

County of Tuolumne 2022 Pavement Management Report



Prepared by:
Blossom Scott-Heim, P.E.
Supervising Engineer
Department of Public Works



Table of Contents

Introduction	2
Pavement Network and Current Conditions	2
Current Budget and Maintenance Practices.....	4
Budget Scenarios	5
Conclusions	9

List of Figures

Figure 1. Pavement Condition Categories	3
Figure 2. Current PCI by Functional Classification	4
Figure 3. Scenario 1 - Existing Funding 2042 Condition Summary	6
Figure 4. Scenario 2 - Minimum PCI Goals (100-70-10) 2040 Condition Summary.....	7
Figure 5. Scenario 3 - Local Tax Measure 2042 Condition Summary	8

List of Tables

Table 1. Pavement Network and Condition Summary (2022).....	3
---	---



Introduction

Since 2007, the County has maintained a Pavement Management Program (PMP) using the StreetSaver pavement management software. StreetSaver is a program developed by the Metropolitan Transportation Commission and is the most widely used system in California. An effective PMP allows the County to optimize the money invested in maintaining paved roads to provide the greatest return on investment.

StreetSaver provides a consistent method of keeping records of pavement conditions and needs. Annual road inspection data is collected by Public Works staff and entered into the StreetSaver program along with other pertinent information, producing a County-wide road condition report. StreetSaver analyses the data and generates a maintenance and rehabilitation strategy based on available funding. This allows us to strategize the most cost-effective ways to extend pavement life and prioritize street maintenance so as to minimize the effects of long-term deterioration.

The purpose of this report is to assist decision makers in utilizing the results of the StreetSaver program. This report contains the overall condition of the County's maintained roads and highlights options for improving it. These options are developed by conducting "what-if" analyses using the StreetSaver program. By varying the budget amounts available for pavement maintenance and repair, one can show how different funding strategies can impact the County's roads over the next twenty years.

Pavement Network and Current Conditions

Roads are one of the County's most valuable assets and the replacement value is estimated to be approximately \$209 million, not including non-pavement elements, such as bridges, curb and gutters, sidewalks, drainage, signs, etc. In addition to our roads, Public Works maintains 54 bridges, almost 8,000 road signs, miles of guardrail and countless culverts.

The County's maintained roads are comprised of 608.79 centerline miles of paved and unpaved roads. However, the StreetSaver database only analyzes approximately 544 paved miles, of which 17 miles are arterials, 82 and 102 miles are major and minor collectors, respectively, and 343 miles are residential/local roads. The remaining gravel roads are not included in the condition assessment as StreetSaver only analyzes paved roads.

The pavement condition index (PCI), is a measurement of pavement grade or condition and ranges from 0 to 100. A newly constructed road will have a PCI of 100, while a failed road will have a PCI of 25 or less. The pavement condition is primarily affected by the climate, traffic loads and volumes, construction materials, and age. County roads are routinely inspected by professionally trained county staff; these inspections are the basis for the PCI rating.



Figure 1. Pavement Condition Categories

Overall, the County’s average network PCI is 24, which includes all paved roads i.e., arterials, collectors and residential or locals. The County network is considered in “Very Poor” condition decreasing 22 points from 2012 to present day: 46 in 2012; 41 in 2014; 36 in 2016; 33 in 2018; 28 in 2021, and 24 in 2022.

Although the PCI is an important assessment tool, the average PCI does not completely describe the road network. Table 1 provides a summary of the PCI by functional class. The arterial and collector roads in the County are in slightly better condition than the residential/local roads. This is typical of most agencies since arterials and major collectors generally have the highest priority for rehabilitation due to their high traffic volumes and eligibility for state and federal funds.

Table 1. Pavement Network and Condition Summary (2022)

Functional Class	Centerline Miles	Lane Miles	% of the Network (by area)	Average PCI
Arterial	17	41	4%	40
Rural Major Collector	82	167	34%	42
Rural Minor Collector	102	200		29
Residential or Local	343	672	62%	16
Total	543.7	1,079.8	100%	28 (network average)

County arterials include Mono Way and LaGrange Road; major collectors include Tuolumne Road and Standard Road; minor collectors include Crystal Falls Drive and Wards Ferry Road. As you can



see from Table 1, the majority of the County's roads are classified as residential/local. Based on the pavement condition categories of Figure 1, the County's arterials, major collectors and minor collectors are in poor condition while the residential/local roads are in very poor condition. Figure 2 shows the current PCI by functional classification.

