

The County of Sonoma
Long-Term Road Plan
Prepared by
The Department of
Transportation & Public Works
October 28, 2014

Table of Contents

Contents

- Table of Contents2
- Executive Summary4
- Chapter 1: Roads Funding - A Legacy Problem.....7
 - Federal Funding.....7
 - State Funding.....9
 - Local Funding..... 11
 - Measure M 12
 - General Fund 12
 - General Fund Franchise Fee 13
 - Parcel Taxes 13
 - Annual Maintenance and Capital Budget..... 14
- Chapter 2: Strategic Planning for Road Maintenance 16
 - Acting on Strategic Planning..... 18
 - Sonoma County Transit 19
- Chapter 3: Current Road Network Conditions 21
 - Road Network..... 21
 - Federally Eligible Network..... 21
 - Significant Rural Road Network..... 21
 - Local Connector and Community Roads 22
 - Remaining Local Roads 22
 - Figure 1: Federally Eligible Road Network..... 23
 - Figure 2: Significant Rural Road Network..... 24
 - Figure 3: Local Road Network: Community & Connectors Local Roads – Remaining Local Roads 25
 - Road Network Evaluation 26
 - Pavement Management Program Update 28
 - MTC’s Pavement Management Program StreetSaver® 29
 - 2013 Pavement Management Program Update Results 30
- Chapter 4: Long-Term Road Plan..... 34

Sales Tax Measure	36
Enhanced Transit Funding Plan	36
Maintenance of Effort	37
Worst First Plan	37
Road Evaluation Framework	38
Table 1 - Road Evaluation Framework.....	41
Chapter 5: Conclusion	42
Appendix A: County Maintained Road System Maps.....	43
Figure A-1: Summary Map.....	44
Figure A-2: Bodega Bay Area	45
Figure A-3: Healdsburg & Geyserville Area	46
Figure A-4: Kenwood & Glen Ellen Area.....	47
Figure A-5: Petaluma & Penngrove Area.....	48
Figure A-6: Rohnert Park & Cotati Area	49
Figure A-7: Russian River Area.....	50
Figure A-8: Santa Rosa Area	51
Figure A-9: Sonoma Valley Area	52
Appendix B: Best Practices in Pavement Management	53
Preventive Preservation	53
Remaining Service Life of County Roads	55
Appendix C: Maintenance Costs Beyond The Pavement	56
Vehicle Operating Costs (VOC)	56
Congestion, the Economy and Job Creation.....	57
Bridges	58

Executive Summary

The County road network is a vital asset to the community, providing access to homes and business, connectivity between communities, opportunities and connections for recreating and a critical component of public safety. With a total of 1,370 paved centerline miles, Sonoma County's maintained road network is the largest among the nine Bay Area counties and one of the largest in the state and maintaining this network to support a thriving economy and healthy environment is a high priority for Sonoma County.

The current state of the County's road network has developed over several decades, and become one of the County's most significant legacy challenges. Years of inadequate State and local funding have resulted in a deteriorating road network. Several factors have conspired to make local road maintenance and improvements challenging including unfavorable formulas and declining State and Federal gas-tax revenues. In California, the distribution of State Excise Tax on Fuels favors population and registered vehicles over road miles. In that regard, the eight most populated Counties receive approximately 47% of the funds; for example, Orange County receives \$45 million annually with only 309 miles of maintained roadways in comparison to Sonoma County that receives \$12 million annually for 1,370 miles of paved roads.

In the face of this legacy challenge, there became a need to establish a strategic and long-term plan for how the County should address its roads. The Board of Supervisors established a Long-Term Roads Ad Hoc Committee comprised of Supervisors McGuire and Rabbitt to develop a Long-Term Roads Plan. Over the past three years, the Board of Supervisors has invested more in repairing the County's road network than in the prior three decades. Between fiscal years 12/13 and 13/14, the Board exclaimed its

commitment to improving the County's infrastructure by investing approximately \$80 million toward roads, bridges, drainage and safety features.

Even with this level of investment, more must be done to cease the continued degradation of our infrastructure. To accomplish the goal of maintaining the County's roadway network in "Good" to "Very Good" condition, the County must invest \$954 million over the next 20 years, or \$47.7 million per year. Without a minimal annual investment of \$20 million per year, the entire network will continue to decline, creating long-term economic costs. Poor pavement condition cost Bay Area drivers \$931 per year in the form of additional vehicle operating costs, including accelerated vehicle depreciation, additional repair costs and increased fuel consumption and tire wear.

The County's Long-Term Road Plan lays out a vision for Sonoma County roads with a primary goal of improving approximately 700 miles of the County road network beyond the 150 miles already improved over past three fiscal years, resulting in over 50 percent of the road network achieving "Good" PCI ratings or better, dramatically improving the roads most frequented and important to economic development, agriculture, recreation and tourism.

A central component of the Long-Term Road Plan is the Road Evaluation Framework that will provide staff with a guide for selecting candidate roads for the annual pavement preservation program to ensure an equal distribution of repair work throughout the County, while addressing the most critical needs and investing in preservation to ensure the most efficient use of funds. The Road Evaluation Framework includes the following general roadway information by classification: average daily traffic, pavement condition, bike and transit relevance, the presence of public safety facilities and Supervisorial District.

To finance the Long-Term Road Plan, the Board of Supervisors has committed to continuing its current \$12 million annual investment; however, the Board recognizes that at least \$20 million per year is required to begin seeing substantial improvement in road conditions. In that regard, the Board has also committed to seeking approval from the voters for a ¼ cent sales tax that would generate approximately \$20 million per year, with the County's share being approximately \$8.7 million. In addition, the Board has expressed its commitment to allocate an additional million dollars annually from the County's General fund for a "Worst First" approach to address significantly deteriorated segments of road regardless of other criteria.

As a component of the proposed ¼ cent sales tax, the Board of Supervisors has also committed to support the entire transportation network, by directing 10% of County's share of new sales tax revenues to enhance transit service through a combination of reduced or free transit passes for students and veterans; increasing service or frequencies to key destinations such as Santa Rosa Junior College, Sonoma State University, future SMART stations and the Santa Rosa Veterans Affairs Medical Center on Airport Boulevard; and increasing paratransit.

This significant investment in the County's road network will have benefits beyond the pavement by helping boost the local economy through development and retention of highly qualified employees; enabling residents and visitors to travel to work and school, visit family and friends; and enjoy world class recreation attractions; and providing local businesses with a reliable access to customers, materials, suppliers and employees.

Chapter 1: Roads Funding - A Legacy Problem

Both California and Sonoma County's extensive system of roads, highways and bridges provide the residents, visitors and businesses with a high level of mobility, forming the backbone that support the local and regional economy. Our surface transportation system enables residents and visitors to travel to work and school, visit family and friends, and enjoy world class recreation attractions while providing local businesses with reliable access to customers, materials, suppliers and employees. As the County, Region and State look to retain its businesses, maintain its level of economic competitiveness and achieve further economic growth, it will be critical to maintain and modernize roads, highways and bridges by improving the physical condition of the transportation network. With over 500,000 registered vehicles in Sonoma County and countless visitors using the county road network to visit the County's parks, beaches, wineries, businesses, restaurants and transportation hubs, it is critical that the County develop, approve and fund a Long-Term Road Plan that assures a roadway infrastructure commensurate with the County's outstanding resources.

Federal Funding

Road funding has traditionally come from legacy programs based on fuel excise taxes. The federal excise tax on gasoline and diesel is 18.4 and 24.4 cents per gallon of fuel sold, respectively.¹ Federal funds are deposited into the State Highway Account to be distributed to projects as part of the Federal and State Transportation Improvement Programs (FTIP & STIP) relating to four general categories: federal highway projects, federal bridge projects, federal safety projects and congestion management and air quality. The County currently receives approximately \$1.8 million per year to maintain the federally eligible road

¹ "California Transportation By The Numbers: Meeting the State's Need for Safe and Efficient Mobility," TRIP, September 2014.

network in addition to bridge funds through the Highway Bridge Retrofit and Replacement (HBRR) program.

Moving Ahead for Progress in the 21st Century Act, or MAP-21, was signed into law in July 2012 and augmented by Congress with the Highway and Transportation Funding Act of 2014, an eight month extension of the federal surface transportation program, on which state and local agencies rely on for road, highway, bridge and transit funding. This legislation extends the current authorization for the highway and public transportation programs and transfers nearly \$11 billion into the Highway Trust Fund (HTF) to preserve existing levels of highway and public transportation investment through the end of May 2015.

The level of funding and the provisions of the federal surface transportation program have a significant impact on highway and bridge conditions, roadway safety, transit service, quality-of-life and economic development opportunities in both California and Sonoma County. Unfortunately, Congress has been unable to come to any agreement on a long-term federal strategy to maintain consistent and adequate resources in the Highway Trust Fund.

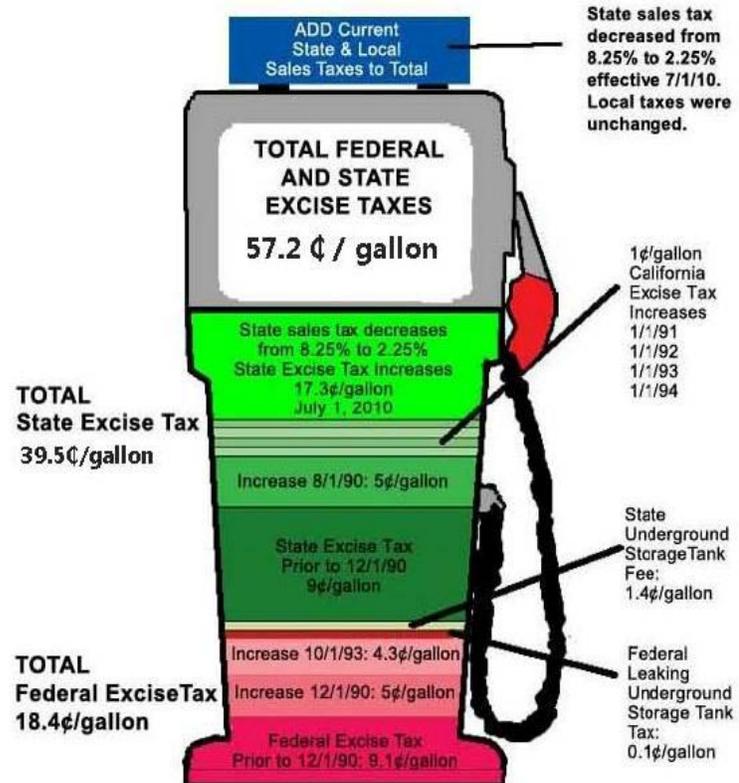
From 2008 to 2012, for every dollar that California paid in federal motor fuel fees, the state received \$1.32 back for road improvements.² With that said, only 360 miles (26%) of the County's 1,370 mile maintained network is eligible to use these federal funds.

² "California Transportation By The Numbers: Meeting the State's Need for Safe and Efficient Mobility," TRIP, September 2014.

State Funding

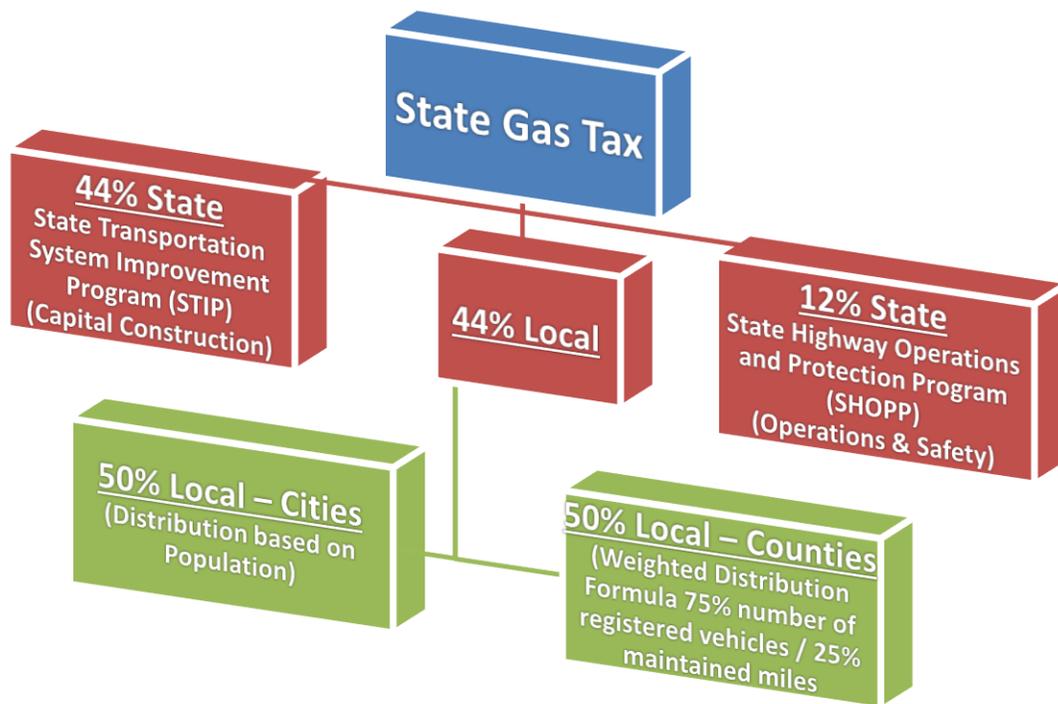
The State of California has utilized a combination of funding sources to help local agencies finance road repairs, such as taxes, fees and bonds. Despite State legislative changes in 2010 that resulted in what is known as the “Gas Tax Swap”, the State’s excise tax on fuels of 39.5 cents per gallon has gone unchanged for more than 20 years, similar to the federal government’s excise tax on fuels, reducing purchasing power by 28%, due to construction cost of inflation and decreased fuel consumption.³

California Gasoline Taxes

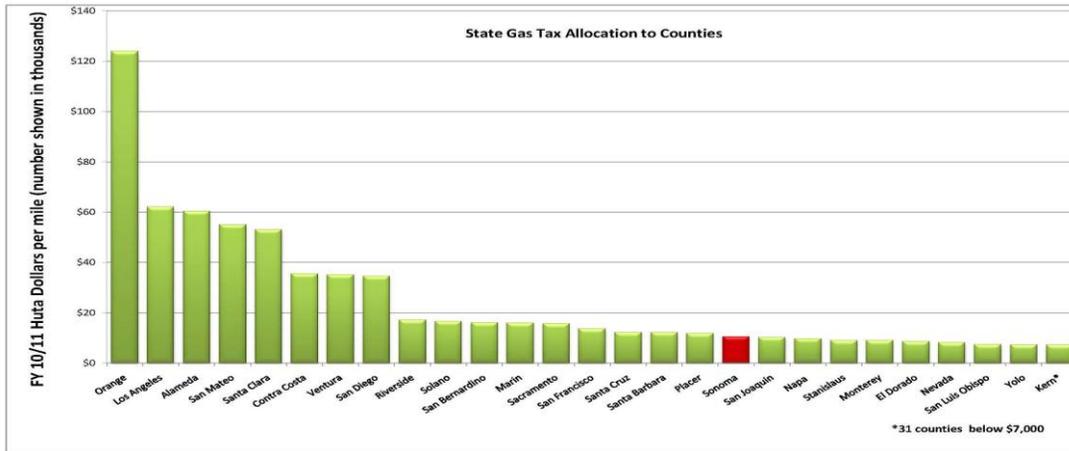


Approximately 44% stays in the State Highway Account to supplement federal funds through the STIP, 12% is dedicated to the State Highway Operations and Protection Program (SHOPP) and the remaining 44% is provided to local jurisdictions based on formula. Only 22% of California’s fuel taxes are returned to Counties, and that is further allocated via a 75%/25% formula based on the number of registered vehicles and maintained road miles, respectively.

