

PIMA COUNTY TRANSPORTATION ADVISORY COMMITTEE

FY19-20 Pavement Program Roadway Prioritization

MARCH 26, 2019

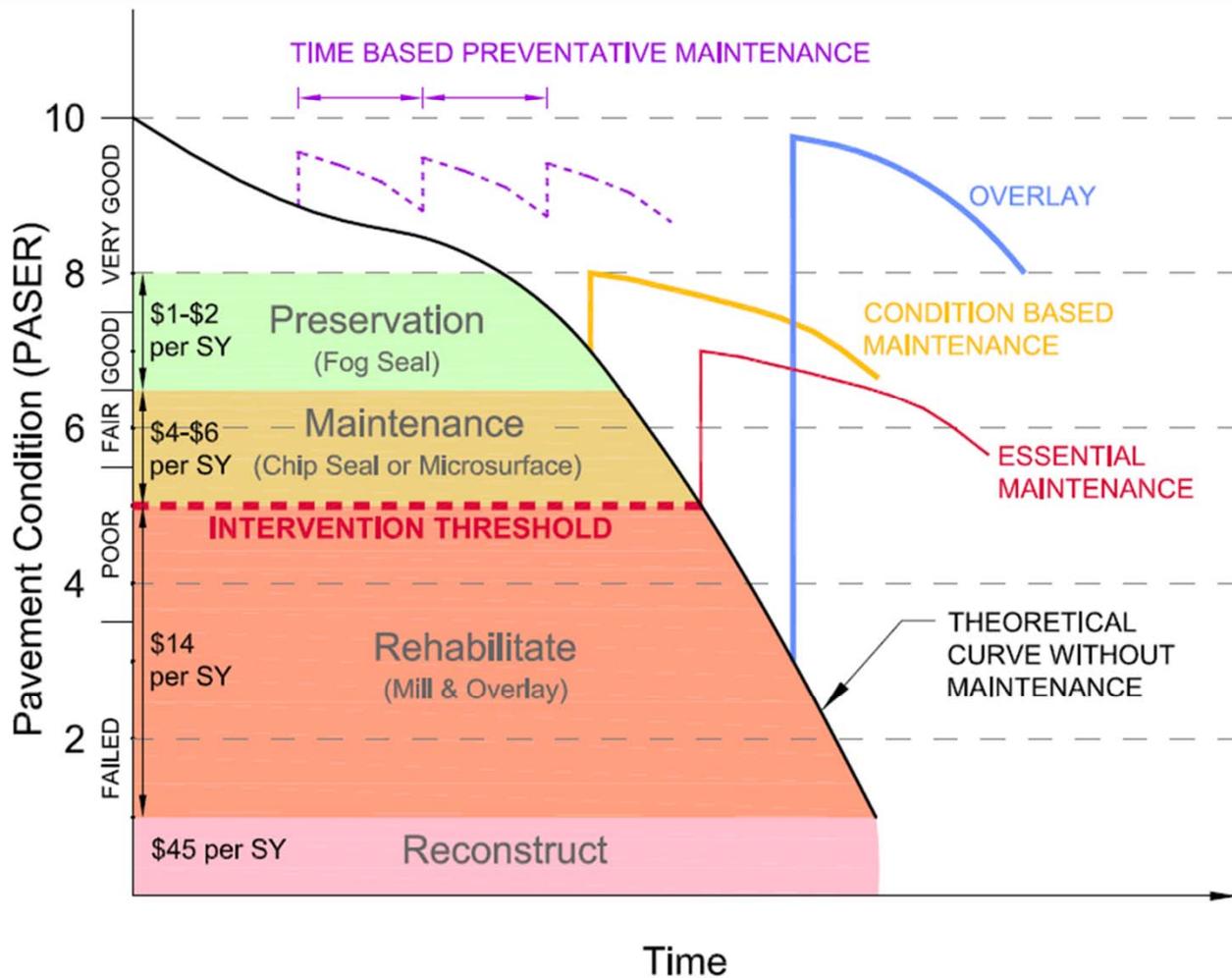
PROGRAM OVERVIEW



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**PIMA COUNTY**



### Prioritization Methodology

- Worst First (Repair Only)
- Maximize Miles (Preservation Only)
- Combination (Keep Good Roads Good)

## Two Programs – Two Different Methodologies

- RLRRP (Property Tax) – Maximize Miles (local roads only)
- HURF Bond (DOT-59) – Worst First (Arterials & Collectors)

## System/Network Based Approach

Need a tool that is:

- Robust (Roughly 1900 miles, mixed classification)
- Reacts to funding changes
- Objective – looks at road condition, maintains overall system condition index

## StreetSaver

- Robust:
  - Developed by MTC (Metropolitan Transportation Commission), the PAG of the San Francisco Bay Area to help maintain city and county roadways and street
- Reacts to funding changes:
  - Flexible to encompass available funding per jurisdiction
- Objective:
  - Uses road condition index, effective treatments, network level assignment
  - Compares different scenarios to show impact of decisions