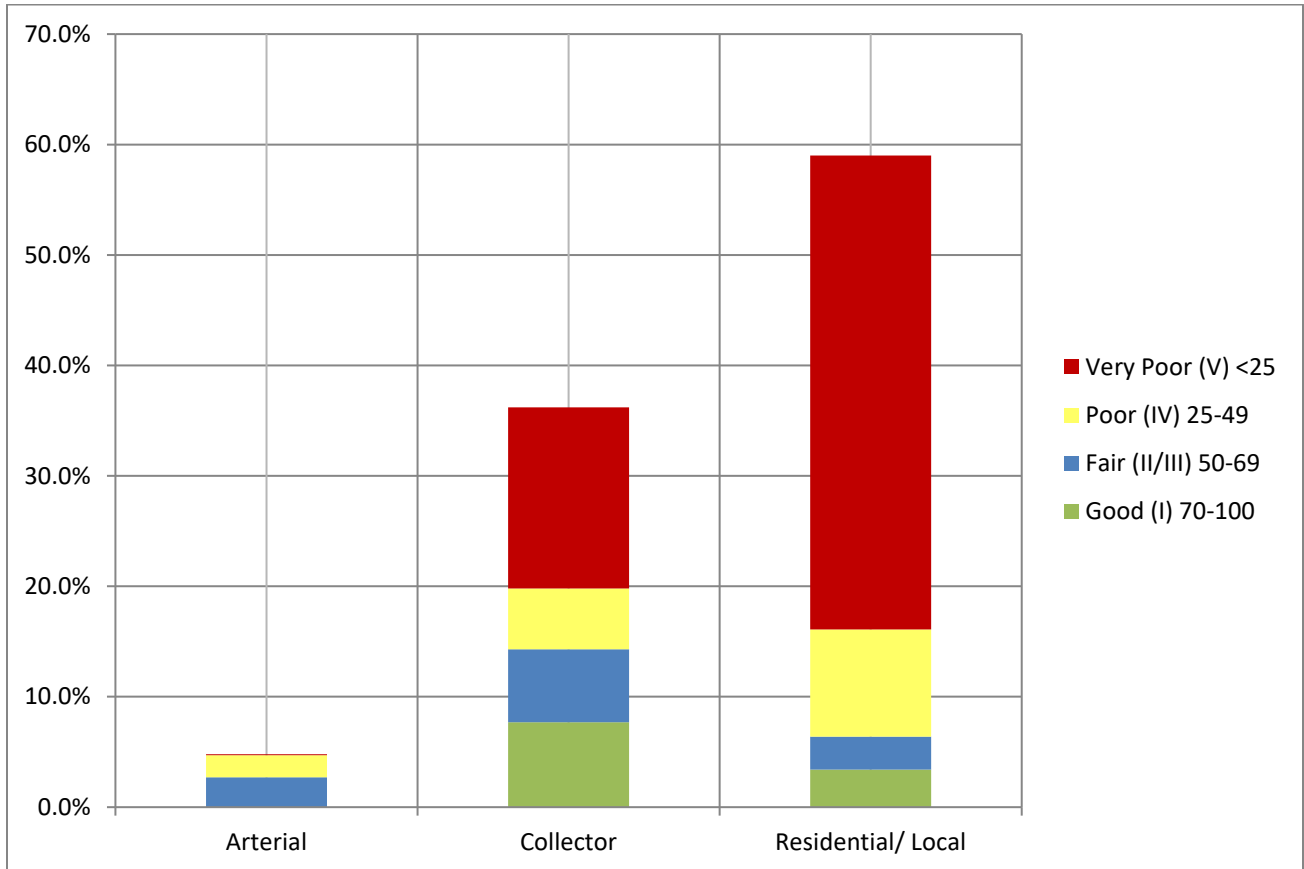


Figure 2. Current PCI by Functional Classification

Current Budget and Maintenance Practices

The County received approximately \$11.3 million into the Road Fund in Fiscal Year 20/21; of this approximately \$1.2 million was available for road rehabilitation and preventative maintenance through capital projects. The remaining funding is allocated toward a multitude of other equally important needs including routine road maintenance; equipment purchases, i.e., street sweeper, pothole patcher, and equipment maintenance; permitting; grading and encroachment compliance; and, development support. Routine road maintenance includes:

- Bridge maintenance/repairs
- Signal maintenance/repairs



- Guardrail maintenance/repairs
- Crack sealing
- Pothole patching
- Culvert maintenance/replacement
- Snow removal
- Tree/brush removal
- Shoulder/ditch cleaning
- Maintaining pavement markings
- Maintaining gravel roads
- Roadside spraying for vegetation control
- Graffiti and litter removal

The engineering division actively seeks grant funding to augment the road budget. Currently we have approximately \$70 million of active grant-funded projects in various phases, of which \$43 million is bridge replacements, \$4 million is safety improvements on roads, and \$14 million is the federal lands access program (FLAP) reconstruction of Evergreen Road. These grant-funded projects often require a local match of up to 20%, which comes from the \$1.2 million available for road rehabilitation and preventative maintenance.

Public Works has had to divert resources away from routine and preventative maintenance to repair damage from the 2017, 2018 and 2019 storms. Though FEMA and CalOES have provided funding for the majority of these projects, there has been a required local match of between 6.25% and 25% of the total cost. To date, Public Works has spent approximately \$3.5 million of Road Fund on the local match for these projects. Additionally, these storm damage projects required significant staff time, from our road crews repairing damage to our engineering division permitting, procuring, and managing the projects. Public Works is pleased to say that all but one of our storm projects were completed by late 2021, allowing us to focus on a significant backlog of capital projects.

Budget Scenarios

Once the pavement condition has been determined, and the appropriate maintenance treatments are assigned in the StreetSaver decision tree, then it is possible to estimate the funding needs for the County's maintained roads. The next step in developing a cost-effective maintenance and rehabilitation strategy is to conduct several "what-if" analyses. Using the StreetSaver budget scenario module, the impacts of various budget "scenarios" can be evaluated.

In a perfect world, all required repairs would be funded, and our road network would be considered in good condition. This "perfect world" scenario would cost an estimated \$296 million over the next 20 years to eliminate all unfunded backlog and maintain a network PCI of 70 or above. We realize that given the current funding opportunities, the "perfect world" scenario is unrealistic; thus, this report will focus on the following three scenarios.



Scenario 1: Existing Funding – Public Works receives approximately \$1.2 million annually for preventative maintenance and rehabilitation. At this funding level we can expect the network PCI to be a 13 by 2042, with 80% of our roads in very poor condition.

