A Regional Perspective on Pavement Management

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CAPA Asphalt Technology Forum

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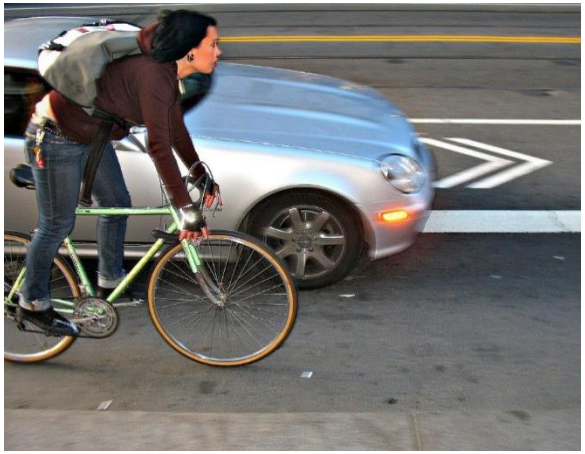
Image Source: https://www.flickr.com/photos/thomashawk/4785300610

The San Francisco Bay Area Region

Population = 7.4 mil
9 counties
100 cities
43,000 lane-miles of local streets & roads
6,850 lane-miles of state highway (Caltrans)
23 transit agencies
7 toll bridges
1 MPO

A Wealth of Transportation Assets

MTC helps coordinate the management of a wide variety of transportation assets. This is critical for estimating the maintenance needs of the region and setting investment strategies.



Local Streets & Roads & Bridges

Transit Capital Assets

ITS Components

MTC's Regional TAM Report Card

A

Local Streets and Roads: 30+ years of implementation; a robust pavement management system used by all jurisdictions; ability to estimate needs, set targets, prioritize investments , and monitor progress and performance.

Public Transit: 10 years of implementation. Fairly robust inventory of capital assets (updated periodically); age-based condition information; investment prioritization based on "need"

C

D-

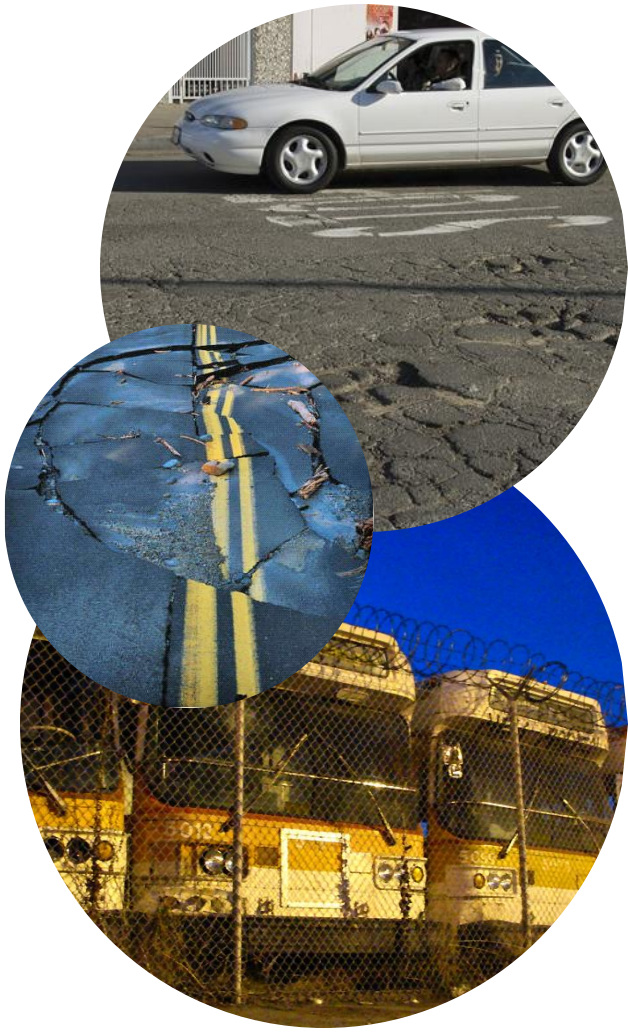
ITS: Incomplete inventory of some asset-types; reliant on State DOT or local jurisdictions for investment need and prioritization; unable to set performance targets and monitor progress

Presentation Focus

Regional Agencies can Implement an Asset Management Program and Performance Policies to Affect the Conditions on Local Streets and Roads and Improve Cost Effectiveness

Why Are Local Road Conditions a Regional Concern?

