



# 2018 Bond Transportation Infrastructure

Mobility Committee

Austin Transportation Department  
April 17, 2018



# 2018 Bond BEATF\* Recommendations

<b>Traffic Signals and Technology</b>	<b>\$15 M</b>
<b>Vision Zero/Transportation Safety</b>	<b>\$15 M</b>
<b>Street Reconstruction</b>	<b>\$75 M</b>
<b>Sidewalk Rehabilitation</b>	<b>\$20 M</b>
<b>Bridges, Culverts and Structures</b>	<b>\$54 M</b>
<b>Neighborhood Partnering Program</b>	<b><u>\$1 M</u></b>
<b>TOTALS</b>	<b>\$180 M</b>

\* Bond Election Advisory Task Force

# How would funding from the 2016 Mobility Bond affect funding for the 2018 Bond?

(in millions)

<u>Infrastructure</u>	<u>Identified Need</u>	2018 Bond Program Request			<u>2016 Mobility Bond</u>
		<u>2018 ATD/PW Request</u>	<u>2018 Staff Starting Point</u>	<u>BEATF</u>	
Roadway (Mobility/new capacity)					
Regional	\$5,000	\$0	\$0	\$0	\$101
Local (includes 2016 Corridors)	\$2,500	\$108	\$0	\$0	\$482
Sidewalks New	\$1,600	\$0	\$0	\$0	\$37.5
Urban Trails	\$1,600	\$61	\$0	\$0	\$26
Bicycle Improvements	\$125	\$35	\$0	\$0	\$20
Safe Routes to School	Developing	\$0	\$0	\$0	\$27.5
Roadway (Capital Renewal)					
Bridges	\$160	\$131	\$54	\$54	\$1
Street Reconstruction	\$777	\$388	\$75	\$75	\$0
Sidewalk Rehab/Replacement	\$330	\$45	\$20	\$20	\$0
Studies/Prelim Engr Reports	NA	\$0	\$0	\$0	\$10
Neighboring Partnering Program	\$15	\$1	\$1	\$1	\$0
ITS Projects – Traffic Signals/ATMS	\$71	\$37	\$20	\$15	\$0
Vision Zero/Transportation Safety	<u>\$160</u>	<u>\$35</u>	<u>\$20</u>	<u>\$15</u>	<u>\$15</u>
TOTALS	\$12,338	\$841	\$190	\$180	\$720

# How would funding from the CAMPO Call for Projects affect funding for the 2018 Bond?

(in millions)

<u>Infrastructure</u>	<u>Identified Need</u>	2018 Bond Program Request			CAMPO	
		<u>2018 ATD/PW Request</u>	<u>2018 Staff Starting Point</u>	<u>BEATF</u>	<u>Local Match</u>	<u>Grant</u>
<b>Roadway (Mobility/new capacity)</b>						
Regional	\$5,000	\$0	\$0	\$0	\$0	\$0
Local (includes 2016 Corridors)	\$2,500	\$108	\$0	\$0	\$40	\$58
Sidewalks New	\$1,600	\$0	\$0	\$0	\$0	\$0
Urban Trails	\$1,600	\$61	\$0	\$0	\$5.4	\$4.9
Bicycle Improvements	\$125	\$35	\$0	\$0	\$0	\$0
Safe Routes to School	Developing	\$0	\$0	\$0	\$0	\$0
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Sidewalk Rehab/Replacement	\$330	\$45	\$20	\$20	\$0	\$0
<b>Studies/Prelim Engr Reports</b>	NA	\$0	\$0	\$0	\$0.24	\$0.96
<b>Neighboring Partnering Program</b>	\$15	\$1	\$1	\$1	\$0	\$0
<b>ITS Projects – Traffic Signals/ATMS</b>	\$71	\$37	\$20	\$15	\$4.28	\$17.02
<b>Vision Zero/Transportation Safety</b>	\$160	\$35	\$20	\$15	\$0.5	\$1.1
<b>TOTALS</b>	<b>\$12,338</b>	<b>\$841</b>	<b>\$190</b>	<b>\$180</b>	<b>\$50</b>	<b>\$81</b>



# Needs and Funding Sources

(in millions)

## 2018 Bond Program Request

<u>Infrastructure</u>	<u>Identified Need</u>	<u>2018 ATD/PW Request</u>	<u>2018 Staff Starting Point</u>	<u>BEATF*</u>	<u>2016 Mobility Bond</u>	<u>CAMPO</u>	
						<u>Local Match</u>	<u>Grant</u>
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<b>TOTALS</b>	<b>\$12,338</b>	<b>\$841</b>	<b>\$190</b>	<b>\$180</b>	<b>\$720</b>	<b>\$50</b>	<b>\$81</b>

“Why would we vote to spend more money on roads when we just approved \$720 million worth of transportation bonds in 2016?”

The 2016 bond approved funds only to address capacity on certain specified “corridors.” The funding included in the BEATF’s recommendation is for critical, non-corridor transportation improvements. It, too, includes much “deferred maintenance.” There is no overlap between this transportation proposition and the 2016 corridor transportation proposition.

(Source: BEATF\* Final Report)

\* BEATF: Bond Election Advisory Task Force



# Signals and Technology



# Traffic Signals and Signal Systems



*Battery Backup Systems*



*Traffic Signal Controllers, Firmware, Conflict Monitors, Communication System*



*Traffic Signal with Flashing Yellow Arrow*



*Pedestrian Hybrid Beacon*



*School Zone Flasher*

## Proposed Funding: \$9.1million

### Outcomes:

- ✓ Provide funding for needed signal infrastructure
- ✓ Improve intersection safety and mobility
- ✓ Improve system reliability
- ✓ Expand multimodal strategies
- ✓ Cyber-security enhancements



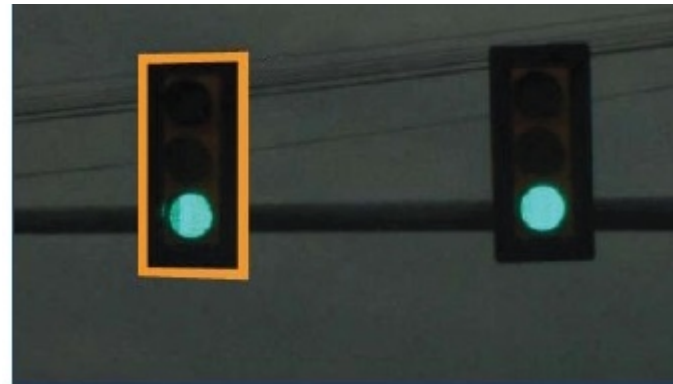
# Signal Safety Improvements



*Next Generation Emergency Vehicle Preemption*



*Accessible Pedestrian Signals*



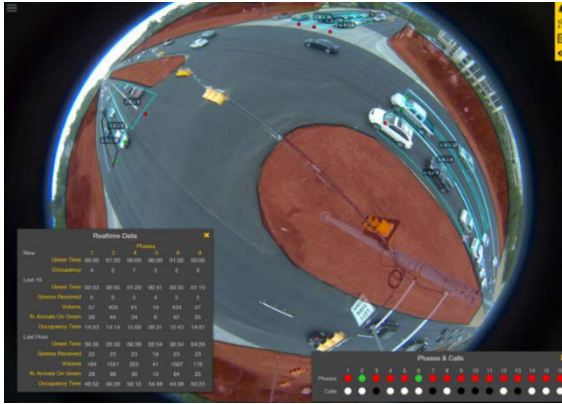
*Retroreflective Backplates*

## **Proposed Funding: \$4.3million**

### Outcomes:

- ✓ Assist visually impaired pedestrians
- ✓ Improve safety
- ✓ Reduce first responder response times
- ✓ Increase safety for first responders

# Mobility Improvements



*Aerial Detection*



*Traffic Monitoring Cameras*



*Transit Signal Priority Reporting*

## Proposed Funding: \$1.6million

### Outcomes:

- ✓ Improve reporting to assist with optimizing transit signal priority
- ✓ Increase reliability for all travelers
- ✓ Expand camera coverage to make real-time signal timing adjustments





