit-Rich PDAs and Connected Community PDAs.

TRAs are areas near rail, ferry or frequent bus service that were not already identified as PDAs where 50 percent of the land area is within a 1/2 mile of an existing rail station, ferry terminal with bus or rail service, or a bus stop with peak service frequency of 15 minutes or less. HRAs are State-identified places with well-resourced schools, access to jobs, and several open spaces that may have historically rejected more housing growth. These areas meet the baseline transit threshold of bus service with peak headways of 30 minutes or better.

3.5.1 Priority Development Areas

Marin County has for decades preserved its open space and managed growth through city-centered policies and focused development along the urbanized US 101 Corridor. There are four identified PDAs within the County. These areas have been designated as such due to their proximity to goods, services, local and regional bus service, and passenger rail. PDAs in Marin County also have mix-use neighborhoods consisting of commercial, residential uses and single-family houses and multi-family housing.

Sonoma County limits sprawl through voter-approved urban growth boundaries (UGB), which have been in effect for decades. Local communities promote urban infill and encourage redevelopment in areas that can absorb higher densities through robust planning policies. There are fifteen PDAs identified in Sonoma County along or near the US 101 North Corridor. Many of the PDAs are concentrated around the cities and towns of Petaluma, Rohnert Park, Windsor, and Cloverdale. Additionally, many of these PDAs have SMART stations and are served by Sonoma County Transit.

Marin County PDAs

- Urbanized Corridor (Unincorporated Marin)
- South East San Rafael Canal (San Rafael)
- Downtown (San Rafael)
- Northgate PDA (San Rafael)

Sonoma County PDAs

- Lakeville (Petaluma)
- Corona (Petaluma)
- Sonoma Mountain Village (Rohnert Park)
- Downtown and Cotati Depot (Cotati)
- Gavenstein Corridor (Cotati)
- Central Rohnert Park
- Santa Rosa Avenue Priority Development Area (Unincorporated Sonoma)
- Mendocino Avenue/Santa Rosa Avenue Corridor
- Roseland (Santa Rosa)
- Sebastopol Road Corridor (Santa Rosa)
- Downtown Station Area (Santa Rosa)

- Northern Santa Rosa Station
- Airport Industrial Specific Plan (Unincorporated Sonoma)
- Station Area/Downtown Specific Plan (Windsor)
- Downtown/SMART Transit Area (Cloverdale)

3.5.2 Priority Conservation Areas and Protected Lands

PBA 2050 identifies regionally significant PCAs as lands in need of protection due to pressure from urban development. PCAs are identified through consensus by local jurisdictions and park and open space districts.

Marin County has the highest percentage of protected land within the Bay Area (almost 60 percent, according to the Bay Area Open Space Council). Marin County covers a geographic area of approximately 525 square miles, with nearly 400 square miles of identified PCAs. Approximately 225 square miles are publicly-owned protected areas, which include 195 miles of regional trails. There are 238 square miles of farmland; 130 square miles or approximately 55 percent of this farmland is protected.[31]

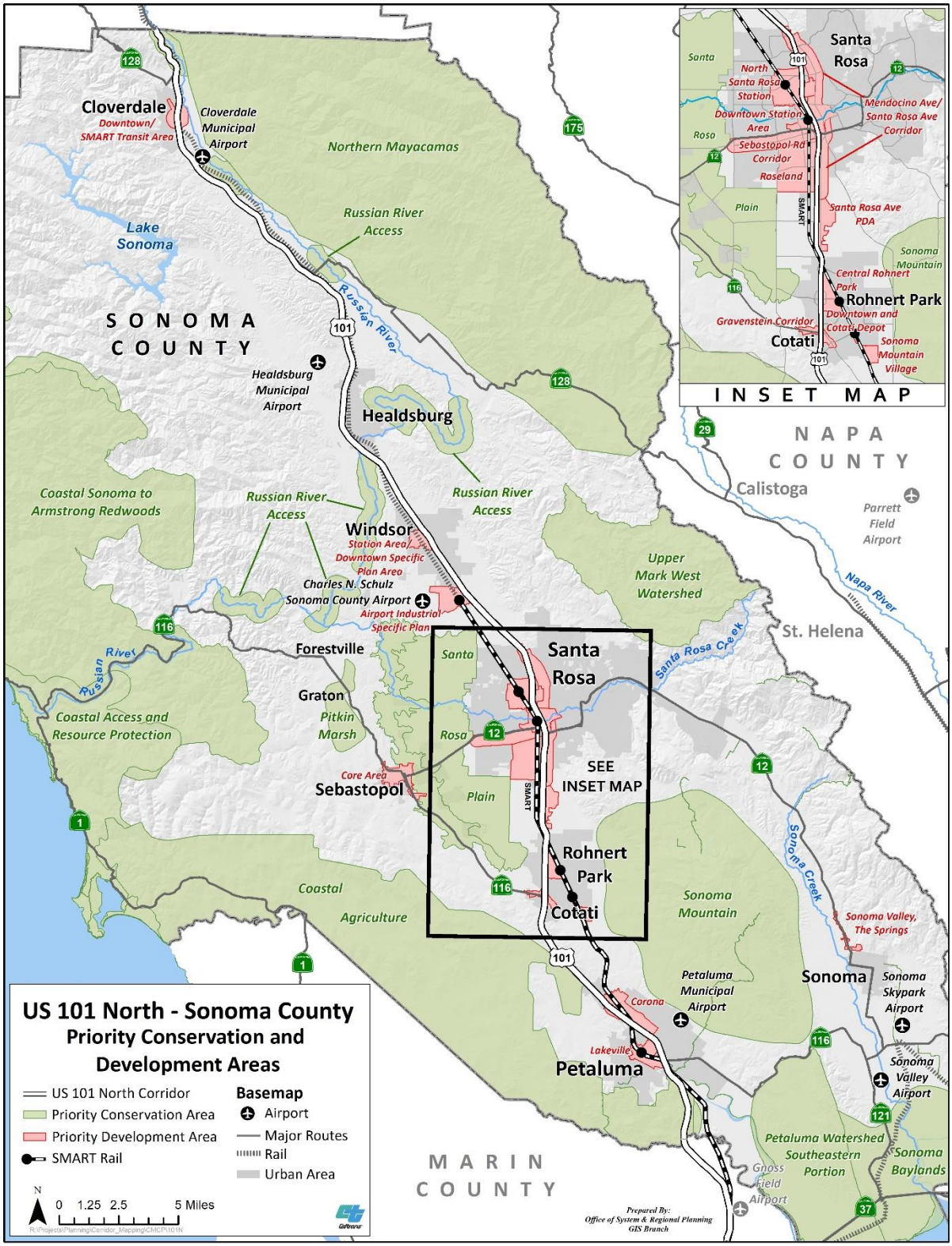
In Sonoma County, there are 870 square miles identified as PCAs, with 160 square miles that are publicly-accessible protected areas and 72 miles of regional trails. Sonoma County has 902 square miles of farmland; 179 square miles or approximately 20 percent of this farmland is protected.[32]

In 1990, Sonoma County residents created the Sonoma County Agricultural Preservation and Open Space District to permanently protect greenbelts, scenic view sheds, farms and ranches, and natural areas of Sonoma County. Voters also approved Measures A and C to create the Open Space District and enable a quarter-cent sales tax to fund its operations until 2011. The measure was renewed in 2006, ensuring the District will be funded through 2031.[33] The following figures show PDAs and PCAs within the US 101 North Corridor.

[31] Bay Area GreenPrint, Marin County: https://www.bayareagreenprint.org/report/
[32] Bay Area GreenPrint, Sonoma County: https://www.bayareagreenprint.org/report/
[33] Sonoma County Agricultural Preservation and Open Space District: http://www.sonomaopenspace.org/

Figure 2: Priority Development Areas and Priority Conservation Areas in Marin County

Figure 3: Priority Development Areas and Priority Conservation Areas in Sonoma County



3.5.3 Equity Priority Communities

MTC uses the term Equity Priority Community (EPC) to represent a cross section of the population that is considered vulnerable in current conditions and may potentially be impacted by future growth and urban development. The data has been conveyed via the use of census tracts along the US 101 North Corridor. [34] MTC's EPC is a regional designation while other State-designations, and thresholds may place a greater emphasis on other factors and descriptors that the regional designation does not. PBA 2050 defines these communities as having a high concentration of minority and low-income households, in addition to three or more factors listed below.[35] The eight factors to identify EPCs 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

Figures 4 and 5 show the EPC designations for Marin and Sonoma Counties, respectively. Many of these areas have limited transportation access to vital resources like health services and shopping. Residents are less likely to own a vehicle and speak a language other than English at home.

Several community-based transportation plans have been developed for these EPCs. The community-based transportation plans further explain demographics, transportation access, where gaps in the network exist, and strategies or solutions to address these gaps. These plans were developed between local residents, community organizations and transportation agencies to improve mobility options for low-income communities. Additionally, the plans include identification of possible funding sources, a list of stakeholders to implement the plan, and documented results of community outreach.

Community-based Transportation Plans (Marin County):

- Marin City[36]
- Novato[37]

[34] 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
[35] http://www.planbayarea.org/2040-plan/plan-details/equity-analysis
[36] https://mtc.ca.gov/digital-library/5023456-marin-city-community-based-transportation-plan
[37] https://mtc.ca.gov/digital-library/5022441-novato-community-based-transportation-plan

- San Rafael-Canal Neighborhood[38]

Community-based Transportation Plans (Sonoma County):

- Healdsburg[39]
- Lower Russian River[40]
- Santa Rosa-Roseland[41]
- The Springs (Central Sonoma Valley)[42]

[38] https://mtc.ca.gov/digital-library/5023084-canal-neighborhood-community-based-transportation-plan-june-2022
[39] https://mtc.ca.gov/sites/default/files/CBTP Healdsburg 2009.pdf
[40] https://mtc.ca.gov/sites/default/files/CBTP Lower Russian River 2009.pdf
[41] https://mtc.ca.gov/sites/default/files/CBTP%20Roseland%202007.pdf
[42]https://mtc.ca.gov/sites/default/files/CBTP%20The%20Springs%20%28Central%20Sonoma%20Valley%29%202010.pdf

Figure 4: Equity Priority Communities in Marin County

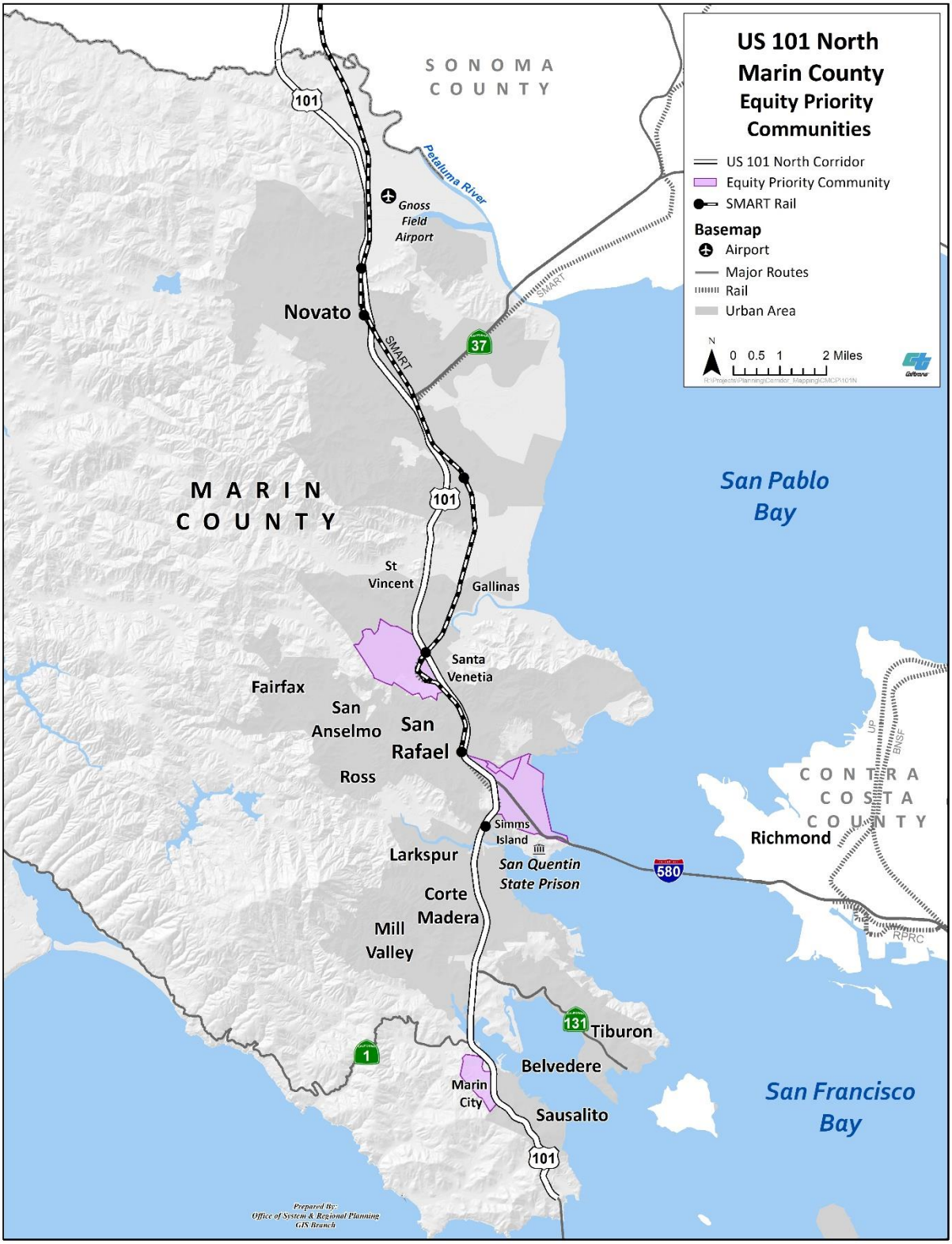
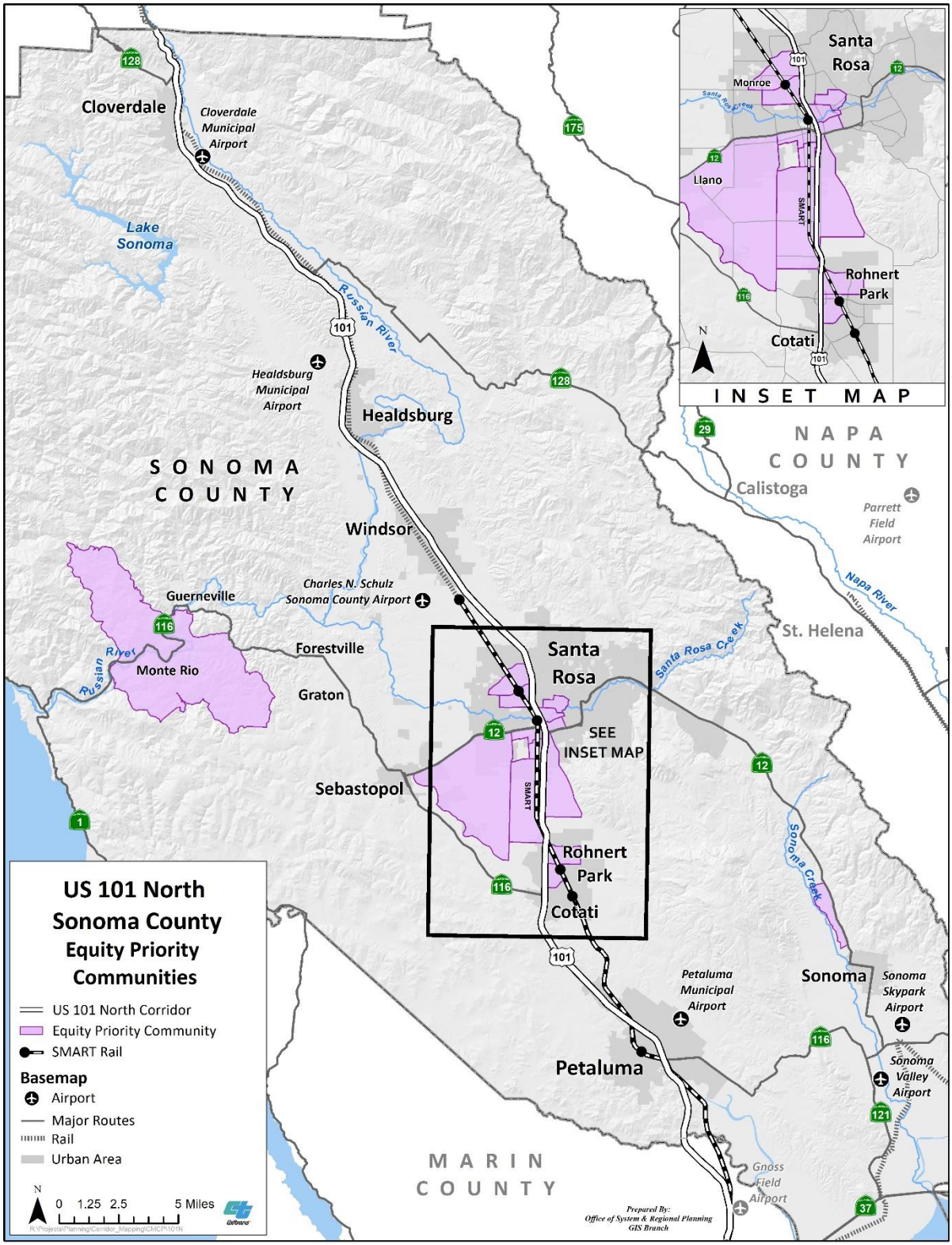


Figure 5:Equity Priority Communities in Sonoma County



3.6 Equity, Health, and Environmental Justice

3.6.1 Environmental Justice and Health

CalEnviroScreen 4.0, updated in October of 2021, is a mapping tool that helps identify communities suffering from cumulative impacts of multiple pollutants. Cumulative impacts scores are produced using information on environmental exposures from all sources of pollution in a geographic area and consider groups of people that are particularly sensitive to pollution's effects as well as socioeconomic factors. CalEnviroScreen 4.0 produces cumulative impact scores for every census tract in the State so that scores in different communities can be compared.

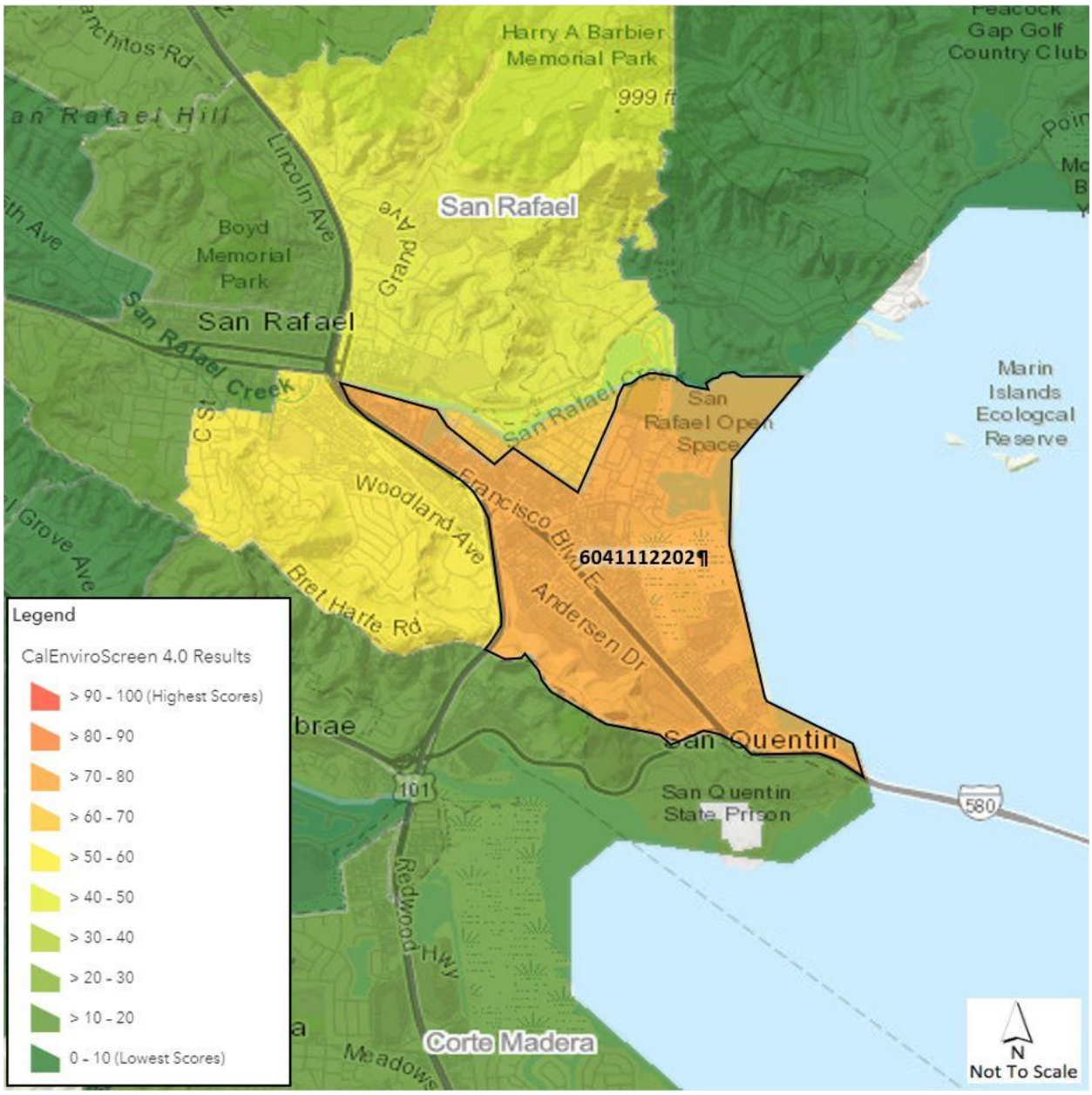
Marin and Sonoma Counties generally rank low on CalEnviroScreen, however higher cumulative impact scores are identified along the US 101 North Corridor, with the highest cumulative percentiles southeast San Rafael (70-80 percent) in Marin County, west of US 101 near the I-580 junction, and in the Santa Rosa-Roseland area in Sonoma County (70-80 percent).[43]

In Figure 6, southeast San Rafael in Marin County has a pollution burden of 77 percent due to the high amount of solid waste facilities, cleanup sites, impaired water bodies, and exposure to traffic.[44] Solid waste facilities are places where household garbage and other types of waste are collected, processed, and stored. These facilities can release toxic gases into the air and chemicals in the waste can leach into the soil nearby. Cleanup sites are places that are contaminated with harmful chemicals and need to be cleaned up by property owners or government. Impaired water bodies occur when water is contaminated by pollutants. Water pollution can harm recreational activities, wildlife, and residents. This area also experiences socioeconomic burdens such as linguistic isolation and housing burden that contribute to the area's high overall scoring. Linguistic isolation is a term used by the US Census Bureau for limited English-speaking households. This indicator represents the percentage of households where no one over the age of 14 speaks English well.

[43] Developed by the California Environmental Protection Agency (CalEPA) and the Office of Environmental Health Hazard Assessment (OEHHA), CalEnviroScreen 4.0 Map (10/2021): https://experience.arcgis.com/experience/11d2f52282a54ceebcac7428e6184203/page/Draft-CalEnviroScreen-4.0/

[44] CalEnviroScreen 4.0 Indicator Maps https://experience.arcgis.com/experience/ed5953d89038431dbf4f22ab9abfe40d/page/Indicators/?data_id=dataSource_25-17c3d89e7e2-layer-1%3A3074&views=Pollution-Burden

Figure 6: CalEnviroScreen Highest Pollution-burdened Population in Marin County



As shown in Figure 7, there are three census tracts within the Santa Rosa-Roseland area of Sonoma County that fall within the 70-80 percentile on CalEnviroScreen. Census tract 6097153200 has a pollution burden of 58 percent. The percentage is attributed to a high concentration of solid waste, ground water threats, and exposure to traffic. This community has a 75 percent for population characteristics due to high amount of asthma, cardiovascular disease, and housing burden. Major highways, like the US 101 North Corridor, can bring air pollutants and noise into neighboring communities, children who attend school or live in these areas tend to have higher rates of asthma compared to communities further away from major

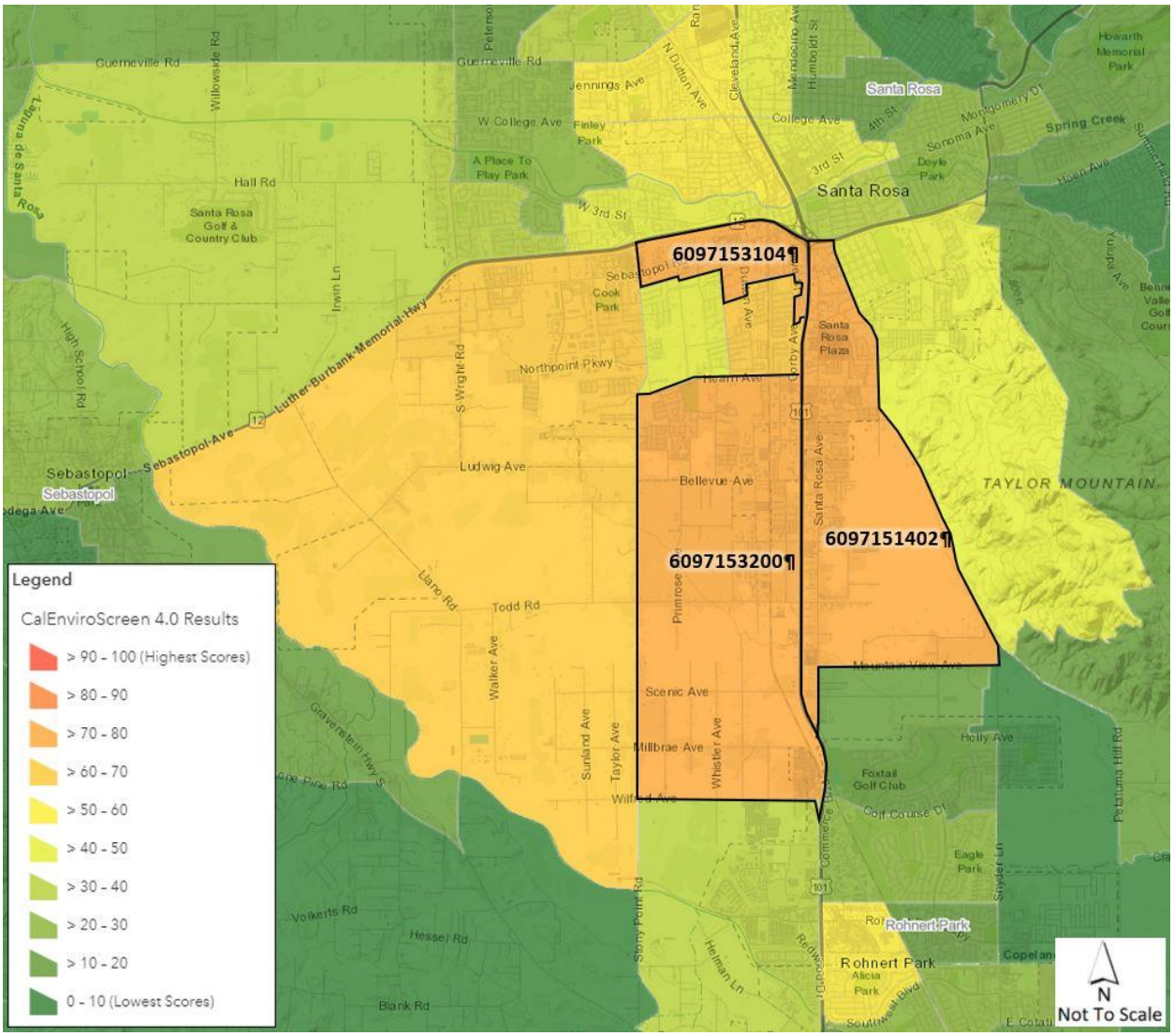
roadways and highways. Exposure to air pollution along with other health choices such as smoking and lack of exercise can lead to developing cardiovascular disease.

Census tract 6097151402 has a pollution burden of 78 percent caused by high exposure to traffic and diesel particulate matter. Exhaust from trucks, buses, and trains with diesel engines contain a mixture of gases and solid particles known as diesel particulate matter (PM). Diesel PM can reach deep into the lung and can contribute to heart and lung diseases. This community has a lower percentage for population characteristics, 63 percent. Residents in the community experience linguistic isolation and have less than a high school education. These two indicators are important to discuss because several studies have shown that the health effects of air pollution are worse among people with less than a high school education.[45]

Census tract 6097153104 has a pollution burden of 48 percent attributed to high amounts of diesel PM, traffic, and lead from housing. Historically, lead has been used in house paint, plumbing, and as a gasoline additive. While lead levels have declined over the past five decades in the United States, it persists in older housing. Exposure to lead through paint is the most significant source of lead exposure for children.[46] This community has a higher percentage for population characteristics, 87 percent. This is attributed to the community having a high housing burden, asthma, and cardiovascular disease, and low education levels.

[45] https://oehha.ca.gov/media/downloads/calenviroscreen/report/calenviroscreen40reportf2021.pdf#page=168
[46] https://oehha.ca.gov/media/downloads/calenviroscreen/report/calenviroscreen40reportf2021.pdf#page=66

Figure 7: CalEnviroScreen Highest Pollution-burdened Population in Sonoma County



Majority of census tracts along the US 101 North Corridor rank low on CalEnviroScreen 4.0 and have a low pollution burden percentile. However, the census tracts discussed above are overexposed to environmental and socioeconomic factors. These factors expose people to health hazards and cause them to develop illnesses and diseases from existing pollution and contaminants.

3.6.2 Equity

Figure 8 shows disadvantaged communities identified by SB 535 (2012) and low-income communities identified by AB 1550 (2016).[47] SB 535 disadvantaged communities are areas

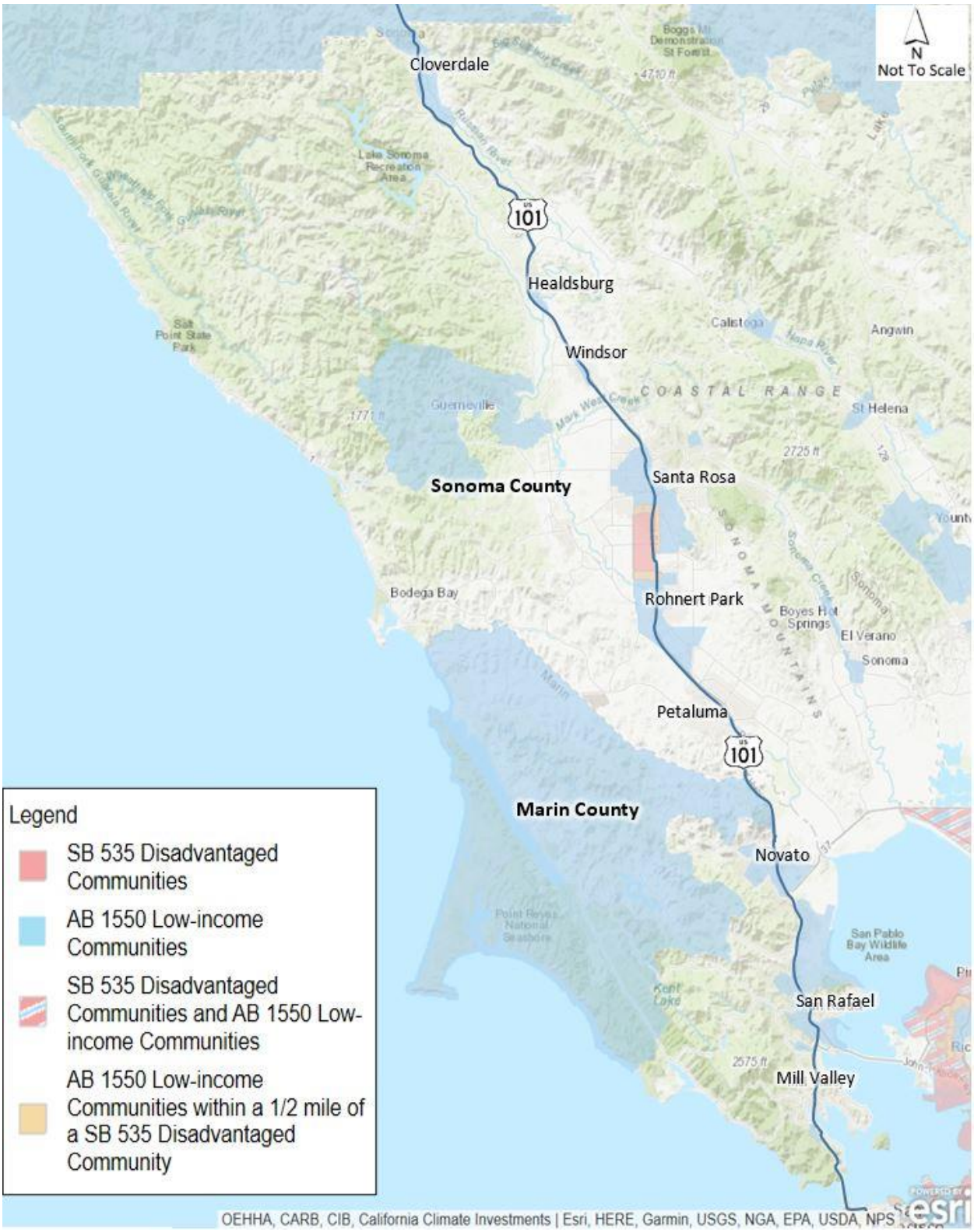
[47] https://ww3.arb.ca.gov/cc/capandtrade/auctionproceeds/communityinvestments.htm

disproportionately affected by environmental pollution, low income, high unemployment, low levels of home ownership, high rent burden, sensitive populations, or low levels of educational attainment.[48] AB 1550 low-income communities are census tracts with median household incomes at or below 80 percent of the statewide median income or with median incomes at or below the threshold designated as low income by the Department of Housing and Community Development.

These areas described above are more likely to have residents without a vehicle in the household, relying on public transportation, active transportation, or carpooling. These communities depend on low-cost and reliable multimodal options to access economic opportunities along the US 101 North Corridor as well as the rest of the Bay Area. Modal choices such as transit, passenger rail, biking, walking, and carpool/vanpools, would greatly increase accessibility to their destinations. These communities are located along the highway and may be affected by poor air quality due to diesel PM from automobiles and heavy-duty trucks. Reducing congestion along the US 101 North Corridor would further objectives to reduce pollution and increase travel time reliability, potentially allowing transit operators to increase transit services and operate at greater efficiency.

[48] http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201120120SB535

Figure 8: Disadvantaged and Low-Income Communities along US 101 North



3.7 Smart Mobility Framework

The Smart Mobility Framework (SMF) guides implementation of multimodal transportation strategies in support of compact and sustainable communities through a broad range of transportation and housing choices. *Smart Mobility 2010: A Call to Action for the New Decade,* developed in partnership with the US Environmental Protection Agency, the Governor's Office of Planning and Research, and the California Department of Housing and Community Development, provided concepts and tools to incorporate smart mobility principles into all phases of transportation decision-making.

In December of 2020, *The Caltrans Smart Mobility Framework Guide 2020* introduced strategies, performance measures, and analysis methods for implementing smart mobility, organized around five themes: network management, multimodal choices, speed suitability, accessibility and connectivity, and equity. The guide also describes the application of five, "place types," to identify transportation planning and project development priorities across the state. These place types describe existing geographic areas based on location, land use, density, and other characteristics:

- Central Cities
- Urban Communities
- Suburban Communities
- Rural Areas
- Protected Lands and Special Use Areas

Each of the place types correspond to transportation planning priorities and serves as a guide, not a rule, for development of recommendations. Planners consider the specific characteristics of a given planning area in addition to local, regional, and State plans when recommending strategic transportation system investments.

SB 743 directs use of VMT as a metric in place of LOS to better measure transportation-related environmental impacts of any project and, "promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses". The SMF Guide incorporates the intention of SB 743 as well as social equity and environmental justice, which are integral to all planning decisions. The SMF also guides Caltrans and stakeholder agencies in assessing how well plans, programs, and projects support Smart Mobility.

The use of place-based approaches to Planning and Design can help identify integrated transportation and land use planning activities as well as types of transportation projects and programs that may lead to increased location efficiency and yield Smart Mobility benefits. In Marin County, US 101 forms the urban spine. Situated within the periphery of the Bay Area's *Urban Center*, development along US 101 in Marin County largely consists of *Suburban Communities*. Sonoma County's developed areas are centered near US 101 as well, with a further distance from the Bay Area's *Urban Centers.* Towns and cities along the Corridor in

Sonoma County vary between *Suburban Communities and Rural Towns*. Meanwhile, the remaining areas of the County are rural. Definitions of place types are shown in Table 4 among examples of communities and cities.

Table 4 also identifies the place types along the US 101 North Corridor and lists transportation priorities recommended by the SMF.

Table 4: US 101 North Corridor SMF Place Types

Place Type	Location	Likely Transportation Priorities
URBAN COMMUNITIES Moderately dense places, mostly residential but with mixed-use centers. Housing is varied in density and type. Transit is available to connect neighborhoods to multiple destinations. Fine-grained network of streets with good connectivity for pedestrians and bicyclists.	Downtown San Rafael	• Pedestrian facilities with high amenity levels • Extensive network of bicycle facilities • Convenient opportunities for multimodal transfers and transit transfer • Design and speed compatibility with surroundings • Shared mobility opportunities • Complete streets facility treatments • Limited parking to reduce demand
SUBURBAN COMMUNITIES Primarily lower density residential with a high proportion of detached housing. Some interspersed retail and services, but little mixing of housing with commercial uses. Street networks often have poor connectivity. Low levels of transit service, large amounts of surface parking, and inconsistent pedestrian networks.	Novato, Fairfax, Sausalito, Miller Avenue, Red Hill Avenue, Downtown Rohnert, Sausalito, Corte Madera, Larkspur, San Rafael, San Quentin, Novato, Outer Petaluma, Cotati, Rohnert Park, Windsor, Tam Valley, Mill Valley, Corte Madera, Larkspur, Greenbrae, Kentfield, San Rafael, Ross, Fairfax, San Anselmo, Santa Rosa, Petaluma	• Improvements to network connectivity to reduce route/trip lengths and opportunities to encourage non-SOV trips • Complete street facility treatments near schools and areas with an opportunity to transition to Urban Community place types • Transit, on-demand transit, or rideshare implementation attached to employment centers where appropriate • Access management and speed management on arterial streets
RURAL AREAS Very low-density places with widely-spaced towns separated by farms, vineyards, orchards, or grazing lands. Includes rural towns that provide a mix of housing, services, and public institutions in compact form that serve surrounding rural areas. May include tourist and recreation destinations which can significantly affect land uses, character, and mobility needs. Very limited modal choices.	Healdsburg, Cloverdale, Windsor, Geyserville, Penngrove, West County and North Novato, Unincorporated Areas	• Bicycle and pedestrian facilities in rural centers/main streets • Traffic calming in rural centers/main streets • Trails where public access and recreational use is permitted • Targeted transit or transit on-demand to accommodate transit-dependent populations/employees/visitors
PROTECTED AREAS AND SPECIAL USE AREAS Lands protected from development by virtue of ownership, long-term regulation, or resource constraints. Also includes large tracts of single use lands that are outside of, or poorly integrated with, their surroundings.	Marin Headlands, Corte Madera Marsh, Ignacio Valley and La Loma Olompali, Annadel and Shiloh Ranch, Hamilton Wetlands	• For any lands not fully protected, projects and programs should assure permanent retention in open space/ resource conservation status. Green prints that identify important natural resource lands and working landscapes can provide opportunities to align open space protection efforts with regional blueprints.

Place Type	Location	Likely Transportation Priorities
		• For special use areas, projects are determined by the purpose and context of the special use area.

3.8 Environmental Scan

The San Francisco Bay Area is a very biodiverse region and home to several threatened and endangered species, rare plants, wetland and marsh habitats, vernal pools, and more. The US 101 North Corridor is primarily located within valleys and lowlands that are bounded to the west by the outer Coastal Range and to the east by the inner Coastal Range. The natural environment is remarkable for its variety and richness of resources. Natural communities include coastal wetlands, oak woodlands, riparian communities, mixed scrub and annual grasses. The area is home to many federal and State endangered and/or threatened species, such as the Saltmarsh Harvest Mouse, California Tiger Salamander, Red-Legged Frog, Central California Coast Steelhead and North American Green Sturgeon. Surface body waters range from seasonal and perennial creeks to sloughs, wetlands, and rivers with tidal influences draining into major watersheds. Examples of surface body waters include the Russian River, Petaluma River, San Pablo Bay, and San Francisco Bay.

The US 101 North Corridor traverses protected open space and important conservation areas, like the Santa Rosa Plain toward the north end of the corridor. The Santa Rosa Plain is a matrix of vernal pools and rare plants, the first of which provides critical breeding habitat for the federally and state endangered California tiger salamander (Ambystoma Californiense) and is also within the federally designated critical habitat for the California tiger salamander.

Wildlife crossing and connectivity opportunities should be considered and integrated into project scopes where transportation projects could trigger a potentially significant impact under the California Environmental Quality Act (CEQA), AB 2344, federal and State Endangered Species Acts, or other permit required mitigation. Examples may include the addition of express lanes, inclusion of centerline concrete median barriers, or other widening projects that make roadways more impenetrable to wildlife movement. Wildlife underpasses, overpasses, directional fencing, or a combination thereof should be considered and included as part of a project's purpose and need statement and scope. Inclusion of wildlife crossings on the State Highway System is critical in the face of climate change as species shift their migration patterns or otherwise move in response to warmer and drier conditions.

For the US 101 North Corridor, transportation impacts on wildlife connectivity should be considered including areas with protected lands or open space on both sides of the freeway or where other semi-rural areas abut the freeway and there is limited planned development within such areas.

The purpose of this section is to provide a brief summary of potential environmental factors that may require future analysis during the project development process. However, this information may not represent all environmental considerations that exist within the Corridor vicinity. Potential environmental issues along the Corridor may include the presence of hazardous materials or facilities, habitats of threatened or potentially threatened species, as well as fragile wetlands. Additional maps show Tribal lands and areas prone to sea level rise inundation.

3.8.1 Geography

Contrasting with the densely populated City and County of San Francisco, southern Marin County (between Highway 1 and the Golden Gate Bridge) is largely in a natural state. Marin's southern peninsula is bounded by rocky cliffs and occasional beaches and is part of the Golden Gate National Recreation Area. Evolving in a harsh coastal area, the vegetation is dominated by coastal scrub and coastal prairie, wetland habitat, and forest. Several forest types are found nearby including redwood and mixed evergreen forest, oak woodlands, and riparian forests. The area is home to high floral diversity and is considered the center of the *California Floristic Province*.[49] As the Corridor moves north through Larkspur and San Rafael, it passes hills and valleys that are primarily urbanized, but include small patches of oak woodlands and narrow bands of freshwater. Moving north through Novato and across the Marin/Sonoma County line into Petaluma, the Corridor becomes less developed and is primarily dominated by coastal salt and brackish marshlands, with a broad plain west and north of the San Pablo Bay.

The area between Petaluma and Windsor in Sonoma County is a broad valley with a combination of urban centers, suburban neighborhoods, and rural areas, some of which are currently undergoing development. Natural plant communities along the Corridor include non-native grasslands, oak woodlands, freshwater marshes, and seasonal wetlands with vernal pools. The northern section of the Corridor from Windsor to Cloverdale is warmer and drier than the areas south, where natural communities tend to be dry oak woodlands and scrub, with some areas of non-native grassland.

3.8.2 Climate Change

Sea Level Rise

Sea level rise (SLR) is one of the best documented and widely accepted impacts of climate change. Coastal communities in California are experiencing the impacts of rising sea levels with increased erosion, extensive flooding during storms, and periodic tidal flooding. The latest update to the State of California Sea Level Rise Guidance was adopted in 2018 and was

[49] The California Floristic Province is one of only five regions in the world with a Mediterranean climate of mild, wet winters and extended, dry summers. This climate encourages plants to adapt to long seasons without rain. The California Floristic Province is home to high floral diversity and unique assemblages rivaled only by the equatorial rainforests.
National Park Service, Golden Gate Recreation Area: https://www.nps.gov/goga/learn/nature/plants.htm

developed by the California Ocean Protection Council (OPC), in coordination with the California Natural Resources Agency, the Governor's Office of Planning and Research, and the California Energy Commission. This guidance provides state agencies with the latest SLR projections for the years 2030 through 2150 under various emissions scenarios. The planning horizon was expanded to support precautionary planning and decision-making for projects with longer life spans.[50] These projections indicate that areas along the San Francisco Bay will experience rising sea levels of two feet by mid-century (2050) and up to seven feet under the 1-in-200 chance (0.5 percent probability) high-emissions scenario. The effects of SLR and flooding are expected to increasingly impact transportation infrastructure in low-lying coastal areas, including bay front communities in Marin County as well as along the southern border of Sonoma County. 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.[51]

Based on SLR mapping data from the San Francisco Bay Conservation and Development Commission (BCDC), a significant portion of the US 101 Corridor in Marin County is expected to be impacted by SLR by the Year 2100. For example, over 13 miles of highway centerline miles of the US 101 Corridor through both counties (Marin and Sonoma) will likely see 3.72 highway-miles inundated by 2050 (24 inches of SLR), and 14.06 highway-miles impacted by 2100 (84 inches of SLR).[52] Highway centerline miles vulnerable to SLR by county are shown in Table 5. Plan Bay Area 2050 also noted that Marin County will be the first county to be susceptible to SLR.

SR 37 is the North Bay Area's most heavily used east/west highway, connecting US 101 North in Marin County and I-80 in Solano County. The corridor's low elevation and proximity to San Pablo Bay make it especially vulnerable to current storm surge, heavy rainstorms, and future sea level rise. Recent flooding events on SR 37 resulted in 27 days of closures in 2017, seven days of closures in 2019, and three days of closures in 2023 that also affected SMART's mainline, resulting in long detours and travel delays for travelers and goods.

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

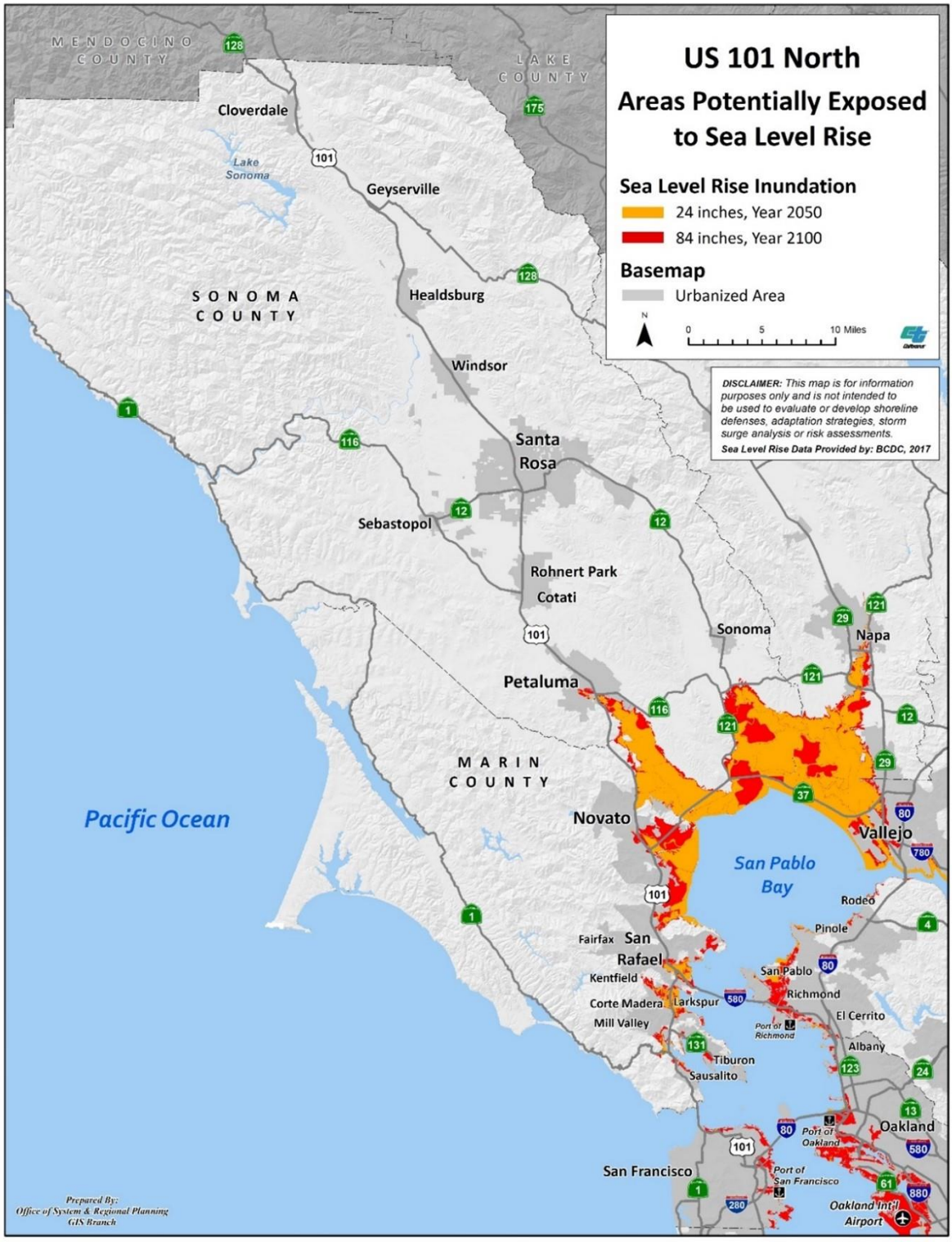
[51] *Guidance on Incorporating Sea Level Rise*, Caltrans Climate Change Workgroup, per California Ocean Protection Council Resolution of March 2011.

[52] BCDC Adapting to Rising Tides Bay Shore Flood Explorer: https://explorer.adaptingtorisingtides.org/explorer

Table 5: US 101 North Highway Centerline Miles Vulnerable to Sea Level Rise

Sea Level Rise Scenario	County	Centerline Miles Exposed
2-Feet (2050)	Marin	3.63
	Sonoma	0.09
	Total:	**3.72**
7-Feet (2100)	Marin	13.83
	Sonoma	0.23
	Total:	**14.06**
Low-lying Areas 2-Feet (2050)	Marin	0.08
	Sonoma	0.00
	Total:	**0.08**
Low-lying Areas 7-Feet (2050)	Marin	0.32
	Sonoma	0.02
	Total:	**0.34**

Figure 9: Sea Level Rise and Coastal Inundation Areas



Storm Surge

Storm surge is defined as a rising of the sea as a result of atmospheric pressure changes and wind associated with a storm. Rising seas translate into more water that can be in motion during storm surge events, which increases the frequency of flooding events and the long-term risks to infrastructure. BCDC projections of storm surge include two-year, five-year, ten-year, 25-year, and 50-year storm surge. Five-year storm surge has a 20 percent chance of occurring in any given year. Fifty-year storm-surge has a 2 percent chance of occurring in any given year. Based on storm surge mapping data from BCDC, total water levels would increase dramatically with the combination of SLR and storm surge. With a five-year storm surge and SLR, the total water level would be 24 inches. The ten-year storm surge and SLR would increase the overall water level from 24 inches to 52 inches. With these projections there are a few notable segments along US 101 that will become frequently inundated with six to ten feet of water along the highway.

Another factor contributing to an even greater impact is during a King Tide event, where tides are exceptionally high and may cause local tidal flooding.[53] Projections of King Tides include a 25-year, 50-year and 100-year event, providing a glimpse of future water levels and flood-prone locations within a community.

Figure 9 depicts where exposure would occur on the US 101 North Corridor as well as other highways and State routes. Figure 9 demonstrates as SLR increases, so does the number of miles exposed along US 101 particularly in the Marin County segment. At just 24 inches of SLR, there are multiple areas within the US 101 corridor that would be exposed and potentially impacted by SLR and storm surge.

Wildfires

In the past few years, California has experienced devastating wildfires. The frequency and intensity of wildfires are projected to increase as a result of rising temperatures and changing precipitation patterns. Wildfires can contribute to landslides, flood exposure, and wildfire smoke which can impact the visibility of drivers and pedestrians as well as air quality.

CAL FIRE has developed fire hazard severity zone maps[54] using a field-tested model to assign hazard scores based on factors that influence fire likelihood and fire behavior. Factors such as fire history, natural vegetation, blowing embers, and typical weather for the area. The map assigns areas as moderate, high, and very high. In Marin County, areas in Mill Valley and San Rafael are classified as very high. Other areas in Tiburon and Novato are classified as moderate

[53] EPA, King Tides and Climate Change https://www.epa.gov/cre/king-tides-and-climate-change
[54] CAL FIRE Fire Severity Zones Map, https://egis.fire.ca.gov/FHSZ/

and high. In Sonoma County, much of the county is identified as having some exposure to wildfire. Areas in Santa Rosa, Geyserville, and Cloverdale are classified as very high.

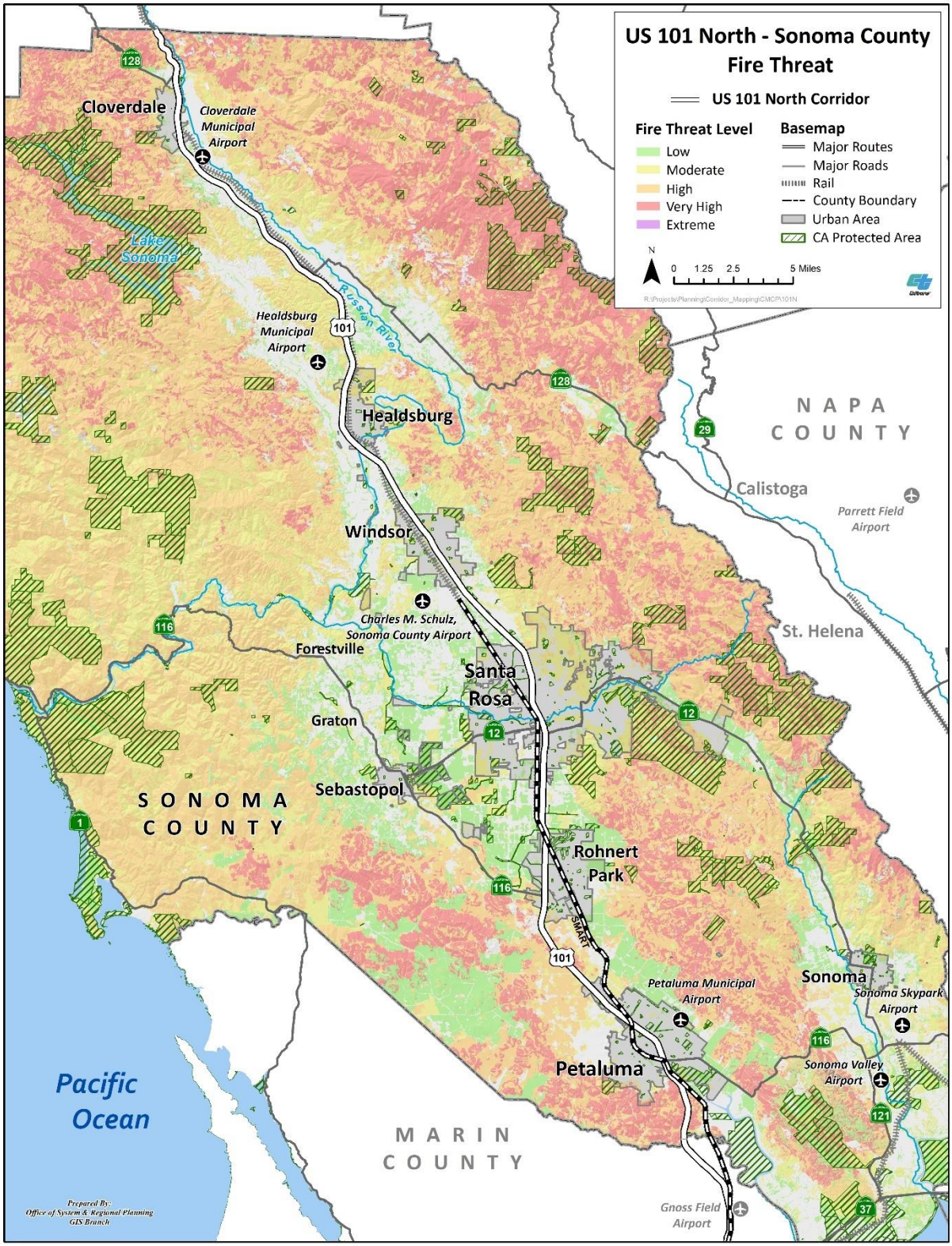
Both Marin and Sonoma counties have high fire risks, Sonoma County is more likely to see more frequent wildfires compared to Marin County. In October of 2017, Sonoma County was hit by the Tubbs fire, which burned an estimated 36,807 acres.[55] The Tubbs fire was active in the cities of Santa Rosa, Windsor, and Sonoma. The Tubbs Fire lasted for 123 days, destroyed 5,636 structures, damaged 317 structures, and resulted in 22 fatalities of both fire personnel and civilians. During late October of 2019, the Kincade fire broke out northeast of Geyserville in Sonoma County. The fire lasted for thirteen days and burned an estimated 77,758 acres. 374 structures were destroyed and 60 structures were damaged by the fire. The Kincade Fire did not result in any fatalities, but four injuries occurred for fire personnel and civilians.[56] In late September of 2020, the Glass Fire struck Sonoma and Napa County. The Glass Fire burned an estimated 67,484 acres and was active for 23 days. 1,555 structures were destroyed and 282 structures were damaged.[57]

Transit providers, such as SMART can also be impacted by wildfires. SMART staff conducted a thorough post-event review and has been implementing lessons learned from the 2017 firestorm, flooding events (2017, 2018, 2023), Kincade Fire (2019), and the fires of 2020. SMART seeks to improve the agency and the infrastructure's resiliency to cope with and function during disasters. The SMART Windsor Extension includes several components to address the future resiliency of the system. In particular, the construction of a second track entrance/exit from the Rail Operations Center to the north, will allow for redundant emergency exits and increased capacity to move vehicles from the facility in the event of an emergency. US 101 North may serve as an important corridor for evacuation of Sonoma County residents in the event of a wildfire. Furthermore, during an evacuation, US 101 North may also serve as a key lifeline route for inbound fire and EMS vehicle access as emergency personnel enter the area to render assistance.

[55]Tubbs Fire Information https://www.fire.ca.gov/incidents/2017/10/8/tubbs-fire-central-lnu-complex/
[56] Kincade Fire Information https://www.fire.ca.gov/incidents/2019/10/23/kincade-fire/
[57] Glass Fire Information https://www.fire.ca.gov/incidents/2020/9/27/glass-fire/

Figure 10: Wildfire Threat - Marin County

Figure 11: Wildfire Threat - Sonoma County



Precipitation

Transportation assets are impacted by flooding, landslides, washouts, and structural damage from heavy rain events. The District 4 Caltrans Climate Change Vulnerability Assessment Report predictions suggest that California will be suffering from severe droughts that may lead to an increase in wildfires. However, the predictions show that California will have heavier, infrequent rainfall. The Caltrans D4 Vulnerability Assessment Report used Representative Concentration Pathways (RCP) 8.5 (high-emissions scenario) to analyze the 100-year storm rainfall event. The assessment was done for the Years 2025, 2055, and 2085. Significant precipitation changes will be seen in western, coastal portions of District 4, including Marin County and Sonoma Counties. Marin and Sonoma Counties will see a five to 9.9 percent increase in precipitation, with some areas in Sonoma County that will experience a ten to 15.3 percent increase. The areas identified in Sonoma County are in between US 101 and Highway 1. Corte Madera Creek which runs underneath US 101 in Marin County will experience higher peak flows due to a potential increase in precipitation . This could lead to riverine flooding along the creek and worsen flooding along US 101. In recent years there has been substantial flooding at the US 101/SR 37 interchange. In February of 2019, Caltrans had to close sections of SR 37 between the Atherton Avenue off-ramp and US 101.[58] This closure was due to needed repairs from ongoing storms. In January of 2017 Marin County issued a flash-flood warning due to heavy rains and rising water levels at Corte Madera Creek, which runs under US 101.[59] In March of 2023, heavy rainfall caused a slide on redwood frontage road and hillside in Marin County running parallel to US 101.

Temperature

Summer temperatures are expected to continuously rise. Rising temperatures affect pavement, ground conditions, and may lead to an increase in maintenance activities along the corridor. The Caltrans Vulnerability Assessment Report analyzed change in the average minimum temperature for the years 2025, 2050, and 2085. Under a high emissions scenario (RCP 8.5), Marin and Sonoma Counties are expected to see an increase of 0.5 to 1.9 degrees Fahrenheit by year 2025. By year 2055, Marin County is expected to see an increase of 2.0 to 3.9 degrees Fahrenheit. Segments of Sonoma County along US 101, are expected to see an increase of four to 5.9 degrees Fahrenheit. By 2085, both Marin and Sonoma Counties will see an increase of eight to 9.9 degrees Fahrenheit. Longer and hotter summers paired with severe drought conditions will increase the wildfire risk in both counties.

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[58] Highway 37 Closure (2019) https://www.mercurynews.com/2019/10/05/caltrans-to-begin-hwy-37-overnight-lane-closures-in-novato/

[59] Flash Flood Warning for Marin County (2017) https://www.sfgate.com/news/article/Flash-flood-warning-in-Marin-County-as-Corte-10848702.php#photo-12164051

Sea level rise, storm surge, wildfires, temperature, and precipitation will continue to cause damage to the State Transportation System. These damages include emergency repairs, damaged culverts, burned out guardrails, destroyed signage, structural damage, and damages to the roadway. As California moves toward the future, the effects of climate change will continue to impact the State and climate change events will become more extreme if unaddressed.

