

Pavement Management Quarterly Webinar

Pavement Management Roadmap

Theme 3: Workforce and Organizational Issues

October 12, 2023

FEDERAL HIGHWAY ADMINISTRATION (FHWA)
IN COOPERATION WITH:
AASHTO COMMITTEE ON MATERIALS AND PAVEMENTS (COMP)
TRB AKT10, PAVEMENT MANAGEMENT SYSTEMS
TRB AKP10, PAVEMENT CONDITION EVALUATION



U.S. Department of Transportation
Federal Highway Administration
Office of Infrastructure

Housekeeping

- This webinar is being recorded. The link will be available at FHWA's Pavement Management website:
 - <https://www.fhwa.dot.gov/pavement/mana.cfm>
- All phone lines will be muted during presentations.
- Questions: Post in the chat pod.



Images: Pixabay

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Webinar Series

- PAVEMENT MANAGEMENT – PERFORMANCE MANAGEMENT
 - Various Topics
- Thursday (quarterly schedule)
 - Next webinar: TBD

Pavement Management Roadmap:

**Pavement Management & Performance -
Technology Transfer:**

<https://www.fhwa.dot.gov/pavement/mana.cfm>



Image: FHWA

Agenda

TOPIC	SPEAKER
Introduction	Christy Poon-Atkins, P.E., Federal Highway Administration (FHWA)
Theme 3: Workforce & Organizational Issues Moderator	Margot Yapp, P.E., Nichols Consulting Engineers (NCE); Federal Highway Administration (FHWA) contractor
Successful Transitions in Pavement Management at the South Dakota Department of Transportation	Phil Clements, P.E., Pavement Management Engineer, South Dakota Department of Transportation (SDDOT)
Non-Traditional Considerations in Prioritizing Paving Projects in Oakland, California	Sarah Fine, Complete Streets Paving & Sidewalk Manager, City of Oakland Department of Transportation
Discussion & Questions	All
Adjourn	

Pavement Management Roadmap

Theme 3: Workforce and Organizational Issues



Christy Poon-Atkins
FHWA



Margot Yapp
FHWA Contractor



Phil Clements
South Dakota Dept. of Trans.



Sarah Fine
City of Oakland Dept. of Trans.

The Updated Pavement Management Roadmap

Theme 3: Workforce & Organization Issues



U.S. Department
of Transportation

**Federal Highway
Administration**

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- Unless otherwise noted, Applied Pavement Technology, Inc. is the source for all images in this presentation.

Presentation Approach

1.0 Background

2.0 Gap Assessment

3.0 Pavement Management Roadmap Suggestions

1.0 Background

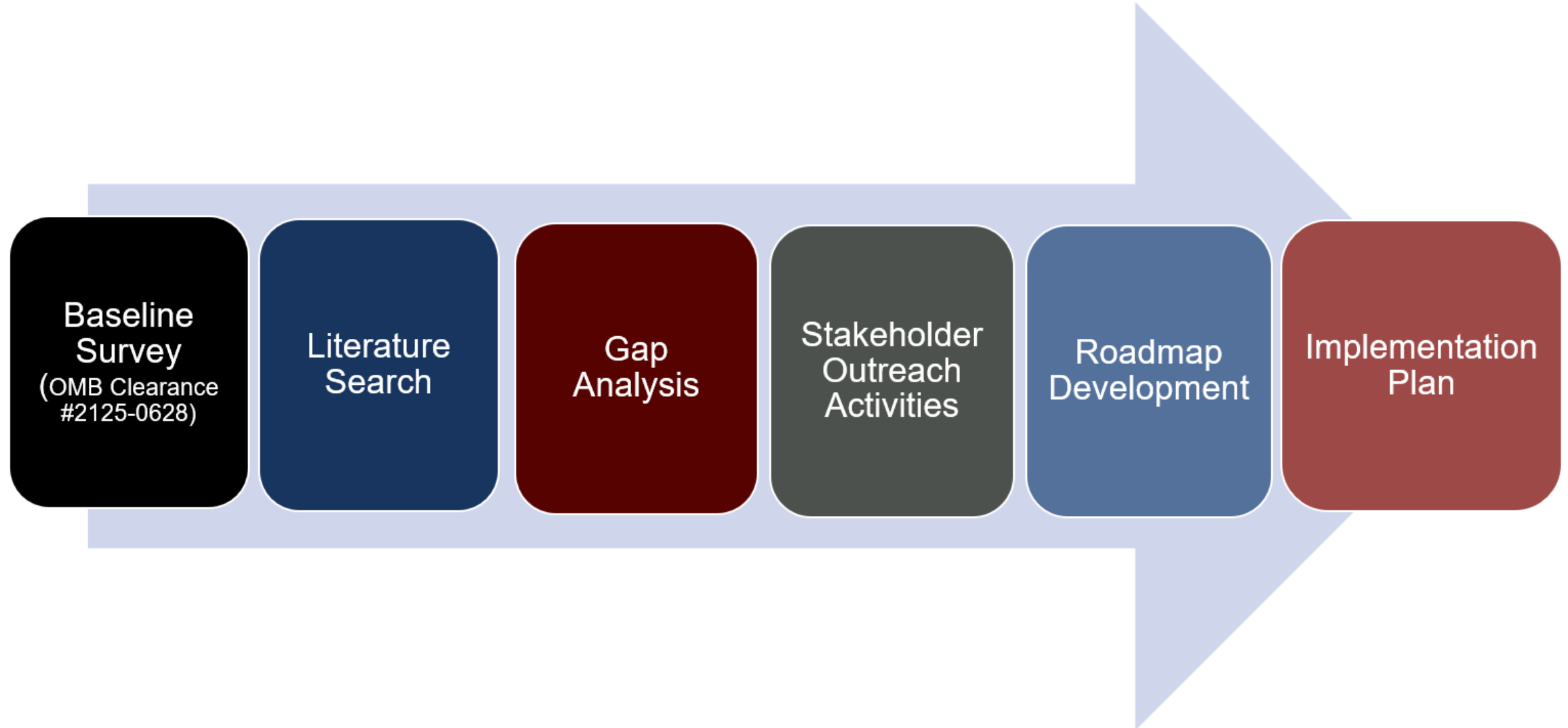
Project Objectives

Project Approach

Project Objectives

- Provide an Updated Pavement Management Roadmap
 - » Present a 10-year strategy to drive:
 - Research
 - Transformative innovation development
 - Technology transfer activities
 - » Continue to improve pavement management practices

Project Approach



2.0 Gap Assessment

Theme 1: Pavement Management Data

Theme 2: Pavement Management Analysis Tools & Other Applications

Theme 3: Workforce & Organizational Issues

Theme 4: Technological Advancements – New Tools, Methodologies, & Technology



Theme 3: Workforce & Organizational Issues

3-1: People

3-2: Funding Uncertainties

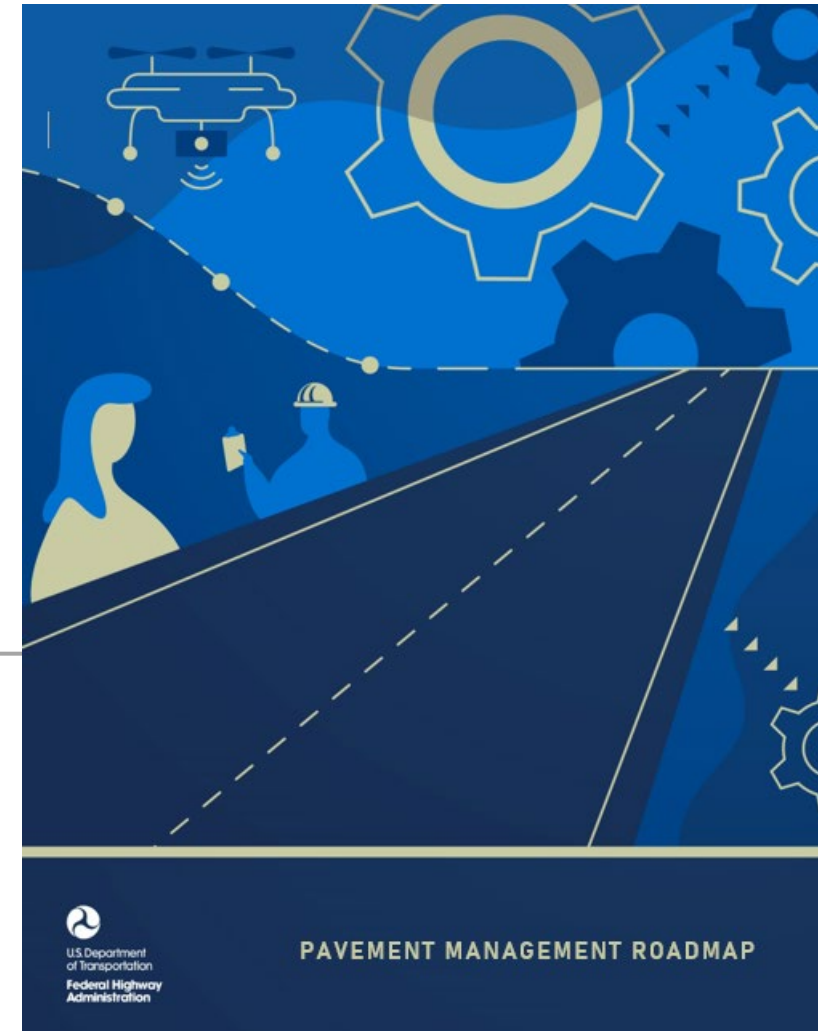
3-3: Integration into Existing Systems & Processes

3-4: Data & Technology

3-5: Communication & Outreach

3.0 Pavement Management Roadmap Suggestions

Note: The suggested activities are based on the gap assessment and outreach activities. There are no commitments to funding the suggestions implied by the FHWA or any other agency.