- Supports All Modes of Transportation
- $40 - $50 billion replacement value
- Conditions are Facing Steep Decline
- Escalating Deferred Maintenance Jeopardizes Funding for All Transportation Priorities

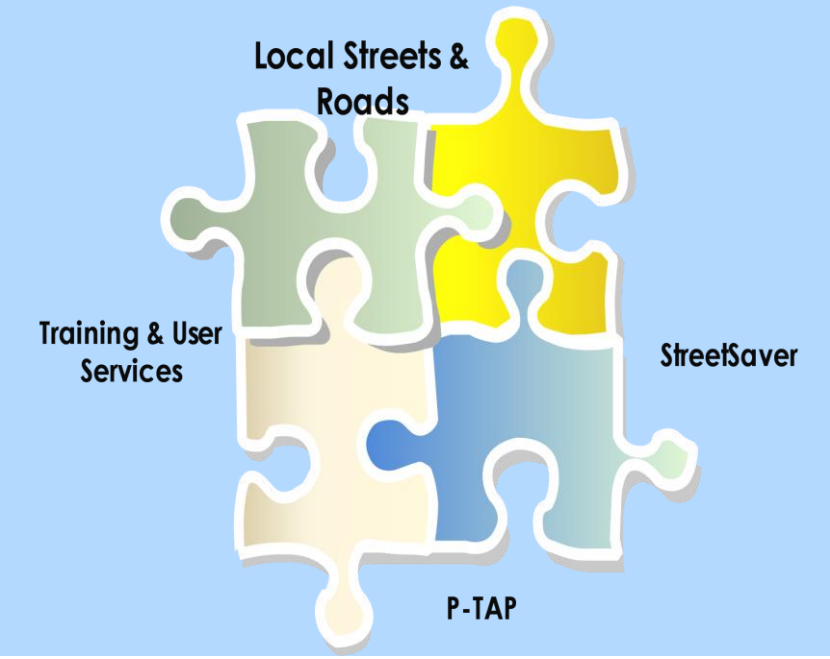


Better Pavement Management in Bay Area

MTC is recognized by the FHWA as “one of the first regions in the country to implement a pavement management system— FHWA Office of Asset Management

MTC's Regional Streets & Roads Program

- Purpose:
  - Promote cost-effectiveness and sustainability
  - Improve conditions
- Four Main Components:
  - #1 - Software (StreetSaver®)
  - #2 - Training & User Support
  - #3 - Federal Grant Program –PTAP
  - #4 - Policy / Regional Coordination
- Each Component Essential to Program's Success