Caltrans District 4 Vulnerability Assessment

The *Caltrans District 4 Climate Change Vulnerability Assessment* was completed in 2018. Based on climate data, California will experience more severe droughts, rising sea levels, more severe storm impacts and coastal erosion, increased temperatures and longer heat waves, and longer and more severe wildfire seasons. The Assessment had three objectives: 1) Understand the types of weather-related and longer-term climate change events that will likely occur with greater frequency and intensity in future years, 2) Conduct a Vulnerability Assessment to determine those Caltrans assets vulnerable to various climate-influenced natural hazards, and 3) Develop a method to prioritize candidate projects for actions that are responsive to climate change. The Assessment outlined potential vulnerabilities to the State Transportation System to showcase the types of climate stressors that will affect future planning, maintenance, and operations of the District's assets. The climate stressors that would impact the District include temperature, precipitation, wildfire, sea level rise, and storm surge. Data from the Years 2025, 2055, and 2085 were analyzed. An interactive web-based map was developed with the Assessment to show which routes within the District are exposed to various climate stressors under different scenarios. As Caltrans takes the lead on climate action, it is crucial that climate change is addressed in long-range plans to ensure that the transportation system remains resilient and secure for all users.

Caltrans District 4 Adaptation Priorities Report

The *Caltrans District 4 Adaptation Priorities Report* completed in 2020 was the next phase in addressing climate change after the Vulnerability Assessment was completed. The purpose of the Report is to prioritize District 4 assets that will be exposed to climate hazards through a detailed asset-level climate assessment. The prioritization considers the timing of the climate change, the severity, extensiveness, and the condition of the asset that is at risk. This report is mainly focused on bridges, large culverts, small culverts, and roadways. The climate hazards used in the prioritization methodology are temperature, riverine flooding, wildfire, sea level rise, storm surge, and coastal cliff retreat. Various asset-hazard combinations were studied, some of the combinations include pavement binder grade exposure to temperature changes, small and large culvert exposed to riverine flooding, bridge exposure to coastal cliff retreat, and at-grade roadway exposure to sea level rise. The next step is for Caltrans District 4 to develop and evaluate adaptation options for each asset category to ensure the ability to withstand future climate changes. The detailed adaptation assessments will include coordination with key stakeholder groups. The Report can be used in long-range planning to prioritize segments of the

roadway and other assets that will be affected by climate change. See Table 6 for priority 1 assets along the US 101 North Corridor. For priority assets 2,3, 4, and 5 see Appendix A.

Sea level rise, storm surge, wildfires, temperature, and precipitation will continue to cause damage to the State Transportation System. These damages include emergency repairs, damaged culverts, burned out guardrails, destroyed signage, structural damage, and damages to the roadway. There are several completed and ongoing studies related to SLR and other climate change vulnerabilities in Marin and Sonoma Counties, several Caltrans Adaptation Planning grants in both Counties, the Marin County Ocean, Coast and Bayfront Sea-level Rise Vulnerability Assessments, and BCDC's Adapting to Rising Tides – Bay Area Project. For more detailed information, maps, and completed and ongoing studies, please see Appendix A.

Table 6: Caltrans District 4 Adaptation Priorities along US 101 North

County	Postmile	Feature Crossed or Carriageway*	Asset Type	Average Cross Hazard Prioritization Score
MRN	L .01	Golden Gate Bridge	Bridge No. 27 0052	74.65
MRN	3.348/3.909	S	Roadway	54.49
MRN	3.343/4.047	P	Roadway	55.67
MRN	4.03	Richardson Bay BR & SP	Bridge No. 27 0010	72.55
MRN	4.561/5.425	P	Roadway	55.67
MRN	4.561/5.483	S	Roadway	54.49
MRN	7.153/8.032	S	Roadway	54.49
MRN	7.166/8.036	P	Roadway	55.67
MRN	8.088/8.584	P	Roadway	55.67
MRN	8.119/8.588	S	Roadway	54.49
MRN	8.47	Corte Madera Creek	Bridge No. 27 0008	73.27
MRN	9.743/10.882	P	Roadway	55.67
MRN	9.748/10.884	S	Roadway	54.49
MRN	10.72	San Rafael Viaduct	Bridge No. 27 0035R	74.69
MRN	10.72	San Rafael Viaduct	Bridge No. 27 0035L	65.96
MRN	18.882/19.087	P	Roadway	55.67
MRN	19.883/R20.193	P	Roadway	55.67
MRN	20.188/20.196	S	Roadway	54.49

*Caltrans' alignment codes designate the carriageway on divided roadways: "P" always represents northbound or eastbound carriageways whereas "S" always represents southbound or westbound carriageways. Undivided roadways are always indicated with a "P".

3.8.3 Mitigation Measures

SB 1 created the Advance Mitigation Program at Caltrans to enhance opportunities for the Department to work with stakeholders to identify important project mitigation early in the project development process and improve environmental outcomes by proactively obtaining environmental mitigation in advance of –rather than during –transportation projects. Started in fiscal year 2017-18, and over the next four years, Caltrans allocated a minimum of $120 million by 2021 for expenditures from a revolving account in the State Transportation Fund. Funds were used by Caltrans Districts to carry out advance mitigation projects to acquire and/or create credits and values. Transportation projects then reimburse the Program for mitigation it provides. The primary goals were to accelerate transportation project delivery, improve environmental outcomes, enhance communication with stakeholders and California Department of Fish and Wildlife, and ensure the Program account was self-sustaining. In October 2019, Caltrans developed the Advance Mitigation Program Final Formal Guidelines to outline the policies and processes the Department will undertake to meet the statutory objectives and requirements of SB 1.[60] State Highway Operation and Protection Program (SHOPP) and State Transportation Improvement Program (STIP) projects that have been evaluated by Caltrans are deemed eligible for this program.

During the project development process, each project will be assessed for environmental impacts and benefits as well as identification of potential mitigation measures to address environmental impacts. For example, the Marin Sonoma Narrows (MSN) Project included roadway widening and realignment for carpool lanes as well as new and upgraded interchanges and bridges, and continuous Class I and Class II bikeways between Novato and Petaluma. In 2012, Caltrans developed the US 101 MSN HOV Widening Project Mitigation and Monitoring Plan to document the mitigation for the MSN HOV Widening Project. Caltrans also purchased nine wetland credits from the Burdell Ranch Wetland Bank in 2010 to mitigate unavoidable impacts to wetlands because of the MSN Project.

The Guidelines for the Solutions for Congested Corridors Program states that projects eligible for funding achieve a balanced set of transportation, environmental, and community access improvements within highly congested corridors throughout the State. The main objective of the Program is to fund projects designed to reduce congestion in extremely traveled and congested corridors through performance improvements, community impacts, as well as provide environmental benefits. [61]

More environmental factors along US 101 North are discussed in Appendix B.

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[60] https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/amp-final-formal-guidelines-a11y.pdf

[61] https://catc.ca.gov/-/media/ctc-media/documents/ctc-workshops/2019/201909-draft-2020-sccp-guidelines-a11y.pdf

3.8.4 Historic and Cultural Resources

Typically, a historic resource is defined as a building, structure, or district, that is determined to be significant based on federal criteria. Marin County has 44 federally listed historic landmarks, while Sonoma County has about 190.

3.9 Native American Tribes

Today, there are over 100 federally recognized tribes in California, almost 30 are within northern California in addition to many unrecognized tribes who are actively involved in the community and cultural resource management. The Pomo, Coast Miwok, and Wappo peoples hold aboriginal territory in modern day Marin and Sonoma Counties. Artifacts found at Tolay Lake in southern Sonoma County date back as far as 4000 years,[62] while the Coast Miwok occupation of Olompali Historic State Park dates back even further. Pomo groups lived in Central and Western regions of Sonoma County and were linked by shared language and culture. The influx of explorers and the establishment of the mission system by the Spanish irreparably altered the aboriginal way of life for the California Native Americans. The reduced population and displacement of native peoples substantially altered their traditional lifeways and, as a result, much ethnographic information has been lost. State, regional, and local agencies must consult and coordinate with tribes to ensure transportation projects do not impact tribal lands and resources within the vicinity of US 101 North which include Dry Creek Rancheria Band of Pomo Indians, Cloverdale Rancheria Band of Pomo Indians, and the Federation Indians of Graton Rancheria as described below.

3.9.1 Dry Creek Rancheria Band of Pomo Indians

Dry Creek Rancheria Band of Pomo Indians Rancheria is located along US 101 North between Healdsburg and Geyserville, in Sonoma County, consisting of 75 acres.[63] This community is one of 20 independent communities that encompasses the Pomo people. During the 19th and 20th centuries, Pomo lands were seized from settlers for the rich and valuable agricultural soils, causing irreparable damage to the Pomo culture and way of life. Dry Creek Rancheria received official federal recognition as a sovereign nation in 1915 now referenced as the Dry Creek Rancheria Band of Pomo Indians. In 2002, the Tribe opened an interim facility which generates revenues that the Tribe use to finance housing, education, health, and other programs that benefit its members and the residents and agencies in the surrounding communities.

[62] Tolay Lake Park Natural and Cultural History, County of Sonoma Regional Parks Department (Archived 2008-02-03) https://web.archive.org/web/20080203214948/http://www.sonoma-county.org/parks/pk_tolay_history.htm

[63] https://www.drycreekrancheria.com/

3.9.2 The Federated Indians of Graton Rancheria

The Federated Indians of Graton Rancheria is a federation of Coast Miwok from the areas of Novato, Marshall, Tomales, San Rafael, Petaluma, and Bodega and Southern Pomo groups from the Sebastopol area. The Coast Miwok and Southern Pomo people were used as a labor source for the Missions of San Francisco de Assisi (Mission Dolores), San Rafael Archangel, and San Francisco Solano and remained in servitude by Mexican land grant owners after the end of the Mission Period in the 1830s. In the mid-1880s, the Coast Miwok and Southern Pomo peoples worked as farm workers in Marin and Sonoma counties. Bodega Miwok William Smith and his relatives founded the commercial fishing industry in the Bodega area. In 1920, the Bureau of Indian Affairs purchased a 15.45-acre tract of land in Graton for the "village home" of the Marshall, Bodega, Tomales, and Sebastopol Indians. They were established as a federally recognized tribe through the purchase of this land, which was put into federal trust. However, congress passed the California Rancheria Act of 1958 which called for the termination of 41 California Rancherias. Graton Rancheria was removed from federal trust and the land was distributed to three residents (now deceased) as private property. This action terminated federal recognition of a tribe of American Indians and was done in the absence of, and without the consent of the tribal members. In 2000, President Bill Clinton signed a law that restored Federal recognition to the Federated Indians of Graton Rancheria. In 2005, the Tribe purchased 254 acres outside of Rohnert Park to use as their reservation.

3.9.3 Cloverdale Rancheria Band of Pomo Indians

Much of Northern California lies within the aboriginal territory of Pomo Indians. The Gold Rush and Western Expansion brought many new settlers who were eager to take over the land. As a result, the Tribes in Northern California suffered, and their way of life changed forever. In 1921, the Cloverdale Rancheria was created when the government federally recognized the Tribe.[64] The Cloverdale Rancheria was deeded 27.5 acres on the southern edge of Cloverdale. Due to the California Rancheria Act of 1958 which called for the termination of 41 California Rancherias, the Act transferred tribal communal property into private ownership, thereby destroying all cultural and tribal affiliations. In 1979, a class action lawsuit led by Tillie Hardwick, a Pomo Indian, against the United States government on behalf of 16 illegally terminated Rancherias. Five years later, the courts issued a ruling on the Hardwick lawsuit, which reinstated the federal recognition of all illegally terminated Rancherias, including the Cloverdale Rancheria. Then in 1994, Tribal landowners had to sell their property to Caltrans to expand US 101. The expansion of the Highway spilt the Rancheria between the east and west side of the freeway, making future living and development difficult for the Tribe. Current Tribal members attend location schools and are active in the community.

[64] http://www.cloverdalerancheria.com/

3.9.4 Kashia Band of Pomo Indians of the Stewarts Point Rancheria

The Kashia Band of Pomo Indians of the Stewarts Point Rancheria are a federally recognized tribe located near Jenner along State Route 1 and traditionally occupied coastal Sonoma County and around Fort Ross, as well as along the Gualala River in the north to Duncan's Point south of the Russian River. An estimated 1,500 people lived in this area before new settlers came to Sonoma County in search of land and new opportunities. By 1870, three villages remained intact and in 1914 the Federal government took this land into a trust, creating the Stewarts Point Rancheria. Today, the Tribe is comprised of 860 members, with several members living in Sonoma, Lake, Mendocino, and Napa counties.[65]

3.9.5 Lytton Rancheria of Northern California

Lytton Rancheria is a federally recognized tribe comprised of the Pomo peoples located in the Alexander Valley of Sonoma County. Like many other California tribes, the Pomo people were devastated by European contact and the California Gold Rush of the 1840s and 1850s. The unratified California Treaty K of 1852 would have provided eighteen reservations around 11,700 square miles as homelands for the indigenous peoples of California; however, by the 1900s, many California Indians and tribes were left homeless and landless. The Lytton Rancheria was purchased in 1926, but in 1958 the Rancheria Act called for the distribution of land and assets to individual tribe members. Then in 1961, the Lytton Rancheria tribe was terminated. Thirty years later, a Federal Court determined that the termination was illegal, and the tribe's status was reinstated. In 2019, U.S. Senate Bill S.1790 was signed and included around 511 acres of tribal land into trust as part of the reservation of the Lytton Rancheria.[66]

3.9.6 Koi Nation of Northern California

Ancestors of the Koi Nation of Northern California were a part of the Southeastern Pomo people in Clear Lake. During the Gold Rush, many Pomo people were enslaved by new settlers.[67] Like other tribes in California, Koi Nation signed the unratified Treaty K of 1852. In 1856, the federal government moved many Pomo tribes to the Mendocino Indian Reservation. In 1916, Congress purchased a 140-acre parcel between Lower Lake and Clear Lake Heights as a rancheria for Koi Nation to be held in trust. The Bureau of Indian Affairs (BIA) declared the settlement as uninhabitable, and the Koi Nation lost their land. In 1965, Congress sold the tribe's only land to Lake County, who wanted to use the land for a municipal airport. Throughout the years of enslavement and diseases, the Koi and Pomo populations diminished. At the beginning of the 20th century, the Koi Nation found themselves in Sonoma County,

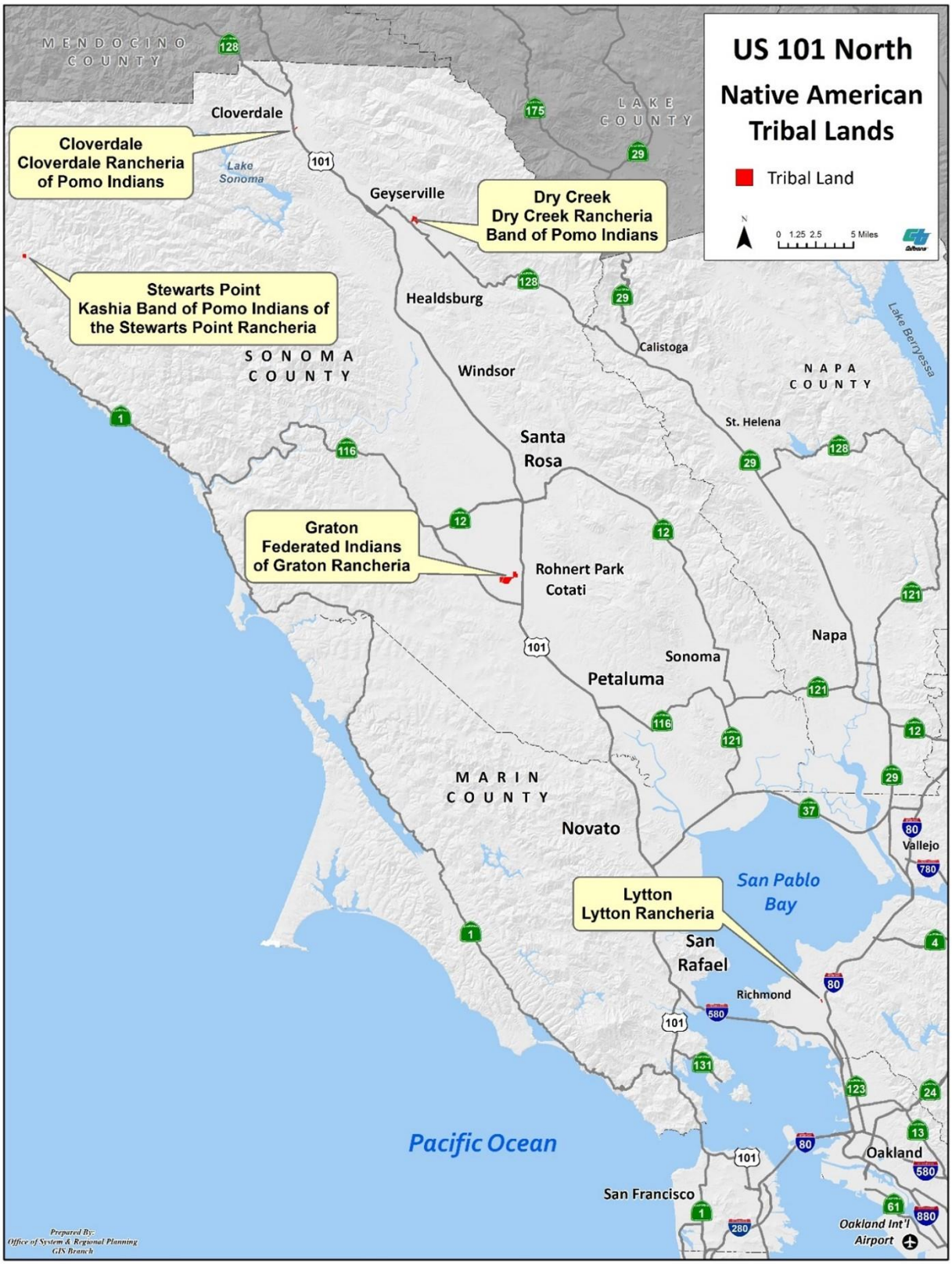
[65] https://www.stewartspoint.org/wp2/
[66] https://www.townofwindsor.com/1075/Lytton-Tribe-Developments
[67] https://www.koinationsonoma.com/

around the City of Santa Rosa. Today, the tribe has purchased land in Sonoma County where members of Koi Nation live and have reestablished themselves on their land.

In addition to the Tribal lands, several of the Tribes also have facilities and other operations along the Corridor. The Sonoma County Indian Health Clinic, serving members of all Tribal Nations, is located in Santa Rosa. Discussing and acknowledging California indigenous tribes' history is crucial in understanding their ways of life, culture, and how to continue the growth of relationships between the tribes and government.

Figure 12 shows a map of modern-day tribal lands in project vicinity; Cloverdale Rancheria and Dry Creek Rancheria Band of Pomo Indians and the Federated Indians of Graton Rancheria are located within the vicinity of the US 101 North Corridor.

Figure 12: Federally Recognized Tribal Lands near the US 101 North Corridor



CHAPTER 4: MULTIMODAL FACILITIES - EXISTING CONDITIONS AND NEEDS

As a multimodal transportation corridor, the US 101 North Corridor serves the movement of people and goods in a variety of transportation modes. This chapter describes public transit services, rail facilities, Park-and-Ride facilities, the private commuter shuttle services, and bicycle and pedestrian facilities as critical transportation modes within the US 101 North 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 Director's Policy (DP)-37[68] 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. DP-37 also requires Caltrans develop integrated multimodal projects and facilitate bicycle, pedestrian, and transit travel by creating a network of "Complete Streets".[69] At the regional level, the Bay Area's Metropolitan Planning Organization, Metropolitan Transportation Commission (MTC), has developed policy and guidance on Complete Streets as well.

4.1 Transit Services and Park-and-Ride

Transportation in the San Francisco Bay Area relies on a complex multimodal system consisting of roads, bridges, highways, rail, tunnels, airports, and bike and pedestrian paths. The Bay Area Rapid Transit (BART) is the primary regional transit operator but does not provide service in Marin, Napa, Solano, or Sonoma Counties. Its extensive train network connects San Francisco with Peninsula and East Bay cities and the international airports (the San Francisco International Airport and the Oakland International Airport). Transportation in Marin and Sonoma Counties relies on US 101, with regional bus service provided by transit agencies such as Golden Gate Transit, and Sonoma County Transit. Local bus operators like Marin Transit and Santa Rosa CityBus also rely on US 101 for their services.

Sonoma-Marin Area Rail Transit District (SMART) is a relatively new transportation option, offering passenger rail service in Sonoma and Marin Counties along the US 101 North Corridor. The 45.1 miles of rail corridor now includes twelve stations, from the Larkspur Ferry station to the Sonoma County Airport. An extension north to Windsor is currently being built. An infill station in North Petaluma is in development and further extensions north to Healdsburg and Cloverdale have yet to be fully funded. Opon completion, the entire system will include 70 miles of passenger rail service, connecting passengers with jobs, education centers, retail hubs

[68] https://dot.ca.gov/-/media/dot-media/programs/sustainability/documents/dp-37-complete-streets-a11y.pdf
[69] http://www.dot.ca.gov/hq/tpp/offices/ocp/docs/dd_64_r2.pdf

and housing along the US 101 North Corridor, and a bicycle/pedestrian pathway, generally within or adjacent to the rail corridor, including a combination of Class I and Class II bicycle facilities.[70] The pathway provides a safe active transportation facility, but also provides first and last mile connections to many stations along the SMART system as well as an additional safety feature to reduce trespasser access to the railroad.

Other transportation services near the Corridor include ferry and other mobility services such as private commuter shuttles and paratransit services. In addition, there are more than twenty Park-and-Ride lots near the US 101 Corridor that provide parking for drivers to join carpools and vanpools, or to connect to public transit. The following sections will discuss the transit services and Park-and-Ride facilities.

As in many sectors, the COVID-19 pandemic has had an enormous impact on transit agencies. Currently, many transit agencies are rolling out enhanced service to support the reopening of the Bay Area economy. This includes schedule changes as well as restoration of service that was curtailed during the pandemic. These frequent changes are announced on the Bay Area's 511 website: https://511.org/alerts/emergencies/coronavirus

4.1.1 Rail Transit Services - SMART

In August of 2017, SMART began offering passenger rail service in Sonoma and Marin Counties, along an initial 43 miles of rail corridor with ten stations, from downtown San Rafael to the Sonoma County Airport. Currently operating at 12 stations along 45 miles in the corridor, at build out the rail service will include 16 stations and 70 miles of passenger rail from the station near the Larkspur Ferry Terminal, with connecting ferry service to San Francisco, and as far north as Cloverdale. The project also includes a bicycle-pedestrian pathway, generally within or adjacent to the rail corridor, with a combination of Class I and Class II bicycle facilities.[71]

Several public agencies purchased the previously long-dormant publicly owned right of way of the former Northwestern Pacific (NWP) Railroad line in Sonoma and Marin Counties, transferring them to SMART with the District's creation in 2002. The tracks are operated and maintained by SMART, which includes the dispatch of SMART Freight rail service to North Bay shipping customers, which has been active since March 2022. SMART completed the southern extension of the passenger rail line to the Larkspur Ferry terminal station in 2019. The northern extension from its current terminus at the Sonoma County Airport will include segments to Windsor (under construction), Healdsburg (planned), and north to Cloverdale (planned). There is an additional planned station, Petaluma North, within the current operating segment which is planned to begin construction in Fiscal Year 2023-2024.

[70] http://www.sonomamarintrain.org/
[71] http://www.sonomamarintrain.org/

An operations and maintenance facility for the entire line is located adjacent to the Sonoma County Airport station on Airport Boulevard, north of Santa Rosa. SMART uses "light" self-powered Diesel Multiple Unit (DMU) vehicles that comply with the latest federal Tier IV emissions standards, quieter and cleaner than conventional locomotive-hauled equipment. The system is compliant with Federal Railroad Administration standards for interaction between passenger and freight services, including vehicle and Positive Train Control system safety requirements.

With the completion of the Larkspur Extension, SMART launched a new train schedule in January 2020 with service focused on passengers commuting to work along the entire corridor with 19 round trips each weekday and equal frequency northbound and southbound. Operations began with seven two-car train sets that carry up to 158 seated passengers, 160 standing passengers, and provide on-board storage of up to 24 bikes. Additional cars resulting in three-car train sets, in use for popular trips, increase seating capacity by 52 percent during the peak hour, or up to approximately 480 seated and standing passengers per train.

SMART service schedules were changed significantly during the COVID-19 pandemic. Operators initiated a schedule with eight weekday round trips and no weekend service during the peak of the pandemic. The agency planned to only resume 13 round trips on weekdays in an effort to lower costs with a much-reduced ridership. In May 2021, service increased to 13 weekday round trips and six Saturday round trips. In May 2022, Sunday service was restored, and in June 2022 SMART added 10 additional weekday trips, and in October 2022, an additional weekday round trip was added, bringing the schedule to 36 weekday trips and 12 trips on Saturday and Sunday.

As of June 2022, Southbound service begins at 4:39 A.M. with a final southbound train at 6:37 P.M., while northbound service runs from 6:08 A.M. to 8:06 P.M. There are six round trips on weekends with the first train (southbound) departing at 7:36 A.M. and the final train (northbound) leaving at 7:30 P.M. The 45-mile operating segment takes one hour and 19 minutes, traveling at an average of 38.5 miles per hour (62.0 km/h).

The SMART train is an important alternative to the car, which will provide the backbone of an integrated transportation system that optimizes mass transit, bike, and pedestrian travel. The SMART system also includes a multi-use bicycle/pedestrian pathways generally running within or adjacent to the entire rail corridor. These continuous bicycle/pedestrian pathways include a combination of Class I and Class II bicycle facilities. The pathways are fully planned to connect with the surrounding bicycle and pedestrian network and are currently being constructed segment by segment.[72]

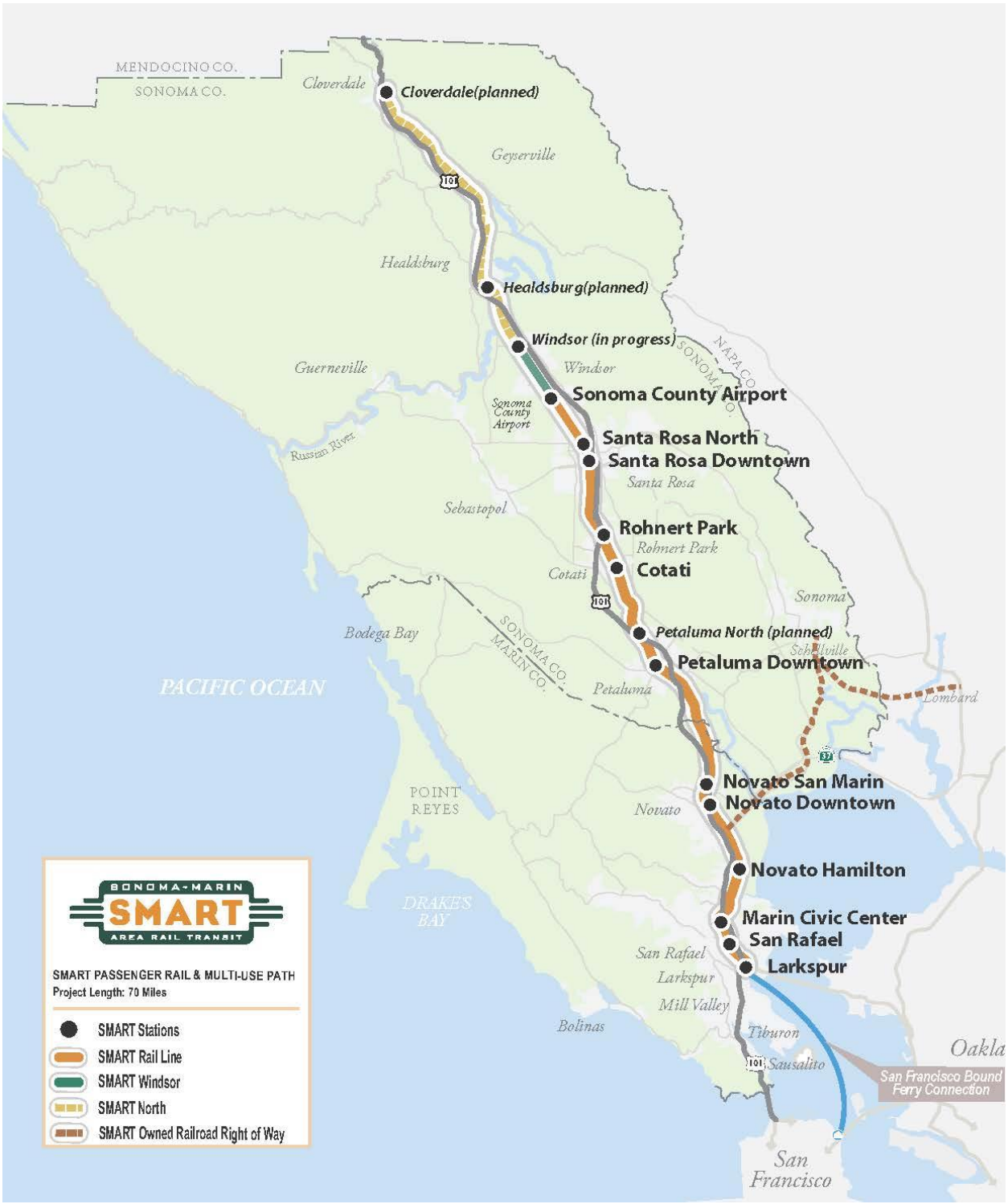
[72] https://www.sonomamarintrain.org/smart_pathway

Passenger Rail Feasibility Study: Novato to Suisun[73]

At the request of the California State Transportation Agency, SMART has reviewed the technical feasibility of implementing passenger rail service between Novato and Suisun City. This is consistent with the vision of the 2023 California State Rail Plan which calls for the evaluation of rail service expansion to the existing network. Caltrans DRMT and SMART have been engaged in network integration service planning for components of their northern extension as well as early refinement of the service plan to connect Sonoma County to Solano County and beyond to Sacramento. The proposed service would connect the existing Novato Hamilton station with the Capitol Corridor passenger rail system at its Suisun-Fairfield station, with the opportunity to through-run service all the way to Sacramento Valley Station. The Feasibility Study inventories the facilities and natural environment, develops conceptual options for rail service, provides high-level cost estimates and approximates travel times. This could provide a transportation alternative to those that travel the congested Highway 37 corridor and build upon transit connections that exist today. The entire corridor from Sonoma and Marin Counties to Sacramento are included in the recently-submitted Sacramento-Sonoma/Marin Corridor application for the Federal Railroad Administration (FRA)'s Corridor Identification Program. Acceptance into the program will establish a collaborative working relationship with the FRA to fund and deliver rail projects efficiently.

[73] https://sonomamarintrain.org/projects-update

Figure 13: SMART Train Route



4.1.2 Bus Transit Services

Several bus operators provide service within Sonoma and Marin Counties, each covering specific communities. There is fare and service schedule coordination between transit operators (including rail and ferry). The universal Clipper Card service offers transfer credits of $1.50 off adult fares.

Marin Transit provides local transit service, including fixed route, paratransit, community shuttle, supplemental school, and the Muir Woods Shuttle in Marin County. Golden Gate Transit offers regional transit service and commuter routes to and from Marin County and San Francisco, as well as to the Del Norte BART station in El Cerrito (Contra Costa County). Sonoma County Transit operates intercity and local routes throughout Sonoma County, including cities along the US 101 North Corridor, Sonoma Valley to the east, and the City of Sebastopol and Russian River areas to the west. Santa Rosa CityBus and Petaluma Transit provide local transit service within the two largest cities in the County. The Mendocino Transit Authority provides inter-county service between Santa Rosa and Ukiah in Mendocino County, and to several communities along the Sonoma/Mendocino County coast. Napa Vine Transit has indicated interest in serving directly the SMART system and Marin Transit provides dial-a-ride services from West Marin into Petaluma. Table 7 summarizes the number of routes and buses by operator.

Table 7: Bus Transit Services in Marin and Sonoma Counties, 2019

Operator	Number of Routes	Number of Buses in Fleet
Golden Gate Transit	19	150
Marin Transit	28	67
Petaluma Transit	6	12
Santa Rosa CityBus	18	29
Sonoma County Transit	23	51
Mendocino Transit Authority	6	N/A

Additionally, SB 742 was approved by the Governor in October 2019 and will allow Amtrak Thruway bus service to be used by passengers not riding rail. This will extend the reach of the Amtrak Thruway Route 7 servicing the US 101 corridor.

Golden Gate Bridge, Highway and Transportation District

Based in San Francisco, the Golden Gate Bridge, Highway and Transportation District operates the Golden Gate Bridge, and two public transit systems: Golden Gate Transit (GGT) buses and Golden Gate Ferry. The District provides commuter and regional bus service via US 101 to San Francisco. GGT provides regional fixed-route bus service in San Francisco, Marin, and Sonoma Counties. Bus service is also available between San Rafael in central Marin and the El Cerrito del Norte and Richmond BART stations in western Contra Costa County via the Richmond-San Rafael Bridge. GGT also provides local bus service under a contract administered by Marin Transit.

Marin County Transit District (Marin Transit)

Marin Transit provides local transit services in Marin County including local fixed route services, supplemental school services, rural service, and paratransit service. Marin Transit contracts with Golden Gate Transit, Marin Airporter, MV Transportation, and Whistlestop Transportation to provide services, and coordinates senior and mobility services within the County through Marin Access, a program by Marin Transit for anyone who cannot or chooses not to drive. [74]

Sonoma County Transit

Sonoma County Transit provides local and intercity fixed route bus service within Sonoma County. It offers connections to local transit services provided by Santa Rosa CityBus and Petaluma Transit. Sonoma County Transit provides links to Mendocino Transit Authority (MTA) for service to the Sonoma/Mendocino County coast and Golden Gate Transit for regional service to Marin and San Francisco Counties. Sonoma County Transit also operates express buses from Santa Rosa to Petaluma and Cloverdale as well as between Sonoma and San Rafael.

Petaluma Transit

Petaluma Transit provides local bus service in Petaluma, with connections to Sonoma County Transit, Golden Gate Transit, and SMART rail transit for intercity trips.

Santa Rosa CityBus

Santa Rosa CityBus provides fixed-route service within the city limits, with most buses operating in loop routes. There are eighteen fixed routes with wheelchair accessible, low-floor buses, which can accommodate up to two bikes on the bike rack attached to the front of each bus. The CityBus route structure is designed around a timed-transfer method of providing service. Twenty-nine buses serving different routes arrive and depart at the downtown Transit Mall and other designated transfer locations.[75]

Mendocino Transit Authority

Mendocino Transit Authority (MTA) provides public transit services for Mendocino County with a service area of 2,800 square miles and a population of 90,000. MTA provides a diverse system of long distance, commute, and local fixed routes, plus two dial-a-rides and one Flex Route. Currently MTA operates --nine fixed bus routes, connecting the Mendocino Coast, the inland valleys, towns and communities to Ukiah, the County seat. Two routes (#95 and #65) connect most of Mendocino County with the City of Santa Rosa in Sonoma County, where passengers can make connections for travel to the Bay Area.

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[74] http://www.marintransit.org/index.html
[75] http://sctransit.com/

MTA provides daily connections in Santa Rosa with Sonoma County Transit, Santa Rosa City Bus, Amtrak, and Golden Gate Transit for regional services to Marin and San Francisco. MTA also provides daily connections with the Sonoma County Airport Express at the Sonoma County Airport for services to and from Bay Area airports. Transit services in the US 101 North Corridor are illustrated in the Marin County and Sonoma County transit maps (Figure 14 and Figure 15).

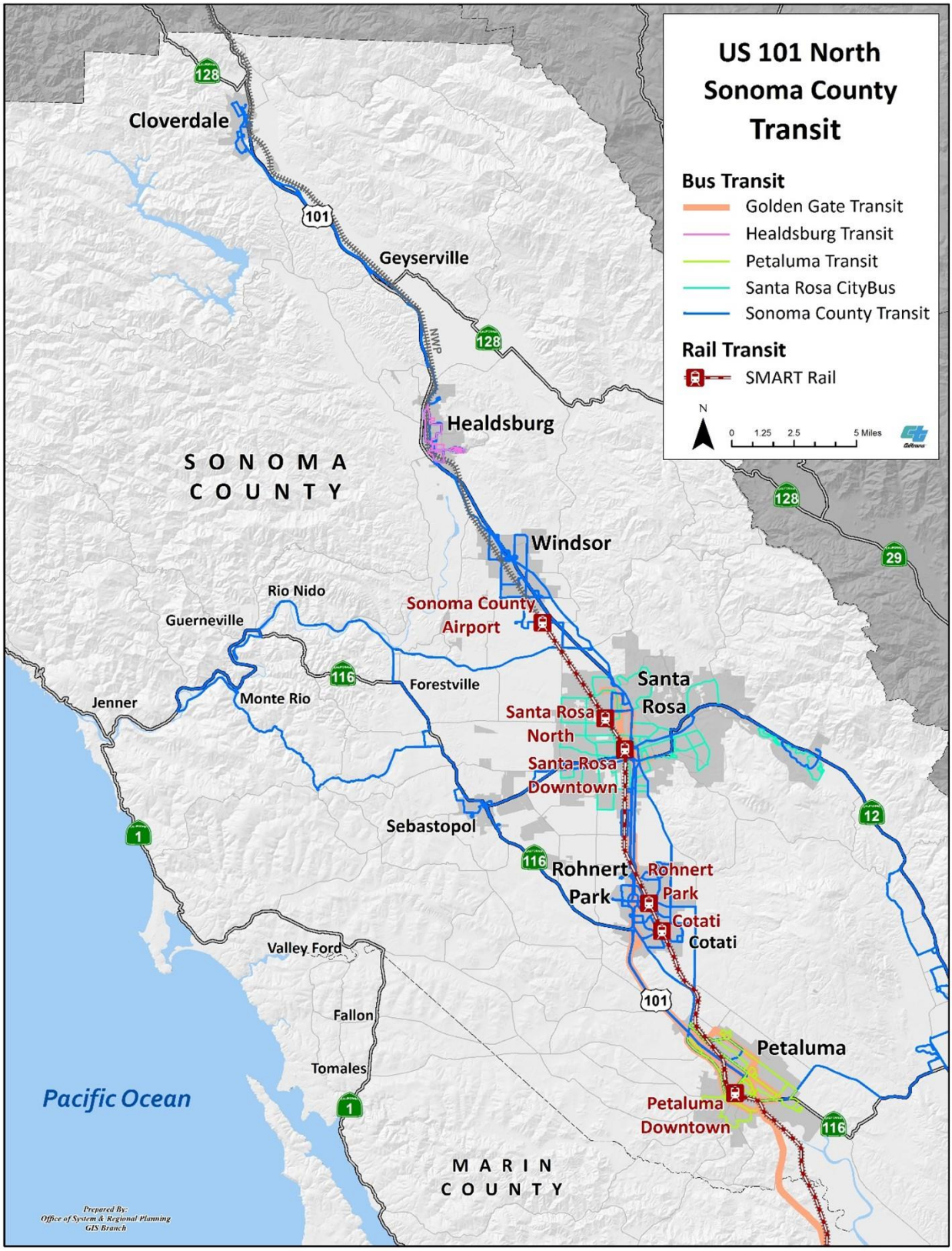
Sonoma County Airport Express

The Sonoma County Airport Express offers scheduled bus service for business and leisure travel between Sonoma and Marin Counties to the San Francisco and Oakland international airports. Locations for the Airport Express include the Charles M. Schulz – Sonoma County Airport, Santa Rosa Park & Ride, the Petaluma Fairgrounds, and the San Rafael Transit Center.[76]

[76] https://airportexpressinc.com/about.php

Figure 14: Transit services in the US 101 North Corridor - Marin County

Figure 15: Transit services in the US 101 North Corridor – Sonoma County



4.1.3 Express Bus Services

Due to COVID-19, there were dramatic cutbacks in transit schedules and commute bus frequency and availability during the years 2020 and 2021.

Golden Gate Transit operates express bus services along the US 101 Corridor in Sonoma and Marin Counties, continuing service on to San Francisco. Commute Routes 114, 132, 154, 172 operate during weekday peak hours only. The express bus service is bi-directional, southbound in the morning commute, and northbound in the evening commute. Sonoma County Transit provides some limited stop bus services within Sonoma County.

Table 8: Golden Gate Transit Commuter Buses

Route	From	To
101	Santa Rosa, Rohnert Park, Petaluma, Novato	SF Financial District
114	Mill Valley, Tam Junc., Manzanita P/R, Marin City	SF Financial District
130	Santa Rosa, Marin City, Sausalito	SF Financial District
132	San Anselmo/San Rafael	SF Financial District
150	San Rafael, Marin City	SF Financial District
154	Novato, Ignacio	SF Financial District
172	Santa Rosa, Rohnert Park, Petaluma	SF Financial District

Source: goldengatetransit.org 2022

Table 9: Sonoma County Transit Express Bus Routes

Route	From	To
44,48	Santa Rosa	Rohnert Park, Cotati, Petaluma
60	Santa Rosa	Windsor, Healdsburg, Cloverdale

Source: sctransit.com 2022

4.1.4 Ferry Service

Along the US 101 North Corridor, modern high-speed ferries are an important component of the multi-modal transportation corridor.

The San Francisco Bay Area Water Emergency Transportation Authority (WETA) is a regional public transit agency tasked with operating ferry service on San Francisco Bay and coordinating water transit response in regional emergencies. WETA operates daily passenger ferry service to the cities of Alameda, Oakland, San Francisco, Vallejo, Richmond, and South San Francisco, carrying roughly 3 million passengers per year under the San Francisco Bay Ferry brand.

The Golden Gate Bridge Highway & Transportation District operates the Golden Gate Ferry, with service between San Francisco and Marin Counties. Ferries provide a reliable and scenic mode of transportation for both commuters and tourists, with service between Larkspur (with connections to SMART rail), Sausalito, Tiburon, and San Francisco.

The Blue & Gold Fleet is a privately owned company providing ferry and water excursion services on San Francisco Bay. The company provides ferries to Sausalito, Tiburon, Angel Island,

and through its contract with WETA, service to Oakland/Alameda, Vallejo, Harbor Bay, Richmond, South San Francisco, and Oracle Park (on San Francisco Giants game days).

4.1.5 Transit Hubs

There are several transit hubs in the Corridor providing connection points for transit services. The Santa Rosa Downtown Transit Mall is the largest in Sonoma County and is estimated to serve thirty routes and over 10,000 passengers daily. The Santa Rosa Transit Mall feeds into the Santa Rosa Avenue/Mendocino Avenue corridor, which has the highest ridership in Sonoma County, providing roughly 7,000 trips a day, between CityBus, Sonoma County Transit and Golden Gate Transit. Transit Hubs in Marin County include the Bettini Transit Center in downtown San Rafael which serves 9,000 passengers daily.

Transit operators in Sonoma County have been working to coordinate connectivity between bus and SMART rail services. Additional transit hubs have been constructed at or adjacent to several of the future SMART stations. Some of the facilities also serve as park-and-ride lots.

The transit hubs in the Corridor include:

- San Rafael Bettini Transit Center — Serves SMART, Golden Gate Transit, Marin Transit, private airport services, and taxis, and has a Caltrans Park-and-Ride. Completed in 2016.
- Marin Civic Center SMART — Served by Marin Transit. Completed in 2016.
- Petaluma Transit Mall — Transfer hub for Petaluma Transit, Sonoma County Transit, and Golden Gate Transit. The downtown Petaluma SMART station is located just east of the Transit Mall. Completed in 2005.
- Cotati Depot — Transfer hub for Sonoma County Transit and Park-and-Ride lot. Completed in 2015.
- Windsor Depot — Transfer hub for Sonoma County Transit (including feeder bus routes to SMART). Completed in 2007.
- Healdsburg Historic Depot — Transfer hub for Sonoma County Transit (including feeder bus routes to SMART) and Park-and-Ride lot. Completed in 2015.
- Cloverdale Depot — Transfer hub for Sonoma County Transit (including feeder bus routes to SMART), feeder bus route to Amtrak, and Park-and-Ride lot. Completed in 1998.

4.1.6 Park-and-Ride Lots

There are several existing Park-and-Ride facilities along the Corridor. Their location, size, and usage are summarized in Table 10.

Table 10: Park-and-Ride Lots along US 101 in North Marin and Sonoma Counties (2019)

Lot	County	Route	P.M.	City/Location	Owner	Space	Usage	Transit Agency
1	Marin	101	1.5	Sausalito/Spencer Ave. & Monte Mar Dr.	Caltrans	47	289%	GGT
2	Marin	131	3.8	West of Tiburon Blvd at Lyford Drive	Caltrans	50	76%	
3	Marin	101	4.1	Marin City/Manzanita, US 101 and SR 1	Caltrans	303	81%	GGT, Marin Transit
4	Marin	101	4.8	Mill Valley/De Silva & Redwood Hwy front	Caltrans	59	92%	GGT, Marin Transit
5	Marin	101	8.6	Greenbrae/Sir Francis Drake Blvd.	GGT	50	N/A	GGT

Lot	County	Route	P.M.	City/Location	Owner	Space	Usage	Transit Agency
6	Marin	101	10.8	San Rafael/Hetherton St. & 3rd St, 4th St. & 5th St. (3 lots)	Caltrans	160	95%	GGT, SCT, SMART
7	Marin	101	11.2	San Rafael/Irwin St. & Mission Ave.	Caltrans	31	90%	GGT, SCT
8	Marin	101	12.2	San Rafael/Lincoln Ave & Prospect Dr.	Caltrans	42	81%	GGT
9	Marin	101	14.7	San Rafael/Smith Ranch Rd.	Caltrans	186	37%	GGT, Marin Transit
10	Marin	101	16.6	Novato/Alameda del Prado & Nave Dr.	Caltrans	100	97%	GGT, Marin Transit
11	Marin	101	20.2	Novato/Rowland Blvd.	Caltrans	240	35%	GGT
12	Marin	37	13.8	N of SR 37 at Atherton Ave/Glen Rd.	Caltrans	30	33%	
13	Marin	101	22.0	Novato/Atherton Ave.	Caltrans	58	81%	GGT
14	Sonoma	101	2.9	Petaluma/S. Petaluma Blvd. & US 101	Caltrans	36	113%	GGT
15	Sonoma	101	3.6	Petaluma/Lakeville St. & SR 116	Caltrans	135	80%	GGT
16	Sonoma	101	4.7	Petaluma/Washington St. & Payran St.	SCT	600	N/A	GGT, SCT, Petaluma
17	Sonoma	101	12.7	Cotati/SR 116 & St. Joseph Way	Cotati	166	N/A	GGT
18	Sonoma	101	12.7	Cotati/Redwood Dr. & SR 116	SCT	76	N/A	GGT, SCT, Solano County Transit
19	Sonoma	101	13.8	Rohnert Park/US 101 & Rohnert Park Expy.	Caltrans	325	67%	GGT, SCT
20	Sonoma	101	14.9	Rohnert Park/Roberts Lake Rd. & Golf Links Dr.	Rohnert Park	169	77%	GGT
21	Sonoma	12	16.3	Under SR 12, W of Brookwood Ave, N of Bennett Valley Rd.	Caltrans	179	55%	GGT, City Bus
22	Sonoma	101	22.5	Santa Rosa/Piner Rd. & Industrial Way	SCT	209	N/A	GGT, Santa Rosa City
23	Sonoma	101	24.8	Fulton/River Rd. & US 101	SCT	31	N/A	SCT
24	Sonoma	101	31.3	Windsor/Old Redwood Hwy &US 101 SB onramp	SCT	41	N/A	SCT
25	Sonoma	101	33.4	Healdsburg/Grant Ave & Healdsburg Ave.	SCT	66	N/A	SCT
26	Sonoma	101	43.3	Geyserville/SR 128 & Remmell St.	SCT	36	N/A	SCT
27	Sonoma	101	47.8	Cloverdale/Asti Rd. & Citrus Fair Dr.	SCT	87	N/A	SCT

SCT = Sonoma County Transit GGT=Golden Gate Transit *Source: 511.org & Caltrans Park & Ride Lot Usage 2019*

4.1.7 Transit Bus Pads on US 101 Ramps

In addition to the Park-and-Ride lots, Golden Gate Transit, Marin Transit, and Sonoma County Transit make use of "bus pads" so that buses can serve intermediate stops along the Corridor without leaving the freeway. Though relatively inexpensive to build, the bus pad has a number of downsides. For example, passengers must wait at the edge of a freeway, transfers can be difficult, and some pads require a long walk from the freeway to surface streets. The following table summarizes the bus pads on US 101.

Table 11: Transit Bus Pads on US 101 North Corridor

County	Location	City/Neighborhood	Transit Operator
Marin	Spencer Avenue	Sausalito	Golden Gate Transit
	Seminary Drive	Mills Valley	Golden Gate Transit
	Tiburon Wye	Mills Valley	Golden Gate Transit
	Paradise Drive	Corte Madera	Golden Gate Transit
	Lucky Drive	Larkspur	Golden Gate Transit
	N. San Pedro Road	San Rafael	Golden Gate Transit
	Terra Linda/ Freitas Parkway	San Rafael	Golden Gate Transit
	Lucas Valley Road/Smith Ranch Road	San Rafael	Golden Gate Transit
	Marinwood	San Rafael	Golden Gate Transit
	Tamalpais Drive	Corte Madera	Marin Transit
	Alameda del Prado	Novato	Golden Gate Transit
	Ignacio Boulevard	Novato	Golden Gate Transit/ Marin Transit
	Rowland Boulevard	Novato	Golden Gate Transit/ Marin Transit
	DeLong Avenue	Novato	Golden Gate Transit/ Marin Transit
Sonoma	Rohnert Park Expressway	Rohnert Park	Golden Gate Transit/ Sonoma County Transit

Source: 511.org

4.1.8 Other Mobility Services

Both Marin and Sonoma Counties provide a range of mobility services to meet the wide range of mobility needs in the Corridor. TAM also provides incentive programs to use regional vanpools and first/last mile programs and are partnering with SCTA on a regional bike share program.

Volunteer driver programs also help meet the transportation needs of disabled and senior residents in Sonoma and Marin Counties. Volunteers currently provide rides for medical and social service appointments to seniors, visually challenged seniors, and others who are unable to use local public transportation.

The Sonoma County Area Agency on Aging and Marin Transit in Marin County currently manage several mobility programs that support the expansion of senior and mobility-impaired services including catch-a-ride and taxi voucher programs, paratransit services, ADA services and

volunteer driver programs. Both Sonoma and Marin Counties provide mobility management services including coordination of volunteer driver programs, ride training, travel navigators, and coordination of health care transportation. Both counties managed transportation demand management programs and participate in the Emergency Ride Home (ERH) program, whereby those who use alternative modes of commuting (carpool, vanpool, public transit, biking, or walking) and experience an emergency are able to be reimbursed for a ride home by taxi, Uber, Lyft, or equivalent service.

4.2 Private Commuter Shuttle Services

Private Commuter Shuttles (Shuttle) are the private sector's response to employee commute needs, transporting workers from their neighborhoods to their jobs or transportation hubs in the Bay Area. They have been in operation since 2004 in San Francisco.[77] A Shuttle operator essentially provides direct private transit service from one location to an employer's company campus. The primary mission of companies that provide Shuttle service for their employees, is to locate high-density clusters of where employees live, then provide a shuttle to those areas and transport employees in and out of work for the day. That means that the origins and the routes of Shuttle trips can change with the location of the employees. The shuttles are typically owned and operated in a variety of ways, including private charter bus companies in contract with a sole employer, buses owned by the employer directly, or by third parties serving multiple employers.

Prior to the COVID-19 pandemic, shuttle services have been successful and have experienced growth in the Bay Area. In 2014, the combined 35 Shuttle operators reached 25 million Vehicle Miles Traveled (VMT), an increase from 16 million VMT just two years prior. There are only eleven round trip shuttles from or to Marin and Sonoma Counties, less than two percent of the regional total. Private shuttle services in Marin and Sonoma Counties have the potential to grow while lessening freeway traffic congestion related to employment growth. Shuttle services are returning slowly to the Bay Area as recovery from the pandemic continues.

Sonoma County Airport Express provides shuttle service between various county pickup locations, San Rafael Transit Center, and Sonoma County Airport, San Francisco International Airport (SFO), and Oakland International Airport (OAK).

Marin Airporter shuttles passengers between various county locations and SFO.

[77] Policy Analysis Memo to County of San Francisco Board of Supervisors, March 2014.

4.3 Bicycle and Pedestrian Facilities

Bicycle and pedestrian facilities are vital components of a multimodal transportation network. Active transportation is integral to corridor planning, encompassing a myriad of benefits. Nearly every journey contains an aspect of active transportation. Due to the generally mountainous topography of Marin and Sonoma Counties, the US 101 North Corridor bicycle/pedestrian network is not always contiguous. This section examines the active transportation network parallel to US 101, identifies the needs of bicyclists and pedestrians, and proposes mobility improvements along the Corridor.

4.3.1 Policy Overview: Regional and Local Plans

MTC Regional Active Transportation Plan

MTC developed a Regional Active Transportation (AT) Plan[78] in 2022 that will provide a framework for investments in infrastructure and regional policy development and implementation. It was designed to support the Plan Bay Area 2050 strategy to build a Complete Streets Network and help meet goals for safety, equity, health, resilience, and climate change. The AT Plan's foundational element is the "Create Healthy and Safe Streets" themed strategy to make roads safer for all users including drivers, cyclists, rollers (people that use a wheelchair or scooter), and pedestrians. This themed strategy was encapsulated in strategies T8 (Build a Complete Streets network) and T9 (Advance regional Vision Zero policy through street design and reduced speeds) of the 35 strategies created to achieve PBA 2050's vision for a more equitable, affordable, connected, diverse, healthy, and vibrant Bay Area for all. The AT Plan incorporates the work of regional partners from adopted county and Caltrans Plans to see where regional bicycle infrastructure and high-priority pedestrian improvement areas are located and understand where there are regional bicycle infrastructure gaps. The Regional Bike Network, working in conjunction with county plans, is the backbone of the AT Network.[79] The funding assessment from the AT Plan identifies funding sources and scenarios to build out a regional active transportation network and implement the plan. The assessment will also help cities and counties access funding more easily. Objectives of the AT Plan include:

- **Regional Planning Framework** – Connect people to areas that will have future growth in housing, jobs, and transit over the next 30 years, as identified in Plan Bay Area 2050
- **Safety** – Create and maintain a safe environment for people walking, rolling, and bike riding
- **Equity** – Provide active transportation options to underserved communities and those with vulnerable populations

[78] https://storymaps.arcgis.com/stories/e77c08c157c54493931af81eaf950c02
[79] https://mtc.maps.arcgis.com/apps/mapviewer/index.html?webmap=8c0efbb322804b06ba8820f1672bd79f

- **Connections** – Provide connections to key regional destinations, corridors, and public transit
- **Previous Planning Efforts** – Build upon regionally significant planned projects that have been identified through local and county planning efforts.

In addition to the State and regional policies on Complete Streets, Sonoma County and cities in Marin County, as well as unincorporated Marin County, have each adopted bicycle and pedestrian plans, outlining the policy goals as well as identifying bicycle and pedestrian needs within each jurisdiction.

Marin County

The Transportation Authority of Marin (TAM)[80] works with the County and cities to create a cohesive, accessible and safer network for bicyclists and pedestrians. Bicycle and pedestrian plans for each city and unincorporated Marin County guide the development of connected bicycle and pedestrian networks.[81] TAM facilitated a coordinated update of bicycle and pedestrian master plans for each town, city, and the County and included regional and State partners such as Caltrans and MTC in 2017.[82]

WalkBikeMarin[83] is an initiative by the County of Marin to make Marin County more healthy, livable, and environmentally sustainable by encouraging walking and bicycling as everyday transportation. This initiative was catalyzed by a $25 million federal grant to fund the Non-motorized Transportation Pilot Program (NTPP). The goal of the WalkBikeMarin website is to provide information about all the County's bicycle and pedestrian projects and programs in one place.

Sonoma County

The Sonoma County Transportation Authority (SCTA) updated the 2008 *Countywide Bicycle and Pedestrian Master Plan*[84] *in* 2014. The goal of the plan is to develop and maintain a comprehensive countywide bicycle and pedestrian transportation system, which includes projects, programs, and policies that work together to provide safe and efficient transportation opportunities for bicyclists and pedestrians. As an agency representing the cities and County of Sonoma, SCTA works to maintain and improve the transportation system by prioritizing, coordinating, and funding, as well as conducting comprehensive, countywide planning. SCTA staff coordinates with Caltrans and the County Bicycle and Pedestrian Advisory Committee on the District 4 Bicycle Plan, which focuses on bicycle network gaps and barriers around the State Highway System. Although there is currently no representation from SCTA on the D4 Policy

[80] https://www.tam.ca.gov/overview/
[81] https://www.tam.ca.gov/planning/bicycle-pedestrian-plans-2/
[82] https://www.walkbikemarin.org/
[83] https://www.walkbikemarin.org/
[84] https://scta.ca.gov/wp-content/uploads/2016/07/BikePedPlanUpdate2014_final.pdf

Advisory Committee or Bicycle Advisory Committee, SCTA was represented on the D4 Bike Plan Technical Advisory Committee during the bike plan development and was on the D4 Pedestrian Plan Working Group when it was being developed.

The SCTA funds bicycle and pedestrian projects through a variety of programs. Transportation Development Act (TDA) funds are generated from a statewide ¼ cent sales tax. Article 3 of TDA (TDA3) is a 2 percent set-aside of those funds for bicycle and pedestrian planning and projects. Funding is distributed based on population in Sonoma County. Examples of recently completed projects include:

- Pedestrian refuges
- Signage and flashers, sidewalk gap closures
- Automatic bicycle and pedestrian counters
- A multi-use pathway, as well as multiple Class II bike lane projects throughout the county

SCTA facilitates coordinated planning and the exchange of information through its Countywide Bicycle & Pedestrian Advisory Committee (CBPAC). This advisory body has representatives from every jurisdiction. It coordinates projects and funding and makes recommendations to the SCTA for bicycle and pedestrian facilities.

SCTA supports "Complete Streets" principles in roadway planning. This means users of all ages and abilities are to be considered when designing a roadway: motorists of various vehicle types, pedestrians, bicyclists, people who use mobility devices such as wheelchairs, and transit users. SCTA planning efforts seek to connect bicycle and pedestrian facilities to each other, as well as to transit. Safety improvements, amenities that promote biking and walking, and programs that encourage choosing non-motorized ways to travel are all part of the SCTA effort to make active transportation viable for more and more people."

4.3.2 North-South Greenway, SMART Pathway, and MSN Multi-Use Path

The built and planned bicycle-pedestrian projects along the US 101 North Corridor comprise a robust larger network. This larger network has been deemed essential by community members, and is called for by various regional planning efforts, including the North-South Greenway, San Francisco Bay Trail, Great Redwood Trail, and the afore mentioned SMART Pathway. Each of these regionwide efforts was founded from a broad coalition of community groups, residents, elected officials, and regional and local planning agencies to create a more extensive, connected, and inviting network for non-motorized transportation. In the case of the SMART Pathway, the facility is considered an integral part of the railroad, both as first/last-mile connection to SMART stations and as a railroad safety feature to provide publicly accessible non-motorized access and discourage trespassing on railroad right-of-way.

With SB 1029, the Great Redwood Trail, a planned 316-mile footpath from the San Francisco Bay north to Humboldt Bay was established. The trail will run along US 101 on portions of the former North Coast Railroad Authority's right-of-way, and other properties from Novato in Marin County to Blue Lake in Humboldt County.

The envisioned North-South Greenway is a 25-mile bicycle and pedestrian corridor which starts at the Golden Gate Bridge and connects Sausalito, Mill Valley, Corte Madera, Larkspur, San Rafael, and Novato to Sonoma County, generally following the old Northwestern Pacific (NWP) railroad alignment parallel to US 101. [85] With the opening of Cal Park Tunnel, the Lincoln Hill Pathway, the Enfrente Pathway, various SMART multi-use pathways, and other projects, the North-South Greenway has come to fruition, but gaps exist.[86] As part of the North-South Greenway project, TAM partnered with Marin County, Caltrans, the City of Larkspur, the Town of Corte Madera, and MTC to close a gap between the Central Marin Ferry Connector, a bike/ped path and bridge connecting the Greenway and the ferry terminal, and the existing multi-use paths at the intersection of Old Redwood Highway and Wornum Drive in the City of Larkspur.[87] The recently completed Central Marin Ferry Connector Project provides bicycle and pedestrian access across Sir Francis Drake Boulevard in Larkspur.[88]

SMART, when complete, will carry passengers from the Larkspur Station adjacent the ferry terminal north to Cloverdale, a seventy-mile trip. The SMART trains have space for twenty bicycles thereby further supporting bike/transit coordination. Bicycles and shared scooters are an important link with SMART to complete the first and last mile travel. SMART saw 171,000 bicycles onboard through the end of 2019 and with the launch of the new schedule and service to Larkspur in early 2020, a weekday average of over 300 bicycles per day were brought on board as part of the multi-modal transportation system. The SMART system includes a parallel bike/pedestrian path, mainly as a Class I path, primarily along the rail right-of-way, which is roughly parallel to US 101. Updated SMART Pathway project statuses and maps can be found on: https://www.sonomamarintrain.org/smart_pathway.

The Marin-Sonoma Narrows (MSN) HOV lane widening project includes a continuous bike/pedestrian pathway along Redwood Boulevard in Novato to San Antonio (frontage) road. MSN Contracts B1, B2, and B3 completed Class I, II, and III bike paths, connecting SMART's Pathway located to the north and south of its project limits. The bike path also connects SMART stations along the corridor. A recently completed Class I path running parallel to US 101 links San Antonio Road to Petaluma Boulevard South into the center of Petaluma. The Marin-Sonoma Narrows segment is roughly parallel to the SMART train tracks on Caltrans property.

