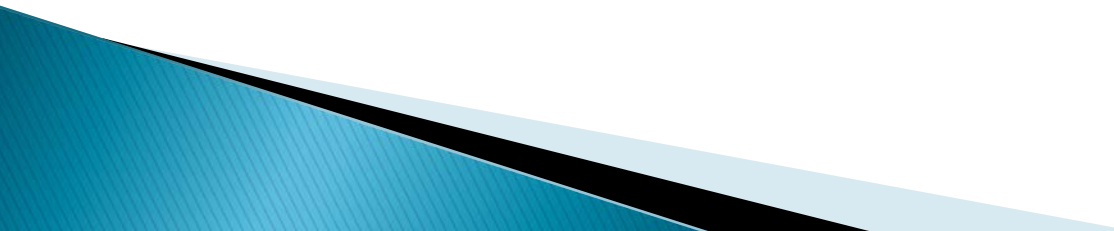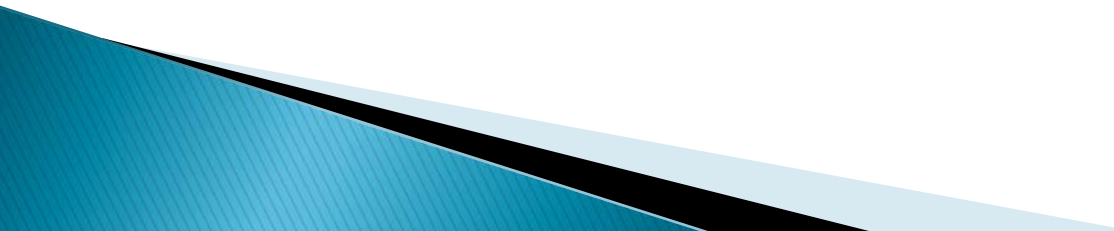# Pavement Preservation at the Local Level

Michael Ross, P.E.
City of Overland Park, KS
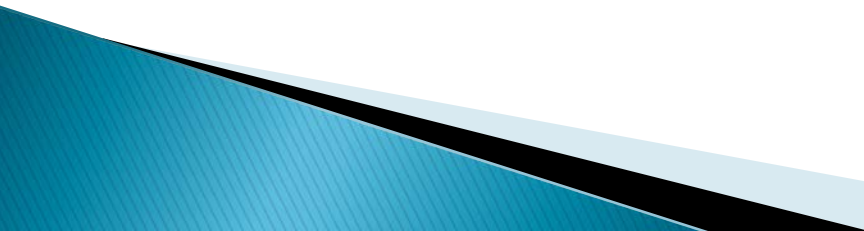
City of Overland Park

- Population 180k (2nd in Kansas)
- Public Street Network about 2,000 lane miles
- Construction early 1900s to present
- Most streets 1960 or later
- Various street standards
- Mostly asphalt

Inventory

- Paper inventory created and maintained starting in the 1960s
- COE PAVER since the 1980s
  - Network
  - Section
  - Layers
  - Class
  - Condition (pavement and curb)
  - Ad hoc maintenance work

Measurement

- PCI
- ASTM D6433
  - Small sampling statistics
    - Homogeneous sections
    - Random sample units
  - 15% inspection
- All streets inspected every two years
- Data entered digitally on Android tablets
- Minimal data manipulation/transcription

BRNOSEC

BRNOSEC REBY01	**Name** EBY	**Map No. (click me)** 05

Construction Class: R05 - Marshall on AB3 (RSP)

☑ Improved ☐ Divided ☐ KCPL Lts ☐ NoSWs

Section Begins	Section Ends	RankID	Culdesacs	Temp
N SIDE 76TH TERR	S SIDE 75TH ST	Residential		O

Length (ft)	CL Length (ft)	Width (ft)	Lanes	Lane Miles	Curb Len (ft)	Area (SF)	Last Construction	Maintenance
1,168	1,168	22.0	2	0.44	2,336	25,696	☑ 8/31/1992	City

Curbs	Subdiv.No.	Subdivision	Date Annexed	Age	No.Samples	Surf.Type
C	348000	JESSUP SUBDIVISION	☑ 8/24/1960	19	11	AC

Drawing (dbl-Click this bar to Select File)

\\projectfs\st.croix\operations\paver\section drawings\scans\map 5\REBY01.pdf

Maintenance History (dbl-Click item to edit)