Improvement Areas – Theme 3



Training – Develop and deploy content to support workforce development.

Workforce Development – Reduce barriers to ready access to training and information needed to support workforce transitions.

Technical Assistance – Provide support to promote the use of pavement management concepts.

Tools – Support the development of software tools to supplement existing capabilities.

Communication – Develop effective tools for strategies for communicating pavement management results to different stakeholders.

Organizational Challenges – Address organizational challenges that hinder the use of pavement management

Types of Actions Suggested



Note: The suggested activities are based on the gap assessment and outreach activities. There are no commitments to funding the suggestions implied by the FHWA or any other agency.

Example Technical Assistance Topics Suggested by Stakeholders

- Short-term
 - » Pilot & implement technical assistance programs on data management, data quality, and performance modeling
 - » Develop an equipment loan program to test new technology
- Long-term
 - » Develop a National Equipment Certification Center
 - » Pilot programs to demonstrate the use of new technology, next generation performance measures, & return on investment from ground penetrating radar (GPR) and traffic speed deflection devices (TSDD) data
 - » Develop a program to support new technology trials

Example Short-Term Training Action Items Suggested by Stakeholders

- Develop training on basic statistics, data quality management plans, equipment calibration & certification, & performance modeling
- Conduct workshops on how to use GPR & TSDD data, data integration, life cycle planning, & use of leading performance measures
- Redesign the PMS User's Group webinar series to focus on training
- Create on-the-job and just-in-time training materials
- Create sharable materials for public messaging of pavement management information

Questions?

FHWA Pavements webpage:
<https://www.fhwa.dot.gov/pavement/>



U.S. Department
of Transportation

**Federal Highway
Administration**

STATE & LOCAL METHODS

SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

&

CITY OF OAKLAND, CALIFORNIA



Pavement Management Transitions – A SDDOT Experience

SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

**Phillip C. Clements, PE
Pavement Management Engineer, SDDOT**

A Quote

“Ladies and Gentlemen

We are gathered here today

To get through this thing called life...”

In The Beginning

UPGRADE TO dROAD 6.0

IMPORT FILE CHECKLIST

BIT JOBSTREAM	HR51JS02	FILE TYPE	Segment (*.SEG)
ACCESS DATABASE	OTHR_SEG	TABLE NAME	OTHR_SEG
<u>dROAD PERSPECTIVE</u>	R_OTHER	PERSPECTIVE TYPE	Segment
<u>dROAD VIEW (Data File Only)</u>		DATE COMPLETED	

BIT JOBSTREAM	HR51JS02	FILE TYPE	Data (*.DAT)
ACCESS DATABASE	OTHR_DAT	TABLE NAME	OTHR_DAT
<u>dROAD PERSPECTIVE</u>	R_OTHER	PERSPECTIVE TYPE	Segment
<u>dROAD VIEW (Data File Only)</u>	R_OTHER	DATE COMPLETED	

BIT JOBSTREAM	HR51JS03	FILE TYPE	Data (*.ASC)
ACCESS DATABASE	PRFL_DAT	TABLE NAME	PRFL_DAT
<u>dROAD PERSPECTIVE</u>	DISTRESS	PERSPECTIVE TYPE	Segment
<u>dROAD VIEW (Data File Only)</u>	PROFILOMTR	DATE COMPLETED	

BIT JOBSTREAM	HR51JS04	FILE TYPE	Segment (*.SEG)
ACCESS DATABASE	TRAF_SEG	TABLE NAME	TRAF_SEG
<u>dROAD PERSPECTIVE</u>	R_TRAFFIC	PERSPECTIVE TYPE	Segment

- Limited documentation
- Subject matter expert
- Example and templates
- Help was readily available.

The Early 2000s



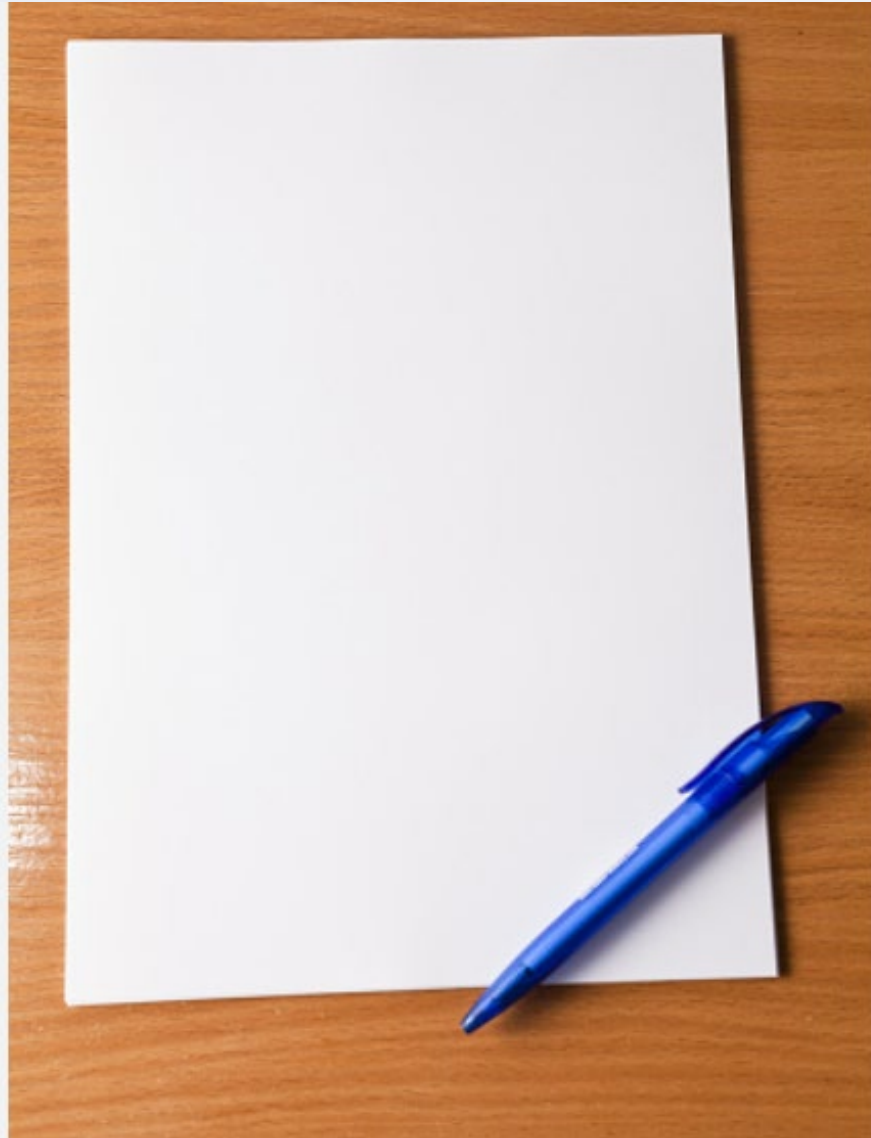
- Short notice
- Extended absence
- Knowledgeable Supervisor
- Good teamwork
- Documentation was still limited

The Early 2010s



- Knowledgeable Supervisor moved on
- System more sophisticated
- 1 year notice
- Creation of “Red Book”

The Retirement - 2018



- 20% of DOT workforce eligible for retirement
- Pavement Management Engineer Retired
- 3 weeks notice
- No map document

