Chapter 1 Purpose of and Need for Project

1.1 Introduction

Highway 101 is the most heavily traveled route in the North Bay area, linking San Francisco to the south with cities in Marin and Sonoma counties before continuing toward Mendocino County to the north. The California Department of Transportation (Caltrans), *assigned by the* Federal Highway Administration (FHWA), *and* in cooperation with the Sonoma County Transportation Authority (SCTA), propose to improve Highway 101 in Sonoma County between Old Redwood Highway in Petaluma and the Rohnert Park Expressway in Rohnert Park. The project would complete the central section in a continuous system of high-occupancy vehicle (HOV) lanes planned between Mill Valley in Marin County and Windsor in Sonoma County. *The proposed project is a joint project by Caltrans and FHWA and is subject to state and federal environmental review requirements. Project documentation, therefore, has been prepared in compliance with both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (N*EPA*). Caltrans is the* lead agency *under CEQA, in addition, FHWA's responsibility for environmental review, consultation, and any other action required in accordance with applicable federal laws for this project is being or has been carried out by Caltrans under its assumption of responsibility pursuant to 23 U.S.C. 327.*

The proposed project would construct HOV lanes in each direction by widening in the Highway 101 median and would provide standard shoulders by widening the outside of the highway. Auxiliary lanes would be added between the State Route (SR) 116 (Gravenstein Highway) and Rohnert Park Expressway ramps to improve weaving movements as traffic enters and exits Highway 101 from those interchanges. A climbing lane *would be constructed* in the northbound direction between Old Redwood Highway and West Sierra Avenue to separate slow-moving vehicles from faster-moving traffic up the Cotati Grade. Most of these improvements can be accommodated within the existing right-of-way. Acquisition of additional right-of-way would be required primarily at the Old Redwood Highway–Petaluma Boulevard North and SR 116 interchanges; at the Pepper Road northbound on-ramp; and at one spot location to accommodate embankment widening just north of Pepper Road. The proposed project is described in greater detail in Section 2.2.3, Proposed Project ("Build") Alternative. Plans depicting the Build Alternative are included in Appendix A.

Improvements to Highway 101 are included in local planning goals and policies. The *Sonoma County General Plan* (1989) and the *Comprehensive Transportation Plan for Sonoma County* (SCTA 2004) include the addition of HOV lanes and improvements to freeway standards for Highway 101. Improvements to Highway 101 are also included in the *Petaluma General Plan (1987-2005)*, which states that two new lanes are needed on Highway 101 to accommodate regional demands. Improvements at the Highway 101/SR 116 Interchange would comply with policies set forth in the *City of Cotati General Plan* to improve the interchange. Policy in the *City of Rohnert Park General Plan* (July 2000) supports widening Highway 101 to six lanes to accommodate HOV lanes.

1.1.1 Scope of this Environmental Assessment/Environmental Impact Report

This Environmental Assessment / *Final* Environmental Impact Report (EA/*F*EIR) is prepared pursuant to the requirements of the National Environmental Policy Act (NEPA), the Council on Environmental Quality regulations implementing NEPA, the California Environmental Quality Act (CEQA), and the State CEQA Guidelines. As required by NEPA and CEQA, this document informs the public and governmental decision-makers of environmental effects associated with the proposed project and describes the measures that would be undertaken to mitigate those effects. This document will be used by federal, state, regional, and local agencies to assess the environmental impacts of the project on resources under their jurisdiction, make discretionary decisions regarding the project, or exercise review and permit authority over the project. It is anticipated that local jurisdictions will use this document in their planning processes to depict the proposed project right-of-way on the land use and circulation element maps of their respective general plans.

1.1.2 Project Location

The project corridor follows existing Highway 101 in Sonoma County from just south of the Old Redwood Highway Interchange in northwestern Petaluma to just north of the Rohnert Park Expressway Interchange in Rohnert Park, a distance of 10.3 km (6.4 mi). HOV lanes constructed under the proposed project would be configured to conform to those proposed or already constructed in other Highway 101 HOV lane widening and improvement projects to the north (Rohnert Park Expressway to Santa Rosa Avenue, including Wilfred Avenue, Highway 12 to Steele Lane, and Steele Lane to Windsor River Road) and south (Marin-Sonoma Narrows) to form continuous HOV lanes from Mill Valley to Windsor.

