



TECHNICAL MEMORANDUM

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To:	Paul Herman, Pankaj Joshi		
From:	Margot Yapp, Shahram Misaghi, Jolina Karam		
Subject:	Fresno Regional Analysis		

Background

The Fresno Council of Governments (COG) is a public agency designated by the state to oversee regional transportation planning that encompasses all the cities within Fresno County as well as the unincorporated County. This includes sixteen member jurisdictions (see Table 1).

Historically, Fresno COG's sixteen-member jurisdictions have employed a variety of approaches to determine what pavement treatments to perform and where to apply them. While some jurisdictions have used pavement management programs (PMPs), others have employed more traditional approaches. Maintaining an up-to-date PMP is essential for local governments to effectively track road inventories, evaluate pavement conditions, identify maintenance and repair needs, estimate associated costs, prioritize projects, and plan budgets accordingly.

Due to limited funding, pavement maintenance and repairs have been insufficient throughout Fresno County, with small cities being particularly affected. In 2008, the Countywide average Pavement Condition Index (PCI) was 74, indicating a "good" condition. However, by 2021, it had declined to 57, placing it in the "at risk" category.

In 2025, Nichols Consulting Engineers Chtd. (NCE) assisted all sixteen member jurisdictions in implementing their PMPs using StreetSaver®, a pavement management decision-support tool developed by the Metropolitan Transportation Commission. All Fresno COG jurisdictions have access to the StreetSaver® PMP to help manage their network. It was therefore possible for Fresno COG to utilize the StreetSaver regional license and perform regional funding analyses.

As part of this study, NCE aggregated the PMP databases from all sixteen member jurisdictions to perform the regional analyses. This memorandum presents a compilation of those results, focusing on the budget needs and funding analyses. These analyses illustrate the effects of various funding scenarios on pavement condition and deferred maintenance over a 10-year period. This compiled approach ensures the report can be easily referenced in the future to track regional trends. The results can also be used to communicate important findings to decision makers and the public.

Countywide Street and Road Inventory

Fresno COG's member jurisdictions maintain approximately 6,283 centerline miles of streets and roads. The majority of the countywide network (97.1%) is composed of asphalt concrete pavements. Of the remaining portion, approximately 2.7% are surface treated roads owned and managed by Fresno County, 0.2% are gravel roads, and less than 0.1% are concrete roads. Table 1 summarizes the road network by jurisdiction. Although gravel sections are included in the databases, they were not included in the analyses.

The analyses performed were based on the most recent StreetSaver® databases between March 2025 and September 2025. Also, Table 1 provides detailed information on the extent of paved surfaces within each jurisdiction, as well as the cumulative paved area across the region, which totals approximately 993,002,285 square feet (equivalent to 35.6 square miles).

Table 1. Countywide Summary Statistics

Jurisdiction	Paved Centerline Miles	No. of Sections	Paved Area (sf)	Gravel Area (sf)	2025 PCI
Clovis	484.8	3381	85,811,364	0	71
Coalinga	50.0	299	10,940,289	9,396	58
Firebaugh	20.7	165	4,337,338	67,238	54
Fowler	37.5	260	7,883,475	0	63
Fresno (City)	1805.3	19,628	354,633,213	25,500	64
Fresno (County)	3388.7	8,266	428,481,730	431,012	66
Huron	11.1	90	2,324,152	595,034	46
Kerman	60.8	565	12,152,573	0	71
Kingsburg	46.0	319	9,379,632	0	66
Mendota	27.6	225	5,918,760	328,525	40
Orange Cove	33.4	169	6,207,592	327,486	34
Parlier	36.9	340	8,040,438	0	69
Reedley	98.6	1,150	19,528,938	43,300	51
San Joaquin	13.5	95	2,836,451	44,636	34
Sanger	87.2	586	17,694,229	36,256	67
Selma	81.4	537	16,832,112	0	60
Countywide	6,283	36,075	993,002,285	1,908,382	64.8

The PCI is a measure of pavement condition and ranges from 0 to 100. A newly constructed road has a PCI of 100, while a failed road has a PCI of 25 or less. Pavement conditions are affected by the environment, traffic loads and volumes, construction materials, and age. The PCI for the countywide network is **64.8**. This value is an area-weighted calculation. The definitions of the pavement condition categories and PCI ranges are shown in Table 2. These are the PCI “breakpoints” used in StreetSaver®.

Table 2. Pavement Condition Categories.

Condition Category	PCI Range	Description
Good	70 – 100	Pavements with minimal surface distress that may include some hairline longitudinal/transverse cracks and/or weathering. The pavement structure is sound, and minor oxidation may occur.
Fair	50 – 69	Pavements with significant distress that is predominantly non-load-related, such as longitudinal/transverse cracks, bleeding, block cracking, weathering, raveling, etc. The pavement structure is sound, and some oxidation has occurred.
Poor	25 – 49	Pavements with moderate to severe surface distresses. Extensive weathering or raveling, block cracking, and load-related distresses such as alligator cracking, rutting, and potholes may occur.
Very Poor	0 – 24	Pavements with severe weather-related distress and large quantities of load-related distress. These pavements are nearing the end of their service life.

The entire street network replacement cost is estimated to be approximately \$12 billion. This can be viewed as the value of the pavement network and is the amount needed to reconstruct the entire paved network. The replacement cost is calculated by multiplying the total pavement area by the unit cost of reconstruction of the pavement structure. It does **not** include related infrastructure assets such as sidewalks, signals, markings, signs, storm drains, etc.

Current Pavement Conditions

The current overall weighted average PCI for the network is 64.8, which places the overall street network pavement condition in the “Fair” category. Figure 1 shows the current pavement conditions of all jurisdictions, as well as the overall network conditions. The overall street condition assessment was calculated based on each jurisdiction’s paved area and it shows that 43.9% of the pavement network is in “Good” condition, 30.7% is in “Fair” condition, and 25.4% is in “Poor” and “Very Poor” conditions. Note that labels smaller than 10% are not shown on the chart for readability (Figure 1).