# Vision Zero/Transportation Safety

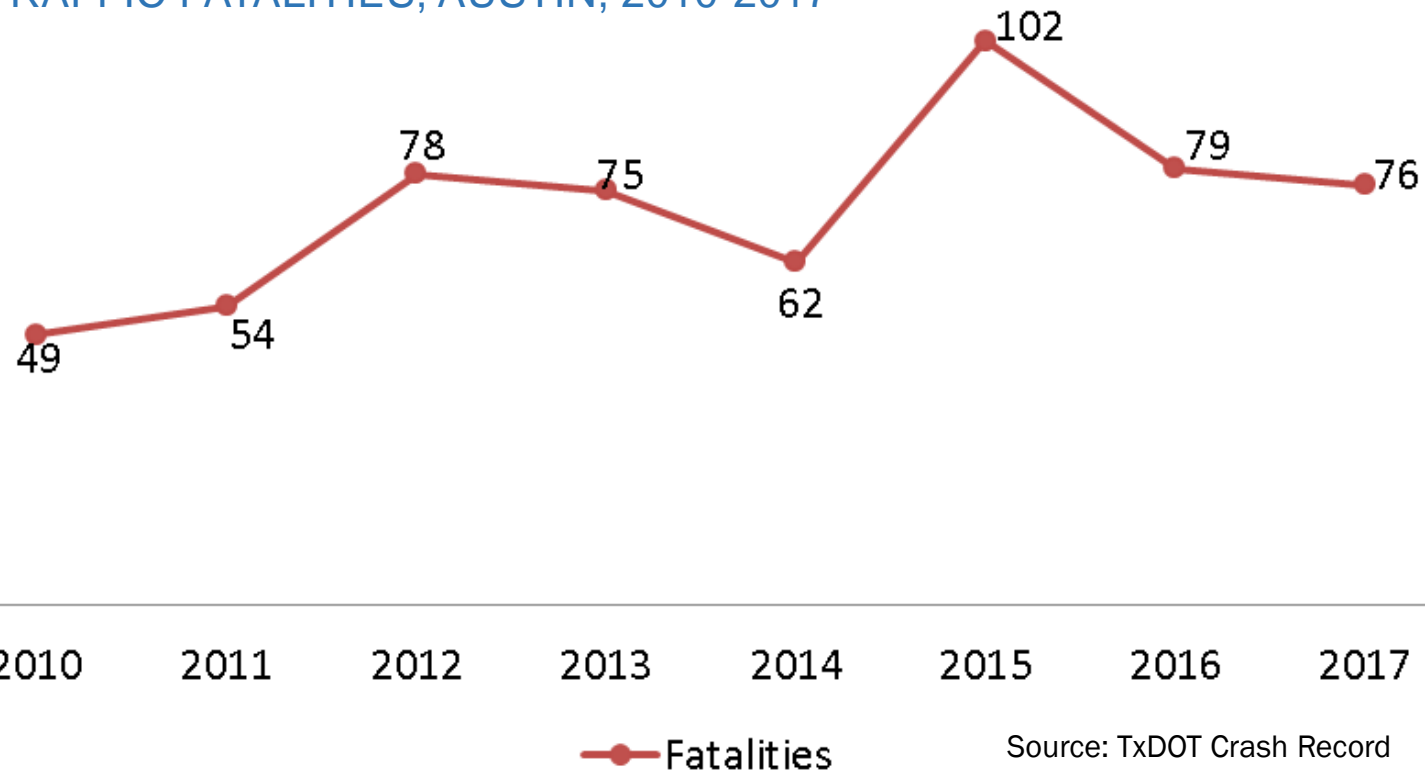


# VISION ZERO SYSTEMWIDE SAFETY PROGRAM



Implementation of fatality reduction strategies at high-crash and high-risk locations in Austin.

TRAFFIC FATALITIES, AUSTIN, 2010-2017



Source: TxDOT Crash Record  
Information System

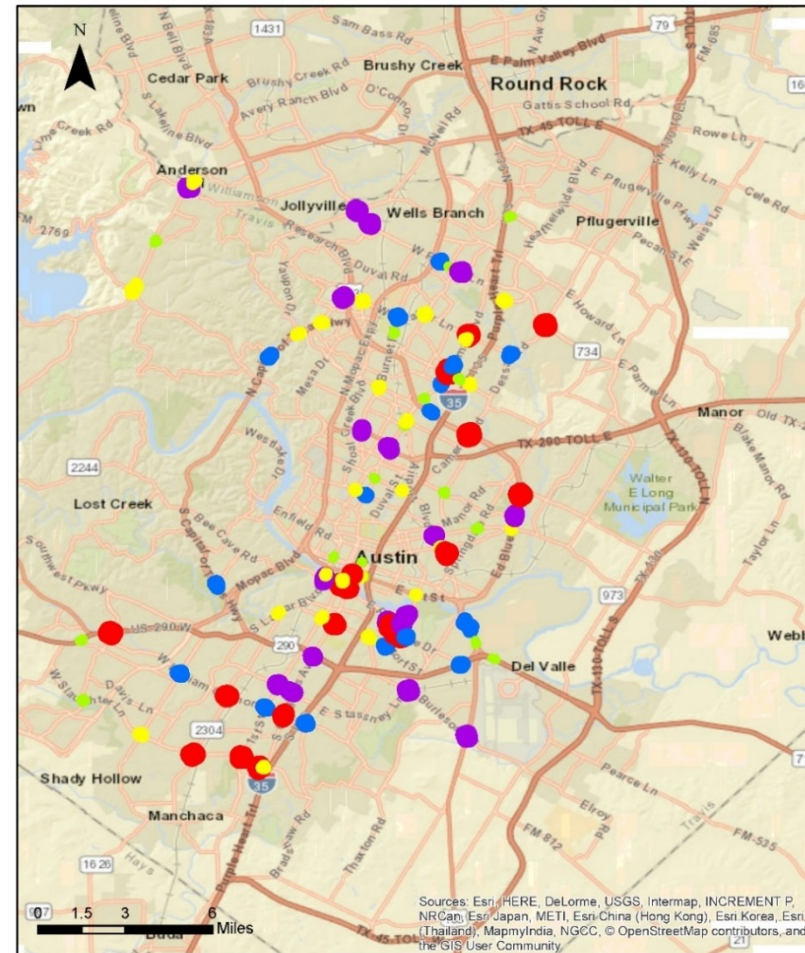
# VISION ZERO SYSTEMWIDE SAFETY PROGRAM



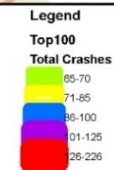
## Major Intersection Safety Projects – \$11 million

### Typical Improvements:

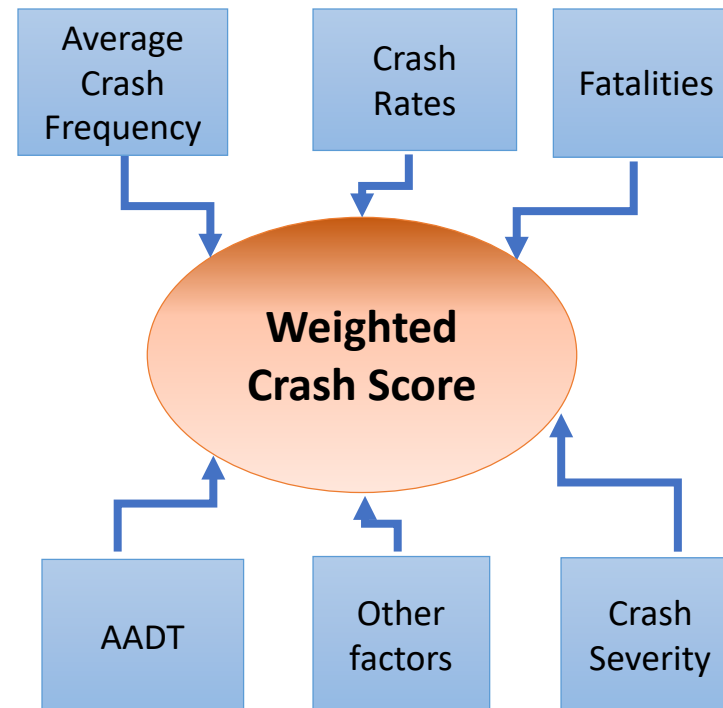
- Intersection Reconfiguration or Reconstruction
- Raised Medians
- Traffic/Pedestrian Signals
- Bicycle and Pedestrian Improvements



Top 100 High Crash Intersections  
(2012-2016)



## How we identify top crash intersections



**VISION ZERO SYSTEMWIDE SAFETY PROGRAM**  
**Major Intersection Safety Projects**





## Early results from Intersection Safety projects

### Average Annual Crashes

	Before	After	Change
N. Lamar Blvd. & Parmer Ln.	33	19	43% ↓
N. Lamar Blvd. between Rutland Dr. and W. Rundberg Ln.	54	42	22% ↓
US 183 & Cameron Road	9	4	57% ↓
I-35 and MLK Jr. Blvd.	33	13	61% ↓