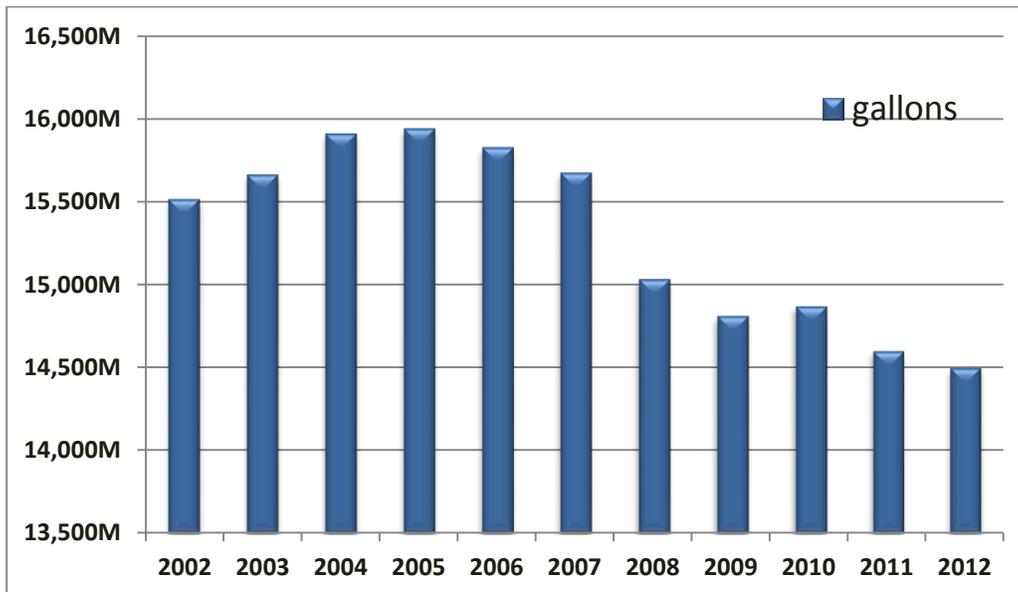
³ APWA Reporter



The County receives approximately \$12.7 million per year in state fuel tax funds, which is among the lowest in the State considering the number of road miles within the maintained system. As clearly shown in the figure below, the eight most populace counties receive approximately 47% of the total State fuel tax despite having only 12% of the total statewide unincorporated roads. As an example, Orange County receives \$45 million per year and has only 309 miles of road.



Additionally, due to heavy swings in the price of gasoline and shifting trends toward alternative fuel vehicles, it is becoming more difficult to predict and budget into the future. The figure below demonstrates the shift downward in millions of gallons sold between 2002 and 2012 exacerbating the uncertain future of this critical road funding.



Local Funding

Sonoma County roads benefit from a number of locally derived funds. These include funds from Measure M, contributions from the General Fund and General Fund Franchise Fees. Periodically the Department of Transportation and Public Works utilized funds developer mitigation fees or donations

or contributions from other cities and agencies, but these are not consistent sources of funding and are not described further in this Plan.

Measure M

In 2004, Sonoma County voters approved Regional Measure M, a ¼ cent sales tax primarily focused on capacity improvements on Highway 101, but inclusive of other transportation projects including 20% distributed to local agencies for local road rehabilitation projects. The measure is very specific on how the revenue is divided with funding provided to seven specific program categories:

- 20% - local street rehabilitation (LSR)
- 20% - specifically defined local street projects (LSP) throughout the County
- 40% - Highway 101 widening projects throughout the County
- 10% - local bus transit (LBT) service
- 5% - Sonoma Marin Area Rail Transit (SMART) project development
- 4% - bicycle and pedestrian projects
- 1% - administration

Measure M LSR funds are distributed to the County and cities within the County via a 50% road mile and 50% population formula. This results in an annual allocation to Sonoma County of approximately \$1.7 million.

General Fund

The Board of Supervisors has historically dedicated a portion of the annual road maintenance budget from the General Fund. Over the past few years, this contribution has been \$5.3 million; however, this was down from \$7.8 million in 2008, which is less than 30% of the total maintenance operations budget.

This is still a fraction of the historical funding from two decades ago, where the Board contributed approximately 50% of the maintenance budget from the General Fund. In FY 14/15, the Board permanently reinstated one of the critical crews (culvert maintenance replacement) lost during the economic downturn in 2008, increasing the annual General Fund contribution associated with operations to \$6.3 million. In addition, the Board demonstrated their strong commitment to maintaining the roadway infrastructure by allocating \$8 million of General Fund during each of the past three years for road repair and reconstruction.

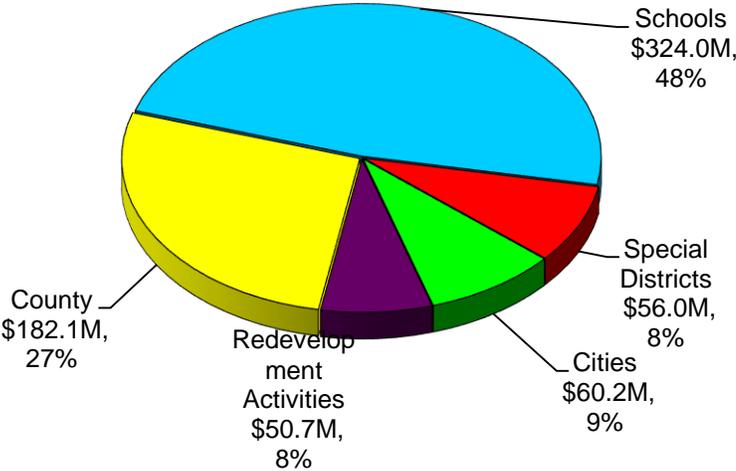
General Fund Franchise Fee

The County also receives a portion of the General Fund Franchise Fee from the County’s waste hauler to compensate for the accelerated degradation of the roads resulting from the heavy vehicle use. In 2012, the Board of Supervisors agreed to focus these funds (\$2.2 million annually) to maintain the federally eligible road network.

Parcel Taxes

It is a common misconception that parcel taxes support local infrastructure, such as roads and bridges. In fact, the majority, roughly half, of property tax revenues go to schools with approximately 27% coming to the County.

WHERE DOES YOUR PARCEL TAX DOLLAR GO?
Distribution of the 2013-14 Parcel Tax Dollar
Total Prop 13 Tax Levy: \$673.0 Million



Annual Maintenance and Capital Budget

The Department of Transportation and Public Works develops an annual budget for Corrective Maintenance Operations and its Annual Pavement Preservation program based on the amount of funds distributed by Federal, State and local sources.

FY 13-14 Pavement Preservation Funds

<u>Corrective Maintenance Operations</u>		<u>Annual Pavement Preservation</u>	
State Gas Tax - 39.5¢/gallon	\$12.7M	Federal Gas Tax - 18.4¢/gallon (latest 3-year cycle)	\$1.65M
Measure M Maintenance	\$1.7M	General Fund Franchise Fees	\$2.2M
Annual General Fund	<u>\$6.3M</u>	One-Time General Funds (FY 12/13-14/15)	<u>\$8.0M</u>
<u>Total</u>	<u>\$20.7M</u>	<u>Total</u>	<u>\$11.85M</u>

Chapter 2: Strategic Planning for Road Maintenance

Under the County Strategic Goal of Economic and Environmental Stewardship, the Board has consistently prioritized investing in transportation infrastructure, to enhance safety for vehicles, pedestrians, and cyclists, fix potholes, repair local roads and streets and improve the quality of life for County residents. A well maintained road network is vital to economic development and activity, especially in the areas of agriculture, recreation and tourism. The 2008 Roads Report started with the following problem description:

“The Sonoma County Board of Supervisors approved the first-ever Strategic Plan for the County on December 11, 2007. Goal 5 of the Plan aims to proactively address the failing transportation infrastructure so that it can be maintained and operated to provide safe reliable and accessible movement of people and goods throughout the County. Objectives include developing resources to provide for the ongoing maintenance and improvement of county roads and developing a multi-year prioritized countywide maintenance plan.

The Board approved the Strategic Plan Implementation of projects on July 8, 2008. Included within the Implementation Plan was Project 47 – Road Funding. The following report is a funding analysis of Sonoma County roads and represents one of the identified project deliverables. There are several key points identified within the report and they are summarized as follows:

- 1. The Sonoma County Road System represents one of our largest public assets with a replacement value of \$1.7 billion.*

2. *Today's transportation revenues are woefully inadequate to address the road maintenance needs of Sonoma County.*
3. *Road maintenance activities are interdependent, with pavement life extension reliant upon a coordinated program of implementation.*
4. *Road maintenance service levels, already identified as deficient, are projected to worsen, with annual shortfalls ranging from \$3.5 million to \$4.5 million over the next five years.*
5. *Failure to address the projected shortfall in road maintenance will result in a need for a significant portion, if not the entire County road network, to be completely reconstructed within 10 years.*

Most people acknowledge that road networks are a vital centerpiece to a vibrant economy. Roads provide connectivity of countless origins and destinations, thus providing flexible choices for many users. Further, most consider roads to be permanent, important and free. Roads are far from permanent and they are not free for those tasked with building and maintaining them. They are; however, important and new strategies need to be explored in order to extend their life and quality. By helping to create and sustain jobs and allowing for the safe transport and delivery of goods and services, every dollar spent preserving our County road system is a dollar invested in our local economy."

Unfortunately, this continues to be true today as the general state of County roads has continued to decline despite recent efforts by the Board of Supervisors to curtail the degradation of the roadway

infrastructure. To address this strategic priority, the Board Chair created the Long-Term Roads Ad Hoc Committee in August 2013, comprised of Supervisors McGuire and Rabbitt, with a mission to improve the quality and safety of the County road system by developing a Long-Term Road Plan including funding strategies for pavement condition improvements.

Since 2008, the Board received reports outlining the challenges of properly funding and maintaining the approximately 1,370 miles of paved and 13 miles of unpaved roads in the County system.

Classification	Center Line Miles
Minor Arterials	32
Other Principal Arterials	2
Major Collector	326
Minor Collector	122
Local	888
Total Paved	1370
Unpaved	13
Total Network Mileage	1383

Acting on Strategic Planning

Years of inadequate State and local funding have created a deteriorating road network. Unfavorable formulas and declining State and Federal gas-tax revenues, which have been the primary revenue stream for road repair and maintenance, coupled with significant local budget reductions due to the “Great Recession” (overall County General Fund revenue from property tax declined approximately \$40 million between FY 08/09 and FY 12/13), along with increased costs of raw materials necessary for pavement preservation, have exacerbated the difficulty in maintaining such an extensive road network. Even during several years of significant budget reductions where the County budget was reduced cumulatively by \$103.6 million and 529 full time equivalent positions, the Board has committed to making every effort

to address the shortfall with available General Fund dollars, and to use those dollars intelligently to leverage outside funding and maintain a “good” Pavement Condition Index (PCI) rating on the Primary Roads (a subset of the Federal Aid roadway network) and roadways vital to the County’s agricultural and tourism economy within the County network.

Reflecting the County’s continued commitment to maintaining its roadway infrastructure, the Board of Supervisors dedicated the highest level of funding for County roads infrastructure in recent history by investing \$8 million of General Funds during each of the last three fiscal years, FY 12/13, FY 13/14 and FY 14/15. These investments were part of a significant commitment from the Board totaling approximately \$80 million budgeted between FY 12/13 and FY 14/15 toward improving roads, bridges, drainage and safety features.

This Long-Term Road Plan outlines a recommended strategy to address pavement conditions on all roads in the county utilizing a combination of long-range, community-based funding solutions, and work with State and Federal legislators to not only sustain the County’s primary roads, but to begin to systematically fixing potholes and improving maintenance on Local Roads, which comprise almost 65% of the County system but have no identified funding source for pavement preservation activities.

Sonoma County Transit

The Long-Term Road Plan is not intended or designed to specifically address congestion, greenhouse gas emission, vehicle miles traveled or transit issues; however, each of these is a critical piece in the health of the community that directly relates to Sonoma County’s General Plan policies in addition to larger regional planning efforts. While there is not a direct relationship to pavement quality, the reduction of

single occupant vehicles leading to the increase of public transportation has direct benefits to the public and County that can be enhanced through proper road maintenance.

