



TOWN OF FAIRFAX TOWN COUNCIL MEETING

PAVEMENT MANAGEMENT PROGRAM UPDATE

MARCH 1, 2023





PRESENTATION GOALS

- Pavement 101
- Pavement management principles
- Assessment findings
- Funding needs
- Recommendations



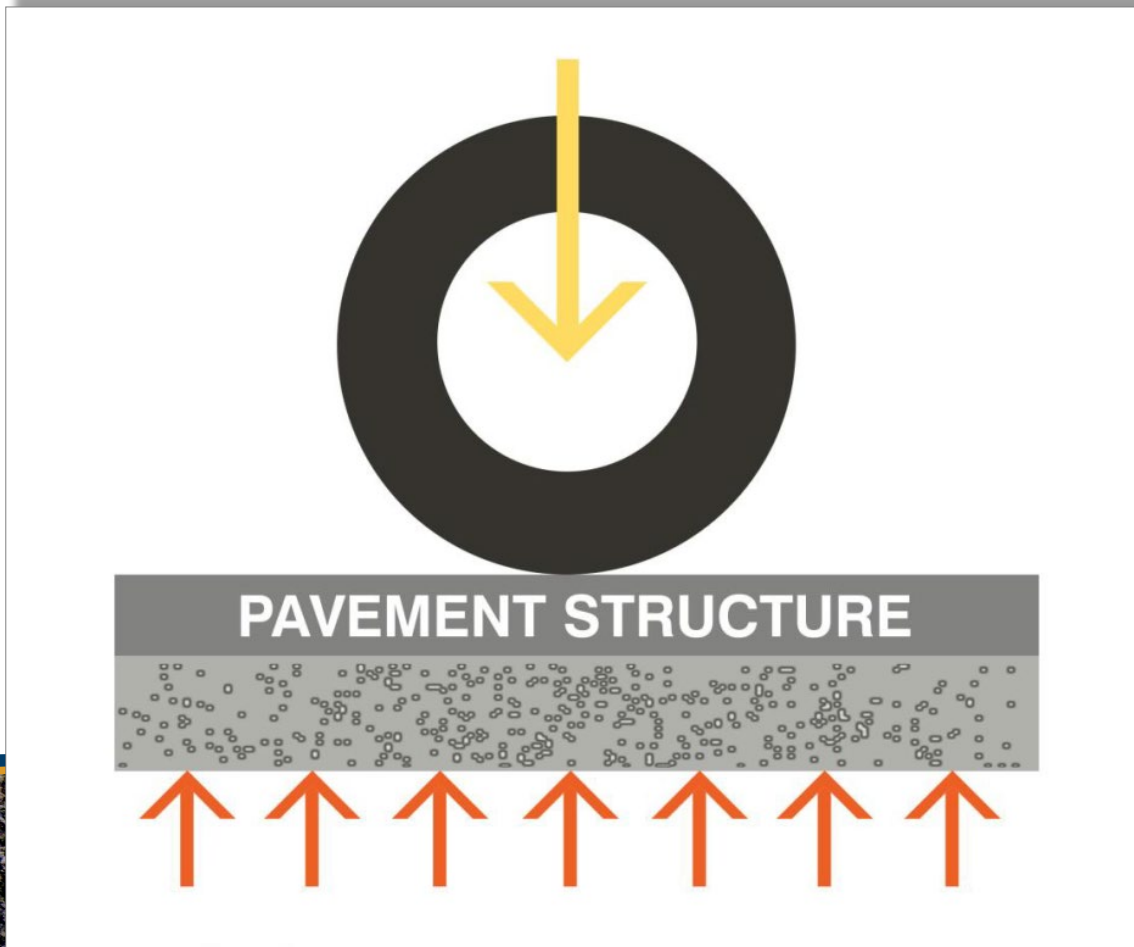