Source: TxDOT Crash Record Information System, 2012-2017

## VISION ZERO SYSTEMWIDE SAFETY PROGRAM

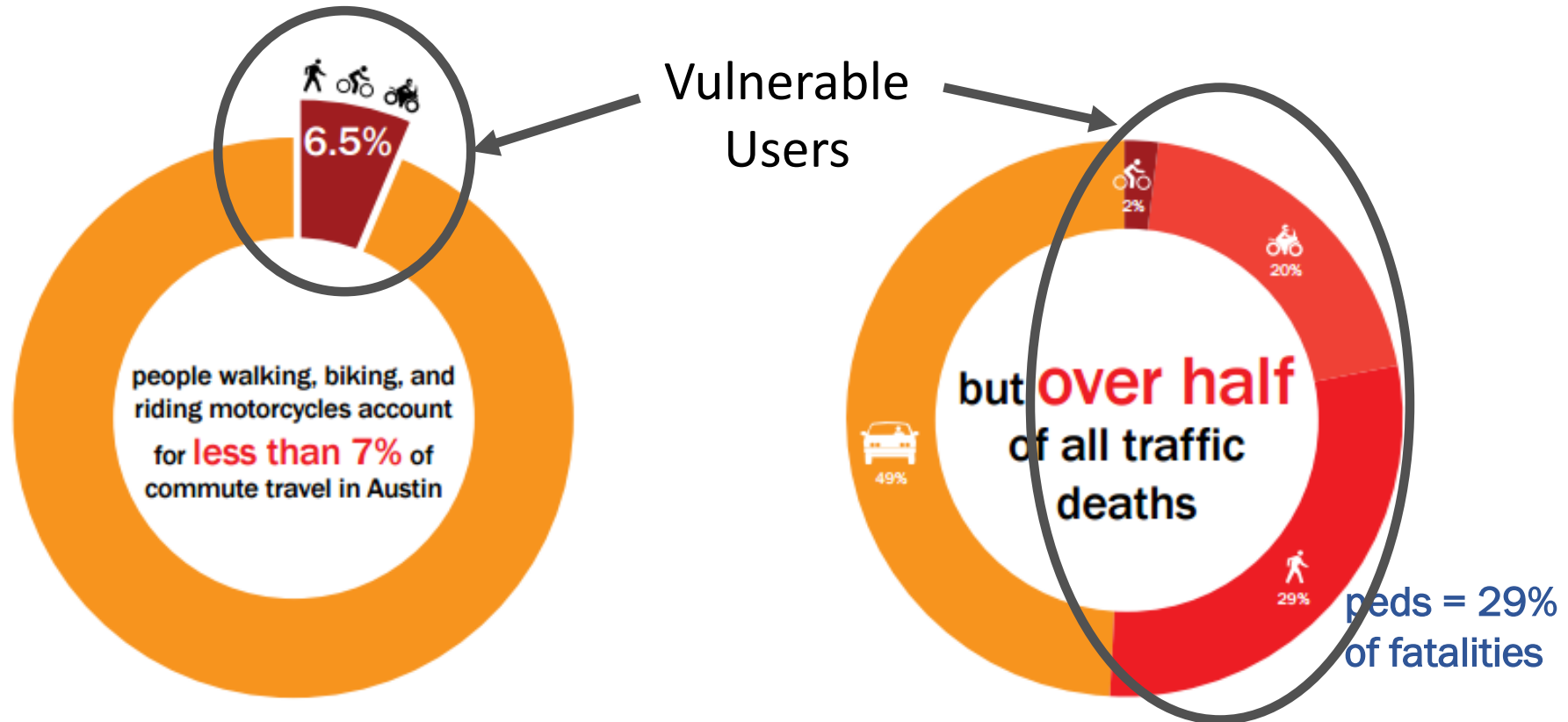
### Major Intersection Safety Projects

# VISION ZERO SYSTEMWIDE SAFETY PROGRAM

## Pedestrian Safety Improvements - \$3.5 million



### Why we focus on vulnerable users



Source: American Community Survey Journey to Work Data (2013 5-year aggregate) and City of Austin Traffic Safety Data.

# VISION ZERO SYSTEMWIDE SAFETY PROGRAM

## Pedestrian Safety Improvements



Flashing Beacons



Pedestrian Safety Lighting



Refuge Islands



Special Event Safety and Security Infrastructure



Curb Extensions



Raised Crosswalks



# VISION ZERO SYSTEMWIDE SAFETY PROGRAM

## Speed Management - **\$0.0\***



### Tools to Manage Speed

- Original staff recommendation requested \$0.5 million; BEATF recommended \$0.5 million
- Local Area Traffic Management (LATM; speed mitigation program) is being reevaluated

**\* As mentioned at 4/10 Council briefing on bonds, staff anticipates bringing back recommended updates to the Task Force recommendation in May 2018; likely to include eliminating speed mitigation funding in the 2018 Bond**

# CAMPO Funding

- Some current 2018 Bond and CAMPO recommendations overlap
- If CAMPO funds awarded, 2018 Bond funds would:
  - Fund a portion of the CAMPO local match
  - Help address remaining unmet need
- CAMPO's Transportation Policy Board votes May 7, 2018

Austin Transportation Department Items	Recommended In	
	2018 Bond	CAMPO Call
New Signal Installations	✓	
Communications System	✓	✓
Modifications and Upgrades	✓	
Controllers	✓	
Firmware	✓	
Conflict Monitors	✓	
Batteries and Signal Cabinets	✓	
Emergency Vehicle Preemption	✓	✓
Power Source Modernization	✓	
Accessible Pedestrian Signals	✓	
Retroreflective Backplates	✓	
Aerial Detection	✓	✓
Cameras	✓	✓
Transit Signal Priority Reporting	✓	✓
Major Intersection Safety Projects	✓	
Pedestrian Safety Improvements	✓	✓
Speed Mitigation*	✓	