# StreetSaver

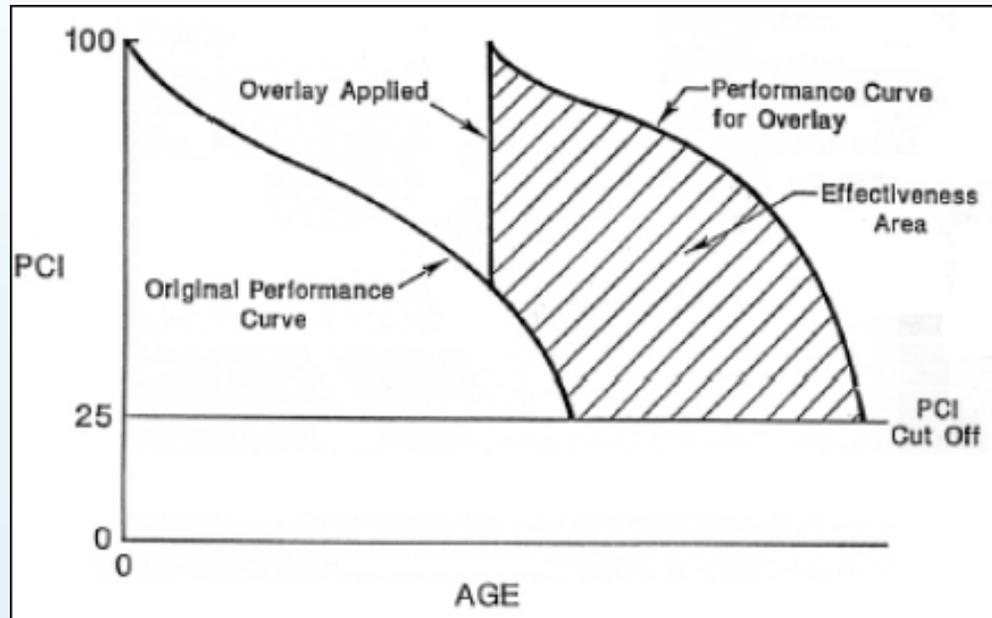
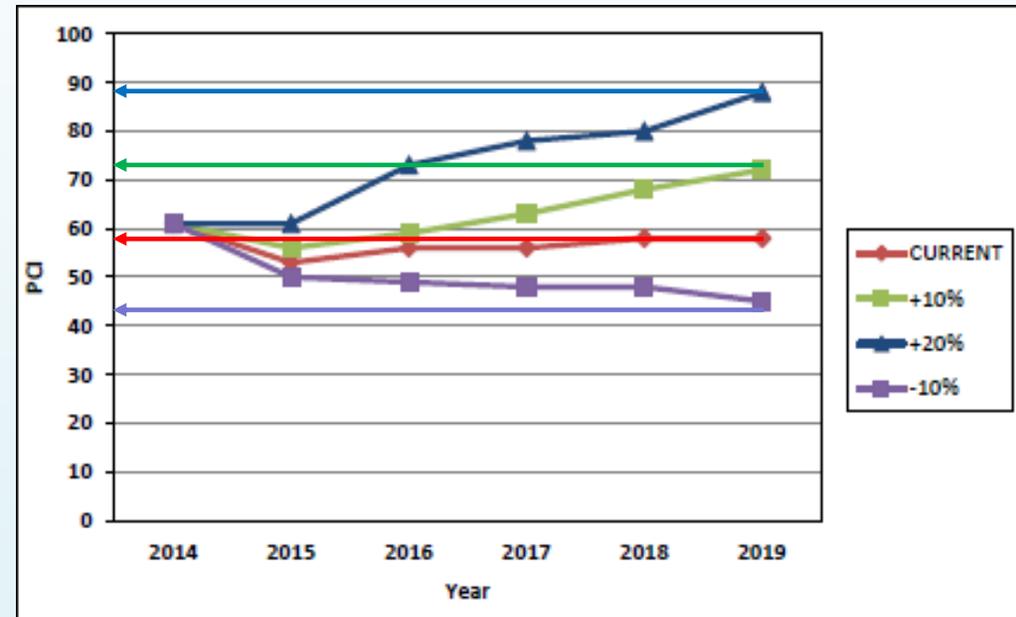
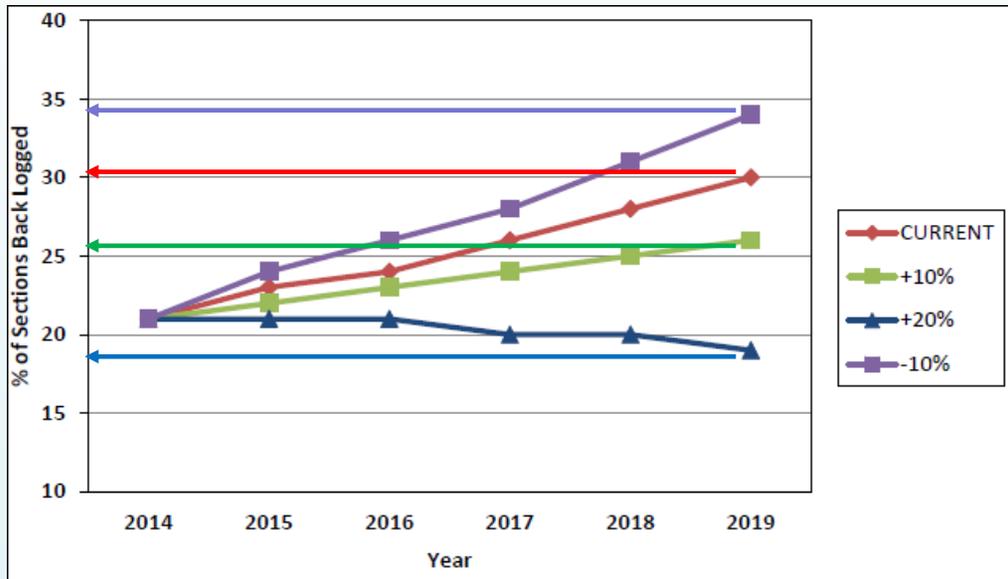