[85] http://www.walkbikemarin.org/documents/BMP/FinalAdopted08/Plan.pdf
[86] https://www.marinbike.org/news/road/north-south-greenway-in-marin/
[87] http://www.nsgreenwaygapclosure.com/
[88] https://www.tam.ca.gov/projects-programs/central-marin-ferry-connection/

4.3.3 Planned Improvements

Caltrans District 4 Bike Plan

Caltrans addresses bicycle needs and projects throughout the project development process. The 2018 Caltrans District 4 Bike Plan identifies infrastructure improvements that enhance bicycle safety and mobility and recommends removal of barriers to bicycling in the region. The Plan was developed in cooperation with local and regional partners and the public to ensure that the recommended bicycle improvements on the SHS complement proposals for local and regional networks. The Plan considers all types of bicycle trips, but prioritizes utilitarian bicycle travel, such as to work, school, shopping, or to connect to transit. State highways that serve as recreational or touring routes for bicyclists are also considered. The Plan helps inform future investments on the State transportation network. Many funding programs also require consideration of complete streets improvements as part of a project, such as sidewalks, bike lanes, and crossing improvements. Caltrans is eligible to compete for State and regional Active Transportation Program (ATP) funds for improvements that have the potential to increase biking trips or to enhance safety.

The Caltrans District 4 Bike Plan Web Map covers the SHS within the nine Bay Area counties, showing which State highways are open to bicyclists, where bicyclists are prohibited, and alternate routes where bicycling is prohibited. Recommended projects from the D4BP are included in Chapter 7.

The Caltrans District 4 Pedestrian Plan

The Caltrans District 4 Pedestrian Plan, completed in April 2021, complements the 2018 Caltrans District 4 Bicycle Plan. These combined plans are part of a comprehensive planning process to implement the statewide bicycle and pedestrian plan, California Active Transportation Plan, Toward an Active California, to identify SHS locations with bicycle and pedestrian needs across all Districts which were then evaluated and prioritized according to mobility, safety, equity, and preservation goals.

The District 4 Pedestrian Plan includes two elements: a summary report providing an overview of the conditions and areas of significant needs for pedestrians; and a Story Map[89], an interactive map that identifies and prioritizes location-based pedestrian needs to improve access along, across, and parallel to the SHS as well as disadvantaged communities, density of pedestrian collisions, pedestrian facility conditions, and highways where pedestrians are permitted. These priority needs are based on an analysis of existing gaps and barriers in the network, as well as latent pedestrian demand, indicated by public input and a variety of data sets.

[89] https://storymaps.arcgis.com/stories/9a25b6f7dcf146328663b62660a0b6f9

The Plan identified locations as either a crossing or a corridor. Crossing needs are one or more of the following: 1) stressful pedestrian crossing, 2) infrequent crossings, 3) freeway interchange needs, and 4) other needs identified through local input or partner agencies. An example is a crossing needed for pedestrians to access the grocery store or park across the busy State highway bisecting their community. Corridor needs are one or more of the following: 1) street sidewalk gaps, 2) sidewalks in fair or poor condition, 3) sidewalks along higher-speeds highways, and 4) other corridor needs identified through local input or by partner agencies.

Locations were scored by first breaking down the SHS into smaller segments that Caltrans might use to develop its improvement projects. Second, each segment was assigned a score based on its context, using measures like those in the District 4 Today section of the Summary Report. Measures were grouped according to the goals of Toward an Active California and weighted to reflect local active transportation vision and input. Freeway crossings, which are not included in those segments, are also scored. The scored segments (and freeway crossings) were then ranked and sorted into tiers with Tier 1 representing the highest intensity of need. Many of the location-based needs will inform the current and future projects along the route.

Obstacles to a continuous pedestrian and bicycle network exist near US 101 North on and off-ramps. The following strategies [90,91] should be considered to ensure safety and provide connections for multi-modal travel:

- 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/crosswalk
    - Limit on-ramps to a single entry lane to provide shorter crossing distances through use of bulb outs where feasible, wherein a second ramp lane (e.g. HOV lane) can resume after the crosswalk
    - 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, while considering the maneuvering needs of bicyclists within and in advance of any such locations
    - Widen sidewalks and shoulders to standard widths, or wider when feasible, to increase user comfort. Provide for six-foot wide sidewalks and eight-foot wide striped shoulders on both sides of the roadway
- Pedestrian-Specific Strategies:

[90] Complete Intersections: A guide to reconstruct intersections and interchanges for bicyclists and pedestrians (Caltrans, 2010) https://altaplanning.com/wp-content/uploads/Complete-Intersections-A-Guide-to-Reconstructing-Intersections-and-Interchanges-for-Bicyclists-and-Pedestrians.pdf
[91] http://www.divergingdiamond.com/

    - Locate crosswalks appropriately, considering speed, sight lines, and crossing distance
    - Incorporate Leading Pedestrian Intervals into signal phasing
    - Shorten crossing distance through geometric changes, adding pedestrian refuge islands or grade separated medians, and the incorporation of bulb outs and lane neckdowns
    - Install pedestrian warning signs, yield signs/yield teeth, 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, which connect to continuous pedestrian facilities
    - For ramp crossings, add pedestrian signals, coordinated with adjacent traffic signals
    - Install accessible pedestrian signals
    - Lighting at uncontrolled crossings, pedestrian scaled lighting
    - Prohibit right turns on red where there are two right turn-lanes and a pedestrian crossing, through signage or the use of blank-out signs
    - Provide public art and lighting at undercrossings in urban areas, where feasible
    - Provide street trees and a vegetative landscape buffer between the sidewalk and travel lanes

- 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
    - Install green paint at conflict zones, where bicycle facilities and free movements cross, especially at on ramp and off ramp facilities
    - At controlled intersections, provide Two-Stage Bicycle Turn Boxes where feasible to better facilitate bicyclist turning movements
    - At controlled intersections, install bicycle detection to improve signal response for bicyclists

The bicycle and pedestrian projects are included in Tables 7.4 through 7.8 in Chapter 7 “Recommended Strategies.”

4.4 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. In 2018, 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 (CMCP) Guidelines developed for the SB 1 SCCP 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. The regional broadband consortia for Marin, Mendocino, Napa, and Sonoma Counties is the North Bay/North Coast Broadband Consortium (NBNCBC).

The NBNCBC identified areas in both Marin and Sonoma Counties as being high priority areas for CASF-Infrastructure Account funding in March of 2018. CASF is committed to deliver broadband access to 98 percent of households in the State and to provide broadband literacy and outreach programs. NBNCBC identified rural West Marin and the unincorporated areas within the County as high priority. These communities are low-density, coastal, and inland clusters, lacking broadband access and are a part of the digital divide. One of the target communities that will be prioritized for funding is the Hamilton Community near the city of Novato in Marin County. This community is near US 101 North. Sonoma County's coastal region was identified as a priority area due to concerns for safety, education, business, agricultural, healthcare, and tourism industries. The NBNCNC identified Sonoma county's lack of connectivity as an issue that spans across both the private and public sector. The lack of connectivity hurts students, first responders, farmers, public agencies, and the county's ability to become a main tourist attraction of the North Bay. Other target and priority communities were identified but are not along US 101 North. These issue-areas all rely on efficient and fast broadband services to promote the welfare of residents in both Marin and Sonoma counties. US 101 North is among the proposed strategic broadband corridors recommended by the regional broadband consortia. See Figure 16 for a map of strategic broadband corridors.

In July 2021, Governor Gavin Newsom signed historic broadband legislation, SB 156. The legislation expands the State's broadband fiber infrastructure and increases internet connectivity to help bridge the digital divide and provide reliable and affordable internet access to all Californians through the Middle-Mile Broadband Network (MMBN). MMBN is an open access, state-owned high-capacity fiber lines that carry large amounts of data at higher speeds over longer distances between local networks. It will connect to a last-mile broadband

infrastructure that will connect homes and businesses with local networks. To achieve these goals, the legislation called for a California broadband advisory committee. The newly formed Middle-Mile Advisory Committee will monitor the development and construction of the middle-mile. Internet service providers and other eligible entities can connect and deliver service through the new middle-mile network. The goal is to provide equitable access to high-speed broadband service and prioritize inclusion of unserved and underserved populations, anchor institutions (hospitals, universities, government entities and community non-profits), tribal entities, and agricultural regions. Caltrans is currently working with an experienced nonprofit third party to manage construction of the middle-mile infrastructure along state highways and rights of way. With US 101 in Marin and Sonoma counties identified as part of the MMBN, the planned delivery date for the full buildout of the broadband mile middle network for the US 101 North Corridor is expected in 2025.

All SMART rail projects have included the installation of dark fiber, a strand of which has been reserved free for public agency use as part of a public private partnership. This partnership will extend north as part of the future SMART rail extensions.

4.4.1 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 draft proposed "fiber ring" includes US 101, I-80, I-580, I-880 and other priority corridors.

Regional Communications Infrastructure

The existing regional communications infrastructure include 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, one of which is located on US 101 in Marin County. These sites create a high-capacity network to support public safety services.
- 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.

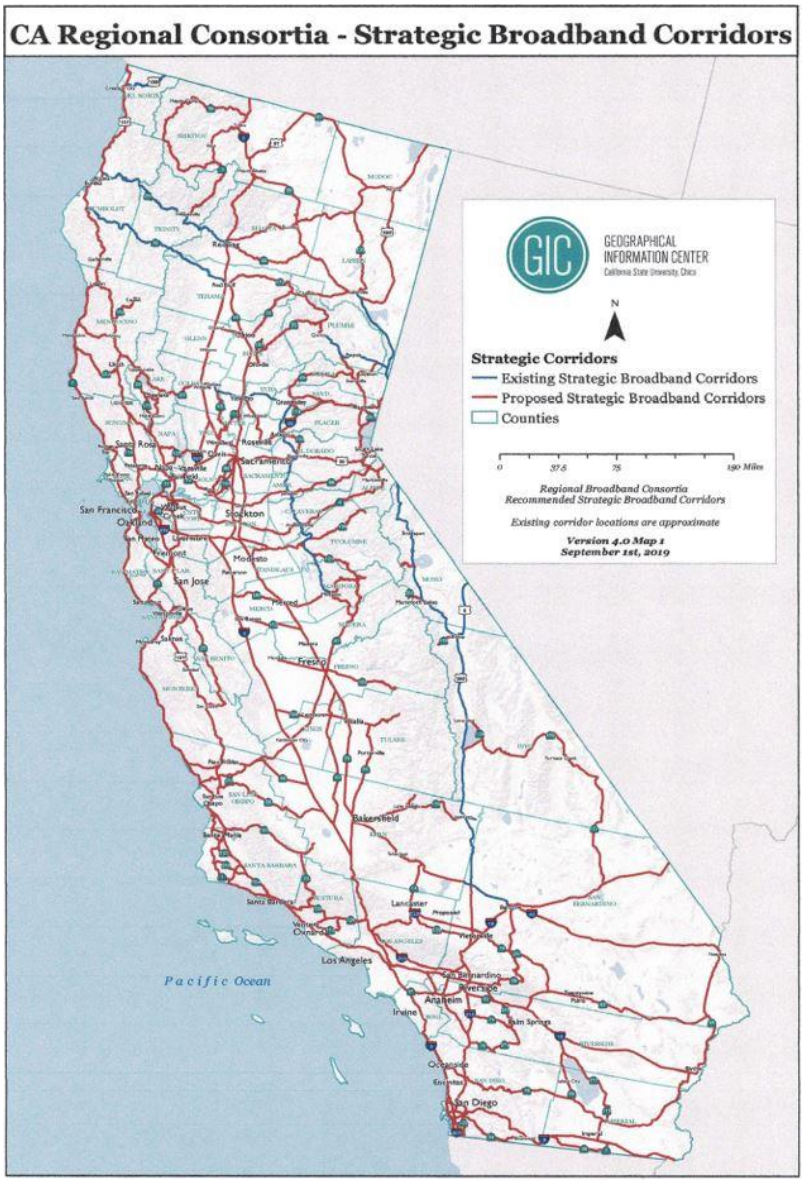
North Bay

There is currently existing empty conduit infrastructure in Marin County in two stretches along US 101: nearly four miles of two 1.25" empty conduits along US 101 through the city of San Rafael and four 1.5" empty conduits for nearly three miles along US 101 through the city of Novato.[92] TAM has identified several projects to be considered for Regional Measure 3 funding. The US 101/I-580 Direct Connector Project is planned to include installation of fiber communications infrastructure along Sir Francis Drake Blvd between the two highways that may be implemented within the next five years when funding is identified.

In February 2022, Marin County approved a broadband strategic plan called the Digital Marin Strategic Plan (Digital Marin)[93]. Digital Marin outlines general strategies for Marin County to bring high-quality internet to underserved populations in Marin County in the coming years.

[92] https://mtc.ca.gov/sites/default/files/Draft_Final_RCSI_Implementation_Plan.pdf
[93] https://godigitalmarin.org/documents/strategic-plan-final/

Figure 16: Strategic Broadband Corridors



4.5 Transportation Systems Management and Operations (TSMO)

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 traffic management for improving throughput:

- System management for recurring localized congestion (ramp metering, managed lanes, traveler information, dynamic speed limits, traffic signal and transit priority, parking management systems and 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. The Caltrans Strategic Management Plan 2020–2024 includes Strategic Objective which state, "To the maximum extent feasible, align financial investments to deliver on State goals and Caltrans' strategic outcomes while maintaining a fix-it-first approach and staying within existing funding frameworks." 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.

Existing ITS infrastructure on the US 101 North Corridor includes ramp meters, Traffic Monitoring Station (TMS), CCTV, CMS, Variable Message Sign (VMS), Extinguishable Message Sign (EMS), and HAR.

The following figures illustrates the TOS elements along the US 101 North Corridor. Detailed TOS and Ramp Metering information is in Appendix C. Caltrans District 4 has established informal guidelines for positioning TOS elements along a freeway corridor, shown in Appendix C.

Figure 17: US 101 North Corridor Traffic Monitoring Stations (TMS) – Marin County

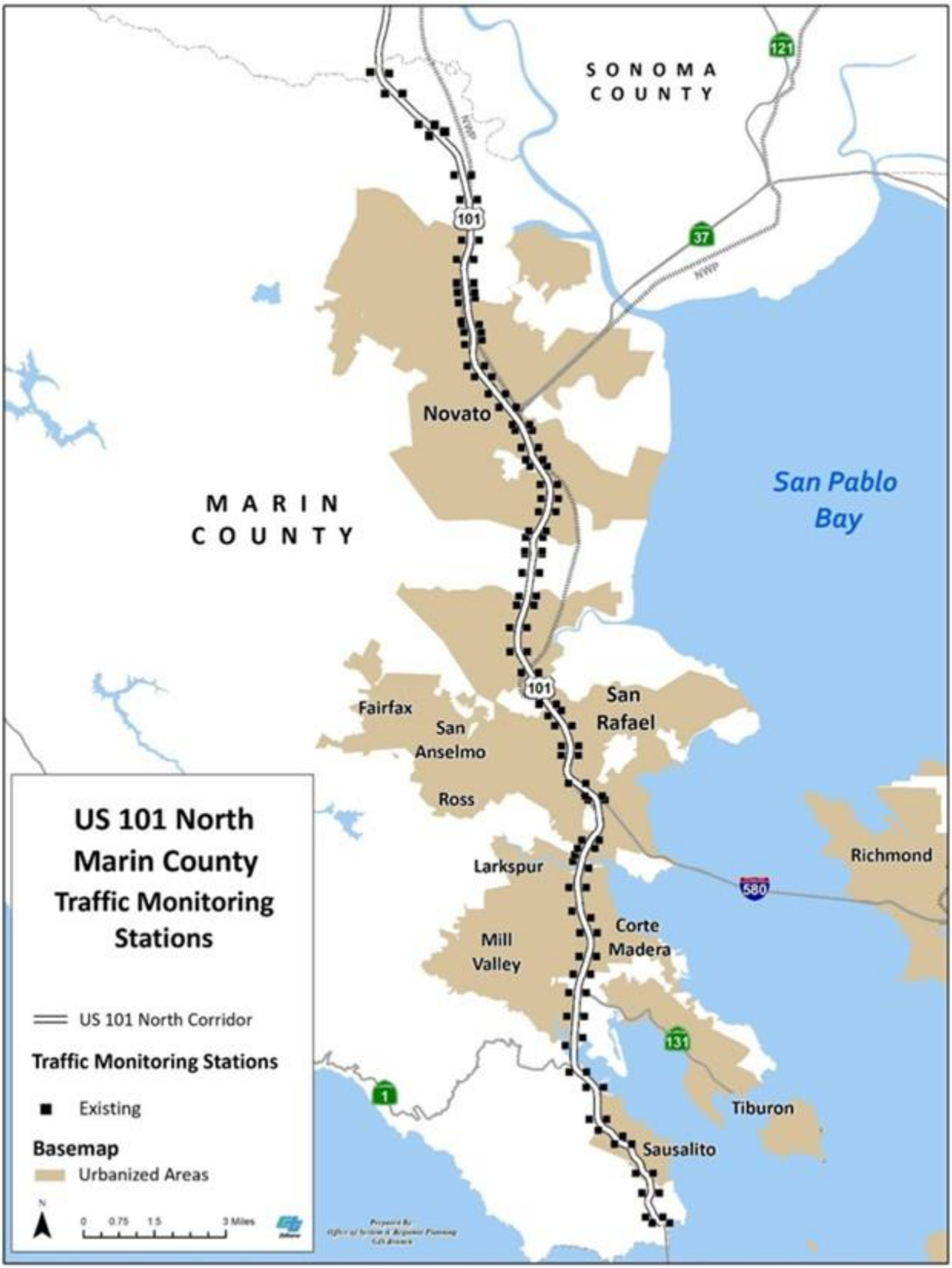


Figure 18: US 101 North Corridor Traffic Monitoring Stations (TMS) - Sonoma County

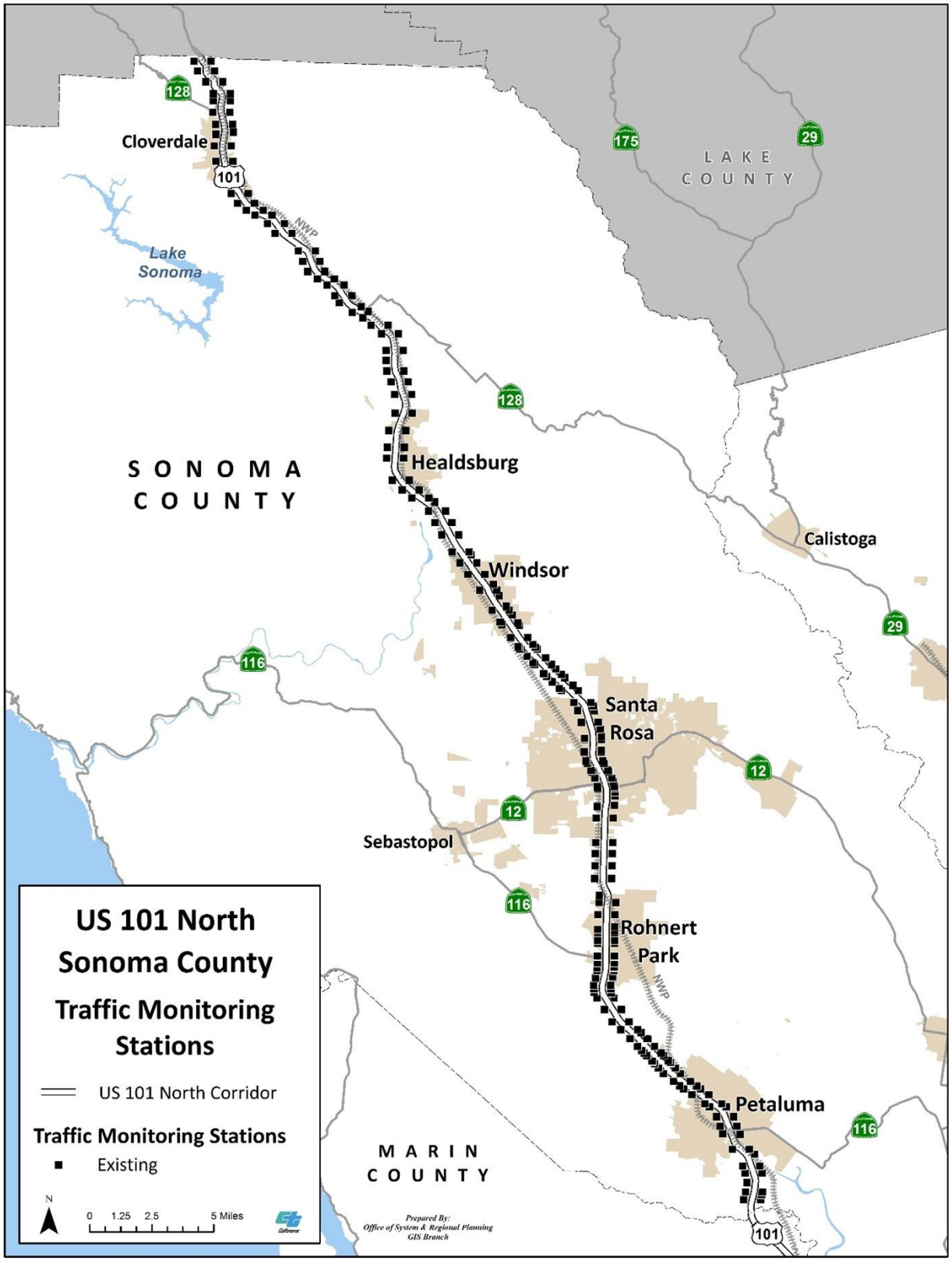


Figure 19: US 101 North TOS in Marin County

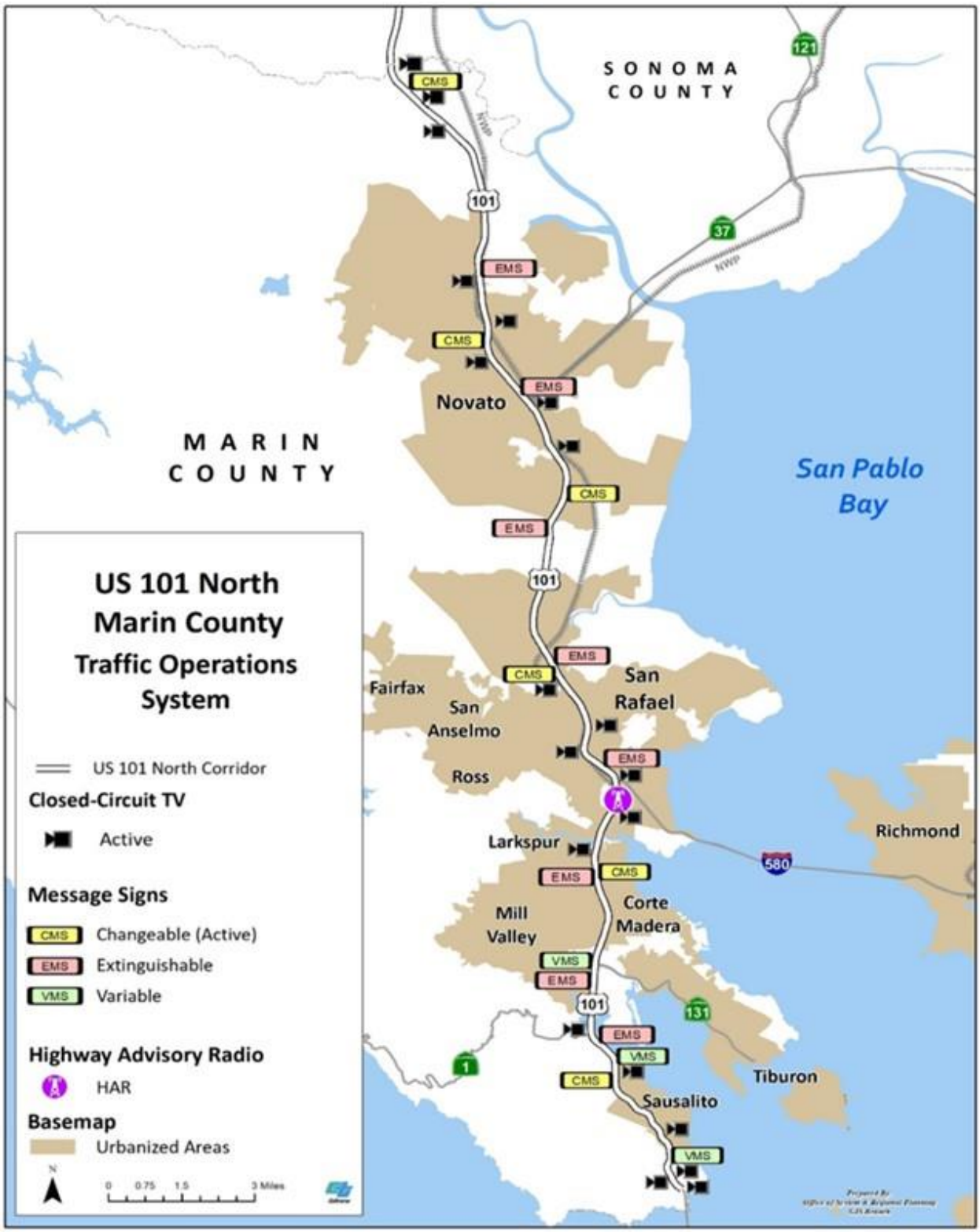
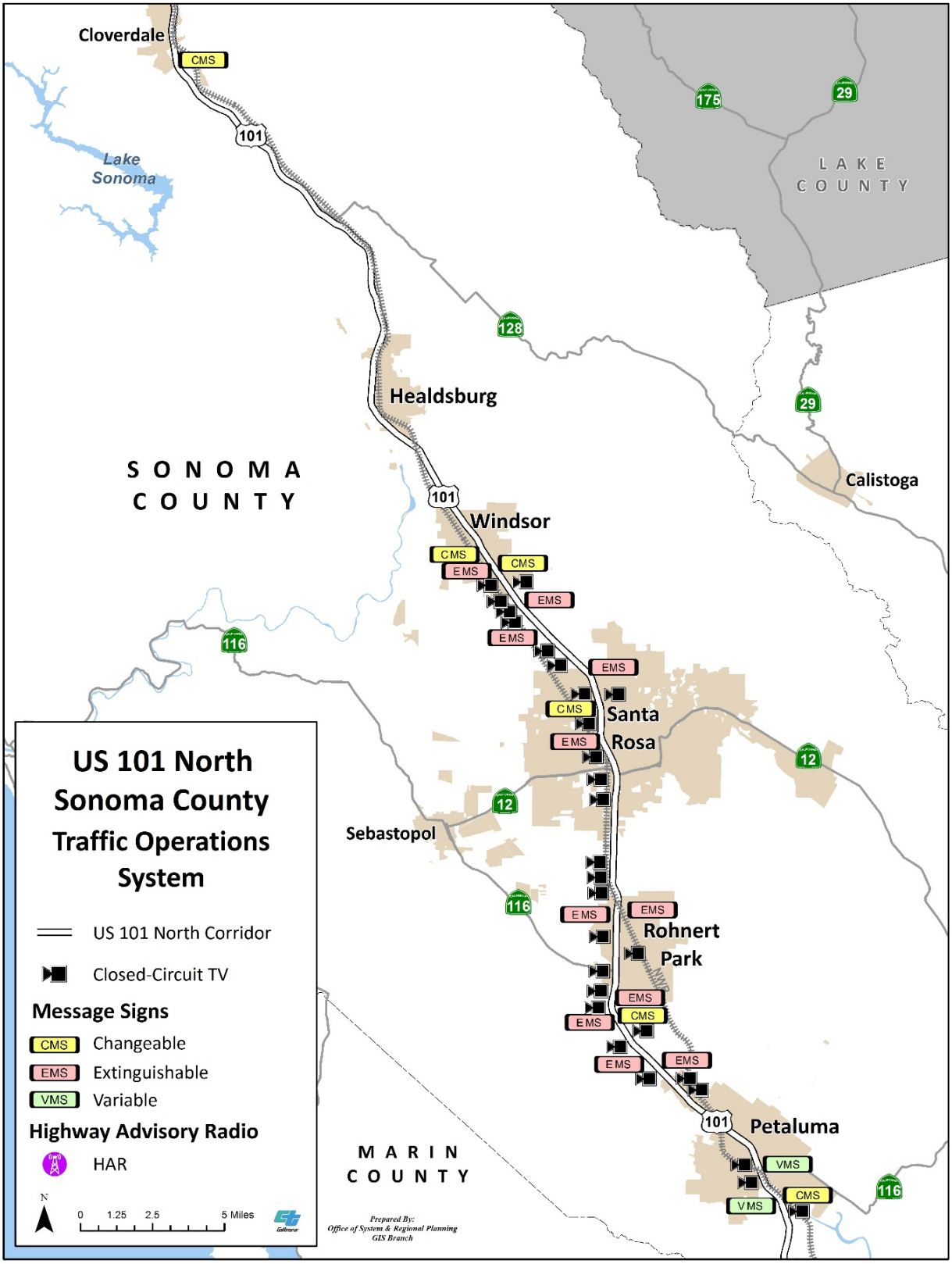


Figure 20: US 101 North TOS in Sonoma County



4.6 Freight Facilities

4.6.1 Freight Generators

The US 101 North Corridor includes major manufacturing industries such as biotechnology, electronic and precision instruments, brewer- and wine-related agriculture and production, petroleum refining, lumber, and chemical production. Major freight traffic generators in the Bay Area include the San Francisco International Airport, the Port of Oakland and Oakland International Airport, corporate campuses in San Mateo and Santa Clara Counties, and agricultural and wine production in Sonoma and Napa Counties. The wineries are increasingly taking advantage of intermodal rail services to move large shipments of equipment and supplies. The SMART rail corridor parallels US 101, SR 37 and SR 12 while local truck routes feed into the US 101, SR 12, SR 37, and I-580 corridors representing the main travel networks for freight distribution in Marin and Sonoma Counties.[94] The Marin-Sonoma Narrows project on US 101 is identified as one of the "highest priority freight route" projects in MTC's 2016 San Francisco Bay Area Goods Movement Plan. Additionally, SMART freight rail spurs and a rail bridge project are included in regional and State freight improvement plan project lists.

In general, Marin and Sonoma Counties are concentrated with ranches, dairies, farms, and vineyards, mainly northwest of Marin County[95] and scattered throughout Sonoma County. [96] SR 12 and SR 37 help provide connections to the I-80 Corridor from Sebastopol, Santa Rosa, the Sonoma Valley, Napa and Marin Counties to the rest of the State.[97] SR 37 and I-580 constitutes two major regional east-west transportation corridors in the North Bay, connecting I-80 and US 101. I-580 also provides a direct link to the Port of Richmond and the BNSF Richmond Railyard[98] and major freight logistics and distribution center hubs in the Central Valley.

the following table.

[94] https://scta.ca.gov/wp-content/uploads/2016/09/CTP16_090616.pdf
[95] http://www.malt.org/MALT-map
[96] http://www.sonomaopenspace.org/lands/
[97] http://scta.ca.gov/wp-content/uploads/2016/09/CTP16_090616.pdf
[98] https://www.bnsf.com/ship-with-bnsf/maps-and-shipping-locations/pdf/div_ca.pdf

Table 12: Freight Network along the US 101 North Corridor

Counties	Corridor	Other Key Corridor Element	Functions of the Corridor	Corridor Description
Sonoma, Napa, Solano, Marin	SR 12/ SR 37	• SMART Rail	Interregional	Helps connect North Bay to the Port of Oakland, San Joaquin Valley and rest of the region.
Contra Costa, Alameda, Marin	I-580	• Port of Richmond (including Richmond Pacific Rail) • BNSF Rail Yard	Interregional	Primary truck corridor connecting the Bay Area to the rest of the U.S. to the continental US secondary freight rail line that is expected to grow increasingly important with expansion of rail terminal at the Oakland Army Base.
San Francisco, Marin, Sonoma	US 101	• SFO • Port of San Francisco (including San Francisco Bay Railroad) • SMART in MRN and SON	Global Gateway, Interregional, Intraregional	Major goods movement corridor serving the Peninsula. Also connects agriculture shippers in North Bay (Sonoma), Central Coast and North Coast with markets in Bay Area. Primary access to SFO.

Source: San Francisco Bay Area Goods Movement Plan (2016) MTC

4.6.2 US 101 North Corridor Freight Overview

Freight movement refers to the transport and delivery of products and services from their origin to their destination. The goods movement supply chain is a vital component of the world economy and is reliant upon surface, air and maritime transportation systems and networks. The US 101 Corridor is a key component of this system and provides direct access to major interregional and regional freight corridors throughout California. In the San Francisco Bay Area, US 101 connects with major federal Interstate corridors including I-80, I-580, I-680, I-880 and I-5 (via the I-238/I-580 Corridor) and serves as the primary freight route through Marin and Sonoma Counties. The US 101 North Corridor also connects the San Francisco Bay Area to Oregon and the Pacific Northwest via the California counties of Mendocino, Humboldt, and Del Norte. A portion of US 101 from I-580 in Marin County to SR 12 in Sonoma County, a distance of more than 30 miles, is congressionally adopted as a Primary Highway Freight System Route[99] as part of the National Highway Freight Network. US 101 is also a nationally designated Surface Transportation Assistance Act of 1982 (STAA) – Terminal Access Route allowing Interstate

[99] https://ops.fhwa.dot.gov/freight/infrastructure/ismt/state_maps/states/california.htm

"STAA" trucks, characterized as longer and heavier trucks, to travel along the route. The STAA Network consists of National Network, Terminal Access and Service Access routes.

The California Freight Mobility Plan (CFMP) 2020, an update to the 2014 CFMP, serves as the State's long-range freight policy and planning document which will provide a consistent vision across the State in relation to the California Transportation Plan, California Sustainable Freight Action Plan, the Caltrans Strategic Management Plan 2020-2024, and the Interregional Transportation Strategic Plan 2021 (ITSP). In addition, the development was guided by the California Freight Advisory Committee (CFAC) representing public and private freight stakeholders across the state. The California Freight Mobility Plan 2020 states the following vision: "As the national gateway for international trade and domestic commerce, California exemplifies the world's most innovative, economically-competitive, multimodal freight network that is efficient, reliable, modern, integrated, resilient, safe, and sustainable, where social and environmental impacts are considered equally."

Regionally, freight facilities along the US 101 North Corridor are discussed in the 2016 San Francisco Bay Area Goods Movement Plan by MTC. The corridor area is also currently being included as part of the Northern California Mega-Region Study to understand regional freight movement clusters and their needs, transportation and land use challenges and opportunities, freight movement workforce training challenges and opportunities, and the identification of critical focus areas along with strategies and an implementation plan.[100] Together these reports will serve as the long-range regional goods movement and industry plans for the San Francisco Bay Area and will help shape future freight policies at State and national levels.

4.6.3 Rail Freight

Rail freight transportation services near the US 101 North Corridor is currently operated by SMART. Prior to SMART commencing the common carrier role in 2022, the private operator on the corridor carried building materials, animal feed, poultry, wine, brewer products, refuse, and other commodities[101]. In June 2021, SMART became the common carrier freight rail operator on the corridor and began the process of assuming the role with SMART staff in early 2022. SMART is unique in serving as the public owner-operator of both the freight and passenger railroad. SMART is working on business development and staff hiring and anticipates utilizing the new role to help North Bay businesses achieve economic growth with a climate friendly transportation footprint. Currently, SMART provides freight rail service from Schellville to the Charles M. Schulz – Sonoma County Airport. Windsor is anticipated to come back online with the future completion of SMART's Windsor Extension, in Sonoma County which would connect freight from Windsor to the national rail network via the California Northern Railroad Company (CFNR)in Lombard (Napa County). There are two operating transload service locations:

[100] http://mtc.ca.gov/our-work/plans-projects/economic-vitality/northern-california-mega-region-goods-movement-study
[101] http://nwprailroad.com/history/

Petaluma and Schellville. Additional transload locations are under development in the US 101 North Corridor. These facilities allow trucks to transfer freight onto the rail network and vice versa. CFNR provides freight service over the following lines: Schellville to Napa Junction, to a connection with the Union Pacific Railroad (UP) at Suisun-Fairfield (23.6 miles); a branch from Vallejo to Napa Junction to Rocktram (13 miles); between a connection with UP at Davis to Wyo to a connection with UP at Tehama (110.7 miles); a branch from Wyo to Hamilton (19 miles); and Los Banos to a connection with UP at Tracy (54.7 miles).[102] [103] Figure 22 displays the operating portions of the SMART along the US 101 North Corridor.

US 101 is the primary route that would benefit from the diversion of freight movement from trucking to rail. A 2009 Draft Environmental Impact Report created by the former and now dissolved North Coast Railroad Authority for resuming rail freight operations along the Russian River Division of the previously named Northwestern Pacific Railroad, estimated that up to 400 truck trips per day could be removed in the loaded direction between Novato and Santa Rosa and 340 per day between Santa Rosa and Mendocino County.[104] This is beneficial to the North Bay's transportation system for congestion relief, reduced roadway surface degradation, and emission reduction.[105]

4.6.4 Other Freight Corridors connecting US 101 North

Key interregional and intraregional truck corridors connecting to US 101 North include I-580, SR 12, and SR 37. Figure 21 identifies these routes as well as freight facilities such as railroads, airports, and ports. I-580 is identified as a Primary Highway Freight System (PHFS) in the National Highway Freight Network (NHFN). US 101 North, SR 12, SR 116, and SR 37 are federally designated Surface Transportation Assistance Act (STAA) Terminal Access routes and I-580 is a National Network route where federal STAA and California Legal trucks are permitted. SR 12 links Sebastopol, Santa Rosa, the Sonoma Valley, and Napa County. It also provides an important connection to I-80, a major freight corridor in the Bay Area and State. Within Santa Rosa, between Fulton Road on the west to Farmers Lane on the east, SR 12 is a freeway and expressway. The two-lane sections of SR 12 in Sebastopol and the Sonoma Valley are heavily congested on both weekdays and weekends. The AADT for truck traffic is approximately 4,500 to 8,600 between Windsor and I-580 as shown in Figure 21

[102] https://www.up.com/customers/shortline/profiles_a-c/cfnr/index.htm
[103] https://www.gwrr.com/customers/freight-rail-service#north-america, http://nwprailroad.com
[104] http://www.northcoastrailroad.org/DEIR_11_09.htm
[105] http://scta.ca.gov/planning/comprehensive-transportation-plan/

Figure 21: US 101 North - Annual Average Daily Truck Traffic (2017)

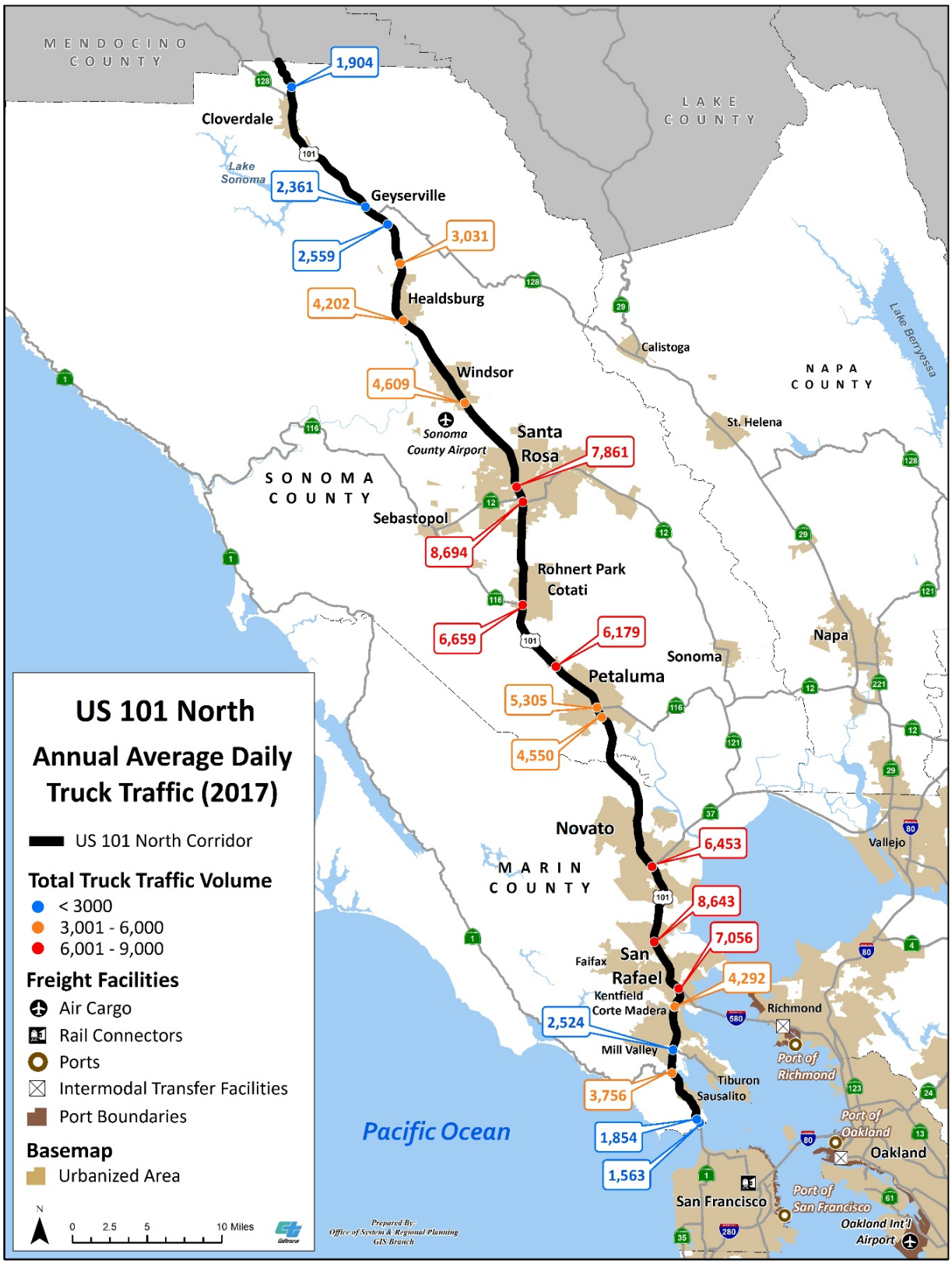
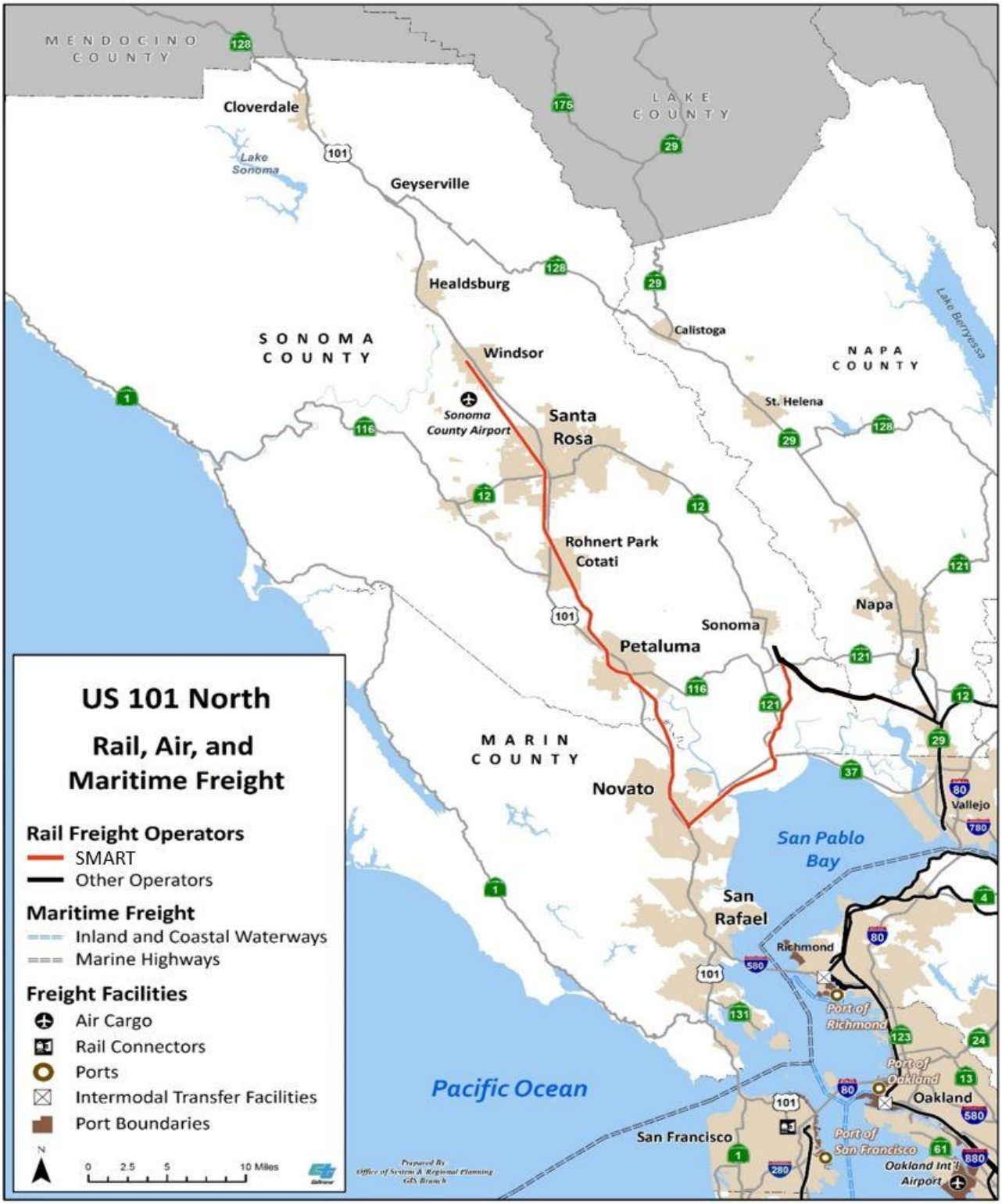


Figure 22: US 101 North - Rail, Air, and Maritime Freight



4.6.5 Trends in Freight Movement

As highways, railways, and airports reach capacity, technological and land use strategies are being considered to address efficiency and demand management. Market trends such as e-commerce have increased the need for last-mile delivery, which poses increasing demand on delivery trucks and parking in urban areas. Freight intelligent transportation systems (FITS) and "connected" vehicles are currently being tested around the nation. Connected vehicles and ITS technologies to communicate between vehicles and transportation systems, allowing for safety and efficiency improvements such as navigation, platooning, and advanced communications continue to be researched by both the public and private sectors and researchers are experimenting with further development of automated freight systems.[106]

Approximately eight percent of all Sonoma County VMT can be attributed to truck traffic. SCTA's CTP Policy Assessment showed that truck traffic could be reduced by fifty percent by shifting freight onto other modes such as rail, increasing packing efficiency and load sizes, implementing smart vehicle technologies in larger vehicles, improving distribution networks, improving delivery routing, and increasing the digital delivery of goods and services.[107]

4.6.6 Freight Needs along US 101 N

US 101 North and connecting roads function as the farm-to-market goods movement network system that serve the region's wineries and food producers, including the growing organic farm sector. Modal conflicts (between the movements of trucks and commuter traffic) continue to exist on these roads. Both highway and railroad corridors provide for shared-use between passenger transport and goods movement. While trucks generally avoid peak periods, increasing demands for on-time delivery of goods have become increasingly difficult for freight service providers to avoid the peak period. The San Francisco Bay Area Goods Movement Plan (2016) identifies the US 101 Marin-Sonoma Narrows project as a high priority to addresses needs, deficiencies and gaps in the region's goods movement system.

Additionally, the benefits of completing SMART rail extensions further north to Windsor, Healdsburg, and Cloverdale and potentially an east-west rail line would reduce truck traffic along the US 101 North Corridor.

[106] San Francisco Bay Area Goods Movement Plan, MTC, 2016
[107] http://scta.ca.gov/wp-content/uploads/2016/09/CTP16_090616.pdf

CHAPTER 5: FREEWAY PERFORMANCE

Corridor performance assessment is a quantitative and/or qualitative analysis of how a freeway corridor is functioning and begins with analyzing existing travel data. With an adequate traffic detection system in place, a corridor performance assessment serves to evaluate the existing system management practices and identify possible causes of performance problems. Modeling is then used to forecast future travel conditions along the corridor. To assess the impacts of a variety of operational strategies and investment scenarios, traffic analysis methods are used, allowing the corridor team to evaluate and recommend operational strategies, capital improvement projects, and opportunities to integrate transportation technology.

To assess the freeway performance of US 101 in Marin and Sonoma Counties, planners and engineers used a combination of sources including ramp metering reports, Caltrans Performance Measurement System (PeMs) analysis, and MTC's Travel Model One. The ramp metering reports were used to identify existing bottlenecks, and PeMs was used to measure freeway speeds and volumes. MTC's Travel Model One was utilized to provide a bigger picture of future freeway performance. Performance analysis includes identifying the existing freeway bottlenecks, along with other corridor mobility performance measures such as:

- Vehicle Miles Traveled (VMT), which is a measurement of travel demand within a corridor
- Vehicle Hours Traveled (VHT), or total time for a corridor to process the VMT demand
- Vehicle Hours of Delay (VHD), which is a measure of how much additional VHT it took for the corridor to process the VMT demand, assuming nominal VHT is at 35 mile per hour (mph) speed
- Number of Incidents to determine any potential correlation between incidents and any mobility degradation resulting from increases in VMT, VHT, or VHD

5.1 Existing Conditions

The analysis of the existing conditions is limited to the most available data from INRIX, accessed in September 2022. Since 2017, the US 101 North Corridor has experienced Tubbs and Kincaid wildfires in 2017 and 2019, respectively (further described in Appendix B); the opening of SMART service in August 2017; and completion of new HOV lanes in the northbound and southbound direction for Marin-Sonoma Narrows (MSN) for contracts B2/B3 in December 2019 and contract C2 in August 2022. Additionally, due to the COVID-19 pandemic and Governor Newsom's Executive Order N-33-20 (shelter-in-place) from March 2020 to June 2021, travel behavior in the corridor significantly changed. Overall, these events and changes have affected travel patterns on the US 101 North Corridor and may have lasting effects that will require further traffic data collection. The same applies with future traffic conditions which are expected to improve once the SMART extension to Windsor project and MSN contract B7, the construction of additional HOV lanes between Novato and the Marin-Sonoma County line, are completed in summer 2025.

5.1.1 Existing Bottlenecks

US 101 in Marin County

In Marin County, bottlenecks develop and associated congestion occurs along the US 101 Corridor in the southbound direction during the AM peak period, 6:00 AM to 10:00 AM, and in the northbound direction during the PM peak period, 3:00 PM to 7:00 PM[108].

The following bottlenecks and queues are observed in Marin County on US 101 **southbound**, during the **AM** peak period:

- From the Ignacio Boulevard on-ramp to Alameda Del Prado off-ramp. Queues from this bottleneck combine with queues from downstream bottlenecks and extend as far north as the Rowland Boulevard interchange during the peak; this applies to the following three locations as well.
- Lucas Valley Road on-ramp to Manuel T. Freitas Parkway off-ramp. This bottleneck combines with the downstream bottleneck and queues during the peak. The queue typically extends to overlap with the Ignacio bottleneck.
- Manuel T. Freitas Parkway on-ramp to San Pedro Road off-ramp. This bottleneck combines with the downstream bottleneck and queues during the peak. Queue typically extends to overlap with the Lucas Valley Road bottleneck and the Ignacio bottleneck.
- San Pedro Road on-ramp to Lincoln Avenue off-ramp. The bottleneck is a result of insufficient capacity associated with a lane drop at Lincoln off-ramp. Queue typically extends to overlap with the Manual Freitas Parkway bottleneck.
- Lincoln Avenue on-ramp to Mission Avenue off-ramp. Queues extend through upstream bottlenecks as far north as the Rowland Boulevard Interchange, overlapping with the San Pedro Road bottleneck.
- Downtown San Rafael off ramp – back up here is regular and extends past Lincoln to San Pedro Road. Limited on-street capacity and short blocks on local roads, along with SMART train service operations limit system recovery time.
- Francisco Boulevard on-ramp to Sir Francis Drake Boulevard off-ramp. There is sporadic congestion associated with high on-ramp volumes. Queues occasionally extend to north of the I-580 connector ramp.
- Sir Francis Drake Boulevard on-ramp to Madera Boulevard off-ramp. Surges of high on-ramp traffic volume results in sporadic queues in this area. Queues occasionally extend to north of the Sir Francis Drake Boulevard off-ramp.
- In addition to freeway bottlenecks, a lack of on-ramp storage affects local streets at:
  - The Route 37 on-ramp: longest queues are observed extending beyond the US 101 overcrossing bridge.

[108] Marin US 101 Ramp Metering Feasibility Study, March 26, 2013 by Kittelson & Associates, Inc.

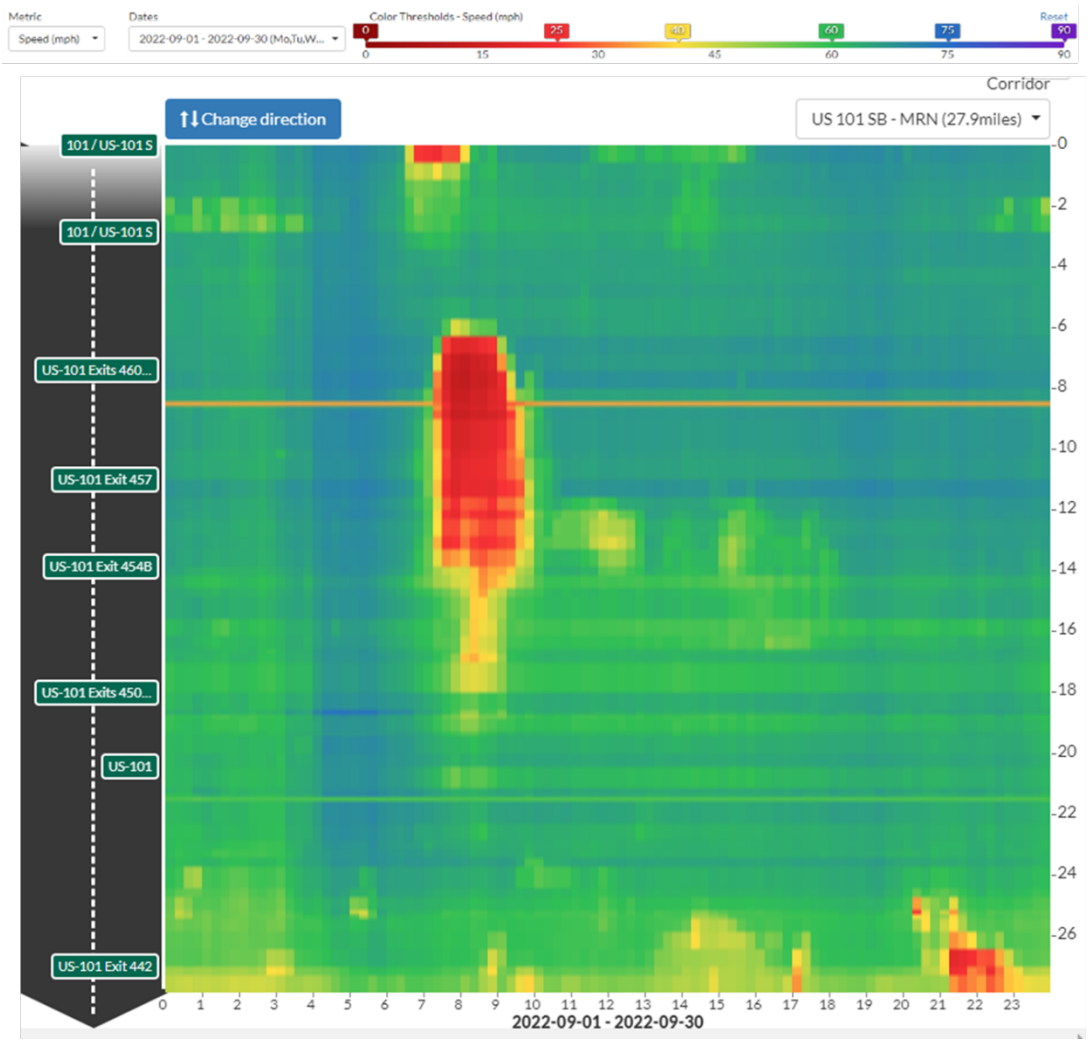
- Sir Francis Drake Boulevard on-ramp: longest queues are observed extending onto Sir Francis Drake Boulevard.
- Second Street on-ramp: queues exist and extend into downtown San Rafael at Heatherton Street and Second Street.

The following bottlenecks and queues are observed on Marin US 101 **northbound**, during the **PM** peak period:

- Tamalpais Drive on-ramp to Sir Francis Drake off-ramp. Queue typically extends to south of the SR 1 Interchange.
- San Pedro Road on-ramp to Manuel T. Freitas Parkway off-ramp (lane drop). This bottleneck becomes sporadically embedded in queues from the downstream bottleneck at Lucas Valley Road, which extend to south of the Lincoln Avenue Interchange.
- Lucas Valley Road diagonal on-ramp to Miller Creek Road off-ramp. There is sporadic congestion due to insufficient capacity, primarily associated with lane drop at Miller Creek off-ramp. The queue occasionally extends through the San Pedro Road on-ramp to Manuel T. Freitas off-ramp bottleneck as far south as the Lincoln Avenue interchange.
- Lane drop north of Atherton Avenue. Bottleneck occurs as a result of lane drop and insufficient capacity. Queue typically extends to south of the Atherton Interchange. Note that north of the lane reduction area (over the two-lane section), freeway typically operates at capacity with sporadic queues towards the Marin-Sonoma County Line.
- I-580 on-ramp to Second Street/Central San Rafael off-ramp. Bottleneck is caused primarily by intersection spillback from local roads, and excessive weaving activities between I-580 on-ramp and 2nd Street off-ramp. Queue typically extends to south of the I-580 on-ramp.
- In addition to freeway bottlenecks, a lack of on-ramp storage affects local streets at:
  - Blithedale Avenue/Tiburon Boulevard loop on-ramp: longest queues are observed extended beyond the loop ramp onto Tiburon Boulevard.
  - Mission Avenue/Central San Rafael on-ramp: longest queues are observed extended beyond the on-ramp and onto Mission Street.

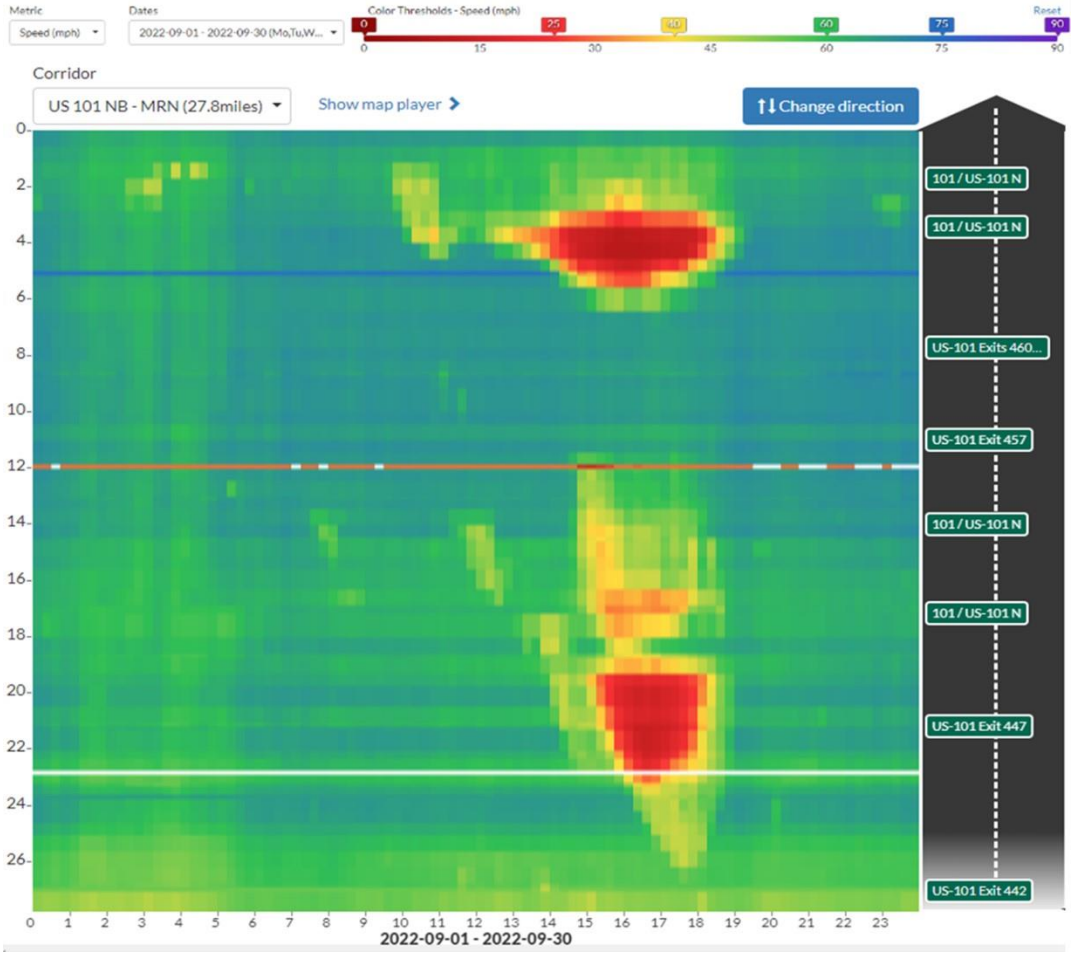
Figures 23 and 24 show the September 2022 speed contours of US 101 in Marin County from the Golden Gate Bridge to the Marin-Sonoma county line.

