



***PAVEMENT MANAGEMENT
PROGRAM
2019-20***

April 6, 2020

Presentation Outline

- **What is Pavement Management?**
- **Treatment Types**
- **Why Pavement Management**
- **City Mileage**
- **Citywide Pavement Condition**
- **Budget Projections and Scenarios**
- **Q&A**

What Is Pavement Management?

- **Network Level Planning Tool**
- **Pavement Inventory**
- **Visual Surface Inspection**
- **Pavement Condition Index (PCI)**
- **Treatment Decision Tree**
- **Budget Scenario Analysis**
- **Historical Treatments**

Why Pavement Management?

- **Efficient Use of Limited Funding**
- **Maintain Valuable Infrastructure Assets (\$591)**
- **Provides Rating of Overall Weighted Condition**
- **Identifies Areas Needing Treatments**
- **Planning Tool / Identifies Needed Budgets**
- **Required for Funding (Prop C and MTA)**
 - **To qualify for Proposition C funding, the City is required to maintain and update a Pavement Management Program every 3 years**

Need a Tool to Manage Pavement Information and Answer Questions:

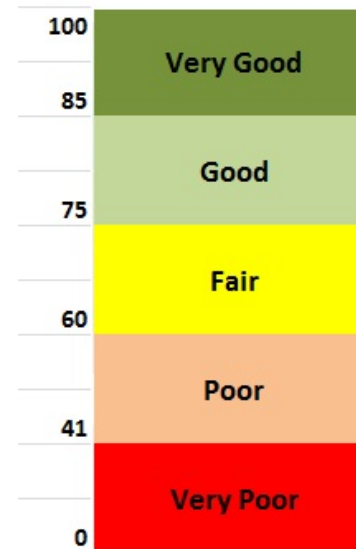
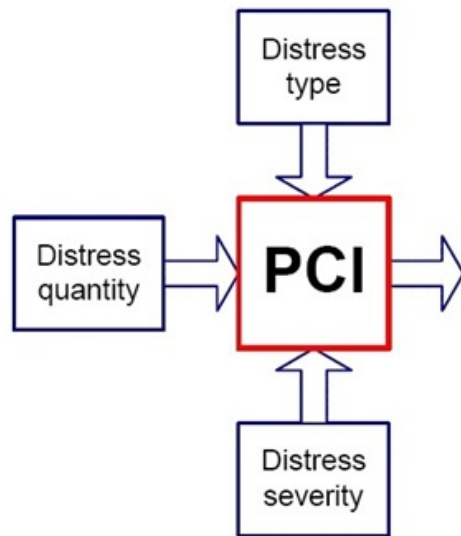
- What is the size of the pavement network?
- What condition is it in?
- How fast is it deteriorating?
- When do I need to perform repairs to maximize pavement life?
- Where should we focus our maintenance and CIP projects?
- How much will it cost?
- MicroPAVER
 - This software is heavily used throughout Southern California:
 - This includes over 200 cities within California; 30+ cities in LA County and all 35 cities in Orange County
 - MicroPAVER allows for the collection of 20 Asphalt Concrete (AC) and 19 Portland Cement Concrete (PCC) distress types
 - Three levels of severity can be collected for each distress type (Low, Medium, and High)



Citywide Pavement Condition

Pavement Condition Index (PCI) Qualitative Scale

- The PCI is a condition rating that ranges from 0 to 100
- Citywide Weighted Average PCI = Pavement section PCI multiplied by its area / by the total area of the network



Factors That Effect Pavement Life

- Traffic volume and static / dynamic loads
- Weather (rain, poor drainage, extreme heat, freezing)
- Type of pavement
- Age of pavement
- Water runoff / pumping (high water)
- Soil and base material under pavement
- Lack of preventative maintenance / rehab M&R efforts and available funding



