

Warren County Department of Public Works

Pavement Management Program



Program Objective

Maintain and repair pavements to maximize their useful service life as cost-effectively as possible.

How will this be accomplished?

Through a carefully planned and implemented program that prioritizes pavement preservation strategies while balancing the need for more costly rehabilitations and reconstructions.

County Road System At a Glance

**Total System Mileage: 244.24 Centerline Miles
(496.80 Lane Miles)**

Functional Classifications

Rural

Major Collector: 12.11
Minor Collector: 74.41
Local Road: 120.08
Total: 206.60

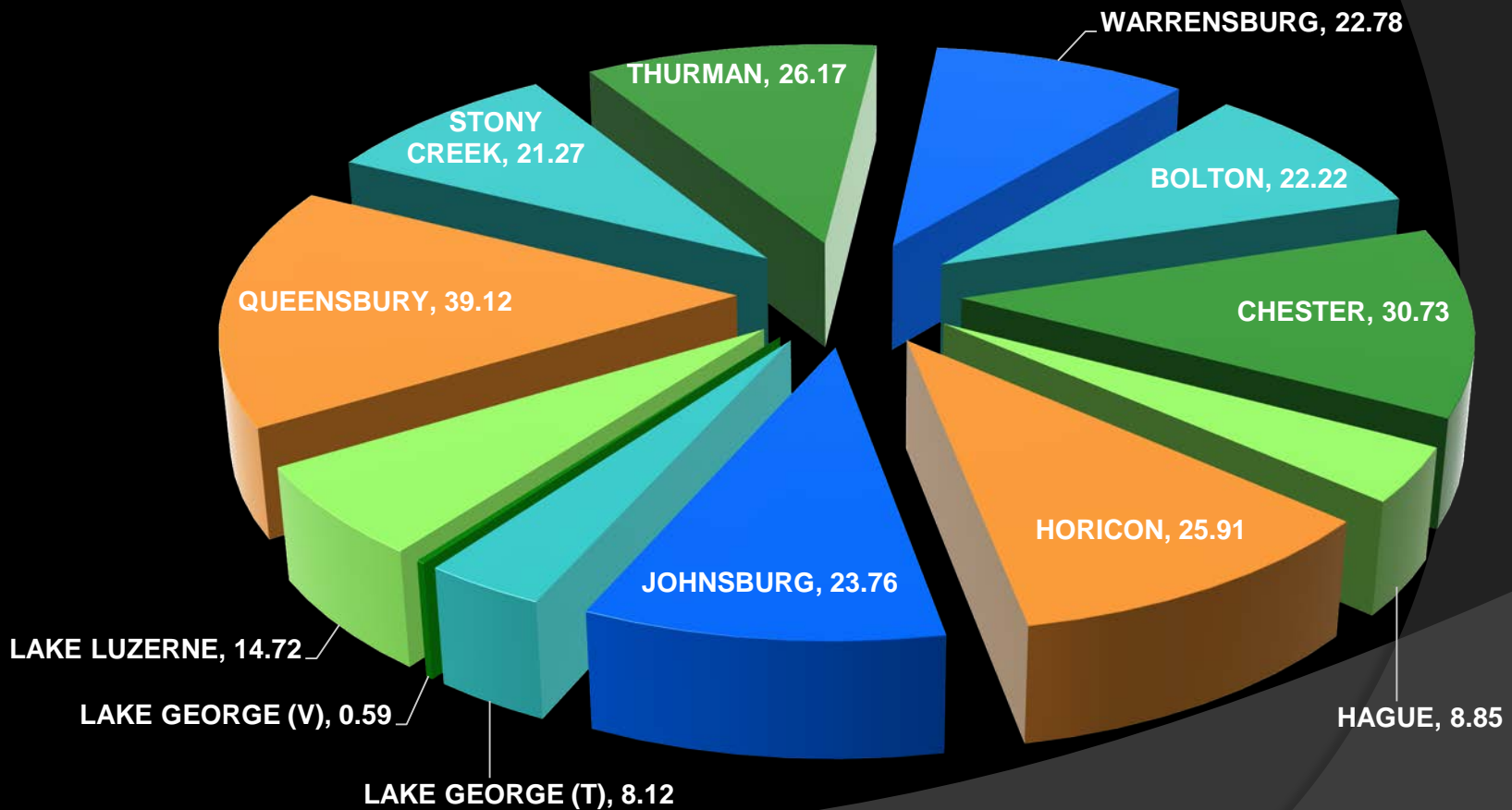
Urban

Principal Arterial: 5.03
Minor Arterial: 19.89
Collector: 11.10
Local Road: 1.62
Total: 37.64

Federal-Aid Eligible Roads = 48.13 miles

County Road System At a Glance

Total County Road Miles per Municipality



Program Development

Preservation program development starts with the 3 following questions...

1. Which roads do we fix?

2. How do we fix them?

3. When do we fix them?

The Right Roads

A great deal can be learned about the structural condition of a road by visually evaluating its surface.

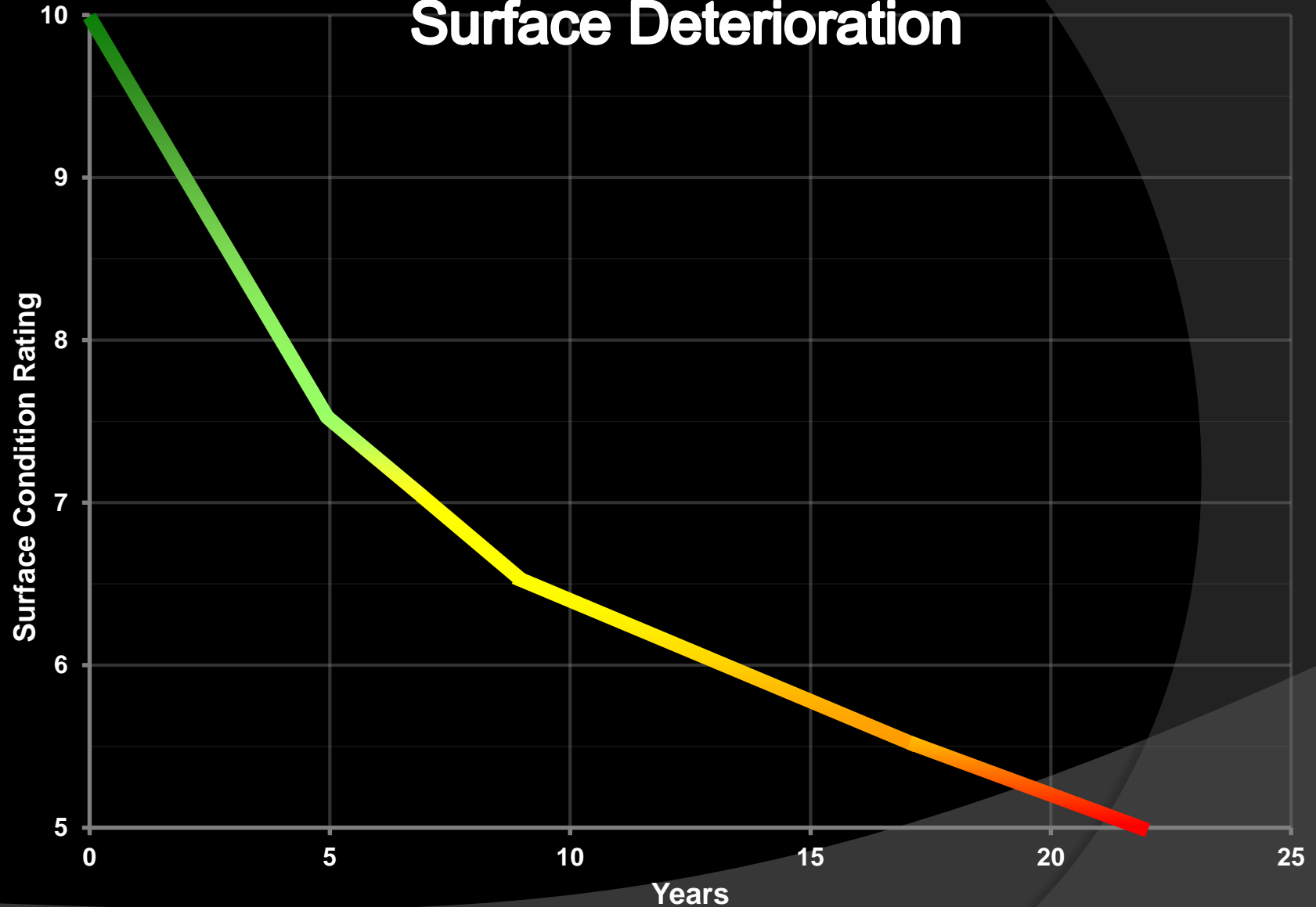
All County roads are surveyed annually and assigned a rating based on the frequency and severity of visible surface distresses in accordance with NYSDOT guidance.

NYSDOT Surface Condition Ratings

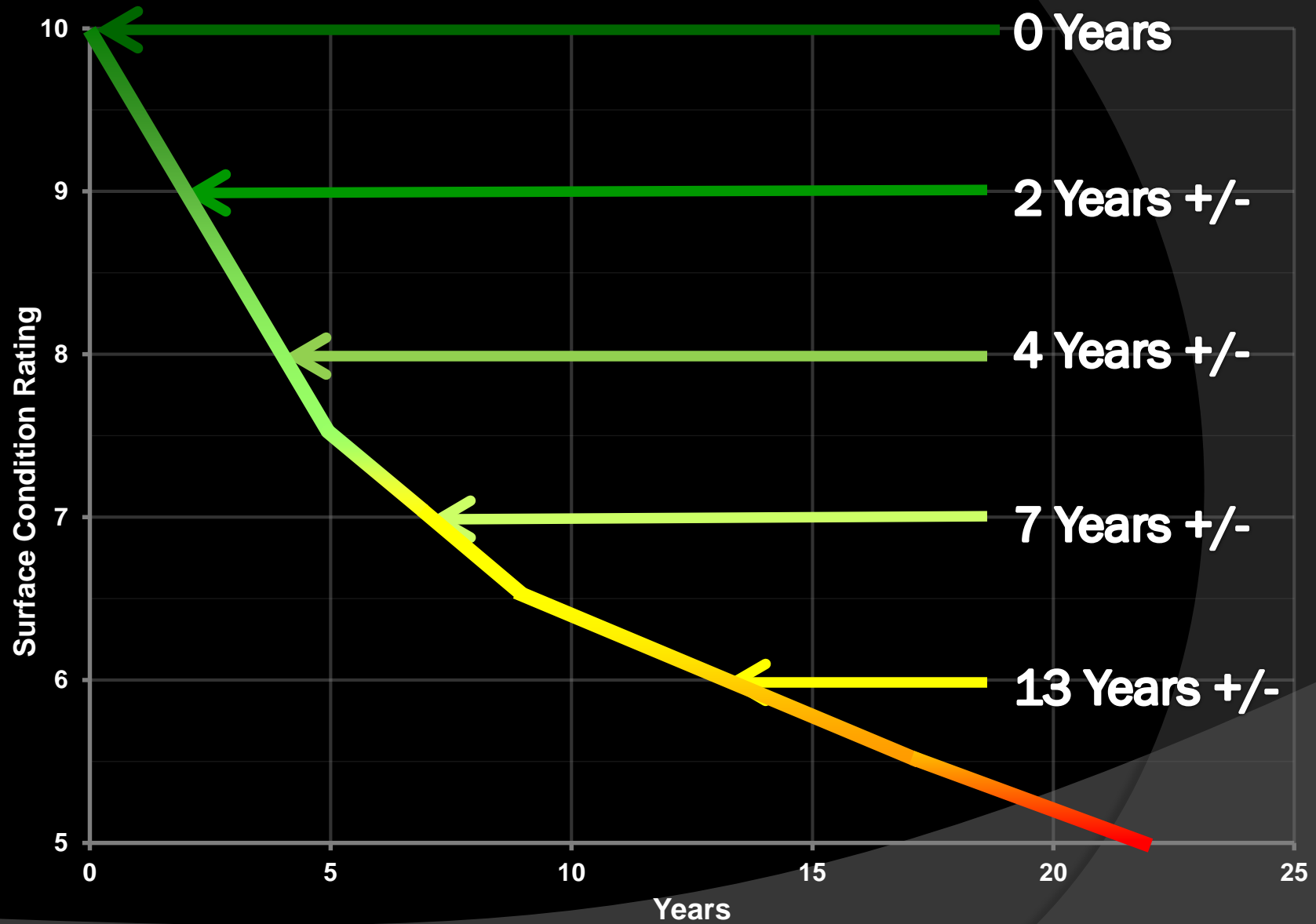
10 – 9:	Excellent
8 – 7:	Good
6:	Fair
5 or less:	Poor

These surface ratings indicate where the roadway segment is in the typical asphalt pavement lifecycle and what treatments are applicable.

