ROADWAY PAVEMENT MANAGEMENT PROGRAM UPDATE

May 1, 2018

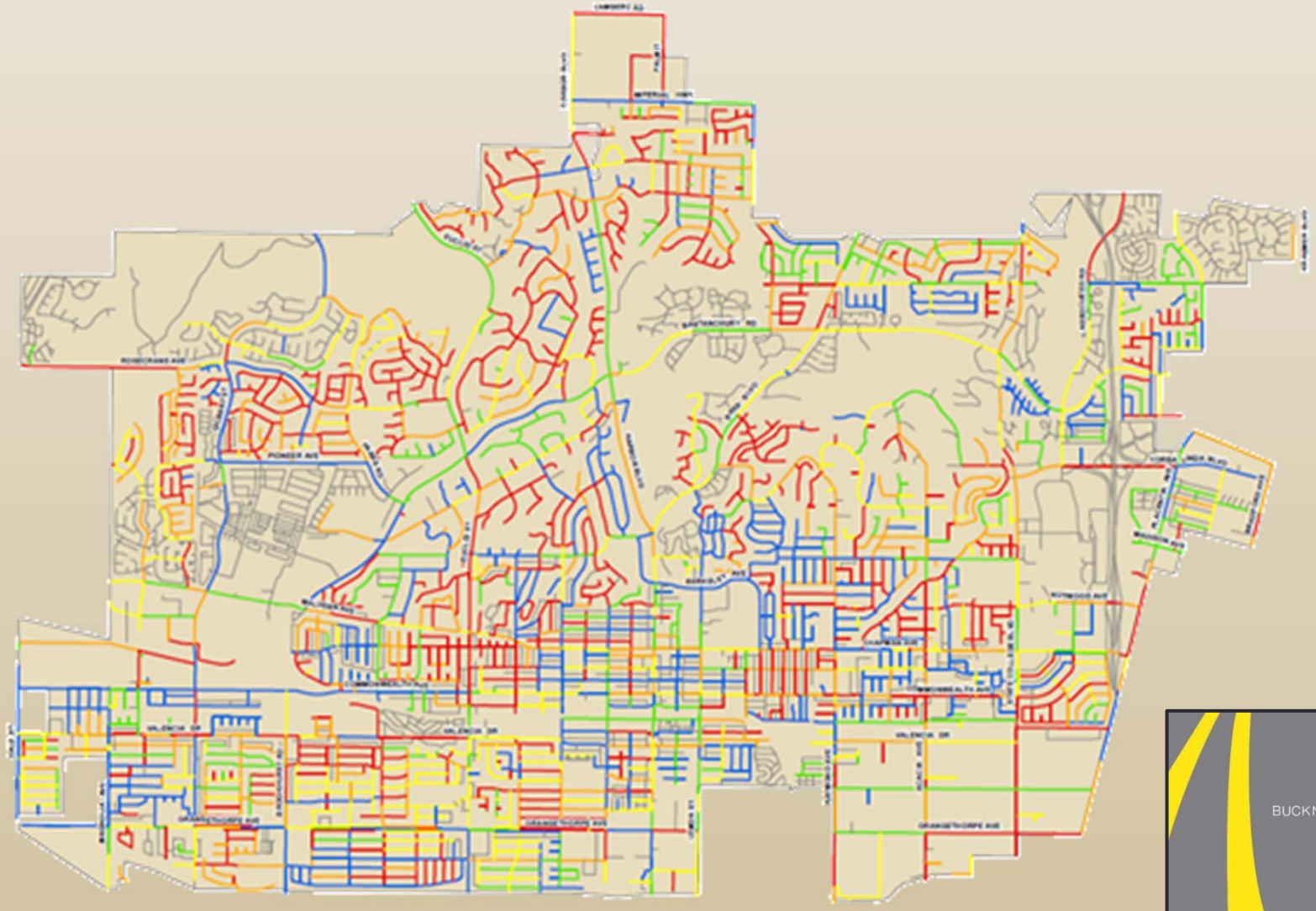
Background

- City maintains approximately 67 miles of arterial roads and 230 miles of local roads (residential/industrial roads)
- Public Works prepares and updates a Pavement Management Program (PMP) every two years.
- PMP is required by OCTA in order for the City to be eligible for Measure M2 funds.

Introduction

- City contracted with Bucknam Infrastructure Group, Inc. to prepare the 2016 and 2018 PMP updates.
- Bucknam Infrastructure Group assisted 17 Orange County local agencies last year with updating their pavement management programs.
- Peter Bucknam has completed over 200 PMP projects over the past 17 years.