PAVEMENT 101



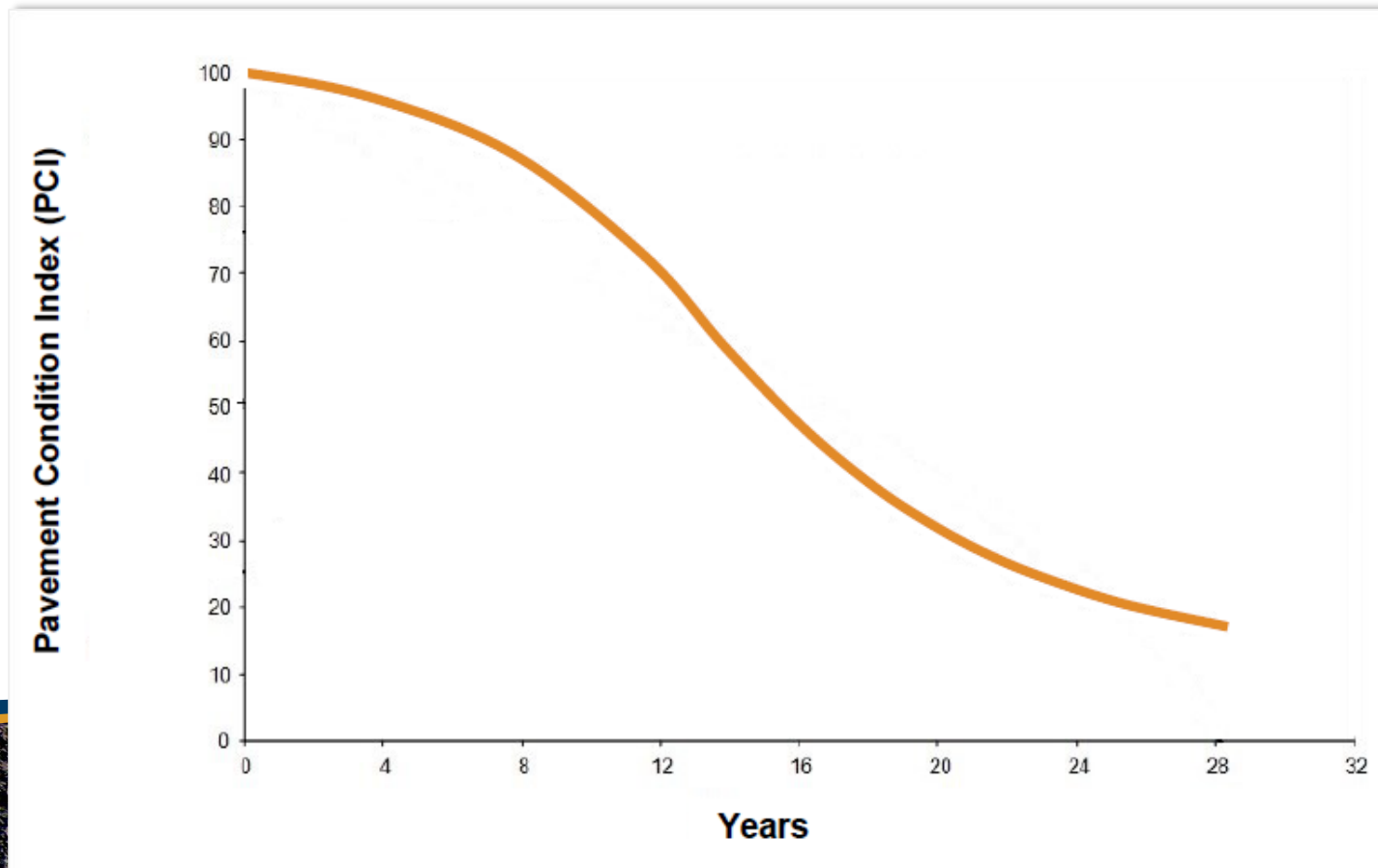


What Determines a Pavement Section?





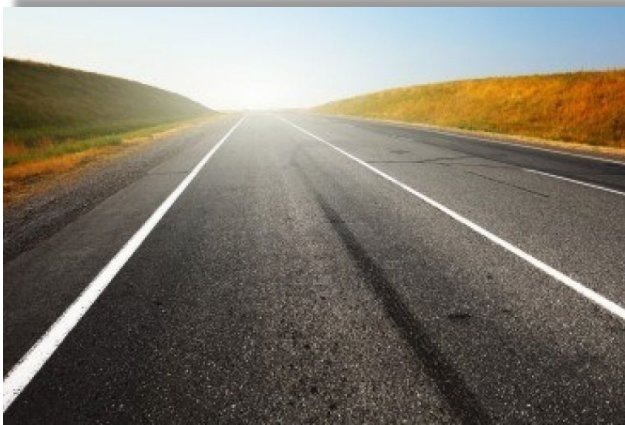
Pavement Deterioration Cycle





Pavement Deterioration

Asphalt concrete deteriorates in two ways:



Oxidizing effects of
sun and water



Fatigue from heavy
wheel loads

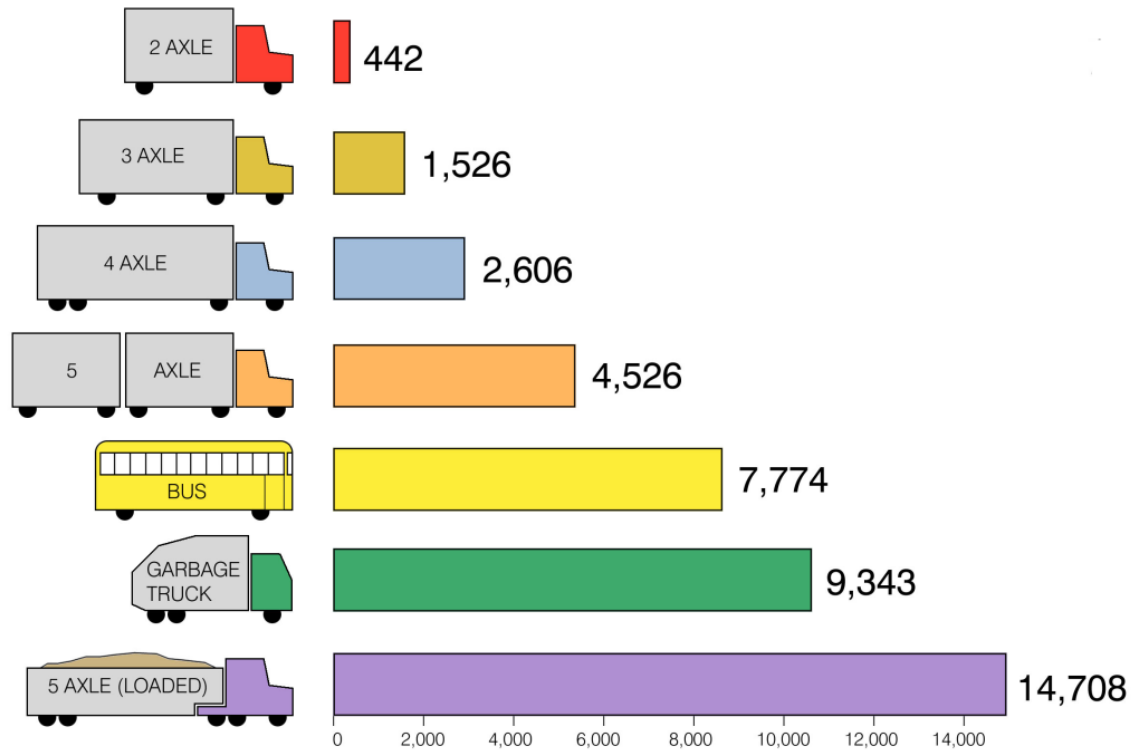


The Impact of Sun and Water





The Impact of Heavy Loads



COMPARATIVE VEHICLE PAVEMENT STRESS

(S-10 BLAZER = 1 VEHICLE UNIT)



Common Pavement Distresses



Weathering or
Raveling



Transverse or
Longitudinal
Cracking



Block
Cracking



Alligator
Cracking



What is a Pavement Management System?

- Budgeting tool
- Inventory tool
- Record of pavement conditions
- Guide to potential street candidates for repair and maintenance

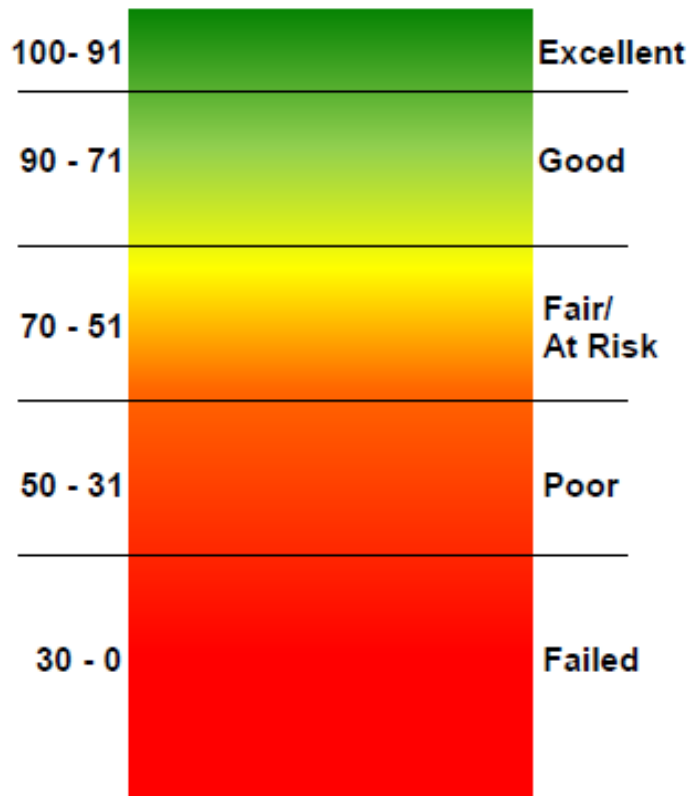


Evaluating Common Pavement Distresses

- Alligator cracking
- Block cracking
- Distortions
- Longitudinal / transverse cracking
- Patches / utility cuts
- Rutting / depressions
- Weathering / raveling