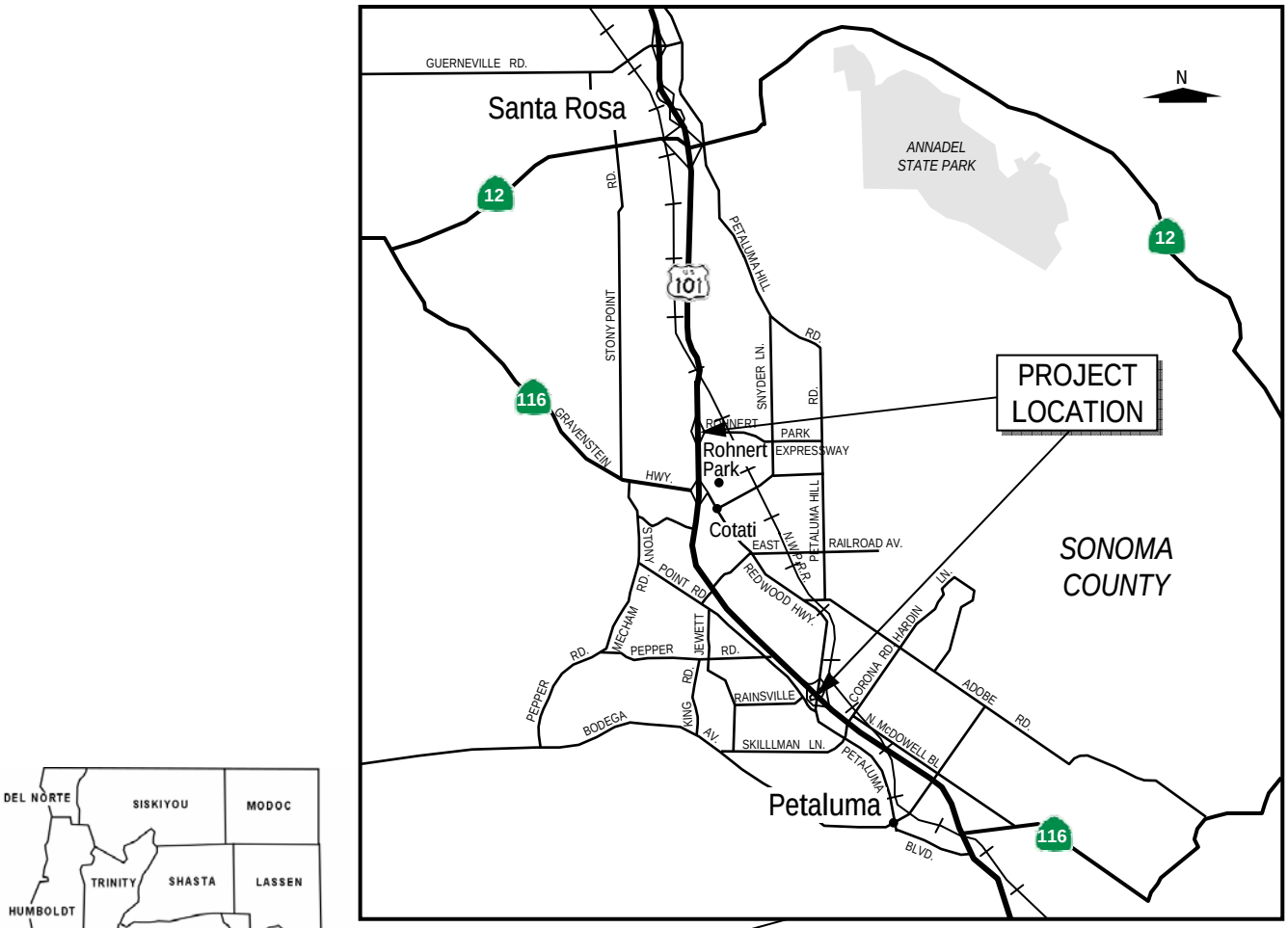
The project location and vicinity are shown in Figures 1.1-1 and 1.1-2. Figure 1.1-3 shows the present project in context of other constructed and planned components of the continuous Highway 101 HOV system in Marin and Sonoma counties.

1.2 Purpose of and Need for the Proposed Project

1.2.1 Purpose

The purpose of the proposed project is three-fold:

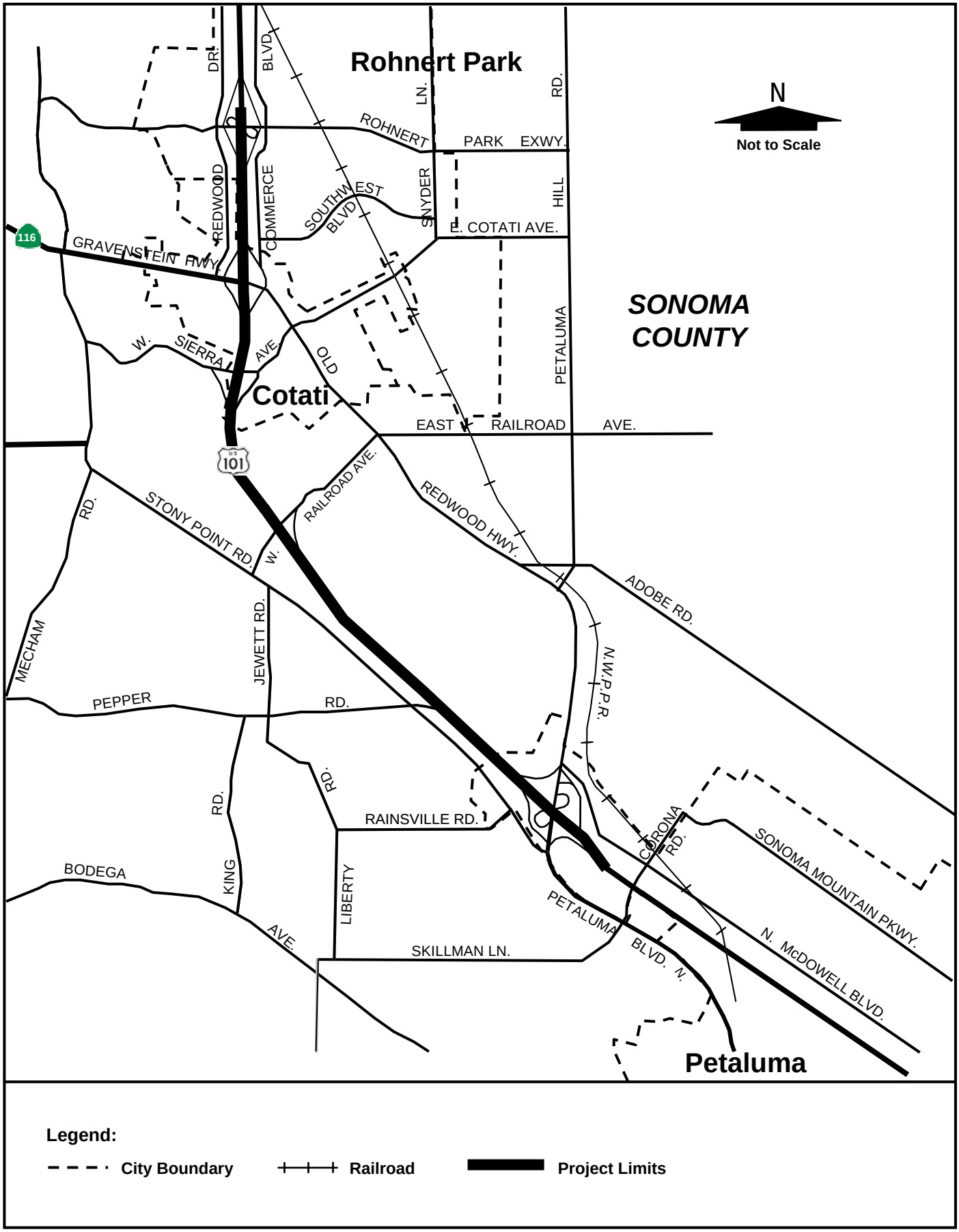
- *Address existing and future capacity constraints and increasing travel demand;*
- *Reduce travel times for users of the Highway 101 corridor; and*
- *Improve mainline traffic operations and on and off movements.*