The use of public transportation and associated reduction of up to 300,000 single occupant vehicle trips per day, saves the United States the equivalent of 4.2 billion gallons of gasoline annually, and more than 11 million gallons per day. Households using public transportation save an average of more than \$8,000 per year, which only increases as the cost of gasoline increases, and relates to an average vehicle miles traveled savings of 4,400 miles annually compared to communities that do not have access to public transportation.⁴

While improved pavement quality significantly lowers the vehicle operating costs (VOC) for personal vehicles in the Bay Area, saving drivers up to \$931 annually, it also results in significant benefits for transit by:

- decreasing travel times, increasing reliability and improving overall operations,
- increasing the useful life of transit vehicles, reducing breakdowns and replacement needs, and
- increasing ridership resulting in decreasing negative environmental impacts

With the anticipation that statewide vehicle miles traveled (VMT) is expected to grow 20 percent by 2030, it seems appropriate for this Long-Term Road Plan to address, supports and incorporates actions that provide for enhanced transit operations.

⁴ “Public Transportation Saves Energy and Helps Our Environment”, American Public Transportation Association

Chapter 3: Current Road Network Conditions

Road Network

The Federal Highway Administration (FHWA) identifies functional classification by grouping streets and highways into classes according to the service they provide: Interstate, Other Freeways and Expressways, Other Principal Arterials, Minor Arterials, Major Collectors, Minor Collectors and Local Roads. Because the total County road network is so extensive, the Plan modifies these groups the roadway network into categories to help clarify, identify and understand their use, guide investments and better track progress in PCI improvement over time. The categories are briefly defined below with general figures providing a graphical presentation of the network. Detailed maps showing all county maintained roads can be found in Appendix A.

Federally Eligible Network

The Federally Eligible Network (Figure 1) consists of all of 360 miles of roads in the County that are classified as either Arterials or Major Collectors which tend to carry the highest average daily traffic volumes. These roads account for approximately 25% of total county maintained roadway network and are on average in good to very good condition, with an average pavement condition index (PCI) of 66. Most importantly these roads are eligible for federal road funding, allowing the County to maximize its ability to leverage local dollars.

Significant Rural Road Network

The Significant Rural Road Network (Figure 2) consists of all roads classified as Minor Collector and a strategic selection of Local roads that are significant to the economic vitality of Sonoma County since they tie rural communities together or provide access to agricultural, tourism and

recreation opportunities. This category includes approximately 220 miles of roads (16% of total network) that are in generally poor condition with an average PCI of 44.

Local Connector and Community Roads

Local Connector and Community Roads (Figure 3) consist of Local roads in areas around population centers, townships and neighborhoods combined with more rural roads that provide interconnectivity between communities that may not have the level of significance of those roads in the Significant Rural Road Network. There are a total of 527 miles of Local roads in this category; however, subdividing them into Connector and Community roads results in the following:

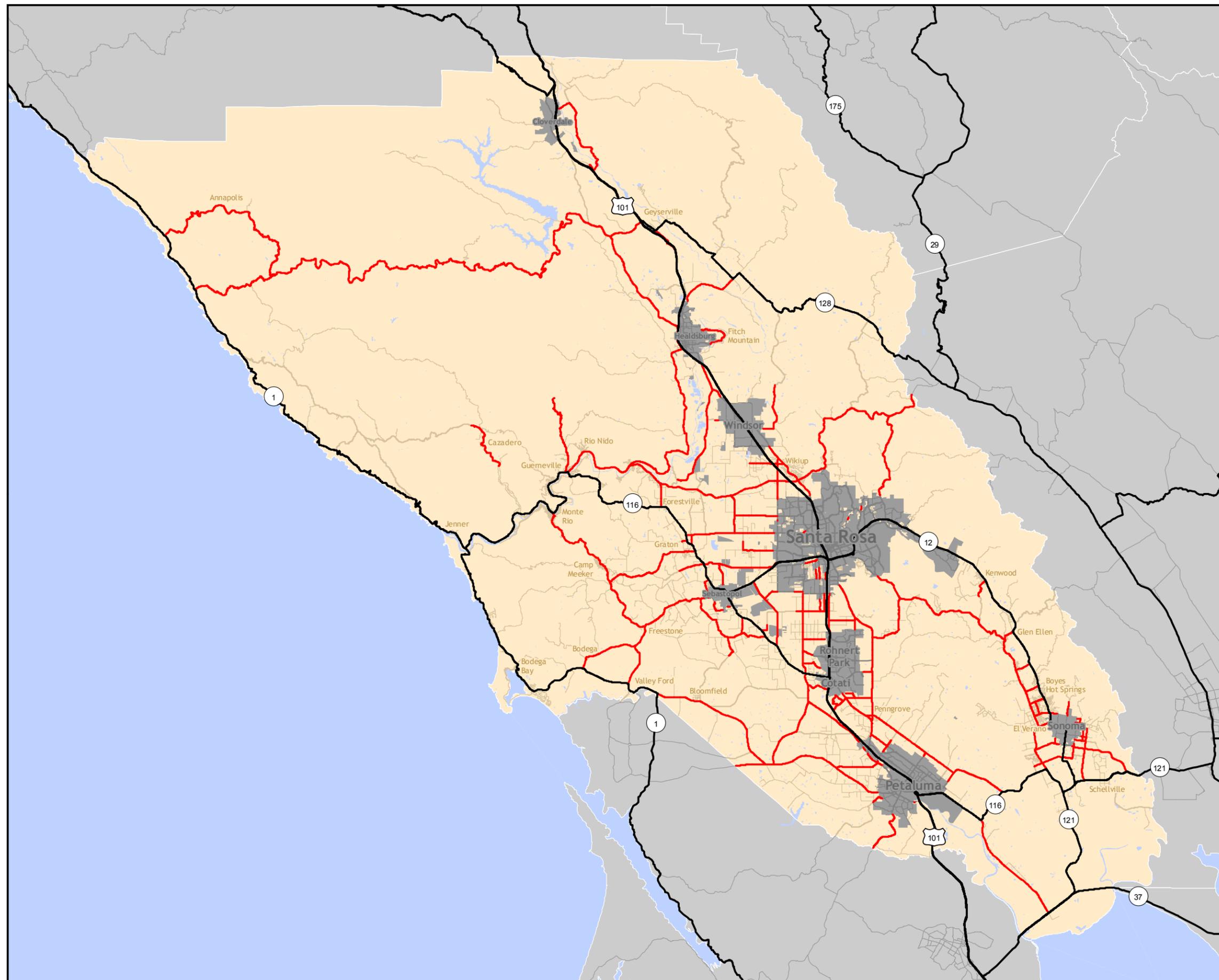
Connector Roads – Examples include Hessel and Bloomfield roads, Canyon Road, Joy Road, Lawndale Road and San Antonio Road. There are approximately 331 or 24% of the total network in this subcategory, most being in poor condition.

Community Roads - Examples include such areas as: Graton, Penngrove, The Springs, Geyserville, Larkfield, Southwest Santa Rosa, etc. There are approximately 196 miles or 14% of total network in this subcategory and a majority are in poor condition.

Remaining Local Roads

Remaining Local Roads (Figure 3) refers to the remainder of the Local road classification that is generally in more rural areas, may often be dead end roads and tend to serve relatively few residents, but incorporates approximately 275 miles or 20% of the total network. These roads tend to have some of the worst pavement and considered to be in poor to very poor condition.

Figure 1:
**Federally Eligible
Roads**



State Highways

County Roads
Federally Eligible Network

City Limit



0 5 10 Miles

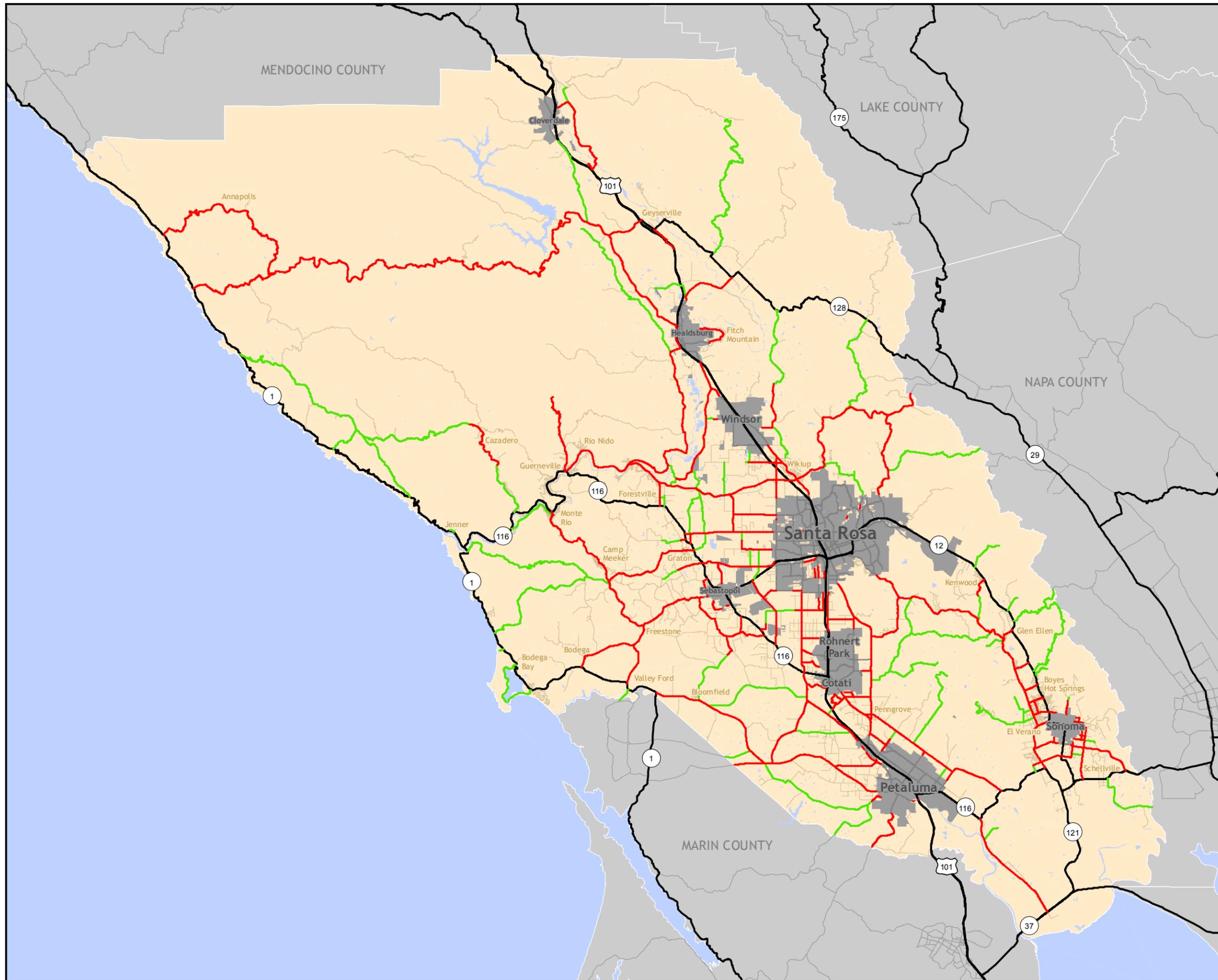


Figure 2:
**Significant Rural
 Road Network**

State Highways

County Roads
 Federally Eligible Network

County Roads
 Significant Rural Road Network

City Limit



0 5 10 Miles

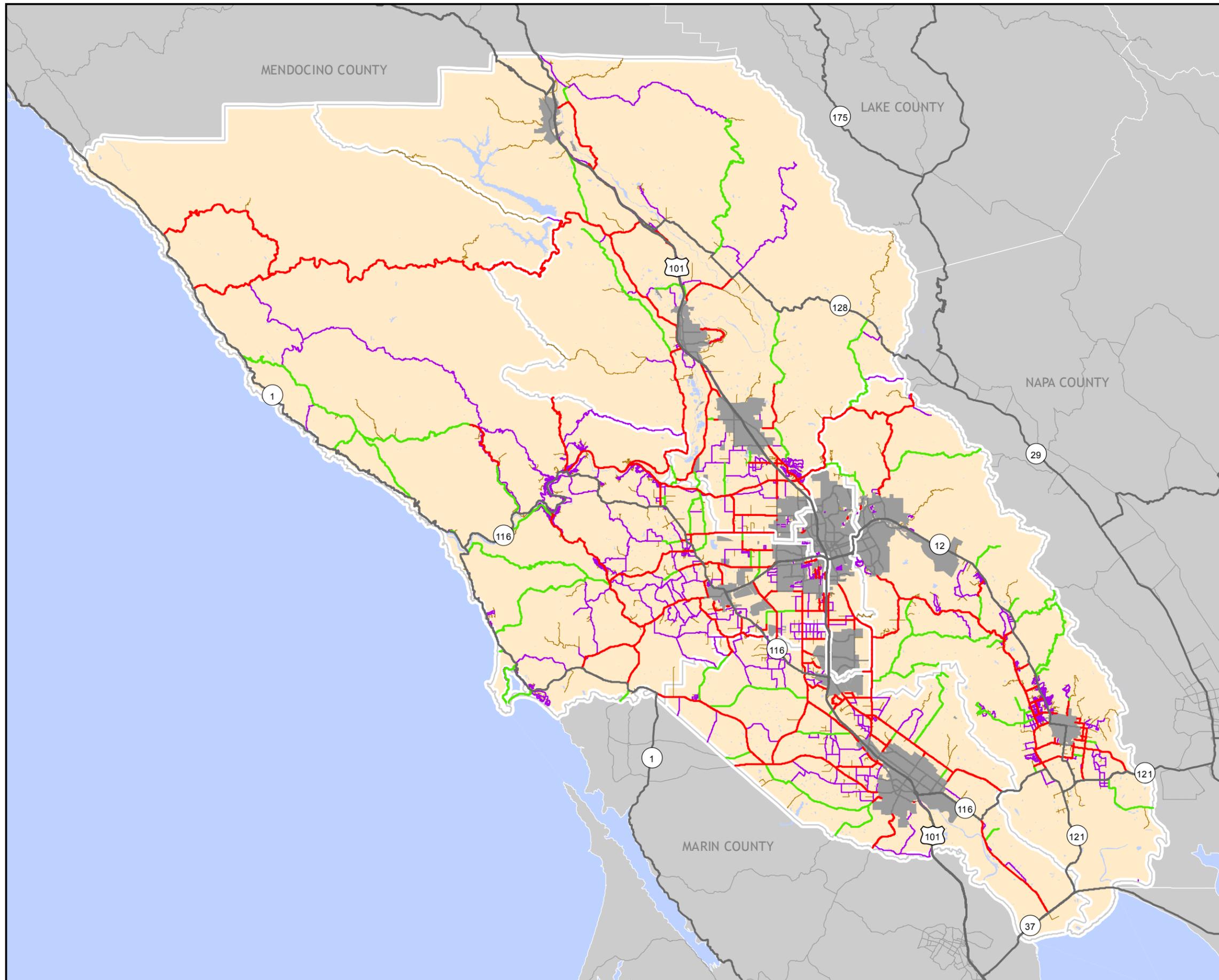


Figure 3:

Local Road Network

Community Local Roads,
Connecting Local Roads
& Remaining

- State Highways
—
- County Roads
Federally Eligible Network
—
- County Roads
Significant Rural Road Network
—
- County Roads
Local Connector & Community Roads
—
- County Roads
Remaining Local Roads
—

Supervisorial District
Boundary



City Limit

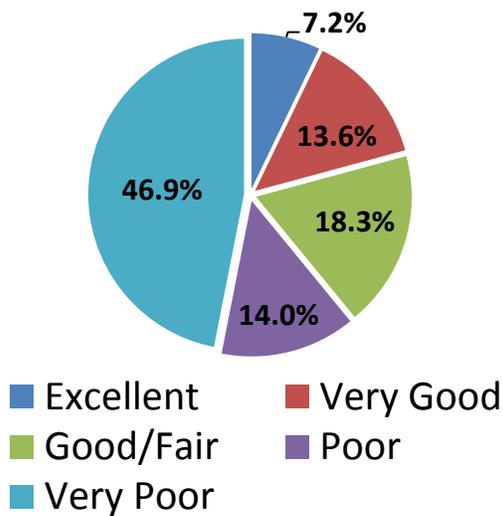


0 5 10 Miles

Road Network Evaluation

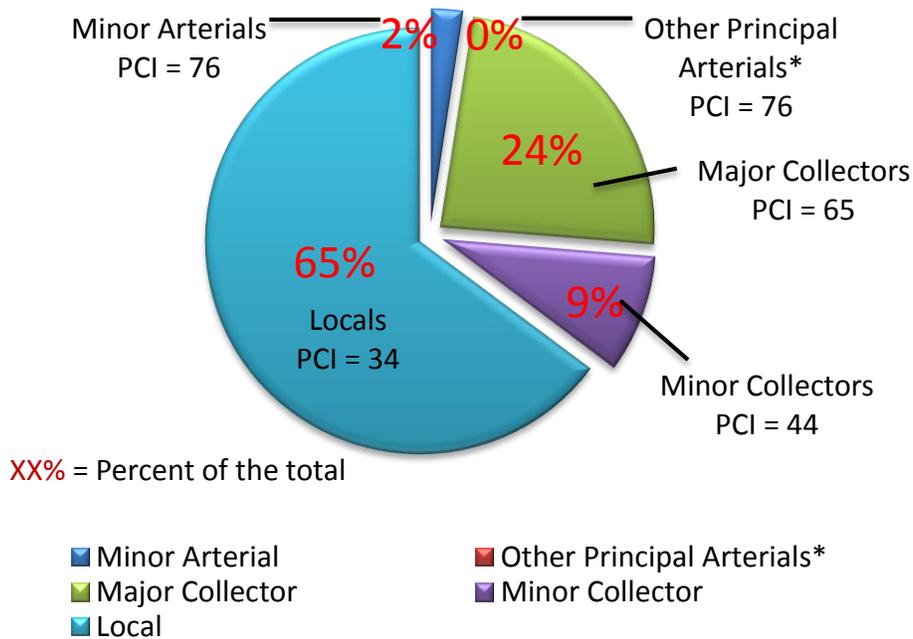
To establish a commonly understood baseline of the current County road network, the County hired Harris and Associates (Harris) to field survey and verify the condition of all roads in the County. These surveys have traditionally occurred on a four year cycle, with all arterials and major collectors surveyed every other year and minor collectors and local roads surveyed on a quadrant basis. To ensure that the effort for developing the baseline information for the Long-Term Road Plan was comprehensive and current, Harris was contracted to survey the entire network over an 18 month period. The figures and tables below summarize the results of that work:

Network Pavement Condition



Condition	PCI Range	Total
Excellent	90-100	7.2%
Very Good	70-89	13.6%
Good/Fair	50-69	18.3%
Poor	25-49	14.0%
Very Poor	0-24	46.9%

Funding Eligibility	ROAD TYPE (Functional Classification)	Road Miles	% of Total Road Miles	Average Daily Traffic	Pavement Condition	Weighted Average
Federally Eligible	Arterial	32	2%	6601	76 – Very Good	66
	Other Principal Arterials	2	<1%	6898	62 – Good	
	Major Collectors	326	24%	3705	65 – Good	
Non-Federally Eligible	Minor Collector	122	9%	821	44 - Poor	35
	Local	888	65%	779	34 - Poor	
Total		1370	100%		46 - Poor	



* Other Principal Arterials are less than 1% of the total road network and do not appear on chart. PCI = 62

Sonoma County’s recent investments in roadway maintenance, particularly on the Federally Eligible Road Network, have resulted in less than 8 percent of the County’s major roads being in poor condition

with 25 percent in mediocre, 18 percent in fair and 49 percent in good condition. Average pavement conditions for the Bay Area are as follows:⁵

Urban Area	Poor	Mediocre	Fair	Good
San Francisco – Oakland	49%	30%	7%	15%
San Jose	49%	18%	12%	21%
Sonoma County – Federally Eligible*	8%	25%	18%	49%

*Note: For Sonoma County Good = PCI 70-100; Fair =PCI 50-69; Mediocre = PCI 25-49; Poor = PCI 0-24

Comparatively, thirty-four percent of California’s major roads and highways have pavements in poor condition, while an additional 41 percent of the state’s major urban roads are rated in mediocre or fair condition and the remaining 25 percent are rated in good condition.⁶ Roads in poor condition may show signs of deterioration, including rutting, cracks and potholes. In some cases, poor roads can be resurfaced, but often are too deteriorated and must be reconstructed. Driving on rough roads costs Bay Area motorists approximately \$931 annually in extra vehicle operating costs (VOC) including accelerated vehicle depreciation, additional repair costs and increased fuel consumption and tire wear. More information about the costs of poorly maintained roads to motorists is contained in Appendix C.

Pavement Management Program Update

In order to be eligible for regional discretionary funds, MTC requires a jurisdiction to have their Pavement Management Program (PMP) certified by MTC. Most jurisdictions in the Bay Area, including Sonoma County, are using StreetSaver® as the PMP. Certification must be renewed every 2 years. In coordination

⁵ “California Transportation By The Numbers: Meeting the State’s Need for Safe and Efficient Mobility,” TRIP, September 2014.

⁶ “California Transportation By The Numbers: Meeting the State’s Need for Safe and Efficient Mobility,” TRIP, September 2014.

with this bi-annual certification event, staff retained Harris Associates (Harris) using StreetSaver® to analyze over a dozen scenarios, with varying levels of financial commitment, and target pavement condition or combination of those two criteria. The County's Pavement Management Program Update summarized in this Plan is from the 2013 reporting cycle. The complete consultant report is available at the Department of Transportation and Public Works or at the Department's website at sonomacounty.ca.gov/Transportation-and-Public-Works/. Harris is currently surveying roads associated with the 2015 reporting cycle, which will be available in May 2015.

MTC's Pavement Management Program StreetSaver®

StreetSaver® is the Metropolitan Transportation Commission's (MTC) pavement management program, which most local agencies in the Bay Area use to help identify both maintenance needs and a cost effective pavement capital program to address those needs. The program inputs consist of the length, width, surface type, functional classification and current pavement condition for each road. The program then applies a complex algorithmic model to predict how each road will deteriorate over time, when and what type of pavement maintenance or repair treatment is appropriate and the cost of the treatment. The software focuses on providing cost effective recommendations that enhance the overall system Pavement Condition Index (PCI). It recommends that 20% of the budget be put to preventative maintenance treatments such as slurry or crack seals for a 10 year program and 38% for a 20 year program to maintain the good roads in "good" condition. The remaining budget should be programmed for more expensive asphalt overlays and reconstruction methodologies.

The inputs and decision tree in Streetsaver® were reviewed and updated to reflect proper roadway classifications, realistic and regionally appropriate pavement treatments, current unit prices based on recent contracts in our area and more reasonable and achievable treatment frequencies. Following these

modifications, staff now has more confidence that the results presented in this new report show a more accurate picture of the funding that will be required to upgrade the County road system and preserve this very important public asset.

The output from the model utilizes these inputs to predict the total value of the maintenance and repair backlog at a given intervals of time, such as today, in 10 years, or in 20 years. StreetSaver® can also be used to run various “budget scenarios” for pavement condition. For example, it can be queried to calculate how much investment is needed on an annual basis over a specified period of time to have a network pavement condition that is good, or very good, as well as “budget constrained” scenarios to show what improvements can be made with limited resources.

2013 Pavement Management Program Update Results

The results of the pavement management program survey concluded that the County’s overall network has a pavement condition index (PCI) of 46 or “Poor,” which is actually a 3 point increase from the prior survey completed in 2011. The positive news is that the Federally Eligible network is in “Good” condition with a PCI of 66 and the most regionally significant road network or Primary Roads, which are a subset of the Federally Eligible network, are considered in “Very Good” condition with an average PCI of 76. Since 2012, the Primary Road network has been the focal point for maintenance funding from the Board of Supervisors as an effort to keep those roads with the highest traffic volumes in “Very Good” condition. Unfortunately, the minor collectors and local roads are in generally poor to very poor shape with an average PCI of 35.

Based on this analysis, the investment required to bring the condition of the County Road network to the goal of “Very Good” by 2035 as described in Policy 1A of the 2009 Comprehensive Transportation

Plan for Sonoma County⁷ is approximately \$954 million, or \$47.7 million per year.⁸ This is shown in the following table as the “Budget Needs Average II” and will continue to grow without significant investment.

The Department of Transportation and Public Works has traditionally reported the 10-year horizon numbers to the Board of Supervisors and Metropolitan Transportation Commission, described as the “Budget Needs Average”. This 2013 report notes that the system wide need is \$620 million with a resulting deferred maintenance of \$268 million at the end of the 10 years, compared to the 2011 report that noted a system wide need of over \$1 billion. Updated values based on the current pavement management program survey will be published in May 2015.

The Budget Needs Average analysis projects the total budget needed to bring the County’s pavement system to a condition where most pavement segments require only minor preventative maintenance. It is defined as the cumulative budget need identified for a specified target pavement condition divided by the number of years in the analysis. The software analyzes each pavement segment and picks specific maintenance practices to maximize the improvement of the entire pavement system. To provide the most comprehensive analysis, the County’s 1,370 maintained road miles have been broken into 2,962 segments in the StreetSaver® model. Maintenance treatments are allocated to as many road segments as the annual budget will allow. The budget scenarios tested were calculated utilizing a 20% and 38% fixed preventative maintenance for the 10 and 20 years funding scenarios, respectively, split with 3% interest and 3% inflation values built in to the calculations.

⁷ “2009 Comprehensive Transportation Plan for Sonoma County”, Sonoma County Transportation Authority

⁸ “Sonoma County 2013-14 Pavement Management Program Update”, Harris & Associates, January 2014.

Five budget scenarios were analyzed as part of the primary report, while twelve (12) additional scenarios were added as an addendum. The key scenarios are highlighted below.

	10-Year Horizon Scenario Name	10 Year Budget	Rough Annual Budget	2023 PCI
4a	Maintain PCI of 46	\$195M	\$19.5M	46 (+0)
5	Increase PCI 5 Points	\$240M	\$24.0M	51 (+5)
6	Budget Needs Average I	\$620M	\$62.0M	75 (+29)

	20-Year Horizon Scenario Name	20 Year Budget	Rough Annual Budget	2033 PCI
3	Maintain 2013 Funding	\$240M	\$12.0M	31 (-15)
4b	Maintain PCI of 46	\$430M	\$21.5M	46 (+0)
7	Budget Needs Average II	\$954M	\$47.7M	68 (+22)

Two other key scenarios were run relating to the value, scope and breadth of a potential sales tax measure.

8. One-Quarter (¼) Cent Sales Tax – Current Funding plus Sales Tax Revenue I

Based on sales tax data from FY 12/13, it is estimated that the County would receive approximately \$8 million from a regional ¼ cent sales tax if the countywide funding split were on a 50% population and 50% road miles formula. In combination with the “Maintain 2013 Funding” scenario of \$12 million, this scenario will mirror the system wide benefits provided in the “Status Quo” scenario and allow the County to maintain a PCI of 46. This will allow for improvements to some of the non-federally eligible network

of minor collectors and local roads, resulting in individual road repairs rather than system wide improvements.

9. One-Half (½) Cent Sales Tax – Current Funding plus Sales Tax Revenue II

A half-cent regional sales tax would generate approximately \$16 million per year (FY 12/13 data) assuming a formula consisting of 50% population and 50% road miles. This additional \$8 million added to the “¼ Cent Sales Tax” scenario for a total annual investment of \$28 million, would result in the County beginning to see more comprehensive system improvements. The various scenarios have demonstrated that an investment of \$24 million annually will result in a system wide increase in PCI of 5 points. It can be inferred from the data ranges of other scenarios that an investment of \$28 million per year could result in an approximate 10 point increase in the system wide PCI.