Typical Asphalt Pavement Surface Deterioration



Pavement Age



The Right Treatments

The surface rating indicates what range of treatments are best suited for the pavement conditions.

Rating Treatment

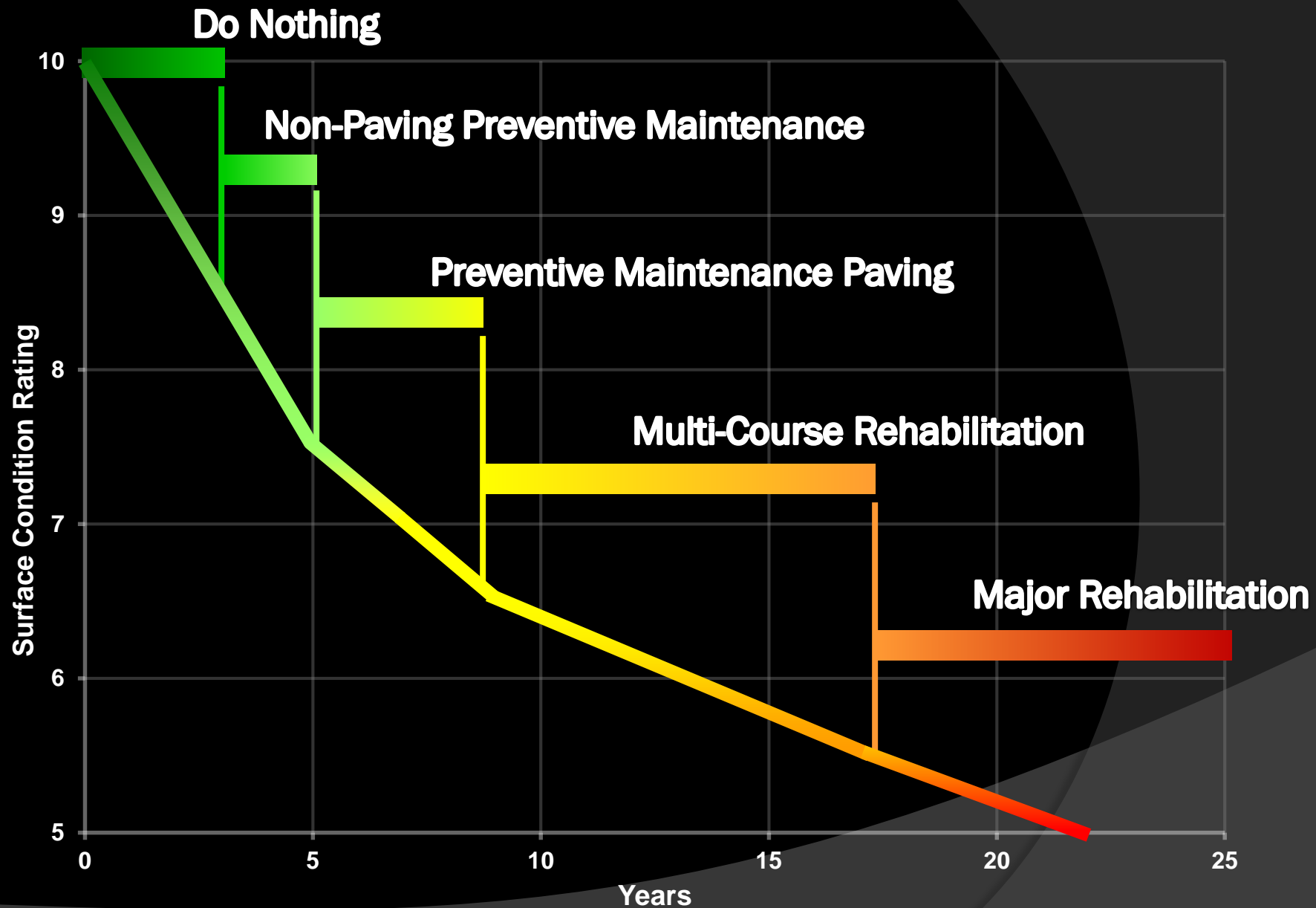
10 – 9: Do Nothing

8: Non-Paving Preventive Maintenance

7: Preventive Maintenance Paving

6: Multi-Course Rehabilitation

5 or less: Major Rehabilitation / Reconstruction



The Right Time

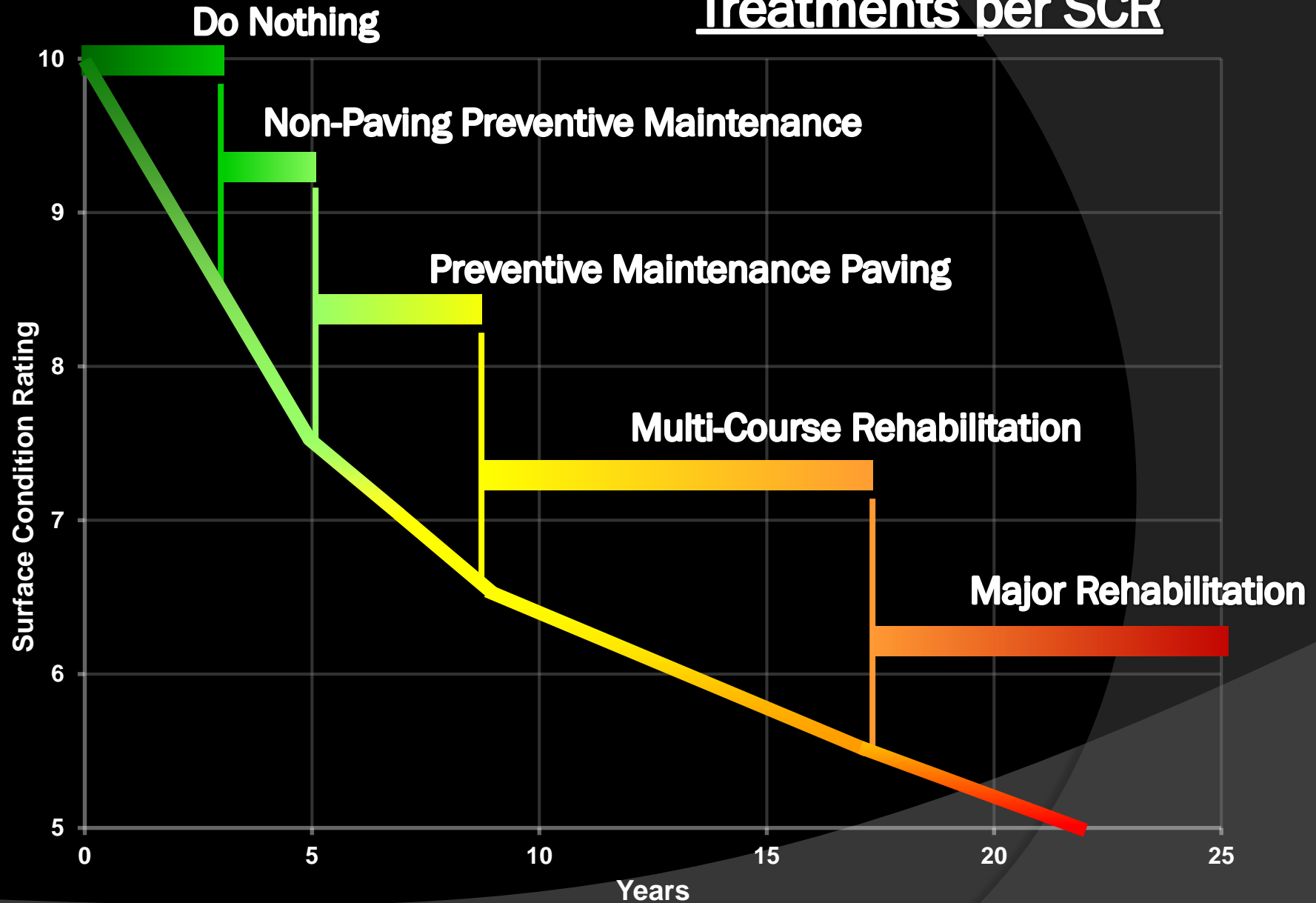
The underlying foundation of a pavement preservation program is to treat the pavement early in the lifecycle.

The intent is to keep water out, revive the surface and consequently extend the life of the pavement.

It is far less expensive to keep good roads good than it is to make fair or poor roads good.