Current - 2023

Flow chart1_ for BA update.docx	01/22/2021 10:47 AM	Microsoft Word D...	23 KB
Flow chart2_ for BA update.docx	03/14/2023 1:05 PM	Microsoft Word D...	21 KB
Flow chart3_ for BA update.docx	03/30/2023 3:19 PM	Microsoft Word D...	19 KB
Section 1_Procedures for Updating MRMs in dTims BA.docx	01/26/2021 9:35 AM	Microsoft Word D...	132 KB
Section 2_Distress Data Import Instructions.docx	03/07/2023 2:59 PM	Microsoft Word D...	228 KB
Section 3_r_other_HR51JS02_reload.docx	02/18/2021 8:18 AM	Microsoft Word D...	978 KB
Section 4_r_roadlayr_HR51JS15_reload.docx	01/10/2023 3:39 PM	Microsoft Word D...	464 KB
Section 5_STIP Table Load and Verify.docx	03/01/2023 4:36 PM	Microsoft Word D...	782 KB
Section 6_bridge_HR51JS11_12_13reload.docx	02/16/2022 9:50 AM	Microsoft Word D...	719 KB
Section 7_Running Table Query PMS_CHECK.docx	01/26/2021 10:54 AM	Microsoft Word D...	74 KB
Section 8_Export Modify and Import PMS sections.docx	02/28/2022 8:07 AM	Microsoft Word D...	142 KB
Section 9_Smoothing Distress and Other Data in PMS Table.docx	03/16/2023 1:33 PM	Microsoft Word D...	790 KB
Section 10_r_traffic_HR51JS04_reload.docx	03/16/2023 1:49 PM	Microsoft Word D...	215 KB
Section 11_maintenanc_HR51JS19_reload.docx	03/02/2021 4:43 PM	Microsoft Word D...	694 KB
Section 12_Process for creating Excel spreadsheets for HPMS from dTims BA.docx	03/14/2023 2:09 PM	Microsoft Word D...	76 KB
Section 13_Inspection Data Export and Formatting.docx	09/12/2023 12:37 PM	Microsoft Word D...	885 KB
Section 14_Accident_Extract_reload.docx	03/16/2022 4:52 PM	Microsoft Word D...	552 KB
Section 15_Process Optimization Data for the Needsbook.docx	03/27/2023 4:32 PM	Microsoft Word D...	273 KB
Section 16_Needsbook Export Instructions.docx	01/25/2021 2:09 PM	Microsoft Word D...	306 KB
Section 17_R_Curve_HR51JS08_HR51JS09_reload.docx	03/16/2021 8:22 AM	Microsoft Word D...	982 KB
Section F1_Flow chart_ for Fall inspection update.docx	08/26/2021 9:37 AM	Microsoft Word D...	16 KB
Section F2_Documentation notes for data runs for fall inspections.docx	09/23/2022 1:41 PM	Microsoft Word D...	2,244 KB

- Assistant is moving on
- Documentation up to date
- 3 weeks notice

Why succession planning and documentation?

- **Extended absences or sudden departures**
- **A time saver, under normal operations**
- **A change in process is captured**

Map Document

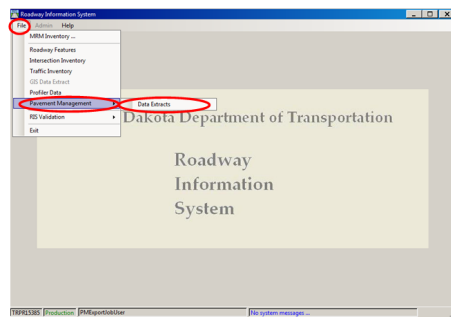
Section 4-R_ROADLAYR Reload

Procedures for Reload of HR51JS15 (R ROADLAYR)

1. Once the RIS purge has been accomplished open the HR49 RIS application on your desktop.

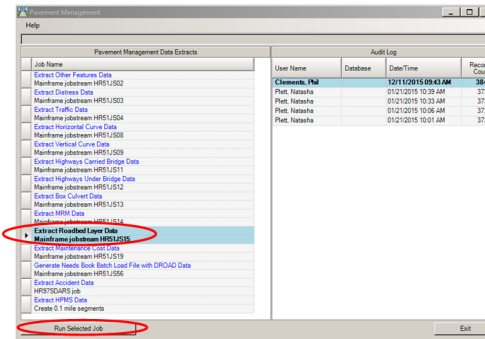


2. Go to the "File" drop-down menu and select Pavement Management and Data Extracts.



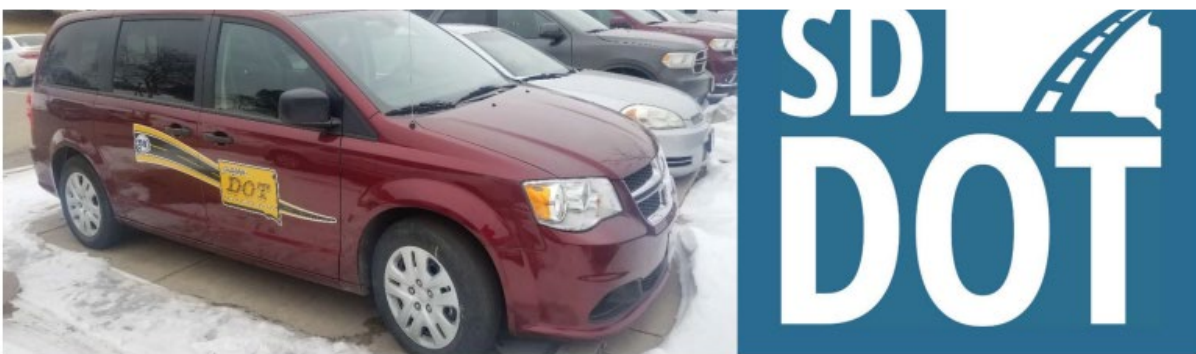
Section 4-R_ROADLAYR Reload

3. In the list of data extracts, select HR51JS15. Press the "Run Selected Job" button.



4. Go to and open the data extract file HR51dTims.mdb
M:\AIIL_SD\SourceCode\AgencyApps\DOT\HR51PavementManagement\Unrestricted\Exe\HR51dTims.mdb.

- Flow chart
- Page references
- Step by Step procedures
- PM Lead – outline.



2023 VISUAL DISTRESS SURVEY MANUAL

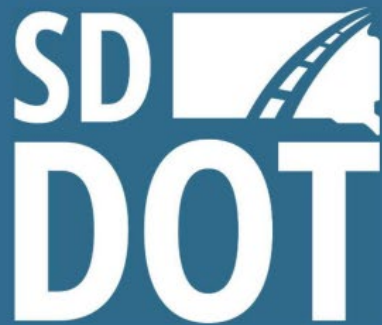


ENHANCED PAVEMENT MANAGEMENT SYSTEM

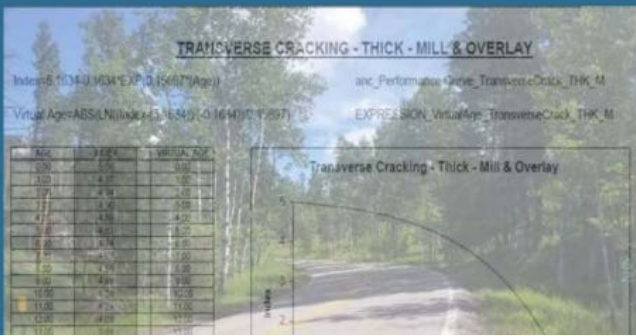
Distress Survey Manual

- Protocols and Procedures
- Companion PowerPoints
- Updated annually





ENHANCED PAVEMENT MANAGEMENT SYSTEM



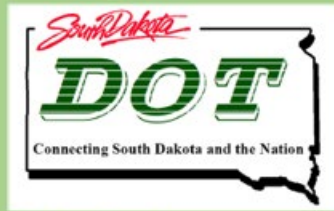
2
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The Synopsis

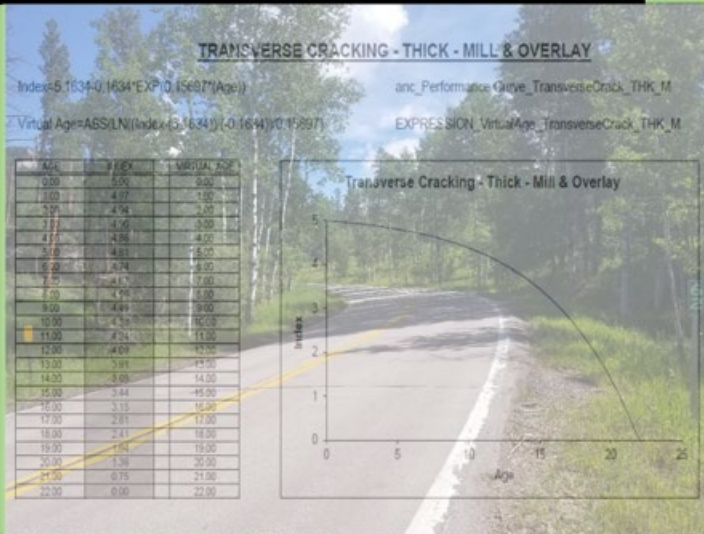
- Elements of Pavement Performance
- General Distress
- Analysis
- Current Treatment costs
- Project selection process
- Triggers and data dictionary
- “One stop shop”





2020

PERFORMANCE CURVES



Performance Curves

- Performance curve charts and equations
- Excel and pdf
- Updated as needed
- Update is imminent after Automated Distress conversion



SDDOT'S ENHANCED PAVEMENT MANAGEMENT SYSTEM




Conclusion – Level of Transition Difficulty

- **Level of task documentation**
- **Level of process documentation**
- **Succession plan**
- **Cross training**

THANK YOU!