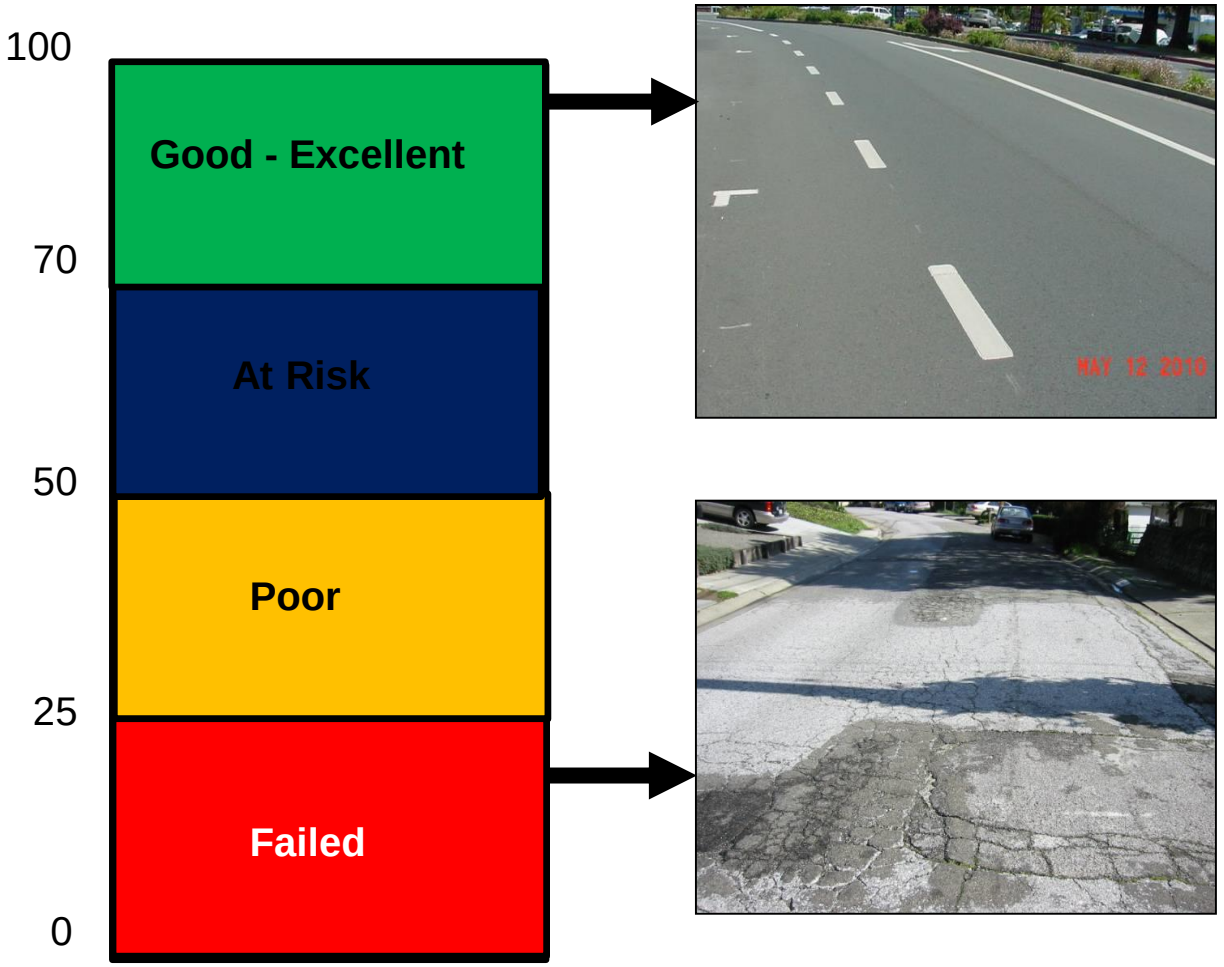
#1 - StreetSaver®

- Network Level System
- Developed 30 Years Ago
- Designed for Local Agencies
- Cost Effective vs. “Worst First”
- Used by all Bay Area Jurisdiction
- 420 Users Nationwide

#1 - StreetSaver®

- Cloud Based
- SQL Server
- Weighted Cost Effectiveness Prioritization
- Budget / Target Scenarios
- Project Selection
- Event History
- GIS Toolbox