Time = Money

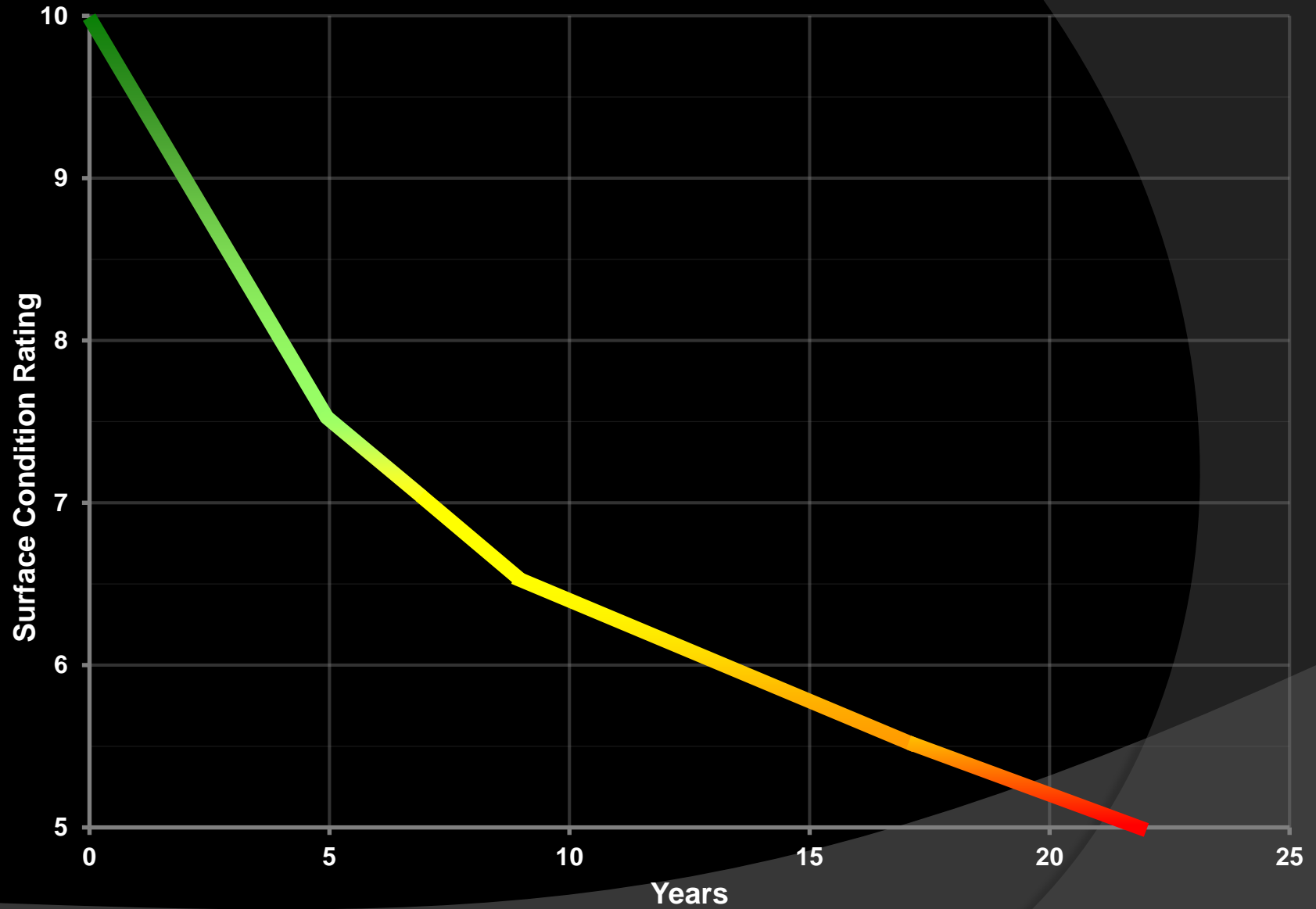
Treatments per SCR



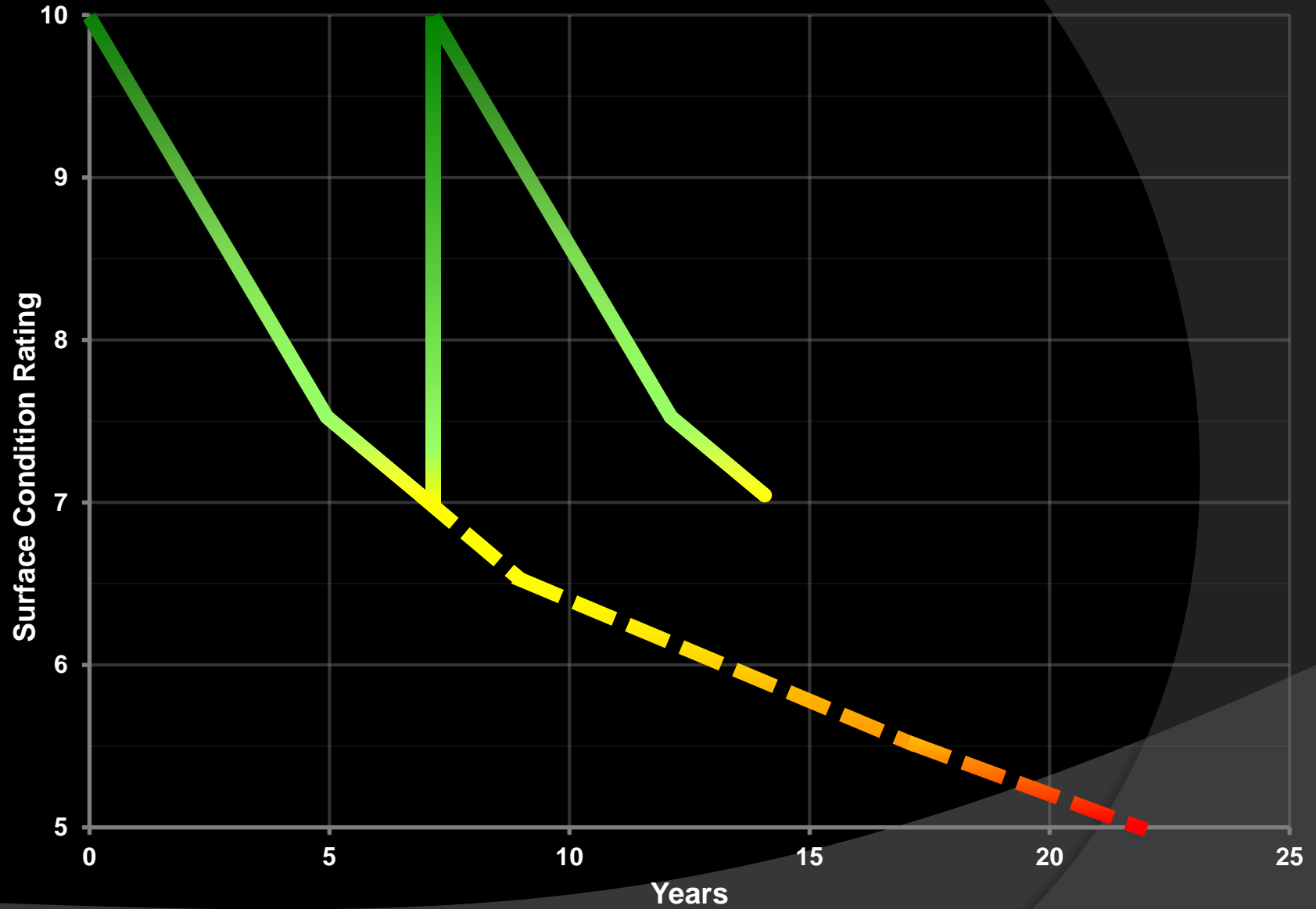
Treatment Cost Ranges

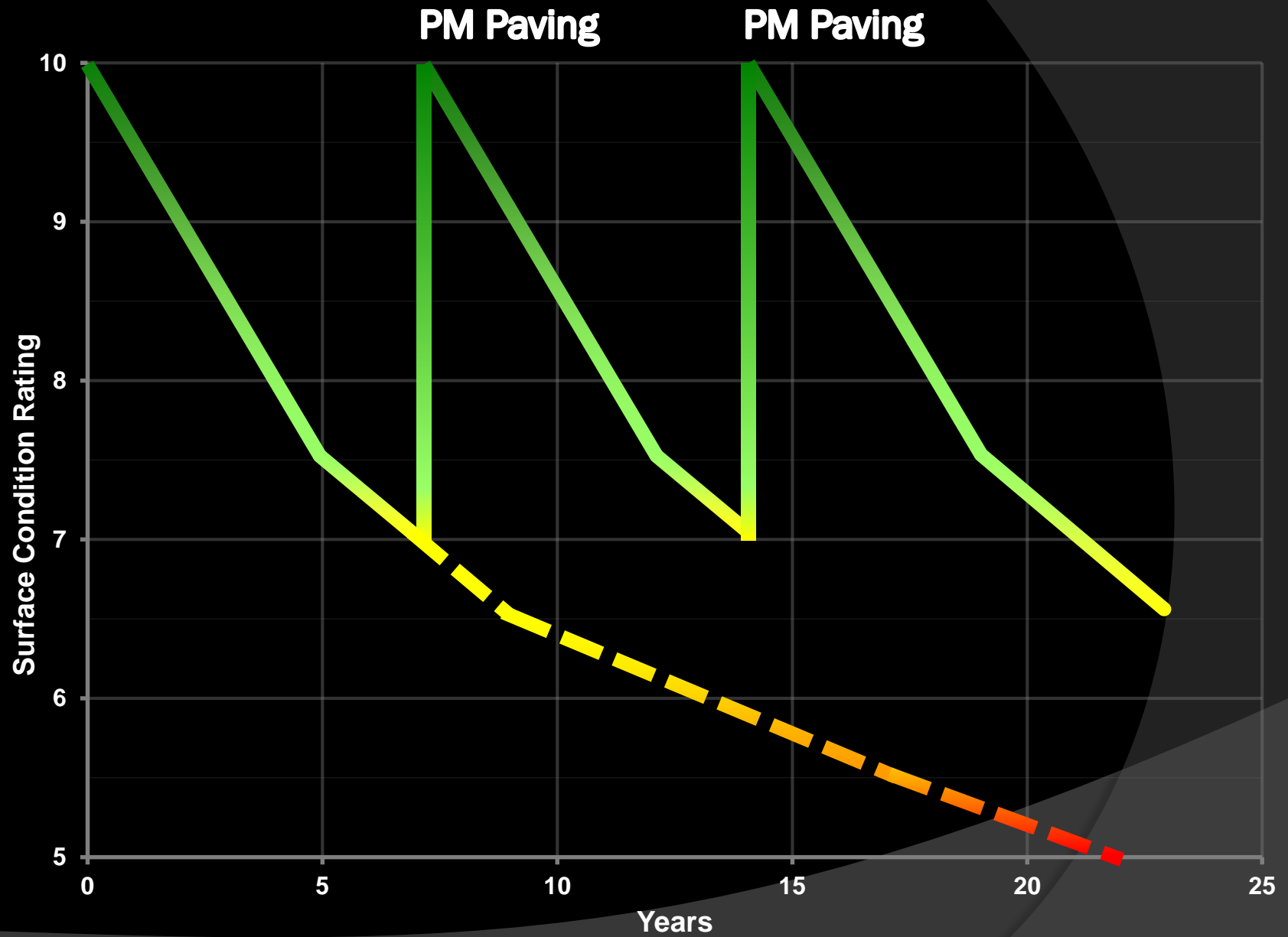


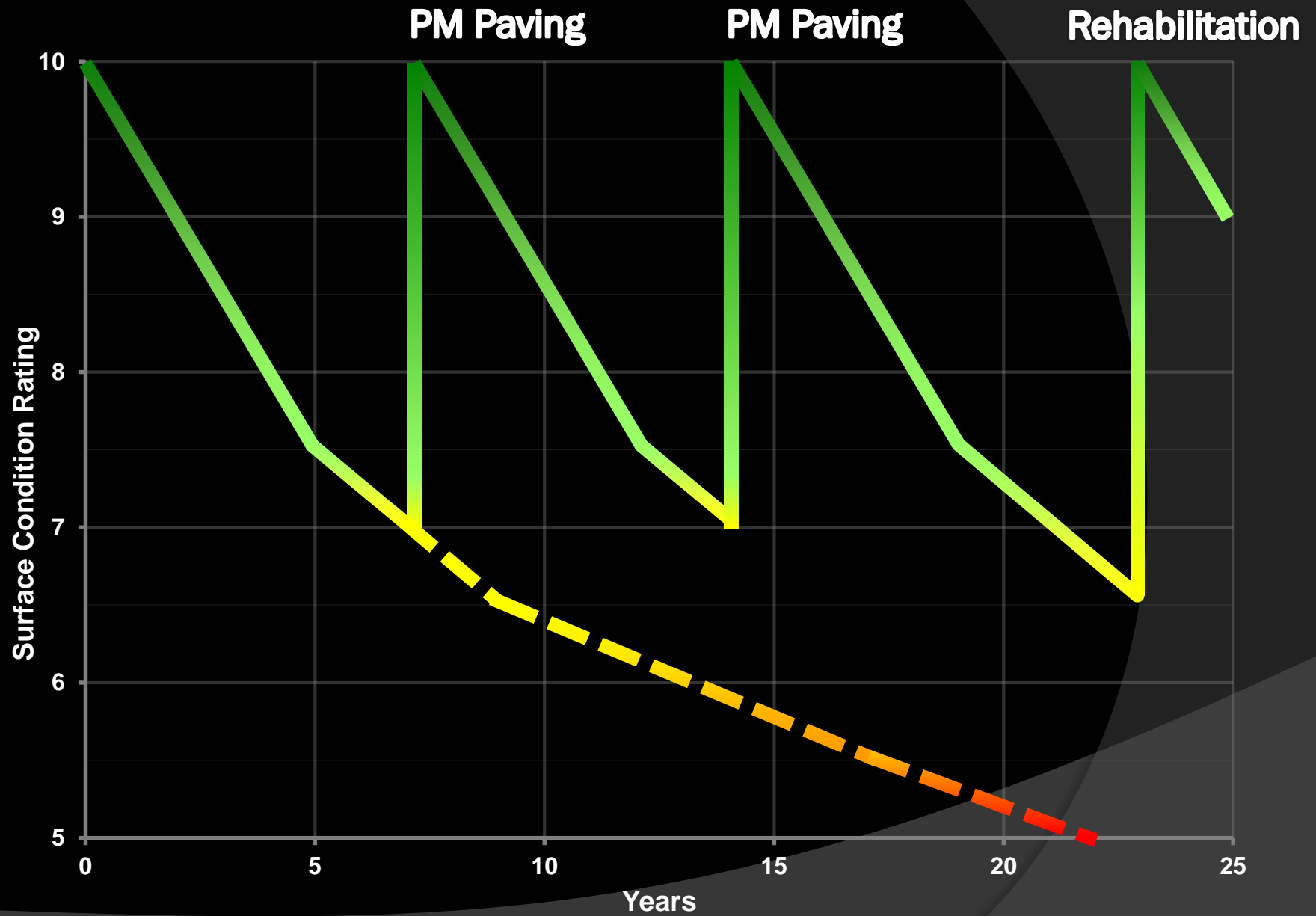
**Comparison of
Prioritized Preventive
Maintenance
VS
Deferred Maintenance**

