DRAFT
July 2016

MOVING FORWARD 2040

Sonoma County's Comprehensive Transportation Plan

SONOMA COUNTY TRANSPORTATION AUTHORITY
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EXECUTIVE SUMMARY

OVERVIEW

Moving Forward 2040 is a 25-year plan that takes the long view on transportation. The Plan — also known as the Comprehensive Transportation plan or CTP — serves as the vision for transportation throughout Sonoma County, with aspirational goals for the transportation system, as well as, the well-being of the communities.

With assistance and insight from our advisory committees, the Sonoma County Transportation Authority (SCTA) takes stock of the current conditions, analyzes trends, sets goals and coordinates with the nine cities and the County to determine needs.

The CTP highlights the challenge in meeting the plan goals (below). Current trends in population and employment threaten to stress our already aged transportation system to new levels and presents serious obstacles to reaching our goals.

While the Vision Scenario represents a path to address these challenges, it will require significant new funding, plus new and innovative partnerships and prioritization at every level of government. The funded projects listed in the Plan have important local benefits and show progress, but are limited in scope – especially given the changing economy and shifts in regional, state and national transportation funding.

The CTP shows that it's possible to meet these goals, but only with a significant coordinated effort using resources that are beyond SCTA control. While the SCTA will continue to advocate for more investment and forward thinking policies at the regional, state and national level, an important next step is to refine our priorities for the limited resources under local control (including Measure M, other local funds and planning efforts to advance the solutions we need).

Goals

The CTP has five ambitious goals, with the fifth goal on Economic Vitality added this year:

Goal 1. Maintain the System Objective: Protect the investment in public transportation infrastructure

Goal 2. Relieve Traffic Congestion Objective: Reduce person hours of delay through strategic improvements, technology and changes in driving habits

Goal 3. Reduce Greenhouse Gas Emissions Objective: Meet the targets to reduce GHG emissions in the transportation sector

Goal 4. Planning for Safety and Health Objective: Increase safety and emphasize health aspects of transportation planning strategies

Goal 5. Promote Economic Vitality Objective: Reduce travel time and cost and increase mobility in communities of concern

WORKING TOGETHER

The SCTA is governed by a twelve-member Board of Directors representing each of the nine cities - Cloverdale, Cotati, Healdsburg, Petaluma, Rohnert Park, Santa Rosa, Sebastopol, Sonoma and Windsor - and the Sonoma County Board of Supervisors. In addition to working closely with these ten jurisdictions, the SCTA coordinates regionally with the Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG) to produce the Sustainable Communities Strategy – also known as Plan Bay Area. The local CTP helps inform Plan Bay Area, documenting our needs and goals.

The CTP complements a number of other countywide planning documents that help to define a better future for Sonoma County and how it might be achieved. These include:

- Climate Action 2020 and Beyond
- Portrait of Sonoma County
- Regional Equity and Housing Plans

CHALLENGES

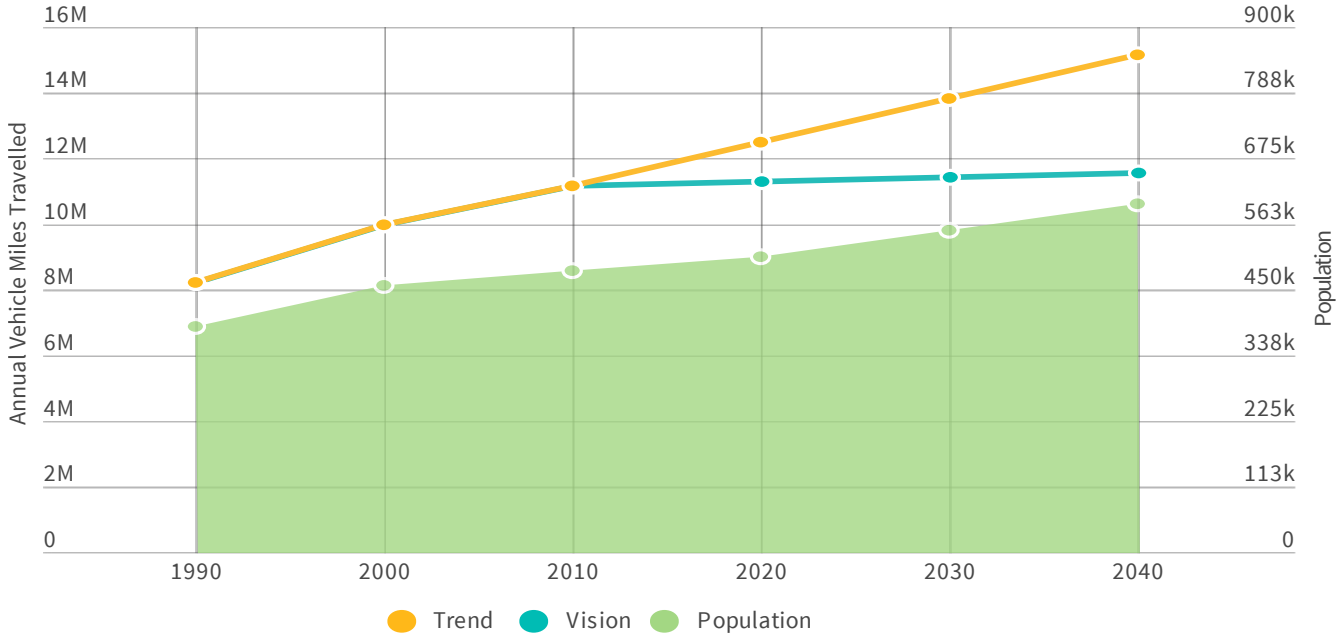
Over the next 25 years Sonoma County will face many challenges in transportation. Some of these are familiar, such as equity and funding. Addressing other issues, such as climate change, will push us to meet significant greenhouse gas (GHG) reductions goals and plan for infrastructure at risk of sea level rise in ways that are new to transportation planning.

Population Growth

The forecasted growth in population and the economy over the next 25 years is one of the main challenges facing Sonoma County when it comes to meeting our goals. The Sonoma County population is predicted to grow at a rate of 23 percent by 2040 (from 483,878 residents in 2010 to 598,460 in 2040). Employment is predicted to grow at an even greater rate (34 percent) from 192,010 in 2010 to 257,450 in 2040.

Population and employment growth have a significant impact on total travel in Sonoma County. The additional people, new jobs and destinations that attract employees are expected to increase countywide travel by more than one third by 2040 (36 percent increase in daily vehicle miles travelled by 2040).

FIGURE ES-1 Projected Sonoma County Growth Trends in Population and Annual Vehicle Miles Traveled



Climate Change

In Sonoma County the transportation sector contributes over half of all GHG emissions. Transportation GHG emissions are a factor of total travel of vehicles, speed of travel, and characteristics of the vehicle fleet. Emissions from this sector could be reduced by reducing the amount of travel, lowering travel speeds, and improving the efficiency of the vehicle fleet. Transportation related GHG emissions in Sonoma County have steadily increased since 1990.

Rising GHG emissions and their impact on the climate could negatively impact countywide transportation infrastructure, quality of life, the economy, and accessibility. More frequent and intense storms and sea level rise could accelerate roadway deterioration, cause transportation facilities to close completely, and increase congestion because of temporary closures. Sonoma County jurisdictions have committed to facing this challenge head on

and have made significant progress towards reducing countywide GHG emissions from the transportation and other sectors.

Equity

State, regional, and local planning efforts have focused on addressing transportation equity in recent years. These efforts have identified geographic concentrations of socioeconomically disadvantaged or vulnerable populations and have highlighted transportation issues facing these populations. These areas are also identified by the MTC as "Communities of Concern" (CoC). CoCs have special mobility needs associated with access to reliable transportation, proximity to pollutants, and safety.

In Sonoma County these areas are currently defined as census block groups in which 30 percent or more of families have incomes between 0 – 200 percent of the federal poverty level or $21,660 - $74,020 total household income depending on family size. CoCs have been used to prioritize funding in an effort to improve conditions in disadvantaged areas. The 2014 Portrait of Sonoma County provides an in-depth look at living conditions in Sonoma County based on life expectancy, education and income.

Geography

Sonoma County covers a large geographic area of over 1,750 square miles yet has a population of less than 500,000 people. There are more lane miles per capita in the county than any other county in the Bay Area. This combination provides for important open spaces and recreational opportunities but it also directly impacts funding for transportation investments, such as road maintenance and transit operations. Transit also faces an extra challenge to provide service over such a large area.

Funding

Transportation funding comes in various forms from different levels of government and with varied timing. Most of these sources have uncertain futures and thus leave transportation systems at risk. Sonoma County voters took matters into their own hands in 2004 and approved Measure M with more than 2/3rds support and this has been an important local source of funding, providing communities with leverage to focus on important projects and match more significant funding sources.

Transportation funding in Sonoma County and throughout the U.S. comes primarily from federal, state, regional and local sources; however, investments made at the state and federal levels have declined, putting more emphasis on local sources. Funding projections for Plan Bay Area 2040, made by MTC in October 2015, are lower than previous projections. MTC estimates that local sources will provide for over half of the anticipated revenues for the region, as we see more local measures approved and federal and state funds decrease 25 percent from the last regional plan.

Federal transportation funding grants are increasingly competitive. As an example, the Federal Department of Transportation received 627 eligible applications from all 50 states and several U.S. territories, and tribal governments, requesting $10.1 billion for needed transportation projects – more than 20 times the $500M available for the program.[1,2]

1 The program referenced is the Transportation Investment Generating Economic Recovery (TIGER) competitive grant program.
2 U.S. Department of Transportation, U.S. Transportation Secretary Foxx Announces $500 Million in TIGER Grants Awarded to 39 Projects, 2015 <https://www.transportation.gov/briefing-room/secretary-foxx-announces-500-million-in-39-tiger-grants, accessed June 17, 2016>.

PERFORMANCE

The plan includes a list of significant proposed transportation projects that address the CTP goals and identified needs. Individual performance measures were first identified for each of the CTP goals. Then a deeper assessment of individual transportation projects, policies, technologies, and strategies was included to show how different projects or approaches help Sonoma County move closer towards meeting performance targets and achieving the goals.

Information gathered as part of this assessment has been used to assemble a future scenario, or vision, which meets most of the plan's performance targets. A few of the performance targets have been difficult to meet because of limitations in the tools used to assess performance.

Table ES-1 Projects included in Moving Forward 2040

Project type	Number of projects	Cost in $M
Bike/Walk	93	$478.41
Bridges	5	$97.00
Roads and Highways	107	$2,081.81
Safe Routes to Schools	1	$26.75
Transit	33	$1,712.78
Totals	239	$4,396.75

VISION

Analyzing proposed CTP projects suggests that countywide CTP goals and performance targets cannot be achieved by building projects alone. In order to achieve our goals, Sonoma County residents will need to change how they travel including how far and how often they make trips, what travel modes they use, and how efficiently they travel.

The CTP performance assessment has identified that the following approaches will help achieve plan goals and performance targets:

- Secure additional funding for road, highway, and transit in order to repair and maintain the existing road and transit systems.
- Secure additional transit funding to pay for transit expansion and to improve the average age of the transit fleet.
- Secure funds to build select transportation projects to reduce congestion, emissions, improve health and safety, and to improve the economy.
- Increase transit service.
- Continue current emphasis on PDA focused and city-centered growth.
- Implement trip reduction strategies.
- Fill vacant capacity on the transit system by making transit more convenient, less expensive, faster, and more attractive.
- Shift four percent of total daily trips from single occupant vehicles to pedestrian or bike travel.
- Implement system efficiency improvements.
- Improve the average vehicle fleet fuel economy.

IMPLEMENTING THE PLAN

The SCTA performs several key roles that support implementation of the CTP goals in collaboration with the ten jurisdictions in Sonoma County (Cloverdale, Cotati, Healdsburg, Petaluma, Rohnert Park, Santa Rosa, Sebastopol, Sonoma, Windsor and the County of Sonoma). Specific implementation tasks fall under several broad SCTA roles:

- Plan and prioritize transportation improvement projects at a countywide level
- Manage Measure M funds
- Prioritize most state and federal funds availabl for roadway, transit, bicycle and pedestrian projects
- Provide project management in partnership with Caltrans on the State Highway system

FIGURE ES-2 Components for meeting Plan's 2040 Goals

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CHAPTER 1

INTRODUCTION

SONOMA COUNTY TRANSPORTATION AUTHORITY

The Sonoma County Transportation Authority (SCTA) serves as the coordinating and advocacy agency for transportation funding for Sonoma County. Proposition 111, approved in California in 1990, resulted in changes to the way transportation projects are planned and funded and authorized the creation of Congestion Management Agencies. In November 1990, the SCTA was formed under the Local Transportation Authority and Improvement Act (Public Utilities Code Section 180000) and designated as the Congestion Management Agency (CMA) for Sonoma County. In 1997, the SCTA relinquished its position as the CMA under new state legislation that made this function optional but still carries out the general functions of a CMA.

SCTA Mission Statement

As a collaborative agency of the cities and County of Sonoma, we work together to maintain and improve our transportation network. We do so by prioritizing, coordinating, and maximizing the funding available to us and by providing comprehensive, countywide planning. Our deliberations and decisions recognize the diverse needs within our county and the environmental and economic aspects of transportation planning.

The SCTA is governed by a twelve member Board of Directors. Nine of these members are chosen from the Councils of the nine incorporated cities or towns, the remaining three are chosen from the County Board of Supervisors. Officers are elected annually. The SCTA holds monthly public meetings of the Board of Directors.

The SCTA acts as the countywide planning and programming agency for transportation related issues. The SCTA plays a leading role in transportation by securing funds, providing project oversight, and initiating long term planning.

The SCTA has legal and administrative requirements to fulfill in the capacity of a countywide transportation agency — some of these requirements are derived from regional agencies such as the Metropolitan Transportation Commission (MTC) and the Bay Area Air Quality Management District (BAAQMD), while others, come directly from the state, or federal government.

Regional Participation

The SCTA plays an important role in the San Francisco Bay Region. Members of the SCTA serve in leadership positions on the governing boards of regional transportation and housing agencies, multicounty transit agencies, and agencies protecting air quality and the San Francisco Bay. Through these leadership positions, SCTA members are able to protect and advocate for Sonoma County needs and interests in the region.

Staff meets routinely with the Department of Transportation (Caltrans), and multiple regional agencies. The routine updating of Plan Bay Area and the regional Sustainable Communities Strategy authored by MTC, ABAG, the San Francisco Bay Conservation and Development Commission (BCDC) and the Bay Area Air Quality Management District (BAAQMD) is ongoing, with work on the future plan and implementation beginning after each plan adoption. The scope of regional planning efforts continue to expand beyond transportation issues and now encompass diverse issues such as land use planning, growth management, environmental issues, and equity.

SCTA staff are also engaged in many other regional activities and participate with colleagues and transportation experts across the region to stay current on funding programs, technical analysis and data collection, and upcoming funding opportunities.

Local Coordination

The following standing committees advise and give input on various issues and convey information to the SCTA:

- Technical Advisory Committee (TAC)
- Citizens Advisory Committee (CAC)
- Countywide Bicycle and Pedestrian Advisory Committee (CBPAC)
- Transit and Paratransit Coordinating Committee (TPCC)

The primary function of the TAC is to advise the SCTA on all technical matters. It is composed of public works directors, planning directors, and transit operators from each jurisdiction in Sonoma County. Representatives from Caltrans, BAAQMD, MTC, the North Coast Air Quality District, and the Golden Gate Bridge, Highway, and Transportation District also participate in the TAC and provide a regional voice on the committee.

Planning Directors and Transit Operators are also represented in TAC subcommittees. The Planning Advisory Committee and the Transit TAC meet on an ongoing basis to discuss specific issues and share information on local planning activities and transit.

The CAC is composed of community stakeholders and five members of the public at large, appointed from each supervisorial district. The primary function of the CAC is to oversee implementation of Measure M by reviewing projects, policy decisions, funding programs, and any other policy matter acted on by the SCTA. The CAC provides input and recommendations for the SCTA's decision making process and has been active in promoting Countywide planning, including the development of this Comprehensive Transportation Plan document.

The CBPAC was formed in July 1993 in response to MTC Resolution No. 875. The CBPAC advises the SCTA on programming decisions for bicycle funds and aides in project coordination of bicycle and pedestrian projects. The CBPAC developed a Countywide Bicycle and Pedestrian Master Plan that is available on line at scta.ca.gov.

The TPCC is composed of the following individuals: one potential transit user over 60 years of age, one disabled individual, one representative from the Hispanic community, two representatives from local social service providers for seniors, two representatives from social service providers for disabled persons, one representative from each fixed route public transit operator within the county, and one representative from a local transportation agency. Each City or Town Council may also appoint one representative to the committee. The TPCC advises the SCTA on funding decisions associated with paratransit and transit programs throughout the county. The TPCC is responsible for making recommendations for allocating funds to local transit operators.

Project Delivery

The SCTA has delivered hundreds of projects totaling billions of dollars. For over a decade, the SCTA has been working toward completion of a High Occupancy Vehicle (HOV) lane on Highway 101 in each direction from Novato north to Windsor. In so doing, the freeway improvements have been divided into six major projects, with some of those projects being further divided into phases to expedite construction. Five of the six projects are now open to drivers and the sixth — the Marin/Sonoma Narrows — is underway with five out of thirteen phases left to complete.

Road maintenance continues to be a major priority in Sonoma County. The CTP estimates that it will cost $2 billion to improve the condition of the 2,300 miles streets and roads in Sonoma County and to keep them maintained into the future.

Transportation improvement programs including the Safe Routes to Schools, Ride Share, Car Share, and Bike Share programs have been successfully completed or are ongoing projects.

Ten Years of Measure M — Traffic Relief Act for Sonoma County

Passed by the voters in November 2004, the Traffic Relief Act for Sonoma County (Measure M) provides direct funding for multi-modal transportation throughout the county. Measure M assesses a ¼ cent sales tax which is used to maintain local streets, fix potholes, widen Highway 101, improve interchanges, enhance and improve transit service, and build safe bicycle and pedestrian routes. The funds are dedicated to the specific programs and projects that were identified in the Measure with further guidance from the Measure M Strategic Plan.

Measure M provides Sonoma County and its nine cities with a reliable fund source for on-going local street maintenance and public transit operations.

In the first ten years of the Measure, SCTA has implemented the Measure M Expenditure Plan and the traveling public is seeing the multi-modal improvements envisioned in the Traffic Relief Act for Sonoma County. Funding to Local Street Rehabilitation and Local Bus Transit programs has allowed for contributions to overall maintenance of our local roadways, as well as ensured quality bus transit. Measure M funding for road maintenance and bus service leveraged over $3M in Proposition 1B, State and Local Partnership Program funding.

The Highway 101 Program has been a significant success for Measure M. Local funds have leveraged an estimated $572M of other funding for Highway 101. Bonding was critical to the leveraging of funds and has allowed SCTA to advance projects during a positive construction bidding climate.

Measure M has also helped to deliver Bicycle and Pedestrian projects and has assisted in the delivery of Local Street Projects as well as the SMART train. The first ten years included completion of significant capital improvements such as Old Redwood Highway Interchange and Airport Blvd Interchange and bike and pedestrian projects such as Street Smart Sebastopol and Copeland Creek Trail. Measure M funding for the Local Street and Bike & Pedestrian programs leveraged over $120M in other funds.

MOVING FORWARD 2040

Moving Forward 2040 — the Comprehensive Transportation Plan tells the story of Sonoma County's transportation system. The plan examines the current state of transportation in the county, and looks at future needs and goals and provides information on how these needs and goals can be met. The CTP is updated frequently enough to ensure that the plan is still relevant, useful, and represents the current transportation needs and goals of SCTA and Sonoma County Jurisdictions. The previous CTP was completed in 2009 and it is estimated that the CTP will be updated again in 2020.

The importance of maintaining an updated planning document is two-fold. First, MTC requires local Transportation Authorities such as the SCTA to establish transportation plans that can feed into the larger Regional Transportation Plan (RTP). The RTP is a federally required, long range planning document that is now called Plan Bay Area. Second, the SCTA is responsible for programming,[1] or allocating, numerous state and federal funding sources to transportation projects. In order to meet these requirements, the SCTA needs a policy and planning document to help guide the programming process. If the SCTA does not meet these two requirements it is at risk of losing critical transportation dollars.

New Initiatives

Since the last CTP update the SCTA has implemented major initiatives that bolster long range planning and foster project delivery.

Enhanced Performance Analysis

In this CTP the SCTA measures progress made in reaching the Plan Goals. Transportation projects and programs, policies and broad land use scenarios were assessed. This is described in **Chapter 6**.

Expanded Emphasis on the Transportation/Land Use Connection

This Plan provides a new emphasis on the connection between transportation and land use, and explores future transportation and housing needs of a growing and changing population. The Plan provides descriptions of local and regional policies that could help manage transportation facilities, and provide viable options to driving.

Bicycle and Pedestrian Master Plan

The SCTA completed a major update to the Countywide Bicycle and Pedestrian Master Plan in 2014. This is an important document that represents a countywide process of identifying challenges and needs for non-motorized transportation. Primary findings from the Bicycle and Pedestrian Plan are incorporated into the Bicycle System section of **Chapter 3 (Transportation Projects)**.

Climate Action 2020

The RCPA, sister agency to the SCTA, has taken on the task of developing a Climate Action Plan, Climate Action 2020, for every jurisdiction in the County. Climate Action 2020, provides guidance in 13 topic areas in an effort to reduce greenhouse gas (GHG) emissions. Transportation GHG reduction recommendations have been incorporated into the CTP and are included in the CTP GHG Reduction Goal.

1 Program verb, to assign funds to a project that has been approved by MTC, the state or other agency; From the Mineta Transportation Institute Glossary — http://transweb.sjsu.edu/MTIportal/research/Glossary.html

Shift Sonoma County

SCTA and RCPA are currently engaged in a multi-year study of transportation options aimed at shifting travelers away from single occupant fossil fueled cars. Bike sharing, car sharing, and increased electric vehicle adoption are all being analyzed as potential options in Sonoma County.

Other Activities

Since the 2009 CTP a number of other major transportation efforts that impact Sonoma County have been completed or are currently underway. MTC and ABAG produced Plan Bay Area, the Sustainable Communities Strategy for the San Francisco Bay Area. Several Sonoma County cities or jurisdictions have completed Station Area Plans and General Plan updates which analyze and guide future transportation and other improvements for Sonoma County cities, towns, and neighborhoods. The SCTA has been active in developing locally relevant definitions of Communities of Concern. Santa Rosa City Bus is in the midst of a major transit planning process which is intended to improve and modernize transit service in the City of Santa Rosa called "Reimagining CityBus." The Sonoma Marin Rail Transit has made significant progress towards starting operations from the Santa Rosa Airport to San Rafael in Marin County and is scheduled to begin service in late 2016.

PUBLIC OUTREACH

The CTP public outreach strategy has included two public workshops, an online poll, and two public hearings. The online poll was shared with community organizations along with a social media campaign that reached 11,550 local residents.

There were 339 responses to online survey questions covering transportation priorities, funding, alternatives and travel choices. Respondents were asked to prioritize a list of transportation system improvements. The highest priorities for all respondents were:

1. Maintain roads
2. Expand SMART
3. Expand bike facilities
4. Expand bus service
5. Road improvements
6. Highway 101

For more information on the public outreach please see the Public Outreach Report in **Appendix 1A**.

Identifying Plan Goals and Objectives

The CTP builds on the efforts of local elected officials and staff from the cities, town, and county government in Sonoma County. This update has been developed with the understanding that existing transportation funding is inadequate, that there is increasing pressure on the existing transportation system, and that transportation impacts on the environment, public health, and safety are growing.

Overall, the CTP is meant to refine the vision, goals, and objectives for improving mobility on Sonoma County's streets, highways, and transit system and bicycle/pedestrian facilities, as well as to reduce transportation related impacts. To that end, it provides policy guidance and identifies transportation improvements for development over the next 25 years. This plan has tackled the important task of determining if our efforts are successful in helping us reach our goals, by including an enhanced performance evaluation. Measuring progress in achieving goals will help identify actions that are helping improve the Sonoma County transportation system and improve mobility for county residents.

CTP Update Process

The CTP update has included the following phases:

- Develop and implementation of Public Engagement Strategy
- Review and presentation of Goals
- Review project list, update project objectives
- Release a call for projects
- Review and update performance targets. Evaluate if the performance targets are still relevant and still represent SCTA priorities.
- Summarize current conditions. Determine how close we currently are to meeting the performance targets.
- Estimate future conditions and set a future baseline. Provide an estimate of what future conditions could look like if we don't construct any projects or make improvements to the transportation system, and what impacts population, housing, and employment growth have on future travel conditions.
- Develop a list of transportation projects, policies, strategies, and technologies that could help SCTA meet goals and targets
- Test transportation project performance. Measure project success in achieving CTP goals and meeting performance targets. Determine which targets show impacts and which projects are most effective.
- Test transportation policy, strategy, and technology impacts. Determine which policies, strategies, and technology help SCTA achieve CTP goals and targets.
- Develop a strategy to achieve CTP goals and targets. Estimate what it will take to meet CTP goals and performance targets by assembling a future scenario in which promising transportation projects, policies, strategies, and technologies would be implemented.

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CHAPTER 2

OUR COMMUNITY

Sonoma County is located in Northern California approximately 50 miles north of San Francisco. The County spans an area from the San Francisco Bay to the Pacific Ocean, with mountain ranges to the north and east.

Population settlement patterns and development of the transportation system has largely followed geographic constraints. The central geographic feature in Sonoma County is the Santa Rosa Plain, bordered on the east by the Sonoma and Mayacama Mountains, and on the west by the Coastal Range and beyond that, the Pacific Ocean. The Russian River, Sonoma County's major waterway, creates a path through the heart of the county and flows westward to the ocean.

There are nine incorporated cities in the county, seven of which are located along the main north- south Highway 101 corridor. Populated areas away from this corridor are focused on the Russian River, Sonoma Valley, Dry Creek Valley, City of Sebastopol, and coastal areas, but there are other smaller unincorporated communities in other areas of the county.

Sonoma County's transportation system is diverse, including highways, local roads, public transit, a railroad right of way, airports, and bicycle and pedestrian routes and pathways. The various components of the transportation system are described in this chapter, along with other information on existing travel characteristics and county demographics.

Sonoma County Today

Communities in Sonoma County have changed significantly over the past 60 years. The widespread availability of the automobile, significant population growth, and the creation of urban growth boundaries have been major factors shaping these changes. Since 1960 the population of the county has more than tripled. While Santa Rosa has experienced the greatest increase in population, growth has occurred in most parts of the county. Major services, educational facilities, shopping and over half of the population are located primarily in the cities, as are most county job centers. Development in the unincorporated areas is more dispersed and is spread over a very large geographic area.

Table 2-1 Sonoma County Population

	1960	1980	2000	2015 Est.
Cloverdale	2,848	3,989	6,831	8,708
Cotati	1,851	3,475	6,471	7,346
Healdsburg	4,816	7,217	10,722	11,687
Petaluma	14,035	33,834	54,548	59,540
Rohnert Park	n/a	22,965	42,236	41,077
Santa Rosa	31,027	83,320	147,595	173,071
Sebastopol	2,694	5,595	7,774	7,507
Sonoma	3,023	6,054	9,128	10,933
Windsor	n/a	n/a	22,744	27,335
Unincorporated County	87,081	133,232	150,565*	149,049
Sonoma County Totals	147,375	299,681	458,614	496,253

Sources: All data from U.S. Census except for 2015 estimate from the CA Dept of Finance.
*Note: Unincorporated County Population shows a decrease in 2000 and 2010 because of annexations. Rohnert Park was incorporated in 1962. Windsor was incorporated in 1992.

Population characteristics

Sonoma County, like the rest of the Unites States, has aged. The median age in 2010 was 39.9, 10 years older than the median age in 1960. Households with children under the age of 18 peaked in 1970 at 41 percent of the total number of households. That number has declined in every census since with the 2010 census estimating that 28 percent of households included children under the age of 18. Household sizes continue to get smaller dropping

from nearly 3 people per home in 1960 to 2.55 in 2010. in Sonoma County households are smaller than the Bay Area average which could be attributed to the aging population and lower birth rates in the county.

Ethnically, Sonoma County is and has been predominately populated by people self-identified as White, though that is changing. In 1960 98 percent of the population self-identified as White according to the U.S. Census, and by 2010 that number decreased to 77 percent. Sonoma county residents identifying themselves as Hispanic has grown to 25 percent in 2010. This number was in the single digits (7 percent) as recently as 1980. The number of foreign born residents in the county has increased from 7.8 percent in 1960 to 16.6 percent in 2010, demonstrating Sonoma County's changing diversity.

Economic Development and Income

In the past 100 years Sonoma County has shown steady growth in the cities, with the economy growing to include leisure, hospitality, retail, manufacturing, education, health services, financial, professional, and business jobs, while maintaining a strong agricultural economy.

Sonoma County has a high concentration of small businesses; 65 percent of firms employ four or fewer workers and close to 80 percent of all firms employ nine or fewer workers. An abundance of small businesses tends to indicate a healthy economy, as entrepreneurs are willing to take greater risks, and seed capital tends to become more accessible.[1]

The number of jobs and health of the Sonoma County economy declined sharply in 2008, leading to lower overall wages and home ownership, however, that trend is reversing. The Economic Development Board reported that "between June 2014 and June 2015, the number of jobs in Sonoma County rose by 2.2 percent. The unemployment rate is at its lowest since the recession at 4.3 percent for June 2015."[2]

The income bracket that is the most represented in Sonoma County is $50,000 to $74,999 in annual household income,[3] the median household income being $63,274. This is slightly higher than the State of California median income of $61,489, but lower than any other county in the San Francisco Bay Area.[4] Over 10 percent of Sonoma County residents live in poverty, with household incomes below the federal poverty level of $24,250 for a family of 4 in 2015. This is slightly higher than the Bay Area average of 9.7 percent. According to the Center for Neighborhood Technology, Sonoma County households spend 59 percent of their household incomes on housing (37 percent) and transportation (22 percent). A community is generally considered affordable when families spend up to 45 percent of their household income on housing and transportation.

The following are sources for updated economic information and analysis:

The Sonoma County Economic Development Board www.sonomaedb.org produces the Sonoma County Indicators Report annually.

The Association of Bay Area Governments produced the reports People, Places, & Prosperity (2015) and the San Francisco Bay Area State of the Region (2015). These and other reports can be found at the ABAG website — http://reports.abag.ca.gov/index.html.

The Center for Neighborhood Technology (CNT) produces the H+T Affordability Index tool that measures the cost of housing in tandem with the cost of transportation resulting in analysis on the affordability of place — http://htaindex.cnt.org/map/ CNT also maintains the Location Affordability Index, a second web-based tool that estimates the cost of housing and transportation based on location. http://www.cnt.org/tools/location-affordability-index.

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1 Sonoma County Economic Development Board, *2015 Sonoma County Indicators, 2015, 2* <http://edb.sonoma-county.org/pdf/unabridged-indicators_2015.pdf, accessed June 17, 2016>.
2 Ibid.
3 Ibid, 5.
4 Santa Clara County median annual household income is the highest in the SF Bay Area at $93,854 and Sonoma County median household income in the lowest in the region at $63,799. The county with the next lowest median income is Solano County at $67,341. From the Sonoma County Economic Development Board, *2015 Sonoma County Indicators.*

All of these sources use information from the US Census. The American FactFinder and QuickFacts, which can be accessed at http://www.census.gov/data.html provide easy access to census information for the county and municipalities.

Spotlight — The Cost of Operating a Personal Vehicle in the United States

Table 2-2 Estimated costs of driving a car in 2009 and 2014

	2009	2014
cents per mile	45.3¢	47.6¢
total annual cost	$9,055	$9,513
gas /mile(cents)	10.09¢	8.45¢
maintenance / mile (cents)	4.56¢	5.28¢
tires / mile (cents)	0.77¢	$1
Insurance (annual)	$976	$1,222
license, registration taxes (annual)	$567	$4,687
depreciation (annual)	$3,461	$3,759
finance charges (annual)	$779	$683

Source: American Automobile Association

Health and Education

Changes in travel behavior could have great positive impacts on health. Based on data from the California Health Information Survey (CHIS), it is understood that reducing traffic injuries has clear benefits, while the impacts of more active travel, biking and walking are known to reduce the risk of cardiovascular disease and diabetes. Sonoma County Department of Health Services (DHS) is in the process of developing the Obesity Prevention Strategic Plan that is anticipated to include similar mode shift strategies.

Many variables factor in the likelihood of long life in Sonoma County. DHS reports in Portrait of Sonoma County[5] that the level of education is a strong predictor of long life, while income is less closely tied to life expectancies in Sonoma County. The report states that "better-educated people have more access to health care and are more likely to comply with treatment regimens, use safety devices such as seat belts and smoke detectors, and embrace new laws and technologies."

Educational attainment, as reported by the U.S. Census, has steadily increased in the County over time. In 2010 11 percent of the population had earned a graduate or professional degree, 20 percent had a Bachelor's degree, and 21 percent had graduated from high school. High school graduation rates vary widely across the county ranging from a low of 54 percent in the Roseland neighborhood to more than 99 percent in the community of Oakmont.

The report did not find broad geographical patterns, but noted that extreme disparities in basic social and economic outcomes are often found within small geographical areas. The cost of transportation, long commutes, dependence on the single occupant vehicle are identified as important economic factors in the report and are also addressed in the CTP Goals.

The High Cost of Housing

Housing availability and affordability are critical to meeting housing needs and creating sustainable communities. **Appendix 2A** includes a record of housing production in Sonoma County through 2013. Sonoma County median home price increased to $555,000 in 2016, highest in nine years[6]. According to the Economic Development Board

5 Sonoma County Department of Health Services, *A Portrait of Sonoma County, 2014* <measureofamerica.org/Sonoma, accessed June 17, 2016>.
6 Press Democrat — February 16, 2016. See **Appendix 2B**.

the median home price increased by 18 percent from April 2014 to April 2015 - similar to the increase that occurred in the local housing market between 2013 and 2014. Sonoma County may still be considered affordable when compared to other parts of the Bay Area, but the high demand for housing and the desirable quality of life in the county continue to push housing prices up.[7] Similarly, rents are rising dramatically, which negatively impacts housing affordability. Families still struggling due to job loss or underemployment are finding it more difficult to find suitable housing. Seniors face serious challenges finding affordable, appropriate housing, while first time home buyers are competing for a limited supply of homes they can afford in an expensive market.

Local governments are engaging in stabilization strategies to assist prospective homeowners and renters. Officials are planning now for additional housing which will be required to house the estimated 100,000 additional people that will live in Sonoma County by 2040. Zoning and other current and future planning efforts provide opportunities to ensure that new development does not displace existing low-income residents and provides housing options for all Sonoma County residents.

Spotlight — Housing

ABAG has produced The San Francisco Bay Area State of the Region Economy, Population & Housing report http://reports.abag.ca.gov/sotr/2015/section4-housing-goals-progress.php. This report provides an in depth look at the relationship between population growth, changing demographics, the economy and the regional housing market.

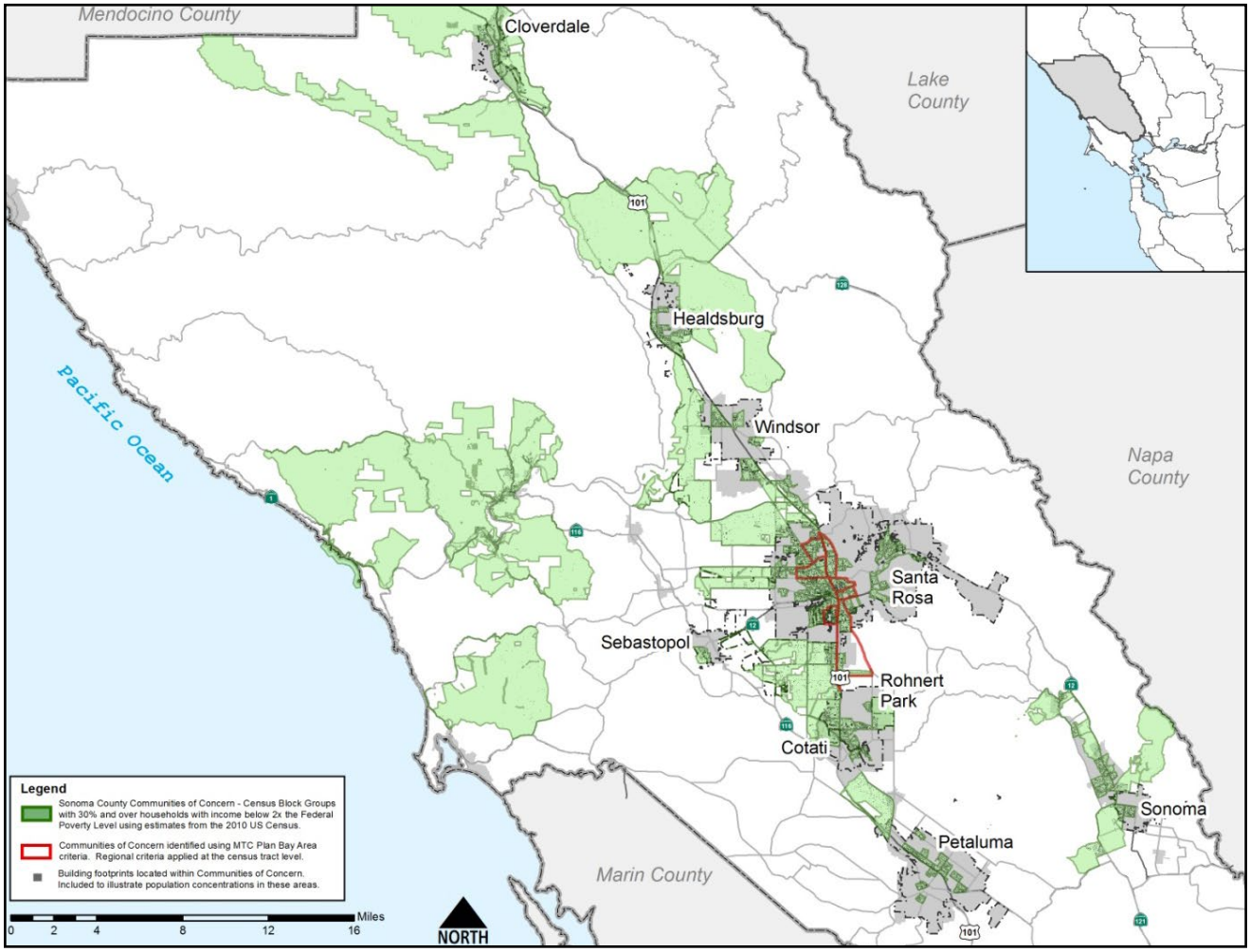
MTC held a Forum on Housing Policy February 2016. For more on topics discussed and related information see http://mtc.ca.gov/whats-happening/news/february-forum-jumpstarts-conversation-housing-policy.

Identifying Disadvantaged Communities in Sonoma County

State, regional, and local planning efforts have focused on addressing transportation equity in recent years. These efforts have identified geographic concentrations of socioeconomically disadvantaged or vulnerable populations and have highlighted transportation issues facing these populations. These areas are termed by MTC as "Communities of Concern" (CoC). CoCs have special mobility needs associated with access to reliable transportation, proximity to pollutants, and safety. In Sonoma County these areas are currently defined by SCTA as census block groups in which 30 percent or more of families have incomes between 0–200 percent of the federal poverty level or $21,660–$74,020 total household income depending on family size. CoCs have been used to prioritize funding in an effort to improve conditions in disadvantaged areas

7 Sonoma County Economic Development Board, Sonoma County Indicators <http://edb.sonoma-county.org/content.aspx?sid=1033&id=2035, accessed June 17, 2016>.

Figure 2-1 SCTA Defined Communities of Concern



Spotlight — Identifying areas with transportation needs

The following methods have been used to identify areas or communities with specific transportation needs in Sonoma County and the San Francisco Bay Area:

SCTA defined Communities of Concern use poverty level[8] and detailed census geographies to identify areas with special transportation needs. Using detailed census block groups allowed more accuracy when identifying pockets of poverty in Sonoma County, especially in areas that are located in very large census tracts, or that are adjacent to very affluent areas. SCTA has used locally defined CoCs to allocate transportation funding.

MTC Adopted Communities of Concern: MTC identified regional communities of concern (CoCs) using demographic variables including ethnicity, income, English proficiency, senior population, disabled population, single-parent households, zero-vehicle households, and overburdened renters using Census Tract data from the 2010 U.S. Census. These CoCs were adopted as part of Plan Bay Area, and are currently being revised as part of the Plan Bay Area update that is underway. These areas have been used to prioritize regional transportation funding.

2017 Caltrans Active Transportation Program Disadvantaged Communities: Caltrans ATP grants are awarded in order to encourage increased use of active transportation modes. ATP applications are granted extra points if a project or program would serve a disadvantaged community. ATP defines disadvantaged communities using income, tribal lands, and proximity to disadvantaged schools.[9]

CalEnviroScreen 2 — SB 535 Disadvantaged Communities: Senate Bill 535 requires that at least 25 percent of State Cap and Trade proceeds allocated through the Greenhouse Gas Reduction Fund (GGRF) benefit disadvantaged communities and that at least 10 percent of these programs be located within these identified communities. CalEnviroScreen uses a combination of population characteristics and pollution exposure rates to identify the most disadvantaged communities in the state at the census tract level. No disadvantaged communities have been identified in Sonoma County using these criteria.[10]

Portrait of Sonoma County Priority Places: Portrait of Sonoma County provides an in-depth look at the life expectancy, education, and income of county residents. These variables were combined into a single Human Development Index (HDI) which can be used to identify disadvantaged communities and disparities between Sonoma County neighborhoods. The 20 census tracts with the lowest HDI have been included in the online disadvantaged communities map.

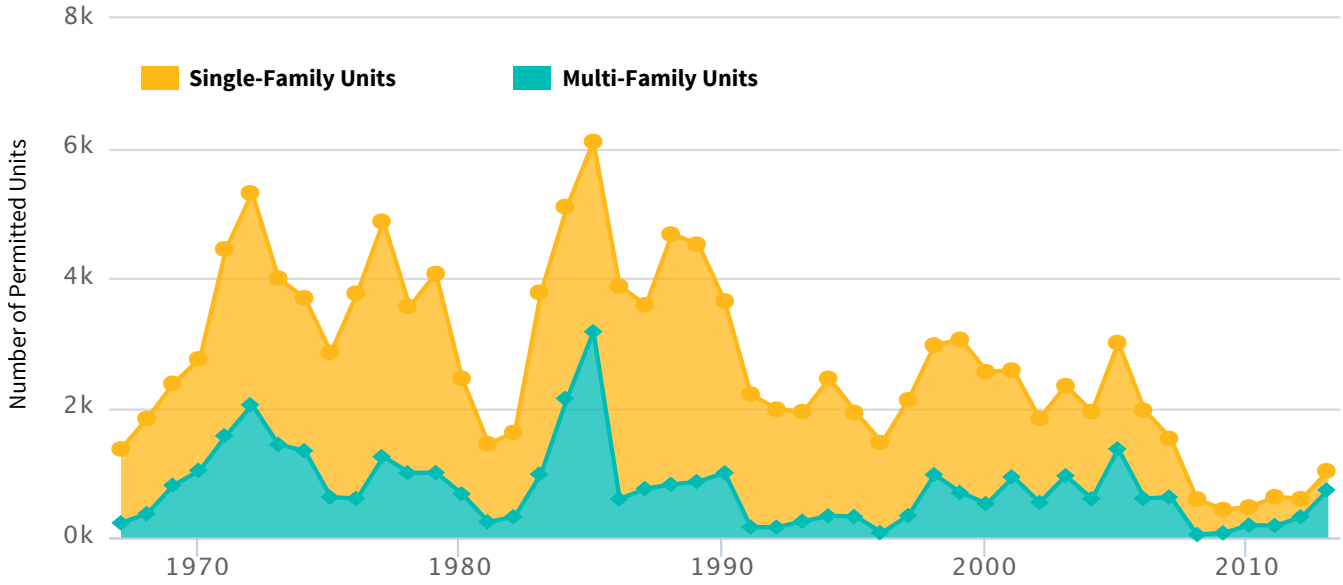
Existing Land Uses

Sonoma County contains a diverse cross-section of landscapes and development types. It encompasses approximately one million acres of land and is the largest county in the nine-county Bay Area Region. Approximately 14 percent of the land is devoted to residential uses, 3 percent are used for commercial, industrial, and similar uses, with the remainder mostly consisting of agricultural lands and open space.

Since 2000, approximately 1,500 residential building permits have been issued in Sonoma County each year. Permits peaked in 2005 (3,003) and dropped off considerably after this peak due to the national housing crisis and recession. Permitting bounced back in 2013 (1,027 permits granted) after hitting a low of only 430 countywide housing permits granted in 2009. Historically, residential development in Sonoma County has been biased toward single-family detached (SFD) housing, with single family homes making up the majority of housing construction and permitting activity. This trend continued through the economic downturn, but there has recently been a shift towards multi-family unit permitting with over 50 percent of permits granted for multi-family units in 2012, and over 70 percent of permits granted for multi-family units in 2013.

8 30% of census block group households earning 200% or less of the federal poverty level
9 75% of students eligible to receive free or reduced meals
10 CalEPA identified the 25% highest scoring CalEnviroScreen2 census tracts as disadvantaged communities.

Figure 2-2 Historical Trend for Housing Growth — Sonoma County 1967–2013



Source: MTC, Vital Signs (http://www.vitalsigns.mtc.ca.gov/housing-growth)

Historical Growth

Although most growth in Sonoma County has historically centered on the Highway 101 corridor, a considerable amount of growth has occurred off of the corridor. Rapid growth in the 1970s and 80s led to development in areas outside of urban service areas, which are not well served by transit or an adequate road network.

In an effort to limit urban sprawl and to protect the rural character of the county, Sonoma County voters approved setting Urban Growth Boundaries (UGBs) that have now been in effect in Sonoma County for decades. This tool has been successful in promoting city infill growth and is helping redevelopment in areas that can absorb higher densities. Sonoma County voters also passed and reauthorized a sales tax to fund the preservation of agricultural land and community separators. Local general plans have prioritized city centered, focused growth.

Spotlight — State and Regional Policy

The need for integrated land use and transportation planning became more urgent in California upon passage of two landmark pieces of state legislation that mandate reductions in greenhouse gas (GHG) emissions:

California Assembly Bill 32 (AB 32), the Global Warming Solutions Act of 2006 mandates a reduction in California's GHG emissions to 1990 levels by 2020.

Senate Bill 375 (SB 375), the Sustainable Communities and Climate Protection Act of 2008 provides more concrete requirements for implementation of AB 32 in order to achieve the emissions reductions expected from the land use sector. SB 375 aims to reduce GHG emissions from passenger vehicles through better coordination between transportation investments and land use decisions.

One key mechanism that is being used to achieve these reductions is to directly connect the region's primary transportation funding sources with regional growth projections.

SB 375 requires every regional Metropolitan Planning Organization (MTC and ABAG in the Bay Area) to produce and incorporate a Sustainable Communities Strategy (SCS) into their Regional Transportation Plans (RTP).The SCS is a regional land use strategy that illustrates how all projected population and employment growth can be distributed within the region across all income levels. The SCS/RTP, known in the Bay Area as Plan Bay Area, must accommodate this growth and demonstrate investment in transportation projects that will reduce GHG emissions. The planning horizon for the update of Plan Bay Area (anticipated approval in 2017) is 2040. Like the CTP, it is updated regularly.

Sonoma County Focus on Priority Development Areas

Following the lead of Bay Area's regional governments (ABAG and MTC), communities in Sonoma County are using the framework of Priority Development Areas (PDAs) to identify areas for future population and employment growth. Cities recognize PDAs or other related place-types in their communities and use local land use authority to steer higher density growth to those areas. As a result of this coordination region wide, PDAs can accommodate a large percentage of the planned housing and job production. Increased density in PDAs is intended to locate more people near jobs and services in an effort to reduce travel and thereby transportation greenhouse gas (GHG) emissions.

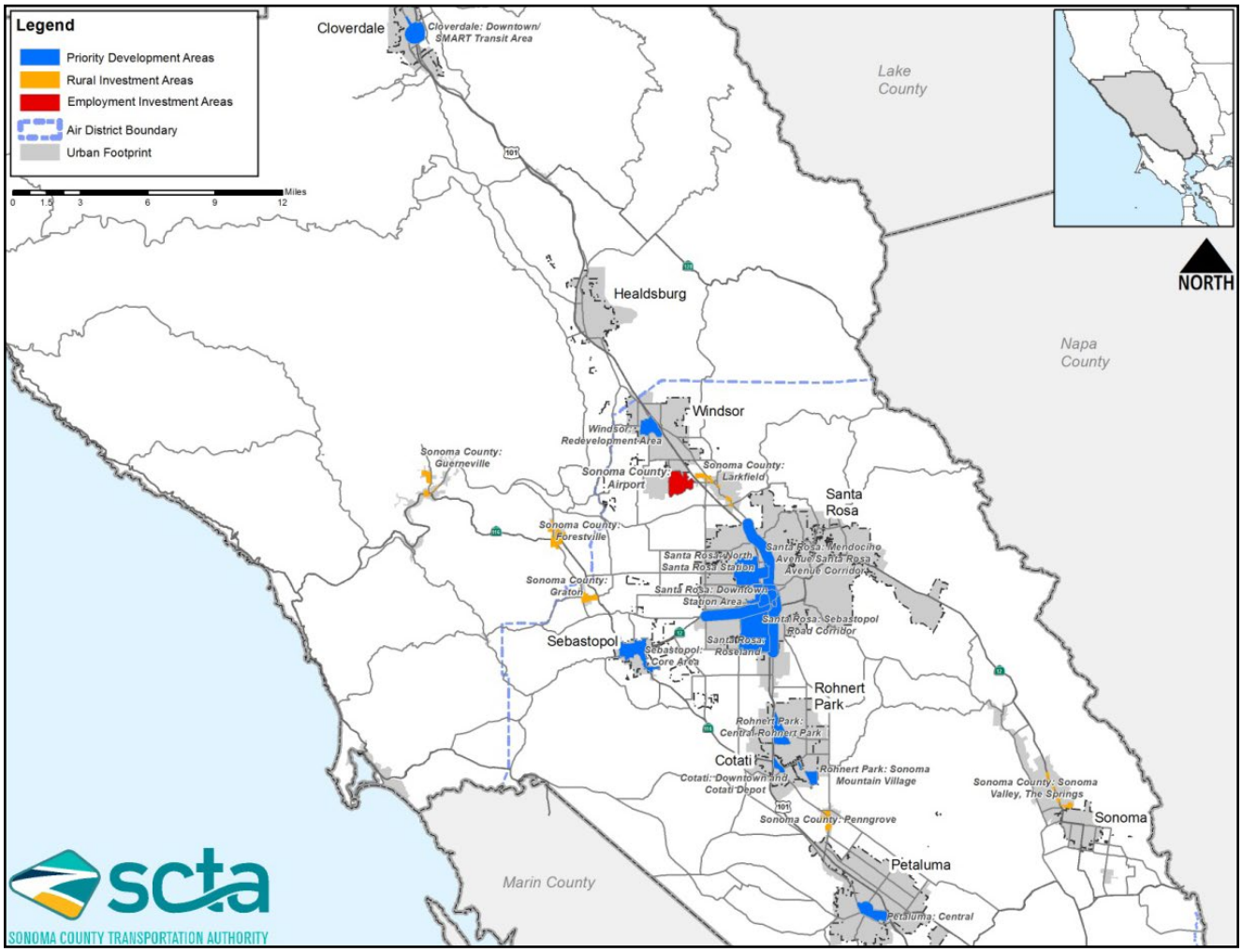
As of 2016, Sonoma County jurisdictions have designated 19 specific areas for priority locations for new development—12 PDAs, 6 Rural Investment Areas (RIAs) and 1 Employment Center. These different designations acknowledge the differences in the existing uses and services and the varying expectations for development in each of these areas. See **Appendix 2C** for descriptions of these different location types.

Regionally, it is anticipated that PDAs will house 80 percent of new growth. The proportion of growth forecasted within PDAs varies by city. The additional growth forecasted by ABAG in many of the PDAs is considered to be ambitious given the cost and availability of land and historic market trends. The anticipated density of development, land use mix, and character varies across PDAs, reflecting local needs and development goals, access to transit, and a host of other factors. The PDA framework is not a perfect fit for the North Bay currently, but is currently evolving to better meet local needs and has already been effective at concentrating some growth and reducing travel and emissions.

The PDA designations do not identify PDAs within Unincorporated Sonoma County, yet existing and planned uses call similar concentrations on housing and job growth in rural locations such as the Russian River communities, the Springs area of Sonoma Valley, and the Airport Industrial Area. The County of Sonoma has designated six Rural Community Investment Areas and one Employment Investment Area to recognize these targeted growth areas in

the unincorporated county. These areas are not expected to ever be as dense or busy as more urban areas, but are planned to focus on concentrating rural growth and encouraging walking and biking within these areas.

Figure 2-3 Sonoma County Priority Development Areas, Rural Investment Areas and Employment Investment Areas



EXISTING TRAVEL CHARACTERISTICS

The U.S. Census Bureau and local and regional transportation planning agencies such as the Metropolitan Transportation Commission and the Sonoma County Transportation Authority collect survey data and run travel demand models in order to determine where people are going, how they get there, and how they travel. This information is used to assess and prioritize future transportation improvements in order to maximize the utility of the transportation system.

Travel is often summarized by trip which represents an individual's travel from one location to another. Trips are normally categorized by trip purpose, or reason the trip was taken. Trips are first calculated as person-trips (i.e. two people driving together to work would be one vehicle trip, but counted as two person-trips) and are then converted to vehicle trips using vehicle occupancy rates. Vehicle occupancies are important, because they demonstrate how many vehicles are needed to move a given number of people from location to location.

Segmenting trips by trip purpose and vehicle/person trip helps provide information on what types of transportation improvements could provide the largest benefits to Sonoma County travelers.

Table 2-3 Trip Purpose Chart 2010[11]

Trip Purpose	Average Travel Time Minutes	Average Trip Length Miles	Average Vehicle Occupancy Persons/Vehicle
Home — Work (14.8%)	23.14	16.27	1.14
Home — School (10.3%)	9.97	4.87	4.16
Home — Other (43%)	10.91	5.63	1.65
Non-Home Based (32%)	9.92	5.35	1.45

Source: Sonoma County Travel Model

How Are People Getting Around?