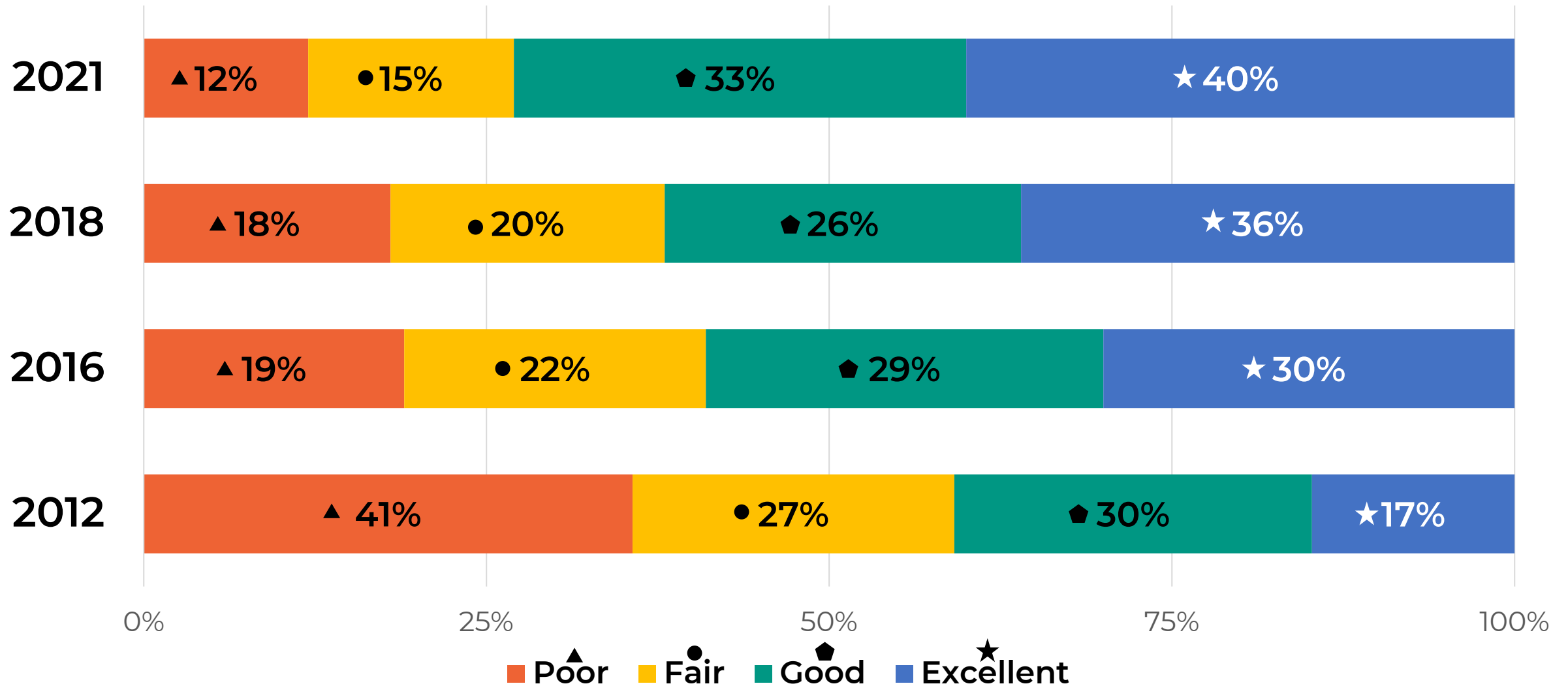
Image: FHWA

A photograph of construction workers in orange and yellow safety gear working on a road. In the background, there is a white paving machine and residential buildings. The workers are using tools to spread and level the asphalt.