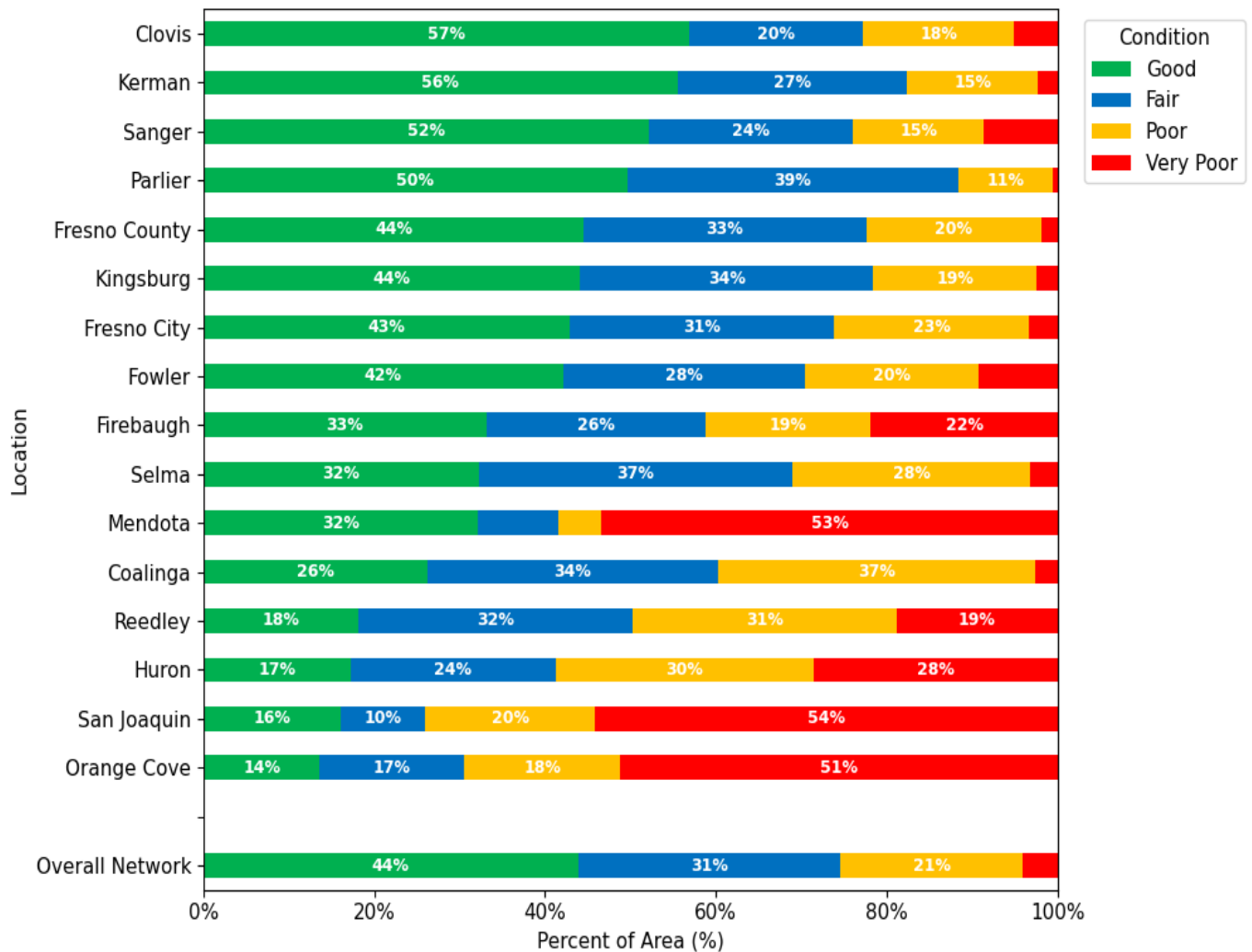


Figure 1. Current Pavement Conditions (Jurisdictions vs. Overall Network)

Funding Comparisons

Figure 2 shows the average funding available per mile per year, over the 10-year period. The annual budgets vary significantly, and range from approximately \$2,000 per mile per year to nearly \$54,000 per mile per year, depending on jurisdictional resources.

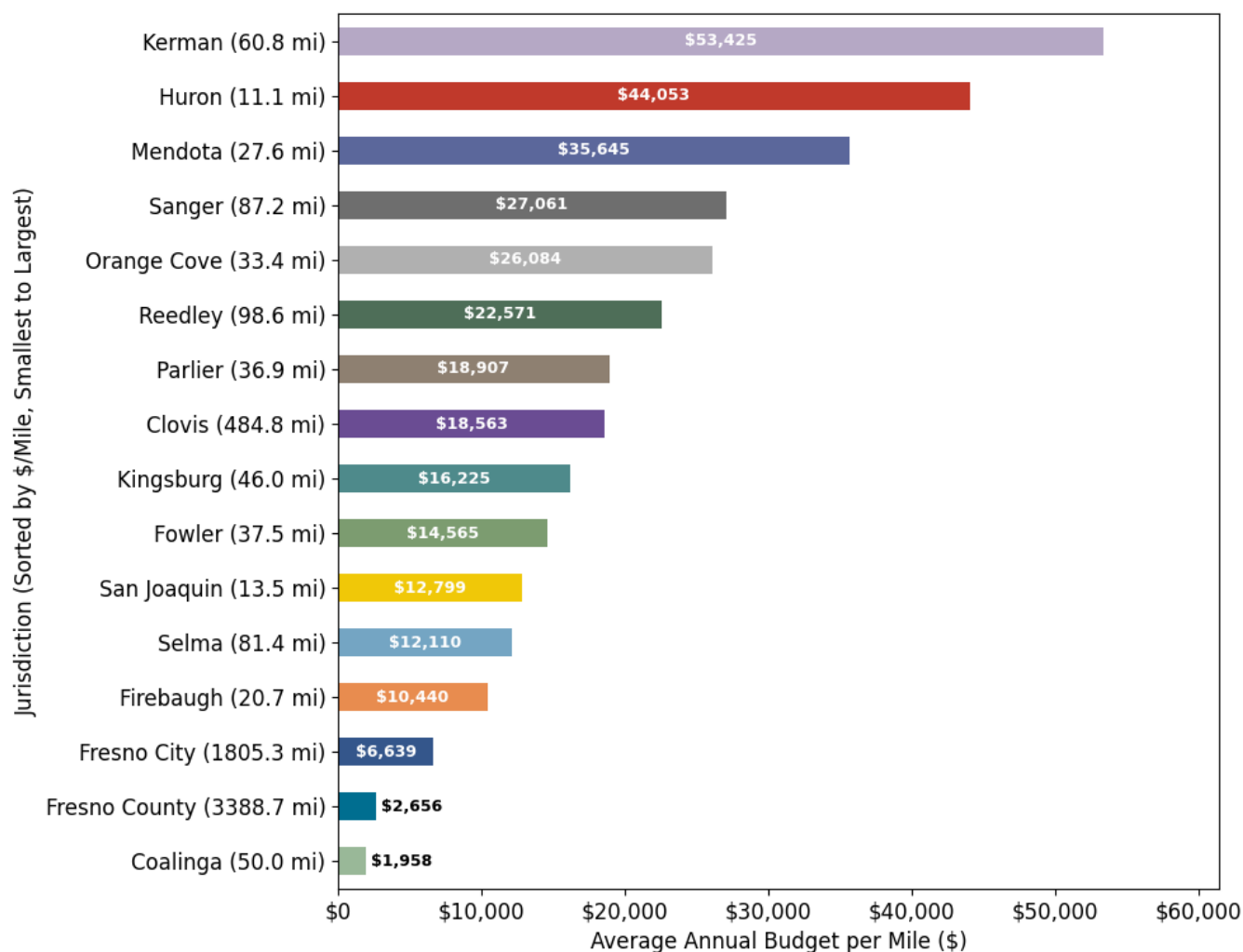


Figure 2. Average Funding per Mile by Jurisdiction.

Decision Tree and Treatment Unit Costs

A decision tree represents a strategy for assigning pavement maintenance and rehabilitation (M&R) treatments to candidate management sections. Typically, these are grouped by functional classification and include treatments for each pavement condition category, as well as their corresponding unit costs. Decision support tools, such as StreetSaver®, are programmed to use decision trees and unit costs to perform budget scenarios that optimize the use of available funds when assigning treatments to pavement sections.

NCE met with individual jurisdictions to evaluate the advantages and disadvantages of various pavement treatment strategies. A customized decision tree was developed for each agency, and this was reviewed and formally approved by local agency representatives.

The unit costs were estimated using bid tabs from local and neighboring jurisdictions, including the Cities of Fresno, Firebaugh, Kerman, Kingsburg, Reedley, San Joaquin, Sanger, and Parlier. Table 3 shows the typical treatments used by functional class and includes the range of unit costs across all agencies.