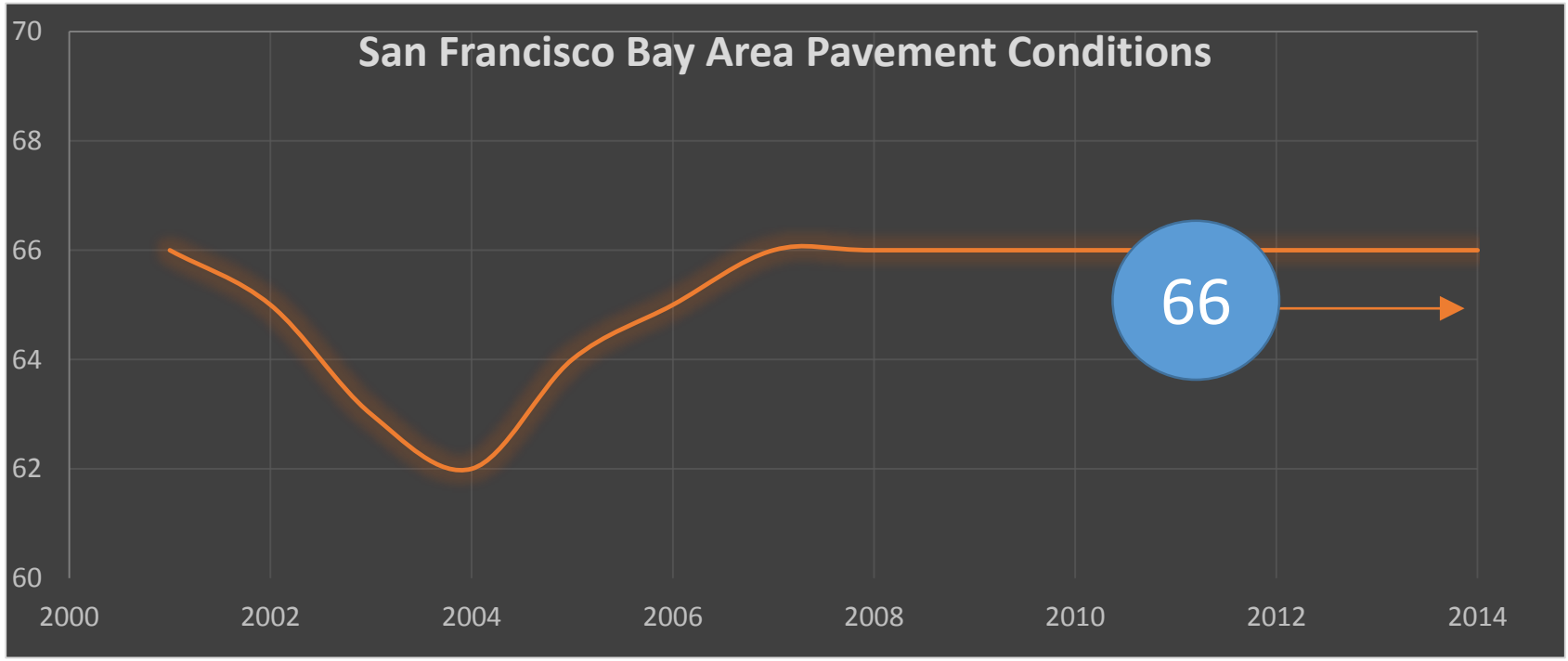
Pavement Condition Index (PCI)



Asset Management Cycle

Bay Area Local Street & Road State of Repair

- Bay Area Pavement Condition at 66
- Still too close to the “tipping point”
- $40B in investment needed/$13B revenue (24 years)



#2 - Training & Support

- Technical (Software) Support
  - Virtual on-site, Hotline & e-mail
- Technology Transfers
- Training Program
  - Pavement management concepts
  - Software use
  - Setting up pavement network
  - Distress data collection
  - How to use data to influence decisions

#3 - Pavement Technical Assistance Program (PTAP)

- Federal Grant Program (STP)
- $1.5 M Annually
- 50 Re-Inspections/ Updates Per Year
- Ensures MTC Access to Quality Data
- Obtains 100% PMS Certification

#4 - Policy & Regional Coordination

- Condition Summaries
- Local Streets and Roads Committee
- Needs / Shortfall Assessments
- Funding Policy
  - Certification Requirement
  - Performance-Based Allocation of Regional Funds
- Advocacy

Regional Condition Summaries

Local Streets & Roads

P-TAP

StreetSaver®

PMP Certification

2014 PCI Scores

Pavement Conditions

Get the latest information on street and highway pavement conditions throughout the Bay Area via Vital Signs.

FIND OUT MORE

Related News

Local Streets & Roads No Better, But No Worse
Apr 13, 2015

Stubborn Mediocrity Marks Local Streets and Roads
Oct 28, 2014

Street Fight: An Overview
Oct 28, 2014

2014 PCI Scores for Each Bay Area City and County

Many factors affect a city's or county's pavement condition index, or PCI score. These include pavement age, climate and precipitation, traffic loads and available maintenance funding.

A municipality with new housing developments and new streets may have a high overall PCI, while an older, urbanized jurisdiction may have a much lower PCI, even though both are practicing pavement preservation. Cities and counties that practice preventive maintenance will have lower long-term pavement costs and will safeguard their investment in local streets and roads.

The typical stretch of Bay Area asphalt shows serious wear and likely will require rehabilitation soon. At 66 out of a possible 100 points, the region's average pavement condition index (PCI) score is much closer to the 60-point threshold at which deterioration accelerates rapidly and the need for major rehabilitation becomes much more likely than to the 75-point score that MTC has established as a target for roadway quality.

