

Pavement Management System Implementation for Sangamon County, IL

**Presentation to Sangamon County Board
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Outline

④ **Project Background & Objectives**

④ **PMS Approach (RWD-based)**

④ **Data Collection & Results**

④ **PMS Development**

④ **Capital Plan Development**

Sangamon County Highway Network

❖ **513 lane-mile roadway network**

- ~ 220 miles are “hard-surfaced” roads
- Remainder are chip-sealed roads

❖ **Custom maintenance and rehabilitation (M&R) for each “sub-networks”**

- Current annual operating budget of ~ \$1.5 million
- \$250 - \$500k is reserved annually for resealing the chip-sealed roads
- Remainder used for surface distress repairs, rehabilitation, and reconstruction on hard-surfaced roads

Project Objectives

Develop and Implement a Pavement Management System

- Manage inventory data
- Track historical and assess current condition data (surface & structural)
- Determine M&R needs
- Develop capital program

Optimize the use of limited M&R funds

- Determine backlog of total M&R needs
- Use benefit/cost analysis to prioritize projects
- Analyze “what-if” scenarios and understand consequences
- Compare performance against policy goals



Innovative Test Equipment

❖ Rolling Wheel Deflectometer (RWD)

- First of its kind – State of the Art Technology
- Incorporates structural condition
- Distinguish need for structural improvement

❖ Video Images

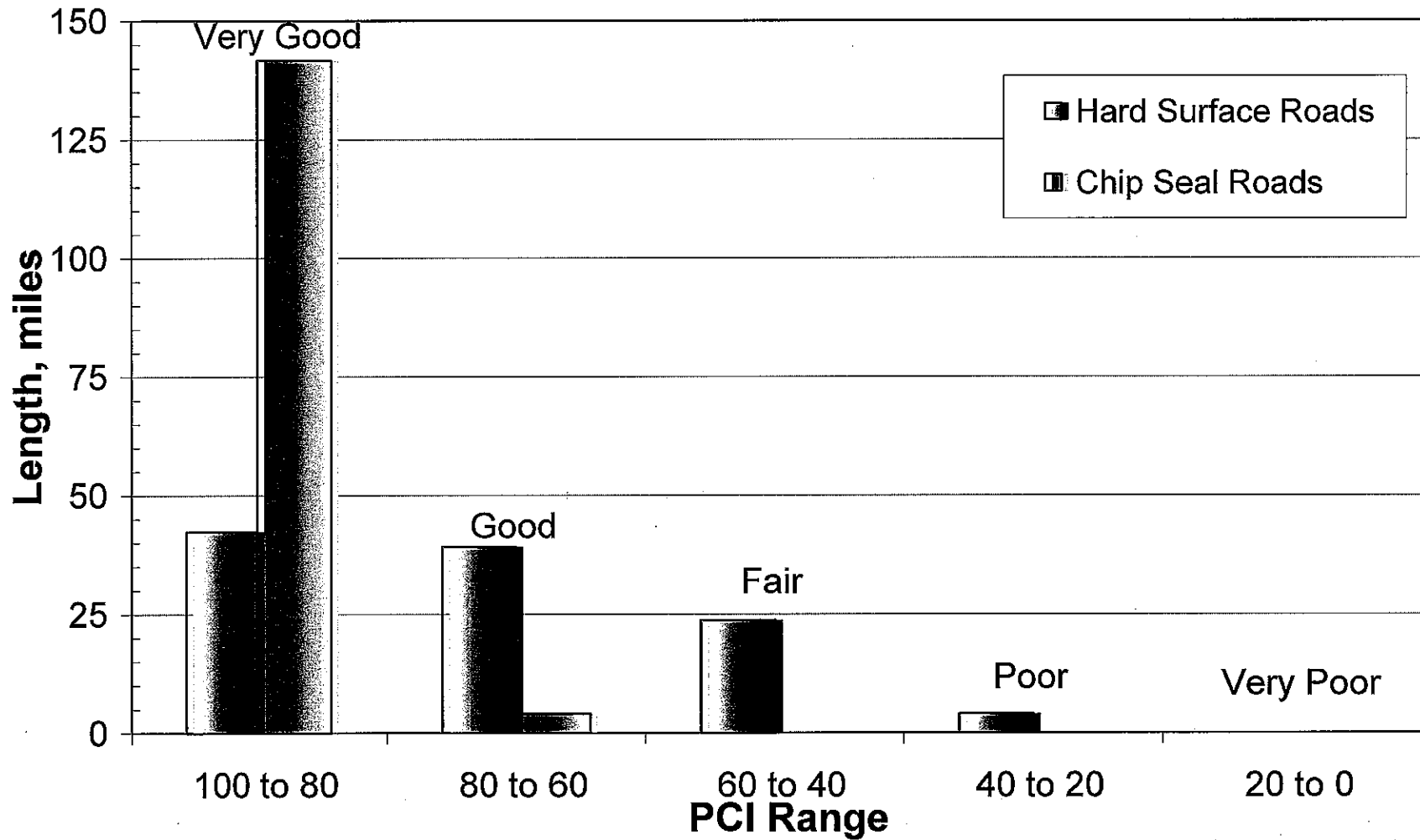
❖ Smoothness Data (IRI)



