



2018 ANNUAL CONFERENCE

Leading the Pack with Pavement Management

Pavement Analyst Implementation for Polk County, FL

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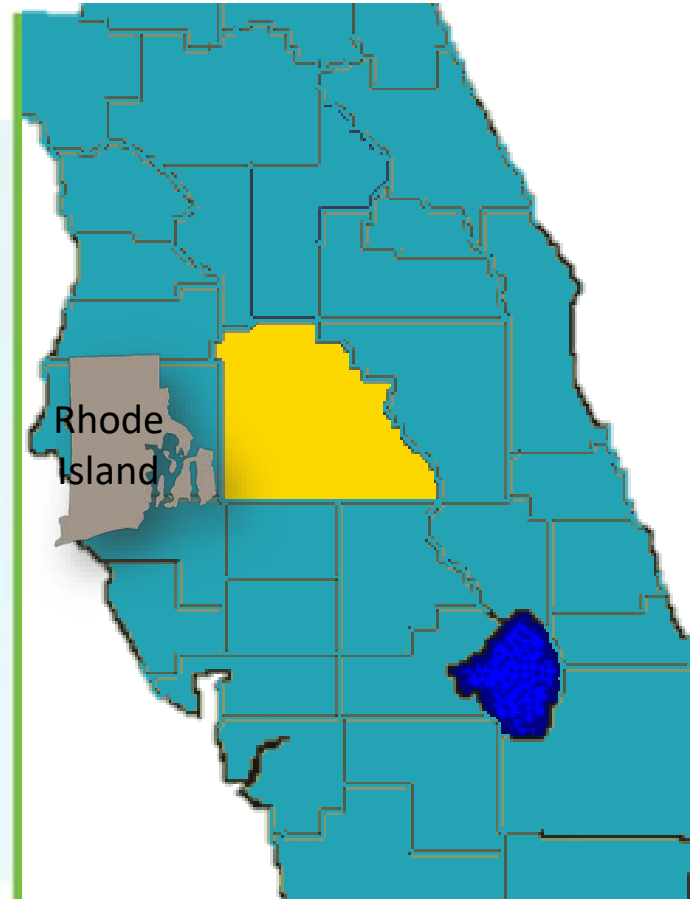
Polk County, FL

Florida's Crossroads of Opportunity



- Fourth largest County
- Today, Polk County manages 2,520 centerline miles of paved roads

SIZE

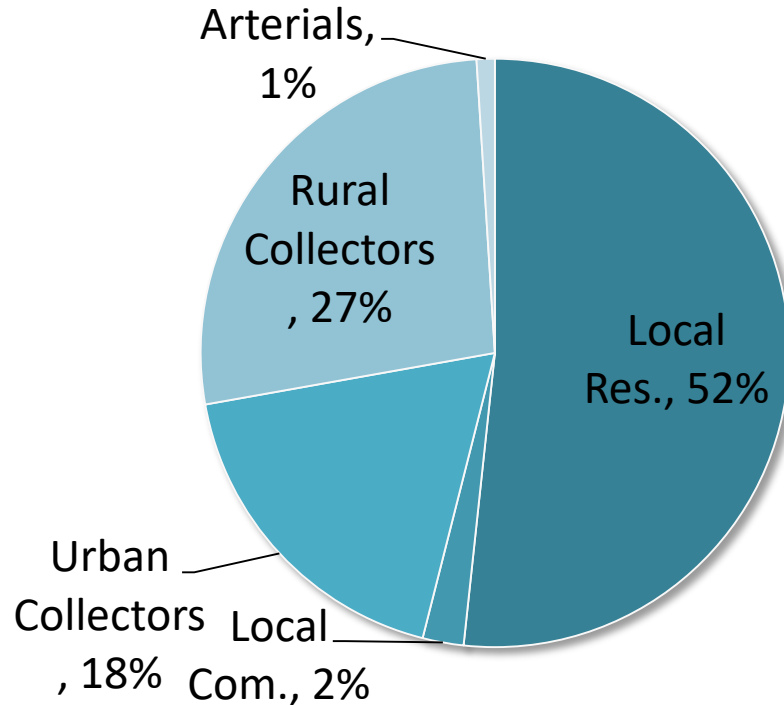


Polk County Mileage Compared to State DOTs

State	Total Miles Managed
Hawaii	948
Rhode Island	1,103
District of Columbia	1,374
New Jersey	2,341
POLK COUNTY, FL	2,520
Vermont	2,628
Massachusetts	3,018
Connecticut	3,720
New Hampshire	3,921
Idaho	4,982
Maryland	5,158
Nevada	5,318
Delaware	5,386