PAVEMENT MANAGEMENT PROGRAM - 2018 UPDATE



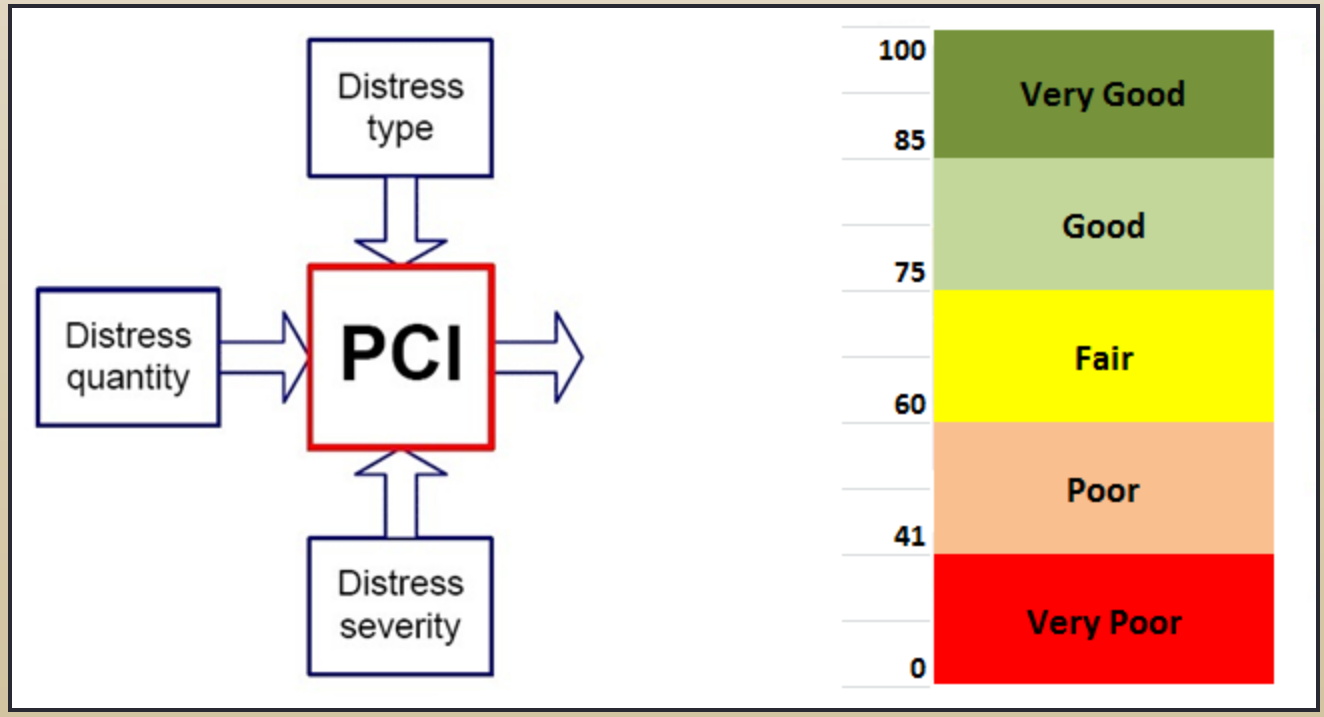
BUCKNAM | INFRASTRUCTURE GROUP, INC.

Pavement Management Program

- The PMP objective is to:
  - Determine existing pavement conditions
  - Develop pavement rehabilitation strategies
  - Forecast future pavement rehabilitation projects
  - Forecast budget needs
- The program determines the existing roadway condition and assigns a Pavement Conditions Index (PCI) rating from 0-100 for each roadway segment.

Pavement Condition Index

- The PCI is a function of overall condition of the pavement. Condition problems include potholes, cracking, failures, rutting, etc.
- Fewer problems = higher PCI rating