Street Reconstruction



## Street Rehabilitation

Improves Structure

Improves Rideability

Restores Smoothness

## Street Reconstruction

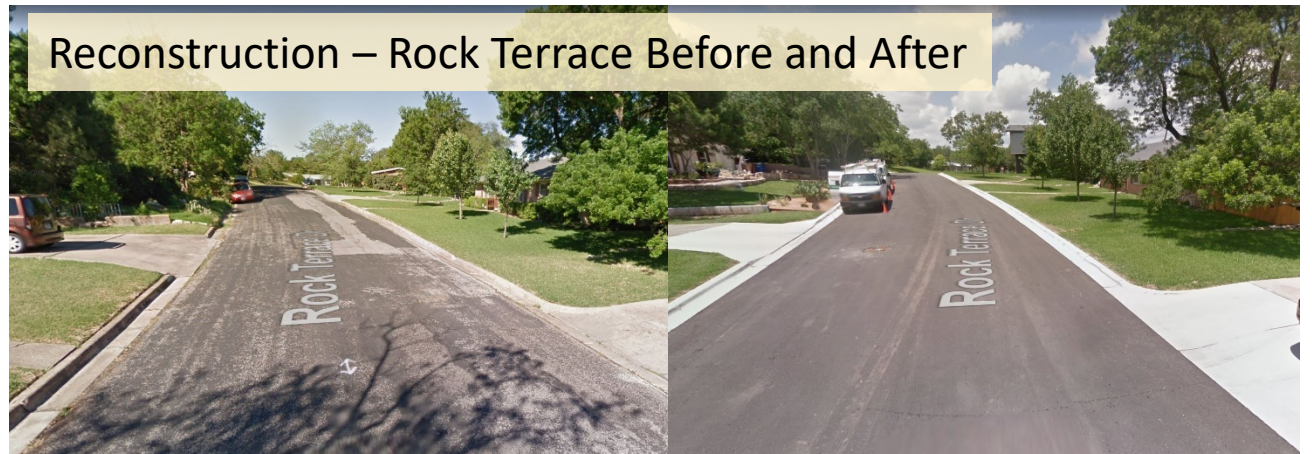
Renews Pavement

Improves to Standard

Rehabilitation



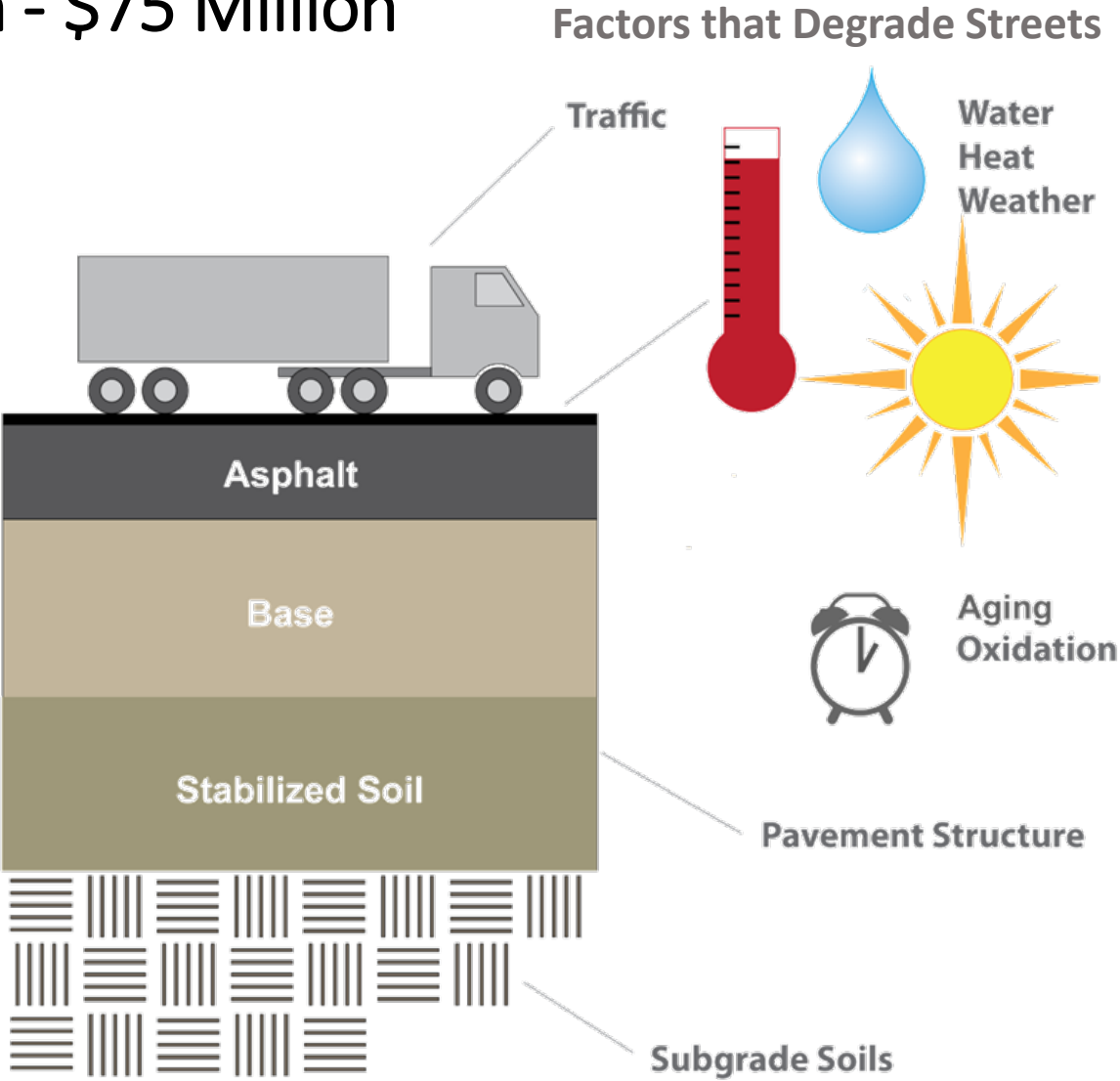
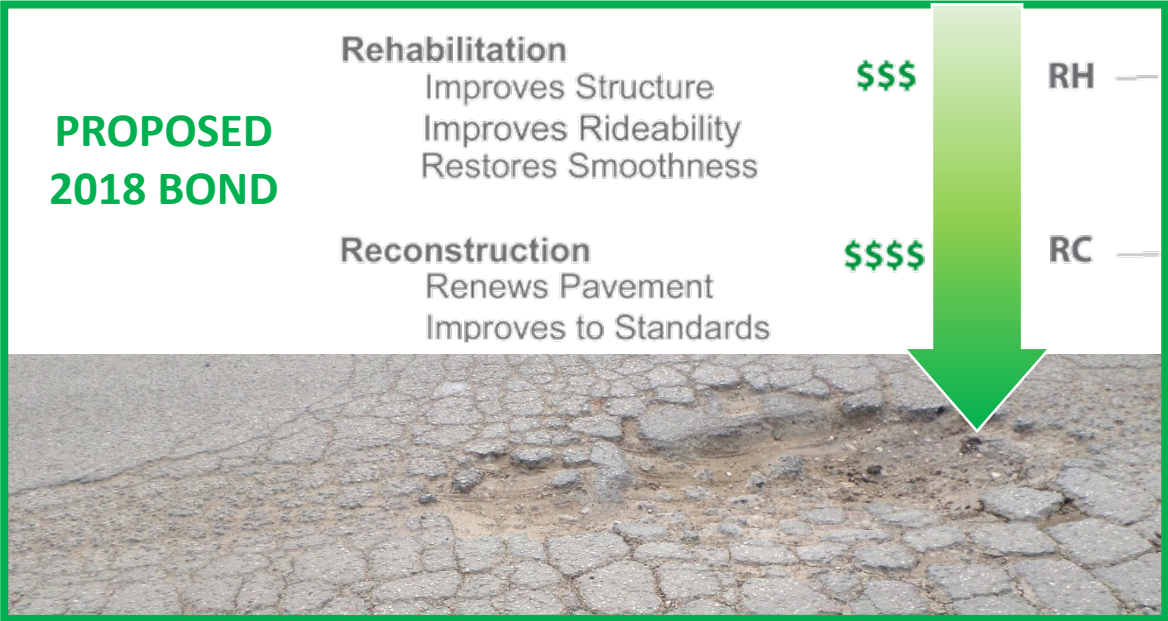
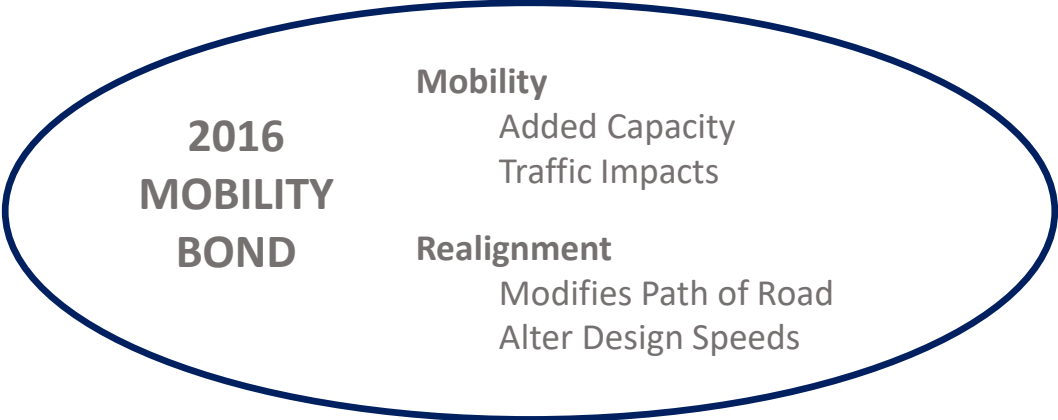
Reconstruction – Rock Terrace Before and After



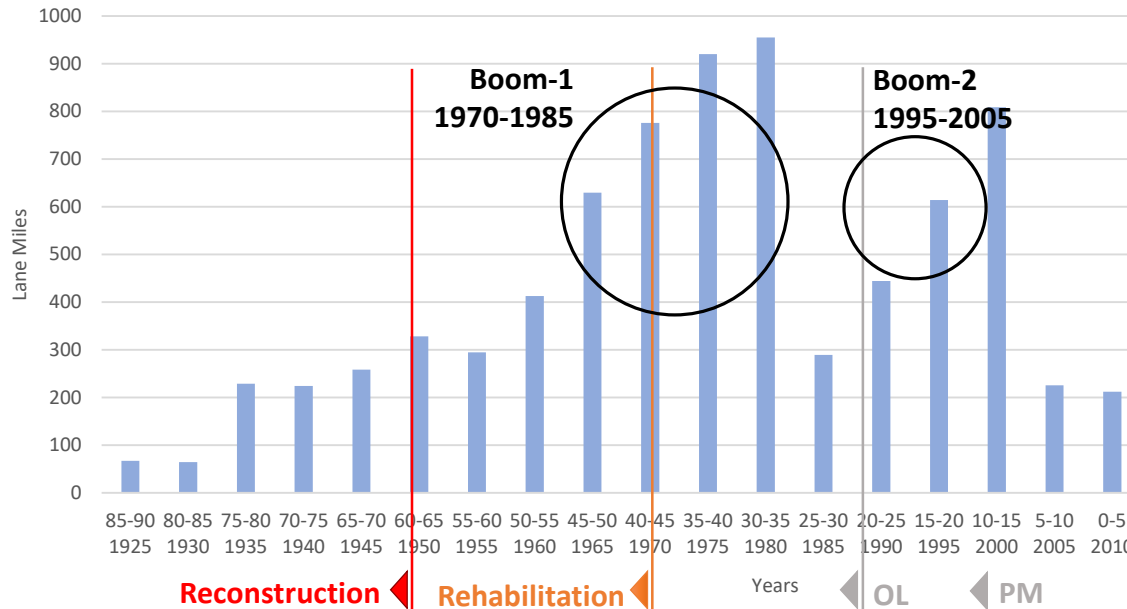
Reconstruction – Hanover Before and After



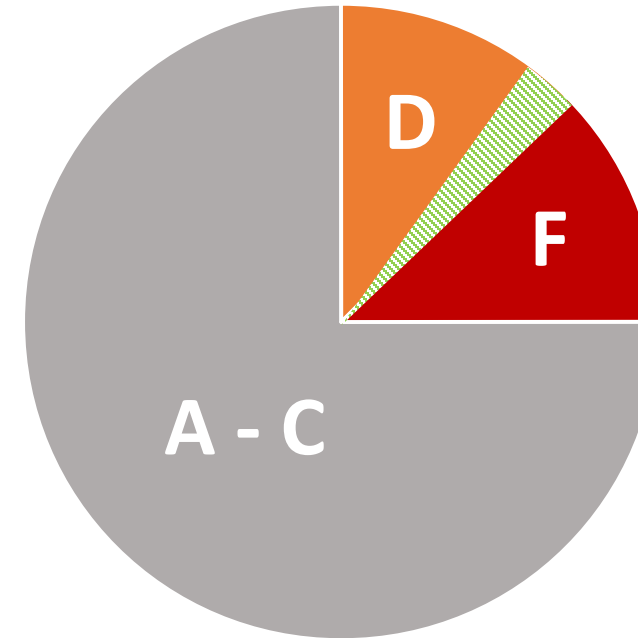
# Street Reconstruction & Rehabilitation - \$75 Million