100 PCI (New)



83 PCI



70 PCI



50 PCI



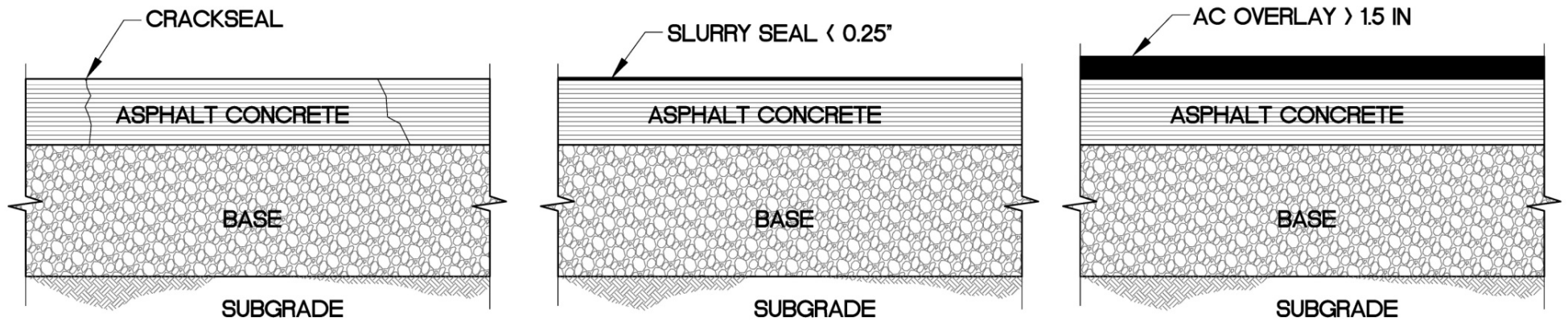
25 PCI



10 PCI (Failed)



Maintenance Treatments



Treatments

- Slurry / Cape Seal – Thin asphalt layer to seal surface;
- Asphalt Concrete Overlay – Apply a asphalt concrete survey (typically 1.5” to 2.0”) over existing street surface; may involve grinding of appropriate depth of asphalt (i.e. grind & overlay);
- Reconstruction – Remove existing roadway section and Replace with new.

Treatments

Pavement Condition (PCI)	Method of Rehab	Cost per Lane Mile	Treatment Frequency (Years)
100-90	None	\$0	0
90-65	Slurry Seal	\$66,500	5-7
65-50	Cape Seal	\$116,600	5-10
55-40	Thin Overlay	\$139,400	7-15
40-20	Thick Overlay	\$148,900	15-20
20-0	Reconstruction	\$504,300	20-25

Pomona Street Mileage

Rank	Mileage	SF	Weighted PCI 2019	Weighted PCI 2016	Weighted PCI 2013
Arterials	130.4	26,612,716	72.5	68.4	67.7
Local	219.9	41,371,514	65.4	61.8	63.6
Citywide	350.3	67,984,230	68.1	64.5	65.3

Pomona Pavement Management Program

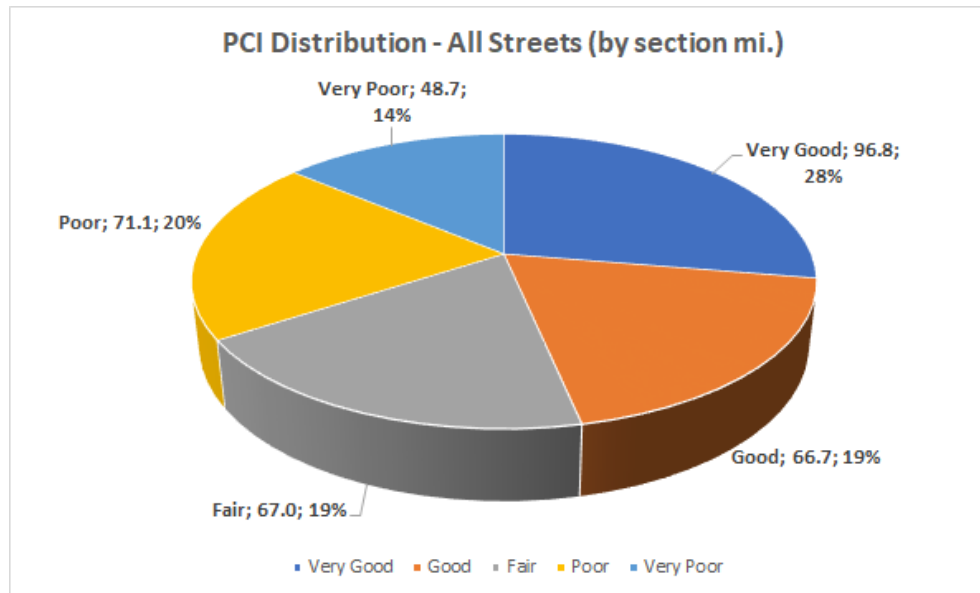
- Pavement studies performed in 2008, 2012, 2016 & 2019
- 67,984,230 SF of pavement throughout City
- Weighted Citywide PCI = 68.1 (was 64.5 in 2016 and 65.3 in 2013)
- Citywide network – 350.3 section miles, includes:
 - 130 section miles of Arterials/Collectors;
 - 220 section miles of Locals; and
 - 3,526 total pavement sections

The pavement network is the City's largest asset with an estimated total replacement cost of \$591 million.