S C T A

Highway 101 HOV Lane Widening Project:
Old Redwood Highway, Petaluma to
Rohnert Park Expressway, Rohnert Park

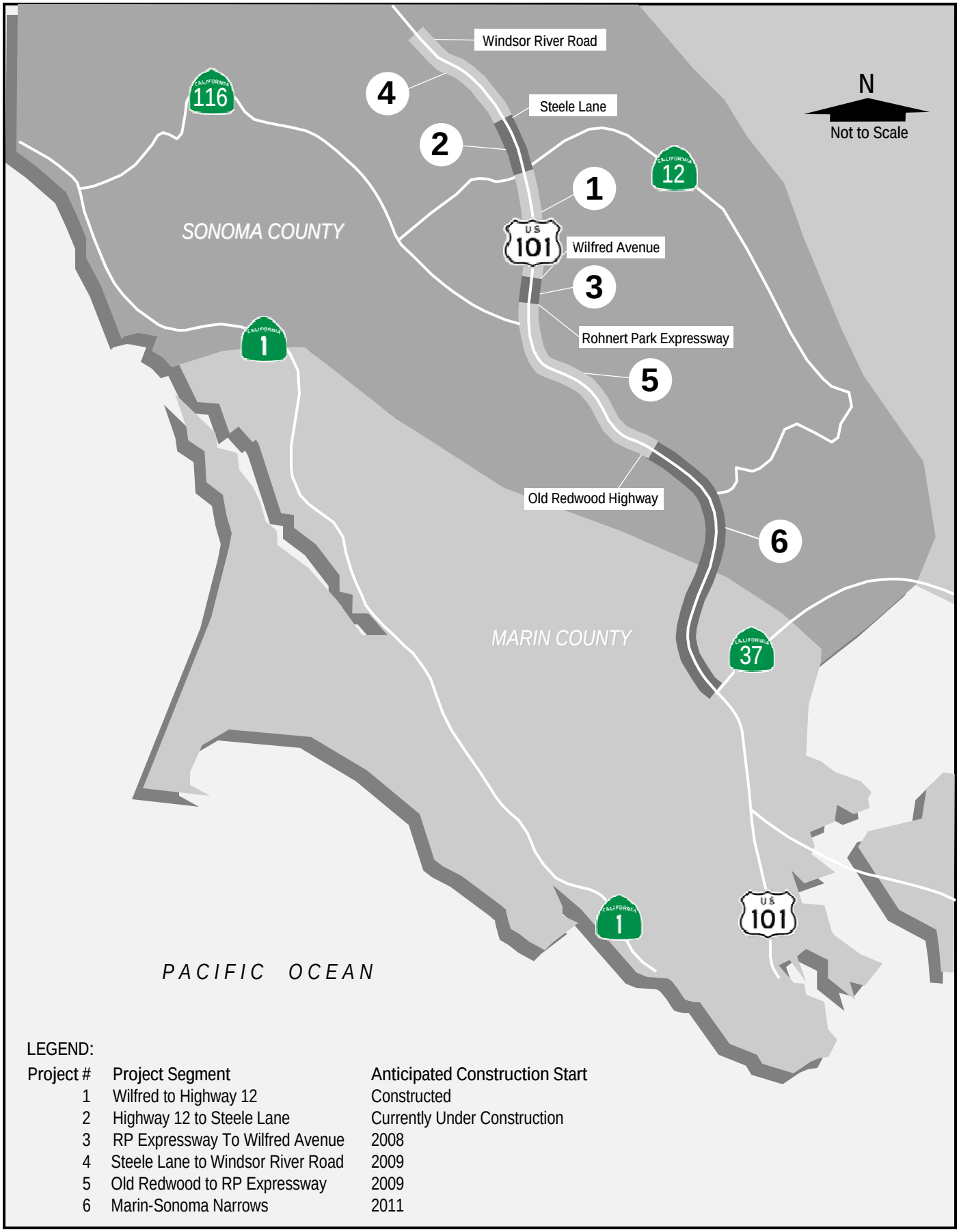
PROJECT LOCATION
Figure 1.1-1



S C T A

Highway 101 HOV Lane Widening Project: Old Redwood Highway, Petaluma to Rohnert Park Expressway, Rohnert Park