Illustration:  
Effectiveness Based on PCI-Time Curve

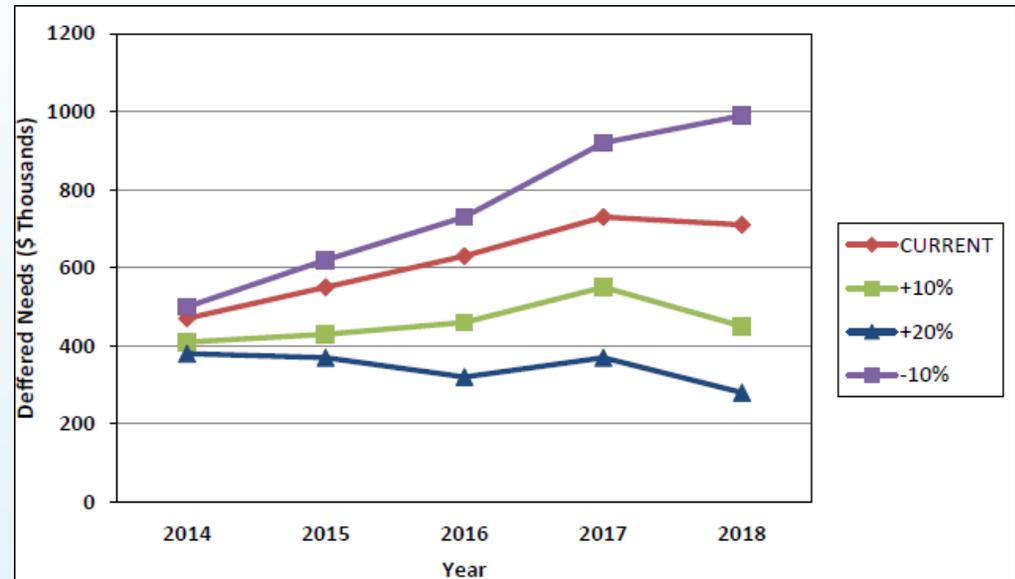


Example Graph:  
Impact of Funding Levels on Condition

# StreetSaver



Example Graph:  
Effect of Funding Levels on Backlog



Example Graph:  
Impact of Funding Levels on Deferred Need

# Current Network Dashboard

StreetSaver
File Windows Graph Colors Help

**Pavement Sections**

- View Sections
- Create Section
- Edit Section
- Duplicate Section
- Section Summary
- PCI Information
- Deterioration Curve
- Events History
- View Documents
- Attach a Document
- Deleted Section Log
- Road Names

**Inspections**

**Maintenance Treatments**

GIS Toolbox

Budgeting

Asset Management

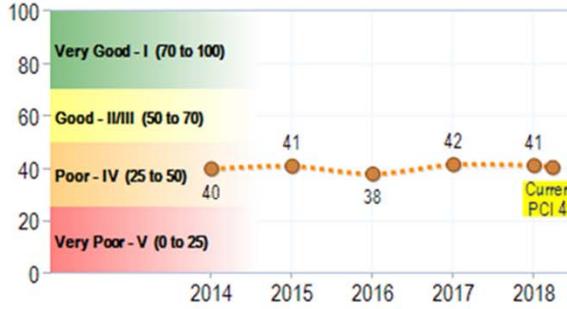
Table Maintenance

Reports and Graphs

System Administration

Utilities

### \*Historical Pavement Condition Trends



Year	PCI
2014	40
2015	41
2016	38
2017	42
2018	41
Current	41

### \*Current PCI

As of 3/22/2019



**+0**  
From 12/31/2018

### Executive Performance Summary

Refresh Summary

Print Summary

Copy Summary to Clipboard

\*DISCLAIMER: For display purposes only, graphs with an asterisk (\*) show Condition Category colors based on default PCI Breakpoint values of 70, 50 and 25.