Evaluating Pavement: the PCI



100 – 91 = Excellent

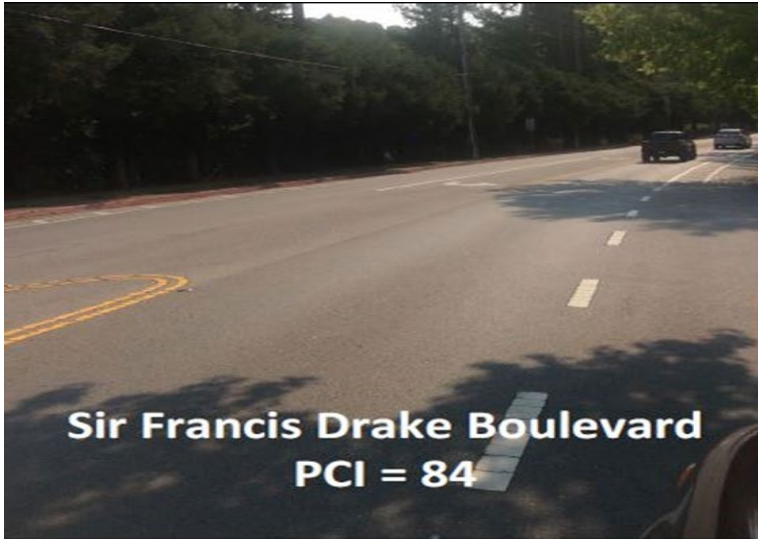
90 – 71 = Good

70 – 51 = Fair/ At Risk

50 – 31 = Poor

30 – 0 = Failed

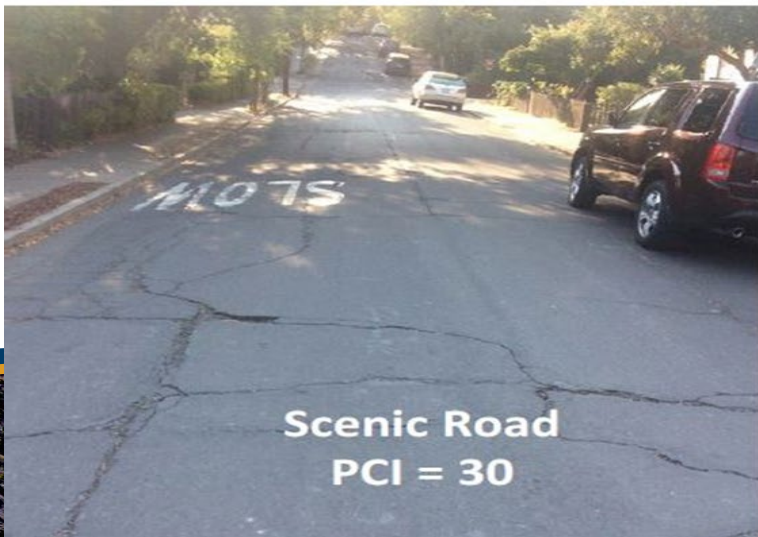
Developed by the U. S. Army Corp of Engineers during World War II and standardized by ASTM, the PCI is an objective and rational basis for determining pavement condition and establishing maintenance priorities.