PROJECT VICINITY
Figure 1.1-2



LEGEND:

Project #	Project Segment	Anticipated Construction Start
1	Wilfred to Highway 12	Constructed
2	Highway 12 to Steele Lane	Currently Under Construction
3	RP Expressway To Wilfred Avenue	2008
4	Steele Lane to Windsor River Road	2009
5	Old Redwood to RP Expressway	2009
6	Marin-Sonoma Narrows	2011

SCTA

Highway 101 HOV Lane Widening Project: Old Redwood Highway, Petaluma to Rohnert Park Expressway, Rohnert Park

HIGHWAY 101 WIDENING AND IMPROVEMENTS PROJECTS
Figure 1.1-3

1.2.1.1 Address Existing and Future Capacity Constraints and Increasing Travel Demand

HOV lanes provide practical benefits to those who choose carpooling and transit over single-occupancy driving, including shorter travel times, less stress from challenging traffic, lower fuel costs, and less wear-and-tear on a personal vehicle. These benefits would act as incentives for commuters and other travelers to carpool and/or take advantage of local and express buses that would move freely on HOV lanes constructed by the project. HOV lanes also would support an increase in express bus service from Sonoma County to San Francisco, recommended in the 2002 HOV Lane Master Plan, to offer faster and more frequent peak-hour transit service for commuters between Sonoma County and downtown San Francisco.

Although the new HOV lanes would improve operations for both mixed-flow and HOV lane traffic, operational improvements would be better for HOV traffic, which would operate at or near free-flow speeds, even during peak hours. This would provide an incentive for motorists to form carpools and switch to the HOV lanes. Additional capacity provided by the HOV lane would reduce congestion in the mixed-flow lanes as well.

1.2.1.2 *Reduce Travel Times for Users of the Highway 101 Freeway System*

Congestion caused by insufficient capacity for current traffic volumes extends travel times for freeway users. HOV lanes encourage more efficient use of freeway capacity. The estimates in the 2006 Caltrans HOV Lane Report[1] indicate that Bay Area HOV lanes currently carry 30 percent of passengers in 17 percent of the vehicles. This increase in efficiency helps alleviate peak hour congestion in both HOV and mixed-flow lanes allowing faster transit through an area served by a freeway with HOV lanes.

1.2.1.3 *Improve Mainline Traffic Operations and On and Off Movements*

Caltrans and the Federal Highway Administration (FHWA) have developed standards for elements of highway design, such as roadway geometry, pavement composition, and drainage, through years of experience in the design, operation, and maintenance of roads. Design standards aim to offer high quality roadway facilities and ensure the safety of roadway users. *The goal is to increase highway mobility and safety in a manner that is compatible with, or enhances, adjacent community values and plans.*

Some aspects of the existing freeway were constructed to design standards that have now been superseded. These include narrow roadway shoulders, ramps without optimized acceleration and deceleration distances, the absence of auxiliary lanes that facilitate the weaving movements of traffic entering and exiting the freeway, and the absence of climbing lanes for slow-moving vehicles on long grades.

[1] *http://www.dot.ca.gov/dist4/highwayops/docs/2006report_hold.pdf*

1.2.2 Project Need

Caltrans developed the proposed project in response to identified needs. Meeting the project purpose outlined in the foregoing paragraphs would address the following related needs in the transportation corridor:

- *Roadway is unable to accommodate current demand; and*
- *Operational inefficiencies in existing roadway design are contributing to congestion.*

1.2.2.1 *Roadway Unable to Accommodate Current Demand*

Need for New Modal Options

Much of the growth in the Bay Area over the past 10 years has occurred in the region's suburbs, and not in the traditional central cities. Carpooling, vanpooling, and express bus services have become increasingly important to meeting the mobility needs of the region as the decentralization of population and employment has occurred. This dispersion of travel over greater numbers of origins and destinations has created significant new suburban freeway congestion and a need for more flexible modal options for meeting commute travel needs.

Highway 101 is a major north-south route that passes through five Bay Area counties — Sonoma, Marin, San Francisco, San Mateo, and Santa Clara. In Sonoma County, Highway 101 plays a vital role in intra-county connections and also connects the County with destinations throughout the greater Bay Area. The existing four-lane conventional highway does not meet current needs. Increasing traffic exceeding capacity on Highway 101, with annual average daily traffic (AADT) ranging from 94,000 to 103,000 vehicles in both directions, creates congestion that is commonplace during both the morning and evening peak periods. The difficulty for slow-moving vehicles of climbing the long Cotati Grade adds to mainline congestion in the northbound direction.

Travel Times

Currently, it can take up to 18 minutes to travel the 18.8 km (11.7 mi) through the traffic study area during peak periods; travel speeds are between 63 kph (39 mph) and 99 kph (61 mph). Future travel through the study area in 2030 without the proposed project is expected to take up to 25 minutes. *Mainline travel speeds are as low as 13 kph (eight mph) in the morning peak hour and 60 kph (37 mph) in the evening peak hour. Slow travel speeds and prolonged travel times attest to recurrent congestion and delay through the project limits. Without capacity and operational improvements, these conditions can be expected to worsen in the future.*

Travel Delay and Level of Service (LOS)

Prolonged travel times along Highway 101 within the project limits are the result of congestion-induced delay. Figure 1.2-1 illustrates the current delay within the traffic study area. While delays during the evening peak hour northbound are currently less than two minutes, delays southbound in the morning peak hour exceed seven minutes.