### Network Inventory

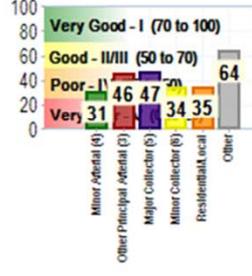
Area: 11.35 (square miles)

Miles: 1,896.22

Lane Miles: 3,941.38

Sections: 6,431

### \*Current PCI by Function



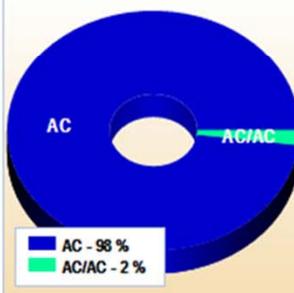
Function	PCI
Minor Arterial (6)	31
Other Principal Arterial (2)	46
Major Collector (6)	47
Minor Collector (6)	34
Residential (6)	35
Other	64

### Remaining Service Life (years)



**-0.2**  
From 12/31/2018

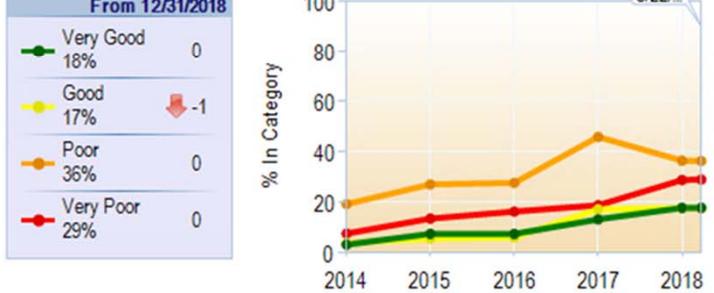
### Surface Type



Surface Type	Percentage
AC	98%
AC/AC	2%

### Historical Network Condition Trends

From 12/31/2018



Category	Percentage
Very Good	18%
Good	17%
Poor	36%
Very Poor	29%

E1STAV - 10
Pima County DOT

# Current PCI Breakpoints

PCI Breakpoints
— □ ×

File Windows
? ?

### Edit PCI Values:

(Unused combinations of FC/Surface Type not shown.)

Functional Class	Surface Type	PCI Cap	Breakpoint I	Breakpoint II/III	Breakpoint IV/V
Arterial	AC	90	60	50	25
Arterial	AC/PCC	90	60	50	25
Arterial	AC/AC	90	60	50	25
Arterial	PCC	90	60	50	25
Arterial	ST	90	60	50	25
Collector	AC	90	50	40	25
Collector	AC/PCC	90	50	40	25
Collector	AC/AC	90	50	40	25
Collector	PCC	90	50	40	25
Collector	ST	90	50	40	25
Residential/Local	AC	90	70	50	25
Residential/Local	AC/PCC	90	70	50	25
Residential/Local	AC/AC	90	70	50	25
Residential/Local	PCC	90	70	50	25
Residential/Local	ST	90	70	50	25
Other	AC	90	70	50	25
Other	AC/PCC	90	70	50	25
Other	AC/AC	90	70	50	25
Other	PCC	90	70	50	25
Other	ST	90	70	50	25

Use these fields to enter a PCI value and apply it to the whole column.
 

Apply	Apply	Apply	Apply

### Selected PCI Display:

Functional Class	Surface Type
Arterial	AC

#### Condition Category

PCI Cap  
90

Very Good

Non Load
II
III

Good

Using Transitional Windows

Poor

Using Transitional Windows

Very Poor

Use Transitional Windows for Deferred Maintenance in Calculations?