Figure 23: INRIX September 2022 Speed Contours US 101 Southbound in Marin County



Source: INRIX data (September 2022)

Figure 24: INRIX September 2022 Speed Contours US 101 Northbound in Marin County



Source: INRIX data (September 2022)

US 101 in Sonoma County[109]

The following bottlenecks and queues are observed on Sonoma US 101 **northbound**:

- A. Between the SR 12 on-ramp and the College Avenue off-ramp. During the AM peak period, queues from this bottleneck often extend through the upstream bottleneck location, described below (bottleneck B), to beyond the Golf Course Drive off-ramp. During the PM peak period, queues sporadically extend to the upstream bottleneck, described below (bottleneck B). Note that there are two consecutive on-ramps within this section (on-ramps from SR 12 and from Sixth Street), while the bottleneck typically occurs at the SR 12 on-ramp, it occasionally shifts to the Sixth Street on-ramp.

[109] Kittleson and Associates, Sonoma County Ramp Metering Implemental Plan, 2014. Study limits: US 101 NB, from the Gravenstein Highway (SR 116 West) Interchange to the Shiloh Road Interchange; US 101 SB, from the Arata Lane Interchange to the Pepper Road Interchange.

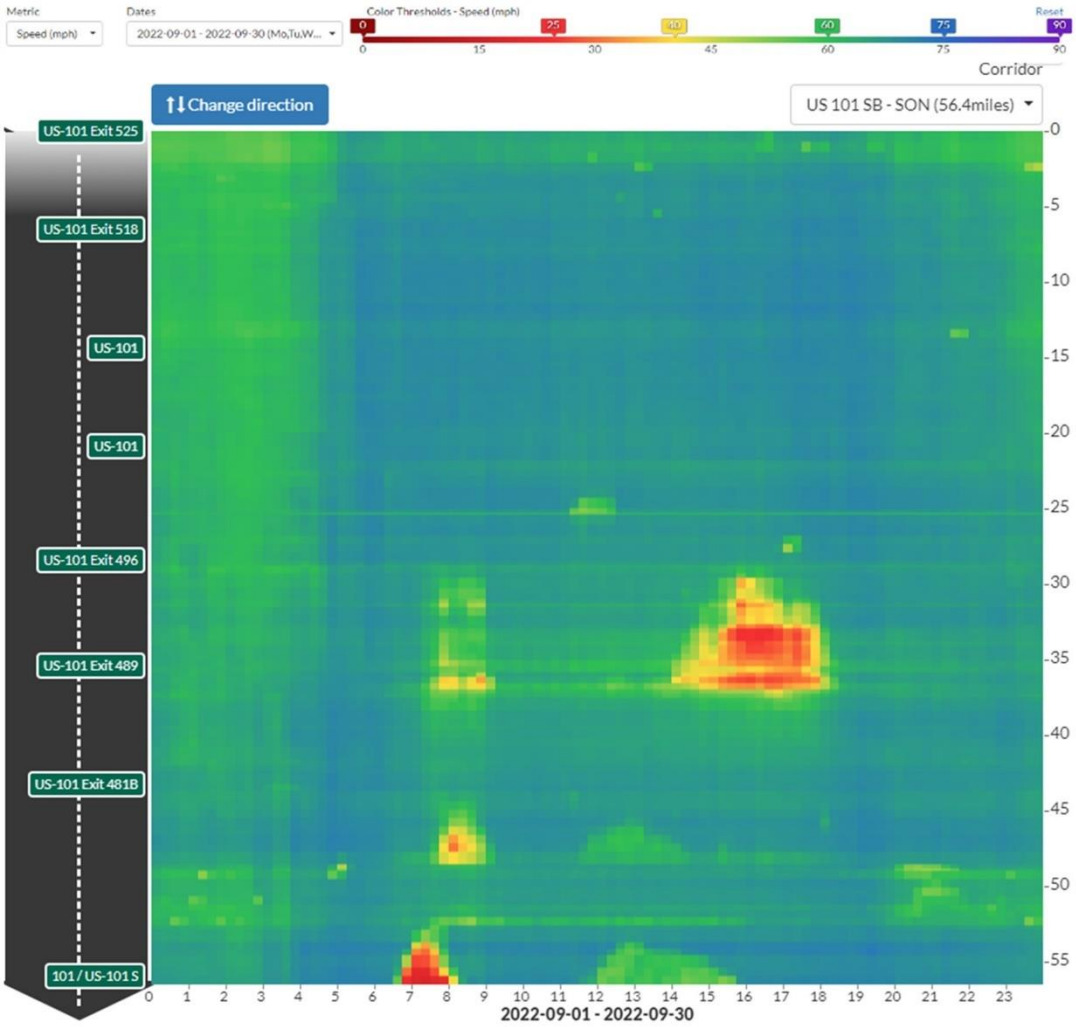
- B. Between the Yolanda Avenue on-ramp and the Baker Avenue off-ramp. During the AM peak period, this bottleneck often becomes embedded in queues from the downstream bottleneck, discussed above, and sporadic congestion occurs from the bottleneck to Golf Course Drive. During the PM peak period, queues from this bottleneck extend past Todd Road.

On US 101 **southbound**, the following bottlenecks are observed:

- C. Between the Hearn Avenue on-ramp and the Todd Road off-ramp. During the AM peak period, queues from this bottleneck sporadically extend as far north as Hearn Avenue. No bottleneck is identified at this location during the PM peak period.
- D. Between the SR 12 on-ramp and the Baker Avenue off-ramp. During the AM peak period, queues from this bottleneck extend north, beyond the Downtown off-ramp. During the PM peak period, queues from this bottleneck extend through the upstream bottleneck, described below (bottleneck E), to beyond Hopper Avenue.
- E. Between the College Avenue on-ramp and the downtown Santa Rosa off-ramp. No bottleneck is identified at this location during the AM peak period. During the PM peak period, this bottleneck becomes embedded in queues from the downstream bottleneck, discussed above.
- F. Between the Guerneville Road off-ramp and the Guerneville Road on-ramp. During the AM peak period, queues from this bottleneck sporadically extend through the upstream bottleneck, described below, to beyond River Road.
- G. Between the River Road on-ramp and the Hopper Avenue off-ramp. During the AM peak period, this bottleneck is sporadic and sometimes becomes embedded in queues from the downstream bottleneck, discussed above.

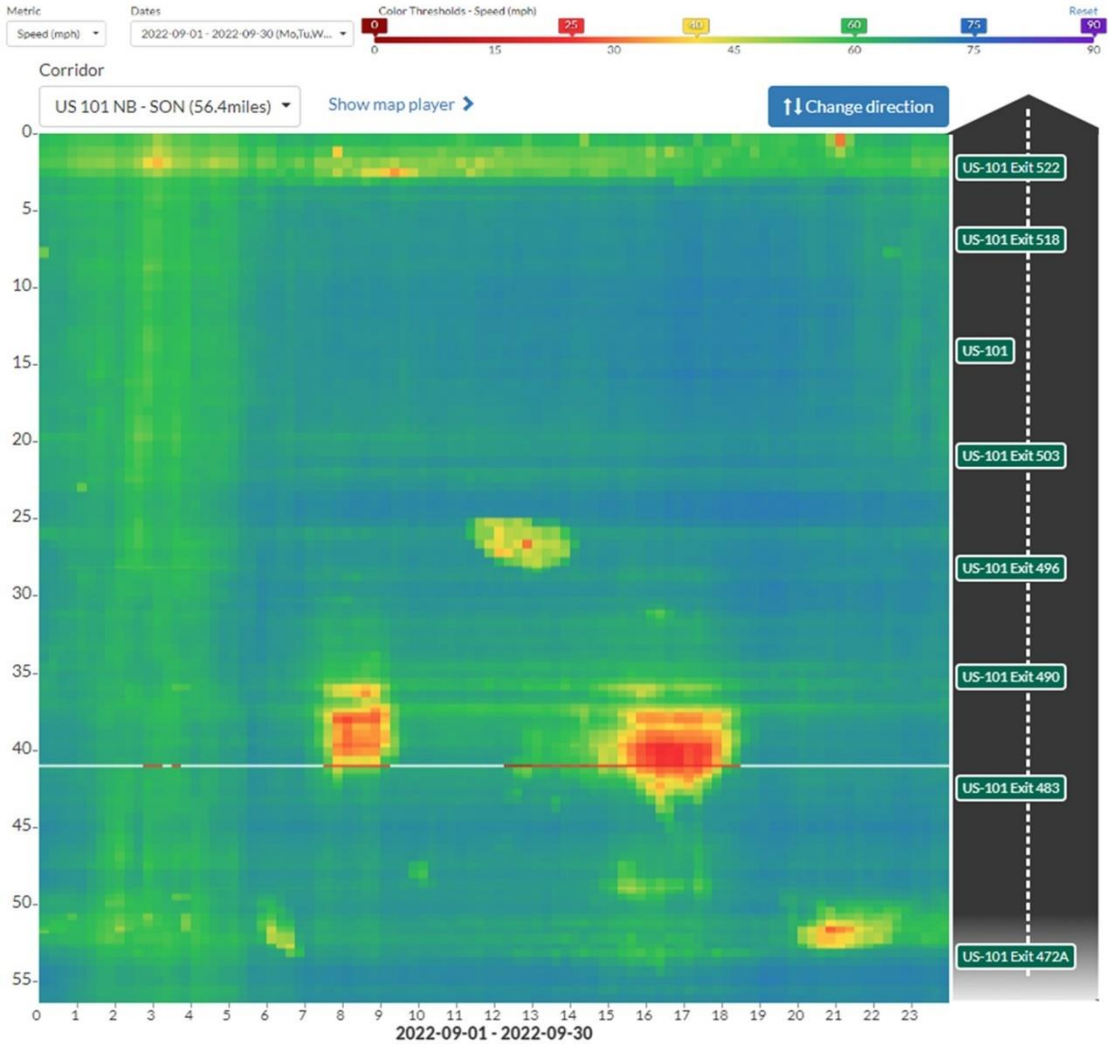
Figures 25 and 26 show the September 2022 speed contours of US 101 in Sonoma County from Marin/Sonoma County line to Sonoma/Mendocino county line.

Figure 25: INRIX September 2022 Speed Contours US 101 Southbound in Sonoma County between Marin/Sonoma County Line and Sonoma/Mendocino County Line



Source: INRIX data (September 2022)

Figure 26: INRIX September 2022 Speed Contours US 101 Northbound in Sonoma County between Marin/Sonoma County Line and Sonoma/Mendocino County Line



Source: INRIX data (September 2022)

5.1.2 Existing Corridor Mobility Performance Measures

While bottlenecks and associated queuing describe typical/recurring traffic operating conditions at *specific* locations in a corridor where the vehicular demand exceeds the freeway capacity and causes congestion, corridor-wide mobility performance measures such as VMT, VHD and VHT can be used to assess operating conditions for the *entire corridor*. To assess changes in the performance measures and number of incidents over time, PeMs was used to create plots of incidents vs Vehicle Hours of Delay (VHD), Vehicle Miles Traveled (VMT), and Vehicle Hours Traveled (VHT) – see Appendix D. These plots were created for the northbound and southbound directions on US 101 in Marin and Sonoma Counties. The time frame selected is from January 2014 to August 2017 compared to the most current data from August 2019 to December 2022. The data is aggregated at a monthly granularity.

US 101 Northbound and Southbound in Marin County.

- The impacts of accidents on VHD on a monthly basis likely indicates that monthly changes in delay are more associated with fluctuations in traffic demand than incidents. Ramp meter can aid in leveling out the monthly spikes and dips in VHD by reducing incidents and controlling traffic demand for the freeway, but there are other factors involved with this.
- The overall VHD, VMT, and VHT have decreased and remained steadily lower than 2017 levels. The overall number of vehicle hours with a threshold speed of 35 miles per hour substantially dropped since 2017. In the NB direction on US 101 in Marin County, VMT decreased sharply in March 2020 and steadily rose back up but remain lower than 2017 levels. However, VMT in the SB direction on US 101 in Marin County increased slightly above 2017 levels. See Appendix D.
- There are transportation studies that indicate that the number of incidents may increase with congestion or increased VHD. However, the incidents on Marin 101 correlate better with the increased travel demand for the corridor. Incidents may not be directly related to congestion.
- There are reliability challenges on US 101 in Marin which are likely related to day-to-day fluctuations in delay.

US 101 Northbound and Southbound 101 in Sonoma County

- Northbound VHD decreased noticeably after ramp metering was implemented in September/October 2014. Note that unlike the significant monthly variability in Marin 101 VHD, ramp metering has resulted in a relatively flat VHD plot and reliable travel on Sonoma 101, from about January 2015 to July 2016. After July 2016, the steady increase in corridor traffic demand has caused the monthly VHD to increase significantly.
- Southbound VHD also decreased after ramp meter implementation, and while not as flat as the northbound VHD, the southbound corridor monthly VHD indicates reliable travel times within the Sonoma 101 corridor. Southbound corridor VHD also show a significant increase after July 2016.
- While VMT and VHT experience seasonal variability, both of these performance measures show a significant drop from July 2021 to December 2022 in the US 101 NB direction in Sonoma County. In the US 101 SB direction, VMT increased beginning of July 2020 to above 2017 levels before decreasing in October 2022.
- While there are transportation studies that indicate that the number of incidents may increase with congestion or increased VHD, incidents on US 101 in Sonoma County still correlate better with the increase in travel demand. Incidents may not be directly related to congestion and but more related to increase in VMT.

5.1.3 Observations on Ramp Metering

A ramp metering study in 2013 evaluated traffic conditions before and after the implementation of ramp metering on US 101 in Sonoma. The limits of the study corridor were

from Old Redwood Highway in Petaluma to Arata Lane in Windsor. Ramp metering was implemented within a subset of the study corridor as described below:

- US 101 northbound: from the Gravenstein Highway (SR 116 West) interchange to the Shiloh Road interchange, PM 12.868 to PM 27.649 (approximately 15 miles). A total of 17 ramps were metered.
- US 101 southbound: from the Arata Lane interchange to the Pepper Road interchange, PM 30.5 to PM 8.871 (approximately 22 miles). A total of 25 ramps were metered.

Ramp metering was implemented on US 101 in Sonoma County between September and October 2014. Ramp metering plans were developed and fine-tuned in the field to manage vehicle entry onto the freeway without negatively affecting traffic operations on local streets. After ramp metering was implemented, corridor travel times decreased for all time periods surveyed, with the maximum travel time changes by direction and peak period as follows:

- In the northbound direction, travel times in the AM peak period decreased by up to 2.0 minutes (or ten percent).
- In the southbound direction, travel times in the AM peak period decreased by up to 2.1 minutes (or eight percent).
- In the northbound direction, travel times in the PM peak period decreased by up to 3.1 minutes (or twelve percent).
- In the southbound direction, travel times in the PM peak period decreased by up to 4.8 minutes (or 16 percent).

Ramp metering is also a proposed strategy for US 101 in Marin.[110] The Marin US 101 Ramp Metering Feasibility Study, March 26, 2013 assessed the implementation of northbound ramp metering at the following eight on-ramps: Bridgeway - SR 1/Pohono Street, Redwood Highway/Seminary, Blithedale Avenue Loop, Tiburon Boulevard Diagonal, Tamalpais Drive Loop, Tamalpais Drive Diagonal, and Sir Francis Drake Boulevard.

Five on-ramps would require widening as part of the capital improvement projects necessary for implementing ramp metering:

- Bridgeway On-Ramp, existing one Mixed-flow lane widened to two mixed-flow lanes
- Blithedale Avenue. Loop On-Ramp, existing one Mixed-flow lane widened to two mixed-flow lanes
- Tiburon Boulevard. Diagonal On-Ramp, existing one Mixed-flow lane widened to two Mixed-flow lanes plus one HOV lane

[110] US 101 Ramp Metering project in Marin County is being designed by Caltrans for Ready To List (RTL) in 2018.

- Tamalpais Drive Diagonal On-Ramp, existing one mixed-flow widened to one Mixed-flow plus one HOV lanes
- Sir Francis Drake Boulevard. On-Ramp, existing two mixed-flow lanes widened to two Mixed-flow lanes plus one HOV lane

After widening the on-ramps and implementing ramp metering, the Marin 101 Feasibility Study predicts the following travel time improvements from Marin City off-ramp to Bellam Blvd/I-580 off-ramp (6.44 miles):

Table 13: Travel Time Comparison with and without Ramp Metering

Analysis Time Period	Without Ramp Metering	With Ramp Metering	Difference	
	Minutes	Minutes	Minutes	Percent
4:00 - 5:00 PM	11.0	9.2	-1.8	-16%
5:00 - 6:00 PM	17.3	13.1	-4.2	-24%

Source: FREQ model, which is a freeway operations analysis tool developed by the University of California, Berkeley.

5.2 Travel Forecasting Models

Travel forecasting models are long-range transportation planning tools that help estimate travel behavior and travel demand in the future. Factors such as population, housing, the economy, and transit options are normally considered in models. Travel forecasting models can provide quantifiable data for transportation investments and decision-making. The following section uses Travel Model One, MTC's regional travel demand model for PBA 2040, to assess the performance of US 101 in 2015 and 2040. Due to time and resource constraints, this data is not reflective of the latest regional travel model, Travel Model 1.5, which was used for the PBA 2050 performance evaluation to forecast future conditions in 2050 compared to the 2015 baseline. To better evaluate freeway performance and inform policy decision and the public, US 101 is divided into six segments based on the existing conditions of the freeway. Route segments from south to north are shown below:

1. Marin/San Francisco County line to I-580
2. I-580 to SR 37
3. SR 37 to Marin/Sonoma County line
4. Marin/Sonoma County line to Old Redwood Highway in northern Petaluma
5. Old Redwood Highway to Windsor River Road
6. Windsor River Road to the Sonoma/Mendocino County line just north of Cloverdale.

The baseline 2015 performance of US 101 North in Marin and Sonoma Counties during the AM peak (6:00 AM to 10:00 AM) and PM peak (3:00 PM and 7:00 PM) periods is shown in Appendix E. As described in Section 5.1, traffic conditions vary within each segment, and there are recurring traffic congestion areas on US 101 known as bottlenecks.

MTC's 2040 travel forecast model evaluated performance outcomes of the following projects in Marin and Sonoma Counties: Sonoma County Service Bus Frequency Improvements, US 101 Marin Sonoma Narrows (MSN) HOV Lanes- Phase 2, Golden Gate Transit Frequency Improvements, and SMART - Phase 3 from Santa Rosa Airport to Cloverdale. According to Plan Bay Area 2040 Performance Assessment Report, SMART Phase 3 project analysis is performed for a typical weekday, but many of the project's benefits will be accrued on weekends due to recreational use and tourism. SMART will feature two-car trains powered by clean diesel engines reaching a top speed of 79 mph. Overall in 2040, the freeway will accumulate about 16,600 vehicle-hours of combined delay during AM and PM peak hours, an increase of 35 percent over the period 2015 to 2040. However, increase in vehicle miles traveled from 2015 to 2040 is moderate, about twelve percent. Detailed travel forecast data could be found in Appendix E.

In conclusion, even with the MSN and SMART projects, there will be significant congestion remaining in the Corridor. Either major additional capacity improvements, a major demand management program involving significant demand reduction, or significantly increased tolerance of high congestion levels in the corridor will be required. Freeway demand reduction could be achieved through multimodal improvements such as Park-and-Ride improvements, multi-use paths, bike/pedestrian crossings, better transit services, and per-mile means-based tolling strategies. ITS including ramp metering and interchange improvements to improve safety and freeway operations could also help reduce delays.

CHAPTER 6: PUBLIC OUTREACH

6.1 US 101 North CMCP Public Engagement

The US 101 North CMCP Public Engagement Plan (PEP) was developed during Winter 2022 with assistance from Caltrans' Community Planning Branch and TAC members. The PEP gives an overview of the US 101 North Corridor, public engagement goals and objectives, alignment with other planning activities, target audiences, roles of each audience, and why public engagement is not only necessary, but crucial. The PEP was broken up into three stages of public engagement: initial engagement, technical engagement, and final engagement. Initial engagement was the informing phase of the PEP and occurred during February through April 2022.

During this phase, staff:

- Had a Public Engagement Kick off with agency partners
- Developed a US 101 North CMCP Fact Sheet in English and Spanish
- Developed Frequently Asked Questions on CMCPs Sheet in English and Spanish
- Published a public-facing website for the US 101 North CMCP
- Created a presentation toolkit for stakeholders and partner agencies
- Initiated Tribal and CBO Outreach

During the second phase of public engagement, technical engagement was where staff went out to the public to collect data on what residents thought of the US 101 North Corridor. This phase occurred during April through August 2022.
During this phase staff:

- Conducted an optional survey for residents and agency partners in Marin and Sonoma Counties regarding US 101 North and goals for the Corridor in English and Spanish, which opened on April 2022 and lasted through September 2022.
- Announced the US 101 North CMCP survey through Twitter
- TAC members shared CMCP announcements to their public outreach contacts and social media.
- Hosted a CBO Workshop on May 12, 2022
- Hosted a Corridor Webinar for agency partners, community residents, and tribal governments along the Corridor on July 21, 2022
- Attended the Marin County Fair on July 1 and July 2, 2022

The last phase of engagement, final engagement was conducted from August to September 2022. During this phase, staff:

- Posted the final CMCP, a summary of next steps, on the Caltrans public-facing website
- Shared survey findings and results, findings from engagement, and next steps with agency partners, tribal governments, CBOs, and community residents.

Online Survey

On April 26, 2022, an online survey was released to the public on ArcGIS Online that asked about travel behavior, travel preferences, and transportation challenges when traveling on the US 101 corridor. Word of the online survey was spread by periodic announcements on the Caltrans District 4 Twitter page and announcing it at public outreach events such as the Community Based Organization (CBO) workshop held on May 12th, individual tribal outreach in May, the Marin County Fair on July 1st and 2nd, and the public webinar on July 21st. A total of 101 respondents participated in the survey.

A summary of the findings from the data received shows that respondents view congestion as the biggest challenge and is the top improvement wanted to be seen. Comments pertaining to congestion illustrate how it affects other modes from being able to perform reliably, such as bus transit and carpooling. Other comments related to driving demonstrate a concern of safety due to poor roadway conditions as well as driving behavior. Congestion being viewed as the biggest challenge to address on the corridor is also the result of driving alone being the dominant mode of choice for respondents.

While it is the dominant mode, most respondents expressed wanting to shift to another mode of travel along the corridor but choose not to due to a few challenging factors that come with using an alternative mode. Respondents noted reasons such as poor bike/pedestrian network condition as well as gaps and safety concerns for not riding their bike or walking. For bus transit, many commented on its unreliability and poor service schedule. For passenger rail, respondents complained of expensive fares, poor scheduling, an incomplete multi-use pathway, a lack of first/last mile service connections, the station being too far from the ferry, and a need for better connections to the airport.

The survey is a snapshot of the current behavior and challenges the corridor faces. While these findings are not news to many, the needs identified through the survey reinforces our current CMCP goals to address congestion and multimodal transportation needs.

6.2 Preservation of Local Community Character and Neighborhood

The development of this CMCP is a collaborative planning process, involving community and public engagement to learn of the challenges of traveling within the Corridor and provide context sensitive solutions to address these issues. Based on early discussion with the technical advisory committee of how to enhance neighborhoods and preserve the local community character of the surrounding areas along the Corridor, the following strategies were suggested:

- Provide “options” to the community to travel by walking, biking, or taking transit through Complete Streets projects.
- Incorporate public art or beautification projects with transportation improvements.
- Improve safe access and traffic calming measures.
- Reconnect communities who had their communities divided by past transportation projects.

CHAPTER 7: RECOMMENDED STRATEGIES

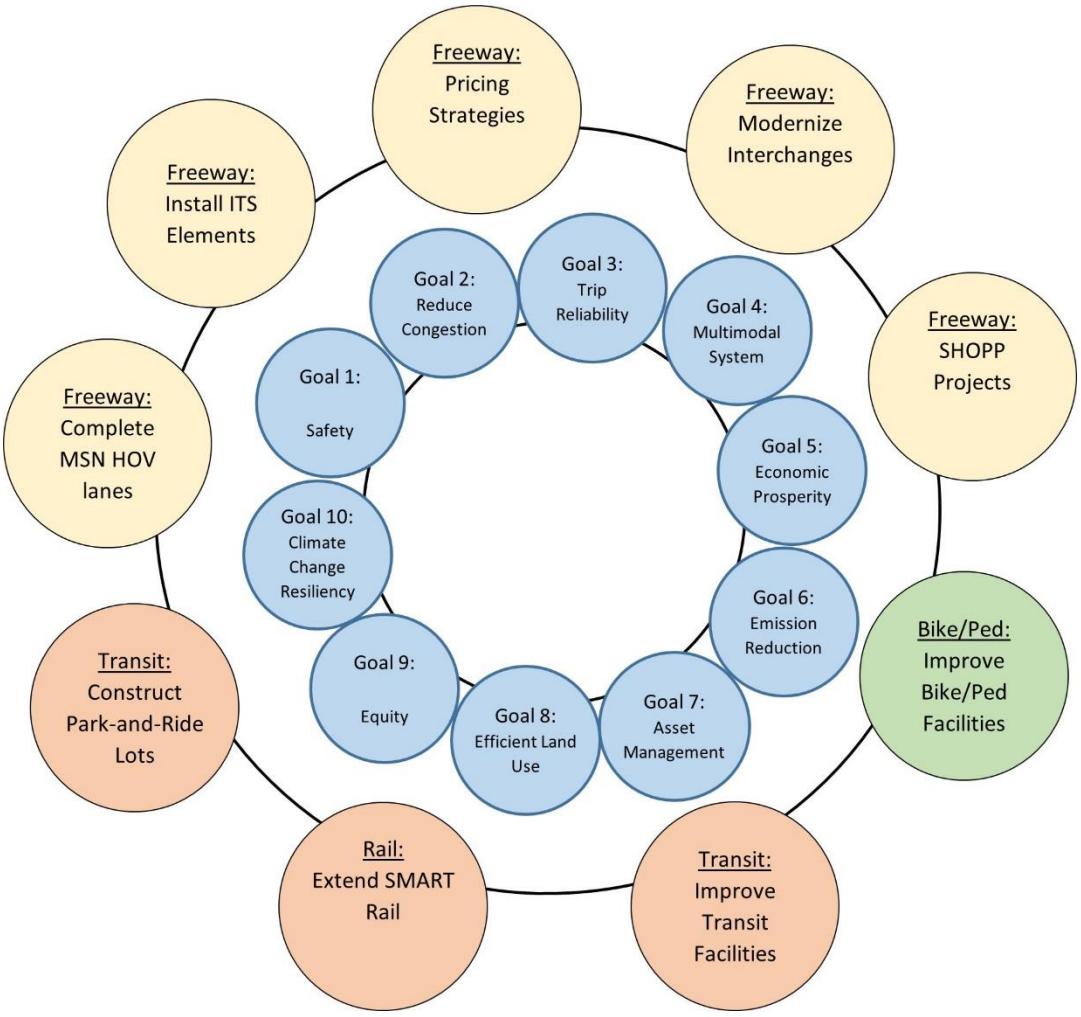
This Comprehensive Multimodal Corridor Plan (CMCP) serves as a partial strategic update to the 2011 US 101 North Corridor System Management Plan (CSMP). While the 2011 CSMP was primarily concentrated around freeway capacity enhancement, the CMCP today evaluates the multimodal facilities along the Corridor and proposes a variety of strategies/projects to address the needs, deficiencies, and gaps in the US 101 North Corridor. This section presents the key findings and recommendations for the US 101 North Corridor.

7.1 Introduction to Recommended Strategies

The US 101 North Corridor is unique in character, linking rural and urbanized areas in Marin and Sonoma Counties with the major metropolitan center of San Francisco. US 101 serves as the backbone for Marin and Sonoma Counties, connecting local communities to work, school, services, and recreation. US 101 is also a regional connection serving as a multi-modal route for carpools, regional transit services, auto trips, and trucking. SMART trains and multiple bicycle and pedestrian paths run parallel to the Corridor. The severe congestion, the limited right-of-way, the mixture of local and regional demands, and the multi-modal nature both on US 101 and the surrounding areas make it a good candidate for conducting a comprehensive corridor study.

In order for this critical route to remain effective and efficient in the movement of people and goods, Caltrans, TAM, and SCTA worked together to develop a performance-based, systems approach for improving the US 101 North Corridor in Marin and Sonoma Counties. Figure 26 is an illustration of the performance-based systems approach for Corridor improvement. Ten goals of the CMCP are at the core of this system approach, and projects and strategies were developed to work as an integrated system to address the mobility needs and facilitate the movement of residents, workers, and visitors.

Figure 27: Illustration of the Performance Based Systems Approach to Improve US 101 North Corridor



Based on analyses in previous chapters, a total of 183 projects were evaluated by Caltrans, TAM, and SCTA. Proposed projects are grouped into seven categories: Managed Lanes, Intelligent Transportation System (ITS) such as ramp metering, interchange modernization, construction of Park-and-Ride lots, SMART rail train extension, and improvements to transit and bike/pedestrian facilities. To provide a comprehensive picture of future improvements along the Corridor, future State Highway Operations and Protection Program (SHOPP) projects are also included in the discussion.

7.2 Rational for Proposed Projects

7.2.1 Managed Lanes

The Transportation Analysis Framework (TAF) and Transportation Analysis Under the California Environmental Quality Act (CEQA) (TAC) were released by Caltrans in September 2020 as guidance documents for the implementation of SB 743, which replaced the “level-of-service,” (LOS) metric tool of analysis used for determining impact significance under CEQA with the

Vehicle Miles Travelled (VMT) metric. While LOS focuses on a project's impact on traffic speeds, VMT analyzes a project's impact on induced travel demand. The shift to VMT analysis aligns with the California Transportation Plan 2050 of achieving statewide GHG emissions reduction targets, preservation of the environment, and public health. The TAF provides guidance on how to analyze induced travel associated with transportation projects whereas the TAC provides guidance on the process of analyzing a transportation project's impacts under CEQA due to increases in VMT attributed to that project and offers a list of potential mitigation measures for significant impacts.

These documents work in conjunction to guide transportation impact analysis for projects on the State Highway System only and do not apply to non-capacity-increasing maintenance projects, safety improvements, and transportation projects that create facilities for pedestrians, cyclists, and transit. These guidance documents are applicable to capacity increasing projects such as the addition of through lanes on existing or new highways, including general purpose lanes, HOV lanes, peak period lanes, auxiliary lanes, or lanes through grade-separated interchanges. Capacity increasing projects potentially lead to a measurable and substantial increase in VMT are likely to be inconsistent with State climate and GHG emission goals. These projects may not come to fruition unless there are established mitigations to reduce induced travel demand and VMT.

The Bay Area's managed lane network delivers significant benefits in terms of increased person-throughput, higher operating speeds, and travel time savings as compared to general-purpose lanes. The Marin-Sonoma Narrows is a section of US 101 that narrows from four lanes to two lanes in the northbound direction (north of Novato) and southbound direction (through Petaluma), causing significant delays. In December 2020, CTC approved $40.1 million for the final segment of the MSN project as part of the SB 1 Solutions for Congested Corridors program. The addition of HOV lanes will increase person-throughput commensurate with the goals of MTC's Managed Lanes Implementation Program and reduce operation delays for Golden Gate Transit Regional Bus services. This project was a significant priority of the business community in Marin and Sonoma Counties and was a top priority for the Transportation Authority of Marin and the Sonoma County Transportation Authority.[111]

In January 2020, Golden Gate Transit weekday ridership during commute hours on US 101 North Corridor was 151,311 riders in the southbound from 6:30 AM to 8:30 AM and 151,690 riders in the northbound from 4:30 PM to 7:00 PM. With the completion of HOV lanes in the Marin-Sonoma Narrows, the projected annualized travel time savings for Golden Gate Transit is approximately 2,855.84 total hours for both AM/PM peak periods in northbound and southbound. With these travel time savings, $643,850 in operating costs can be saved per year and an additional six new trips can be added per weekday (peak direction only), amounting to

[111] https://www.tam.ca.gov/wp-content/uploads/2017/07/TAM-SVP-GettingAroundMarin_072617.pdf

1,512 potential new trips per year. The new trips would add 120 new riders per day which is an additional 30,240 new riders per year. Non-peak passengers can be accommodated using the existing Golden Gate Transit and SMART service.

Vehicle occupancy counts taken at locations along US 101 North indicate that the number of vehicles in the HOV lane are less than the number of vehicles per lane in the General-Purpose (GP) lanes. With the exception of a few places in Sonoma County, the vast majority of locations surveyed illustrate that the estimated number of passengers in the HOV lane exceeds that of the GP lanes. This indicates that the managed lanes are successful at increasing person-throughput.

In addition to person-throughput, the efficiency of managed lanes is measured by their ability to deliver higher speeds than that of the adjacent GP lanes. When a managed lane corridor is congested, vehicles in the HOV or Express Lanes should be moving faster than vehicles in the GP lanes, otherwise there is little incentive in time savings or reliability for commuters to form carpools or take transit. In congested parts of Marin and Sonoma Counties, speeds in the HOV lane on US 101 are frequently under 45 mile per hour (mph) and less than 5 mph faster than speeds in the adjacent GP lanes. Should degradation continue to persist in these areas, increased enforcement, changes to hours of operation, and lane access conversions, or increase in occupancy requirements to 3+ may provide potential solutions. In Sonoma County, parts of the HOV lanes are underutilized and express lanes could provide a means of improving use.

MTC's Next Generation Bay Area Freeway Study is currently underway to further PBA 2050's strategy to implement per-mile tolling on congested freeway corridors where transit alternatives exist. In partnership with stakeholders, the study will explore pathways that pair freeway pricing mechanisms such as all-lane tolling with complementary strategies (e.g., means-based discounts, express buses, last-mile shuttles, and bicycle programs) that will work together to achieve equity and efficiency goals. Consistent with the pricing strategy in PBA 2050, this study will build on past and ongoing pricing studies, produce materials to demonstrate benefits of pricing solutions, consider optimal pathways and deployment of pricing, and make recommendations for further analysis and implementation in prioritized sub-regions. The study will analyze freeway corridors such as US 101 North Corridor to determine if pricing would encourage drivers to:

- Travel during off-peak hours
- Consolidate trips and make their own driving routes more efficient
- Choose alternate destinations, if possible
- Take public transit or carpool instead of driving alone

Study goals include relieving congestion, reducing harmful GHG emissions, and raising funds for new transportation investments, leading the system to operate more efficiently, equitably, and sustainably.

7.2.2 Freeway Interchange Modernization

Many interchanges on US 101 were constructed in the 1950s, and ramps and intersecting local streets experience recurring traffic congestion throughout the day. Some interchanges have minimum sidewalk and bikeway facilities but serve bus stops. Other interchanges have "hook" ramps that connect with local roads for short distances (less than 500 feet), creating high turning traffic volume at nearby intersections. While overcrossings may not meet the minimum vertical clearance required for structures over a freeway, curb ramps at some interchanges may not meet Americans with Disabilities Act (ADA) standards. As a result, this CMCP includes interchange modernization projects to improve local traffic circulation and regional traffic operation, improve multimodal access and connectivity, and improve overall safety of the facilities.

Interchange modernization[112] can also serve as multimodal improvements that enhance communities and connect users of all modes. US 101 North bisects many communities, limiting bike and pedestrian connections across communities and to regional bus stops located on the highway. Improvements are recommended at the following highway interchange facilities in Marin County: Tiburon Boulevard / East Blithedale Avenue, Tamalpais Drive, Merrydale Avenue, Freitas Parkway, and Lucas Valley Road; and may include Hearn Avenue, Hopper/Old Redwood Highway, Dry Creek Road, and others in Sonoma County.

Other proposed strategies include completing the direct connector between northbound US 101 and eastbound I-580, which will reduce travel impacts for residents and workers on the local roadway system in Larkspur and San Rafael, as well as substantially improve operations on the highway. [113] A direct connector from westbound I-580 to southbound US 101 is a strategy that could improve traffic conditions on Sir Francis Drake Boulevard in Marin.

In Sonoma County, a southbound bottleneck routinely develops in between SR 12 and Baker Avenue, and results in congestion on southbound US 101. Replacing the overcrossing at Baker Avenue would eliminate the need for the lane drop north of the overcrossing and allow for an auxiliary lane in this section, improving traffic conditions approaching the bottleneck.

7.2.3 Ramp Metering

Ramp metering is an effective traffic management strategy to maintain an efficient freeway system, and protect the investment made in constructing freeways by keeping them operating at or near capacity.[114] Ramp metering can improve traffic flow on highways and reduce travel times by facilitating vehicle merging and reducing the bunching of vehicles loading onto the

[112] https://www.tam.ca.gov/wp-content/uploads/2017/07/TAM-SVP-GettingAroundMarin_072617.pdf
[113] https://www.tam.ca.gov/wp-content/uploads/2017/07/TAM-SVP-GettingAroundMarin_072617.pdf
[114] Caltrans Deputy Directive 35 R-1

highway. Advance detection to avoid backup onto local roads is included as part of the proposed ramp metering projects in Marin County.

7.2.4 Transit Improvements

One strategy to maximize the person-throughput of the regional freeway network is to increase the number of persons carried rather than vehicles. HOV lanes increase person-throughput while decreasing per capita vehicle miles traveled, resulting in lower emissions than mixed-flow lanes. Managed lanes provide a great incentive for travelers to carpool or take transit by offering travel time savings and reliability and represent a great opportunity to enhance existing transit services.

Regional and local bus services have a substantial impact on the person-throughput of the freeway. In Marin, approximately 500 transit trips a day occur on US 101, with passenger loads estimated at over 20,000 rides a day.

Relocating the Bettini Transit Center, which serves 9,000 daily riders, is a high priority to improve operational efficiency and customer experience. This facility is the largest transit center in Marin County, and serves all transit operators in the county.

Enhancing Marin's Park-and-Ride facilities along US 101 can increase transit usage and support higher occupancy use of highways. Protecting facilities from sea level rise is a current challenge in locations such as the Manzanita Park-and-Ride.

Transit capital projects that provide a travel time savings can also attract "choice riders" that would otherwise choose to drive alone. These improvements can include bus-on-shoulder facilities in northern Marin. Bus-on-shoulder facilities have the potential to help manage demand on highways and provide travel time reductions for commuters. The Transportation Authority of Marin is considering a Bus-on-Shoulder pilot project which can take advantage of existing regional bus stops on the highway, providing additional travel time benefits that attract additional riders. [115] TAM used a Caltrans Sustainable Communities grant to study this Bus-on-Shoulder idea and a final report was completed in September 2021. The report is available at: https://www.tam.ca.gov/wp-content/uploads/2021/11/2021.09.14-Feasibility-Study_Final.pdf

7.2.5 SMART Extension[116]

With the initial operating segment of the SMART passenger rail service operating in 2017, SMART provides an alternative for travelers in the US 101 North Corridor. Completing the full buildout of the SMART system will promote ridership, reducing demand on US 101. Future extensions for the SMART Corridor include Windsor, Healdsburg, and Cloverdale.

[115] https://www.tam.ca.gov/wp-content/uploads/2017/07/TAM-SVP-GettingAroundMarin_072617.pdf
[116] http://sonomamarintrain.org/about-district

7.2.6 Bike and Pedestrian Facility Improvements

For non-motorized travelers, US 101 is a major physical barrier to cross. By providing safe and accessible bike and pedestrian facilities along the Corridor, more trips can be made by bike and pedestrian modes. The CMCP proposes projects that connect the existing and proposed bikeway and pedestrian networks such as the completion of the SMART Pathway and the closure of gaps in the North-South Greenway. The CMCP also proposes projects that connect and complete the San Francisco Bay Trail and the Great Redwood Trail. In addition, the CMCP aims to supports existing transit services by increasing safe and easy multimodal access to transit. Increasing first and last-mile connectivity to SMART and regional transit services will help encourage 'green commutes' in the region.[117]

7.2.7 State Highway Operations and Protection Program

The State Highway Operations and Protection Program (SHOPP) is a four-year program that is updated every two years. It is Caltrans' primary tool to implement the *fix-it-first* approach to the State Highway System. Within each SHOPP cycle, priorities are evaluated to match funding and the goals established in the Caltrans Strategic Management Plan, such as Safety, Sustainability, Livability, Economy and Performance.

In accordance with Streets and Highways Code Section 164.6, Caltrans also prepares a ten-year state rehabilitation plan every two years that identifies the rehabilitation and reconstruction needs of all highways and bridges on the State Highway System, known as the Ten-Year SHOPP Plan. Table 14 lists projects in the ten-year SHOPP. Since SHOPP projects are not proposed by this CMCP, they are not evaluated in the plan, however they help provide a more complete picture of corridor improvements.

A State Highway System Management Plan (SHSMP) is developed every two years as an integrated management plan that fulfills the Streets and Highway Code requirements for the Ten-Year SHOPP Plan and incorporates the Five-Year Maintenance Plan. The SHSMP also helps fulfill the requirement for Caltrans to develop a robust Asset Management Plan, as outlined in Senate Bill (SB) 486. Among other changes, the SHSMP integrates the maintenance, rehabilitation and operation into a single management plan, introduces new national performance measures for pavement and bridges as required by federal law and presents performance targets approved under provisions of SB 486.[118]

[117] https://www.tam.ca.gov/wp-content/uploads/2017/07/TAM-SVP-GettingAroundMarin_072617.pdf
[118] https://dot.ca.gov/programs/asset-management/state-highway-system-plan

Table 14: SHOPP Projects

County	Route	Postmile	SHOPP ID/ EA	Activity	Description	Advertised Year
Marin	101	0 – 20.178	N/A	Bridge	Corte Madera Creek BR. No. 27 0008, Bridge Health: Fair to Good, 135,055 SF. San Rafael Viaduct BR. No. 27 0035R, Bridge Health: Fair to Good, 118,026 SF.	2028/29
Marin	101	0 – 20.178	N/A	Sustainability	Fund Contribution Only (FCO) with municipalities within Marin County for trash capture partnership project to meet SF Water Board CDO requirement	2028/29
Marin	101	L0.0 – 8.022	1W090	Mobility - TMS	TMS DT/RM Lifecycle Replacement Project	2024/25
Marin	101	0.1 – R20.74	N/A	Proactive Safety	Upgrade to Concrete Barrier and Install Outer Separation Barrier on MRN 101	2028/29
Marin	101	0.2 – 8.622	N/A	Signs and Lighting	Waldo Tunnel Left & Right Bores(27 0040L & 27 0040R), Tunnel Lighting Rehabilitation, LED Upgrade	2026/27
Marin	101	0.87 – 1.074	0W100	Sustainability	Stormwater Mitigation - Trash Capture	2021/22
Marin	101	0.9 – 10.8	3W390	Major Damage - Emergency Opening	In Marin County, at Southbound Route 101 at Post Mile 4.50 at lanes 3 and 4 on the Richardson Bay Bridge (Bridge No. 27-0010), in the City of San Rafael.	2021/22
Marin	101	3.35 – 3.65	2Y050	Marin City Flooding and sea level rise mitigation project	Flooding and sea level mitigation project at Donahue St/US 101 Interchange. Construct pump station/house, detention basin, and new cross culvert under US 101.	2028/29
Marin	101	3.5 – 4.7	0W060	Sustainability	Stormwater - Trash Capture Project; Install Best Management Practices (BMP) - Full Trash Capture devices in various locations in Marin County	2025/26

Marin	101	4.61 – 26.96	2AA30	Major Damage - Permanent Restoration	In Marin County, in Corte Madera, at Tiburon Open Space Preserve, regrade slope	2022/23
Marin	101	6.1 – 6.3	N/A	Signs and Lighting	20 Overhead sign structures box beam replacement	2028/29
Marin	101	7.188 – R22.206	4J860	Bridge	Tamalpais Dr OC BR#27-0072 ADA and seismic upgrades	2023/24
Marin	101	7.37 – 18.88	4AC70	Pavement	Nellen Avenue Undercrossing to Miller Creek Bridge	2024/25
Marin	101	8 – 15.34	0W210	Bridge	Corte Madera Creek Br. No. 27-0008K: BH- Poly Deck, Repair & Galvanic Protect Columns, Exp Jnt Replace, Vent Holes for Drainage	2025/26
Marin	101	8.47	0K800	Mobility - ADA	In Marin County In San Rafael At Freitas Parkway Overcrossing - Upgrade Pedestrian facilities	2021/22
Marin	101	13.7	4W710	Pavement	In and near Novato, from Miller Creek Bridge to Sonoma County Line	2026/27
Marin	101	15.34 – 27.627	2AA40	Major Damage - Permanent Restoration	In Marin County, near San Rafael, at the Marinwood Bicycle Path, regrade slope	2023/24
Marin	101	16.1 – 16.2	4W720	Pavement	Golden Gate Bridge to Nellen Ave UC	2027/28
Sonoma	101	0.01	3J080	Bridge	San Antonio Creek Bridges 20-0019R & 20-0019L	2021/22
Sonoma	101	0.11 – 28.73	4W670	Mobility - TMS	End-of-life CCTV, VDS, CMA, EMS, and HAR Technology Replacements in Marin, Napa, Solano, and Sonoma Counties	2026/27
Sonoma	101	6.6 – 14.018	4Q890	Pavement	0.2 mile south of Corona Road OC to 0.1 mile north of Rohnert Park Expressway	2028/29
Sonoma	101	6.83	N/A	Proactive Safety	Corona Rd OC Br 20-0160- Br Rail Upgrade	2030/31
Sonoma	101	14.018 – 21.75	4Q860	Pavement	Rohnert Park Expressway to Steele Lane	2026/27
Sonoma	101	15.53 – 15.63	N/A	Proactive Safety	Santa Rosa Ave On-Ramp Br No 20-0171K: Replace Bridge Rail = 818 LF	2029/30

Sonoma	101	16.54 – 19	2K240	Proactive Safety	Br. Rail Replacement Todd Rd OC 20-0172, Baker Ave OC 20-0173, Miller Rd OC 27-0082	2021/22
Sonoma	101	18.394 – R52.4	4W680	Mobility - TMS	End-of-life Traffic Signal Technology Replacements in Marin, Napa, and Sonoma Counties	2026/27
Sonoma	101	20.6	2Q580	Facilities	Facility (352)- D4 Santa Rosa Maintenance Station / Relocate and Construct New Facility/Demolish Existing Facility. In Sonoma County, In Santa Rosa, at 3251 Brickway Boulevard.	2024/25
Sonoma	101	21.7 – 29.347	N/A	Pavement	Steele Lane to Windsor UC	2029/30
Sonoma	101	22.81 – 32.79	1Q700	Proactive Safety	Mendocino Ave OC 20-0179, Fulton Rd OC 20-0200, Shiloh Rd OC 20-0202, Limerick Ln OC 20-0066, Rail	2023/24
Sonoma	101	36.27 – R52.06	3W570	Bridge	(5 Bridges): 20 0026 Calabazas Creek, 20 0144 Dry Creek Road UC, 20 0146L Chiquita Road UC, 20 0252R First Street UC, 20 0288 Russian River	2021/22
Sonoma	101	R54.201 – R56.219	4Q880	Pavement	101/128 Separation to Mendocino County Line	2030/31
Sonoma	101	R55.8	2K350	Major Damage - Permanent Restoration	In Sonoma County, near Cloverdale, at 1.6 miles north of US 101/SR 128 Separation	2021/22

7.3 Project Evaluation

With the exception of the listed SHOPP projects, all projects proposed in this CMCP were evaluated against the rating criteria below as "highly positive impact," "medium positive impact", and "low positive impact" to show how the projects support the goals of the CMCP. Project evaluation was a collaborative effort by TAC team meetings. Due to time and resource constraints, the technical advisory committee agreed to evaluate projects based on the first eight goals of the CMCP. Goals 9 (Address Equity) and 10 (Address climate change vulnerabilities to transportation facilities) will be considered overarching goals for all projects. All projects listed are not in any priority order with the flexibility to be bundled into a program of projects for future funding opportunities such as SB 1 Solutions for Congested Corridors Program.

Table 15: Rating Criteria

CMCP Goals	Rating Criteria
Goal 1: Improve safety	How does the proposed project increase safety for motorized and non-motorized users?
Goal 2: Reduce congestion and improve efficiency	How will the proposed project address congestion?
Goal 3: Improve trip reliability	Are there any improvements that help increase trip reliability?
Goal 4: Support an accessible and inter-connected multimodal system	How will the proposed project improve accessibility for people that travel the Corridor?
Goal 5: Reduce pollutants and GHG emissions	How will the proposed project reduce greenhouse gas emissions and criteria pollutants, and advance the State's air quality and climate goals?
Goal 6: Support economy	How does the proposed project support economic development and access to employment? How does the proposed project improve regional competitiveness?
Goal 7: Improve asset management	How will the project support a strategic process of operating, maintaining, and improving physical assets that will achieve and sustain a desired state of good repair over the lifecycle of the assets at minimum practicable cost?
Goal 8: Efficient Land Use	How does the project contribute to jobs/housing balance, increase non-SOV trips, nearby multimodal facilities, connectivity to local streets and arterials, and address climate adaptation (e.g. SLR, wildfires)?

Proposed projects are grouped into seven categories: Managed lanes, Intelligent Transportation System (ITS) such as ramp metering, interchange modernization, Park-and-Ride construction, SMART rail train extension, and improvements to transit and bike/pedestrian facilities. Projects of the same category generally have the similar ratings, but they may receive different ratings

due to distinct attributes (such as geographic location, how heavily the project is used by the public, and contribution to local economy). For instance, the Marin-Sonoma Narrows projects all receive high ratings for the seven corridor goals since these projects improve travel safety, reduce congestion and GHG emissions, support the economy, improve multimodal connections, and increase trip reliability. They are high priority for investment in Marin and Sonoma Counties. Interchange improvement projects generally receive medium to high ratings on "safety", depending on the extent of the safety components of the projects. Similarly, such projects are normally rated medium to high on "supporting multimodal system", based on how multimodal enhancement will be provided at the interchanges. On the other hand, ratings of interchange projects on "emission reduction" are mostly low due to the capacity-increasing nature of those projects. With regard to "Asset Management," ratings are mostly high for interchange modernization projects since these projects would normally install ramp meters and improve signal coordination.

The timeframes are an estimate of project readiness for construction, identified as either Short Term (ST) for projects within four years (by Fiscal Year 2026/2027), Medium Term (MT) as between four and ten years (Fiscal Years 2027/2028 to 2036/2037), or Long-term (LT) as more than ten years (beyond Fiscal Years 2036/2037).

The TAC also determined land use efficiency for each project by proximity to Priority Development Areas (PDAs) and how each project would provide connectivity for multimodal travel and climate change adaptation.

The tables below provide project listings, grouped by county and improvement type with performance ratings. Among these projects, a list short-term projects are identified based on the current status of the projects and are listed in Table 25. Short-term projects are defined as projects which could be implemented within four years.

Tables 22 through 24 are proposed bike and pedestrian projects. Many of those projects are from the District 4 Bike Plan, District 4 Pedestrian Plan, or proposed by Caltrans System Planning, and will need to be studied further for feasibility prior to nomination. Many proposed bicycle and pedestrian projects are identified as needs and may not include an estimated timeframe, PBA 2050 RTP ID, or project name.

The projects evaluated in the tables below include fiscally constrained and unconstrained/conceptual projects that may be subject to change and possible inclusion in MTC's latest RTP/SCS. Any regionally significant project subject to regional air quality conformity must be included in the fiscally constrained and conformed RTP/SCS to advance for federal actions, including funding awards.

Table 16: Highway Project Evaluation Results (Not in Priority Order)

County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Name	Project Justification	Goal								Status	Timeframe
						1	2	3	4	5	6	7	8		
MRN	21-T06-026	10.00	San Rafael / Larkspur	NB Highway 101 - EB Highway 580 direct connector	As the only non-high speed freeway connector to a toll bridge in the Bay Area, PM period congestion on US 101 throughout southern Marin County results from heavy queues on the highway mainline for users of I-580, the Richmond-San Rafael Bridge. Currently vehicles must exit the highway (US 101) and use local roads to connect to eastbound I-580, resulting in delays to the highway mainline in Marin County. Growing congestion on US 101 through Marin County necessitates freeway operational improvements to reduce travel times and emissions.	H	H	H	L	M	H	H	L	PAED will start late spring 2023	
MRN	Not in Plan Bay Area 2050	10.00	San Rafael / Larkspur	WB Highway 580 – SB Highway 101 direct connector	A direct connector from westbound I-580 to southbound US 101 is a strategy that could improve traffic conditions on Sir Francis Drake Boulevard in Marin. Growing congestion on US 101 through Marin County necessitates freeway operational improvements to reduce travel times and emissions	H	H	H	L	M	H	H	L	Proposed	LT
MRN	21-T06-026	20.00 – 27.3	Between Novato and County Line	MSN - Segment B7 Construct HOV lanes	In Marin County, in and north of Novato, construct a southbound HOV lane from 0.3 mile south of the Marin/Sonoma County line to just south of Franklin Avenue Overhead, and a northbound HOV lane from 1.7 miles north of Atherton Avenue Overcrossing to 0.3 mile south of the Marin/Sonoma County line. Project includes bridge widening, roadway widening and replacement, interchange modifications (Redwood Landfill Interchange), connect 3.6 and 6.5 miles of HOV lane in the NB and SB direction respectively, standardize inside and outside shoulders, and correct the roadway horizontal	H	H	H	H	H	H	H	M	Contract Approval (May 2022) Construction Stage - Summer 2022 fully funded. - TAM/Caltrans	ST

Legend

Goals: **1** = Improve safety, **2** = Reduce congestion and improve efficiency, **3** = Improve trip reliability, **4** = Support an accessible and inter-connected multimodal system, **5** = Reduce pollutants and GHG emissions, **6** = Support economy, **7** = Improve asset management, **8** = Land use efficiency

Ratings: **H** = Highly Positive Impact, **M** = Medium Positive Impact, **L** = Low Positive Impact

Timeframe: **ST** = Short Term (within 4 years), **MT** = Medium Term (between 4-10 years), **LT** = Long Term (more than 10 years)

**: Project may not align with PBA 2050. Further consultation with MTC is required.

County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Name	Project Justification	Goal								Status	Timeframe
						1	2	3	4	5	6	7	8		
					alignment and vertical profile, while relocating remaining utilities located in State R/W. This project is a significant priority of the business community in Marin and Sonoma Counties and is a top priority for the Sonoma County Transportation Authority. To deliver this project, the Transportation Authority of Marin (TAM), Sonoma County Transportation Authority (SCTA) and Caltrans have initiated a strategy of dividing the 17-mile project into a series of contracts and are building the project in phases										
MRN	21-T06-026	20.90 – 27.6	Between Novato and County Line	MSN - Segment L1B - Plant mitigation for MSN	Establish landscaping (highway planting) within the limits of Contracts A1, A2, A3, B1, and B3 and implement on-site mitigation planting within the limits of Contract B3 in Marin County.	H	H	H	H	H	H	H	L	Awaiting Funds	ST
MRN	21-T06-026	24.00 – 27.5	Between Novato and County Line	MSN - Segment B8 - Utility relocation, ROW and county road bike lane	In Marin County, relocate remaining utilities located in State R/W and widen San Antonio Road to include Class-II bike facility from 2.0 miles north of Atherton Avenue Overcrossing to 0.1 miles south of the Marin/Sonoma County line. Project includes utility relocation, R/W acquisition, roadway widening, pavement rehabilitation, and signing/striping for 0.6 miles of Class II bike facilities.	H	H	H	H	H	H	H	M	In Design (Jan 2024 RTL target); Estimate Construction start in Summer 2025 if SB1 funds are available - TAM/SCTA/ Caltrans	ST
MRN	21-T06-026	27.00	Between Novato and County Line	MSN - Segment B6 - Bridge replacement	Construct a new bridge and its approaches on new alignment to replace an existing structurally deficient County bridge on San Antonio Creek Road at the Marin/Sonoma County line. The southern approach of the new bridge will extend no more	H	H	H	H	H	H	H	L	Design on hold; awaiting new co-op with Counties	ST

Legend

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Ratings: **H** = Highly Positive Impact, **M** = Medium Positive Impact, **L** = Low Positive Impact

Timeframe: **ST** = Short Term (within 4 years), **MT** = Medium Term (between 4-10 years), **LT** = Long Term (more than 10 years)

**: Project may not align with PBA 2050. Further consultation with MTC is required.

County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Name	Project Justification	Goal								Status	Timeframe
						1	2	3	4	5	6	7	8		
					than 615 feet to conform to the existing San Antonio Creek Road.										
MRN	21-T07-057	Various	Marin Countywide	Ramp metering - NB US 101 southern Marin	Growing congestion on US 101 through Marin County necessitates freeway performance initiatives to improve travel times and reduce emissions. Adaptative ramp metering improves corridor access management. HOV lanes and transit access improvements in various locations.	H	H	H	L	H	H	H	H	NB 101, from GGB to I 580, project to install ramp metering was completed. Activation required.	ST
MRN	21-T07-057, 21-T06-049	Various	Marin Countywide	Ramp metering - NB US 101 Marin	Growing congestion on US 101 through Marin County necessitates freeway performance initiatives to improve travel times and reduce emissions. Adaptative ramp metering improves corridor access management. HOV lanes and transit access improvements in various locations.	H	H	H	L	H	H	H	H		ST
SON	21-T06-029	Various	Petaluma - Windsor	Corridor Landscaping - Visual Mitigation following HOV lane completion	To mitigate visual impacts of the MSN project, plant one tree for each tree removed by the project where feasible.	L	L	L	L	M	L	M	L	In Development / Under Study - Funding Required	

Legend

Goals: **1** = Improve safety, **2** = Reduce congestion and improve efficiency, **3** = Improve trip reliability, **4** = Support an accessible and inter-connected multimodal system, **5** = Reduce pollutants and GHG emissions, **6** = Support economy, **7** = Improve asset management, **8** = Land use efficiency

Ratings: **H** = Highly Positive Impact, **M** = Medium Positive Impact, **L** = Low Positive Impact

Timeframe: **ST** = Short Term (within 4 years), **MT** = Medium Term (between 4-10 years), **LT** = Long Term (more than 10 years)

**: Project may not align with PBA 2050. Further consultation with MTC is required.

Table 17: Local Roadway Project Evaluation Results (Not in Priority Order)

County	Plan Bay Area	Post Mile	Location	Project Name	Project Justification	Goal								Status	Timeframe
						1	2	3	4	5	6	7	8		
SON	21-T07-056		Caulfield Lane, from Bautista Wy. to Petaluma Blvd. S., Petaluma	Southern Crossing at Caulfield Lane	Construct extension of Caulfield Lane, with movable bridge at Petaluma River	H	L	H	H	M	H	H	M	In Development / Under Study - Funding Required	
SON	21-T07-057		Citywide, Petaluma	Traffic Signals and ITS Upgrades	Install fiber optic interconnect communication, upgrade traffic controllers with adaptive upgrades, advanced detection system for automated traffic signal performance measures, and install battery backup systems at various traffic signals citywide.	H	H	H	L	M	M	H	H	Proposed	
SON	21-T07-057		Citywide, Rohnert Park	Citywide Advanced Traffic Management System (ATMS) Implementation	Implement citywide ATMS at 26 of 38 existing intersections (including cabinet and detection replacement/upgrade; ATMS infrastructure/software, programming), and installation of 6.7 miles of fiber in new interconnect conduit	H	H	H	L	M	M	H	H	Proposed	
SON	Not in PBA 2050		Baker Avenue		In Sonoma County, a southbound bottleneck routinely develops in between SR 12 and Baker Avenue, and results in congestion on southbound US 101. Replacing the overcrossing at Baker Avenue would eliminate the need for the lane drop north of the overcrossing and allow for an auxiliary lane in this section, improving traffic conditions approaching the bottleneck.	M	H	H	L	L	M	H	L	Proposed	LT

Legend

Goals: **1** = Improve safety, **2** = Reduce congestion and improve efficiency, **3** = Improve trip reliability, **4** = Support an accessible and inter-connected multimodal system, **5** = Reduce pollutants and GHG emissions, **6** = Support economy, **7** = Improve asset management, **8** = Land use efficiency

Ratings: **H** = Highly Positive Impact, **M** = Medium Positive Impact, **L** = Low Positive Impact

Timeframe: **ST** = Short Term (within 4 years), **MT** = Medium Term (between 4-10 years), **LT** = Long Term (more than 10 years)

**: Project may not align with PBA 2050. Further consultation with MTC is required.

Table 18: Highway Interchange Project Evaluation Results (Not in Priority Order)

County	Plan Bay Area 2050 RTP ID	Post Mile Approx.)	Location	Project Name	Project Justification	Goal								Status	
						1	2	3	4	5	6	7	8		
MRN	21-T06-026	.03	Unincorporated /Sausalito	Alexander Avenue	*See note of the highway interchange program at the end of this table Preliminary recommendation is to pursue the near-term improvements and are rated for the near term. Goals 1 and 4 rated high in the long term.	M	L	L	L	M	L	H	L	Pre-PID	MT
MRN	21-T06-026	3.3	Sausalito/Marin City	Donahue Street/North Bridge Boulevard/Bridgeway Interchange - modernize	*See note of the highway interchange program at the end of this table Preliminary recommendation is to pursue the near-term improvements and are rated for the near term. Goal 1 was rated medium in the long term.	L	L	M	M	M	L	H	L	Pre-PID	MT
MRN	21-T06-026	5.7	Mill Valley	East Blithedale/ Tiburon Interchange	*See note of the highway interchange program at the end of this table Preliminary recommendation is to pursue the long-term improvements and are evaluated for the long term. Goals 2 and 5 were rated low in the near term. D4 Bike Plan: Provide Class I or IV bikeway through US 101/Hwy 131 interchange as part of reconstructing the interchange eliminate high speed ramp entries.	H	H	M	M	L	L	H	M	In Development / Under Study - Initial study completed; PSR update and ramp metering/improvement; Listed in RTP	MT
MRN	21-T06-026	7.40	Corte Madera	Tamalpais Drive/Paradise Drive	*See note of the highway interchange program at the end of this table	H	M	H	H	L	L	H	M	Project is in PAED	MT