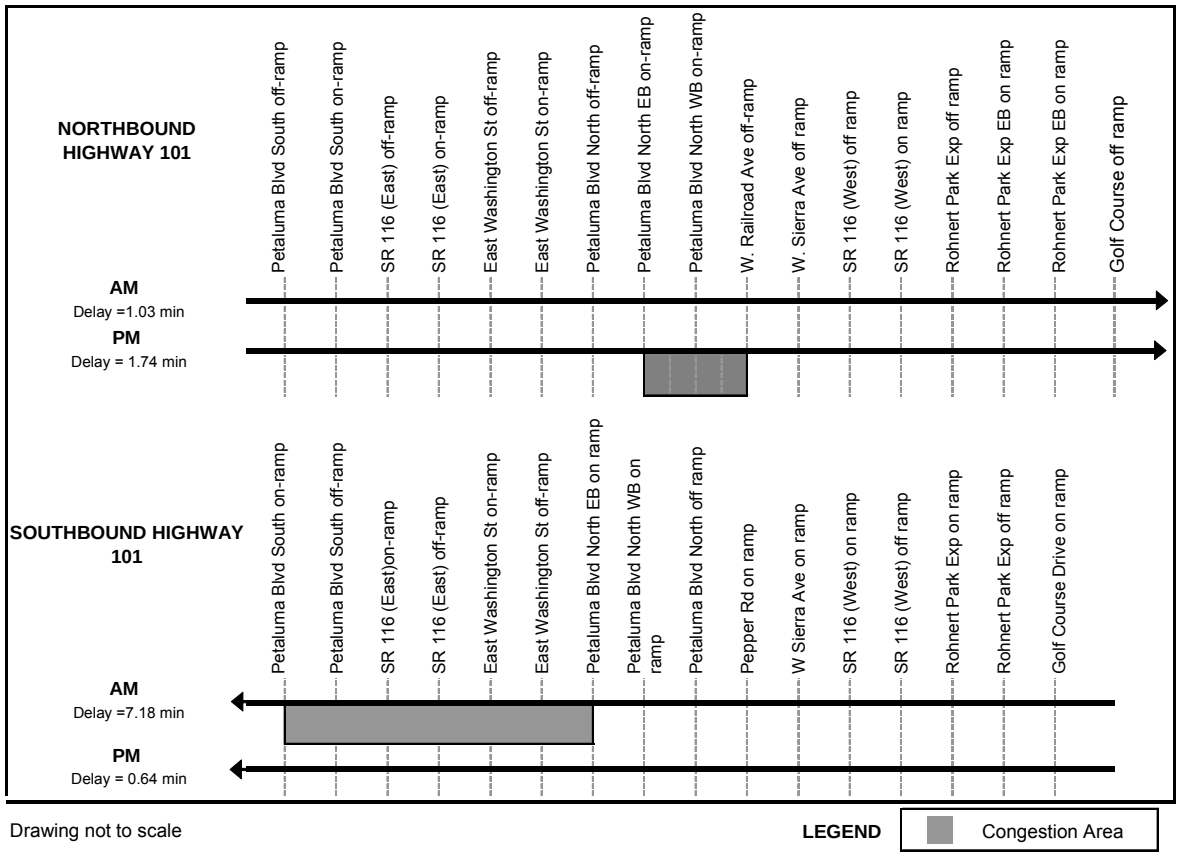


Figure 1.2-1: Highway 101–Total Delay and Locations of Extreme Traffic Congestion – Existing Conditions

Level of Service or LOS is a measure used to rate roadway facilities, based on their traffic conditions. Six levels of service are defined for each facility type, varying from LOS "A", which indicates that traffic flows freely, with little or no delay, to LOS "F", which indicates that traffic demand exceeds freeway capacity, generally resulting in long queues and delays. These LOS descriptors are based on the average vehicular density recorded for each freeway segment. As shown in Figure 1.2-1, congested conditions exist in the traffic study area northbound in the evening peak hour and southbound in the morning peak hour. Traffic operates at LOS E or LOS F in these congested segments.

Figure 1.2-2 shows the congested segments under the No-Build Alternative, which would operate at LOS E or worse in the year 2030. Within the project limits, users eligible for the HOV lane would also be subjected to these congested traffic conditions. These recurrent congested conditions and travel delays are expected to continue over time. Projections of 2030 peak-hour travel delay on Highway 101 through the traffic study area without the proposed project vary from *six* to 14 minutes, depending upon the direction and peak hour.