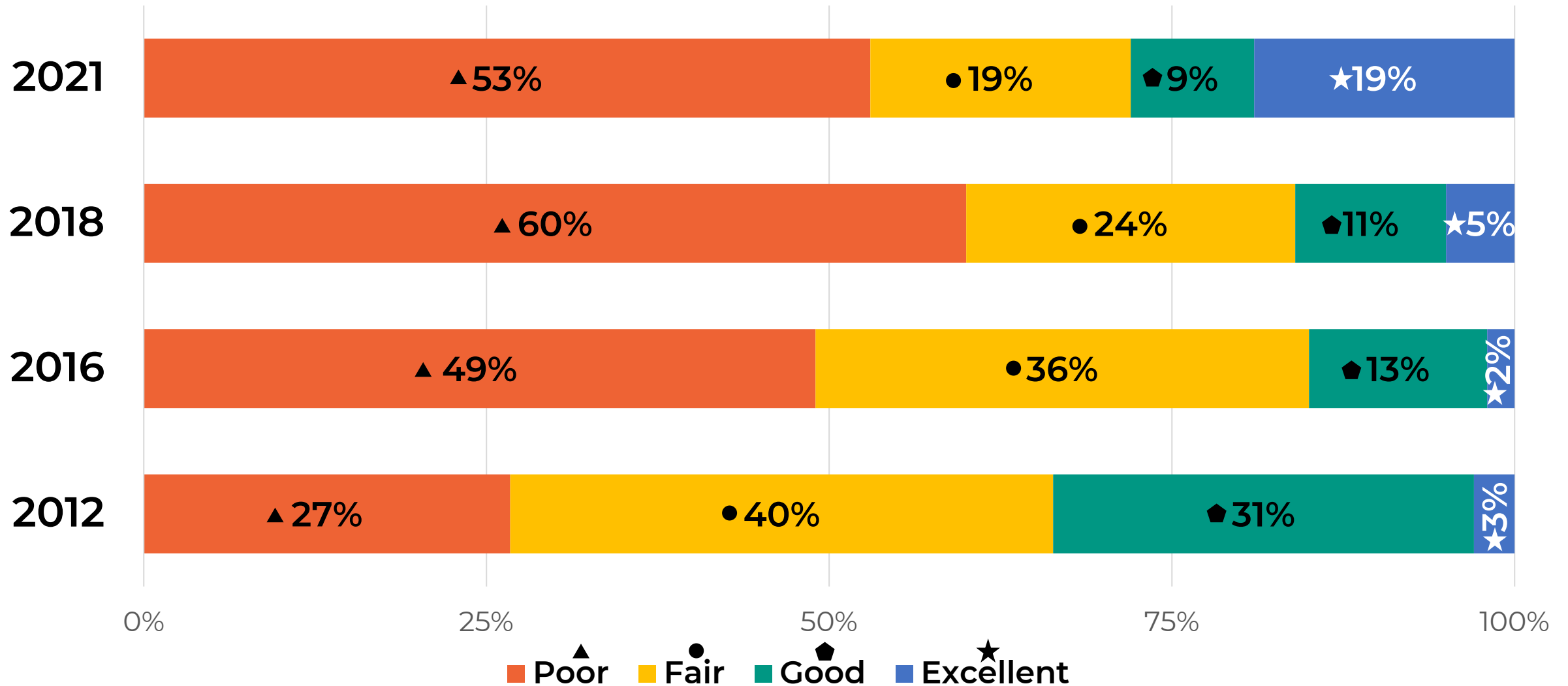
Oakland's Equity-Based Paving Plan

FHWA Pavement Management Series
October 12, 2023

Pavement Condition – Arterials



Pavement Condition – Local



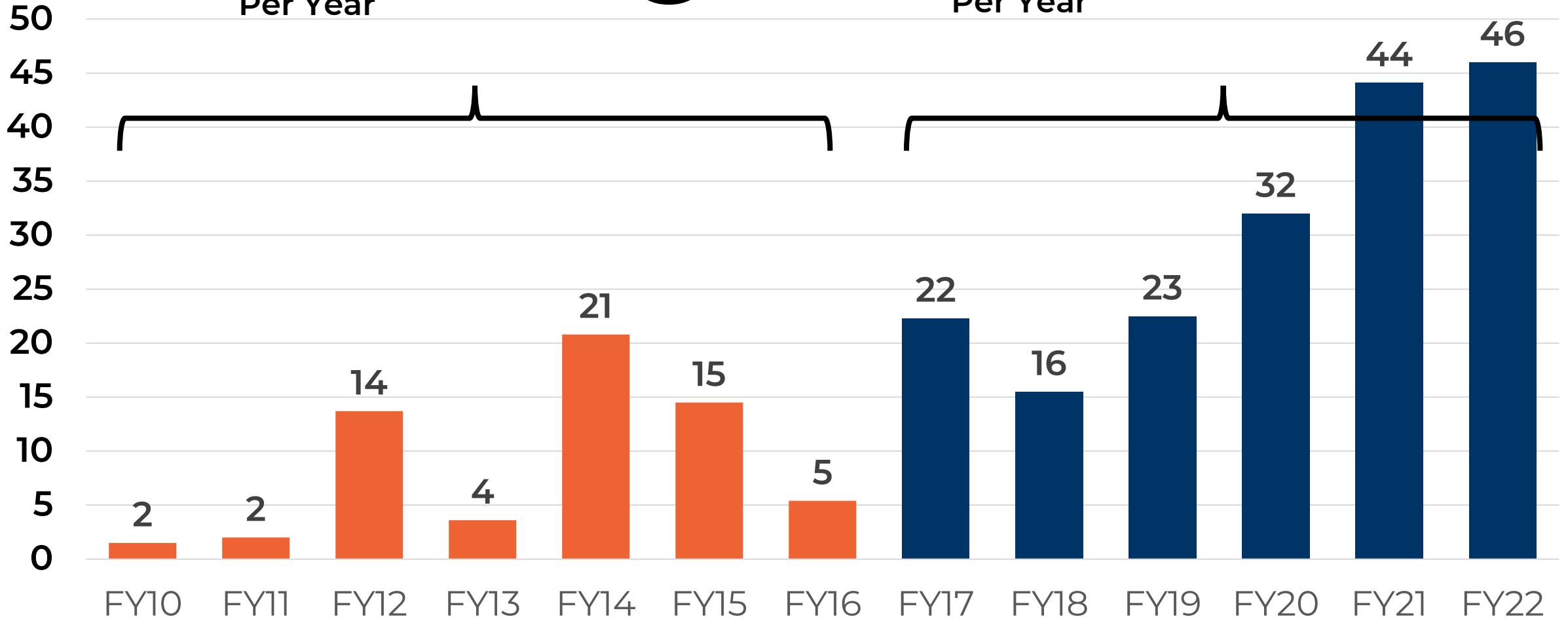
Local Infra. Bond Boosting Paving

Pre-Measure KK
Average Miles Paved
Per Year

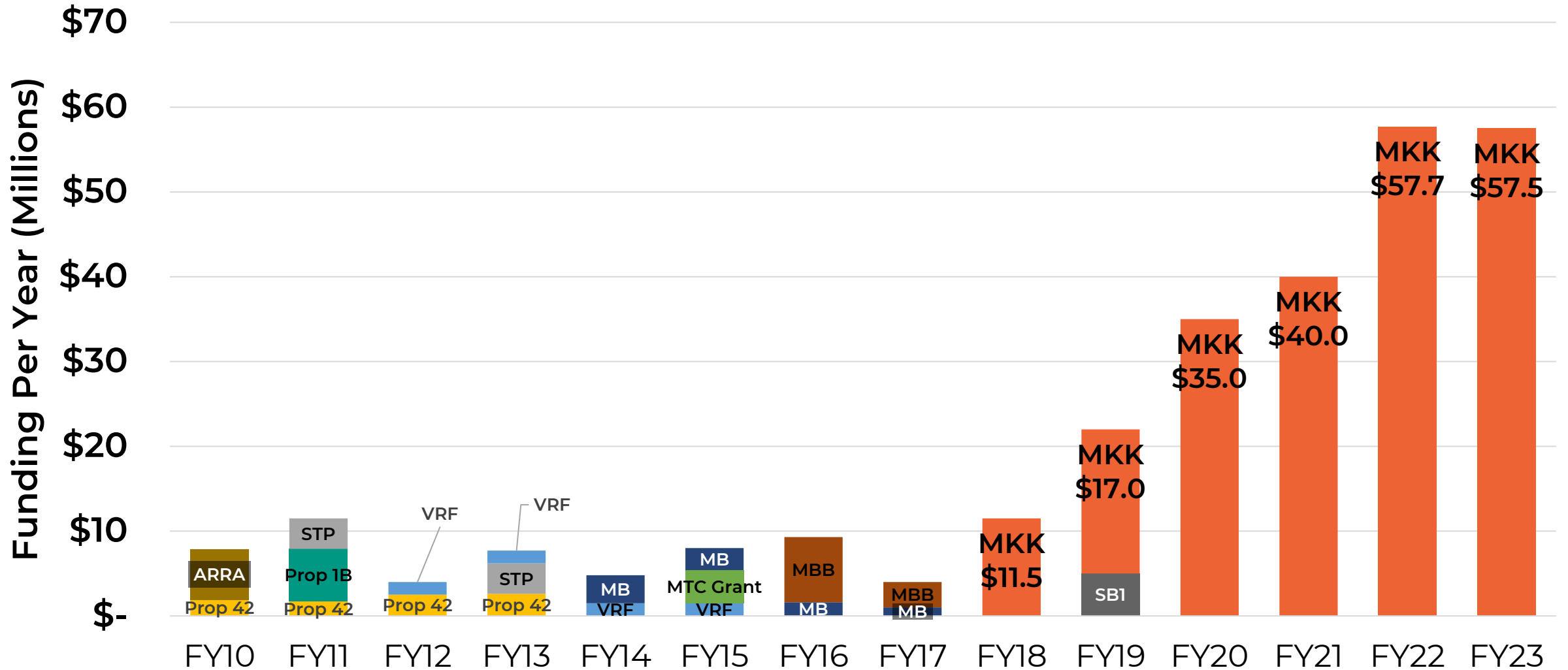
9

With Measure KK
Average Miles Paved
Per Year

30

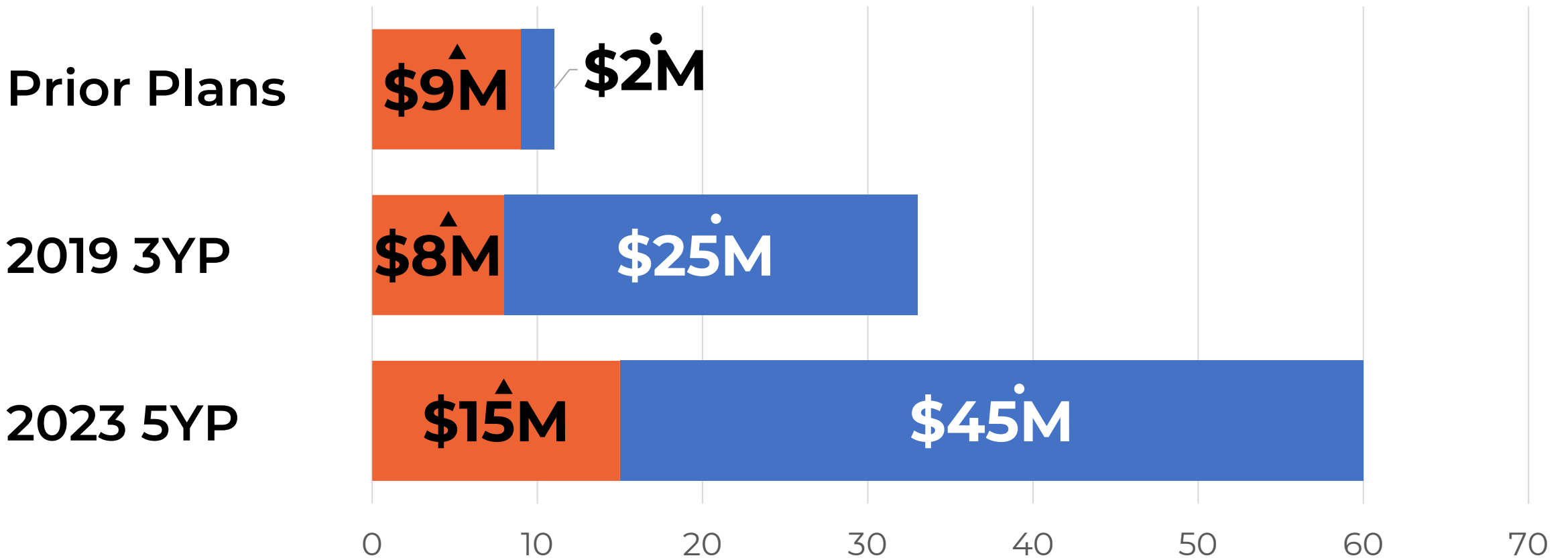


Funding Over Time

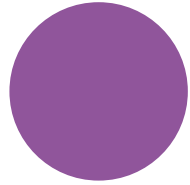


Annual Budget By Street Type

▲ Major Streets ● Local Streets



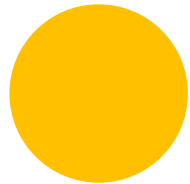
2022 Paving Plan



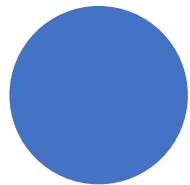
Develop **5-year street list** to improve and maintain Oakland's streets



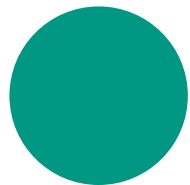
Deliver **\$300M+ in paving construction**



Rehabilitate and maintain local streets to improve neighborhood quality of life



Identify staffing and capital facilities needs to sustain long-term in-house program



Anticipate a second bond measure and identify consequences of failed measure

Quick Definitions

Underserved Populations

Populations and communities that have experienced historic or current disparities.