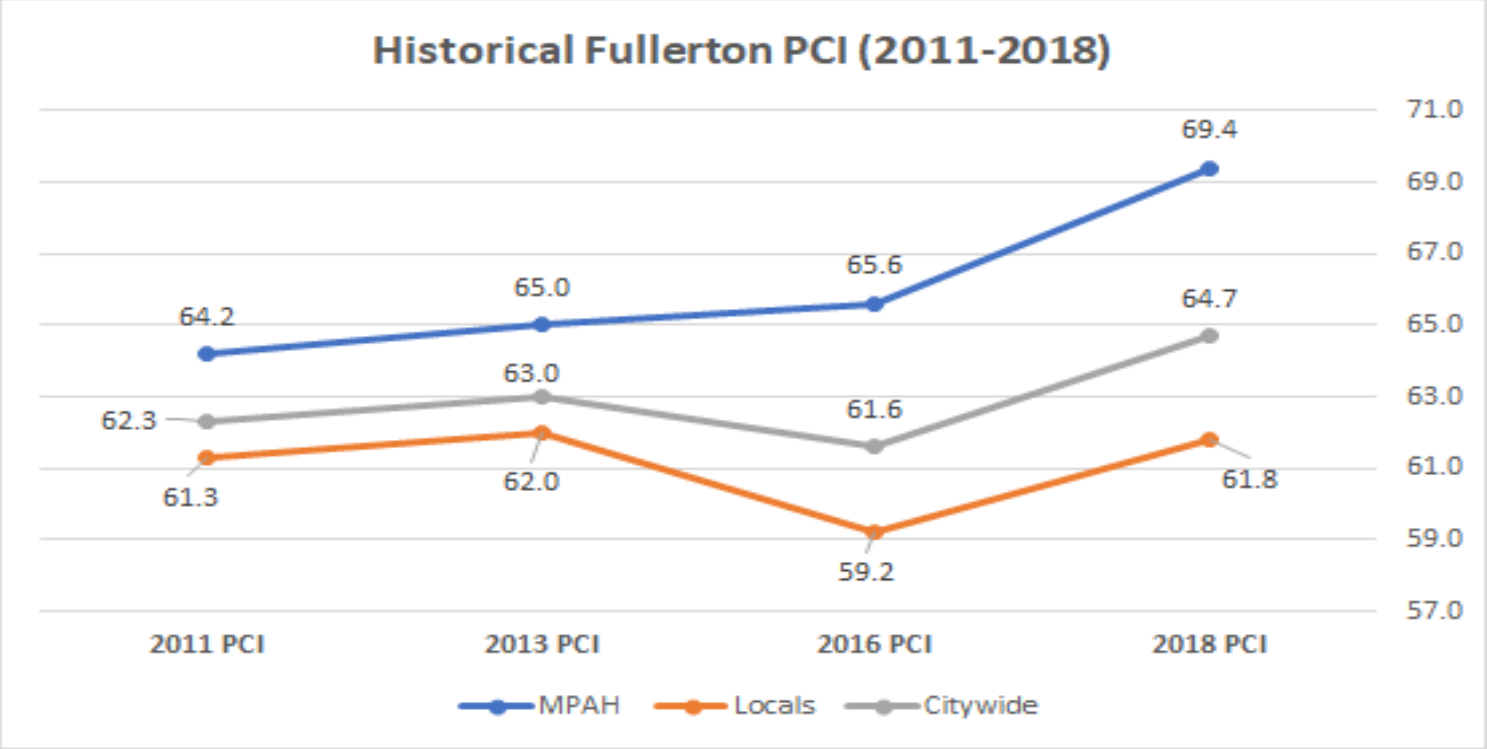


Factors That Effect Pavement Life

- *Delay of Preventive Maintenance*
- *Traffic Volume and Loading*
- *Age of Pavement*
- *Type of Pavement (PCC vs AC)*
- *Soil and Base Material Under Pavement*
- *Storm Water Infiltration into Subgrade*
- *Utility Trench Cuts*

PCI Rating Summary

Item	2011 PCI	2013 PCI	2016 PCI	2018 PCI (Current)
Arterial Streets	64.2	65.0	65.6	**69.4**
Local Streets	61.3	62.0	59.2	**61.8**
Citywide	62.3	63.0	61.6	**64.7**



2018 PCI Rating Summary

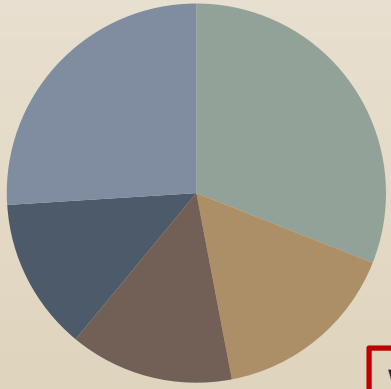
PCI - Arterial Roads

- Very Poor = 15%
- Poor = 14%
- Fair = 24%
- Good = 14%
- Very Good = 33%

Weighted Average
PCI = 69.4* (Fair)

** Significant arterial street improvements in 2017 were funded by private development and other agencies (OCSD, OCTA, cities).*