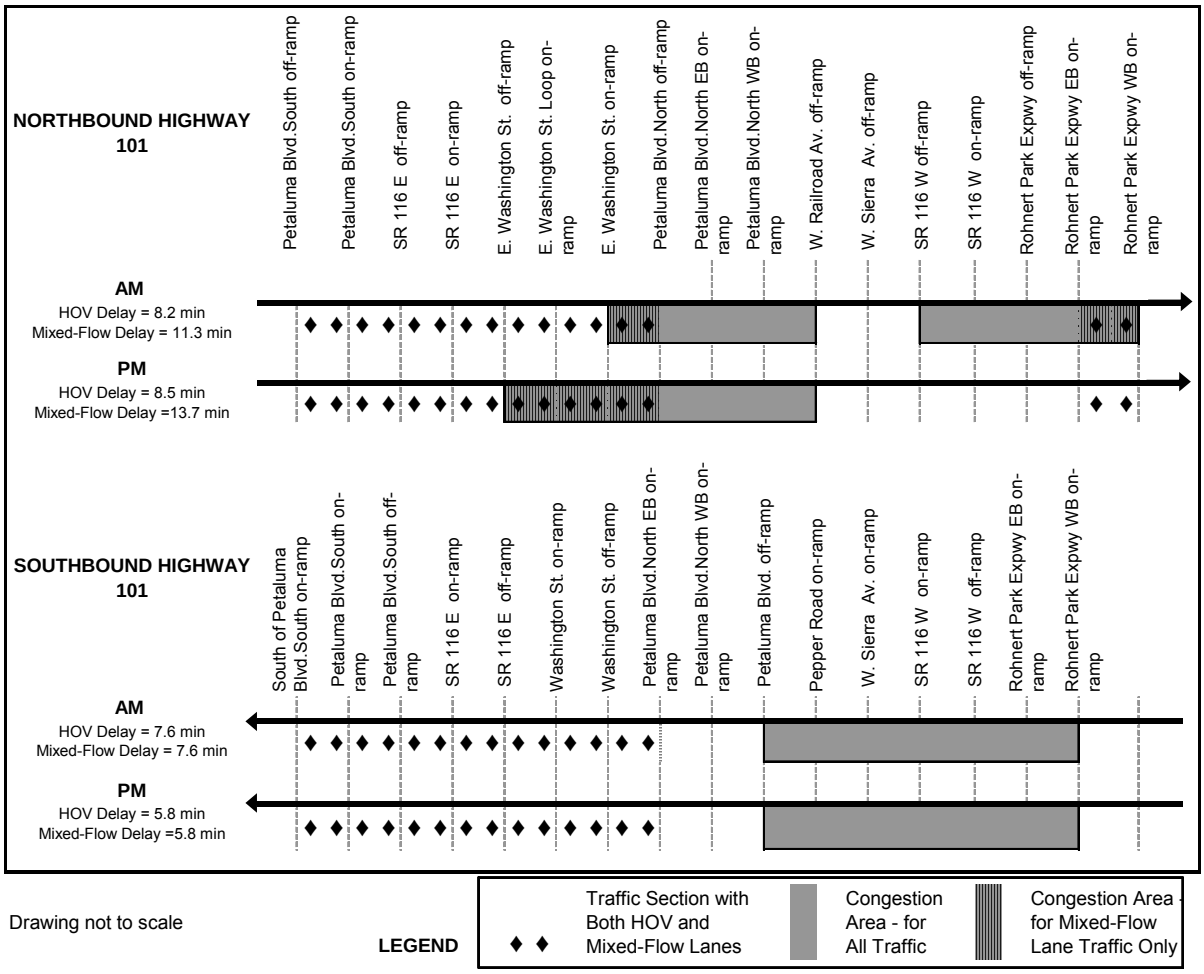


Figure 1.2-2: Highway 101–Total Delay and Locations of Traffic Congestion–2030 No-Build Conditions, Without HOV Lanes*

*HOV lanes shown outside the proposed project limits are those created by the projects described in Section 1.3.3, Related Projects.

1.2.2.2 Capacity Constraints

Highway capacity constraints add up to back-ups onto the ramps leading onto the freeway, and traffic congestion developing along the mainline. *Insufficient mainline capacity to accommodate current and projected 2030 forecast traffic volumes means that congestion would continue to develop along the freeway mainline.* Currently, southbound Highway 101 travel demand exceeds capacity from the Petaluma Boulevard North on-ramp to the Petaluma Boulevard South on-ramp during the morning peak hour. Capacity constraints also exist northbound during the evening peak hour in the vicinity of the Petaluma Boulevard North Interchange. These conditions are expected to exacerbate as travel demand increases over time.

The location of the worst capacity constraints and delays without the project in 2030 is expected to be from the East Washington Street on-ramp to the top of the Cotati Grade, which ends just before the West Sierra Avenue off-ramp.

The Highway 101 HOV system, which is expected to reduce congestion-related delays and indirectly increase capacity for mixed-flow through traffic, is currently discontinuous. Mainline traffic operations for commuters and tourists in Marin and Sonoma counties would not be expected to improve without improved access to HOV lanes that cover longer distances between destination cities. Without continuous HOV lanes, substantial improvements in travel times for intercity buses and carpooling commuters would be unlikely.

1.2.2.*2* *Operational Inefficiencies in Existing Roadway Design are Contributing to Congestion*

Some of the existing features of Highway 101 do not meet current design standards. *Other existing deficiencies are operational, inasmuch as they contribute to inefficient traffic movements.*

Existing facility deficiencies include the following:

- *varying shoulder widths, mostly nonstandard, with outside shoulders ranging from 2.4 m (8 ft) to nearly 3.0 m (10 ft);*
- *ramps providing less than desirable acceleration, deceleration, and sight distances; nonstandard merge tapers;*
- *nonstandard vertical sight distance (the length of highway that a driver can see ahead of the vehicle) in the vicinity of Railroad Avenue and through SR 116 (Gravenstein Highway) interchange; and*
- *nonstandard vertical clearance over SR 116.*

Operational deficiencies include difficult weaving movements for traffic entering and exiting the freeway between SR 116 and Rohnert Park Expressway, and mainline congestion caused by slow-moving vehicles traveling up the long Cotati Grade.