Apply PCIs to All Surface Types in FC

Apply PCIs to All

Restore Defaults
Save Save & Close Close

# Current Decision Tree

Functional Class	Surface	Condition Category	Treatment Type	Treatment	Cost/Sq Yd, except Seal Cracks in LF:	Yrs Between Crack Seals	Yrs Between Surface Seals	# of Surface Seals before Overlay
Arterial	AC	I - Very Good	Crack Treatment	SEAL CRACKS	\$1.00	3		
			Surface Treatment	FOG SEAL	\$1.50			4
			Restoration Treatment	MILL AND THICK OVERLAY	\$15.45			2
		II - Good, Non-Load Related		MICRO SEAL	\$8.00		8	
			III - Good, Load Related		MICRO SEAL	\$8.00		8
			IV - Poor		MICRO SEAL	\$8.00		4
	AC/AC	I - Very Good	V - Very Poor		RECONSTRUCT STRUCTURE (AC)	\$31.45		8
				Crack Treatment	SEAL CRACKS	\$1.00	3	
				Surface Treatment	FOG SEAL	\$1.50		
		Restoration Treatment	MILL AND THICK OVERLAY	\$15.45		2		
		II - Good, Non-Load Related		MICRO SEAL	\$8.00		8	
			III - Good, Load Related		MICRO SEAL	\$8.00		8
IV - Poor			MICRO SEAL	\$8.00		4		
Residential/Local	AC	I - Very Good	Crack Treatment	SEAL CRACKS	\$1.00	4		
			Surface Treatment	DOUBLE CHIP SEAL	\$6.00			8
			Restoration Treatment	MILL AND THICK OVERLAY	\$15.45			3
		II - Good, Non-Load Related		SINGLE CHIP SEAL	\$6.00		4	
			III - Good, Load Related		MICRO SEAL	\$8.00		8
			IV - Poor		DOUBLE CHIP SEAL	\$6.00		4
	AC/AC	I - Very Good	V - Very Poor		RECONSTRUCT STRUCTURE (AC)	\$31.45		8
				Crack Treatment	SEAL CRACKS	\$1.00	4	
				Surface Treatment	DOUBLE CHIP SEAL	\$6.00		
		Restoration Treatment	MILL AND THICK OVERLAY	\$15.45		3		
		II - Good, Non-Load Related		SINGLE CHIP SEAL	\$6.00		4	
			III - Good, Load Related		MICRO SEAL	\$8.00		8
IV - Poor			DOUBLE CHIP SEAL	\$6.00		4		
V - Very Poor		RECONSTRUCT STRUCTURE (AC)	\$31.45		8			

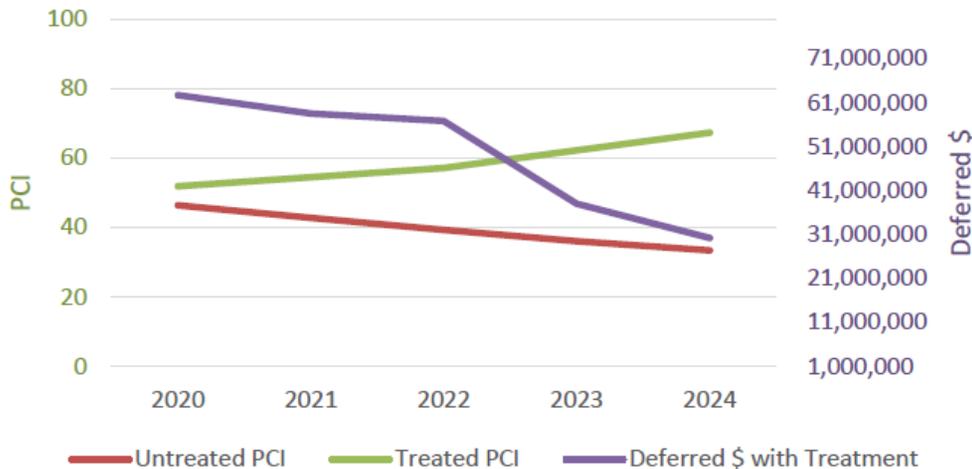
## Scenarios

- Ran 5 different scenarios of the projected 5-year pavement preservation contracts allocations
  - Scenario 1 – Arterials & Collectors
  - Scenario 2 – Arterials & Collectors, Split by BOS District
  - Scenario 3 – All Roads, Split by Classification
  - Scenario 4 – All Roads, Split by BOS District & Classification
  - Scenario 5 – All Roads StreetSaver Best Practice

# Scenario 1

Scenario 1 - Arterials and Collectors					
Year	Budget	Spent	Untreated PCI	Arterials and Collectors only PCI	Deferred \$
2020	15,000,000	14,249,291	46	52	62,731,629
2021	16,000,000	15,677,814	43	55	58,507,403
2022	16,100,000	16,004,518	39	57	56,877,142
2023	20,500,000	20,372,353	36	62	38,050,671
2024	22,100,000	22,065,555	33	67	30,222,163
	<b>89,700,000</b>	<b>88,369,531</b>			

1 - Arterials and Collectors Only



Percent Network Area by Functional Classification and Condition Class

Condition in base year 2020, prior to applying treatments.					
Condition Class	Arterial	Collector	Res/Loc	Other	Total
I - Very Good	0.5%	21.8%	0.0%	12.4%	34.7%
II / III - Good	0.6%	6.3%	0.0%	11.1%	18.0%
IV - Poor	3.9%	7.6%	0.0%	6.5%	18.0%
V - Fail	4.9%	23.1%	0.0%	1.2%	29.2%
<b>Total</b>	<b>9.9%</b>	<b>58.8%</b>	<b>0.0%</b>	<b>31.3%</b>	<b>100.0%</b>
Condition in year 2024 after schedulable treatments applied.					
Condition Class	Arterial	Collector	Res/Loc	Other	Total
I - Very Good	6.8%	44.5%	0.0%	13.3%	64.6%
II / III - Good	0.4%	2.4%	0.0%	9.3%	12.0%
IV - Poor	2.7%	4.5%	0.0%	7.9%	15.1%
V - Fail	0.0%	7.4%	0.0%	0.9%	8.3%
<b>Total</b>	<b>9.9%</b>	<b>58.8%</b>	<b>0.0%</b>	<b>31.3%</b>	<b>100.0%</b>