Chapter 4: Long-Term Road Plan

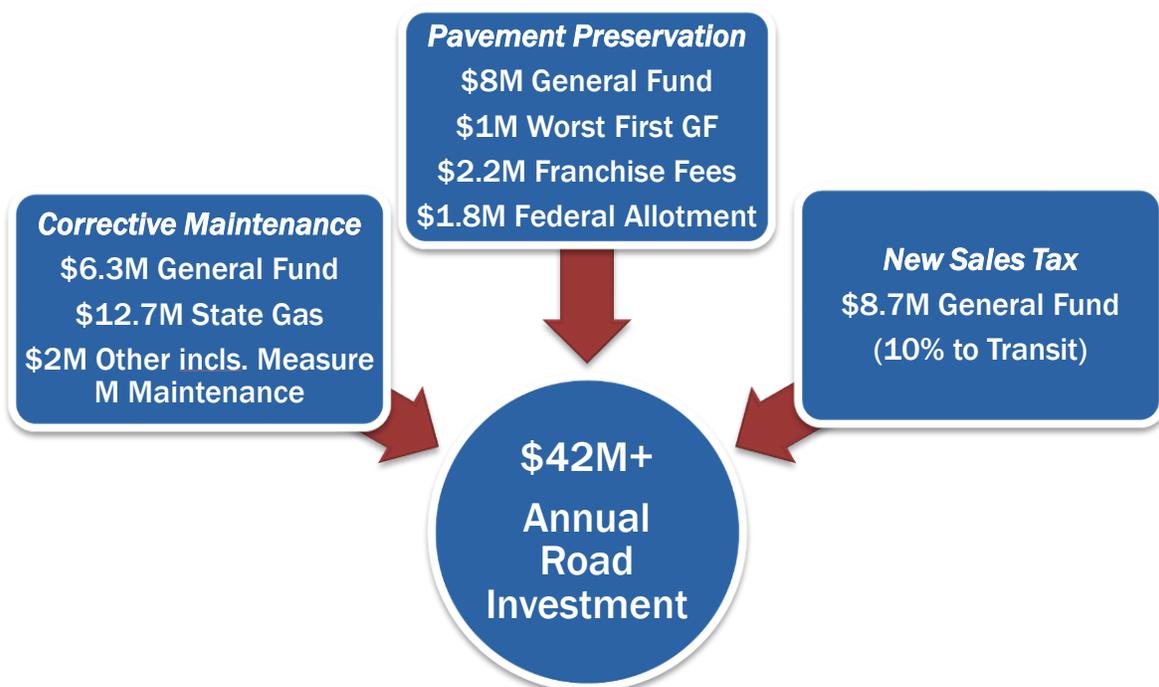
The Long-Term Road Plan establishes a long-term goal for the complete County maintained road network and develops an approach that will help guide investments toward creating a well maintained road network that supports economic development, agriculture, recreation and tourism as well as track progress in PCI improvement. This Long-Term Road Plan combines a methodology to guide investment decision making with identification of potential funding strategies to ensure that the County's roadway infrastructure will best serve the County's citizens and visitors over time. To develop this Long-Term Road Plan, staff considered the results of the "2013 Pavement Management Program Update" to gain a common understanding of the current road network and possible range of investments required to improve roadway conditions.

As noted above, a central component of the Long-Term Road Plan is the Road Evaluation Framework that will provide staff with a guide for selecting candidate roads for the annual pavement preservation program to ensure an equal distribution of repair work throughout the County, while addressing the most critical needs and investing in preservation to ensure the most efficient use of funds. The Road Evaluation Framework takes into consideration general roadway information such as classification, average daily traffic, pavement condition, bike and transit relevance, the presence of public safety facilities and Supervisorial District.

At their June 17, 2014, meeting, the Board of Supervisors established a primary goal for the Long-Term Road Plan to focus first on the rehabilitation approximately 700 miles of the County maintained road network. This goal builds off their significant investment during the past three fiscal years, resulting in rehabilitation of 150 miles of the network. Upon achieving their goal, the Board's Plan will have resulted

in over 50 percent of the road network being maintained with a “Good” PCI rating or better compared to the 26 percent that are identified as “Good” today. Moreover, this will establish a “Good” PCI rating for the roads most frequented and important to economic development, agriculture, recreation and tourism.

To implement this Plan, the County must invest an average of at least \$20 million per year. The Board of Supervisors has solidified its commitment by recommending the continuation of existing support through the County General Fund and other local sources and follows the Ad Hoc’s recommendation that the County move forward with a local revenue measure. In that regard, the Long-Term Road Plan includes the following fiscal components:



These financial components will provide the County the opportunity to improve over half of the County’s roads moving the County closer to goal of having all roads in “Very Good” condition. More detailed descriptions of some of these key financial components are described below.

While the Plan incorporates most of the limited local funding options, it also looks to maximize and leverage federal dollars while continuing to seek new statewide revenue sources and legislative changes to create a more favorable allocation formula for the County. These efforts, in combination with other funding strategies discussed previously and those that may develop in the future, will be critical components in the County's effort to achieve the comprehensive goal of rehabilitating the remainder of the County's road network.

Sales Tax Measure

To address the financing of the Long-Term Road Plan's primary goal, the Board of Supervisors is proposing a ¼ cent sales tax measure. The proposed measure would generate approximately \$20 million per year, to be managed by the Sonoma County Transportation Authority and distributed among the city and county pursuant to the Measure M allocation formula that takes into consideration both road miles and population, yields approximately \$8.7 million per year to the County. At their July 29, 2014, meeting the Board of Supervisors affirmed that the majority of the County's share of the funding would be used for roadway maintenance, but that 10 percent would be allocated for enhanced transit operations.

Enhanced Transit Funding Plan

The Board also affirmed its commitment to reducing vehicle miles traveled, greenhouse gas emission and servicing the County's most vulnerable populations by allocating 10% of the sales tax revenue to support enhancing transit operations. Some of the key enhancements may include:

- Reduced cost or free passes for students and veterans

- Expanding routes that service key destinations, such as Santa Rosa Junior College, Sonoma State University, future SMART stations and the Santa Rosa Veterans Affairs Medical Center on Airport Boulevard.
- Increase frequencies or evening service
- Expanded paratransit service

The County will be initiating a pilot project to run between January 1, 2015, and December 31, 2015, to determine the level of success associated issuing free passes to college students and veterans. This pilot study will provide valuable feedback for the Board should the sales tax measure pass.

Maintenance of Effort

A key element to this Plan is the maintenance of effort stipulation to ensure potential voters that new revenues will not simply be used to supplant existing funds allocated for roads. The Board has committed to making every effort to continue their historic funding levels by maintaining an \$8 million annual General Fund contribution for road improvements in addition to \$6.4 million annual General Fund contribution for on-going corrective maintenance.

Worst First Plan

At their July 29, 2014 meeting, the Board of Supervisors heard concerns expressed by the public regarding the poor state of the local road network and an interest in having some dedicated funding to address their local streets. Recognizing that their Long-Term Road Plan did not include enough annual funding to develop a comprehensive capital program that would improve all 1,370 miles of paved roads, the Board agreed to incorporate a “Worst First” program that allocates \$1 million annually from the General Fund, above their annual Maintenance of Effort commitment, to begin addressing the worst

local roads in the County. The Department of Transportation and Public Works will utilize StreetSaver® in combination with feedback from the Road Maintenance Division and individual Board members to identify a list of candidate roads as a component of the annual pavement management program work plan. The focus for this category of funding is to identify roads that would not be identified as a priority in the Road Evaluation Framework and have degraded beyond the maintenance team’s ability to reasonably perform routine maintenance. The Department will make every effort to make recommendations demonstrating an equitable distribution of these funds across the County.

Road Evaluation Framework

With the broad road categories established as described earlier in this report, staff developed the Roads Evaluation Framework to guide the selection of which roads will be improved. The Evaluation Framework does not prescribe specific roads or set a target, rather it helps ensure an equal distribution of repair work throughout the County, while addressing the most critical needs and investing in preservation to ensure the most efficient use of funds. The Roads Evaluation Framework consists of a series of key roadway attributes that the Department will utilize to identify candidate roads:

- Average daily traffic
- Pavement condition
- Bike and transit relevance
- Supervisorial District
- Public Safety facilities (fire stations & hospitals) served by road



By including public safety facilities, the Board gives significant consideration to the importance of ensuring safe access for residents and emergency personnel to public safety facilities by ensuring that roadways fronting these facilities do not pose response delays or access barriers.

By way of example, the Evaluation Framework shows that the Federally Eligible Network has the following key attributes:

- 356 road miles
- High daily traffic volumes
- 104 miles in “Very Good” condition and the remaining 252 miles in “Good” condition
- 267 miles are significant for bike travel
- 73 miles are significant for transit

Each of these factors will be taken into consideration when selecting individual road miles for repair and improvement, along with modeling data provided by StreetSaver®, community related impacts in the project area, lead times to complete environmental review or right of way acquisition and the availability of contractors and materials. The results of this analysis will be compiled on an annual basis within a work plan presented by the Director of Transportation and Public Works to the County Administrator and Board of Supervisors.

This implementation methodology supports Plan’s goal to improve approximately 700 miles of the County road network in addition to the 150 miles completed during the prior three fiscal years with a focus those roads most frequented and important to economic development, agriculture, recreation and tourism. In addition, the Framework ensures that improvements will be made consistent with the

County's complete streets policy and take into consideration drainage, safety and bicycle and pedestrian facilities in addition to addressing accessibility issues increasing multimodal mobility.

This methodology is not intended to ignore the Local road network, but rather establish a clearer guide for staff to develop an annual pavement preservation program that accomplishes the above stated focus and primary goal. The Board established the "Worst First" program to begin addressing these roadways that fall outside the Road Evaluation Framework; however, the majority of the Local road network will be addressed as new funding sources noted earlier are achieved.

Table 1 - Road Evaluation Framework (miles within each Long-Term Road Plan Category by attribute)

Road Evaluation Attributes	Federally Eligible Network	Significant Rural Road Network	Local Community & Connector Roads		Remaining Network	Totals
			Community	Connectors		
Total Miles *	356	225	196	331	275	1383
Average Daily Vehicles						
Heavy 4000 ADT	356					356
Medium 800 ADT		225	196	331		752
Light < 200					275	275
Average Pavement Condition						
Excellent (90-100)	54	5	1	2	0	62
Very Good (70-89)	101	7	16	12	13	149
Good (50-69)	50	22	29	35	33	169
Poor (25-49)	90	60	42	108	80	381
Very Poor (<25)	60	131	107	169	142	609
Unpaved			2	5	6	13
Total	356	225	196	331	275	1383
Bike Plan Roads (County only)	267	127	22	29	5	450
Transit Routes Miles (County only)	73	7	14	6	1	101
Supervisorial District						
1	58	62	58	29	59	266
2	75	35	42	44	33	229
3	11	0	6	0	4	21
4	74	51	35	70	97	327
5	138	77	56	188	81	540
						1383

* There are 1,383 total miles of maintained roads; however, 13 miles are unpaved and were not evaluated in the Harris report

** Roads segments fronting Public Safety Facilities will be given additional consideration during evaluation.

Chapter 5: Conclusion

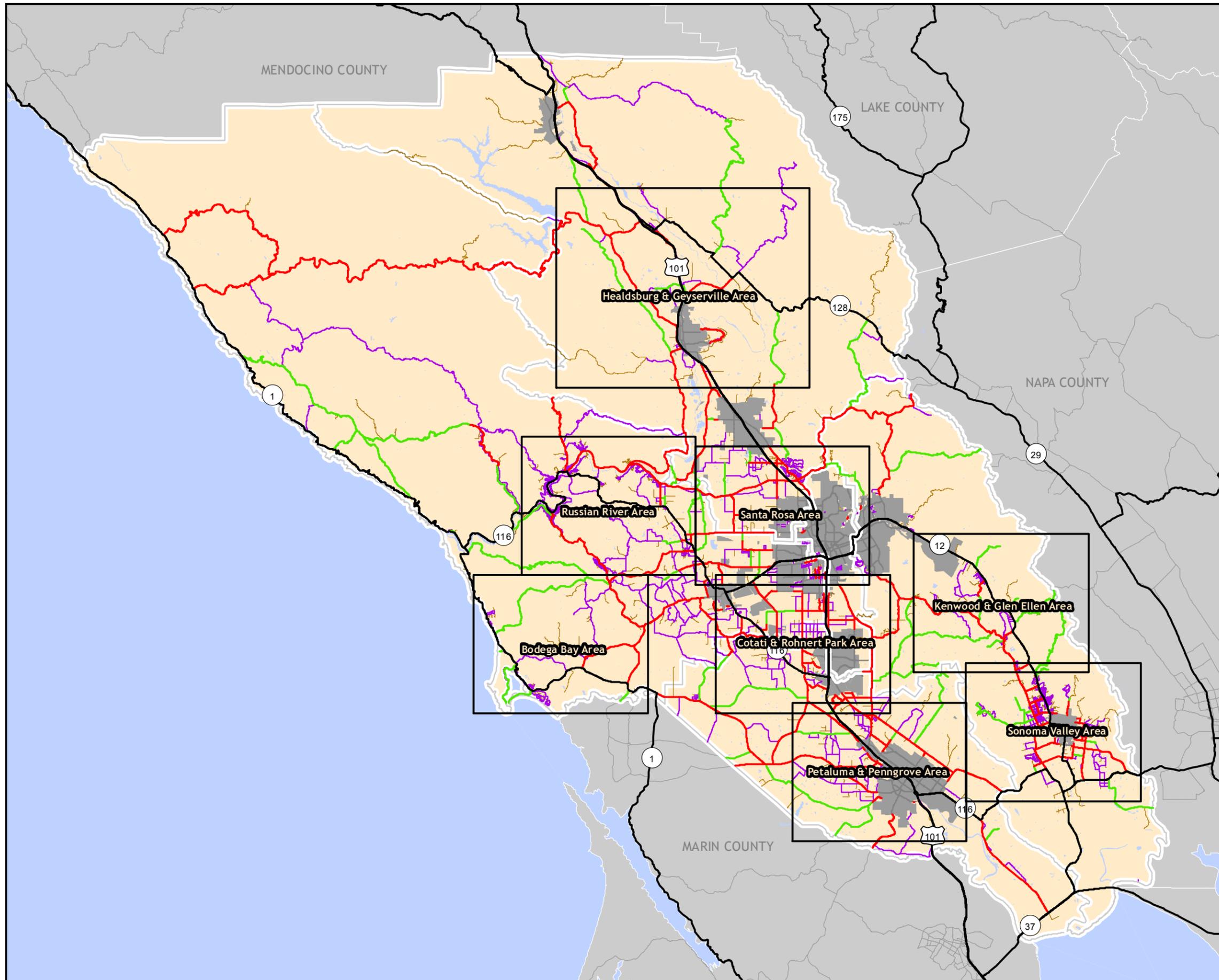
The County road network is a vital asset to the community providing access to homes and business, connectivity between communities, opportunities and connections for recreating and a critical component of public safety. Maintaining these assets in good condition is a high priority for Sonoma County. With the current state of the County road network being listed in “Poor” condition with an average pavement condition index of 46, it is important for the County to have and implement a long-term strategy to improve the overall condition of the network as well as a strategy that ensures the investments being made keep the roads good, once improved.