Source: FHWA website

<https://www.fhwa.dot.gov/policyinformation/statistics/2013/hm10.cfm>



The Journey Here

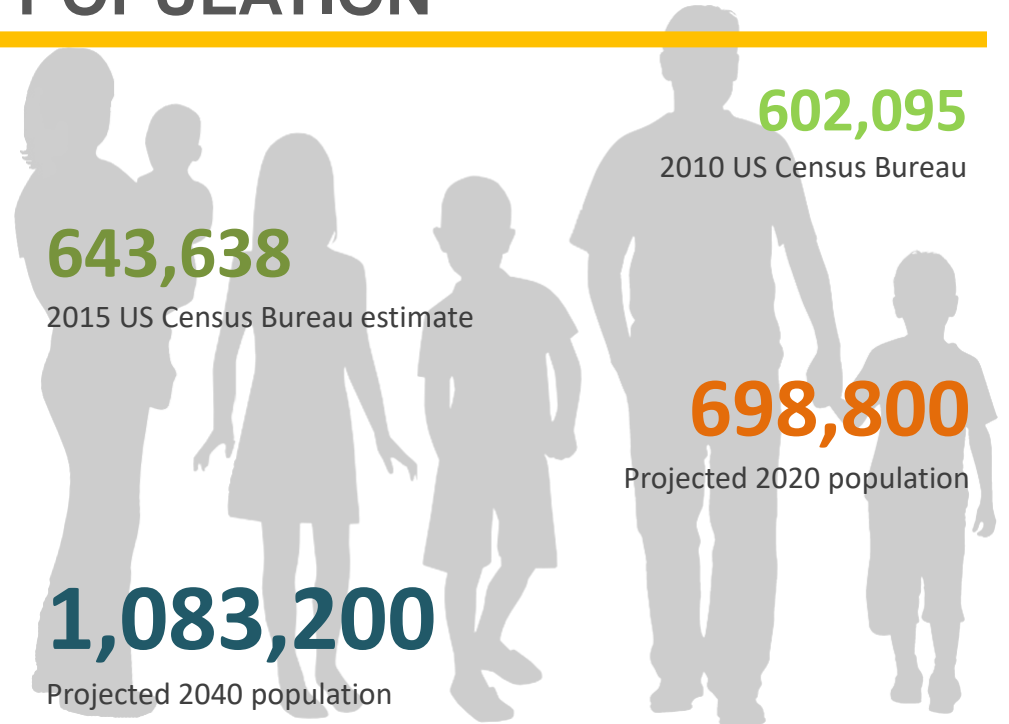
- County had tried different efforts to manage the network off and on since 2004, starting with the PASER rating system.
- Most efforts never evolved.
- What changed???



Anticipated Growth & Challenges

Residential Growth –
expected to nearly
double by 2040.

POPULATION

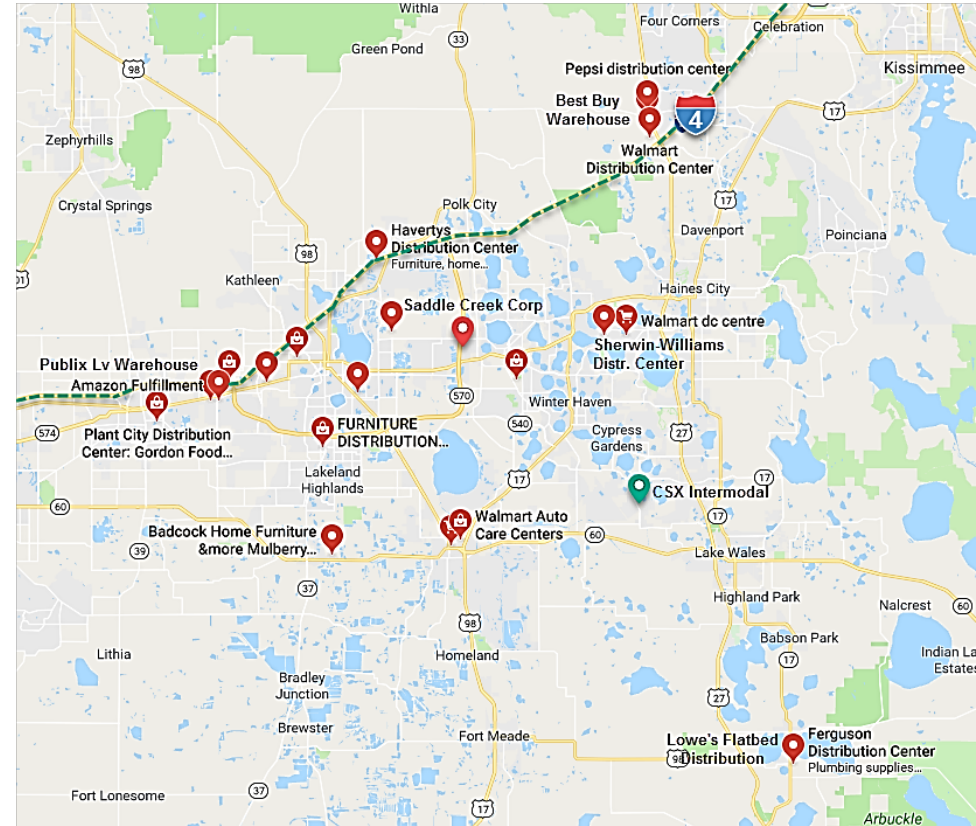


Source: Polk TPO 2040 Population & Employment Forecast (Aug. 2014)