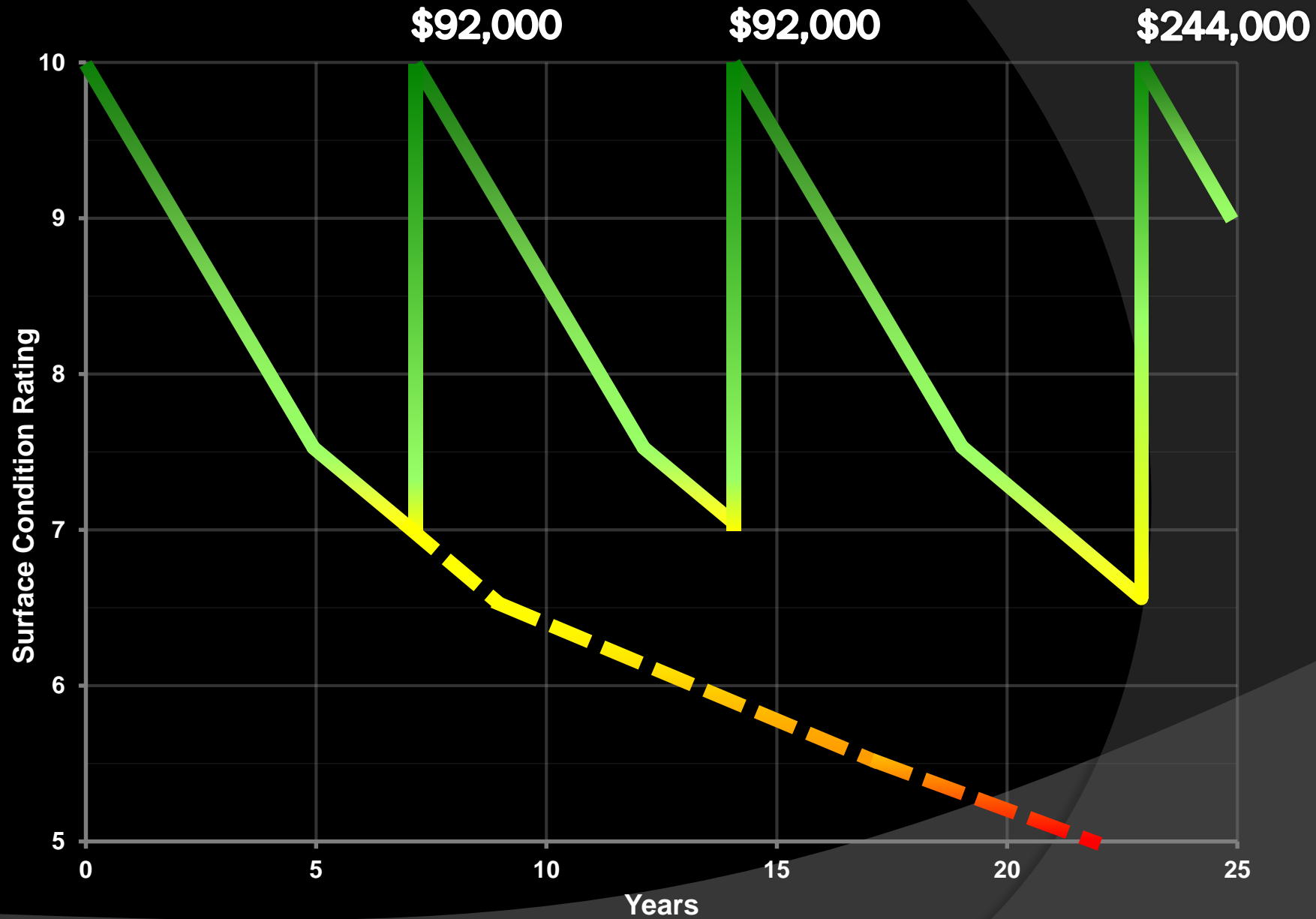


PM Paving





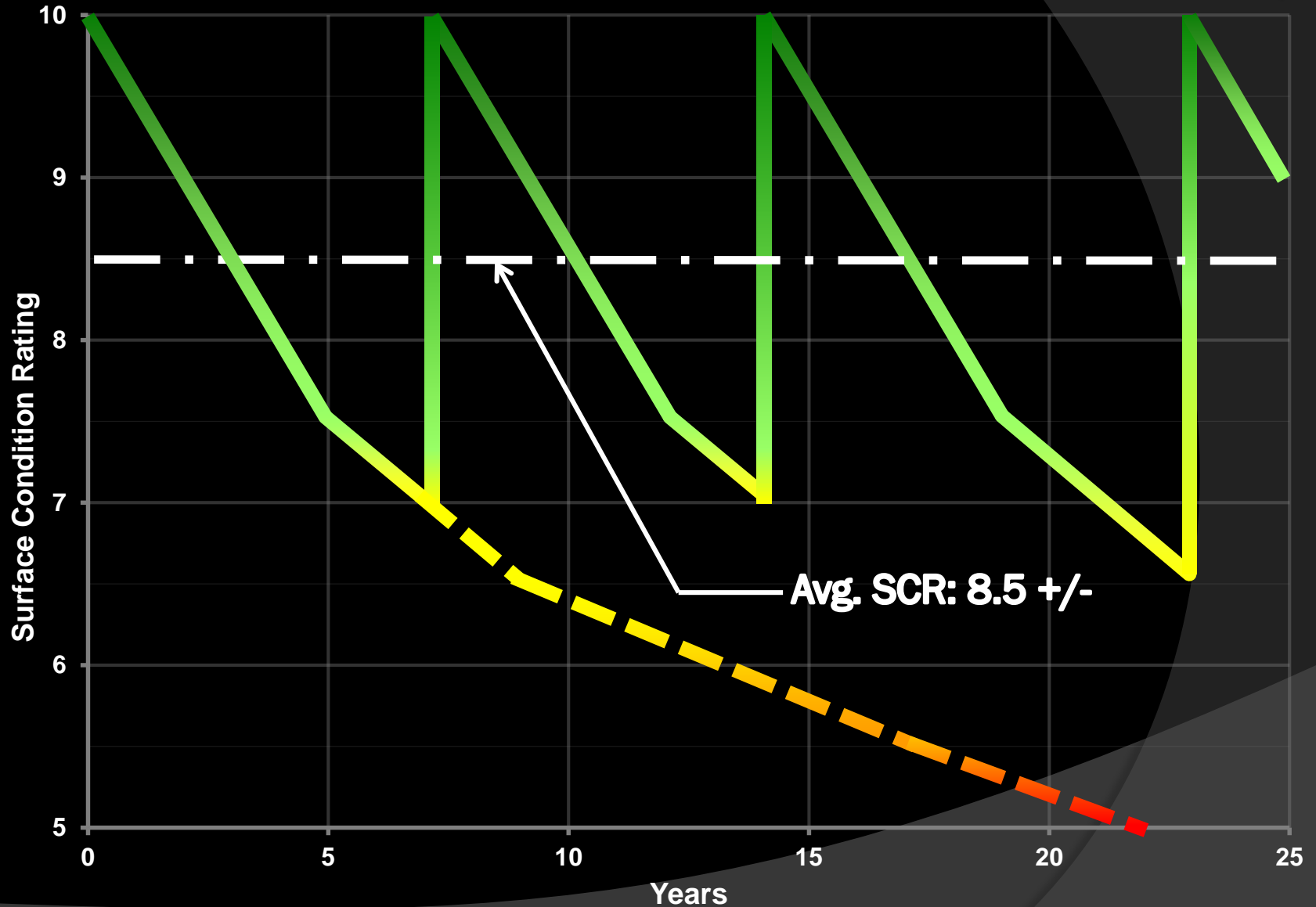




*Costs based on average treatment for 1.0 mile of road by Contractor forces.

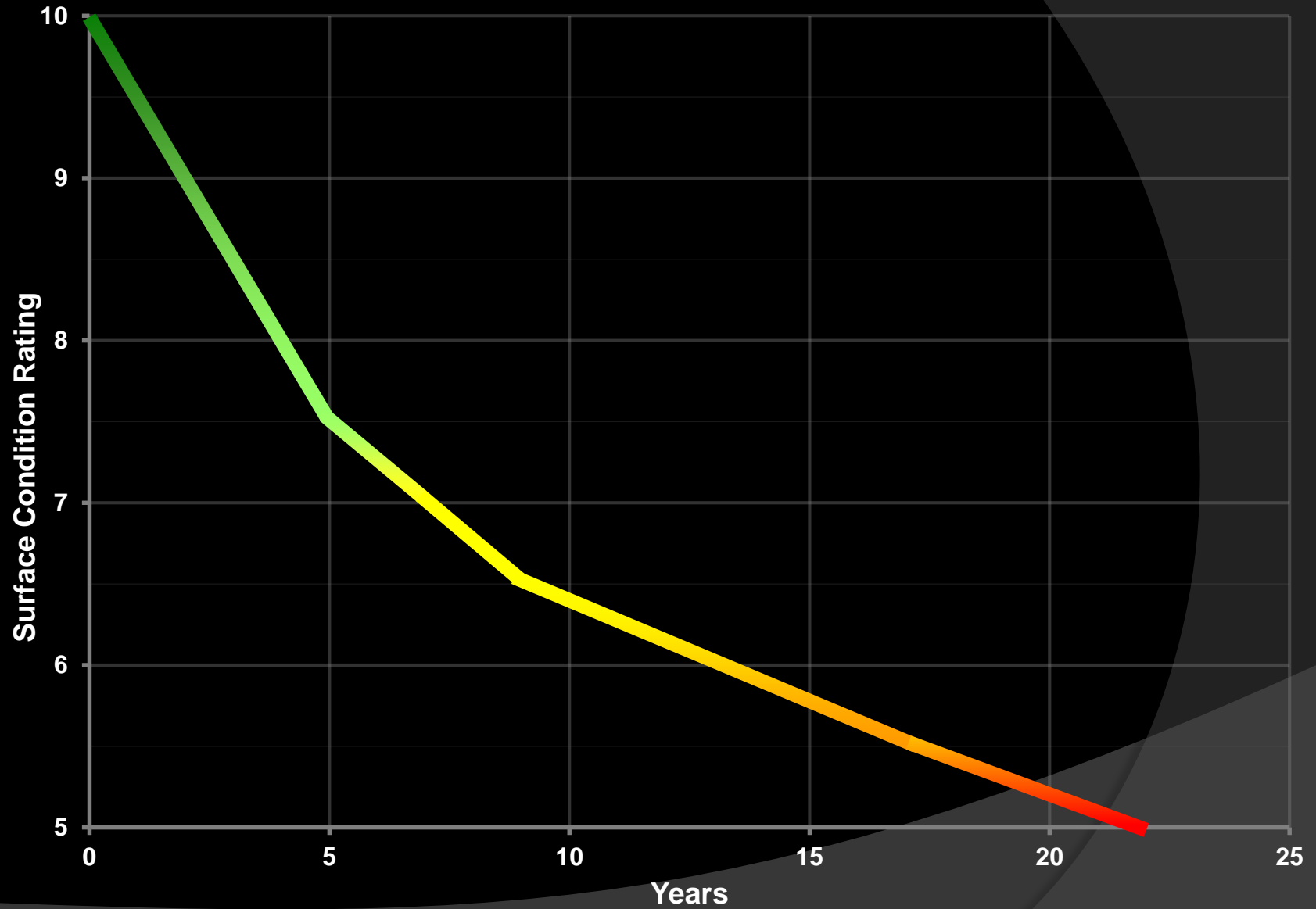
\$92,000 + \$92,000 + \$244,000

Total 23 Year Cost: \$428,000

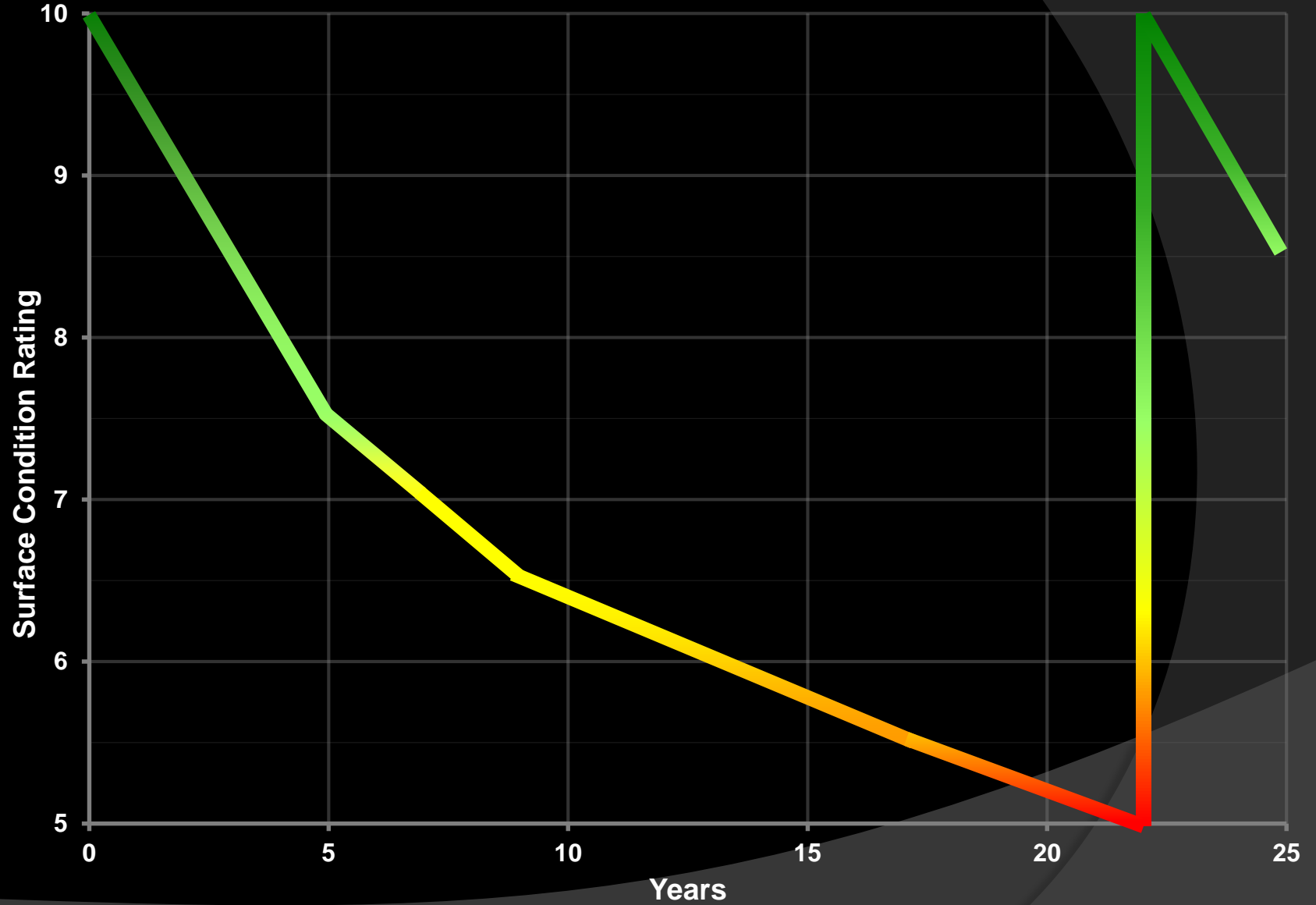


*Costs based on average treatment for 1.0 mile of road by Contractor forces.