Legend

Goals: **1** = Improve safety, **2** = Reduce congestion and improve efficiency, **3** = Improve trip reliability, **4** = Support an accessible and inter-connected multimodal system, **5** = Reduce pollutants and GHG emissions, **6** = Support economy, **7** = Improve asset management, **8** = Land use efficiency

Ratings: **H** = Highly Positive Impact, **M** = Medium Positive Impact, **L** = Low Positive Impact

Timeframe: **ST** = Short Term (within 4 years), **MT** = Medium Term (between 4-10 years), **LT** = Long Term (more than 10 years)

**: Project may not align with PBA 2050. Further consultation with MTC is required.

County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Name	Project Justification	Goal								Status	Timeframe
						1	2	3	4	5	6	7	8		
				Interchange - modernize NB aux lane	Preliminary recommendation is to pursue the near-term improvements D4 Bike Plan: Reconfigure intersection to eliminate high-speed ramp entries. Provide Class I on north side of Tamalpais Drive to improve access across the highway.										
MRN	21-T06-026	8.5	Larkspur	Sir Francis Drake Blvd/Fifer Avenue/Industrial Way Interchange	*See note of the highway interchange program at the end of this table The project will address path of travel to existing bus stops located within the highway facility where transit users currently cross high speed on- and off-ramp in unmarked crossing to access bus stops. Near-term improvements provides additional bus stops within the Sir Francis Drake interchange improving accessibility to bus. Long-term improvements proposes interchange improvements between Sir Francis Drake Boulevard and Tamalpais Drive. Improvements include restriping and widening of mainline to provide auxiliary lanes, widening of existing Wornum Undercrossing, realignment of SB on- and off-ramps to Fifer Ave and introducing new NB on- and off-ramps at Wornum.	L	L	M	L	L	L	H	L	Pre-PID	MT

Legend

Goals: **1** = Improve safety, **2** = Reduce congestion and improve efficiency, **3** = Improve trip reliability, **4** = Support an accessible and inter-connected multimodal system, **5** = Reduce pollutants and GHG emissions, **6** = Support economy, **7** = Improve asset management, **8** = Land use efficiency

Ratings: **H** = Highly Positive Impact, **M** = Medium Positive Impact, **L** = Low Positive Impact

Timeframe: **ST** = Short Term (within 4 years), **MT** = Medium Term (between 4-10 years), **LT** = Long Term (more than 10 years)

**: Project may not align with PBA 2050. Further consultation with MTC is required.

County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Name	Project Justification	Goal								Status	Timeframe
						1	2	3	4	5	6	7	8		
					Preliminary recommendation is to pursue the near-term improvements. Each goal is a given near-term rating, however, Goals 1,2,4, and 5 were rated High in the long term.										
MRN	21-T06-026	8.60	Larkspur	East Sir Francis Drake (SFD) Blvd Interchange - SFD Lane drop	Growing congestion on US 101 through Marin County necessitates freeway operation improvements to reduce travel times and emissions.	M	M	H	M	L	H	M	L	Completed	Completed
MRN	21-T06-026	10.00	San Rafael	Bellam Blvd off-ramp intersection improvement	In order to improve access to the Richmond - San Rafael Bridge and I-580 to address PM peak congestion, traffic must exit and re-enter the freeway using local streets on Bellam Boulevard. Widening and reconfiguration of Bellam Boulevard would improve access and congestion levels resulting from backups at this intersection. Growing congestion on US 101 through Marin County necessitates freeway operation improvements to reduce travel times and emissions.	M	H	H	H	L	H	M	L	In Design; Estimate Construction start in Winter 2022 - TAM/San Rafael/Caltrans	ST
MRN	21-T06-026	10.7	San Rafael	San Rafael On-ramp at 2nd and Heatherton Interchange - 2 lane SB on-ramp	*See note of the highway interchange program at the end of this table Near-term project improvements includes restriping mainline and Second St on-ramp to increase storage and alleviate nonstandard design features on mainline.	L	L	H	L	M	L	H	M	Pre-PID	MT

Legend

Goals: **1** = Improve safety, **2** = Reduce congestion and improve efficiency, **3** = Improve trip reliability, **4** = Support an accessible and inter-connected multimodal system, **5** = Reduce pollutants and GHG emissions, **6** = Support economy, **7** = Improve asset management, **8** = Land use efficiency

Ratings: **H** = Highly Positive Impact, **M** = Medium Positive Impact, **L** = Low Positive Impact

Timeframe: **ST** = Short Term (within 4 years), **MT** = Medium Term (between 4-10 years), **LT** = Long Term (more than 10 years)

**: Project may not align with PBA 2050. Further consultation with MTC is required.

County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Name	Project Justification	Goal								Status	Timeframe
						1	2	3	4	5	6	7	8		
					**Long-term project improvements proposes to widen mainline to provide a 2-lane ramp to connect to I-580 EB Connector the and SB US 101 Connector. This improvement will require significant right of way take from adjacent properties. Preliminary recommendation is to pursue the near-term improvements, while planning for a longer-term solution. Goals were evaluated with near term rating, however, Goal 2 was rated Medium in the Long term.										
MRN	21-T06-026	12.70	San Rafael	Merrydale Road and North San Pedro Interchange - modernize	*See note of the highway interchange program at the end of this table Preliminary recommendation is to pursue the near-term improvements. Goals were evaluated with near term ratings, however Goals 1,2 and 4 rated High in the long term.	M	L	M	M	L	L	H	M	Pre-PID	MT
MRN	21-T06-026	13.70	San Rafael	Manual T. Freitas Parkway/Civic Center Drive Interchange - modernize	*See note of the highway interchange program at the end of this table Proposed bike/ped Preliminary recommendation is to pursue long-term improvements to complement the current short-term project underway by Caltrans. Goals were rated with a near-term rating, however Goal 1 rated high in the long-term.	M	H	M	M	L	M	H	M	Pre-PID	ST, MT

Legend

Goals: **1** = Improve safety, **2** = Reduce congestion and improve efficiency, **3** = Improve trip reliability, **4** = Support an accessible and inter-connected multimodal system, **5** = Reduce pollutants and GHG emissions, **6** = Support economy, **7** = Improve asset management, **8** = Land use efficiency

Ratings: **H** = Highly Positive Impact, **M** = Medium Positive Impact, **L** = Low Positive Impact

Timeframe: **ST** = Short Term (within 4 years), **MT** = Medium Term (between 4-10 years), **LT** = Long Term (more than 10 years)

**: Project may not align with PBA 2050. Further consultation with MTC is required.

County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Name	Project Justification	Goal								Status	Timeframe
						1	2	3	4	5	6	7	8		
MRN	21-T06-026	14.70	San Rafael	Lucas Valley/ – Smith Ranch Road Interchange-modernize	*See note of the highway interchange program at the end of this table Long-term improvements include providing a new SB on- and off-ramp to Lucas Valley and removing the existing SB loop off-ramp. Preliminary recommendation is to pursue the near-term improvements. Goals were evaluated with the near-term rating, however Goals 1 and 2 were rated a High rating in the long-term and Goal 4 was rated a Medium in the long term as well.	M	M	M	L	L	L	H	M	Pre-PID	MT
MRN	21-T06-026	15.60	Miller Creek OP, San Rafael/Marin County		Consider squaring off ramps.	H	M	M	H	M	M	H	L	Listed in RTP	LT
MRN	21-T06-026	16.60	Novato	Alameda Del Prado / Nave Drive Interchange	*See note of the highway interchange program at the end of this table Near-term improvements will restripe within current roadway footprint to improve vehicular access, bicycle and pedestrian connectivity. Long-term improvements propose to reconfigure the interchange to a tight-diamond configuration. Preliminary recommendation is to pursue the near-term improvements. Goals were	M	M	M	M	M	L	H	L	Pre-PID	MT

Legend

Goals: **1** = Improve safety, **2** = Reduce congestion and improve efficiency, **3** = Improve trip reliability, **4** = Support an accessible and inter-connected multimodal system, **5** = Reduce pollutants and GHG emissions, **6** = Support economy, **7** = Improve asset management, **8** = Land use efficiency

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Timeframe: **ST** = Short Term (within 4 years), **MT** = Medium Term (between 4-10 years), **LT** = Long Term (more than 10 years)

**: Project may not align with PBA 2050. Further consultation with MTC is required.

County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Name	Project Justification	Goal								Status	Timeframe
						1	2	3	4	5	6	7	8		
					evaluated with the Near-term rating, however, Goals 1 and 4 rated High in the Long-term.										
MRN	21-T06-026	16.70	Nave Dr., Novato		Consider squaring off ramps.	H	M	M	H	M	M	H	L	Listed in RTP	LT
MRN	21-T06-026	18.00	Novato	Ignacio Blvd/Bel Marin Keys/Nave Drive Interchange - modernize	*See note of the highway interchange program at the end of this table Preliminary recommendation is to pursue the near-term improvements. Goals were evaluated with the Near-term rating, however Goals 1 and 4 were rated medium in the Long-term.	L	L	M	L	M	L	H	L	Pre-PID	MT
MRN	21-T06-026	21.10	DeLong Ave, Novato		Consider squaring off ramps and shortening turn radii.	H	M	M	H	M	M	H	L	Listed in RTP	LT
MRN	21-T06-026	22.00	San Marin Drive/Atherton Avenue	Novato	*See note of the highway interchange program at the end of this table Preliminary recommendation is to pursue the near-term improvements. Goals were evaluated with near-term rating, however Goal 1 was rated Medium in the Long-term.	L	L	M	L	M	L	H	L	Pre-PID	MT
SON	21-T06-029	5.60	Rainer Ave, from N. McDowell Blvd. to Petaluma Blvd. N., Petaluma	Petaluma Crosstown Connector and Rainer Interchange	Construct extension of Rainer Avenue under US 101, across SMART tracks and Petaluma River to connect with Petaluma Blvd N. Construct new interchange ramps at US 101.	M	M	H	H	L	H	H	H	In Development / Under Study - Funding Required	LT

Legend

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County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Name	Project Justification	Goal								Status	Timeframe
						1	2	3	4	5	6	7	8		
SON	21-T06-029	10.70	Between Petaluma and Cotati	Railroad Ave Interchange - Add SB on ramp, NB on ramp, and SB off ramp	The existing Railroad Avenue interchange is a partial interchange with only a NB off-ramp. This project would construct the SB on-ramp, NB on-ramp, and SB off-ramp in phases dependent on funding.	M	M	M	L	L	M	M	L	In Development / Under Study - Funding Required	MT
SON	21-T06-029	18.50	Santa Rosa	US Highway 101/Hearn Avenue Interchange - Widen O/C, Improve I/C	The existing Hearn Avenue interchange is unable to accommodate current and future traffic volumes resulting in congestion. This congestion and traffic queues adversely impact Hearn Avenue, the interchange, and mainline Highway 101 operations. The proposed project will reduce congestion and queue lengths by adding two lanes (resulting in two travel lanes in each direction) and improving the on-ramps and off- ramps. The project will also provide a westbound Class II bicycle lane and a 8.5-foot wide Class IV separated bikeway on the south side of the new structure. The project is expected to be ready to list for construction in April 2024. • Improve local traffic circulation and regional traffic operations • Improve multimodal access, connectivity and operations • Improve overall safety of the facility	H	M	M	H	M	H	H	M	In Design - Estimated Start Construction: Spring 2024 Construction funding required	ST

Legend

Goals: **1** = Improve safety, **2** = Reduce congestion and improve efficiency, **3** = Improve trip reliability, **4** = Support an accessible and inter-connected multimodal system, **5** = Reduce pollutants and GHG emissions, **6** = Support economy, **7** = Improve asset management, **8** = Land use efficiency

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**: Project may not align with PBA 2050. Further consultation with MTC is required.

County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Name	Project Justification	Goal								Status	Timeframe
						1	2	3	4	5	6	7	8		
SON	21-T06-029	22.80	Mendocino Ave, Santa Rosa		Consider squaring off ramps, shortening ped crossings, adding pedestrian refuges, shortening Right turn radii.	H	M	M	H	M	M	H	L	Proposed	LT
SON	21-T06-029	22.80	Santa Rosa	Mendocino Ave/Hopper Interchange - Improve Interchange	There is significant traffic congestion and operational issues in northwest Santa Rosa near US 101 freeway interchange where Mendocino Avenue transitions to Old Redwood Highway. **Potential long-term improvements could include major freeway interchange modifications, such as combining the existing split on/off ramps at Hopper Avenue and the on/off ramps at Mendocino Avenue into a full interchange. A very preliminary assessment was completed in April 2010. The next phase for this project would be completing the Project Initiation Document (PID).	M	M	H	M	L	M	H	M	In Development / Under Study - Funding Required	LT
SON	21-T06-029	24.90	Between Santa Rosa and Windsor	River Road Interchange - Widen O/C, Improve I/C	Improve local traffic circulation, improve multimodal access, connectivity and operations. The existing River Road interchange is unable to accommodate current and future traffic volumes.	M	M	M	M	L	M	H	M	In Development / Under Study - Funding Required	LT
SON	21-T06-029	27.60	Windsor	Shiloh Road Interchange - Upgrade Interchange	**Reconstruct the Shiloh Road/US 101 interchange to provide two lanes in each direction. It is anticipated that the existing OC will be replaced and ramps reconfigured. It is expected that 60 percent of project costs will come from federal, State, or regional funds	M	M	M	M	L	M	H	L	In Development / Under Study - Funding Required	MT

Legend

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**: Project may not align with PBA 2050. Further consultation with MTC is required.

County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Name	Project Justification	Goal								Status	Timeframe
						1	2	3	4	5	6	7	8		
SON	21-T06-029	30.70	Windsor	Arata Lane Interchange - Operational Improvement	Construction of the Northbound on-ramp to US 101 will complete the Arata Lane interchange with US 101. This project also includes the relocation of a portion of Los Amigos Road north of Arata Lane. Rights of way have been obtained in prior phases.	M	M	M	M	L	M	M	M	In Development / Under Study - Funding Required	Mt
SON	21-T06-029	33.52	Healdsburg Ave., Healdsburg		Construct roundabout with bicycle and pedestrian facilities at NB US 101 off-ramp	H	H	H	H	H	M	H	M	Proposed / In Caltrans D4 Bike and D4 Pedestrian Plan	LT
SON	21-T06-029	36.30	Healdsburg	Dry Creek Road Interchange - Improve I/C (interconnected signals or roundabout couplet)	SB off-ramp intersection operates unacceptably at LOS F during both morning and evening peak periods. SB off-ramp traffic frequently backs up on to shoulder on mainline. The current traffic flow difficulties and safety concerns will be addressed primarily through the inclusion of roundabouts or traffic signals at the intersections of the US 101 ramps and Dry Creek Road. A project feasibility study was completed assessing alternatives, completed PEAR, and cost estimate.	H	H	H	L	L	M	H	L	In Development / Under Study - Funding Required	MT

***Highway Interchange Program:** One of 12 interchanges prepared under the Transportation Authority of Marin's Highway 101 Interchange and Approaching Roadway Study that examines the existing conditions, deficiencies, and constraints of the selected interchanges on Highway 101 in Marin County. The planning level study is funded through Measure AA with overarching goals to "reduce congestion and reduce greenhouse gas emissions, maintain and improve local transportation infrastructure, and provide high quality transportation options for people of all ages who live, work and travel in Marin County". The study identifies opportunities for improvement under a program of near- and long-term projects that aim to improve operations and safety for all users.

The overall project improvements aim to alleviate existing nonstandard conditions by upgrading existing facilities for vehicular traffic, transit users, pedestrians and bicyclists. The proposed concepts propose to address safety for all modes by upgrading existing curb ramps to meet current American with Disabilities Act

Legend

Goals: **1** = Improve safety, **2** = Reduce congestion and improve efficiency, **3** = Improve trip reliability, **4** = Support an accessible and inter-connected multimodal system, **5** = Reduce pollutants and GHG emissions, **6** = Support economy, **7** = Improve asset management, **8** = Land use efficiency

Ratings: **H** = Highly Positive Impact, **M** = Medium Positive Impact, **L** = Low Positive Impact

Timeframe: **ST** = Short Term (within 4 years), **MT** = Medium Term (between 4-10 years), **LT** = Long Term (more than 10 years)

**: Project may not align with PBA 2050. Further consultation with MTC is required.

Requirements; upgrading existing traffic signals and interconnecting where beneficial; providing high visibility crosswalks at pedestrian crossings; providing green painted Class II and Class IV bike lanes or Class I multiuse paths; widen existing sidewalks to 6' minimum; provide minimum 11' travel lanes; close gaps in existing bike and pedestrian network.

Legend

Goals: **1** = Improve safety, **2** = Reduce congestion and improve efficiency, **3** = Improve trip reliability, **4** = Support an accessible and inter-connected multimodal system, **5** = Reduce pollutants and GHG emissions, **6** = Support economy, **7** = Improve asset management, **8** = Land use efficiency

Ratings: **H** = Highly Positive Impact, **M** = Medium Positive Impact, **L** = Low Positive Impact

Timeframe: **ST** = Short Term (within 4 years), **MT** = Medium Term (between 4-10 years), **LT** = Long Term (more than 10 years)

**: Project may not align with PBA 2050. Further consultation with MTC is required.

Table 19: Transit Project Evaluation Results (Not in Priority Order)

County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Name	Project Justification	Goal								Status	Timeframe
						1	2	3	4	5	6	7	8		
MRN	21-T11-115	11.00	San Rafael	Bettini Transit Center - permanent relocation	Continuation of SMART to southern terminus in Larkspur bisects the current transit facility. Growing congestion on US 101 through Marin County necessitates enhancements to multi-modal and public transit options, and providing seamless connectivity across modes in a central facility would be addressed by this project.	L	M	M	H	H	H	H	H	In Development / Under Study - SMART and Golden Gate Transit	ST
MRN	21-T12-124	Various	Marin Countywide	Bus on Shoulder	Growing congestion on US 101 through Marin County necessitates freeway performance initiatives to improve public transit options. The proposed project would reduce transit travel times during congested peak periods and connect existing highway transit stops for local and regional bus services. Path of travel and pavement conditions would be improved as part of this project.	L	H	H	H	H	H	H	H	Feasibility Study completed in Oct 2021, Seeking funds for Design	ST
MRN	21-T01-007		North Eastern Marin County	Transit Maintenance Facility	Relocate contractor maintenance facilities in a centralized location, including bus parking and three maintenance bays	M	L	L	L	L	L	H	L		
SON	21-T10-071	15.50 – 19.6	Santa Rosa	Rapid Bus route	Mendocino Avenue-Santa Rosa Avenue corridor parallel to US 101. Project includes ITS infrastructure expansion, and two Rapid Bus Routes. It will benefit alternative modes travel, and contribute to GHG emissions reductions	M	H	H	H	H	L	L	H	In Development / Under Study - Funding Required	LT
SON	21-T01-002		Citywide, Petaluma		Purchase replacement and expansion zero-emission buses and charging infrastructure for Petaluma Transit	M	M	M	H	H	M	H	M	In Development / Under Study -	ST

Legend

Goals: **1** = Improve safety, **2** = Reduce congestion and improve efficiency, **3** = Improve trip reliability, **4** = Support an accessible and inter-connected multimodal system, **5** = Reduce pollutants and GHG emissions, **6** = Support economy, **7** = Improve asset management, **8** = Land use efficiency

Ratings: **H** = Highly Positive Impact, **M** = Medium Positive Impact, **L** = Low Positive Impact

Timeframe: **ST** = Short Term (within 4 years), **MT** = Medium Term (between 4-10 years), **LT** = Long Term (more than 10 years)

**: Project may not align with PBA 2050. Further consultation with MTC is required.

County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Name	Project Justification	Goal								Status	Timeframe
						1	2	3	4	5	6	7	8		
														Funding Required	
SON	21-T01-002		Citywide, Santa Rosa		Purchase replacement and expansion zero-emission buses and charging infrastructure for Santa Rosa CityBus	M	M	M	H	H	M	H	M	In Development / Under Study - Funding Required	ST
SON	21-T01-002		Countywide		Purchase replacement and expansion zero-emission buses and charging infrastructure for Sonoma County Transit	M	M	M	H	H	M	H	M	In Development / Under Study - Funding Required	ST

Legend

Goals: **1** = Improve safety, **2** = Reduce congestion and improve efficiency, **3** = Improve trip reliability, **4** = Support an accessible and inter-connected multimodal system, **5** = Reduce pollutants and GHG emissions, **6** = Support economy, **7** = Improve asset management, **8** = Land use efficiency

Ratings: **H** = Highly Positive Impact, **M** = Medium Positive Impact, **L** = Low Positive Impact

Timeframe: **ST** = Short Term (within 4 years), **MT** = Medium Term (between 4-10 years), **LT** = Long Term (more than 10 years)

**: Project may not align with PBA 2050. Further consultation with MTC is required.

Table 20: Rail Transit Project Evaluation Results (Not in Priority Order)

County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Name	Project Justification	Goal								Status	Timeframe
						1	2	3	4	5	6	7	8		
SON	21-T11-113	26.3 – 29.4	SMART	SMART Extension	Extend Passenger Rail Service from Airport Blvd to Windsor. It will encourage increased use of active modes of transportation and contribute to GHG emissions reductions.	M	H	H	H	H	M	H	H	Partially funded, construction suspended	ST
SON	*Not in Plan Bay Area 2050 Project List*	29.4 – 34.5	SMART	SMART Extension	Extend Passenger Rail Service from Windsor to Healdsburg. It will encourage increased use of active modes of transportation and contribute to GHG emissions reductions.	M	H	H	H	H	M	H	H	In Development - Funding Required	MT
SON	*Not in Plan Bay Area 2050 Project List*	34.9 – 51.6	SMART	SMART Extension	Extend Passenger Rail Service from Healdsburg to Cloverdale. It will encourage increased use of active modes of transportation and contribute to GHG emissions reductions.	M	H	H	H	H	M	H	H	In Development - Funding Required	MT
SON	21-T11-115		Countywide		Purchase additional rail vehicles for SMART to support additional performance goals and capacity	L	H	H	H	H	H	H	M	In Development / Under Study - Funding Required	MT
SON	21-T11-201		SMART	SMART North Infill Petaluma Station	Add a second SMART commuter rail station in the Northeast area of the City of Petaluma at Corona Road. This would be the 13th station in SMART's rail network. The project will include auto, and bicycle station platform and all associated civil systems work.	M	H	H	H	H	M	H	H	Fully funded, construction begin in FY 2023/24	ST

Legend

Goals: **1** = Improve safety, **2** = Reduce congestion and improve efficiency, **3** = Improve trip reliability, **4** = Support an accessible and inter-connected multimodal system, **5** = Reduce pollutants and GHG emissions, **6** = Support economy, **7** = Improve asset management, **8** = Land use efficiency

Ratings: **H** = Highly Positive Impact, **M** = Medium Positive Impact, **L** = Low Positive Impact

Timeframe: **ST** = Short Term (within 4 years), **MT** = Medium Term (between 4-10 years), **LT** = Long Term (more than 10 years)

**: Project may not align with PBA 2050. Further consultation with MTC is required.

County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Name	Project Justification	Goal								Status	Timeframe
						1	2	3	4	5	6	7	8		
SON	21-T11-115		SMART	SMART Double Tracking	**Double tracking consists of adding track to areas of the existing 45-mile railroad where there is currently only a single track. This involves expanding two tunnels to make room for a second track, replacing the single-track moveable bridge over the Petaluma River with a double-track bridge, and constructing through very poor soil conditions in the wetlands between Novato and Petaluma and possible property acquisition in residential or industrial areas.	L	H	H	H	H	H	H	L	In Development / Under Study - Funding Required	LT
SON	21-T11-115		Sonoma and Marin	SMART Rail Freight Projects	**Improvements along publicly owned SMART rail right-of-way to accommodate freight services and expansions. Programmatic category that could include freight spurs, Positive Train Control/systems and crossing upgrades, track and sidings expansions and bridge improvements.	H	H	M	L	H	H	H	H	Varies	ST

Legend

Goals: **1** = Improve safety, **2** = Reduce congestion and improve efficiency, **3** = Improve trip reliability, **4** = Support an accessible and inter-connected multimodal system, **5** = Reduce pollutants and GHG emissions, **6** = Support economy, **7** = Improve asset management, **8** = Land use efficiency

Ratings: **H** = Highly Positive Impact, **M** = Medium Positive Impact, **L** = Low Positive Impact

Timeframe: **ST** = Short Term (within 4 years), **MT** = Medium Term (between 4-10 years), **LT** = Long Term (more than 10 years)

**: Project may not align with PBA 2050. Further consultation with MTC is required.

Table 21: Park & Ride Project Evaluation Results (Not in Priority Order)

County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Name	Project Justification	Goal								Status	Timeframe
						1	2	3	4	5	6	7	8		
MRN	21-T12-124	4.30	Mill Valley	Park & Ride Lot improvement for flood and sea level rise mitigation - Manzanita	Growing congestion on US 101 through Marin County necessitates freeway performance initiatives and sea level rise adaptation to improve park & ride lot utilization. Project would address chronic flooding conditions, improve pavement, ADA, lighting and path of travel.	H	H	M	H	H	M	H	H	Caltrans initiating PID	ST
MRN	21-T12-124	14.70	San Rafael	Park & Ride Lot improvement for faster regional transit service - Smith Ranch Rd	Growing congestion on US 101 through Marin County necessitates freeway performance initiatives to improve public transit options. This project would allow for transit vehicles to enter and exit the Smith Ranch Road Park-and-Ride, reduce transit travel times, and provide direct connection for Park-and-Ride users. The project would improve path of travel for transit routing and pedestrians and improve pavement conditions and lighting.	L	H	M	H	H	M	H	H	Listed in RTP	LT

Legend

Goals: **1** = Improve safety, **2** = Reduce congestion and improve efficiency, **3** = Improve trip reliability, **4** = Support an accessible and inter-connected multimodal system, **5** = Reduce pollutants and GHG emissions, **6** = Support economy, **7** = Improve asset management, **8** = Land use efficiency

Ratings: **H** = Highly Positive Impact, **M** = Medium Positive Impact, **L** = Low Positive Impact

Timeframe: **ST** = Short Term (within 4 years), **MT** = Medium Term (between 4-10 years), **LT** = Long Term (more than 10 years)

**: Project may not align with PBA 2050. Further consultation with MTC is required.

County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Name	Project Justification	Goal								Status	Timeframe
						1	2	3	4	5	6	7	8		
MRN	21-T12-124	20.20	Novato	Park & Ride Lot improvement for faster regional transit service - Rowland Ave	Growing congestion on US 101 through Marin County necessitates freeway performance initiatives to improve public transit options. Project would provide direct connectivity for Park-and-Ride users to transit and improve path of travel.	L	H	M	H	H	M	H	H	Listed in RTP	LT

Legend

Goals: **1** = Improve safety, **2** = Reduce congestion and improve efficiency, **3** = Improve trip reliability, **4** = Support an accessible and inter-connected multimodal system, **5** = Reduce pollutants and GHG emissions, **6** = Support economy, **7** = Improve asset management, **8** = Land use efficiency

Ratings: **H** = Highly Positive Impact, **M** = Medium Positive Impact, **L** = Low Positive Impact

Timeframe: **ST** = Short Term (within 4 years), **MT** = Medium Term (between 4-10 years), **LT** = Long Term (more than 10 years)

**: Project may not align with PBA 2050. Further consultation with MTC is required.

Table 22: Bike Project Evaluation Results (Not in Priority Order)

County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Justification	Goal								Status	Timeframe
					1	2	3	4	5	6	7	8		
MRN	21-T09-061	0.00	Shoreline Hwy	Currently an interchange with high volume, high speeds, and collisions. TAM BPAC proposes some minor ramp reconfiguration and signalization.	H	M	M	H	M	M	H	M	Proposed	
MRN	21-T08-060	0.21	Alexander Rd - Vista Pt Trail, Sausalito	Provide Class I path along US 101 from Vista Point to Alexander Ave in conjunction with planned interchange crossing improvements, consistent with FHWA Alexander Avenue Planning Study. Provide legible transition between Class I and Class II facilities in the intersection area.	H	M	M	H	M	M	H	H	Listed in RTP	
MRN	21-T08-060	2.50	Rodeo Ave. - Sausalito	Rodeo Ave.	H	M	M	H	H	L	L	M	Listed in RTP	
MRN	21-T08-060	3.16	Donahue St., Marin City	Provide bike lanes on Donahue Street to support bicyclists crossing under US 101, and to provide access to the Mill Valley Sausalito Path east of Bridgeway	H	M	M	H	M	M	H	M	Listed in RTP	
MRN	21-T08-060	4.49 – 4.87	Seminary Dr. - US 101	Proposed Class II bike lanes on Redwood Highway Frontage Road east side of	H	M	M	H	H	H	L	H		

Legend

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Timeframe: **ST** = Short Term (within 4 years), **MT** = Medium Term (between 4-10 years), **LT** = Long Term (more than 10 years)

**: Project may not align with PBA 2050. Further consultation with MTC is required.

County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Justification	Goal								Status	Timeframe
					1	2	3	4	5	6	7	8		
				freeway from the Marin County Draft Bicycle and Pedestrian Master Plan										
MRN	21-T08-060	4.60	Redwood Hwy- (Strawberry Frontage Rd) - Milly Valley & Marin County	Provide bike lanes on Redwood Highway Frontage Road east side of freeway. Existing bike/ped grade separated crossing near on/off ramps.	H	M	M	H	H	L	L	M	Listed in RTP	
MRN	21-T09-061, 21-T08-060	5.64	US 101/Hwy 131 Interchange	Provide Class I or IV bikeway through US 101/Hwy 131 interchange as part of reconstructing the interchange eliminate high speed ramp entries.	H	M	M	H	M	M	H	M		
MRN	21-T09-061, 21-T08-060	5.80	Tiburon Blvd., Marin County (Mill Valley)	Class II bike lanes on Tiburon Boulevard and on Redwood Highway Frontage Road. Recommend reconfiguring interchange to diamond, eliminating high speed ramp entries. Prioritize bicycles along Blithedale Ave/Tiburon Boulevard, as this is the only route across US 101 for some distance in either direction	H	M	M	H	M	M	H	M	In Development / Under Study - Initial study completed; Under review by TAM for possible PSR update	

Legend

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**: Project may not align with PBA 2050. Further consultation with MTC is required.

County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Justification	Goal								Status	Timeframe
					1	2	3	4	5	6	7	8		
MRN	21-T09-061, 21-T08-060	7.33	Tamalpais Dr	Reconfigure intersection to eliminate high-speed ramp entries. Provide Class I on north side of Tamalpais Drive to improve access across the highway	H	M	M	H	M	M	H	M		
MRN	21-T08-060	8.66	Sir Francis Drake Blvd E., Larkspur	Class I path passes under Redwood Highway south of Sir Francis Drake Blvd, and Cal Park Hill Pathway provides a north-south connection on the east side of 101, but no north/south crossing is currently provided on the west side	H	M	M	H	M	M	H	M	Proposed	
MRN	21-T08-060	10.96	4th St., San Rafael	Explore Class IV facilities on 4th Street with improved intersections on Heatherton (Caltrans jurisdiction) and Irwin (City of San Rafael jurisdiction)	H	M	M	H	M	M	H	H	Proposed	
MRN	21-T08-060	11.10	Mission Ave., San Rafael	Add signage and striping	H	M	M	H	M	M	H	M	Listed in RTP	
MRN	21-T09-061, 21-T08-060	12.65	N. San Pedro Road, San Rafael	Minor reconstruction of ramps to eliminate free flow auto movements on to US 101 ramps. Provide Class II bike lanes on San Pedro Rd thru interchange	H	M	M	H	M	M	H	M	Proposed	

Legend

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					1	2	3	4	5	6	7	8		
MRN	21-T09-061, 21-T08-060	14.68	Lucas Valley Rd	Explore reconfiguring ramps to eliminate high speed entry and exit. TAM BPAC emphasizes challenge of getting from Park & Ride to west side of freeway. Currently has poor lighting and poor pavement conditions	H	M	M	H	M	M	H	M		
MRN	21-T08-060	17.99	Ignacio Blvd., Novato	Improve bicyclist comfort on Ignacio Boulevard across 101 to facilitate access to planned Class I in rail corridor on the east side. TAM BPAC notes this is high need for school children.	H	M	M	H	M	M	H	M	Listed in RTP	
MRN	21-T08-060	20.19	Rowland Blvd., Novato	Consider adding separated facility on Rowland Boulevard	H	M	M	H	M	M	H	M	Listed in RTP	
MRN	21-T08-060	22.00	Atherton Ave., Novato	Atherton Ave overpass, Novato.	H	M	M	H	H	L	L	M	Listed in RTP	
SON	21-T08-060	3.25	Petaluma Blvd S	Install Class I path on existing grade under the US 101 Petaluma River Bridge on the north side of the river to connect Riverfront Development to the Petaluma Marina.	H	H	H	H	H	H	L	M	Proposed	MT

Legend

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**: Project may not align with PBA 2050. Further consultation with MTC is required.

County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Justification	Goal								Status	Timeframe
					1	2	3	4	5	6	7	8		
SON	21-T08-060	4.75	E Washington St., Petaluma	Consider realigning NB 101 on ramp from west side of Washington to the T intersection of the NB 101 off ramp and eliminating the slip ramp. Consider bike signal phasing on east side of Washington to allow bikes to get ahead of merging traffic.	H	M	M	H	M	M	H	L	Proposed	LT
SON	21-T09-061, 21-T08-060	12.00	W Sierra Ave., Cotati	Reduce curb radii and square up the existing ramps where they meet with W Sierra Ave to shorten crossing distance for bicyclists. Add stop sign on Sierra Ave at ramp entrances to eliminate free right movement	H	M	M	H	M	M	H	H	Proposed	LT
SON	21-T09-061	13.88	Rohnert Park Expy	Minor ramp reconfiguration to square up the ramps and reduce conflicts with bicyclists	H	M	M	H	M	M	H	M	Proposed	LT
SON	21-T08-060	14.90	Golf Course Dr., Rohnert Park	Install low stress bicycle facilities through interchange on Commerce Boulevard. Consider Class II buffered bike lanes if possible. Consider bicycle signal.	H	M	M	H	M	M	H	M	Bridge rail replacement project at this interchange in PAED. Will not address	LT

Legend

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County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Justification	Goal								Status	Timeframe
					1	2	3	4	5	6	7	8		
													bicycle deficiencies	
SON	21-T08-060	15.53	Santa Rosa Ave/Roberts Lake Rd	Proposed Bellevue Creek Trail provides an east-west connection starting at Petaluma Hill Road and continues west to the proposed Laguna de Santa Rosa Trail. An overhead crossing of Hwy 101 is needed.	H	H	H	H	H	H	L	M	Proposed	LT
SON	21-T08-060	16.53	Todd Rd, Santa Rosa	Explore options for low stress bicycle facility given little room bike lanes on current bridge. May need to replace bridge, provide separate bike/ped facility, or have shared accommodation on the bridge. Consider striping approach to the bridge.	H	M	M	H	M	M	H	L	Proposed	LT
SON	21-T08-060	18.90	Baker Ave., Santa Rosa	Connect proposed Colgan Creek trail to bike lanes. Interchange is offset with numerous conflicts. Suggest reconstructing interchange or provide separate bike/ped overcrossing. Consistent with SCTA Bike Plan	H	M	M	H	M	M	H	H	Proposed	LT

Legend

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**: Project may not align with PBA 2050. Further consultation with MTC is required.

County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Justification	Goal								Status	Timeframe
					1	2	3	4	5	6	7	8		
SON	21-T08-060	20.10	3rd St., Santa Rosa	Minor interchange improvements (signage and striping)- Class IIB	H	M	M	H	M	M	H	H	Proposed	LT
SON	21-T08-060	20.80	College Ave., Santa Rosa	Explore minor interchange improvements on College Avenue through the interchange	H	M	M	H	M	M	H	H	Proposed	MT
SON	21-T08-060	21.23	Bear Cub Way	Build separated crossing over US-101 as proposed in Santa Rosa Project Study Report	H	M	M	H	H	M	L	M	Proposed	LT
SON	21-T08-060	21.74	Steele Ln., Santa Rosa	Explore low stress bicycle facility and bike signal in are with significant traffic and multiple turn lanes	H	M	M	H	M	M	H	H	Proposed	MT
SON	21-T09-061	22.50	Bicentennial Way, Santa Rosa	Explore replacing free flow off-ramps from 101 NB with single, signalized crossing. Potentially signalize 101 SB on ramps	H	M	M	H	M	M	H	H	Proposed	LT
SON	21-T08-060	24.79	River Rd/Mark West Springs Rd, Fulton	Improve bicycle facilities on Mark West Springs Road and River Road through interchange	H	M	M	H	M	M	H	H	Proposed	LT
SON	21-T08-060	29.37	Old Redwood Hwy/Healdsburg Ave	Provide separated bike/ped crossing of US 101 in Windsor at Old Redwood Highway	H	M	M	H	H	M	L	M	Proposed	
SON	21-T09-061	33.52	Healdsburg Ave	Explore minor ramp reconfiguration to square up	H	M	M	H	M	M	H	M	Proposed	

Legend

Goals: **1** = Improve safety, **2** = Reduce congestion and improve efficiency, **3** = Improve trip reliability, **4** = Support an accessible and inter-connected multimodal system, **5** = Reduce pollutants and GHG emissions, **6** = Support economy, **7** = Improve asset management, **8** = Land use efficiency

Ratings: **H** = Highly Positive Impact, **M** = Medium Positive Impact, **L** = Low Positive Impact

Timeframe: **ST** = Short Term (within 4 years), **MT** = Medium Term (between 4-10 years), **LT** = Long Term (more than 10 years)

**: Project may not align with PBA 2050. Further consultation with MTC is required.

County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Justification	Goal								Status	Timeframe
					1	2	3	4	5	6	7	8		
				off-ramps and on-ramps, remove slip lanes										
SON	21-T08-060	34.90	Mill St, Westside Road, Healdsburg	Install Class II bike lanes on Mill St, and construct sidewalk on south side of Mill St between US 101 NB onramp and Healdsburg Ave	H	M	M	H	M	M	H	M	In Development / Under Study Funding Required	ST
SON	21-T09-061	34.90	Mills Rd./Westside Rd., Healdsburg	Explore minor ramp reconfiguration to square up off-ramps and on-ramps, remove slip lanes	H	M	M	H	M	M	H	M	Proposed	LT
SON	21-T08-060	34.90	Westside Road	Class III bike route as proposed in Sonoma County Bicycle and Pedestrian Plan	H	M	M	H	M	M	H	M	Proposed	
SON	21-T09-061	35.03	Gravenstein Hwy/Hwy 116, Cotati	Reconfigure interchange to relocate NB on-ramp and install Class IV separated bikeways. Area has existing bike lanes through intersection. Explore reducing curb radii of on and off ramps	H	M	M	H	M	M	H	H	Proposed	LT
SON	21-T08-060	36.30	Dry Creek Rd	Minor interchange improvements (signage and striping)- Class II	H	M	M	H	M	M	H	M	Proposed	LT
SON	21-T08-060	38.57	Lytton Springs Rd	Provide signage, conflict marking, and bike lanes on Lytton Springs Rd thru US 101 interchange	H	M	M	H	M	M	H	M	Proposed	

Legend

Goals: **1** = Improve safety, **2** = Reduce congestion and improve efficiency, **3** = Improve trip reliability, **4** = Support an accessible and inter-connected multimodal system, **5** = Reduce pollutants and GHG emissions, **6** = Support economy, **7** = Improve asset management, **8** = Land use efficiency

Ratings: **H** = Highly Positive Impact, **M** = Medium Positive Impact, **L** = Low Positive Impact

Timeframe: **ST** = Short Term (within 4 years), **MT** = Medium Term (between 4-10 years), **LT** = Long Term (more than 10 years)

**: Project may not align with PBA 2050. Further consultation with MTC is required.

County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Justification	Goal								Status	Timeframe
					1	2	3	4	5	6	7	8		
SON	21-T08-060	41.44	Geyserville Ave	Provide signage, striping, and bike lanes on Geyserville Ave thru US 101 interchange.	H	M	M	H	M	M	H	M	Proposed	LT
SON	21-T08-060	43.36	Canyon Road	Provide signage, striping, and bike lanes on Canyon Rd thru US 101 interchange	H	M	M	H	M	M	H	M	Proposed	LT
SON	21-T08-060	49.07	Theresa Dr	Provide signage, striping, and bike lanes on Theresa Dr thru US 101 interchange	H	M	M	H	M	M	H	M	Proposed	LT
MRN – SON	21-T08-060	3.25 - 27.14	Petaluma Blvd S - S San Antonio Rd	Marin Sonoma Narrows Trail proposed in Sonoma County Bicycle and Pedestrian Plan (2010)	H	H	H	H	H	H	L	H		

Legend

Goals: **1** = Improve safety, **2** = Reduce congestion and improve efficiency, **3** = Improve trip reliability, **4** = Support an accessible and inter-connected multimodal system, **5** = Reduce pollutants and GHG emissions, **6** = Support economy, **7** = Improve asset management, **8** = Land use efficiency

Ratings: **H** = Highly Positive Impact, **M** = Medium Positive Impact, **L** = Low Positive Impact

Timeframe: **ST** = Short Term (within 4 years), **MT** = Medium Term (between 4-10 years), **LT** = Long Term (more than 10 years)

**: Project may not align with PBA 2050. Further consultation with MTC is required.

Table 23: Pedestrian Project Evaluation Results (Not in Priority Order)

County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Justification	Goal								Status	Timeframe
					1	2	3	4	5	6	7	8		
SON	21-T09-061	3.70	Lakeville Rd. (SR116) Petaluma	Improve pedestrian access and safety. Consider smaller radii turns and adding bus pad & Park-and-Ride access. It will connect to SMART Pathway.	H	M	M	H	M	M	H	H	Proposed	LT
MRN	21-T09-061	12.70	N. San Pedro Road, San Rafael	Intersection improvements proposed in D4 Pedestrian Plan. Square off ramps, improve pedestrian access to bus pads, add crosswalks, and improve landscaping.	H	M	M	H	M	M	H	M	Proposed	LT
MRN	21-T09-061	22.00	Atherton Ave	Crossing need identified in D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	
MRN	21-T09-061		2nd St., San Rafael	Freeway Junction Improvement need identified in the D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	
MRN	21-T08-060		Bay St/San Rafael Creek	Crossing need identified in D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	
MRN	21-T08-060		Corte Placida	Crossing need identified in D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	

Legend

Goals: **1** = Improve safety, **2** = Reduce congestion and improve efficiency, **3** = Improve trip reliability, **4** = Support an accessible and inter-connected multimodal system, **5** = Reduce pollutants and GHG emissions, **6** = Support economy, **7** = Improve asset management, **8** = Land use efficiency

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Timeframe: **ST** = Short Term (within 4 years), **MT** = Medium Term (between 4-10 years), **LT** = Long Term (more than 10 years)

**: Project may not align with PBA 2050. Further consultation with MTC is required.

County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Justification	Goal								Status	Timeframe
					1	2	3	4	5	6	7	8		
MRN	21-T08-060		Dusel Dr	Crossing need identified in D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	
MRN	21-T09-061		E Blitherdale Ave	Freeway Junction Improvement need identified in the D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	
SON	21-T09-061		E Washington St.	Freeway Junction Improvement need identified in the D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	
MRN	21-T08-060		Lucas Valley Rd	Locally identified crossing need in the D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	
MRN	21-T08-060		Meadow Valley Rd	Crossing need identified in D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	
MRN	21-T08-060		Miller Creek Rd	Locally identified crossing need in the D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	
MRN	21-T08-060		Tamalpais Dr	Crossing need identified in D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	
MRN	21-T08-060		SR 1/ US 101 interchange	Crossing need identified in D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	
MRN	21-T09-061		Wolfback Ridge Rd	Freeway Junction Improvement need identified in the D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	

Legend

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Timeframe: **ST** = Short Term (within 4 years), **MT** = Medium Term (between 4-10 years), **LT** = Long Term (more than 10 years)

**: Project may not align with PBA 2050. Further consultation with MTC is required.

County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Justification	Goal								Status	Timeframe
					1	2	3	4	5	6	7	8		
SON	21-T06-029; 21-T08-060	17.60	Bellevue Ave., Santa Rosa	Bellevue Ave Improvements. Construct new overcrossing of U.S. 101 at Bellevue Ave. between Todd Rd. interchange and Hearn Ave. interchange. Includes two travel lanes, bike lanes, and pedestrian access.	H	M	M	H	H	M	L	H	Proposed	LT
SON	21-T08-060	24.79	River Rd/Mark West Springs Rd	Freeway Junction Improvement need identified in the D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	
SON	21-T09-061	26.30	Airport Blvd, Santa Rosa	Consider squaring up ramps and adding crosswalks.	H	M	M	H	M	M	H	M	Proposed	ST
SON	21-T08-060	37.00	Chiquita Rd., Healdsburg	Add crosswalks, sidewalks	H	L	L	H	M	L	L	M	Proposed	LT
SON	21-T08-060		Cloverdale Blvd., between Shady Lane and Muscat Creek crossing, Cloverdale	Cloverdale Sidewalk Completion Project. Construct new sidewalk and accessibility improvements	H	M	M	H	H	M	L	H	In Development / Under Study - Funding Required	ST
SON	21-T09-061		Healdsburg Ave	Freeway Junction	H	L	M	H	H	L	L	M	Proposed	

Legend

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Timeframe: **ST** = Short Term (within 4 years), **MT** = Medium Term (between 4-10 years), **LT** = Long Term (more than 10 years)

**: Project may not align with PBA 2050. Further consultation with MTC is required.

County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Justification	Goal								Status	Timeframe
					1	2	3	4	5	6	7	8		
				identified in the D4 Pedestrian Plan										
SON	21-T09-061		Independence Ln	Freeway Junction Improvement need identified in the D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	
SON	21-T09-061		Zanzi Ln	Freeway Junction Improvement need identified in the D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	
SON	21-T09-061		Asti Post Office Rd	Freeway Junction Improvement need identified in the D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	
SON	21-T09-061		Theresa Rd	Freeway Junction Improvement need identified in the D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	
SON	21-T09-061		S Cloverdale Blvd	Freeway Junction Improvement need identified in the D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	
SON	21-T09-061		Citrus Fair Dr.	Freeway Junction Improvement need identified in the D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	
SON	21-T08-060		US 101/Laguna de Santa Rosa	Crossing need identified in D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	

Legend

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Timeframe: **ST** = Short Term (within 4 years), **MT** = Medium Term (between 4-10 years), **LT** = Long Term (more than 10 years)

**: Project may not align with PBA 2050. Further consultation with MTC is required.

County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Justification	Goal								Status	Timeframe
					1	2	3	4	5	6	7	8		
SON	21-T08-060		US 101/Copeland Creek	Crossing need identified in D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	
SON	21-T08-060		US 101/Hinebaugh Creek	Locally identified crossing need in the D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	
SON	21-T08-060		Santa Rosa Ave	Crossing need identified in D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	
SON	21-T08-060		W Robles	Crossing need identified in D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	
SON	21-T08-060		Hearn Ave.	Crossing need identified in D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	
SON	21-T08-060		Barham Ave.	Crossing need identified in D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	
SON	21-T08-060		Jennings Ave.	Locally identified crossing need in the D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	
SON	21-T08-060		Administration Dr.	Crossing need identified in D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	
SON	21-T08-060		Bicentennial Way	Crossing need identified in D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	
SON	21-T08-060		Mitchell Ln	Crossing need identified in D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	

Legend

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Timeframe: **ST** = Short Term (within 4 years), **MT** = Medium Term (between 4-10 years), **LT** = Long Term (more than 10 years)

**: Project may not align with PBA 2050. Further consultation with MTC is required.

County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Justification	Goal								Status	Timeframe
					1	2	3	4	5	6	7	8		
SON	21-T08-060		Bluebird Dr.	Crossing need identified in D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	
SON	21-T08-060		US 101/Windsor Creek	Crossing need identified in D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	
SON	21-T08-060		Cordellia Lane	Crossing need identified in D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	
SON	21-T08-060		Westside Road	Crossing need identified in D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	
SON	21-T08-060		Dry Creek Rd	Crossing need identified in D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	
SON	21-T08-060		Canyon Rd/SR 128	Crossing need identified in D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	
SON	21-T08-060		McCray Rd.	Crossing need identified in D4 Pedestrian Plan	H	L	M	H	H	L	L	M	Proposed	

Legend

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Timeframe: **ST** = Short Term (within 4 years), **MT** = Medium Term (between 4-10 years), **LT** = Long Term (more than 10 years)

**: Project may not align with PBA 2050. Further consultation with MTC is required.

Table 24: Bike/Pedestrian Project Evaluation Results (Not in Priority Order)

County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Name	Project Justification	Goal								Status	Timeframe
						1	2	3	4	5	6	7	8		
MRN	21-T08-060	6.38	Casa Buena Dr. Corte Madera		New Ped crossing to provide more direct connection between residential neighborhoods and avoid traffic at Tamalpais Interchange and Wornum-Redwood Highway. Crossing could utilize existing topography (hill on Casa Buena side) to minimize ramp length.	H	M	H	H	H	L	L	M	Proposed / In Caltrans D4 Bike and D4 Pedestrian Plan	LT
MRN	21-T08-060	8.00 – 8.2	Wornum Dr., Greenbrae	Central Marin Gap Closure Project.	Wornum undercrossing - Class I MUP and safe connection to existing Bay Trail bayside of Redwood, safe connection to Sandra Marker Trail. New MUP between undercrossing and Sandra Marker Trail needed. The Bay Trail and the Sandra Marker Trail are two major non-motorized transportation facilities in Corte Madera/Larkspur that would be seamlessly connected with the construction of a new MUP under the freeway at Wornum Drive.	H	M	M	H	H	L	L	H	Preliminary engineering complete, PSE to begin FY 19/20.	ST
MRN	21-T08-060	19.08	Redwood Blvd., Novato		Add separated crossing of US 101/Hwy 37 interchange, Novato Blvd Bike Path across US 101. No comfortable crossing between Ignacio Blvd and Rowland Blvd in Novato (2 miles)	H	M	H	H	H	L	L	M	Proposed	LT

Legend

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Ratings: **H** = Highly Positive Impact, **M** = Medium Positive Impact, **L** = Low Positive Impact, **N** = Negative Impact

Timeframe: **ST** = Short Term (within 4 years), **MT** = Medium Term (between 4-10 years), **LT** = Long Term (more than 10 years)

County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Name	Project Justification	Goal								Status	Timeframe
						1	2	3	4	5	6	7	8		
MRN	21-T08-060	Various	2nd St to Anderson, San Rafael		MUP/2nd St to Anderson	H	M	M	H	H	L	L	H	Completed	ST
MRN	21-T08-060	Various			Close gaps on North/South Greenway MUP and connects to Larkspur Ferry Terminal.	H	M	M	H	H	L	L	H	Environmental and PSE completed by July 2022, construction complete by 12/23	ST
SON	21-T08-060	3.30	Petaluma River Bridge, Petaluma		Install new Class I trail under the US 101 Petaluma River Bridge on the north side of the river. This will connect the Riverfront Development to the west (under construction) to the Petaluma Marina to the east. This will connect downtown Petaluma, including the new SMART rail station to the southeast portion of Petaluma, including the bay area rim trail.	H	M	H	H	H	M	L	H	In Development / Under Study - Funding Required	MT
SON	21-T08-060	3.30 – 12.5	Petaluma - Sebastopol	Petaluma – Sebastopol Multi Use Path	Provides connections across critical barriers in NW/SE corridor for alternative modes.	H	M	M	H	H	L	L	H	In Development / Under Study - Funding Required	LT
SON	21-T08-060	3.98	Caulfield Ave., from Lakeville St. to Garfield Dr., Petaluma	Caulfield Lane Complete Street Improvements	Road diet, Class IV and Class II bicycle facilities, curb ramp and pavement improvements, including US 101 overcrossing	H	M	H	H	H	M	L	H	In Development / Under Study - Funding Required	ST
SON	21-T09-061	4.54	McKenzie Dr., Petaluma		Replace existing non-compliant pedestrian overcrossing with new structure with accessible approaches and improved lighting.	H	M	M	H	H	L	L	L	In Development / Under Study - Funding Required	LT

Legend

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County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Name	Project Justification	Goal								Status	Timeframe
						1	2	3	4	5	6	7	8		
					Environmentally cleared by MSN project.										
SON	21-T08-060	5.80 – R5.1	Petaluma to Cloverdale	SMART Multi-Use Path	Provides connection between Petaluma and Cloverdale	H	M	M	H	H	L	L	H	Many sections complete or under construction. Others in Development - Funding Required	MT
SON	21-T07-056, 21-T08-060	6.82	Corona Road, Petaluma		Replace existing overcrossing structure that has significant geometry and configuration challenges for safe bike and pedestrian access. Corona Road Bridge's existing geometry has narrow sidewalks and shoulders, and low bridge railings, none of which meet current design standards. Connectivity east of this bridge will soon be enhanced with the planned SMART Station Multi-Use Pathway (MUP) and the N. McDowell Blvd. Complete Streets project active transportation improvements. Includes two travel lanes, bike lanes, and pedestrian access.	H	H	H	H	H	H	H	H	In Development / Under Study - Funding Required	LT
SON	21-T09-061	13.50	Copeland Creek, Cotati, Rohnert Park		Construct grade separated overcrossing of U.S. 101 to connect nearby existing and planned creek	H	M	M	H	H	L	L	H	In Development / Under Study - Funding Required	MT

Legend

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Timeframe: **ST** = Short Term (within 4 years), **MT** = Medium Term (between 4-10 years), **LT** = Long Term (more than 10 years)

County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Name	Project Justification	Goal								Status	Timeframe
						1	2	3	4	5	6	7	8		
					trails. Feasibility study completed 2021.										
SON	21-T07-056, 21-T08-060	14.5	State Farm Drive, Rohnert Park	State Farm Drive Overcrossing	Construct new overcrossing of U.S. 101 at State Farm Drive/ Business Park Drive between Wilfred Ave./Golf Course Drive interchange and Rohnert Park Expressway interchange. Includes two travel lanes, bike lanes, and pedestrian access.	H	M	M	H	H	M	L	H	Proposed	LT
SON	21-T07-056, 21-T08-060	15.50	Bellevue Creek Trail, Santa Rosa		The proposed Bellevue Creek Trail provides an east-west connection starting at Petaluma Hill Road and continues west to the proposed Laguna de Santa Rosa Trail. An overhead crossing of Hwy 101 is needed. The Bellevue Creek Trail will provide connections to bike lanes on Petaluma Hill Road, on Stony Point Road, and the SMART Trail.	H	M	M	H	H	M	L	H	In Development / Under Study - Funding Required	LT
SON	21-T07-056, 21-T08-060	17.60	Bellevue Ave., Santa Rosa		Bellevue Ave Improvements. Construct new overcrossing of U.S. 101 at Bellevue Ave. between Todd Rd. interchange and Hearn Ave. interchange. Includes two travel lanes, bike lanes, and pedestrian access.	H	M	M	H	H	M	L	H	Proposed	LT
SON	21-T08-060	18.96	Colgan Ave		Connect proposed Colgan Creek trail to bike lanes. Reconstruct	H	M	M	H	M	M	H	M	Proposed	

Legend

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Timeframe: **ST** = Short Term (within 4 years), **MT** = Medium Term (between 4-10 years), **LT** = Long Term (more than 10 years)

County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Name	Project Justification	Goal								Status	Timeframe
						1	2	3	4	5	6	7	8		
					offset interchange or provide separate bike/ped overcrossing consistent with Sonoma County Bicycle and Pedestrian Plan										
SON	21-T08-060	21.50	Santa Rosa Jr. College area, Santa Rosa	Santa Rosa Jr. College US Highway 101 Bicycle and Pedestrian Overcrossing Project	The City of Santa Rosa (City), in cooperation with Caltrans and SCTA, proposes to build a Class I Bikeway, Bicycle and Pedestrian Overcrossing (BPOC) over US 101 in Santa Rosa, Sonoma County. The proposed BPOC is located in the northern portion of the City of Santa Rosa, between the existing U.S. 101/Steele Lane and U.S. 101/College Avenue interchanges. The project proposes to provide an exclusive bicycle/pedestrian crossing over U.S. 101 in the northern part of Santa Rosa with an approximately 14.5-foot clear width ADA compliant Class I shared use BPOC over US 101, which would consist of a 5-footwide pedestrian lane and 8-footwide bike path. The pedestrian walking lane bike path would be separated by a mountable sloped curb and is traversable by both pedestrians and bicyclists. The BPOC would have 17-foot minimum vertical clearances over the	H	H	H	H	H	M	L	H	In PS&E. CON expected FY 2023/24	ST

Legend

Goals: **1** = Improve safety, **2** = Reduce congestion and improve efficiency, **3** = Improve trip reliability, **4** = Support an accessible and inter-connected multimodal system, **5** = Reduce pollutants and GHG emissions, **6** = Support economy, **7** = Improve asset management, **8** = Land use efficiency

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Timeframe: **ST** = Short Term (within 4 years), **MT** = Medium Term (between 4-10 years), **LT** = Long Term (more than 10 years)

County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Name	Project Justification	Goal								Status	Timeframe
						1	2	3	4	5	6	7	8		
					frontage roads, Cleveland Avenue and Armory Drive, and an 18.5-foot minimum vertical clearance over US 101. The Project proposes an alignment along Edwards Avenue and Elliott Avenue, which would be located near the Santa Rosa North SMART station on the west side and near SRJC on the east side.										
SON	21-T08-060	26.10	Mark West Creek Trail, Santa Rosa		The proposed Mark West Creek Trail provides an east-west connection from Old Redwood Highway to the Santa Rosa Airport. The trail follows the Mark West Creek corridor and will need to cross below the Airport Boulevard off-ramp and US 101.	H	M	M	H	H	M	L	H	Proposed	LT
SON	21-T09-061	27.60	Shiloh Rd.		Shiloh Road has a high volume of industrial traffic. The Shiloh Road overpass requires two lanes in each direction and US 101 ramp reconfiguration and upgraded signalization. The lane improvements will improve bicycle and pedestrian connectivity and safety.	H	M	M	H	M	M	H	M	In Development / Under Study - Funding Required	MT
SON	21-T08-060	29.40	Old Redwood Hwy, Windsor	Downtown Ped & Bike Crossing of US 101 - Phase 1 - Underpass Widen	Central Windsor at Old Redwood Highway (ORH). The existing underpass along ORH does not have sufficient width for compliant bike	H	M	M	H	H	M	L	H	In Development / Under Study - Funding Required	ST

Legend

Goals: **1** = Improve safety, **2** = Reduce congestion and improve efficiency, **3** = Improve trip reliability, **4** = Support an accessible and inter-connected multimodal system, **5** = Reduce pollutants and GHG emissions, **6** = Support economy, **7** = Improve asset management, **8** = Land use efficiency

Ratings: **H** = Highly Positive Impact, **M** = Medium Positive Impact, **L** = Low Positive Impact, **N** = Negative Impact

Timeframe: **ST** = Short Term (within 4 years), **MT** = Medium Term (between 4-10 years), **LT** = Long Term (more than 10 years)

County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Name	Project Justification	Goal								Status	Timeframe
						1	2	3	4	5	6	7	8		
					lanes and shared-use pathways. The existing northbound on-ramp is not signalized and poses impediments for safe crossing for pedestrian and bicycles. Public outreach indicates a great need to improve this existing underpass and to add a vehicle free pedestrian and bicycle crossing either over or under US 101. This central Windsor location has the highest daily traffic counts in the Town and requires safe pedestrian and bicycle access to the downtown. This area connects Class II trails on ORH and Conde Lane and to Class III trails on Windsor River Road. In the central area, these Class II trails connect to existing and proposed Class I Windsor Creek trails. The Windsor River Road Class III trail connects to SMART Pathway.										
SON	21-T08-060	29.40	Los Amigos Road to Old Redwood Highway over US 101, Windsor	Downtown Ped & Bike Crossing of US 101 - Phase 2 - Overcrossing	Improve east and west connectivity of central Windsor with a new bicycle and pedestrian bridge overcrossing of US 101 with touchdown areas at each end of the bridge.	H	M	M	H	H	M	L	M	In Development / Under Study - Funding Required	LT
SON	21-T09-061	30.70	Arata Lane, Windsor		The project proposes to reconstruct the US 101 overpass for widening of	H	M	M	H	M	M	H	M	Proposed	LT

Legend

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County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Name	Project Justification	Goal								Status	Timeframe
						1	2	3	4	5	6	7	8		
					Arata Lane. Improvements will also realign Los Amigos Road, add a northbound on-ramp, widen Arata Lane to include signal modifications to add pedestrian crossings at existing off-ramp and proposed on-ramp, and add enhanced crosswalks or crossing signs/markings at Los Amigos Road/Arata Lane. Improve existing Class II bike lanes. There are additional sidewalk gap closures required at this location.										
SON	21-T09-061	38.60	Lytton Springs, Healdsburg		Add crosswalks, shorten crossing distances, control turns	H	L	L	H	M	L	L	M	Proposed	LT
SON	21-T09-061	50.40	Cloverdale Blvd., Cloverdale		Add crosswalks, shorten crossing distances, control turns	H	L	L	H	M	L	L	M	Proposed	LT
SON	21-T09-061	51.60	Citrus Fair Dr., Cloverdale		Adjacent to SMART Station. Main pedestrian/bike access from Downtown Cloverdale. Improve pedestrian realm, control turns, high visibility crosswalks.	H	L	L	H	M	L	L	H	Proposed	LT
SON	21-T09-061	54.20	N. Redwood Hwy, Cloverdale		Add crosswalks, shorten crossing distances, control turns	H	L	L	H	M	L	L	M	Proposed	LT
SON	21-T08-060		N Cloverdale Blvd, from SR 128 to North Street, Cloverdale	North Cloverdale Gateway Project	Construct bicycle and pedestrian facilities	H	M	M	H	H	M	L	H	Proposed	LT

Legend

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County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Name	Project Justification	Goal								Status	Timeframe
						1	2	3	4	5	6	7	8		
SON	21-T08-060		Cloverdale Blvd., between Railroad Ave and Franklin St., Cloverdale	Cloverdale Traffic Calming Project	Construct sidewalk, bike lanes, crosswalks, roadway, public transit, and accessibility improvements.	H	M	M	H	H	M	L	H	In Development / Under Study - Funding Required	ST
SON	21-T08-060		Healdsburg Ave., between Powell Ave. and northern Healdsburg city limits	Healdsburg Avenue Complete Street Improvements	Road diet, Class IV and Class II bicycle facilities, streetscape improvements.	H	M	H	H	H	M	L	H	In Development / Under Study - Funding Required	ST
SON	21-T08-060		McDowell Blvd, between Old Redwood highway and Sunrise Parkway, Petaluma	North McDowell Blvd Complete Streets	Rebuilding roadway substructure, including subgrade and base repair. Signal improvements include coordination along McDowell Blvd North from E. Washington south to Caufield Lane which includes 13 signals, reconstructing and striping from Old Redwood Highway to Sunrise Parkway, construction of 38 new curb ramps, sidewalk gap closures from Old Redwood Highway to Corona Rd as well as at the railroad crossing and widening of an existing sidewalk to create connectivity for class I bike path	H	H	H	H	H	M	H	H	In Development / Under Study - Funding Required	ST
SON	21-T08-060		Conde Ln., between Oakfield Ln.		Construct class II bike lanes. Construct sidewalk on west side of street.	H	M	M	H	M	M	H	M	In Development / Under Study - Funding Required	ST

Legend

Goals: **1** = Improve safety, **2** = Reduce congestion and improve efficiency, **3** = Improve trip reliability, **4** = Support an accessible and inter-connected multimodal system, **5** = Reduce pollutants and GHG emissions, **6** = Support economy, **7** = Improve asset management, **8** = Land use efficiency

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County	Plan Bay Area 2050 RTP ID	Post Mile (Approx.)	Location	Project Name	Project Justification	Goal								Status	Timeframe
						1	2	3	4	5	6	7	8		
			and Mitchell Ln., Windsor												
SON	21-T09-061		Old Redwood Highway, between Starr Road and Joe Rodota Drive, Windsor	Old Redwood Highway Corridor Enhancement Segment 1	Install pedestrian scale lighting and Class IV bikeways and close sidewalk gaps on both sides of the corridor. A gateway entry sign and various mini-places should be considered to make this segment more inviting. Upgrade the intersection of Starr and ORH to a roundabout and enhance/install various pedestrian crossings. Add bus shelter amenities where possible.	H	H	H	H	H	M	H	M	In Development / Under Study - Funding Required	LT
SON	21-T08-060		Old Redwood Highway, between Alden Lane and Pool Creek, Windsor	Old Redwood Highway Corridor Enhancement Segment 2	Upgrade bike facilities to Class IV bikeways, upgrade bicycle conflict zones to provide more room and alert drivers to bicyclists, close sidewalk gaps on both sides of the corridor, upgrade crosswalks, and install roundabout at Hembree Lane and Pleasant Avenue.	H	H	H	H	H	M	H	M	In Development / Under Study - Funding Required	LT
SON	21-T09-061		Old Redwood Highway, between Pool Creek and Shiloh Road, Windsor	Old Redwood Highway Corridor Enhancement Segment 3	Upgrade bike lanes to add buffer, install new sidewalk to close gaps, add higher visibility crossings and conflict markings for bicycle facilities in conflict zones, provide an entry feature near Shiloh Road, and add bus shelter amenities where possible.	H	H	M	H	H	M	L	M	In Development / Under Study - Funding Required	LT

Legend

Goals: **1** = Improve safety, **2** = Reduce congestion and improve efficiency, **3** = Improve trip reliability, **4** = Support an accessible and inter-connected multimodal system, **5** = Reduce pollutants and GHG emissions, **6** = Support economy, **7** = Improve asset management, **8** = Land use efficiency

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Timeframe: **ST** = Short Term (within 4 years), **MT** = Medium Term (between 4-10 years), **LT** = Long Term (more than 10 years)

Table 25: Short-term Projects

County	Project Name	PID Approval/ Environmental Start (Month/Year)	Environmental Complete (Month/Year)	Design Complete (Month/ Year)	Construction Complete (Month/ Year)	Total Project Cost (in millions)	Funding Needed (in Millions)	Status
Marin	East Sir Francis Drake Blvd Interchange - SFD Lane drop	Complete	Dec '16	Mar '17	Complete	$3.50	Fully Funded	Completed
Marin	Bellam Blvd off-ramp intersection improvement	Complete	Jun '18	Sep '22	Jan '24	$5.00	$3.50	
Marin	Ramp metering - NB 101 Southern Marin	Complete	Complete	Mar '18	Caltrans to update on status	n/a	Fully Funded	
Marin	MSN - Segment B7 - Construct HOV Lanes	Complete	Oct '09	Jun '21	Dec '25	$135.00	Fully Funded	
Marin	MSN - Segment B8 - Utility Relocation and ROW Acquisition	Complete	Oct '09	Jan '24	Dec '25	$7.50	Funding Need	April 2023 for design, April 2025 construction complete
Marin	MSN - Segment B6 - Bridge replacement	Complete	Oct '09	Apr '21	Jun '25	$8.20	$2.70	April 2024 for Design, April 2026 for construction;
Marin	MSN - Segment L1B - Plant mitigation for MSN	Complete	Oct '09	Jun '23	Jun '24	$1.10	$1.10	June 2025 Design Complete: June 2026

County	Project Name	PID Approval/ Environmental Start (Month/Year)	Environmental Complete (Month/Year)	Design Complete (Month/ Year)	Construction Complete (Month/ Year)	Total Project Cost (in millions)	Funding Needed (in Millions)	Status
								Construction complete
Marin	2nd to Anderson (2nd to Rice Segment)	Complete	Complete	Complete	Complete	$3.20	$1.00	Completed
Marin	Central Marin Regional Pathways Gap Closure	Complete	Jan '19	Jul '20	Oct '21	$2.70	2.2, Seeking ATP Funds	
Marin	North South Greenway Northern Section	Complete	Complete	Jul '20	Jul '22	$15.50	Fully Funded	Completed
Marin	Bettini Transit Center - permanent relocation	In Development / Under Study - SMART and Golden Gate Transit	Dec '22					
Sonoma / Marin	MSN - C2 Segment - Construct HOV lanes and soundwalls	12/1/2019	10/9/2019	12/18/2019	Apr '23	$206	Fully Funded	Completed
Sonoma	US Highway 101/Hearn Avenue interchange -	Complete	Complete	04/3/2023	12/31/2025	$43.68	Fully Funded	

County	Project Name	PID Approval/ Environmental Start (Month/Year)	Environmental Complete (Month/Year)	Design Complete (Month/ Year)	Construction Complete (Month/ Year)	Total Project Cost (in millions)	Funding Needed (in Millions)	Status
	Widen O/C, Improve I/C							
Sonoma	Hwy 101 Bike and Ped Overcrossing near SRJC - Connector Over Highway 101 in vicinity of N. SR Station Area/JC	8/17/2019	6/19/2020	8/28/2023	3/26/2026	$27.68	$14.50	

APPENDICES

Appendix A: Climate Change and Vulnerability Studies

The following are climate change and vulnerability studies that were conducted in the vicinity of the US 101 North Corridor.