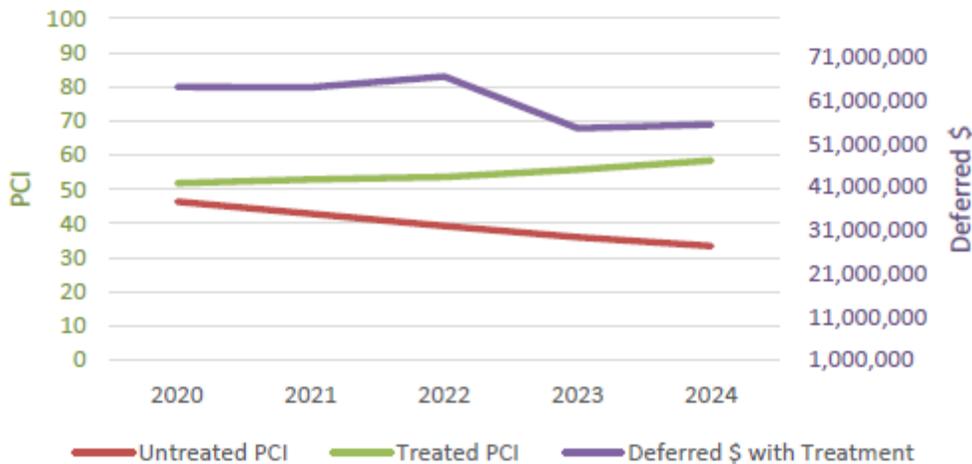
# Scenario 2

**Scenario 2 - Arterials and Collectors, Budget Allocated by BOS District**

Year	Budget	Spent	Arterials and Collectors only		
			Untreated PCI	PCI	Deferred \$
2020	15,000,000	12,798,613	46	52	64,182,342
2021	16,000,000	11,749,560	43	53	64,120,858
2022	16,100,000	12,224,727	39	54	66,584,203
2023	20,500,000	14,113,151	36	56	54,617,114
2024	22,100,000	15,743,410	33	58	55,552,748
<b>89,700,000</b>			<b>66,629,461</b>		

Note 1: In Scenario 2 there are not enough Arterials and Collectors that require rehabilitation to spend the entire budget allocation in Districts 2 and 5

2- Arterials and Collectors Only  
Budget Distributed by BOS



**Percent Network Area by Functional Classification and Condition Class**  
Condition in base year 2020, prior to applying treatments.

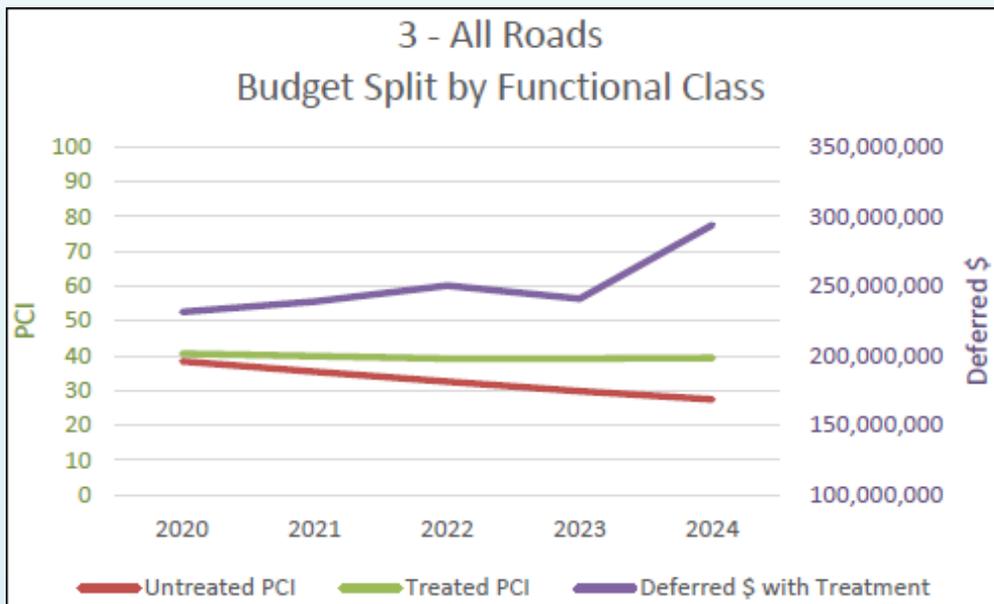
Condition Class	Arterial	Collector	Res/Loc	Other	Total
I - Very Good	0.5%	21.8%	0.0%	12.4%	34.7%
II / III - Good	0.6%	6.3%	0.0%	11.1%	18.0%
IV - Poor	3.9%	7.6%	0.0%	6.5%	18.0%
V - Fail	4.9%	23.1%	0.0%	1.2%	29.2%
<b>Total</b>	<b>9.9%</b>	<b>58.8%</b>	<b>0.0%</b>	<b>31.3%</b>	<b>100.0%</b>

Condition in year 2024 after schedulable treatments applied.