Citywide Pavement Condition

Over 47% of all streets are in Good Condition

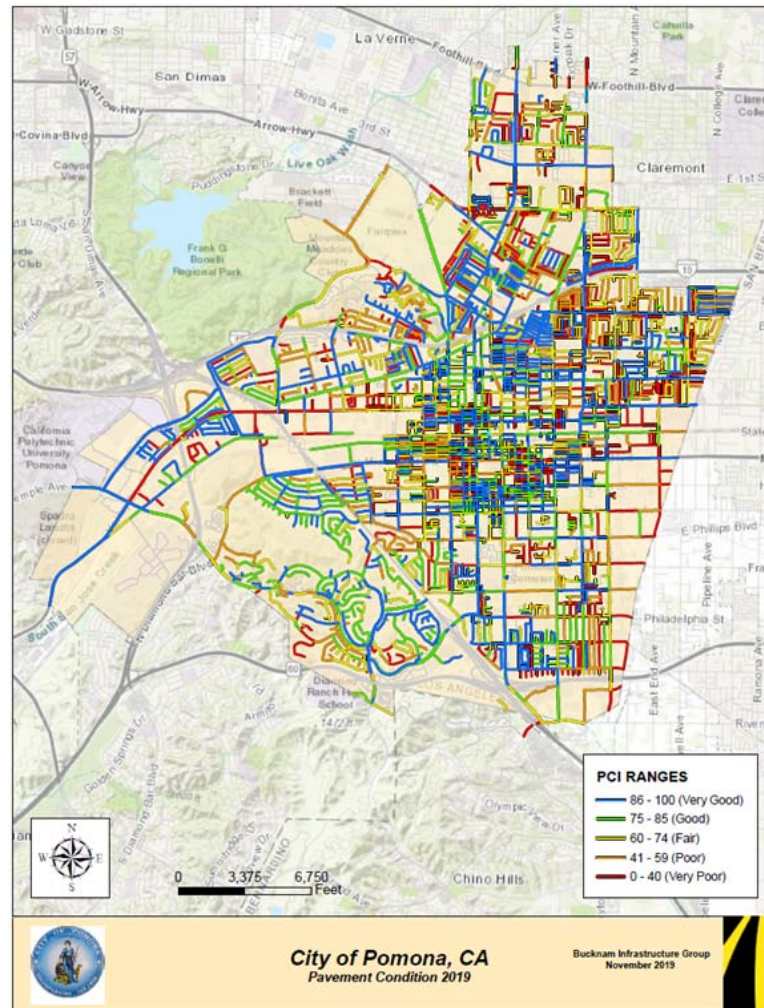
Condition	PCI Range	Arterial	% of Arterials	Local	% of Locals	Total	% of Network
Very Good	86-100	46.2	35%	50.6	23%	96.8	28%
Good	75-85	27.3	21%	39.4	18%	66.7	19%
Fair	60-74	22.0	17%	45.0	20%	67.0	19%
Poor	41-59	21.4	16%	49.7	23%	71.1	20%
Very Poor	0-40	13.5	10%	35.2	16%	48.7	14%
		130.4		219.9		350.3	



Citywide Pavement Condition

- Over 61% of Residential Streets have a PCI of 60 or better and are in Fair to Good condition
- Over 73% of Arterial Streets have a PCI of 60 or better and are in Fair to Good condition
- Over 66% of Total Streets have a PCI of 60 or better and are in Fair to Good condition

Citywide Street Network PCI Map



2019-20 Update of Pomona PMP

- Over the past several months the City has been working with Bucknam Infrastructure Group to assess the previous PMP database, its pavement segmentation and to incorporate recent pavement maintenance work histories
- Completed a pavement condition survey on all streets (not alleys) to generate a Pavement Condition Index (PCI) for each pavement section – QC variances to 2016 study
- Developed and ranked street conditions, maintenance recommendations, and cost estimates for all streets (not alleys) based on current conditions and maintenance practices
- Developed a preventive maintenance and CIP rehab schedule to report on the overall weighted average PCI anticipated for the next five years based on projected needed/available funding

Next Steps (Identification of PMP Application & Funding Sources)