Table 3. Regional Decision Tree

Functional Class	Condition Category (PCI)	Typical Treatments Applied	Estimated Unit Cost (\$/SY)
Arterial	Good (70 – 100)	Do Nothing - Slurry Seal + Crack Seal/ Fog Seal	\$1.50 - \$11.25
	Fair (50 – 69)	Slurry/Cape Seal + Crack Seal/1.5-2.0" Mill and Overlay	\$16.00 - \$47.75/ \$25.00 - \$79.50
	Poor (25 – 49)	2.5" Mill and Overlay/CIR*/FDR** with HMA Overlay	\$58.00 - \$96.00
	Very Poor (0 – 24)	FDR** + Overlay/ Reconstruct/3.5" Mill and Overlay	\$ 76.00 - \$146.50
Collector	Good (70 – 100)	Do Nothing/Slurry Seal + Crack Seal/Fog Seal	\$1.50 - \$10.75
	Fair (50 – 69)	Slurry/Cape Seal + Crack Seal/1.5-2.0" Mill and Overlay	\$14.50 - \$36.75/ \$25.00 - \$76.75
	Poor (25 – 49)	2.5" Mill and Overlay/CIR*/FDR** with HMA Overlay	\$56.00 - \$92.50
	Very Poor (0 – 24)	FDR** + Overlay/ Reconstruct/2.5-3.5" Mill and Overlay	\$56.00 - \$124.00
Residential	Good (70 – 100)	Do Nothing/ Slurry Seal + Crack Seal/Fog Seal	\$1.50 - \$10.00
	Fair (50 – 69)	Slurry/Cape Seal + Crack Seal – 1.5-2.0" Mill and Overlay	\$10.75 - \$20.25
	Poor (25 – 49)	2.5" Mill and Overlay/CIR*/FDR** with HMA Overlay	\$20.00 - \$62.50
	Very Poor (0 – 24)	FDR** + Overlay/ Reconstruct/2.5" Mill and Overlay	\$ 50.00 - \$98.00

*CIR: Cold in Recycling

**FDR: Full Depth Reclamation

Funding Sources

The Fresno COG member jurisdictions obtain pavement funding from five primary sources.

The Highway User Tax Account (HUTA) is the California State per-gallon tax on gasoline and diesel fuels. This tax has been the primary source of funding for road maintenance throughout the state for many years. However, the rise of alternative fuels, electric vehicles, and more efficient gasoline-powered vehicles has led to reduced gas consumption and is therefore projected to be a declining revenue source.

The Road Maintenance and Rehabilitation Act (RMRA or SB1), passed in 2017, created a new state revenue source funded by an additional per gallon gas tax as well as a new vehicle-registration tax. This funding source is expected to provide Fresno COG member jurisdictions with more than \$49 million per year for road maintenance. As with HUTA, it is expected to be a declining revenue source.

Measure C is a half-cent sales tax passed by Fresno County voters in 1986. This source of revenue provided approximately \$1 billion during the first 20 years (Measure C I) for road and street maintenance and construction, and \$1.4 billion during the reauthorization period from 2007 to 2026 (Measure C II) for multimodal transportation improvements. The current measure (Measure C II) was extended in 2006 and will be sunset in 2027. A minimum of 15% of the Measure C II funding currently goes to local street and road maintenance.

Local Transportation Fund (LTF) is a statewide 0.25 cent general sales tax. It provides transit planning and operation for public transit operators. Local governments receive LTF funds for street and road improvements when there are no unmet transit needs that are deemed reasonable to meet in the areas.

Surface Transportation Block Grant (STBG) is a federal funding source that provides flexible funds for states and local jurisdictions. The STBG can be used to fund a variety of projects including highways, bridges, public roads, pedestrian and bicycle infrastructure, and transit. Because of its flexibility, STBG has served different purposes

over time. Due to the high roadway maintenance needs in the Fresno region in recent years, local jurisdictions in Fresno region have chosen to focus on street and road maintenance with STBG funding. The Regional STBG program is competitive and the funding for each jurisdiction may vary from year to year.

Budget Needs Analysis

A 10-year budget needs analysis was performed to identify the funding required to perform pavement treatments at the optimal time. For all jurisdictions, this was done using the StreetSaver®. These estimates were then added to obtain the countywide estimated budget needs. Table 4 summarizes the budget needs for each jurisdiction at the end of the 10-year analysis, with a total 10-year budget needs for the region of \$5.4 billion.

Table 4. Budget Needs Analysis for Each Jurisdiction

Jurisdiction	10-Year Budget Needs (\$M)
Clovis	431.7
Coalinga	61.6
Firebaugh	26.8
Fowler	40.0
Fresno City	1,988.3
Fresno County	2,162.9
Huron	16.9
Kerman	39.2
Kingsburg	44.2
Mendota	54.8
Orange Cove	60.5
Parlier	38.1
Reedley	158.2
San Joaquin	26.0
Sanger	108.6
Selma	103.2
Countywide	5,361.0

Funding Analyses

Three funding scenarios were selected for analysis to determine the impact of current funding on the countywide condition of streets and roads and on the deferred maintenance (the maintenance and rehabilitation pavement treatments not performed due to insufficient funding) and to determine the funding needed to maintain or improve the current condition of the countywide network.

Scenario 1: Current funding levels;

Scenario 2: Funding required to maintain the current PCI;

Scenario 3: Funding required to improve the current pavement network to PCI of 70, which is Fresno COG's goal

Each funding scenario was analyzed over a 10-year period and includes inflation. The projected regional funding for each scenario and the projected deferred maintenance are shown in Figures 3 to 8. The total 10-year funding for Scenarios 1, 2, 3 are \$436.2 million, \$3.1 billion and \$3.8 billion, respectively.

Scenario 1: Current Funding

In this scenario, the current funding of every jurisdiction was aggregated for the years 2025 through 2034. As seen in Figure 3, the total annual funding ranges from \$45.2 million in 2026 to \$44.9 million in 2034. For 2025, every agency had already planned projects for that specific year, with funding already allocated. This explains the gap between the \$32.4 million budget for 2025 and the \$45.2 million budget for 2026. Labels for City budgets of less than \$0.5 million are not shown in the graph for clarity.

Analysis of the annual budgets allocated by each jurisdiction demonstrates significant variation in funding levels across the region. The City of Fresno allocates the largest annual budget, with \$12 million per year designated for street and road maintenance. Fresno County follows with an annual budget of \$10 million. The City of Kerman dedicates \$3.5 million per year, representing a substantially smaller share compared to Fresno and the County.

Based on this funding level, it is projected that the overall weighted average PCI (64.8 in 2025) will decrease to 48.3 by 2034 (Figure 10).

