‘State of the Streets’

Moore, OK City Council Presentation
April 3rd, 2023

IMS Infrastructure Management Services, LP

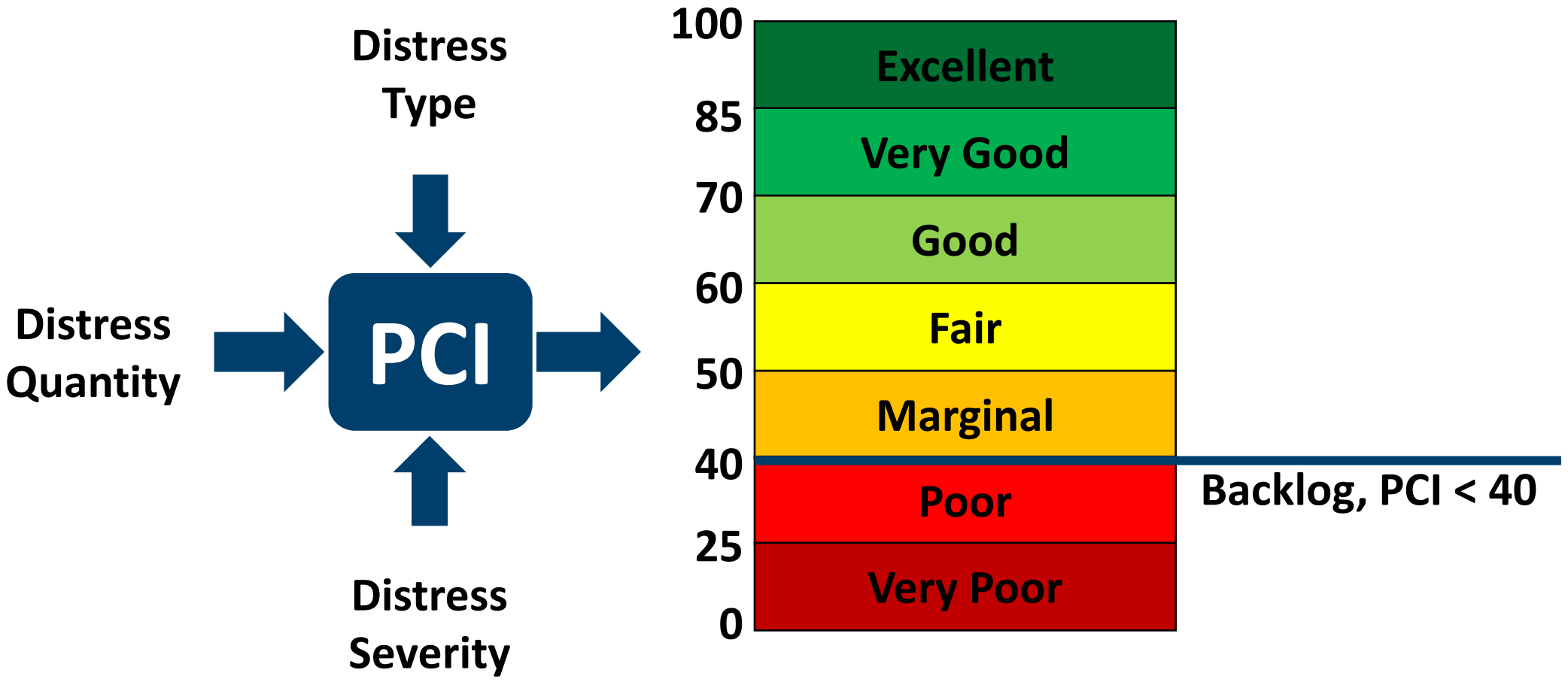
Megan Foshee, EIT | Project Engineer

AGENDA

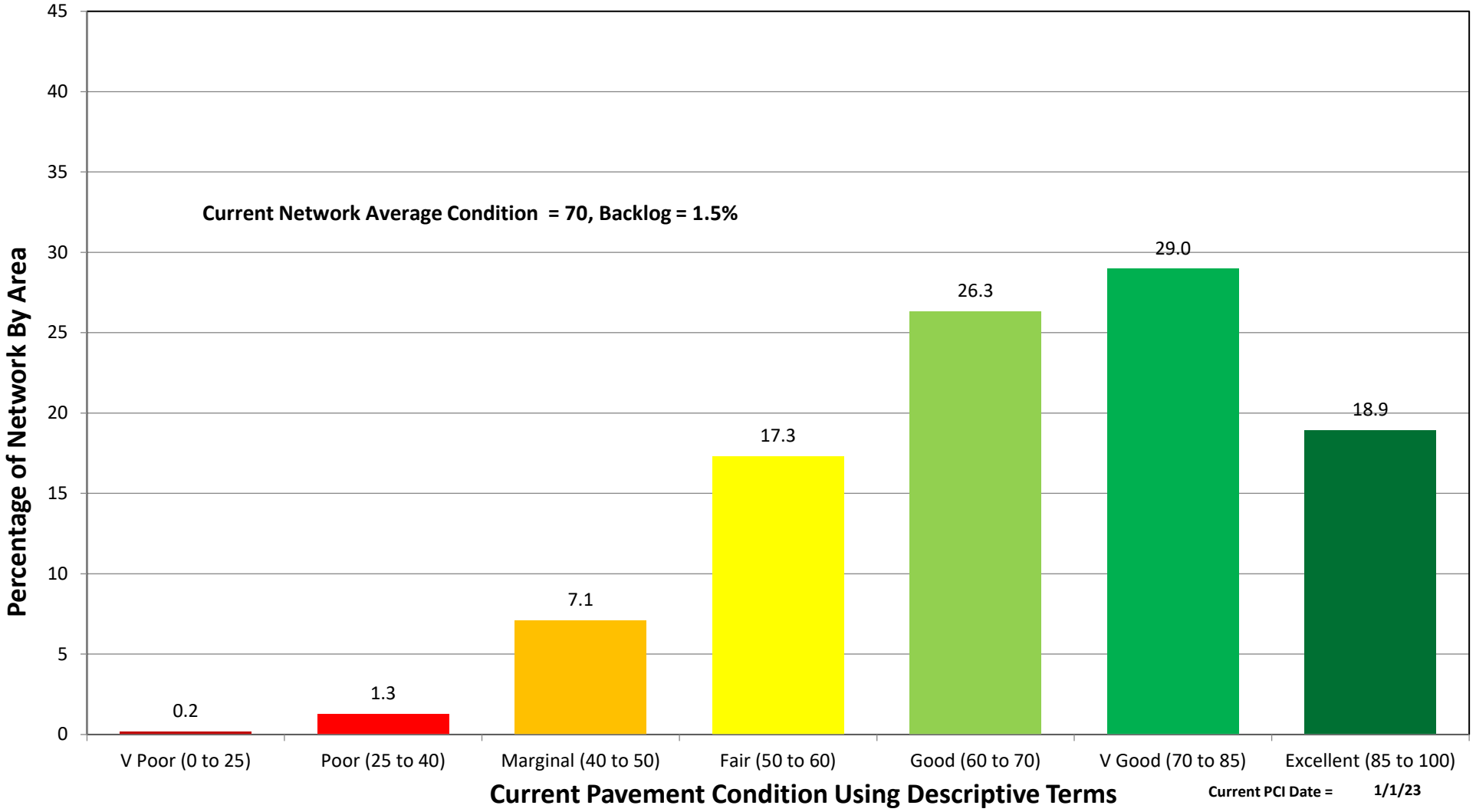
1. **Overview of Pavement Condition**
2. **Pavement Management Process**
3. **Pavement Condition Survey**
4. **Representative Conditions**
5. **Analysis and Project Planning**

Overview of Pavement Condition

PAVEMENT CONDITION INDEX (PCI)