1.3 Project Background

1.3.1 Project History

Highway 101 was constructed between 1948 and 1968 as a four-lane mixed-flow highway, with the expectation that a third lane would be added in each direction in the 1970s. In actuality, the first

Highway 101 widening project did not begin construction until April 2001[2], even though traffic had increased from 15,000 cars per day in 1958 to over 120,000 in the year 2000.[3]

Numerous studies, listed in Table 1.3.1-1, have recommended capacity improvements to Highway 101 through Sonoma County. The *Route 101 Route Concept Report* (Caltrans 1986) recommended that a continuous HOV system be developed from San Francisco to Santa Rosa. Phase II of the *101 Corridor Study* (Barton-Aschman Associates 1989) introduced a strategic transportation plan that included widening Highway 101 for HOV lanes from Mill Valley to Windsor with increased bus and ferry service. The *Sonoma/Marin Multi-Modal Transportation and Land Use Study* (Calthorpe et al. 1997) proposed a passenger rail service with complementary regional and feeder bus service and supporting HOV lanes. (The environmental process for the Sonoma-Marin Area Rail Transit [SMART] project began in November 2002.)

The *1998 Interregional Transportation Strategic Plan (ITSP)* (Caltrans 1998) designated Highway 101 as a Focus Route on the Interregional Road System (IRRS). Focus Routes are assigned highest priority for completion to minimum facility standards within the 20-year plan period. Focus Routes are included in the National Highway System as a network of primary arteries for interregional trips and access to other states. The plan recommended a four- to ten-lane freeway for U.S. 101 from San Francisco to Cloverdale.

In 2001, a Caltrans Transportation Corridor Concept Report for Highway 101 North reported that Highway 101 did not have sufficient capacity to carry either current or forecasted traffic demand.[4] Specifically, the report noted northbound back-ups between Atherton Avenue and SR 116 East and from SR 116 West to SR 12. In 2003, the Metropolitan Transportation Commission (MTC) issued its *High-Occupancy Vehicle Lane Master Plan Update for the San Francisco Bay Area* (DKS Associates 2003). This plan recommended HOV lanes on Highway 101 in Sonoma County between Windsor and Novato where the lanes would connect with existing HOV lanes to San Rafael. The plan put a high priority on increasing express bus service that would use the Highway 101 HOV lanes to move peak-hour long distance commuters from Sonoma County to downtown San Francisco. The plan recommends an express bus station near the northern limit of the proposed project at Rohnert Park Expressway.

In June 2004, SCTA issued its *Comprehensive Transportation Plan for Sonoma County*. The plan outlines three steps to reduce congestion on Highway 101: increase capacity, improve flow, and reduce the number of cars. To increase capacity, the plan specifies adding HOV lanes to widen the highway from four to six lanes. Auxiliary lanes, interchange improvements, and ramp metering were identified as components of flow improvement. Recommended measures to reduce the number of cars included ridesharing, telecommuting, and staggered work schedules.

[2] HOV lanes on Highway 101 from Wilfred Avenue in Rohnert Park to Highway 12 in Santa Rosa were opened to traffic in November 2002, providing the first HOV lanes in Sonoma County and the first complete segment of the continuous HOV system to Windsor.

[3] Correspondence. Mike Kerns, SCTA, to Jeff Morales, Caltrans, October 26, 2001.

[4] Transportation Corridor Concept Report (TCCR) with Traffic Operations Strategies (TOPS) #1: U.S. 101 North, Golden Gate Bridge to Sonoma/Mendocino County Line, Caltrans, Fall 2001.

The Draft Environmental Assessment/Environmental Impact Report was circulated in August 2006 and was available for public review for 45 days. A public hearing was held on August 22, 2006 at Cotati City Hall.

Table 1.3.1-1: Related Studies

Title	Agency and Date	Summary
Route Concept Report, Route 101	Caltrans 1986	This report recommended HOV lanes connecting Santa Rosa to San Francisco to alleviate congestion associated with anticipated growth.
101 Corridor Study, Phase II, Strategic Transportation Plan	101 Corridor Action Committee, 1989	Includes widening 101 as one element of a balanced transportation plan for the corridor. Recommends one new traffic lane in each direction for HOV use from Petaluma to Windsor during peak hours.
Sonoma-Marin Multimodal Transportation and Land Use Study	Calthorpe Associates, et al. 1997	Proposes HOV lanes along some segments of the 101 corridor as supporting elements in a multimodal transportation solution.
1998 Interregional Transportation Strategic Plan (ITSP)	Caltrans 1998	Recommends completing Highway 101 as a 4- to 10-lane freeway at minimum from San Francisco to Cloverdale by the year 2018.
Transportation Corridor Concept Report (TCCR) With Traffic Operations Strategies (TOPS): U.S. 101 North	Caltrans 2001	Identifies the establishment and/or extension of the mainline HOV system in Sonoma County as a near-term operational strategy for transportation improvements in the 101 corridor.
Marin-Sonoma Express Bus Study	GGBHTD/MTC 2002	The study focused on how express buses should fit into the overall multi-modal transportation system for the North Bay over the next 20 years. Four different strategies for implementing express bus service from Sonoma County to Marin County to complement the proposed rail service were evaluated in terms of new daily riders over and above measures of existing express performance. The preferred strategy recommended implementation of one strategy as an interim service until the HOV lanes on Highway 101 are completed between Novato and Petaluma and then implementation of another refined strategy. Key components of the interim strategy include extending the existing Golden Gate Transit Route 101 into Sonoma County; enhancing service, and doubling existing peak hour direction express bus service.
2002 HOV Lane Master Plan Update	MTC 2003	Prepared in conjunction with Caltrans and the California Highway Patrol, this plan recommends HOV lanes on Highway 101 in Sonoma County between Windsor and Novato with complementary express bus service to downtown San Francisco.
Comprehensive Transportation Plan	SCTA 2004	Includes highway widening to six lanes as one of three measures necessary to reduce congestion on Highway 101. Other steps are flow improvements and reduction of traffic volumes.
Regional Express Bus Study	Caltrans/MTC 2005	Study results not yet available.