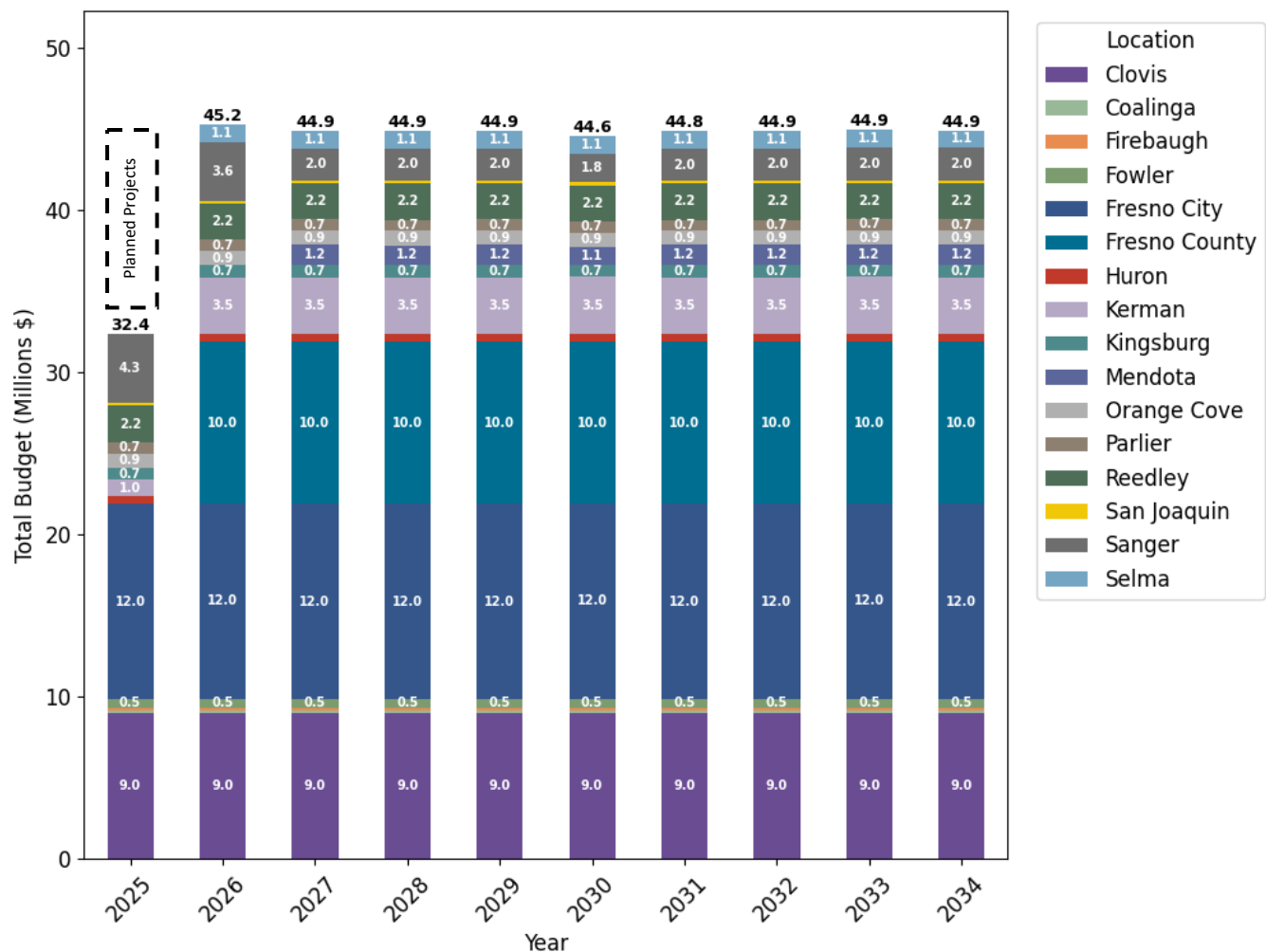


Figure 3. Scenario 1: Available Funding for 10-Year Analysis Period.

Figure 4 shows the individual and overall deferred maintenance for this scenario. Overall, the deferred maintenance will increase from \$2.6 billion in 2025 to \$6.2 billion by 2034.

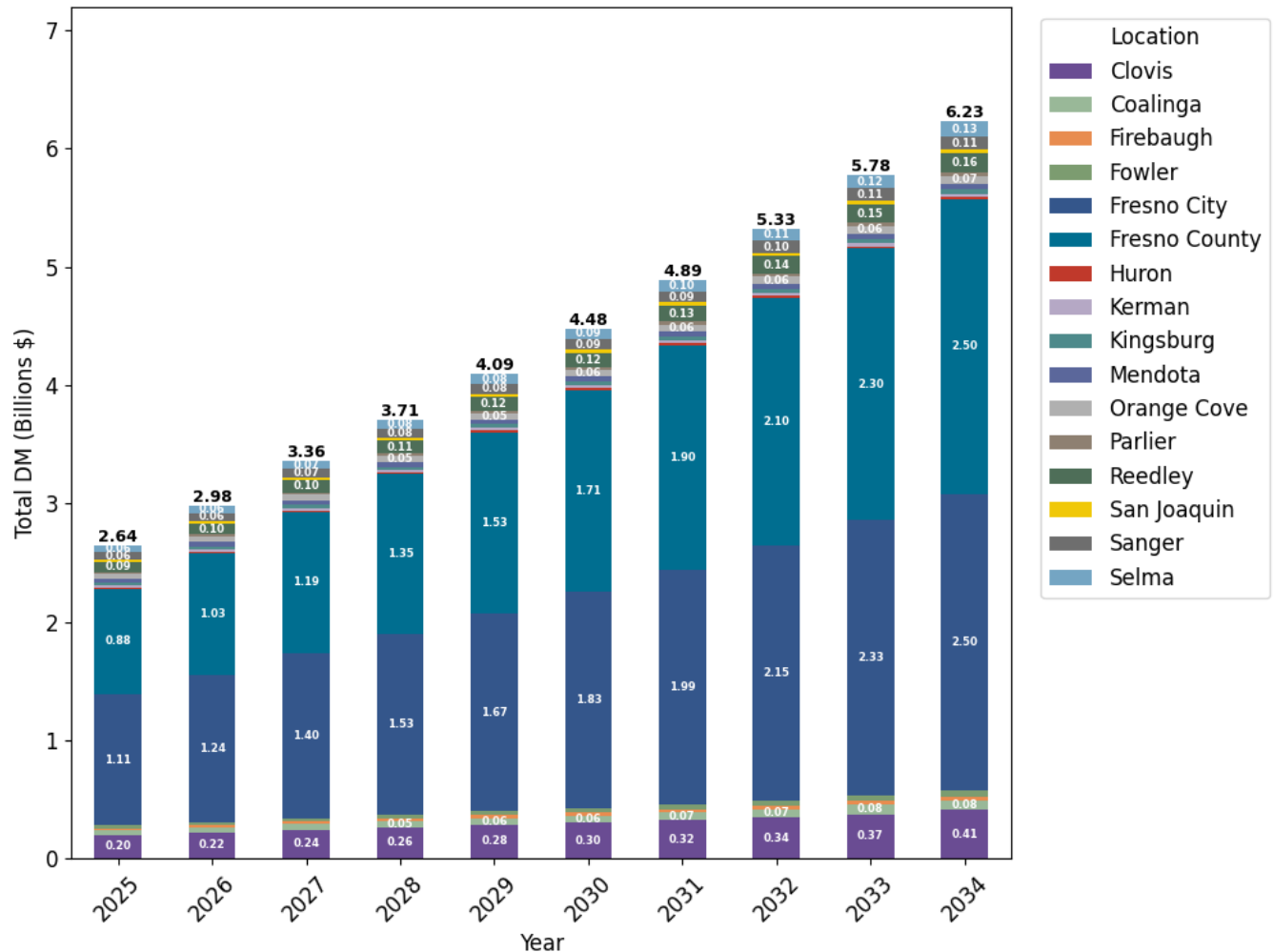


Figure 4. Scenario 1 Deferred Maintenance for the 10-year Analysis Period.

Scenario 2: Funding Needed to Maintain the Current PCI

This scenario determines the annual funding required for each jurisdiction to maintain its current PCI across the entire analysis period. Figure 5 shows the annual budgets required for each jurisdiction as well as the total budget needed for the entire network. Between 2026 to 2034, an average of \$331 million/year is needed to maintain the current PCI, with a maximum budget of \$355.5 million in 2031. The weighted average PCI for the overall network will be maintained at 65.1.