## Ages of Streets



## \$4B Total Street Value



**RECOMMENDED**  
**\$75M**  
 AFFECTS  
 3% OF TOTAL  
 NETWORK  
 - OR -  
 ROUGHLY 13%  
 OF D AND F  
 RATED STREETS

## Street Funding Gap

IDEAL RECONSTRUCTION  
 TIMEFRAME BASED ON THE  
 TYPICAL STREET LIFECYCLE

**80 Years**

(100 lane miles/year)

**VS**

TIMEFRAME WITH CURRENT  
 FUNDING LEVELS FOR STREET  
 RECONSTRUCTION

**300 Years**

(24 lane miles/year)

**G.O. Bonds are the only funding  
 source for street rehabilitation &  
 reconstruction**



# Activities and Funding Sources for Streets

## Operations & Maintenance Annual Budget

### Routine Maintenance & Repairs

- Performed on an as-needed basis throughout the life of the asset
- Unplanned maintenance & repairs

### Preventative Maintenance

- Done on a regular, planned and scheduled basis – monthly, annually, every 5 or 10 years, etc.
- Selection of specific maintenance treatments and types are informed by condition, deterioration, and distresses apparent
- A part of the overall life cycle of the asset and necessary to reach its intended design life

## Capital Funding (G.O. Bonds)

### Rehabilitation

- Rehabilitation is based on the condition and triggered when PM is no longer very effective to restore good, serviceable condition
- Extends life by roughly one-third the life of a newly replaced or reconstructed asset
- Allows deferring full reconstruction or replacement by the design life period of the rehabilitation

### Reconstruction

- End of life cycle and beginning of new
- Done on an as-needed basis to ensure the asset stays in good condition and reaches its expected life cycle



# Approximate Cost of Street Activities (CIP and O&M)

2016 Average Street Activity Costs (Pavement Only)			
Source	Strategy Type	Cost/Lane Mile	Treatment
Capital	Reconstruction	\$1,250,000/LM	Reconstruction – Downtown
		\$750,000/LM	Reconstruction - Arterial
		\$500,000/LM	Reconstruction - Collector
		\$400,000/LM	Reconstruction - Residential
	Rehabilitation	\$250,000/LM	Major Rehabilitation
		\$150,000/LM	Minor Rehabilitation
O&M	Maintenance	\$90,000/LM	Structural Overlay
		\$75,000/LM	Overlay
		\$50,000/LM	Thin Overlay
		\$33,000/LM	Cape Seal
		\$25,000/LM	Microsurfacing
		\$20,000/LM	Slurry Seal
		\$18,000/LM	Seal Coat
		\$6,000/LM	Fog Seal
		\$1,500/LM	Crack Seal

Additional Costs for Street CIP projects include:

Reconstruction:

- Drainage (80% of street cost)
- Sidewalks, Curb Ramps, Bikeways, Curb & Gutter (20% of street cost)
- Project Delivery (25% of total project cost)
- Contingency (7% of total project costs)

Rehabilitation:

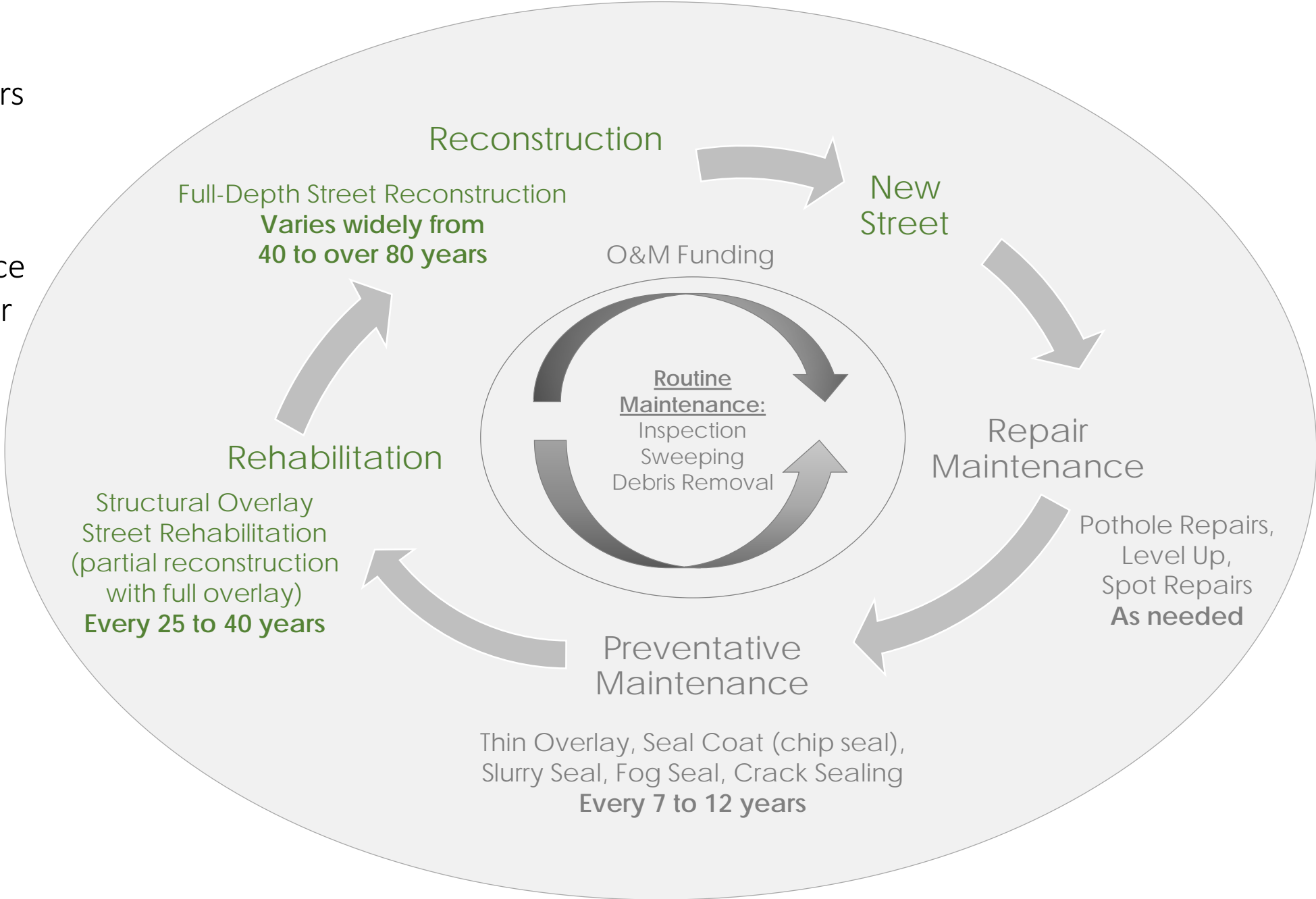
- Sidewalks, Curb Ramps, Bikeways, Curb & Gutter (20% of street cost)
- Project Delivery (25% of total project cost)
- Contingency (7% of total project costs)