Travel in Sonoma County, like the rest of the Bay Area and United States, is heavily oriented towards private passenger vehicles. In 2013 there were 342,000 licensed drivers and 500,000 registered vehicles in the county according to DMV records. Commute trips are concentrated during peak, or rush hour, travel periods and are major contributors to traffic congestion. In 2006 nearly seventy-five percent of workers drove alone during their commute; 12.3 percent carpooled; 2.2 percent used public transit; 3.8 percent bicycled or walked; and 6.4 percent worked at home. These *mode shares have been fairly stable since 1980, although the transit and carpool mode shares have dropped slightly, and healthy increases in bicycle/walk and work-at-home mode shares have been observed.*

Table 2-4 Travel to Work Mode Share in Sonoma County

Travel to work	1980	1990	2000	2006	2010
Drive Alone	69.4	74.6	74.7	74.5	74.4
Carpool	16.3	13	12.6	12.3	11.3
Transit	3.2	2.3	2.4	2.2	2.0
Bike/Walk	5.7	4.3	3.9	3.8	4.3
Other means	2	0.9	1	0.8	0.6
Worked at home	3.4	4.9	5.4	6.4	7.1

Source: US Census

The use of alternative travel modes (i.e., those other than driving alone) for inter-county commute trips tends to be higher than for trips made inside the county. Approximately 5 percent of inter-county commute trips are made by transit (compared to 1.4 percent of intra-county trips); 15.1 percent are by carpool (compared to 10.5 percent of intra-county trips).[12]

Motor vehicle ownership in Sonoma County

Motor vehicle ownership in the County tends to be somewhat higher than the Bay Area average. There are also fewer households without access to a private vehicle in Sonoma County compared to the Bay Area (1.9 percent vs. 5.3 percent); and more households with two or more vehicles (80 percent vs. 77 percent).[13] The higher auto ownership rates reflect the County's dependency on personal vehicles for transportation as a result of dispersed land uses, an extensive road network, and the rural nature of much of the county.

11 Trip purpose characteristics are projected to stay mostly consistent through 2040 with the following exceptions. Home -other trip lengths (minutes and mileage) are expected to increase by 25-30% by 2040 and the average vehicle occupancy rate is for home-school trips forecasted to drop to just below 3 persons per vehicle by 2040.

12 U.S. Census Bureau, Census Transportation Planning Package (2010).

13 U.S. Census Bureau, 2010–2014 American Community Survey 5-Year Estimates.

Table 2-5 Fee paid Registered Vehicles in Sonoma County

Year	Registered Vehicles	Population	Vehicles per person
1950	51,582	103,405	.5
1980	240,204	299,681	.8
2007	428,000	484,470	.9
2014	456,249	500,292	.9

Source: Department of Motor Vehicles

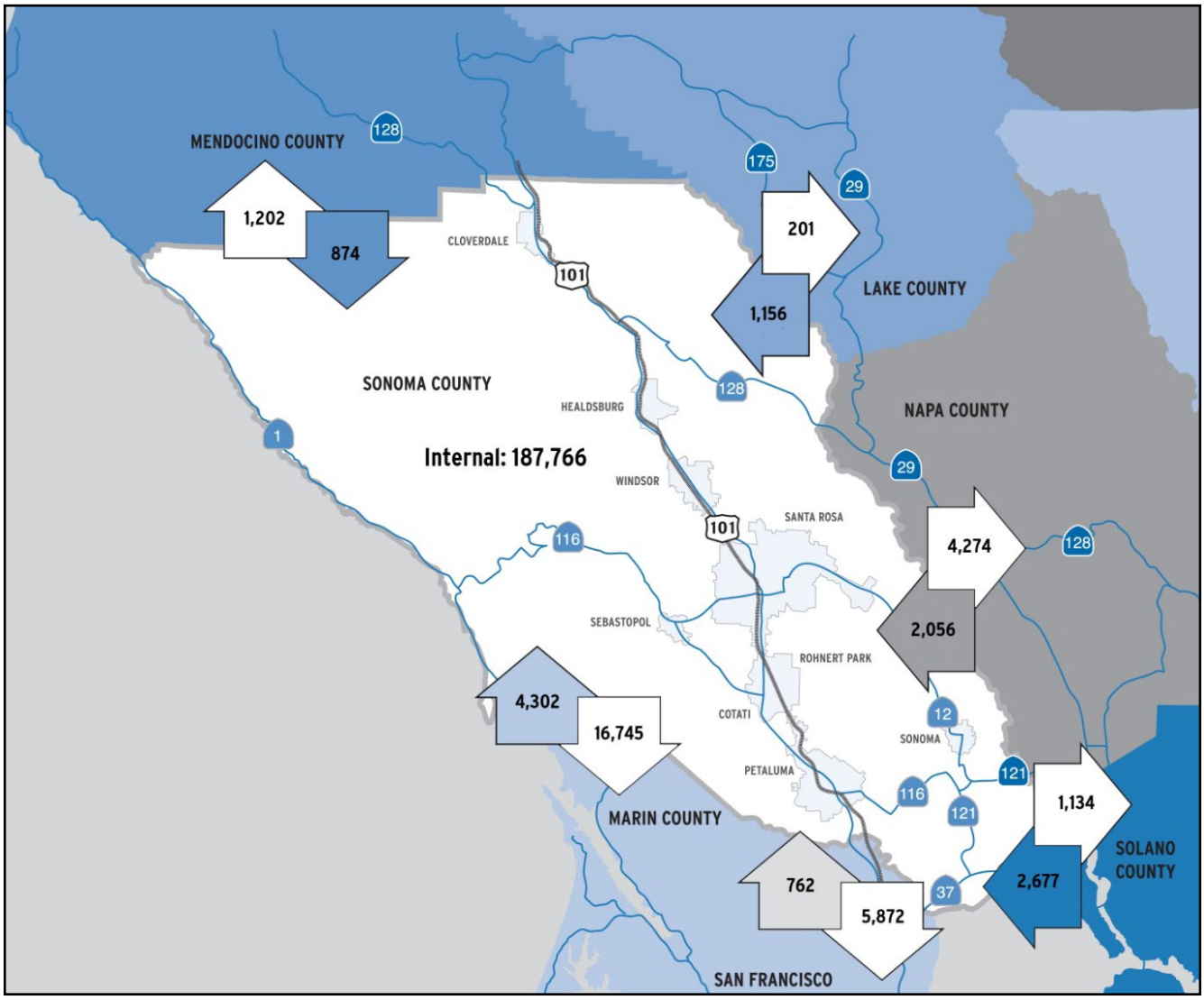
Workforce Commute

Sonoma County's 186,935 households contain a workforce of 235,040 employed residents. There are approximately 207,800[14] jobs available to these residents. Major employers in the county are generally located within the cities. There is a significant intra-county commute between the employees located in the county's cities to employers scattered throughout the county engaged in agriculture, tourism, and retail activities. A majority (83 percent) of the estimated 225,640 Sonoma County workers stay in the county for work, and 92 percent of jobs in the county are filled by in-county employees. Fewer than 20 percent (16.8 percent) of Sonoma County workers commute to jobs outside the County representing a steady decrease in out of county commuting since 1980. Of these out commuters, 16,745 work in Marin County (7.42 percent of workers) and 5,872 in San Francisco (2.6 percent of workers), both of which are served by the highly congested Highway 101 corridor. Commuting to Marin County has declined since 2000, with the out commute to San Francisco and Napa counties increasing slightly over the same time period.

The number of *in-commuters*, or workers who work in Sonoma County but live in other counties, continues to rise with 17,019 workers commuting into the county per day in 2013. This represents an increase from 1990 and 2000 in which 9,326 to 14,000 workers commuted into the county.[15] Marin County supplies more workers to Sonoma County than any other county (4,300). Other California counties which, in 2013, supplied more than a thousand workers include: Contra Costa (1,072); Lake (1,156); and Napa Counties (2,056), Solano (2,677).[16]

14 California Employment Development Department, October 2015 estimated wage and salary employment.
15 U.S. Census, 2009–2013 5 Year American Community Survey Commuting Flows.
16 U.S. Census, American Community Survey 2010–2013.

Figure 2-4 Ingress/Egress Map



Source: US Census: 2009–2013 5 Year American Community Survey Commuting Flows.

Just under 15 percent of all weekday trips are for commute purposes[17]. Although modest in number, commute trips have a disproportionate impact on the transportation system's performance for several reasons. Commute trips are usually longer than other trips. They tend to be concentrated in a few hours of the day (7-9 AM and 4-6 PM); and vehicle occupancies are generally much lower for trips to work.

Trips to School

Though the number of homes with school aged children has declined, the morning traffic caused by the school commute is significant. Historically, children usually walked or biked to school, or rode a school bus. This is no longer true, with a large proportion of students being driven to and from school, though there are movements to make walking and biking to school more attractive to children and parents.

17 Sonoma County Travel Model.

Table 2-6 2010 Sonoma County School Trips — Mode of Travel

Travel Mode	Percentage
Drive Alone	15.02
Shared Ride	70.71
Transit	0.63
Walk/Bike	13.63

Source: Sonoma County Travel Model

Non-Commute Trips

Other travel, including trips to medical appointments, shopping, and recreation and tourism trips make up the largest proportion of total daily trips (43 percent) but are less consistent than trips that are part of daily routines and are more difficult to analyze. Data available for these types of trips suggests that these trips are shorter than work trips and travelers are more likely to travel with other people in their vehicles.

SONOMA COUNTY IN 2040, FORECASTS

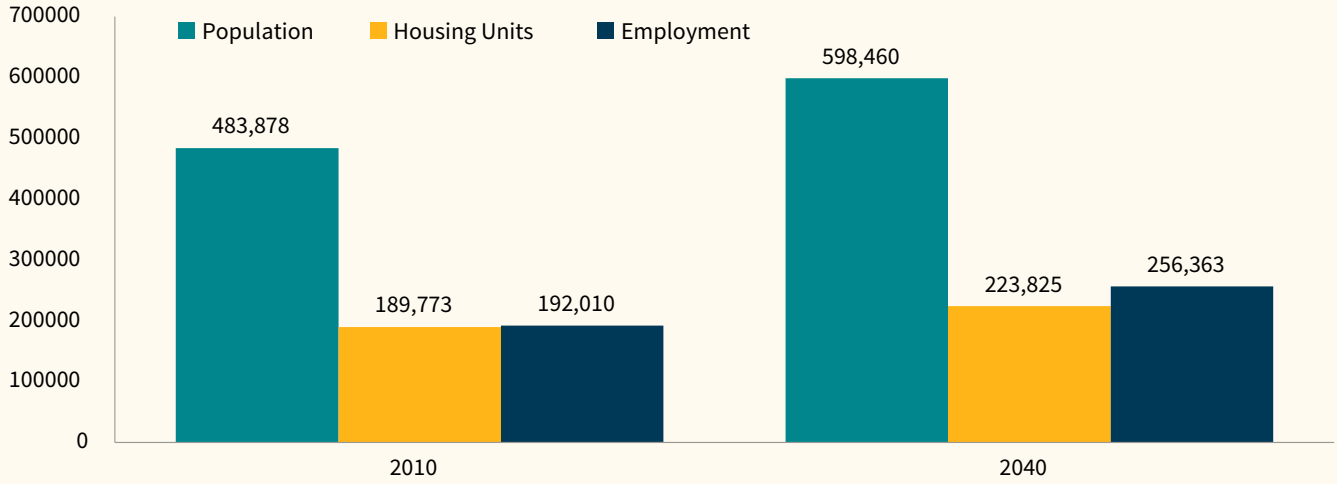
Future population, housing, and employment growth are forecasted at the regional level by the Association of Bay Area Governments and Metropolitan Transportation Authority. The California Department of Finance and Economic Development Department provide additional estimates of future population, housing, and employment growth. The forecasts provided by these agencies provide the best estimate or picture of how Sonoma County will grow and develop through 2040. These forecasts can help guide decisions about how the transportation system can be maintained and improved, and how these decisions can help meet countywide transportation goals. These forecasts were developed using the most recent planning, economic, and transportation data available, including local general plans, more detailed area specific plans, economic trend analysis, and transportation system usage data such as traffic counts, transit ridership, and traveler surveys.

The most recent forecasts produced at the regional level have been developed for the San Francisco Bay Area Regional Transportation Plan, “Plan Bay Area” and are forecasted for a 30-year time period from 2010–2040. The land use component of the regional forecast forms the basis for the regional Sustainable Communities Strategy (SCS). These RTP and SCS growth estimates have been incorporated into the Sonoma County Travel Model and have been used the analysis that has been performed as part of the most recent CTP update. The Sonoma County population is predicted to grow by almost 20 percent by 2040, from 483,878 residents in 2010 to 574,031 in 2040. Employment growth is predicted to grow at an even greater rate (34 percent) from 192,010 in 2010 to 257,450 in 2040. Population and employment growth have a significant impact on total travel in Sonoma County. The additional people and new jobs and destinations that attract employees and travelers are expected to increase countywide travel by over 1/3rd by 2040 (36 percent increase in daily vehicle miles travelled by 2040).

Spotlight — Forecasting and Modeling Uncertainty

Forecasting and modeling techniques provide valuable information about how populations may grow and change, how the economy will develop, and how population and employment growth may impact travel in the future. These processes are based on observed data, mathematical equations, and scientific knowledge. Modeling tools used by SCTA to analyze future conditions in the CTP have been validated using real world data such as roadway traffic counts, transit ridership data, bicycle and pedestrian counts, and population, housing, and employment growth data collected by the US Census Bureau and other government agencies. This validation process ensures that model results are reasonable and are consistent with actual travel conditions and observed growth trends. Though care is taken to ensure that forecasts and model results are accurate, they are not perfect and may not provide a complete or perfect picture of the future. Forecasts and model results are useful for long range planning and to support decision making, but should always be compared to historic trends, existing conditions, and other empirical research and the results should be used and applied with care.

Figure 2-5 Sonoma County Growth Forecasts: 2010–2040, Population, Housing Units, Employment



Source: Association of Bay Area Governments

Spotlight — Sonoma County in 2040

Between 2010 and 2040 the Sonoma County population is expected to grow by over 100,000 people or around 20% (483,878 residents in 2010 to 598,460 in 2040).

The Sonoma County population is projected to continue to age. The senior population (ages 65+) is expected to increase from 14 percent to 22 percent of the total population by 2040.

34,000 additional housing units are projected to be built in Sonoma County by 2040. This is an 18 percent increase in housing units over a 30 year period. Multifamily or higher density housing is expected to make up a larger proportion of housing growth than has been observed in the past.

Over 60,000 additional jobs are expected to be added to the Sonoma County economy by 2040 (65,430 from 2010–2040). These jobs are expected to be focused primarily within the Health, Education, Professional Services, and Arts and Recreation job sectors.

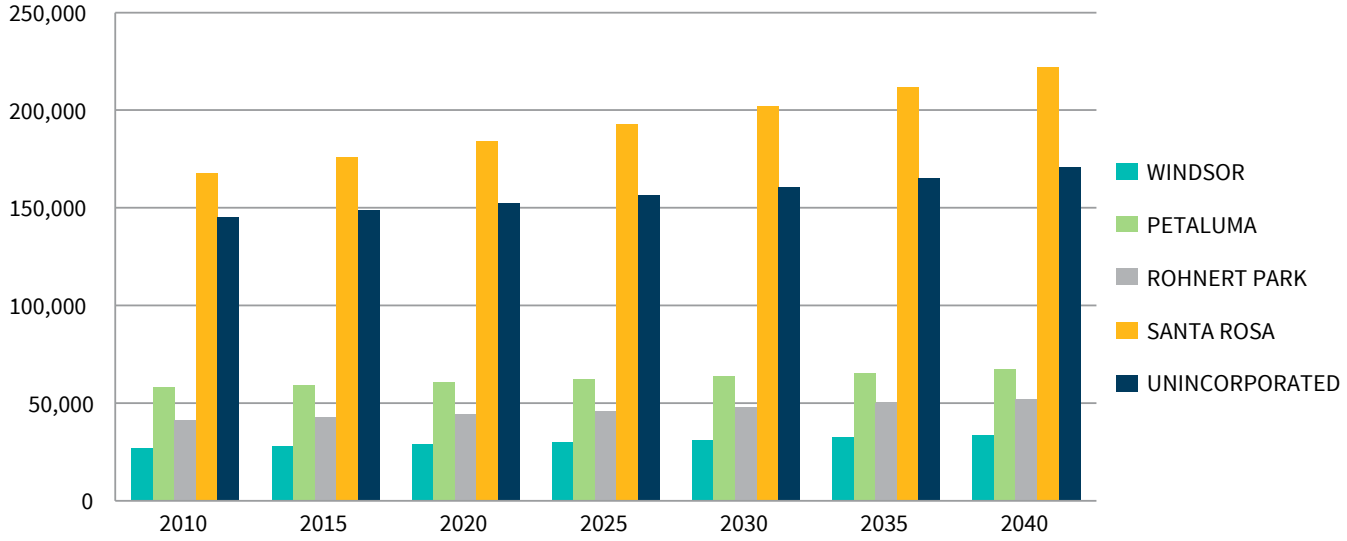
Projected Population Growth in Sonoma County

Sonoma county population forecasts are developed by ABAG by considering job growth forecasts, existing population, labor force participation rates, birth and death rates, local general plans, and migration. Sonoma County population is predicted to grow by 24 percent by 2040, increasing from 483,878 residents in 2010 to 598,460 residents in 2040. Cloverdale, Santa Rosa, and the Town of Windsor are projected to grow the fastest during this time period (26-33 percent growth rates over the 30 year period), with the Cities of Healdsburg, Sonoma, and Petaluma expected to experience the slowest local growth rates (9–16 percent growth rates over the 30 year period).

The Sonoma County population continues to age with the median age rising from 37.5 in 2000 to 39.9 in 2010. The senior population (ages 65 and over) is projected to increase from 14 percent (2010) to 22 percent of the total population by 2040. Aging of the population could have significant impacts on local employment trends, demand for goods and services especially those oriented towards care and service of the senior population, and travel patterns. Retirees will make up a larger proportion of the population, which will reduce the size of the local workforce, which could trigger a need to import more labor from surrounding counties to fill Sonoma County jobs. Senior travel patterns can also be quite different from the rest of the population. With no need to commute to work or drop children off at school, some travel could shift to off-peak periods, taking some pressure off of the busy and congested peak period travel times. The Public Policy Institute of American Association of Retired Persons (AARP) developed a web-based tool to measure community livability for seniors. Users can search the Index by address, ZIP Code, or community to find an overall livability score, as well as a score for each of seven major livability categories: housing, neighborhood, transportation, environment, health, engagement, and opportunity. Sonoma County as a whole scores 56. To calculate the score of your community or read about the variables go to https://livabilityindex.aarp.org/.

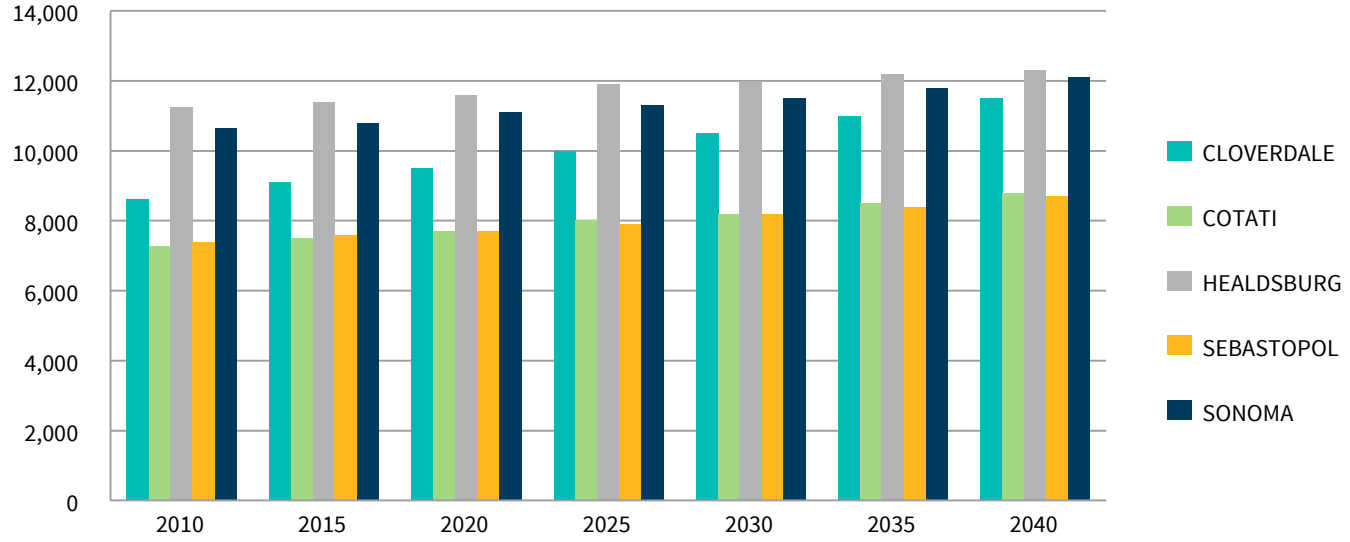
The Sonoma County population is projected to become more racially and ethnically diverse by 2040. The Latino and Asian population shares will increase significantly by 2040, and together will make up 42 percent of the total Sonoma County population. Population growth of these ethnic groups is expected to impact housing preferences and household formations rates. According to the California Department of Finance, these populations have a historically high preference for multifamily housing and form multigenerational households at a higher rate than the general population.

Figure 2-6 Sonoma County 2010–2040 Population Growth, Large Jurisdictions



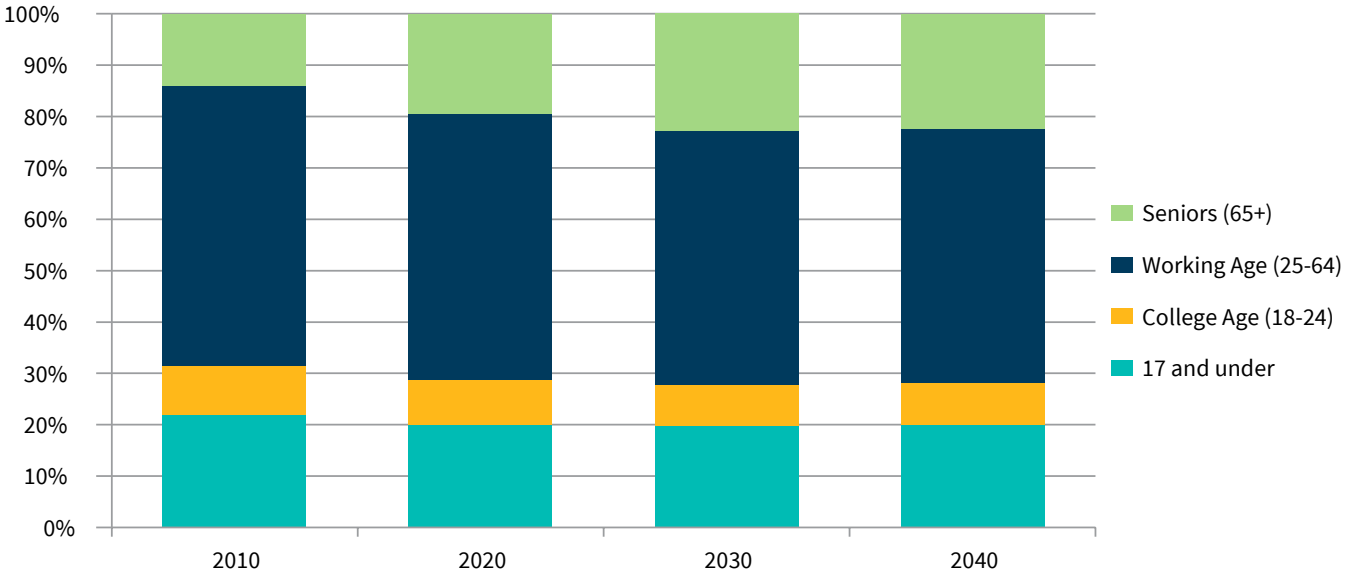
Source: Association of Bay Area Governments

Figure 2-7 Sonoma County 2010–2040 Population Growth, Small Jurisdictions



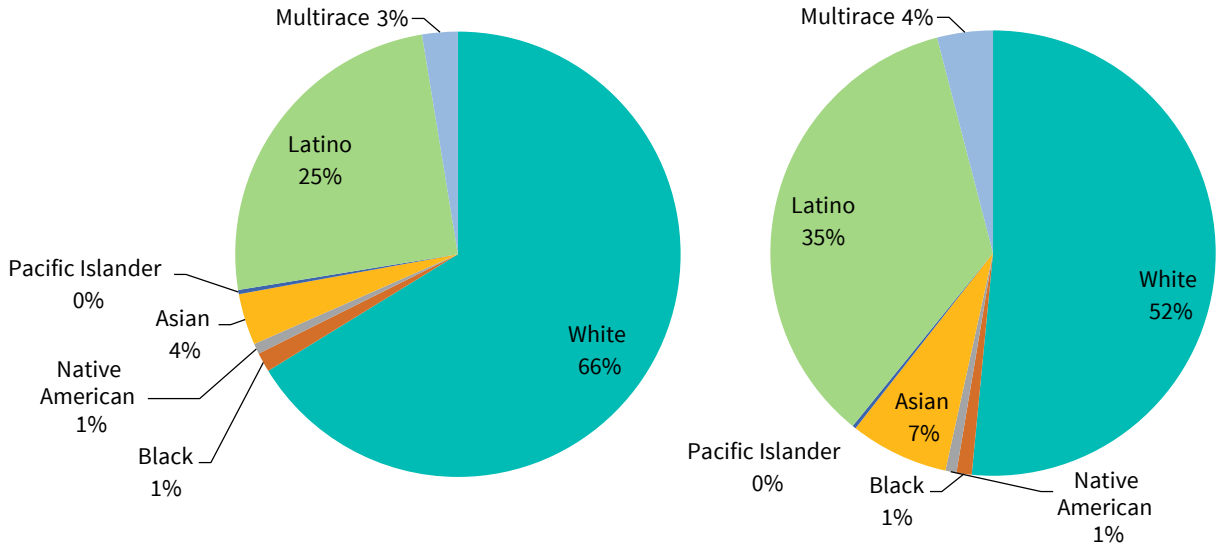
Source: Association of Bay Area Governments

Figure 2-8 Sonoma County Aging Population, % of Total Population, 2010–2040



Source: Metropolitan Transportation Commission, Association of Bay Area Governments, California Department of Finance

Figure 2-9 Sonoma County Population by Race/Ethnicity, 2010–2040



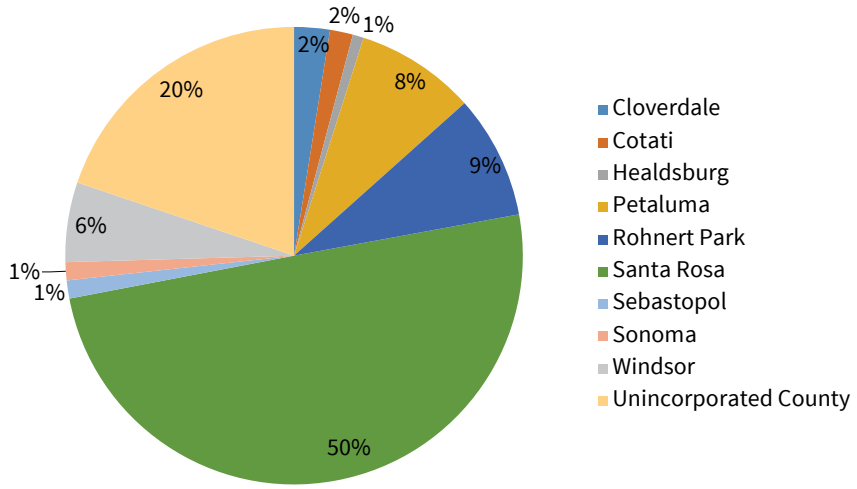
Source: U.S. Census 2010, Association of Bay Area Governments, California Department of Finance

Projected Housing Growth in Sonoma County

ABAG develops housing production forecasts based on expected household income and demand, historic housing production rates and local planning (general plans and zoning). Housing growth assumptions also account for changes in housing type preferences due to aging populations, changes in the ethnic makeup of populations, and housing preference changes in younger populations. Higher shares of housing growth have been allocated to Priority Development Areas as part of the regional Sustainable Communities Strategy.

Housing is predicted to increase by 18 percent, or over 34,000 units, from 2010 to 2040. A higher proportion of constructed housing is expected to be focused on multi-family housing including townhomes, condominiums, and apartments, especially in the urban areas of Sonoma County. This shift is expected because of the aging population, housing affordability, growth in the Latino and Asian populations, and changing housing preferences for younger age groups. Housing growth is projected to be the highest in and around the largest Sonoma County cities including Santa Rosa, Petaluma, and Rohnert Park. As shown in **Figure 2-9**, ABAG predicts healthy housing growth in the Town of Windsor and the Sonoma Valley and Russian River areas of unincorporated Sonoma County. Housing growth in these areas is concentrated in PDAs or Rural Investment Areas.

Figure 2-10 Sonoma County Percentage of Forecasted Housing Growth 2010–2040



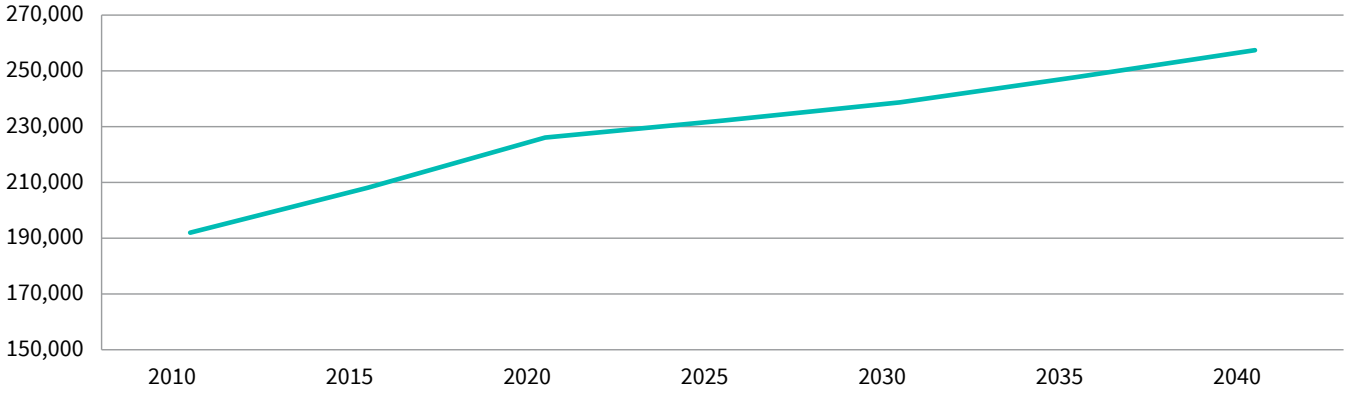
Source: Association of Bay Area Governments, Metropolitan Transportation Commission

Projected Employment Growth in Sonoma County

ABAG forecasts regional employment by industry sector based on forecasts provided by the Center for Continuing Study of the California Economy (CCSCE). This analysis considered employment and job growth trends, national population and economic forecasts, housing supply, and characteristics of the work force (education, training, etc.). This forecast projects that over 60,000 additional jobs are expected to be added to the Sonoma County economy by 2040 (65,430 from 2010–2040). Job growth from 2010 to 2020 is predicted to be particularly healthy, accounting for a rebound and recovery from the job loss experienced during the Great Recession that began in 2007. Geographically, the majority of job growth is projected to occur in the cities, urbanized areas, and business parks in the unincorporated areas. Cloverdale, Rohnert Park, and Santa Rosa employment markets are forecasted to grow the fastest, with job growth in Sebastopol, Healdsburg, Sonoma, and the unincorporated county occurring at a slower rate.

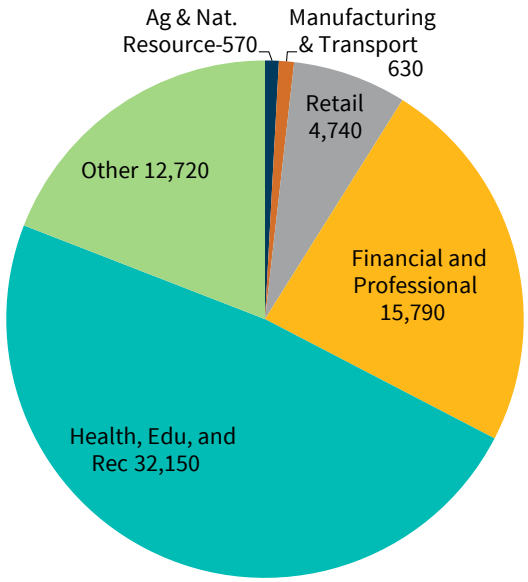
Job growth is expected to be heavily biased towards health, education, recreation, financial, and professional services sectors. Agricultural, natural resource, industrial (manufacturing and warehousing), and transportation/distribution sectors are expected to stay about the same with retail, government, and other job sectors expected to grow at a slower rate.

Figure 2-11 Sonoma County Employment Growth 2010–2040



Source: Association of Bay Area Governments, California Department of Finance

Figure 2-12 Sonoma County Job Growth by Sector 2010–2040



Source: Association of Bay Area Governments, Metropolitan Transportation Commission

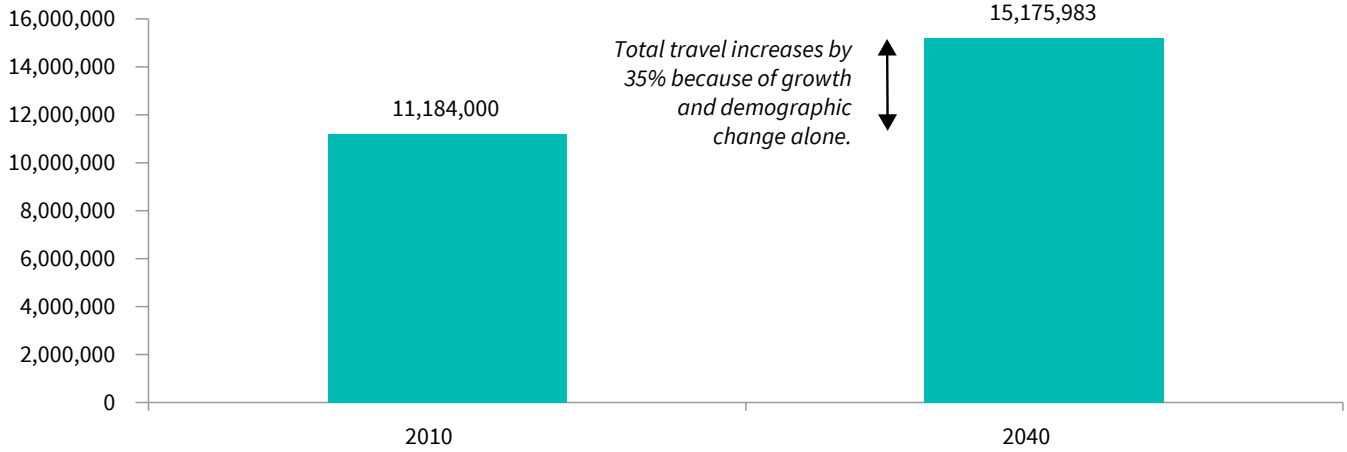
Growth Impacts on the Transportation System

Population and employment growth have a significant impact on total travel in Sonoma County. The additional people and new jobs and destinations that attract employees and travelers increase total countywide travel and congestion. Growth is a primary factor behind increases in Sonoma County travel and congestion.

Travel

Vehicle miles traveled (VMT) is a commonly used measure of travel activity. VMT is a function of population, vehicle ownership, how often people travel, and where they are going. The SCTM estimates a 36 percent increase in VMT from 2010–2040 based on population and employment growth. This represents an increase from 11 million VMT per day in 2010 to 15 million VMT per day in 2040. VMT is predicted to grow at a greater rate than population and employment. Forecasts indicate that employment growth will outpace population growth. This factor along with the continued aging of the Sonoma County workforce means that labor may need to be imported from outside of the County and in-commuting from neighboring counties and the region is expected to increase accordingly. These in-commute trips are longer than in county commute trips and contribute to the increased VMT growth rate.

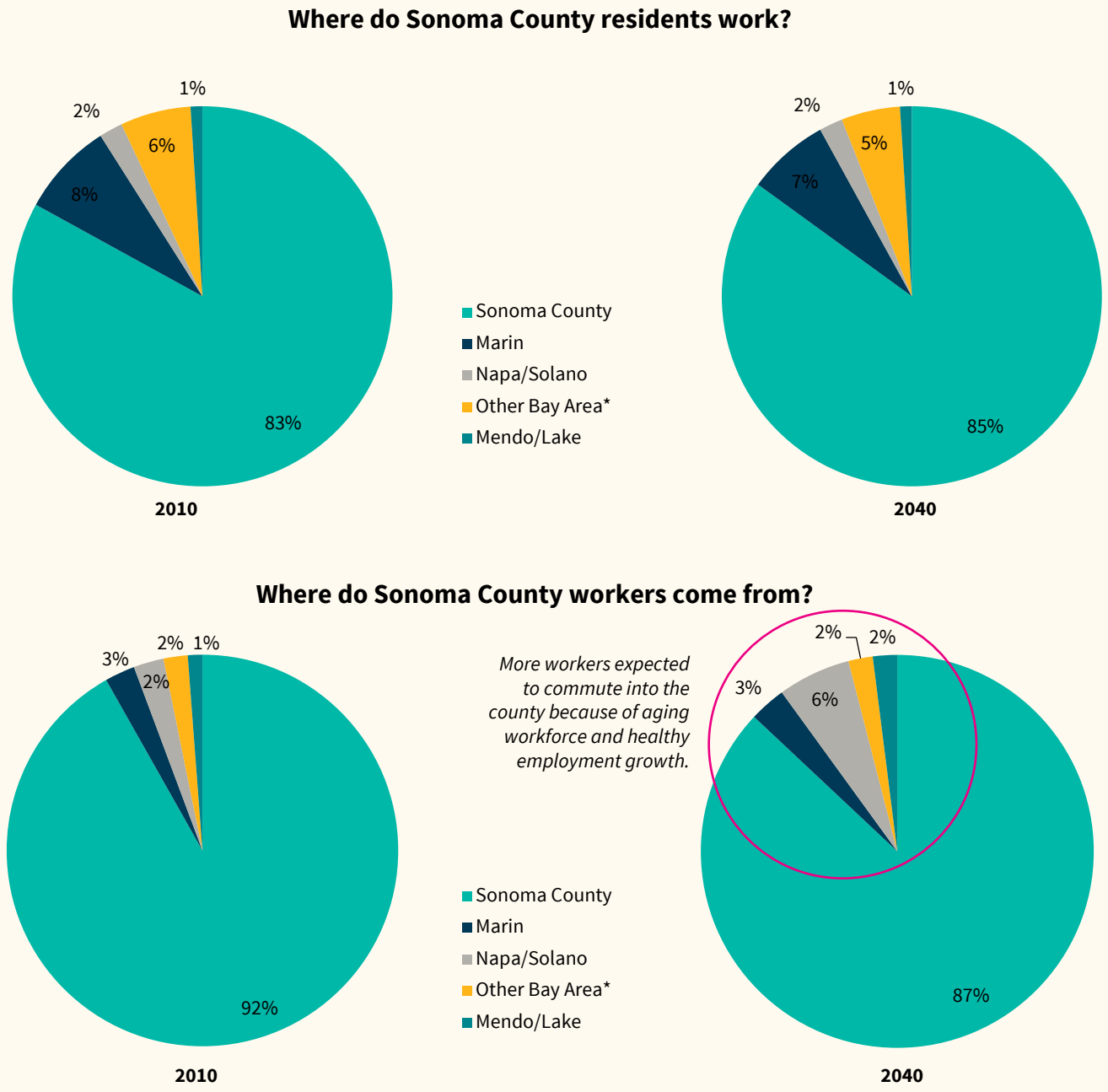
Figure 2-13 Sonoma County Daily VMT 2010–2040



Source: Sonoma County Travel Model

Spotlight — Shifting Commute Patterns

FIGURE 2-14 Sonoma County Commuting Patterns 2010–2040



Source: Sonoma County Travel Model

Emissions and Air Quality

Transportation accounts for around 50 percent of all countywide GHG emissions in Sonoma County. The SCTA and Sonoma County jurisdictions have committed to reducing GHG emissions to 20 percent below 1990 levels by 2020. Transportation GHG emissions are calculated using estimates of total vehicle travel (VMT), travel speeds, and vehicle fleet characteristics.

Sonoma County transportation GHG emissions are expected to increase by about 39 percent during the period from 2010–2040. This is largely a factor of increased travel due to population and employment growth, and assumes that the vehicle fleet makeup and vehicle fuel economy stay about the same as they currently are by 2040. GHG emissions are expected to increase at a greater rate than VMT because of increased congestion and because of slower, and less efficient, travel speeds. State mandated fuel economy improvements (Pavley, AB 1493) could provide significant GHG reductions by 2040 because of improved vehicle fuel economies, and other developing and emerging vehicle technologies are likely to also contribute to reduced emissions from automobile travel.

Congestion and Travel Delay

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.

A commonly used measure of congestion is Person Hours of Delay (PHD). PHD is calculated by determining the difference between estimated travel time under congested conditions and under free-flow or uncongested conditions for a roadway segment or trip. The travel model estimates that in 2010 almost 44,000 hours were lost each day because of traffic congestion in Sonoma County. Sonoma County congestion is predicted to triple by 2040. Most of this increase can be attributed to increased travel because of population and employment growth. Over half of this delay is expected to occur during the morning and evening peak travel periods, and highways and major local arterials would be impacted the most.

Travel Modes

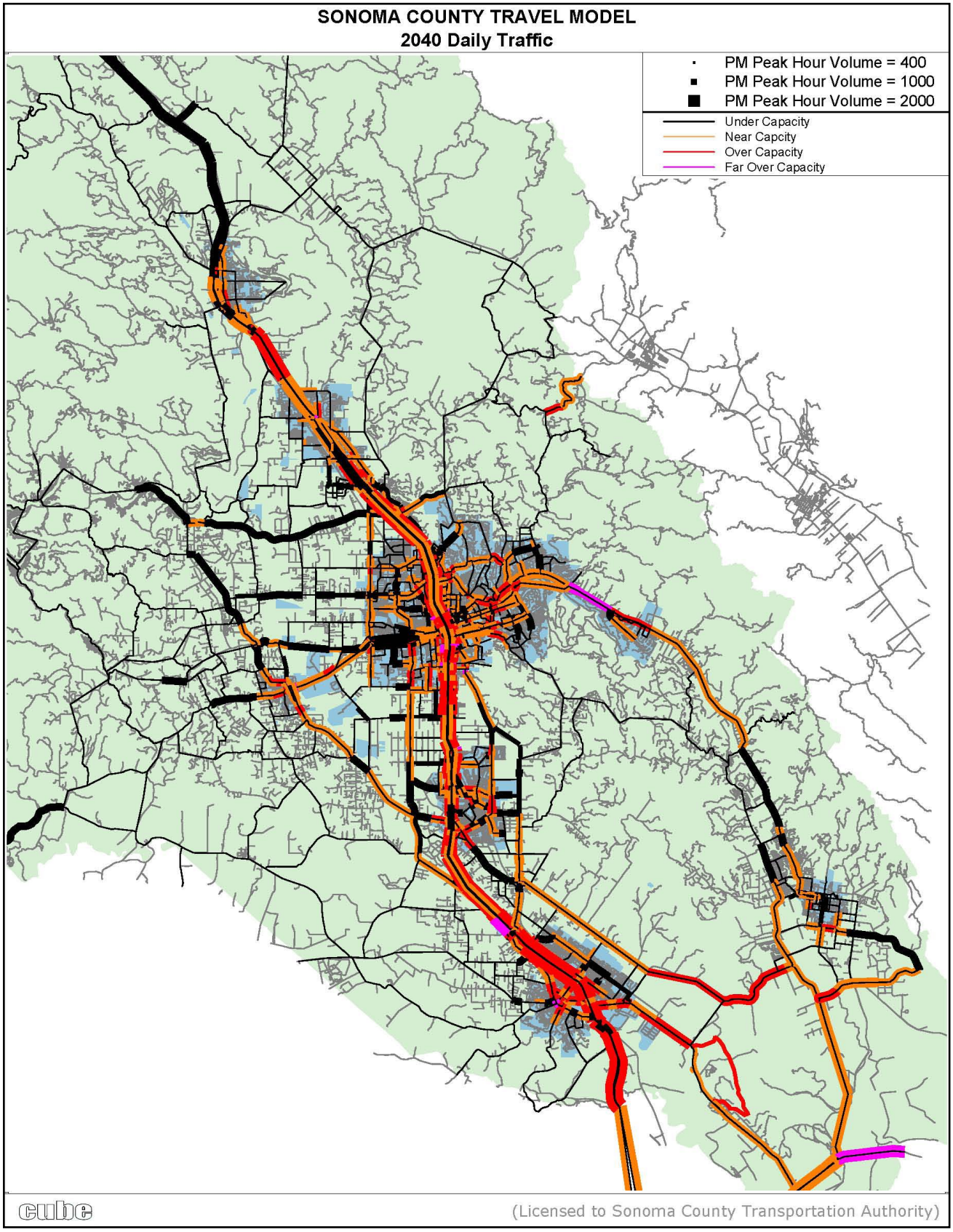
Travel in Sonoma County is dominated by the private automobile and is expected to remain so into the future if transportation policy, funding, and attitudes do not change. In 2010 approximately 8 percent of trips were made using active transportation modes. The Sonoma County Travel Model estimates that the rate of using active travel modes will stay in the 8 percent range in 2040, and estimates that major transportation projects and growth will have a very small impact on shifting travel to active transportation modes at the countywide level. Total transit ridership and walking/biking is expected to increase in the future but increased travel using these modes is offset by increased auto travel.

Table 2-7 Sonoma County Mode Shares by Trip Purpose — 2010 and 2040

	Auto				Non-Auto			
	Drive Alone		Shared Ride		Transit		Walk/Bike	
	2010	2040	2010	2040	2010	2040	2010	2040
All Trips	45.95%	45.30%	46.63%	46.50%	0.41%	0.40%	8.00%	7.80%
Commute	77.13%	76.80%	18.40%	18.40%	1.29%	1.50%	3.11%	3.30%
School	15.02%	15.00%	70.71%	70.90%	0.63%	0.70%	13.63%	13.40%

Source: Sonoma County Travel Model

Figure 2-15 2040 Daily Traffic



CHAPTER 3 HIGHLIGHTS

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CHAPTER 3

TRANSPORTATION SYSTEM

HIGHWAY AND ROADWAY SYSTEM

Sonoma County streets and highways would stretch all the way to New York if laid end-to-end. The system has more road miles than any other Bay Area county and combined has a huge rural network with urban and suburban systems.

In most Bay Area counties, cities own approximately two-thirds of the mileage, and the county only a quarter. In Sonoma County, this formula is reversed, with the County of Sonoma responsible for maintaining over half of the roadway system. There are over 2,700 miles of public roadways countywide, by far the greatest amount among the regions counties.[1] The reconstruction value of this infrastructure is estimated at $3.3 billion in 2016,[2] excluding state highways. The California State Department of Transportation (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 half or more of the daily vehicle miles traveled (VMT) in Sonoma County.

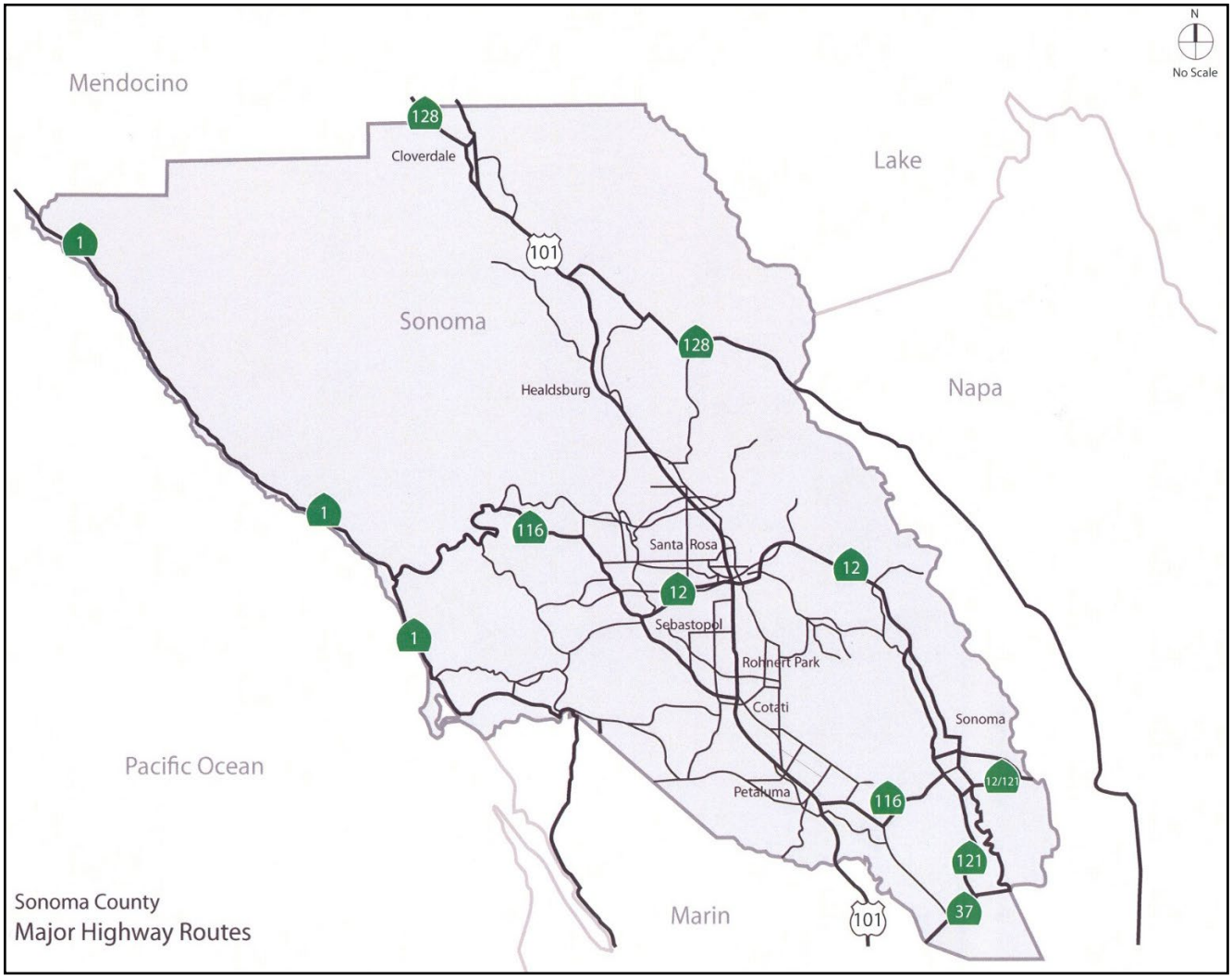
Table 3-1 Sonoma County Centerline Mileage of Public Roads, 2013

Owner/Maintenance Responsibility	Miles	Percent	Daily Vehicle Miles Traveled	Percent
County of Sonoma	1,397	52	2,407,670	22
Cities	960	36	3,000,180	28
Cloverdale	24	1	15,460	0
Cotati	23	1	91,540	1
Healdsburg	44	2	120,010	1
Petaluma	153	6	489,520	4
Rohnert Park	83	3	225,950	2
Santa Rosa	521	19	1,797,640	16
Sebastopol	21	1	26,760	0
Sonoma	33	1	102,920	1
Windsor	59	2	130,380	1
State Highways	239	9	5,474,260	50
State Parks Department	92	3	8,840	0
Federal Agencies	15	1	8,440	0
Total Maintained Mileage	**2,703**	**100**	**10,899,390**	**100**

Source: California Department of Transportation, Highway Performance Monitoring Program, http://www.dot.ca.gov/hq/tsip/hpms/datalibrary.php
Note: Miles and percentages rounded

1 California Department of Transportation, Highway Performance Monitoring Program, http://www.dot.ca.gov/hq/tsip/hpms/datalibrary.php.
2 SCTA calculated the reconstruction value escalated at 3.3% from 2004 estimates.