This definition includes **people of color, low-income households, people with disabilities, households with severe rent burden, people with limited English proficiency, and youth/seniors.**

Equity

Equity is a goal. It means that your identity has no detrimental effect on the distribution of resources, opportunities, and outcomes for our City's residents. **To achieve equity, we prioritize the needs of underserved populations.**

300M

Major Streets

75M

Program funds **citywide** to keep major streets in **good condition**

Prioritize individual streets by **street condition** and **traffic safety history**

PCI Goal

72



75

Local Streets

225M

Program funds in nine planning areas by **equity** and **street condition**

Prioritize individual streets by **street condition, equity, and park proximity**

PCI Goal

50



61

Planned Priorities

Local Streets

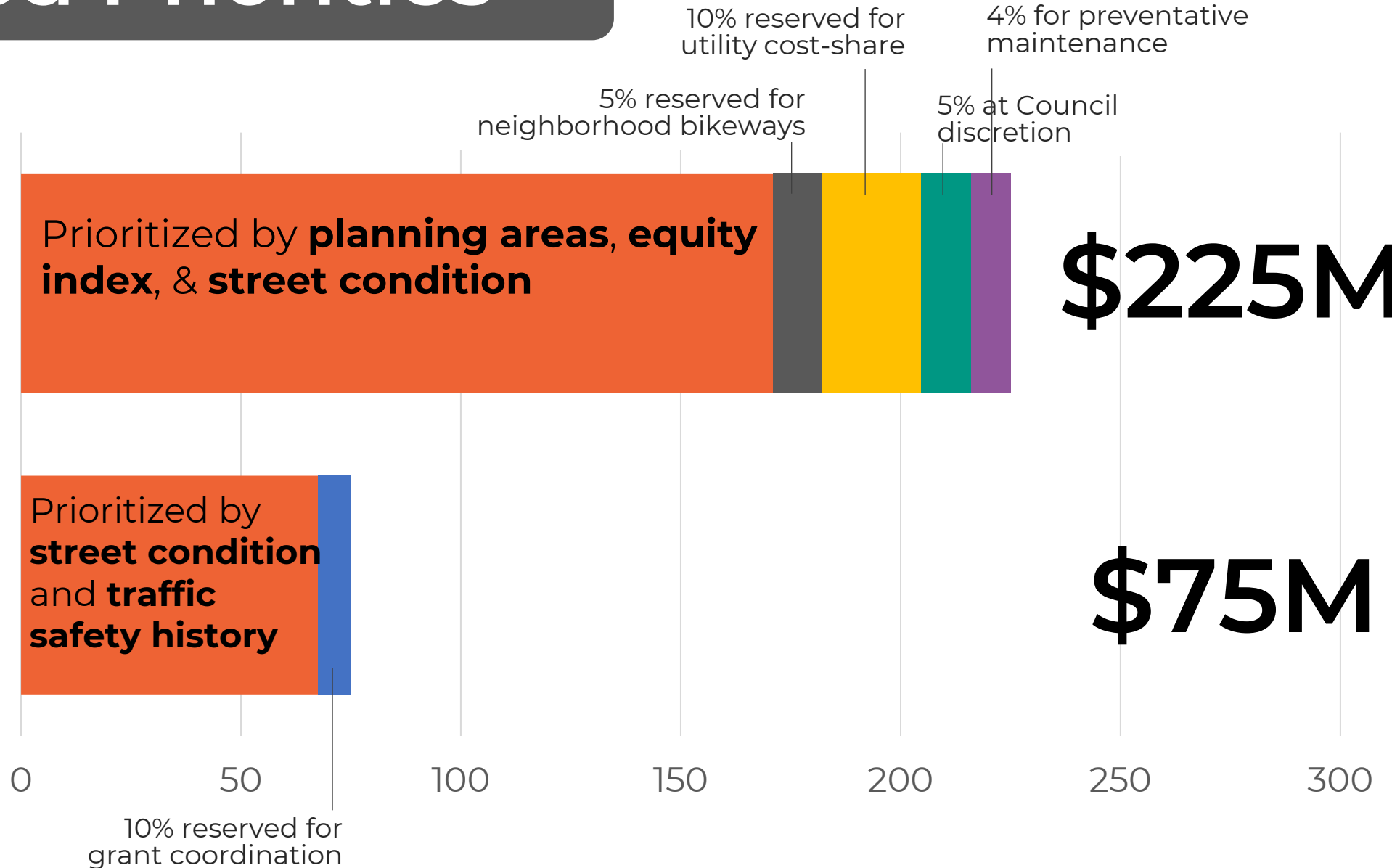
Prioritized by **planning areas, equity index, & street condition**

\$225M

Major Streets

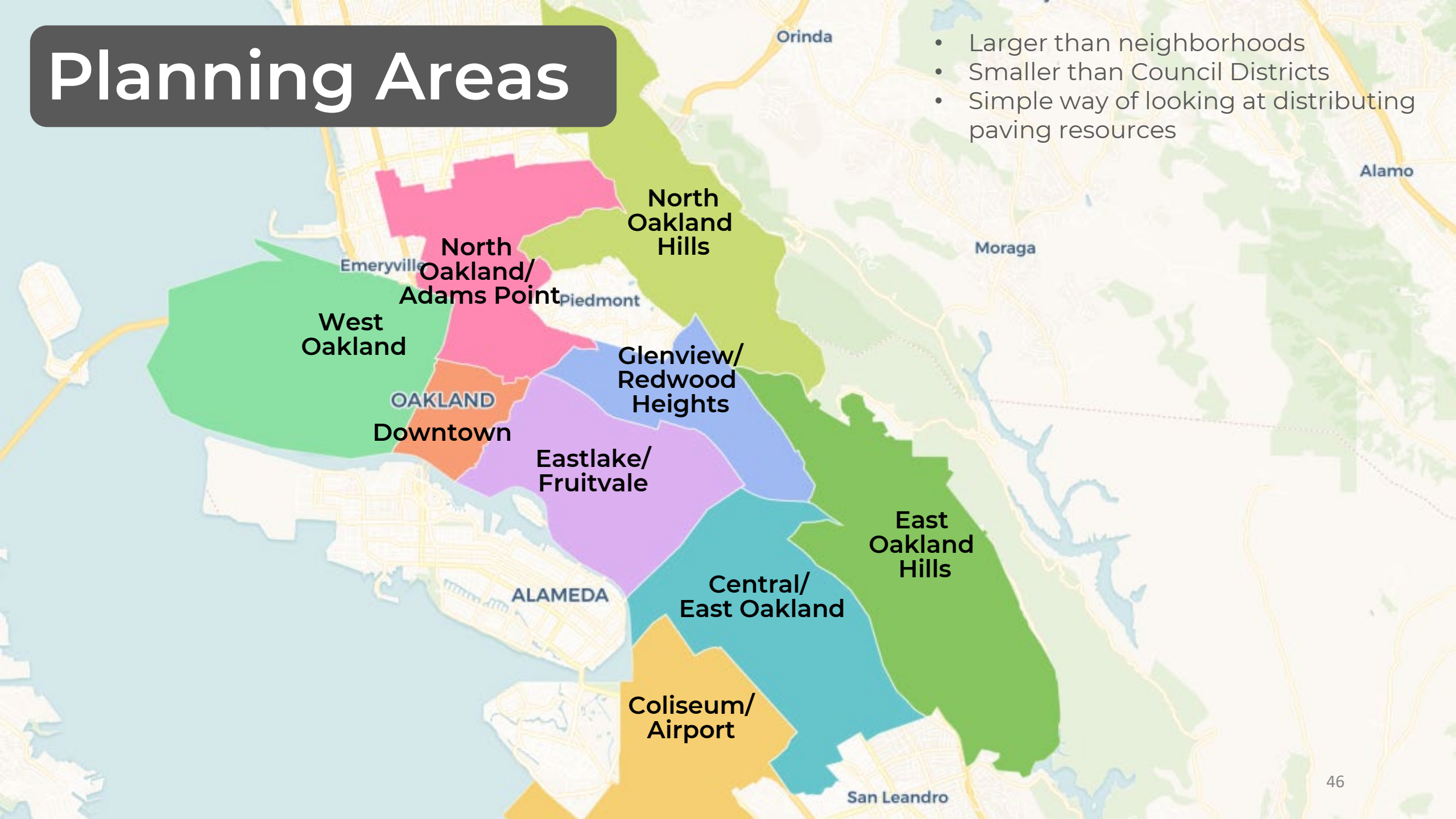
Prioritized by **street condition and traffic safety history**

\$75M



Planning Areas

- Larger than neighborhoods
- Smaller than Council Districts
- Simple way of looking at distributing paving resources



Planning Areas

- Use Planning Areas to identify **Local Streets** needs based on **street condition**, **population density**, and **equity factors**.