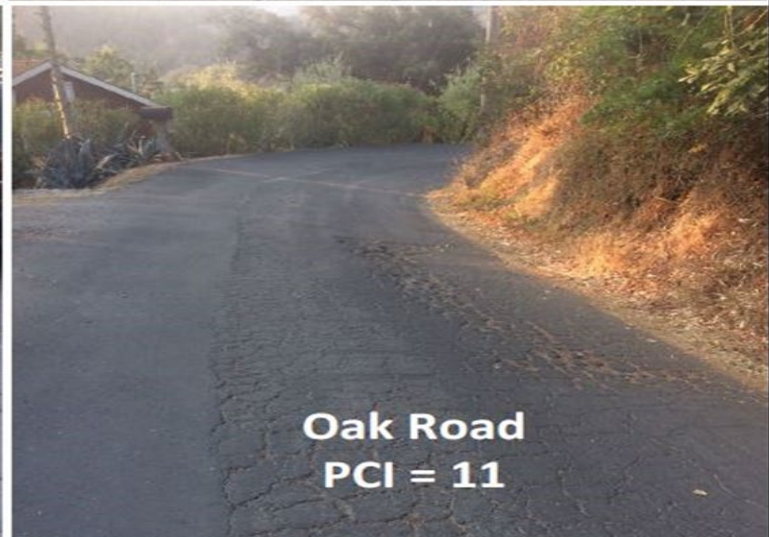
Sir Francis Drake Boulevard
PCI = 84



Pine Drive
PCI = 65



Scenic Road
PCI = 30



Oak Road
PCI = 11





PCI = ?





PAVEMENT MANAGEMENT PRINCIPLES

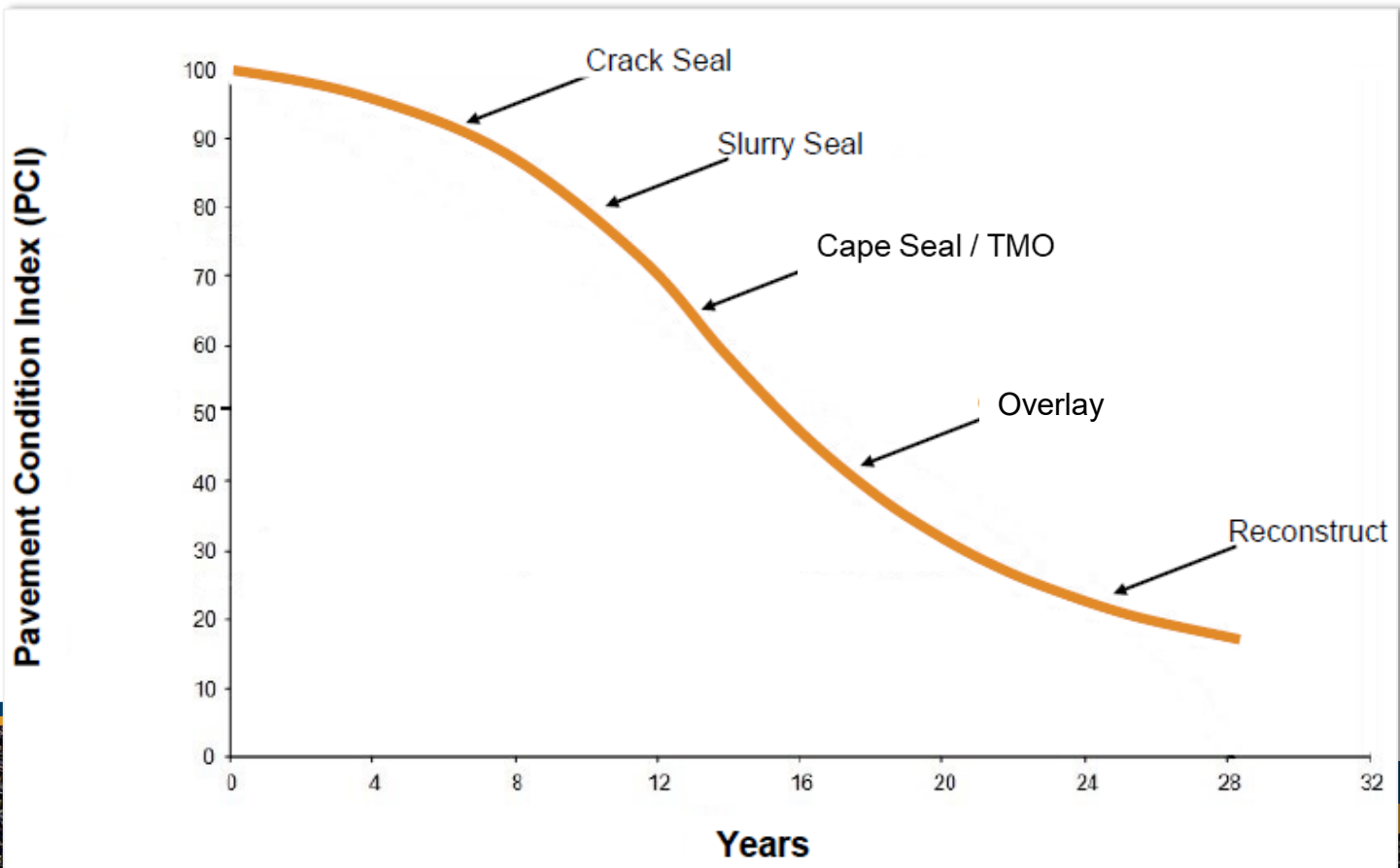




Applying the **RIGHT TREATMENT**
to the **RIGHT PAVEMENT**
at the **RIGHT TIME**
using the **RIGHT MATERIALS**