Anticipated Growth & Challenges

Commercial Growth –

- Central distribution hub
- High truck percentage



Source: Google Maps search for distribution center

Anticipated Growth & Challenges

- Pavement Structures and Types

2011



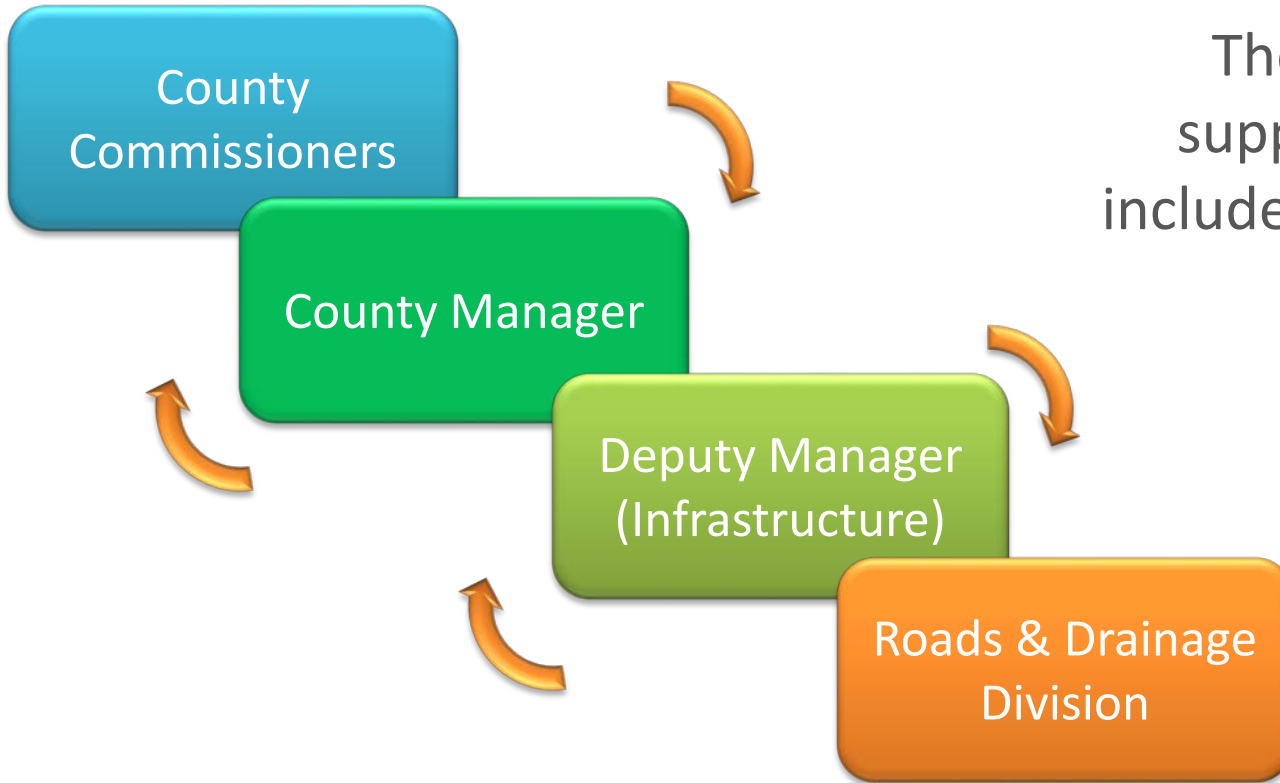
2015



Need for a different perspective



Top to Bottom Initiative



The right climate to support the program included buy-in from all levels of County Management

2015 Pavement Management RFP

- Clear goals– **systematic**, **consistent** and **reproducible method** to determine the when, where & how.
- Major tasks initially identified included:
 - Evaluation of County Procedures
 - Evaluate pavement condition rating method
 - Evaluate different analytical software
 - Make recommendations
 - Ph. 2 – assist with implementation of recommendations

SCOPE OF SERVICES

The Polk County Transportation Division is requesting Proposals from Engineering Consultants with expertise in the development of a Pavement Management System (PMS). The intent of the PMS will be to provide the County with a systematic, consistent and reproducible method of determining priorities and optimal time of improvements to economically manage the pavement preservation of its roadway system with the assigned budget. The PMS must also provide guidance for long-term financial planning and assessment of the potential impacts of varying funding levels. The management system must be compatible with our GIS capabilities (ArcGIS by ESRI) and have the ability to generate reports for budgeting, presentations and other purposes.

Source: Polk RFP 15-725 Pavement Management System

Gathering the Pieces

- Focused on 3 components based on our needs and goals.
 - Wanted to improve our overall business process efficiency.
 - Wanted more granularity with the ratings, and actually track and record the distresses for better decision making
 - Wanted analytics capable of answering the **“what ifs”**. *What if we set a condition minimum? What if we had more funds...,etc.*



Treatments

Before

Traditional mill/inlay and overlay projects done through an annual contract.

Pavement Treatments

Before

Entire budget was allocated to mill/inlay and overlays.

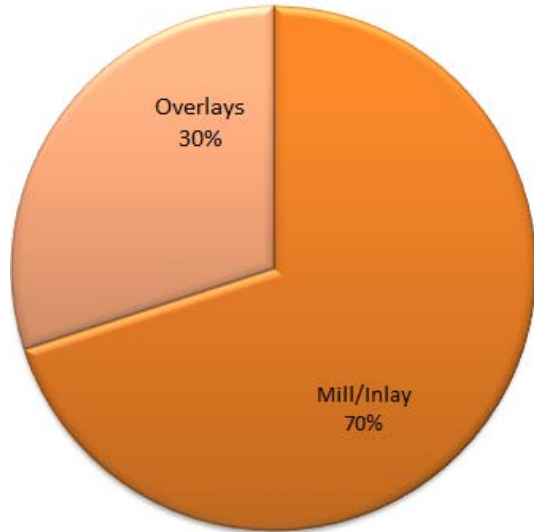
Averaged **60-80 centerline mi/yr.**

Using heavy treatments on local roads.

Currently implementing new Pavement Analyst Software to assist in establishing multi-year work plans, evaluate budget needs and control backlog.