As a significant part of the process, the Board conducted extensive community outreach in developing this Long-Term Road Plan, including Supervisors McGuire and Rabbitt individually hosting town halls in partnership with local stakeholder and community groups, presenting information to and soliciting feedback from local service groups and associations in addition to holding numerous meetings with residents and local stakeholders. In addition, County staff conducted community sentiment surveys, which indicated that roads and transportation infrastructure continue to be a high priority, and met with local jurisdictions to secure their partnership for the Long-Term Road Plan.

With the significant outreach and community feedback the Board has developed this Long-Term Road Plan to frame the issues facing the County regarding its roadway infrastructure, evaluate and identify a reasonable goal to improve the conditions and to lay out a fiscal structure to achieve the goal. While the largest burden of the plan rests on the shoulders of the voters, the Board of Supervisors are pleased that a financially achievable plan exists to improve and protect one of the County’s most important assets, its roadway network.

Appendix A: County Maintained Road System Maps

Figure A-1:
Summary Map



- State Highways
- County Roads Federally Eligible Network
- County Roads Significant Rural Road Network
- County Roads Local Connector & Community Roads
- County Roads Remaining Local Roads

- Supervisorial District Boundary
- City Limit



0 5 10 Miles

Figure A-2:

Bodega Bay Area



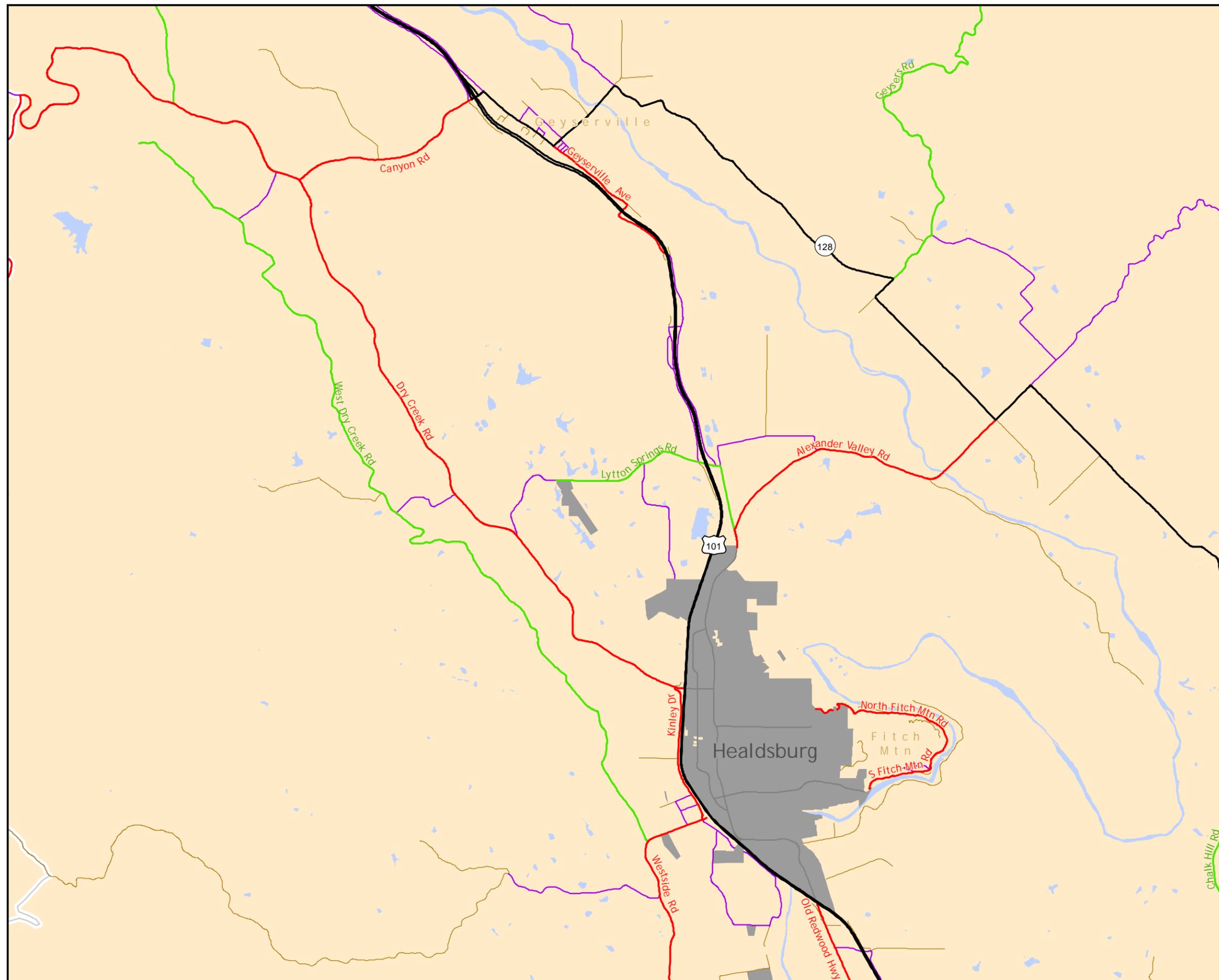
- State Highways
- County Roads Federally Eligible Network
- County Roads Significant Rural Road Network
- County Roads Local Connector & Community Roads
- County Roads Remaining Local Roads

- Supervisorial District Boundary
- City Limit



Figure A-3:

Healdsburg & Geyserville Area



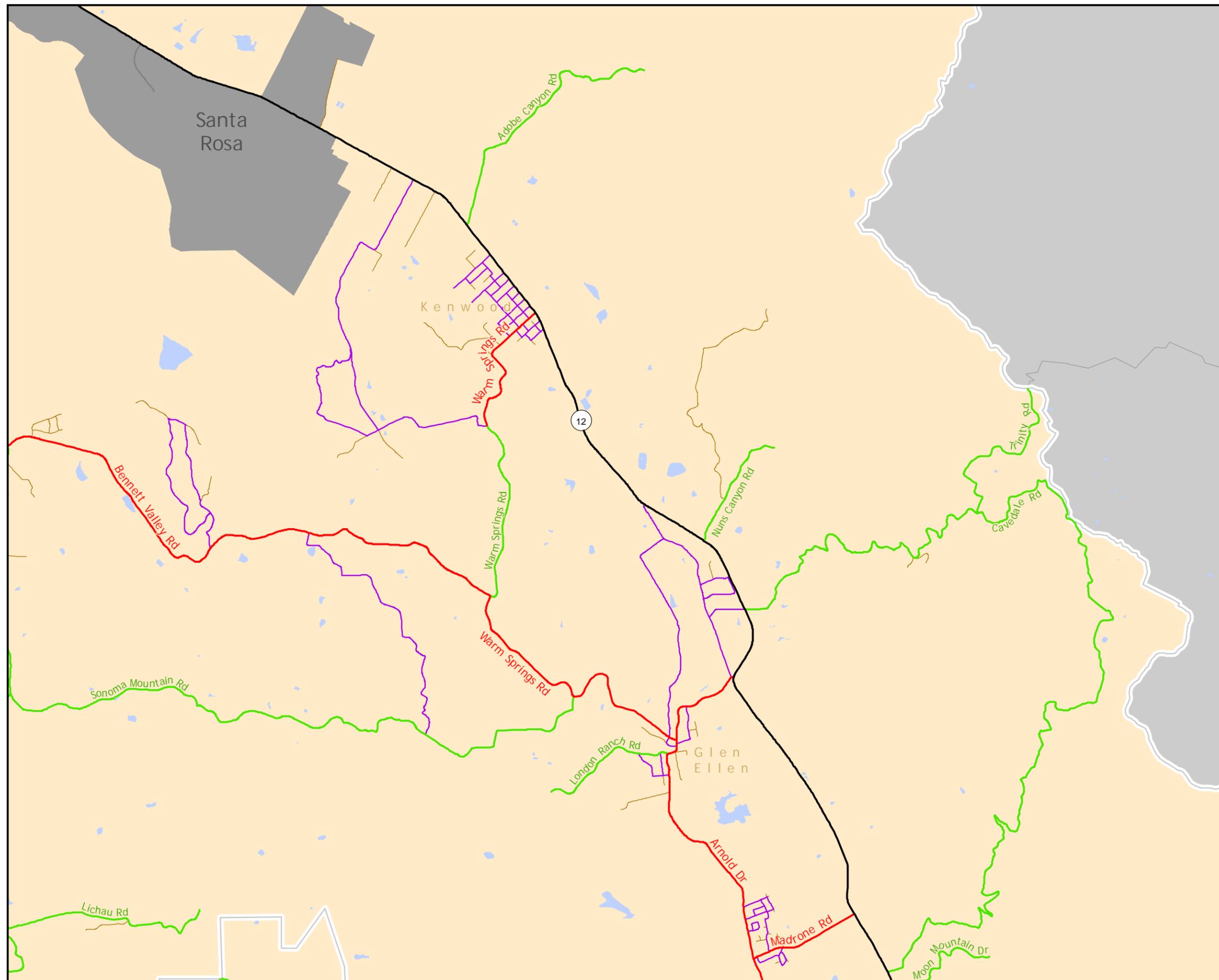
- State Highways
- County Roads Federally Eligible Network
- County Roads Significant Rural Road Network
- County Roads Local Connector & Community Roads
- County Roads Remaining Local Roads

Supervisorial District Boundary

City Limit

Figure A-4:

Kenwood & Glen Ellen Area



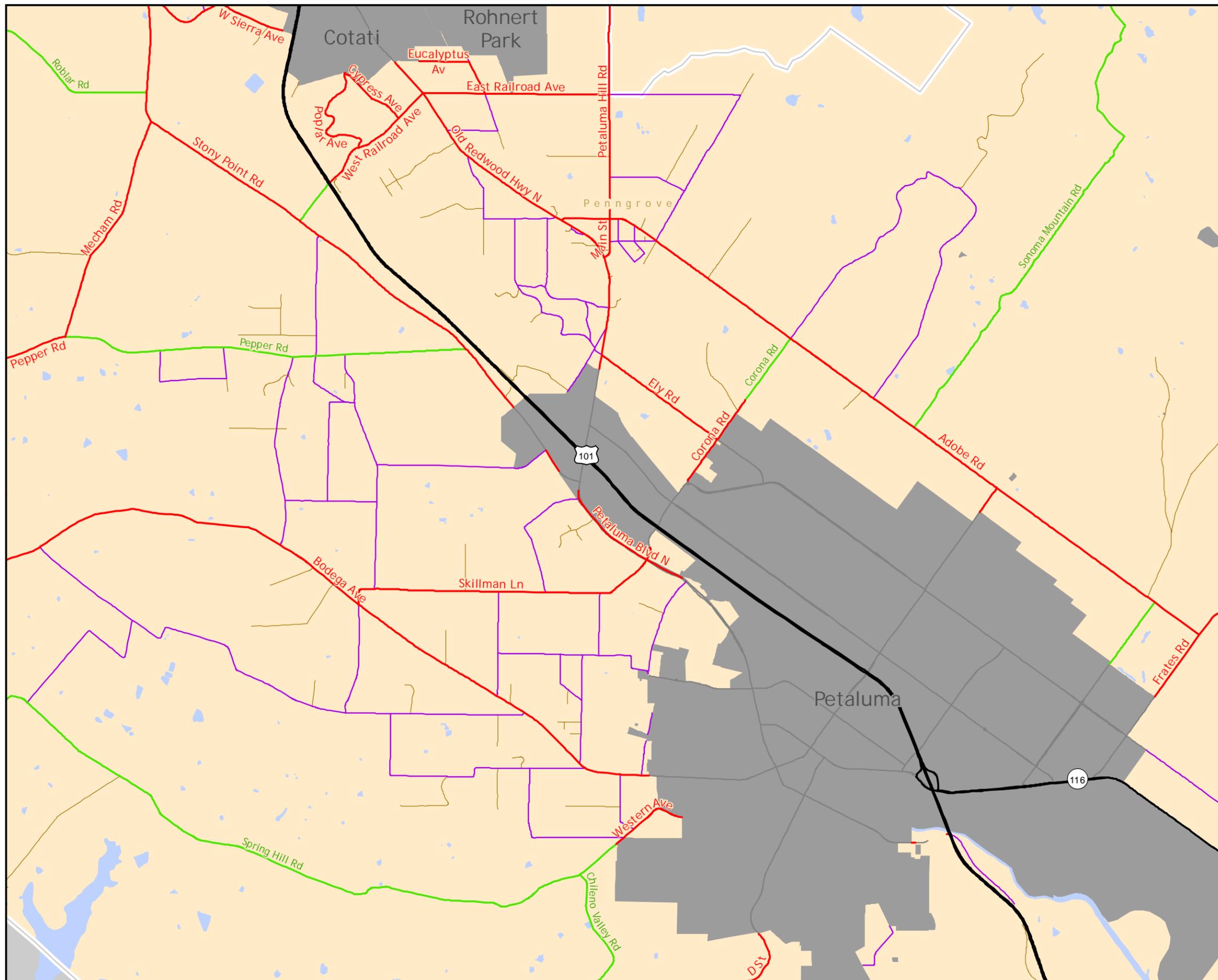
- State Highways
- County Roads Federally Eligible Network
- County Roads Significant Rural Road Network
- County Roads Local Connector & Community Roads
- County Roads Remaining Local Roads