Figure 3-1 Map of important County and Caltrans streets and highways



Highway 101

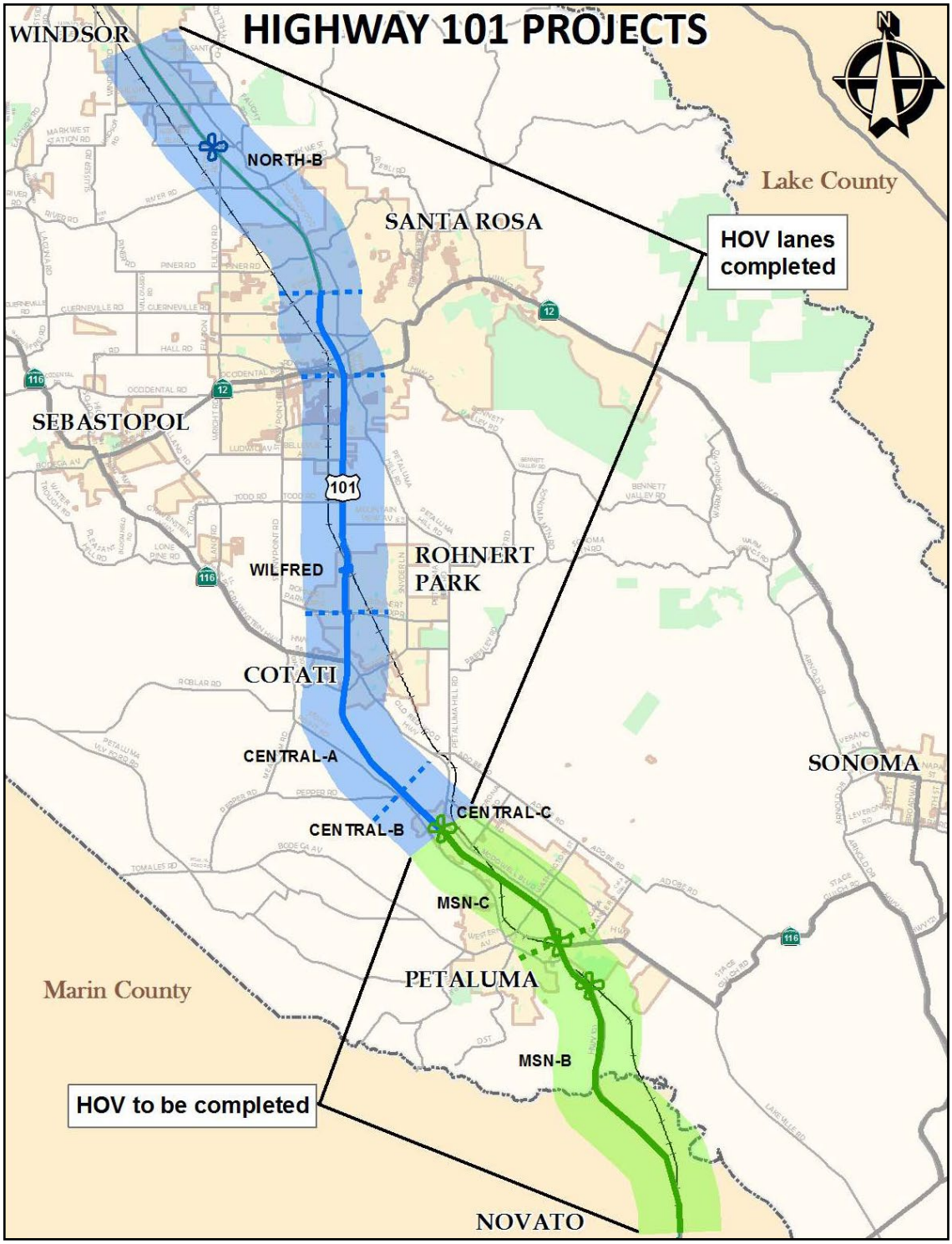
Highway 101 is the county's principal freeway and the primary north-south trunk highway linking the county to Marin County and San Francisco to the south and Mendocino County to the north. Much of Highway 101 was constructed as a typical rural freeway, at-grade with two lane overpasses that use hook on and off-ramps,[3] in the 1950s and 1960s. Expansion of the freeway to six lanes by converting wide medians to High Occupancy Vehicle (HOV) lanes began over a decade ago, with completion of the first segment in 2003. Highway 101 is now six lanes, including HOV lanes, for the 23 mile stretch between Windsor River Road and Old Redwood Highway in Petaluma. Segments between Highway 116/Lakeville interchange and Petaluma Boulevard South interchange in Petaluma; and the Redwood Landfill interchange and Highway 37 in Marin County are also complete. In 2015, two sections of the highway in southern Sonoma County remain four lanes and do not meet freeway standards[4] (frequently known as the Marin-Sonoma Narrows), but are under construction and estimated to be completed by the end of 2018. There are plans for widening the remainder of Highway 101 in phases; however, the gaps are currently

3 'Hook ramps' are ramps that exit (or enter) the freeway from a paralleling street, using a ramp curved at (approximately) a 90-degree angle. Because hook ramps are often forced into tight situations, they frequently have less than desirable geometrics.

4 This section, from north of Atherton Avenue in Novato to south of the Petaluma Boulevard south ramps, is classified as an expressway. It lacks access control, i.e., intersections and private property driveways access directly onto 101 at several locations.

unfunded (see **Figure 3-2)**. The four-lane sections of Highway 101 correspond with locations where bottlenecks frequently occur.

Figure 3-2 Highway 101 Projects Map

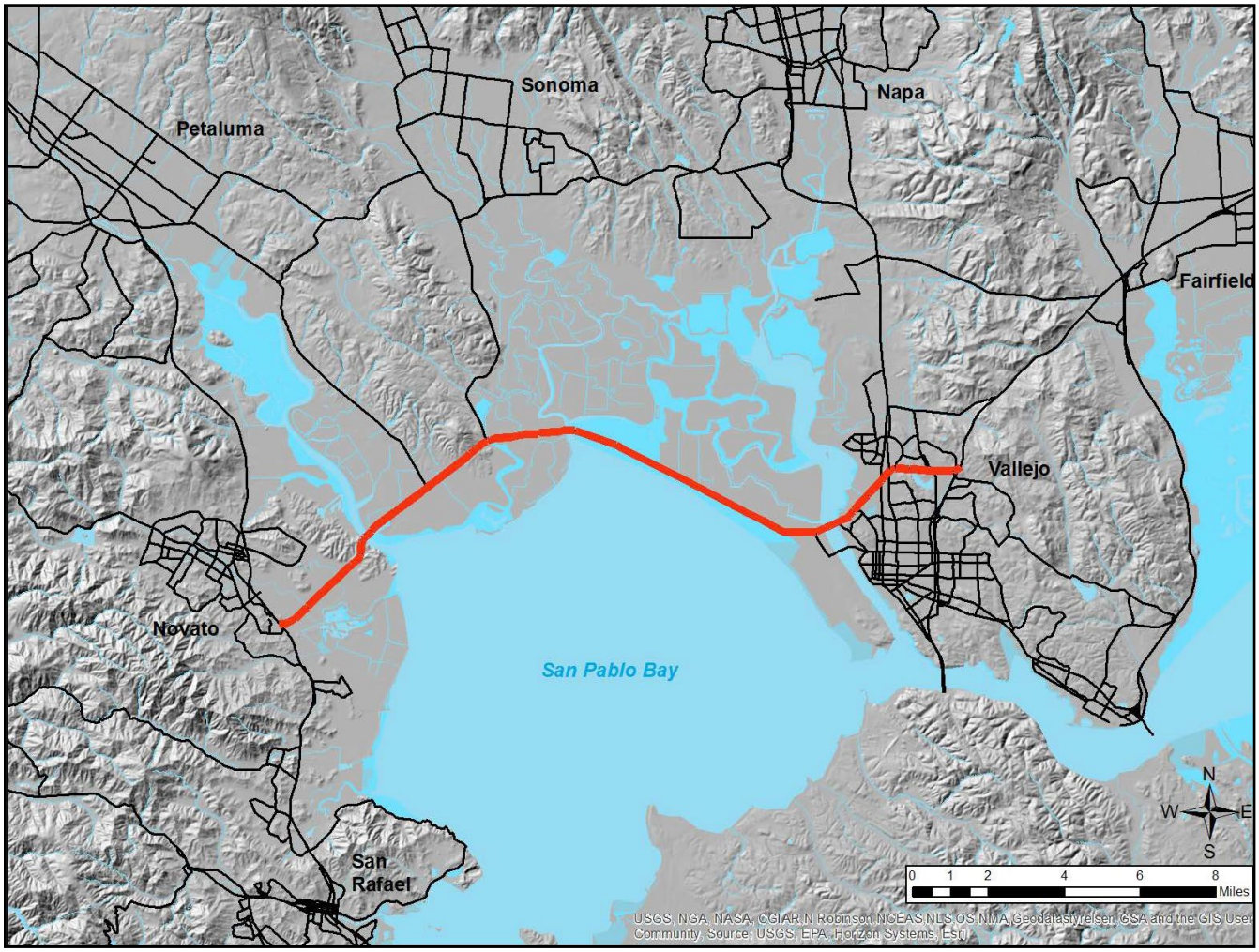


Highway 37

Highway 37 constitutes a major regional east-west vehicular transportation corridor in the northern Bay, connecting Highway 80 and Highway 101. The portion of Highway 37 near its intersection with Highway 121, where the four lane expressway ends, was the fourth worst congested area in Sonoma County in 2007.

This corridor is also under threat from sea level rise as it is one of the lowest-lying highways, in terms of elevation relative to mean higher high water, in California. Highway 37 was considered by Caltrans to be the best case study with which to develop an adaptive planning process to deal with flooding from sea level rise. As such, it is currently being studied to understand how adaptive transportation planning could address issues related to climate change and sea level rise. The projected rise of 1 to 1.7 meters in the next 90 years poses a potential threat to the Highway. Because of its position upon a berm passing through existing marshes and marshes under restoration, Highway 37 also poses a threat to the ability of nearby coastal-marsh systems to adapt. These marshes are nationally important as habitat for endangered species, so the role of the highway in their adaptation must be considered in corridor planning.[5]

Figure 3-3 Highway 37 Map



5 University of California, Davis, Road Ecology Center, *State Route 37 Integrated Traffic, Infrastructure and Sea Level Rise Analysis: Final Report, by Fraser M. Shilling, Kevin Ward, & David Waetjen (UC Davis); Justin Vandever, Joy Villafranca , Kris May, Sarah Kassem, and Mark Lightner (AECOM) (2016), 7-8.* < http://hwy37.ucdavis.edu/resources, accessed May 17, 2016>.

Highway 12

State Highway 12 links Sebastopol, Santa Rosa, the Sonoma Valley, and Napa County. It also provides an important connection to the Interstate 80 corridor, including a link for interstate trucking. Within Santa Rosa, between Fulton Road on the west to Farmers Lane on the east, State Highway 12 is developed to freeway standards. The two lane sections in Sebastopol and in the Sonoma Valley are severely congested on both weekdays and weekends. The congestion is particularly bad during summer months, because of a variety of uses (wineries, special events, the Infineon Raceway, and so on) that attract large numbers of day and overnight visitors. Although Arnold Drive provides an alternative route for much of the Sonoma Valley, most visitor traffic tends to stay on the state highway. State Highway 12 is also congested at its western terminus in Sebastopol, where it joins State Highway 116.

Condition of Roads

Physically, Sonoma County's unincorporated and municipal road system suffers from a number of problems:

- Restricted maintenance budgets over the past 25 years have resulted in poor pavement conditions. For example, Sonoma County's roads average a Pavement Condition Index (PCI) of 44 in unincorporated areas, whereas a PCI of 80 is considered optimum.[6] This is the lowest of any county in the Bay Area, and the County has one of the largest deferred maintenance backlogs in the Bay Area.
- Many roads, especially in rural areas or older urban areas, lack standard shoulders or pedestrian walking areas to enhance the safety and pleasure of walking and cycling.
- Roads (including state highways and freeways) have been subject to serious flooding problems in the past 20 years. Some bridges are obsolete and do not meet 100 or even 50 year flood levels.
- Portions of some roads do not meet current safe sight stopping distance standards.
- Many city streets become congested during peak commute times, school bell times, and special events.

The most recent pavement condition data compiled by MTC is shown by road type for each Sonoma County jurisdiction in **Figure 3-4**. This figure illustrates how local roads are generally in worst condition than collectors and arterials, especially in rural areas. A critical point is that although pavements deteriorate only 40 percent in quality in the first 75 percent of their life, this deterioration subsequently accelerates rapidly, resulting in another 40 percent drop in quality in the next 12 percent of life. A single dollar spent on renovation when the pavement is still in 'fair' condition can save five dollars in maintenance cost over spending maintenance funds when the pavement has already deteriorated to 'very poor' quality.

6 Metropolitan Transportation Commission, Pavement Management Program (2013).

Figure 3-4 Pavement Condition Index by Road Type

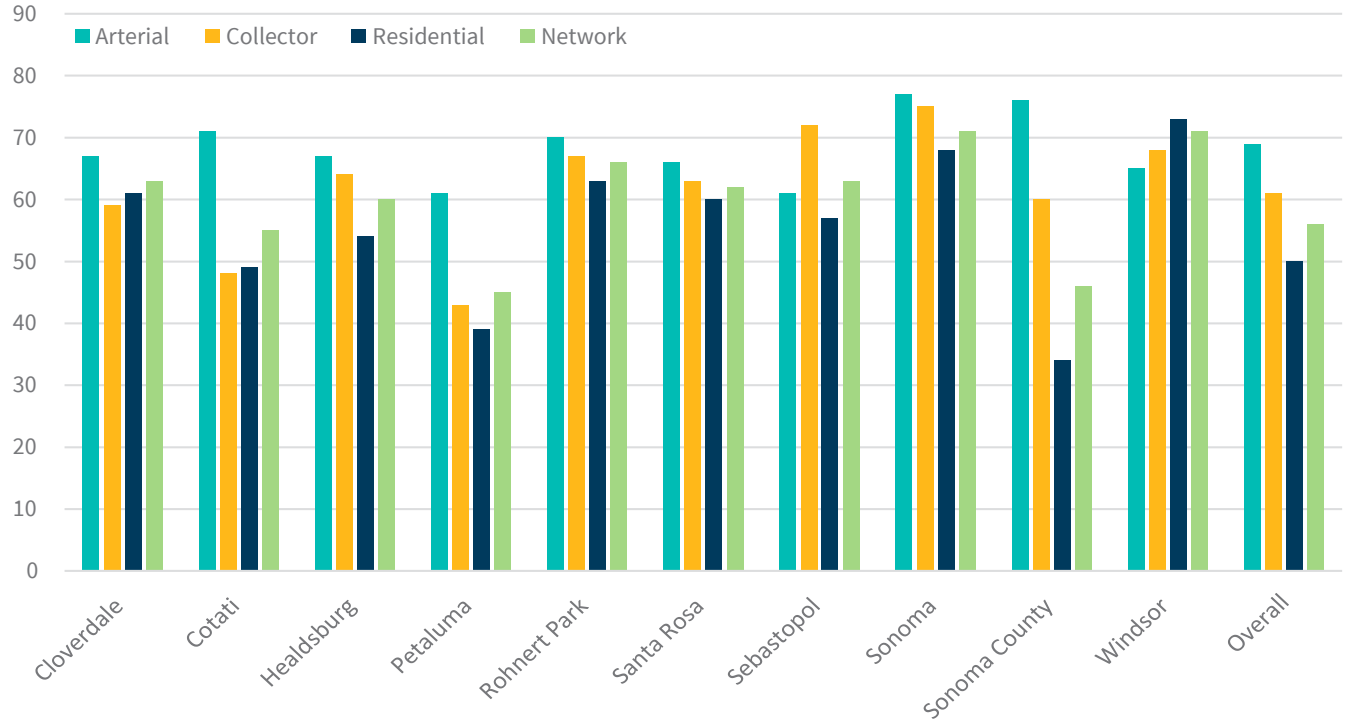
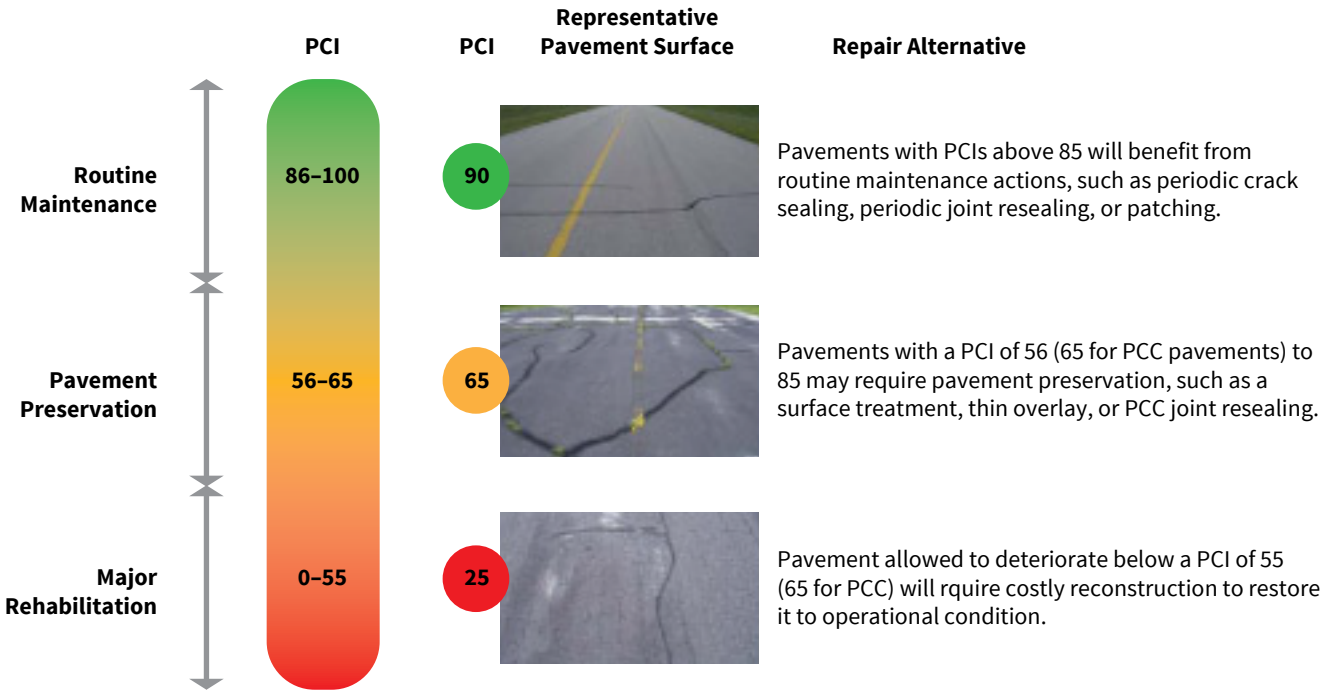


Figure 3-5 Pavement Condition Index (PCI) Description



Source: Arizona Department of Transportation

Congestion

Congestion on freeways and local roads fluctuates over time due to changes in the economy, infrastructure, and travel patterns. While specific locations on highways and arterials regularly become congested at during peak commute times, weekend travel also causes delay in several locations throughout the County.

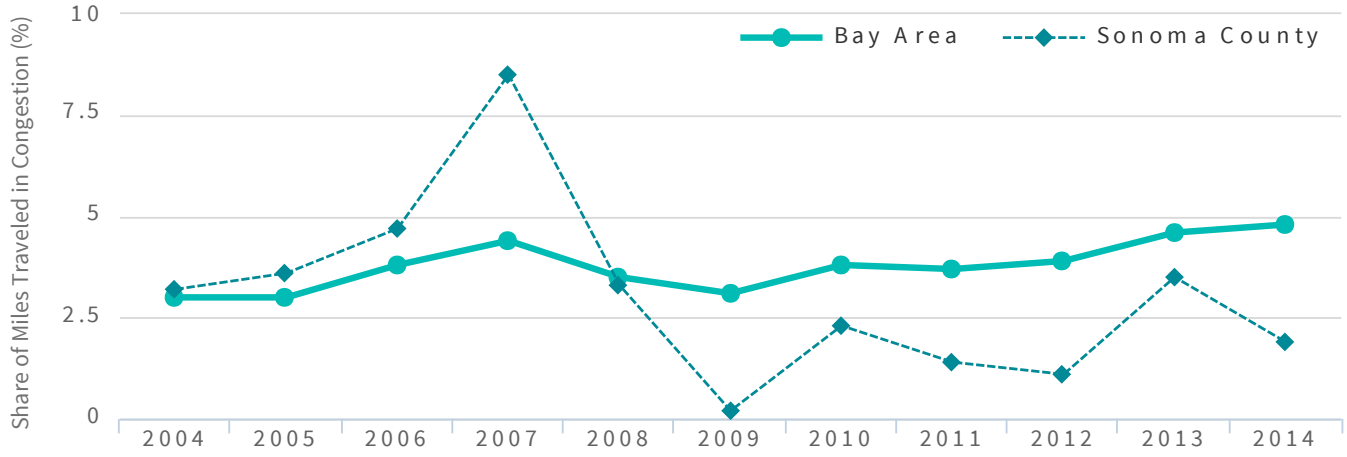
Spotlight — Measuring Transportation Impacts: Vehicle Miles Traveled vs. Level of Service

On September 27, 2013, California Governor Brown signed Senate Bill 743, which requires that the Governor's Office of Planning and Research (OPR) amend California Environmental Quality Act (CEQA) guidelines for analyzing transportation impacts. Traditionally, environmental review of transportation impacts has focused on vehicle delay occurring at intersections or on roadway segments. This delay is usually measured using a metric called level of service (LOS). Mitigation for degraded LOS is often focused on increasing roadway capacity. Increased capacity may encourage auto use and increase emissions from vehicles, and discourage travel using other transportation modes such as transit, walking and biking. SB 743 seeks to reorient the focus of transportation analysis away from driver delay to a way of analyzing transportation impacts that support statewide goals related to infill development, public health, creating multimodal transportation networks, and reducing greenhouse gas emissions.

Current Freeway Congestion Locations

Caltrans freeway congestion monitoring data indicates that in 2014 roughly two percent of freeway travel throughout the state occurred in congested conditions. About five percent of regional freeway travel in the San Francisco Bay Area occurs in congested conditions. Congested freeway travel in Sonoma County was higher than the regional average from 2004–2007, and dropped below the regional average from 2008–2014.[7] The economic recession of last decade and improvements to the Highway 101 corridor have contributed to improvements in freeway congestion since 2008. However, the duration of congestion—from the time it starts until the time it ends—continues to increase. Some segments of Highway 101 now begin experiencing congestion in the early- to mid-afternoon. Southbound Highway 101 in south Petaluma becomes congested by 5:30 AM. Freeway congestion is defined as conditions where vehicle speeds regularly drop below 35 mph for at least 15 minutes each weekday.

Figure 3-6 Sonoma County and Bay Area Congested Travel on Freeways



Source: MTC Vital Signs

7 Metropolitan Transportation Commission, Vital Signs <http://www.vitalsigns.mtc.ca.gov, accessed June 17, 2016>.

Weekend Traffic Congestion

State Highway 116 connects the coastal city of Jenner (at Highway 1), Forestville, Sebastopol, Petaluma, and the Sonoma Valley and is a two-lane road with varying widths. Congestion is most severe on weekends due to recreational traffic, particularly in Guerneville and Sebastopol. Other State highways with substantial weekend traffic are State Highway 121 (between Highway 37 and the Napa County line), Highway 37, and Highway 1. There are relatively few quantitative measures available for weekend traffic congestion.

Highway 1 north of Jenner experiences heavy weekend traffic as a result of steep, winding grades; the presence of heavy vehicles (including RVs); presence of coastal development (e.g., Sea Ranch, Gualala) and tourist attractions (e.g., beaches). Many "sightseeing" trips use this scenic road. River Road, Alexander Valley Road, Dutcher Creek Road, Bohemian Highway, Westside Road, Fort Ross Road, and Lakeville Road also experience varying degrees of weekend congestion from visitor traffic, sometimes related to holiday or seasonal periods. Some shopping areas, e.g., Santa Rosa Avenue, experience heavy weekend traffic due to a large number of retail centers concentrated in a fairly small area.

Petrified Forest Road suffers from some weekend delays, because it is two lanes with few passing opportunities, and there are a moderate number of heavy vehicles that slow other vehicles on the mountainous grades. This route is a popular connection between northern Napa County and Sonoma County.

Weekday Traffic Congestion on Arterials

Main Street, in the unincorporated community of Penngrove, suffers considerable peak period weekday traffic congestion due to drivers avoiding congestion on Highway 101, and new development in northeast Petaluma and east Rohnert Park. Arnold Drive, River Road, Old Redwood Highway, Bodega Highway, Lakeville Highway, and Petaluma Hill Road have heavy weekday traffic. Todd Road, Llano Road, Crane Canyon Road experience congested conditions on weekdays and many roads within incorporated cities also experience severe congestion. While some other local roads may need safety or physical improvements, they have adequate levels of service.

Freeway Management

Key systems management features that have been implemented in Sonoma County are Freeway Service Patrol and on-ramp metering. The Bay Area Freeway Service Patrol (FSP) is a congestion management program implemented by the Metropolitan Transportation Commission Service Authority for Freeways and Expressways (MTC SAFE), Caltrans, and the California Highway Patrol (CHP). FSP drivers rove the freeways during hours of peak congestion, providing quick and efficient response to incidents. Every year, FSP trucks save Bay Area motorists nearly four million hours of delay time, reduce fuel use by nearly two million gallons, and reduce tailpipe emissions by several hundred tons.

In 2014, on-ramp metering lights were activated at 56 Sonoma County locations along Highway 101 from Old Redwood Highway in Petaluma to Arata Lane in Windsor. Ramp metering lights help ensure freeways are able to carry all the traffic they have capacity for by managing the rate at which vehicles enter the freeway through the use of traffic signals. Traffic at metered locations is monitored by Caltrans to optimize the operations and function of the system. Many of the on-ramps in Sonoma County have a carpool lane marked with a diamond to promote high occupancy vehicles (HOV). A technical report analyzing conditions before and after implementation of the on-ramp metering lights found that travel times on Highway 101 decreased for all time periods surveyed. These decreased travel times were realized despite traffic volume growth over the two year period and the opening of the Graton Resort and Casino in Rohnert Park.[8] All ramp metering in the corridor will be activated by 2020.

Arterial Management and Intelligent Transportation Systems

Many traffic signals today are activated by the presence of traffic and so can respond to changing traffic conditions at individual intersections. Sometimes signals are also coordinated or synchronized to improve traffic flow and

8 Kittelson & Associates, Inc., *Final Sonoma US 101 Ramp Metering Before/After Technical Report, December 2015.*

reduce delay. Arterial management takes this a step further, and attempts to look at all signals in a corridor and provide flexible and adaptive traffic controls best suited to the traffic conditions on a minute-by-minute basis. The intent is to reduce delays and the number of stops experienced by motorists.

Traffic signal management is the proactive operation of traffic signals to achieve traffic control objectives and improve efficiency. Through the use of vehicle detection technology, traffic signal management strategies have been implemented in several locations throughout Sonoma County to improve the flow of traffic on arterial roadways and provide signal priority for transit vehicles.

These strategies can have a substantial impact on reducing congestion and corresponding emissions, and improving on-time transit performance. Signal timing for arterial management is often used to synch signals during peak commute hours to optimize directional traffic flow. The City of Petaluma has recently coordinated signal timing during peak commute hours at several intersections on major arterials throughout the City to reduce congestion and corresponding emissions. Signal timing technology can also be used to detect vehicles in left turn lanes to trigger a left turn signal to avoid running the signal when no vehicles are traveling in that direction. The Town of Windsor is converting several signals from protective left turn phasing to protective-permissive left turn phasing to reduce average delay.

Transit signal priority (TSP) uses technology to detect approaching buses and allow a phase advantage, where a green light may be extended for around 10 seconds to allow an approaching bus to make it through the intersection. In addition, TSP can shorten a red light by around 10 seconds for a bus that is stopped behind the light. The City of Petaluma has replaced older signal preemption equipment with state-of-the-art GPS enabled detection equipment at several key intersections. Petaluma's TSP equipment communicates with both Petaluma Transit buses and City of Petaluma Fire Department response vehicles to enable reduced transit route cycle times and improve safety.

BICYCLE AND PEDESTRIAN SYSTEM

Bicycling and walking are key components of vibrant, livable, healthy communities, and are an integral part of a complete transportation system. These active transportation modes support all of the CTP Goals (see **Chapter 4**) by assisting in reducing traffic congestion, greenhouse gas emissions, air and noise pollution, and energy consumption, while also helping to improve the health and quality of life of residents and communities. Bicycling and walking are zero emissions travel options and are particularly effective in reducing greenhouse gases when replacing short car trips by eliminating the "cold start" vehicle emissions produced by gasoline-powered motorized vehicles. For every 1 mile pedaled rather than driven, nearly 1 pound of carbon dioxide (Co2) is saved. Bicycling and walking are low cost and provide the health benefits of physical activity, which are well documented and numerous.

Spotlight — Safety and Education Programs

Safety has a substantial influence on the decision to walk or ride a bike. Safe and complete bicycle and pedestrian facilities, as well as education and awareness, reduce the potential for injuries. A detailed discussion regarding measuring and reducing traffic injuries in Sonoma County is provided in **Chapter 4**.

Safety and education programs, such as those sponsored by the Sonoma County Bicycle Coalition, and law enforcement efforts aimed at correcting motorist, pedestrian and bicyclist behavior, are important supports to maintaining safety for bicyclists and pedestrians. Other programs such as bicycle fairs, events, races, Bike to Work Day, and the Center for Climate Protection's ECO2school program promote biking for commute and recreation purposes as well as safety and education. Employer incentive programs also provide support for electing bicycling or walking as an alternative to driving.

Spotlight — Sonoma County Safe Streets Coalition

The Sonoma County Safe Streets Coalition task force was formed by Sonoma County Supervisor Shirlee Zane in 2012. The Coalition brings together relevant public and nonprofit organizations to collaborate on improving the safety of pedestrians and bicyclists. Several successful public service campaigns have developed through this Coalition.

Spotlight — Safe Routes to School

SCTA supports the Countywide Safe Routes to School Program and Bike to Work Day initiatives through Measure M funding. The Safe Routes to School Program also receives State and Federal funding through Caltrans. Facilitating the ability of school children to walk and bicycle to school is important as a means of increasing childhood health, as well as fostering behaviors that curb local traffic congestion and vehicle emissions. Over the past forty years, the percentage of children walking and biking to school has dwindled dramatically from about 50% of all students in 1969 to just 13% in 2009. Parents cite long distances as the most common barrier. Even though fewer children live within a mile of school (41% in 1969, 31% in 2009), of those who live within one mile of school, 88% walked or biked to school in 1969 versus only 38% in 2009.

The International Walk and Roll to School Day is included as an event in the Countywide Safe Routes to Schools Program, which encourages and educates students to safely walk and bike to and from school, and educate parents, school officials, and staff about the benefits of walking and biking to school. The number of students participating in International Walk and Roll to School Day has increased nearly 20%, from 2,139 in 2007 to 11,026 in 2013.

With its moderate climate, diverse scenic vistas, and swaths of gentle terrain, Sonoma County is in general an ideal place to bicycle and walk. Additionally, while each of Sonoma County's cities have unique constraints, all of the cities are of such a scale as to make many desired destinations within reasonable distances for bicyclist and/or pedestrian access. Likewise the distances between many cities are feasible for bicycle commute and recreational trips. SCTA envisions a broad network of safe routes that will connect all desired destinations. However, the bicycle and pedestrian infrastructure is currently incomplete and relatively few people use bicycling or walking as their primary mode of transportation. In 2010, only eight percent of all trips in Sonoma County were taken bicycle or walking. Although nearly all trips begin and end as pedestrian trips, the mode used for the majority of a trip is used to calculate mode share.

While many challenges for both pedestrians and bicyclists exist throughout the County, much has been done to improve facilities and encourage walking and bicycling. During the last several decades, and increasingly in recent years, interest has grown in creating a transportation system that fully integrates bicycling and walking. "Complete street" policies now require that transportation agencies routinely accommodate safe access for all users when investing in road improvements, i.e., designing and operating the right-of-way for pedestrians, bicyclists, motorists and transit riders of all ages and abilities. Patterns for new development is shifting toward more walkable, bikeable, and transit oriented communities focused in Planned Development Areas (PDA). Infill development and complete networks of paths, sidewalks, and bicycle facilities reduce distances between destinations and provide safe and accessible routes for bikes and pedestrians. While much remains to be done, steady progress has been made by Sonoma County and its cities to upgrade and add facilities that foster bicycle and pedestrian travel. Class I pathways, Class II striped bike lanes, Class III signed bicycle routes, multi-use trails, pathways and sidewalks have been added in rural, suburban and urban settings.

The Pedestrian System

Across the County, common patterns are evident regarding the pedestrian system. Historic downtown core areas developed before the automobile era retain much of their walkability, where a variety of destinations are reachable by foot from residences. Sonoma, Sebastopol, Petaluma, Cotati, Santa Rosa, Windsor, Healdsburg and Cloverdale all have such long-established central areas. For the most part sidewalks have been in place for many decades in these areas. Rohnert Park was developed after automobile ownership became common and its neighborhoods provide pedestrian access to schools and parks but more limited access to other destinations.

Sidewalks are also in place in almost all of the most recently developed residential, civic, and business developments. System gaps are frequently found in locations between the older and newer development. Often closures of such gaps have needed to await development, or re-development, of adjacent parcels, at which time sidewalks are made a permit condition. Discontinuous sidewalk systems are also prevalent in the County's unincorporated towns. Additionally, most rural roads lack sidewalks and only some have a shoulder area to walk on.

The most daunting barriers to safe pedestrian travel are freeways, particularly Highway 101, and high-speed and/or multiple lane arterials. Traversing on-ramps and off-ramps, and traveling under or over freeways on foot can be an unpleasant experience for many. Likewise, crossing high-speed and/or multiple-lane principal arterials is a challenge many would-be pedestrians find too difficult. Various approaches are being used to address this issue by redesigning roadway facilities. On a number of streets bulb-outs have been added to slow traffic and shorten the distances pedestrians must travel from curb to curb. Other roads have been redesigned to calm traffic speeds and add human scale to roadways and crossings. Various signal and warning devices have been implemented, and strategies including medians, and pavement treatments have been employed. In the case of Highway 101, its current re-construction has created opportunities to upgrade pedestrian accommodations.

Pedestrian connectivity to public transit can sometimes be a challenge. Convenient access to bus stops, bus shelters, and complementary amenities such as seating and lighting encourage use of public transit and add to pedestrian comfort and safety.

People who use wheel chairs are by definition also pedestrians. As new pedestrian facilities are built and older ones are upgraded, they must be constructed to be accessible per the regulations of the Americans with Disabilities Act of 1990. Curb ramps and accessible user devices are some of the accommodations routinely installed.

While reasonable walking distances may vary from person to person, it is clear is that people will walk more if they feel safe and comfortable, and can experience interesting and pleasant surroundings. A comprehensive pedestrian system is comprised of more than just walking surfaces. Many cities have added amenities such as landscaping, tree plantings, lighting and street furniture to create pedestrian friendly environments. Design standards are being used to create pedestrian areas that are welcoming and feel safe. Land-use is critical to the viability of a pedestrian system, with pedestrian facilities designed to provide access to attractors like schools, offices, eating establishments, retail sites, and transit routes.

The Bicycle System

The countywide bicycle system includes, but is not limited to, the following facility types: Class I, Class II, Class III, Class IV, bicycle boulevards, multi-use trails, traffic calming, signage, bicycle-activated signal detection, and bicycle parking. See **Appendix 3A.**

- Class I Bikeway (Bike Path) provides a completely separated right of way for the exclusive use of bicycles and pedestrians with crossflow by motorists minimized (such as the Joe Rodota Trail);
- Class II Bikeway (Bike Lane) provides a striped lane for one-way bicycle travel on a street or highway, with the lane designated with striping and signage and/or pavement markings;

- Class III Bikeway (Bike Route) provides for shared use with pedestrian or motor vehicle traffic with the route indicated just with signage; and a
- Class IV Bikeway (Cycle Track or Protected Bikeway) provides an on-street bike lane that is buffered from traffic using a physical barrier, such as curbs, planters, or parked cars.
- Additionally there are unpaved recreational trails.

A range of users must be considered in building a bicycle system. Some experienced riders might prefer the shortest and fastest on-road route regardless of the type of facility; however, most riders will likely prefer a Class I separated bicycle facility or a Class II bike lane. Bicycle riders of all ages and abilities, and those who are riding for both recreation and transportation or commuting, must be considered in system implementation.

In 2008, Sonoma County had more than 241 miles of built bicycle infrastructure, of which the vast majority were in the form of bike lanes on street networks. Since then, the bicycle network has grown by approximately 24 percent, with over 77 miles of bicycle infrastructure have been built, including more than 10 miles of Class I facilities, 46 miles of Class II facilities, and 19 miles of Class III facilities.

Class II facilities have been and continue to be the dominant form of bicycle infrastructure built, with 61% of the overall bicycle infrastructure built since 2008 throughout the entire Sonoma County area. Class I and Class III bike-ways were approximately 14% and 26%, respectively, of the total miles built. The table below includes the total miles of the existing bicycle system by Class for each jurisdiction.

Table 3-2 Total Miles of Existing Bicycle Facilities by Class

Class	I		II		III	
	Existing	Proposed	Existing	Proposed	Existing	Proposed
Large Jurisdictions						
Santa Rosa	13.0	27.1	46.0	50.2	18.0	109.2
County	20.4	193.8	25.0	389.0	6.0	187.5
Medium Jurisdictions						
Petaluma	19.0	22.4	20.3	43.3	1.0	17.9
Rohnert Park	10.6	13.5	22.9	6.2	6.5	7.9
Windsor	2.7	7.9	17.2	6.8	1.1	6.3
Small Jurisdictions						
Cloverdale	1.7	7.4	1.1	2.6	0.4	3.4
Cotati	1.6	0.6	4.5	2.4	0.0	1.9
Healdsburg	1.8	2.1	3.0	1.0	4.4	3.5
Sebastopol	1.2	0.4	0.0	5.6	0.0	4.0
Sonoma	3.9	0.6	2.0	4.8	2.4	3.4
Total by Class	**76.0**	**275.7**	**141.9**	**511.8**	**39.8**	**344.9**
Total Existing Facilities						**257.7**
Total Proposed Facilities						**1132.3**

Source: Countywide Bicycle and Pedestrian Master Plan, 2014.

Class 1 Facilities

Across the County, opportunities exist to use public rights of way to establish off-road Class I trails. Many Class I facilities have been, or will be, constructed along creek alignments owned by cities or the County (e.g., Sonoma County Water Agency) and along prior or existing railroad rights-of-way. Additional opportunities might exist along pipeline and other utility easements. An extensive Class I facility is being implemented along the Sonoma Marin Area Rail Transit (SMART) railway, which is discussed in more detail below.

The major existing Class I facility in the County is the Joe Rodota Trail (3 miles) leading east to west from Santa Rosa to Sebastopol. It links to the West County Trail, a Class I facility, which currently extends to Forestville (with County plans to extend it further along Mirabel Road and to the Prince Memorial Greenway, which continues into downtown Santa Rosa). Traversing scenic areas of the West County, mostly in alignments that were formerly rail lines, these two multi-use trails are utilized by commuters and recreational users of all ages. The alignment of the proposed SMART Pathway would intersect the Joe Rodota Trail. In addition to the facilities utilizing public rights-of-way, others have been, and will be, constructed as part of private development.

On-Road Facilities

On-road bicycle facilities include bike lanes (Class II) and shared lane facilities or bike routes (Class III). There are currently more than 230 miles of Class II and II facilities throughout the County. Class IV bikeways, or cycle tracks, are a new classification adopted by Caltrans in 2015. While cycle tracks have not yet been implemented in Sonoma County, a recent study in the United States showed that bicyclists feel safer using cycle tracks and that they increase bicycling.[9] The existing roadway system presents many barriers and safety concerns for bicyclists. Many roads are narrow, not having been constructed to accommodate bicycle and foot traffic, and current traffic volumes. In many rural areas, shoulder widths are sub-standard and along some roadways virtually non-existent. Additionally, freeways and high-speed and multiple-lane arterials present challenges for the on-the-road bicyclist.

These inadequacies of older roadways are being addressed incrementally. Roads are sometimes widened to include room for bicyclists or redesigned, often with “road diets” or other safety measures, to create environments that are friendlier to bicyclists. Gap closures, particularly those on facilities with high demand and those that are part of the regional network, are in general given priority for improvement.

Implementations can be costly and are sometimes controversial, especially when accommodations may mean the need to acquire additional right-of-way; engineer and construct drainage, culverts and bridges; relocate utilities; remove parking; and take projects through the public review, approval and environmental clearance processes. The range of objectives, which at times can compete, make solutions difficult to devise. The needs of pedestrians, bicyclists, motorists, people who use wheelchairs and other mobility aids, transit and emergency vehicle operators all must be considered in designing new facilities and retrofitting older ones.

Maintenance of existing non-motorized facilities is also crucial. Roadside sweeping and debris removal, pothole repair, tree trimming, and the monitoring and maintenance of roadway shoulders, sidewalks, trails and signs are all examples of essential maintenance program tasks.

As with the pedestrian system, the bicycle system includes more than bicycling surfaces. Bicyclists need an integrated support system of helpful signage, signal detectors, bike racks for temporary parking at destinations, secure longer-term parking/storage at work and school sites, and facilities that include restrooms, showers and clothes storage. In many cases, the lack of such support facilities presents a major deterrent for bicycle use.

Proposed Physical Improvements

Sonoma County and all its cities have engaged in recent planning for bicycle and pedestrian improvements through the 2014 update of the Countywide Bicycle and Pedestrian Master Plan (Countywide BPMP). The Countywide BPMP includes approximately 278 miles of Class I facilities, 511 miles of Class II facilities, and 269 miles of Class III facilities, with a total of 1,058 miles of bikeways connecting all of the jurisdictions. A complete list of proposed projects by jurisdiction can be found in **Appendix B** of the Countywide BPMP. Projects that have been identified as priorities for completion within the next 10 years are highlighted in the Countywide BPMP project list. **Table 3-2** above provides the number of miles of proposed bicycle facilities by type (Class I, II or III) per entity. With Sonoma County’s expanse and volume of road miles, it is not surprising that the County’s share of proposed miles of improvements are high compared to the cities.

9 National Institute for Transportation and Communities, *Lessons from the Green Lanes: Evaluating Protected Bike Lanes in the U.S., June 2014* < http://ppms.trec.pdx.edu/media/project_files/NITC-RR-583_ProtectedLanes_FinalReportb.pdf, accessed June 15, 2016>.

In addition to multi-use Class I pathways, pedestrian only improvements are proposed in all of the jurisdictions. A complete list of proposed pedestrian projects can be found in **Appendix B** of the Countywide BPMP. Sidewalk gap closure projects and sub-standard crossings in locations where there is high demand are a high priority for improvement. Creating environments that are safe and attractive for pedestrians important in many areas.

Large capital bicycle and pedestrian projects (over $1M) and projects of countywide significance are highlighted in this plan. These projects are summarized in **Table 3-3** and detailed in **Appendix 7B**. These 116 large capital/countywide significance bicycle and pedestrian projects combined will cost a total of $479.41M to complete. Many of these projects are currently unfunded. It is apparent that there is significant work to be done and funding to be acquired to complete the major projects that make up the planned bicycle and pedestrian system.

Table 3-3 Bicycle and Pedestrian Projects — Large Capital/Countywide Significance

Jurisdiction	Number of Projects	Cost (in $M)
Cloverdale	4	$5.29
Cotati	2	$1.58
Healdsburg	2	$8.59
Petaluma	8	$35.85
Rohnert Park	10	$23.31
Santa Rosa	13	$49.60
SCTA*	1	$0.00
Sebastopol	2	$0.69
SMART	1	$108.05
Sonoma County	65	$213.40
Windsor	8	$32.04
Total	**116**	**$479.41**

*Project cost is included in Highway 101 widening project.

Connectivity to Transit

Convenient bicycle and pedestrian connections to public transit are vital components of the bicycle and pedestrian network. Transit has the potential to extend trip ranges for bicyclists and pedestrians beyond comfortable walking or biking distances or during extreme weather. Likewise, bicycling and walking provide essential “last mile” connections to and from transit. Completion of the bicycle and pedestrian network would fill gaps in the current connections to transit. Sufficient bicycle carrying capacity on buses, and bicycle racks at transit stops, are also needed to make such trips a reliable option. Currently all of the public transit operators are equipped to carry bicycles and some bus stops have bicycle racks.

Spotlight — Sonoma Marin Area Rail Transit (SMART) Pathway

Operation of the SMART train will provide new opportunities for pedestrians and bicyclists to connect to public transit. The SMART Pathway paralleling the railroad alignment will provide bicycle and pedestrian access to the train stations, as well as independent travel north to south across the Sonoma and Marin counties (see **Figure 3-8**). The SMART Pathway is a planned multi-use/Class I trail along the 70-mile SMART rail project and former Northwestern Pacific Railroad (NWPR) corridor. This facility will eventually extend from Cloverdale to the ferry terminal in Larkspur in Marin County. The SMART Pathway will provide access to all fifteen SMART stations and serve both commuter and recreational bicyclists and pedestrians; joggers and other users.

SMART's environmental studies predict that 7,000 to 10,000 people will use the Pathway in a day. Several sections of the Pathway are now complete and several others are currently in the construction or design phase. While there has been progress on the Pathway, many segments remain unfunded and complex environmental, permitting, and design issues have delayed progress of others. Local cities and counties are tasked with completing segments that are on city streets and that are part of local bicycle and pedestrian master plans. In Healdsburg, Windsor and Santa Rosa, Class I facilities have already been constructed along parts of this right-of-way. All jurisdictions through which this rail corridor passes have prioritized this multi-use pathway in their plans.

Other Bicycle-supportive Programs

In addition to bicycle lanes and paths, projects and plans are underway that support bicycling as a means of transportation and recreation. Many cities are implementing comprehensive bicycle signage programs to enhance the safety and navigability of existing facilities. Bicycle parking programs aim to provide adequate bicycle parking amenities to meet the needs of existing and future bicyclists and enhance the overall bicycle system.

Bicycle sharing programs are emerging in several cities around the world and in the Bay Area. These systems provide access to short-term bicycle rentals in public locations. Bike share is often used for short trips between key destinations, trips between transit hubs and work or school, tourism and recreation. SCTA is conducting a feasibility study for bike share systems in Sonoma County. The study will provide recommendations for bike share sites, operating and funding models.

BUS TRANSIT SERVICES

Several bus operators provide service within Sonoma County, each covering specific communities and trips. Sonoma County Transit operates inter-city and local routes throughout the County, including all cities along the Highway 101 corridor, the Sonoma Valley to the east, and the City of Sebastopol and Russian River areas to the west. Santa Rosa CityBus (CityBus) and Petaluma Transit, the two largest cities in the County, provide local transit service within their communities. Golden Gate Transit offers regional transit service and commuter routes to and from Marin County and San Francisco. The Mendocino Transit Authority provides inter-county service between Santa Rosa and Ukiah in Mendocino County, and to several communities along the Sonoma/Mendocino Coast. Napa VINE has indicated interest in serving directly to the SMART system in the future and Marin Transit provides dial-a-ride services from West Marin into Petaluma.

Table 3-4 Sonoma County Bus Transit Services in 2015

Operator	Number of Routes	Number of Buses in Fleet
Golden Gate Transit	6	180*
Petaluma Transit	6	12
Santa Rosa CityBus	17	39
Sonoma County Transit	23	50
Mendocino Transit Authority	5	

* Includes Golden Gate Transit buses that do not serve Sonoma County routes

There are several transit hubs in the County providing connection points for the transit services. The Santa Rosa Downtown Transit Mall is the largest and is estimated to serve 30 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 the County, providing roughly 7,000 trips a day, between CityBus, Sonoma County Transit and Golden Gate Transit.

Additional transit hubs have been constructed at or adjacent to several of the future SMART stations. The existing facilities are currently functioning as bus transfer hubs and will eventually be served by SMART. Some of the facilities also serve as park-and-ride lots. These transit hubs include:

- 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. Construction began in 2015.
- Cloverdale Depot — Transfer hub for Sonoma County Transit (including feeder bus routes to SMART), Amtrak Thruway Service, and park and ride lot. Completed in 1998.

Real-Time Information

In the recent years, transit operators in Sonoma County have installed Automatic Vehicle Location (AVL) equipment on buses providing real-time Global Positioning Systems (GPS) location information for dispatching and tracking vehicles. AVL systems allow operators to provide real-time information to transit riders through websites, mobile applications, and hub and bus stop signage.

Mobile applications, websites, and transit hub and bus stop signage that display real-time bus schedule and arrival information facilitate easier and more convenient travel by transit. Real-time information is currently available for Santa Rosa CityBus and Petaluma Transit on the MyStop mobile application and website, and for Sonoma County Transit on the Next Bus mobile application and website. Real-time information and trip planning tools for all Sonoma County bus systems, including Golden Gate Transit, are also available through 511.org. SMART is working to install AVL equipment on their rail vehicles and to connect that information into the regional transit traveler information systems.

Sonoma County Transit and Petaluma Transit have recently installed several real-time bus arrival signs at major bus stops and transfer points. CityBus is in the process of installing real-time bus information signs at the Santa Rosa Transit Mall that will display real-time bus arrival information for multiple operators serving the Transit Mall. The presence of real-time bus signage is expected to increase throughout the County in the coming years.

Fares

The Clipper® card (Clipper®), MTC's universal fare card, is a fare instrument designed to operate on all of the different transit modes in the San Francisco Bay Area to pay fares for both inter-operator and intra-operator services. In January 2016, Sonoma County Transit, CityBus, and Petaluma Transit joined other Bay Area transit agencies in accepting Clipper®. The SMART train will accept Clipper® as its only fare medium. Clipper® will enable automated transfers between all transit operators with transfer agreements.

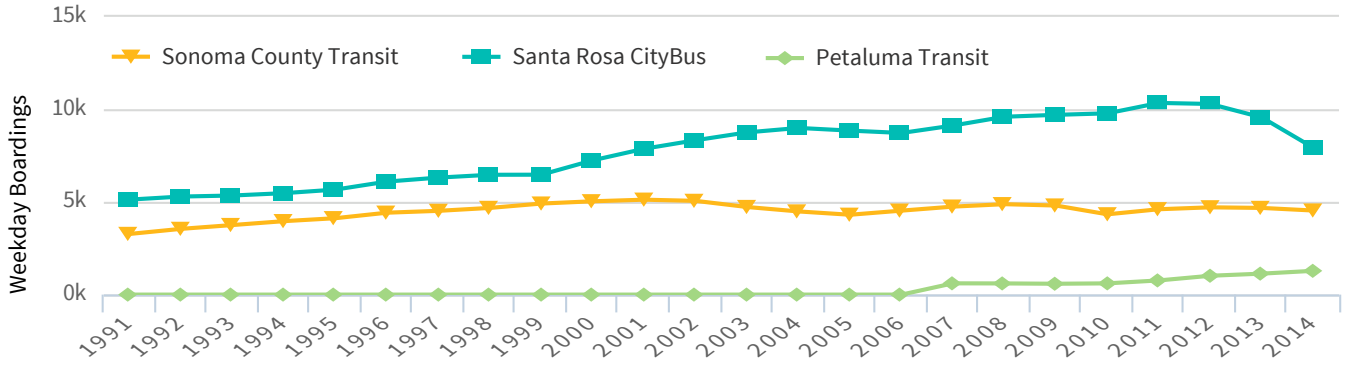
Currently, the base cash fares for Sonoma County Transit, CityBus, and Petaluma Transit is $1.50 for adults and $0.75 for the elderly (65+) and disabled. Base youth fares are $1.00 on Petaluma Transit and $1.25 for Sonoma County Transit and CityBus. Currently, operators offer free transfers between routes within a two hour period. Fare

transfer credits are also offered between connecting bus operator routes. SMART will offer $1.50 adult and $0.75 youth transfer credits for riders using Clipper® cards to transfer from any connecting transit agency. Likewise, connecting transit agencies will be accepting similar transfer credits for riders transferring from SMART.

Transit Ridership

Transit ridership in Sonoma County has grown throughout the years, with some fluctuations that have generally coincided with the economy and fuel prices (see **Figure 3-7)**. Historically, a large portion of transit riders in Sonoma County have been transit dependent. An increase in transit ridership, on all systems, is anticipated with the addition of the SMART commuter rail service in 2016.

Figure 3-7 Historical Trend for Daily Transit Ridership in Sonoma County



Source: MTC Vital Signs

Santa Rosa CityBus

Since 1958, CityBus has grown from three buses, two routes, and approximately 1,033 riders per day, to fourteen times the number of buses (39), nine times the number of fixed routes (17) and ten times the average number of weekday riders (10,155) in 2012. Annual ridership in 1983, the halfway point in the existence of Santa Rosa Transit-CityBus, was 1,020,000 passengers. In FY 2012–13 fixed route ridership was 2,869,065,[10] representing a 181 percent increase in 30 years.

CityBus ridership increased steadily between 2003 and 2011; however, ridership fell in the aftermath of service cuts, a fare increase, and transfer policy changes implemented in 2013 to address a significant budget shortfall as a result of the recession. Routes with the highest ridership cover southwest Santa Rosa and the Mendocino Avenue corridor. CityBus passenger demand tends to peak between 7–8:00 a.m. and 3–4:00 p.m. CityBus currently operates 17 fixed routes on weekdays and Saturdays and 15 routes on Sundays, with frequencies ranging from 30 to 60 minutes.

As CityBus continues to maintain and replace its infrastructure, it is challenged with meeting long-standing demand for more service. In 2016, Santa Rosa CityBus completed a long-range planning effort for the system to create a blueprint for the build-out of the "ideal" transit system for Santa Rosa called Reimagining CityBus. The plan identifies current and future travel patterns, needs, and priorities; more closely links transit planning with land use planning; and improves the efficiency, effectiveness, and overall operation of the bus system. The plan recommends a combination of changes to route alignments, schedules and the overall design of the transit system network, as indicated by planning analysis, public feedback, and Santa Rosa City Council guidance, to achieve these goals. CityBus has included connectivity to SMART as a major consideration is its Reimagining CityBus process. The plan for redesign of the CityBus system increases the frequency, directness, and connectivity of routes serving the Santa Rosa SMART stations. Implementation of the first phase of short-term revenue-neutral

10 National Transit Database, Transit Agency Information, Region 9, 2013 <http://www.ntdprogram.gov/ntdprogram/pubs/profiles/2013/agency_profiles/9017.pdf, accessed June 9, 2015>.

service recommendations is anticipated in 2016. In addition, a phased long-range plan will guide future system enhancements when additional funding becomes available.

This first phase of service changes will include two high-frequency, bi-directional bus service corridors and focused connections with the two Santa Rosa SMART stations. The high-frequency corridors would run north-south on Santa Rosa Avenue/Mendocino Avenue/Bicentennial Way/Range Avenue and east-west on Sebastopol Road/Third Street and target 15 minute headways, significantly higher frequency than the existing service levels. Ultimate build out of these projects could result in full-fledged rapid bus service.

In order to meet growing service demands, CityBus must also increase its fixed route and paratransit bus fleets. Over the twenty-five year life of this plan, facility enhancements to accommodate more buses, and technology enhancements to accommodate the technological changes that will inevitably occur over a quarter of a century, will also need to be implemented. All of these projects will require discretionary grant funds or other new funding sources for implementation.

Petaluma Transit

The City of Petaluma initiated fixed-route transit service in 1976. Today, Petaluma Transit provides scheduled service along six separate routes using a fleet of modern, 35-foot low-floor transit coaches. Routes currently operate on 30- or 60-minute headways, between 6:15 a.m. and 10:15 p.m. weekdays, from 7:20 a.m. to 10:15 p.m. on Saturdays, and from 8:20 a.m. to 5:45 p.m. on Sundays. Petaluma staff oversee operations performed in contract with MV Transit.

Annual ridership on the fixed-route system increased dramatically from roughly 160,000 in 2010[11] to 373,950 in 2015.[12] Ridership growth slowed in FY 2015 and is expected to continue at a similar rate with a forecasted system-wide ridership of 414,489 by 2022.[13] Petaluma's fixed-route buses carry approximately 1,513 boarding passenger trips per weekday.[14] In 2012, roughly a quarter of passenger trips were for work commute purposes and one third were for K–12 and college commute purposes; the remainder were primarily for shopping and recreational purposes. Ninety-seven percent of passengers said they walked to their first transit boarding point and the average walk time to the bus stop was 5.6 minutes, indicating a very high degree of coverage of land area. The remaining three percent of passengers bicycled to the bus stop. About 60 percent of riders report an annual family income of under $30,000. Over one third of riders are transit dependent and do not have any drivable vehicles in their household. Approximately 60 percent of riders are under 21 years old and only five percent are over 65 years old.[15]

Petaluma Transit is developing plans for service expansion and modification to better support SMART on opening day. Petaluma Transit is planning to augment three routes that will together provide robust SMART station-based service timed with train schedules. The three routes will connect Downtown, West Petaluma, and the Southeast Petaluma/Lakeville Highway Business Park areas to the Downtown SMART Station.