Pavement Treatments

Treatment Breakdown
prior 2015



75 CL miles avg

Inventory & Rating

Before

In 2004 the County began using PASER method (dev. Univ. of Wisconsin 1987).

PCI - 1 – 10 scale indicative of overall roadway condition.

Based on Rater's overall perception of different distresses and their level of severity.

Inspections done in-house on 2 year cycle thru ArcGIS



Software & Analytics

Before

- Paving lists were managed through spreadsheets **by Worst First approach.**
 - Used Public Sector™ software by Infor to manage our asset inventory, work orders, and costs, but it was never set up with analytical capabilities.
-
- Running analyses with Pavement Analyst for the first time this summer.
 - Will continue use of Public Sector™ for work orders and inventory management, together with ESRI GIS.



Lessons Learned

Upper
Management
Support



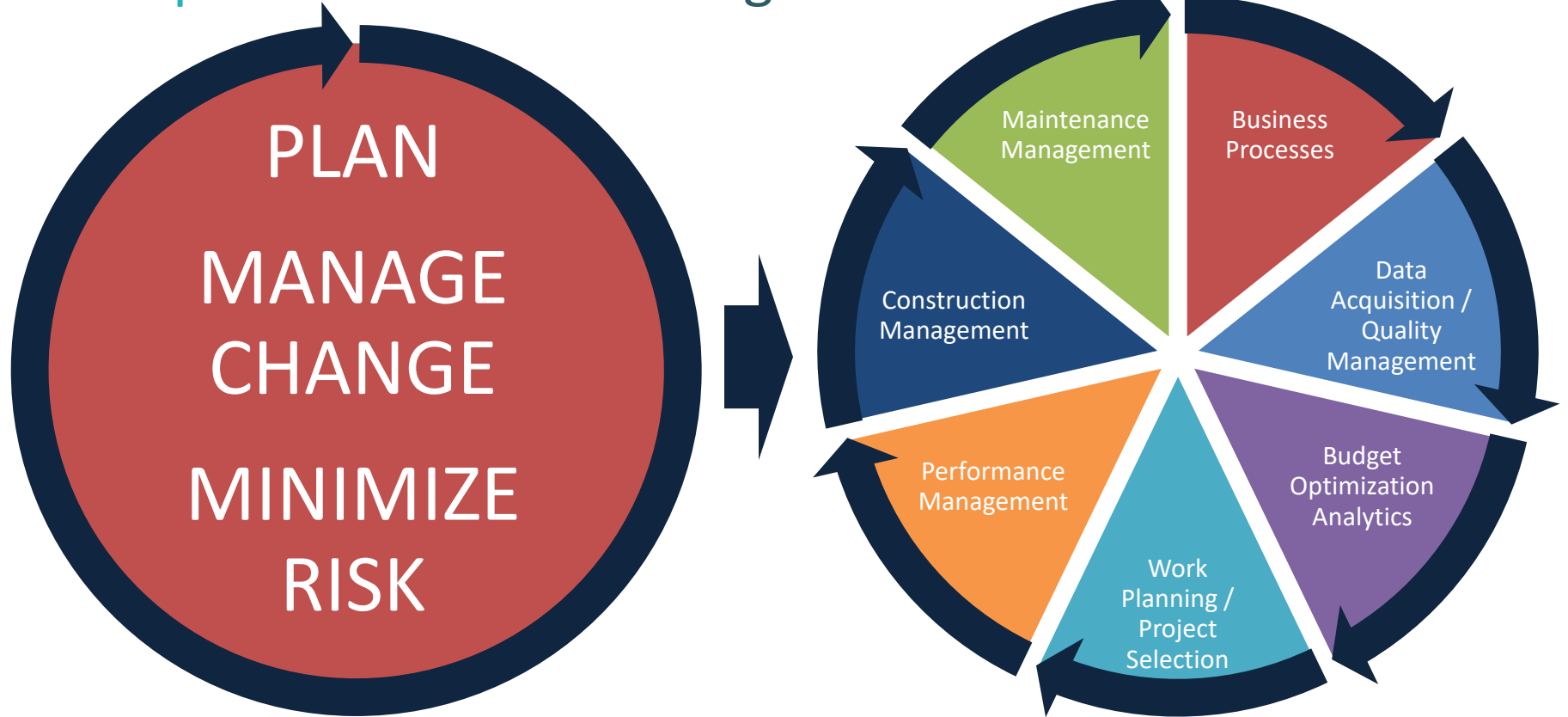
Clear
Objectives

Consultant
Partnership

Dedicated
Resources

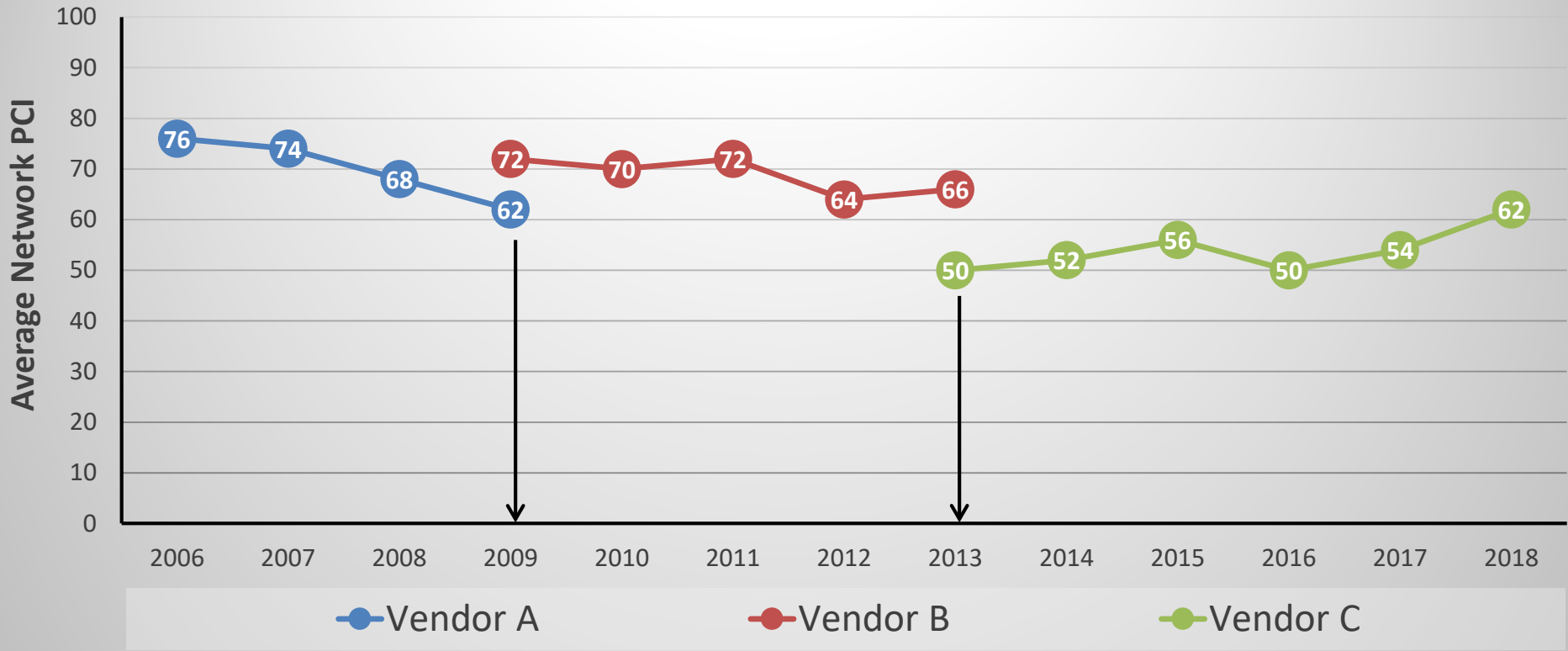
Own the Process from beginning to end!

Polk County Manages Change and Risk by Implementing Complete Pavement Management



Example of Change and Risk: Has This Ever Happened to You?

Changes in Data Collection Vendor Over Time



Reasons Why the RFQ/RFP Process can be so Frustrating

- Which reason(s) would you give?
 - Time Consuming
 - Costly
 - Ties up Staff
 - No Guarantee of Success!

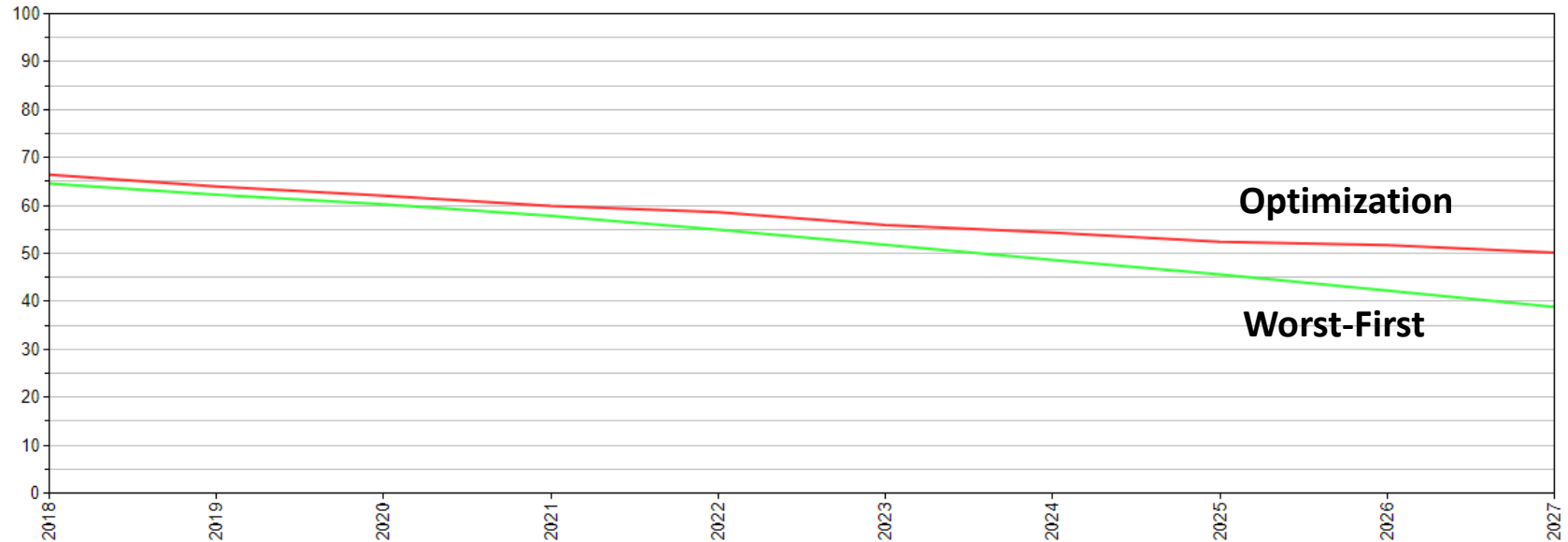


- Proper Planning, Managing Change, and Minimizing Risk can make this your last RFQ/RFP for Pavement Management