Caltrans Adaptation Planning Grant Program

In 2017, SB 1 allocated $20 million in climate change and adaptation planning grants to local and regional agencies for adaptation planning.[119] This grant program, housed under the Caltrans Sustainable Communities Grant Program, lasted three fiscal years spanning from 2017-18 and ended in 2019-20.[120] The grant program aimed to advance adaptation planning on California's transportation infrastructure. Adaptation planning efforts will increase the resiliency of the transportation network to help mitigate the impacts of climate change. The following planning grants were awarded in the US 101 North Corridor:

Adaptation Planning Grant: State Route 37 (SR 37) Resilient Corridor Program for Marin and Sonoma Counties

The Metropolitan Planning Commission (MTC) and sub-applicant, Sonoma County Transportation Authority (SCTA) were awarded an Adaptation Planning Grant by Caltrans (FY 19/20) for the project, State Route 37 (SR 37) Resilient Corridor Program for Marin and Sonoma Counties. SR 37 is a 21-mile corridor that extends from US 101 in Novato to I-80 in Vallejo. It is an important regional connection linking job markets and housing within Marin, Sonoma, Napa and Solano Counties and provides access to popular tourist destinations. The most critical issues facing the corridor are traffic congestion, vulnerability to flooding and sea level rise, and environmental sensitivity. To address these issues, the Metropolitan Transportation Commission, Caltrans District 4, the Sonoma County Transportation Authority, the Transportation Authority of Marin, and the Bay Conservation and Development Commission will work together on the SR 37 Resilient Corridor Program to identify corridor improvements, focusing on the segment between US 101 and SR 121 (Segment A). This project will continue previous efforts that focused on the segment between SR 121 and Mare Island (Segment B) to develop a single vision for the entire corridor. The total cost of the project is $600,000 dollars and MTC and SCTA received a $500,000-dollar grant award.

Adaptation Planning Grant: Windsor READI (Resiliency for Emergencies and Disasters Initiative)

In FY 19/20, the Town of Windsor was awarded a $265,950 Caltrans Adaptation Grant to fund the Windsor READI (Resiliency for Emergencies and Disasters Initiative). The Town of Windsor, with a population of 27,548 and located within Sonoma

[119] Senate Bill No. 1 Chapter 5 https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180SB1
[120] Caltrans Adaptation Planning Grant https://dot.ca.gov/programs/transportation-planning/division-of-transportation-planning/regional-and-community-planning/sustainable-transportation-planning-grants

County, developed this plan to address climate change adaptation. The Town collaborated with key stakeholders including public safety officials, transit and transportation agencies, and under-represented populations. The plan includes: 1) Transportation and community vulnerability assessment; 2) Climate-related transportation hazards and evacuation plan and route maps; 3) Climate resilient transportation infrastructure assessment; 4) Adaptation and resiliency goals; 5) Policies and objectives based on information specified in the vulnerability assessment; and 6) Sample set of feasible implementation measures designed to carry out the goals, policies, and identified objectives. Deliverables include an outreach plan, draft and final Windsor READI plans. This effort builds upon the Sonoma County Climate Action Plan as well as the Windsor General Plan and Local Hazard Mitigation Plan. Windsor READI was unanimously adopted by the Town Council on February 16, 2022. WindsorReady.com.

Army Corps of Engineers Emergency Action Plan - Marin City

In Fall of 2021, US Army Corps of Engineers (ACE) secured funding to develop a Marin City Emergency Action Plan (EAP) with support from stakeholder agencies (Marin Public Works, Marin City Community Services District, Marin Fire, CalOES, District 4, and others). ACE is in the process of holding workshops to scope an "interim EAP" focused on priority actions to prevent flooding and protect egress during winter storm events. ACE will eventually integrate the interim EAP into a longer-range, more comprehensive action plan. ACE has held interagency brain-storming sessions to identify near-term flood and fire risk, and possible responses. One deliverable meant to respond to near-term flooding, the Marin City Traffic Management Emergency Action Plan, will be activated at the lowest level during an anticipated period of high tide and rainfall. The EAP outlines actions agencies can take when flooding occurs on or near Marin City access roads: 1) Along shoulder and outer lane of Highway 101 Southbound; 2) In the ditch along Highway 101 Southbound Marin City Exit and; 3) Near the Highway 101 Northbound and Southbound on and off ramps in Marin City or; 4) At the N. Bridge Blvd underpass. The Traffic Management Emergency Action Plan identifies three ways local agencies can be notified of flooding and prompted to activate response: 1) Public reports flooding of Marin City access roads through a 911 or nonemergency call to California Highway Patrol; 2) Caltrans Maintenance Crews, who monitor the infrastructure, report flooding of Marin City access roads to Caltrans Traffic Management Center; 3) Local agencies, like Marin City Community Services District or Marin County, who can then coordinate with the Caltrans Traffic Management Center.

Marin Shoreline Sea Level Rise Vulnerability Assessment

Marin County faces sensitivity to SLR due to the location of several transportation assets along the Bay shoreline. While Marin's shoreline already experiences regular erosion, flooding, and significant storm event impacts, SLR will exacerbate these natural processes, leading to significant social, environmental, and economic impacts.

A Countywide Vulnerability Assessment was conducted in 2017 to identify the risks and exposure from SLR.[121] Key findings within the US 101 Corridor include:

- Southern Marin would likely suffer the worst flooding impacts, which could occur in the near-term.
- Compromised access to and from the Manzanita Interchange of US 101 and SR 1 could affect hundreds of thousands of residents, employees, and visitors.
- Reductions in useable space for living, tourism, transportation, and natural resources could impact approximately 12,750 properties, more than 12,000 buildings, and 100 miles in roads.
- Waves, wind, and temporary flooding during storms could account for $60 million to $6 billion (2016 dollars) in building damages.
- Areas that are not exposed to rising bay waters can still be vulnerable to SLR when the wastewater treatment plant, ports, and major roadways become compromised under flooding conditions.
- Marin is not self-contained and could be impacted by other parts of the Bay Area affected by SLR. For example, the Port of Oakland receives imports and exports for the entire Bay Area.

BayWAVE Vulnerability Assessment

BayWAVE Vulnerability Assessment Marin Bay Waterfront Adaptation and Vulnerability Evaluation (BayWAVE) is Marin County's coordinated planning effort for SLR along the bay shoreline. Adaptation planning efforts includes hazard mitigation planning, updating the Countywide General Plan, and adaptation projects throughout the County. The Marin Shoreline SLR Vulnerability Assessment was completed in April of 2017. Manzanita Park and Ride, Tam Junction, and Tamalpais Valley were analyzed and discussed in the Assessment. In 2021, a story map was released to explain the projected sea level rise in Richardson Bay as a part of the BayWAVE effort.[122]

Marin County Climate Action Plan 2030

The Climate Action Plan helps Marin County understand how much their residents contribute to climate change, set targets to reduce contributions by a certain year, and outline goals and strategies to meet those targets. The Climate Action Plan seeks to reimagine a community that is substantially less dependent on fossil fuels and provides a prosperous environment for both current and future generations, while not exporting environmental damage and GHG emissions to other parts of the Bay Area. The Plan has six focus areas: Renewable Energy, Transportation,

[121] Marin Shoreline Sea Level Rise Vulnerability Assessment (June 2017):): https://www.marincounty.org/-/media/files/departments/cd/planning/slr/baywave/vulnerability-assessment-final/final_allpages_bvbconsulting_reduced.pdf?la=en

[122] https://storymaps.arcgis.com/stories/a45cc5e375624d6f92dab11263dcffd9

Buildings and Infrastructure, Local Food and Food Waste, Carbon Sequestration, and Climate Resilient Communities. The Plan was finalized and adopted in December of 2020.[123]

Sonoma County Regional Action Plan: Climate Action 2020 and Beyond

Climate Action 2020 and Beyond (2016) builds on prior commitments to reduce greenhouse gas emissions through a community-wide climate action plan (CAP) for all communities in Sonoma County.[124] Expanding on *Climate Ready Sonoma County*, this assessment lays out the overall strategy for reducing GHG emissions in each sector and contains the near-term action plans for each city and unincorporated area within Sonoma County. Furthermore, it highlights each community's vulnerability to the hazards of climate change and describes goals to improve resilience, including land use and transportation strategies. Transportation strategies include expansion of public transit, bicycle and pedestrian facilities, and renewable energy resources.

Prior to completion of the Countywide Action Plan, the City of Santa Rosa adopted a municipal Climate Action Plan (2012).[125]

Adapting to Rising Tides

The Adapting to Rising Tides Program (ART Bay Area) is a partnership between the Metropolitan Transportation Commission (MTC), the Bay Conservation and Development Commission (BCDC), and the Bay Area Regional Collaborative (BARC), which is working with local, State, regional and federal agencies and organizations to gather, develop and analyze the data needed to understand the impacts of a changing climate on Bay Area communities, infrastructure, services, and natural resources. ART Bay Area was awarded a Caltrans Sustainable Transportation Planning Grant, along with Bay Area Toll Authority (BATA) matching funds, to develop a regional adaptation planning process aimed at increasing the resilience of the region's transportation and community assets. The program developed a set of intricate, locally relevant maps of the San Francisco Bay shoreline and anticipated flooding as sea levels rise. The maps are available to the public and designed to support consistent sea level rise assessment and adaptation in the region, with work completed by the end of 2019.[126] The ART effort completed a Local Assessment for Richardson Bay that includes the areas of Tiburon, Mill Valley, Belvedere, Sausalito, Alto, Marin City, Strawberry, and Tampalpais-Homestead Valley. US 101 and SR 1 were analyzed in the Plan as crucial transportation assets.[127]

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[123] https://www.marincounty.org/-/media/files/departments/cd/planning/sustainability/climate-and-adaptation/cap-2030_12082020final.pdf?la=en

[124] http://www.adaptationclearinghouse.org/resources/sonoma-county-california-climate-readiness-plan-climate-action-2020-and-beyond.html

[125] https://srcity.org/DocumentCenter/View/10762

[126] ART Bay Area: http://www.adaptingtorisingtides.org/project/art-bay-area/

[127] http://www.adaptingtorisingtides.org/wp-content/uploads/2020/03/OLU_A-Richardson.pdf

Caltrans SR 37 Planning and Environmental Linkages (PEL) Study

The goal of the Caltrans-led PEL Study is to collaboratively develop planning alternatives that address corridor-wide transportation needs while considering the concerns of communities, agencies, stakeholders, and the public. The PEL Study will lay out a vision for the State Route 37 corridor (from US-101 to I-80) by including different needs, activities, and projects in one umbrella document. The PEL Study will help Caltrans understand the sequencing for short-term solutions, such as flooding and traffic congestion, and longer-term solutions for sea level rise and extreme weather events. After completion of the PEL Study, Caltrans will conduct the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) processes, to determine which planning alternative is selected and what will ultimately be built.

Caltrans Marin City (US-101/SR1/Manzanita Park & Ride) State-Sponsored Non-SHOPP PID

In 2021, Caltrans began a Non-SHOPP PID to study current flooding during king tides and future flooding attributed to sea level rise at the following facilities near Marin City/Manzanita: 1) SR 1 at the junction with US 101; 2) Manzanita Park-and-Ride; 3) Caltrans maintenance yard; 3) Mill Valley/Sausalito Recreational Pathway (Bay Trail); 4) neighboring commercial properties. The intent is to address the issues of peak tide elevations during king tide events exceeding the ground or surface elevations of low-lying areas within the study area. Shallow tidal flooding results in regular closures of SR 1 and can cut off access to US 101, a corridor of regional and interregional significance. Shallow tidal flooding also impacts key transportation infrastructure in the area, including the roadway and parking surfaces at the nearby Caltrans Park and Ride lot. Flooding is expected to increase in frequency and severity into the future due to ongoing ground settlement and future projected sea level rise. Solutions considered in this study include: 1) prevent tidal water from backing up through culverts and storm drains; 2) create barriers to tidal flooding across areas of low elevation; 3) modify the Bay Trail to protect the trail from tidal flooding; 4) improve control of tidal inundation through the primary storm drain outfall east of US 101; 5) upgrade the storm drain system and improve conveyance of flood water. Caltrans is looking to continue working with partner agencies and key regional stakeholders on defining and studying adaptation solutions at this location.

The *Caltrans District 4 Adaptation Priorities Report* categorized assets along the State Highway System as priority 1 through 5. The table below displays priority 2, 3, 4, and 5 assets along US 101 North.

Table A-1: District 4 Adaptation Priorities along US 101 North

Priority	County	Postmile	Feature Crossed or Carriageway*	Asset Type	Average Cross Hazard Prioritization Score
2	MRN	5.916/7.166	P	Roadway	24.68
2	MRN	6.487/7.153	S	Roadway	21.85
2	MRN	19.087/19.548	P	Roadway	21.85
2	MRN	20.193/20.471	P	Roadway	24.68
2	MRN	R20.196/R20.505	S	Roadway	21.85
2	MRN	22.318/25.132	P	Roadway	24.68
2	MRN	R22.279/25.392	S	Roadway	21.85
2	SON	25.164/34.556	S	Roadway	21.85
2	SON	40.6	N/A	Small Culvert No. 201014104060	30.43
2	SON	40.6	N/A	Small Culvert No. 201014104060	29.98
2	SON	38.26	N/A	Small Culvert No. 201014103826	29.52
2	SON	41.15	N/A	Small Culvert No. 201014104115	29.28
2	SON	40.07	N/A	Small Culvert No. 201018104007	28.50
2	SON	40.05	N/A	Small Culvert No. 201018104004	27.41
2	SON	51.1	N/A	Small Culvert No. 201010105110	26.25
2	SON	40.42	N/A	Small Culvert No. 201014104042	25.69
3	SON	29.5	Windsor Creek	Large Culvert No. 20 0185	25.36
3	SON	40.42	N/A	Small Culvert No. 201014104042	25.30
3	SON	43.04	N/A	Small Culvert No. 201014104304	23.71
3	SON	49.8	N/A	Small Culvert No. 201014104980	23.11
3	SON	36.97	N/A	Small Culvert No. 201014003697	23.06
3	SON	R53.06	Oat Valley Creek	Large Culvert No. 20 0265	21.24
3	SON	29.2	N/A	Small Culvert No. 201016002920	18.37
3	SON	5.19	Lynch Creek US 101 North SB	Bridge No. 20 0162L	17.89
3	SON	5.19	Lynch Creek US 101 NB	Bridge No. 20 0162R	17.69
3	MRN	13.936/14.543	S	Roadway	17.36

Priority	County	Postmile	Feature Crossed or Carriageway*	Asset Type	Average Cross Hazard Prioritization Score
3	MRN	18.63/18.882	S	Roadway	17.36
3	SON	34.556/46.018	S	Roadway	17.36
3	SON	R49.318/MEN 101 R0.112	S	Roadway	17.36
3	MRN	13.838/14.36	P	Roadway	16.90
3	MRN	18.203/18.882	P	Roadway	16.90
3	MRN	18.5	Arroyo De San Jose	Bridge No. 27 0003	11.83
3	SON	34.563/35.171	P	Roadway	16.90
3	SON	36.02/R46.016	P	Roadway	16.90
3	SON	R49.319/R56.219	P	Roadway	16.90
3	SON	15.52	North Branch Laguna De Santa	Large Culvert No. 20 0174	13.14
3	SON	13.51	Copeland Creek	Bridge No. 20 0015	16.77
4	SON	33.05	N/A	Small Culvert No. 201010003305	13.33
4	SON	31.03	N/A	Small Culvert No. 201016003103	13.19
4	SON	4.77	Washington Street Creek	Bridge No. 20 0163L	9.35
4	SON	8.05	Willow Brook	Bridge No. 20 0161	9.32
5	MRN	15.35	Hinebaugh Creek	Large Culvert No. 20 0082	12.78
5	MRN	15.35	Miller Creek	Bridge No. 27 0004	12.53
5	SON	34.53	N/A	Small Culvert No. 201016003453	12.22
5	SON	32.01	N/A	Small Culvert No. 201010003201	11.02
5	SON	31.03	N/A	Small Culvert No. 201016003103	10.75
5	SON	30.22	N/A	Small Culvert No. 201014003022	10.64
5	SON	32.01	N/A	Small Culvert No. 201010003201	10.33
5	SON	30.22	N/A	Small Culvert No. 201014003022	10.27
5	SON	45.56	N/A	Small Culvert No. 201014104556	7.40
5	SON	51.46	N/A	Small Culvert No. 201018105146	7.06
5	SON	33.78	Russian River	Bridge No. 20 0273R	6.30

Priority	County	Postmile	Feature Crossed or Carriageway*	Asset Type	Average Cross Hazard Prioritization Score
5	SON	19.99	Santa Rosa Creek	Bridge No. 20 0276	4.70
5	SON	R46.018/49.318	S	Roadway	2.40
5	MRN	19.548/19.883	P	Roadway	2.28
5	SON	35.171/36.02	P	Roadway	2.28
5	SON	46.016/49.319	P	Roadway	2.28

*Caltrans' alignment codes designate the carriageway on divided roadways: "P" always represents northbound or eastbound carriageways whereas "S" always represents southbound or westbound carriageways. Undivided roadways are always indicated with a "P".

Appendix B: Other Environmental Factors

Habitat Connectivity

In the face of human development and climate change, maintaining a network of connected wildlands is essential to supporting California's diverse species of plants and animals, who rely on connected habitats to move through territories, find mates, hunt, forage and reproduce.

The California Department of Fish and Wildlife (CDFG) and Caltrans commissioned the California Essential Habitat Connectivity Project in 2010 to produce a statewide assessment of critical habitat areas.[128] The goal was to identify large remaining blocks of intact habitat or natural landscape and model linkages between them that need to be maintained, particularly as corridors for wildlife. The Project identifies large *Natural Landscape Blocks* and *Essential Connectivity Areas*—that connect the Landscape Blocks.[129] Natural Landscape Blocks identified along US 101 North corridor include: Indian Valley Open Space Preserve southern Novato and Olompali State Park in Northern Novato, Petaluma Valley area along the Sonoma-Marin Countyline, China Camp State Park and San Pedro Mountain in San Rafael, and in the Marin Headlands in southern Marin. No identified Essential Connectivity Areas cross the US 101 North Corridor.

To preserve and restore the State's threatened fish populations, California Senate Bill (SB) 857 requires Caltrans to assess potential barriers to anadromous fish prior to commencing any project using State or federal transportation funds. The bill requires projects to be constructed without presenting barriers to fish passage.[130] Although there are several river crossings along

[128] CA Fish and Wildlife, BIOS Mapping: https://map.dfg.ca.gov/bios/?bookmark=648 (Last Assessed 10/2016)
[129] Additional details, including essential habitat by species, can be found in the SC Wildland Report, Critical Linkages: The Bay Area and Beyond http://www.scwildlands.org/reports/CriticalLinkages_BayAreaAndBeyond.pdf
[130] Senate Bill No. 857, Fish Passages http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=200520060SB857

US 101 through Sonoma County and a few stream crossings across US 101 in Marin County, no priority fish passage barriers are currently identified for remediation.[131]

The Sonoma-Marin Area Rail Transit (SMART) purchased the 56-acre Mira Monte Marina as a mitigation site in October of 2013. The land was purchased to offset the loss of 2.2 acres of wetlands from project construction between Petaluma and San Rafael. The wetlands are along the Petaluma River near the Sonoma-Marin county line. This purchase added to the 2,000 acre protected Petaluma Marsh that supports are variety of bird, plant, and animal species. The mitigation project restored tidal marsh and benefitted endangered species like the California Clapper Rail, Coho Salmon, and special status species such as the Black Rail and Steelhead.

Green House Gas Emissions

State Assembly Bill 32 (AB 32): *Global Warming Solutions Act* (2006) requires the State's greenhouse gas emissions to be reduced to 1990 levels by the Year 2020 and directs the California Air Resources Board (ARB) to be the lead agency to implement the law. The Climate Action Team, made up of relevant State agencies including Caltrans, is charged with helping direct State efforts on the reduction of GHG emissions and engaging State agencies. Caltrans strategy to reduce global warming has two elements: the first is to make transportation systems more efficient through operational improvements and the second is to integrate reduction measures into the planning, development, operations and maintenance of transportation elements.[132] In 2016, the Legislature passed SB 32, which codifies a 2030 GHG emissions reduction target of 40 percent below 1990 levels.

Senate Bill 375 (SB 375): *Addressing Greenhouse Gas Emissions from the Transportation Sector* (2008) provides a means for achieving AB 32 goals from cars and light trucks. The transportation sector contributes over 40 percent of the State's GHG emissions, with automobiles and light trucks contributing almost 30 percent. SB 375 requires the California Air Resources Board to develop regional GHG emissions reductions targets for cars and light trucks for each of the State's metropolitan planning organizations (MPOs). Through their planning processes, each of the MPOs is required to develop plans to meet their regional reduction targets; which is either accomplished through a financially constrained *Sustainable Communities Strategy*, such as Plan Bay Area, or an unconstrained alternative planning strategy. SB 375 also provides streamlining of California Environmental Quality Act (CEQA) requirements for specific residential and mixed-use developments, such as those identified in *Priority Development Areas*.

Senate Bill 375 (SB 743): *California Environmental Quality Act Updates* (2013) requires the Office of Planning and Research (OPR) to update guidelines for analyzing transportation project

[131]Caltrans, Coastal Anadromous Fish Passage Assessment and Remediation Progress Report (2016)

[132] Caltrans, Climate Action Plan (2006): http://www.dot.ca.gov/hq/tpp/offices/ogm/key_reports_files/State_Wide_Strategy/Caltrans_Climate_Action_Program.pdf

impacts as they relate to CEQA legislation. Vehicle Miles Travelled (VMT) now provides an alternative to Level of Service (LOS) for evaluating transportation impacts, particularly within areas served by transit. Alternative criteria must promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses.

In addition to State measures, local counties and cities have also undertaken actions to reduce Greenhouse Gas Emissions. For example, Sonoma County and the City of Santa Rosa both have climate action plans and have been active in this area for years.

California is divided geographically into air basins for the purpose of managing the air resources of the State on a regional basis; emissions are regulated and monitored by the Air Resources Board, as required by SB 375.[133] The San Francisco Bay Air Basin covers the State's second largest metropolitan region, with approximately twenty percent of Californians residing in the air basin.[134] The San Francisco Bay Air Basin includes the following counties: Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, the southern half of Sonoma County, and the southwestern portion of Solano County. Oversight of regional policies and regulations for the control of air pollution within the air basin are conducted by the Bay Area Air Quality Management District (BAAQMD). [135] The remaining portion of Sonoma County is located within the North Coast Basin, under the jurisdiction of the Northern Sonoma County Air Pollution Control District (NSCAPCD), which regulates the emissions of air pollution from stationary sources.

The Bay Area currently is in non-attainment status for ozone (O_3) and fine particulate matter emissions ($PM_{2.5}$) but is in attainment for Carbon Monoxide (CO) emissions, which has declined over the last few decades due to stringent control measures from motor vehicles. In the Bay Area, ozone and Particulate Matter (PM) emissions are primarily attributed to exhaust from combustion engines, such as cars, trucks, and other mobile sources.[136] Table below shows the pollution summary for the Bay Area Air Basin's North Counties.[137]

[133] https://ww3.arb.ca.gov/cc/sb375/policies/policies.htm
[134] Caltrans US 101 North Corridor System Management Plan (2010)
[135] Bay Area Air Quality Management District (BAAQMD), Air Quality Standards and Attainment Status (2017): http://www.baaqmd.gov/research-and-data/air-quality-standards-and-attainment-status
[136] While ozone is a gas created by reactive organic compounds, particulate matter consists of solid particles suspended in the air and is usually measured in two size ranges, referring to the size of particles.
[137] Bay Area Air Basin, North Counties Pollution Summary (2018): https://www.baaqmd.gov/~/media/files/communications-and-outreach/annual-bay-area-air-quality-summaries/pollsum2018-pdf.pdf?la=en

North Counties Pollution Summary (2018)

MONITORING STATIONS	OZONE						CARBON MONOXIDE			NITROGEN DIOXIDE				SULFUR DIOXIDE				PM_{10}				$PM_{2.5}$				
	Max 1-Hr	Cal 1-Hr Days	Max 8-Hr	Nat 8-Hr Days	Cal 8-Hr Days	3-Yr Avg	Max 1-Hr	Max 8-Hr	Nat/Cal Days	Max 1-Hr	Ann Avg	Nat 1-Hr Days	Cal 1-Hr Days	Max 1-Hr	Max 24-Hr	Nat 1-Hr Days	Cal 24-Hr Days	Ann Avg	Max 24-Hr	Nat 24-Hr Days	Cal 24-Hr Days	Max 24-Hr	Nat 24-Hr Days	3-yr Avg	Ann Avg	3-yr Avg
North Counties	(ppb)		(ppb)			(ppb)	(ppm)			(ppb)				(ppb)				($\mu g/m^3$)				($\mu g/m^3$)			($\mu g/m^3$)	
Napa*	47	0	42	0	0	*	1.6	1.1	0	39	*	0	0	-	-	-	-	-	-	-	-	30.2	0	*	*	*
Napa Valley College*	83	0	68	0	0	*	1.4	1.1	0	43	*	0	0	-	-	-	-	*	26	0	0	117.9	12	*	*	*
San Rafael	72	0	53	0	0	54	2.0	1.6	0	55	9	0	0	-	-	-	-	19.0	166	1	2	167.6	13	42	11.1	9.1
Sebastopol	71	0	53	0	0	51	1.4	1.3	0	65	4	0	0	-	-	-	-	-	-	-	-	175.3	13	34	8.3	7.0
Vallejo	70	0	55	0	0	56	2.8	2.4	0	57	8	0	0	6.7	1.8	0	0	-	-	-	-	197.2	13	48	13.3	10.8

Appendix C: TOS Elements

Guidelines for Positioning TOS Elements

Caltrans District 4 has established the following informal guidelines for positioning TOS elements along a freeway corridor.

• TMSs could be spaced approximately between 0.33 and 0.50 miles apart. Several traffic monitoring stations within the corridor are Wireless Microwave Vehicle Detection Stations (WMVDSs), which include two battery-powered sensors embedded in each lane. These sensors communicate wirelessly to a pole-mounted roadside node. WMVDS are subject to replacement by inductance loop installations, when new ramp meters are installed. Metering traditionally works with inductance loops. Standalone WMVDS locations may also be replaced to address battery replacement issues.

• CCTV cameras may be spaced at one-mile intervals. Cameras are considered at interchanges and between interchanges.

• CMSs should be considered at decision points upstream of freeway-to-freeway interchanges. They may also be considered for installations along long stretches of highway. VMSs, which are smaller changeable message signs, are present on US 101 in Marin County for messaging related to Muir Woods.

• HARs could be spaced at intervals that will provide full coverage of the highway. Depending on the terrain, HAR transmitters are typically located between five and ten miles apart. EMS units should be deployed at locations within the HAR transmitter's operating range.

• Caltrans District 4 Fiber Communications Master Plan includes future installation of fiber optic communications for TOS elements on US 101 in Marin and Sonoma Counties.

TOS Inventory

Table C-1: Closed Circuit Television Cameras (CCTV)

County	Post Mile	Fwy Dir	Description
Mrn	0.10	N	Dana Bowers Safety Roadside Rest Area (SRRA) (Golden Gate Bridge North Vista Point)
Mrn	0.25	S	Sausalito Lateral (Alexander Ave) On-ramp
Mrn	0.52	N	Just South of Waldo Tunnel (Berry Baker Tunnel)
Mrn	1.52	N	Spencer Ave. Off-ramp
Mrn	3.41	N	Waldo Undercrossing (UC), On-ramp
Mrn	4.28	S	Sign mounted - Off-ramp Stevens
Mrn	8.29	S	Just North of Greenbrae Pedestrian Overcrossing (OC) South of Sir Francis Drake Blvd.
Mrn	9.50	N	North of Sir Francis Drake Blvd
Mrn	10.01	N	Route 580 Connector to Northbound (NB) 101
Mrn	10.84	S	2nd St./Hetherton Ave. Diag. On-ramp to Southbound (SB) 101
Mrn	11.40	N	North of Mission Ave Interchange (IC) (Coleman School Ped OC)

County	Post		
Mrn	12.47	S	Just North of Lincoln Avenue
Mrn	18.00	N	Just South of Ignacio Blvd
Mrn	19.05	N	Rte 37/101 IC
Mrn	20.18	S	Just South of Roland Blvd OC
Mrn	21.11	N	Just North of Delong Ave - Diagonal On-ramp to NB
Mrn	22.00	S	Just South of Atherton Ave. - Diagonal On-ramp to SB
Mrn	25.56	S	Existing
Mrn	26.85	N	In Design (MSN B7)
Mrn	27.50	N	In Construction
Son	2.5	N	Kastania Rd
Son	3.16	S	before Kastania Rd Off-ramp
Son	3.82	S	Rte 116 to 101 Off-ramp
Son	7.68	N	Petaluma Blvd
Son	8.24	N	North of Petaluma Blvd
Son	8.9	S	Pepper Rd
Son	9.86	S	Cattle Pass UC
Son	11	N	North of Railroad Ave
Son	11.43	S	South of Sierra Ave
Son	12	S	Sierra Ave
Son	12.7	S	Junction Rte 116
Son	13.32	N	North of junction Rte 116
Son	13.9	S	Rohnert Park EXP
Son	15	S	Wilfred Ave
Son	15.5	S	Before Wilfred Ave
Son	16.54	S	Todd Rd
Son	19	S	Baker Ave
Son	19.8	S	Junction 12
Son	20.7	S	College Ave
Son	21.72	S	Cleveland Ave
Son	22.25	S	Mendocino Ave
Son	22.52	N	Bicentennial Way
Son	23.97	S	South of River Rd
Son	24.95	S	River Rd
Son	25.95	S	Fulton Rd
Son	26.33	S	Airport Blvd
Son	26.8	S	South of Shiloh Rd
Son	27.64	N	Shiloh Rd
Son	28.36	S	South of Windsor River Road

Table C-2: Highway Advisory Radio (HAR)

Mrn	9.49	N	North of Sir Francis Drake Blvd.
Son	2.95	S	Kastania Rd Off-ramp
Son	8.98	S	Pepper Rd
Son	14.92	S	Wilfred Ave
Son	19.8	S	Junction 12
Son	25.95	S	Fulton Rd

Table C-3: Changeable Message Signs (CMS)

Mrn	3.03	S	North of Rodeo Ave. Off-ramp. Needs Power Connection
Mrn	7.80	N	North of Paradise Drive/Mt. Tamalpais Drive
Mrn	12.47	S	Just North of Lincoln Avenue
Mrn	16.86	N	North of Nave Dr. On-ramp to Northbound (NB) 101
Mrn	20.70	S	South of Franklin Undercrossing (UC)
Mrn	26.86	N	In Design (MSN B7)
Son	2.53	N	Kastania Rd
Son	11.01	N	North of Railroad Ave
Son	21.72	S	South of Steel Lane
Son	28.34	S	South of Windsor River Rd
Son	28.38	N	North of Shiloh Rd
Son	50.5	N	South of Cloverdale Blvd

Table C-4: Variable Message Signs (VMS)

Mrn	0.86	N	Just South of Waldo Tunnel (Golden Gate National Recreation Area [GGNRA]: Muir Woods)
Mrn	3.50	N	Bridgeway On-ramp to Northbound (NB) (GGNRA: Muir Woods)
Mrn	5.61	S	Tiburon Blvd (Rte 131) On-ramp to Southbound (SB) (GGNRA: Muir Woods)
Son	2.6	S	Kastania Rd
Son	3.791	N	Rte 116 On-ramp

Table C-5: Extinguishable Message Signs (EMS) for Highway Advisory Radio

Mrn	4.03	N	Shoreline Hwy. Off-ramp
Mrn	5.52	S	Just North of Tiburon Blvd. (Route 131; Blithedale) Off-ramp
Mrn	7.70	S	North of Madera Blvd.
Mrn	10.03	N	Sign mounted - North of Francisco
Mrn	13.14	N	South of Freitas Pkwy Interchange (IC)
Mrn	16.02	S	North of Miller Creek Road IC
Mrn	19.50	N	North of So. Novato Blvd./Rte 37
Mrn	22.27	N	North of Atherton Ave.
Son	8.98	N	Pepper Rd
Son	8.98	S	Pepper Rd
Son	11.23	S	South of Sierra Ave
Son	11.7	N	South of Sierra Ave
Son	14.83	N	South of Wilfred Ave
Son	14.92	S	Wilfred Ave
Son	20.86	S	South of Bicentential Way
Son	23.6	N	North of Hopper Ave
Son	25.58	S	South of Fulton Rd
Son	26.79	N	South of Shiloh Rd
Son	28.35	S	South of Windsor River Rd

Table C-6: Traffic Monitoring Systems (TMS)

Mrn	0.05	N	S	Bowers Vista Point (Magnetometer)
Mrn	0.25	N	S	Wireless Magnetometer Vehicle Detection Station (WMVDS)
Mrn	0.80	N	S	WMVDS
Mrn	1.26	N	S	WMVDS

County	Post Mile	Fwy		
Mrn	2.10	N	S	WMVDS
Mrn	2.39	N		WMVDS
Mrn	2.60		S	WMVDS
Mrn	2.90	N	S	WMVDS
Mrn	3.50	N	S	WMVDS
Mrn	4.00	N	S	WMVDS
Mrn	4.58		S	WMVDS
Mrn	4.75	N		WMVDS
Mrn	5.20	N	S	WMVDS
Mrn	5.70	N	S	WMVDS
Mrn	6.10	N	S	WMVDS
Mrn	6.50	N	S	WMVDS
Mrn	7.00	N	S	WMVDS
Mrn	7.35	N		WMVDS
Mrn	7.50		S	WMVDS
Mrn	8.00	N	S	WMVDS
Mrn	8.40	N		WMVDS
Mrn	8.52		S	Sir Francis Drake Blvd
Mrn	8.70		S	WMVDS
Mrn	8.85	N	S	Sir Francis Drake Blvd
Mrn	9.05	N	S	WMVDS
Mrn	9.94	N	S	Westbound 580/Bellam Blvd
Mrn	10.04	N	S	North of Francisco Interchange (IC) (Hoag Ave)
Mrn	10.52	N	S	South of 2nd St IC (Rice Dr)
Mrn	11.21	N	S	Mission Ave (Irwin)
Mrn	11.41	N	S	North of Mission Ave IC (Coleman School Pedestrian Overcrossing [OC])
Mrn	11.85	N	S	South of Lincoln IC
Mrn	12.11		S	Lincoln
Mrn	12.26	N		Lincoln
Mrn	12.44	N	S	North of Lincoln IC
Mrn	13.20	N	S	WMVDS
Mrn	13.70	N	S	WMVDS
Mrn	14.20	N	S	WMVDS
Mrn	14.70	N	S	WMVDS
Mrn	14.90	N	S	WMVDS
Mrn	15.40	N	S	WMVDS
Mrn	15.80	N	S	WMVDS
Mrn	15.85	N	S	Miller Creek Rd
Mrn	16.15	N	S	2600' North of Miller Creek Rd
Mrn	16.30	N	S	2000' South of Pacheco Creek OC
Mrn	16.77	N	S	North of Pacheco Creek OC
Mrn	17.04	N	S	2000' North of Pacheco Creek OC
Mrn	17.33	N	S	South of Los Robles Rd
Mrn	17.79	N	S	North of Posada Del Sol
Mrn	17.96	N	S	Just South of Ignacio Blvd
Mrn	18.24	N	S	
Mrn	18.62	N	S	Ramp Meter on Novato Blvd/Rte 37 Connector to SB 101
Mrn	18.76	N	S	South of Rte 37 IC
Mrn	19.23	N	S	Rte 37/Novato Blvd Connector to Northbound (NB) 101 Ramp Meter just North of Rte 37 (Abandoned)
Mrn	19.59	N	S	
Mrn	20.05	N	S	Roland Blvd. On-ramp to Southbound (SB) 101 Ramp Meter
Mrn	20.34	N	S	Roland Blvd. On-ramp to NB 101 Ramp Meter
Mrn	20.80		S	WMVDS

County	Post Mile	Fwy		
Mrn	R20.9	N		WMVDS
Mrn	21.06	N	S	DeLong Ave. On-ramp to SB 101 Ramp Meter
Mrn	21.23	N	S	DeLong Ave. On-ramp to NB 101 Ramp Meter
Mrn	21.3		S	WMVDS
Mrn	21.70		S	WMVDS
Mrn	21.80	N		WMVDS
Mrn	21.91	N	S	Atherton Ave. On-ramp to SB 101 Ramp Meter
Mrn	22.10	N	S	Atherton Ave. On-ramp to NB 101 Ramp Meter
Mrn	22.12	N	S	WMVDS
Mrn	22.60	N	S	WMVDS
Mrn	23.00	N	S	WMVDS
Mrn	24.00	N	S	WMVDS
Mrn	24.50	N	S	WMVDS
Mrn	25.54		S	In Design (MSN B7) to include additional lane
Mrn	25.66	N		In Design (MSN B7) to include additional lane
Mrn	25.90	N	S	In Design (MSN B7) will replace WMVDS with Loops
Mrn	26.94	N	S	In Design (MSN B7) will replace WMVDS with Loops
Mrn	27.50	N	S	In Construction
Son	0.610	N	S	WMVDS
Son	0.870	N		
Son	1.020	N	S	WMVDS
Son	1.510	S		
Son	2.010	N	S	WMVDS
Son	2.310	N	S	WMVDS
Son	2.620	N		
Son	2.810	N	S	WMVDS
Son	3.470	N		
Son	3.500	S		
Son	3.810	N	S	WMVDS
Son	3.810	S		Lakeview Rd
Son	3.820	N		Rte 116 / Lakeville Hwy
Son	4.220	N	S	
Son	4.700	N	S	E Washington St
Son	4.730	N	S	WMVDS
Son	4.730	S		WMVDS
Son	4.950	N	S	E Washington St
Son	5.580	N	S	WMVDS
Son	5.990	N	S	WMVDS
Son	6.180	N		
Son	6.190	S		
Son	6.500	N	S	WMVDS
Son	7.020	N	S	WMVDS
Son	7.320	N	S	South of Old Redwood Hwy
Son	7.560	S		Petaluma Blvd
Son	7.600	N		WMVDS
Son	7.620	N		Petaluma Blvd
Son	7.680	S		WMVDS
Son	7.710	S		Petaluma Blvd
Son	7.730	N		Petaluma Blvd
Son	8.000	N	S	WMVDS
Son	8.150	N	S	Denman Rd
Son	8.280	S		
Son	8.530	N	S	WMVDS
Son	8.920	N	S	South of Pepper Rd

County	Post Mile	Fwy		
Son	8.970	N	S	WMVDS
Son	9.320	N		
Son	9.500	N	S	WMVDS
Son	9.990	N	S	WMVDS
Son	10.530	N	S	South of Railroad Ave
Son	10.550	N	S	WMVDS
Son	11.110	N	S	WMVDS
Son	11.330	N		
Son	11.370	S		
Son	11.500	N	S	WMVDS
Son	11.640	N	S	North of W Sierra Ave
Son	11.900	S		W Sierra Ave
Son	11.930	N	S	WMVDS
Son	11.970	N		W Sierra Ave
Son	12.230	N	S	North of W Sierra Ave
Son	12.340	N	S	WMVDS
Son	12.380	N		
Son	12.550	N	S	Gravenstein Hwy
Son	12.800	N	S	WMVDS
Son	12.820	N	S	Gravenstein Hwy
Son	13.350	N	S	South of Rohnert Park Expwy
Son	13.450	N	S	WMVDS
Son	13.770	N	S	Rohnert Park Expwy
Son	13.830	N	S	Rohnert Park Expwy
Son	13.900	S		Rohnert Park Expwy
Son	14.000	N		Rohnert Park Expwy
Son	14.500	N	S	WMVDS
Son	14.980	N		Wilfred Ave
Son	14.990	S		Wilfred Ave
Son	15.260	S		Laguna De Santa Rosa
Son	16.000	N	S	WMVDS
Son	16.510	N	S	Todd Rd
Son	17.000	N	S	WMVDS
Son	17.450	N	S	WMVDS
Son	18.430	N	S	Hearn Ave
Son	18.900	S		Baker Ave
Son	18.950	N		Baker Ave
Son	19.330	N		
Son	19.490	N		WMVDS
Son	19.620	S		SB 12
Son	19.660	N		
Son	19.700	S		Westbound 12
Son	19.710	N		Eastbound 12
Son	19.890	N		
Son	20.070	N	S	3rd St
Son	20.340	N	S	opposite 6th St
Son	20.420	S		
Son	20.430	N		
Son	20.730	N	S	SB College Ave
Son	20.850	N	S	NB College Ave
Son	21.230	N	S	NB College Ave
Son	21.280	N		
Son	21.720	N	S	Steele Lane
Son	21.770	S		

County	Post Mile	Fwy		
Son	21.840	N		Steele Lane
Son	22.150	N		
Son	22.430	N	S	Bicentennial Way
Son	22.440	N		WMVDS
Son	22.900	S		Mendocino Dr
Son	22.920	N	S	WMVDS
Son	22.980	N		Mendocino Dr
Son	23.110	N		
Son	23.280	N	S	Hopper Ave
Son	23.990	N	S	WMVDS
Son	24.110	S		
Son	24.290	N		
Son	24.500	S		WMVDS
Son	24.750	N		River Rd
Son	24.750	N		WMVDS
Son	24.820	S		River Rd
Son	24.940	N		Mark West Spring Rd
Son	24.960	S		WMVDS
Son	24.990	S		Mark West Spring Rd
Son	25.260	N		WMVDS
Son	25.500	N	S	WMVDS
Son	25.600	S		
Son	25.850	N		WMVDS
Son	25.860	N		
Son	25.940	S		WMVDS
Son	26.270	S		WMVDS
Son	26.310	S		Airport Blvd
Son	26.320	N		WMVDS
Son	26.370	S		
Son	26.430	N		Airport Blvd
Son	26.450	S		Airport Blvd
Son	26.580	N		
Son	26.940	N	S	WMVDS
Son	27.530	N		Shiloh Rd
Son	27.590	S		Shiloh Rd
Son	27.660	N		Shiloh Rd
Son	27.700	S		Shiloh Rd
Son	27.700	S		WMVDS
Son	28.040	N		WMVDS
Son	28.280	N	S	WMVDS
Son	28.480	N		WMVDS
Son	29.000	N		WMVDS
Son	29.230	N	S	Old Redwood Hwy
Son	29.500	N		WMVDS
Son	30.030	N	S	WMVDS
Son	30.590	N	S	WMVDS
Son	30.990	N		WMVDS
Son	31.080	S		Arata Ln
Son	31.150	N	S	WMVDS
Son	31.950	N	S	WMVDS
Son	32.500	N	S	WMVDS
Son	33.030	N	S	WMVDS
Son	33.610	N		WMVDS
Son	33.900	N	S	WMVDS

County	Post Mile	Fwy		
Son	34.400	N	S	WMVDS
Son	34.960	N	S	WMVDS
Son	35.930	N	S	WMVDS
Son	36.350	N	S	WMVDS
Son	37.030	N	S	WMVDS
Son	37.800	N	S	WMVDS
Son	38.470	N	S	WMVDS
Son	39.000	N	S	WMVDS
Son	39.480	N	S	WMVDS
Son	39.900	S		WMVDS
Son	40.300	N	S	WMVDS
Son	41.000	N	S	WMVDS
Son	41.560	N	S	WMVDS
Son	42.000	S		WMVDS
Son	42.500	S		WMVDS
Son	42.560	N		WMVDS
Son	42.900	N		WMVDS
Son	43.160	S		WMVDS
Son	43.470	N	S	WMVDS
Son	44.000	N	S	WMVDS
Son	44.500	N	S	WMVDS
Son	45.020	N	S	WMVDS
Son	45.450	N	S	WMVDS
Son	45.890	N	S	WMVDS
Son	47.090	N	S	WMVDS
Son	47.570	N	S	WMVDS
Son	48.200	N	S	WMVDS
Son	48.600	N	S	WMVDS
Son	49.050	N	S	WMVDS
Son	49.500	N	S	WMVDS
Son	51.000	N	S	WMVDS
Son	51.630	N	S	WMVDS
Son	52.100	S		WMVDS
Son	52.180	N		WMVDS
Son	52.500	N	S	WMVDS
Son	53.000	N	S	WMVDS
Son	53.472	N	S	N Redwood Hwy
Son	54.400	N	S	WMVDS
Son	55.000	N	S	WMVDS
Son	55.580	N	S	WMVDS
Son	56.000	N	S	WMVDS

Table C-7: Ramp Meters

County	Post Mile	Fwy Dir	Location	Ramp Type	# of Lanes	HOVL	Comment	Status (1)
Mrn	0.06	NB	Vista Point	S	1		Planned	
Mrn	0.31	NB	Alexander Ave / Bunker Rd	S	1		Planned	
Mrn	1.83	NB	Monte Mar Dr / Spencer Ave	S	1		Planned	
Mrn	2.4	NB	Rodeo Ave	S	1		Planned	
Mrn	3.57	NB	N Bridge Blvd/Bridgeway / Gate 6 Rd / Donahue (Marin City)	S	1		Planned	
Mrn	4.02	NB	Southbound (SB) Rte 1 (Shoreline Hwy / Almonte Blvd)	H	1		Planned	

County	Post Mile	Fwy Dir	Location	Ramp Type	# of Lanes	HOVL	Comment	Status (1)
Mrn	4.75	NB	Redwood Hwy Frontage Rd / De Silva Dr	H	1		Planned	
Mrn	5.66	NB	Eastbound (EB) E Blithedale Ave / Tiburon Blvd	L	1		Planned	
Mrn	5.83	NB	Westbound (WB) Rte 131 (Tiburon Blvd / E Blithedale Ave)	S	1		Planned	
Mrn	7.33	NB	EB Tamalpais Dr	L	1		Planned	
Mrn	7.51	NB	WB Tamalpais Dr / Redwood Hwy / San Clemente Dr	S	1		Planned	
Mrn	8.1	NB	Industrial Way / Redwood Hwy / Wornum Dr	S	1		Planned	
Mrn	8.85	NB	Sir Francis Drake Blvd	S	3	NM	Non-Op	.
Mrn	10	NB	WB Rte 580 / Bellam Blvd / Francisco Blvd	D	2		Non-Op	.
Mrn	11.2	NB	Mission Ave	S	2		Non-Op	.
Mrn	12.27	NB	Villa Ave / Lincoln Ave / Lillian Ln	H	1		Non-Op	.
Mrn	12.85	NB	N San Pedro Rd	S	1		Planned	
Mrn	13.63	NB	EB Manuel T Freitas Pkw / Civic Center Dr	H	1		Planned	
Mrn	13.76	NB	Redwood Frontage Rd / Civic Center Dr	S	1		Planned	
Mrn	14.66	NB	EB Lucas Valley Rd	L	1		Planned	
Mrn	14.79	NB	WB Smith Ranch Rd / Lucas Valley Rd	S	1		Planned	
Mrn	15.75	NB	St Vincent Dr / Miller Creek Rd	S	1		Planned	
Mrn	16.79	NB	Nave Dr / Bolling Dr	H	1		Planned	
Mrn	18.05	NB	Nave Dr / Ignacio Blvd / Roblar Dr	H	1		Part Const	
Mrn	18.18	NB	Bel Marin Keys Blvd / Ignacio Blvd / Nave Dr	S	2		Part Const	
Mrn	19.17	NB	WB Rte 37	C	1		Non-Op	.
Mrn	19.17	NB	EB Novato Blvd	S	1		Non-Op	.
Mrn	R20.4	NB	Rowland Blvd	S	2		Non-Op	.
Mrn	R21.23	NB	De Long Ave / Davidson St	S	1		Non-Op	.
Mrn	R22.11	NB	Atherton Ave	S	2		Non-Op	.
Mrn	25.66	NB	San Antonio Rd / Redwood Sanitary Landfill Rd	S	1		Non-Op	.
Mrn	0.17	SB	Alexander Ave / Conzelman Rd / Sausalito Lateral	S	1		Planned	
Mrn	1.71	SB	Spencer / Monte Mar Dr	H	1		Planned	
Mrn	2.49	SB	Rodeo Ave	H	1		Planned	
Mrn	3.42	SB	Donahue St / N Bridge Blvd (Marin City)	L	1		Planned	
Mrn	3.99	SB	Rte 1 (Shoreline Hwy / Almonte Blvd)	S	1		Planned	
Mrn	4.75	SB	Redwood Hwy Frontage Rd / Hamilton Dr	H	1		Planned	
Mrn	5.56	SB	EB East Blithedale Ave / Tiburon Blvd	S	1		Planned	
Mrn	5.73	SB	WB Rte 131 (Tiburon Blvd) / E Blithedale Ave	L	1		Planned	
Mrn	6.54	SB	Meadow Valley Rd / Casa Buena Dr	S	1		Planned	
Mrn	7.24	SB	EB Tamalpais Dr	S	1		Planned	
Mrn	7.4	SB	WB Tamalpais Dr	L	1		Planned	
Mrn	7.64	SB	Madera Blvd	S	1		Planned	
Mrn	8.17	SB	Fifer Ave	S	1		Planned	
Mrn	8.46	SB	Sir Francis Drake Blvd	D	2		Part Const	
Mrn	9.83	SB	W Francisco Blvd / Jacoby St / Andersen Dr	S	1		Part Const	
Mrn	10.76	SB	2nd St	S	2		Part Const	

County	Post							
Mrn	12.1	SB	Lincoln Ave / Prospect Dr	H	1		Non-Op	.
Mrn	12.77	SB	Merrydale Rd / N San Pedro Rd	H	1		Planned	
Mrn	13.67	SB	WB Manuel T Freitas Pkwy	L	1		Planned	
Mrn	13.67	SB	EB Manuel T Freitas Pkwy / Del Presidio Blvd	S	1		Planned	
Mrn	14.62	SB	Lucas Valley Rd	S	1		Planned	
Mrn	15.43	SB	Miller Creek Rd	S	1		Planned	
Mrn	16.66	SB	Alameda del Prado / Nave Dr	S	1		Planned	
Mrn	17.89	SB	Ignacio Blvd / Enfrente Rd	S	1		Planned	
Mrn	18.66	SB	WB Rte 37 / EB Novato Blvd	C	2		Non-Op	.
Mrn	19.97	SB	Rowland Blvd	S	3	NM	Non-Op	.
Mrn	R21.03	SB	De Long Ave	S	2		Non-Op	.
Mrn	R21.85	SB	Atherton Ave	S	2		Non-Op	.
Mrn	25.48	SB	San Antonio Rd / Redwood Sanitary Landfill Rd	L	1		Non-Op	.
Son	0.19	NB	San Antonio Rd	S	1		Non-Op	.
Son	2.7	NB	Kastania Rd / S Petaluma Blvd	S	2		Non-Op	.
Son	3.84	NB	Rte 116 / Lakeville Hwy	S	1		Non-Op	
Son	4.7	NB	WB E Washington St	L	1		Non-Op	.
Son	4.89	NB	EB E Washington St	S	2		Non-Op	.
Son	7.63	NB	Northbound (NB) N Old Redwood Hwy / N Petaluma Blvd	L	1		Non-Op	.
Son	7.71	NB	SB N Old Redwood Hwy	S	1		Non-Op	.
Son	12.87	NB	Rte 116 / Gravenstein Hwy / Old Redwood Hwy / Commerce Blvd	S	3	M	Operational	.
Son	13.83	NB	EB Rohnert Park Expy	L	2	M	Operational	.
Son	14.23	NB	WB Rohnert Park Expy	S	3	M	Operational	.
Son	14.86	NB	Commerce Blvd / Golf Course Dr / Roberts Lake Rd	S	2		Operational	.
Son	16.62	NB	Todd Rd / Santa Rose Ave	S	2		Operational	.
Son	18.5	NB	Yolanda Ave / Santa Rosa Ave / Hearn Ave	S	2	M	Operational	.
Son	18.98	NB	Santa Rosa Ave / Colgan Ave / Baker Ave	S	1		Operational	.
Son	19.75	NB	EB Rte 12	C	1		Operational	.
Son	19.76	NB	WB Rte 12	C	1		Operational	.
Son	20.42	NB	6th St / Morgan St	S	1		Operational	.
Son	20.9	NB	College Ave	S	2		Operational	.
Son	21.93	NB	Steele Lane / Guerneville Rd	S	3	M	Operational	.
Son	22.96	NB	Mendocino Ave / Fountaingrove Pkwy / Old Redwood Hwy	H	2	M	Operational	.
Son	24.77	NB	EB River Rd / Mark West Springs Rd	L	1		Operational	.
Son	24.9	NB	WB River Rd / Mark West Springs Rd	S	1		Operational	.
Son	26.39	NB	Airport Blvd	S	3	M	Operational	.
Son	27.54	NB	EB Shiloh Rd	L	1		Operational	.
Son	27.65	NB	WB Shiloh Rd	S	1		Operational	.
Son	29.56	NB	Old Redwood Hwy / Windsor River Rd	S	1		Non Op	.
Son	33.67	NB	Old Redwood Hwy / Grant Ave / Healdsburg Ave	S	1		Planned	
Son	35.05	NB	Westside Rd / Mill St	S	1		Planned	
Son	36.48	NB	Dry Creek Rd	S	1		Planned	
Son	R38.71	NB	Lytton Springs Rd	S	1		Planned	
Son	R40.25	NB	Independence Undps / Souverain Rd / Geyserville Ave	S	1		Planned	
Son	R41.65	NB	Geyserville Ave / Banli Ln	S	1		Planned	
Son	R43.57	NB	Canyon Rd / Geyserville Ave (Rte 128)	S	1		Planned	

County	Post							
Son	R48.06	NB	Asti Store Rd / Simmons Rd	S	1		Planned	
Son	R49.22	NB	Theresa Dr / Asti Rd	S	1		Planned	
Son	R50.64	NB	Santana Dr / Asti Rd / S Redwood Hwy	S	1		Planned	
Son	R51.82	NB	Citrus Fair Dr / Asti Rd	S	1		Planned	
Son	R53.76	NB	N Redwood Hwy (Rte 128)	S	1		Planned	
Son	0.18	SB	San Antonio Rd	S	1		Non-Op	.
Son	2.63	SB	Kastania Rd / S Petaluma Blvd	S	2		Non-Op	.
Son	3.8	SB	Rte 116 / Lakeville St / Caulfield Ln	H	1		Planned	
Son	4.71	SB	E Washington St	S	2		Non-Op	.
Son	7.58	SB	NB N Petaluma Blvd / N Old Redwood Hwy	H	1		Non-Op	.
Son	7.67	SB	SB N Old Redwood Hwy / N Petaluma Blvd	L	1		Non-Op	.
Son	8.87	SB	Pepper Rd	S	1		Operational	.
Son	11.86	SB	W Sierra Ave / W School St	S	2	M	Operational	.
Son	12.61	SB	Rte 116 / Gravenstein Hwy	S	2	M	Operational	.
Son	13.71	SB	EB Rohnert Park Expy	S	2	M	Operational	.
Son	13.89	SB	WB Rohnert Park Expy	L	2	M	Operational	.
Son	14.85	SB	Golf Course Dr / Redwood Dr / Wilfred Ave	D	3	M	Operational	.
Son	16.56	SB	Todd Rd / S Moorland Ave	S	1		Operational	.
Son	18.38	SB	Corby Ave / Hearn Ave	S	2		Operational	.
Son	18.82	SB	Baker Ave / Corby Ave / Santa Rosa Ave	S	2		Operational	.
Son	19.59	SB	EB Rte 12	C	2		Operational	.
Son	19.59	SB	WB Rte 12	C	2		Operational	.
Son	19.79	SB	3rd St / Davis St	S	1	M	Operational	.
Son	20.63	SB	College Ave	S	2		Operational	.
Son	21.56	SB	Guerneville Rd / Steele Lane	S	2		Operational	.
Son	22.4	SB	Bicentennial Way / Cleveland Ave	S	3	M	Operational	.
Son	22.9	SB	Mendocino OC / Cleveland Ave / Industrial Dr	H	1		Operational	.
Son	23.13	SB	Cleveland Ave / Hopper Ave	L	2	M	Operational	.
Son	24.82	SB	EB River Rd / Mark West Springs Rd	S	2	M	Operational	.
Son	24.97	SB	WB River Rd / Mark West Springs Rd	L	2	M	Operational	.
Son	26.24	SB	EB Airport Blvd	S	3	M	Operational	.
Son	26.41	SB	WB Airport Blvd	L	2	M	Operational	.
Son	27.58	SB	EB Shiloh Rd	S	2	M	Operational	.
Son	27.69	SB	WB Shiloh Rd	L	1		Operational	.
Son	29.2	SB	Old Redwood Hwy / Windsor River Rd	S	2	M	Operational	.
Son	31.09	SB	Arata Lane / Old Redwood Hwy	S	1		Operational	.
Son	33.3	SB	Old Redwood Hwy / Limerick Ln	S	1		Planned	
Son	34.37	SB	Healdsburg Ave / Exchange Ave	H	1		Planned	
Son	36.13	SB	Dry Creek Rd	S	1		Planned	
Son	R38.43	SB	Lytton Springs Rd	S	1		Planned	
Son	R39.91	SB	Independence Undps / Souverain Rd / Via Archimedes	S	1		Planned	
Son	R41.24	SB	Geyserville Ave / Geiserville Rd	S	1		Planned	
Son	R43.08	SB	Canyon Rd (Rte 128) / Chianti Rd	S	1		Planned	
Son	R47.66	SB	Simmons Rd / Asti Store Rd	S	1		Planned	
Son	R48.92	SB	Theresa Dr / Dutcher Creek Rd	S	1		Planned	
Son	R50.23	SB	Santana Dr / S Redwood Hwy / S Cloverdale Blvd	S	1		Planned	
Son	R51.46	SB	Citrus Fair Dr / N Cloverdale Blvd	S	1		Planned	
Son	R53.32	SB	N Redwood Hwy (Rte 128)	H	1		Planned	

Note:

Status:

A black dot "." identifies "existing" ramp metering locations. This include locations where there are operational ramp meters or locations where ramp metering hardware is fully installed and accepted by the Division of Traffic Operations, but it is currently not activated (Non-Operational). Ramp meters which are in construction are identified as "planned" ramp metering locations.