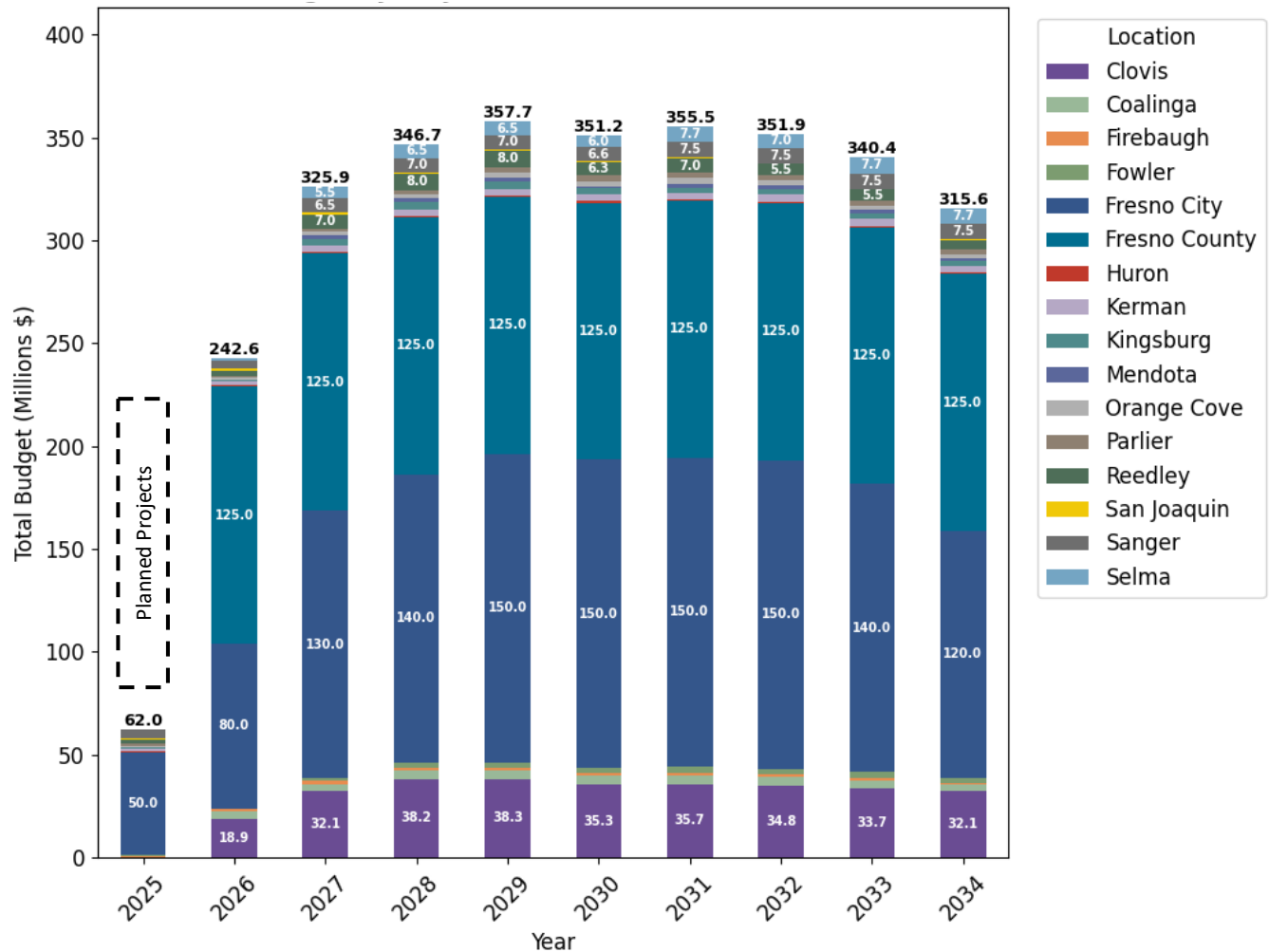
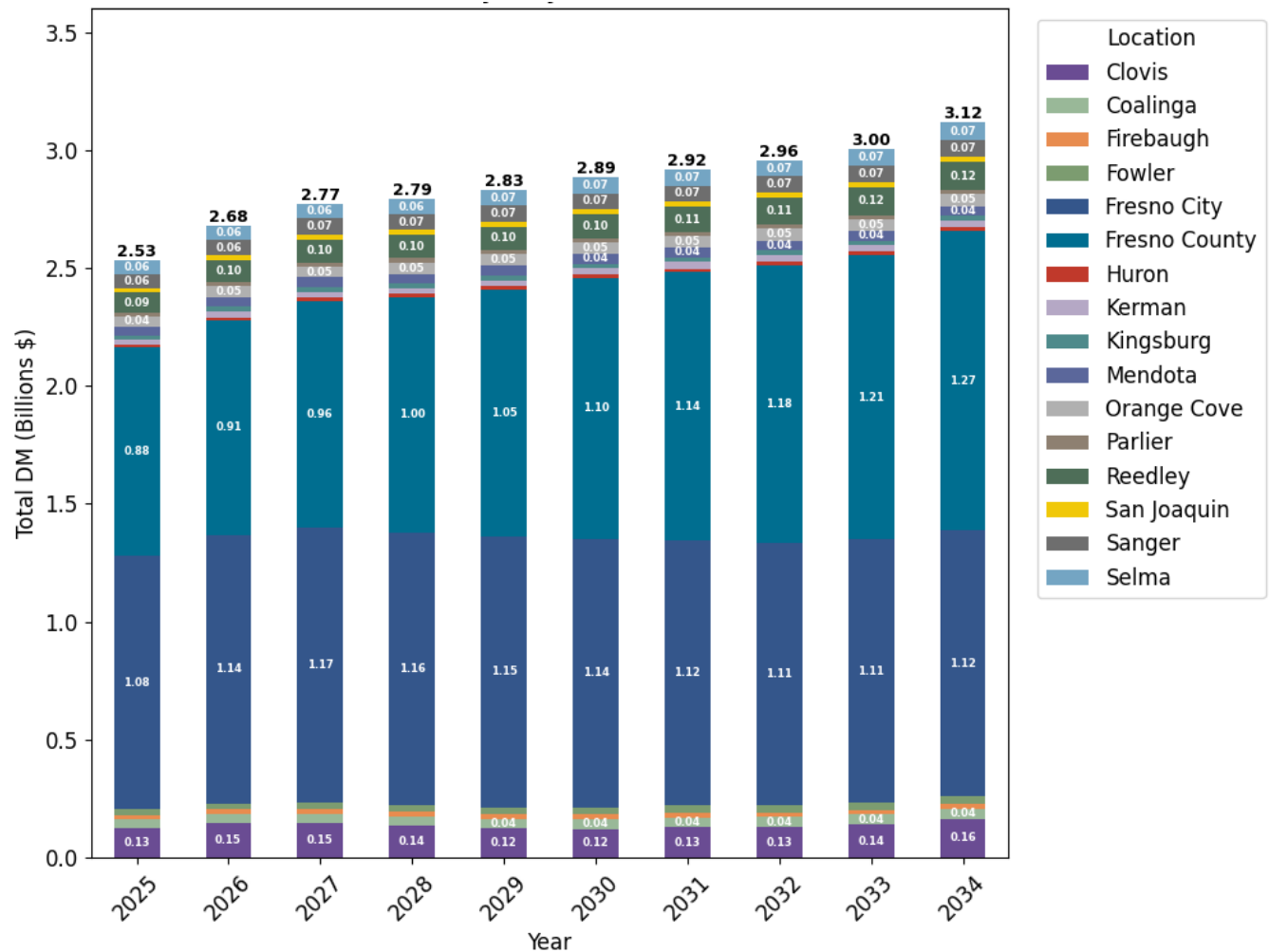


Figure 5. Scenario 2: Funding for the 10-Year Analysis Period.

Although the above funding levels are sufficient to maintain the existing PCI, deferred maintenance costs will increase from \$2.5 billion to \$3.1 billion in 2034 (Figure 6).



Deferred Maintenance Calculation is affected by StreetSaver Target-Driven Scenarios. Results slightly differ.

Figure 6. Scenario 2 Deferred Maintenance for the 10-Year Analysis Period.

Scenario 3: Funding Needed to Improve PCI to 70

This scenario shows the funding required for each jurisdiction to elevate its current PCI to 70 by 2034, in alignment with Fresno COG's PCI goal. This will require \$409.4 million annually, as illustrated in Figure 7.

The demand for funding is expected to reach its peak at \$460.9 million in 2032. This represents a substantial increase in investment, approximately 9 times greater than the current budgets outlined in Scenario 1.