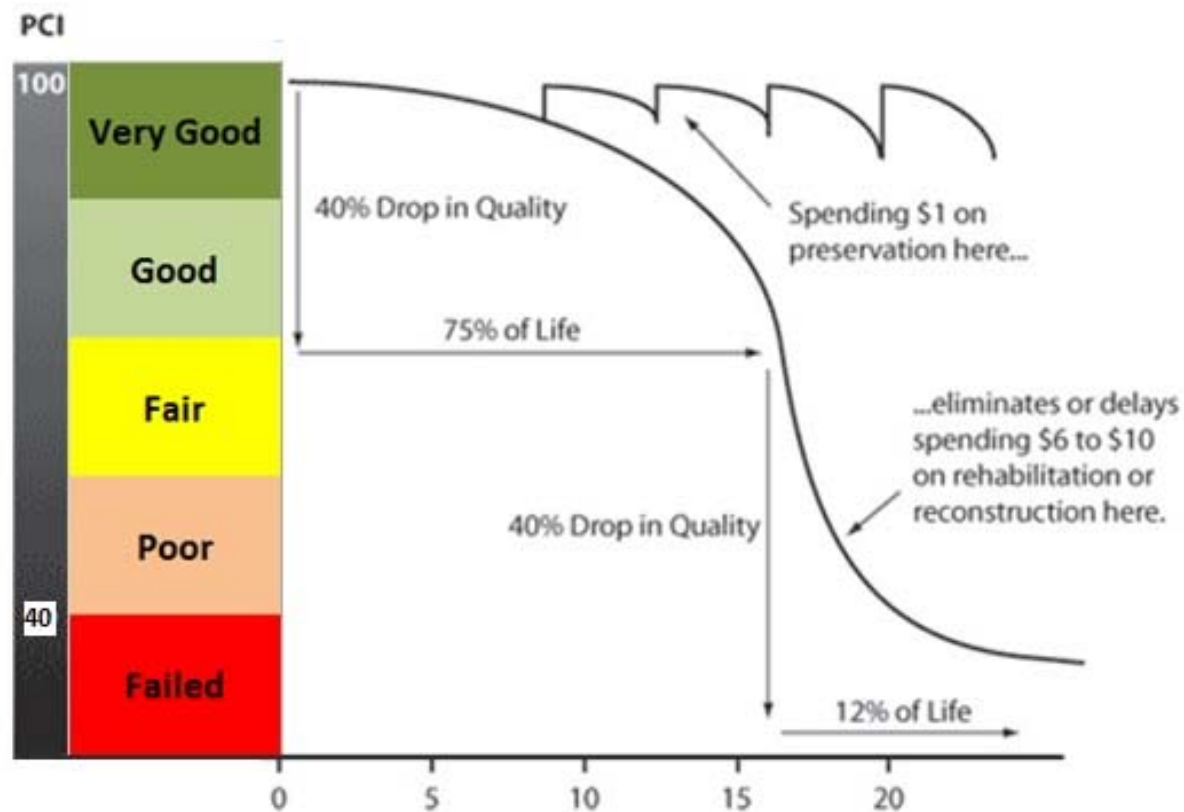
- Forecast Pavement Rehabilitation Projects

- How does our current \$5.68 Million Annual PW M&R/CIP budget perform over five years against today's conditions;
- What level of funding is necessary to "maintain" today's conditions (PCI 68.1);
- What level of funding is necessary to "increase" today's conditions to 71.0

- Need to Consider:

- Current Funding – Special Assessment alternatives / Grants
- Long-term Goals – Proactive Arterial - Local planning
- Alternative pavement applications (ARHM, CCPR, etc.)
- Achieve goal of "preventative maintenance" condition