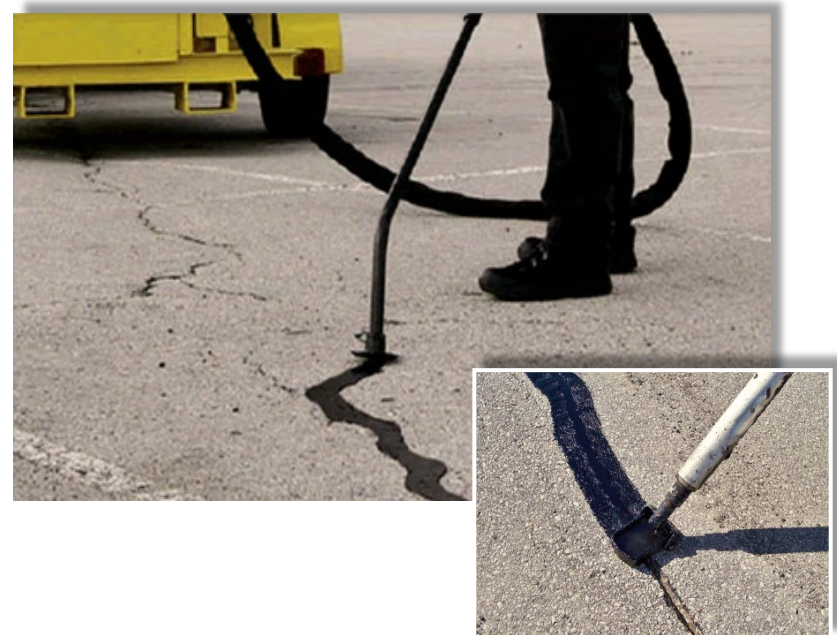
Pavement Preservation Timing





Crack Sealing Treatment

- The right treatment for block or transverse cracking.
- Inexpensive.
- Prevents water from seeping beneath the asphalt to the subgrade where structural damage occurs.





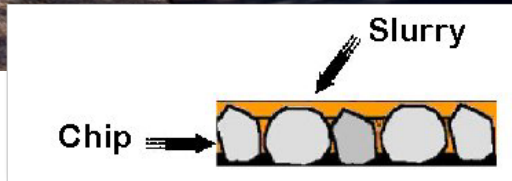
Slurry Seal Treatment



- The right treatment for raveled pavement in traffic areas with speed limits above 15 mph.
- Skid resistant.
- Fills in minor cracks, creates a uniform finish and provides a weather- and water-tight surface.



Cape Seal



- The right treatment between an overlay and a slurry seal.
- Combines a chip (aggregate) layer followed within a few weeks by a slurry seal for durability.
- Prevents water damage to the road bed and provides a new wear surface.
- Significantly extends pavement life when combined with crack sealing and surface patching.



Overlay



- The right treatment for severely deteriorated pavement.
- Overlays existing pavement with a new layer of bituminous asphalt.
- Thickness depends on existing pavement condition and traffic.
- Strengthens the overall pavement structure and improves ride.



Reconstruction



When a pavement has failed or reached the end of its service life, it requires complete removal and replacement of the existing pavement structure. Reconstruction may use new or recycled paving materials or a combination of both.



Reconstruction: Pulverization



- Grinds the existing asphalt surface and mixes it with the aggregate base.
- Strengthens the existing base and forms a stronger foundation for reconstruction.
- Improves drainage.
- Eliminates bumps, humps and rutting.



Pavement Management Strategies


- Best-First “Top Down” Management
- Worst-First “Bottom Up” Management
- Critical-Point Management



Pavement Management Strategies

Critical Point Management



 Critical-Point-Management selects streets before they deteriorate and need the next most expensive treatment.