Pavement Condition Index (PCI) for Bay Area Jurisdictions, 2012–2014

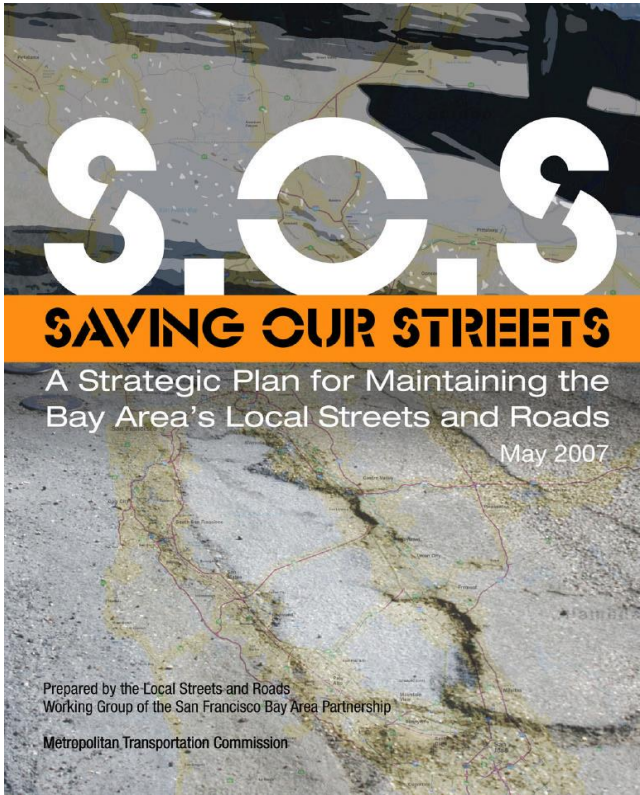
			3-Year Moving Average*		
Jurisdiction	**County**	**Total Lane Miles**	**2012**	**2013**	**2014**
Very Good (PCI=80–89)					
Brentwood	Contra Costa	420	87	86	86
Dublin	Alameda	252	86	85	86
El Cerrito	Contra Costa	138	84	84	84
Foster City	San Mateo	120	81	81	81
Union City	Alameda	329	79	79	81
Belvedere	Marin	23	83	81	80
Clayton	Contra Costa	94	75	76	80
Portola Valley	San Mateo	71	78	78	80
			3-Year Moving Average*		
Jurisdiction	**County**	**Total Lane Miles**	**2012**	**2013**	**2014**
Good (PCI=70–79)					
Atherton	San Mateo	106	81	81	79
Los Altos	Santa Clara	226	80	79	78
San Ramon	Contra Costa	464	76	78	78
Pleasanton	Alameda	499	77	77	78
Colma	San Mateo	24	70	73	78

Regional Condition Summaries

http://www.vitalsigns.mtc.ca.gov

Local Street and Roads Committee

- Local Public Works Officials
- Advises MTC on Policy
- Advocates for Better Funding
- Works to Improve Project Delivery
- Encourages Best Practices Among Peers