Condition Class	Arterial	Collector	Res/Loc	Other	Total
I - Very Good	5.0%	33.9%	0.0%	15.8%	54.7%
II / III - Good	0.4%	2.1%	0.0%	8.9%	11.3%
IV - Poor	2.6%	3.7%	0.0%	5.7%	12.0%
V - Fail	1.9%	19.1%	0.0%	0.9%	22.0%
<b>Total</b>	<b>9.9%</b>	<b>58.8%</b>	<b>0.0%</b>	<b>31.3%</b>	<b>100.0%</b>

# Scenario 3

Year	Budget	Spent	Untreated	All Roads	
			PCI	PCI	Deferred \$
2020	15,000,000	14,106,987	38	41	231,427,932
2021	16,000,000	15,349,238	35	40	238,996,595
2022	16,100,000	15,576,514	33	39	250,283,768
2023	20,500,000	19,928,174	30	39	240,907,511
2024	22,100,000	21,107,700	27	39	293,951,550
<b>89,700,000</b>		<b>86,068,613</b>			



Condition Class	Arterial	Collector	Res/Loc	Other	Total
I - Very Good	0.2%	8.3%	4.2%	4.8%	17.5%
II / III - Good	0.2%	2.4%	9.4%	4.2%	16.3%
IV - Poor	1.5%	2.9%	22.0%	2.5%	28.8%
V - Fail	1.9%	8.8%	26.2%	0.5%	37.4%
<b>Total</b>	<b>3.8%</b>	<b>22.5%</b>	<b>61.8%</b>	<b>11.9%</b>	<b>100.0%</b>

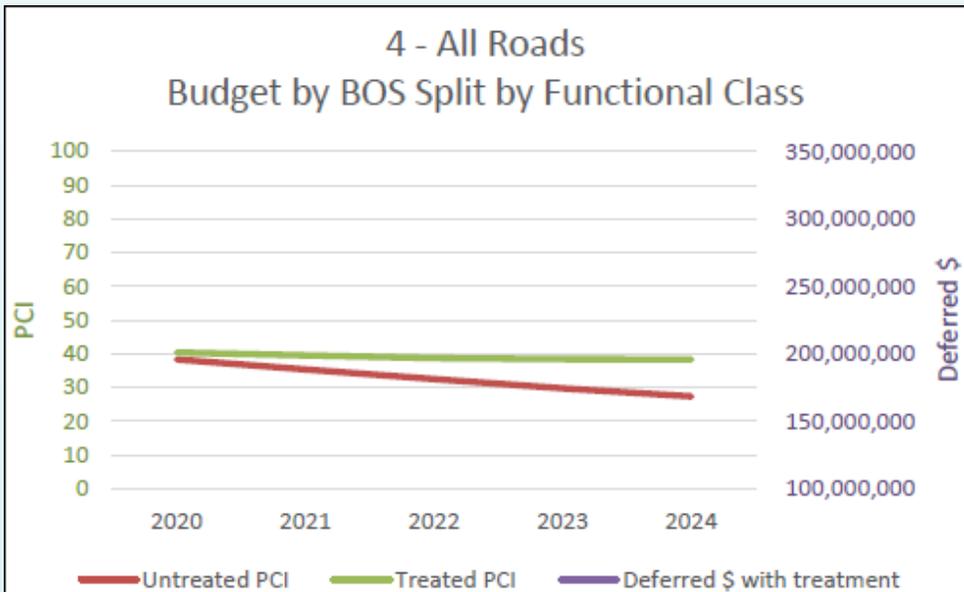
Condition Class	Arterial	Collector	Res/Loc	Other	Total
I - Very Good	0.5%	9.4%	12.3%	5.7%	27.8%
II / III - Good	0.2%	0.9%	4.6%	3.1%	8.8%
IV - Poor	0.9%	1.7%	15.0%	2.8%	20.5%
V - Fail	2.2%	10.5%	29.9%	0.3%	42.9%
<b>Total</b>	<b>3.8%</b>	<b>22.5%</b>	<b>61.8%</b>	<b>11.9%</b>	<b>100.0%</b>

# Scenario 4

**Scenario 4 -All Roads; Budget Distributed by BOS District and Split by Classification**

Year	Budget	Spent	Untreated	All Roads	
			PCI	PCI	Deferred \$
2020	15,000,000	13,796,982	38	40	Not possible to calculate with the double filter of by Functional Class and by BOS
2021	16,000,000	14,615,416	35	40	
2022	16,100,000	14,566,351	33	39	
2023	20,500,000	18,454,457	30	38	
2024	22,100,000	18,514,546	27	38	
<b>89,700,000</b>		<b>79,947,752</b>			

Note 2: Scenario 2 has 25 separate budgets resulting in additional cumulated gap between Budget and Spent compared to other scenarios



**Percent Network Area by Functional Classification and Condition Class**

Condition in base year 2020, prior to applying treatments.