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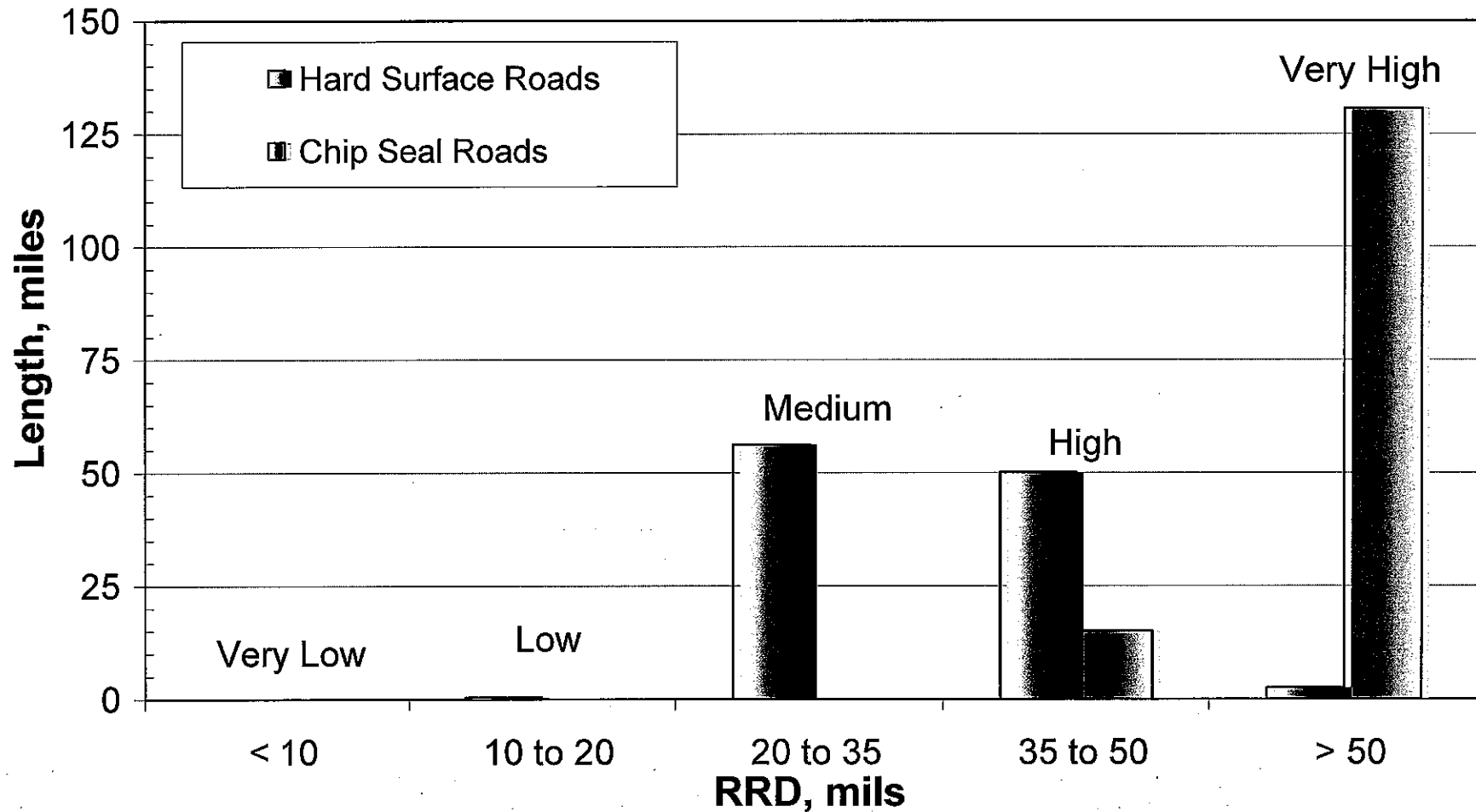