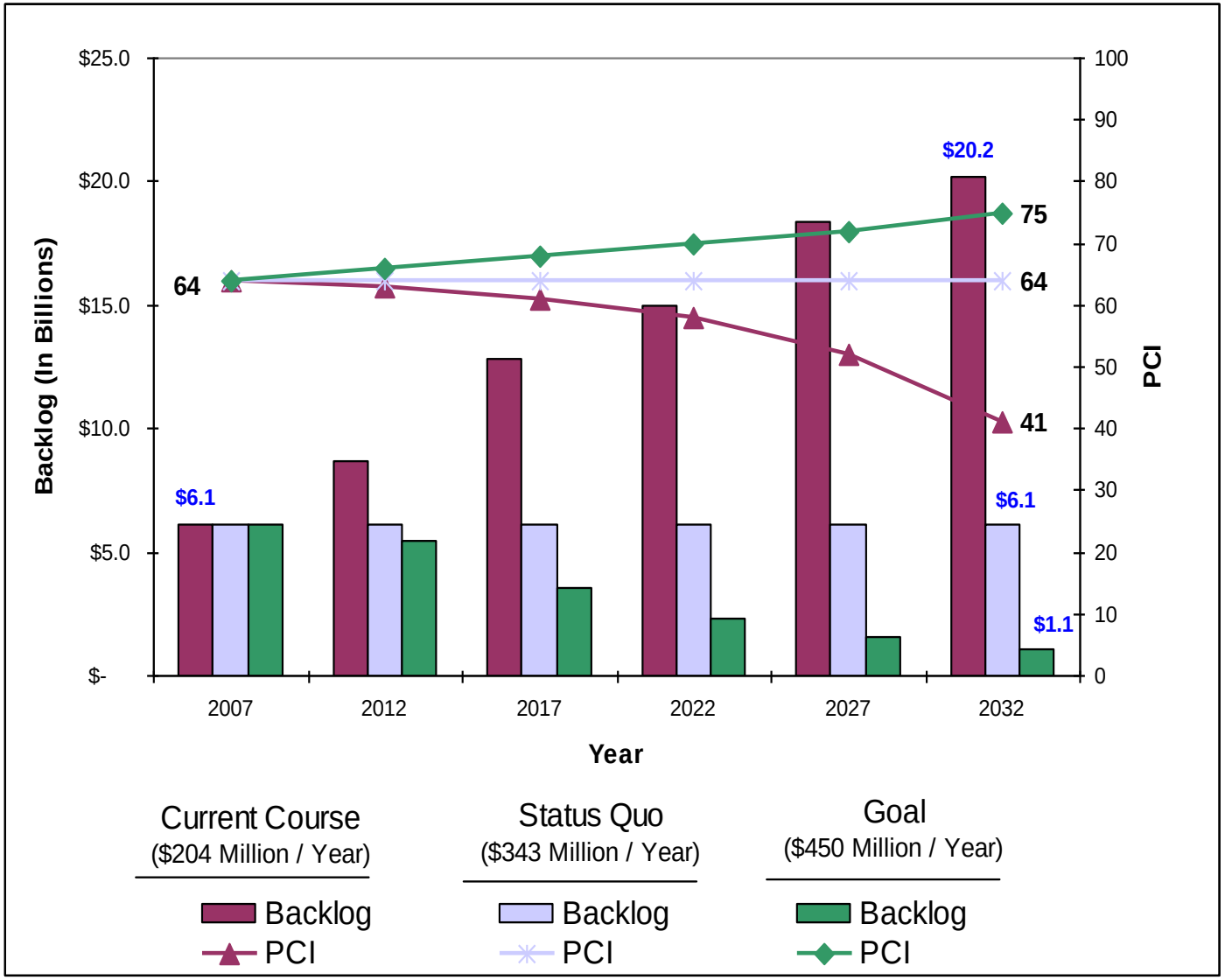
Local Street & Road Needs Assessment

- How Much Do We Need to Spend?
  - Pavement
  - Non-Pavement
  - Bridges
- Regional “What-If?” Scenarios
- Exclusive Use of StreetSaver® Makes This Easy