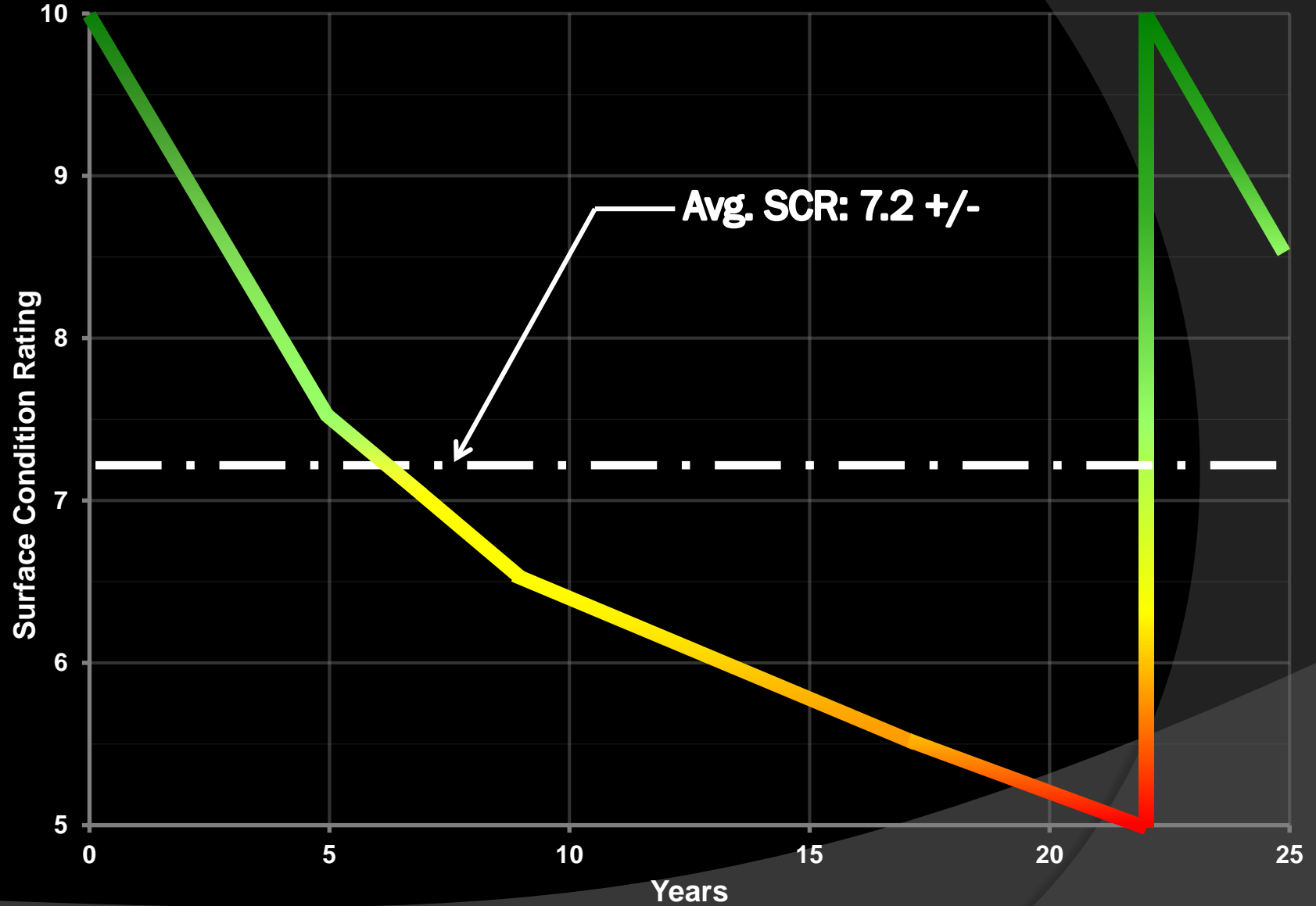
Deferred Maintenance Lifecycle



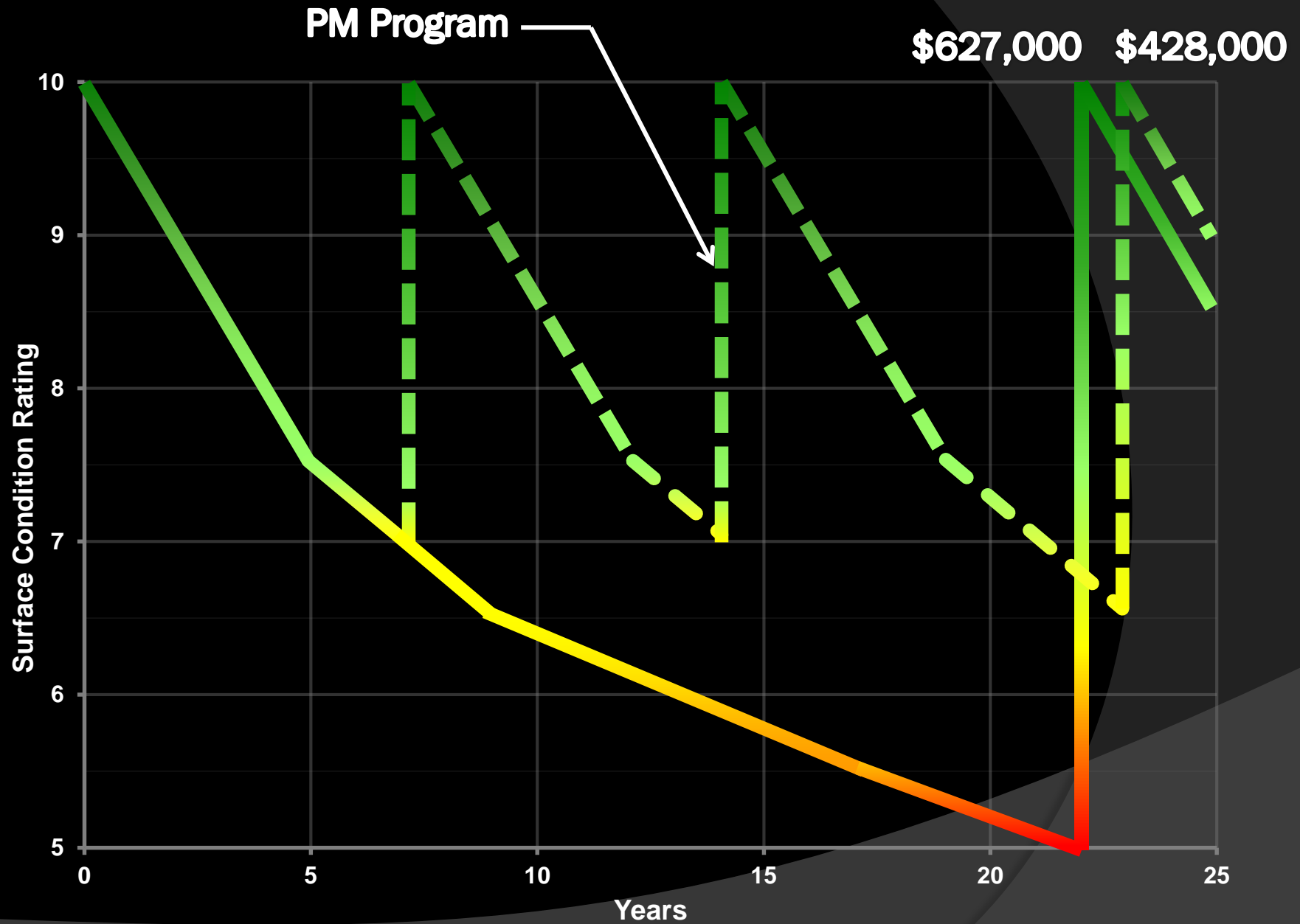
Major Rehab / Reconstruction



Total 22 Year Cost: \$627,000



*Costs based on average treatment for 1.0 mile of road by Contractor forces.



*Costs based on average treatment for 1.0 mile of road by Contractor forces.

Summary

Preventive Maintenance

Deferred Maintenance

Lifecycle:

23 Years

22 Years

Total Cost:

\$428,000

\$627,000

Average SCR:

8.5

7.2

**Interim Repairs
not Estimated:**

Crack Sealing

**Crack Sealing
Potholes
Patching**

Other Factors:

**More Effective Snow &
Ice Removal**

**Less Effective Snow &
Ice Removal**

Evaluating the Effects of
Preservation Principles
&
Annual Funding Levels

The goal is to maximize the useful service life of the County roadway system as cost-effectively as possible.

Utilizing preservation principles and varying levels of annual funding, Surface Condition Ratings (SCR) projections were developed to evaluate the effects on the entire County system.

Projections were developed using existing SCRs, time-based deterioration of asphalt roadways and the counter-effects of proposed improvements.

The programming priorities are:

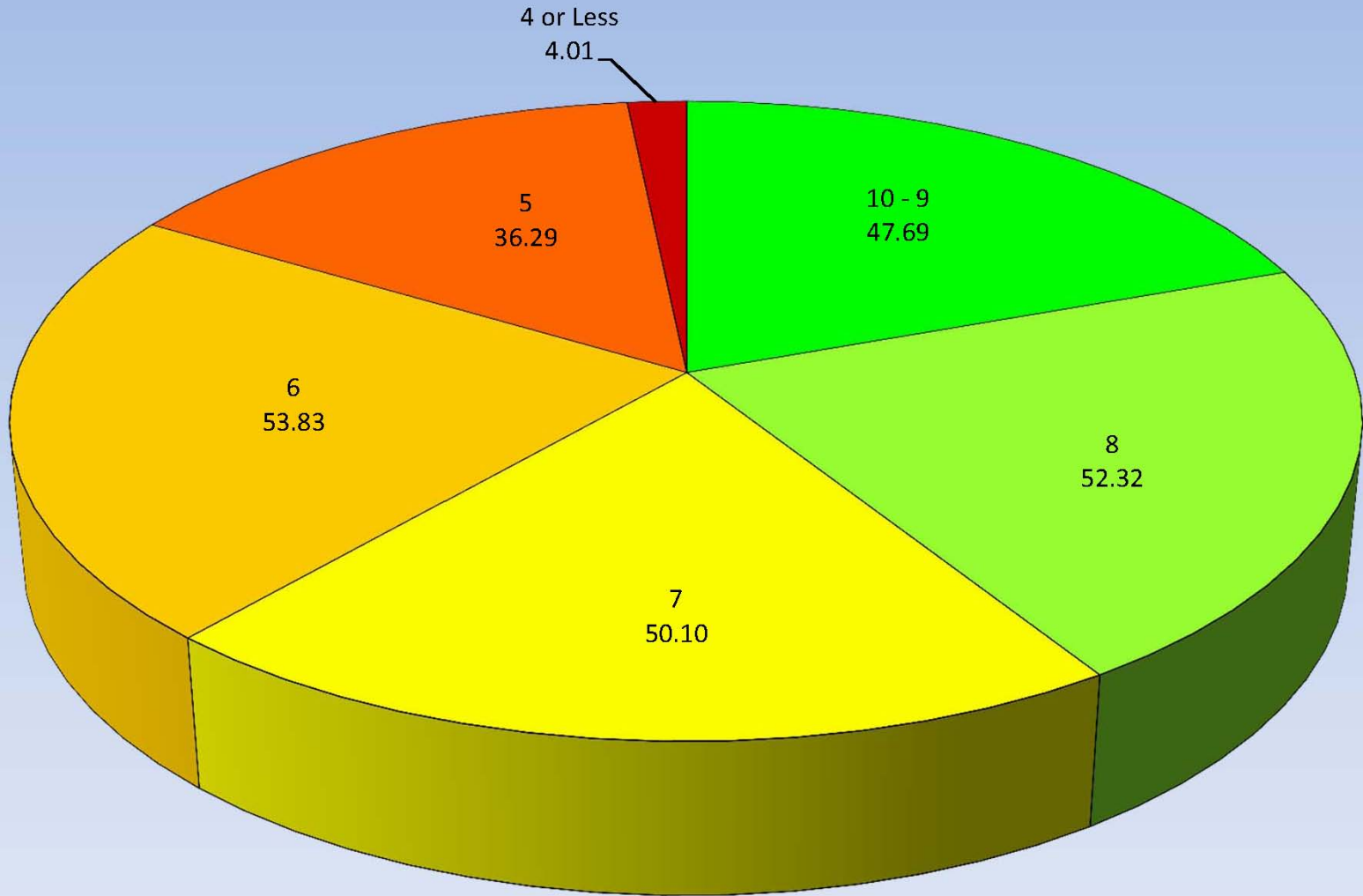
Priority 1: Crack seal all roads with an SCR of 8