Supervisorial District Boundary

City Limit

Figure A-5:

Petaluma & Penngrove Area



- State Highways
- County Roads Federally Eligible Network
- County Roads Significant Rural Road Network
- County Roads Local Connector & Community Roads
- County Roads Remaining Local Roads

Supervisorial District Boundary



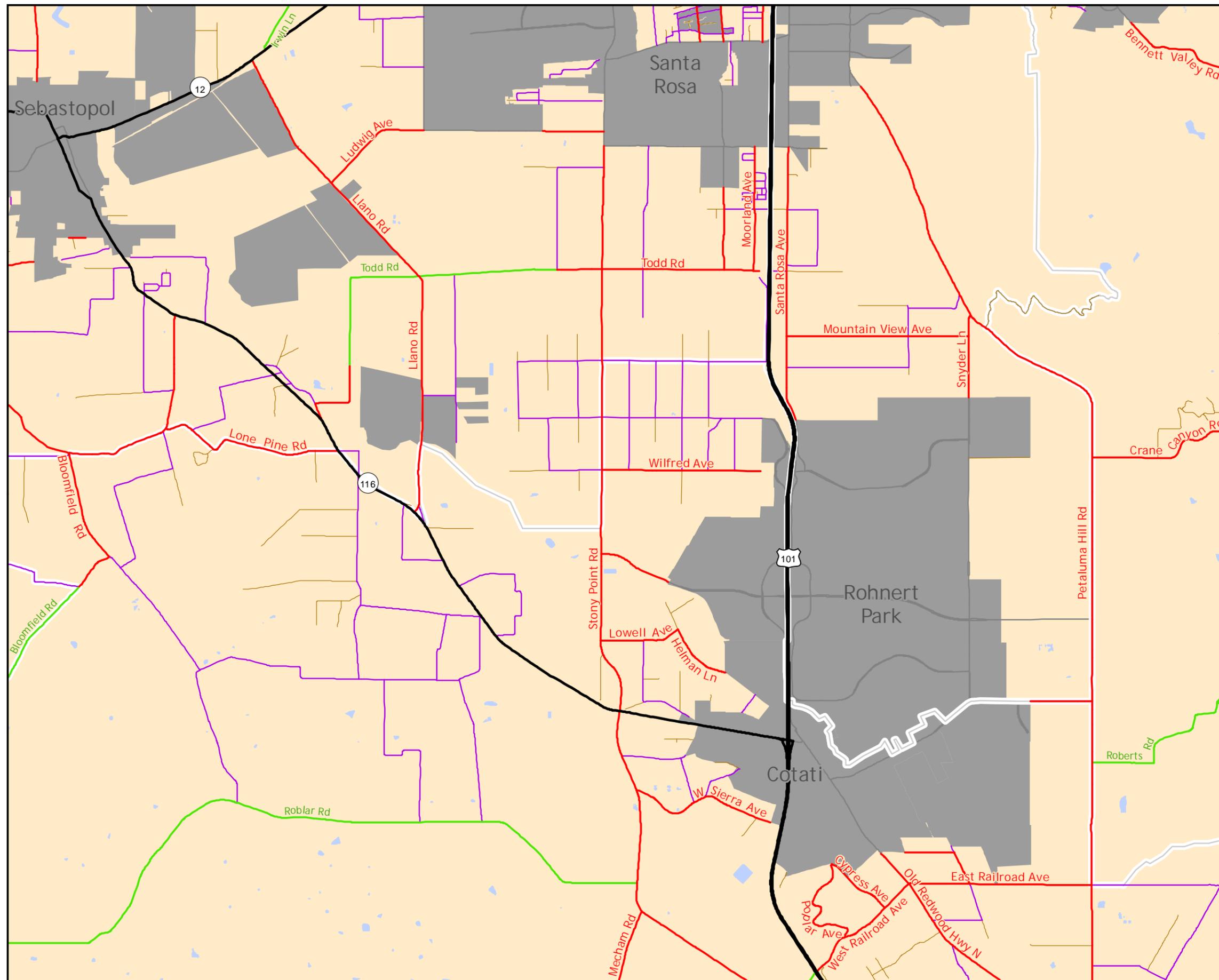
City Limit



0 0.5 1 Miles

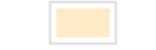
Figure A-6:

Cotati & Rohnert Park Area



- State Highways
- County Roads Federally Eligible Network
- County Roads Significant Rural Road Network
- County Roads Local Connector & Community Roads
- County Roads Remaining Local Roads