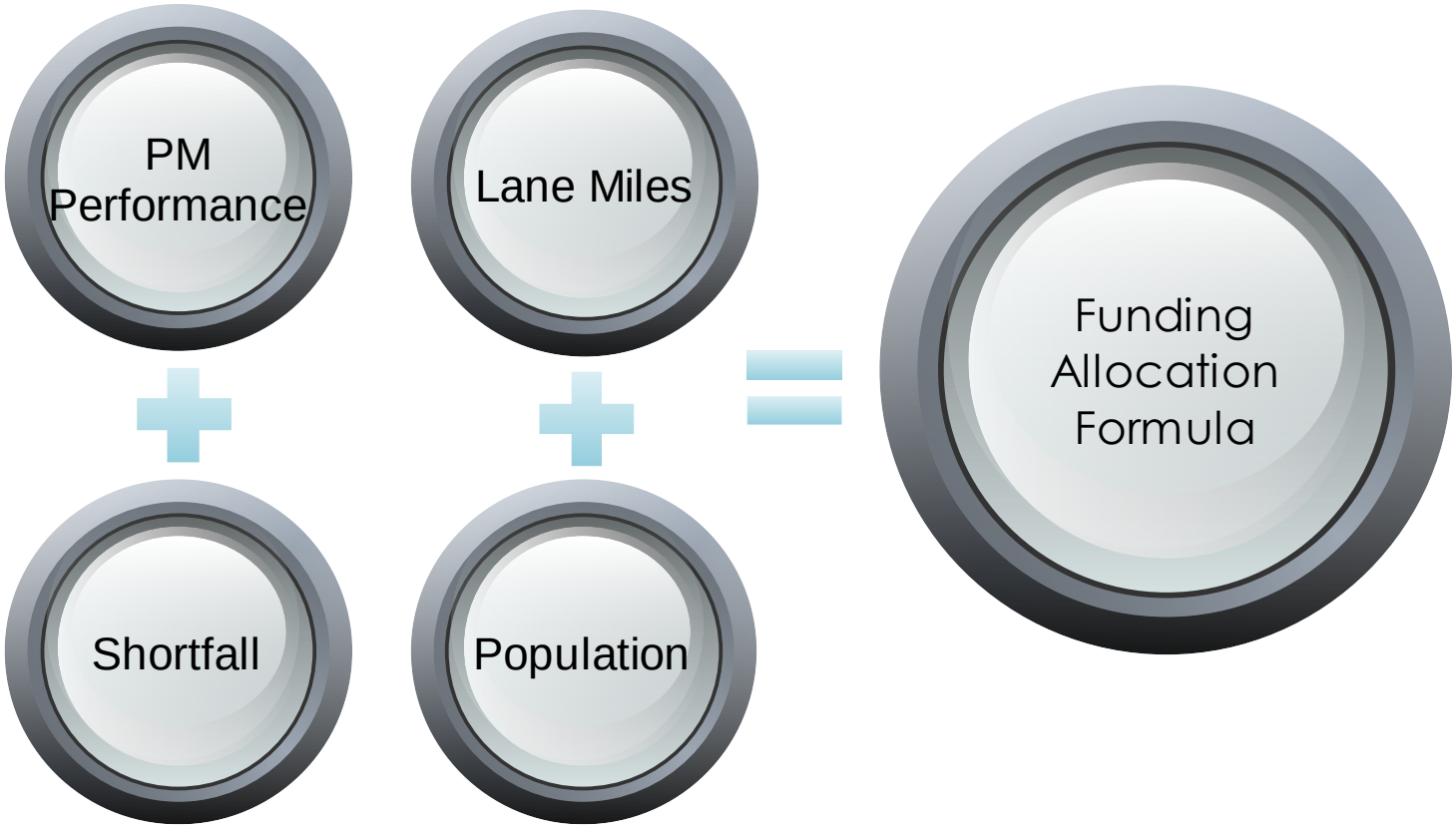
Local Street & Road Needs Assessment

Jurisdiction	Revenues for System Preservation Needs	Total Preservation Needs -- Maintain PCI	Total Preservation Needs -- SGR	Remaining Needs -- Maintain PCI	Remaining Needs -- SGR
Alameda	$ 2,739	$ 5,727	$ 6,591	$ 3,121	$ 3,852
Contra Costa	$ 1,861	$ 4,539	$ 4,639	$ 2,678	$ 2,778
Marin	$ 454	$ 1,093	$ 1,345	$ 639	$ 890
Napa	$ 532	$ 687	$ 1,035	$ 168	$ 503
San Francisco	$ 2,096	$ 3,228	$ 4,011	$ 1,132	$ 1,915
San Mateo	$ 1,118	$ 2,902	$ 3,041	$ 1,815	$ 1,923
Santa Clara	$ 3,068	$ 7,868	$ 8,896	$ 4,800	$ 5,828
Solano	$ 428	$ 2,061	$ 2,609	$ 1,633	$ 2,181
Sonoma	$ 896	$ 2,156	$ 4,069	$ 1,260	$ 3,173
REGION	**$ 13,192**	**$ 30,261**	**$ 36,236**	**$ 17,246**	**$ 23,045**