Pavement Condition Index (PCI)





RWD Deflection





Programming the PMS

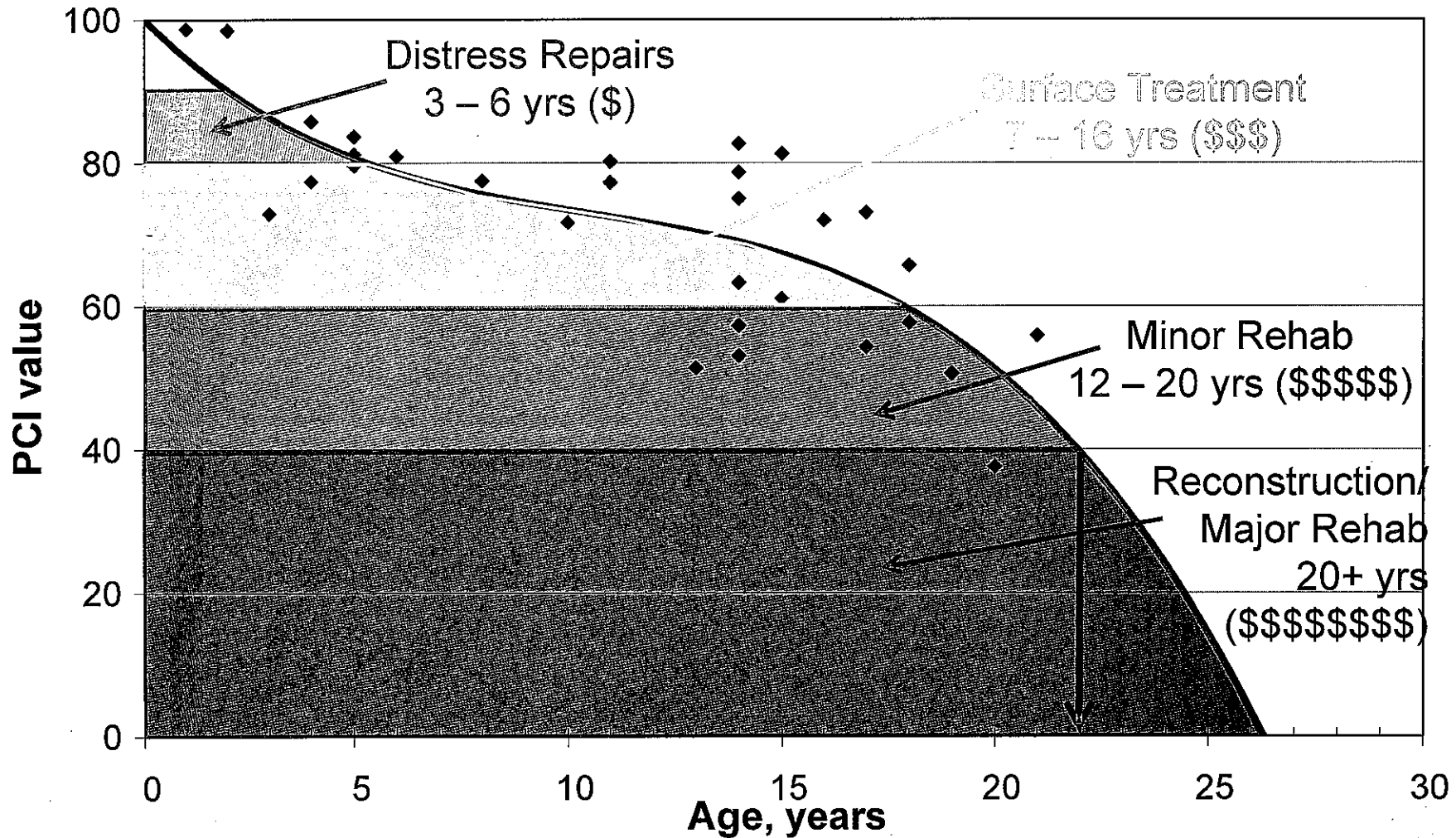
⊕ Implemented ARA's RoadCare Decision Support System