CONDITIONS AT TIME OF ANALYSIS



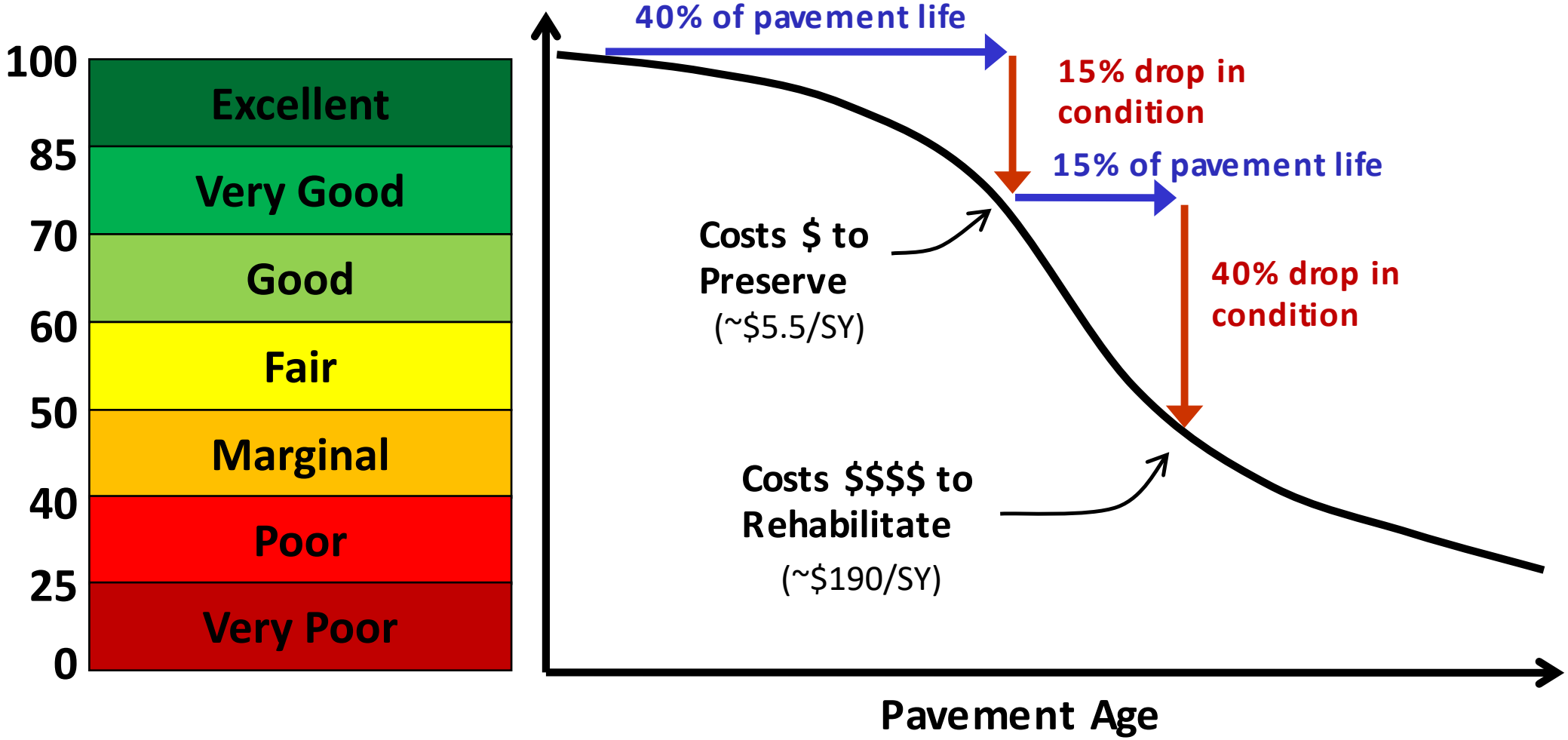
Centerline miles of City-owned roadways = Approx. 257 miles

Network Average PCI = 70 (Very Good)

Backlog = 1.5%

Pavement Management Process

RIGHT TREATMENT AT THE RIGHT TIME



PAVEMENT MANAGEMENT PROCESS

City Objectives, Policies and Budgets

Assess Pavement Conditions

Evaluate Priorities, Analysis Techniques, and Pavement Performance

Pavement Condition Survey

PAVEMENT CONDITION SURVEY

Common Pavement Distresses

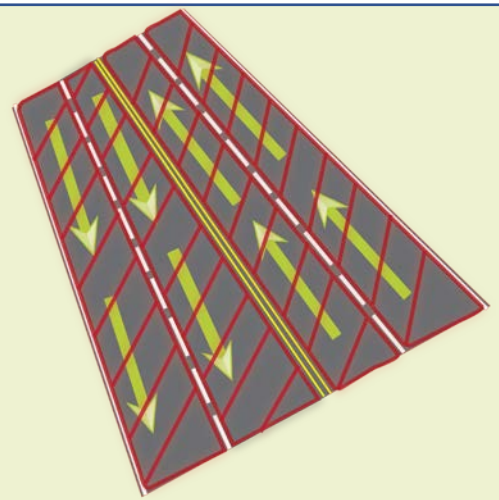
Alligator Cracking
Longitudinal Cracking
Transverse Cracking
Potholes
Corner Breaks
Faulting
Spalling
Patching

Measurements

Roughness
Rutting

FROM MANUAL TO AUTOMATED PCI SURVEYS…

Manual PCI surveys based on approx. 10% sampling



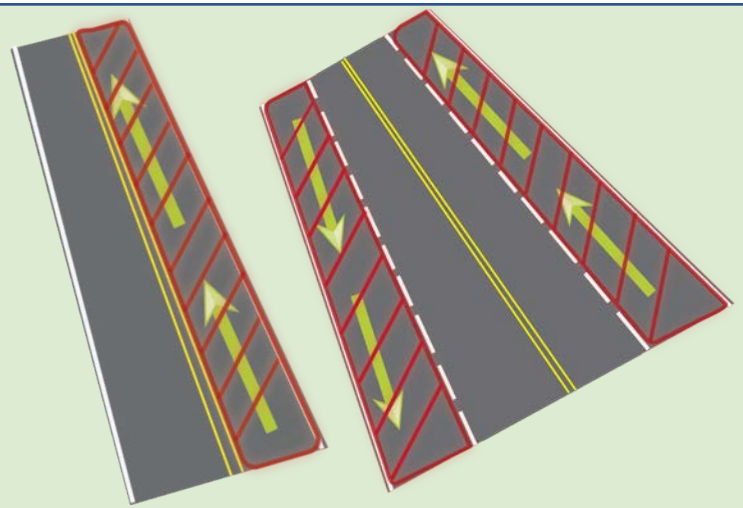
Automated PCI surveys
All lanes – Good for baseline surveys