ID	Date	Category	Mat.Code	Material	Thickness	Comment
182001	05/24/2013	WST	1550	Microsurface Type 2	-	MR-1433
175626	08/28/2007	WST	1550	Microsurface Type 2	-	MR-1002
21293	06/15/2000	ST	1530	Single layer aggregate seal; special oil	-	
14768	08/31/1992	SURFACE	1200	Asphaltic Concrete (Marshall)	2.00	1992 RESIDENTIAL STREET PROGRAM
14767	08/31/1992	BASE	1200	Asphaltic Concrete (Marshall)	4.00	
14766	08/31/1992	BASE	3130	High fines crushed stone (AB-3)	4.00	
13182	07/02/1991	ST	1510	Single layer aggregate seal		

GBA Work Order	Start Date	End Date	Work Type	Supervisor
12-000135	11/30/2011	12/2/2011	Crack Repair, In-House	HUTCHINSON, BRIAN
12-000134	11/15/2011	11/18/2011	Crack Repair, In-House	HUTCHINSON, BRIAN

PCI scale

100	Excellent
85	Very Good
70	Good
55	Fair
40	Poor
25	Very Poor
10	Failed
0	

Pavement Condition

Date	PCI
06/08/2015	61.2
06/07/2013	100.0
07/21/2011	69.6
07/22/2009	77.6
07/30/2007	80.2
08/05/2005	85.6
06/17/2004	82.3
06/27/2002	92.3
06/05/2000	91.8

Curb Condition

Date	CCI
06/08/2015	83.2
06/07/2013	89.8
07/21/2011	91.1
07/22/2009	89.1
07/30/2007	77.8
08/05/2005	69.0
06/17/2004	76.8
06/27/2002	94.6
06/05/2000	97.1

Roughness

Date	IRI	Max IRI
07/20/2009	285	
07/20/2009	285	

Maintenance

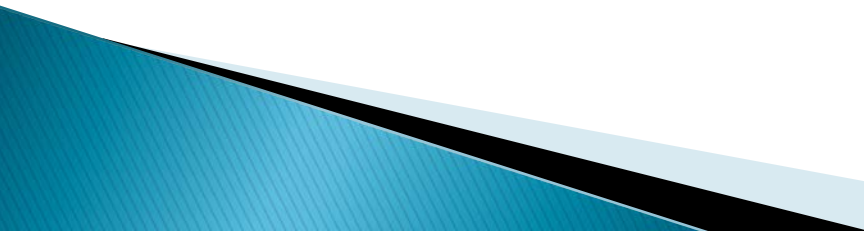| Date	Operation	PCI	ABBR
07/2016	Do Nothing ...	58.02	NOTHING