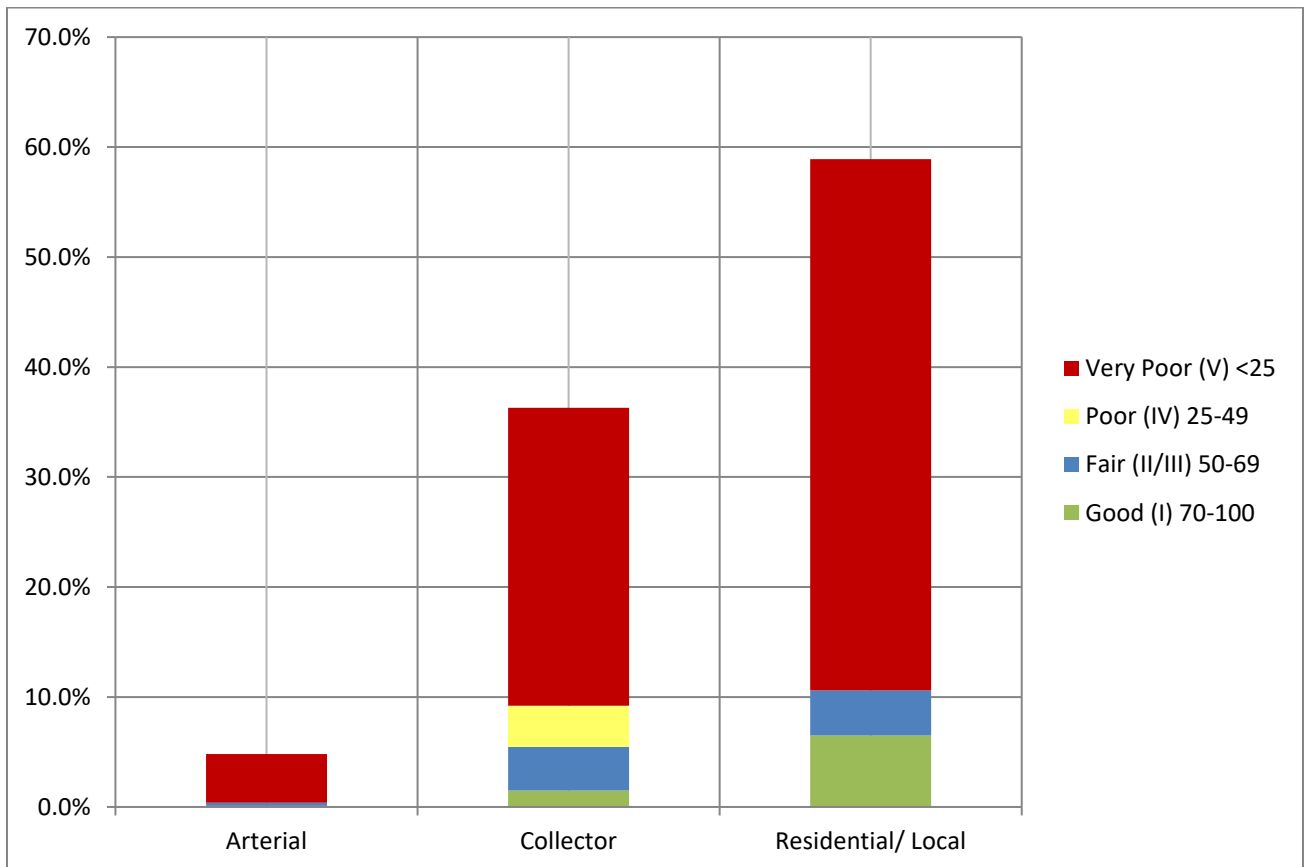


Figure 3. Scenario 1 - Existing Funding 2042 Condition Summary



Scenario 2: Minimum PCI Goals (100 – 70 – 10) and Additional Funding – In 2018, your Board adopted the goal of keeping a minimum percentage of each classification in good condition (100% Arterials/70% Collectors/10% Locals). This scenario requires approximately \$143 million over the next 20 years (\$42 million in year one and varying amounts annually thereafter). This scenario would increase the overall network PCI to 32 in 2042, 19 points higher than the projected PCI under existing funding and leaves 42% of our roads in good condition. This option would require additional revenue sources to achieve.