# Street Life Cycle

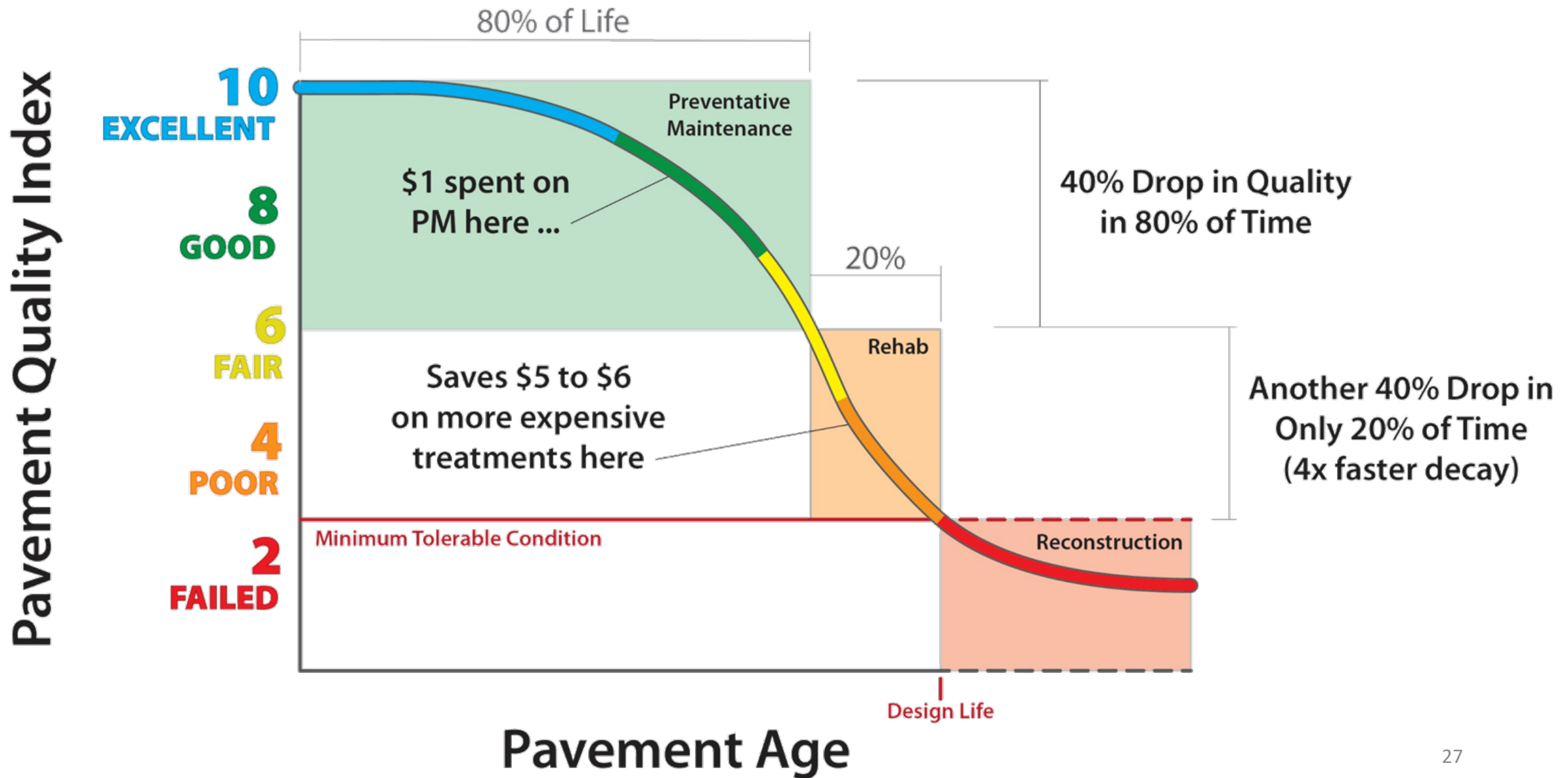
Varies from 40 to 80 years depending upon pavement design, truck and bus traffic, preventative maintenance cycles, soils, and weather

**Legend**  
Activities funded by G.O. Bonds (Capital Funding)

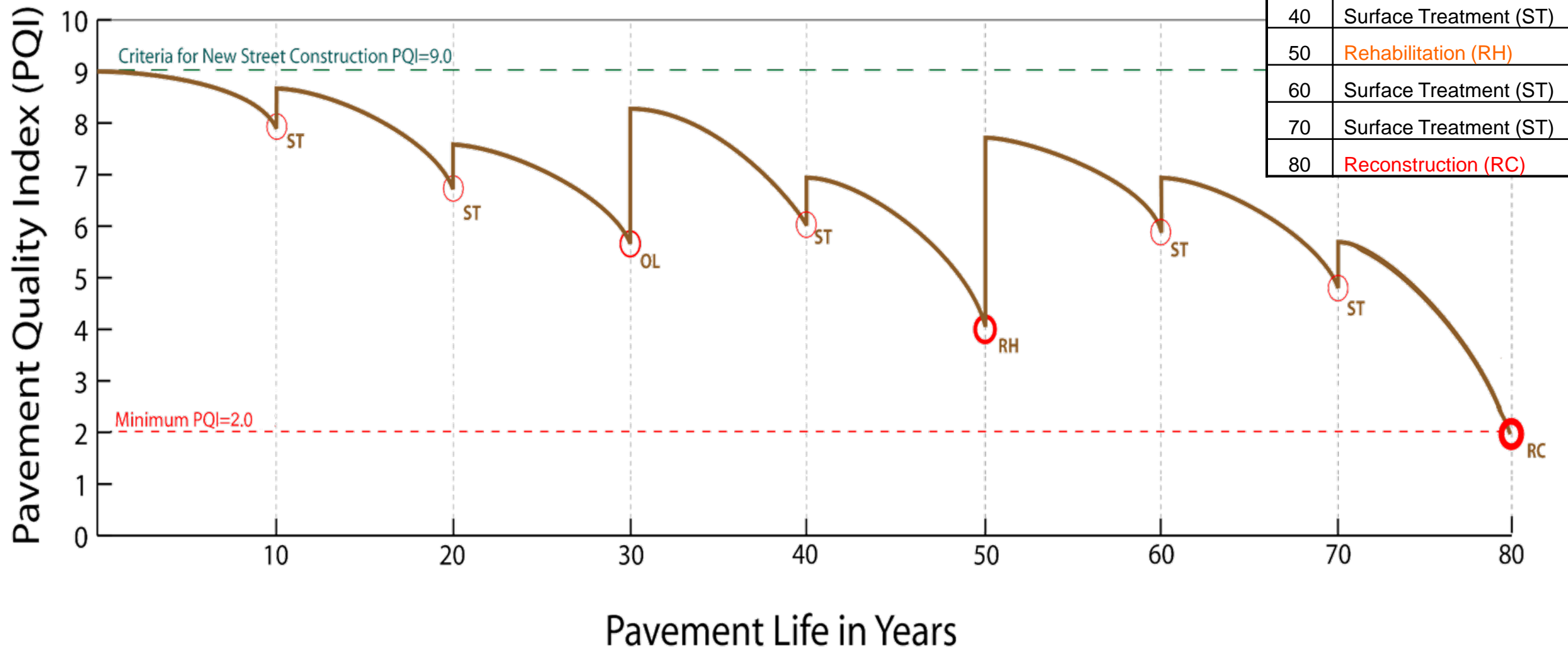
Activities funded by Annual Operations & Maintenance (O&M) Budget



# Cost Savings with Preventative Maintenance



# Typical Pavement Life Cycle with Preventative Maintenance

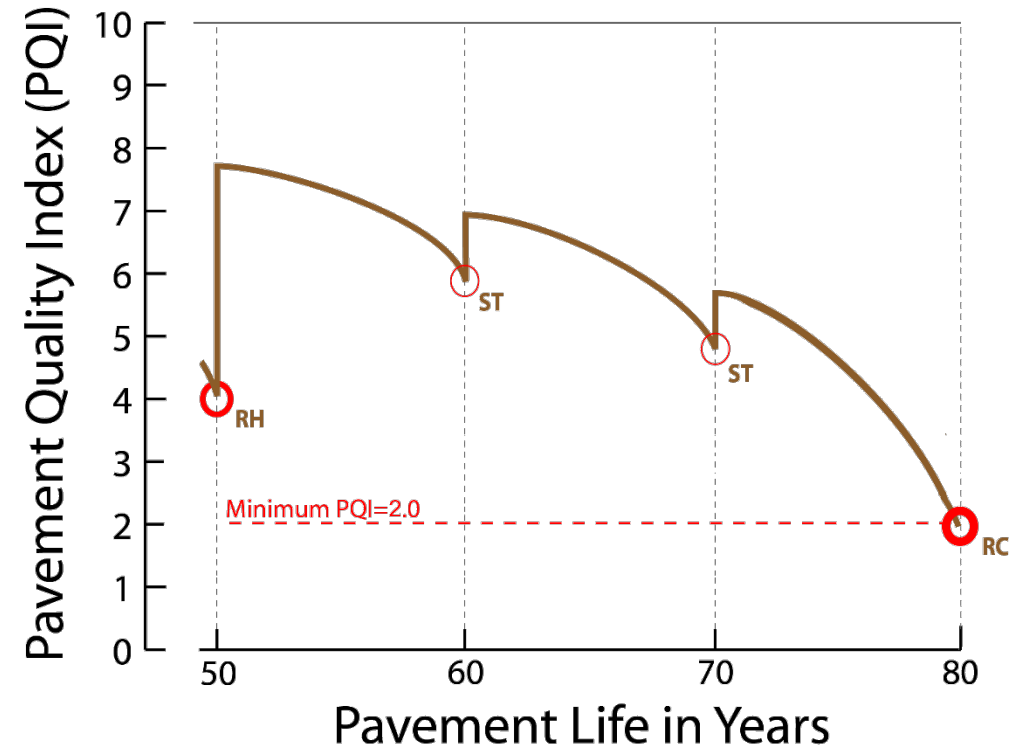




# Pavement Management Information System (PMIS) - Street Prioritization

Methodology used by Pavement Management Information System (PMIS) to Select and Prioritize Street Maintenance and Capital Projects

- Initialize Multi-Constraint Analysis
  - Establish Budgets
  - Set Performance Goals
- Select Benefit Calculation
  - Maximize Distress or Roughness Index
- Select Treatment Candidates based on Condition Data
  - PMIS uses Decision Trees to select the correct treatments
  - Calculates a Benefit value for each treatment
- Perform Optimization Analysis
  - PMIS searches for the best set of candidate maintenance and reconstruction projects to maximize the total Benefit within budget and performance constraints