Typical condition plot

Now line
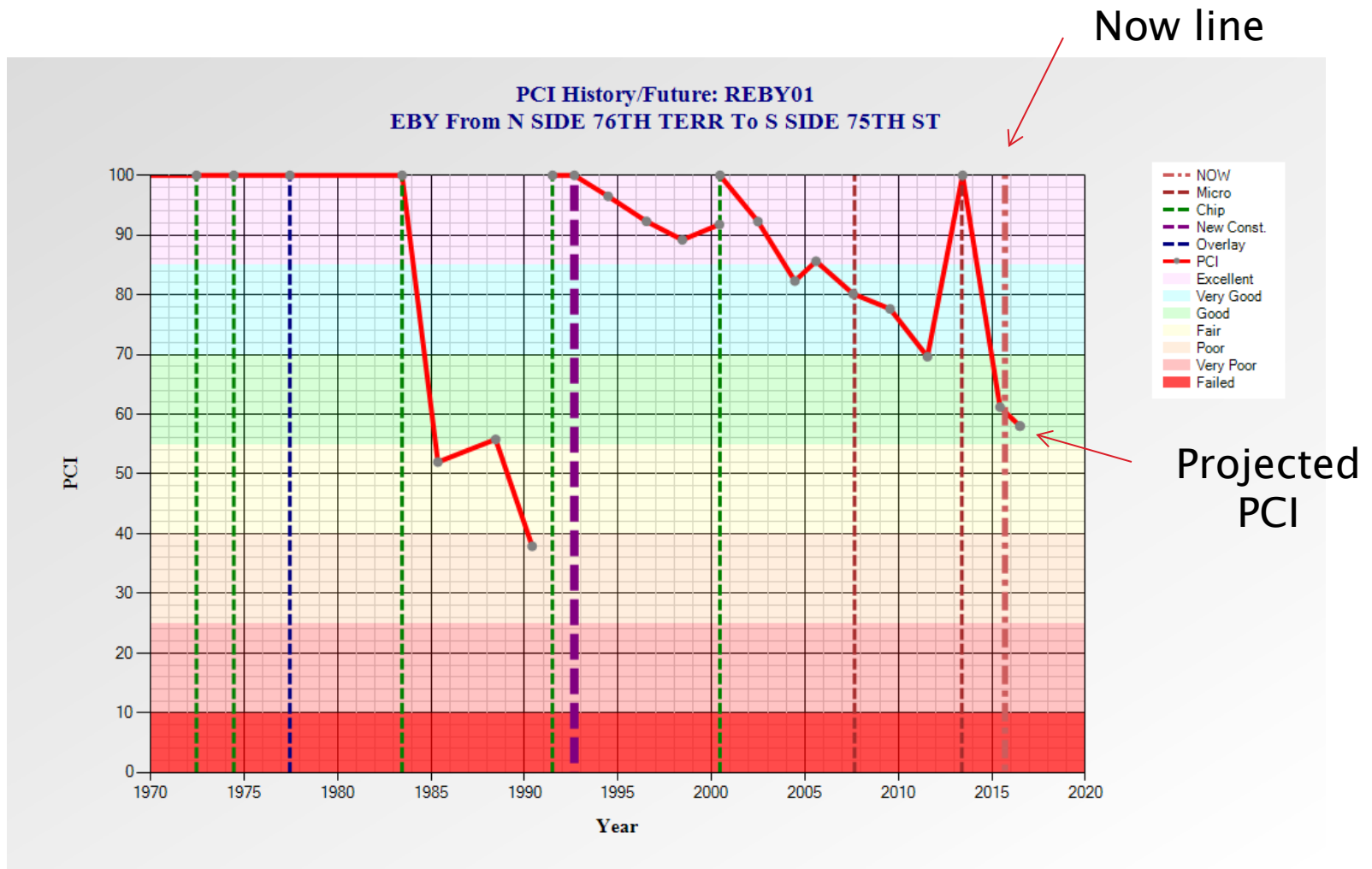
Projected PCI

Each sample is photographed

Measurement

- Engineering students
  - Teams of two
  - Partners rotated
- Calibration
  - All teams measure the same street
  - Target ± 5 pts.
- QC during inspection
  - Projected vs. actual PCI compared
  - Photographs used
- Cost: roughly $50/lane mile

Philosophy

- Identify and preserve "Good" streets
- Identify streets beyond their useful life
- Rebuild as budget allows
- Spending Priorities
  - Keep "Good" streets good
  - Keep all streets operable
  - Rebuild "failed" streets – worst first

Good Street (PCI=61.2)
Good PCI Range = 55-70

Analysis

- "Keep your good streets good"
- Calculated deterioration rate for each class
- Maintenance criteria for each street class
  - Age
  - Condition
  - Priority
  - Budget
- Other considerations
  - Keep neighborhood streets together
  - Exclude streets impacted by other projects

Chip Seal

- Primary Treatment
  - Roads < 45 MPH
- AI Design
  - 1 chip thick (trap rock or granite 3/8 x #4)
  - 60% embedment (CRS-1HP 65% emulsion).
- Preparation
  - Good Streets
    - Base repair
    - Seal 3/8"+ cracks
    - Remove pavement markings (mill)
  - Bad Streets
   - Patch potholes
    - Remove pavement markings (mill)

HMA Overlay

- Secondary Treatment
- "Good" streets > 30 years old
- Preparation
  - Base repair
  - Replace bad curb
  - Replace non-compliant ADA elements
  - Mill to restore original section
- Design
  - SuperPave asphalt $N_{des}=60$
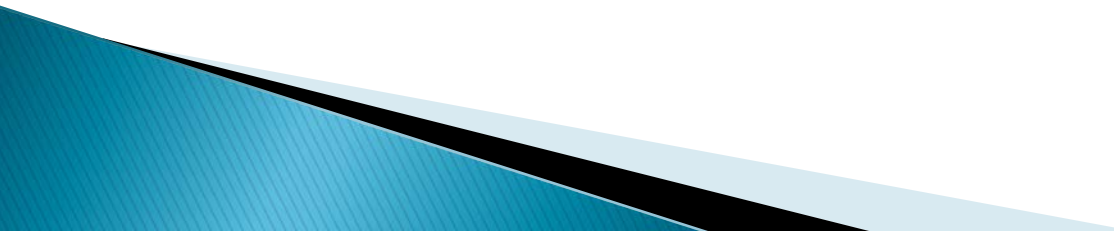 - 12.5mm nominal
  - 35% FRAP (no shingles)