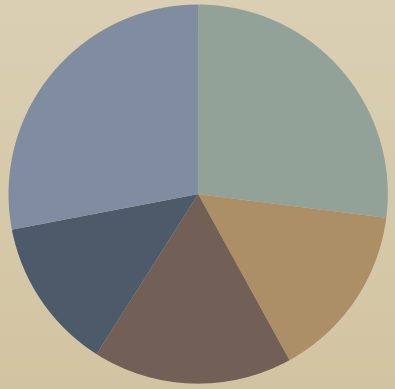
PCI - Local Roads



- Very Poor = 31%
- Poor = 13%
- Fair = 14%
- Good = 16%
- Very Good = 26%

Weighted Average
PCI = 61.8 (Fair)

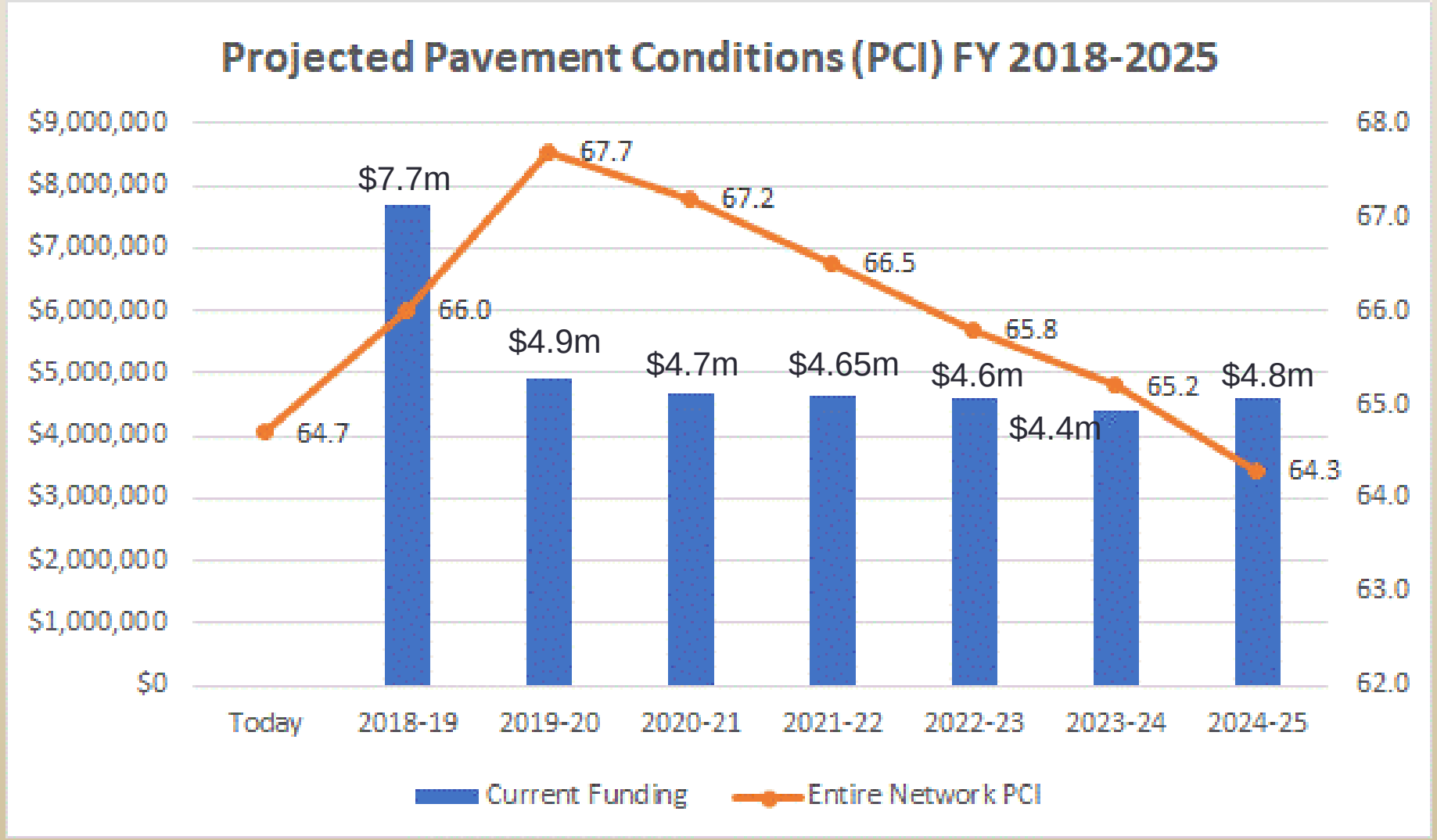
PCI - All Roads (Weighted)