Benefits of Automated Surveys

Safety

Repeatability

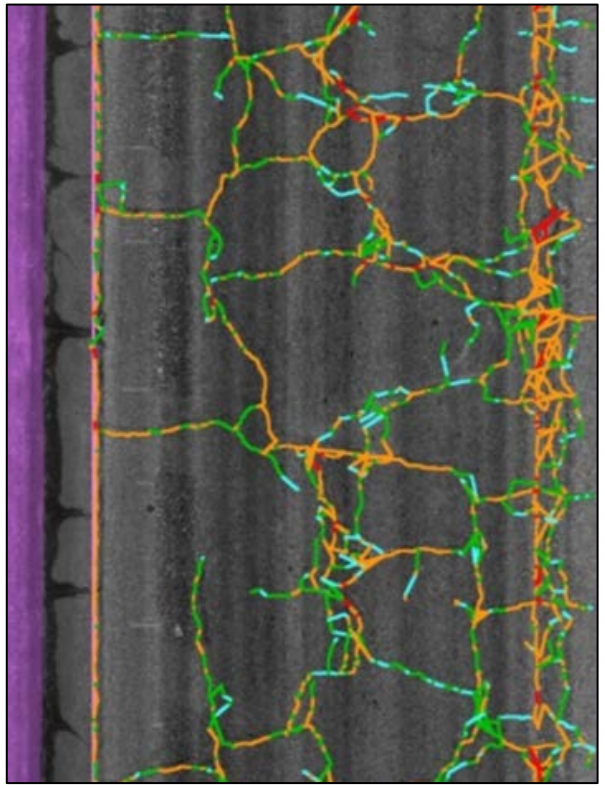
Transparency



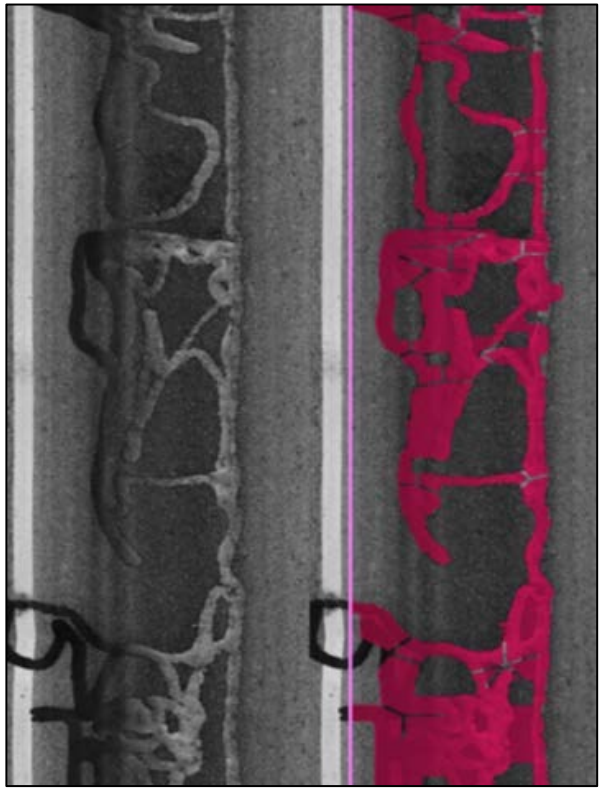
***Automated PCI surveys**
1 lane for locals, 1 lane in each direction for Arterial & Collector roadways