Supervisorial District Boundary

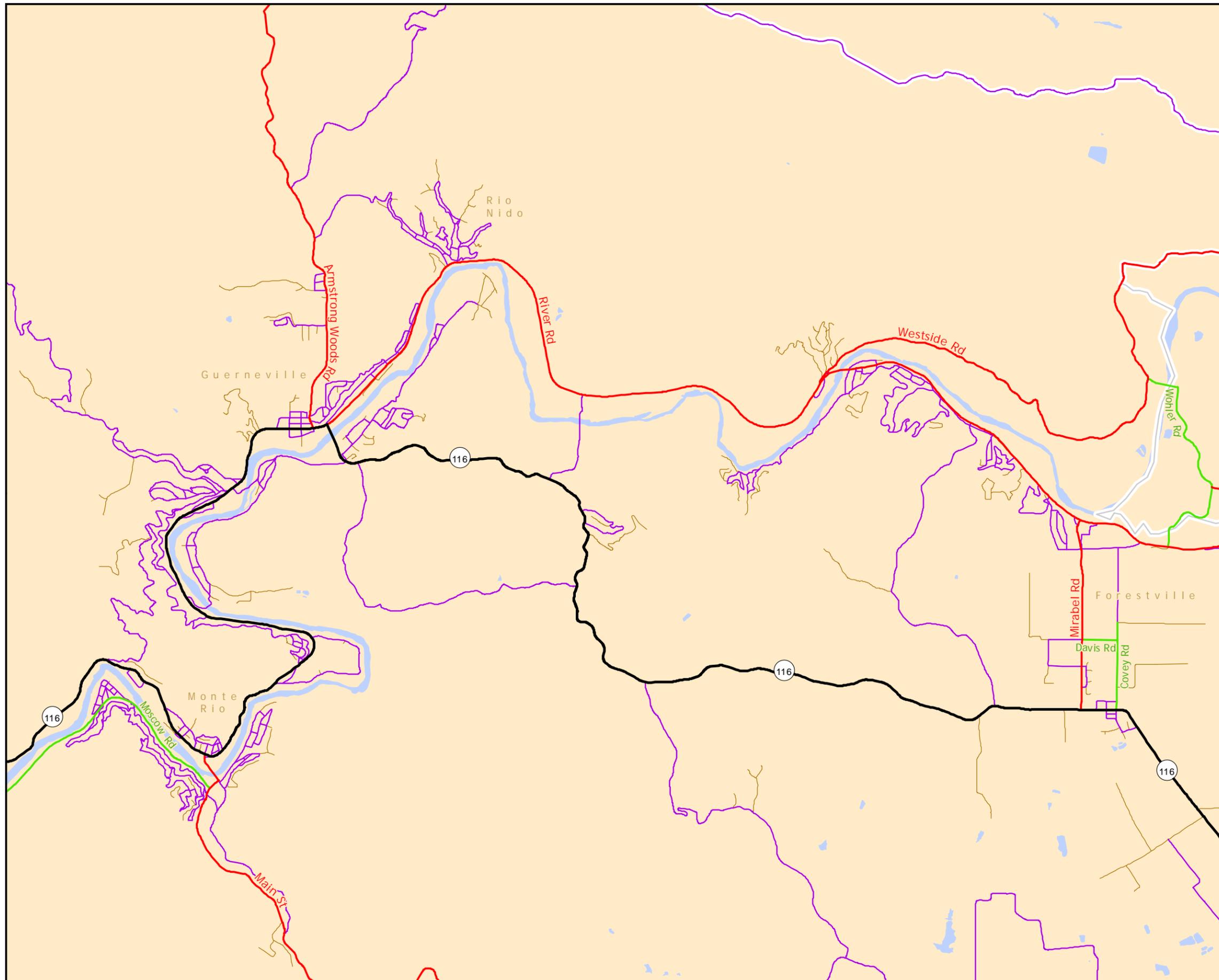


City Limit



0 0.5 1 Miles

Figure A-7:
Russian River Area



- State Highways

- County Roads
 Federally Eligible Network

- County Roads
 Significant Rural Road Network

- County Roads
 Local Connector & Community Roads

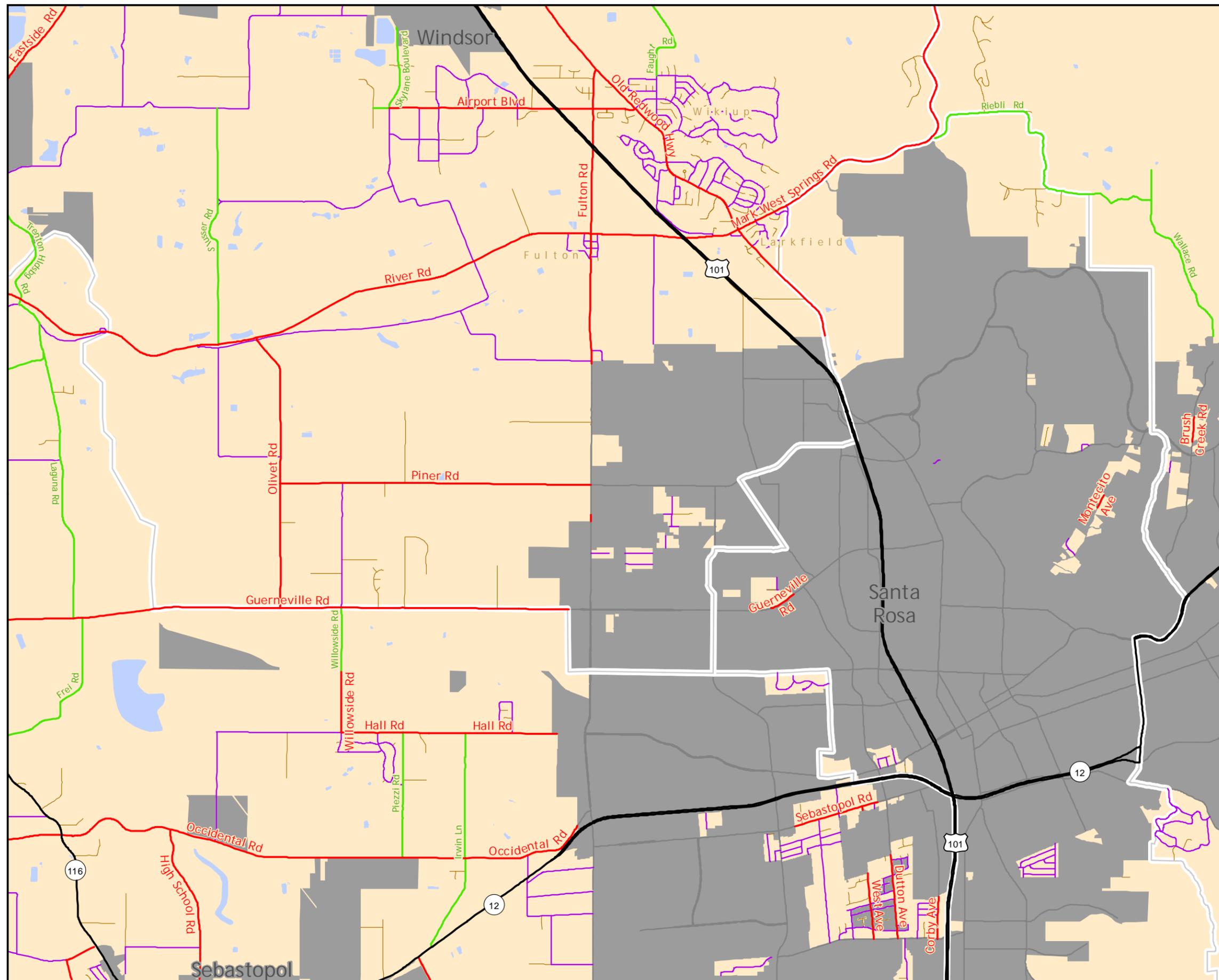
- County Roads
 Remaining Local Roads


- Supervisorial District
 Boundary

- City Limit




Figure A-8:
Santa Rosa Area

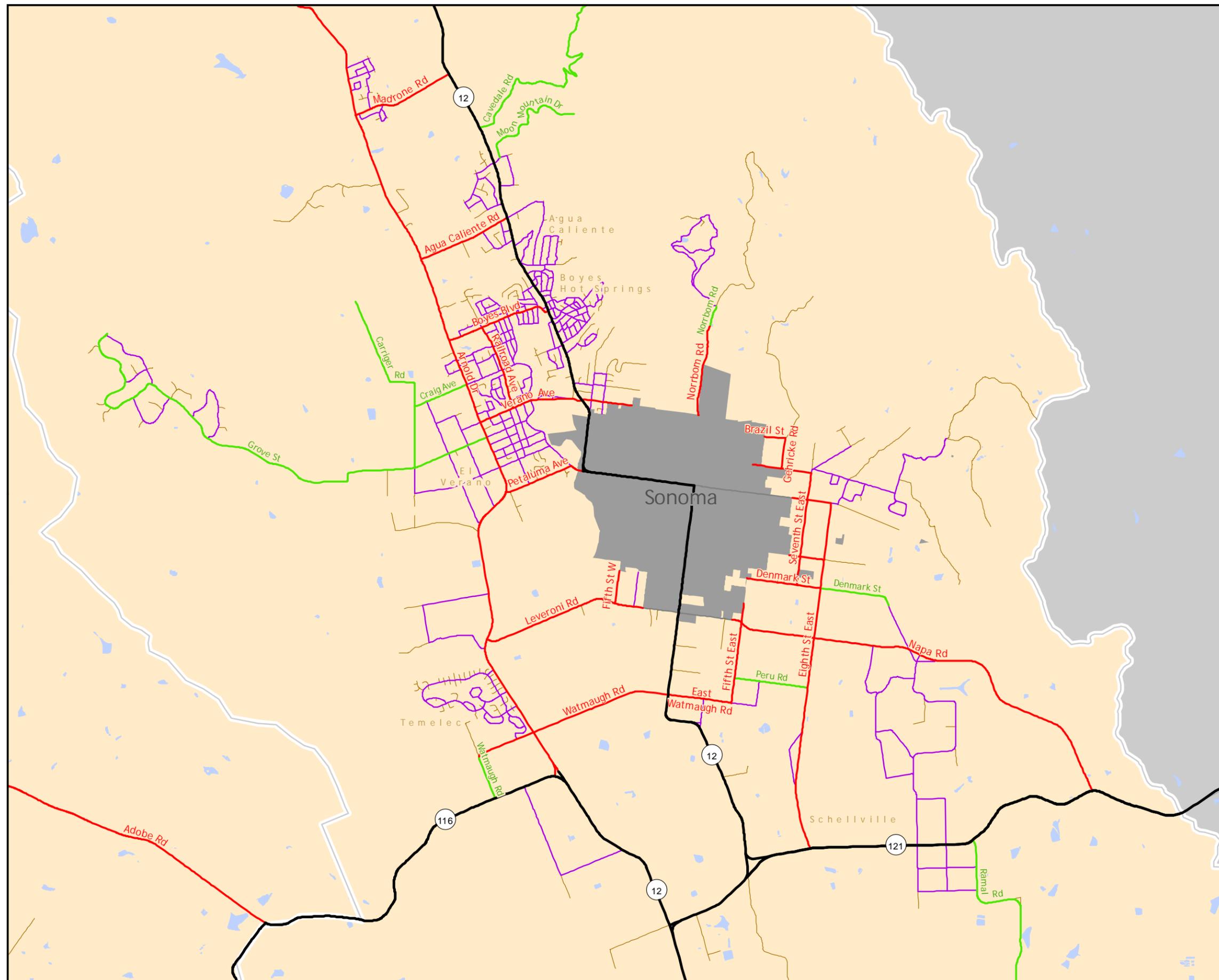


- State Highways
- County Roads Federally Eligible Network
- County Roads Significant Rural Road Network
- County Roads Local Connector & Community Roads
- County Roads Remaining Local Roads

- Supervisorial District Boundary
- City Limit



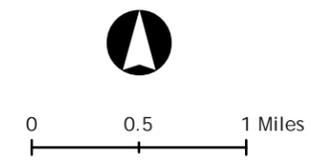
Figure A-9:
Sonoma Valley Area



- State Highways
- County Roads Federally Eligible Network
- County Roads Significant Rural Road Network
- County Roads Local Connector & Community Roads
- County Roads Remaining Local Roads

Supervisorial District Boundary

City Limit



Appendix B: Best Practices in Pavement Management

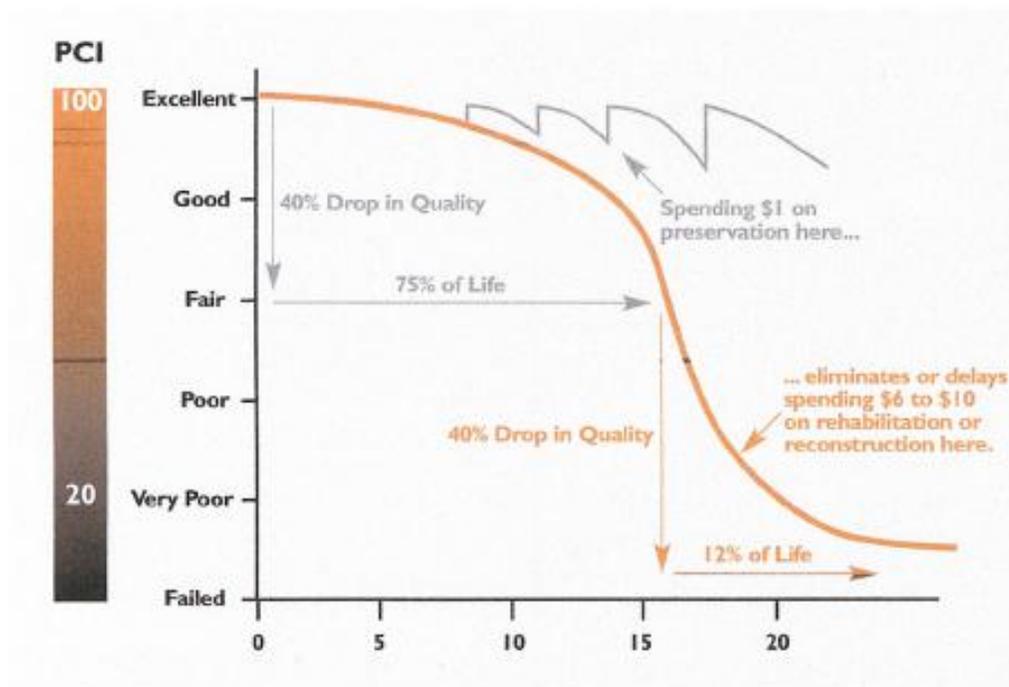
Broadly speaking, there are two categories of pavement maintenance activities: preventive and corrective. Preventive Maintenance (PM) includes actions and techniques that extend the life of the pavement surface by preventing damage that compromises the road. It is analogous to brushing, flossing, and getting your teeth cleaned regularly to prevent tooth decay. Unfortunately, as with regular visits to the dentist, it is tempting to delay PM when budgets are tight because it sometimes looks like spending resources to fix roads that “don’t need it.” By delaying too long, damage will have occurred making repairs very expensive. With degradation, the roads demand corrective maintenance activities just to keep the road safe. Corrective maintenance (CM) includes treatments that repair acute symptomatic damages and as has a negligible effect on the extension of pavement life.

Preventive Preservation

Good preventive maintenance prolongs the life of the road, as well as lowering the cost of maintaining it. This proactive approach is called “pavement preservation”. The Federal Highway Administration defines “pavement preservation” as “a program employing a network level, long-term strategy that enhances pavement performance by using an integrated, cost-effective set of practices that extend pavement life.”⁹ It involves careful planning and deployment of resources to make sure that the right technique is used on the right road at the right time. By applying lower cost and less disruptive techniques before significant damage occurs, pavement preservation maximizes limited resources. Perhaps more importantly, from the perspective of the motoring public, the ride quality remains at a high level and the intrusion of roadwork is minimal.

⁹ FHWA Pavement Preservation Expert Task Group, <http://www.fhw.dot.gov/pavement/preservation/091205.cfm>

There is a defined window of opportunity for using pavement preservation techniques. Pavement preservation is most effective on roads that have not sustained damage to the road base, that is, roads in “Good” condition or better. The pavement preservation program therefore depends on complete and reliable information about the condition of the roads such as the StreetSaver® program used by the County. It also depends on a plan that includes an established PCI threshold for implementing preventive maintenance activities. The figure below shows how a pavement preservation program implements preventive measures to maintain the condition of the pavement in “Good” condition or better and in doing so extends the life of the pavement.



A focus on “fix it first” has been well documented to be the most efficient approach to pavement maintenance where every \$1 spend on preventative pavement maintenance saves taxpayers up to \$11 on future pavement repairs.*¹⁰

¹⁰ “California Transportation By The Numbers: Meeting the State’s Need for Safe and Efficient Mobility,” TRIP, September 2014.

Remaining Service Life of County Roads

Another way to evaluate the road network is to consider the “remaining service life” of the roadways. The remaining service life of a road is related to the condition (and therefore the PCI), but it shifts the focus of the evaluation. Categorizing roads by their remaining service is an approach to support prioritizing the roads in a system for treatment, and matching the proper treatment to the road. By examining the remaining life of our roads, we can improve our ability to predict the magnitude and timing of expenditures on these roads. When a road has zero remaining years of service life, it is in a state of advanced deterioration, and requires full reconstruction. While the road can still be used, the ride would be similar to driving on an unpaved or gravel road. A road with 30 years of remaining service life is essentially a newly constructed or newly reconstructed road at the beginning of its service life.

Appendix C: Maintenance Costs Beyond The Pavement

Vehicle Operating Costs (VOC)

Recent estimates have identified that the lack of desirable safety features, inadequate capacity and poor pavement condition cost the state’s residents approximately \$17 billion per year in the form of additional vehicle operating costs, including accelerated vehicle depreciation, additional repair costs and increased fuel consumption and tire wear; the cost of lost time and wasted fuel due to traffic congestion; and the financial cost of traffic crashes.¹¹

The table below breaks down these statewide costs to focus on how driving on roads that are deteriorated, congested and lacking desirable safety features financially impact motorists in the Bay Area on an annual basis:¹²

Urban Area	VOC	Congestion	Safety	Total
San Francisco – Oakland	\$795	\$1,266	\$145	\$2,206
San Jose	\$760	\$800	\$163	\$1,723
Bay Area Average	\$777	\$1,033	\$154	\$1,964

While the County Long-Term Roads Plan does not address congestion specifically, it does address improvements that will significantly lower VOCs and safety through improved pavement quality, which could save drivers up to \$931 annually. With the anticipation that statewide vehicle miles traveled (VMT) is expected to grow 20 percent by 2030, this cost is not expected to decline.

¹¹ “California Transportation By The Numbers: Meeting the State’s Need for Safe and Efficient Mobility,” TRIP, September 2014.

¹² “California Transportation By The Numbers: Meeting the State’s Need for Safe and Efficient Mobility,” TRIP, September 2014.

Congestion, the Economy and Job Creation

The Long-Term Road Plan is not intended or designed to specifically address congestion, the economy or job creation issues; however, each of these is a critical piece in the health of a community that directly relates to a local agency's ability to finance roadway improvements by establishing, attracting and maintaining a strong tax base. The County has addressed some of these issues with the passage of Measure M in 2004 and the County's Traffic Mitigation Fee program associated with new development activities. With that said, it seems appropriate to frame how these factors fit into the overall cost of maintaining the road network.

Increasing levels of congestion add significant costs to consumers, commuters, transportation companies, manufacturers and distributors. Congestion costs can also be directly related to overall operating costs for trucking and shipping companies, leading to revenue loss, lower pay for drivers and employees and higher consumer costs. Companies have begun looking at the quality of a region's transportation system when deciding where to relocate or expand. Regions with congested or poorly maintained roads may see businesses relocate to areas with smoother, more efficient and more modern transportation systems. Highway accessibility was ranked as the number one site selection factor in a 2011 survey of corporate executives by Area Development Magazine.

As a snapshot of how congestion affects motorists and product delivery, the following shows the annual congestion cost per driver as a function of lost time and wasted fuel in the Bay Area:¹³

¹³ "California Transportation By The Numbers: Meeting the State's Need for Safe and Efficient Mobility," TRIP, September 2014.

Urban Area	Hours Lost to Congestion	Cost of Lost Time and Wasted Fuel
San Francisco – Oakland	61 hours	\$1,266
San Jose	39 hours	\$800
Bay Area Average	50 hours	\$1,033

A 2007 analysis by the Federal Highway Administration found that every \$1 billion invested in highway construction supported approximately 27,800 jobs; approximately 9,500 in the construction sector, 4,300 jobs in industries supporting the construction sector and 14,000 other jobs induced in non-construction related sectors of the economy.¹⁴

They further estimated that each dollar spent on road, highway and bridge improvements resulted in an average benefit of \$5.20 in the form of reduced vehicles maintenance costs, reduced delays, reduced fuel consumption, improved safety, reduced road and bridge maintenance costs and reduced emissions as a result of improved traffic flow.¹⁵

Bridges

The Long-Term Road Plan does not specifically focus on bridge maintenance, repair or replacement, but it is important to frame these critical infrastructure components in this discussion. Sonoma County has over 330 bridges in its maintenance inventory. In 2008 it was reported that the average sufficiency rating for Sonoma County bridges was 76, which was above the national average. A sufficiency rating considers three primary criteria: hydraulic capacity, structural integrity and functional traffic capacity.

¹⁴ “California Transportation By The Numbers: Meeting the State’s Need for Safe and Efficient Mobility,” TRIP, September 2014.

¹⁵ “California Transportation By The Numbers: Meeting the State’s Need for Safe and Efficient Mobility,” TRIP, September 2014.

Statewide, eleven percent of California’s bridges are structurally deficient as evidenced by significant deterioration of the bridge deck, supports or other major components.¹⁶ Structurally deficient bridges are often posted for lower weight or closed to traffic, restricting or redirecting large vehicles, including commercial trucks and emergency services vehicles. In addition, seventeen percent of California’s bridges are functionally obsolete as they no longer meet current highway design standards, often because of narrow lanes, inadequate clearances or poor alignment.¹⁷

Despite having a current average sufficiency rating of 75, Sonoma County bridges require a significant amount of attention with over 41 percent being either structurally deficient or functionally obsolete. That equates to 135 bridges in Sonoma County needing some major aspect of repair, retrofit or replacement. There are currently 19 major bridge projects in design with funds provided by the Highway Bridge Retrofit and Replacement (HBRR) program.

¹⁶ “California Transportation By The Numbers: Meeting the State’s Need for Safe and Efficient Mobility,” TRIP, September 2014.

¹⁷ “California Transportation By The Numbers: Meeting the State’s Need for Safe and Efficient Mobility,” TRIP, September 2014.