Sample Pavement Life Cycle

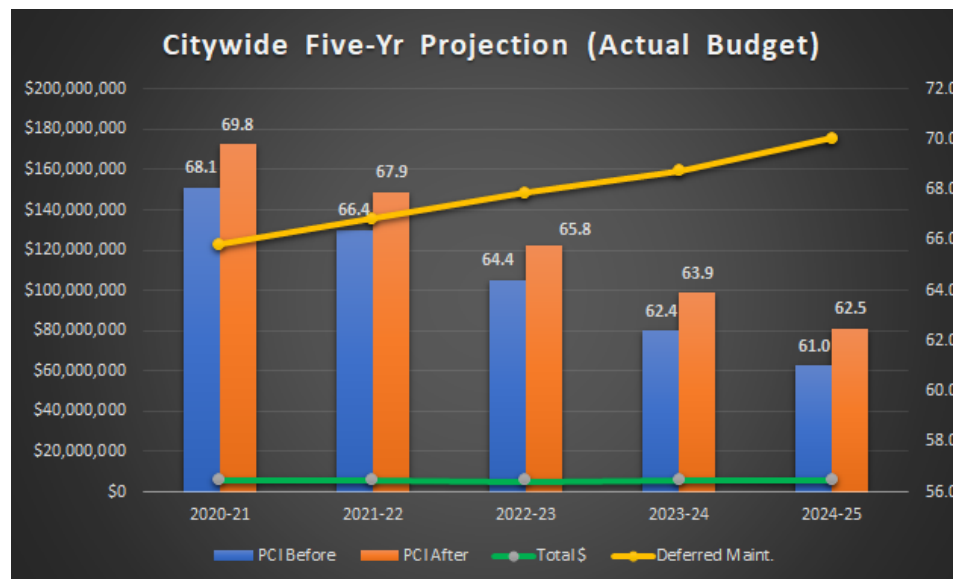


Maintenance Methods

All Streets		
PCI Range	Description	Unit Cost
20-95	Preventative, Stop Gap, Patching	Varies by Activity
Varies by Activity		
60-85	Type II Slurry Seal	\$2.23/SF
Minimal Level of Service (65)		
40-60	Cape Seal	\$2.50/SF
20-60	1.5" AC Grind & Overlay	\$2.80/SF
20-60	1.5" ARHM Overlay	\$3.00/SF
0-20	3" AC Reconstruction (1 1/2" + 1 1/2" ARHM)	\$5.58/SF
0-20	4" AC Recon (2" Conv AC; 2" ARHM)	\$8.70/SF
0-20	PCC Reconstruction	\$10.90/SF
52% Contingency included within All Unit Costs		

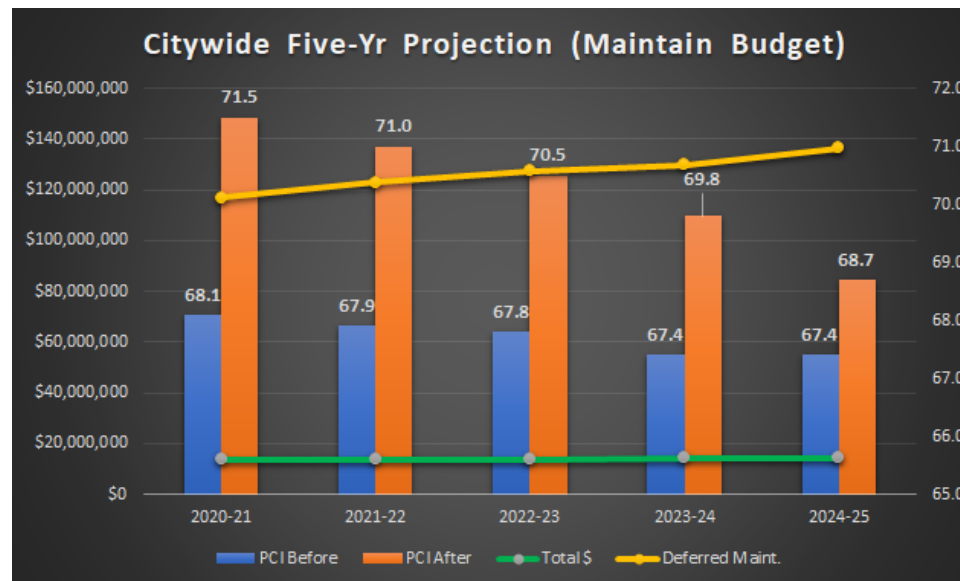
Scenario 1 – Citywide Five-Yr Projection (Actual Budget)

Plan Year	PCI Before	PCI After	Slurry/Cape Seal	Overlay / Recon	Total \$	Deferred Maint.
2020-21	68.1	69.8	\$500,000	\$5,213,500	\$5,713,500	\$122,960,100
2021-22	66.4	67.9	\$500,000	\$5,206,700	\$5,706,700	\$135,611,000
2022-23	64.4	65.8	\$500,000	\$5,196,700	\$5,696,700	\$148,281,100
2023-24	62.4	63.9	\$500,000	\$5,199,000	\$5,699,000	\$159,310,200
2024-25	61.0	62.5	\$500,000	\$5,200,600	\$5,700,600	\$175,429,100
			\$2,500,000	\$26,016,500	\$28,516,500	