Polk County Example of Successful Change Management: Compare Optimization vs. Worst First Project Selection

- Goals:
 - Improve the Network Condition
 - Minimize Cost to Taxpayers
 - Maximize Benefit to the Traveling Public
- Using typical budget of \$15 Million for whole network:
- \$15 Million/Year for 10 Years
- Run an optimization analysis (New Business Process)
- Run a worst first analysis (Old Business Process)

Comparing Network Condition Optimization vs. Worst First Management

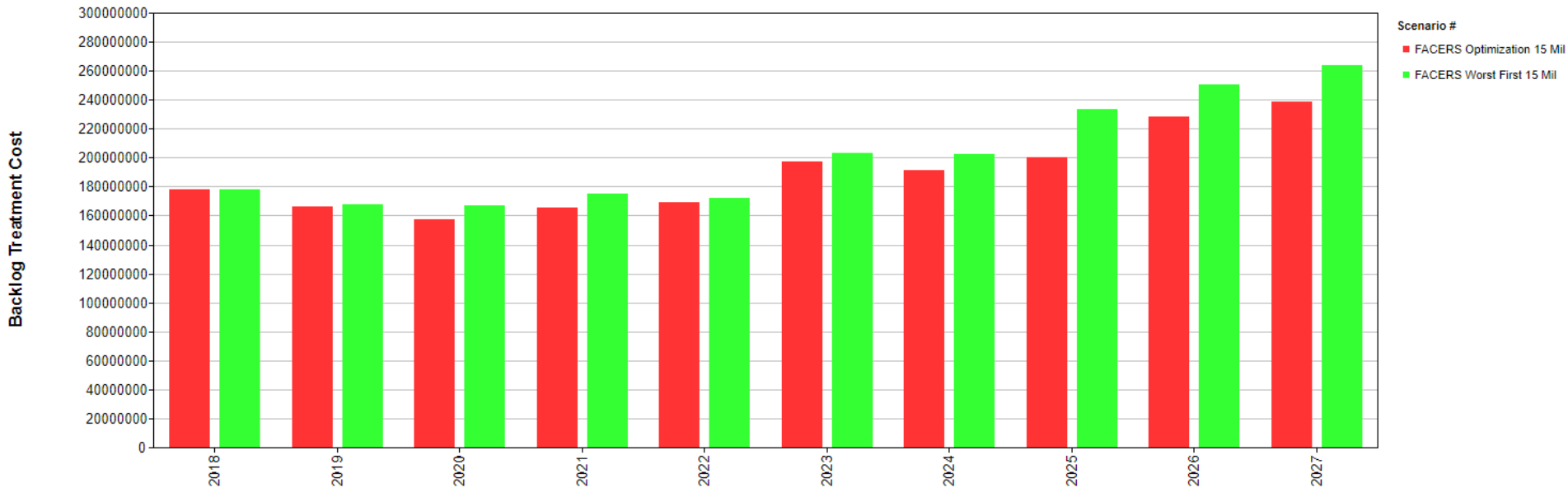


Average PCI in 2027:
Optimized PCI: 50
Worst-First PCI: 38

Network Condition
Improvement:
12 PCI Points

Minimizing Cost to Taxpayers

Optimization vs. Worst First Management

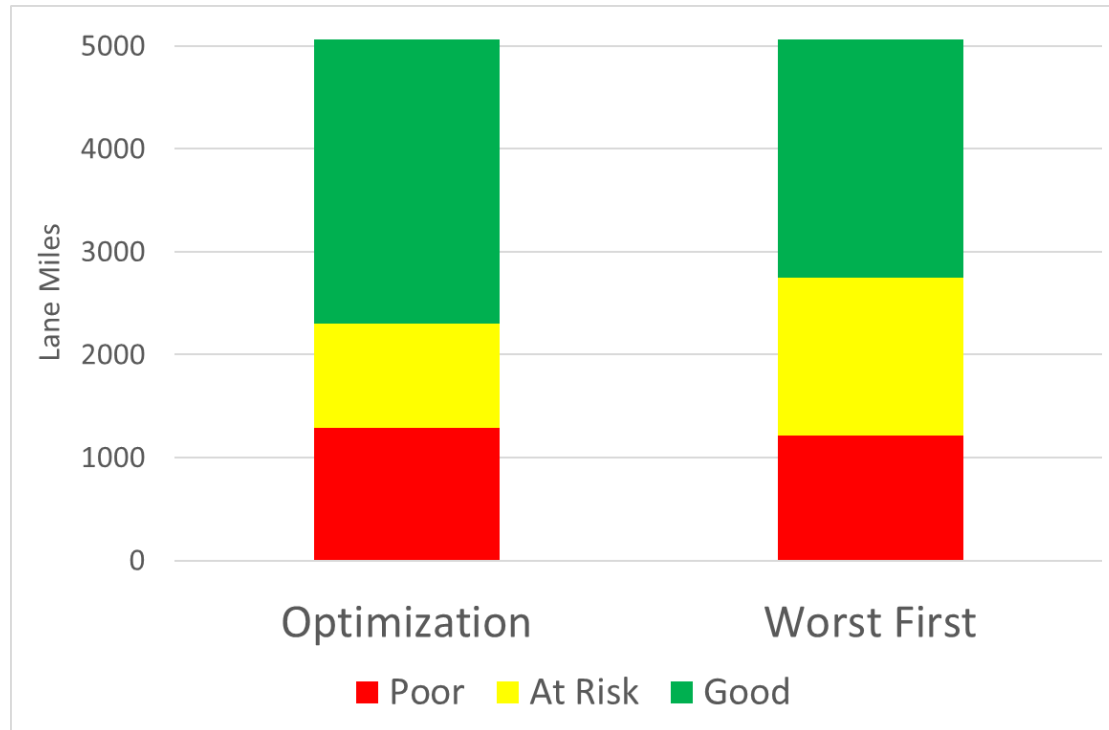


Total Backlog Cost in 2027:
Optimized: \$238.5 Million
Worst-First: \$263.9 Million