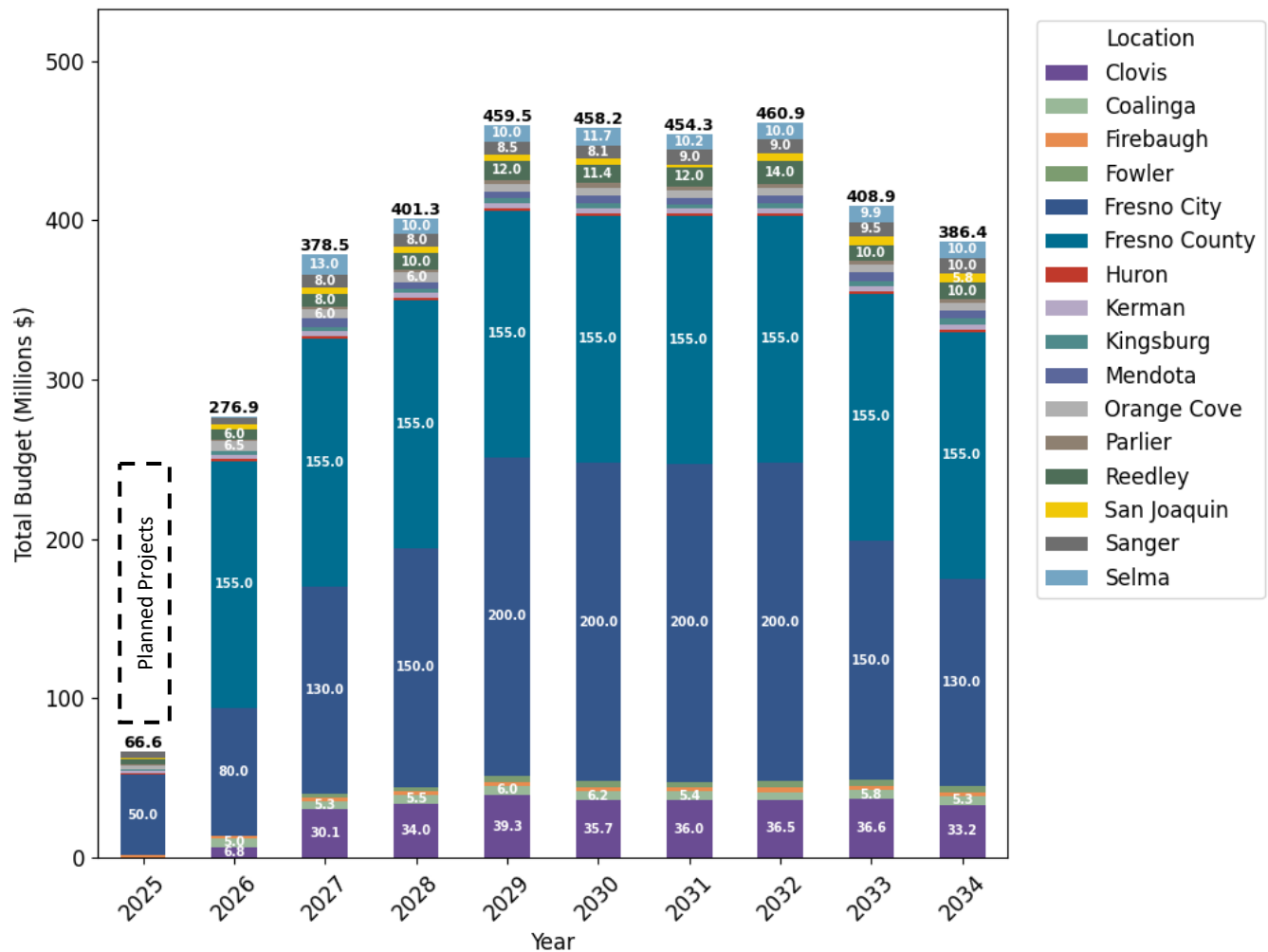
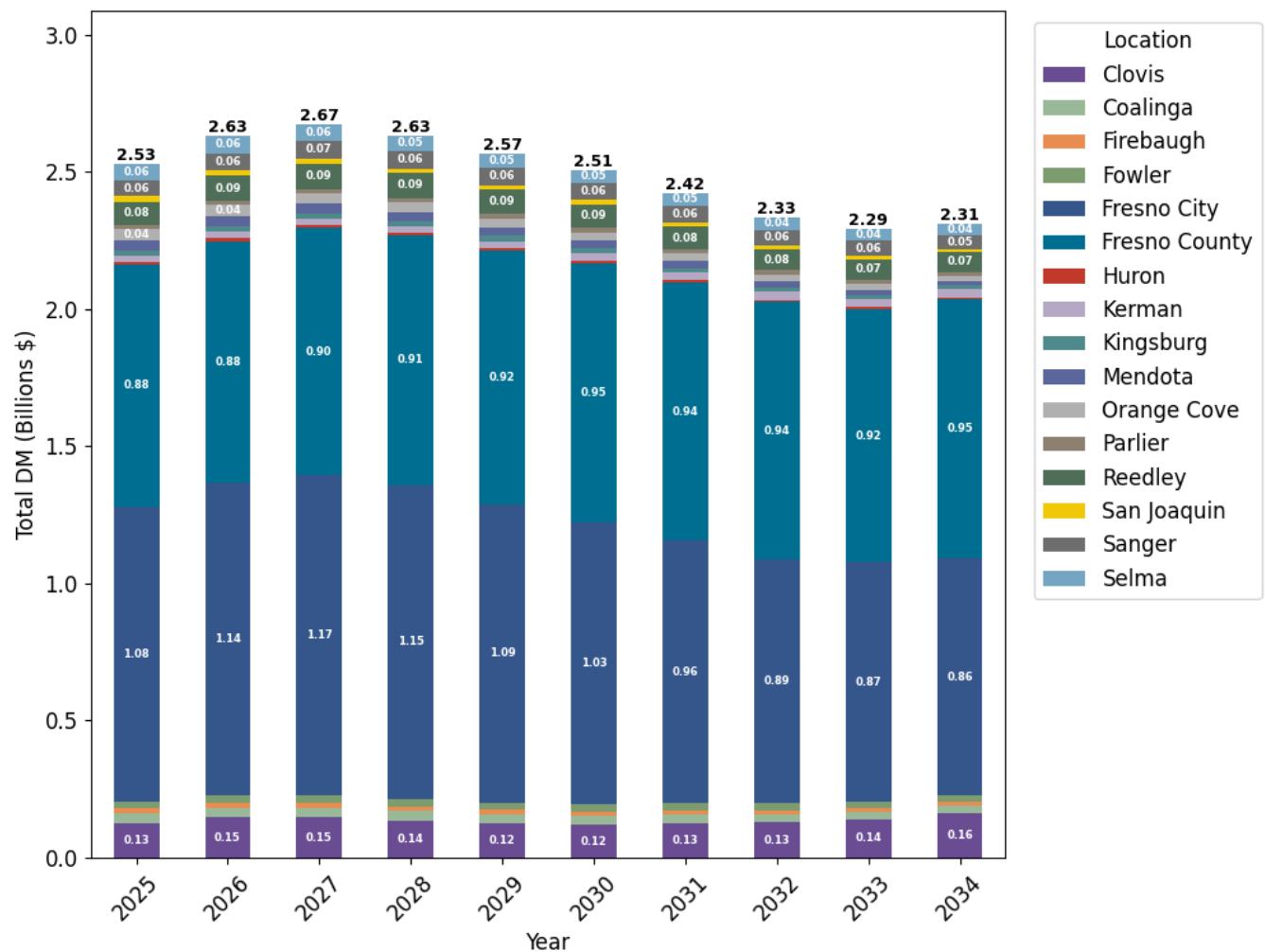


Figure 7. Scenario 3: Funding for the 10-year Analysis Period.

In Scenario 3, deferred maintenance is anticipated to decline by approximately \$220.0 million over the 10-year analysis period, as illustrated in Figure 8. A comparison with Scenario 1 indicates that this scenario results in a reduction of \$3.9 billion (62.9%) in deferred maintenance.



Deferred Maintenance Calculation is affected by StreetSaver Target-Driven Scenarios. Results slightly differ.

Figure 8. Scenario 3 Deferred Maintenance for the 10-year Analysis Period.

Scenario Summary and Comparison

Budget Needs

The 10-year budget needs for the region is estimated to be \$5.4 billion. This unconstrained budget represents the total funding required to apply the most cost-effective treatment at the optimal time for every road section.

Figure 9 shows the percentage of 10-year funding needs met by each scenario. Overall, Scenarios 1, 2, and 3 meet 8.1%, 56.9%, and 70.0% respectively, of the 10-year budget needs. This comparison shows that while current funding (8.1% of need) will cause deferred maintenance to more than double, Scenario 2 (56.9% of need) is required to slightly increase it by \$0.5 billion. Only the 70.0% investment (Scenario 3) is sufficient to both achieve a "Good" PCI and actively pay down the deferred maintenance.