Sonoma County Transit

Sonoma County Transit's fixed-route system provides countywide service along major travel corridors in rural areas of Sonoma County. The system also links most small towns and communities and all nine incorporated cities in the County including Cloverdale, Healdsburg, Windsor, Santa Rosa, Sebastopol, Rohnert Park, Cotati, Sonoma and Petaluma. Sonoma County Transit's major intercity routes consist of routes 20, 26, 30, 40, 44, 48, and 60. Express and commute intercity bus service is also provided via routes 22, 34, 38, 42, 46, and 62. The fixed-route system is operated with annual State Transportation Development Act (TDA) and State Transit Assistance (STA)

11 City of Petaluma, *Short Range Transit Plan, November 2012.*
12 City of Petaluma, Petaluma Transit, August 6, 2015.
13 Ibid.
14 Ibid.
15 City of Petaluma, Full On Board Survey, *May 2014.*

funding from the County of Sonoma and funding contributions or reciprocal service agreements from each of the County's nine incorporated cities.

In addition to intercity public transit service, Sonoma County Transit provides local public transit service, under contract, within the Town of Windsor (route 66), and the cities of Healdsburg (67), Sebastopol (route 24), Rohnert Park, Cotati (routes 10, 12, 14), Sonoma (route 32), and Cloverdale (route 60), respectively. Local service is also provided to the unincorporated Russian River communities of Rio Nido, Guerneville, Monte Rio and Duncan Mills, and Occidental (route 28), and to the unincorporated Sonoma Valley communities of Agua Caliente, Boyes Hot Springs, El Verano and Temelec (route 32). Summer weekend intercity service is provided to the unincorporated Sonoma Coast communities of Bodega, Bodega Bay, Doran Park, and Jenner (route 29).

Sonoma County Transit operates 22 routes Monday through Friday between 5:20 a.m. and 10:27 p.m., with the exception of holidays Weekend service (including route 29) consists of thirteen routes operating on Saturday and ten on Sunday between approximately 7:05 a.m. and 9:31 p.m. Route 29 operates on weekends between the months of July and September only.

Sonoma County Transit plans to provide important feeder bus service to SMART, including enhanced east-west connections from the Sonoma Valley and from Sebastopol, and a circulator shuttle between the Airport Boulevard SMART station and the Sonoma County Airport. New feeder bus services to SMART from Cloverdale, Healdsburg and Windsor are also being coordinated with Sonoma County Transit.

More than half of Sonoma County Transit's fixed-route ridership is on three bus routes; 44, 48, and 60. Average weekday ridership in FY 2015 was 4,125.[16] Sonoma County Transit passenger demand tends to peak in the mid-afternoon on weekdays. A passenger profile survey indicated that over one third (35%) of Sonoma County Transit riders do not have any drivable vehicles available for their trip, and that roughly half of riders were under 30 years old and 18 percent were 60 or over.[17]

Sonoma County Transit pays its operations contractor, TransDev, on an "in-service" hourly basis. TransDev is paid a flat rate from the time a bus leaves the yard for revenue service to the time it returns to the yard from revenue service. Sonoma County Transit staff review paid in-service hour amounts each time schedules are revised or service is altered. Sonoma County Transit operated 89,397 fixed-route revenue hours during fiscal year 2015.[18]

Under contract with Sonoma County Transit, the **Mendocino Transit Authority (MTA)** provides inter-county public transit service along the Sonoma Coast between Mendocino County and Sonoma County. MTA's route 95 provides service 7-days per week between the coastal communities of Point Arena, Anchor Bay and Gualala in Mendocino County, and between Sea Ranch, Stewarts Point, Fort Ross, Jenner, Bodega Bay, Bodega, Freestone, Sebastopol, downtown Santa Rosa, Coddingtown Mall, and the Charles M. Schulz — Sonoma County Airport in Sonoma County. MTA's route 65 also provides service 7-days per week along the Highway 101, 20 and 1 corridors between Mendocino, Casper, Fort Bragg, Willits, Ukiah, and Hopland in Mendocino County, and between the Sonoma County Airport and downtown Santa Rosa in Sonoma County. As with route 95, this route provides one round-trip daily, originating in Mendocino County in the morning and in Sonoma County in the afternoon. Route 65 is subsidized solely by MTA.

Golden Gate Transit

Golden Gate Transit (GGT) primarily provides regional inter-county transit service between Santa Rosa, Rohnert Park, Cotati, Petaluma, Marin County and the downtown San Francisco financial district. GGT currently operates 27 transit routes, six of which serve Sonoma County. Route 101 offers all-day service between Santa Rosa and San Francisco. Several inter-county commute routes offer peak hour and peak direction service during morning and evening commute periods (routes 72, 72X, 74, 76, 101X). *Peak direction* is defined as toward San Francisco in the morning and from San Francisco in the afternoon. These buses offer fast, express service with relatively few stops.

16 Sonoma County Transit, October, 2015.
17 Redhill Group, Inc., *Sonoma County Transit 2012 Passenger Study, Draft Survey Findings, August 24, 2012, 18–19.*
18 Sonoma County Transit, October 2015.

There are few transfers from bus to bus on this system; most people either walk or drive to a Golden Gate Transit stop.

In FY 2013/14, ridership on all GGT routes throughout the Bay Area was 3,690,186, a five percent increase over FY 2011/12. The total ridership on routes serving Sonoma County was 1,149,293 in FY 2013/14.[19]

The County of Sonoma contributes funding to the Golden Gate Bridge Highway and Transportation District/ Golden Gate Transit to provide public transit service within and outside of Sonoma County. The County and each of the County's nine incorporated cities annually contribute a portion of their TDA/STA funds to support operation of the Golden Gate Transit fixed-route system and paratransit system.

PARATRANSIT SERVICE

Transit agencies are required to provide complementary paratransit service to persons unable to use the fixed-route system when operating fixed-route transportation service for the general public. This requirement does not apply to commuter bus, commuter rail, and intercity rail systems. Paratransit service must be comparable to the public transit operator's fixed-route service regarding the following service criteria: comparable response time, similar fares, same geographic area of service, no restriction of trip purpose, equal availability of information, and no constraints on capacity. All bus systems in Sonoma County provide paratransit service per Americans with Disabilities Act (ADA) requirements. The ADA became law in 1990. This civil rights legislation mandates equal opportunity in employment, transportation, telecommunications, and places of public accommodation for people with disabilities.

Santa Rosa currently contracts with MV Transportation to provide a curb-to-curb paratransit service that will deliver patrons anywhere within the city limits. Transfer arrangements can be made with Whistlestop Wheels or Volunteer Wheels in the event a scheduled trip destination is outside of Santa Rosa city limits.

In Fiscal Year 2015, Santa Rosa's paratransit service carried an average of 191 passengers per weekday and averaged 2.5 weekday passengers per revenue hour. Paratransit ridership and productivity has remained relatively flat over the last several years. Santa Rosa Paratransit served 99% of trips within 30 minutes of the scheduled pick-up time during FY 2011, which exceeded its standard of greater than 95%. Santa Rosa Transit's eleven bus and two minivan paratransit fleet is equipped with a full video security system ensuring both increased security and levels of responsibility. CityBus employs thirteen paratransit vehicle operators and uses Trapeze scheduling software to allow increased scheduling efficiency and enhance on-time performance.

Petaluma contracts with MV Transportation to provide door-to-door ADA paratransit services. In FY 2015, Petaluma Paratransit transported an average of 2,205 monthly passengers and averaged 2.88 passengers carried per revenue hour, which is a slight increase from FY 2014. With a six vehicle paratransit fleet, ten vehicle operators, and manageable trip distances, Petaluma Paratransit is able to accommodate most same day requests while enhancing, rather than compromising, productivity. Petaluma Paratransit operates the same time span as the fixed route and provides rides to eligible persons to and from any location in the Petaluma Urbanized Area, regardless of the proximity to active fixed route bus service. Petaluma Paratransit is able to provide this "premium" ADA service while effectively balancing the passenger need and service performance. City staff and MV Transportation work closely together to outreach to the community and manage mobility in a coordinated manner. The City of Petaluma currently uses Trapeze NOVUS scheduling software and is researching new software options.

Sonoma County paratransit offers countywide intercity service as well as local service within the cities of Healdsburg, Windsor, Rohnert Park, Cotati, Sebastopol, Sonoma, and the unincorporated communities located in the Sonoma Valley area and the Russian River area. Cloverdale Transit's route 68, which is operated by the City of Cloverdale, provides a "deviated fixed-route" service. This means that route 68 offers door-to-door paratran-

19 Golden Gate Bridge, Highway and Transportation District, *Short-Range Transit Plan FY 2015–2024, February 2015, 3–5.*

sit service, upon request, within the Cloverdale city limits by deviating, if necessary, from its normal fixed-route schedule. Route 95, operated under contract by Mendocino Transit Authority, is not required to provide ADA paratransit service because it is considered limited peak commute service. Annual paratransit ridership has increased consistently over the past three fiscal years. Total annual paratransit ridership for FY 2015 was 48,981 trips, which is an increase of over 25 percent since FY 2013.

Sonoma County contracts with the Volunteer Center of Sonoma County to provide paratransit service through Volunteer Wheels in a service area and during service hours comparable to Sonoma County Transit's fixed-route system. Volunteer Wheels operates a combination of lift-equipped mini-buses and sedans provided by the County, which complement each other depending on the demand for service. In 2015, the Volunteer Center employed thirty persons including paratransit drivers, reservationists, schedulers, road supervisors, and management staff.

Golden Gate Bridge, Highway and Transportation District (GGBHTD) offers inter-county demand-response paratransit service within a ¾ mile radius of all non-commute Golden Gate Transit routes through Marin Transit's current contracted paratransit provider, Whistlestop. GGBHTD has arrangements with Sonoma County Transit, Petaluma Transit and Santa Rosa City Bus to provide a limited amount of intra-county paratransit coverage during very early morning or very late evening hours, when those providers are not in operation.

Golden Gate Transit currently owns fourteen paratransit vehicles which are operated by Whistlestop. Annual paratransit ridership declined by 2.4 percent, from 9,377 to 9,152, between FY 10/11 and FY 12/13, while the vehicle service hours increased by about 2.2 percent. This trend in the balance between ridership and vehicle service hours could pose a challenge to the service hour productivity standards should it continue.[20]

Sonoma-Marin Area Rail Transit (SMART) station facilities and bicycle/pedestrian improvements, will meet ADA standards and provide transfer opportunities between modes, as required by the Federal Transit Administration (FTA).[21] Requirements for complementary paratransit do not apply to commuter rail or intercity rail systems.[22]

OTHER MOBILITY SERVICES

Volunteer driver programs also help meet the transportation needs of disabled and senior residents in Sonoma County. Volunteers currently provide rides for medical and social service appointments for seniors, visually challenged seniors, and others who are unable to use local transportation systems. The Sonoma County Area Agency on Aging currently manages several mobility programs that support the expansion of existing volunteer driver programs and establishment of new programs, expand taxi voucher programs, and provide mobility planning. Volunteer driver programs currently supported by the Area Agency on Aging include the Sebastopol Area Senior Center, iRide program through Petaluma People Services Center, Catholic Charities' volunteer driver program, and Vintage House LIMO program. A transition to a uniform scheduling software platform, Assisted Rides, for these volunteer services is underway. Friends in Sonoma Helping (F.I.S.H.) also runs a volunteer driver program.

Information about mobility options that address the needs of disabled and senior residents of Sonoma County can be found through *Sonoma Access* (www.sonomaaccess.org), a one-stop website and referral center. Sonoma Access was established by the City of Santa Rosa and is now administered through the Sonoma County Area Agency on Aging with funding from a federal New Freedom grant and a federal Enhanced Mobility of Seniors and Individuals with Disabilities grant. Website improvements to enhance user experience are underway.

20 Ibid, 1-11-12, 2-6, 3-32.
21 Sonoma-Marin Area Rail Transit, *Draft Environmental Impact Report, Chapter 2: Project Description, 2005.*
22 49 CFR 37, Section 121, revised October 21, 2007.

PASSENGER RAIL — SONOMA-MARIN AREA RAIL TRANSIT DISTRICT

The State Legislature established the Sonoma-Marin Area Rail Transit (SMART) District in January 2003 to plan, construct, and operate a commuter rail line in Marin and Sonoma Counties. The SMART Board of Directors is made up of elected officials from both counties and representatives from the Golden Gate Bridge Highway and Transportation District. The project includes building and operating a 15-station, 70-mile passenger rail line from the Larkspur Ferry terminal, with connecting service to and from San Francisco, to Cloverdale using the previously long-dormant publicly owned right of way of the former Northwestern Pacific (NWP) Railroad line. The project accommodates freight rail services, which have been active on the corridor since 2011. The project also includes a Class I multi-use pedestrian and bicycle path parallel to much of the line. The SMART rail corridor parallels Highway 101. Stations in Sonoma County would include (from south to north): Petaluma Downtown, Petaluma North, Cotati, Rohnert Park, Santa Rosa Downtown (at Railroad Square), Santa Rosa North (at Guerneville Road), Sonoma County Airport, Windsor, Healdsburg, and Cloverdale. 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 will use "light" self-powered Diesel Multiple Unit (DMU) vehicles that comply with the latest federal Tier IV emissions standards and are quieter and cleaner than conventional locomotive-hauled equipment.

In 2008, Marin and Sonoma County voters passed a one-quarter cent sales tax to fund the bulk of the SMART project which is being built in stages. Phase 1 will connect the Sonoma County Airport in Santa Rosa to downtown San Rafael and will serve all of the cities along the 43 mile corridor. Passenger service on the first segment is expected to begin in late 2016. Phase 2, extends the project south to the Larkspur Ferry terminal, anticipated by 2018, and Phase 3 extends the project north to Cloverdale.

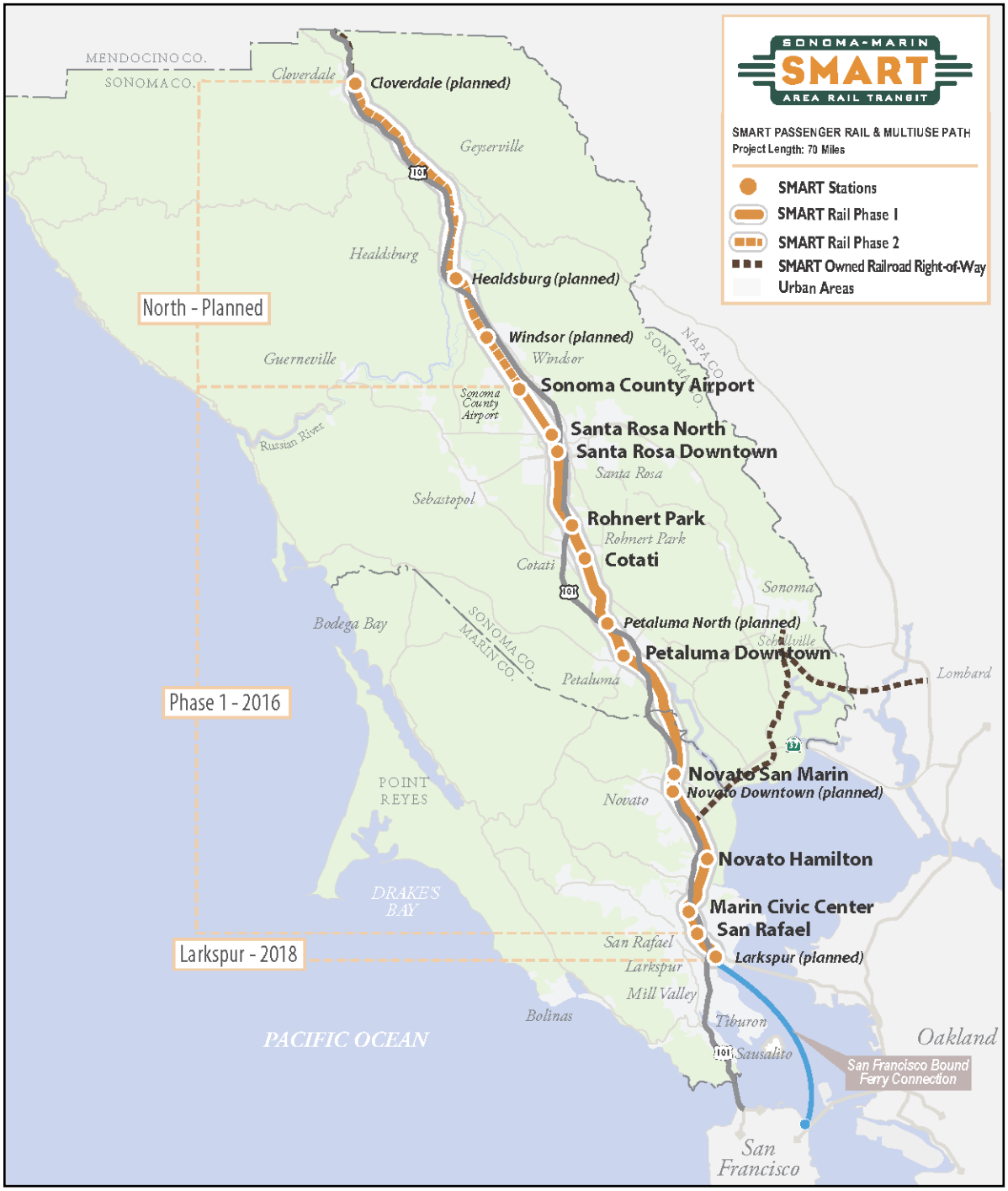
In 2015, Phase I construction completed includes replacement and reconstruction of track, road crossings, bridges, tunnels, signal improvements, systems infrastructure, and a maintenance facility. Several segments of the SMART Pathway have also been constructed (see Bicycle and Pedestrian section for more detail).

Initially, SMART service will focus on passengers commuting to work, beginning operations with seven two-car train sets that will carry up to 158 seated passengers, 160 standing passengers, and provide on-board storage for up to 24 bikes, depending on the mix of wheelchairs and use of flip seats. Additional cars resulting in three-car train sets will increase seated capacity by 52% during peak hour trips, or up to approximately 480 seated and standing passenger per train.

SMART's initial estimates have the train carrying approximately 5,050 to 6,500 passengers weekday by 2035 with connections made to bus transit, bicycle/pedestrian facilities, and key destinations.

SMART passenger service will provide the backbone of an integrated transportation system that optimizes bus, bike, and pedestrian transportation. The SMART train is an important alternative to the car as the cost of driving continues to escalate and reducing GHG emissions becomes increasingly imperative.

Figure 3-8 SMART Train Map



GOODS MOVEMENT

Goods Movement refers to the transportation of products from the location of their manufacture or harvest to their final retail destination, and is a vital component of the regional economy and transportation system. Industries dependent on goods movement provided just under one-third of all jobs in the Bay Area in 2011, and the nation's fifth largest container port is located in the Bay Area (the Port of Oakland). In Sonoma County, over 16,000 people are employed in the goods movement industry. Highway 101, Highway 37, and the SMART rail on

the Northwestern Pacific Railroad (NWP) line are the main arteries for freight distribution in Sonoma County. The Marin-Sonoma Narrows project on Highway 101 is called out as one of the highest priority freight route projects in MTC's 2016 Goods Movement Plan.[23] In addition, Highway 101 from 580 to Santa Rosa is part of the National Highway Freight Network established by the FAST Act for freight project investment.[24]

The North Coast Railroad Authority (NCRA) began limited freight service on the SMART rail line in 2011 after an agreement with SMART coordinating construction and operations. Freight trains share the rail line with SMART, outside of SMART's primary operating hours (6–10 am and 4–7 pm) in order to avoid conflicts with faster passenger trains on the single-track line once SMART service begins in 2016.

Highway 101 is the primary route that would benefit from diversion of freight from truck to rail. The NCRA's Draft Environmental Impact Report for resuming operations on the Russian River Division of the Northwestern Pacific Railroad estimates that up to 400 truck trips would be removed in the loaded direction between Novato and Santa Rosa, 340 per day between Santa Rosa and Redwood Valley (near Ukiah).[25] This is a beneficial impact for the North Bay's transportation system for both congestion relief, pavement wear and emissions.

AIR TRANSPORTATION

There are six public-use airports in Sonoma County: two are privately owned, three are owned by cities (Cloverdale, Healdsburg, and Petaluma airports), and one is owned by the County of Sonoma—the Charles M. Schulz Sonoma County Airport (STS). Sonoma County Airport is the only airport in the County to offer an Airport Traffic Control Tower (ATCT), a precision instrument approach, Aircraft Rescue and Firefighting (ARFF), and Automated Surface Observing System (ASOS). In addition, STS is the only airport in Sonoma County capable of accommodating commercial air carrier service.

The Charles M. Schulz Sonoma County Airport is located in central Sonoma County, approximately 7 miles northwest of the City of Santa Rosa and 18 miles inland from the Pacific Ocean. The Airport is conveniently accessible to most of the County via Highway 101.

The Airport currently occupies approximately 1,200 acres and features two runways. Runway 14-32, the Airport's primary runway has a published length of 6,000 feet and is 150 feet wide. Runway 14-32 can accommodate aircraft weighing up to 184,000 pounds. This runway is lighted and has an instrument landing system serving the approach end of Runway 32. Runway 2-20 is designated as the crosswind runway. It has a published length of 5,202 feet and is 100 feet wide. The runway is lighted and does not currently have an instrument landing system.[26]

COMMERCIAL FLIGHTS

Alaska Airlines, operated by Horizon Air, provides service to Los Angeles, San Diego, Orange County, Seattle, and Portland. The service by Horizon Air has resulted in the Airport's peak period for passenger activity reaching 263,142 in 2015. A second commercial airline, Allegiant Air, began providing service to Las Vegas and Phoenix in 2016.

In August 2013, the airport started a project to decouple the ends of the two runways and extend runway 14/32 by 885 feet, to 6,000 feet and extend runway 2/20 by 200 feet, to 5,202 feet. This project was completed in 2015.

23 Metropolitan Transportation Commission, *San Francisco Bay Area Goods Movement Plan, February 2016* < http://mtc.ca.gov/our-work/plans-projects/economic-vitality/san-francisco-bay-area-goods-movement-plan, accessed May 12, 2016>.

24 U.S. Department of Transportation, Federal Highway Administration, Freight Management and Operations, <http://ops.fhwa.dot.gov/freight/infrastructure/nfn/index.htm, accessed June 15, 2016>.

25 North Coast Railroad Authority, *Public Draft Environmental Impact Report North Coast Railroad Authority Russian River Division Freight Rail Project, November 2009* < http://www.northcoastrailroad.org/DEIR_11_09.htm, accessed May 17, 2016>.

26 Charles M Shulz — Sonoma County Airport <http://www.sonomacountyairport.org/runways-lighting, accessed June 17, 2016>.

Table 3-5 Charles M. Schulz Sonoma County Airport Top Business Routes, January 2014 – December 2014

Rank	Destination	Passengers	Carriers
1	Los Angeles, CA	106,646	Alaska
2	Seattle, WA	53,634	Alaska
3	San Diego, CA	46,820	Alaska
4	Portland, OR	45,565	Alaska

In August 2013 the airport started a project to decouple the ends of the two runways and extend runway 14/32 by 885 feet, to 6000 feet and extend runway 2/20 by 200 feet, to 5202 feet. This project was completed in 2015.

More up to date information the Charles M. Schulz— Sonoma County Airport can be found at http://www.sonoma-countyairport.org/.

Spotlight

Table 3-6 Charles M. Schulz Sonoma County Airport, Improvement Needs

PROJECT NAME	YEAR OF CONSTRUCTION	COST (IN $M)
Runway Safety Area Improvements — Phase II — Service Roads	2017	$2.0
Terminal Expansion — Phase 1	2017	$10.2
Parking Lot Expansion — Phase 1	2017	$3.8
Apron A and D Rehabilitation	2017	$1.2
Airline Apron Rehabilitation — Phase 2	2017	$4.8
Airport Rescue and Fire Fighting Building	2018	$8.0
Airport Security Fencing	2018	$1.0
Parking Lot Expansion — Phase 2	2018	$1.0
Apron E and F Reconstruction	2018	$8.0
Taxiway A Reconstruction/Overlay	2019	$8.0
Taxiway C,D, and G Reconstruction	2019	$5.8
Apron D Reconstruction	2019	$9.2
Terminal Circulation Reconfiguration	2020	$20.0
Runway 14/32Overlay and Centerline Lighting	2020	$10.0
Terminal Expansion — Phase 2	2021	$35.0
Runway 2/20 and Taxiway B and D Rehabilitation	2021	$1.8
Terminal Expansion — Phase 3	2025	$10.0
Total Airport Needs		$139.8

TRANSPORTATION DEMAND MANAGEMENT (TDM)

Transportation demand management (TDM) is a collection of methods and actions intended to improve the efficiency of the existing transportation system by reducing the demand for single occupancy vehicle travel, especially during congested peak hours. A variety of TDM strategies are currently in place in Sonoma County, which include subsidies and incentives, marketing and education, ridesharing programs, and supportive infrastructure. As a first step to expand TDM in Sonoma County, the SCTA is developing a TDM program plan that identifies implementable actions as part of the *Mode Shift Action Plan.*

Transit pass subsidies and alternative commute incentives are currently offered through the bus transit operators. Santa Rosa's Free Ride Program allows Santa Rosa-based employers to offer their employees discounted bus

passes, guaranteed ride home, and incentives for walking, biking, and carpooling. Santa Rosa also provides subsidized monthly passes to students and youth. Petaluma Transit also provides subsidized monthly passes to youth. Sonoma County Transit offers free rides for veterans and currently has a pilot program that allows college students to ride for free. Some large employers, including Sonoma County and Sutter Health, currently provide free transit to their employees.

Marketing and education to spread awareness of the benefits and availability of alternative transportation options are important elements of TDM. Transit operators market their services and the various incentive programs described above. Youth education and encouragement programs like Safe Routes to School and ECO2school are focused on home to school commutes and help establish lifelong tools for alternative transportation.

MTC's 511 system offers real-time traffic conditions and drive times, transit schedules and trip planning, and ride-share matching information through its website (www.511.org) or via telephone (by dialing 511). The GoSonoma.org website, managed by the Sonoma County Spare the Air Resources Team, provides information about how to use and find more information about various alternative transportation modes.

Ridesharing applications and services are rapidly expanding and evolving. Starting in 2012, SCTA participated in a two-year pilot program to develop Carma (gocarma.com) carpool service in Sonoma County. Carma is a dynamic carpool application that allows commuters to search for other users traveling in their direction and create real-time carpools. Private commuter vanpool companies, such as vRide, currently provide rides for commuters between San Francisco, Novato, Petaluma, and Santa Rosa.

Infrastructure that supports transit, ridesharing, and bicycling facilitates use of these modes. Secure bicycle parking at transit hubs and bicycle storage on transit are available to support bicycling to transit. There are 23 official park and ride lots in Sonoma County where motorists and cyclists can park their vehicle to either use transit or form a carpool (see **Appendix 3B**). A new park and ride lot with a minimum of 100 spaces at the Highway 101 and Airport Boulevard interchange has also been proposed. The existing park and ride lots are owned by a variety of entities, including cities, the County, and Caltrans. Carpoolers using park and ride lots along Highway 101 can take advantage of High Occupancy Vehicle Lanes (HOV) where they exist. All of the existing park and ride lots in Sonoma County are served by bus transit.

Employers within the Bay Area Air Quality Management District (BAAQMD) with over 50 full-time employees are required to register and offer commuter benefits to their employees through the Bay Area Commuter Benefits Program as of September 2014. This program requires that employers offer pre-tax benefits, employer-provided subsidies, employer-provided transit, and/or alternative commuter benefits.

Beginning in 2016, pre-tax commuter benefits became a permanent part of the Federal tax code, allowing the use of tax-free dollars to pay for transit commuting and parking costs through employer-sponsored programs. For the 2016 taxable year, the tax code allows tax-free transportation fringe benefits of up to $255 per month per employee for transit expenses and up to $255 per month for qualified parking (including parking at transit stations, vanpool or carpool sites, or employer's worksite). Employees do not pay federal income or payroll taxes and employers do not pay payroll taxes on income set aside for pre-tax commuter benefits.

TRENDS AND INNOVATION IN TRANSPORTATION

Technology and communication are rapidly changing the transportation landscape. From integration of transportation information on mobile devices to autonomous vehicles, technological innovations are enhancing the efficiency of the current system and introducing new ways to travel. With the ubiquity of mobile devices, travelers now and increasingly have the ability to plan transit trips, reserve rides, form carpools, find and pay for parking, and do many other things that increase the efficiency of their trip from any location. New developments are fostering the collaboration between public transit and private companies.

Real-time transit information and trip planning tools can make taking transit more convenient and reduce anxiety while making connections. New technological developments could be used to further improve the transit rider's experience as well as utility of the transit system. For example, emerging technologies use real-time dispatching to provide application-based on-demand transit services.

For hire ride sourcing, such as Uber and Lyft, have become very popular due to the convenience of on-demand mobile reservation systems and economic opportunities for drivers. Some of these services have expanded to offer shared rides, which may become more prevalent in the future.

Shared Mobility

Shared mobility, like the sharing economy, has been around in some form for a long time but has been gaining momentum with recent technological advances. Shared mobility includes shared rides (carpools and vanpools) and shared vehicles (bicycles, cars, scooters, etc.). Shared mobility provides transportation options for people without personal vehicles or who want to share rides. Real-time mobile reservation systems and dynamic ride-share matching have made these services more accessible and attractive.

Bike share systems provide access to bicycles for short trips at a low cost and can be an efficient last mile solution. Bike share systems eliminate the barriers to owning and maintaining or traveling with a personal bike. These systems have existed in some countries for decades. Over the years, the industry has evolved a variety of operational models and new technologies.

Car share programs can help break barriers for increased use of transit, carpool, vanpool, and biking by providing a last mile solution. Car share vehicles near workplaces can be used for short trips when commuting by alternative modes. Members can enjoy peace of mind when commuting by alternative modes and reduce their need for private vehicle ownership.

Private Automobiles

Technology advancements are also changing how we travel in private automobiles. Real-time traffic and parking information, and increasingly connected vehicles are providing efficiencies that improve travel and parking demand and are speculated to have large impacts on safety and roadway capacity in the future.

Electric Vehicles and Electric Vehicle Charging Network

The utilization of plug-in electric vehicles (PEVs or EVs) has the potential to reduce petroleum consumption and greenhouse gas emissions dramatically, and increase energy independence through the utilization of locally produced energy. **Chapter 4** identifies the increase in EVs that would be needed to meet the GHG reduction goals of the CTP and discusses targets set by the state and CA2020. The long-term success of transportation electrification will depend in part on the near-term deployment of vehicles and charging infrastructure.

In 2015, there were over 2,000 plug-in electric vehicles (PEVs) in Sonoma County and over 175 public charging stations. Several private charging stations are also available at employment sites, residential developments, and other locations. An action plan for implementing an EV charging station network scalable to anticipated use in Sonoma County is currently being developed by the SCTA/RCPA through the Shift Sonoma County plan.

Connected and Autonomous Vehicles

Automation of vehicles and increased data connectivity to vehicles has been at the forefront of transportation research and development. Autonomous and connected or semi-autonomous vehicles have the potential to move more vehicles by safely driving closer together. Many believe that autonomous vehicles can help the elderly, young, and disabled gain mobility, ease parking issues, and make vast improvements to traffic congestion, safety, and fuel efficiency. Several researchers are focusing on the potential for shared driverless transportation to provide efficient first and last mile connections to transit.

Trends in Goods 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 has increased the need for last-mile delivery, which poses increasing demand on delivery trucks and parking in urban areas. Freight intelligent transportation systems (ITS) and "connected" vehicles are currently being tested around the nation. Connected vehicles and ITS use technology to communicate between vehicles and transportation systems, allowing for safety and efficiency improvements such as navigation, platooning, and advanced communication. Researchers are experimenting with the development of further automating freight systems.[27]

27 Metropolitan Transportation Commission, *San Francisco Bay Area Goods Movement Plan, 2016.*

CHAPTER 4 HIGHLIGHTS

Goal 1: Maintain the System 4-2

Goal 2: Relieve Congestion 4-4

Goal 3: Reduce Greenhouse Gas Emissions 4-6

Goal 4: Plan for Safety and Health 4-9

Goal 5: Promote Economic Vitality..... 4-13

CHAPTER 4

TRANSPORTATION PLAN GOALS

The 2015 CTP uses five main goals:

1. Maintain the System
2. Relieve Congestion
3. Reduce Greenhouse Gas Emissions
4. Plan for Safety and Health
5. Promote Economic Vitality

Goal #1 (Maintain the System) and Goal #2 (Relieve Congestion) have been included in many previous Comprehensive Transportation Plans and continue to be countywide priorities. Goal #3 (Reduce Greenhouse Gas Emissions) and Goal #5 (Plan for Safety and Health) were added as goals and countywide priorities in the 2009 CTP. The goal to Promote Economic Vitality is new in this CTP.

Performance Measures and Targets have been identified for each of the plan goals. These quantifiable measures of progress provide information on how well our community is doing at meeting plan goals. The performance measures can help identify further actions that may help us make additional progress towards meeting the goals and may help identify and prioritize actions that would be particularly effective in each goal area.

A number of transportation scenarios were evaluated as part of the CTP update in order to set a baseline for each plan goal and performance measure, and in order to evaluate how different sets of transportation improvements and policies would support plan goals and help meet performance targets. These scenarios were tested using SCTA's Sonoma County Travel Model (SCTM).[1]

GOALS

Goals	Performance Targets	
Goal 1: Maintain the System	*Roadway Condition* — Improve countywide Pavement Condition Index (PCI) for arterial and collector streets to 80 (very good condition) by 2040. Improve countywide PCI for residential streets to 65 (good condition) by 2040.	Transit System Condition — Reduce the average transit fleet age by 25% below 2010–2012 average fleet age by 2040 (7.5 years for 2010–2012).
Goal 2: Relieve Traffic Congestion	*Congestion Reduction* — Reduce Person Hours of Delay (PHD) by 20% below 2005 levels by 2040	
Goal 3: Reduce Greenhouse Gas Emissions	Reduce GHG emissions to 60% below 1990 levels by 2040. This target has been updated based on targets proposed in Climate Action 2020 Sonoma County's countywide green-house gas emissions reduction plan.	
Goal 4: Plan for Safety and Health	*Active Transportation* — Increase active transportation mode share (bike, walk, and transit) to 15% by 2040 (2010 — 8.38%).	Safety — Reduce total daily collisions by 1 by 2040.
Goal 5: Promote Economic Vitality	*Reduce transportation costs for business and residents* — Reduce average peak period travel time per trip by 10% by 2040 (2010 — 11.31 minutes).	Prioritize investments in Communities of Concern. Reduce average household travel costs below 2010 levels by 2040.

Goal 1. Maintain the system

Maintaining transportation road infrastructure includes many activities from keeping ditches clear to purchasing new buses and keeping bike lanes free of debris. The transportation infrastructure is the most expensive asset owned by many jurisdictions who often respond to funding shortages by deferring preventative maintenance for roads. This has drastic consequences on the condition of pavement. The 25 year planning horizon must also account for replacement of the bus fleet, rail cars, paratransit buses, vans and cars.

Local jurisdictions complete road condition field surveys for Metropolitan Transportation System to be included in the Regional Pavement Management System. Roadways are assigned a Pavement Condition Index (PCI) Score from 1–100 and MTC compiles weighted pavement condition scores. Transit operators provide information on fleet condition as part of Short Range Transit Planning processes, and provide system operation and vehicle age data to the Federal Transit Administration (which is included in the National Transit Database).

1 See **Appendix 6A** for more information on the Sonoma County Travel Model.

TARGETS FOR 2040: (a) PCI of 80 for arterial and collector roads (b) PCI of 65 for residential roads (c) reduce the average transit fleet age by 25% below 2010–2012 average fleet age.

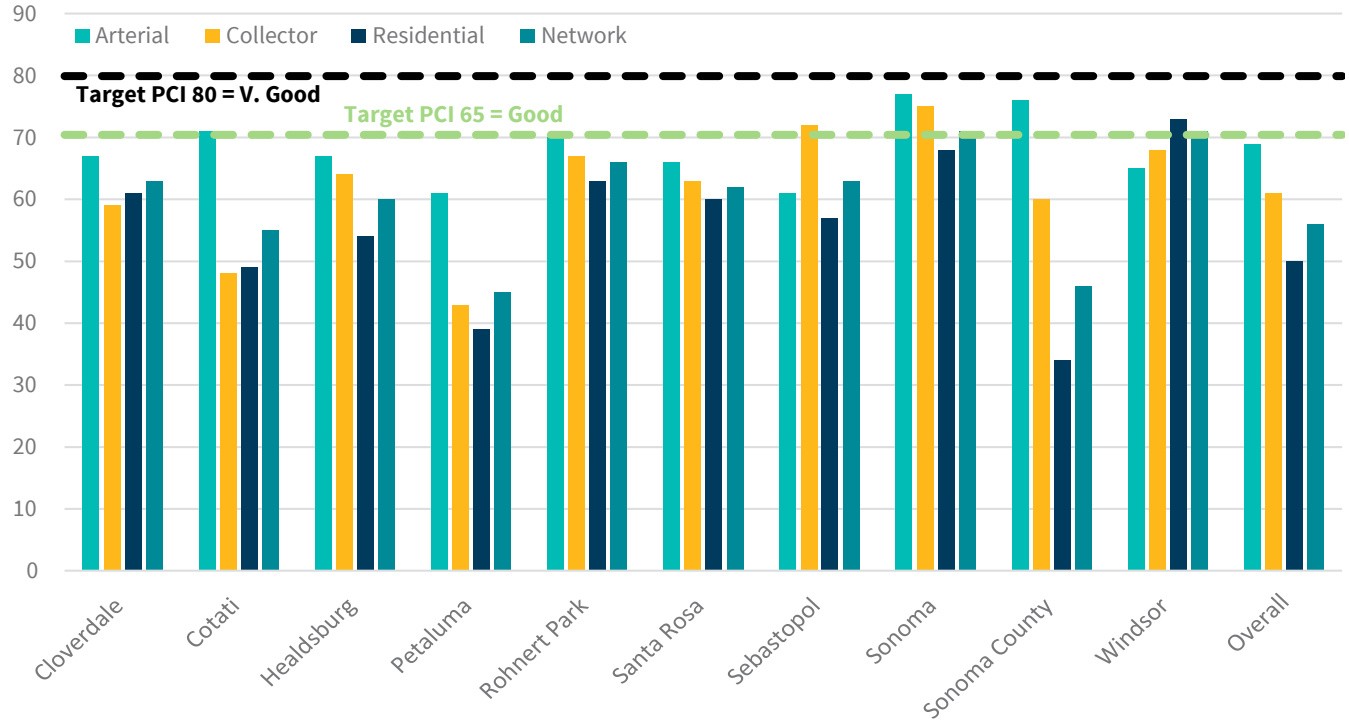
Funding available for maintaining streets and roads in Sonoma County is limited and has been prioritized by setting a target for maintaining major roadways, including arterial and collector roads, in very good condition (PCI 80). Smaller residential roads carry much lower traffic loads and SCTA has set a target for maintaining these roads in fair condition (PCI 65). As the transit fleet ages, delays and transit service disruptions may become more frequent. Improving the average age of transit fleets in Sonoma County will improve transit service by making it more comfortable and reliable. SCTA has set a target of reducing the average fleet age of the Sonoma County transit fleet by 25 percent below 2010–2012 average fleet age (7.57 years) by 2040.

Since the 2009 CTP

The average condition of the Sonoma County roadway network has hovered around 53 (out of 100) over the past 10 years, which is considered in the "at risk" category. MTC has estimated that it will cost $5 billion to improve and maintain the Sonoma County road system at a PCI of 75, or "good" condition, through 2040.[2] Approximately $2.7 billion of this maintenance cost is currently unidentified. MTC has also estimated that it will cost $278 million through 2040 to maintain Sonoma County bridges — of which $162 million is currently unfunded.

Because of maintenance funding shortfalls, Sonoma County jurisdictions and the SCTA have prioritized maintaining the major roadways at a higher PCI than local residential streets. Reaching the CTP goal of maintaining arterial and collector roadways at a PCI of 80, or "very good" condition, and residential roadways at a PCI of 65, or "fair" condition, will require additional unidentified funding.

Figure 4-1. Sonoma County Pavement Condition Index by Road Type and Jurisdiction, 2013



Source — Metropolitan Transportation Commission, Pavement Management Program

Sonoma County's transit system provides an important travel option for county residents and serves as a transportation "lifeline" for many people in the county. Aging vehicles and equipment can increase maintenance costs and breakdown rates, which in turn negatively impacts transit service and quality of the countywide transit

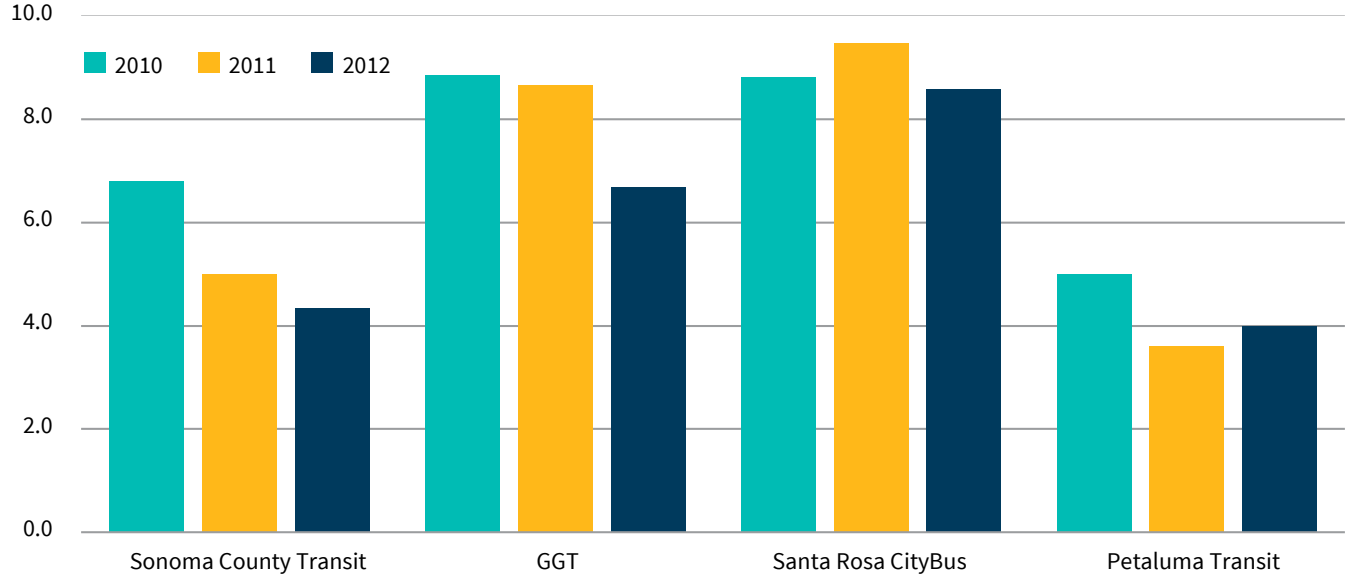
2 MTC, *Plan Bay Area, Local Street and Roads Needs and Revenue Assessment.*

system. SCTA has prioritized improving the physical condition of the countywide transit system and has set a goal of improving the average transit fleet age by 25 percent by 2040.

Local transit agencies provide yearly estimates of average transit fleet age to the Federal Transit Administration which are summarized in the National Transit Database. The Federal Transit Administration estimates that the average useful life of transit buses varies between 4-12 years depending on vehicle size and type. The average age of the transit fleet in Sonoma County has slowly improved, dropping from an average fleet age of 8.3 years in 2010 to 7.2 years in 2014.

This improvement is encouraging but adequate funding will be needed to ensure that older transit vehicles are replaced in a timely manner and that the overall fleet age can continue to be improved. Sonoma County transit providers have budgeted $160 million through 2040 to replace aging vehicles in the existing fleet, and $95 million to expand fleets in order to improve service. Aging vehicles will need to be replaced more frequently and more funds will be needed in order to meet the CTP target for average transit fleet age.

Figure 4-2. Average Age of Bus Fleets for Sonoma County Transit Providers



Source — Federal Transit Administration, National Transit Database

Moving forward, what is required to meet the 2040 Goal?

Additional funding will be required to maintain road, highway, and other transportation infrastructure. Additional funding will be required to improve the condition of transit fleets, stops, and other capital assets and to improve the transit system by adding service and increasing frequencies.

Goal 2. Relieve Traffic Congestion

Congestion has been consistently identified as an important public concern in Sonoma County. Traffic congestion has significant impacts on the county's economic performance and quality of life. Travel demand routinely exceeds highway capacity during peak periods in many areas of the county. Traffic flow is also often impacted by accidents, vehicle breakdowns, road work, adverse weather conditions, and local operational issues. Person Hours of Delay (PHD) is a common aggregate measure of congestion. PHD represents the average number of hours that travelers are stuck in traffic due to recurring (due to demand) and non-recurring (due to incidents, construction, etc.) congestion.

Highway congestion in Sonoma County is most severe during the morning and afternoon peak periods, with congested periods beginning as early as 5:30 am and lasting until 6:30 p.m. in the evening. Highway congestion

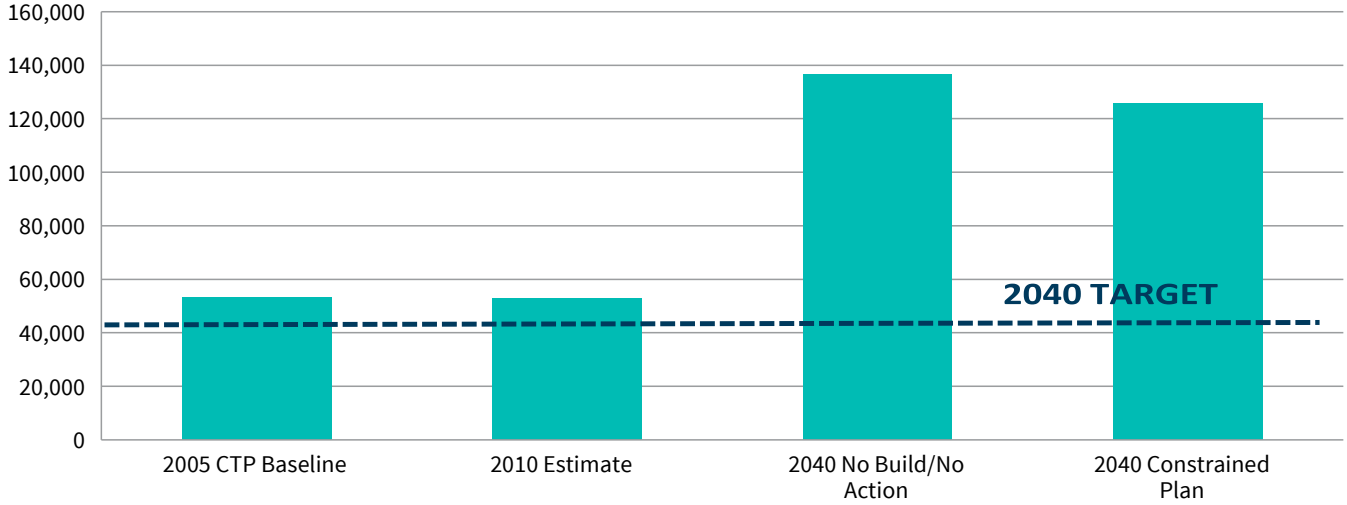
is most severe within Santa Rosa on Highway 101 and Highway 12, and in Petaluma on Highway 101 between Petaluma Boulevard South to Washington Street. Two lane sections of Highway 12 in Sebastopol and in the Sonoma Valley also experience congested periods on both weekdays and weekends.

Arterials are also showing signs of strain. Arnold Drive, Main Street (Penngrove), River Road, Old Redwood Highway, Bodega Highway, Lakeville Highway, and Petaluma Hill Road experience heavy weekday traffic[3]. Todd Road, Llano Road, Crane Canyon Road have congested conditions on weekdays and many roads within incorporated cities experience severe recurring congestion during afternoon and evening commute periods, and around schools during school drop-off and pick-up periods.

Target for 2040 — Reduce Person Hours of Delay (PHD) by 20% below 2005 levels by 2040

Congestion and recurring delay on Sonoma County roads has consistently been identified as a major transportation issue in previous transportation plans, public outreach, and transportation surveys. SCTA has targeted reducing PHD by 20 percent below 2005 levels by 2040 in order to reduce congestion related impacts to the Sonoma County transportation system.

Figure 4-3. Daily Person Hours of Delay (PHD)



Sources — Caltrans/SCTA

Since the 2009 CTP

Daily PHD has remained relatively static since the adoption of the 2009 CTP. PHD dropped slightly in 2010 to 52,938 from the 2005 estimate of 53,226. Estimated PHD 2012 was slightly higher, at 55,535. Recent congestion measurements suggest that congestion is staying relatively constant in Sonoma County, and that no observable progress has been made towards reducing countywide congestion levels.[4]

Moving forward, what is required to meet the 2040 Goal?

Caltrans estimates that over 50,000 hours were lost each day because of traffic congestion in Sonoma County in 2010. Congestion is predicted to nearly triple by 2040. Most of this increase can be attributed to increased travel because of population and employment growth. The project performance assessment indicated that certain projects provide some congestion relief in 2040. Projects that improve highway capacities such as MSN Phase 2 and Hwy 37 improvement projects reduce congestion in heavily traveled corridors and provide countywide congestion reduction benefits. If funding were available to complete all proposed CTP projects, projects would

3 Sonoma County Travel Model, SCTA Traffic Count Database.
4 Caltrans Performance Measurement System (PeMS), SCTM

provide an almost 20 percent congestion reduction benefit in 2040 when compared to no build, BAU or "Business as Usual", 2040 conditions. Transportation policies such as system efficiency improvements, pricing, trip reduction, and freight improvements could reduce 2040 congestion levels by up to 50 percent depending on the policy improvement.

Travel Demand Management programs and new technologies are promising methods for reducing traffic delay. Shifting travelers to different travel modes (transit, car/vanpools, bicycles, walking and car-sharing), different times to avoid peak congested periods (flextime, compressed work week), and avoiding trips altogether (telecommuting, etc.) also have the potential to reduce traffic congestion.

Implementing projects and policies included in the constrained plan would reduce 2040 delay by over 10,000 hours per day. This reduction represents a step in the right direction and an improvement over no build conditions in 2040, but does not meet the CTP performance target. Implementing an ambitious package of unfunded transportation projects, policies, and technologies described in the vision scenario would reduce 2040 daily PHD to 41,625 and meet the performance target of reducing daily PHD by 20 percent below 2005 levels by 2040.

Goal 3. Reduce Greenhouse Gas Emissions

In Sonoma County the transportation sector contributes over half of all county greenhouse gas emissions. Transportation greenhouse gas emissions are a factor of total travel of vehicles, speed of travel, and characteristics of the vehicle fleet. Emissions from this sector could be reduced by reducing the amount of travel, lowering travel speeds, and improving the efficiency of the vehicle fleet. Transportation related greenhouse gas emissions in Sonoma County have steadily increased since 1990.

Rising greenhouse gas emissions and their impact on the climate could negatively impact countywide transportation infrastructure, quality of life, the economy, and accessibility. More frequent and intense storms and sea level rise could accelerate roadway deterioration, cause transportation facilities to close completely, and increase congestion because of temporary closures. Sonoma county jurisdictions have committed to facing this challenge head on and have made significant progress towards reducing countywide greenhouse gas emissions from the transportation and other sectors. One important step forward has been the development of the Regional Climate Protection Authority, and work on the countywide climate action plan, Climate Action 2020.

Climate Action 2020 has identified the following greenhouse gas reduction targets:

- Reduce greenhouse gas emissions to 25% below 1990 levels by 2020
- Reduce greenhouse gas emissions to 40% below 1990 levels by 2030
- Reduce greenhouse gas emissions to 80% below 1990 levels by 2050

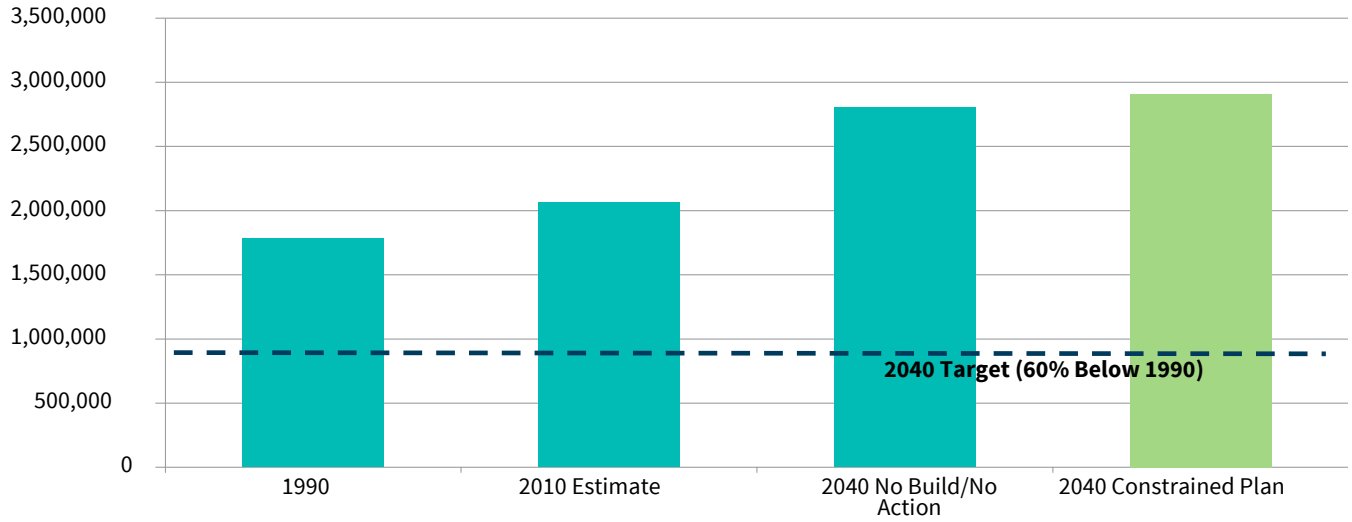
The CTP planning horizon and forecast year has been set at 2040 to be consistent with regional transportation and land use planning efforts. No CA 2020 GHG emissions reduction target has been set for 2040. The CTP 2040 greenhouse gas reduction target has been set at the midpoint between 2030 and 2050 targets, representing a reduction of transportation GHG emissions to 60 percent below 1990 levels by 2040.