UBAS Ultrathin Bonded Asphaltic Surface

- Primary Treatment for Thoroughfares
- Criteria for candidates:
  - Surface Treatment >= 8 years
  - Overlay >= 10 years
  - New Construction >= 12 years
- Design
  - KDOT
  - Texture existing surface so that treatment can drain into curb

Strategy Closing the Gap Current $7.7M 25 yr

Strategy Closing the Gap Proposed $12M 25 yr
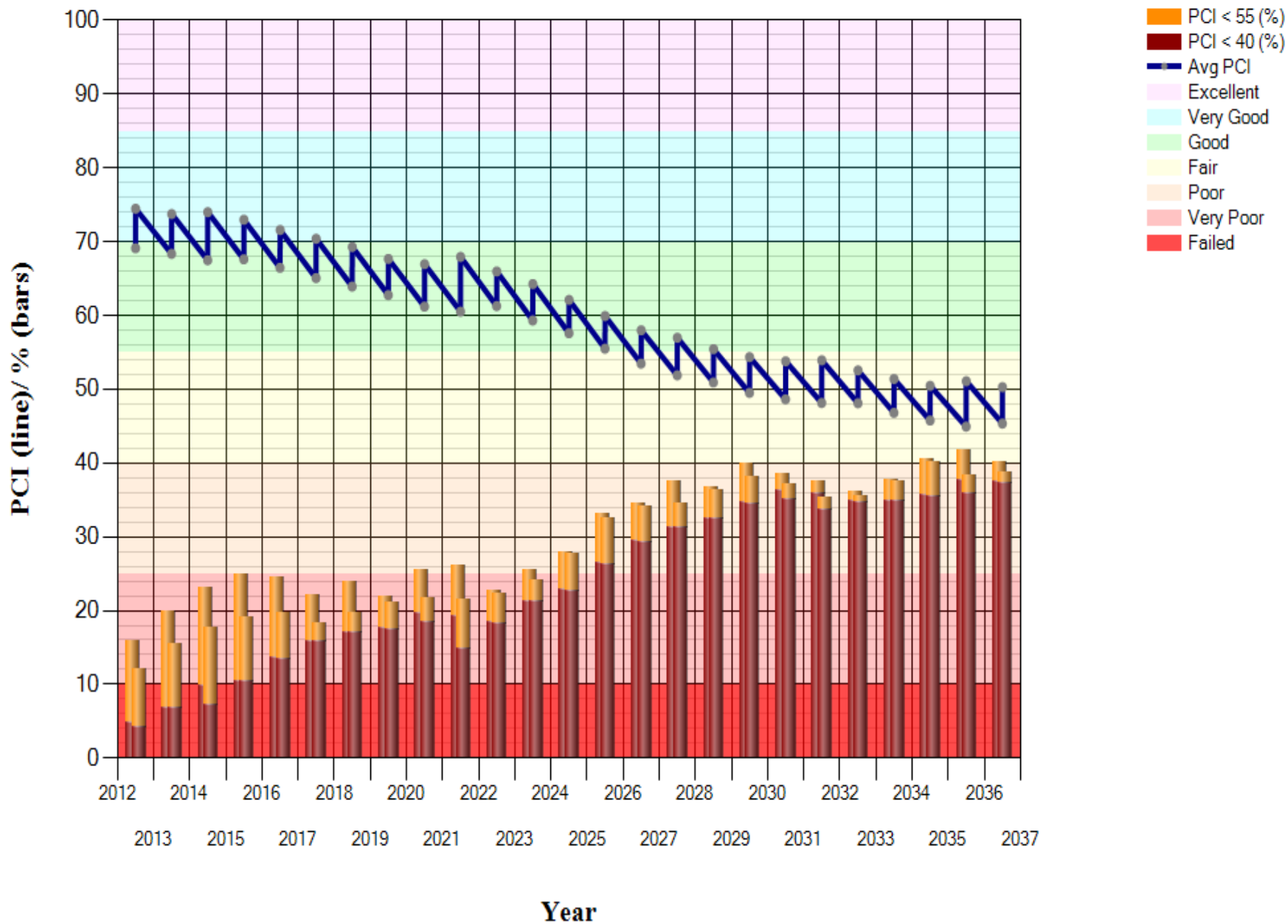
PAVER Benefits

- Allows us to measure preservation program
- Justified the switch from local concrete aggregates to more durable freeze-thaw resistant aggregates.
- Demonstrated the benefit of chip seals over microsurfacing.
- Reduces the influence of politics by providing scientific basis for decisions.
- Provides feedback for maintenance programs.

Questions?