LCMS-2 PAVEMENT DISTRESS DETECTION

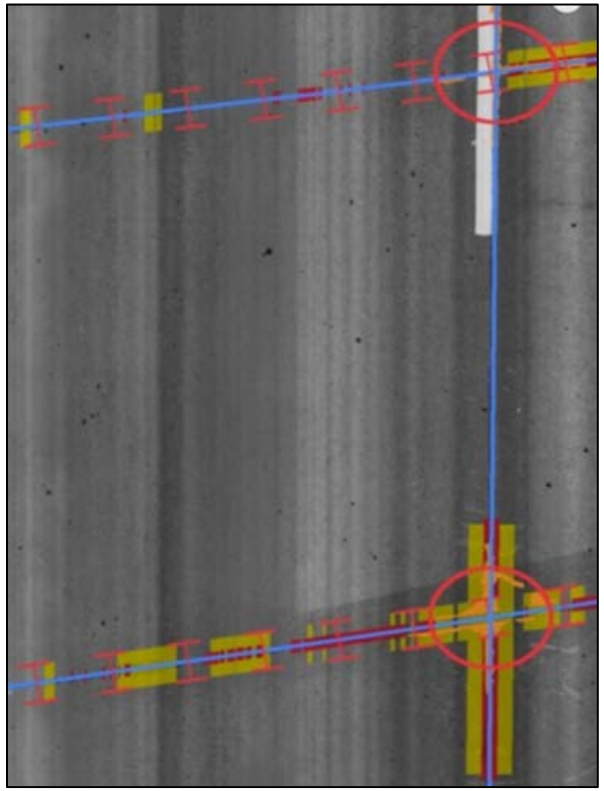
Cracks



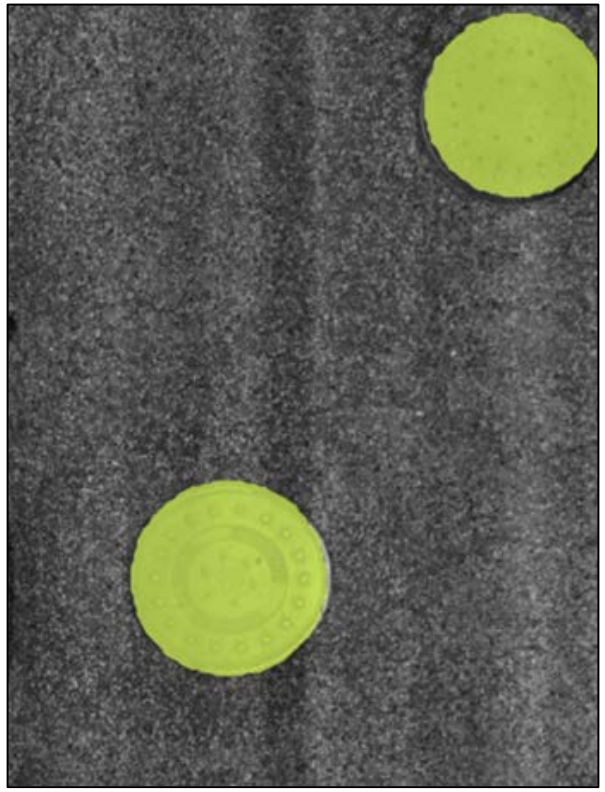
Sealed cracks



Concrete Joints



Utilities



TESTING THE STRUCTURAL PERFORMANCE WITH THE FASTFWD

The FastFWD is a state-of-the art non-destructive tool used to perform structural testing. The purpose of this testing is to assess the load carrying capacity of a roadway or parking lot pavement to assess the remaining service life and determine the best rehabilitation strategy.

Representative Pavement Conditions

Condition = Excellent | PCI = 97

GISID : 1366
From : N Service Rd
To : NE 18th St

N Broadway Ave

Tue Jul 27


Condition = Very Good | PCI = 74
CITY of MOORE
INCORPORATED
1893
OKLAHOMA
GISID : 2050
From : Renita Ct
To : SE 9th St
Renita Way