⊕ Uses system data to determine appropriate short-term and long-term M&R activities across the network

- How will the pavements deteriorate in the future?
- What will fix it now? What if we wait a few years?
- How much will it cost this year? How much more if we defer?
- If this project is selected, how will other projects be affected?
- **Will this plan meet the County's performance goals???**

M&R Categories - Relative Timings & Costs



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Decision Matrices

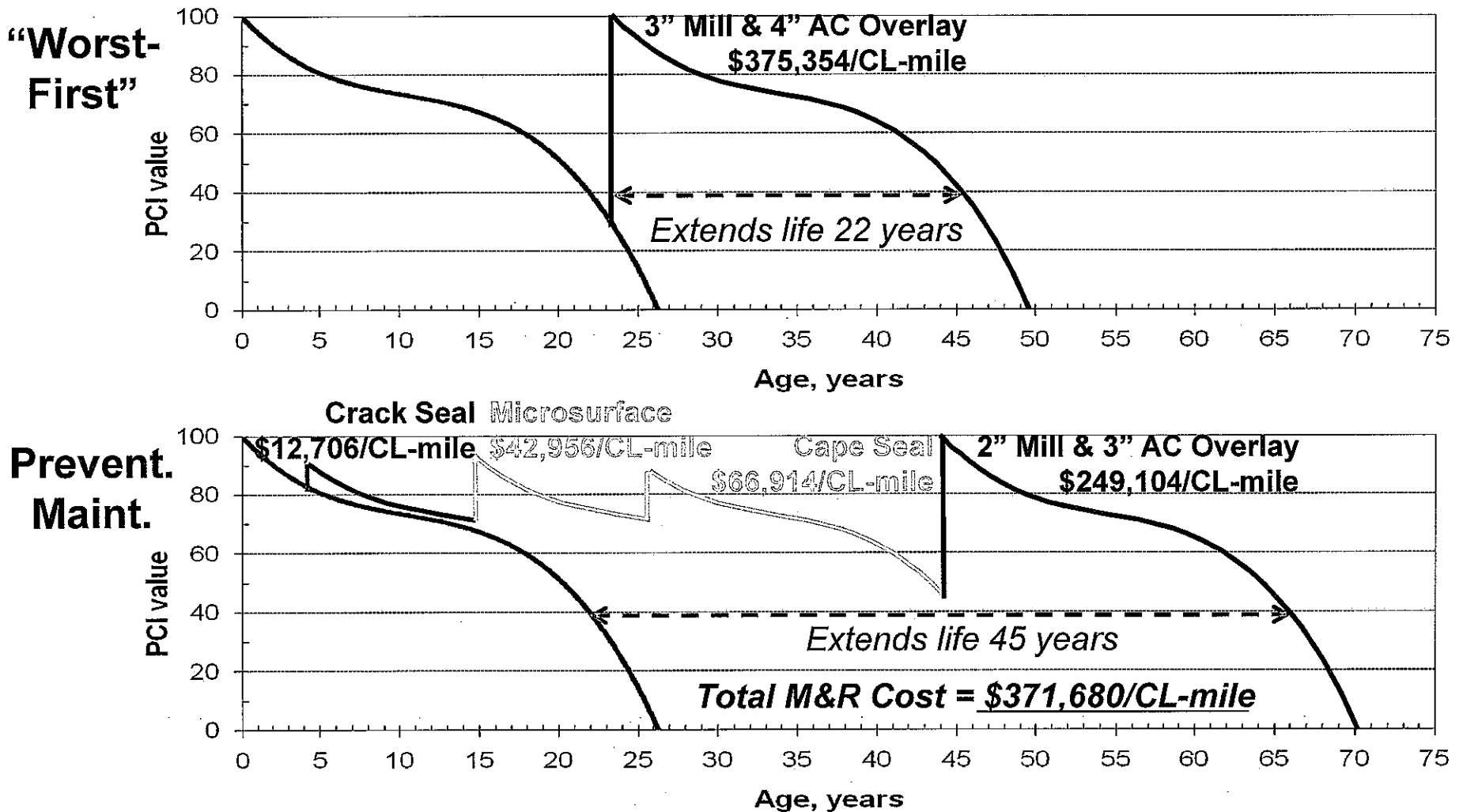
Hard Surface Roads Class III Truck Routes