# PMIS - Street Prioritization for Rehabilitation & Reconstruction

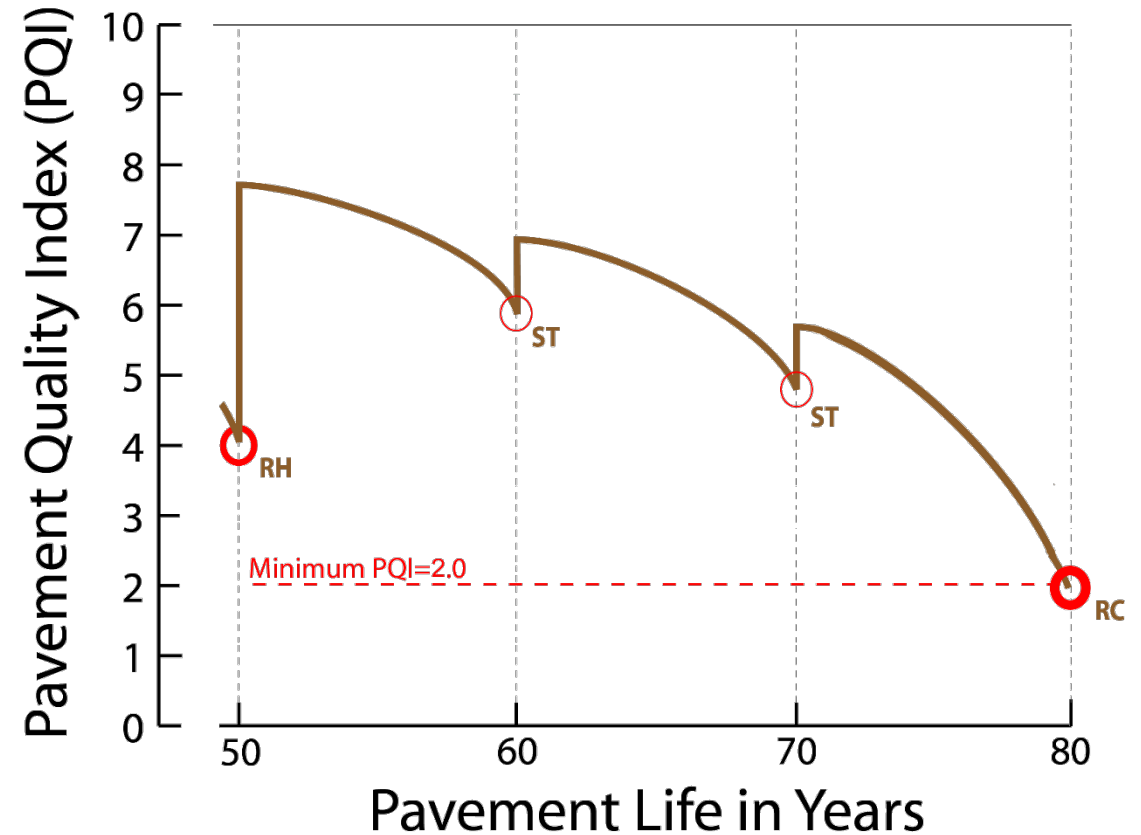
Methodology used by Pavement Management Information System (PMIS) to Select and Prioritize Street Maintenance and Capital Projects

The two most critical factors for selecting street reconstruction projects are

- 1) Extensive Street Roughness
- 2) Severe Damage and Distress

No maintenance strategy other than complete reconstruction will be practical or cost-effective after the PQI deteriorates down to the minimum tolerable level.

Note: Additional coordination efforts with utilities & other work takes place to maximize dig-once coordination opportunities & minimize disruptions to the community.







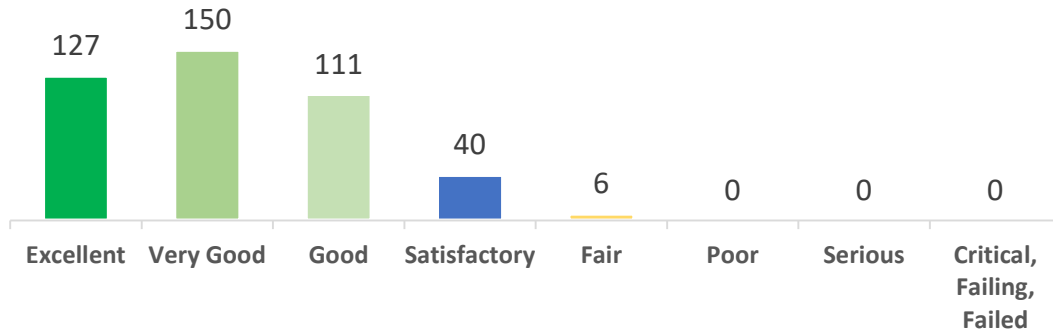
# Bridges





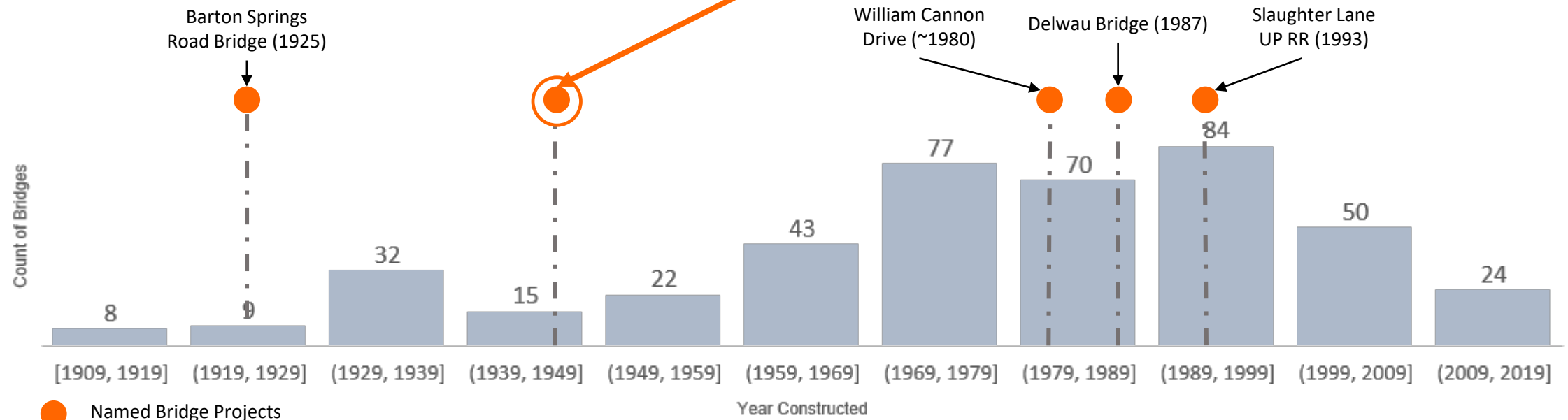
# Bridges & Structures - \$54 Million

Conditions of Austin's Bridges



## Redbud Trail Bridge (1948) - \$50 Million

- 70 year old bridge at end of design life
- Would be 6" Under Water in 100-Year Flood
- Multimodal connections are missing
- COA & City of Westlake Hills agreement for Ullrich WTP truck routes





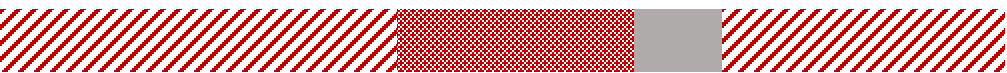
## Sidewalks

# Sidewalk Rehabilitation & Replacement - \$20 Million

## Sidewalk Project = Functional Pedestrian Route



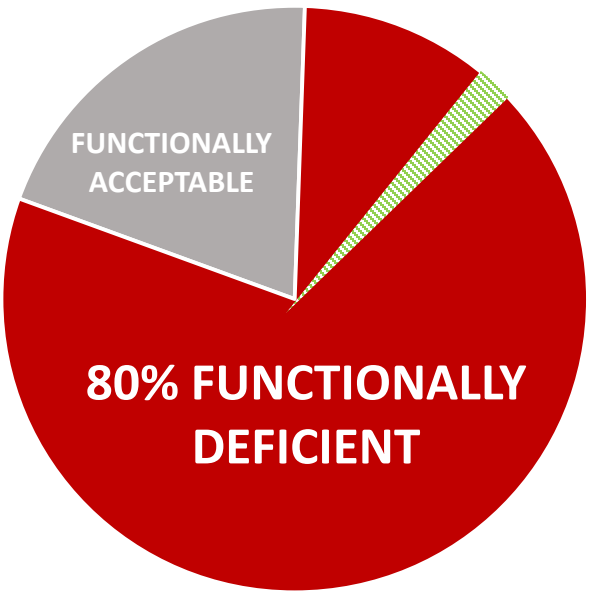
2016 Mobility Bond = **Build New** (& Rehabilitate Deficient)