Ramp Type:

L = Loop
H = Hook
C = Freeway-to-freeway Connector
S = Slip or diagonal
D = Collector/Distributor

HOVPL

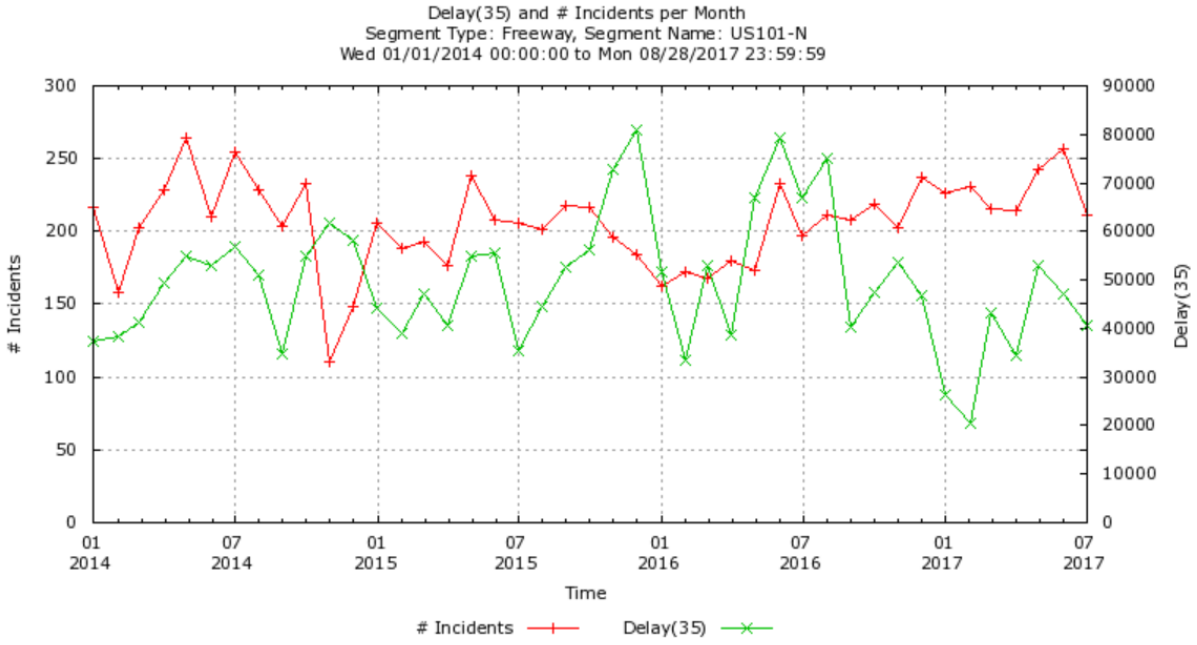
M = metered HOVPL
NM = non-metered HOVPL
Blank space = No HOVPL lane

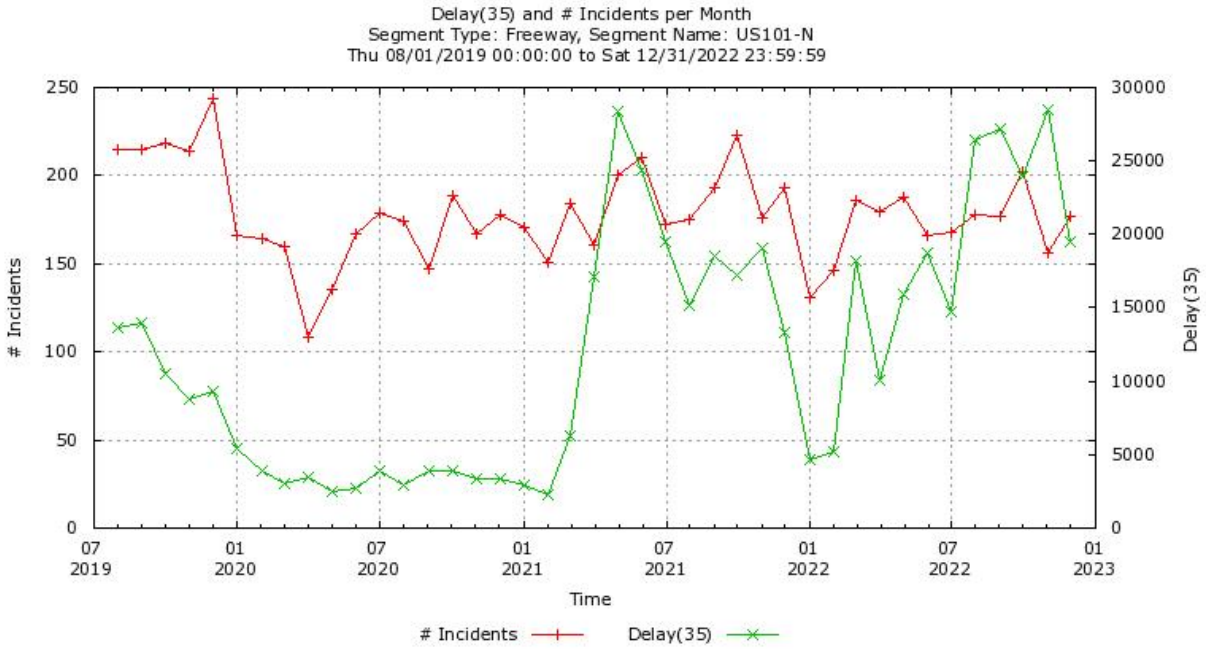
Comments:

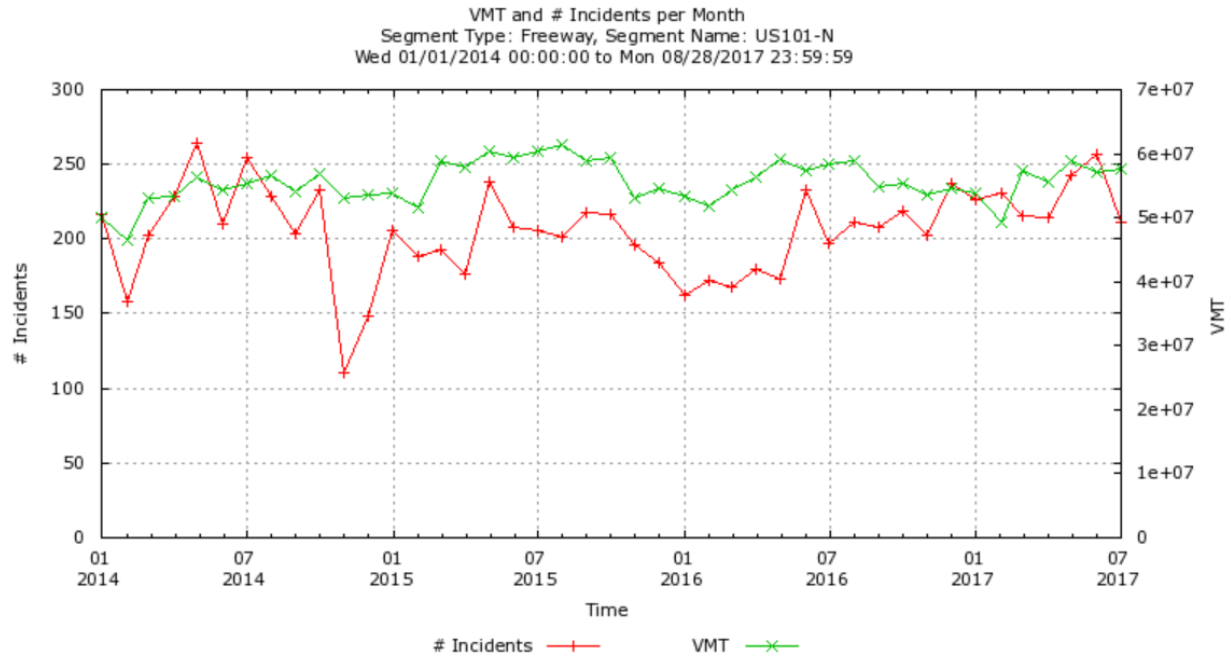
Operational = Ramp meter is currently actively metering
Non-Operational (Non-Op) = Ramp metering hardware is fully installed and accepted by the Division of Traffic Operations, but it is currently not activated.
Partially Constructed (Part Const) = Ramp meter in construction, or just the underground equipment constructed, with no poles/signs/heads in place.
Planned = Meter non-existent; only planned/proposed

Appendix D: Correlation between Incidents and Vehicle Hours of Delay (VHD), Vehicle Miles Traveled (VMT), and Vehicle Hours Traveled (VHT)

Northbound US 101 Postmile MRN L0.3 to Postmile MRN 26.3






VMT and # Incidents per Month
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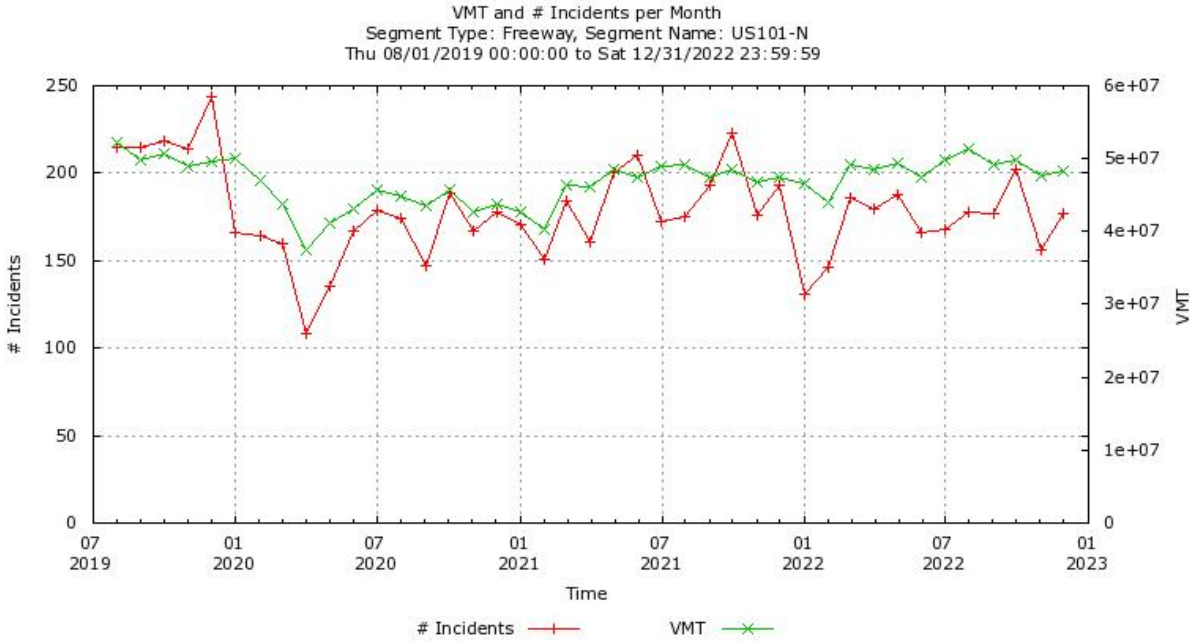
Incidents
VMT
Time
Incidents
VMT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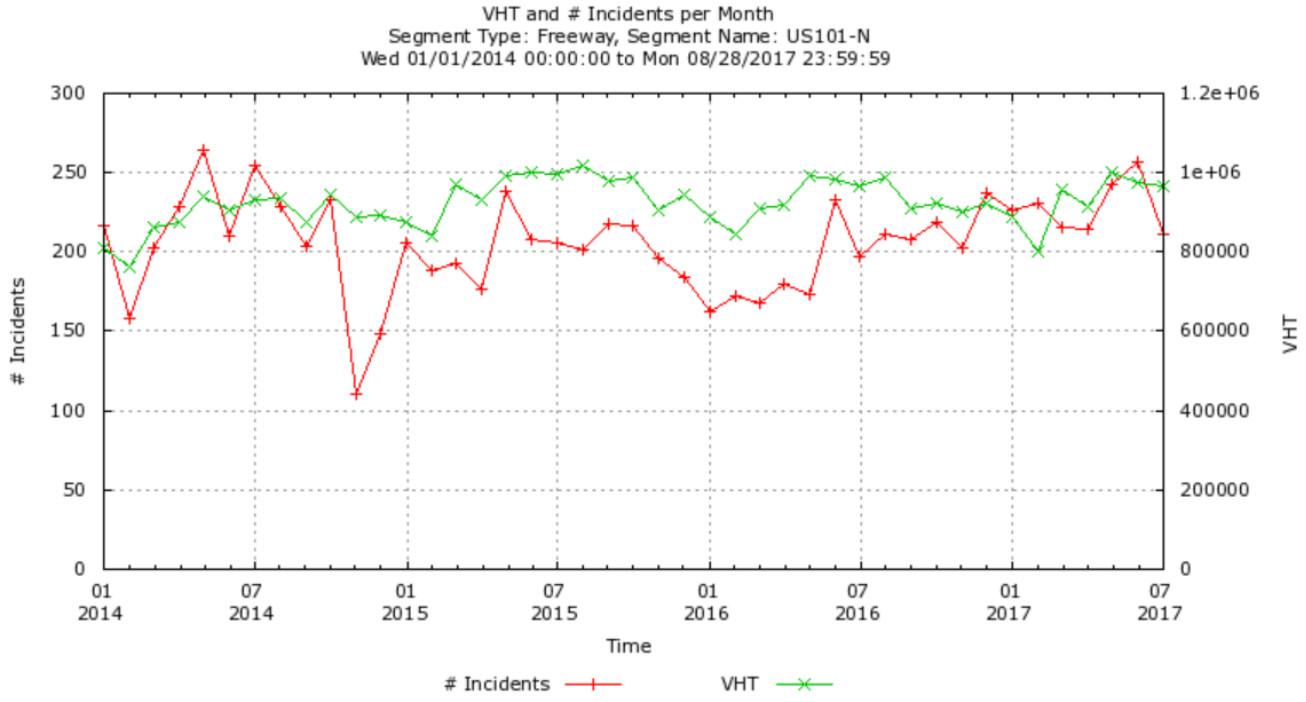
Incidents
VMT
Time
Incidents
VMT


VHT and # Incidents per Month
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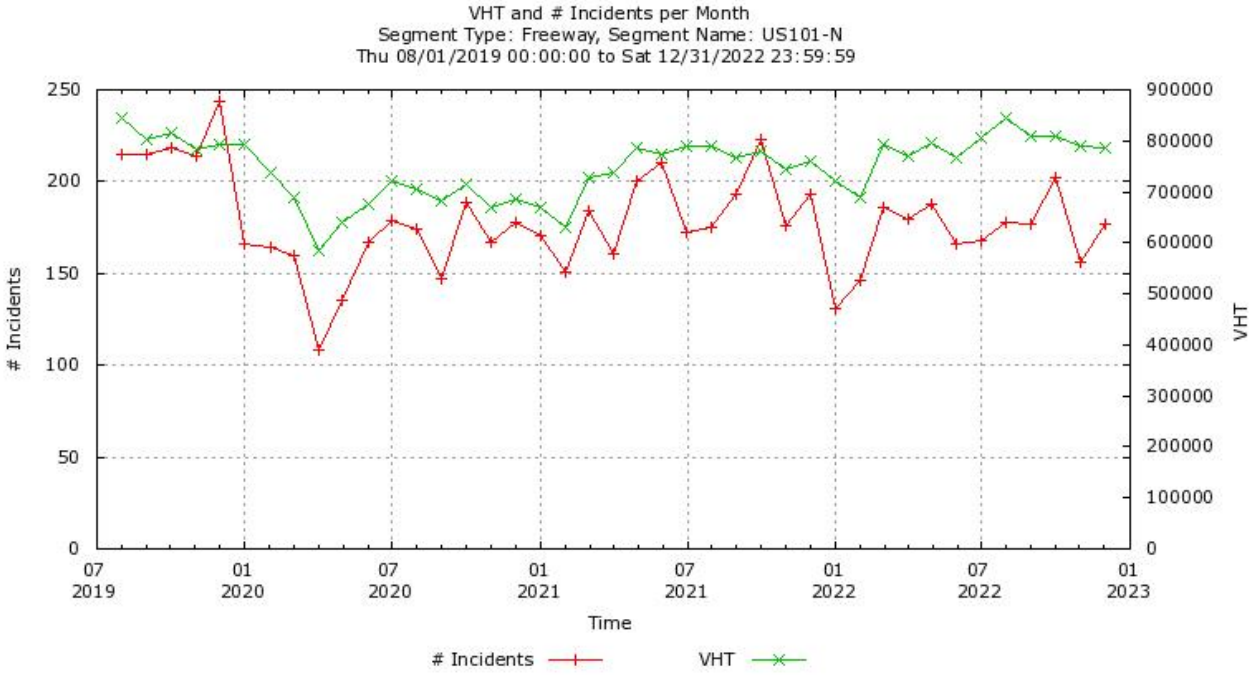
Incidents
VHT
Time
Incidents
VHT


VHT and # Incidents per Month
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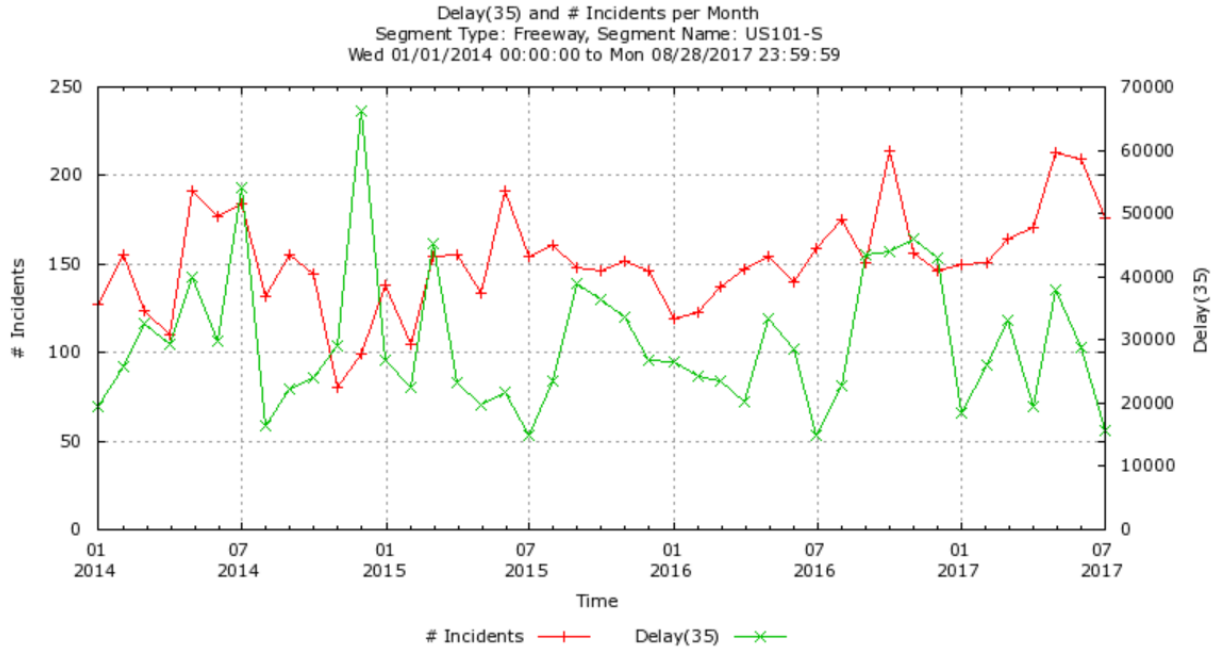
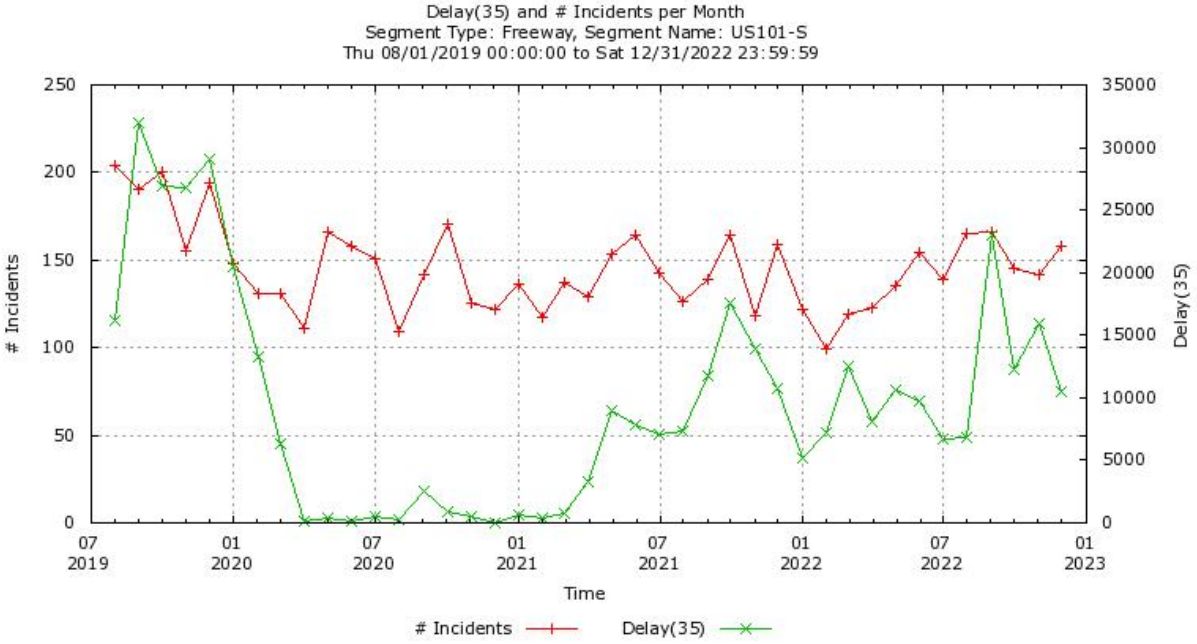
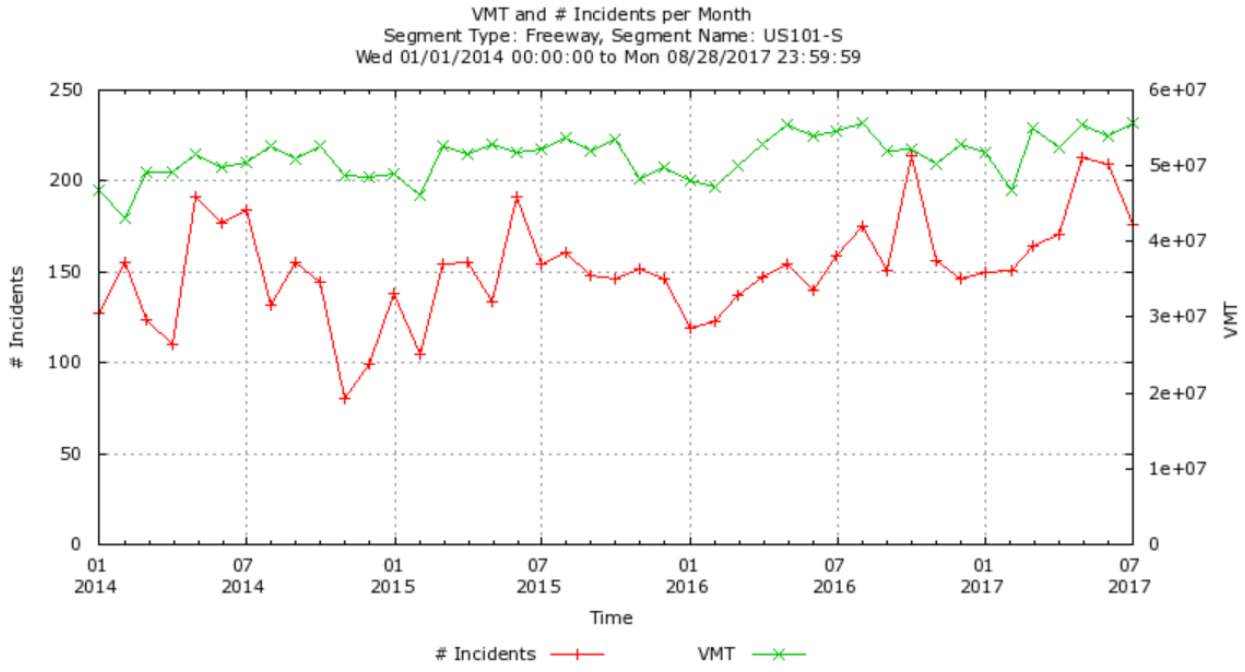
Thu 08/01/2019 00:00:00 to Sat 12/31/2022 23:59:59
Incidents
VHT
Time
Incidents
VHT

Southbound US 101 Postmile MRN L0.3 to Postmile MRN 26.3



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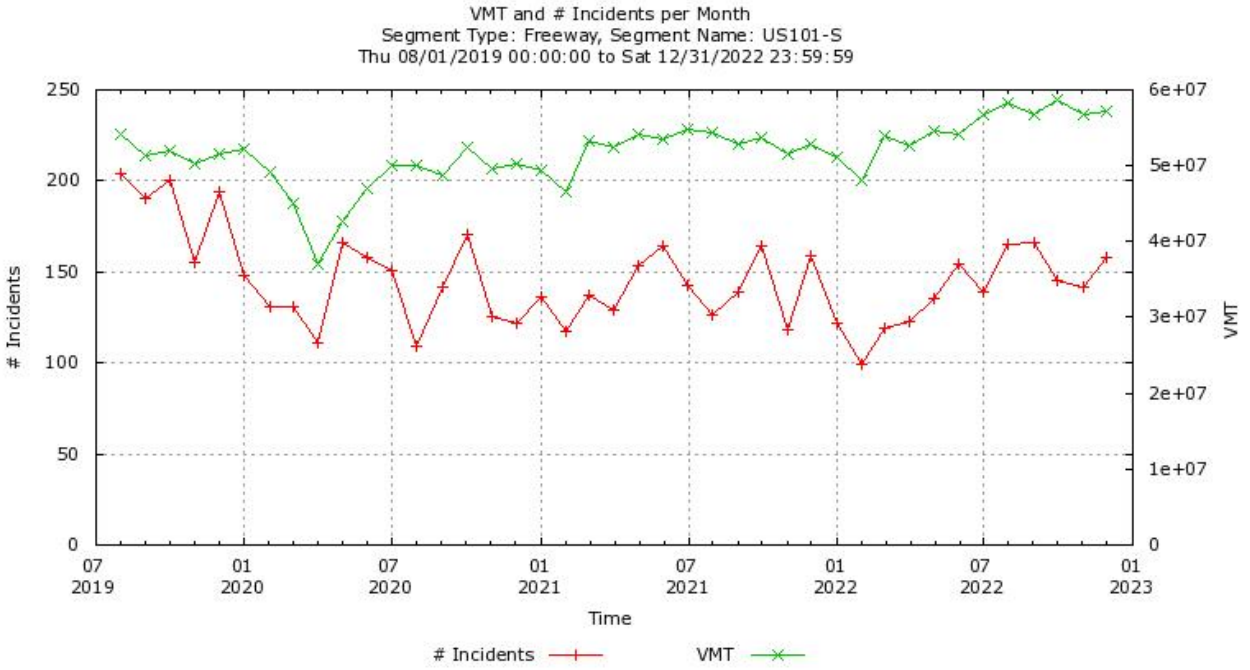
Incidents
VMT
Time
Incidents
VMT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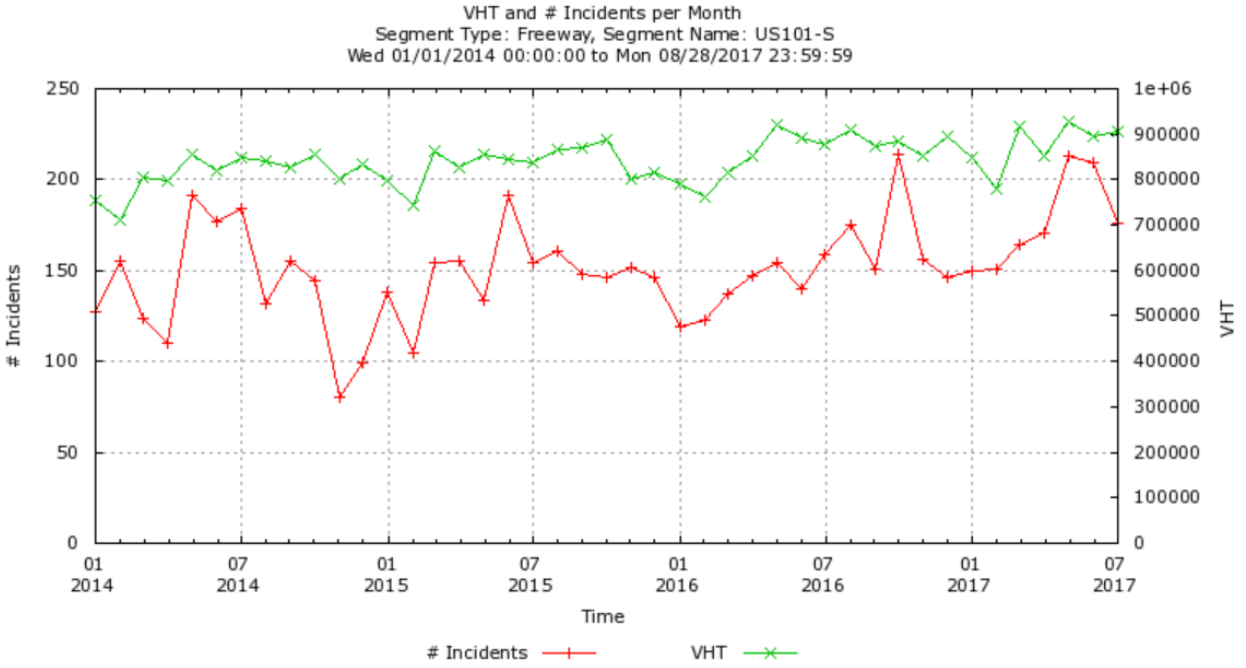
Incidents
VMT
Time
Incidents
VMT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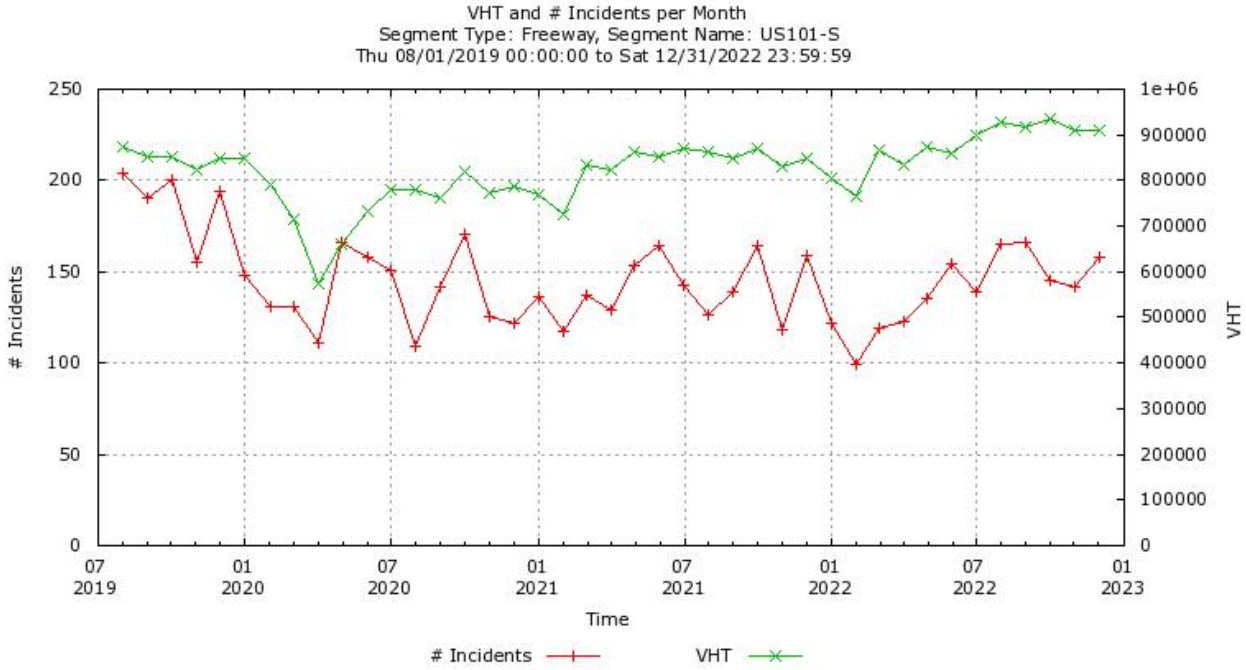
Incidents
VHT
Time
Incidents
VHT


VHT and # Incidents per Month
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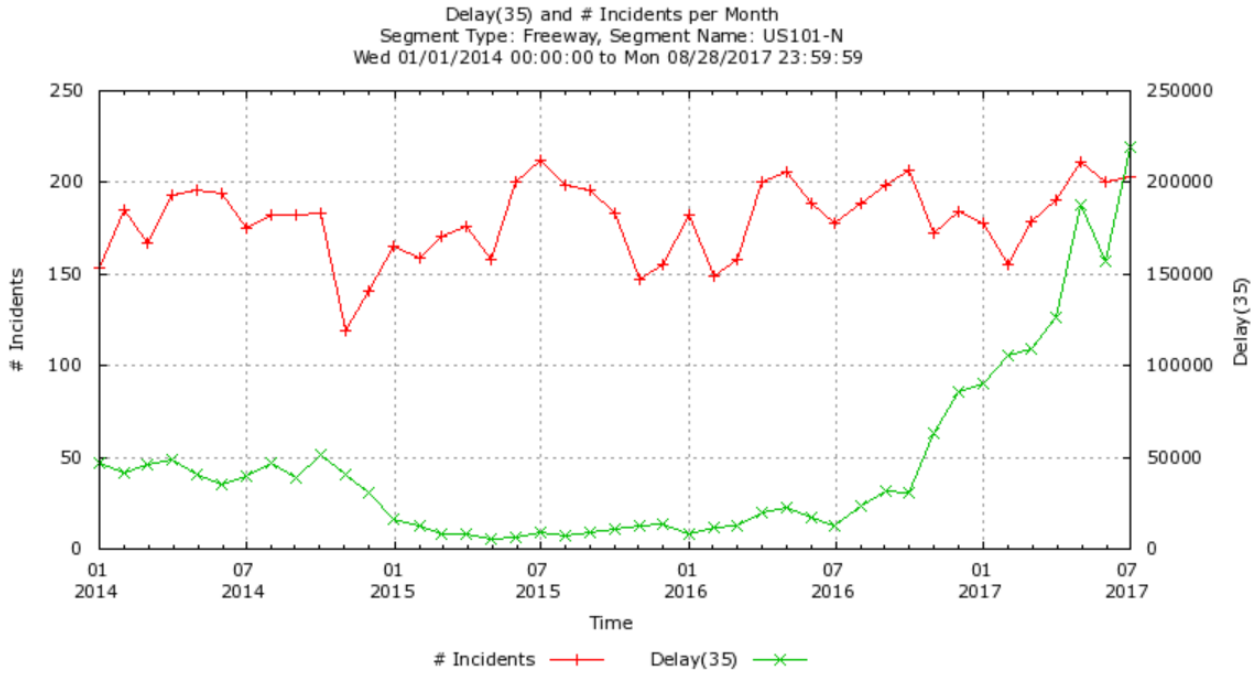
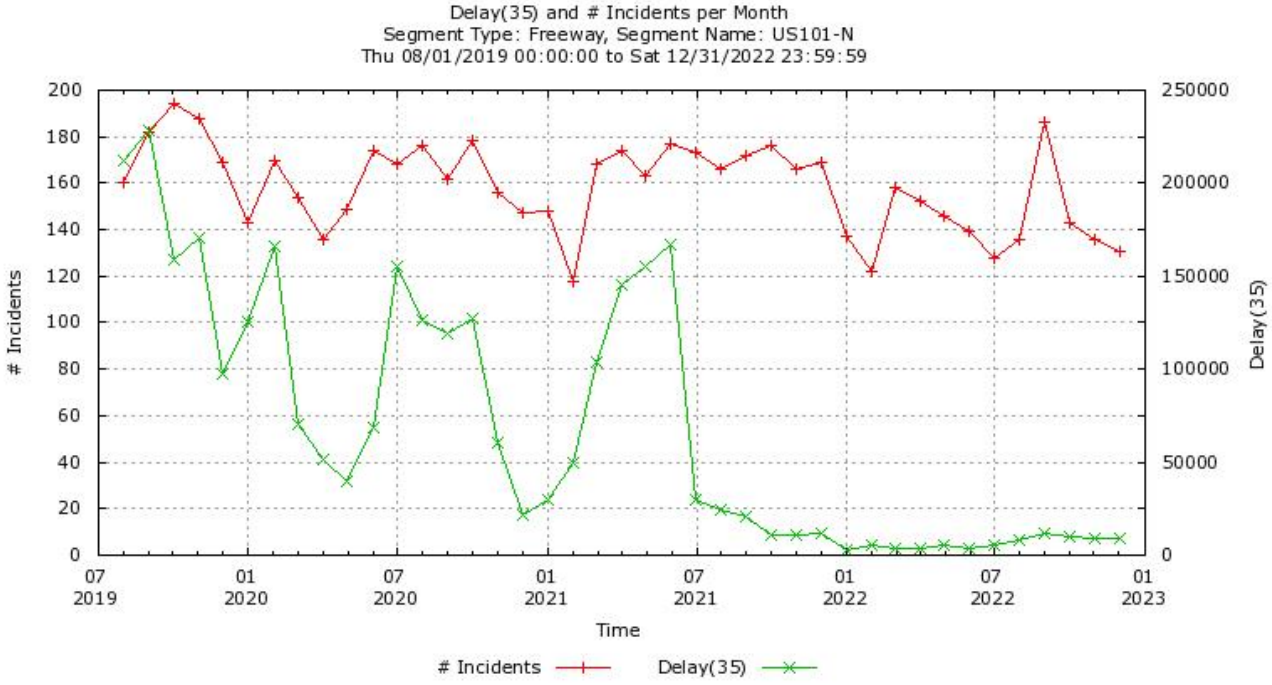
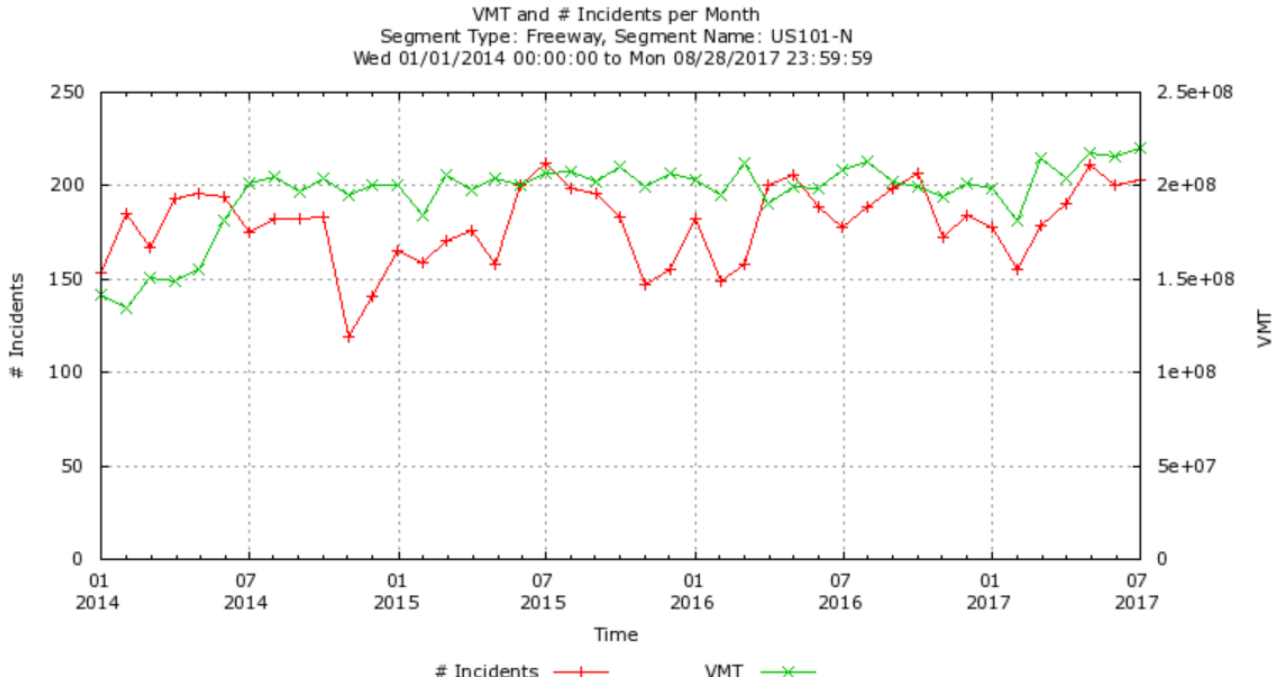
Incidents
VHT
Time
Incidents
VHT

Northbound US 101 Postmile MRN 27.3 to Postmile SON R 55.8



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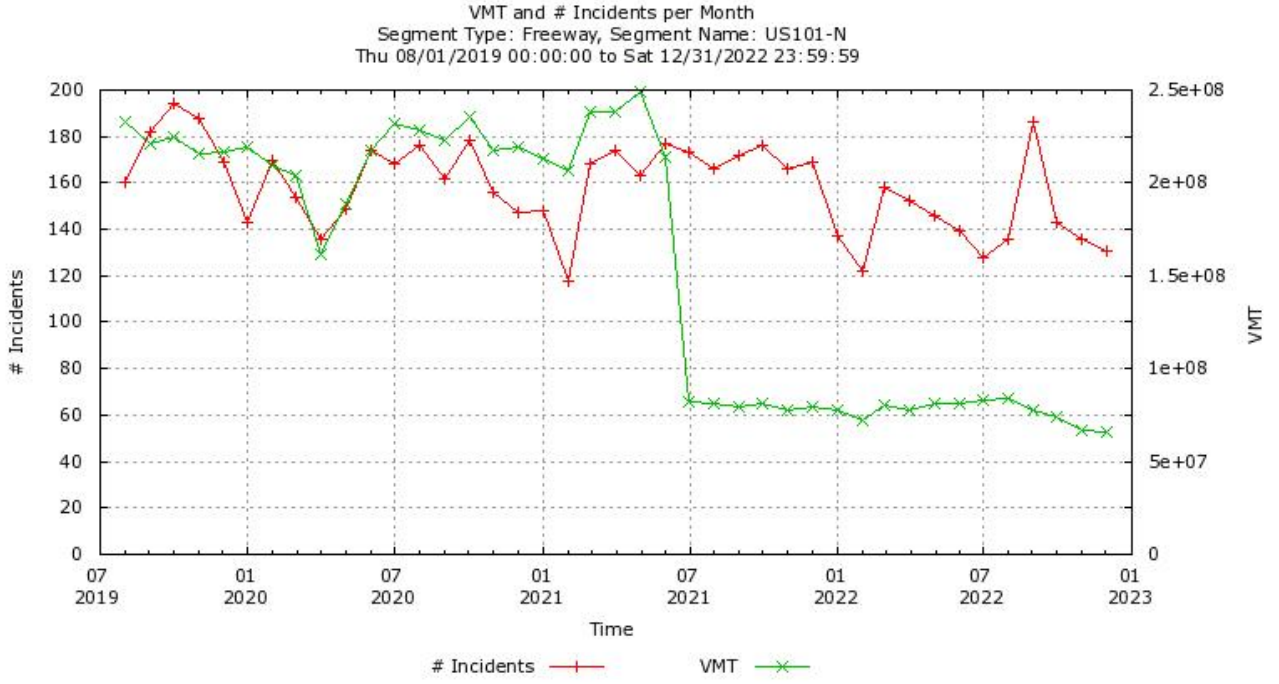
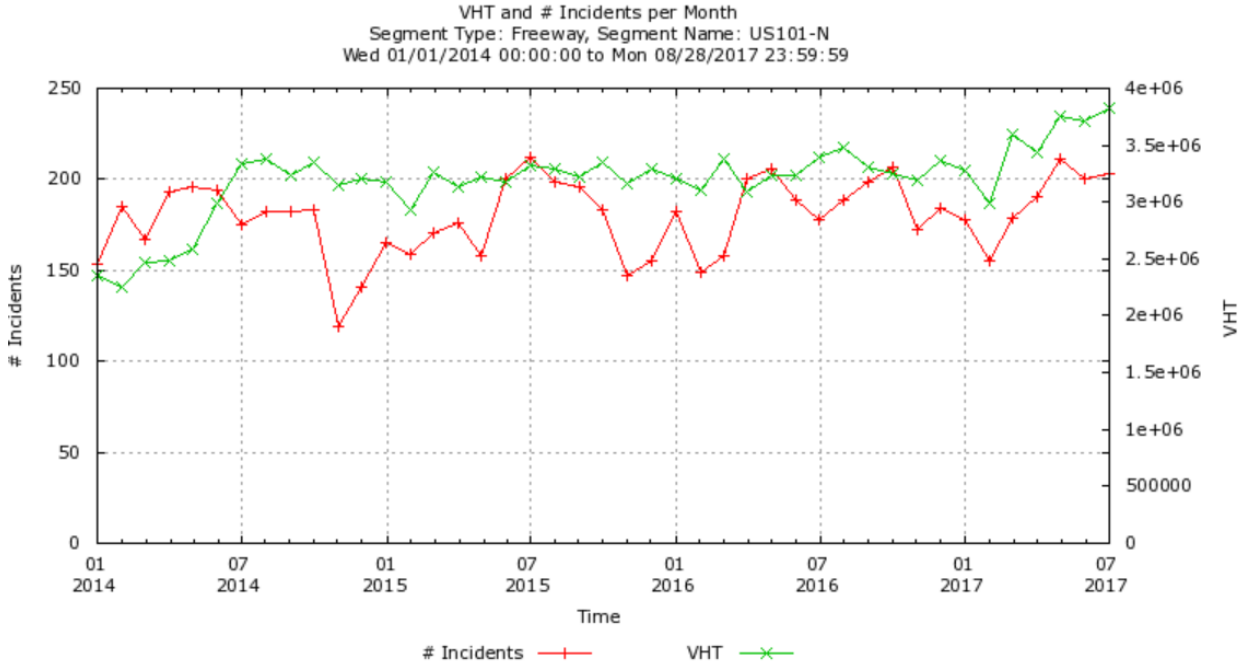
Incidents
VMT
Time
Incidents
VMT


VMT and # Incidents per Month
Segment Type: Freeway, Segment Name: US101-N
Thu 08/01/2019 00:00:00 to Sat 12/31/2022 23:59:59
Incidents
VMT
Time
Incidents
VMT


VHT and # Incidents per Month
Segment Type: Freeway, Segment Name: US101-N
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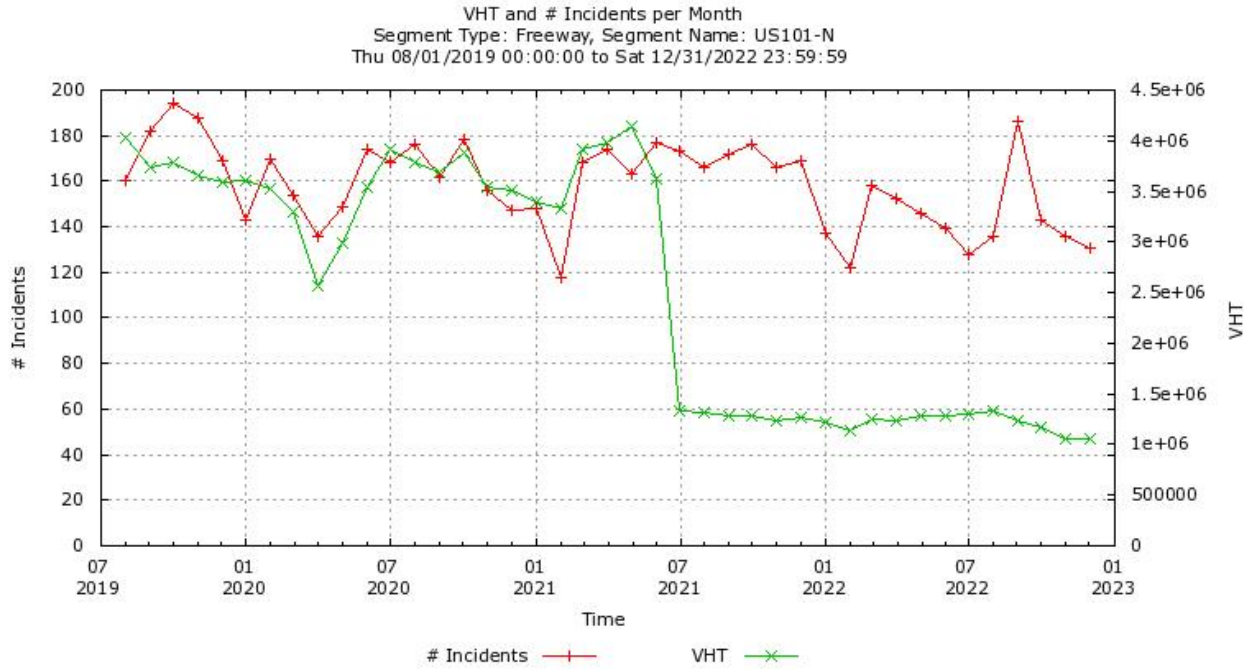
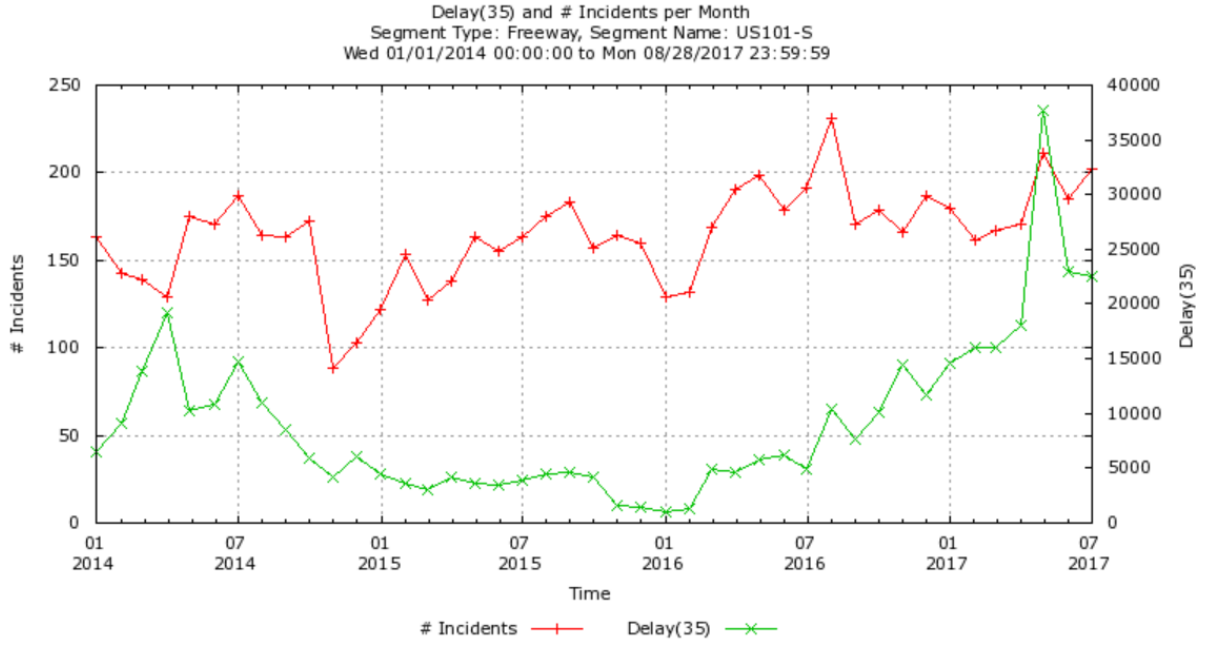
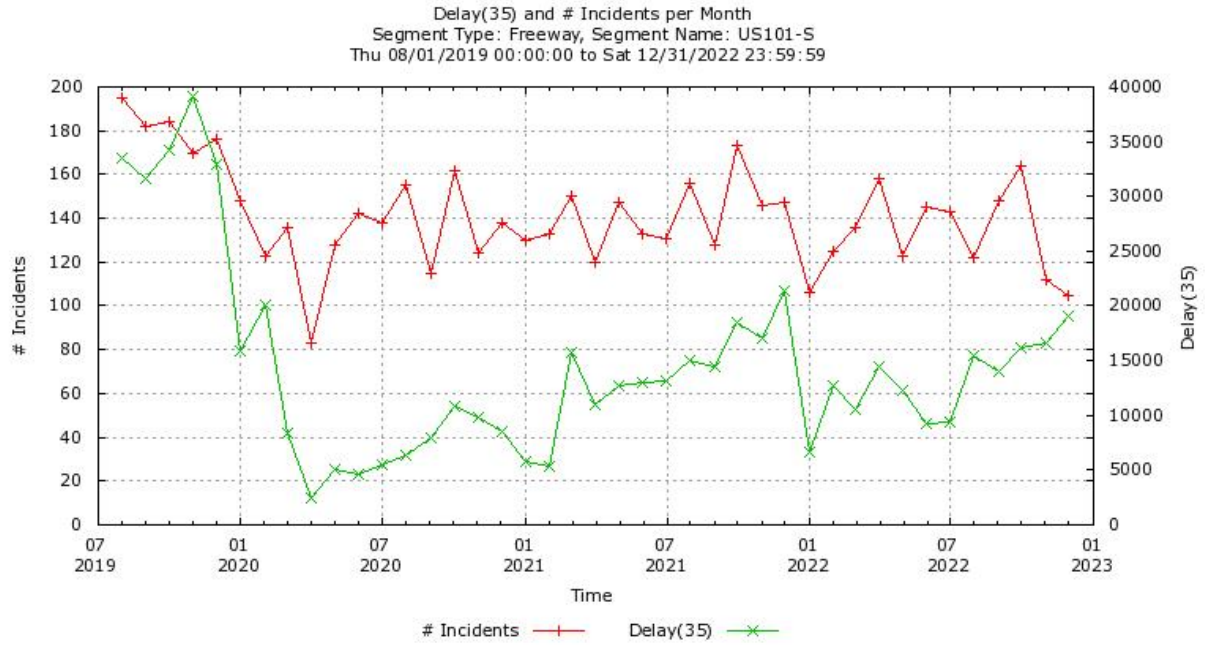
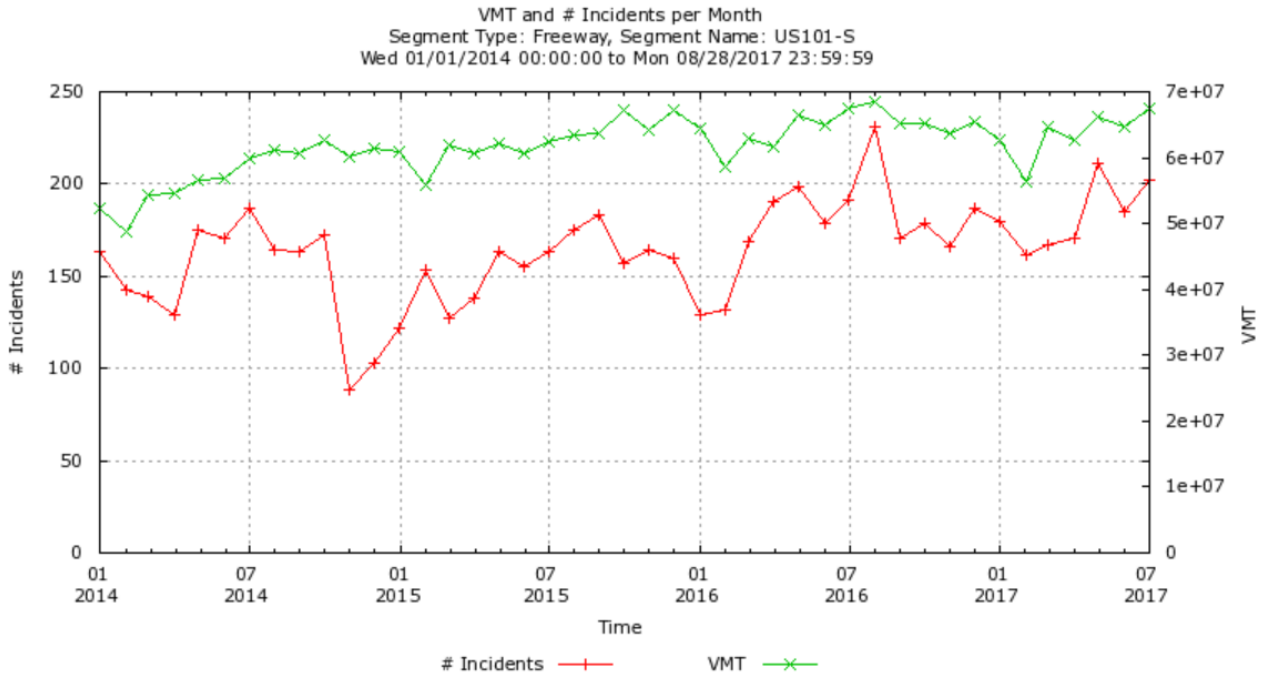
Incidents
VHT
Time
Incidents
VHT


VHT and # Incidents per Month
Segment Type: Freeway, Segment Name: US101-N
Thu 08/01/2019 00:00:00 to Sat 12/31/2022 23:59:59
Incidents
VHT
Time
Incidents
VHT