Priority 2: Maximize miles of roads treated annually with SCR of 7

Priority 3: Rehabilitate SCR 6 roads to prevent drop in rating

Priority 4: Rehabilitate or Reconstruct SCR 5 or less roads as budget allows

Existing Conditions 2018 Surface Condition Ratings



SCR Projections

Important items to note:

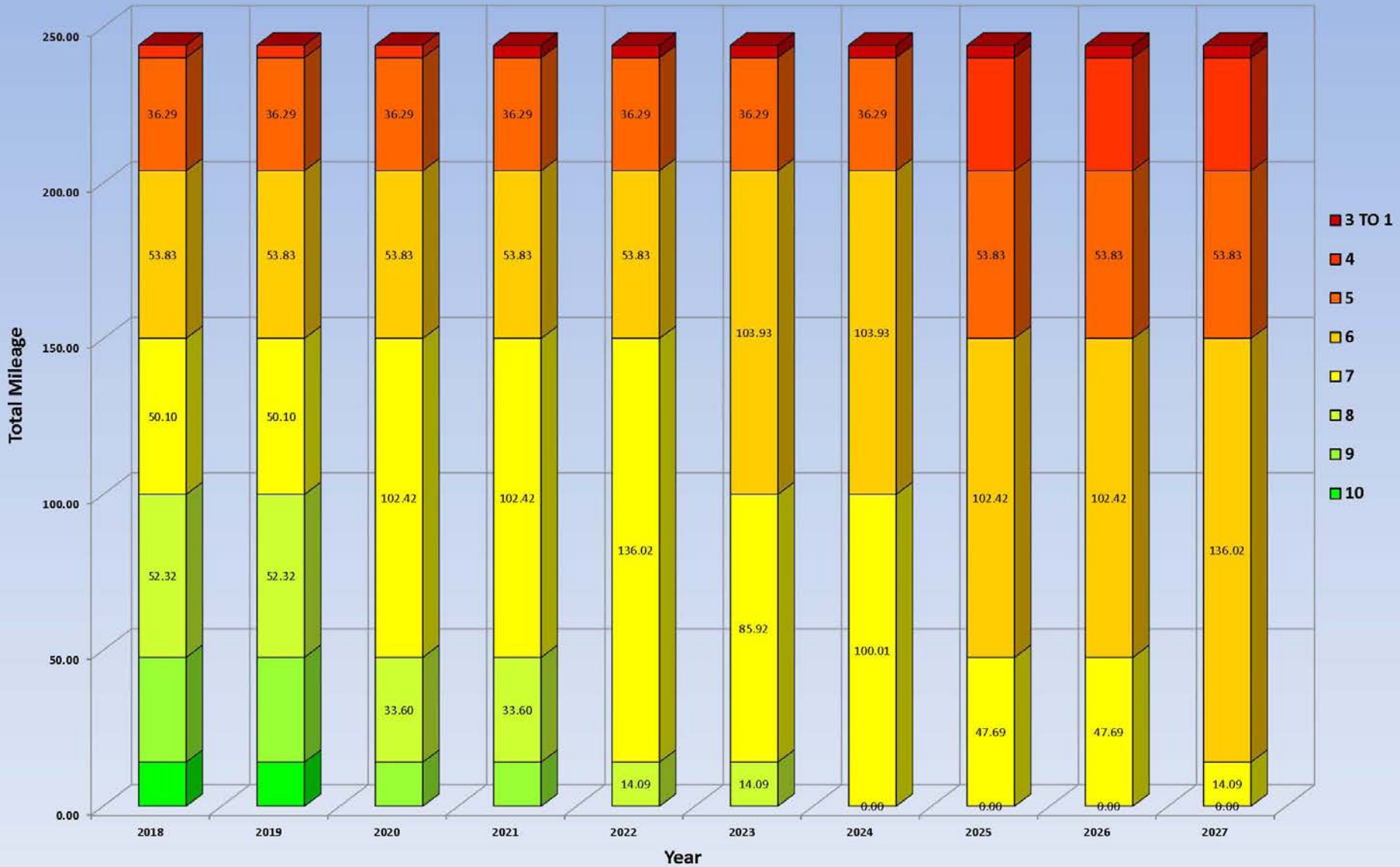
- **Trend line of SCR 7 or greater roads**

➔ The boundary between SCR 7 and SCR 6 delineates preservation from rehabilitation