Target for 2040 — Reduce greenhouse gas emissions 60% below 1990 levels by 2040 by working with government agencies and the public.

Since the 2009 CTP, new estimates for past, current, and future greenhouse gas emissions have been developed for Climate Action 2020. New GHG estimates are lower than estimates previously developed by SCTA and the Sonoma County Climate Protection Campaign as a result of using updated tools including the California Air Resources Board air quality measurement tool EMFAC 2011,[5] which considers vehicle speeds in GHG emissions calculations. EMFAC 2011 also includes more detailed vehicle fleet information.

5 The California Air Resources Board Emission Factors (EMFAC) model is used to calculate emission rates from all motor vehicles in California.

Figure 4-4. GHG Emissions Sonoma County Estimated GHG Emissions



Source — Climate Action 2020/SCTA

Moving forward, what is required to meet the 2040 Goal?

Greenhouse gas emissions are expected to increase by roughly 39 percent during the period from 2010–2040 under no build conditions. This is largely a factor of increased travel due to population and employment growth, and assumes that the vehicle fleet makeup and vehicle fuel economy stays about the same as it is currently in the future. State mandated fuel economy standards (Pavley, AB 1493) are expected to provide a large GHG reduction by 2040, reducing GHG emissions by around 8 percent below 2010 levels. Individual projects do not have a large impact on countywide emissions, but projects focused on shifting travel to active transportation modes, or that focus on reducing traffic congestion and making travel more efficient provide the largest GHG reductions.

Additional reductions including even more ambitious fuel economy and vehicle efficiency improvements, and VMT or total travel reductions coming from projects and policy approaches included in the Vision Scenario analyzed as part of the CTP will be required to meet the CTP GHG reduction target by 2040. SCTA could reach the 2040 greenhouse gas reduction target by implementing the vision scenario including an increase of 2040 vehicle fleet fuel economy to 55 miles per gallon.

Spotlight — Meeting Sonoma County Transportation Greenhouse Gas Reduction Goals — What Will it Take?

Sonoma County jurisdictions have set ambitious Greenhouse Gas (GHG) Reduction goals through the current and previous countywide climate action planning processes including Climate Action 2020 (CA 2020) and other GHG reduction efforts. CA 2020 has set 2030 (reduce countywide GHG emissions to 40 percent below 1990 levels by 2030) and 2050 (reduce countywide GHG emissions to 80 percent below 1990 levels by 2050) GHG reduction targets that are in sync with statewide GHG reduction targets.[6] The CTP GHG reduction target has been updated to be consistent with CA 2020 and statewide GHG reduction goals. The new CTP GHG target aims to *reduce 2040 GHG emissions from transportation to 60 percent below 1990 levels by 2040.*

Reaching this target will require a combination of efforts to reduce overall travel, or reduce vehicle miles traveled (VMT), and making travel that does occur cleaner and more efficient. Implementing the projects, programs, strategies, and policies included in the CTP high performing scenario could reduce travel (VMT) by almost one-third (32 percent) in 2040 when compared to a future in which no efforts are made to reduce travel or address future travel impacts.[7] This VMT reduction will help meet the 2040 GHG reduction target, but won't get us all the way there.

SCTA estimates that the vehicle fleet will need to change significantly if targeted transportation GHG reductions are to be met. Analysis has shown that average countywide vehicle fleet fuel economy will need to increase to 55 miles per gallon in order to reach the 2040 GHG reduction target.[8] This fuel economy increase could be achieved by:

- Increasing the average fuel economy of the conventionally fueled light duty vehicle/hybrid vehicle fleet (cars, SUVs, light trucks) to 32 mpg. This increase could be achieved by increasing the share of hybrid vehicles in use and improving the efficiency of conventional vehicles (lighter weights, improved drive trains, and other design improvements).
- Increase the zero emissions vehicle (ZEV)[9] share of light duty vehicles to 40-50 percent of the total fleet (approximately 110,000–140,000 vehicles in 2040).[10] The total share would depend on the efficiency of ZEV vehicles.
- Heavy truck fuel efficiency increase by 50 percent, increasing from 6 mpg to 9 mpg.
- Electrification of transit fleets.
- Double motorcycle fuel economy (43.5 mpg to 87 mpg)

The California Air Resource Board (CARB) has estimated that a 20 percent VMT reduction and even more aggressive shift to ZEVs will be required to meet statewide GHG reduction targets. CARB estimates that 87 percent of the statewide vehicle fleet will need to be made up of ZEVs, BEVs, and PHEVs to meet the 2050 GHG reduction target. CTP estimates of fleet turnover and ZEV fleet share are consistent with statewide estimates of fleet turnover and conversion, and are actually somewhat less aggressive due to the larger VMT reduction associated with the CTP high performing scenario.

6 AB 32, and 2005 Executive Order target direct California to reduce GHG emissions to 1990 levels by 2020 and 80% below 1990 levels by 2050. Executive Order B-30-15 directs California to reduce GHG emissions to 40% below 1990 levels by 2030.
7 The CTP high performing scenario was compared to a 2040 baseline or business as usual scenario that estimates future travel conditions assuming travel behavior, technology, and the transportation network are the same in 2040 as they are today.
8 Sonoma county average vehicle fuel economy was 23 mpg in 2010.
9 ZEVs could include battery powered electric vehicles, fuel cell powered vehicles, or vehicles powered other non-emitting power sources.
10 The Center for Sustainable Energy estimated that there were 2229 electric vehicles in Sonoma County in 2015.

The Sonoma county vehicle fleet will need to change drastically in order for CTP and state GHG reduction goals to be met. Increasing the share of electric vehicles in the countywide fleet will require:

- Improved charging infrastructure — private and public
- Vehicle development — improved vehicle efficiency and manufacturing, increased vehicle range
- Vehicle distribution — Manufacturing, distribution, and sales network will need to continue to be improved and expanded.
- Vehicle cost competitiveness with conventionally fueled vehicles
- Continue to develop and expand renewable electric power generation
- Retail sales training

Spotlight — Vehicle Miles Traveled (VMT)

VMT is a measure of miles traveled by vehicles in a specific geographic area for a given time period. The Sonoma County Travel Model generates VMT estimates at the county, jurisdiction, traffic analysis zone, and road segment level for average weekdays. VMT is a function of population, vehicle ownership rates, how often people travel, and where they are travelling to. The Association of Bay Area Governments has estimated that the Sonoma County population will grow by approximately 18 percent from 2010–2040, and that employment will grow by approximately 26 percent during this 30 year time period. This growth is generally predicted to follow growth distributions outlined in local general and area specific plans with an increased focus on Priority Development Areas which were identified as part of the Regional Sustainable Communities Strategy process. The Sonoma County Travel Model uses projected housing, population, and employment growth forecasts while considering predicted demographic changes to estimate VMT.

The SCTM estimates a 36 percent increase in VMT from 2010–2040. In raw numbers this represents 11 million VMT per day in 2010 and 15 million VMT per day in 2040. VMT is predicted to grow at a greater rate than population and employment because of the aging Sonoma County workforce and a need to import labor for a growing number of jobs from outside of the County. VMT was not identified as a separate performance measure in the 2015 CTP, but was analyzed since many of the performance measures are VMT based and VMT is commonly used as a measure of travel activity.

Goal 4. Planning for Safety and Health

There is a growing trend among transportation planners and health professionals to focus on the link between a healthy community and safe transportation options as a means to improving public health. Transportation is intimately related to public health issues on a variety of fronts, be it that traffic accidents are the leading cause of death for teenagers or that fatality and injury accidents impact the community or that air quality effects asthma suffers, or that safe bicycle and pedestrian routes can benefit transportation and health.

Safety

According to the Statewide Integrated Traffic Records System (SWITRS) the number of collisions resulting in injuries or fatalities per day in Sonoma County has varied between 5–8 per day since 2004. The number of average daily accidents dropped from 2004–2008 and has leveled out to a daily average of around 6 injury and fatality collisions per day from 2008 onward. Only 1–2 percent of these collisions resulted in fatalities during this time period.

Future daily countywide accident rates have been estimated using the SMARTGAP transportation and land use post-processing tool developed with funding from the Transportation Research Board. SMARTGAP was developed as part of the Strategic Highway Research Program (SHRP 2) and explores the effect of smart growth policies on travel demand, and the relationships among households, businesses, and travel behavior and conditions. SMARTGAP estimates future collision rates by factoring VMT, road lane miles, transit revenue service hours, and travel mode shares. Fatality, injury, and property damage incident rates are included in the estimates. Crash estimates are based purely on total travel activity and size of the transportation system and do not consider targeted safety improvements or localized improvements that could provide significant safety enhancements.

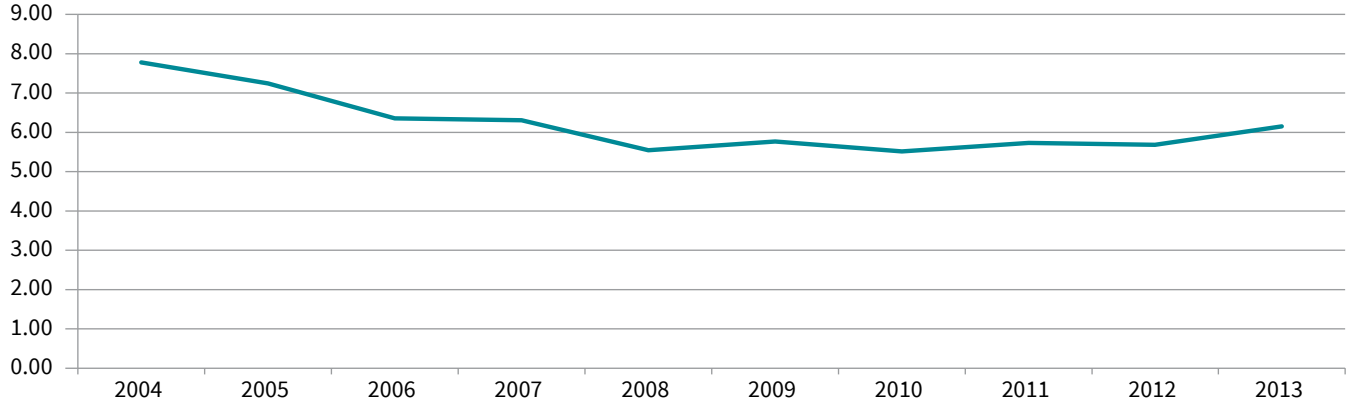
TARGET FOR 2040: Reduce total daily fatality and injury collision rates by 1 accident per day below 2010 levels by 2040.

Ultimately the goal for fatalities and injuries is zero, however, for the task of benchmarking progress SCTA has targeted reducing total daily collisions by 1 accident per day below 2010 levels by 2040. Daily traffic collision rates is a new performance target that has been added to the 2015 CTP. CTP projects and policies considered as part of the CTP performance assessment indicated that these countywide approaches are estimated to provide only minor collision rate reductions through 2040 and that the traffic safety performance target would not be met by applying these improvements alone.

Since the 2009 CTP

Sonoma County daily collisions have remained relatively constant according to traffic records since 2009 hovering at on average just under 6 per day. Daily collision rates have risen slightly since 2010. This increase can be attributed to increased travel which could be tied to improved economic conditions in Sonoma County.

Figure 4-5. Sonoma County Collisions (Fatal and Injury) - Daily



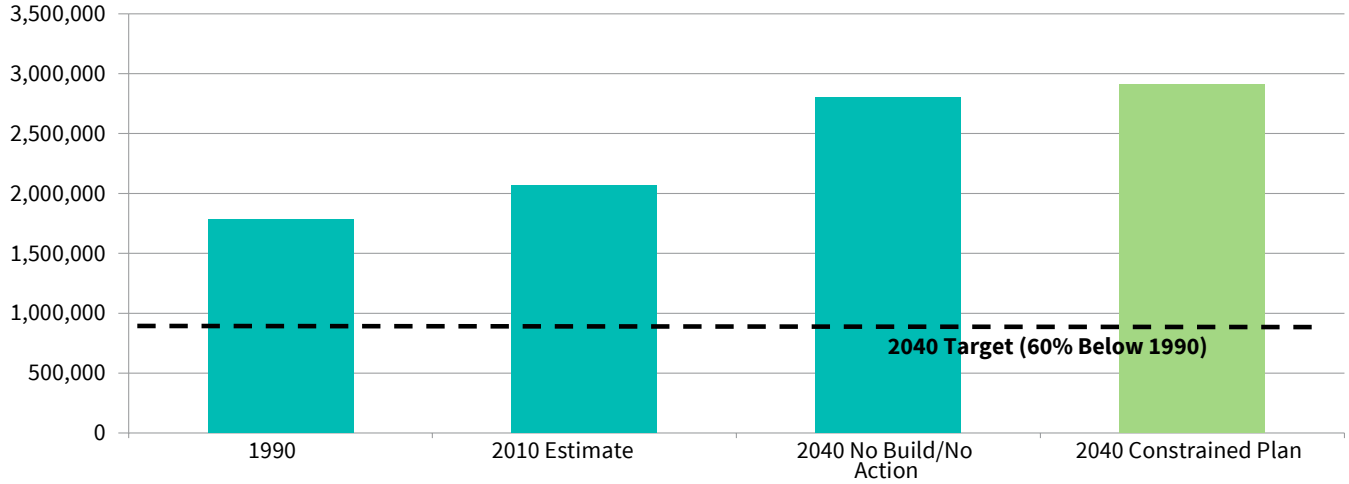
Source: California Statewide Integrated Traffic Records System/SWITRS

Moving forward, what is required to meet the 2040 Goal?

As Sonoma County continues to recover from the economic recession of the last decade countywide travel and collisions have started to rise. Continued population and employment growth will only exacerbate this problem and increase VMT and traffic injuries and fatalities. Projects focused on improving traffic safety and reducing the consequences of crashes that do occur have been included in the CTP, but the tools used to perform this analysis were not sufficiently sensitive to capture the safety benefits these projects could provide. Many of these projects are focused on improving safety at the local level or are focused on reducing the number or severity of traffic collisions and not VMT. SMARTGAP, the tool used to estimate countywide collision rates, estimates collusions based on VMT and the size of the transportation system and does not consider local safety improvement measures. Other tools or methods for assessing traffic incident rates should be investigated. These methods should consider targeted safety enhancements and local improvements and how different actions could improve traveler safety and reduce collision rates. In addition to improving analysis tools for measuring safety impacts SCTA should continue

to focus on reducing exposure and the amount of travel that occurs in potentially unsafe conditions, reducing the risk of traffic collisions, and reducing the consequences of collisions that do occur.

Figure 4-6. Traffic Collisions per day



Sources: SWITRS, SCTA

Health impacts

Shifting travel to active transportation modes such as walking, biking, or riding transit can help decrease obesity, improve neighborhood air quality conditions, and improve overall community health. Active transportation mode share or the percentage of trips being made by bike, transit, or foot has been used to estimate how CTP projects, and transportation programs can improve or degrade health conditions in Sonoma County.

Spotlight — In 2013, Dr. Neil Maizlish and colleagues at the California Department of Public Health, used the Integrated Transport and Health Impacts Model to quantify health benefits of transportation strategies aimed at reducing greenhouse gas emissions.[11] They found that increased physical activity associated with active transport could generate a large net improvement in population health, especially when combined with strategies to reduce risk of traffic injury. Study results showed that increasing median daily walking and bicycling from 4 to 22 minutes reduced the burden of cardiovascular disease and diabetes by 14% (32,466 Disability Adjusted Life Years), and decreased GHG emissions by 14%. Increasing active transport to these levels could reduce the estimated $34 billion in California's annual costs from cardiovascular disease,[12] and other chronic conditions such as obesity, and achieve the US Surgeon General's recommendation that adults engage in 150 minutes of moderate to vigorous physical activity weekly.[13]

Since the 2009 CTP

Specific metrics were not identified in the 2009 CTP for improving health, however, in 2010 8.38 percent of all trips (including commute, school, recreation, shopping, and other trip purposes) were made using active transportation modes. Mode share for active transportation modes is expected to decrease slightly by 2040 in Sonoma County if current trends continue.

11 Maizlish, N., Woodcock, J., Co, S., Ostro, B., Fanai, A., & Fairley, D. (2013). Health Cobenefits and Transportation-Related Reductions in Greenhouse Gas Emissions in the San Francisco Bay Area. *American Journal of Public Health*, 103(4), 703–709. http://doi.org/10.2105/AJPH.2012.300939

12 Roger VL, Go AS, Lloyd-Jones DM. et al. Heart disease and stroke statistics—2011 update: a report from the American Heart Association. Circulation. 2011;123(4):e18–e209 [PMC free article] [PubMed]

13 Office of the Surgeon General The Surgeon General's Vision for a Healthy and Fit Nation. Rockville, MD: US Department of Health and Human Services; 2010

Bay Area average non-automobile mode share for all trip purposes is 16 percent with countywide averages ranging from a high of 45 percent in San Francisco, through a low of just over 8 percent in Sonoma County. North Bay county active transportation mode shares range from 15 percent in Marin County, 12 percent in Napa County, 11 percent in Solano County, through just over 8 percent in Sonoma County.[14]

Table 4-1 Regional mode shares for all trip purposes

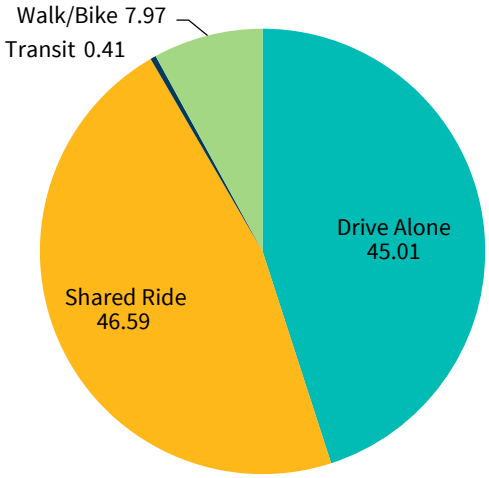
	Non-auto Mode Share
Alameda	22.00%
Contra Costa	12.20%
Marin	14.60%
Napa	11.70%
San Francisco	45.00%
San Mateo	14.70%
Santa Clara	11.10%
Solano	10.60%
Sonoma	**8.36%**
Bay Area Region	16.00%
Sacramento Region	7.40%

Source: Bay Area Travel Survey

Moving forward, what is required to meet the 2040 Goal?

Implementing policies focused on maximizing transit ridership, increasing bicycle and pedestrian travel, increasing land use densities, and making driving more costly could increase bicycle and pedestrian mode shares by up to 5 percent based on results of the CTP performance assessment. Implementing the vision CTP scenario which includes transit improvements and selected policies and projects shown to be effective at encouraging mode shift away from auto travel could increase 2040 active mode share to just over 15 percent in Sonoma County, achieving the CTP performance target.

Figure 4-7. Percentage of Travel by Mode in Sonoma County — 2010



Sources: Sonoma County Travel Model

14 California Statewide Travel Survey (2010–2012), Sonoma County Travel Model.

Goal 5: Promote Economic Vitality

SCTA recognizes that transportation is an important component of countywide economic health and has made promoting economic vitality a goal for the 2015 CTP. Two performance measures have been identified which can help assess transportation's role in improving countywide economic conditions.

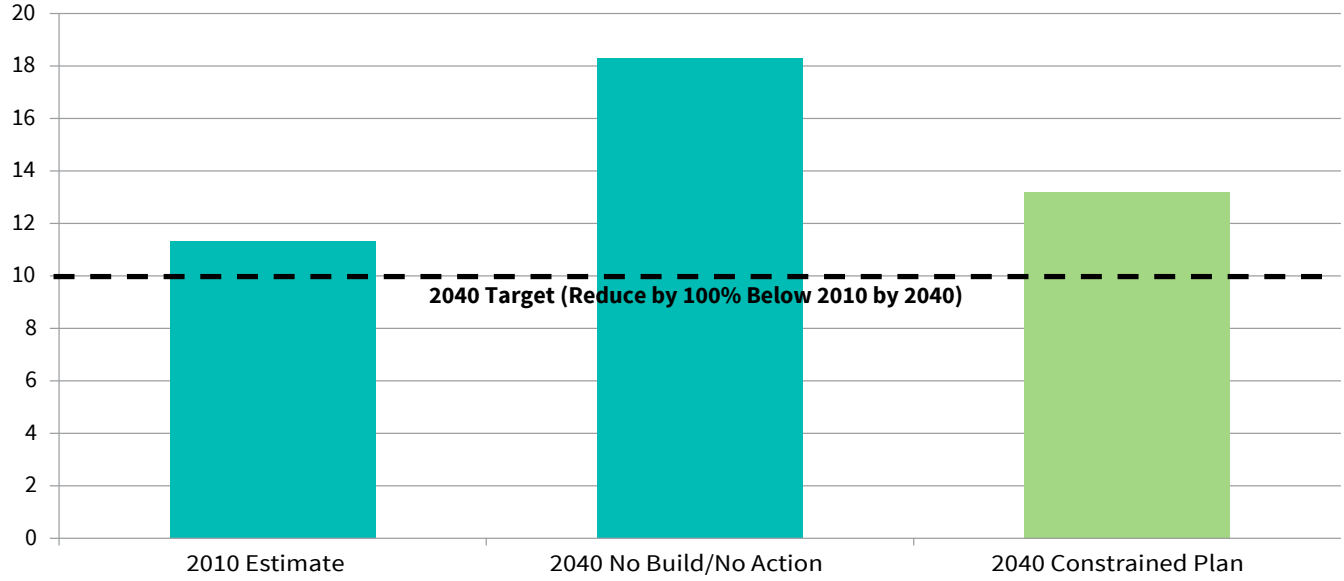
Reduce Commute congestion

Increased and unreliable travel times and congestion can have a negative impact on job creation, tourism, commerce, and goods movement, while an efficient and effective transportation system can help improve local economic conditions and make working and doing business in Sonoma County more profitable.

SCTA has identified evening, or PM, peak period average travel time as a performance measure that can be used to assess the transportation related cost of doing business in Sonoma County. This measure provides an estimate of transportation system efficiency and can indicate how easy, or difficult, it is to conduct business, move goods, and attract employees to Sonoma County. Increases in peak period congestion make doing business in the county more difficult, increase delivery and shipping costs, and make it difficult for workers to get to and from work sites and employment locations.

Target for 2040: Reduce 2010 Average PM Peak Period Travel Time per Trip by 1 minute by 2040.

Figure 4-8. PM Average Travel Time (minutes)



Sources: Sonoma County Travel Model, MTC

Since the 2009 CTP

Evening peak period travel time was not included as a performance measure in the 2009 CTP but according to commute data collected by the US Census Bureau, commute travel times in Sonoma County have stayed relatively flat since 2009, decreasing to 24.9 minutes in 2014 from 25.5 minutes in 2009. This data is collected for work or commute trips only, which are typically longer than other types of trips and are higher that the estimates considered in the CTP performance assessment and estimates that were used to set the performance target. Nevertheless, the reduction in commute trip travel time is encouraging and would be expected to also apply to non-work trips as well. Moving forward, what is required to meet the 2040 Goal?

PM peak period average travel time is predicted to increase from around 11 minutes per trip in 2010 to over 18 minutes per trip in 2040. Population, housing, and employment growth are the primary causes of this increase in congestion and travel time. CTP projects are expected to provide some congestion relief and peak period travel time benefit in the future. Policies that maximize system efficiencies and encourage a shift to transit and non-motorized travel modes are effective at reducing PM peak period travel times. The performance target could be met by implementing the CTP vision scenario which would reduce average evening peak period travel time to under 9 minutes per trip.

Moving forward, what is required to meet the 2040 Goal?

Thousands of hours are lost each year due to congestion and travel delay. Implementing projects and policies which reduce peak period travel times and improve countywide mobility will reduce the cost of doing business in Sonoma County and make it easier for local businesses to attract and maintain an appropriate labor force.

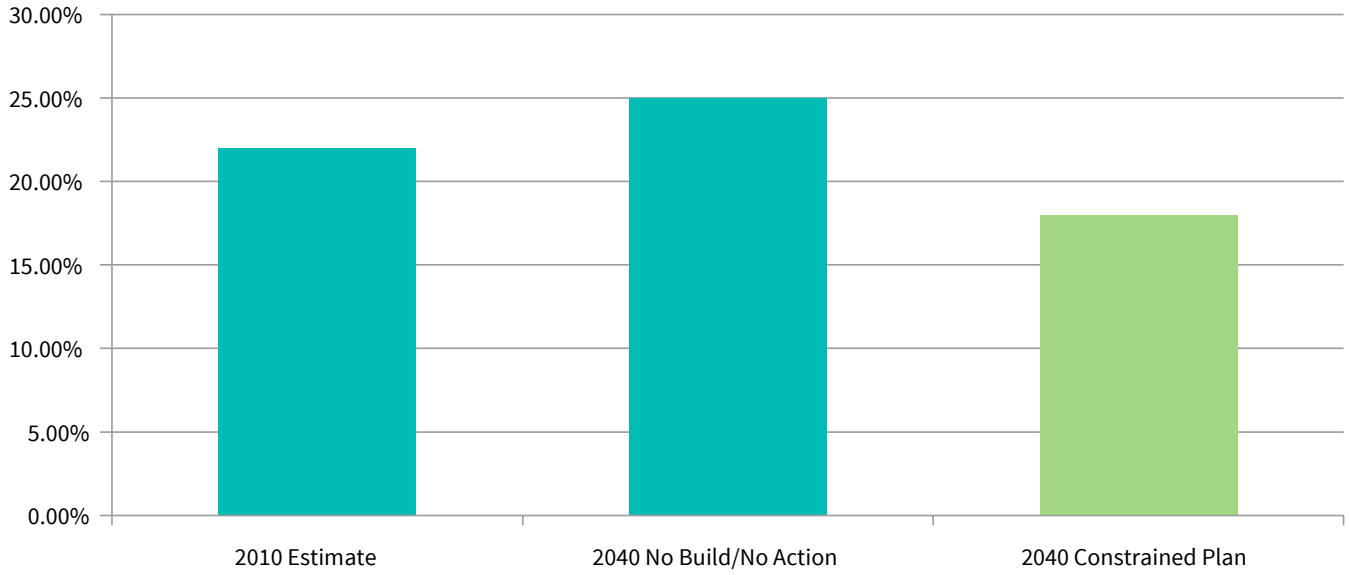
Transportation Equity

SCTA supports polices that help make transportation choices available and affordable for all households and county residents. Transportation affordability is linked to economic vitality. The transportation system allows people to access employment, goods and services, recreational opportunities, education, and other destinations. As transportation costs rise, accessibility and quality of life suffer as larger and larger portions of household budgets must be spent on transportation. Low and moderate income households are hit the hardest by rising transportation costs. Future monthly household travel costs are estimated to increase from roughly $1,160 per month (2013) to just under $1,340 per month in 2040 because of increased congestion, increased regional commuting, and longer average travel times. An average household in Sonoma County spent roughly 22 percent of the household budget on transportation costs in 2013 with this percentage estimated to increase to 25 percent by 2040 because of increased congestion and travel times.

Vulnerable communities, or Communities of Concern, have been identified by highlighting census block groups in which 30 percent or more of households have incomes between 0–200 percent of the federal poverty level ($21,600 - $74,020 total household income depending on family size). Transportation improvements can help improve conditions and provide transportation options and improved mobility is these areas. **Figure 2-3** in **Chapter 2** of the CTP shows the location of Sonoma County Communities of Concern. SCTA has prioritized these areas and has indicated that CTP projects wherever possible should serve these disadvantaged communities.

TARGET FOR 2040: Prioritize investments in Communities of Concern. Reduce average household travel costs below 2010 levels by 2040.

Figure 4-9. Percentage of Household Budget Spent on Transportation



Sources: SCTA, Center for Neighborhood Technology, AAA

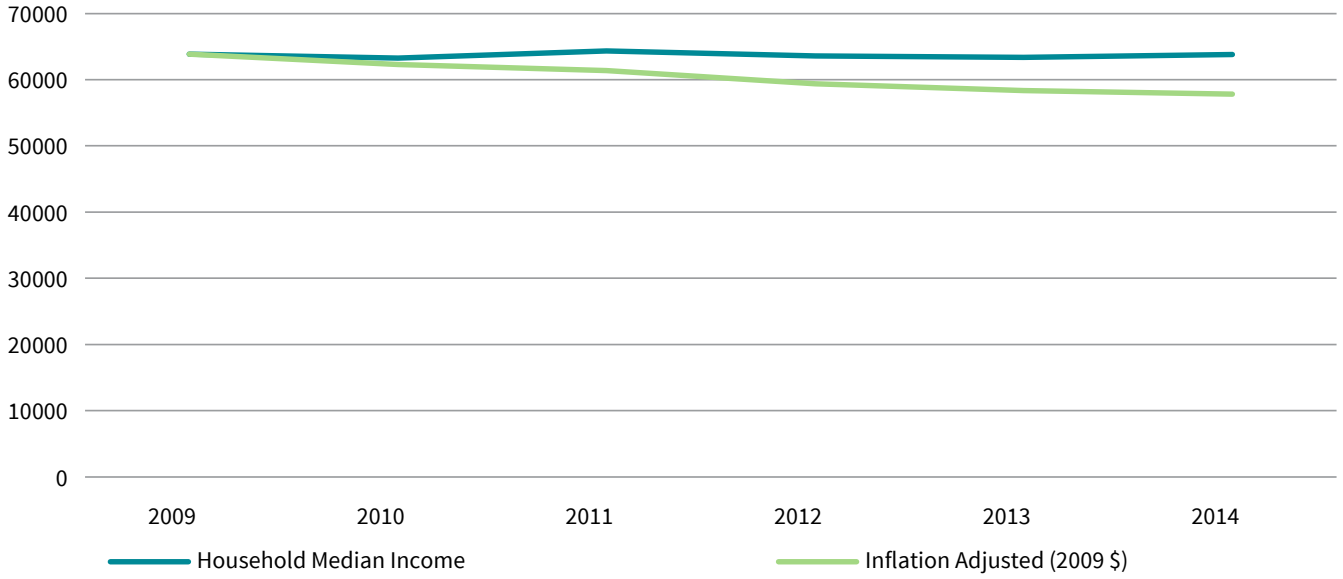
Transportation improvements that serve communities of concern can improve accessibility and potentially improve conditions in these vulnerable areas. Rising transportation costs continue to impact household incomes and affordability in Sonoma County. The Center for Neighborhood Technology estimates that housing and transportation are already unaffordable for many Sonoma County households. Reducing household transportation costs will increase countywide affordability and improve quality of life in Sonoma County.

Since the 2009 CTP

Specific metrics were not identified in the 2009 CTP for reducing household travel costs but has been identified as a metric in the current CTP. AAA estimates that the cost of driving has increased by 5 percent since 2009 from an average cost of operating a personal vehicle of 45 cents per mile in 2009 to 48 cents per mile in 2014.[15] Most of this increased cost can be attributed to increased insurance and maintenance costs, with fuel costs actually decreasing over this same five year period. During this five year period median incomes in the county have stagnated and actually declined when corrected for inflation (see **Figure 4-11**). Rising transportation costs and flat or declining income will continue to put pressure on Sonoma County households if this trend continues. Low income households will be hit the hardest if this trend continues.

15 American Automobile Association, Cost of Driving Estimates, 2009 and 2014.

Figure 4-10. Sonoma County Median Household Income 2009- 2014



Sources: US Census Bureau — American Community Survey, Bureau of Labor Statistics — Consumer Price Index.

Moving forward, what is required to meet the 2040 Goal?

Transportation costs will need to be reduced and/or household incomes will need to increase in order to meet the 2040 Goal of reducing household transportation costs. Transportation investments and improvements that provide travel options that are less costly than private automobile use have the potential to lower travel costs and will benefit disadvantaged communities in Sonoma County and provide travel alternatives for all countywide travelers. Reducing the number of trips each household is required to make, and how far they must travel will also reduce travel costs. Vulnerable communities which are highlighted by Communities of Concern are especially vulnerable to rising transportation costs and transportation improvements in Communities of Concern should be prioritized where possible.

Spotlight — Transportation Pricing and Affordability

Travel demand reduction policies which seek to control travel by increasing transportation costs significantly increase household travel costs. Per mile VMT or congestion fees could increase travel costs to 35 percent of an average household budget and parking pricing policies could increase household travel costs to 37 percent of the household budget in 2040. This could represent an increase in average household travel costs by around $500 per month. Implementing the CTP vision scenario would reduce average household travel expenses to around $1000/month or 19 percent of an average household budget in Sonoma County.

CHAPTER 5 HIGHLIGHTS

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Process 5-2

Committed Projects 5-2

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New Project Highlights 5-3

CHAPTER 5

TRANSPORTATION PROJECTS

PROJECTS OVERVIEW

One of the primary purposes of the CTP is to identify the transportation projects and programs that are needed to maintain and enhance the transportation system and make progress towards achieving the vision and goals.

This document does not assign funding to specific projects, but is a long range plan intended to identify and summarize transportation funding needs in Sonoma County.

The transportation system infrastructure is in constant use. Large transportation projects are complicated and expensive, and require many funding sources to complete, which may take years or even decades to secure. Including capital projects in the CTP can help project sponsors secure funding and helps them to successfully develop, design, and deliver projects. Since the CTP is a long range plan, project sponsors were encouraged from the start to consider and anticipate future transportation needs, even if no funding sources have been identified for these needs, when submitting projects.

Transportation improvement projects can generally be sorted into two groups:

1. Regionally significant projects that affect large numbers of the traveling public, are usually expensive, require multi-year schedules, and that can make an impact on the CTP goals; or
2. Projects with important local benefits that may not require huge budgets and aren't large enough to make a difference in the countywide performance analysis.

Examples of projects that don't provide large countywide benefits for meeting CTP goals, but have important local benefits are included at the end of this chapter. Overall performance of projects is discussed in **Chapter 6**.

Process

Jurisdictions recommend projects from their capital improvement plans for inclusion in the CTP. As part of the this CTP update, projects from previous plans have been reviewed, updated, or removed if they had been completed and/or are no longer being actively pursued. The SCTA received project submissions for carry-over and new projects from all Sonoma County cities, the County, and local transit agencies.

For the first time, the CTP now includes Sonoma County Airport projects. Funding for air travel is not administered by the SCTA and has not been included in previous CTPs. Airport projects were not analyzed for performance and are not included in the project list. They are listed in the Airport section of the Transportation System as information.

Committed Projects

Transportation projects that are fully funded or are in various stages of completion are considered committed projects. It is assumed that these projects will be completed in the near term. Committed projects were included in the analysis of 2040 baseline, or under "no build" and "business as usual" conditions.

Many of these projects have been included in previous CTPs and represent project delivery successes. Some of the larger committed projects are:

- Marin Sonoma Narrows: Phase 1
- Healdsburg Avenue Bridge Retrofit/Rehabilitation
- SMART: San Rafael to Airport

Summary of Projects

A summary of all projects submitted as part of the CTP project list review and update is provided in **Table 5-1**. Included projects cover a variety of different modes of travel and are dispersed geographically throughout the cities and the County. A number of proposed projects are intended to address transportation issues such as traffic congestion or safety by expanding or improving the existing infrastructure. Other projects focus on maintaining the system. The entire list of projects can be found online at http://scta.ca.gov/planning/comprehensive-transportation-plan/ and in **Appendix 5**.

Smaller phased projects that make up a cohesive larger project are listed as a single project, unless a particular funding need requires a segment to be listed individually. An example of this is the Foss Creek Trail. The trail is part of the overall SMART Pathway and is both underway and seeking funding. It has therefore been identified as a distinct project. Other SMART Pathway projects which have been submitted by different jurisdictions along the corridor are combined into a single project for the purposes of planning.

Table 5-1. Overview of Projects submitted by jurisdictions

Project Type	Number of projects	Cost in $M	Known Funding in $M
Bike/Walk	77	$452.52	$11.05
Bridges	5	$99.00	$16.09
Highway	23	$907.50	$269.00
Tech Solutions	2	$6.90	$0
Local Road projects	66	$687.57	$57.98
Local Road Rehab	18	$2,119.32	$0.20
Airport	9	$85.98	$9.70
Programs	2	$46.00	$8.75
Transit Maintenance	10	$1,724.37	$1719.65
Transit Expansion	21	$692.62	$3.55
Totals	**249**	**$6,085.06**	**$1,380.14**

Bus and Rail Transit projects are divided into two different categories: one representing the cost of maintaining existing service, and another exploring the potential for enhanced and expanded service. Maintenance of transit service is required to be budgeted using known fund sources, and maintenance costs are required to be listed as fully funded. Transit stations, rapid bus transit service, and SMART extensions are included as promising transit expansion projects. Technological improvements such as real-time transit information represent exciting opportunities that could increase efficiencies in transit service.

The 77 bicycle and pedestrian projects identified in the CTP originate from the 2014 SCTA Countywide Bicycle and Pedestrian Master Plan. These projects will provide improvements to the transportation system that will make bicycle and pedestrian travel more comfortable, safe, and direct. Although all projects in the SCTA Countywide Bicycle and Pedestrian Master Plan are included, only projects costing over $1M were included in the CTP list of Project Needs.

Highway, streets and roads projects identified in the CTP include maintenance and rehabilitation, as well as new or expanded facilities. Some expansion projects represent significant investments and may require phasing in order to make use of limited funding opportunities.

Safe Routes to School (and to Transit), rideshare, bike share, car share, guaranteed ride home initiatives, and a host of other programs that now figure prominently in the transportation world are included as components in reaching CTP goals.

New Project Highlights

Transit Projects

Transit operations and fleet maintenance are tied to known funding. Any expansion or enhancement of transit systems, especially in operations, is difficult to fund through existing sources. Key expansion projects included in the updated plan are:

- Service increases for all transit systems (including Sunday service for Sonoma County Transit)
- SMART rail service to Cloverdale, including maintenance facilities
- SMART stations

- Rapid bus projects in Santa Rosa and Petaluma
- Transit Mall and North Side Transfer center expansions in Santa Rosa
- Maintenance shop, bus yard, and bus stop improvements
- Technology — passenger information and fare technology, transit signal priority projects

Bicycle / Walk Projects

Bike/Walk projects make up the largest number of individual projects included in the CTP. The list of bicycle and pedestrian CTP projects is derived from the Bicycle/Pedestrian Master Plan and represents a high priority subset of the list of projects in that plan. A few of the largest projects include:

- SMART Pathway - Includes all projects within SMART's right of way in all Sonoma County jurisdictions from Petaluma to Cloverdale. Together with the bike facilities built as part of the Highway 101 Marin Sonoma Narrows (MSN) Phase 1 project, this represents the largest and most costly proposed bike facility in the county. Other SMART Pathway projects such as the Foss Creek Trail in Healdsburg and Petaluma on-street projects round out the project. North Santa Rosa Station Area Bike/Ped Connector over Highway 101
- Highway 1 — Many project phases that make up 34 miles of class 2 bike lanes along the Sonoma coastline
- Highway 128 — 23.58 miles of class 2 bike lanes from Napa County to Mendocino County

Bridges

There is an unfunded need to upgrade or replace bridges in Sonoma County. Specific unfunded projects include ongoing bridge replacements in Sonoma County and Santa Rosa and the SMART Rail Russian River Bridge costing.

Highway Projects

The Highway 101 project, which will add a high occupancy vehicle (HOV) lane in each direction from Windsor south to Marin County is slowly being completed. There are two phases of work remaining on the Sonoma portion of the Highway 101 project located in the Marin/Sonoma Narrows:

- B2, Phase 2 — Construct HOV lanes in both directions between just north of Highway 116 East and the Marin County line
- C2 — construct HOV lanes in both directions from to Old Redwood Highway in Petaluma to just north of Highway 116 East.

Many interchanges along the route are in need of updating and are identified in the plan:

- Highway 101 and Railroad Avenue interchange in Cotati
- Highway 101 and Todd Rodd interchange in Santa Rosa
- Highway 101 at Hearn interchange in Santa Rosa
- Highway 101 at Mendocino Ave/Hopper in Santa Rosa

Other Highways in the County need improvements including:

- Fulton Road widening from Guerneville Road to Piner Road
- Highway 116 widening and rehabilitation between Sebastopol and Cotati
- Highways 116 and 121 interchange improvements
- Highway 37 corridor protection and enhancement

Local Roads Projects

CTP local roads projects represent a diverse set of projects including:

- Southern Crossing at Caulfield Lane in Petaluma
- Farmers Lane Extension in Santa Rosa
- Baker Road Overcrossing Widening in Santa Rosa
- Piner Road improvements from Marlow Rd to Fulton Rd in Santa Rosa
- Sebastopol Road Corridor Plan — from Dutton Ave to Stony Point Rd in Santa Rosa
- Petaluma Hill Road — widening from Aston Ave to Santa Rosa City limit
- Adobe Road Reconstruction in Unincorporated Sonoma County

Road rehabilitation

Road rehabilitation represents a significant unmet need, with maintenance costs estimated at over $2 billion over the next 25 years in order to maintain roads at an acceptable condition. MTC estimates that it will cost $5 billion to improve the pavement condition of every street and roadway in the county.

Spotlight — Local Benefits of Projects

Many of the projects included in the CTP address local, neighborhood, or intersection and corridor level transportation issues and could provide benefits that have not been highlighted as part of the CTP performance assessment. Possible additional benefits include local congestion reduction, operational improvements, improved safety, improvements to traveler experience, improvements to the walking and biking environment, increases in transit ridership and access, and maintained and enhanced infrastructure.

Local Benefits Case Study — Hearn Ave and Highway 101 Interchange and Overcrossing

Description of Project: This project would reconstruct the overcrossing and interchange at Hearn Avenue and Highway 101, including the addition of turn lanes, bike lanes, and sidewalks.

Performance Assessment Results-Benefits to the Countywide Transportation System: Impacts to the countywide transportation network from this project would be modest when compared to business as usual or no build conditions in 2040. The SCTA comprehensive transportation plan performance assessment indicated that vehicle miles traveled, greenhouse gas emissions, congestion, and peak congested period travel times would be reduced by this project, but the reductions would be relatively small.

This project would enhance the countywide highway system by improving the connection from Southwest Santa Rosa across Highway 101 to major shopping and service centers on the east side of the highway.

Local Congestion Reduction, Traffic Safety, and Circulation Benefits: This project would improve traffic flow and travel speeds on Hearn Avenue and freeway on and off ramps in the project area. Morning and afternoon congestion can reduce speeds at the existing overcrossing to as low as 6 miles per hour. Conditions are expected to degrade even further by 2040 if the overcrossing is not improved. Widening the roadway and improving

bicycle and pedestrian infrastructure on the existing overcrossing would increase travel speeds by over 50% during the most heavily congested periods (afternoon rush hour) and would provide better biking and walking connections between neighborhoods on the east and west sides of Highway 101. Improving traffic flow, reducing conflicts between bicyclists, pedestrians and vehicles, and reducing congestion related stoppages would improve traffic safety and reduce the number of collisions occurring in this area.

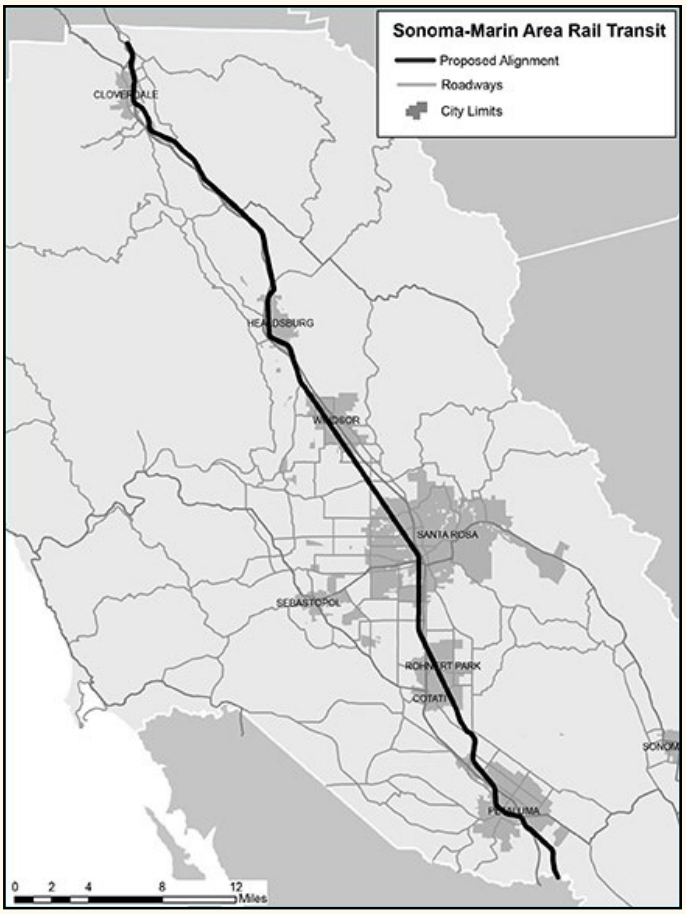
Local Bicycle and Pedestrian Benefits: This intersection serves as a major gateway between population centers in southwest Santa Rosa and major employment, retail, and service centers to the east if Highway 101. Limited crossings of Highway 101 create bottlenecks at existing crossings such as the Hearn Avenue crossing. The current over-crossing is difficult to navigate as a bicyclist or pedestrian because of the width of the facility, vehicle travel speeds, and lack of adequate bicycle and pedestrian infrastructure. Widening the over-crossing, upgrading sidewalks, and adding bicycle lanes will allow bicyclists and pedestrians to travel across the freeway to travel destinations to the east more safely and comfortably, and would remove conflicts with east-west vehicle travel which occurs on the existing bridge.

Local Environmental Benefits: Upgrading this interchange and overcrossing would reduce congestion and stop and go traffic and increase travel speeds to more efficient levels at this location. These improvements could be expected to improve air quality in the immediate project area.

Local Benefits Case Study — Sonoma Marin Area Rail Transit (SMART) Pathway

Description of Project: This project would construct a 70 mile multi-use bicycle and pedestrian pathway through the SMART corridor between Cloverdale in Sonoma County and Larkspur in Marin County.

Performance Assessment Results-Countywide Benefits: The completion of this project would add miles of additional non-motorized travel facilities to the countywide transportation system but would have a relatively small impact on countywide congestion, air quality, and travel. The CTP performance assessment indicates that the construction of the SMART pathway would reduce daily Vehicle Miles Traveled (VMT), greenhouse gas (GHG) emissions, congestion, and congested period travel times by shifting travel from automobiles to non-motorized travel. Though these reductions represent reductions of miles travelled per day, greenhouse gases emitted, or hours lost due to congestion, the reductions are small compared to existing and forecasted conditions in 2040.



The miles of additional class 1 bicycle and pedestrian pathway that this project would add to the countywide transportation network would be significant, and would provide a major north-south connection between Sonoma County population centers in the Highway 101 corridor from Cloverdale in the North to Santa Rosa, Rohnert Park, Petaluma, and Marin County in the south. Safe and pleasant bicycle and pedestrian connections in this corridor do not currently exist or are very circuitous and can add miles of travel to a single bike or walking trip. This facility would provide

excellent connections to the countywide transit system, providing safe and easy access to major transit centers and stops in the central Sonoma County corridor, and opening up easy access to transit.

Local Congestion Reduction, Traffic Safety, and Circulation Benefits: This project would significantly enhance both the countywide and local bicycle and pedestrian system by linking together existing non-motorized facilities and providing an important north-south connection between cities and towns in the Highway 101 corridor. This improved system would encourage more non-motorized travel which would take some pressure off congested local roadways, thereby reducing traffic congestion and improving circulation and access in the communities it would serve. The SMART pathway would separate pedestrians and bicyclist from vehicle traffic, reducing conflicts between travelers and improving the comfort and safety of bicyclists and pedestrians.

Local Bicycle and Pedestrian Benefits: 2,000–2,500 individuals are predicted to use this facility for transportation purposes each day according to analysis completed using the Sonoma County Travel Model. Many more users are expected to use this facility for recreational purposes.1 Local bicycle and pedestrian systems are relatively well developed, but regional connections between them are needed. This facility would serve as a major north-south connector, serving as a trunk line connecting bicycle and pedestrian networks in each of the jurisdictions in the corridor.

Local Environmental Benefits: The bicycle and pedestrian trips made using this facility would have little to no impact on local air quality conditions and would have a low impact on the environment in general. Many of these trips replace trips that would have been made using other less environmentally healthy modes of transportation, resulting in improved conditions.

1 SMART estimates that between 7,000 and 10,000 trips will be made using the SMART pathway per day.

CHAPTER 6 HIGHLIGHTS

Reaching Plan Goals—Creating a Transportation Vision for Sonoma County 6-2

CHAPTER 6

EVALUATING PLAN PERFORMANCE

Decisions and actions that are made today will impact future generations. The future is never certain, but tools are available that give us an idea of how our county may look in the next 5, 10, 20, or even 25 years.

Land use and transportation models use historical growth and travel data to predict future growth, travel demand, and traffic. By using these tools to look at different visions of the future, or transportation scenarios, we can gain insights into what may or may not help us to achieve our transportation related goals.

REACHING PLAN GOALS — CREATING A TRANSPORTATION VISION FOR SONOMA COUNTY

The Comprehensive Transportation Plan has become progressively more goals-oriented and focused on measuring performance. CTP performance can be assessed by quantifying what it will take to meet the goals identified in the plan. The 2009 CTP identified four performance targets that were loosely related to plan goals. A broad scenario-based assessment was included in the 2009 plan that demonstrated how implementation of CTP projects and transportation policies would impact transportation metrics such as vehicle miles traveled (VMT), congestion, and greenhouse gas (GHG) emissions. None of the broad scenarios tested in the 2009 CTP met all of the identified performance targets or demonstrated an ability to meet all of the plan goals.

As part of this update, individual performance measures have been identified for each of the CTP goals. A deeper assessment of individual transportation projects, policies, technologies, and strategies was included in this plan, to demonstrate how different projects or approaches help Sonoma County move closer towards meeting performance targets, achieving goals, and improving the countywide transportation system. Information gathered as part of this assessment has been used to assemble a future scenario, or vision, which meets most of the plan's performance targets. A few of the performance targets have been difficult to meet because of limitations in the tools used to assess performance, due to inelasticities in the metric, or because meeting the target is challenging given current and imagined travel conditions, technologies, and behavior.

The CTP performance assessment and scenario analysis consisted of a number of phases. First, existing conditions and progress made since the 2009 CTP were summarized in order to assess any progress made since the last plan and in order to set a current baseline that future scenarios could be compared to. Projects were then evaluated in order to determine the impact constructing some or all of the project list would have on CTP goals and targets. The policy assessment then evaluated how different policies, technologies, or behavioral changes could help SCTA meet CTP goals and performance targets. Results from the project and policy assessment were then used to construct a future "vision" or financially unconstrained scenario which achieved most of the CTP targets. The Vision Scenario was then compared to a number of transportation scenarios in order to demonstrate how close each scenario would come to meeting the plan goals and performance targets.

Spotlight — CTP TRANSPORTATION SCENARIOS

Existing conditions/2010 Baseline: This scenario represents current conditions as of 2010 and serves as a baseline to measure future progress or changes.

No Build/No Action: This scenario represents a future in which only currently committed projects, or projects which are currently in the delivery or construction pipeline, are completed by 2040. Population and employment growth are assumed to occur as forecasted by ABAG for the regional Sustainable Communities Strategy as described in **Chapter 2**. For this analysis, travel behavior is assumed to stay the same as it is today.

Constrained Plan: The constrained scenario includes capital highway and transit improvements listed in the Measure M Strategic Plan, constrained projects and programs identified in Plan Bay Area, and other capital improvements that have other identified funding sources. This scenario represents an approximation of a financially constrained scenario, in which no new funding sources or mechanisms are identified in the future. Population and employment growth are assumed to occur as forecasted by ABAG for Plan Bay Area and travel behavior is to stay the same as it is today for this analysis.

Vision: A "vision" scenario was developed which meets all CTP goals and performance targets. This scenario is not financially constrained and assumes that an expanded list of large capital road and highway projects are completed, that all CTP transit projects are completed and operate a maximum capacity, future population and employment growth is focused on PDAs, county jobs-housing balance is maintained and improved. Trip reduction measures are implemented, travel behavior is altered, and a significant shift to non-motorized travel takes place. The existing and future transportation system is made much more efficient by implementing technological improvements such as vehicle fuel economy improvements and autonomous vehicle technologies being implemented.

The results of the scenario analysis are meant to serve as a decision support tool to aid local decision makers in the prioritization of transportation projects and policies. This analysis or performance assessment provides an idea of what types of projects and policies will provide the greatest ability to reach SCTA's goals and objectives.

Testing Project Impacts

The CTP includes a range of transportation projects including regional highway and freeway projects, local streets and roads projects, road and transit maintenance, system improvement projects, and bicycle and pedestrian projects. These projects have been submitted by project sponsors, generally local jurisdictions or transit providers, as future transportation priorities. Projects may address system condition and maintenance, improve roadway or transit system capacity or efficiency, provide additional mobility, or improve safety and operations.

The first major phase of the CTP performance assessment focused on project performance. This was intended to provide information on how effective different types of transportation projects could be at helping SCTA reach plan goals and targets.

Initial tests of project impacts suggested that individual projects could provide congestion reduction, but benefits or impacts in other countywide performance areas would be small when considered at a countywide scale. Projects could have significant benefits or impacts at the local neighborhood or corridor level, but when considered at a regional level, any changes (positive or negative) are largely overshadowed by existing travel conditions or by population and employment impacts.