Condition = Good | PCI = 69

GISID : 1453
From : NE 12th St
To : NE 14th St

Lost Creek Dr

Fri Jul 3

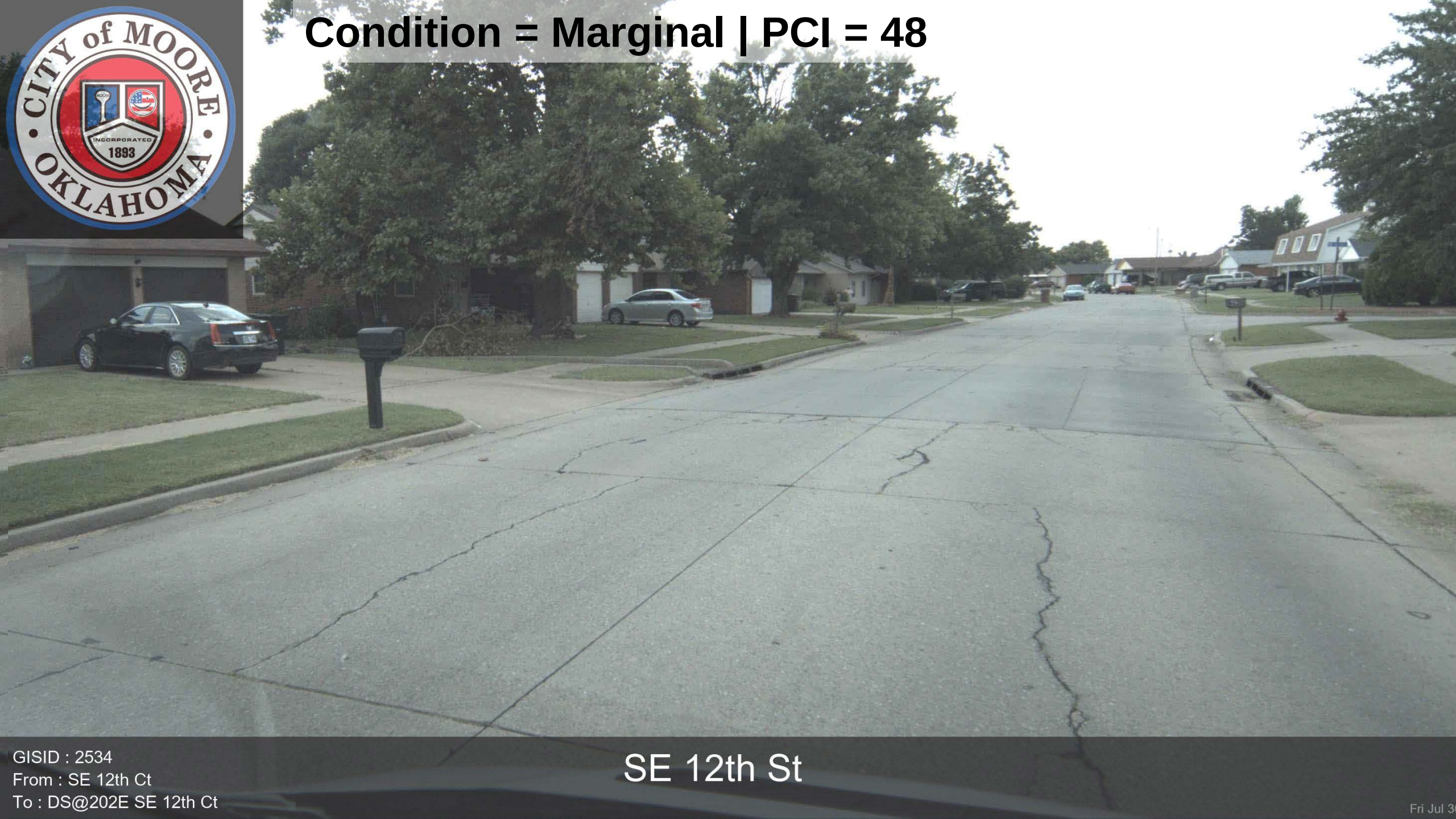
Condition = Fair | PCI = 58

GISID : 1328
From : Windermere Dr
To : Queensbury Rd

Regency Blvd

Tue Jul

Condition = Marginal | PCI = 48



GISID : 2534
From : SE 12th Ct
To : DS@202E SE 12th Ct

SE 12th St

Fri Jul 3

Condition = Poor | PCI = 30

GISID : 1911
From : Cedar Ln
To : DS@155N Cedar Ln

Highland Dr

Condition = Very Poor | PCI = 25

Analysis and Project Planning

ANALYSIS AND PROJECT PLANNING

- Funding is not zero and it is not unlimited
- Examine effects of current funding level
- Identify annual budget to maintain current PCI and backlog
- Minimize deterioration in pavement conditions
- Pavement management is priority based – not “worst first” – for most efficient stewardship of citizen funds

DEVELOPING MAINTENANCE AND REHABILITATION (M&R) PLANS

Step 1

Research or 'Needs Analysis'

- ✓ Identify agency's current M&R practices, including maintenance, preservation, and rehabilitation
- ✓ Identify historical M&R records & planned projects
- ✓ Identify local unit costs and budget
- ✓ Identify agency priorities – Functional class, highly trafficked areas, proximity to public buildings, etc.

Step 2

Customization

- ✓ Define M&R activities
- ✓ Create deterioration models
- ✓ Create cost models
- ✓ Implement planned projects
- ✓ Set agency-specific priorities
- ✓ Create logical projects