PCI Value	PCI Rating	Representative RWD Deflection, mils		
		< 35 Good	35 - 50 Fair	> 50 Poor
100	Very Good	Defer Maintenance		
80		PM - Crack sealing (maximum 1 time)		
60	Good	Microsurfacing (maximum 1 time)		Distress Repair & Crack Seal (max 2 time)
		Cape Seal (maximum 2 times)		
40	Fair	Mill 2 Replace 2	Mill 2 Replace 3	Mill 2 - Patch - Replace 4
20	Poor	Mill 3 - Patch - Replace 3	Mill 3 - Patch - Replace 4	Mill 3 - Patch - Replace 5
0	Failed	Reconstruction (FDR overlay or Rubblize+overlay)		

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Preventive Maintenance vs. "Worst-First"



* All costs in 2009 USD; no inflation or discounting



Preliminary M&R Analysis

⊕ Assigned annual budgets per typical SCHED scenario

- Chip-Sealed Roads Program: \$250k per year
- Hard-Surfaced Roads Maintenance (green & yellow): \$150k per year
- Hard-Surfaced Roads Construction (orange & red): \$2.2M every other year

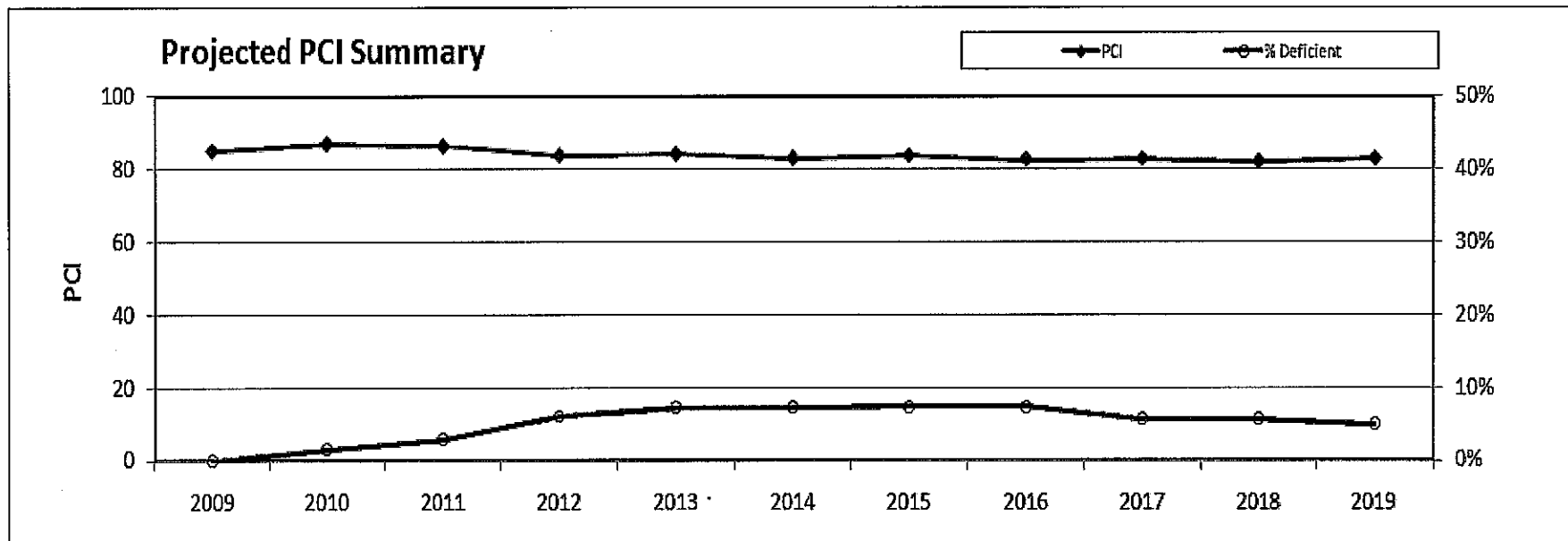
⊕ Feasible projects ranked & selected by benefit/cost ratio