Because of these findings, SCTA staff selected a cross-section of large CTP projects that represent different major project types in order to assess how different types of projects could help SCTA meet performance targets. These sample projects included:

- Highway interchange improvements
  - Hearn Ave/Highway 101
  - Railroad Avenue/Highway 101
  - Fulton Rd/ Highway 12
- Highway improvement projects
  - Highway 101/Marin Sonoma Narrows: Phase 2
  - Highway 116 widening and rehabilitation between Sebastopol and Cotati
  - State Route 37 corridor improvements
- Transit improvement projects
  - SMART: Airport to Cloverdale extension
  - Santa Rosa CityBus service expansion
- Non-motorized projects
  - SMART pathway
- Local road improvements
  - Airport Blvd widening including Brickway and Laughlin Rd improvements
  - Petaluma Crosstown connector

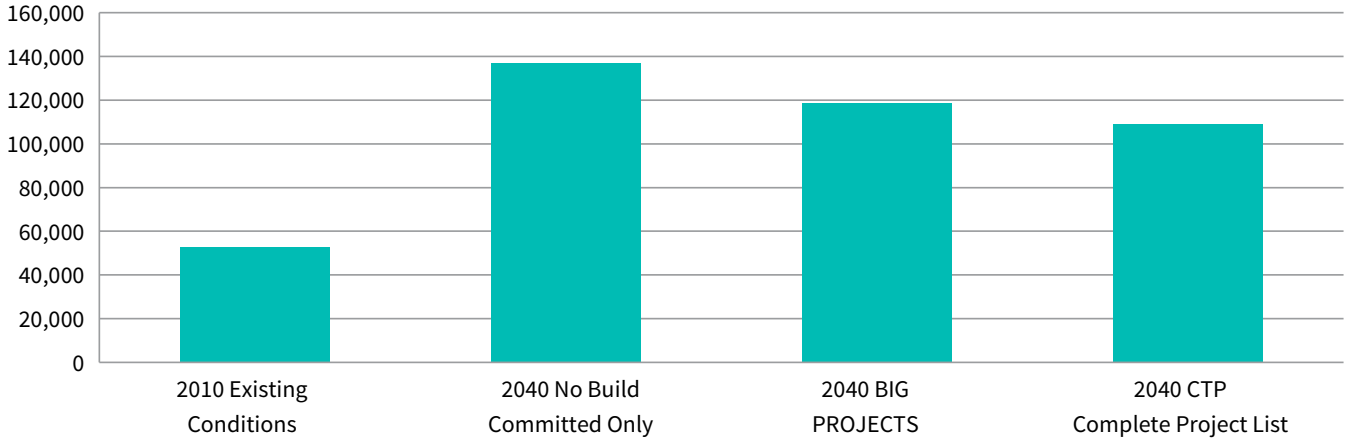
These projects are only a small sample of the full CTP project list but represent a cross-section of regionally significant projects.

Sample big projects were tested and compared to 2010 existing conditions and 2040 no build conditions as shown in **Figure 6-1**. The 2040 no build scenario included committed projects only, or projects that are fully funded or underway, and forecasted housing and employment growth. Although funding will not likely be available to construct all submitted CTP projects by 2040, a scenario which included the entirety of the CTP project list (all road, highway, transit, and bike/pedestrian) was analyzed for comparison purposes.

This more detailed performance assessment suggested again that projects could provide congestion reduction benefits, with the highest congestion reduction benefits, from a countywide perspective, being provided by large highway improvement projects. Completing all proposed CTP projects could reduce 2040 projected daily congestion by 20% and reduce 2040 PM peak hour travel times by 17%. Completing all large sample projects could reduce 2040 projected daily congestion by 13% and 2040 PM peak hour travel times by 10%. Individual projects which were shown to provide the largest future congestion reductions include projects such as the SMART pathway and improvements in the Highway 101 and Highway 37 corridors as illustrated in **Table 6-1**. The analysis indicated that project impacts in other performance areas would not be significant[1] at the countywide scale.

1 Individual projects, sample projects, and the entire CTP project list improvements where less than 1% in non-congestion related performance areas when considered at the countywide level.

Figure 6-1 CTP Project Performance Assessment — Project Congestion Reduction Sonoma County 2040 Daily Countywide Congestion (Person Hours of Delay)



Source: Sonoma County Travel Model

Spotlight — CTP Project Modeling Process:

1. Projects were coded into the travel model using submitted project descriptions and with clarifications from project sponsors.
2. Model general assumptions were set:
   - » land use: 2010 base year, Plan Bay Area land use
   - » travel costs assumed to stay the same (keep pace with inflation)
   - » no technological breakthroughs or significant changes to travel behavior.
3. Model run for 2040 No Build conditions, All CTP Projects, and selected large CTP projects as identified above.
4. Travel model based metrics extracted and summarized.
5. Post processing tools used to estimate GHGs (EMFAC[2]), collision rates (SmartGAP[3]), and traveler costs (SmartGAP and American Automobile Association cost factors).
6. Performance metrics were summarized and compared to performance scoring criteria.

Table 6-1 2040 Congestion Reduction for Selected Large CTP Projects

	Congestion Reduction in 2040	
Project	Daily reduction	PM peak hour reduction
SMART Pathway	1.6%	1.4%
Highway 101	6.5%	7.0%
Highway 37	6.8%	2.9%
SMART — Larkspur to Cloverdale	0.4%	1.3%
Santa Rosa CityBus Service Enhancements	0.3%	2.5%

Source: Sonoma County Travel Model

2 EMFAC is California's model for estimating emissions from on-road vehicles operating in California. It is built on decades of vehicle testing and analysis, and is informed by DMV registration data, the Smog Check program, and many other data sources. EMFAC is used as a starting point for developing plans to meet air quality standards, and for assessing the impact of motor vehicle emissions regulations on emissions and air quality. From California Air Resources Board http://www.arb.ca.gov/msei/emfac2011-faq.htm#emfac2011_qstn01

3 SmartGAP is a sketch planning tool developed as part of the SHRP2 process to provide transportation planning agencies with a means to assess how land development and growth management activities impact transportation.

Testing Policy Impacts

Analyzing proposed CTP projects demonstrate that countywide CTP goals and performance targets cannot be achieved by building projects alone. Sonoma County residents will need to change how they travel including how far and how often they make trips, what travel modes they use, and how efficiently they travel if these goals are to be met in the future. To this end, SCTA explored how possible policy approaches, technologies, and behavioral changes could help meet CTP goals and performance targets. This assessment provides information for decision makers and project sponsors on what types of actions provide benefits in CTP goal areas. Policies, technologies, and behavioral approaches were tested using the tools and research available and do not represent a full array of all possible solutions. New policy approaches and technological advances will continue to be developed that could have a significant impact on how people travel in Sonoma County or how travel impacts mobility, the environment, health and safety, and the economy.

Innovations in transportation technologies, changes to how people travel, and transportation policies could reduce VMT, reduce GHG, improve air quality, and provide other benefits that would help SCTA reach performance targets. The performance impacts of a variety of policy approaches, technologies, and changes to travel choice and behavior were tested in order to explore benefits they could provide in CTP goal/performance areas. These are summarized in **Figure 6-2** with more detail provided in **Appendix 6B**.

Figure 6-2 CTP Performance Assessment — Tested Policies

Transportation Pricing	Trip Reduction Techniques	Land Use	Mode Shift	System Efficiency
• Per mile driving increase • Parking charges • Free Transit Fares	• Household trip making reduction • Increased ridesharing, vanpooling, and carpooling • Maximized use of HOV lanes	• No development outside of UGBs • All future growth in PDAs • Improved jobs-housing balance	• Implement transit improvements • Maximize ridership of existing system • Maximize ridership of vision transit system • 5% shift to walking and biking	• Increased road capacity • Improved vehicles • Improved freight network

The results of the policy performance assessment indicated that a variety of different policy approaches, advancements in technology, and changes in travel behavior will be necessary to address the goals, objectives, and performance targets that have been identified in the CTP.

High performing approaches were identified for each performance target and used to develop a 2040 scenario, the 2040 Vision Scenario, which meets the performance targets and provides improvement in CTP performance areas. Policies that increase the efficiency of the existing transportation system or which shift travel onto more efficient modes were generally the most effective at helping meet CTP goals and targets.

Meeting CTP Goals and Performance Targets — Assembling the 2040 Vision Scenario

High performing projects and policies from the project and policy analyses were included in a future 2040 Vision Scenario, which demonstrates how CTP performance targets for each of the plan goals could be met. Funding has not been currently identified for the projects, policies, strategies, or technologies that were identified as high performers and included in this scenario. Some high performing policy levers that were analyzed in the policy level performance assessment were omitted based on feedback from local jurisdictions and the SCTA. These approaches were identified as having negative impacts or undesirable social effects and were therefore not considered in the 2040 Vision Scenario.

The Vision Scenario was assembled iteratively by adding high performing projects or policy approaches until the scenario was able to reach most CTP performance targets. Recommendations for reaching our goals include securing sustainable funding sources, continue our focus on improving the land use connection, increase efficiencies in vehicles, fuels and implement technological improvements. For details, see the Implementation section of **Chapter 7** Funding and Implementation.

CHAPTER 7

FUNDING AND IMPLEMENTATION

FUNDING OVERVIEW

Inadequate and unreliable funding creates a challenge to meeting the CTP Goals. As discussed in **Chapter 2** (Our Community), Sonoma County is anticipated to experience significant growth in the next 25 years, putting additional stress on the transportation network.

Transportation funding in Sonoma County and throughout the US come primarily from federal, state, regional and local sources, however, investments made at the state and federal levels have declined, putting more emphasis on local sources. Analysis for the region made by the Metropolitan Transportation Commission (MTC) in October 2015, indicate reductions in all fund estimates over previous cycles, and MTC estimates that as federal and State funds are estimated to be reduced by 25 percent, local sources will be required to fill in the gaps.

Financial Constraints

The SCTA uses MTC forecasts of the status of available revenues and likely new sources. The CTP lists transportation needs as they have been submitted by the cities and the County. Existing and projected revenues will not meet the identified needs. The SCTA has a long-standing history of supporting efforts at the local, State and federal levels to maximize efficiencies related to providing transportation improvements as well as efforts to increase funding for transportation. Projects that are not committed, but that have already identified sources of funding make up the financially constrained list of projects. This list does not specify small local projects and does not include speculative funding options.

In transportation, difficult funding challenges arise when decision-makers are faced with having to choose between maintenance and expansion. An added complexity is that project sponsors must try to match various fund sources and their requirements with the projects of greatest importance.

The system of funding transportation is complicated and cumbersome due in large part to ever evolving policies and priorities that seek to meet the demands of varying interests and concerns related to transportation improvements. This has sometimes led to restricting funds to specific kinds of projects (e.g., safety or bridge rehabilitation) or specific modes of travel. Some key points to keep in mind about existing transportation funds include:

- Funds are often dedicated to specific uses, e.g., gas tax funds cannot be used to pay for the operation of a new bus route.
- Some funds are automatically apportioned through formulas to various recipients, whereas some are discretionary with respect to the recipient or the types of projects they can be spent on.
- Most funding mechanisms do not automatically change due to inflation in prices and thus often do not keep up with the cost of doing business. For example, the prices of materials used in highway construction—steel, concrete, and asphalt—have risen dramatically without a corresponding increase in gas tax revenues. The cost fuel for busses is volatile, yet transit operators strive to provide consistent service with inconsistent revenues.
- Virtually all funding sources for transportation are “matching programs” in that they do not fully fund a project and require contributions from other sources. This process, known as leveraging, means that local funds can be substantially expanded when combined with state and federal funds. For example, a program with a 25 percent local match means that every dollar of local money can produce up to three dollars of other money that needs to be obtained. In order to be competitive it is often necessary to provide an even greater match. SCTA’s policy has been to try to maximize the leveraging of federal, State, and regional funds wherever possible. The downside to this overarching approach is that projects end up being funded by numerous sources and if one of those were to decline or become unavailable the whole project is put at risk.
- As the transportation system ages, it grows more costly to maintain. Deferred maintenance often leads to short term savings, but in the longer term increases in costs.

Major Revenue Sources

Historically, most of the money used for transportation projects is generated from the users that pay fuel and sales as well as other taxes and fees. These tax dollars flow into federal, State and local funding pots. The federal funds are used primarily for capital projects such as new highway lanes, bus purchases, and local road maintenance. State funds go to capital projects, transit operations and cover maintenance and operations of the state highway

system. Local funds are used for capital, operations and maintenance for all transportation modes, as well as to match federal and state grants.

The SCTA has oversight over the distribution of discretionary State and federal funding for transportation in Sonoma County. Most of these funds come to the SCTA through MTC or directly from the State and federal governments. Measure M, a quarter cent sales tax collected in Sonoma County for transportation purposes, is administered directly by the SCTA. Measure M funds have been instrumental in enabling SCTA to leverage other fund sources, like the State Transportation Improvement Program (STIP) and a statewide transportation bond[1], which have been essential to delivering the Highway 101 widening project. Because of declining revenues, the 2016 STIP had a negative balance, resulting in projects being removed from the list to be funded. As the State continues to face financial struggles, the SCTA must be nimble in its financial and project management to ensure maximum benefit is received from limited dollars and that the voter expectations when Measure M was approved, can be met.

Federal Transportation Funding

On December 4, 2015, President Obama signed into law the Fixing America's Surface Transportation Act, or "FAST Act." [2] FAST is a five-year funding program, the first in over ten years with a time frame of over three years. Despite the passage of FAST, the long term strategy for funding transportation projects remains a critical point of discussion at the federal level. The federal gas tax has been used to fund transportation projects since the 1930s, however, since the last increase in 1993, it has not been indexed to inflation, resulting in a loss of buying power. Coupled with an increase in the number of hybrid and electric vehicles on the road and increasing fuel efficiency, gas tax revenues have not kept up with demand and are declining.

The federal government imposes several taxes on surface transportation modes. Most drivers are aware of the 18.4 cent per gallon gasoline tax every time they fill up at the pump. Additional sources of revenues come from truck weight fees and tires. There are three key issues with the federal gas tax:

1. As a tax on the gallons sold, the gas tax is not responsive to inflation. In addition gasoline prices have been declining in recent years resulting in reduction of revenue collected and fewer transportation projects implemented.
2. In the longer term, vehicles are expected to become more fuel efficient, with alternative fuels playing a larger role in the vehicle fleet. Although this is a positive for the environment, it will mean less funding for transportation in the future. Given that, other types of revenue generating mechanisms will have to be considered on a national level, e.g., a direct charge for vehicle miles traveled, rather than on gallons of fuel purchased.
3. California is a 'donor' state and historically has not gotten back all that it pays in gas taxes. The State receives approximately 90 percent of its contributions of collected taxes.[3]

Federal transportation funding grants are increasingly competitive. As an example, the Federal Department of Transportation received 627 eligible applications from 50 states and several U.S. territories, including tribal governments, requesting 20 times the $500 million available for the program, or $10.1 billion, for needed transportation projects.[4,5]

State Transportation Funding

From the report "Transportation Funding in California 2014" by the Economic Analysis Branch, CA Department of Transportation.

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1 California Transportation Commission, Proposition 1B — Corridor Mobility Improvement Account <http://www.catc.ca.gov/programs/cmia.htm>.
2 U.S. Department of Transportation, FAST Act <https://www.transportation.gov/fastact/>.
3 Caltrans, Economic Analysis Branch, Transportation Funding in California 2014 <http://www.dot.ca.gov/hq/tpp/offices/eab/index.html>.
4 The program referenced is the Transportation Investment Generating Economic Recovery (TIGER) competitive grant program.
5 U.S. Department of Transportation, *U.S. Transportation Secretary Foxx Announces $500 Million in TIGER Grants Awarded to 39 Projects, 2015* <https://www.transportation.gov/briefing-room/secretary-foxx-announces-500-million-in-39-tiger-grants, accessed June 17, 2016>.

State Fuel Excise Tax: As of July 1, 2014, California collects 36¢/gallon excise tax on gasoline and 11¢/gallon on diesel fuel—generating approximately $3.0 billion a year. The total amount of State Fuel Excise Tax revenues are divided between the State Highway Account (SHA) and local entities according to a statutory formula.

The excise tax on gasoline is comprised of two taxes:

- The base state excise tax (Proposition 111, 1990) has remained at 18¢/gallon since 1994. Cities and counties receive approximately 36 percent and the state receives 64 percent of this revenue.
- The price-base excise tax for Fiscal Year (FY) 2015-16 is 17.3¢/gallon, from 18¢ the previous year. As of July 2016 the tax will be further adjusted downward to 9.8¢/gallon.

Regional Funding — One Bay Area Grant

The One Bay Area Grant (OBAG) is a program developed by MTC to implement the strategies of the Plan Bay Area (2013). It uses existing fund sources, primarily federal funds STP and CMAQ that are distributed by MTC. In order to implement regional goals articulated in Plan Bay Area (2013 and 2017) OBAG distribution is based on formulas that include the amount of housing and affordable housing that each jurisdiction has built and is planning to build. Jurisdictions must also invest 50 percent of their funds in Priority Development Areas.

With Resolution 4035, MTC directly linked its primary transportation funding tool, the One Bay Area Grant (OBAG) Program with Plan Bay Area and the regional framework of place types. By connecting funding to policy MTC aims to reward jurisdictions that are planning for and producing housing, including both market rate and affordable units. This is a distinct change from past rounds of federal transportation funding which were largely distributed to cities and counties by formula based on population and/or road miles and mostly used for local streets and roads projects. Now, MTC is placing much less emphasis on transportation needs and geographic equity and is instead focusing funds on multimodal investments in areas that are willing to absorb population growth.

It remains unclear how successful this program will be in the long run. Housing production has long been left to the private market, which has declined significantly in the past 8 years. Affordable housing, and even moderately priced development has been largely non-existent, with increasing costs and, now with the lack of redevelopment agencies, fewer funding options. The Bay Area, including Sonoma County are in the midst of housing crisis, that requires new thinking about land use and the government's role in housing production. Transportation funding, now linked to housing is strained to meet the enormous needs of housing along with increasing transportation infrastructure needs as traditional fund sources are in decline. The concept of linking transportation funding to housing planning and production makes sense, however, the severity of the needs combined with the scarcity of resources creates a difficult situation in which to assess the program. There is also concern that the regional framework isn't as effective in Sonoma County as it may be in San Francisco.

Local Funding — Measure M

The Traffic Relief Act for Sonoma County (Measure M) provides a ¼ cent sales tax to be used to maintain local streets, fix potholes, accelerate the widening of Highway 101, improve interchanges, restore and enhance transit, support development of passenger rail, and build safe bicycle and pedestrian routes. Passed in 2004, the expenditure plan funds specific projects until it expires in 2025.

Initially, it was projected that the Measure would produce a total of $470 M, beginning with $17.3 M in the first year and increasing at a growth rate of 3.21 percent. **Figure 7-1** shows the estimated revenue of the measure stacked up against the actuals. The impact on the sales tax measure of the downturn in the economy is evident.

Figure 7-1 Projected vs Actual Measure M Sales Tax Revenue 2005–2015

Actuals show that the total sales tax collected over the ten year period is approximately $186.3 M or 8.6 percent lower than the $203.9 M initially projected. If the growth rate over the final ten years of the measure is 3 percent per year, as conservatively estimated in the 2014 Strategic Plan, the net revenue will total approximately $432 M or 8.15 percent less than the initial projection. However, if growth were to equal 5.65 percent per year, which is less than the 6.21 percent ten year average from 1994 to 2004, then Measure M would hit its initial target of $470 M over the full 20-years of the measure.

As the Measure M projects are built and the sales tax reaches its expiration date of April 2025 the CTP will be used to help frame the discussion about transportation needs and priorities that could be addressed on a possible extension.

Other Local Sources

Voters in Sonoma and Marin Counties approved the SMART District's Measure Q, a one-quarter percent sales tax to fund the design, construction, operation and maintenance of the commuter rail project in 2008.

In 2011, a measure to fund road maintenance, transit and safe routes to schools programs in the form of a vehicle licensing fee was not approved by voters. More recently, in 2015, the County proposed a sales tax to create a sustainable source of funding for road maintenance. This measure also failed at the ballot.

Spotlight — Ten Years of Measure M

The Measure M Ten Year Summary Report was released in March 2016. SCTA has implemented the Measure M Expenditure Plan and the traveling public is seeing the multi-modal improvements envisioned in the Traffic Relief Act for Sonoma County. Funding to Local Street Rehabilitation (LSR) and Local Bus Transit (LBT) programs has allowed for contributions to overall maintenance of our local roadways, as well as ensured quality bus transit. Measure M funding for the LSR and LBT programs leveraged over $3M in Proposition 1B, State and Local Partnership Program (SLPP) funding, which has further augmented roadway maintenance and bus service.

The Highway 101 Program has been a significant success for Measure M, leveraging approximately $572M of other funding, matching other sources at a 5 to 1 ratio.

Highway 101 now has continuous carpool lanes between Windsor and the north end of Petaluma.

The Petaluma Boulevard South and Lakeville Interchanges are being built along with new bridges over the Petaluma River and Route 116.

Significant improvements have been made to the East Washington Interchange on-ramps.

The new Airport Boulevard Interchange is open.

Old Redwood Highway Interchange is complete.

A new interchange opened at Petaluma Boulevard South in 2016.

Highway 101 will be re-aligned and out of the flood plain at the county line.

SCTA is rigorously pursuing additional funding sources to extend the carpool lanes south, through Petaluma and to the Marin County line.

Measure M funding for the Local Streets Projects and Bike-Ped programs leveraged over $120 Million in other funds.

Bicyclists and pedestrians are using new and improved facilities, drivers are experiencing less congested and better maintained roadways, Highway 101 has been widened through much of the county, transit riders have had bus service maintained, and in 2016, commuter rail service will be available between Sonoma and Marin Counties— all of this is due to the availability of Measure M funds and being a self-help county.

Measure M has delivered on its promise to leverage other fund sources and has made significant progress on delivering its expenditure plan.

Importance of Planning

The SCTA recognizes the need to plan for projects and programs into the future and beyond known fund sources in order to meet new and existing goals, particularly those of emission reduction. CTP 2040 is a financially unconstrained document. Projects and programs are included in the plan that do not have an identified fund source, based on the needs determined through the CTP 2040 process. In the case of many projects proposed after 2025, the scope and costs of projects may have not yet been fully determined.

Up to date information on transportation funding can be found at the sources cited in this chapter including;

- U.S. Department of Transportation — https://www.transportation.gov/fastact/
- CA Department of Transportation "Transportation Funding in California 2014" — http://www.dot.ca.gov/hq/tpp/offices/eab/index.html
- MTC Fund and Invest — http://mtc.ca.gov/our-work/fund-invest.

IMPLEMENTATION

The SCTA has set ambitious goals in this CTP. Project delivery, planning, technical analysis, advocacy, coordination and public outreach make up the core efforts.

The SCTA has led innovative projects, some large, like the development and institutionalization of the Regional Climate Protection Authority, which is now an award winning, cutting edge agency. Specific transportation efforts already underway, including Safe Routes to Schools, are important steps in implementation. SCTA has also piloted public facing projects like the Regional Rideshare 3 County Project, Car Share and Bike Share. Internally, SCTA is one of the only agencies of its size to have a functional countywide traffic model.

This CTP shows that it's possible to meet these goals, but only with a significant coordinated effort using resources that are beyond SCTA control. While the SCTA will continue to advocate for more investment and forward thinking policies at the regional, state and national level, an important next step is to refine our priorities for the limited resources under its control (including Measure M, other local funds and planning efforts to advance the solutions we need).

Table 7-1 SCTA Overall Workplan

	Description	Time Frame
Implement Measure M		
Measure M Strategic Plan	Update Strategic Plan — 5 year programming document	Every 2 years
Project Administration	Monitor projects, manage funds	ongoing
Reporting	Prepare Annual Report to the Public	Annually
Project Delivery		
Highway 101 funding	Work with funding partners and explore options to fund remaining improvements needed to Highway 101	ongoing
Highway 101 delivery	Continue to work with Caltrans to complete construction of HOV lanes on Highway 101	ongoing
Safe Routes to School	Safe Routes to School monitoring and coordination with DHS and Workgroup.	ongoing
One Bay Area Grant	Work with MTC staff on guidelines for next round. Monitor project deliv ery progress; Work with local project sponsors on next cycle.	4-5 year cycles
Lifeline	Work with transit operators and other project sponsors to implement and monitor program.	Ongoing
Transportation Development Act, Art. 3	Manage the program, monitor projects, produce quarterly progress updates, and work with MTC and local jurisdictions.	Annual cycle
Transportation Fund for Clean Air	Manage the program, monitor projects, and produce interim and final reporting, work with BAAQMD and other regional partners on update of program policies, audits, administration.	Annual cycle
FTA 5310: Formula Grants for the Enhanced Mobility of Seniors and Individuals with Disabilities	Coordinate with 5310 project sponsors regarding project status.	Ongoing
Innovative Transportation	Administer SHIFT Grant to study car share and bike share	2015–2017
Transportation Planning		
Comprehensive Transportation Plan (CTP)	Update Comprehensive Transportation Plan Vision, incorporating existing and future needs, provide performance analysis and strategy for meeting goals.	Every 4 years
SCTA Countywide Bicycle and Pedestrian Plan	Maintain update of local maps. Ongoing Countywide Bicycle and Pedestrian Advisory Committee. Collection and processing of bicycle and pedestrian activity data.	On-going

	Description	Time Frame
Travel Demand Modeling	Maintain updates to model. Continued development of model forecast reports and data products. Analysis of local projects. Coordinate modeling/forecasting with regional modeling activities.	On-going
Plan Bay Area	Work with regional agencies and CMAs on Plan Bay Area issues. Attend regional and local meetings and facilitate local meetings related to PCAs, housing allocations and transportation needs and performance. Support Plan Bay Area in Sonoma County. On- going implementation and discussion.	Every 4 years
Priority Development Area Planning	Work with local and regional governments to refine place type definitions and develop best outlook for Sonoma County housing and land use connection.	On-going
Project Study Reports / Project Initiation Documents	Work with Caltrans to manage and monitor development of PSR/PIDs. Work with local jurisdictions on specific PIDs.	Continually revise PSR priority list; FY Work plan, 3 YR work plan; work on statewide effort related to PIDs
Coordinate and Communicate		
Advisory Committees	Facilitate advisory committees	On-going
Transit Coordination	Ongoing Transit TAC meetings regarding coordination. Participate in Transit Sustainability Study and SMART Bus Integration Study.	On-going
Implement public outreach plan	Maintain public outreach through social media and other outlets.	On-going
Air quality and emission reduction strategies	Assess and help implement strategies and investigate new funding opportunities. Attend cap and trade meetings. Real time ride share, electric vehicle fleet expansion.	On-going
Climate Action 2020 coordination	Coordinate transportation goals with Climate Action 2020 to implement GHG reductions, from the transportation sector	On-going
MTC Meetings — Commission and Committees	Participate in meetings — MTC, JPC, Programming and Allocations, ABAG.	On-going
Bay Area Partnership	Work with regional and local transportation agencies.	On-going
Partnership Committees	Attended and participated in the PDWG, LSR, TFWG, RAWG, Active Transportation, Regional Mobility Management, and Regional Rideshare & Bicycle committees on a regular basis. Staff serving as Vice Chair for the Regional Model Working Group. Also participated in Complete Streets Working Group and Federal Efficiencies Working Group. Forwarded important information and updates to local jurisdictions.	On-going
Self Help Counties Coalition	Participate in regular discussions about statewide issues and legislation that impact sales tax measure counties.	On-going
Public information distribution	Work with community groups and elected officials on Plan Bay Area, climate change, and other topical issues. Coordinate with Sonoma County Bicycle Coalition to promote various programs. Keep SCTA website updated. Respond to public data requests.	On-going
Advocate for Transportation		
Transportation advocacy	Work to identify sustainable fund sources for transportation.	On-going
Legislative advocacy	Work with State legislature and federal representatives to promote SCTA Goals.	On-going

REACHING PLAN GOALS

The SCTA has ambitious goals that reflect the needs and vision of Sonoma County residents. Given the anticipated increase in population and the forecasted trends, reaching the goals will require innovation, reliable funding sources and active participation of the public.

The CTP performance assessment has identified that the following approaches will help achieve plan goals and performance targets:

- Secure additional funding for road, highway, and transit in order to repair and maintain the existing road and transit systems.
- Secure additional transit funding to pay for transit expansion and to improve the average age of the transit fleet.
- Secure funds to build select transportation projects to reduce congestion, emissions, improve health and safety, and to improve the economy.
- Increase transit service.
- Continue current emphasis on Priority Development Area focused and city-centered growth.
- Implement trip reduction strategies.
- Fill vacant capacity on the transit system by making transit more convenient, less expensive, faster, and more attractive.
- Shift 4 percent of total daily trips from single occupant vehicles to pedestrian or bike travel.
- Implement system efficiency improvements.
- Improve the average vehicle fleet fuel economy.

Figure 7-2. CTP 2040 Vision Scenario Components

Population and Employment Growth through 2040 located in UGBs and centered on PDAs, maintain current jobs-housing balance with neighboring counties.

Construct Selected CTP Vision Large Road and Highway Projects. Examples include HWY 101 HOV lane completion, SMART Pathway, and other highway and large local road projects.

Implement all CTP ***Vision Transit Improvements*** including headway improvements, rapid bus service, and extended service.

Maintain the road and highway system in good condition. Maintain current and vision transit service levels.

Implement Trip Reduction Measures — Travel demand management, compressed work week, work from home, online shopping, online entertainment.

Implement System Efficiency Improvements — Intelligent transportation systems, signal timing, metering, smart car technology, etc.

Vehicle Fleet Fuel Economy increased to 55 MPG

Maximize Transit Ridership by filling vacant capacity on buses and trains.

4% mode shift from single occupant vehicle trips to bicycle and pedestrian trips due to changing attitudes, improved safety, improved non-auto infrastructure, pedestrian/bike/transit friendly land use changes.

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ADDITIONAL RESOURCES

AAA Exchange — http://exchange.aaa.com/ — American Automobile Association provides an online calculator to determine the cost of driving with a number of variables including location, types of vehicle. The site also provides information on "Going Green", Electric Vehicles and driving habits that help conserve fuel.

AARP Livability Index — https://livabilityindex.aarp.org/ American Association Retired Persons online tool to measure livability in any community.

ABAG- abag.ca.gov, for regional forecasts, information on Plan Bay Area, Priority Development and Conservation Areas. ABAG also produces a variety of useful regional reports.

Economic Development Board of Sonoma County — http://edb.sonoma-county.org/ — Census data focused on Sonoma County, forecasts and other economic reporting

GoSonoma — http://gosonoma.org for transportation alternatives to the single occupant vehicle

Mineta Transportation Institute Glossary — http://transweb.sjsu.edu/MTIportal/research/Glossary.html

MTC Vital Signs — http://mtc.ca.gov/tools-resources/vital-signs

National Low Income Housing Coalition http://nlihc.org/oor/california data illustrating the relative cost of housing, especially in comparison to the rest of the Bay Area.

U.S. Census — http://www.census.gov/data.html, provides options on viewing census data.

APPENDIX 1A
PUBLIC OUTREACH REPORT

INTRODUCTION

In the process of updating the Comprehensive Transportation Plan (CTP) public input was used to help steer goals and policies. Staff designed outreach methods to engage with the public on the challenges and opportunities for the transportation system and 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 Draft CTP

For this update to the CTP, outreach was conducted with a smaller budget than the 2009 plan. Instead, staff conducted the outreach using innovative ways to interact with the public, including online methods that replaced the telephone poll from previous revisions to the plan. For this draft plan update, outreach consisted of:

- 2 public Workshops
- An online poll
- 2 public hearings (plus other presentations)

The public workshops were held in Santa Rosa (9/9/15) and Petaluma (9/17/15). Staff was on hand to discuss the CTP and collect input from 30 attendees at the two events.

[Row of pictures from the public workshops, include a board photo to show a public hearing]

The Sonona County Transportation Needs survey was open for three weeks from September 3–23, 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.

KEY FINDINGS

Survey Findings on CTP Priorities

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

Table 1: Transportation priorities by age and income

		#1 Priority	#2 Priority	#3 Priority
Age	Under 18	Maintain Roads	Expand buses	Expand SMART
	18 to 24	Expand buses	Maintain Roads	Expand SMART
	25 to 34	Expand SMART	Expand bikes	Expand buses
	35 to 44	Maintain Roads	Expand SMART	Expand bikes
	45 to 54	Maintain Roads	Expand SMART	Expand bikes
	55 to 64	Maintain Roads	Expand bikes	Road improvements
	65 or older	Maintain Roads	Road improvements	Expand bikes
Income	$ 30,000 or less	Expand buses	Maintain Roads	Expand SMART
	$ 30,000 - 60,000	Maintain Roads	Expand buses	Expand SMART
	$ 60,000 - 90,000	Maintain Roads	Expand bikes	Expand buses
	$ 90,000 or more	Maintain Roads	Expand bikes	Expand SMART
	Average (all)	Maintain Roads	Expand SMART	Expand bikes

Overall, there were three main themes of feedback from the survey, workshops and community meetings:

A. Improve access to transportation

B. Improve road maintenance

C. Reduce environmental impact

Improve access to transportation

Survey responses show the driving alone is still the 'best' mode of transportation for many. Drive alone was the most popular response and also the mode with the shortest commutes.

In addition, transit was only identified as the best transportation mode for some respondents as transit has the longest commute times and respondents were most likely to try transit if routes were improved or if they were without a car. One representative comment submitted with the survey reads:

> *I would love to live by bike/public transit here, but the danger of biking along our roads, the infrequency of buses, and insufficient routes make it impossible.*

Table 2: Commute time and distance by mode

Mode	Minutes	Miles
Drive alone	42.64	25
Carpool	51.56	24.81
Bus	112	46.58
Bike	51.74	10.75
Average (all modes)	*49.37*	*24.63*

Table 3: Commute time and distance by age and income

		Minutes	Miles
Age	Under 18	52.86	22
	18 to 24	59.29	20.6
	25 to 34	54.09	22.31
	35 to 44	48.19	30.89
	45 to 54	47.71	25.48
	55 to 64	50.88	23.7

	65 or older	31	16.08
Income	$ 30,000 or less	65	27.4
	$ 30,000–60,000	40.98	21.89
	$ 60,000–90,000	36.91	18.84
	$ 90,000 or more	52.79	27.31

Improve road maintenance

Improving road maintenance was the highest priority for most age groups of survey respondents. While respondents prioritized better road maintenance, they also showed concern about funding with survey respondents favoring traffic impact fees and gas tax as the solution for funding road maintenance. One representative comment submitted with the survey was:

> *The state of repair of Sonoma County Roads is horrendous. Other local counties seem to find the resources, why can't we?*

Reduce environmental impact

Many of the comments on bikes, transit and infrastructure touched on the need to reduce the environmental impact of transportation. A popular solution seems to be electric vehicles, with 43.7% of respondents indicating they were likely to buy and electric vehicle in the near future.

Respondents interested in electric vehicles were motivated by the environmental impact and fuel savings, while vehicle sticker price kept many on the fence. One respondent commented that:

> *It's important that we plan ahead and put in infrastructure that allows us to continue living and creating communities that will support our children.*

Bike and Walk

What would cause you to walk or ride a bicycle more frequently?

1. You didn't have a car, 82.2%
2. Walking and bicycle paths were safer, 77.7%
3. Walking and bicycle were separated from traffic, 77.1%
4. There were more walk/bike paths on local streets, 73.8%

Transit

What would cause you to use local transit (bus or train) more frequently?

1. You didn't have a car, 86.8%
2. Routes were more convenient, 85.9%
3. Fares were free, 63.4%
4. You felt more safe or comfortable using the transit system, 52.9%
5. Gas prices reached $5 dollars a gallon, 43.8%

Electric Vehicles

Of survey respondents, 43.7% said that they were likely or extremely likely to purchase a plugin-in hybrid or electric vehicle when shopping for their next vehicle.

The top three factors which respondents identified as making them hesitant to choose a plugin-in hybrid or electric vehicle were:

1. Price, 72.4%
2. Access to charging stations, 69.6%
3. Vehicle driving range, 66.8%

The top three factors which respondents identified as favorably influencing their decision to purchase a plugin-in hybrid or electric vehicle were:

1. Fuel savings, 69.0%
2. Environmental impact, 68.1%
3. Purchase incentives, 56.8%

SURVEY RESULTS

Full results of the survey can be explored online: http://j.mp/ctp-survey-results. Responses to a separate satisfaction survey for using Peak Democracy were positive, with 82% reporting that they liked using the Sonoma County Communities Forum. While technical issues remain a problem for some, the following anonymous comment is representative of many that were received:

> *I've never been asked in Sonoma County what I think about public transportation, or how I get about. I'm grateful for the opportunity to share my opinions, though limited by the structure of your questionnaire.*

APPENDIX 2A
HOUSING GROWTH DATA 1967–2013

HOUSING GROWTH IN SONOMA COUNTY — VITAL SIGNS

Housing growth is measured in terms of number of units for which cities issue permits throughout a given year. The dataset includes housing permit numbers, separated into single-family and multi-family units, for Bay Area counties, cities, and unincorporated areas and comes from the California Housing Foundation and the Construction Industry Research Board (1967 to 2013). The dataset also includes housing permit numbers by metropolitan area, which come from the U.S. Census Bureau's Building Permit Survey (1988 to 2012).

DATA SOURCES

Geography	Data Source	Years
County	Construction Industry Research Board	1967–2010
County	California Housing Foundation/Construction Industry Res	2011–2013

Housing Growth in Sonoma County 1967–2013

Year	County	Single Family Units	Multi Family Units	Total Units	Single Family Share	Multi Family Share
1967	Sonoma	1,139	225	1,364	84%	16%
1968	Sonoma	1,466	367	1,833	80%	20%
1969	Sonoma	1,571	804	2,375	66%	34%
1970	Sonoma	1,716	1,035	2,751	62%	38%
1971	Sonoma	2,877	1,568	4,445	65%	35%
1972	Sonoma	3,264	2,045	5,309	61%	39%
1973	Sonoma	2,563	1,433	3,996	64%	36%
1974	Sonoma	2,355	1,337	3,692	64%	36%
1975	Sonoma	2,231	622	2,853	78%	22%
1976	Sonoma	3,163	601	3,764	84%	16%
1977	Sonoma	3,627	1,245	4,872	74%	26%
1978	Sonoma	2,565	996	3,561	72%	28%
1979	Sonoma	3,069	999	4,068	75%	25%
1980	Sonoma	1,779	672	2,451	73%	27%
1981	Sonoma	1,205	241	1,446	83%	17%
1982	Sonoma	1,298	320	1,618	80%	20%
1983	Sonoma	2,800	976	3,776	74%	26%
1984	Sonoma	2,957	2,142	5,099	58%	42%
1985	Sonoma	2,930	3,171	6,101	48%	52%
1986	Sonoma	3,282	593	3,875	85%	15%
1987	Sonoma	2,832	753	3,585	79%	21%
1988	Sonoma	3,857	818	4,675	83%	17%
1989	Sonoma	3,657	861	4,518	81%	19%

Single-family housing units include detached, semi-detached, row house and town house units. Row houses and town houses are included when each unit is separated from the adjacent unit by an unbroken ground-to-roof

party or fire wall. Condominiums are included when they are of zero-lot-line or zero-property-line construction; when units are separated by an air space; or, when units are separated by an unbroken ground-to-roof party or fire wall. Multi-family housing includes duplexes, 3-4 unit structures and apartment-type structures with five units or more. Multi-family also includes condominium units in structures of more than one living unit that do not meet the single-family housing definition.

Each multi-family unit is counted separately even though they may be in the same building. Total units is the sum of single-family and multi-family units. County data is available from 1967 whereas city data is available from 1990. City data is only available for incorporated cities and towns. All permits in unincorporated cities and towns are included under their respective county's unincorporated total. Permit data is not available for years when the city or town was not incorporated.

APPENDIX 2B
MEDIAN HOME PRICE

SONOMA COUNTY MEDIAN HOME PRICE HITS $555,000, HIGHEST IN NINE YEARS

Robert Digitale
The Press Democrat | February 16, 2016

Sonoma County's housing market got off to a familiar start in 2016, with a paltry volume of inventory, relatively few sales and a rising median price that last month reached the highest level in nine years.

The county's median sales price for a single-family home hit $555,000 in January, according to The Press Democrat's monthly housing report, compiled by Pacific Union International senior vice president Rick Laws.

The median price climbed nearly 16 percent from a year earlier and is the highest for any month since March 2007, when it was $560,000.

The market so far looks a lot like 2015, said Tom Kemper, manager of the Coldwell Banker office on Bicentennial Avenue in Santa Rosa. What's still lacking is inventory.

"There's still more people that want to buy than there are houses to buy," he said.

Buyers last month purchased 255 single-family homes. Home sales increased 12 percent from a year ago, but the total still represented the second-slowest January in eight years.

Craig Curreri, a broker associate with Pacific Union in Santa Rosa, said homes that would have sold a year ago for $450,000 are now getting snapped up for $515,000. And relatively few such properties are on the market.

For buyers in that price range, he said, "it's brutal. It's absolutely brutal... The people who are achieving the most success are the ones willing to get uncomfortable."

For some buyers, getting uncomfortable means selling a current home before finding a replacement. So doing can bring uncertainty about where the buyer will live in the short term, but it also can make a purchase offer more attractive to a seller, Curreri said.

Brenda Alarcon, an agent with Bradley Real Estate in Santa Rosa, said she is encountering current homeowners interested in buying a new property, "but then they don't want to sell their house until they find something else."

To improve their chances, such buyers should first place their own houses on the market, Alarcon said. If needed, they can seek a longer escrow period on their current property in order to give them more time to buy their next one.

The county's median price has mostly rebounded in the aftermath of the national housing crisis.

The median hit a record high of $619,000 in August 2005 before plunging to a low of $305,000 in February 2009.

In the last four years, the median has risen 72 percent and is now just 10 percent below the record high.

The county ended January with fewer than 500 single-family homes on the market, less than a two-month supply of inventory at the current pace of sales. Such a low volume is generally considered a sign of a sellers market.

"The biggest problem is we don't have anything to sell," said Pat Provost, one of four owners of Century 21 NorthBay Alliance in Santa Rosa.

January displayed a switch in sales activity by price range.

Sales declined 33 percent compared to a year earlier for single-family homes selling for less than $500,000. For houses that sold at or above $500,000, the number of sales increased 76 percent.

The sales increase of more-expensive homes could be due partly to increased purchases in more-affluent neighborhoods. But Curreri maintained that the increase is also partly due to appreciation.

He gets support for that view from real estate data service CoreLogic, which reported that county homes increased in value an average of 9.5 percent in December from a year earlier, the most recent data available. The CoreLogic Home Price Index is based on sales of the same properties over time.

Provost said 2016 still could end up better than last year for the real estate market. Buyers and sellers may conclude that an election year is the right time to do business because interest rates and the economy likely will remain favorable.

However, she said, better times will require getting a much bigger supply of inventory to sell once the spring home buying season begins.

“If we don’t,” said Provost, “then I think we’re going to stay about the same.”

APPENDIX 2C DEVELOPMENT PLACE TYPES

Development Place Types and Characteristics

Place Type	Sonoma County PDAs	Intensity	Description	Number in Sonoma County
Regional Center	Closest Regional Centers are San Francisco and Oakland	High Largest Growth Area	Primary center of economic and cultural activity for the region.	0
City Center	Downtown Santa Rosa		Sub-regional center of economic and cultural activity with some regional destinations.	1
Urban Neighbor-hood	Focused around region's largest cities—Oakland, San Francisco, San Jose		High-density residential areas with a mix of residential and local-serv-ing retail uses.	0
Mixed-Use Corridor	Santa Rosa Sebastopol Corridor and Mendocino Avenue/Santa Rosa Avenue Corridor	Medium Large Growth Area	Focus of local and community and economic activity for areas without a district center.	2
Suburban Center	Petaluma Central; North Santa Rosa; Rohnert Park Sonoma Mtn. Village; Windsor Redevelopment Area		Sub-regional center of economic activity with local amenities in traditionally suburban areas.	3
Transit Town Center	Central Rohnert Park; Cloverdale Downtown/SMART Station Area; Cotati Downtown and Cotati Depot; Sebastopol Core Area;	Moderate Small Scale Growth Area	Local center of economic and cultural activity with a range of housing options and local amenities.	4
Transit Neighbor-hood	Santa Rosa Roseland		Residential neighborhoods with a variety of housing options and retail services.	1
Employment Investment Area	Sonoma County Airport Industrial Park	Moderate/ Employment Focused	Centers of economic activity that can be enhanced by local-serv-ing retail, pedestrian and bicycle access improvements	1
Rural Community Investment Area	Forestville, Graton, Guerneville, Larkfield, Penngrove, The Springs	Low	Centers and corridors of economic and community activity sur-rounded by agricultural, resource, or protected conservation lands	6

Characteristics of Priority Development Area

Currently, there are 12 Priority Development Areas (PDAs) in Sonoma County that have been voluntarily nominated by local jurisdictions and approved by ABAG as part of the FOCUS program. The qualifications to become a PDA are relatively simple: an area must be in an existing community, near transit service and planned for more housing. According to the ABAG FOCUS program,

"Priority Development Areas (PDAs) are locally-identified, infill development opportunity areas within existing communities. They are generally areas of at least 100 acres where there is local commitment to developing more housing along with amenities and services to meet the day-to-day needs of residents in a pedestrian-friendly environment served by transit. To be eligible to become a PDA, an area had to be within an existing community, near existing or planned fixed transit or served by comparable bus service, and planned for more housing."

Specifically, to qualify to be a PDA an area must meet these definitions:

Area — means the planning area being proposed for designation as a priority development area under the FOCUS program. Since the program seeks to support area planning, the recommended area size is 100 acres, which is approximately a ¼ mile radius.

- A planned area is part of an existing plan that is more specific than a general plan, such as a specific plan or an area plan.
- A potential area may be envisioned as a potential planning area that is not currently identified in a plan or may be part of an existing plan that needs changes.

Existing Community — means that the area is within an existing urbanized area, lies within an urban growth boundary or limit line if one is established, and has existing or planned infrastructure to support development that will provide or connect to a range of services and amenities that meet the daily needs of residents making non-motorized modes of transportation an option.

Housing — means the area has plans for a significant increase in housing units to a minimum density of the selected place type from the Station Area Planning Manual, including affordable units, which can also be a part of a mixed use development that provides other daily services, maximizes alternative modes of travel, and makes appropriate land use connections.

Near Transit — means (1) the area around an existing rail station or ferry terminal (typically a half-mile around the station), (2) the area served by a bus or bus rapid transit corridor with minimum headways of 20 minutes during peak weekday commute periods, or (3) the area defined as a planned transit station by MTC's Resolution 3434."

The goal of 20 minute headways has had the effect of significantly limiting the number of locations eligible to become PDAs outside of area served by SMART. Until there is a substantial and sustainable increase in funding available for transit operations, this will serve as a limit, along with growth potential for PDA eligibility in the unincorporated County.

Originally, PDAs focused on housing production but were later expanded to include jobs, a critical element in the success of PDA development. Research shows that increasing a community's density and its accessibility to job centers are the two most significant factors for reducing vehicle miles travelled (VMT).4

Rural Community Investment and Employment Investments Areas

Unincorporated Sonoma County has designated six Rural Community Investment Areas and one Employment Investment Area. Unlike PDAs, Rural Community Investment Areas are not anticipated to achieve the same housing densities or number of jobs as PDAs, but complement PDAs by focusing limited growth in rural communities within the urban footprint. Employment Investment Areas are centers of office and light industrial development that can be enhanced through improved access to transit and other non-motorized transportation networks. While they do not meet the criteria for PDA status, Investment Areas are recognized as places for sustainable development.

Priority Conservation Areas

Priority Conservation Areas (PCAs) were also defined as part of the regional FOCUS program. PCAs are areas of regional significance that have broad community support and an urgent need for protection. Land trusts, open space districts, parks and recreation departments, local jurisdictions and other organizations are all involved in the designation of PCAs. The goal of designating PCAs has been to accelerate protection of key open space areas, agricultural resources, and areas with high ecological value to the regional ecosystem. Historical, scenic, and cultural resources are also considered.

Sonoma County has a demonstrated interest in protecting its agricultural and open space. Voter approved Urban Growth Boundaries and the creation and reenactment of the Agricultural Preservation and Open Space District demonstrates the county's commitment and willingness to prioritize protection of these lands. The FOCUS programs PCAs recognize and promote these ideas at a regional level.

APPENDIX 2D
SAFETY — VITAL SIGNS

Vital Signs Metric

Injuries from Crashes

Measure Name

Severe injuries from crashes (traffic collisions)

Description

classifies a serious injury as any combination of the following: broken bones; dislocated or distorted limbs; severe lacerations; skull, spinal, chest or abdominal injuries that go beyond visible injuries; unconsciousness at or when taken from the scene; or severe burns. This injuries dataset includes serious injury counts for the region and counties, as well as individual collision data.

Last updated in August 2015

Data Sources

Geography Level	Data Source	Years	Notes	URL
Region	California Highway Patrol: Statewide In	2001–2012	via SafeTREC Transportatio	http://tims.berkeley.edu/
County	California Highway Patrol: Statewide In	2001–2012	via SafeTREC Transportatio	http://tims.berkeley.edu/
Collision	California Highway Patrol: Statewide In	2001–2012	only available in shapefile f	http://tims.berkeley.edu/

Methodology

The data is reported by the California Highway Patrol (CHP) to the Statewide Integrated Traffic Records System (SWITRS), which was accessed via SafeTREC's Transportation Injury Mapping System (TIMS). The data was tabulated using provided categories specifying injury level, individuals involved, causes of collision, and location/jurisdiction of collision (for more: http://tims.berkeley.edu/help/files/switrs_codebook.doc). Fatalities were normalized over historic population data from the US Census and American Community Surveys and vehicle miles traveled (VMT) data from the Federal Highway Administration.

For more regarding reporting procedures and injury classification, see the California Highway Patrol Manual (http://www.nhtsa.gov/nhtsa/stateCatalog/states/ca/docs/CACHP555Manual22003ch1-13.pdf).

Field Names

Injuries_fromCrashes

Number of severe injuries as a result of crashes (traffic collisions) in the given year and geography

Contact Information
vitalsigns.info@mtc.ca.gov
Reference ID: EN7

APPENDIX 3A BIKEWAY TYPES

A designated bikeway network provides a system of facilities that offers enhancement or priority to bicyclists over other roadways in the network. However, it is important to remember that all streets in a city should safely and comfortably accommodate bicyclists, regardless of whether the street is designated as a bikeway.

Shared-use path (Credit: Marty Bruinsma)

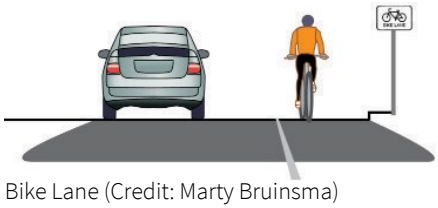
Shared Use Paths — Class I

Shared use paths are facilities separated from motor vehicle traffic by an open space or barrier. Bicyclists, pedestrians, joggers, and skaters often use these paths. Shared-use paths are appropriate in areas not well served by the street system, such as in long, relatively uninterrupted corridors like waterways, utility corridors, and rail lines.

Cycle track (Credit: Dan Burden)

Cycle Tracks — Class IV

Cycle tracks are specially designed bikeways separated from the parallel motor vehicle travelway by a line of parked cars, landscaping, or a physical buffer that motor vehicles cannot cross. Cycle tracks are effective in attracting users who are concerned about conflicts with motorized traffic.



Bike Lane (Credit: Marty Bruinsma)

Bike Lanes — Class II

Portions of the traveled way designated with striping, stencils, and signs for preferential use by bicyclists, bike lanes are appropriate on avenues and boulevards. They may be used on other streets where bicycle travel and demand is substantial. Where on-street parking is provided, bike lanes are striped on the left side of the parking lane. In California bike lanes are designated as Class II bikeways.

Bicycle route (Credit: Marty Bruinsma)

Shared Roadways — Class III

A shared roadway is a street in which bicyclists ride in the same travel lanes as other traffic. There are no specific dimensions for shared roadways. On narrow travel lanes, motorists have to cross over into the adjacent travel lane to pass a cyclist. Shared roadways work well and are common on low-volume, low-speed neighborhood residential streets, rural roads, and even many low-volume highways. In California shared roadways are known as Class III bikeways.

Bicycle boulevard: Portland, OR
(Credit: Ryan Snyder)

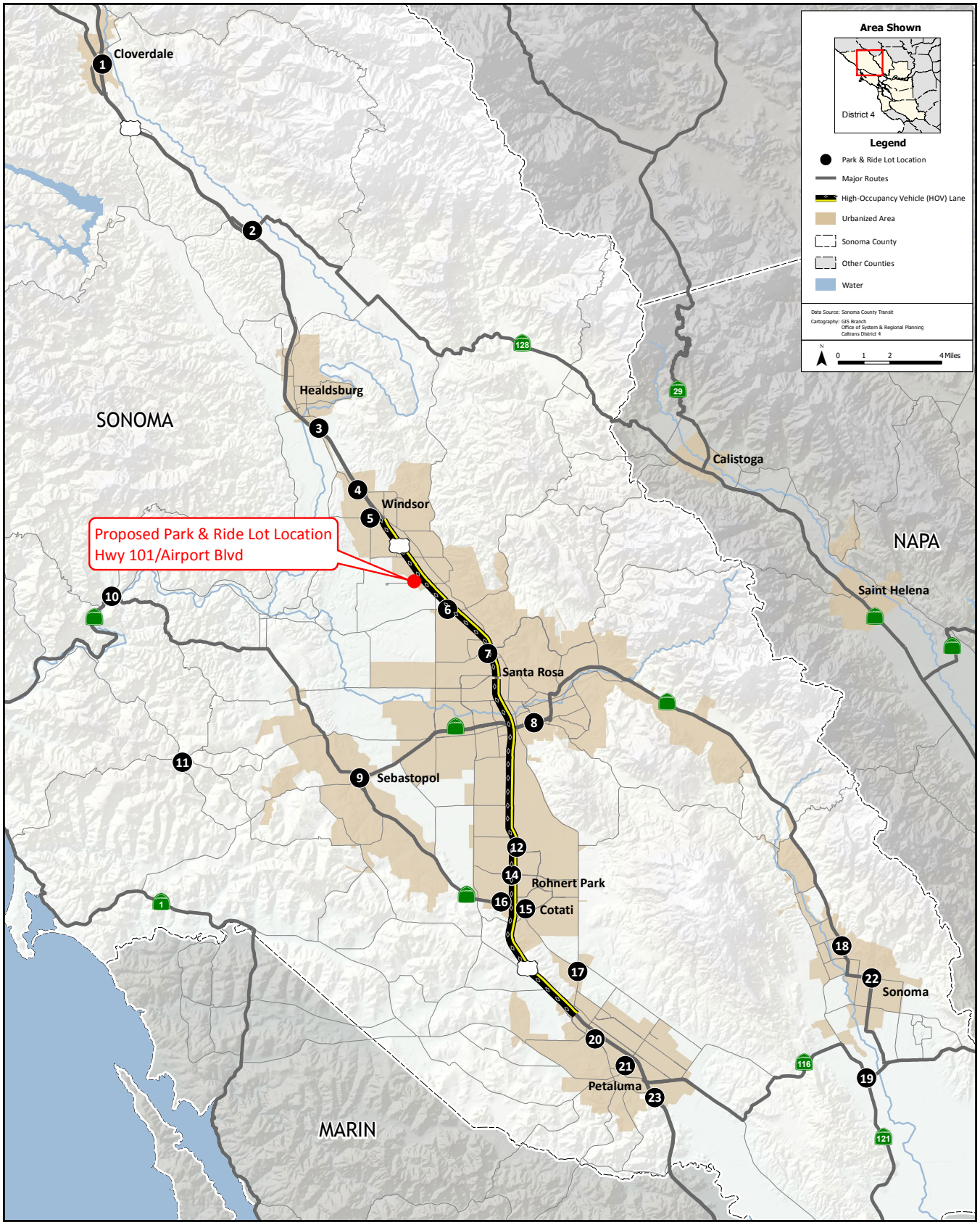
Bicycle Boulevards — Type of Class III

A bicycle boulevard is a street that has been modified to prioritize through bicycle traffic but discourage through motor vehicle traffic. Traffic calming devices control traffic speeds and discourage through trips by automobiles. Traffic controls limit conflicts between automobiles and bicyclists and give priority to through bicycle movement at intersections.