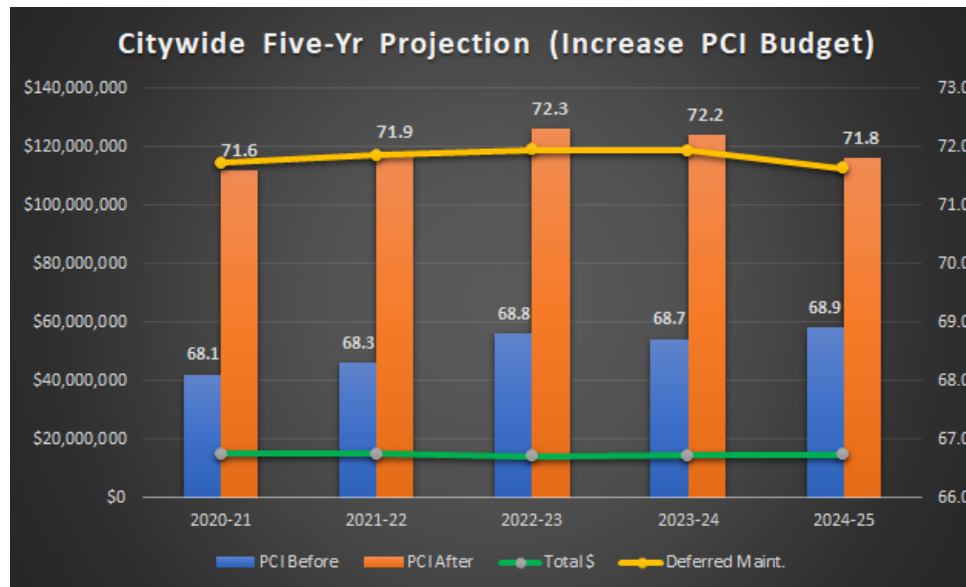
Scenario 2– Maintain PCI Funding

Plan Year	PCI Before	PCI After	Slurry/Cape Seal	Overlay / Recon	Total \$	Deferred Maint.
2020-21	68.1	71.5	\$500,000	\$13,349,100	\$13,849,100	\$116,873,800
2021-22	67.9	71.0	\$500,000	\$13,275,400	\$13,775,400	\$123,041,300
2022-23	67.8	70.5	\$500,000	\$13,355,100	\$13,855,100	\$127,535,600
2023-24	67.4	69.8	\$500,000	\$13,689,900	\$14,189,900	\$129,933,300
2024-25	67.4	68.7	\$500,000	\$13,722,300	\$14,222,300	\$136,532,100
			\$2,500,000	\$67,391,800	\$69,891,800	