Money Saved by Improving
Management Process:
\$25.4 Million

Detail of Last Year of Analysis Conditions

Comparing Optimization to Worst First Management

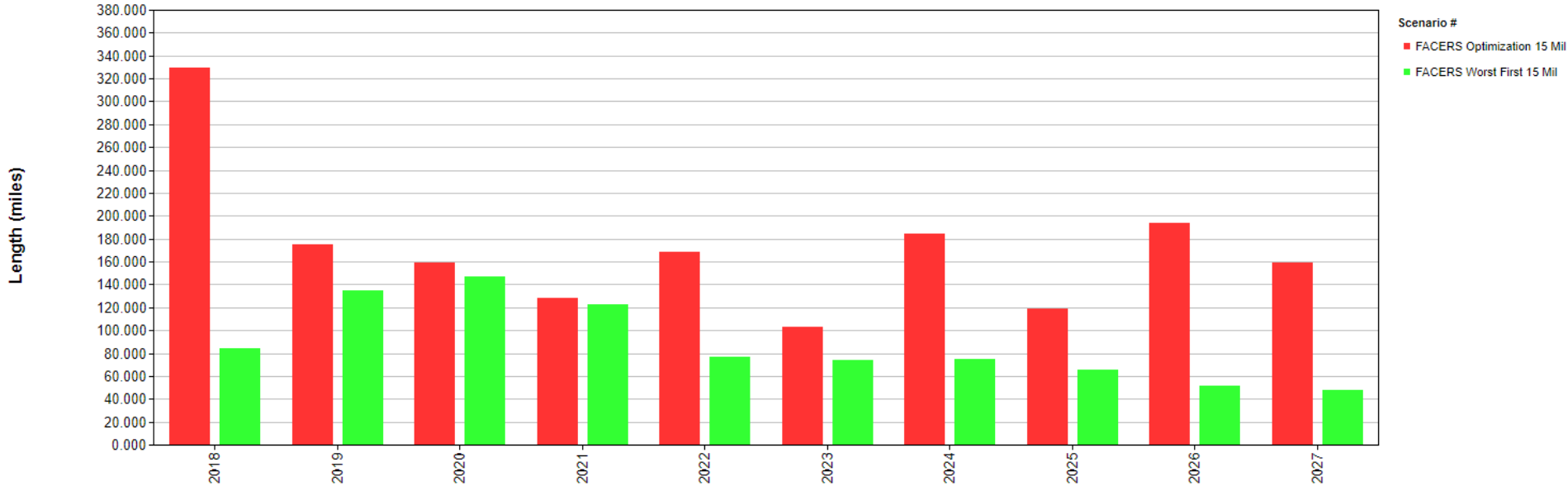


Percent Increase of
Good Roads:

20%

With similar
Percent Poor Roads

Maximizing Benefit to the Traveling Public Optimization vs. Worst First Management



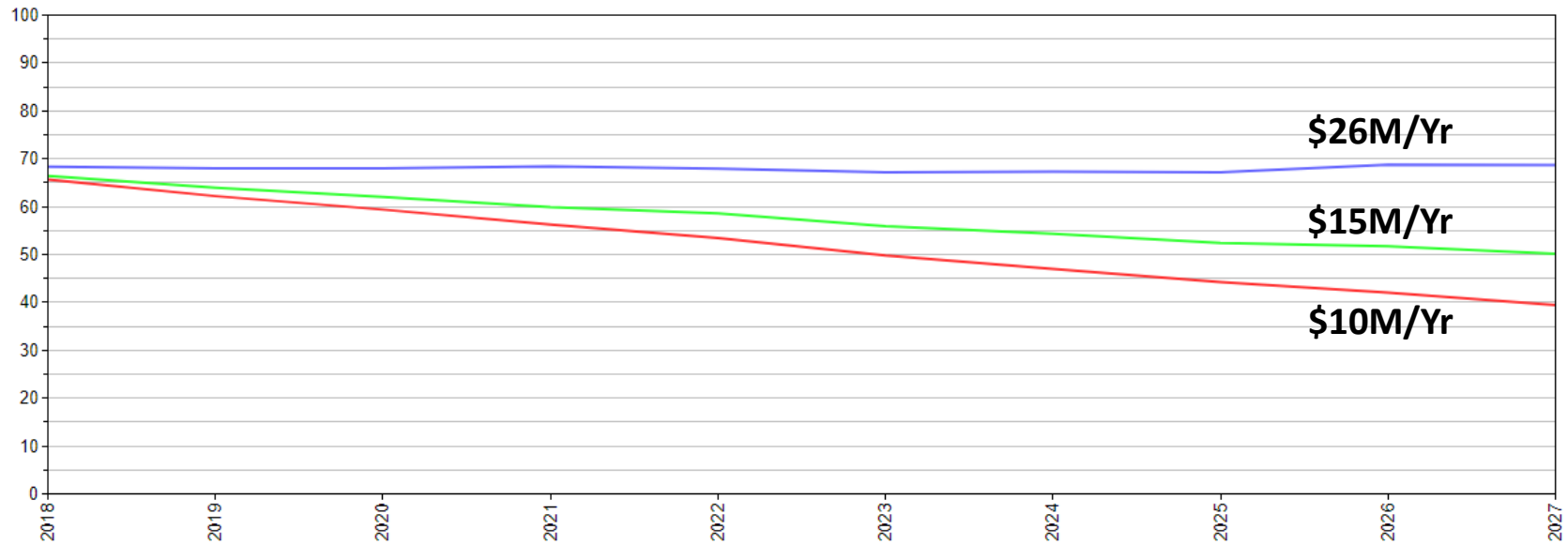
Total Centerline Miles Treated over 10 Years (2,529 mile network):
Optimized: **1,719 miles (68%)**
Worst-First: 879 miles (35%)