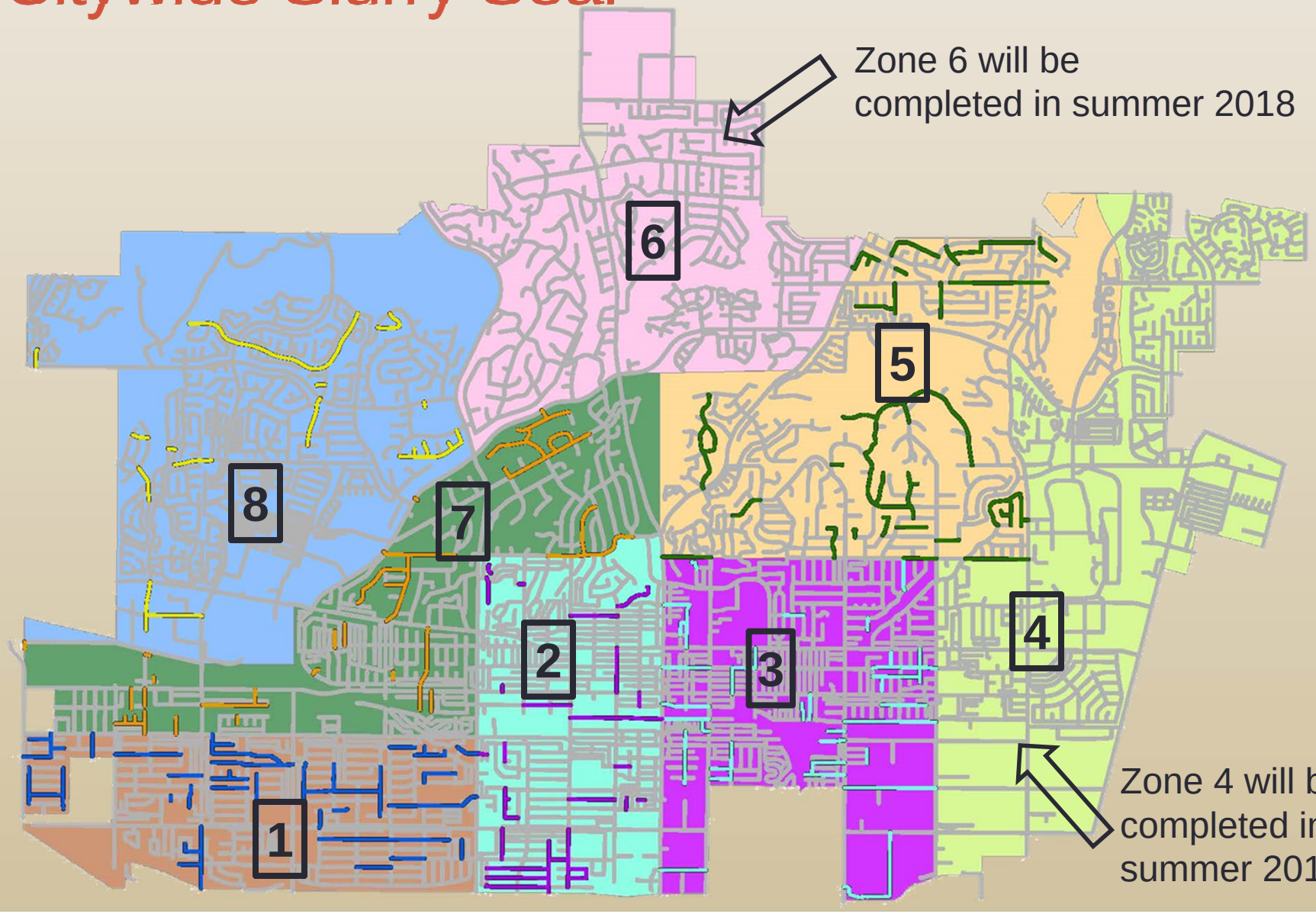
- Very Poor = 27%
- Poor = 15%
- Fair = 17%
- Good = 13%
- Very Good = 28%

Overall Weighted
City Average
PCI = 64.7 (Fair)