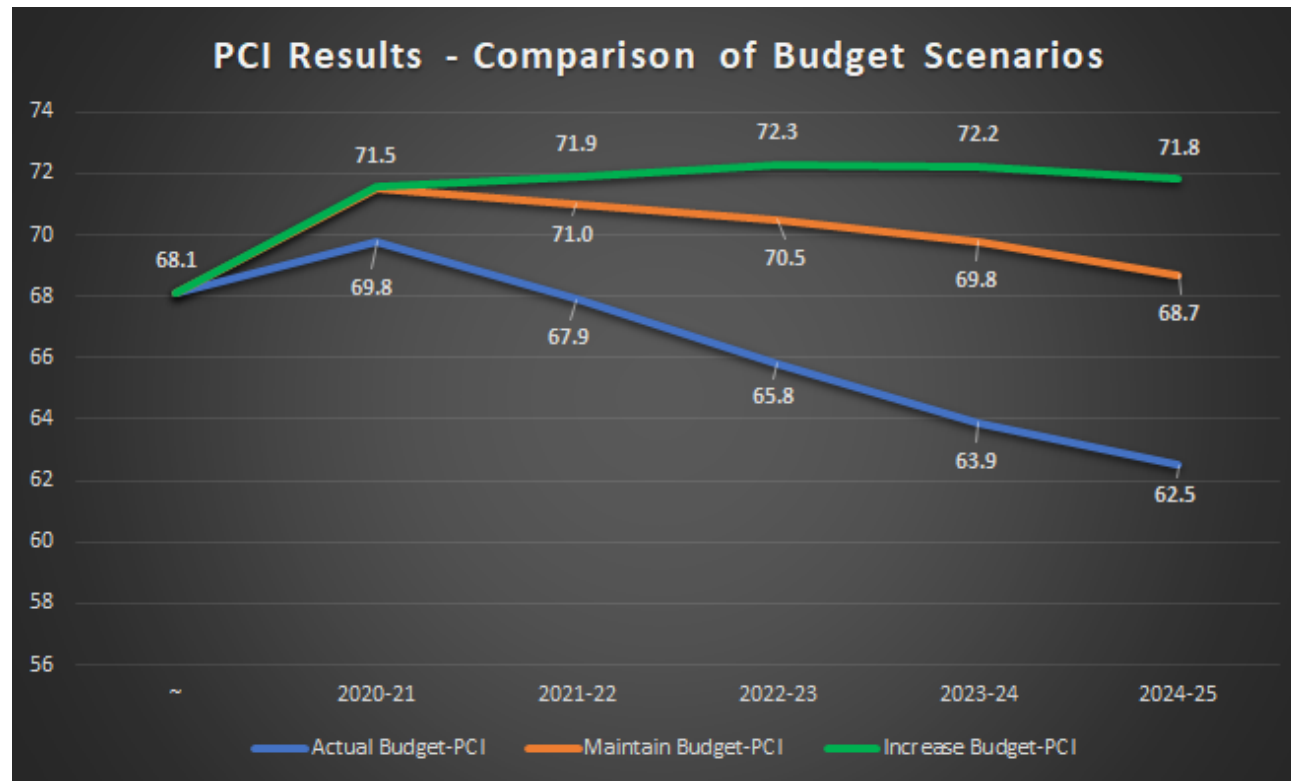


Scenario 3 – Increase PCI Funding

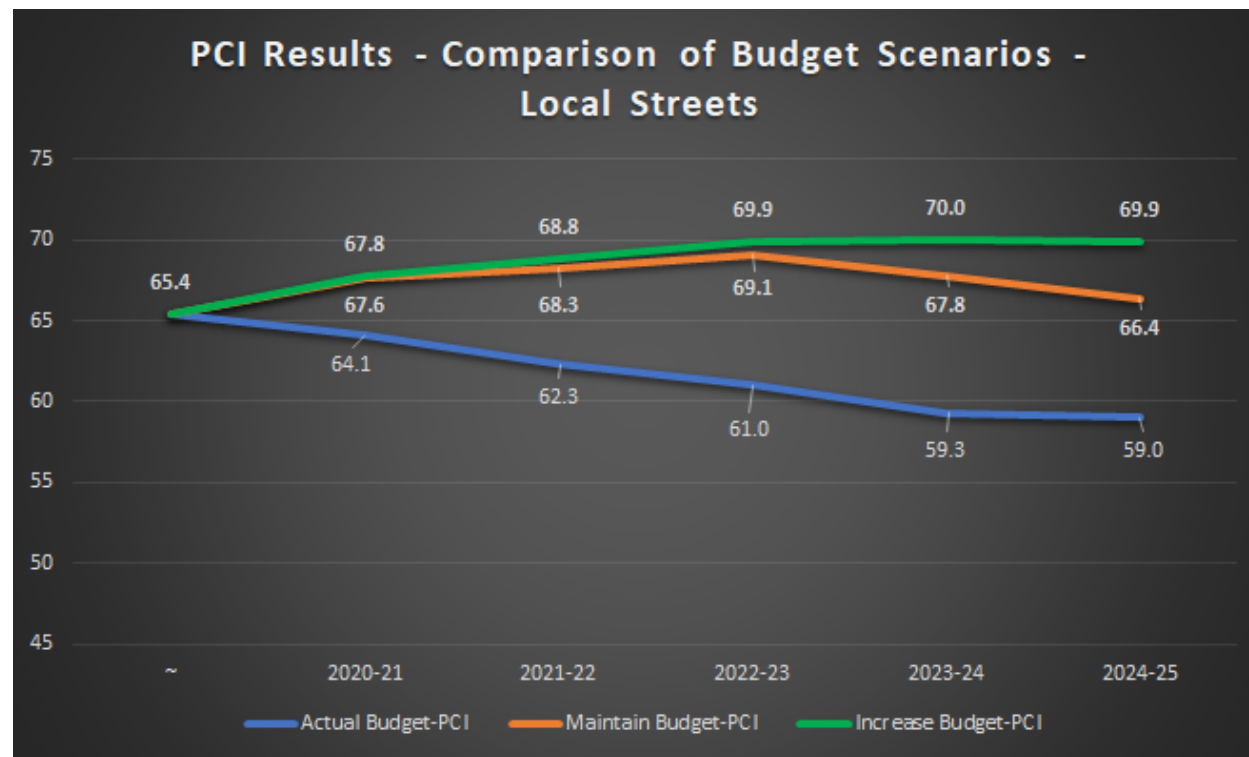
Plan Year	PCI Before	PCI After	Slurry/Cape Seal	Overlay / Recon	Total \$	Deferred Maint.
2020-21	68.1	71.6	\$750,000	\$14,149,100	\$14,899,100	\$114,320,800
2021-22	68.3	71.9	\$750,000	\$14,275,400	\$15,025,400	\$117,181,600
2022-23	68.8	72.3	\$750,000	\$13,355,100	\$14,105,100	\$118,875,900
2023-24	68.7	72.2	\$750,000	\$13,689,900	\$14,334,500	\$118,729,400
2024-25	68.9	71.8	\$750,000	\$13,722,300	\$14,632,400	\$112,628,300
			\$3,750,000	\$69,191,800	\$72,996,500	