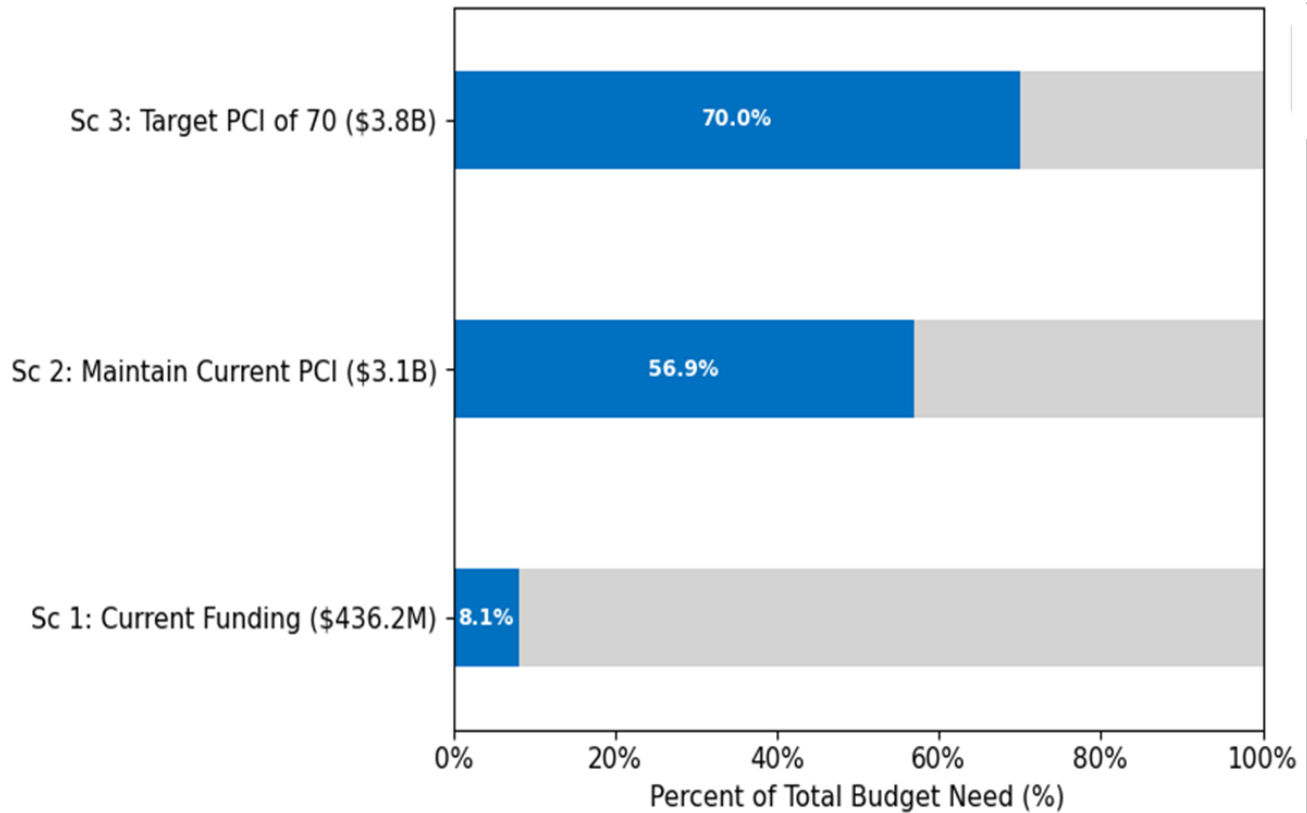


Figure 9. Percent of 10-Year Funding Needs Met by Each Scenario.

Network PCI Breakdown

The three funding scenarios illustrate the significant impact of budget levels on the long-term condition of the Fresno COG region's pavement network. The analyses compare the outcomes of the current funding levels against scenarios required to maintain or improve the network's PCI.

Figure 10 shows the average network PCI for all three scenarios analyzed over the analysis period.

- Scenario 1 (Current Funding): This shows a decrease in the current PCI from 64.8 ("Fair" category) to 48.3 by 2034 ("Poor" category.)
- Scenarios 2 and 3: The two investment scenarios successfully maintain or improve the network condition. Scenario 2 (Maintain Current PCI) stabilizes the network at a PCI of 65.1, which is the statewide average PCI.
- Scenario 3 (Target PCI 70) is the only one that achieves the "Good" category, reaching the 70 PCI goal by 2034.

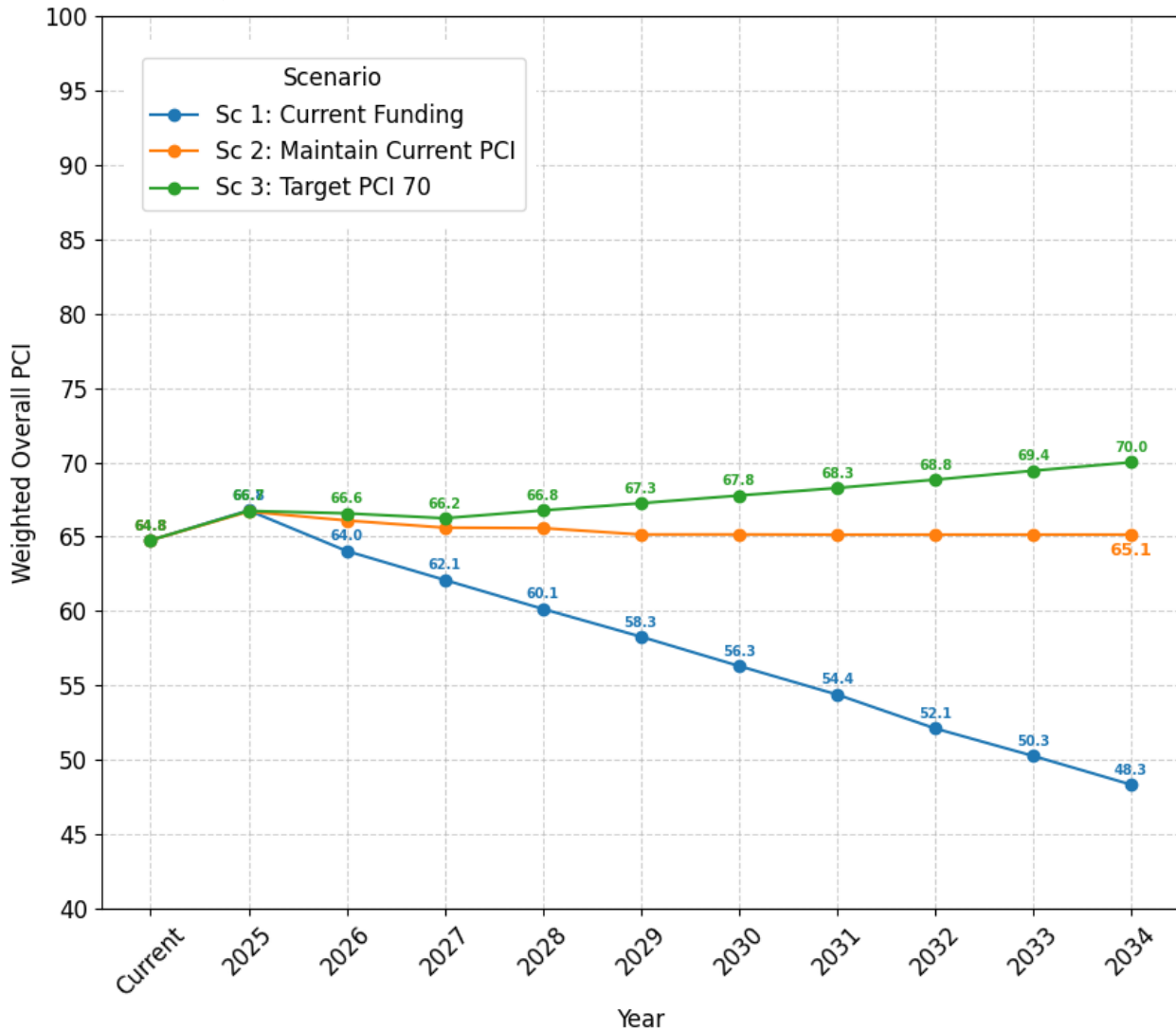


Figure 10. PCI Breakdown for Each Scenario over the 10-year Analysis Period.