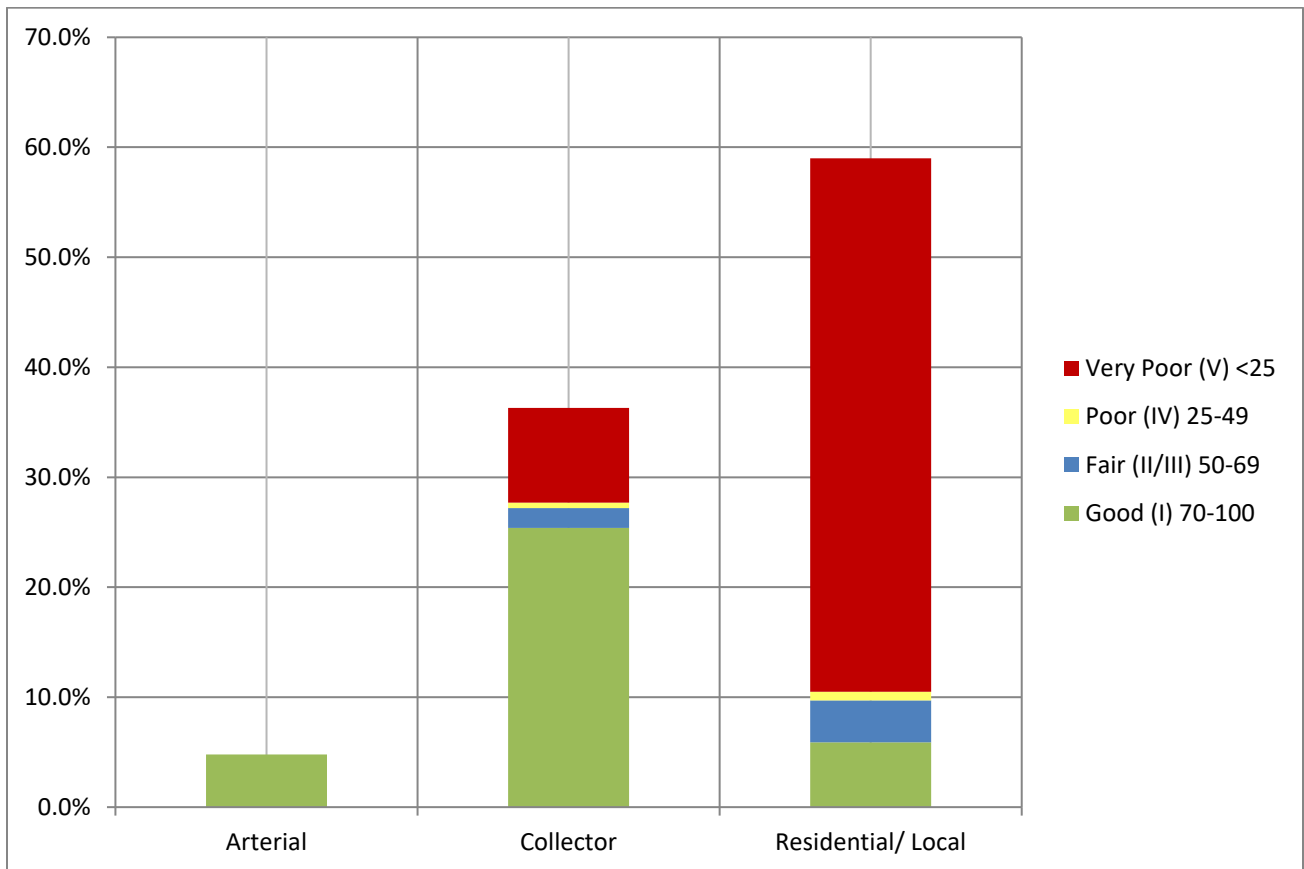


Figure 4. Scenario 2 - Minimum PCI Goals (100-70-10) 2040 Condition Summary



Scenario 3 Local Tax Measure – There are 25 “self-help” counties in California, representing approximately 88% of the population. This scenario looks at the effects of a ½% local sales tax measure, with all proceeds going toward road rehabilitation and maintenance. A ½% local sales tax could raise \$2.25 million annually, increasing the funding for preventative maintenance and rehabilitation to \$3.45 million. This scenario would increase the network PCI to 20 in 2042, 7 points higher than the projected PCI under existing funding and leave 26% of our roads in good condition.