Pavement Condition vs. Maintenance / Rehabilitation Cost



PCI Range	Treatment Category	Cost Range (per SF)
90-71	Light Maintenance	\$0.82 to \$1.17
70-51	Heavy Maintenance	\$2.57 to \$4.14
70-51	Light Rehabilitation	\$7.46 to \$8.70
50-26	Heavy Rehabilitation	\$9.65 to \$13.35
25-0	Reconstruction	\$23.83 to \$31.17



ASSESSMENT FINDINGS





Town of Fairfax System Data

- System Size
 - ✓ 27.6 centerline miles
 - ✓ 3,067,321 square feet of pavement
- System-wide average weighted PCI of 55
- Replacement value of \$48,000,000



Maintained Road System

Functional Classification	Centerline Miles	Percent of System	Average PCI
Arterial	4.8	22.6	57
Collector	10.1	35.9	54
Residential	12.7	41.5	53
Totals	27.6	100.0	54

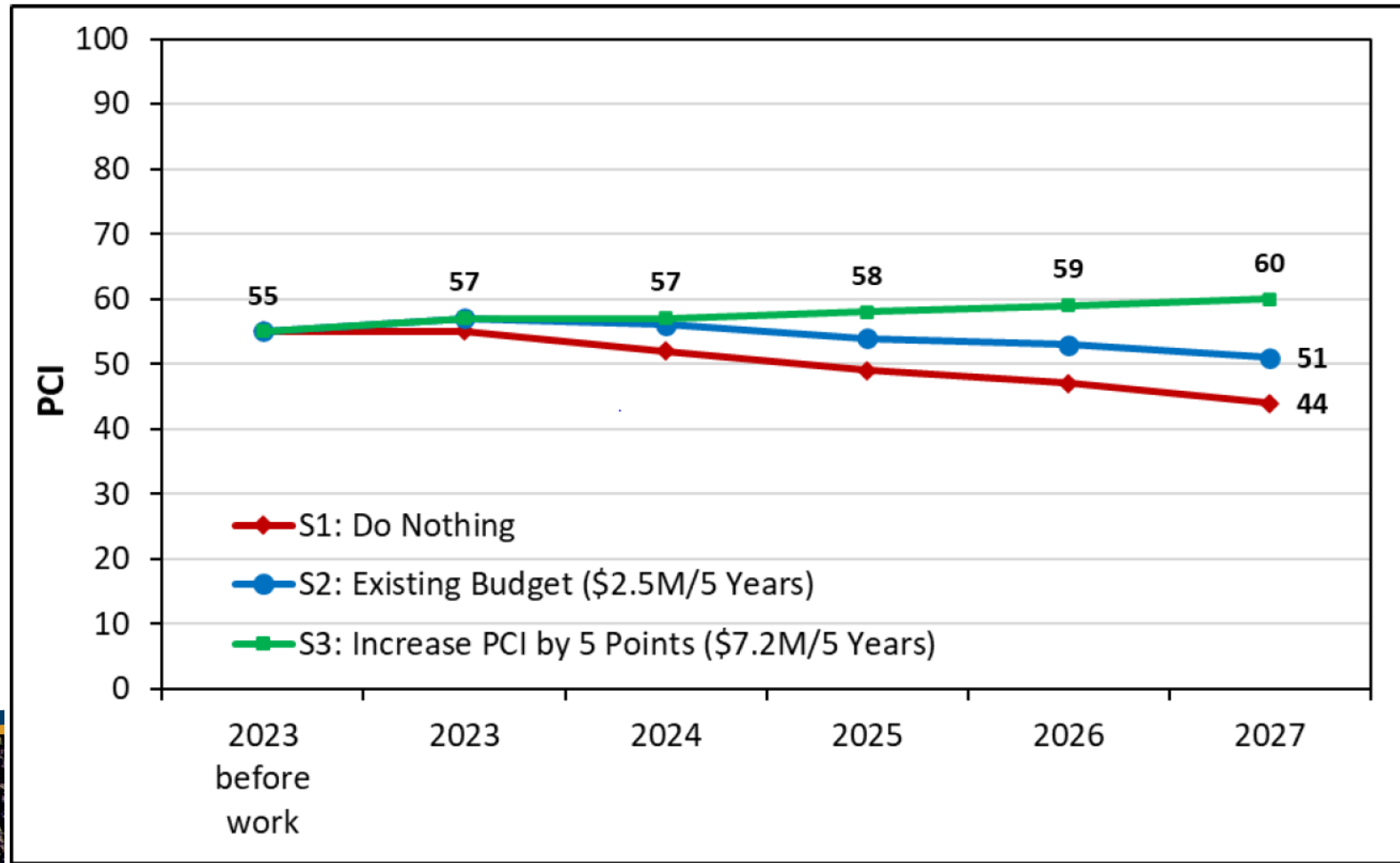


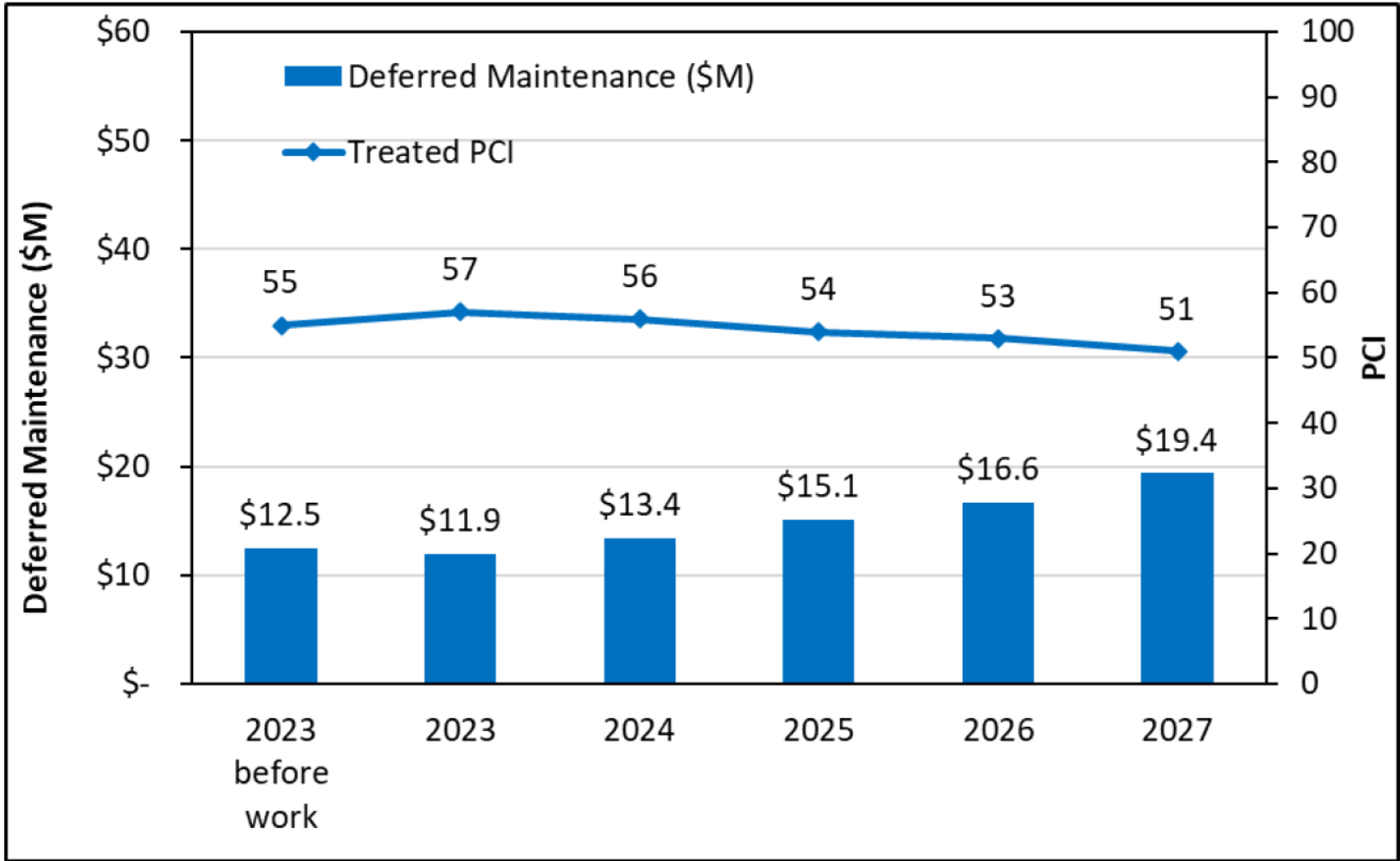
FUNDING NEEDS





Five Year PCI Trend Using Future Treatment Costs







PEI RECOMMENDATIONS

- **Continue to update the Pavement Management System**
- **Develop Multi-Year Pavement Expenditure Plan**
- **Focus limited funding to preserve critical assets**
- **Leverage limited funds with grants (Matching Funds) on Grant Eligible Streets (Arterials)**
 - STIP, Complete Streets, Safe Routes to Schools
- **Consider additional funding sources**
 - Refuse Impact Fees, Utility Impact Fees, Sales Tax, Parcel Tax





QUESTIONS?