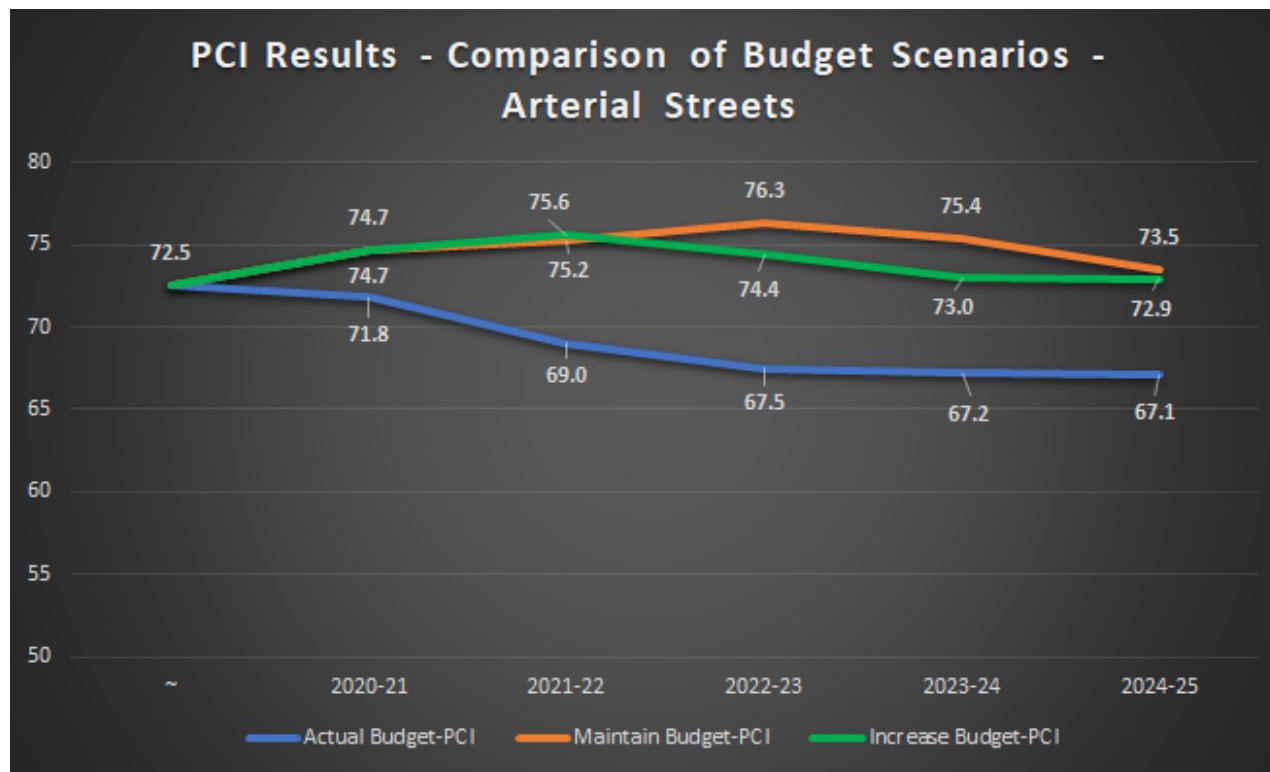
PCI Results based upon All Budget Scenarios



PCI Results based upon All Budget Scenarios – Local Streets



PCI Results based upon All Budget Scenarios – Arterial Streets



Findings and Recommendations

- Network has weighted PCI of 68.1 (Arterials = 72.5; Locals = 65.4);
- 35% of the Arterial network (approx. 45.9 miles) qualifies for overlay / reconstruction;
- 49% of the Local network (107.9 miles) qualifies for overlay / reconstruction;
- At a minimum, capital and maintenance projects should focus on maintaining the current weighted PCI of 68.1 over next five years;
- The City should re-evaluate per METRO and other funding requirements

Findings & Recommendations (Cont'd)

- Budget shown in “Scenario 2 – Maintain PCI” (previous slide) is ample to maintain weighted PCI of 68.1 after five years, furthermore, the citywide deferred backlog slightly decreases from a level of \$114.3 million to \$112.6 million after five years;
 - Delaying repairs on streets where pavement condition indicates a need creates deferred maintenance. Deferred maintenance includes pavement maintenance / rehabilitation that is needed across the entire network, but cannot be performed due to the lack of available funding and is pushed to the next budget cycle. The actual repairs that are being deferred are often referred to as a “backlog”.
- Generate updated Citywide Pavement Management Program report as required to qualify for funding;
- The City should continue to evaluate alternative pavement applications such as Cold Central Plant Recycling, cape seal, high density mineral bond, and rubber overlay to stretch the City’s allocated funding and pavement section life cycles;
- Look for ways to increase funding for local streets (SB-1, Measure M, etc.)

Issues Associated with Current Funding Levels

- No Gas Tax proceeds for Local Streets
- Reduced Measure R funds
- Measure R used to supplement Arterials instead of Collector/Local Streets
- Existing Grants (ATP Cycle 1 & 4 and 2015 Metro Call) have maxed-out City's available matching funds.
- No other grant/funding sources for Local Streets

Potential Funding Solutions

- Refocus on Preventative Rehabilitation/Maintenance
- Lobby for Replacement Gas Tax
- Partner with other Jurisdictional Agencies
 - Examples
 - County: Valley & Towne
 - Claremont: Indian Hill & Towne
 - Caltrans: Foothill & SR-71
- Search for future unknown opportunities

Questions and Answers

City of Pomona
Public Works Department