1.3.2 Funding and Programming

The main source of project funding would be the State Transportation Improvement Plan (STIP), *Proposed Corridor Mobility Improvement Account (CMIA) funding available through Proposition 1B, approved by voters in November 2006* and the Sonoma County sales tax measure, Measure M, also known as the Traffic Relief Act for Sonoma County. Measure M, a 20-year, ¼ cent sales tax dedicated to transportation, was passed by the voters in Sonoma County in November 2004. The Expenditure Plan for the measure specifies that 40 percent of the funds collected will be spent on Highway 101 improvements. Federal and state funding sources are described in the Regional Transportation Plan (RTP) and Regional Transportation Improvement Program (RTIP). The Highway 101 HOV Lane Widening Project is included in the financially constrained portion of the 2006 RTIP, which draws its projects from the RTP. The SCTA is considering the use of Grant Anticipation Revenue Vehicle (GARVEE) bonds to help advance the construction of projects on Highway 101, but it has not yet been determined which projects will be included in a GARVEE issuance. Table 1.3.2-1 presents the funding breakdown. Total costs for the project are estimated to be $164.6 million for Option A and $178.3 million for Option B in 2007 dollars.

Table 1.3.2-1: Funding for Highway 101 Improvements– Old Redwood Highway to Rohnert Park Expressway

Funding Source	Amount
RTIP	*$46.4 million*
Proposition 1B	*$42.8 million*
Measure M Sales Tax (Traffic Relief Act for Sonoma County)	*$27.5 million*
Future STIP (State and Federal Gas Tax)/GARVEE	$*47.9-61.6* million
Total Funding	$*164.6*–*178.3* million

1.3.3 Related Projects

Highway 101 through Marin and Sonoma counties has been the focus of major planning efforts, including the *101 Corridor Study, the Sonoma/Marin Multimodal Transportation and Land Use Study (Calthorpe Study)*, and the *Sonoma-Marin Area Rail Transit Commission Study*, that present solutions for solving the transportation problems in these counties. Projects that are proposed as a result of these efforts are listed in this section.

1.3.3.1 Highway 101 HOV Lane Widening and Improvements Projects

The proposed project is one of five Highway 101 HOV Lane projects that are currently proposed or under construction in Sonoma County. Together, these projects complete the Sonoma County portion of continuous Highway 101 HOV lanes from Mill Valley in Marin County to Windsor in Sonoma County (see Figure 1.1-3). The Marin County portion of this HOV system is complete from Mill Valley to SR 37 in Novato with the exception of the Marin 101 HOV Lane Gap Closure Project, which is currently under construction. Part of the Sonoma County portion of the HOV lane system, from Wilfred Avenue to Highway 12, has also been completed. The other four projects for Sonoma County are the following:

Highway 12 to Steele Lane and Steele Lane Interchange Improvements

This project will add HOV lanes, ramp improvements, and auxiliary lanes on Highway 101 between Highway 12 and Steele Lane. Further improvements include new structures, replacement and improvement of existing structures, soundwall construction and relocation, and modification to the surrounding local street network to improve local circulation and access. The Final EA/EIR for this project was approved in December 2003. The mainline and interchange improvements are currently under construction. Project completion is estimated to occur in Fall 2008.

Rohnert Park Expressway to Santa Rosa Avenue, including the Wilfred Avenue Interchange

This HOV Lane project would provide auxiliary lanes between the Rohnert Park Expressway and Santa Rosa Avenue Interchanges and construct ramp improvements. Local street networks would be modified to improve access and circulation. Environmental approval for this project *occurred* in 2006, with construction *anticipated to* begin in 2008.

Steele Lane to Windsor River Road

This HOV Lane Project would include construction of HOV lanes, auxiliary lanes, and ramp improvements, and reconstruct the Fulton Road−Airport Boulevard Interchange Complex. Environmental approval is anticipated in 2007, with construction beginning in 2009.

Marin-Sonoma Narrows

This HOV Lane Project would upgrade the "Novato Narrows" section of Highway 101 to freeway, providing interchanges and frontage roads to replace at-grade intersections and driveways, and make ramp improvements. Environmental approval is anticipated in 2008; phased construction would begin in 2011.

1.3.3.2 Sonoma-Marin Area Rail Transit (SMART)

This commuter rail project develops an existing publicly-owned rail corridor along the 101 corridor from Cloverdale to San Rafael, a distance of approximately 70 miles. The project would include 14 rail stations − nine in Sonoma County. The Rohnert Park and Cotati stations would connect rail passengers to bus services that would take advantage of the HOV lanes constructed under the HOV Lane Widening Project from Steele Lane to Windsor River Road. The Sonoma-Marin Area Rail Transit (SMART) project is sponsored by the SMART District. The District Board is made up of two supervisors and three city council members from Sonoma and Marin counties and two representatives from the Golden Gate Bridge, Highway, and Transportation District. The environmental process for the SMART project began in November 2002. Rail service is anticipated to begin in 2009. The environmental document was *issued for public review* in November 2005.