⊕ Projected condition performance over 10-year analysis

- Weighted-average network PCI
- % of Network below deficient level (PCI = 40)

⊕ Considered both total network and hard-surfaced roads

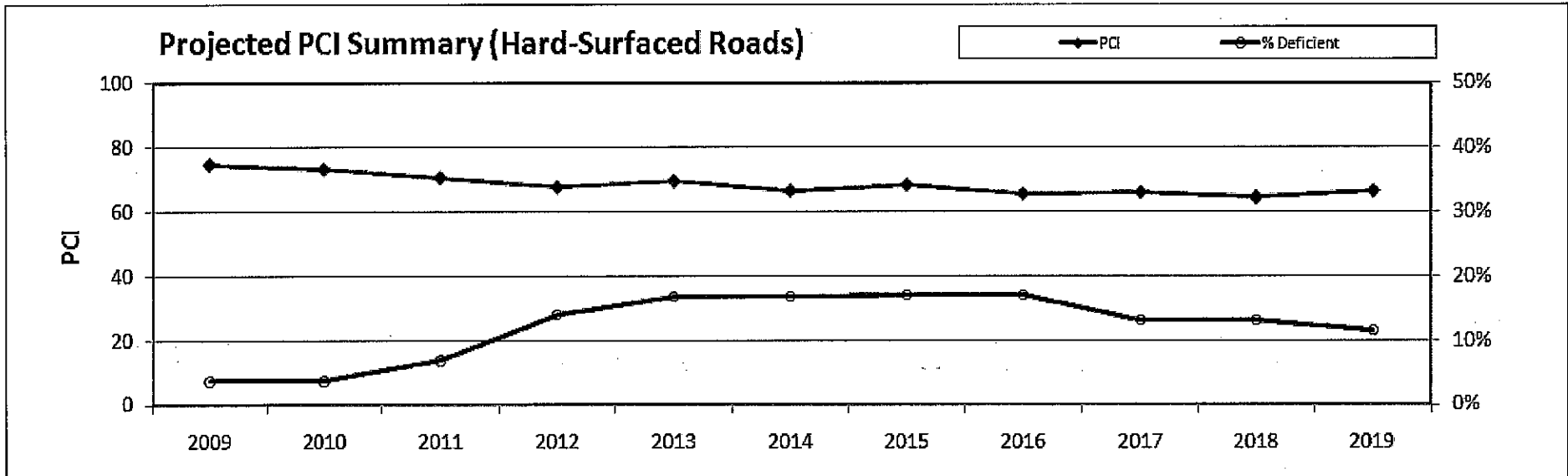
10-year Projection (Total Network)



- ⊕ **2009: Average Network PCI = 85 with 0% deficient**
- ⊕ **Current funding levels will result in slight dip over time**
- ⊕ **Backlog of “big, expensive projects” coming due from 2012 - 2014**