% Increase in Roads Repaired: **95%**

Polk County Comparison of Multiple Budget Scenarios

- Ran Optimization Analyses
 - \$15 Million/Year for 10 Years
 - \$26 Million/Year for 10 Years
 - \$10 Million/Year for 10 Years
- \$26 Million equates to approximate need to Maintain Current Condition of the network
- Compared the output to see impact of adjusting funding

PCI – Comparing Various Budget Scenarios



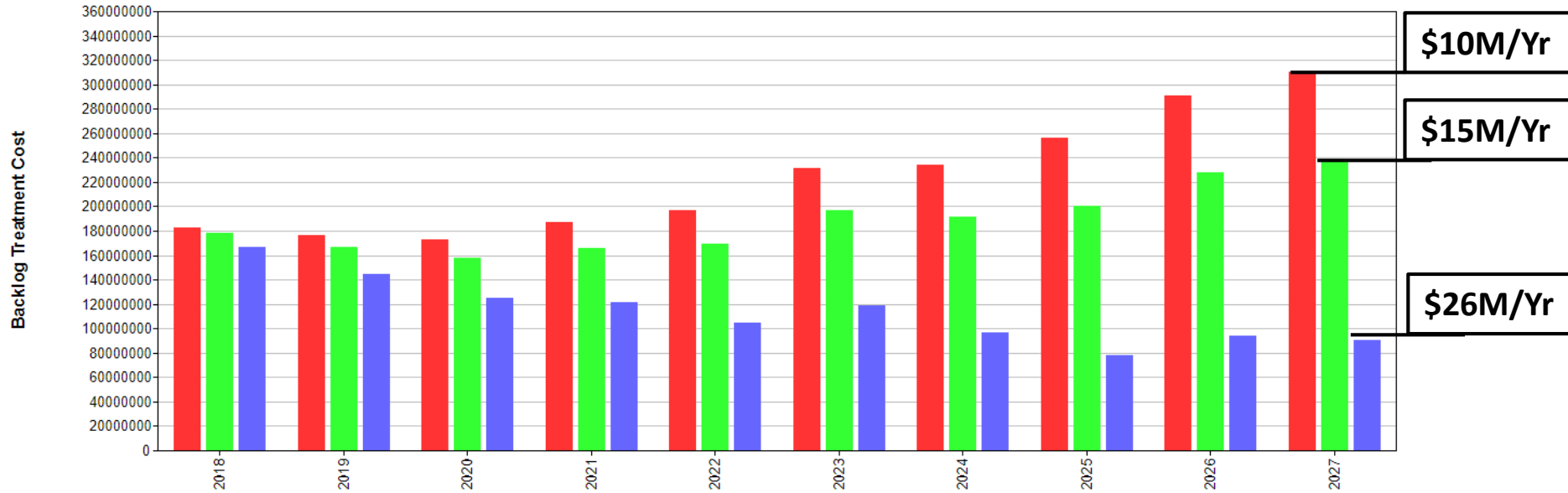
Average PCI in 2027:

\$26 Million Budget PCI: 69 (Current Network Condition)

\$15 Million Budget PCI: 50 (Current Budget Level)

\$10 Million Budget PCI: 39

Backlog Cost – Comparing Various Budget Scenarios



Total Backlog Cost in 2027:

\$26 Million Budget Backlog: \$91 Million
\$15 Million Budget Backlog: \$239 Million
\$10 Million Budget Backlog: \$264 Million

Return on Investment by
Providing Proper Funding:
\$38 Million

By Every Metric, This Project Was A Success!

- Every Performance Metric shows potential improvement
 - Network Condition Improves
 - Public Better Served
 - Money Saved
 - Time Saved
- Buy-in to the Process at all Levels
- Polk County now a Leading Florida County in Asset Management practices by Implementing a Plan, Managing Change, and Minimizing Risk with Better Tools and Processes

Thank You!

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EDC-4 Pavement Preservation across Florida Surveys



Pavement Preservation *(When, Where, and How)*



https://ufl.qualtrics.com/jfe/form/SV_cHMabQ8Q52Lt5Ln

https://ufl.qualtrics.com/jfe/form/SV_74HLLNk8LNhzm2V

Workshops focused on the “How”:

- October 2nd Orlando
- October 4th Marianna
- Peer Exchange
 - November (TBD): Tampa