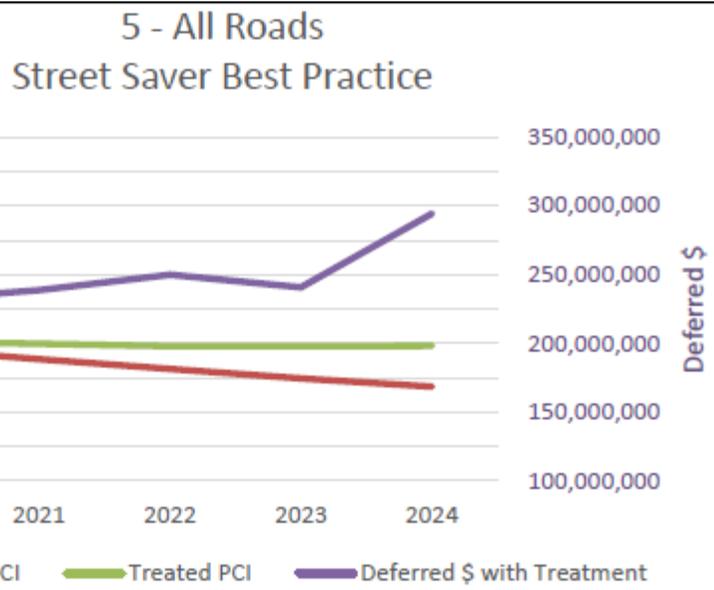
Condition Class	Arterial	Collector	Res/Loc	Other	Total
I - Very Good	0.2%	8.3%	4.2%	4.8%	17.5%
II / III - Good	0.2%	2.4%	9.4%	4.2%	16.3%
IV - Poor	1.5%	2.9%	22.0%	2.5%	28.8%
V - Fail	1.9%	8.8%	26.2%	0.5%	37.4%
<b>Total</b>	<b>3.8%</b>	<b>22.5%</b>	<b>61.8%</b>	<b>11.9%</b>	<b>100.0%</b>

Condition in year 2024 after schedulable treatments applied.

Condition Class	Arterial	Collector	Res/Loc	Other	Total
I - Very Good	0.2%	8.8%	12.7%	4.6%	26.3%
II / III - Good	0.2%	0.7%	4.8%	3.8%	9.5%
IV - Poor	0.9%	1.5%	14.7%	2.5%	19.7%
V - Fail	2.5%	11.5%	29.6%	1.1%	44.6%
<b>Total</b>	<b>3.8%</b>	<b>22.5%</b>	<b>61.8%</b>	<b>11.9%</b>	<b>100.0%</b>

# Scenario 5

Scenario 5 - All Roads Street Saver Best Practice					
Year	Budget	Spent	Untreated PCI	All Roads PCI	Deferred \$
2020	15,000,000	14,249,997	38	40	231,284,843
2021	16,000,000	15,415,142	35	40	238,783,587
2022	16,100,000	15,615,319	33	39	250,020,480
2023	20,500,000	19,751,175	30	40	240,809,973
2024	22,100,000	20,994,824	27	40	294,411,162
	<b>89,700,000</b>	<b>86,026,457</b>			



Percent Network Area by Functional Classification and Condition Class					
Condition in base year 2020, prior to applying treatments.					
Condition Class	Arterial	Collector	Res/Loc	Other	Total
I - Very Good	0.2%	8.3%	4.2%	4.8%	17.5%
II / III - Good	0.2%	2.4%	9.4%	4.2%	16.3%
IV - Poor	1.5%	2.9%	22.0%	2.5%	28.8%
V - Fail	1.9%	8.8%	26.2%	0.5%	37.4%
<b>Total</b>	<b>3.8%</b>	<b>22.5%</b>	<b>61.8%</b>	<b>11.9%</b>	<b>100.0%</b>
Condition in year 2024 after schedulable treatments applied.					
Condition Class	Arterial	Collector	Res/Loc	Other	Total
I - Very Good	2.6%	17.0%	3.2%	5.0%	27.8%
II / III - Good	0.2%	0.9%	4.6%	3.6%	9.2%
IV - Poor	1.0%	1.7%	15.0%	3.0%	20.8%
V - Fail	0.0%	2.8%	39.0%	0.3%	42.2%
<b>Total</b>	<b>3.8%</b>	<b>22.5%</b>	<b>61.8%</b>	<b>11.9%</b>	<b>100.0%</b>

# Questions?

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# PIMA COUNTY