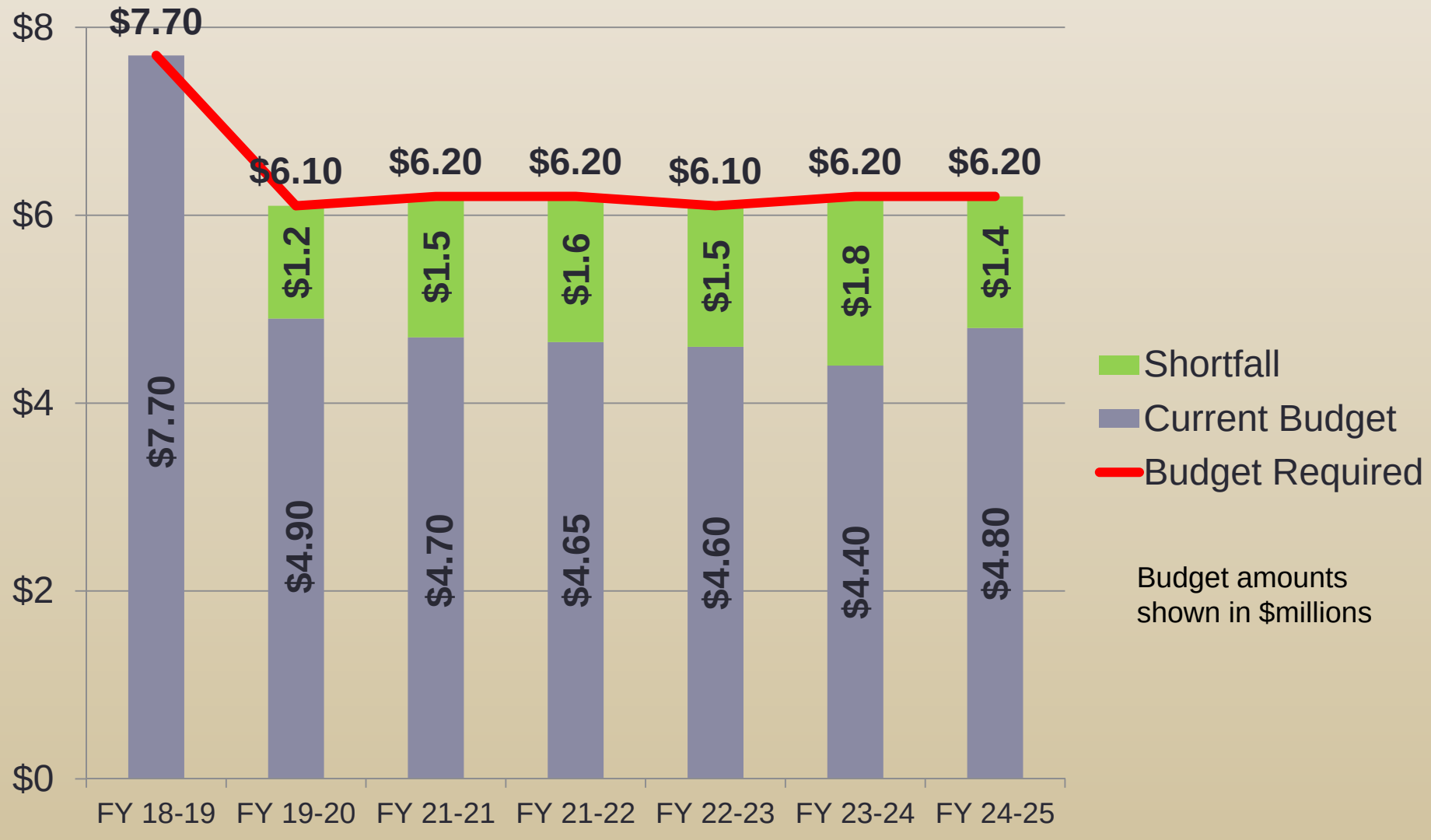
Current Funding PCI Projection



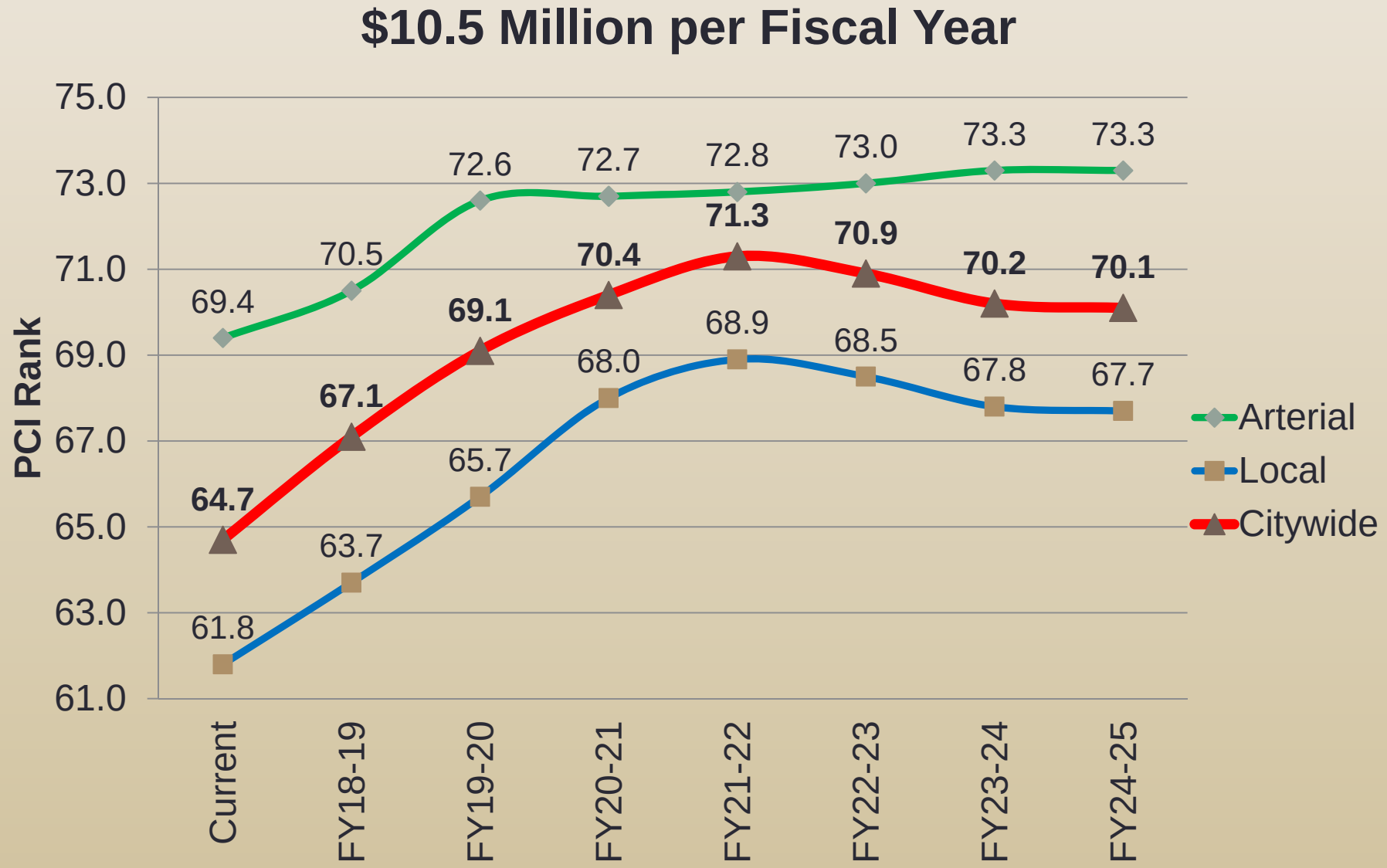
Citywide Slurry Seal



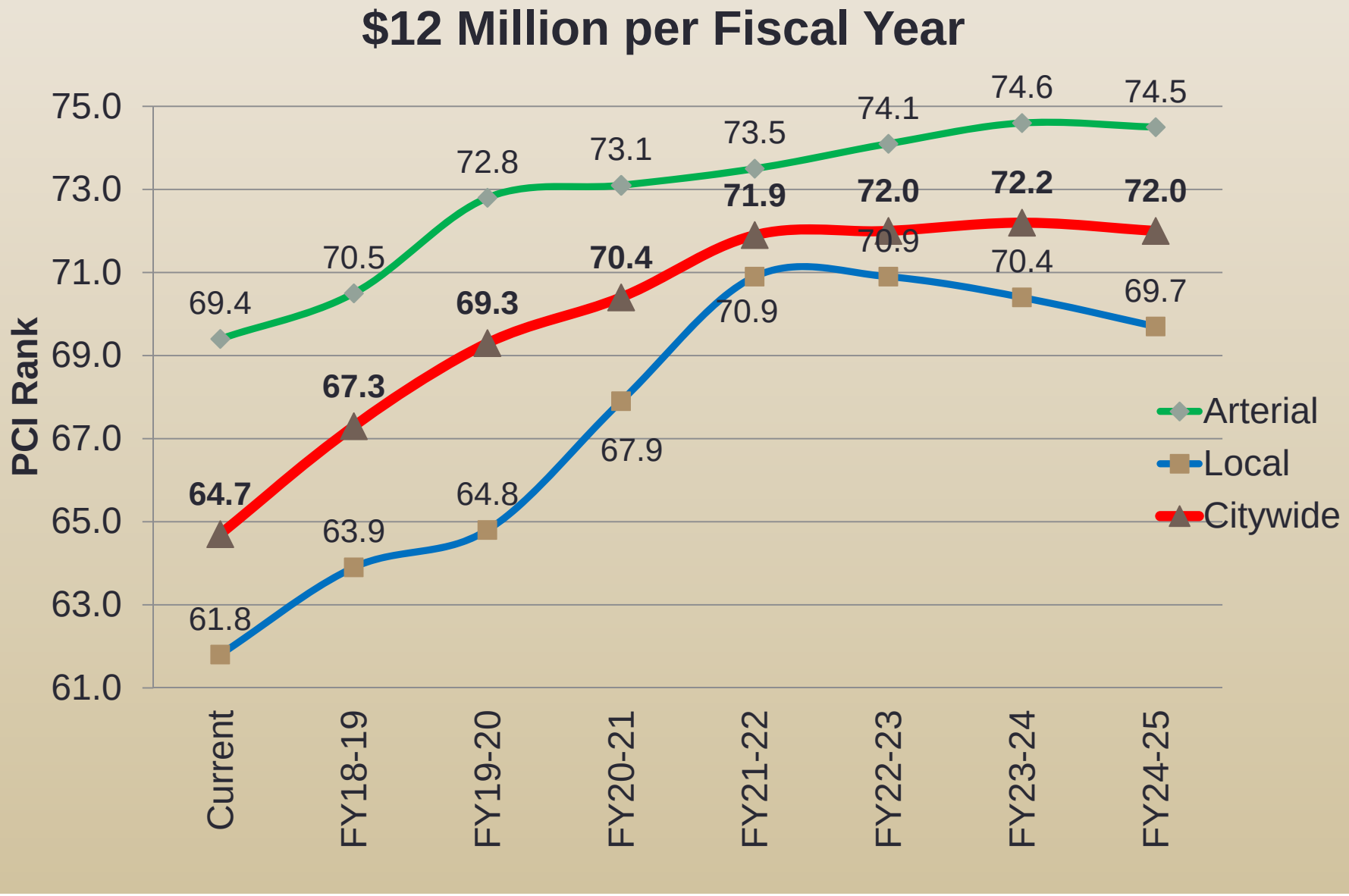
Funding Requirements to Maintain PCI



Alternate Funding & Resulting PCI



Enhanced Funding & Resulting PCI



Maintenance Methods

Typical Pavement Condition Maintenance Methods		
Condition Category	**PCI Levels**	**Maintenance Method**
Very Good	86-100	None
Good	75-85	Slurry Seal
Fair	60-74	Thin Overlay (2”)
Poor	41-59	Thick Overlay (4”)
Very Poor	0-40	Reconstruction

In General:

- Slurry Seal adds 5-20 points to a street’s PCI rank (depending on existing condition)
- Thin Overlay resets the street’s PCI rank at 100.