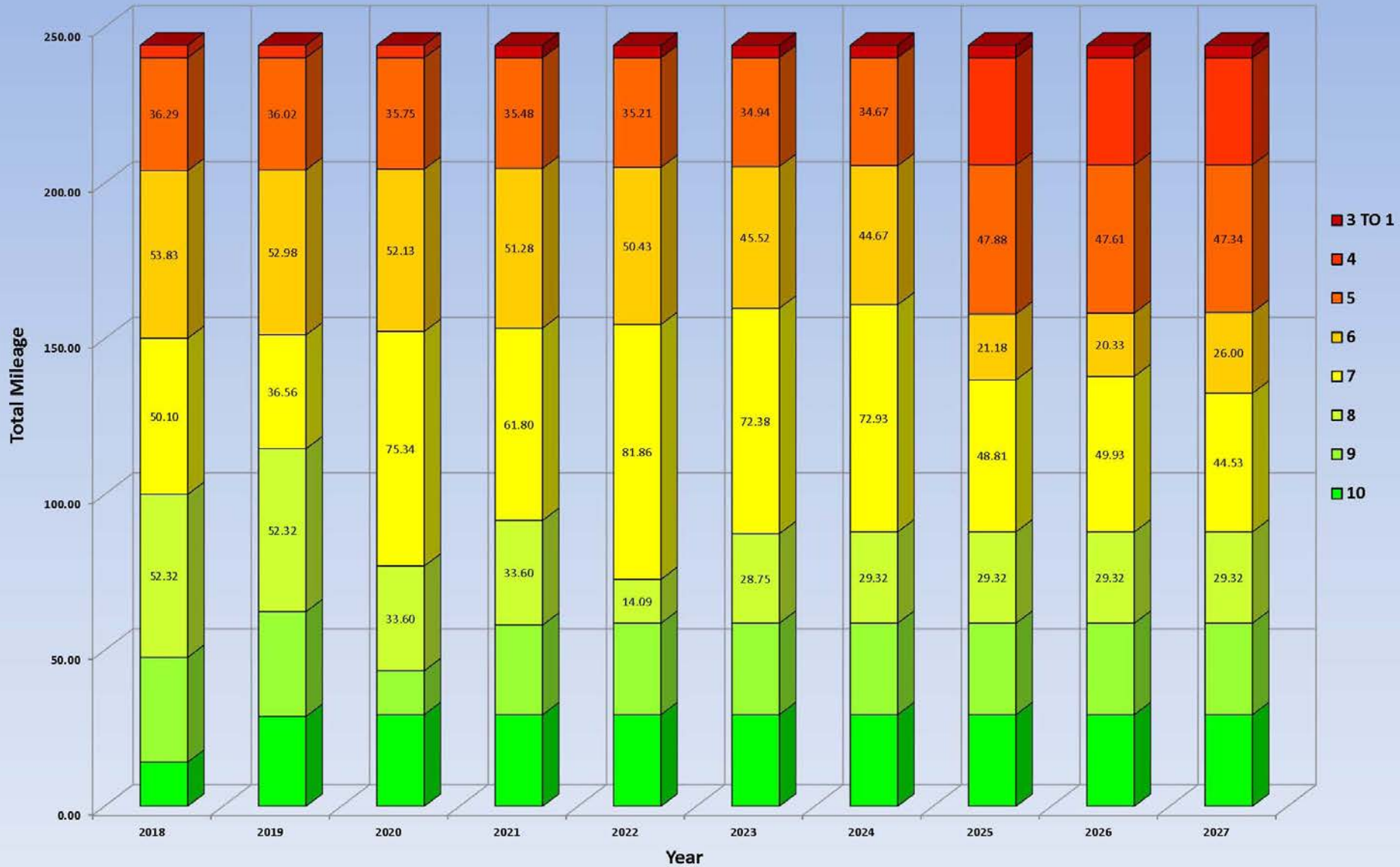
- **Volume of SCR 5 or lower roads**

➔ These roads represent costly major rehabilitations and reconstructions

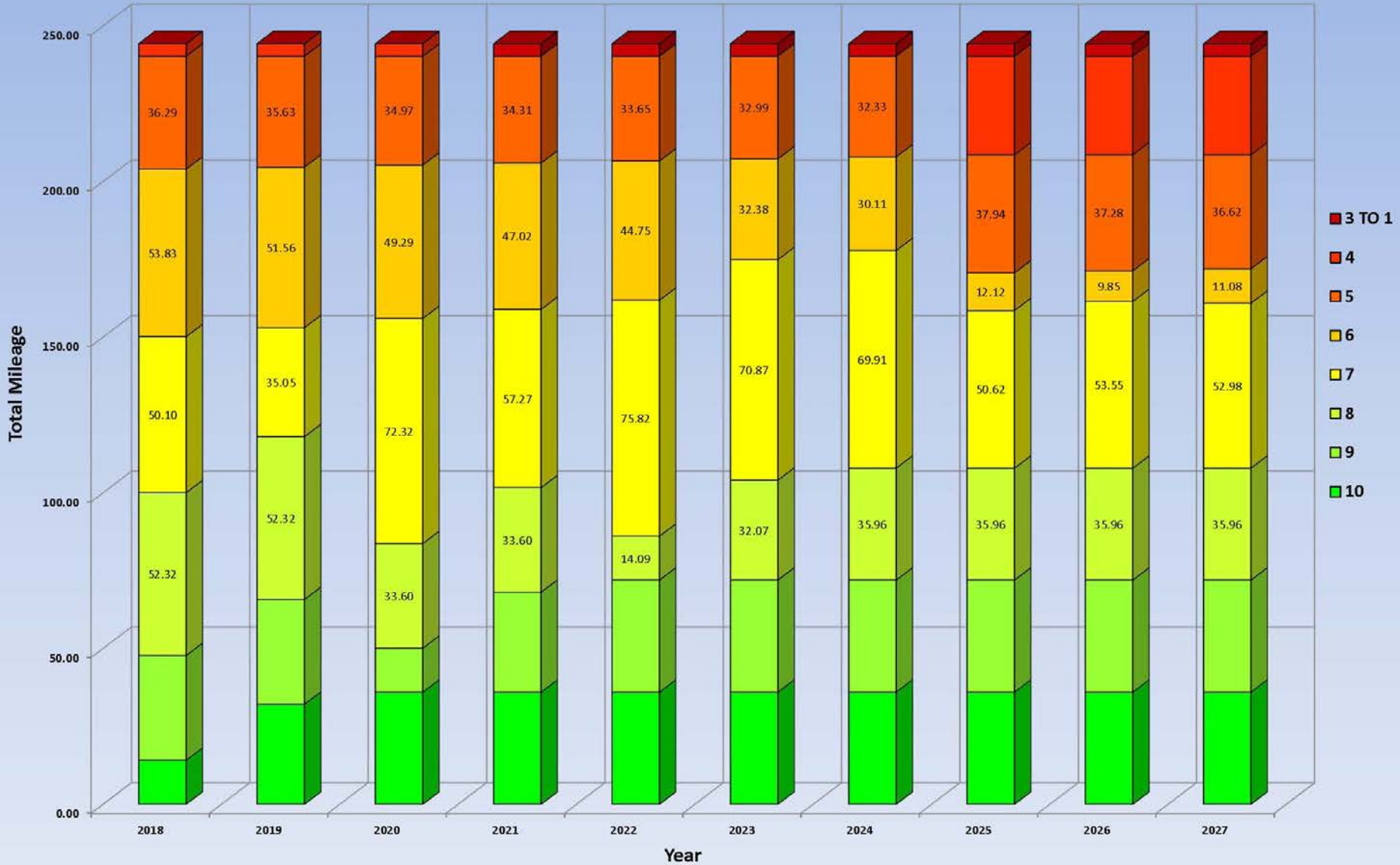
No-Build - \$0 per Year Program



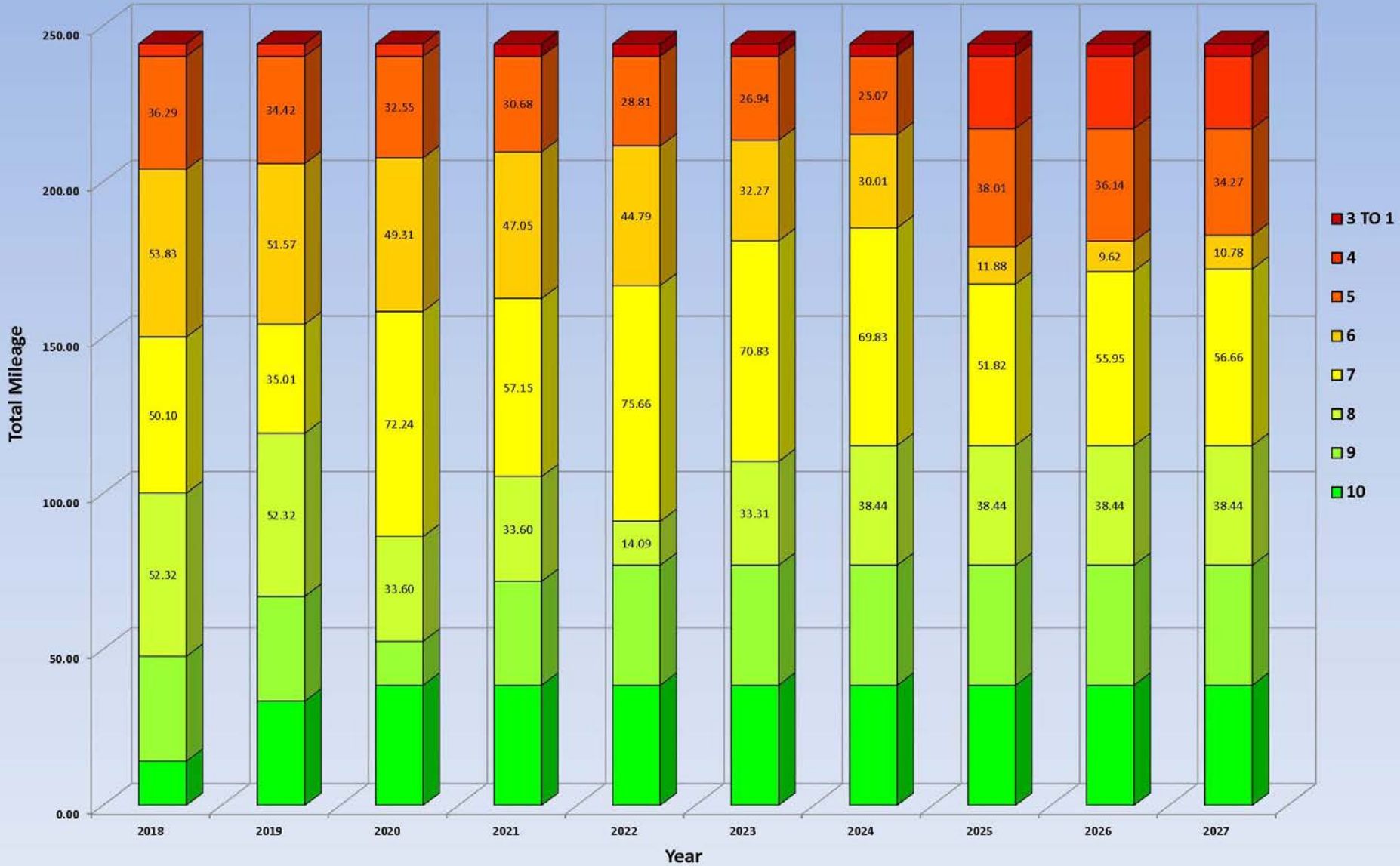
NYS Funds Only (CHIPS, PaveNY & Exteeme Winter Recovery) - \$2.25M per Year Program



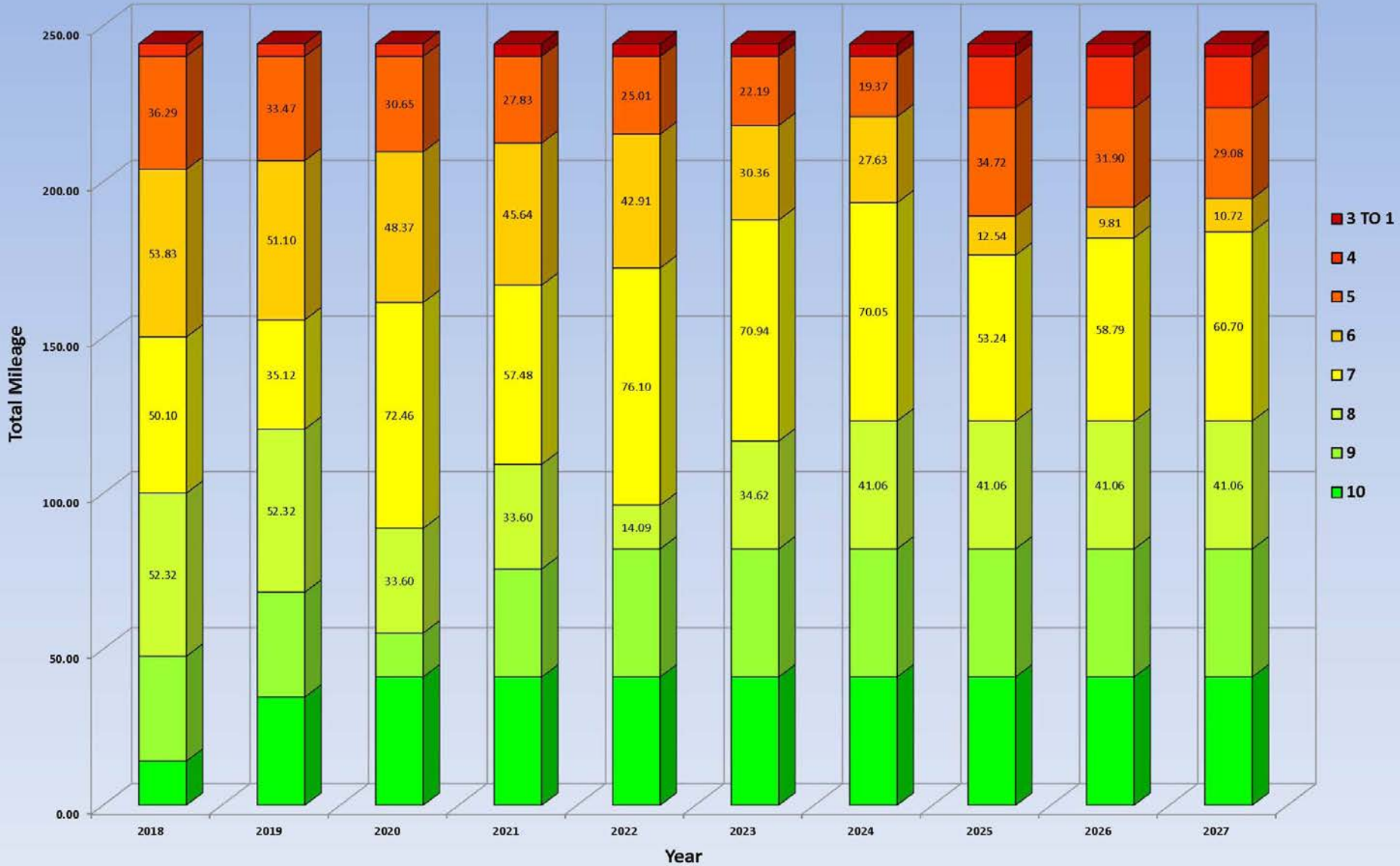
NYS Funds + \$750k County Funds - \$3.0M per Year Program



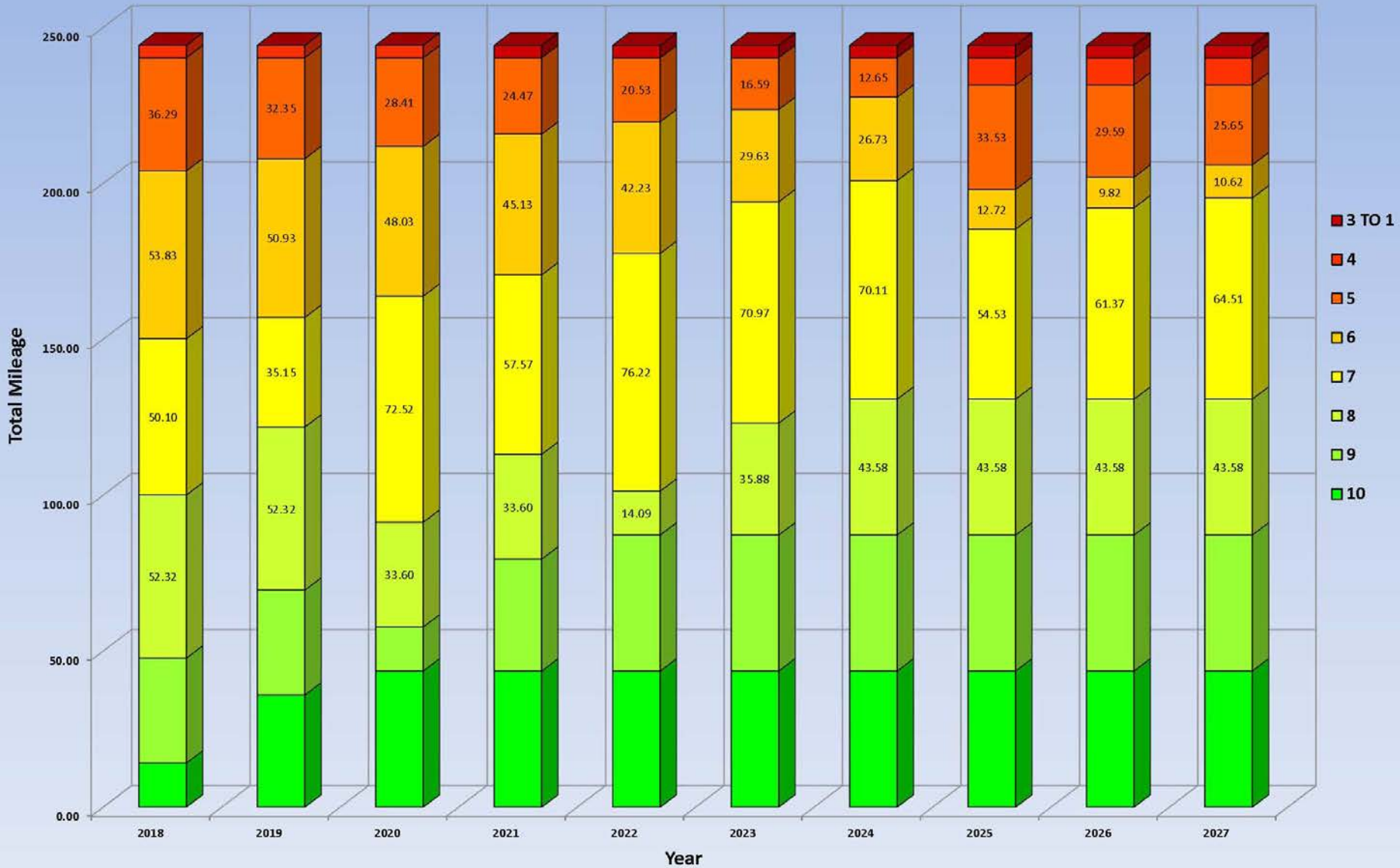
NYS Funds + \$1.25M County Funds - \$3.5M per Year Program