2018 G.O. Bond = **Rehabilitate Deficient** (& Build New as needed)

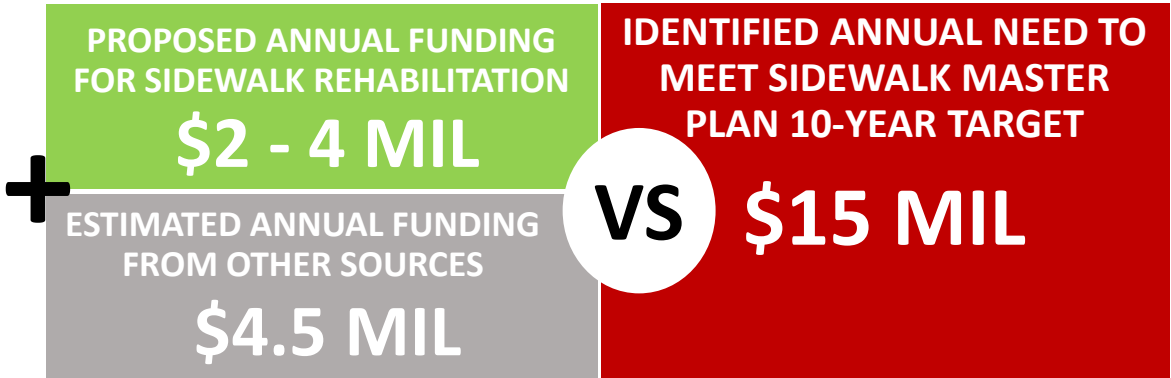


## Sidewalk Network Conditions

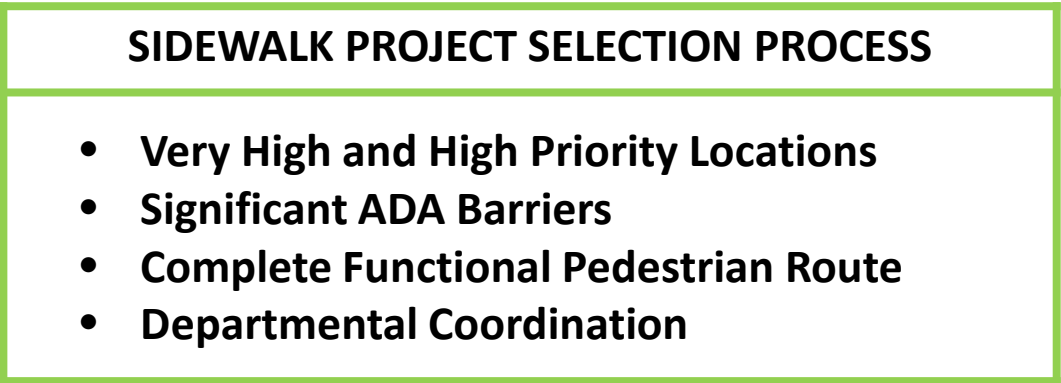


RECOMMENDED  
**\$20M**  
AFFECTS 2% OF  
FUNCTIONALLY  
DEFICIENT  
SIDEWALKS

## Annual Sidewalk Funding Gap



## Sidewalk Project Selection Process\*

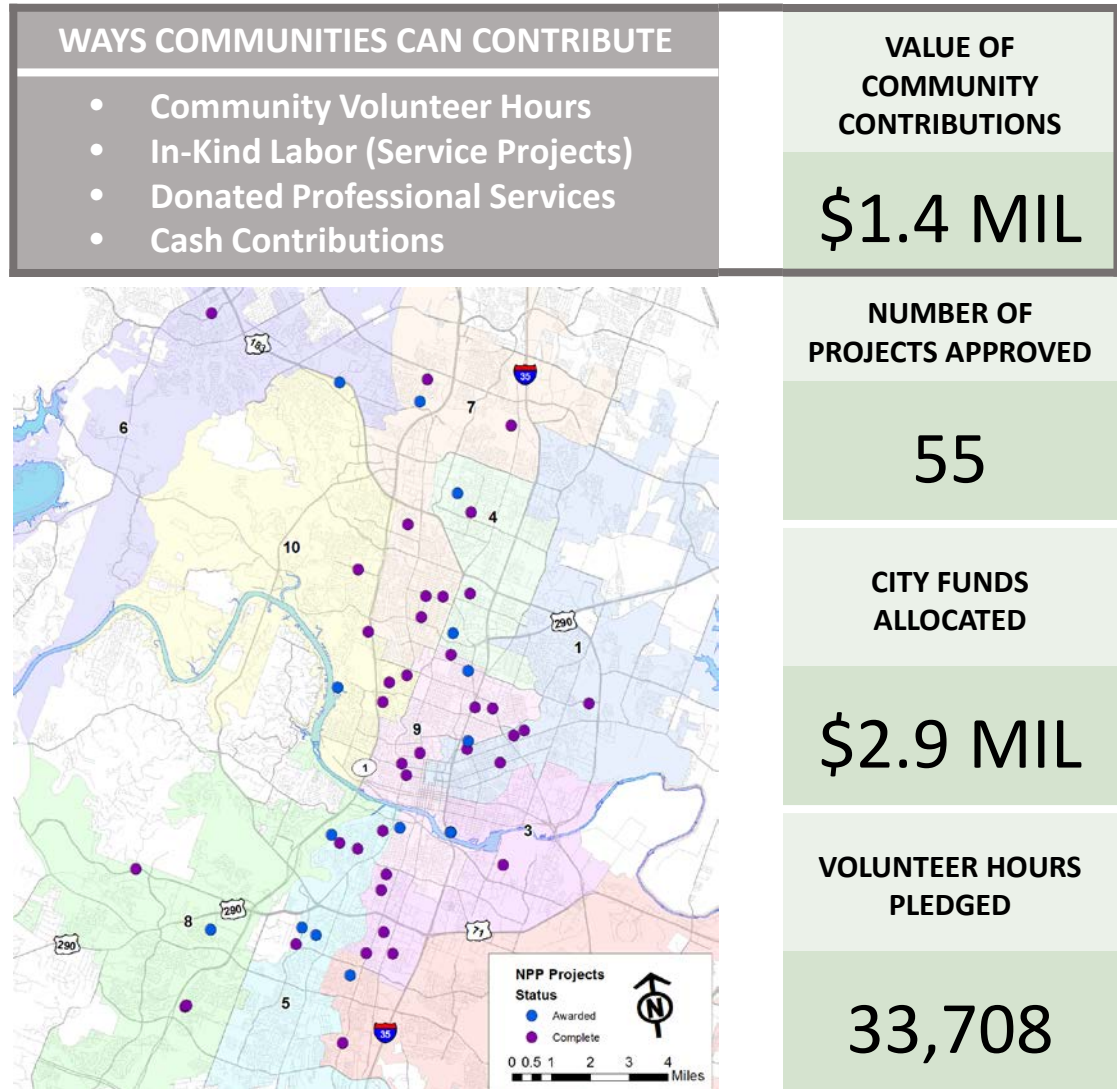






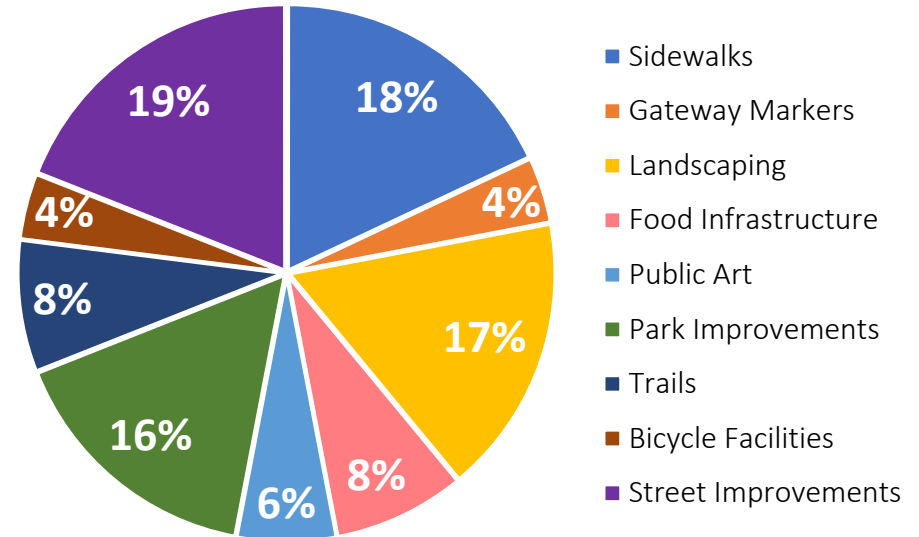
## Neighborhood Partnering

# Neighborhood Partnering Program - \$1 Million



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Projects by Type 2010-2017



NPP 2018 Bond Proposition

## RECOMMENDED \$1 MILLION

- Supplement existing program funding to execute additional projects.**
- Bond funds are only used as the City's contribution to projects.**



# Next Steps

April 2018

- April 10th - Task Force Recommendation presentation to Council
- April 17 – Mobility Committee presentation

May/June 2018

- Updated debt capacity analysis
- Update on staff recommendation
- Council deliberates on bond package
- Council public hearings

August 2018

- August 7 - Council Bond Work session
- August 9th - Council finalizes bond package, calls election
- Council public hearings

November 2018

- Bond Election – Nov. 6



A U S T I N

Questions?