- Thick Overlay resets the street’s PCI rank at 100.
- Reconstruction resets the street’s PCI rank at 100.

Citywide Findings and Recommendations

- Pavement management involves frequent preventative maintenance.
  - As pavement deteriorates preventative maintenance such as patching and slurry seal have limited benefits. More aggressive maintenance measures have to be used.
- Key overlay projects will be needed over the next seven years to maintain the Citywide PCI level.
- Recommend implementing a proactive, common sense overlay program and a continued slurry seal program for the next several fiscal years.

Arterial Findings and Recommendations

- 37% (25 centerline miles) of arterial streets qualify for slurry seal maintenance.
- 30% (20 centerline miles of arterial streets qualify for rehabilitation/reconstruction maintenance.
- Develop a proactive fiscal and planned approach to identify overlay projects based on the PMP models.
- Appropriate approximately $2 million annually to generate an arterial network PCI increase of 1 point.

Local Findings and Recommendations

- 27% (63 centerline miles) of local streets qualify for slurry seal maintenance.
- 46% (107 centerline miles of local streets qualify for rehabilitation/reconstruction maintenance.
- Develop a proactive fiscal and planned approach to identify overlay projects based on the PMP models.
- Appropriate approximately $5 million annually to generate an local network PCI increase of 1 point.

Questions?