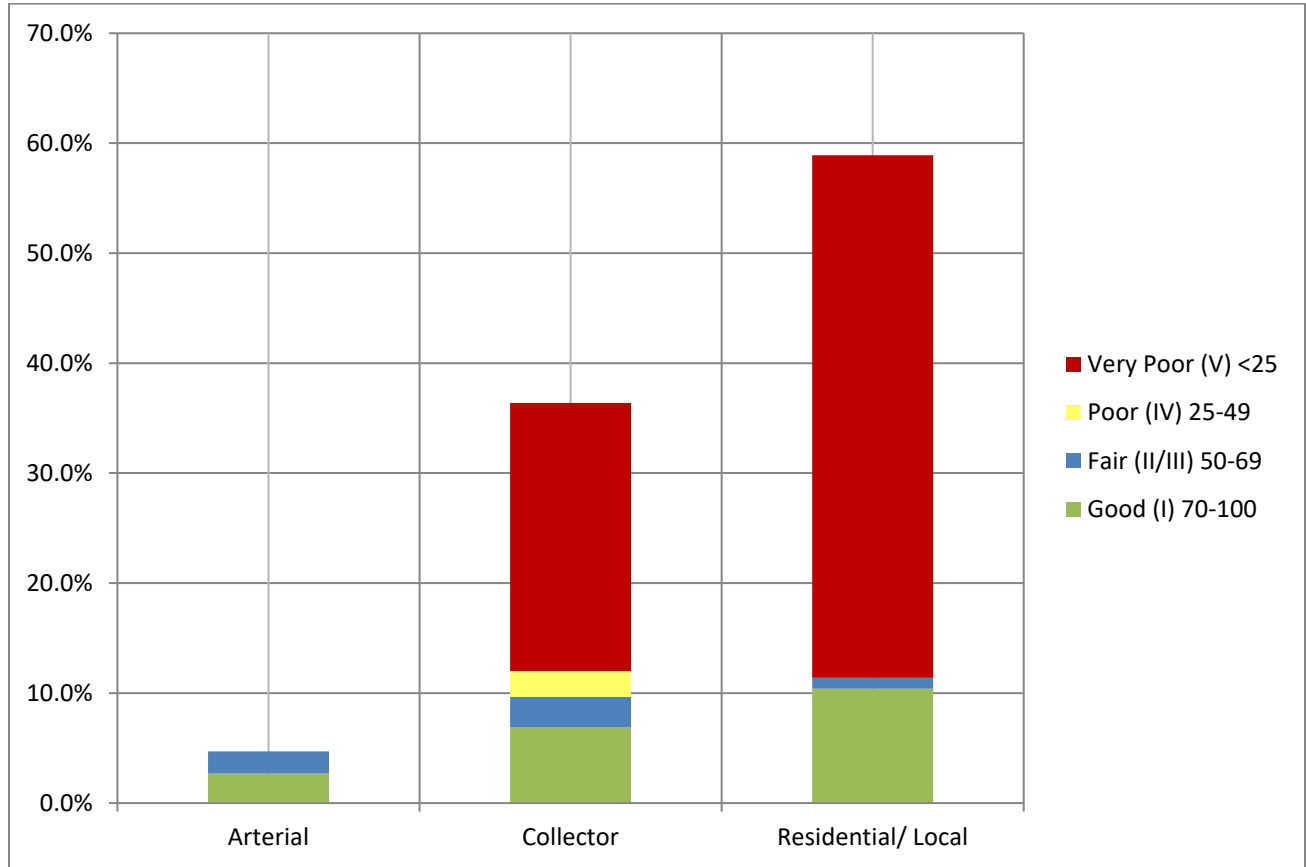


Figure 5. Scenario 3 - Local Tax Measure 2042 Condition Summary



Conclusions

With an estimated replacement cost of over \$200 million, Tuolumne County has a substantial investment in its County-maintained road system. Unfortunately, due to many years of funding shortfalls resulting in years of deferred maintenance, the County-maintained roads are in poor to very poor condition. Approximately \$296 million is required over the next twenty years for pavement alone. This estimate does not include required routine maintenance and other transportation infrastructure needs.

But we do have options. We can maintain the status quo; at current funding levels, the overall PCI of the County road network will continue to decline and is projected to be a 13 by 2042. Or we can seek additional revenue source(s); invest more on road rehabilitation and maintenance to improve road conditions. One possibility is a dedicated local sales tax to provide supplemental revenues to roads. All funding raised by a local sales tax would stay in the county to be used for local projects only. This would also allow the County to compete for state and federal grants on a larger scale by providing much needed local match.

Additionally, we can continue to dedicate a portion of one-time funds to shovel-ready road projects, as well as maximizing our current funding by trialing innovative and cost-effective road treatments.