	Pop.	Total Street Miles	Median Income	Avg Street Slope	% People of Color	% Low Income
Central / East Oakland	101,611	165	\$54k	1.3%	93%	48%
Coliseum / Airport	4,687	20	\$47k	2.1%	98%	51%
Downtown	19,410	40	\$57k	1.2%	75%	49%
East Oakland Hills	31,704	98	\$101k	5.1%	72%	26%
Eastlake / Fruitvale	100,503	134	\$50k	2.1%	83%	46%
Glenview/Redwood Heights	31,911	78	\$122k	4.7%	47%	18%
North Oakland Hills	24,950	110	\$191k	7.6%	31%	11%
North Oakland / Adams Point	81,976	126	\$83k	2.1%	48%	29%
West Oakland	27,641	60	\$58k	2.1%	74%	48%
Citywide	424,393	830	\$66k	3.2%	71%	37%

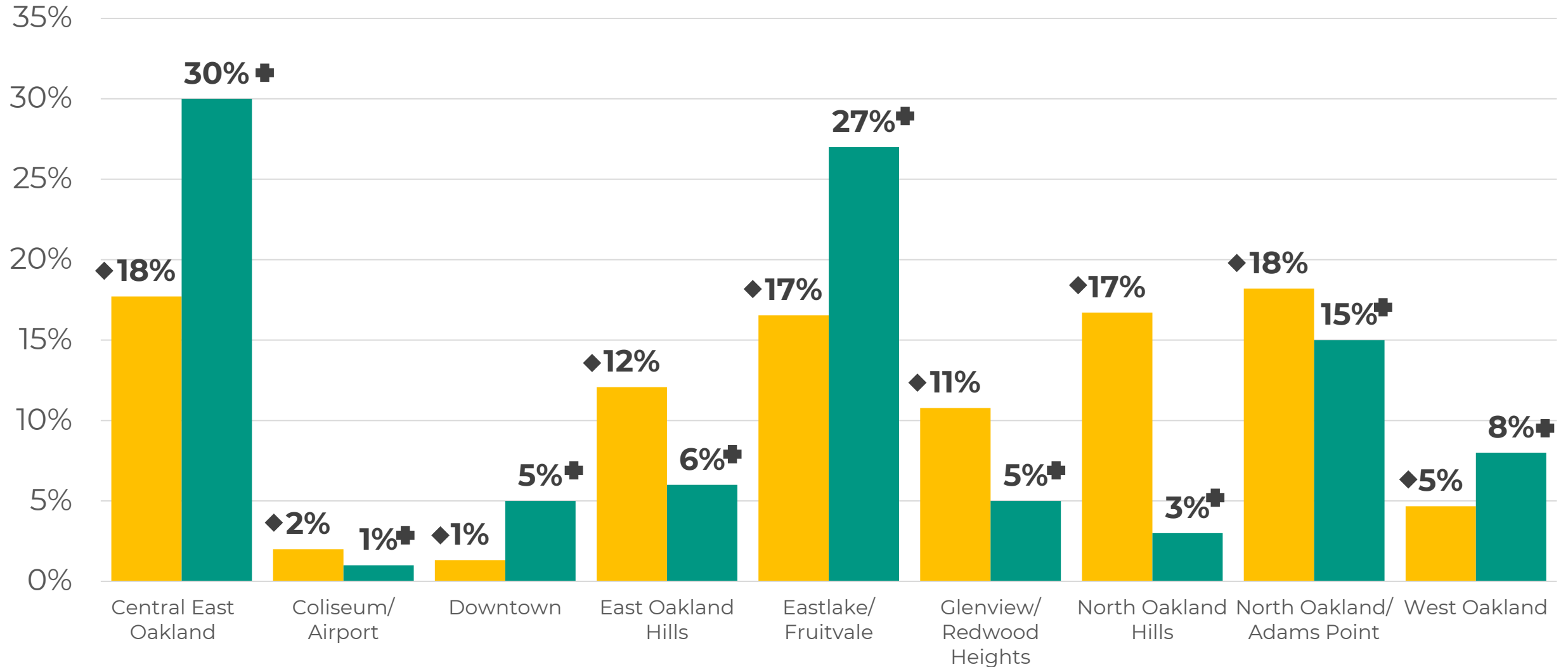
Planning Areas

- Use Planning Areas to identify **Local Streets** needs based on **street condition**, **population density**, and **equity factors**.

	Pop.	Citywide Share of Underserved Pop.	Citywide Share of Local Street Miles (PCI < 50)	Local Streets Avg PCI	People Per Local Street Mile (PCI < 50)
Central / East Oakland	101,611	30%	18%	51	1,452
Coliseum / Airport	4,687	1%	2%	49	670
Downtown	19,410	5%	1%	61	2,773
East Oakland Hills	31,704	6%	12%	52	773
Eastlake / Fruitvale	100,503	27%	17%	47	1,675
Glenview/Redwood Heights	31,911	5%	11%	50	840
North Oakland Hills	24,950	3%	17%	49	409
North Oakland / Adams Point	81,976	15%	18%	48	1,224
West Oakland	27,641	8%	5%	57	1,728
Citywide	424,393			52	1,156