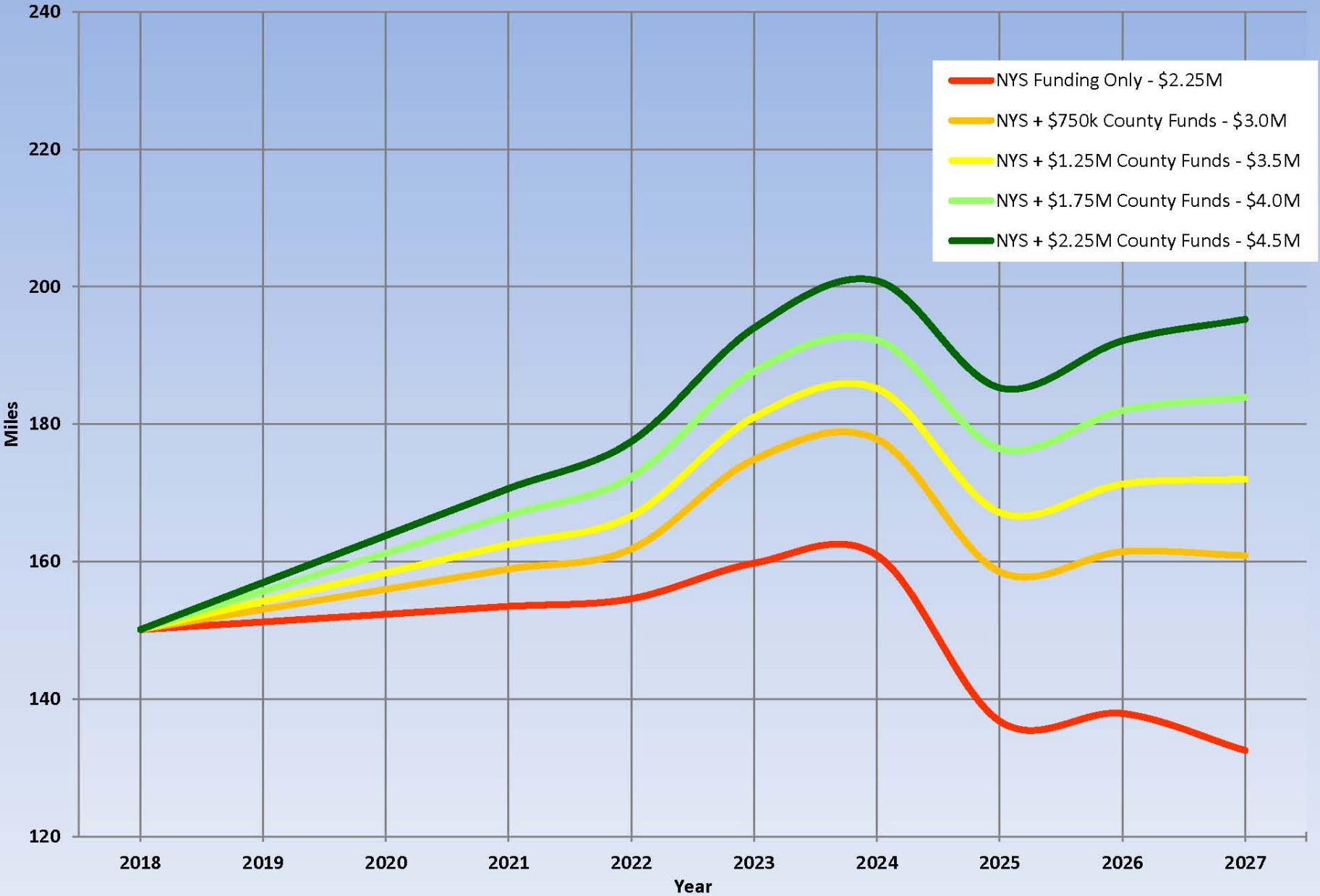
NYS Funds + \$1.75M County Funds - \$4.0M per Year Program



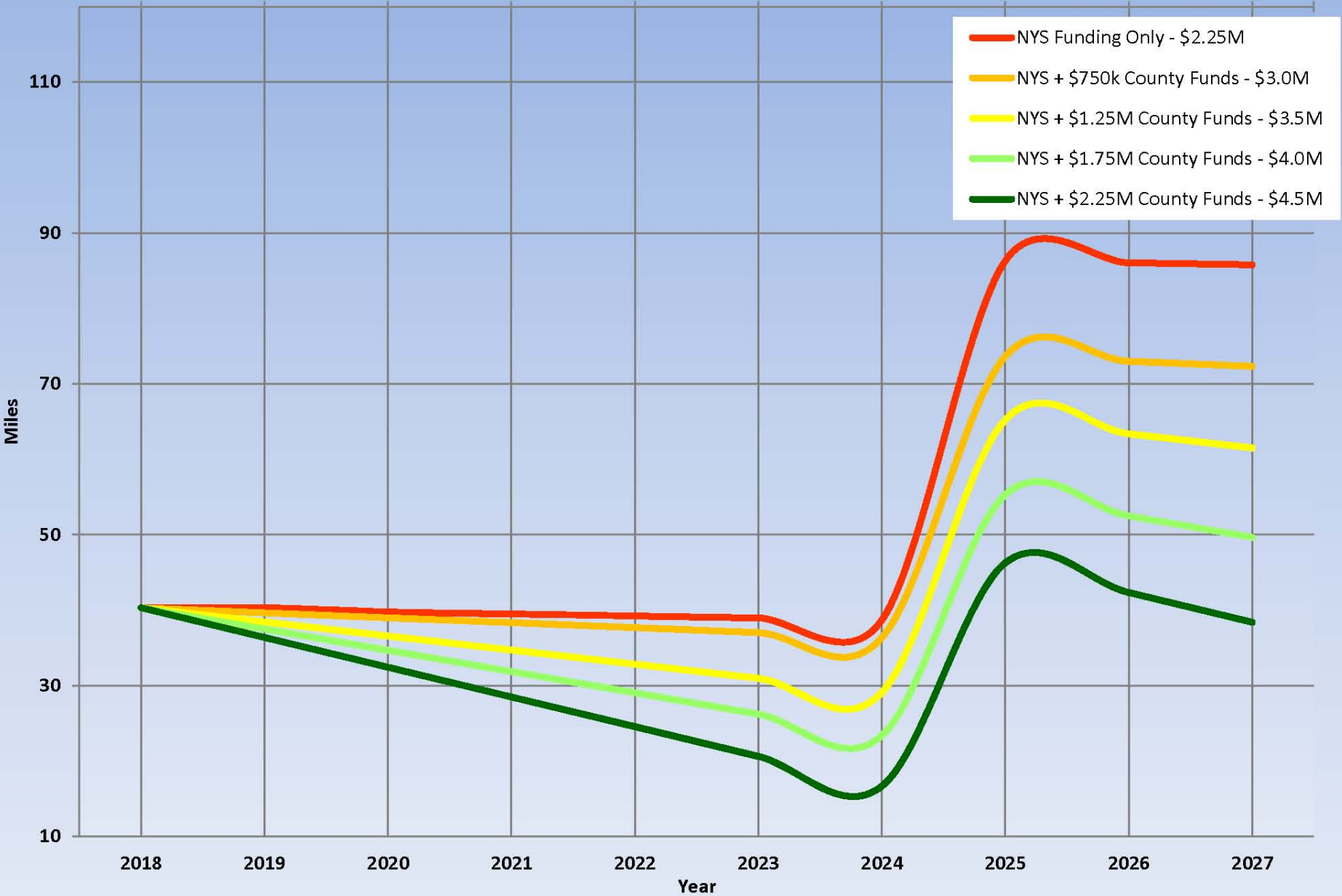
NYS Funds + \$2.25M County Funds - \$4.5M per Year Program



Miles of Roads with SCR 7 or Greater



Miles of Roads with SCR 5 or Less



Summary of Projections

● \$2.25M Annual Program

➔ Does not increase SCR 7 or greater roads over 10 year period

➔ Results in significant increase of SCR 5 or lower roads over 10 year period

● \$3.0M Annual Program

➔ Provides modest increase of SCR 7 or greater roads over 10 year period

➔ Results in significant increase of SCR 5 or lower roads over 10 year period

Summary of Projections

● \$3.5M Annual Program

➔ Provides good increase of SCR 7 or greater roads over 10 year period

➔ Results in modest decrease of SCR 5 or lower roads over 10 year period

● \$4.0M Annual Program

➔ Provides significant increase of SCR 7 or greater roads over 10 year period

➔ Results in minimized increase of SCR 5 or lower roads over 10 year period

Summary of Projections

● \$4.5M Annual Program

- ➔ Provides excellent increase SCR 7 or greater roads over 10 year period
- ➔ Results in lowest increase in SCR 5 or less roads over 10 year period

What is the ideal level
of annual funding?

Annual funding equal to or greater than \$3.0 million will increase the total mileage of “Good” roads over 10 years.

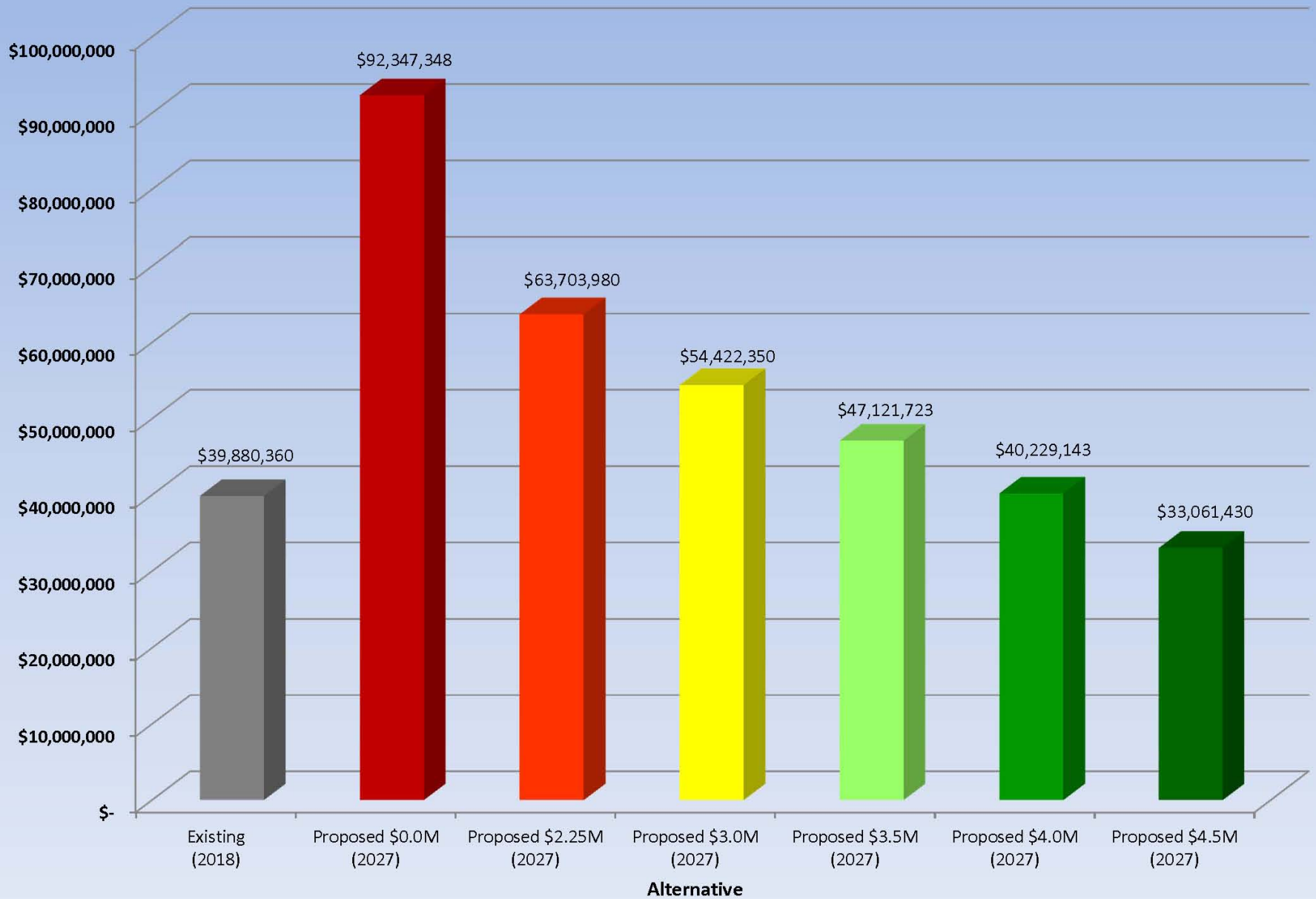
But what about the quantity of “Fair” and “Poor” roads?

What funding level will allow prioritization of preservation while addressing a sustainable amount of fair and poor roads?

The following graph shows the estimated cost to restore the entire County road system to brand new condition in 2019 dollars (no inflation).

These estimated amounts combine the construction costs for all treatments of SCR 8 roads or lower into one aggregate number per alternative.

Estimated Cost of Total County System Restoration



As shown in the graph, an annual program of \$4.0 million or more provides an ideal balance between preservation prioritization and more costly rehabilitation / reconstruction work.

Annual funding below \$4.0 million will result in a higher total restoration cost 10 years from now than existing conditions.

What does this mean?

Good or Fair: 158 miles
Poor: 86 miles

Good or Fair: 172 miles
Poor: 72 miles

G or F: 204 miles
P: 40 miles

G or F: 183 miles
P: 61 miles

G or F: 195 miles
P: 49 miles