Step 3

Recommended Plan

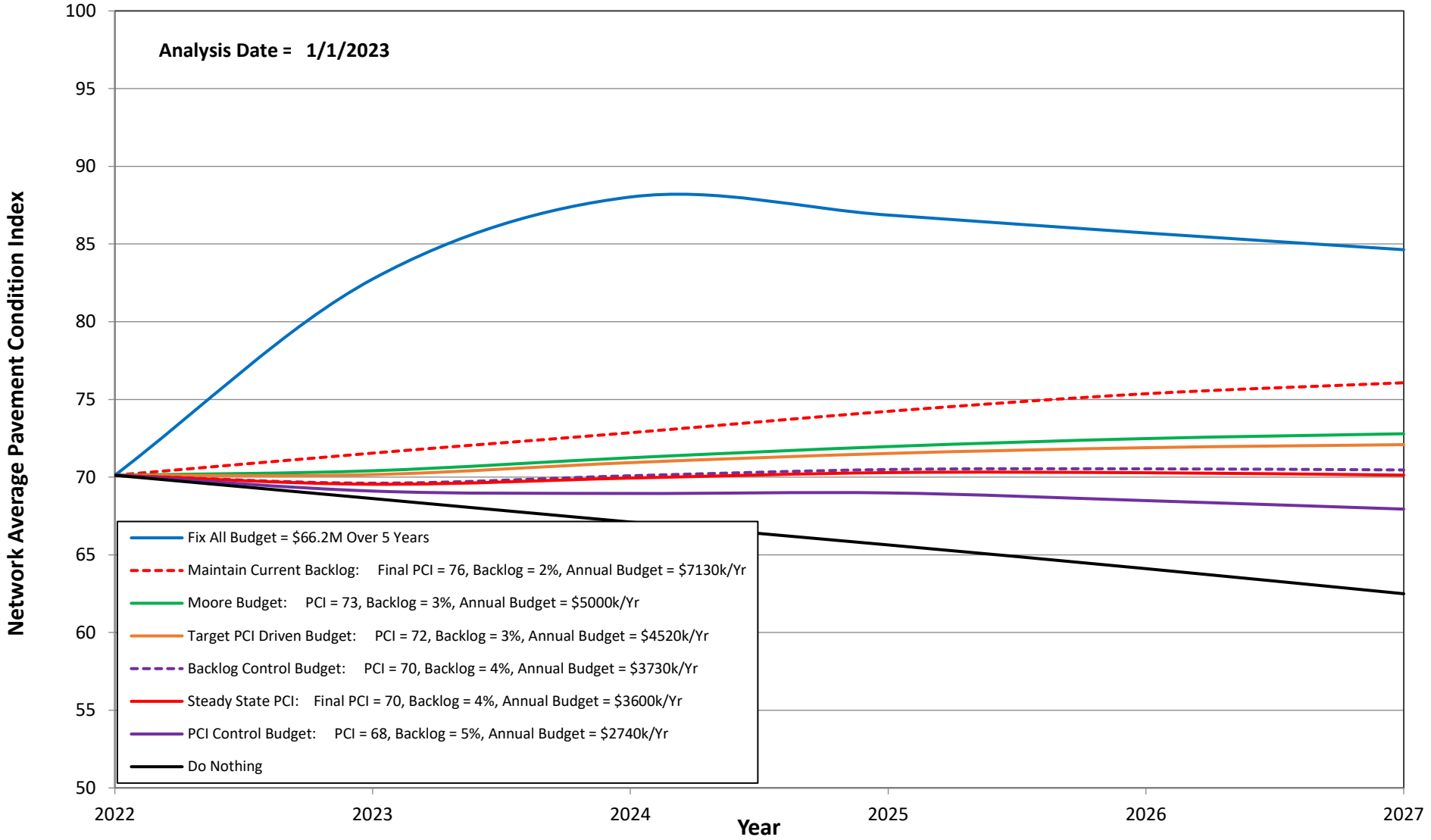
- ✓ Run several "what-if" scenarios based on agency's budget and goals
- ✓ Compare different budgets, resulting conditions, and resulting backlogs
- ✓ Develop multi-year M&R plan

M&R UNIT COSTS

- M&R unit costs change over time and need to be routinely updated.
- Recent inflation has impacted M&R costs.