Network Condition Profile

Currently, the pavement network consists of 43.9% of its area classified as being in "Good" condition. In contrast, 25.4% of the network falls within the "Poor" or "Very Poor" categories, indicating substantial areas in need of improvement (see Figure 11.)

Under Scenario 1, the network's condition will deteriorate, with "Poor" and "Very Poor" areas increasing to almost half the network (23.7% and 24.8%, respectively). Only one-third (29.4%) will remain in "Good" condition.

Scenarios 2 and 3 both result in improved condition; both scenarios maintain over two-thirds of the pavement in "Good" condition, with Scenario 2 achieving 67.5% and Scenario 3 reaching 74.7%. The combined percentage of roads classified as "Poor" and "Very Poor" is kept relatively low, at 23.9% for Scenario 2 and 17.2% for Scenario 3.

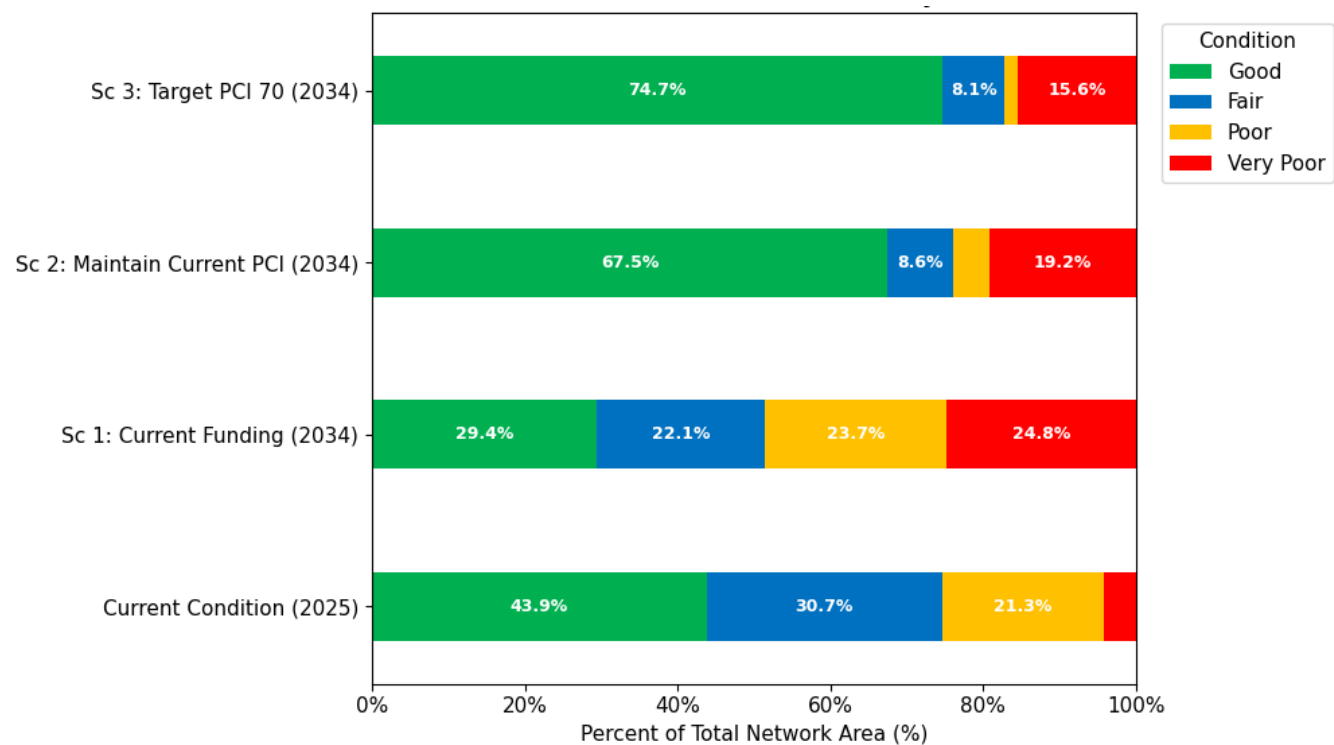


Figure 11. Network Condition Comparisons per Scenario by 2034

Annual Budget and Deferred Maintenance

The three funding scenarios analyzed show the impact of the different budget levels on Fresno’s countywide pavement network. Table 5 provides a summary of each scenario's 10-year budget, the projected deferred maintenance in 2034, and the resulting future network conditions, all compared to the current conditions.

Scenario 1 (Current Funding): The minimal 10-year budget of \$436.2 million is insufficient. This low funding level causes deferred maintenance to more than double, increasing from \$2.6 billion to \$6.2 billion by 2034.

Scenario 2 (Maintain Current PCI): This scenario requires a 10-year budget of \$3.1 billion, an investment increase of approximately 7 times more than current funding. This significant increase effectively manages the backlog, holding the 2034 deferred maintenance to \$3.1 billion. This strategy saves \$3.1 billion in future maintenance and rehabilitations compared to Scenario 1, and achieves a PCI of 65.1, which is the statewide average PCI.

Scenario 3 (Target PCI 70): This is the only scenario that actively reduces deferred maintenance. It requires the largest 10-year investment of \$3.8 billion, which is approximately 9 times greater than the current budget. In exchange for this investment, the network's maintenance backlog is successfully reduced, with the final deferred maintenance decreasing to \$2.3 billion by 2034. This represents a reduction of \$3.9 billion (62.9%) compared to Scenario 1. Residents will experience significantly better experience with the road and streets network, and it begins to approach the historical condition almost 20 years ago.

Table 5. 10-Year Scenarios Summary

Scenario	10-year Budget (\$B)	2034 Weighted Average PCI	2034 Deferred Maintenance (\$B)	2034 Network Condition (%Good)	2034 Network Condition (% Poor/ Very Poor)
Current Conditions	N/A	64.8 (Fair)	~2.6	43.9%	25.4%
Scenario 1: Current Funding	0.4	48.3 (Poor)	6.2	29.4%	48.5%
Scenario 2: Maintain Current PCI	3.1	65.1 (Fair)	3.1	67.5%	23.9%
Scenario 3: Target PCI 70	3.8	70.0 (Good)	2.3	74.7%	17.2%

Summary

In summary, the Fresno COG member jurisdictions have a substantial investment of \$12.0 billion in the pavement network. Overall, the countywide street and road network is in Fair condition, with a 2025 network PCI of 64.8. Of the 6,283 centerline miles in the county, approximately 43.9% are in “Good” condition while about a quarter are in Poor or Failed condition.

The analyses indicate that approximately \$5.4 billion needs to be spent on pavement maintenance and rehabilitation over the next 10 years to essentially repair all streets and roads and bring the network to a condition level where it can be maintained with on-going preventive maintenance. In the long run, this strategy will save money by preventing future pavement deterioration to levels requiring more costly rehabilitation or reconstruction.

The analysis of three funding scenarios showed that current funding levels (\$436.2 million) are insufficient, projecting a decrease in PCI to 48.3 and an increase in deferred maintenance to \$6.2 billion by 2034. Maintaining the network in its current "Fair" condition (PCI of 65.1) requires a 7 times increase in investment (\$3.1 billion), resulting in a minor increase in the deferred maintenance by \$0.5 billion. Achieving the Fresno COG's goal of a PCI of 70 requires a funding increase to \$3.8 billion. This scenario reduces the long-term maintenance backlog (down to \$2.3 billion), saving \$3.9 billion in future costs compared to the current funding path.