Content on this page is adapted from the Los Angeles County, Model Design Manual for Living Streets < http://www.modelstreetdesignmanual.com/index.html, accessed May 7, 2015>.

APPENDIX 3B PARK AND RIDE LOTS IN SONOMA COUNTY (2016)

	City	Location	Car Parking Spaces	Lighting	Bike Racks
1	Cloverdale	Citrus Fair Dr & Caldwell Ln	87	Yes	Yes (12 Rack Spaces)
2	Geyserville	Geyserville Ave & Remmel St	36	Yes	Yes (4 Rack Spaces)
3	Healdsburg	Grant Av & Healdsburg Av	66	Yes	Yes (4 Rack Spaces)
4	Windsor	Old Redwood Hwy Between Herb Rd & 101 On Ramp	41	Yes	Yes (3 Rack Spaces)
5	Windsor	Windsor Rd./Windsor River Rd.	94		Shelter, Bike Rack
6	Fulton	River Rd & Hwy 101	31	Yes	No
7	Santa Rosa	Piner Rd & Industrial Wy	209	Yes	Yes (8 Rack Spaces)
8	Santa Rosa	Bennett Valley Rd & Brookwood Ave	181	Yes	No
9	Sebastopol	Petaluma Av & Burnett St	38	Yes	Yes (8 Rack Spaces)
10	Guerneville	Rt 116 & 4th St	39	Yes	Yes (6 Rack Spaces)
11	Occidental	Bohemian Hy & Graton Rd	23	Yes	No
12	Rohnert Park	Roberts Lake Rd & Golf Course Dr	169	Yes	No
13/14	Rohnert Park	Rohnert Park Expwy & Hwy 101	316	Yes	Yes (5 Rack Spaces)
15	Cotati	St Joseph Way & Old Redwood Hwy	166	Yes	Yes (4 Lockers)
15	Penngrove	Old Redwood Hy & Main St	24	Yes	No
16	Cotati	Redwood Dr & Rt 116	76	Yes	No
17	Penngrove	Old Redwood Hy & Main St	24	Yes	No
18	Boyes Hot Springs	E. Thomson Av & Sonoma Hy	20	Yes	No
19	Schellville	Rt 121 & Rt 116	45	No	No
20	Petaluma	Gossage Av & N Petaluma Bl	18	No	No
21	Petaluma	Washington St & Payran St	600	Yes	Yes (8 Rack Spaces)
22	Petaluma	Lakeville St & Rt 116	134	Yes	Yes (4 Lockers)
23	Petaluma	S Petaluma Bl & Hwy 101	36	Yes	No


Area Shown
District 4
Legend
Park & Ride Lot Location
Major Routes
High-Occupancy Vehicle (HOV) Lane
Urbanized Area
Sonoma County
Other Counties
Water
Data Source: Sonoma County Transit
Cartography: GIS Branch
Office of System & Regional Planning
Caltrans District 4
N
0 1 2 4 Miles
Cloverdale
Healdsburg
SONOMA
Windsor
Proposed Park & Ride Lot Location
Hwy 101/Airport Blvd
Calistoga
NAPA
Saint Helena
Santa Rosa
Sebastopol
Rohnert Park
Cotati
Sonoma
Petaluma
MARIN
128
29
1
116
121

APPENDIX 6A
SCTM OVERVIEW

SONOMA COUNTY TRAVEL MODEL 2015
CTP Modeling —Technical Summary

Introduction

The Comprehensive Transportation Plan (CTP) update includes a performance assessment of transportation projects, programs, policies, and strategies. These projects and policies have been identified in other existing plans such as local general plans, short range transit plans, the previous CTP, the Regional Transportation Plan, through transportation research, or have been submitted by local project sponsors. The CTP Performance Assessment was presented to SCTA committees (Technical Advisory Committee, Technical Advisory Committee – Modeling Subcommittee, Planning Advisory Committee, Citizen's Advisory Committee) for feedback and approval. The SCTA reviewed and approved the final performance assessment results on November 9, 2015. The Sonoma County Travel Model, SCTM 2015, was the main analytic tool used to perform the performance assessment.

I. The Sonoma County Travel Model (SCTM 2015)

SCTM 2015 is a combination of digital databases, computer software, and scientific theory which is used to replicate the real world transportation system (roads, intersections, traffic control devices, congestion delays, transit use, road capacity, speed limits) in Sonoma County. The travel demand model can be used to forecast future travel patterns and demand based on changes to the transportation system (new roads, changes in capacity, etc.), land use (changes in residential densities, or locations, new job sites, etc.), or demographics (more or less people in a certain area).

SCTM uses a traditional four-step travel demand modeling process to estimate:

- How much travel is taking place? (Trip Generation)
- Where are people going? (Trip Distribution)
- What travel modes are people using to make their trips? (Mode Choice)
- What routes/facilities are being used? (Trip Assignment)

1. Data Requirements:

The two basic inputs for applying the travel demand model are:

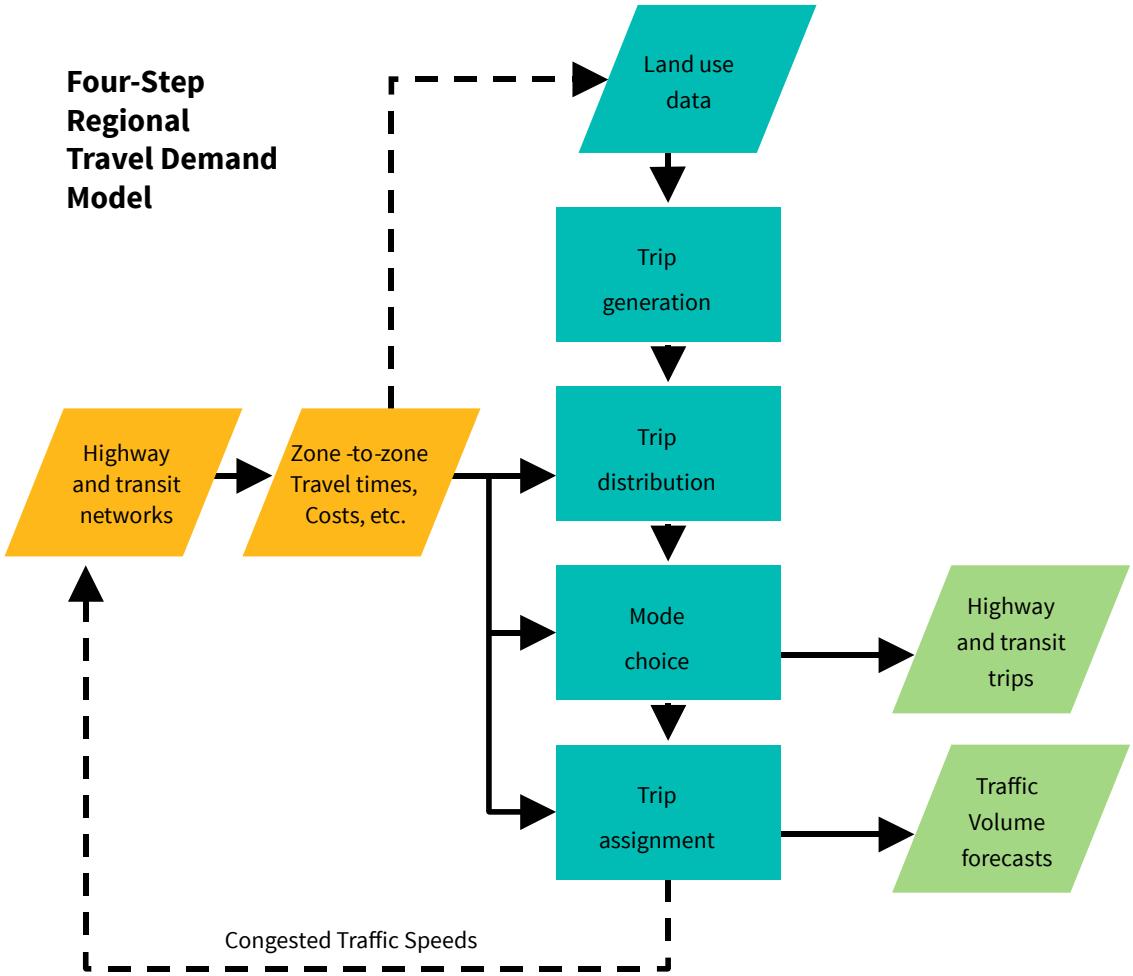
- Land use inputs, representing estimates of current and future development; and
- Transportation inputs, including the current transportation network and planned changes (increases or decreases in capacity, new roads or highways, new transit lines)

These inputs are housed in a countywide land use database and are assembled and updated in consultation with local jurisdictions.

2. Four-Step Modeling Process:

SCTA uses a traditional, four-step travel demand modeling process to replicate and forecast countywide travel behavior. These four steps are: Trip Generation, Trip Distribution, Mode Choice, and Trip Assignment steps (See **Figure 1**).

Figure 1. The Four-Step Travel Demand Modeling Process.



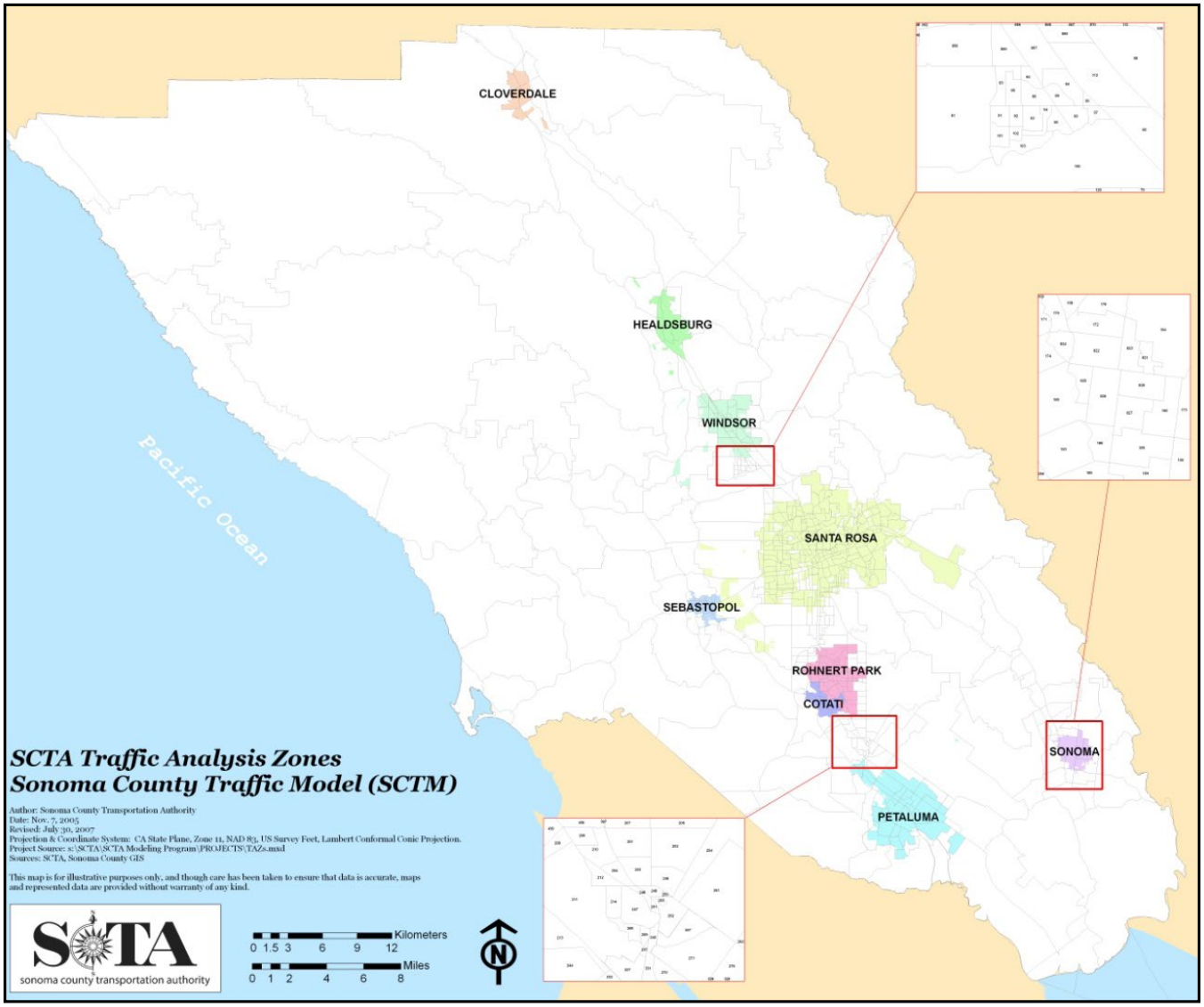
Trip Generation: How much travel?

Sonoma County is first divided into over 800 traffic analysis zones (TAZs). A zone could be as small as a few city blocks (such as central Santa Rosa) or as large as 100 square miles in rural areas (such as northwestern Sonoma County).

The travel demand model estimates the number of trips going to and from each zone. Trips are divided by purpose – work trips, school trips, and other trips. Each of these zones attracts and produces a certain number of trips based on the amount of residential, office, industrial, recreation, and commercial development in the zone. Zones with high levels of residential development produce many trips, zones with high levels of commercial, office, or industrial development attract many trips.

The output of this step is a list of TAZs and the number of different types of trips produced by and attracted to each zone.

Figure 2. SCTA Traffic Analysis Zones



Trip distribution: who goes where?

The trip distribution step allocates produced trips to the zones that they are attracted to. For example, after the model estimates the number of commute trips produced by a zone in Windsor, this step matches these produced trips to other zones around the region, such as zones in Santa Rosa or other regional employment centers. These linkages are called origin/destination pairs.
A mathematical gravity model is used to determine where trips are distributed. The larger two zones are in terms of employment and/or population, and the closer they are in distance, the more trips will likely be generated between them.

This step produces an origin/destinations table, which is a matrix showing the estimated number of trips moving between the different zones.

Mode choice: how do people travel?

In the third step of the four-step modeling process the model uses observed travel mode shares to estimate which proportion of total trips are made using different modes of transportation such as driving alone, carpooling, taking transit, walking, or biking.

The output of this step is a breakdown of what travel modes are being used for different types of trips within the region.

Trip assignment: what routes do people take?

In this final step, the model selects the most likely path for each trip. The model assumes people will take the fastest route avoiding traffic and congestion where possible. Each trip is examined and a best path is determined while minimizing the time and distance needed to travel from zone to zone.

The final product of this step is a transportation network representing generalized countywide roadway, transit, and other transportation facilities with attached future travel and traffic estimates for specific road sections.

II. Projected Conditions

Staff and consultants have used real world traffic counts and travel survey data to validate the SCTM and ensure accuracy for the model base year of 2010.

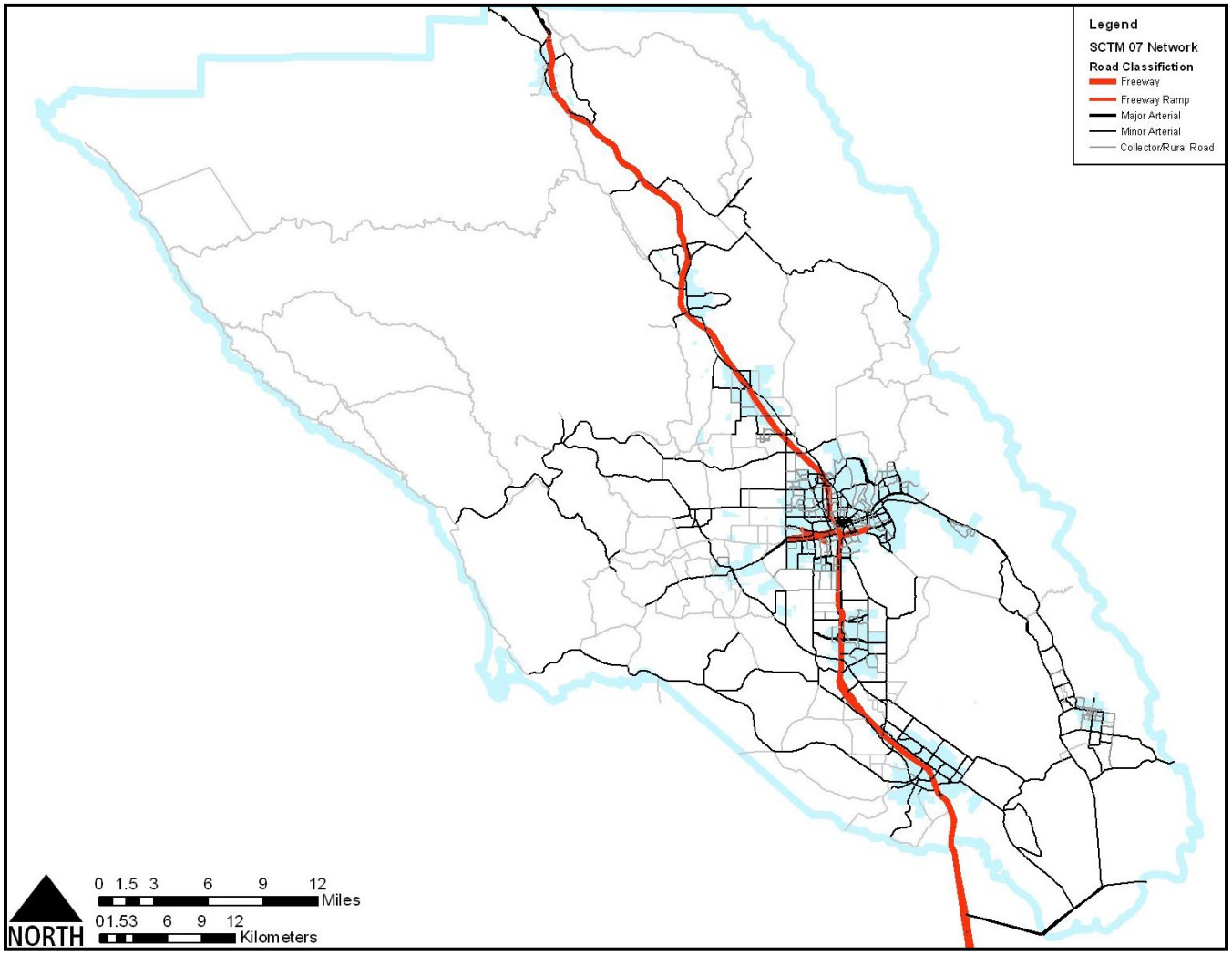
Demographic and Transportation System Assumptions

The socio-economic forecasts used in SCTM 2015 are based on Plan Bay Area 2040 forecasts that were developed by MTC and ABAG. These population and employment forecasts were used as control totals for jurisdictions and county planning areas. Staff worked with local planning agencies to allocate future projected growth to traffic analysis zones within jurisdictional boundaries or county planning areas using these control totals. Analysis years are 2010, which provides an estimate of existing conditions. and 2040, which represents the future planning horizon and a best estimate of future conditions.

Population and employment are projected to rise steadily from 2010 to 2040. Sonoma County's 2010 population of 483,878 is projected to increase to 598,460 by 2040, an increase of 114,582 persons, a 24% total increase or just under 1% increase per year. The 2010 number of county jobs (192,010) is projected to grow to 257,470 by 2040, an increase of 65,460 jobs, a 34% total increase, or an increase of just over 2% per year. Population and job growth are projected to be centered on the Highway 101 corridor and focused on existing urbanized areas. Average household size was 2.6 persons per household in 2010, which is projected to increase to 2.7 persons per household by 2040.

The SCTM generalizes the countywide transportation facilities as a transportation network (see **Figure 4**). The 2010 model networks are based on networks created as part of the development of the original Sonoma County Travel Model (SCTM), Santa Rosa Travel Model, and Rohnert Park Travel Model, and have been updated based on Petaluma and Windsor Model networks. Additional network detail has been added based on input from local public works and planning staff and based on updated traffic analysis zone boundaries.

Figure 3. SCTM Model Network



Pricing Assumptions

The following pricing assumptions are used in SCTM 2015:

Automobile Operating Costs: Baseline 2010 perceived automobile operating cost is estimated at 18.91 cents per mile. This perceived operating cost is assumed to stay constant through 2040. Fuel price fluctuations and increases are expected to be offset by improvements in vehicle fuel economy. Operating costs were adjusted in certain scenarios as part of the CTP performance assessment.

Tolls: Toll costs are projected to keep pace with inflation (no increase or decrease in toll amounts).

Parking: Parking costs are assumed to keep pace with inflation. Parking costs were adjusted in certain CTP performance assessment scenarios.

Transit Fares: Transit fares are assumed to keep pace with inflation. Transit fares were adjusted in certain CTP performance assessment scenarios.

APPENDIX 6B DETAILED PERFORMANCE ASSESSMENT RESULTS

A significant part of the 2015 CTP update was the inclusion of the plan performance assessment. The performance assessment was undertaken in an effort to determine how effective different types of actions would be at helping SCTA achieve plan goals and reach performance targets that have been identified for each of these goals. The performance assessment consisted of four separate phases. The first phase identified current conditions and set benchmarks for each of the performance targets and identified any progress in reaching goals that had been made since the last plan. The second phase evaluated the impact that transportation CTP projects could have on plan performance measures. The third phase evaluated how other actions, policy approaches, technologies, or behavioral changes could help SCTA achieve goals or meet targets. A future financially unconstrained vision scenario was identified in phase four of the performance assessment. This scenario meets most of the plan goals and targets and demonstrates what it will take to achieve the CTP goals and meet the CTP performance targets.

CTP PROJECT ASSESSMENT

A variety of different types of transportation projects including regional highway and freeway projects, local streets and roads projects, transit maintenance and system improvement projects, and bicycle and pedestrian projects have been submitted for inclusion in the CTP. These projects have been submitted by project sponsors, generally local jurisdictions and transit providers, as future transportation priorities. Projects may address system condition and maintenance, improve roadway or transit system capacity or efficiency, provide additional mobility, or improve safety and operations. Different types of projects may help improve the regional or countywide transportation system or may be intended to improve mobility, safety, and the quality of local circulation.

Submitted projects where included in the project performance assessment. This assessment was intended to provide information on how effective different types of transportation projects could be at helping SCTA reach the CTP goals and performance targets.

Some projects are fully funded and are considered committed projects. It is assumed that these projects will be completed in the near term. Committed projects were included in any analysis of 2040 baseline, or “no build” conditions. Identified CTP committed projects are listed below.

CTP Committed Projects:

- Marin Sonoma Narrows: Phase 1 - SCTA
- Healdsburg Avenue Bridge Retrofit/Rehabilitation - Healdsburg
- River Road channelization and improvements – Sonoma County
- Bodega Highway improvements west of Sebastopol – Sonoma County
- Five-way Intersection/Roundabout – Healdsburg
- Dowdell Avenue Extension – Rohnert Park
- Bodway Parkway Extension – Rohnert Park
- Keiser Avenue Reconstruction – Rohnert Park

Project Performance Assessment Approach

Initial tests of project performance suggested that individual projects would have only a nominal impact on CTP performance measures. Because of these findings SCTA staff selected a cross-section of large CTP projects that represent different project types in order to assess if these projects would provide benefits in CTP goal and performance areas. These projects were tested and compared to 2010 conditions and 2040 no build, or baseline, conditions. The 2040 no build scenario included committed projects only. A scenario which included all submitted CTP Projects (all road, highway, transit, and bike/pedestrian) was also analyzed and compared to 2010 and 2040 no build conditions.

Selected Cross-section of CTP Projects Analyzed in the CTP Project Performance Assessment:

- Hearn Avenue/Highway 101 interchange improvements
- Highway 116 widening and rehabilitation between Sebastopol and Cotati
- Marin Sonoma Narrows: Phase 2
- SMART: Airport to Cloverdale extension
- SMART pathway
- Railroad Avenue/Highway 101 interchange improvements
- Airport Boulevard Widening including Brickway and Laughlin Rd improvements
- Fulton Road/Highway 12 Interchange
- Petaluma Crosstown Connector and Rainier Interchange
- State Route 37 Corridor Protection and Enhancement Project
- Santa Rosa CityBus service expansion including Rapid Bus

Modeling Process:

The Sonoma County Travel Model and off model post processing techniques were used to quantify project performance for each CTP goal performance measure. The project level assessment followed the following steps:

1. Projects were coded into the travel model using submitted project descriptions.
2. Model general assumptions were set – land use: 2010 base year, 2040 Plan Bay Area land use, travel costs assumed to stay the same (keep pace with inflation), no technological breakthroughs or significant changes to travel behavior.
3. Model runs for 2040 no build conditions, all CTP projects, and selected large CTP projects as identified above were set up and run.
4. Travel model based metrics where extracted and summarized.
5. Post processing tools were used to estimate GHGs (EMFAC), accident rates (SmartGAP[1]), and traveler costs (SmartGAP and AAA cost factors).
6. Performance metrics were summarized and compared to performance scoring criteria.

Project benefits — Vehicle Miles Traveled

Vehicle miles traveled (VMT) was not identified as a separate performance measure in the CTP update, but was summarized since many of the performance measures are VMT based and VMT is commonly used as a measure of travel activity. VMT measures miles traveled by vehicles in a specific geographic area for a specified time period.

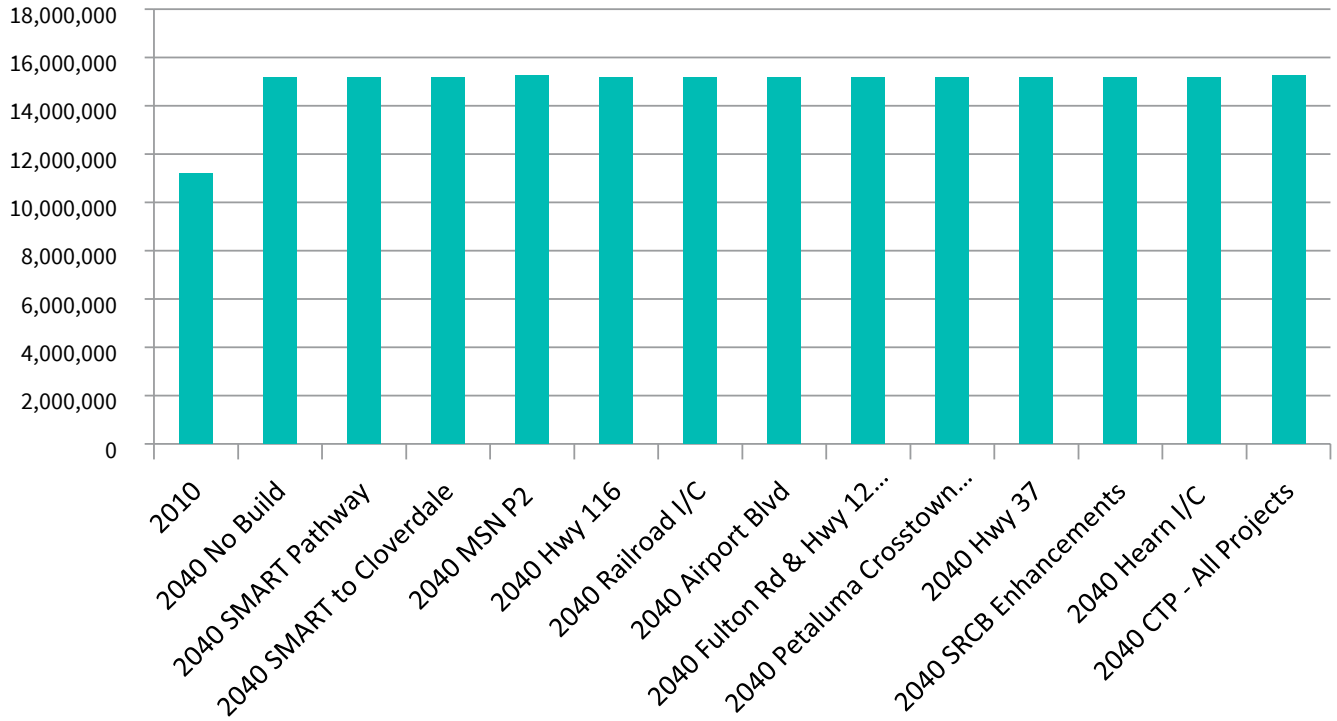
1 SmartGAP is a sketch planning tool developed as part of the SHRP2 process to provide transportation planning agencies with a means to assess how land development and growth management activities impact transportation.

The Sonoma County Travel Model generates VMT estimates at the county, jurisdiction, traffic analysis zone, and road segment level for average weekdays. VMT is a function of population, household vehicle ownership rates, how often people travel, and where they travel. Projected population and employment growth is generally predicted to follow growth distributions outlined in local general and area specific plans with an increased focus on Priority Development Areas (PDAs). PDAs were identified as part of the Sustainable Communities Strategy developed for the Regional Transportation Plan - Plan Bay Area. The Sonoma County Travel Model uses projected housing, population, and employment growth forecasts while considering predicted demographic changes to estimate VMT.

The SCTM estimates a 36% increase in VMT from 2010–2040. In raw numbers this represents around an increase of 4 million VMT per day, increasing from 11 million VMT per day in 2010 to 15 million VMT per day in 2040. VMT is predicted to grow at a faster rate than population and employment because of the aging Sonoma County workforce which may increase the need to import labor for a growing number of jobs from outside of the County.

The project level performance assessment suggested that individual projects do not have a significant impact on countywide VMT with transportation project related reductions estimated at less than 1%. Most projects are shown to provide very small VMT reductions when compared to the 2040 No Build scenario, with most providing less than a .1% reduction, or a roughly 5,000 VMT per day reduction2. A few large highway capacity expansion projects are estimated to increase VMT slightly, but increases are expected to be under 1% or less than 100,000 VMT per day. Any results under 2% could be attributed to random error and do not necessary represent any actual increase or reduction in VMT.

Figure 4. CTP Project Performance — Estimated Vehicle Miles Traveled.



Project Benefits — Congestion Reduction and Delay

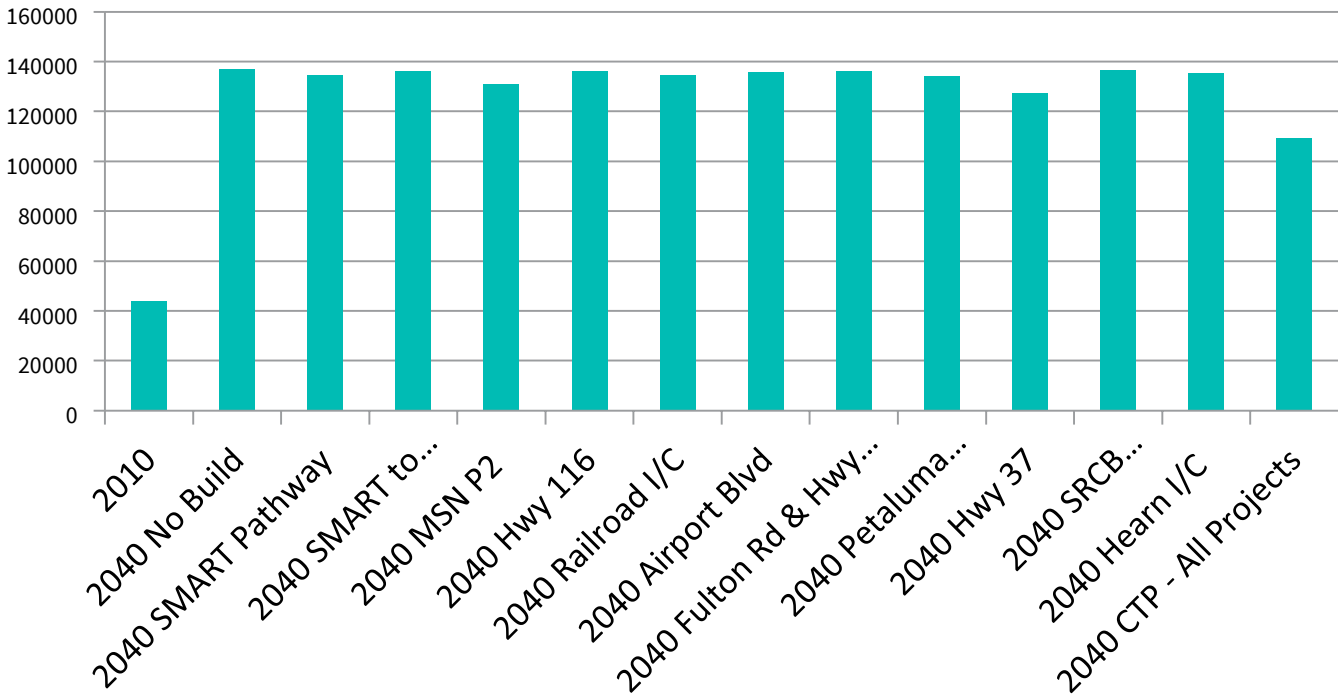
Traffic volumes continue to increase in Sonoma County increasing traffic congestion and growing as the county's population and economy grow. The implications of increased traffic congestion include lost productivity due to

2 Countywide daily VMT in 2010 was almost 11 million VMT per day in Sonoma County.

increased delay, increased fuel consumption and pollution, reduced accessibility, longer emergency response times, higher traffic collision rates, and quality of life impacts because of time lost sitting in traffic.

A commonly used measure of congestion is Person Hours of Delay (PHD). PHD is calculated by determining the difference between estimated travel time under congested conditions and estimated travel time during free-flow or uncongested conditions for a roadway segment or trip. The travel model estimates that almost 53,000 hours were lost each day because of traffic congestion in Sonoma County in 2010. Congestion is predicted to more than triple by 2040. Most of this increase can be attributed to increased travel because of population and employment growth. The performance assessment indicates that certain projects can provide some congestion relief in 2040. Projects that improve highway capacities such as MSN Phase 2 and Hwy 37 improvement projects reduce congestion in heavily traveled corridors and have some congestion reduction impact. Completing all proposed CTP projects would provide an almost 20% congestion reduction benefit in 2040 when compared to no build 2040 conditions.

Figure 5. CTP Project Performance — Estimated Person Hours of Delay.



PHD is commonly used by traffic engineers and transportation planners, but can be difficult for average travelers to relate to their everyday traveling experience. Congestion can be summarized at a per capita level, making congestion estimates easier to relate to or imagine. The Texas Transportation Institute summarizes yearly peak period delay per traveler for urbanized areas in the United States. This metric quantifies how many hours an average traveler looses sitting in traffic each year in different cities across the country. Sonoma County travelers lose about 15 hours per year sitting in peak period traffic, which is similar to congestion levels experienced in Bakersfield, CA, Boise, ID, or Eugene, OR. Annual peak traveler delay is estimated to increase to about 39 hours per year in Sonoma County by 2040 under no build conditions. This is comparable to current congestion conditions experienced by travelers in San Diego or San Jose (see Table 1 below).

CTP projects could help reduce peak period traveler delay. Projects that focus on non-motorized travel such as the SMART Pathway or All CTP Projects (includes the build-out of the entire planned Class I bike network), or highway congestion reduction projects such as MSN Phase 2 and Highway 37 improvements provide the greatest reductions in peak traveler delay.

Table 1. Estimated Annual Peak Period Delay per Traveler

Scenario	Annual Peak Delay Hrs/Traveler
2010	14.9
2040 No Build – Committed Projects Only	39.3
2040 SMART Pathway	34.3
2040 SMART to Cloverdale	39.2
2040 MSN Phase 2 Construction	38.0
2040 Hwy 116 Improvements	39.2
2040 Railroad I/C and corridor improvements	38.6
2040 Airport Blvd Improvements (Including Brickway/Laughlin)	38.9
2040 Fulton Rd & Hwy 12 I/C	39.2
2040 Petaluma Crosstown Connector and Rainier I/C	38.9
2040 Hwy 37 Corridor Improvements	37.0
2040 Santa Rosa CityBus Service Enhancement - incl. BRT	39.1
2040 Hearn Ave I/C Improvements	39.0
2040 CTP Complete Project List	30.4
2011 Metro Averages	
SF-Oakland Average	61.00
Bakersfield	12.00
Los Angeles	61.00
Sacramento	32.00
San Diego	37.00
San Jose	38.00

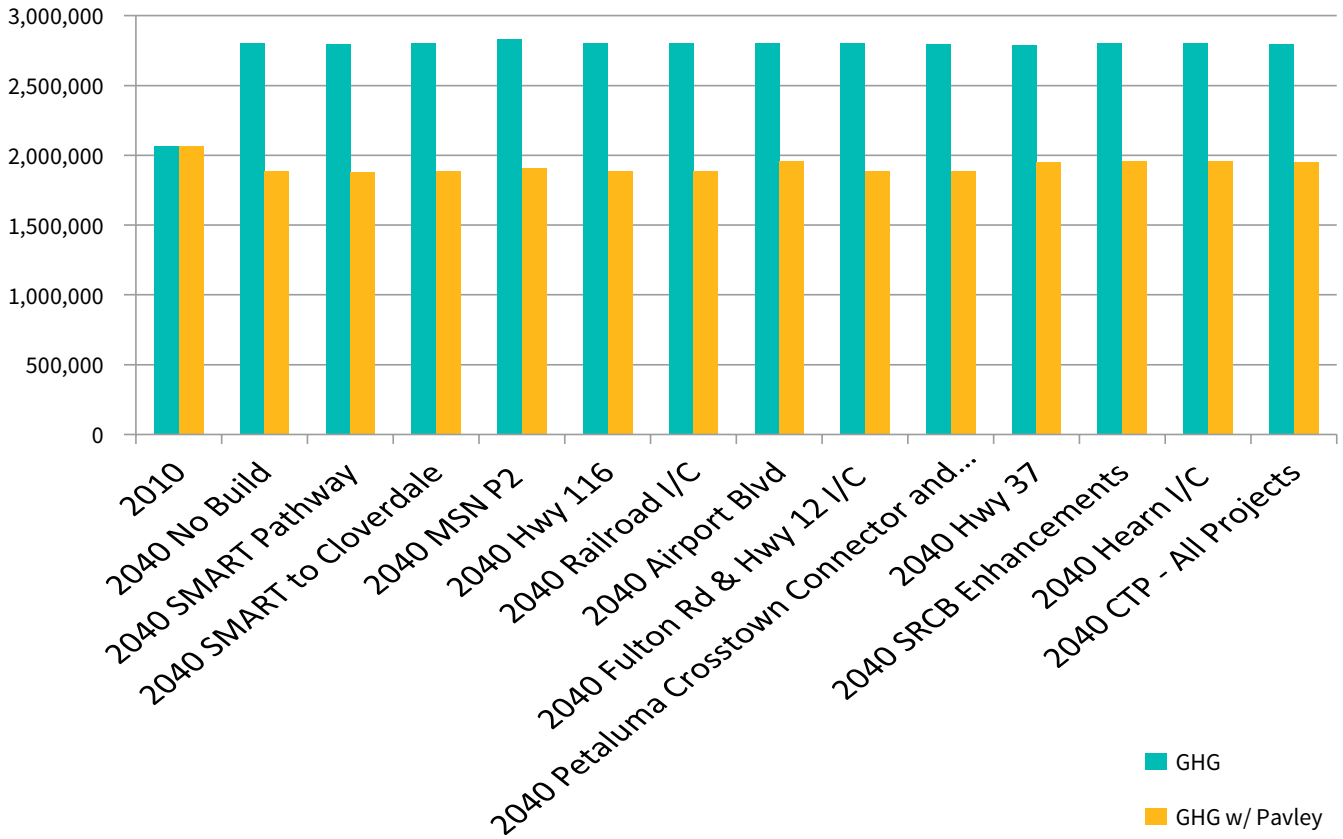
Project Benefits — Reducing Greenhouse Gas Emissions

Transportation activities contribute over 50% of all countywide greenhouse gas emissions in Sonoma County. The SCTA and Sonoma County jurisdictions have committed to reducing GHG emissions to 25% below 1990 levels by 2015, and 40% below 1990 levels by 2035. This commitment was included in the 2009 CTP as a performance target and plan objective. The target was reevaluated as part of the Climate Action 2020 process. New Climate Action 2020 targets call for reducing GHG emissions to 25% below 1990 levels by 2020, 40% below 1990 levels by 2030, and 80% below 1990 levels by 2050. SCTA has used these targets to set a new 2040 target of reducing GHG emissions to 60% below 1990 levels by 2040.

Transportation greenhouse gas emissions are a factor of total travel by vehicles, speed of travel, and vehicle fleet characteristics. Greenhouse gas emissions where calculated using EMFAC, a California Air Resource Board sponsored tool which is used to estimate vehicle emissions impacts.

Greenhouse Gas Emissions are expected to increase by roughly 39% during the period from 2010–2040 under no build conditions. This is largely a factor of increased travel due to population and employment growth, and assumes that the vehicle fleet makeup and vehicle fuel economy stays about the same as it is currently in the future. State mandated fuel economy improvements (Pavley, AB 1493) would provide an approximate 8% GHG reduction benefit by 2040 due to a cleaner vehicle fleet. Individual projects do not have a large impact on countywide emissions, but projects focused on shifting travel to active transportation modes, or that focus on reducing traffic congestion and making travel more efficient provide the largest GHG reduction benefit.

Figure 6. CTP Project Performance – Estimated Greenhouse Gas Emissions.



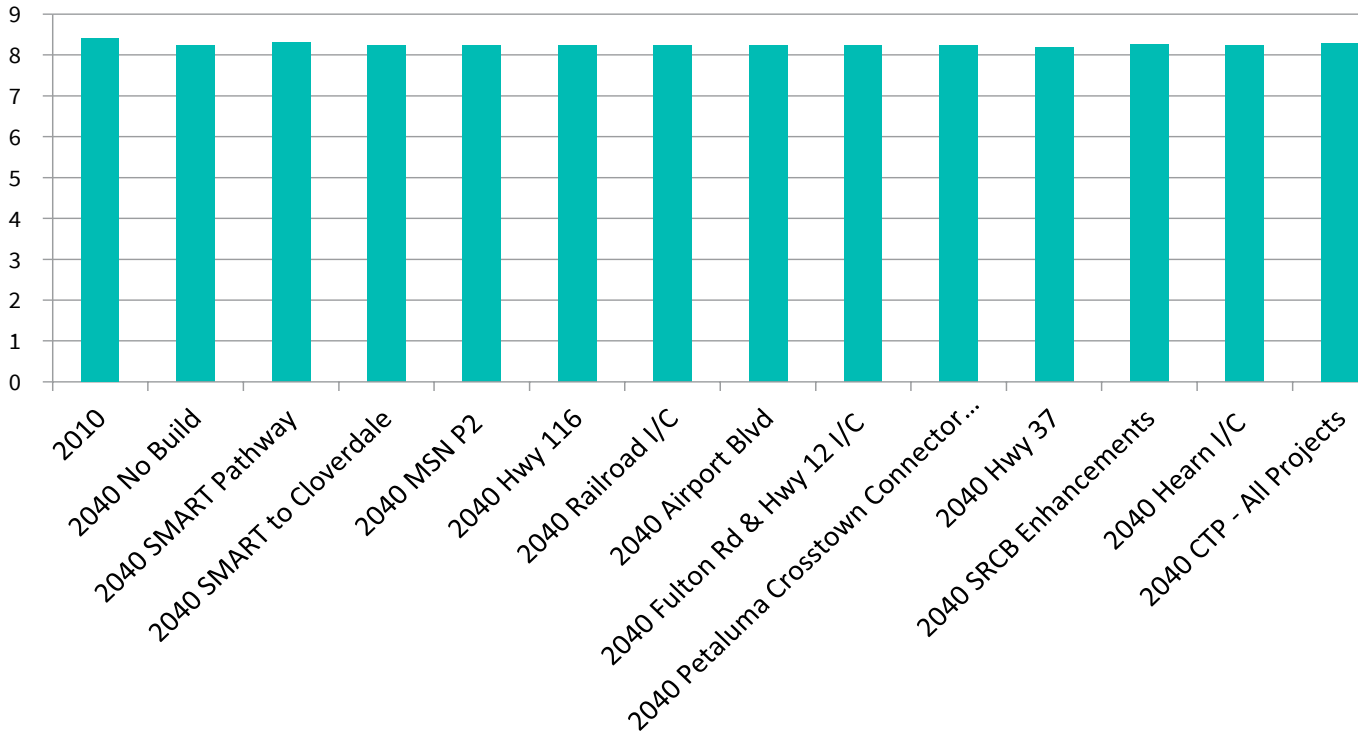
Project Benefits — Safety and Health

One of the five CTP goals encourages planning for safety and health. Transportation choices can have big impacts on safety at the local and regional level and on community and individual health. Two performance measures and targets have been identified which can help indicate progress in these areas, one focusing on active transportation modes and another focused on traffic safety and accidents.

Project Benefits — Active Transportation

Land use planning, urban design, and transportation choices can significantly improve public health. Active transportation modes such as walking, bicycling, or taking transit provide health benefits by lowering chronic disease rates, reducing obesity, and improving air quality. In 2010 approximately 8% of trips were made using active transportation modes. The Sonoma County Travel Model estimates that the rate of using active travel modes should stay in the 8% range through 2040, and estimates that projects have a very small impact on these rates. Projects focused on improving pedestrian or bicycle infrastructure or which improve transit service could have a large impact on existing transit ridership or walking and biking rates at the local or neighborhood level, but increases make up a very small percentage of overall regional or county travel, and are small when compared to existing automobile oriented travel.

Figure 7. CTP Project Performance — Non-auto mode share.



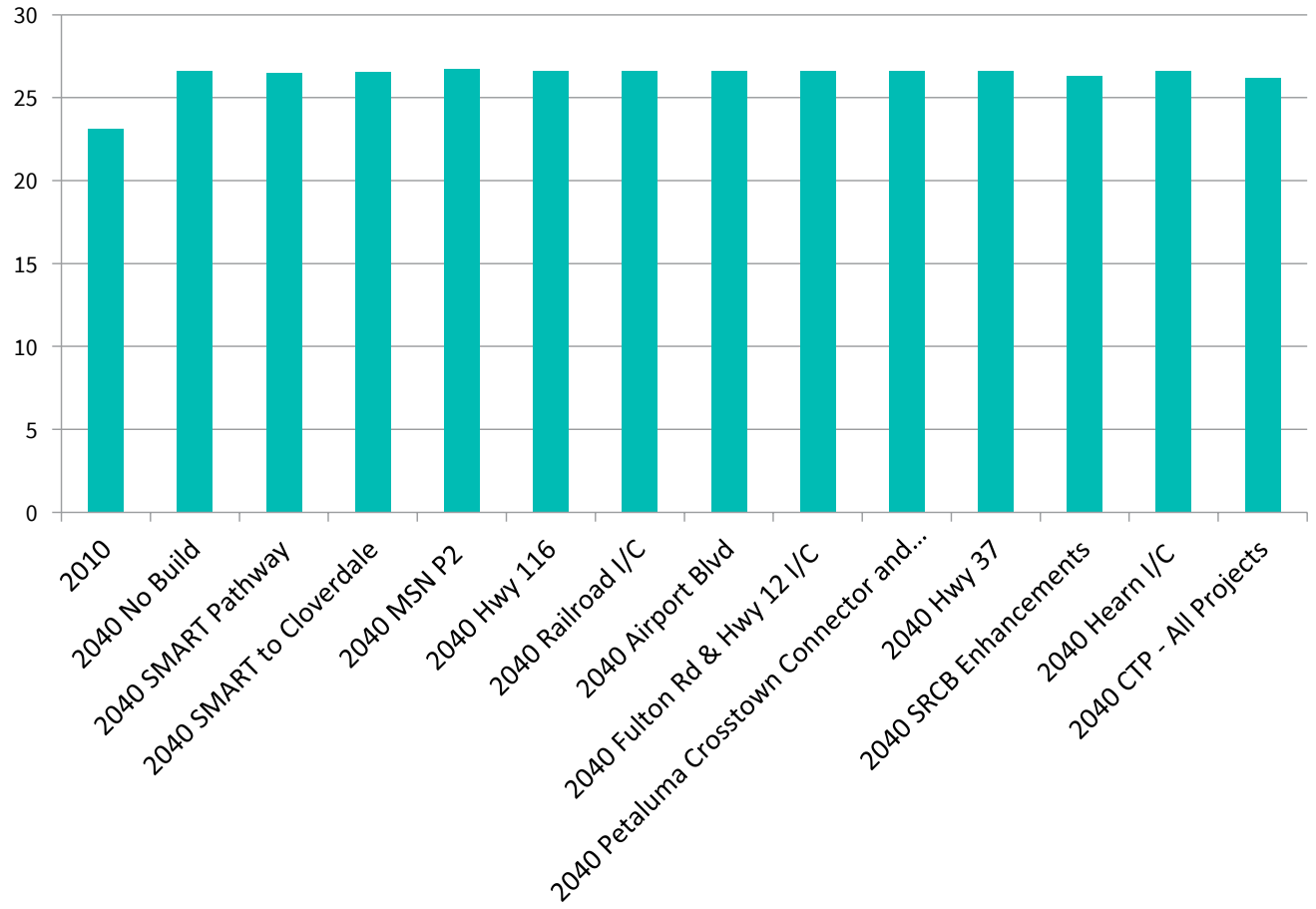
Project Benefits — Collisions

Traffic collisions impose a significant economic and societal burden on Sonoma County residents. Costs include lost productivity, property damage, medical and rehabilitation costs, congestion costs, legal and court costs, emergency services, insurance administration costs, and tremendous emotional and societal costs. SCTA approved adding a safety performance target to the 2009 CTP which set a goal of reducing countywide daily traffic collisions by 20% below 2010 levels by 2040. This target was later revised to reduce countywide daily traffic collisions by 1 fewer daily collisions than the 2010 daily collision rate by 2040.

Safety impacts were calculated using the SmartGAP post-processing tool by factoring VMT, road lane miles, transit service (transit revenue service hours), and travel mode shares. Fatality, injury, and property damage collision rates are included in the estimates. In the CTP, property damage collision rates were not reported in order to keep the focus of this metric on traffic related safety impacts.

Project performance assessment results indicate that project level improvements have little impact on countywide collision rates. This is due to the small impact that CTP projects have on countywide VMT. The Sonoma County Travel Model and post-processing tools do not estimate safety improvements that would likely occur at local roadway, corridor, or neighborhood level. Individual projects could provide large safety improvements for local intersections or road segments which could be missed when considering regional or countywide safety impacts.

Figure 8. CTP Project Performance — Estimated Fatality, Injury, and Property Damage Collisions per Day.

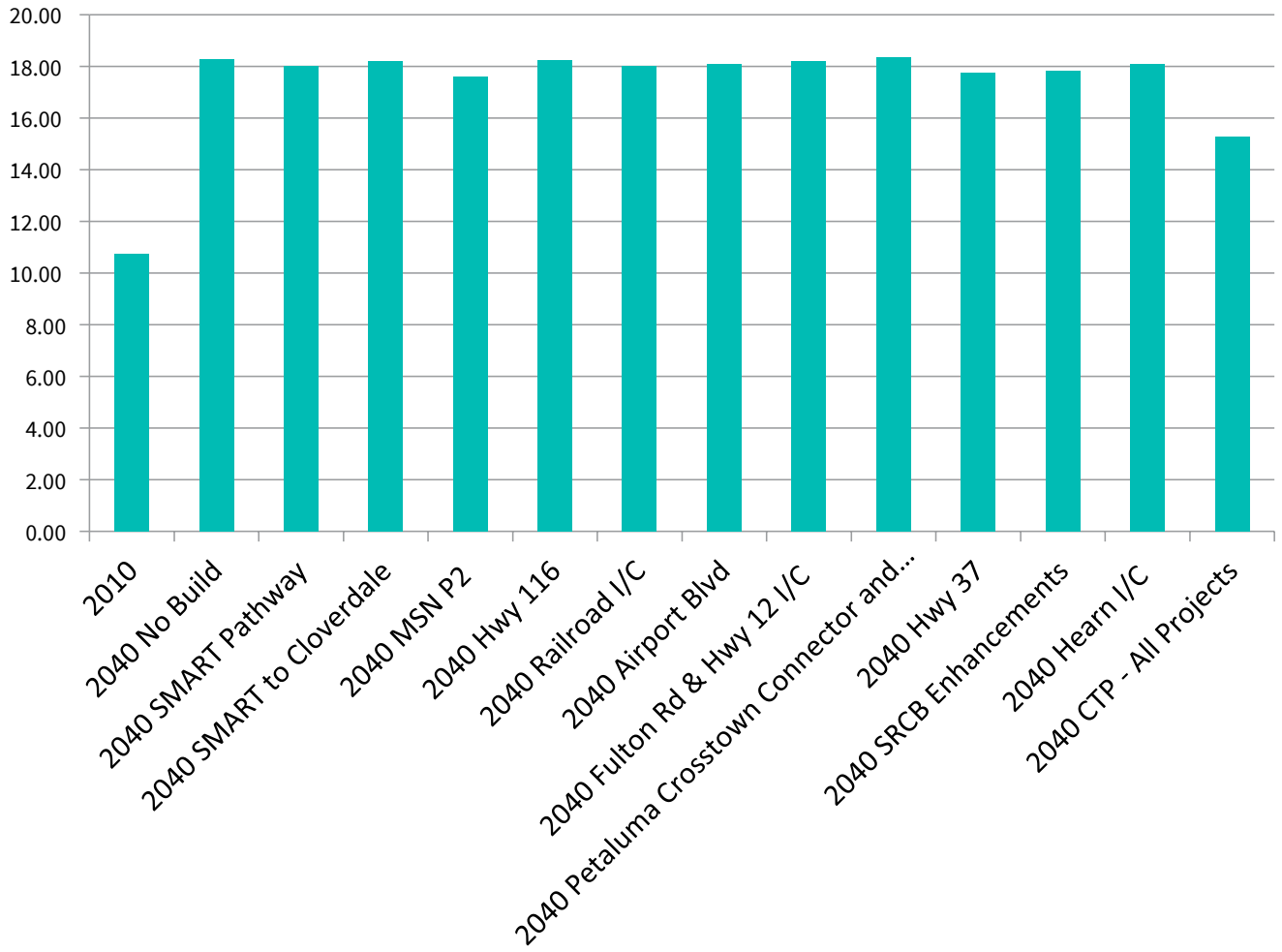


Project Benefits — Promoting Economic Vitality

The SCTA has recognized that the countywide transportation system plays an important role in the local economy. A new goal has been added to the 2015 CTP focused on promoting economic vitality. Two performance measures have been identified which can help assess transportation's role in improving countywide economic conditions. The first performance measure is PM peak period average trip length. This measure has been used by transportation planning agencies to measure transportation system efficiency and provides a way to represent how easy, or difficult, it is to conduct business, move goods, and attract employees to Sonoma County. Increases in peak period congestion make doing business in the county more difficult and make it difficult for workers to reach work sites.