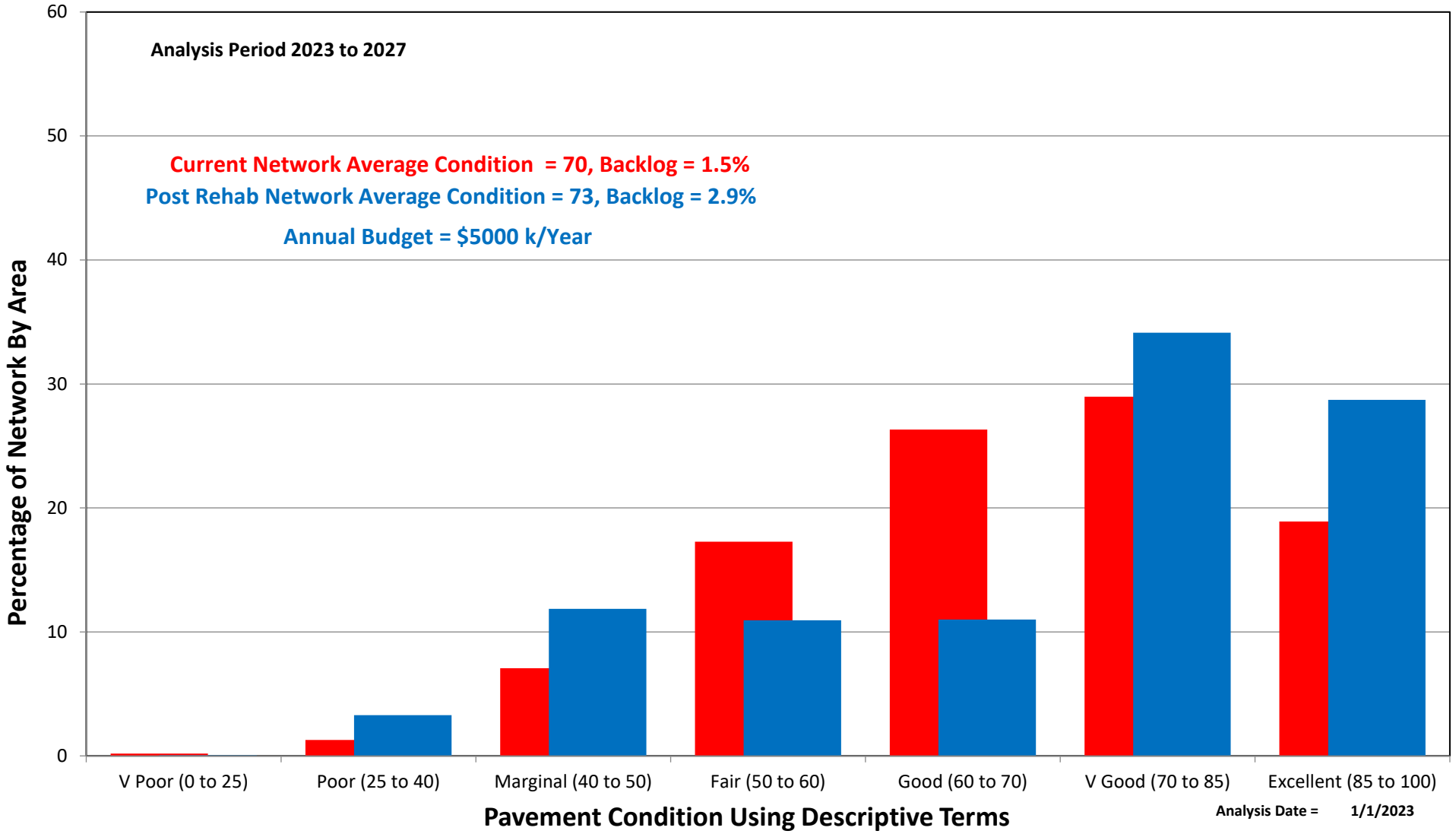
Pavetype	Rehab Activity	Min PCI	Critical PCI (Need Year)	Max PCI	Base Unit Rate ($/yd2)	Highway Unit Rate ($/yd2)	Minor Arterial Unit Rate ($/yd2)	Local Unit Rate ($/yd2)	Alley Unit Rate ($/yd2)
All	Routine Maintenance	85	100	100	0.00	0.00	0.00	0.00	0.00
Asphalt	Slurry Seal / Preventive Maintenance	80	82	85	**3.10**	3.40	3.30	3.30	3.20
Asphalt	Surface Treatment / Chip Seal	70	73	80	**4.80**	5.30	5.20	5.00	4.90
Asphalt	Edge Mill + Thin Overlay (1.5 - 2.0)	60	63	70	**19.25**	21.25	20.75	20.25	19.75
Asphalt	EM/FWM + Moderate Overlay (2.0 - 3.0)	50	54	60	**26.50**	30.50	29.50	28.50	27.50
Asphalt	FWM + Thick Overlay (> 2.0 - 3.0)	40	44	50	**31.00**	37.50	36.00	34.00	32.50
Asphalt	Surf Recon + Base Rehab / FWM + Strctrl Ptch + Olay	25	30	40	**46.00**	55.50	53.00	50.50	48.50
Asphalt	ACP Full Depth Reconstruction	0	15	25	**74.50**	82.00	80.00	78.00	76.50
Concrete	PCC Jnt Rehab & Crk Seal	80	82	100	**1.25**	1.40	1.35	1.30	1.30
Concrete	PCC Localized Rehab	70	73	80	**5.00**	5.75	5.50	5.50	5.25
Concrete	PCC Slight Pnl Rplcmnt (<10%)	60	63	70	**15.00**	18.25	17.25	16.50	15.75
Concrete	PCC Moderate Pnl Rplcmnt (< 20%)	50	54	60	**28.00**	35.50	33.50	31.50	30.00
Concrete	PCC Extensive Pnl Rplcmnt (<33%)	40	44	50	**41.00**	54.50	51.00	47.50	44.00
Concrete	PCC Partial Reconstruction	25	30	40	**101.00**	128.00	121.00	114.00	107.00
Concrete	PCC Full Depth Reconstruction	0	15	25	**143.00**	190.00	178.00	166.00	154.00

IMPACT OF FUNDING LEVELS ON PAVEMENT CONDITIONS



POST REHAB CONDITION COMPARISON

CURRENT CONDITIONS COMPARED TO FORECASTED CONDITIONS



RECOMMENDATIONS

- Strive to maintain a PCI above 70 with a backlog below 4%.
- City's current funding is forecasted to increase PCI to approximately 73 and backlog to 3% after 5 years.
- Strategic and proactive annual maintenance and rehabilitation saves money in the long run.
- City should resurvey streets every 2-4 years to update condition data, track pavement performance, and improve pavement management plan.