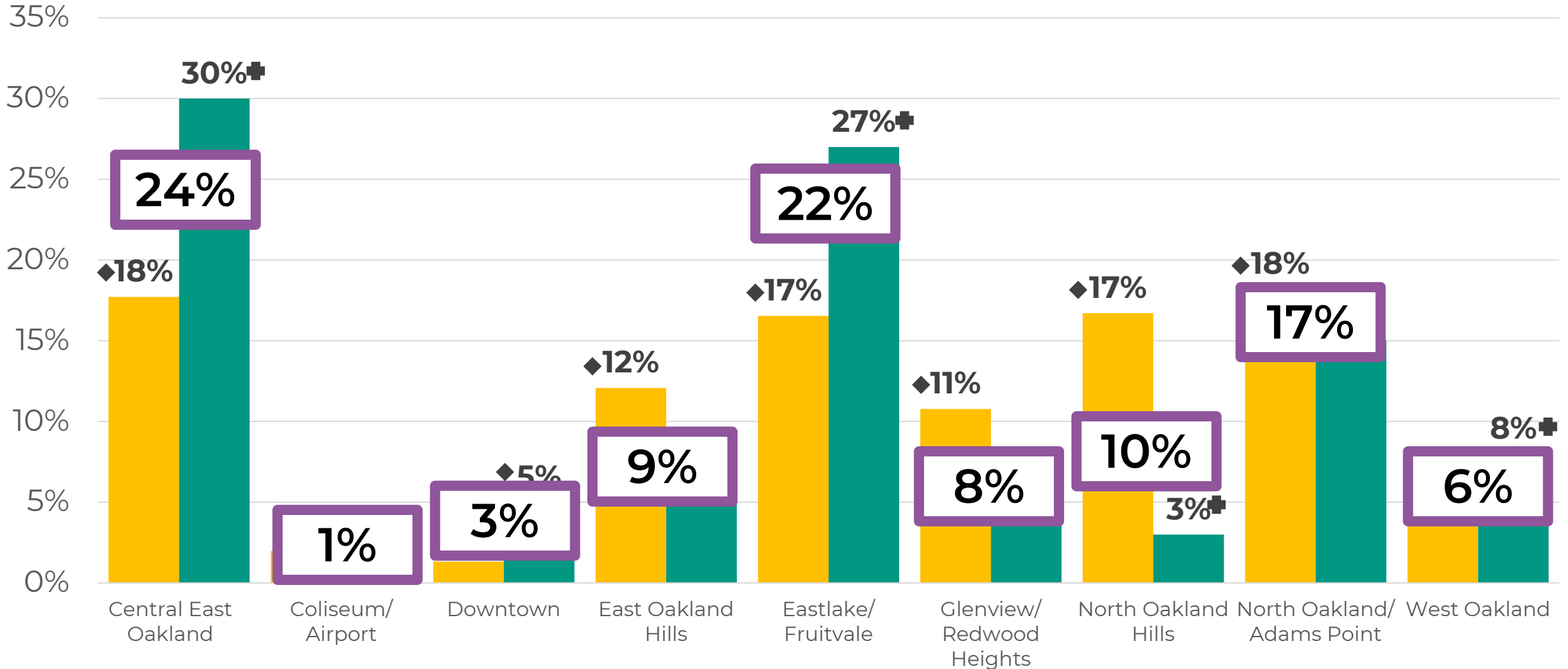
Street Condition & Equity

- ◆ Share of Local Streets in Poor Condition
- Share of Underserved Populations

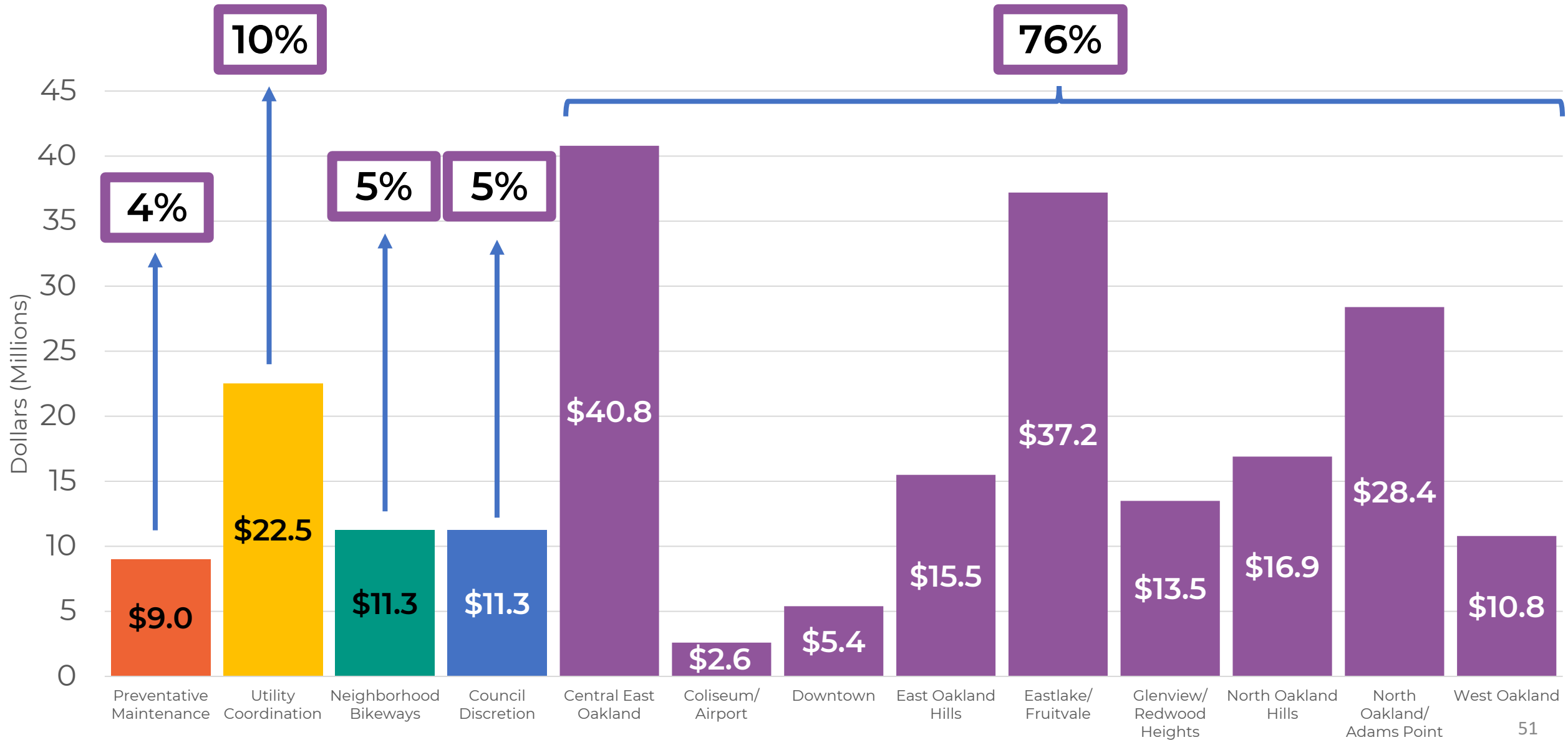


Funding By Planning Area

- Distribute funding for local streets by the share of underserved populations and share of local street miles in poor condition



Proposed Local Streets Funding



Local Streets Prioritization

Local Streets

225M

Program funds in nine planning areas by **equity** and **street condition**

Prioritize individual streets by **street condition, equity, and park proximity**

PCI Goal

50

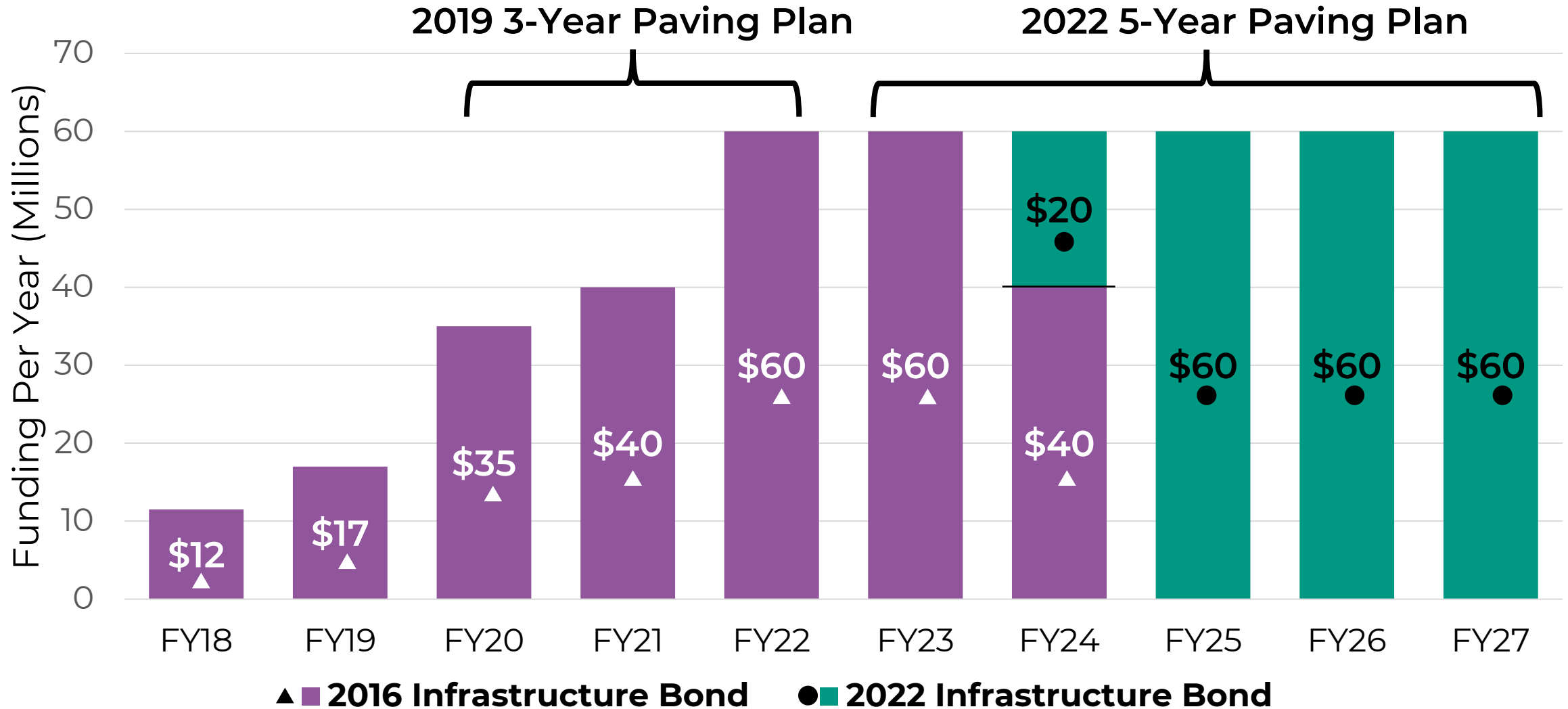


61

How We Prioritized Local Streets:

- Use the dollar amount by planning area
- Estimate cost of all streets
- Add streets in poor condition until dollar target is met
- **Reserve 4% of program budget for local streets preventative maintenance**

Plan Funding



Outreach & Process

(2021 Data
Public Release)

Draft Plan to
City Council

May-Aug

Sept

Oct

Dec

Jan

July 2022



Community engagement
**Online open house, neighborhood
councils, & city commissions**

Final Thoughts

2019 3-Year Paving Plan

- Approved resolution establishing \$100M, 120+ mi paving plan
- Explicitly prioritized equity in resource allocation
- Reduced Council influence over street selection
- Pre-authorized \$35M in contract authority

2022 5-Year Paving Plan

- Approved resolution establishing \$300M, 400+ mi paving plan
- Maintained equity prioritization
- Pre-authorized \$75M in contract authority



San Francisco Chronicle, April 2019

THANK YOU!



Image: FHWA approved

For a certificate of participation submit your request with the following link: <https://forms.gle/HUNtCxri58N6Gx5o7>

Questions?



Image: Pixabay

THANK YOU!

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Christy Poon-Atkins, P.E.

(202)893-0559

Christy.Poon-Atkins@dot.gov



Image: FHWA approved

For a certificate of participation, submit your request with the following link for the respective theme:

Theme 3: <https://forms.gle/HUNtCxri58N6Gx5o7>

Theme 2: <https://forms.gle/pgUk3QZ6fWeG5JrH6>

Theme 1: <https://forms.gle/WaoswUPJMxUsFa5f7>



U.S. Department of Transportation
Federal Highway Administration