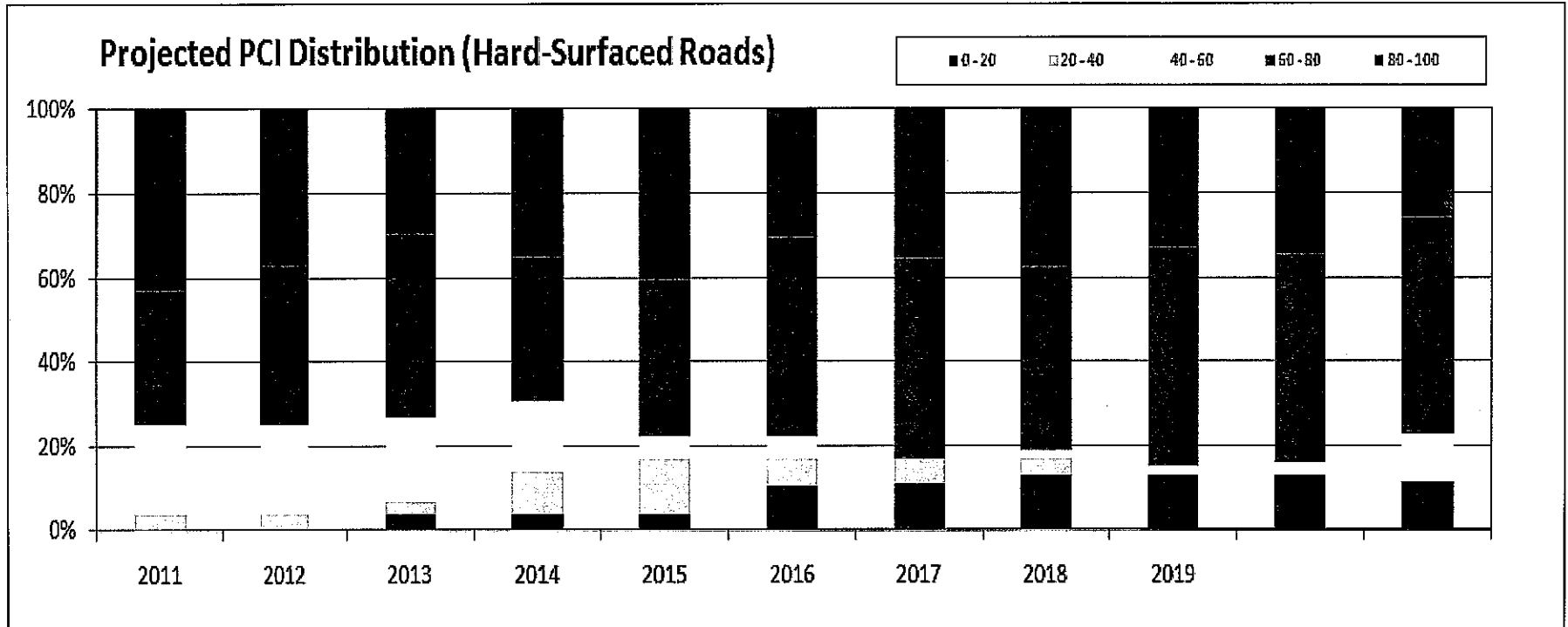


10-year Projection (Hard-Surfaced Roads)



- ⊕ **2009: Average Hard-Surfaced Roads PCI = 75**
- ⊕ **Projected performance drop entirely within hard-surfaced roads**
- ⊕ **Can begin identifying candidate projects for bonds, special grants in 3-4 year timeframe**

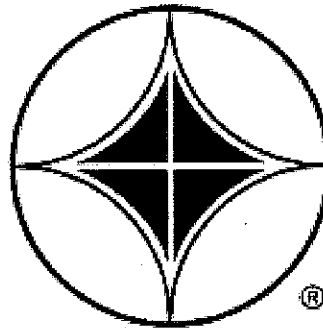
10-Year PCI Distribution (Hard-Surfaced Roads)



⊕ Strategic planning of major projects on the horizon will allow Sangamon County to maintain excellent condition distribution

THANK YOU!

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