Southbound US 101 Postmile MRN 27.3 to Postmile SON R 55.8






VMT and # Incidents per Month
Segment Type: Freeway, Segment Name: US101-S
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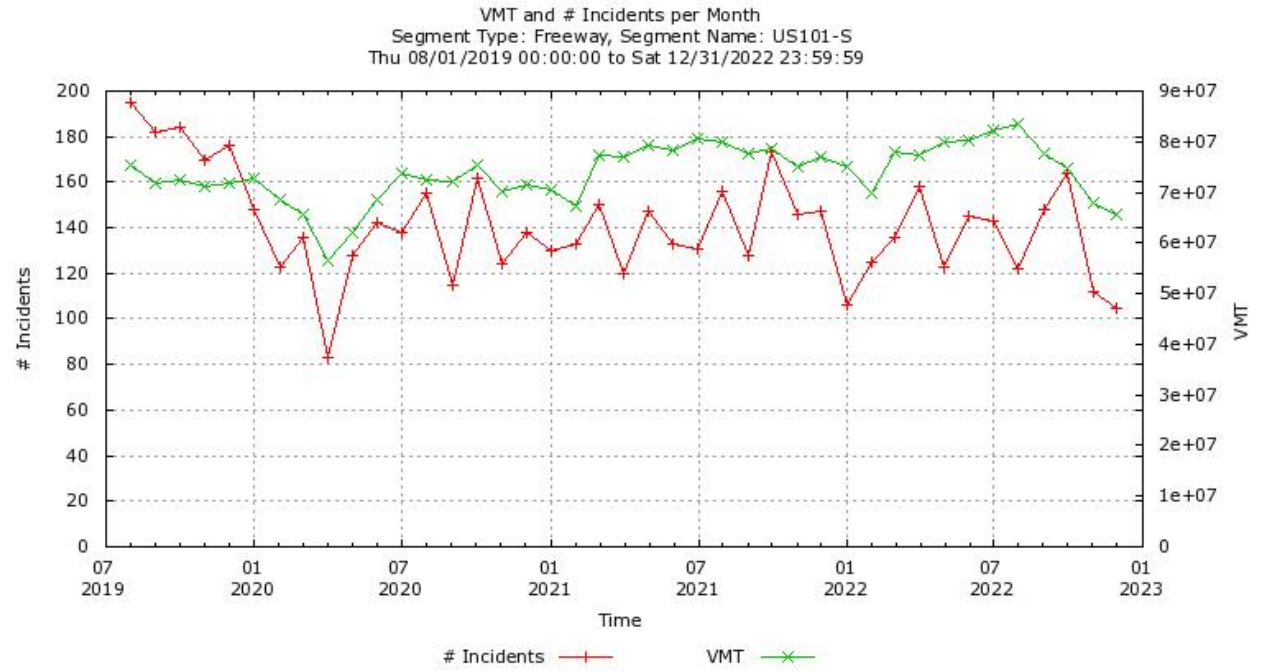
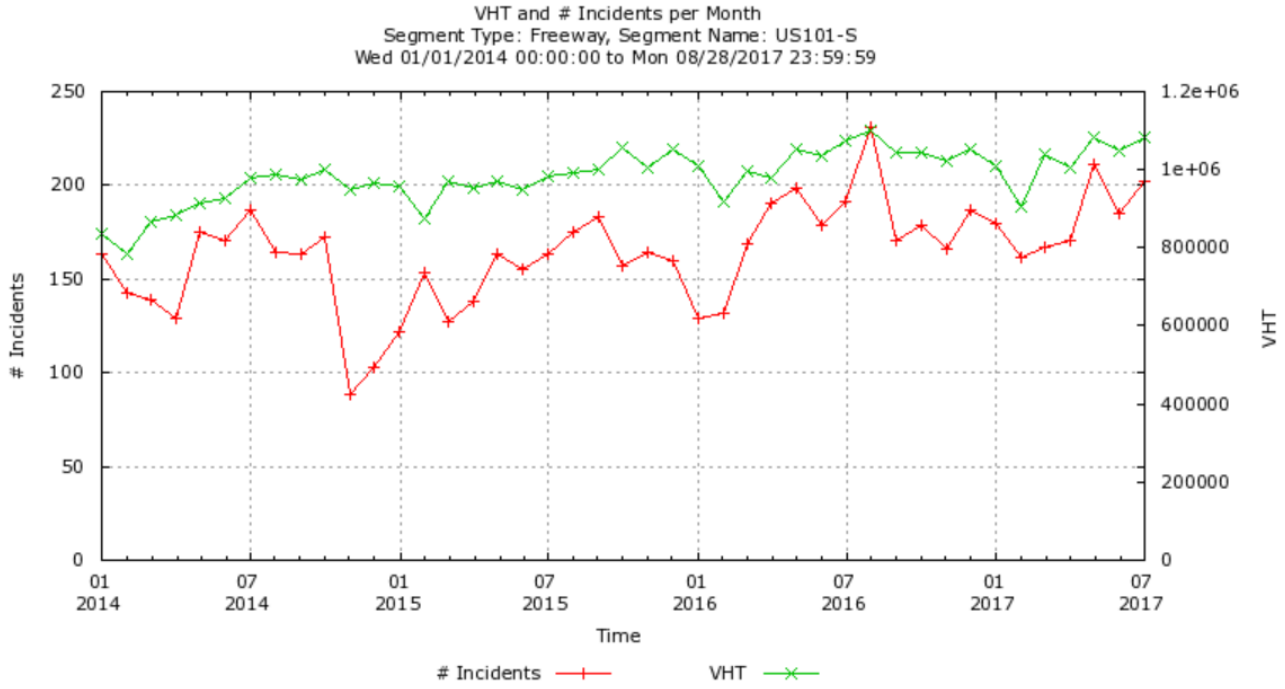
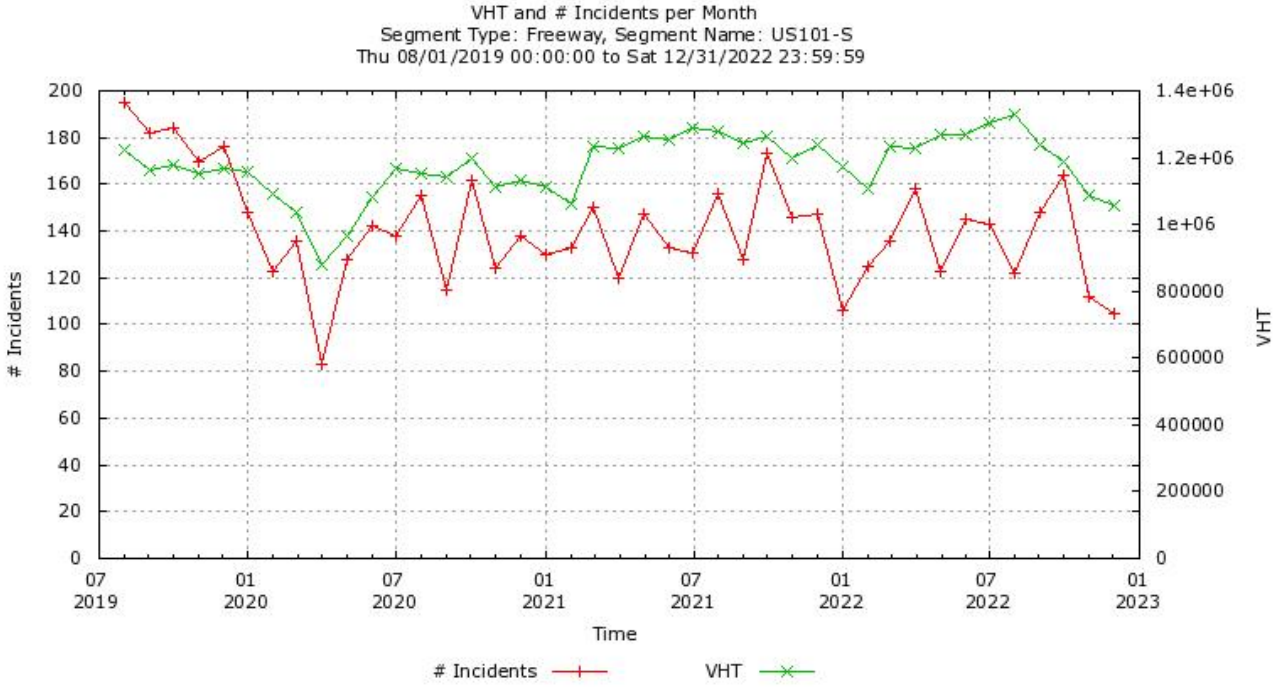
Incidents
VMT
Time
Incidents
VMT


VMT and # Incidents per Month
Segment Type: Freeway, Segment Name: US101-S
Thu 08/01/2019 00:00:00 to Sat 12/31/2022 23:59:59
Incidents
VMT
Time
Incidents
VMT


VHT and # Incidents per Month
Segment Type: Freeway, Segment Name: US101-S
Wed 01/01/2014 00:00:00 to Mon 08/28/2017 23:59:59
Incidents
VHT
Time
Incidents
VHT


VHT and # Incidents per Month
Segment Type: Freeway, Segment Name: US101-S
Thu 08/01/2019 00:00:00 to Sat 12/31/2022 23:59:59
Incidents
VHT
Time
Incidents
VHT

Appendix E: Results from MTC Travel Demand Model

Table E-1: Baseline 2015 Performance of Marin-Sonoma 101 by Segment[138]

Segment		AM Peak Period			PM Peak Period		
		NB	SB	Total	NB	SB	Total
1	Sum of CTIM	15.4	17.0	32.4	17.1	14.7	31.8
	Sum of DELAY	10.0	969.7	979.7	683.4	55.0	738.4
	Sum of VMT	120970.2	249791.4	370761.5	255379.6	133274.2	388653.8
	Sum of VHT	1903.8	4870.8	6774.6	4674.0	2137.7	6811.7
2	Sum of CTIM	17.9	23.7	41.7	21.2	18.0	39.2
	Sum of DELAY	16.2	2536.4	2552.6	1339.9	45.5	1385.5
	Sum of VMT	115745.8	252322.6	368068.5	242129.2	128883.1	371012.2
	Sum of VHT	1825.0	6470.6	8295.7	5115.0	2060.4	7175.4
3	Sum of CTIM	12.9	14.8	27.6	15.3	9.3	24.6
	Sum of DELAY	1.0	1540.5	1541.5	596.7	1.7	598.4
	Sum of VMT	50578.2	135795.0	186373.3	123700.5	53829.1	177529.5
	Sum of VHT	779.1	3629.7	4408.8	2499.8	829.8	3329.6
4	Sum of CTIM	8.0	12.6	20.7	10.7	8.2	18.9
	Sum of DELAY	3.1	1181.8	1184.9	629.0	5.1	634.1
	Sum of VMT	50239.2	125778.9	176018.2	114301.1	54896.9	169198.0
	Sum of VHT	803.0	3173.9	3976.8	2437.2	879.9	3317.1
5	Sum of CTIM	40.5	45.1	85.6	44.2	42.9	87.1
	Sum of DELAY	180.9	935.2	1116.1	1094.1	396.4	1490.5
	Sum of VMT	207390.1	287859.7	495249.9	291866.1	242160.9	534027.0
	Sum of VHT	3429.8	5423.1	8852.9	5650.7	4185.2	9835.9
6	Sum of CTIM	24.9	25.1	50.0	24.9	25.1	50.1
	Sum of DELAY	0.4	0.8	1.2	1.2	0.8	2.0
	Sum of VMT	75129.1	97843.4	172972.4	102053.3	89098.2	191151.5
	Sum of VHT	1156.2	1506.1	2662.3	1571.3	1371.6	2942.8
Total	Total Sum of CTIM	119.7	138.3	258.0	133.3	118.2	251.5
	Total Sum of DELAY	211.7	7164.3	7376.0	4344.3	504.6	4848.9
	Total Sum of VMT	620052.7	1149391.1	1769443.7	1129429.7	702142.3	1831572.0
	Total Sum of VHT	9897.0	25074.1	34971.1	21947.9	11464.6	33412.5

Note:
All measures are for average weekday peak periods, AM or PM.
CTIM = congested travel time, minutes VOL= vehicle volume
DELAY = difference between the congested travel time and the free flow travel time, vehicle hours
VMT = vehicle mile traveled, vehicle-miles VHT = vehicle hours traveled, vehicle-hours

[138] Summarized based on MTC Travel Model One 2017

Table E-2: Forecasted 2040 Performance of Marin-Sonoma 101 by Segment [139]

Segment		AM Peak Period			PM Peak Period		
		NB	SB	Total	NB	SB	Total
1	Sum of CTIM	15.4	17.1	32.5	18.0	14.7	32.8
	Sum of DELAY	11.1	1,064.6	1,075.7	1,205.7	74.8	1,280.5
	Sum of VMT	130,648.9	265,655.8	396,304.8	291,085.2	147,632.6	438,717.9
	Sum of VHT	2,055.4	5,213.4	7,268.8	5,754.4	2,382.2	8,136.6
2	Sum of CTIM	18.0	24.4	42.4	21.7	18.1	39.8
	Sum of DELAY	27.0	3,028.2	3,055.2	1,652.1	89.1	1,741.2
	Sum of VMT	131,482.0	272,631.2	404,113.1	261,072.1	149,355.4	410,427.5
	Sum of VHT	2,081.2	7,279.7	9,361.0	5,723.4	2,424.0	8,147.4
3	Sum of CTIM	15.1	21.2	36.3	18.1	15.1	33.2
	Sum of DELAY	1.5	1,852.7	1,854.2	804.5	2.9	807.4
	Sum of VMT	56,916.5	155,602.0	212,518.5	139,007.0	61,703.5	200,710.5
	Sum of VHT	877.1	4,246.6	5,123.7	2,943.0	952.2	3,895.2
4	Sum of CTIM	15.8	21.6	37.4	19.2	16.1	35.3
	Sum of DELAY	3.0	1,582.5	1,585.5	876.6	6.6	883.2
	Sum of VMT	54,526.6	148,445.7	202,972.3	133,736.4	61,652.2	195,388.6
	Sum of VHT	869.2	3,930.6	4,799.8	2,991.0	987.5	3,978.4
5	Sum of CTIM	41.0	47.5	88.6	46.5	43.5	90.1
	Sum of DELAY	279.0	1,713.9	1,992.9	1,766.4	603.5	2,369.9
	Sum of VMT	226,696.9	325,518.9	552,215.9	328,010.2	269,110.6	597,120.7
	Sum of VHT	3,830.4	6,788.0	10,618.4	6,886.6	4,812.4	11,699.0
6	Sum of CTIM	24.9	25.2	50.1	24.9	25.2	50.1
	Sum of DELAY	0.7	1.9	2.6	3.1	1.9	5.1
	Sum of VMTPM	83,689.8	117,571.8	201,261.6	122,274.4	102,863.5	225,138.0
	Sum of VHTPM	1,288.2	1,810.7	3,098.9	1,884.3	1,584.4	3,468.7
Total	Total Sum of CTIM	130.3	157.1	287.4	148.5	132.7	281.2
	Total Sum of DELAY	322.3	9,243.9	9,566.2	6,308.5	778.9	7,087.4
	Total Sum of VMT	683,960.7	1,285,425.4	1,969,386.1	1,275,185.4	792,317.9	2,067,503.2
	Total Sum of VHT	11,001.5	29,269.1	40,270.6	26,182.7	13,142.6	39,325.3

Note: All measures are for average weekday peak periods, AM or PM.

CTIM = congested travel time, minutes VOL= vehicle volume

DELAY = difference between the congested travel time and the free flow travel time, vehicle hours

VMT = vehicle mile traveled, vehicle-miles VHT = vehicle hours traveled, vehicle-hours

[139] Summarized based on MTC Travel Model One 2017

Table E-3: Changes from 2015 to 2040

Segment		AM Peak Period			PM Peak Period		
		NB	SB	Total	NB	SB	Total
1	Sum of CTIM	0%	1%	0%	6%	0%	3%
	Sum of DELAY	11%	10%	10%	76%	36%	73%
	Sum of VMT	8%	6%	7%	14%	11%	13%
	Sum of VHT	8%	7%	7%	23%	11%	19%
2	Sum of CTIM	0%	3%	2%	2%	1%	2%
	Sum of DELAY	67%	19%	20%	23%	96%	26%
	Sum of VMT	14%	8%	10%	8%	16%	11%
	Sum of VHT	14%	13%	13%	12%	18%	14%
3	Sum of CTIM	17%	44%	31%	18%	62%	35%
	Sum of DELAY	56%	20%	20%	35%	71%	35%
	Sum of VMT	13%	15%	14%	12%	15%	13%
	Sum of VHT	13%	17%	16%	18%	15%	17%
4	Sum of CTIM	97%	71%	81%	80%	97%	87%
	Sum of DELAY	-4%	34%	34%	39%	30%	39%
	Sum of VMT	9%	18%	15%	17%	12%	15%
	Sum of VHT	8%	24%	21%	23%	12%	20%
5	Sum of CTIM	1%	5%	3%	5%	2%	3%
	Sum of DELAY	54%	83%	79%	61%	52%	59%
	Sum of VMT	9%	13%	12%	12%	11%	12%
	Sum of VHT	12%	25%	20%	22%	15%	19%
6	Sum of CTIM	n/a	n/a	n/a	n/a	n/a	n/a
	Sum of DELAY	67%	147%	120%	159%	136%	150%
	Sum of VMTPM	11%	20%	16%	20%	15%	18%
	Sum of VHTPM	11%	20%	16%	20%	16%	18%
Total	Total Sum of CTIM	11%	17%	14%	14%	16%	15%
	Total Sum of DELAY	52%	29%	30%	45%	54%	46%
	Total Sum of VMT	10%	12%	11%	13%	13%	13%
	Total Sum of VHT	11%	17%	15%	19%	15%	18%

Note: All measures are for average weekday peak periods, AM or PM.

CTIM = congested travel time, minutes VOL= vehicle volume

DELAY = difference between the congested travel time and the free flow travel time, vehicle hours

VMT = vehicle mile traveled, vehicle-miles VHT = vehicle hours traveled, vehicle-hours

Appendix F: Other Public Outreach

This CMCP is a summary of data, studies, and transportation projects that are referenced by State, regional and local transportation agencies that have conducted extensive public engagement and outreach for various plans and projects in the US 101 North Corridor. Public engagement through MTC's Plan Bay Area 2040, SCTA's Comprehensive Transportation Plan: Moving Forward 2040, and TAM's extensive public engagement is not an exhaustive list but provides an overview of their process to garner public support in refining State, regional and local measures. Appendix F dates specific outreach efforts by Caltrans, MTC, SCTA, and TAM for multimodal projects on US 101 North Corridor since 1997 to the present. The longest dated Marin Sonoma Narrows (MSN) project particularly originated from SCTA's Sonoma/Marin Multi-Modal Transportation and Land Use Study in 1997 which examined scenarios for an efficient transportation network. The preferred scenario from this study envisioned commuter rail service, HOV lanes, reconfigured freeway interchanges, improvements to bus and transit, bicycle and pedestrian improvements, as well as mixed use development. Since then, MSN, SMART, and many other projects started gaining traction as more public outreach are conducted. This chapter discusses the most current public outreach efforts for Marin and Sonoma County which support the projects evaluated in Chapter 7.

Sonoma County Transportation Authority (SCTA)

SCTA updated their Comprehensive Transportation Plan, Moving Forward 2040 in September 2016, a countywide plan used to help reflect new priorities, financial projections, and vision of the County to guide its communities. In the process of updating the plan, public input helped steer goals and policies. Staff designed outreach methods to engage the public on the challenges and opportunities for the future of transportation in Sonoma County.

Public outreach was conducted with four main goals:

- To inform public about the CTP
- Provide an opportunity for input on the plan
- Gauge the transportation needs of Sonoma County
- Help inform the Draft CTP

Two public workshops were held in September 2015. Staff was on hand to discuss the CTP and collect input from 30 attendees at the two events. The Sonoma County Transportation Needs survey was open for three weeks from September 3rd to 23rd, 2015. In addition to working with existing organizations to share information on ways for the public to engage with the CTP, a Facebook campaign was used to reach another 11,550 local residents. There were 339 responses to survey questions covering transportation priorities, funding, alternatives and travel choices. Responses to the survey were also collected offline, through paper surveys available at the public workshops. Links to a Spanish translation of the survey were shared through Latino community organizations. Two public hearings (plus other presentations) were also conducted.

The average ranked priorities for transportation improvements identified in the survey were:

1. Maintain roads
2. Expand SMART
3. Expand bikes
4. Expand buses
5. Road improvements
6. Highway 101

SCTA is currently developing an update to the next CTP, Moving Forward 2050, which will undergo public engagement through Summer 2020 until completion in Spring 2021.

In addition, SCTA has held regular meetings with the following committees which includes representatives from local transportation agencies, community groups, cities, non-governmental organizations (NGOs), and coalitions:

- Planning Advisory Committee meets every third Thursday of each month.
- Citizen's Advisory Committee (CAC) meets on the last Monday of each month.
- Technical Advisory Committee (TAC) meets on the fourth Thursday of each month.
- Countywide Bicycle and Pedestrian Advisory Committee meets on the third Thursday of each month.
- Transit Paratransit Coordinating Committee meets on the third Tuesday of every other month.

SCTA keeps the advisory committees informed of project statuses as well as to gain input to help resolve project specific issues. The CAC, composed of community stakeholders and five public members appointed by each supervisorial district, provides public oversight on the implementation of Measure M, the 2004 Traffic Relief Act for Sonoma County, a ¼ cent sales tax dedicated to transportation for 20 years. Measure M is used to maintain local streets, fix potholes, widen US 101, improve interchanges, enhance and improve transit service and build safe bicycle and pedestrian routes. As a part of Measure M, SCTA developed six US 101 HOV projects that would create a continuous HOV lane from the Marin County line to Windsor, address operational and safety issues throughout the corridor. SCTA with Measure M seeks to create a safe, convenient, free flowing US 101 with less traffic congestion that moves at a steady pace.[140]

Transportation Authority of Marin (TAM)

TAM hosts and participates in regular public meetings including but not limited to the following regularly scheduled meetings:

- TAM Citizens Oversight Committee
- TAM Bicycle and Pedestrian Advisory Committee
- TAM Executive Committees

[140] https://scta.ca.gov/measure-m/highway-101/

- TAM Board of Commissioner Meetings
- Marin Mobility Consortium (Senior and Disabled Community Engagement)

In 2018, TAM passed a Transportation Sales tax extension with 76% voter approval, after an exhaustive public outreach and community engagement process. This process served to gather input from the community on transportation needs and priorities for the development of a Transportation Sales Tax Expenditure plan, ultimately resulting in an approved sales tax by the voters of Marin County. The following is a listing of community outreach events associated with this process:

- Expenditure Plan Advisory Committee (EPAC) held meetings every third Monday of each month between July and November 2017.
- Citizens' Oversight Committee (COC) held five meetings in 2017, seven meetings in 2018, and five meetings in 2019.
- Community Meetings:
    - Rotary Clubs
        - Ignacio Rotary Lunch Speaker Series - January 2017, April 2017, June 2018
        - San Rafael Rotary Lunch Speaker Series – May 2017
        - Sausalito Rotary Club – April 2018
        - Novato Rotary Club – November 2018
    - Chamber of Commerce and Business Groups
        - San Rafael Leadership Institute – December 2016
        - North Bay Leadership Council – March 2017, September 2018
        - Keep Marin Working – June 2017, July 2018
        - Leadership Novato – September 2017
        - San Rafael Chamber of Commerce Government Affairs Committee – September 2017
        - San Rafael Chamber of Commerce Board Meeting – June 2018
        - Novato Chamber of Commerce – July 2018
        - Marin Economic Forum – July 2018
    - Community Interest Organizations
        - Marin Conservation League – October 2017, July 2018
        - Marin Senior Fair – October 2017, October 2018
        - Marin Coalition Meeting – January 2018
        - Coalition of Sensible Taxpayers – July 2018
        - Main Street Moms – October 2018
    - Public Agency Meetings
        - Marin Mobility Consortium – March 2017, September 2018
        - Marin Public Works Association – December 2017, January 2019
        - Novato Planning Academy – February 2018
        - Golden Gate Bridge Highway and Transportation District Board – June 2018
        - Paratransit Coordinating Council – September 2018

        - Age Friendly Commission – September 2019
- City/Town Council Meetings:
    - Belvedere – April and June 2018
    - Corte Madera – April and June 2018
    - Fairfax – April and June 2018
    - Larkspur – March and June 2018
    - Mill Valley – March and June 2018
    - Novato – March and June 2018
    - Ross – April and June 2018
    - San Anselmo – April and June 2018
    - San Rafael – March and June 2018
    - Sausalito – April and June 2018
    - Tiburon – April and June 2018
    - County of Marin, Board of Supervisors – April and June 2018

In the Fall of 2016, TAM reached out to the public to understand individual preferences and values in moving around Marin County through their Vision Plan Survey. TAM partnered with local governments, transit agencies, and community groups across the county to distribute and encourage participation in an online survey, "Getting Around Marin." Administered in both English and Spanish, the survey invited Marin residents and commuters to identify transportation values and priorities, consider trade-offs between potential investments and policies, and provide feedback about local and regional mobility. The Getting Around Marin survey received nearly 4,000 responses, nearly 90 percent of which came from Marin residents.

TAM hosted two public opinion polls regarding transportation issues and the transportation sales tax effort. In June 2017, a baseline poll was conducted that verified transportation issues and traffic congestion continue to be top concerns of Marin County residents. There is great interest in a variety of transportation solutions from elected officials, workers, business community, residents and community organizations.

In January 2018, a follow-up survey was conducted to help gauge the public's perception of transportation needs, provide information about prioritizing transportation projects and programs in Marin, and determine the public's willingness to generate local funding to support transportation improvements.

The Expenditure Plan Advisory Committee (EPAC) was formed in June 2017 as an advisory committee to the TAM Board of Commissioners. The committee was comprised of volunteers representing diverse stakeholder groups in Marin County. The committee drafted and unanimously agreed upon an expenditure plan defining the transportation projects and programs for the ½ cent sales tax measure, approved by all cities and towns and the County of Marin in November 2018. The Citizens' Oversight Committee (COC) is an advisory body, composed of private citizens residing in Marin County, is responsible for the review of Measure A (2004), Measure AA (2018), and Measure B (2010) revenues and expenditures of TAM. The

2018 Final Expenditure Plan details Marin County's 30-Year transportation sales tax. The Expenditure Plan is divided into four categories that addresses different aspects of the transportation system within the county.[141] The first category is to reduce congestion on US 101 and adjacent roadways. Multiple advisory committees were created for the transportation sales tax revenues which also provide local funds to accelerate the completion of Marin-Sonoma Narrows, improve operations and enhance safety at interchanges and access routes to and from US 101 throughout the county. Funding for commute alternatives and trip reduction programs that reduce peak-hour congestion is also provided. The idea behind these three projects and programs is to alleviate bottlenecks in the county's freeway network, prevent spillover traffic into residential and industrial neighborhoods, and provide alternative options for in-county commuters.

[141] 2018 Final Expenditure Plan: Marin County Transportation Sales Tax Revenue (TAM): https://2b0kd44aw6tb3js4ja3jprp6-wpengine.netdna-ssl.com/wp-content/uploads/2018/07/TAM_2018FinalExpenditurePlan_062918.pdf

The following table is a list of public outreach and engagement events since the inception of multimodal planning along the US 101 North Corridor.

Table F-1: Public Outreach along US 101 North Corridor

Date Completed	Outreach Type/Audience	Number of Recipients *	Subject	Public Meeting	Focus Group**	Website	Publications/ Letters	Survey	Event	Email Outreach
Summer 1997	3 Focus Group Sessions (Design Workshops) in Larkspur, Petaluma, and Santa Rosa		Sonoma/Marin Multi-Modal Transportation & Land Use Study by SCTA	√	√				√	√
April/May 1997	4 Symposiums and 5 Open Houses	76	Sonoma/Marin Multi-Modal Transportation & Land Use Study by SCTA	√			√	√	√	√
8/1/2001 8/22/2001	Local city and county officials, city of Novato and Petaluma residents	103	Minimizing Environmental Impacts identified in "Novato Narrows" Project Study Report	√	√		√	√		√
8/14/2001 11/16/2001	Marin Conservation League Don Wilhelm		MSN discussion on Minimizing interchange impacts or environmental resources. Environmental study limits, environmental assessment status, findings to-date, possible mitigation sites. Traffic studies and growth inducement.		√					√
9/5/2001	Transportation Solutions Defense and Education Fund David Schonbrunn		Transit alternative discussion. Express bus service expansion on MSN		√					√
9/10/2001 5/2/2002 1/5/2006	Golden Gate Transit		MSN discussion on Transit improvement, HOV lane design, Park and ride locations.		√					√
9/21/2001, 01/18/2002, 2/15/2002, 4/19/2002, 5/17/2002, 9/20/2002, 2/20/2004, 4/21/2004, 12/15/2004, 3/16/2005, 6/15/2005, 12/21/2005, 2/18/2008	Marin and Sonoma Counties, and the cities of Petaluma, Novato, and San Anselmo are represented on the PAG.	85	MSN discussion on Funding availability, Inclusion of High Occupancy toll element, Environmental and access impacts with upgrading of expressway to freeway in Segment B, Aesthetics of Redwood Landfill Overcrossing, Impacts to Petaluma River and construction staging of Petaluma River Bridge, Provision of access to bus park-and-ride lots, Preferred Alternative and Access Option.	√	√					√
3/21/2002	Payran/McKinley Neighborhood Action Committee		MSN discussion on Noise walls, landscaping, impacts to homes,		√					√

Date Completed	Outreach Type/Audience	Number of Recipients *	Subject	Public Meeting	Focus Group**	Website	Publications/ Letters	Survey	Event	Email Outreach
	Jeff Cartwright, Chair		and right-of-way take							
4/24/2002	Marin and Sonoma Bicycle Communities and SMART		Vision of a Class 1 path along Northwest Pacific Railroad (NWPRR) right-of-way		√					√
4/30/2002	SMART Lillian Hames, Project Director		Updates on SMART: • SMART preparing EIR for full 70-mile corridor (Cloverdale to San Rafael/Ferry Terminal) • Fifteen stations planned, 75 mph operating speed, and 55-minute travel time between Santa Rosa and San Rafael • SMART policy is to accommodate bike and pedestrians within rail corridor where feasible		√					√
11/18/2002 11/19/2002	Local constituencies in Marin and Sonoma counties and state, federal, and local agencies	63	Reducing or modifying the footprint of MSN project elements to minimize environmental impacts	√			√	√		√
February 2003	6 open houses, Marin County	200	Moving Forward- A 25 Year Transportation Vision for Marin County	√						√
February 2003	Marin County	1000	Moving Forward- A 25 Year Transportation Vision for Marin County	√				√	√	√
6/15/2005 6/16/2005	Payran/McKinley Neighborhood Action Committee. Residents in Petaluma	35	Noise improvement. Impacts and benefits of adjacent 105 freeway sound walls that in the MSN Project	√		√	√	√		√
2/28/2002 1/31/2006 2/28/2006 2/9/2007	Representatives from the UCFWS, USACE, USEPA, NOAA Fisheries		Endangered Species Act project review and consultation for the MSN project		√					√
1/9/2007	Windsor Community Meeting		MSN HOV Lane Widening Project Status Update	√		√			√	√
1/17/2007	Windsor Town Council		MSN HOV Lane Presentation	√		√			√	√
July 2007	Regional Forum	85	MTC's Transportation 2035 Plan: Vision and Goals	√		√				√
Fall 2007	Registered voters in all nine counties	1,800	MTC Transportation 2035 Plan Telephone Survey					√		√

Date Completed	Outreach Type/Audience	Number of Recipients *	Subject	Public Meeting	Focus Group**	Website	Publications/ Letters	Survey	Event	Email Outreach
Fall 2007	Online survey	2,000	MTC Transportation 2035 Plan Web Survey			√		√		√
Fall 2007	Interested residents, community leaders, stakeholders, and business owners	700	MTC Transportation 2035 Plan Regional Forum sponsored by MTC and ABAG	√	√	√				√
11/6/2007 11/14/2007	Public meetings with residents and elected officials in Marin and Sonoma Counties		MSN Environmental and technical studies. Public map display	√			√			√
November 2007	3 Public Stakeholder Meetings	115	Discussion and information session regarding MTC's Transportation 2035 Plan	√					√	√
November/December 2007	On-street interviews throughout the nine counties	200	MTC's Transportation 2035 Plan					√		√
January-June 2008	Joint Advisory Workshops		Monthly discussions regarding investments and tradeoffs for MTC's Transportation 2035 Plan		√					√
Spring 2008	MTC Transportation Plan 2035 Telephone Survey	3,600 (400 per county)	Invest tradeoffs for MTC's Transportation 2035 Plan					√		√
May 2008	9 Public Workshops (one per county)	450 (per county)	Gauged public opinion on investment tradeoffs and quizzed respondents on knowledge of transportation facts	√				√	√	√
May 2008	9 Focus Groups (one per county)	100 (per county)	Discussed potential investment packages		√					√
5/15/2008	General Public in Windsor		US 101 HOV Lanes from Santa Rosa to Windsor	√					√	√
December 2008	Public Comment		Public Comment period opened for MTC's Draft Transportation 2035 Plan			√				√
January 2009	2 Public Hearings		MTC's Draft Transportation 2035 Plan: Public Hearings	√					√	√
March 10, 2010	Community members and interested residents	100	Bay Area Greenhouse Gas Reduction Workshop: Oakland	√	√				√	√
April 22, 2010	Public officials, community leaders, interested residents, and advocacy groups		OneBayArea.org Website			√				√
April 22, 2010	Local government officials from all nine counties with ABAG Spring General Assembly, MTC, Bay Area Air Quality Management District, Bay Area Conservation (BCDC), and interest groups	350	Local Government Summit		√				√	√

Date Completed	Outreach Type/Audience	Number of Recipients *	Subject	Public Meeting	Focus Group**	Website	Publications/ Letters	Survey	Event	Email Outreach
April 28, 2010 through December 2010	Regional Advisory Working Group (RAWG)		Develop Wok Plan Elements for Plan Bay Area 2013, develop targets and strategies on housing, greenhouse gas emissions, transportation, and land use	√	√					√
September 29, 2010	Staff and elected representatives from ABAG, MTC, Bay Area Quality Management District, BCDC, and Transportation Authority of Marin (TAM)		Plan Bay Area 2013 kickoff and information session		√					√
October 7, 2010	Staff and elected representatives from ABAG, MTC, Bay Area Quality Management District, BCDC, and Sonoma County Transportation Authority (SCTA)		Plan Bay Area 2013 kickoff and information session		√					√
Spring 2011	Staff and elected officials from MTC, ABAG, and Congestion Management Agencies (CMAs) throughout in all nine counties		Briefing on Plan Bay Area Process Presentation overview of Initial Scenario Approach Presentation on Performance Targets adopted by MTC and ABAG		√					√
March/April 2011	Registered voters in all nine counties	1,069	Plan Bay Area 2013: Public Opinion Poll: Telephone Poll					√		√
May 5, 2011	Plan Bay Area Community Based-Outreach KBBF Radio (Sonoma County)	213	Plan Bay Area 2013 information session and priority rankings	√	√			√	√	
May 11, 2011	Public Workshop in Marin County	113	Plan Bay Area 2013 information session and priority rankings	√	√			√	√	√
May 18, 2011	Public Workshop in Sonoma County	85	Plan Bay Area 2013 information session and priority rankings	√	√			√	√	√
May 24, 2011	Plan Bay Area Community-Based Outreach Grassroots Leadership Network of Marin (Marin County)	103	Plan Bay Area 2013 information session and priority rankings	√	√			√	√	√
November 2011 through January 2012	Registered voters in all nine counties	1,610	Plan Bay Area 2013: Public Opinion Poll: Telephone Poll					√		
January 9, 2012	Public Workshop in Sonoma County	150	Plan Bay Area 2013: Priorities and Tradeoffs	√	√			√	√	√
January 13, 2012	Community Based Organization: KBBF Radio (Sonoma County)	19	Focus Group: Plan Bay Area 2013		√					
January 17, 2012	Public Workshop in Marin County	151	Plan Bay Area 2013: Priorities and Tradeoffs	√	√			√	√	√
January 24 through January 26, 2012	Four Focus Groups for Plan Bay Area 2013 in San Francisco, Walnut		Plan Bay Area 2013 Focus Groups for urban residents, rural, and		√					√

Date Completed	Outreach Type/Audience	Number of Recipients *	Subject	Public Meeting	Focus Group**	Website	Publications/ Letters	Survey	Event	Email Outreach
	Creek, and Novato		suburban residents							
January 25, 2012 through February 20, 2012	Online survey for interested residents and community members	1,128	Virtual Workshop Survey, Plan Bay Area 2013: Regional Planning Survey			√		√		√
January 25, 2012 through February 20, 2012	Online survey for interested residents and community members	1.055	Virtual Workshop Survey, Plan Bay Area 2013: Transportation Investment Priorities			√		√		√
January 25, 2012 through February 20, 2012	Online survey for interested residents and community members	887	Virtual Workshop Survey, Plan Bay Area 2013: SF Bay Area 2040 Survey			√		√		√
January 26, 2012	Community Based Organization: Grassroots Leadership Network of Marin (Marin County)	14	Focus Group: Plan Bay Area 2013		√					√
Spring 2013	Native American tribal government leaders		Plan Bay Area 2013, Tribal Consultation Workshop in Sonoma County		√					√
March 12, 2013	Community Based Organization: KBBF Radio (Sonoma County)	17	Focus Group: Plan Bay Area 2013		√					
March 21, 2013	Community Based Organization: Grassroots Leadership Network of Marin (Marin County)	18	Focus Group: Plan Bay Area 2013		√					√
March, April, and May 2013	Registered voters in all nine counties	2,516	Public Comment on Draft Plan Bay Area 2013 and Draft EIR			√				√
March, April, and May 2013	Registered voters in all nine counties	2,516	Plan Bay Area 2013: Public Opinion Poll: Telephone Poll					√		
April 2013	Interested residents and community members		Plan Bay Area 2013 Town Hall: Online comment forum			√		√		√
April 8, 2013	Elected Official Briefing with MTC, ABAG, and SCTA	100% attendance	Draft Plan Bay Area 2013	√	√	√				√
April 8, 2013	Public Open House and Public Hearing in Sonoma County	75	Draft Plan Bay Area 2013	√	√	√			√	√
April 25, 2013	Elected Official Briefing with MTC, ABAG, and TAM	90% attendance	Draft Plan Bay Area 2013	√	√		√			√
April 25, 2013	Public Open House and Public Hearing in Marin County	320	Draft Plan Bay Area	√	√					√
July 18, 2013	MTC and ABAG joint meeting and final public hearing	520	Joint Meeting between ABAG and MTC full boards and final public hearing on the Draft Plan Bay Area	√					√	√
January 15, 2014	Meeting with Tiburon/Mill Valley elected officials		Ramp Metering along US 101 in Marin County	√	√					√
July 2014	Marin County Fair Exhibit at TAM Booth		Ramp Metering along US 101 in Marin County						√	√

Date Completed	Outreach Type/Audience	Number of Recipients *	Subject	Public Meeting	Focus Group**	Website	Publications/ Letters	Survey	Event	Email Outreach
September 25, 2014	Presentation to the Marin Managers Association		Ramp Metering along US 101 in Marin County	√						√
September 26, 2014	Presentation/ Discussion – Tiburon/ Belvedere/ Katie Sears		Ramp Metering along US 101 in Marin County	√	√					√
October 8, 2014	Presentation to Strawberry Recreation		Ramp Metering along US 101 in Marin County	√	√					√
October 23, 2014	TAM Board of Commissioners Meeting		Ramp Metering along US 101 in Marin County	√						√
November 19, 2014	Mill Valley Update		Ramp Metering along US 101 in Marin County	√						√
November 20, 2014	Public Workshop		Ramp Metering along US 101 in Marin County	√						√
January 20, 2015	Presentation to Mill Valley Council		Ramp Metering along US 101 in Marin County	√						√
January 22, 2015	Board update and request local road data collection		Ramp Metering along US 101 in Marin County	√						√
May 7, 2015	Open House in Sonoma County	65	Information session on Plan Bay Area 2040. Participants also selected their top three priorities for Plan Bay Area 2040.	√				√	√	√
May 28, 2015	Open House in Marin County	80	Information session about Plan Bay Area 2040. Participants also selected their top three priorities for Plan Bay Area 2040	√				√	√	√
April 6, 2015	Public Workshop		North-South Greenway Gap Closure Bicycle / Pedestrian Project (Larkspur)	√						√
July 29, 2015	Public Workshop		North-South Greenway Gap Closure Bicycle / Pedestrian Project (Larkspur)	√						√
October 6 and October 7, 2015	Regional Advisory Working Group (RAWG) and the Regional Planning Committee	130	Scenario Concept Special Workshops; Present and discuss the three draft scenarios for Plan Bay Area 2040		√			√	√	√
November 22, 2015	TAM Board of Commissioners Meeting		Ramp Metering along US 101 in Marin County	√						√
February 20, 2016	Public officials, community leaders, interested residents, and advocacy groups	300	Housing Forum: Calling the Bay Area Home: Tackling the Affordable Housing and Displacement Challenge						√	√
March/April 2016	Registered voters in all nine counties	2,048	Plan Bay Area 2040 Telephone Survey					√		

Date Completed	Outreach Type/Audience	Number of Recipients *	Subject	Public Meeting	Focus Group**	Website	Publications/ Letters	Survey	Event	Email Outreach
March 21, 2016	Public Workshop		North-South Greenway Gap Closure Bicycle / Pedestrian Project (Larkspur)	√						√
April 16, 2016 and April 17, 2016	3 Public Hearings in San Rafael, Oakland, and San Jose	156	Public Hearings on Draft Environmental Impact Report (DEIR) for Plan Bay Area 2013	√	√		√		√	√
May 2016 – 2019	Bike to Work Day booth near the project site		North-South Greenway Gap Closure Bicycle / Pedestrian Project (Larkspur)	√					√	√
May 26, 2016 through September 16, 2016	Online survey on the three alternative scenarios; includes 204 responses from surveys conducted by Community Based Organizations (CBOs)	Total 921 (Marin County: 39 Sonoma County: 28)	Plan Bay Area 2040: Build A Better Bay Area Online Survey			√		√		√
May 26, 2016 through June 14, 2016	3 Scoping Meetings in Oakland, San Jose, and Santa Rosa	60	Draft Environmental Impact Report (DEIR) for Plan Bay Area 2040	√						√
June 4, 2016	Open House in Marin County	125	Plan Bay Area 2040 milestones and issues. Seek comments on the alternative growth scenarios Review connections between Plan Bay Area 2040 and local transportation and land use priorities.	√				√	√	√
June 13, 2016	Open House in Sonoma County	20	Plan Bay Area 2040 milestones and issues. Seek comments on the alternative growth scenarios Review connections between Plan Bay Area 2040 and local transportation and land use priorities	√				√	√	√
July 2017	Marin County	80	TAM Strategic Vision Plan	√						√
July 2017	Online Survey (2016), Marin County	4000	TAM Strategic Vision Plan					√		√
July 2017	Online and Paper Survey, Marin County	600	TAM Strategic Vision Plan				√	√		√
July 2017	Manager workshop for managers and agency heads		TAM Strategic Vision Plan		√					√
April 27, 2017	Transportation Authority of Marin (TAM)		Briefing on Draft Plan Bay Area 2040		√					√
Spring 2017	Public online survey	4,721	Online survey to collect public input on bicycling needs, issues, and recommendations for the			√		√		√

Date Completed	Outreach Type/Audience	Number of Recipients *	Subject	Public Meeting	Focus Group**	Website	Publications/ Letters	Survey	Event	Email Outreach
			State-owned transportation network access the Bay Area to inform the Caltrans District 4 Bicycle Plan.							
May 2017	3 Public Hearings in San Francisco, San Jose, and Vallejo	55	Draft Plan Bay Area 2040 and Draft Environmental Impact Report (EIR) for Plan Bay Area 2040	√					√	√
May 2, 2017 through May 17, 2017	5 Community-hosted Focus Groups in Alameda, Contra Costa, Santa Clara, and Solano Counties	70	Presentation on the Draft Plan Bay Area and the Action Plan Discussion on the Draft Plan's performance on housing, economic development, and		√					√
May 8, 2017	Sonoma County Transportation Authority (SCTA)		Briefing on Draft Plan Bay Area 2040		√					√
May 8, 2017	Tribal Summit with Tribes, Staff from MTC, ABAG, SCTA, and TAM		Presentation on the Draft Plan Bay Area 2040, Draft EIR, the Action Plan, and the 2017 Transportation Improvement Plan		√					√
May 12, May 16, and May 18, 2017	3 Public Hearings on Draft Plan Bay Area 2040 and Draft EIR: San Francisco, San Jose, and Vallejo	55	Plan Bay Area 2040: Public Hearings	√						√
May 20, 2017	Open House in Marin County	80	Update residents on the progress of Plan Bay Area 2040 Engage participants on the Draft Plan Collect comments on the Plan Bay Area 2040 Action Plan	√				√	√	√
May 22, 2017	Open House in Sonoma County	45	Update residents on the progress of Plan Bay Area 2040 Engage participants on the Draft Plan Collect comments on the Plan Bay Area 2040 Action Plan	√				√	√	√
May 2017	1st round of Community Workshops		Overview of proposed priority bicycle improvements for Caltrans District 4 Bike Plan	√		√		√		√
November 2017	Final round of Community Workshops		Overview of proposed priority bicycle improvements for Caltrans District 4 Bike Plan	√		√		√		√
November 30, 2017	Comment tool provided for public		Commenting opportunity on potential projects to be included in Caltrans District 4 Bike Plan			√		√		√

Date Completed	Outreach Type/Audience	Number of Recipients *	Subject	Public Meeting	Focus Group**	Website	Publications/ Letters	Survey	Event	Email Outreach
November 30, 2017	Public webinar		Webinar of proposed priority bicycle improvements for Caltrans District 4 Bike Plan	√		√		√		√
February 12, 2018	TAM Board of Commissioners		Second to Andersen North-South Greenway Gap Closure (San Rafael)	√						√
June 4, 2018	San Rafael City Council Meeting		Second to Andersen North-South Greenway Gap Closure (San Rafael)	√						√
June 8, 2018	San Rafael Snapshot Newsletter		Second to Andersen North-South Greenway Gap Closure (San Rafael)				√			√
August 2018	TAM Traveler Newsletter Article		North-South Greenway Gap Closure Bicycle / Pedestrian Project (Larkspur)				√			√
November 14, 2018	TAM Board of Commissioners Meeting		Bellam Blvd. Off ramp Intersection Improvement	√						√
December 13, 2019	Public Outreach Event at Corte Madera Town Hall		Central Marin Regional Pathways Gap Closure Project	√						√
January 24, 2019	TAM Board of Commissioners Executive Director Report		Bellam Blvd. Off ramp Intersection Improvement	√						√
February 27, 2019	Corte Madera Community Workshop		Central Marin Regional Pathways Gap Closure Project	√	√					√
February 28, 2019	TAM Board of Commissioners Meeting		Ramp Metering along US 101 in Marin County	√						√
March/April 2019	TAM Traveler Newsletter Article		Ramp Metering along US 101 in Marin County				√			√
May 2019	TAM Traveler Newsletter Article		Ramp Metering along US 101 in Marin County				√			√
June 27, 2019	TAM Board of Commissioners Meeting		Bellam Blvd. Off ramp Intersection Improvement	√						√
July 16, 2019	Andersen to Rice Section Grand Opening Celebration		Second to Andersen North-South Greenway Gap Closure (San Rafael)	√					√	√
January 23, 2020	TAM Board of Commissioners Meeting		Bellam Blvd. Off ramp Intersection Improvement	√						√

Appendix G: Potential Funding Programs

Federal-Aid Highway Program

- National Highway Performance Program (NHPP)
    - The National Highway Performance Program (NHPP) was established under MAP-21 and continued under the FAST Act. The NHPP provides support for the condition and performance of the National Highway System (NHS), for the construction of new facilities on the NHS, and for ensuring that investments of Federal-aid funds in highway construction are directed to support progress toward the achievement of performance targets established in a State's asset management plan for the NHS.
- Surface Transportation Block Grant Program (STBGP)
    - "The Surface Transportation Block Grant program (STBG) provides flexible funding that may be used by States and localities for projects to preserve and improve the conditions and performance on any Federal-aid highway, bridge and tunnel projects on any public road, pedestrian and bicycle infrastructure, and transit capital projects, including intercity bus terminals."
    - BIL Surface Transportation Block Grant Fact Sheet: https://www.fhwa.dot.gov/bipartisan-infrastructure-law/stbg.cfm
- Highway Safety Improvement Program (HSIP)
    - "The Highway Safety Improvement Program (HSIP) is a core Federal-aid program with the purpose to achieve a significant reduction in traffic fatalities and serious injuries on all public roads, including non-State-owned roads and roads on tribal land."
- Congestion Mitigation and Air Quality Improvement Program (CMAQ)
    - "The BIL continues the Congestion Mitigation and Air Quality Improvement Program (CMAQ) to provide a flexible funding source to State and local governments for transportation projects and programs to help meet the requirements of the Clean Air Act. Funding is available to reduce congestion and improve air quality for areas that do not meet the National Ambient Air Quality Standards for ozone, carbon monoxide, or particulate matter (nonattainment areas) and for former nonattainment areas that are now in compliance (maintenance areas)."
    - Additional Information: https://www.fhwa.dot.gov/environment/air_quality/cmaq/
- Metropolitan Planning Program
    - "The BIL continues the Metropolitan Planning Program, which establishes a cooperative, continuous, and comprehensive framework for making transportation investment decisions in metropolitan areas. Program oversight is

a joint Federal Highway Administration/Federal Transit Administration responsibility."

- Recreational Trails Program
    - The Recreational Trails Program provides funds annually for recreational trails and trails-related projects. The RTP is administered at the Federal level by the Federal Highway Administration. It is administered at the state level by the California Department of Parks and Recreation.
- Consolidated Rail Infrastructure and Safety Improvements Program
    - The CRISI program provides funding for capital projects that will improve passenger and freight rail transportation systems in terms of safety, efficiency, or reliability.
- Nationally Significant Federal Lands and Tribal Projects (NSFLTP) Program:
    - Provides grants to Tribes and Federal land management agencies to complete projects that will provide substantial benefits to their communities or parklands.
- Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Discretionary Grant Program
    - The eligibility requirements of RAISE allow project sponsors at the State and local levels to obtain funding for multi-modal, multi-jurisdictional projects that are more difficult to support through traditional DOT programs. RAISE can fund port and freight rail projects, for example, which play a critical role in our ability to move freight, but have limited sources of Federal funds. RAISE can provide capital funding directly to any public entity, including municipalities, counties, port authorities, tribal governments, MPOs, or others in contrast to traditional Federal programs which provide funding to very specific groups of applicants (mostly State DOTs and transit agencies). This flexibility allows RAISE and traditional partners at the State and local levels to work directly with a host of entities that own, operate, and maintain transportation infrastructure, but otherwise cannot turn to the Federal government for support.
- Multimodal Project Discretionary Grant Opportunity (MPDG)
    - **Mega Grants**: known statutorily as the National Infrastructure Project Assistance program (49 U.S.C. 6701). The program supports large, complex projects that are difficult to fund by other means and likely to generate national or regional economic, mobility, or safety benefits.
    - **INFRA Grants**: known statutorily as the Nationally Significant Multimodal Freight and Highway Projects program (23 U.S.C. 117). A Federal discretionary grant program reviewed by USDOT. Emphasis on highway and goods movement projects. Awards competitive grants for multimodal freight and highway projects of national or regional significance to improve the safety, efficiency, and reliability of the movement of freight and people in and across rural and urban areas.

    - **Rural Surface Transportation Grant:** (23 U.S.C. 173) The Rural Surface Transportation Grant Program will support projects to improve and expand the surface transportation infrastructure in rural areas to increase connectivity, improve the safety and reliability of the movement of people and freight, and generate regional economic growth and improve quality of life.
- Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) Formula Program
    - The BIL establishes the Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) Formula Program to help make surface transportation more resilient to natural hazards, including climate change, sea level rise, flooding, extreme weather events, and other natural disasters through support of planning activities, resilience improvements, community resilience and evacuation routes, and at-risk costal infrastructure.
- National Highway Freight Program (NHFP)
    - "The FAST Act establishes a new National Highway Freight Program to improve the efficient movement of freight on the National Highway Freight Network (NHFN) and support several goals, including—
        - investing in infrastructure and operational improvements that strengthen economic competitiveness, reduce congestion, reduce the cost of freight transportation, improve reliability, and increase productivity;
        - improving the safety, security, efficiency, and resiliency of freight transportation in rural and urban areas;
        - improving the state of good repair of the NHFN;
        - using innovation and advanced technology to improve NHFN safety, efficiency, and reliability;
        - improving the efficiency and productivity of the NHFN;
        - improving State flexibility to support multi-State corridor planning and address highway freight connectivity; and reducing the environmental impacts of freight movement on the NHFN. [23 U.S.C. 167 (a), (b)]"

- Congestion Relief Program: Provides grants to advance innovative, integrated, and multimodal solutions to reduce congestion and the related economic and environmental costs in the most congested metropolitan areas with an urbanized area population of at least 1 million.
- Bridge Investment Program: A program that focuses on existing bridges to reduce the overall number of bridges in poor condition, or in fair condition at risk of falling into poor condition.

Other Bipartisan Infrastructure Law (BIL) and the Inflation Reduction Act (IRA) programs:

- Strengthening Mobility and Revolutionizing Transportation (SMART) Grants Program: The program was established to provide grants to eligible public sector agencies to

conduct demonstration projects focused on advanced smart community technologies and systems in order to improve transportation efficiency and safety.

- Reconnecting Communities Program: The program funds planning grants and capital construction grants as well as technical assistance to restore community connectivity through the removal, retrofit, mitigation, or replacement of eligible transportation infrastructure facilities.
- Safe Streets and Roads for All (SS4A): The SS4A program funds regional, local, and Tribal initiatives through grants to prevent roadway deaths and serious injuries.

Information on the latest Federal Competitive Grant Programs can be found here:

- USDOT | BIL Grant Programs
    - https://www.transportation.gov/bipartisan-infrastructure-law
    - NOFOs: https://www.transportation.gov/bipartisan-infrastructure-law/key-notices-funding-opportunity
- Office of Strategic Investment Planning has a list of discretionary fund programs that may apply: https://transportationplanning.onramp.dot.ca.gov/downloads/transportationplanning/files/strategicplanning/Caltrans%20LOS%20Fact%20Sheet%20Final%206-2022.pdf

Federal Transit Program

- Section 5303, 5304, 5305 Metropolitan and Statewide and non-Metropolitan Transportation Planning Program
    - "Funds are available for planning activities that (A) support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency; (B) increase the safety of the transportation system for motorized and nonmotorized users; (C) increase the security of the transportation system for motorized and nonmotorized users; (D) increase the accessibility and mobility of people and for freight; (E) protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns; (F) enhance the integration and connectivity of the transportation system, across and between modes, for people and freight; (G) promote efficient system management and operation; and (H) emphasize the preservation of the existing transportation system."
- Section 5307 Urbanized Area Formula Program
    - Eligible activities include planning, engineering, design and evaluation of transit projects and other technical transportation-related studies; capital investments in bus and bus-related activities such as replacement of buses, overhaul of buses, rebuilding of buses, crime prevention and security equipment and construction of maintenance and passenger facilities; and capital investments in

new and existing fixed guideway systems including rolling stock, overhaul and rebuilding of vehicles, track, signals, communications, and computer hardware and software. All preventive maintenance and some Americans with Disabilities Act complementary paratransit service costs are considered capital costs.

- Section 5309 Capital Investment Program
    - The discretionary Capital Investment Grant (CIG) program provides funding for fixed guideway investments such as new and expanded rapid rail, commuter rail, light rail, streetcars, bus rapid transit, and ferries, as well as corridor-based bus rapid transit investments that emulate the features of rail.
- Section 5310 Enhanced Mobility of Seniors and Individuals with Disabilities
    - This program provides grant funds for capital, mobility management, and operating expenses for:
        - Public transportation projects planned, designed, and carried out to meet the special needs of seniors and individuals with disabilities when public transportation is insufficient, inappropriate, or unavailable;
        - Public transportation projects that exceed the requirements of the Americans with Disabilities Act (ADA);
        - Public transportation projects that improve access to fixed-route service and decrease reliance on complementary paratransit; and
        - Alternatives to public transportation projects that assist seniors and individuals with disabilities and with transportation.
- Section 5311 Formula Grants for Rural Areas
    - This program provides capital, planning, and operating assistance to states and federally recognized Indian tribes to support public transportation in rural areas with populations less than 50,000, where many residents often rely on public transit to reach their destinations.
- Section 5312 Public Transportation Innovation
    - This program supports research activities that improve the safety, reliability, efficiency, and sustainability of public transportation by investing in the development, testing, and deployment of innovative technologies, materials, and processes.
- Section 5337 State of Good Repair Grants
    - The State of Good Repair grants program provides financial assistance to public transit agencies that operate rail fixed-guideway and high-intensity motorbus systems for the maintenance, replacement, and rehabilitation of capital assets, along with the development and implementation of transit asset management plans. These funds reflect a commitment to ensuring that public transit operates safely, efficiently, reliably, and sustainably so that communities can offer balanced transportation choices that help to improve mobility, reduce congestion, and encourage economic development.
- Section 5339 Buses and Bus Facilities Program

- The Grants for Buses and Bus Facilities Competitive Program (49 U.S.C. 5339(b)) makes federal resources available to states and direct recipients to replace, rehabilitate and purchase buses and related equipment and to construct bus-related facilities, including technological changes or innovations to modify low or no emission vehicles or facilities. Funding is provided through formula allocations and competitive grants.

- Transit-Oriented Development Planning Pilot
  - Provides funding to advance planning efforts that support transit-oriented development (TOD) associated with new fixed-guideway and core capacity improvement projects. TOD focuses growth around transit stations to promote ridership, affordable housing near transit, revitalized downtown centers and neighborhoods, and encourage local economic development.

Innovative Financing

- Grant Anticipation Revenue Vehicles (GARVEE) Bond Program
  - GARVEE bonds are tax-exempt debt instrument financing mechanisms that are backed by annual federal appropriations for federal-aid transportation projects. Proceeds from the financing can be used for the costs of right of way and/or construction of highway or other transportation projects that are eligible under Title 23 of the USC and that meet all federal requirements. Additionally, projects must have environmental clearance and completed project design, be designated for GARVEE financing by the CTC, and eligible through FHWA for advance construction using GARVEE financing.
- Public-Private Partnerships (PPP)
  - California recognizes the importance of private sector capital and expertise to the building of transportation infrastructure through the PPP program. By offering reasonable investment returns, California's public sector intends to partner with the private sector to develop, construct, and operate additional transportation projects to accelerate goods movement, improve air quality, and facilitate California's economic development. Transportation Finance Bank (TFB) Loan Program - The U.S. Department of Transportation (US DOT) designated California to participate in its State Infrastructure Bank (SIB) Pilot Program, authorized under the National Highway System Designation Act of 1995. The SIB Program was established to provide flexible project financing through loans, debt service guarantees, lines of credit and other capital financing support. California established its SIB, the Transportation Finance Bank, to offer flexible, short term loans (maximum six- year) to public and private entities for any stage of an eligible highway construction or transit capital project.
- State Highway Account (SHA) Loan Program
  - This program offers short-term (maximum four-year) construction loans to local entities for State Transportation Improvement Program (STIP)-eligible projects

included within an adopted Regional Transportation Plan. Total project costs must be greater than $10 million; however, for counties with populations under 500,000, this requirement may be waived.

- Transportation Finance Bank (TFB) Loan Program
    - The U.S. Department of Transportation (US DOT) designated California to participate in its State Infrastructure Bank (SIB) Pilot Program, authorized under the National Highway System Designation Act of 1995. The SIB Program was established to provide flexible project financing through loans, debt service guarantees, lines of credit and other capital financing support. California established its SIB, the Transportation Finance Bank, to offer flexible, short- term loans (maximum six- year) to public and private entities for any stage of an eligible highway construction or transit capital project.
- Transportation Infrastructure Finance and Innovation Act (TIFIA) of 1998
    - The Federal TIFIA Program offers credit assistance on flexible terms for major transportation projects of critical national importance. Credit assistance, in the form of direct loans, loan guarantees, and standby lines of credit, is available to public and private sponsors. Projects must meet certain minimum project cost requirements, be supported by project revenues or a non-federal dedicated funding source, and be included in the STIP. While applications for assistance are submitted directly to the US DOT. Caltrans' Office of Innovative Finance staff is available to assist in the application process and providing support for eligible project
- Partnership Ventures (PV)
    - Partnership Ventures administered the Caltrans private toll road program authorized by Streets and Highways Code Section 143 (Assembly Bill 680 Baker) Chapter 107, Statutes of 1989). This statute authorized Caltrans to solicit proposals and enter into agreements with the private sector to develop, construct and operate four privately-financed public transportation demonstration projects. In addition to the toll road program, Partnership Ventures were also responsible for identifying and developing other private partnerships which would generate revenues and/or additional infrastructure for the State.

State Transportation Grants

- Caltrans Sustainable Transportation Planning Grant Program
- Sustainable Transportation Planning Grants
- State Transportation Improvement Program (STIP)
- Active Transportation Program
- Transportation Development Act
- Transit and Intercity Rail Capital Program (TIRCP)

- Low Carbon Transit Operations Program (LCTOP)
- State Airport Improvement Program Matching Grant
- Airport Acquisition and Development (A&D) Grants
- Airport Annual Credits
- State Transit Programs (STIP/Prop 1B (SLPP)/TCRP/Prop. 116/Prop. 1A)
- Solutions for Congested Corridors Program (SCCP)
- Trade Corridor Enhancement Program (TCEP)
- Local Partnership Program (LPP)
- Reconnecting Communities: Highways to Boulevards

Final US 101 North Comprehensive

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