PM peak period average trip length is predicted to increase from around 11 minutes per trip in 2010 to over 18 minutes per trip in 2040. Population, housing, and employment growth is the primary cause of this increase in congestion and travel time, but proposed projects do provide some congestion relief and peak period travel time benefit in the future. Projects which reduce future congestion provide the largest benefits including projects like the SMART pathway and improvements in the Hwy 101 and Hwy 37 corridors. Building all submitted 2015 CTP projects could reduce PM peak trip time by about 3 minutes per trip below 2040 no build conditions.

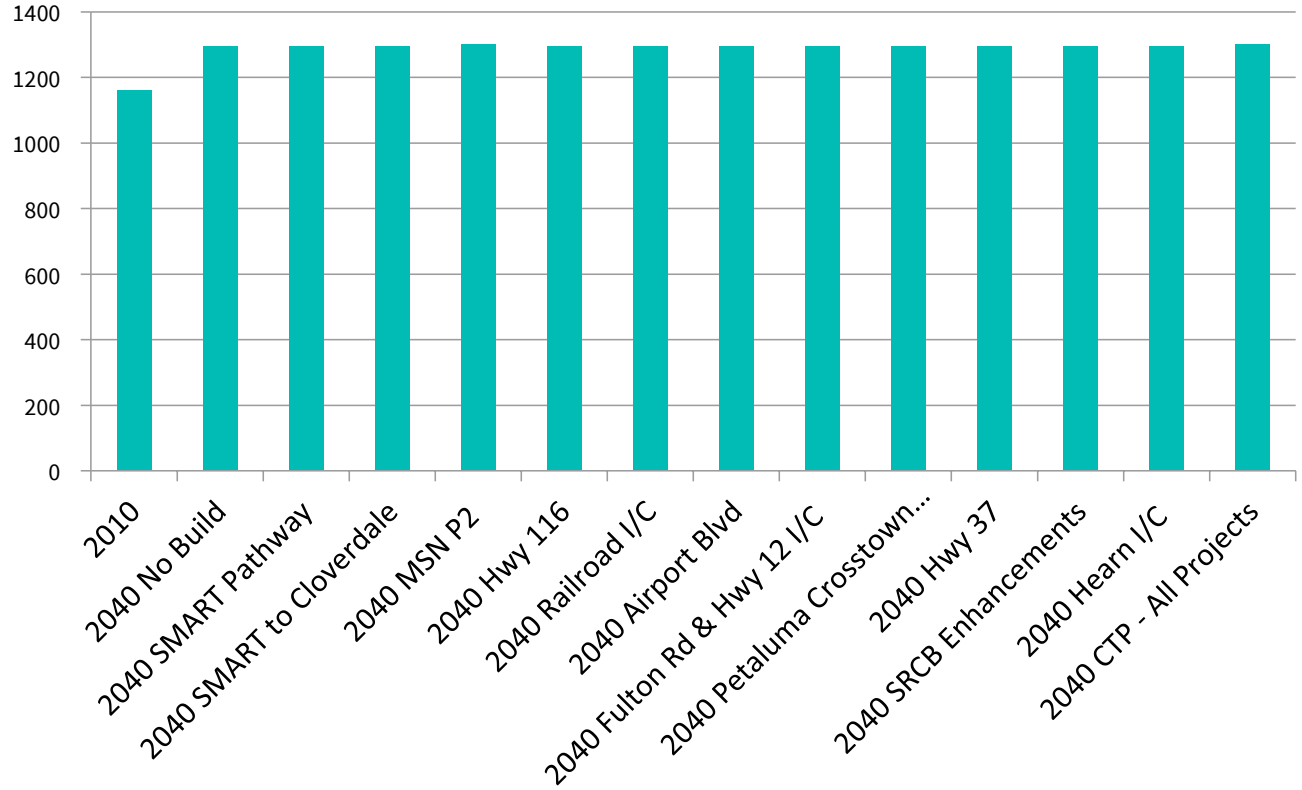
Figure 9. CTP Project Performance – Estimated PM Peak Hour Average Trip Length, in Minutes



Project Benefits — Average Household Travel Costs

Ensuring that transportation is affordable and efficient for households and county residents is an important part of promoting economic vitality. The transportation system allows people to access employment, goods and services, recreational opportunities, education, and other destinations. As transportation costs rise, accessibility and quality of life suffer as larger and larger portions of household budgets must be spent on transportation costs. Low and moderate income households are often hit the hardest by rising transportation costs. Future monthly household travel costs are estimated to increase from roughly $1200 per month to over $1300 per month in 2040 because of increased congestion, increases in in-commuting, and longer average travel times. An average household spends roughly 22% of the household budget on transportation costs, with this percentage estimated to increase to 25% by 2040 under no build conditions. The performance assessment indicates that projects have little impact on household travel costs, with non-auto projects providing the largest benefit and projects focused on increasing road or highway capacity provide a lower benefit when compared to no build conditions.

Figure 10. CTP Project Performance — Estimated Monthly Household Travel Costs.



CTP Policy Assessment — Testing Policy Impacts

The analysis of proposed CTP projects demonstrated that countywide CTP goals and performance targets will not be achieved by building projects alone. The ways in which Sonoma County residents travel including how far and how often they make trips, what travel modes they use, and how efficiently they travel will need to change if these goals are to be met in the future. The CTP policy performance assessment explores possible policy approaches, technologies, and behavioral changes and estimates the possible transportation related benefits these could provide and how they could help SCTA meet CTP goals and performance targets. The policy performance assessment is not intended to provide a definitive path on how CTP goals and targets may be met, but is intended to provide information on what types of measures could provide benefits in CTP goal areas. Policies, technologies, and behavioral approaches were tested using the tools and research available and do not represent a full array of all possible solutions. New policy approaches and technological advances will undoubtedly arise that could have a significant impact on how people travel in Sonoma County or how travel impacts mobility, the environment, health, safety, and the economy.

Staff tested the performance impact of the following policy approaches, technologies, and behavioral changes in order to explore the possible benefits they could provide in CTP goal/performance areas:

1. *Transportation Pricing*: The cost of driving or traveling using different modes can have a significant impact on travel behavior. Making driving more expensive and other modes less expensive could shift travel onto more efficient travel modes, reduce the number of trips people take, and reduce the distances people travel. The following pricing approaches where tested as part of the CTP policy assessment:
    a. Cost of driving: A 25 cent per mile increase to the cost of driving was tested in order to assess the possible impact of the following pricing policies: VMT tax, pay as you drive insurance, congestion pricing, fuel tax increases, or other use or mileage based fees.

   b. Parking pricing: The following changes to parking pricing were tested: All employee parking to be paid parking in employment centers (areas with 100 or more workers). For these areas: 100% of employees pay for parking at place of employment ($10 per day). 25% of all other drivers pay for parking at these destinations ($10 per day parking rate).

   c. Free transit fares: Assume transit fares are 100% subsidized.

2. *Trip Reduction Techniques*: Changes to how, how much, when, and where Sonoma County residents travel could have a big impact on future congestion, VMT, and other CTP performance measures. Staff analyzed the following trip reduction approaches in the policy performance assessment:

   a. Trip reduction strategies: Tested a 2% reduction in household trip making. This equates to 1 less trip made by household per week. An average household makes approximately 50 trips per week. This trip making reduction was used to estimate the impact of increased telecommuting, compressed work week schedules, travel demand management strategies, and increased online shopping and/or instant or digital delivery of goods and services on Sonoma County travel conditions.

   b. Increased Rideshare and Vanpool participation: Assumed a +10% increase of carpool, rideshare, and van share participation rates. The participation rate was approximately 10% in 2013.

   c. Maximized HOV lane utilization: The High Occupancy Vehicle (HOV) lanes on Highway 101 do not currently operate at full capacity. Staff tested maximizing usage of the HOV lane system in Sonoma County and extending HOV hours of operation to 4am-10pm. HOV capacities were held at 2+ persons per vehicle.

3. *Land Use*: The project level performance assessment illustrated that housing and employment growth have a very large impact on CTP performance measures and will contribute to increased travel, congestion, emissions, collision rates, and travel times in Sonoma County. More efficient land use patterns could help reduce the impact of existing and forecasted growth in the county. Staff analyzed the following land use policies in the policy performance assessment:

   a. All future development in Sonoma County through 2040 located within Urban Growth Boundaries (UGB). Baseline 2040 forecasts produced by ABAG included estimates for limited growth outside of UGBs and County Urban Service Areas (USA). Any housing and employment growth allocated outside of UGBs and USAs was reallocated into these areas for the analysis of this land use scenario.

   b. All future housing and employment growth in Sonoma County through 2040 located within identified Priority Development Areas and Urban Service Areas/Employment Opportunity Areas in the unincorporated portions of the county.

   c. Incoming and outgoing trips at the county gateways was balanced to represent future improvements to jobs-housing balance and the availability of affordable and appropriate housing within the county. Improved jobs-housing balance and housing affordability could reduce the need to travel into or out of the county for work or other purposes.

4. *Mode shift to non-auto transportation modes*: Travel shifting onto transit from auto-based modes could reduce VMT and emissions, reduce the cost of transportation, reduce wear and tear on the roadway system, and improve community health and safety. Bicycling and walking are inexpensive and low impact travel modes and increased travel using these travel modes could lead to positive shifts in CTP performance areas. The following shifts from auto-based modes to transit and non-motorized travel were analyzed in the policy performance assessment:

   a. Implement all vision transit improvements as outlined in the CTP project list. Implementation of these unfunded or "vision" transit projects would almost double countywide transit capac-

ity by improving route headways and increasing hours of service. This scenario did not assume changes in countywide travel behavior or increases to transit ridership beyond those that could be attributed to improving the transit system as indentified in the CTP.

b. Maximize ridership of existing transit system by 2040. Staff estimates that the countywide transit system in Sonoma County will operate at about 36% capacity in 2040. Filling vacant seats on buses and trains to capacity would take cars off of the road and reduce county vehicle miles traveled. This shift could be encouraged by improving transit service, making transit cost less, making transit more convenient, connecting important travel destinations, and by encouraging attitudinal and behavioral changes that would shift more travel onto transit.

c. Maximize ridership of proposed "vision" transit service by 2040. Staff estimates that the countywide transit system would operate at about 26% capacity if "vision" transit enhancements were implemented by 2040. The unused capacity on the improved transit system would be significant, and filling vacant seats and filling transit vehicles to capacity could reduce countywide VMT by over 650,000 miles per day. Filling unused capacity could be accomplished using the approaches listed above.

d. Assume a 5% shift of all travel to walk and bike travel modes, increasing bicycle and pedestrian mode share from the current rate of 8% of total countywide trips to 13% of total countywide trips. Explicit reasons for this shift have not been identified but could include things such as build-out of the bicycle and pedestrian network as laid out in the SCTA Bicycle and Pedestrian Plan, continued implementation of complete streets projects, improvements to the built environment, and changes in attitudes and travel behaviors.

5. *System Efficiency*: Improved efficiencies could allow the existing transportation system to operate more effectively and could reduce future degradation of the transportation system and personal mobility. Efficiencies could be made through technological advances and implementation of programs and policies that encourage more efficient travel behavior. The following system efficiency improvements were analyzed as part of the policy performance assessment:

   a. System Efficiency Improvements – Capacity: Staff tested a 25% increase in roadway capacity that could be attributed to intelligent transportation systems (ITS), signal timing, corridor management, incident response programs, changeable message signs, metering improvements, traffic information communication programs, smart cars, freeway vehicle platooning, driverless vehicles, and other efficiency increasing programs or transportation technologies.

   b. System Efficiency Improvements - Vehicle Fuel Economy: Estimated California vehicle fuel economy in 2015 is approximately 23 miles per gallon
   . National and State fuel economy standards are expected to increase vehicle fleet fuel economy to about 32 miles per gallon by 2035
   . Staff tested increasing average vehicle fleet fuel economy to 55 miles per gallon in the policy performance assessment. Vehicle fleet fuel economy could be improved by increased rollout of electric/hybrid vehicles, improvements in vehicle fuel economy in the gasoline vehicle fleet, eco-driving training, speed limit and HOV enforcement, and other behavioral or technology improvements.

   c. System Efficiency Improvements – Freight Shift: Approximately 8% of all Sonoma County VMT can be attributed to truck traffic. Staff tested reducing this truck traffic by 50% which could be achieved 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, or increasing the digital delivery of goods and services.

Policy Benefits — Relieving Traffic Congestion

The policy performance assessment indicated that the following actions, as described in the testing policies section, could reduce 2040 congestion levels by the indicated amounts:

- System efficiency improvements – Capacity: 47%
- Parking pricing: 46%
- Maximized transit ridership (Existing – Vision Service): 17–28%
- Maximized use of the HOV system: 22%
- CTP projects (11 Largest – All Projects): 13–20%
- Mode shift - Bike/Ped: 19%
- Trip reduction: 17%
- Congestion pricing: 17%
- Freight improvements: 16%

Other tested approaches could reduce congestion by between 0 – 10% by 2040.

Policy Benefits — Reducing Greenhouse Gas Emissions

The policy performance assessment indicated that the following actions, as described in the testing policies section, could reduce 2040 GHG emissions by the indicated amounts:

- Fuel economy improvements: 47%
- Parking pricing: 23%
- Mode shift – Bike/Ped.: 9%
- Maximized use of the HOV system: 8%
- Congestion pricing: 7%
- Maximized transit ridership (Existing – Vision Service): 2-5%
- Trip reduction: 5%
- Freight improvements: 4%

Other tested approaches could reduce GHG emissions by between 0 – 3% by 2040.

Policy Benefits — Planning for Safety and Health

Transportation choices can have major impacts on safety and health at the local and regional level. Two performance measures and targets have been identified as part of the CTP which can help indicate progress in these areas. One measure is focused on active transportation modes and another is focused on traffic safety and accidents.

Policy Benefits — Active Transportation:

The policy performance assessment has indicated that the following actions, as described in the testing policies section, could increase the percentage of trips being made by bicycle, transit, or walking by the indicated amounts in 2040:

- Mode shift – Bike/Ped.: 13%
- Maximized transit ridership (Existing – Vision Service): 9-11%

- Parking pricing: 10%
- Congestion pricing: 9%
- Land use - PDAs: 9%
- Free transit fares: 8.5%

Other tested approaches would not increase non-auto mode share above current rates of 8% by 2040.

Policy Benefits — Collisions

The policy performance assessment has indicated that the following actions, as described in the testing policies section of this report, could countywide traffic collisionsr by the indicated amounts by 2040:

- Parking pricing: 9%
- Mode shift – Bike/Ped.: 9%
- Maximized use of the HOV system: 8%
- Congestion pricing: 7%
- Maximize transit ridership (Existing- Vision Service): 2-5%
- Freight improvements: 4%

Other tested approaches could reduce countywide traffic accident rates by between 0 – 3% by 2040.

Policy Benefits — Promoting Economic Vitality

The countywide transportation system plays an important role in the local economy. A new goal has been added to the 2015 CTP focused on promoting economic vitality. Two performance measures have been identified which can help assess transportation's role in improving countywide economic conditions. The first performance measure, PM peak period average travel time, provides an estimate for transportation system efficiency and can indicate how easy, or difficult, it is to conduct business, move goods, and attract employees in Sonoma County. Increases in peak period congestion make doing business in the county more difficult, increase delivery and shipping costs, and make it difficult for workers to reach work sites and employment locations.

PM peak period average trip length is predicted to increase from around 11 minutes per trip in 2010 to over 18 minutes per trip in 2040. Population, housing, and employment growth is the primary cause of this increase in congestion and travel time, but CTP projects are expected to provide some congestion relief and peak period travel time benefit in the future.

The policy performance assessment has indicated that the following actions, as described in the "testing policies section" of this report, could improve PM peak travel times by the indicated amounts by 2040:

- System efficiency improvements - Capacity: 32%
- Maximize transit ridership (Existing- Vision Service): 17–28%
- Maximized use of the HOV system: 22%
- Mode shift – Bike/Ped.: 20%
- Congestion pricing: 16%
- CTP projects (11 Largest – All Projects): 10-16%

Other tested approaches could reduce countywide PM peak travel times by between 0 – 9% by 2040.

Policy Benefits — Average Household Travel Costs

SCTA has indicated that transportation should be affordable and efficient for all households and county residents. Transportation affordability is an important part of promoting economic vitality. The transportation system allows

people to access employment, goods and services, recreational opportunities, education, and other destinations. As transportation costs rise, accessibility and quality of life suffer as larger and larger portions of household budgets must be spent on transportation. Low and moderate income households are hit the hardest by rising transportation costs.

The project and policy performance assessments indicate that projects and policies have little positive impact on household travel costs, with non-auto projects providing the largest benefits when compared to no build conditions. Pricing policies significantly increase household travel costs with per mile VMT or congestion fees increasing travel costs to 32% of average household budget and parking pricing policies increasing household travel costs to 33% of the household budget in 2040.

Policy Performance Summary

The results of the policy performance assessment indicate that a variety of different policy approaches, advancements in technology, and changes in travel behavior will be necessary to address the goals, objectives, and performance targets that have been identified in the CTP. Maintaining and enhancing the existing transportation system is critical to ensuring that countywide mobility does not suffer in the future and additional funding will need to be identified to maintain our streets, roads, transit, and other transportation infrastructure. Traffic congestion and GHG emissions are ongoing concerns in Sonoma County and more efficient use of the existing transportation system by improving vehicle efficiencies, and maximizing use of our existing HOV and transit systems could provide significant congestion and emissions reduction benefits. Congestion and GHG emissions could be reduced by lowering the number of trips people make, shifting travel onto non-auto travel modes, or by managing travel demand through pricing policy. Construction of selected transportation projects could reduce congestion and improve countywide mobility. Policy approaches that encourage travel using active transportation modes and reduce travel on the roadways in automobiles would benefit health and safety. Health and safety issues should be addressed at the local neighborhood level. Small scale transportation improvements implemented at the local level could have a greater impact on overall community health and safety than major countywide or regional policies or measures. Transportation improvements or policies alone will not ensure the health of the local and regional economy, but transportation improvements that reduce the cost of business while ensuring that personal transportation costs are not overly burdensome could be effective ways of supporting the economy.

Meeting CTP Goals and Performance Targets — Assembling The 2040 Vision Scenario

High performing projects and policies from the project and policy performance assessments were included in one future scenario which demonstrated how CTP performance targets could be met. Funding has not been currently identified for the projects, policies, strategies, or technologies that were identified as high performers and included in this scenario. Some high performing policy levers that were identified in the policy performance assessment were omitted based on feedback from the SCTA. These approaches were identified as having negative impacts or undesirable social effects and were therefore not included in the 2040 vision scenario.

The following transportation projects were shown to help reduce countywide congestion and help provide small benefits in other CTP performance areas and were included in the vision scenario:

- Hearn Avenue/Highway 101 interchange improvements
- Highway 116 widening and rehabilitation between Sebastopol and Cotati
- Marin Sonoma Narrows: Phase 2
- SMART: Airport to Cloverdale extension
- SMART pathway

- Railroad Avenue/Highway 101 interchange improvements
- Airport Boulevard widening including Brickway and Laughlin Rd improvements
- Fulton Road/Highway 12 Interchange
- Petaluma cross-town connector and Rainier Interchange
- State Route 37 corridor protection and enhancement project

The following transportation policies or strategies were shown to provide the greatest performance benefits in the policy performance assessment and were included in the vision scenario:

d. *Focused population and employment growth*: Future population, housing and employment growth would be consistent with the regional Sustainable Communities Strategy. This growth distribution represents a city-centered future growth pattern focused on Sonoma County Priority Development Areas (PDAs) and is generally consistent with local general plans and development priorities. All future development in Sonoma County through 2040 would also be located within Urban Growth Boundaries (UGB).

e. *Regional jobs-housing balance*: Incoming and outgoing trips at the county gateways were balanced to represent future improvements to jobs-housing balance and the availability of affordable and appropriate housing within the county. Improved jobs-housing balance and housing affordability could reduce the need to travel into or out of the county for work or other purposes. For analysis purposes, inter-county travel was assumed to stay the same as it was in 2010.

f. *Trip reduction strategies*: Included a 2% reduction in household trip making. This equates to 1 less trip made per household per week. An average household makes approximately 40-50 trips per week. This trip making reduction was used to estimate the impact increased telecommuting, compressed work week schedules, travel demand management strategies, and increased online shopping and/or instant or digital delivery of goods and services could have on Sonoma County travel.

g. *Vision transit improvements*: Implement all vision transit improvement projects as outlined in the CTP project list. Implementation of these unfunded or vision transit projects would almost double countywide transit capacity. These vision improvements would increase the capacity of the transit system by improving route headways and increasing hours of service. Vision transit improvements would include:

    i. Santa Rosa CityBus service expansion including rapid bus corridors

    ii. Sonoma County Transit service expansion

    iii. Petaluma Transit service expansion including rapid bus corridor

h. *Maximize transit ridership*: Maximize ridership of proposed "vision" transit service by 2040. Staff estimates that the countywide transit system would operate at about 26% capacity if vision transit enhancements were implemented by 2040. The unused capacity on the improved transit system would be significant, and filling vacant seats and filling transit vehicles to capacity could reduce countywide VMT by over 650,000 miles per day.

i. *Shift to non-motorized travel*: Assume a shift of 4% of single occupant vehicle travel to walk and bike travel modes, representing approximately 120,000 trips per day (out of around 3.5 million daily trips in Sonoma County). Explicit reasons for this shift have not been identified but could include things such as build-out of the bicycle and pedestrian network as laid out in the SCTA Bicycle and Pedestrian Plan, continued implementation of complete streets projects, improvements to the built environment, increased cost of driving, and changes in attitudes and travel behaviors.

j. *System efficiency improvements— capacity*: Represented by a 25% increase in roadway system capacity that could be attributed to intelligent transportation systems (ITS), signal timing, corridor management, incident response programs, changeable message signs, metering improvements, traffic information communication programs, smart cars and autonomous vehicles, freeway vehicle platooning, driverless vehicles, and other efficiency programs and transportation technologies.

k. *System efficiency improvements — vehicle fuel economy*: Estimated California vehicle fuel economy in 2015 is approximately 23 miles per gallon
. National and State fuel economy standards are expected to increase vehicle fleet fuel economy to about 32 miles per gallon by 2035
. Increasing the average vehicle fleet fuel economy to 55 miles per gallon would allow GHG reduction targets to be reached. Vehicle fleet fuel economy could be improved by increased rollout of electric/hybrid vehicles, improvements in vehicle fuel economy in the gasoline vehicle fleet, eco-driving training, speed limit and HOV enforcement, and other behavioral or technology improvements.

The 2040 vision scenario was assembled iteratively by adding high performing projects or policy approaches until the combined scenario was able to reach most CTP performance targets.

REACHING CTP GOAL 2: Relieve traffic congestion – 2040 Vision Scenario

Traffic volumes continue to rise in Sonoma County as the population and economy grow. Growing traffic congestion could impact economic productivity due to increased transportation delay, increased fuel consumption and pollution, reduced accessibility, increased emergency response times, increased traffic accident rates, and degraded quality of life for Sonoma County residents. Congestion is predicted to more than triple by 2040 in Sonoma County. Most of this increase can be attributed to increased travel due to population and employment growth. Implementing the 2040 Vision Scenario would reduce daily person hours of delay (PHD) to 41,625 and would meet the performance target of reducing daily PHD by 20% below 2005 levels by 2040.

REACHING CTP GOAL 3: Reducing greenhouse gas emissions – 2040 Vision Scenario

Transportation contributes over 50% of all greenhouse gas emissions in Sonoma County. Sonoma County jurisdictions have committed to reducing GHG emissions to 25% below 1990 levels by 2020, and 40% below 1990 levels by 2030, and 80% below 1990 levels by 2050. Based on these targets a 2040 GHG reduction target, reduce GHG emissions to 60% below 1990 levels by 2040, has been included in the CTP.

Transportation greenhouse gas emissions are a function of total travel by vehicles, speed of travel, and vehicle fleet characteristics. Greenhouse gas emissions were calculated using EMFAC, a California Air Resource Board sponsored tool which is used to estimate vehicle emissions.

Greenhouse gas emissions are expected to increase by roughly 36% during the period from 2010–2040 under no build conditions. This is largely a factor of increased travel due to population and employment growth. State mandated fuel economy improvements (Pavley, AB 1493, Low Carbon Fuel Standards) and additional vehicle fuel economy improvements could provide significant emissions reductions by 2040. Implementing the vision scenario would reduce annual GHG emissions below the 2040 target of 60% below 1990 emissions. This reduction can be attributed to improved vehicle fleet fuel economy and VMT reductions.

REACHING CTP GOAL 4: Planning for Safety and Health – 2040 vision scenario

Transportation choices can have a major impact on safety and health at the local and regional level. Two performance measures and targets have been identified as part of the CTP which highlight progress in these areas. One measure is focused on active transportation and a second focuses on traffic safety and accidents.

Active Transportation

Land use planning, urban design, and transportation choices can improve public health. Active transportation modes such as walking, bicycling, or taking transit provide health benefits by lowering chronic disease rates, reducing obesity, and improving air quality. In 2010 approximately 8% of trips were made using active transportation modes in Sonoma County. The Sonoma County Travel Model estimates that this rate will stay in the 8% range through 2040, and that project construction would have little impact on active transportation travel rates. Projects focused on improving pedestrian or bicycle infrastructure or which improve transit service could increase transit ridership or walking and biking rates at the local or neighborhood level, but increases make up a very small percentage of overall countywide or regional travel, and are small when compared to existing and forecasted automobile travel. Implementation of the 2040 Vision Scenario, including vision transit improvements, and shifts from automobile travel to walking and biking could increase 2040 active mode share to 15.1% in Sonoma County, which is slightly higher than the CTP performance target in this area (15% active mode share by 2040).

Traffic Safety

Performance assessment results indicate that projects and policies analyzed in the project and policy performance assessments are estimated to provide only minor collision rate reductions through 2040. The 2040 Vision Scenario was shown to reduce fatal and injury collision rates by 1 per day when compared to no action conditions, which is encouraging, but does not meet the performance target of reducing collision rates by 1 per day below 2010 levels by 2040. The performance assessment process highlighted the fact that the tools used to perform this analysis are not sensitive to improvements that could provide significant safety improvements at the countywide and local level. Staff will continue to investigate other tools or methods for assessing traffic incident rates that capture how smaller enhancements could increase traffic and roadway safety.

REACHING CTP GOAL 5: Promoting Economic Vitality — 2040 Vision scenario

The countywide transportation system plays an important role in the local economy. A new goal has been added to the 2015 CTP focused on promoting economic vitality. Two performance measures have been identified which can help assess transportation's role in improving countywide economic conditions. The first performance measure, PM peak period average travel time, provides an estimate of transportation system efficiency and can indicate how easy, or difficult, it is to conduct business, move goods, and attract employees to Sonoma County. Increases in peak period congestion make doing business in the county more difficult, increase delivery and shipping costs, and make it difficult for workers to reach work sites and employment locations.

PM peak period average travel time is predicted to increase from around 11 minutes per trip in 2010 to over 18 minutes per trip in 2040. Population, housing, and employment growth are the primary causes of this increase in congestion and travel time. CTP projects are expected to provide some congestion relief and peak period travel time benefit in the future. Implementing the high performing scenario would reduce average evening peak period travel time to under 9 minutes, which is shorter than the 2040 performance target of just over 10 minutes of peak period travel.

Average Household Travel Costs

Future monthly household travel costs are estimated to increase from roughly $1200 per month (2010) to over $1300[3] per month in 2040 because of increased congestion, increased regional commuting, and longer average travel times. An average household spends roughly 22% of the household budget on transportation costs currently, with this percentage estimated to increase to 25% by 2040 under no build conditions[4]. Implementing the

3 Monthly household travel costs include estimated travel costs including fuel, fees (parking/tolls), insurance, maintenance, and vehicle depreciation. Sources: SmartGAP data post processing (Strategic Highway Research Program), and AAA driving cost estimates. AAA estimates the national average cost of operating a single passenger vehicle was $750/month in 2015.

4 Monthly household transportation costs were compared to 2010 Sonoma County Median Household income ($63,356) to estimate percentage of household budget that would be spent on transportation.

2040 Vision Scenario would reduce average household travel expenses to around 18% of an average household budget.

Does the 2040 Vision Scenario achieve CTP goals?

SCTA would meet 6 of 7 CTP performance targets by implementing the projects, approaches, and strategies that were considered as part of the 2040 Vision Scenario. These projects, policies, strategies, and technology improvements are not currently funded and generally require implementation at all levels of government as well as buy in from the public.

APPENDIX 7A
PROJECT NEEDS REPORT

Plan ID#			Cost	Known $	Project Year
Bike/Walk					
BP1	Cloverdale	Cloverdale River Trail	1.89	0.00	TBD
BP4067	Cloverdale	Citrus Fair Drive	1.40	0.00	TBD
BP37	Cotati	West Cotati Avenue Sidewalks	1.58	0.00	TBD
4520	Healdsburg	Foss Creek Pathway Class II	1.34	0.00	TBD
4521	Healdsburg	Foss Creek Pathway Class I	7.25	0.45	TBD
4004	Petaluma	SMART Pathway — on street path in Petaluma	5.00	0.00	TBD
4006	Petaluma	Rivertrail—Crossing SMART and Hwy 101	2.90	0.00	2018
4519	Petaluma	Petaluma River Trail	8.09	0.00	TBD
BP77	Petaluma	Class 2 bicycle lane segments citywide	17.29	0.00	TBD
BP78	Petaluma	Adobe Rd.	1.50	0.00	TBD
3048	Rohnert Park	Copeland Creek Bike/Ped Overcrossing at Highway 101	6.00	0.00	2025
4010	Rohnert Park	Central Rohnert Park PDA Complete Streets Improvements	6.00	0.00	2016–2025
4012	Rohnert Park	Rohnert Park Class I Bike Paths Reconstruction	7.00	0.00	2015–2025
BP171	Rohnert Park	New Bike/Pedestrian Path Crossing Hwy 101	3.00	0.00	TBD
2090	Santa Rosa	Highway 12 Corridor — Farmers Lane to Spring Lake Park	1.00	0.00	2030
4027	Santa Rosa	Jennings Avenue Bicycle and Pedestrian Crossing at the SMART Corr	9.20	0.00	2020
4506	Santa Rosa	Class I Rehabilitation	1.00	0.00	TBD
BP243	Santa Rosa	N. Santa Rosa Stn Area/Jr College Bike/Ped Connector Over HWY 101	21.00	0.25	2040
4502	SMART	SMART Pathway	108.05	0.00	2018
4507	Sonoma County	State Hwy. 116 North Class II bikelanes	14.31	0.00	TBD
4509	Sonoma County	Bodega Hwy. Class II bikelanes	3.57	0.00	TBD
4510	Sonoma County	Geyserville Ave. / Asti Rd. Class II bikelanes	5.82	0.00	TBD
4511	Sonoma County	Sonoma County Bay Trail	9.48	0.17	2020
4512	Sonoma County	Warm Springs Rd. Class II bikelanes	3.84	0.00	TBD
4513	Sonoma County	Laguna de Santa Rosa Trail	4.88	0.05	2023
4515	Sonoma County	State Hwy. 128 23.58 miles of Class II bikelanes	17.68	0.00	TBD
4516	Sonoma County	Bellevue Creek Trail and Connector	1.99	0.11	2024
4518	Sonoma County	State Hwy. 1 34.05 miles of Class II bikelanes	17.79	0.00	TBD
4523	Sonoma County	Bodega Bay Trail	7.71	2.05	2021
BP4068	Sonoma County	Crocker Road Bicycle/Pedestrian Bridge	2.00	0.00	TBD
BP681	Sonoma County	Sonoma Valley Trail	5.06	0.31	2019
BP682	Sonoma County	Cloverdale / Lake Sonoma Trail	2.03	0.00	TBD
BP683	Sonoma County	Cloverdale River Trail	1.37	0.00	TBD
BP688	Sonoma County	Dutch Bill Creek Trail	2.19	0.60	2023
BP704	Sonoma County	Laguna de Santa Rosa Trail Extension	2.24	0.00	2023
BP705	Sonoma County	Larkfield / Wikiup Trail	1.54	0.00	TBD
BP707	Sonoma County	Monte Rio / Willow Creek Trail	3.00	0.00	2024
BP708	Sonoma County	Petaluma / Sebastopol Trail	4.48	0.11	2023

Plan ID#			Cost	Known $	Project Year
BP709	Sonoma County	Petaluma Marsh Trail	4.42	0.00	2023
BP714	Sonoma County	Russian River Trail	11.43	0.13	2023
BP716	Sonoma County	Salmon Creek Trail	1.51	0.00	TBD
BP726	Sonoma County	Sonoma / Schellville Trail	1.92	0.91	2016
BP736	Sonoma County	Petaluma - Novato Trail	1.17	0.00	2023
BP738	Sonoma County	8th St. East	2.32	0.00	TBD
BP740	Sonoma County	Adobe Rd.	2.24	0.00	TBD
BP743	Sonoma County	Alexander Valley Rd.	2.87	0.00	TBD
BP746	Sonoma County	Arnold Dr.	2.60	0.00	TBD
BP748	Sonoma County	Bennett Valley Rd.	1.56	0.00	TBD
BP751	Sonoma County	Bodega Ave.	1.56	0.00	TBD
BP766	Sonoma County	Doran Beach Rd.	1.67	0.00	TBD
BP768	Sonoma County	Dry Creek Rd. Class II bikelanes	7.55	0.00	TBD
BP773	Sonoma County	Eastside Rd. Class II bikelanes	3.88	0.00	TBD
BP775	Sonoma County	Faught Rd. Class II bikelanes	1.92	TBD	
BP778	Sonoma County	Frei Rd. Class II bikelanes	1.06	0.00	TBD
BP780	Sonoma County	Geysers Rd. Class II bikelanes	1.95	0.00	TBD
BP794	Sonoma County	Laguna Rd. / Old Trenton Rd. Class II bikelanes	1.04	0.00	TBD
BP800	Sonoma County	Ludwig Ave. Class II bikelanes	1.08	0.00	TBD
BP803	Sonoma County	Mark West Springs / Porter Creek Rd. Class II bikelanes	7.29	2.50	2024
BP815	Sonoma County	Occidental Rd. Class II bikelanes	2.29	0.00	TBD
BP817	Sonoma County	Pepper Rd. Class II bikelanes	4.41	0.00	TBD
BP822	Sonoma County	Petrified Forest Rd. Class II bikelanes	1.77	2.50	2024
BP823	Sonoma County	Piner Rd. / Olivet Rd. Class II bikelanes	2.82	0.00	TBD
BP825	Sonoma County	Pleasant Hill Rd. Class II bikelanes	1.62	0.00	TBD
BP832	Sonoma County	Roblar Rd. Class II bikelanes	4.87	0.00	TBD
BP837	Sonoma County	South Wright Rd. Class II bikelanes	1.04	0.00	TBD
BP854	Sonoma County	State Hwy. 116 South Class II bikelanes	1.85	0.00	TBD
BP856	Sonoma County	State Hwy. 12 Class II bikelanes	5.19	0.00	TBD
BP859	Sonoma County	State Hwy. 121 Class II bikelanes	5.59	0.00	TBD
BP867	Sonoma County	Todd Rd. Class II bikelanes	3.77	0.00	TBD
BP874	Sonoma County	Water Trough Rd. Class II bikelanes	1.28	0.00	TBD
BP877	Sonoma County	Willowside Rd. Class II bikelanes	1.51	0.75	2017
2037	Windsor	Old Redwood Highway: Hembree Lane to Shiloh Road	11.00	0.01	2020–2021
2042	Windsor	Starr Road: Re-Build Railroad Grade Crossing	1.00	0.01	2018–2019
4053	Windsor	Starr Road Sidewalk Gap Closure	1.00	0.00	2016–2017
BP4068	Windsor	Old Redwood Highway: Windsor Road to Arata Lane	13.00	0.08	2024–2025
BP4068	Windsor	Intersection Modification at Lakewood Drive/Old Redwood Highway	2.00	0.08	2020–2030
BP973	Windsor	Conde Lane: Oakfield Lane to Mitchell Lane	4.00	0.01	2020–2030
77 Projects		**Category Sum (in millions)**	**$452.52**		
		Identified Funding		**$11.05**	
Bridges					
4005	Petaluma	Washington Street Bridge Seismic Retrofit	4.00	0.00	2017
4020	Santa Rosa	Maintain Transportation System — Bridge Rehabilitation	1.00	0.00	Ongoing
4021	Santa Rosa	Replacement cost of bridges	45.00	0.00	Ongoing
4522	SMART	SMART Rail Russian River Bridge Project	30.00	0.00	2018

Plan ID#			Cost	Known $	Project Year
2027	Sonoma County	Sonoma County Bridge Widening Program	19.00	16.90	TBD
5 Projects		**Category Sum (in millions)**	**$99.00**		
		Identified Funding		**$16.90**	
Highway					
4001	Cotati	US 101/Highway 116 North Bound On-Ramp Improvements	10.00	0.00	2030
4002	Cotati	US 101/West Sierra Avenue South Bound Off-Ramp Improvements	10.00	0.00	2030
2005	Santa Rosa	Hearn Ave @ Hwy 101 Interchange Improvements	33.50	1.15	2025
2012	Santa Rosa	Fulton Rd @ Hwy 12 Interchange	27.00		2040
2023	Santa Rosa	Bellevue Ave @ Hwy 101 Improvements	20.80	0.00	2040
2141	Santa Rosa	Mendocino Ave / Hopper Ave — Hwy 101 Interchange	30.00	0.00	TBD
4022	Santa Rosa	Todd Rd @ Hwy 101 Interchange Improvements	41.20	0.00	2040
1008	SCTA	Widen U.S.101 Marin Sonoma Narrows — Phase 1 (Sonoma)	237.00	237.00	2012–2016
2001	SCTA	U.S.101 / Railroad Avenue Improvements. Also Project #2001	50.00	0.00	2030
2003	SCTA	Highways 116 and 121 Intersection Improvements	22.00	5.00	2019
2016	SCTA	Highway 116 Widening and Rehabilitation btwn Sebastopol & Cotati	83.00	7.00	2020
2103	SCTA	State Route 37 Corridor Protection and Enhancement Project - Env.	10.00	0.00	2030
3047	SCTA	Widen U.S.101 Marin Sonoma Narrows — Phase 2 (Sonoma)	210.00	14.00	2018–2022
4031	SCTA	Landscaping — Highway 101 HOV Corridor	18.00	5.00	2015–2025
2072	Sebastopol	Intersection Control on Hwy 116 at 2 locations in Sebastopol	4.00	0.00	2020
2072	Sebastopol	SR 116 Curb, Gutter & Sidewalk	2.00	0.00	2017
4034	Sonoma	Intersection Improvements at SR12 Sonoma Highway and West Napa St	3.00	0.00	2023
4037	Sonoma	Intersection Improvements at SR12 Broadway and SR12 West Napa St.	4.00	0.00	2018
2008	Sonoma County	Forestville bypass on Route 116	15.00	0.00	TBD
2015	Sonoma County	Realign Route 116 (Stage Gulch Road) along Champlin Creek and wid	38.00	0.00	
4054	Windsor	Arata Lane Interchange Phase 2B NB On-ramp (CIP FY 2016–2017)	4.00	0.00	2023–2024
4056	Windsor	Shiloh Road Interchange Reconstruction	21.00	0.00	2020–2030
4058	Windsor	US 101 Overcrossing of Arata Lane	14.00	0.00	2020–2030
23 Projects		**Category Sum (in millions)**	**$907.50**		
		Identified Funding		**$269.15**	
Local Roads					
2080	Healdsburg	5-way Intersection Roundabout	5.50	5.50	2016
2026	Petaluma	Petaluma Crosstown Connector and Rainier Interchange	115.00	0.00	TBD
2140	Petaluma	Southern Crossing at Caulfield Lane	72.00	0.00	TBD
4007	Petaluma	Petaluma Boulevard South Road Diet	4.00	0.00	2018
2083	Rohnert Park	Dowdell Avenue Extension	1.87	1.87	2017
2084	Rohnert Park	Bodway Parkway Extension	1.49	1.49	2020

Plan ID#			Cost	Known $	Project Year
4008	Rohnert Park	Snyder Lane Widening – Medical Center Dr to Golf Course Dr	6.13	5.50	2017–2025
4009	Rohnert Park	Redwood Drive Reconstruction	2.90	0.00	2017
4011	Rohnert Park	East Cotati Avenue Reconstruction	6.00	0.00	2016–2020
4014	Rohnert Park	Keiser Avenue Reconstruction	4.98	4.98	2020
2006	Santa Rosa	Farmers Lane Extension	47.50	10.00	2025
2012	Santa Rosa	Fulton Road — widening improvements	9.00		2018
2049	Santa Rosa	New traffic signals/roundabouts — citywide in Santa Rosa	2.00	0.00	ongoing
2050	Santa Rosa	Dutton Meadows from Hearn Ave to Bellevue Ave	4.80	0.00	TBD
2051	Santa Rosa	West Ave Reconstruct and Widen Sebastopol Rd to South Ave	2.30	0.00	TBD
2063	Santa Rosa	Intersection Modification - 4th Street at Farmers Lane.	7.30	0.00	2030
2070	Santa Rosa	W. College Ave from Fulton Rd to Stony Point Rd	2.70	0.00	TBD
2078	Santa Rosa	Sebastopol Rd Corridor Plan — from Olive St to Dutton Ave	8.20	2025	
2111	Santa Rosa	Northpoint Pkwy — Extend from Fresno to S. Wright	10.50	0.00	TBD
2113	Santa Rosa	Fresno Ave — Extend from Northpoint Pkwy to Finley	5.30	0.00	TBD
2115	Santa Rosa	Stony Point Rd — widen from Hearn Ave to Santa Rosa City Limits	19.00	14.60	2017
2119	Santa Rosa	Sebastopol Rd Corridor Plan — Dutton Ave to Stony Point Rd	24.00	0.00	TBD
2120	Santa Rosa	Corby Ave — widen from Baker Ave to Hearn Ave	8.60	0.00	TBD
2121	Santa Rosa	Baker Overcrossing Widen	32.00	0.00	TBD
2123	Santa Rosa	Petaluma Hill Rd — widen from Aston Ave to Santa Rosa City limit	22.50	0.00	TBD
2124	Santa Rosa	Kawana Springs Rd widen from Santa Rosa Ave to Petaluma Hill Rd	3.40	0.00	TBD
2130	Santa Rosa	Piner Rd from Marlow Rd to Fulton Rd	26.50	5.00	TBD
4015	Santa Rosa	Range Avenue traffic calming improvements / roundabouts	3.00	0.00	TBD
4016	Santa Rosa	Fresno Avenue extension from Northpoint Pkwy to Ludwig Ave	6.60	0.00	TBD
4017	Santa Rosa	Downtown Pedestrian Linkages — 6th/7th/A Streets	3.00	0.00	TBD
4018	Santa Rosa	Coffey Lane extension	1.10	0.00	TBD
4019	Santa Rosa	Santa Rosa Avenue Corridor from Sonoma Avenue to Maple Ave	5.40	0.00	TBD
4026	Santa Rosa	Mendocino Avenue Corridor from Steele Lane to College Avenue	7.00	0.00	TBD
4035	Sonoma	Intersection Improvements at West Spain St. and Fifth St. West	2.00	0.00	2021
4036	Sonoma	Median Safety Barrier Improvements at Fifth St. West	3.00	0.00	2019
4038	Sonoma	Intersection Improvements at Fifth St. West and West MacArthur St	1.50	0.00	2024
2002	Sonoma County	Airport Boulevard Widening Ordiance Road and Aviation Boulevard	50.00	0.00	TBD
2007	Sonoma County	Mark West Springs Road/Porter Creek Road safety improvements	5.00	0.00	TBD
2009	Sonoma County	Mirabel Road and Route 116 signalization and Channelization	5.00	3.00	TBD

Plan ID#			Cost	Known $	Project Year
2010	Sonoma County	River Road channelization and improvements	4.00	4.00	TBD
2011	Sonoma County	Bodega Highway improvements west of Sebastopol	2.00	2.00	TBD
2029	Sonoma County	Adobe Road Reconstruction	20.00	0.00	TBD
2046	Sonoma County	Todd Road Reconstruction	12.00	0.00	TBD
2056	Sonoma County	Alexander Valley Road Safety and Modal Improvements	4.00	0.00	TBD
2062	Sonoma County	8th Street East/Hwy 121 Signalization	3.00	0.00	TBD
2064	Sonoma County	8th Street East widening Napa Rd to Napa Street	3.00	0.00	TBD
2066	Sonoma County	River Road Widening — Fulton to Old Redwood Hwy	7.00	0.00	TBD
2098	Sonoma County	Stony Point Rd Intersection Improvements	2.00	0.00	2017
2109	Sonoma County	Verano Ave — center turn lane from Arnold to HWY 12	2.00	0.00	2020
2142	Sonoma County	Llano Road improvements & extension	3.00	0.00	TBD
4040	Sonoma County	River/Mirabel Intersection Improvements	3.00	0.00	TBD
4059	Sonoma County	Old Redwood Hwy/Fulton Intersection Improvements	2.00	0.00	2018
4060	Sonoma County	Adobe/Corona Intersection Improvements	2.00	0.00	TBD
4061	Sonoma County	Porter Creek Rd/Calistoga Rd/Petriforest Rd. Intersection Improve	3.00	0.00	TBD
4062	Sonoma County	Arnold/Madrone Intersection Improvements	2.00	0.00	TBD
4063	Sonoma County	Hwy 116 Intersection Improvements (County portion)	10.00	0.00	Ongoing
4064	Sonoma County	Alexander Valley/Healdsburg Ave Intersection Improvements	3.00	0.00	TBD
4065	Sonoma County	Mirabel Road Improvements	3.00	0.00	2017
4066	Sonoma County	Brickway/Laughlin Corridor Improvements	8.00	0.00	2018
2038	Windsor	Shiloh Road: Hembree Lane to Old Redwood Highway	10.50	0.00	2020–2021
2039	Windsor	Windsor River Rd/Windsor Rd Int Improvements (CIP FY 2015-16)	2.00	0.00	2018–2019
2052	Windsor	Old Redwood Highway: Widen from Arata Lane to North Town Limits	4.50	0.01	2022–2023
2053	Windsor	Old Redwood Highway: Windsor Rd to Windsor River Rd	4.50	0.01	2024–2025
4049	Windsor	Jaguar Way Roadway (CIP 2015–2016)	5.00	0.01	2021–2022
4051	Windsor	Old Redwood Highway: Windsor Road to Arata Lane	13.00	0.01	2024–2025
4052	Windsor	Intersection Modification at Lakewood Drive/Old Redwood Highway	2.00	0.01	2020–2030
66 Projects		**Category Sum (in millions)**	**$687.57**		
		Identified Funding		**$57.98**	
Local Roads Rehab					
4511	Cloverdale	Pavement Maintenance Program	24.80		
2138	Cotati	Old Redwood Hwy rehab — Plaza to Gravenstein Hwy	8.00	0.00	2020
4510	Cotati	Pavement Maintenance Program	39.00	ongoing	
2036	Healdsburg	Healdsburg Avenue—Mill Street Improvements	2.00	0.00	TBD
4003	Healdsburg	Dry Creek Road Improvements	1.25	0.00	TBD
4004	Petaluma	Various Pavement Maintenance Projects	125.00	0.00	ongoing
2139	Rohnert Park	Southwest Boulevard Overlays and Corridor Improvements	1.10	0.00	2017–2022
4507	Rohnert Park	Pavement Maintenance Program	26.00	0.00	
4508	Rohnert Park	Maintain Pavement System – Road Rehabilitation	94.37	0.00	
2000	Santa Rosa	Maintain Transportation System Pavement —Maintenance	65.00	0.00	Ongoing
4030	Santa Rosa	Maintain Transportation System — Road Rehabilitation	410.00	0.00	Ongoing

Plan ID#			Cost	Known $	Project Year
4032	Sebastopol	Pavement Rehabilitation Program	5.00	0.20	2015–2020
4033	Sonoma	Local Streets and Roads Rehabilitation	10.00	0.00	2022
4508	Sonoma County	Pavement Maintenance Countywide	1,200.00		2016–2040
4057	Windsor	Pavement Maintenance Program – Road Rehabilitation	72.00	0.00	ongoing
15 Projects		**Category Sum (in millions)**	**$2,083.52**		
		Identified Funding		**$0.20**	
Programs					
4524	Countywide	Implement Sonoma County Climate Initiatives program	20.00		
4505	Sonoma County	Safe Routes to School	26.00	8.75	ongoing
2 Projects		**Category Sum (in millions)**	**$46.00**		
		Identified Funding		**$8.75**	
Tech Solutions					
4025	Santa Rosa	Energy Efficient Street Lighting	3.60	0.00	2020
4028	Santa Rosa	ITS Transit Corridors/Energy Efficiency	3.30	0.00	2025
2 Projects		**Category Sum (in millions)**	**$6.90**		
		Identified Funding		**$0.00**	
Project Count 190		**Total Identified Transportation Need* in millions**	**$4,283.01**		
		Identified Funding	**$364.03**		

*does not include transit

All projects in the Bicycle and Pedestrian Master Plan are included in the CTP. Only projects costing over $1 million are listed.

APPENDIX 7B
IDENTIFIED TRANSIT NEEDS

ID#			Cost	Funding	Project Year
Maintain Existing Operations					
4515	Petaluma Transit	Petaluma Transit — Ongoing Operations	90.00	90.00	2015–2040
4501	Santa Rosa CityBus	Transit and Paratransit O&M	372.40	372.40	2015–2040
4542	SMART	Ongoing Operations (as funded by Measure Q and reauthorized)	600.40	600.40	2016–2040
4500	Sonoma County Transit	SCT Existing Operations (Current)	485.00	485.00	2015–2040
4 Projects					
		Category Total in millions	**$1,547.80**		
		Identified Funding		**$1,547.80**	
Maintain Facilities					
4517	Petaluma Transit	Transit Maintenance, Operations & Admin Facility Rehab, Phase II & III	1.20	0.00	2017
4514	Santa Rosa CityBus	Facility Maintenance and Rehab	5.31	5.31	
4513	Sonoma County Transit	Bus yard, maintenance facility, bus stops, park and ride lots	10.00	10.00	2015 - 2040
		Category Total in millions	**$16.51**		
		Identified Funding		**$15.31**	
3 Projects					
Maintain Fleet					
4510	Petaluma Transit	Bus Replacements	17.62	14.10	various
4505	Santa Rosa CityBus	Fleet Replacement	67.44	67.44	
4504	Sonoma County Transit	SCT Existing Vehicle Replacements	75.00	75.00	2015 - 2040
3 Projects					
		Category Total in millions	**$160.06**		
		Identified Funding		**$156.54**	
Facilities — ITS — Infrastructure Expansion					
2026	Petaluma Transit	Petaluma Transit Signal Priority (TSP)	0.50	0.20	2015
4529	Petaluma Transit	Petaluma Intermodal Station Bus Access Improvements (SMART Stn)	0.08	0.00	2018
4538	Petaluma Transit	Petaluma MO&A Facility Shop CNG Retrofit	0.04	0.00	2018
4539	Petaluma Transit	Ongoing Bus Stop Improvements	0.75	0.00	
3007	Santa Rosa CityBus	2 Rapid Bus routes — planning, engineering , tech and infrastructure	10.40	0.00	
3041	Santa Rosa CityBus	Passenger Information and Fare Payment Technology and Marketing	2.36	0.00	
3042	Santa Rosa CityBus	Including Transit Mall, Transfer Center expansion	10.00	0.00	
3000	SMART	SMART Rail Extensions — Airport to Cloverdale	178.82	0.00	2018
4503	SMART	SMART Sonoma County Stations Enhancements	81.04	0.00	2018
4508	SMART	SMART Rail Operations Capacity Expansion	30.39	0.00	2018
4509	SMART	SMART Rail Freight Improvements	19.70	0.00	2018
4512	SMART	SMART Rail — Petaluma Infill Station	11.00	0.00	2018
3043	Sonoma County Transit	SCT Facility Expansion, bus yard and maintenance	10.00	0.00	2030
		Category Total in millions	**$355.08**		
		Identified Funding		**$0.20**	

ID#			Cost	Funding	Project Year
13 Projects					
Operations Expansion					
4516	Petaluma Transit	Service expansion including Rapid Bus, Rt Frequency and new Senior S	22.00	0.00	2022
4540	Santa Rosa CityBus	50% Service Expansion and Rapid Bus (operating)	134.61	0.00	
4518	SMART	Local Transit Service Enhancements	9.00	0.00	2022
3026	Sonoma County Transit	Systemwide service expansion on core intercity and local routes	73.00	0.35	2030
4526	Sonoma County Transit	SCT Feeder Service to SMART Rail	4.00	3.00	2016
5 Projects					
		Category Total in millions	**$242.61**		
		Identified Funding		**$3.35**	
Vehicle Expansion					
4523	Petaluma Transit	Fleet Expansion	10.00	0.00	2022
4541	Santa Rosa	Fleet Expansion	16.93	0.00	
4506	SMART CityBus	SMART Rail Operations Capacity Expansion — Rail Vehicles	53.00	0.00	2018
4511	Sonoma County Transit	SCT Vehicle Expansion	15.00	0.00	2030
4 Projects					
		Category Total in millions	**$94.93**		
		Identified Funding		**$0.00**	
Projects Count 32					
		Total Identified Transit Need in millions	**$2,416.99**		
		Identified Funding		**$1,723.20**	