Local Street & Road Needs Assessment



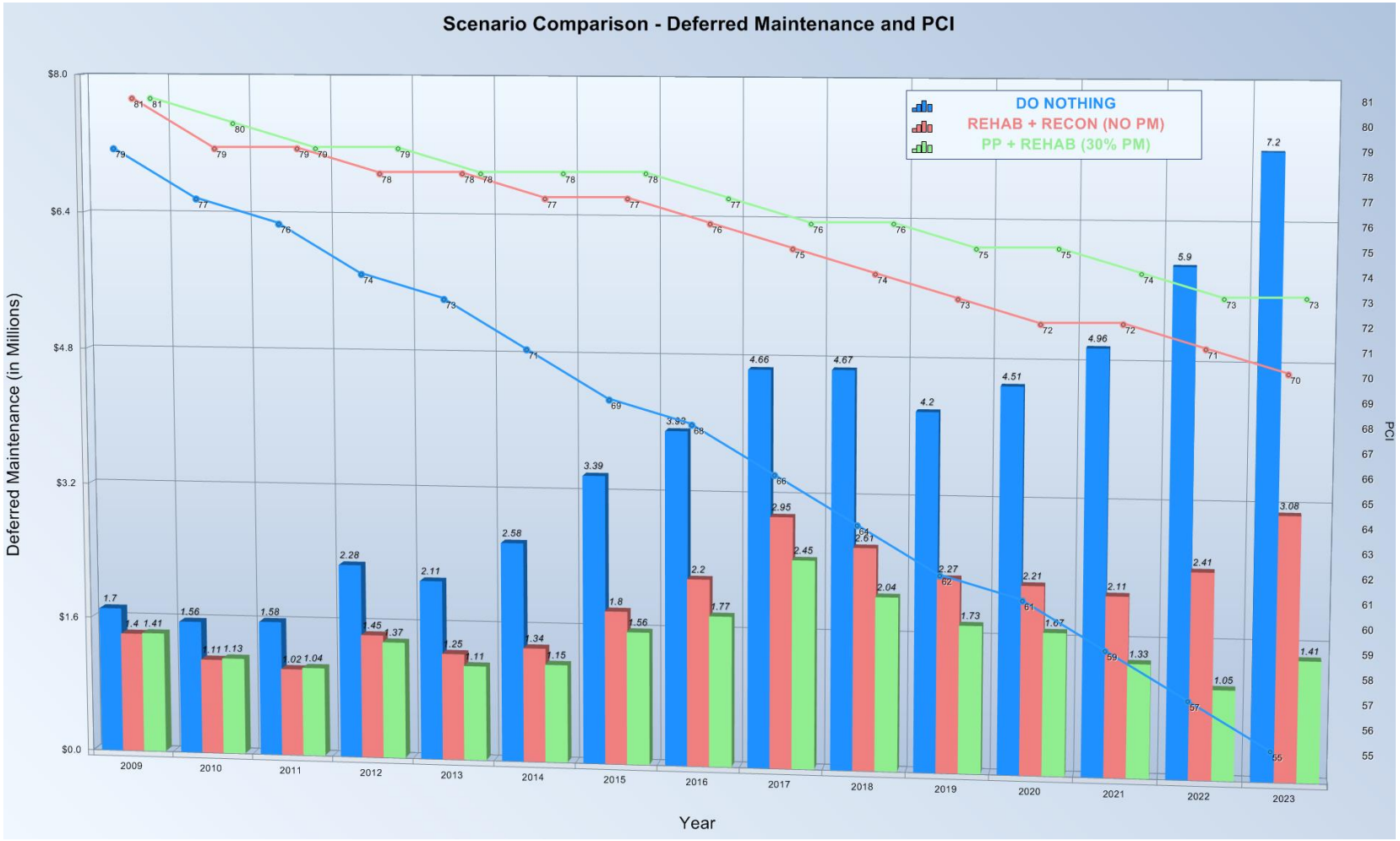
Regional Funding Allocation



Performance Factor

- Difficult to Find a “One Size Fits All” Performance Measure
- Performance Factor Criteria
  - Measurable
  - Objective as Possible
  - Can be fairly applied
  - Utilizes data widely available
  - Meaningful

Importance of Preventive Maintenance



Performance Factor

- Ratio of Actual to Recommended % of Budget Spent on Preventive Maintenance
  - No advantage or disadvantage due to existing network features or budget
  - Data comes Directly from StreetSaver ®
  - Can be Weighted by Jurisdiction Size
  - Promotes Pavement Preservation Principles

Sample Calculation

Jurisdiction	County of Napa	American Canyon	Calistoga
Recommended percent PM	16%	43%	20%
Actual PM Arterials & Collector	$71,304	$486,373	$187,729
Actual PM Residential	-	$1,010,649	$98,813
Actual Total PM	$71,304	$1,497,022	$286,542
Actual Total Maintenance	$14,657,343	$4,953,711	$1,776,620
Actual percent PM	0%	30%	16%
Performance Score	3%	70%	81%

Advocacy

Road Condition, Funding, and Measure T
Napa Countywide Road Maintenance Act

NC TPA NV TA

Measure T—Fix Our Local Roads

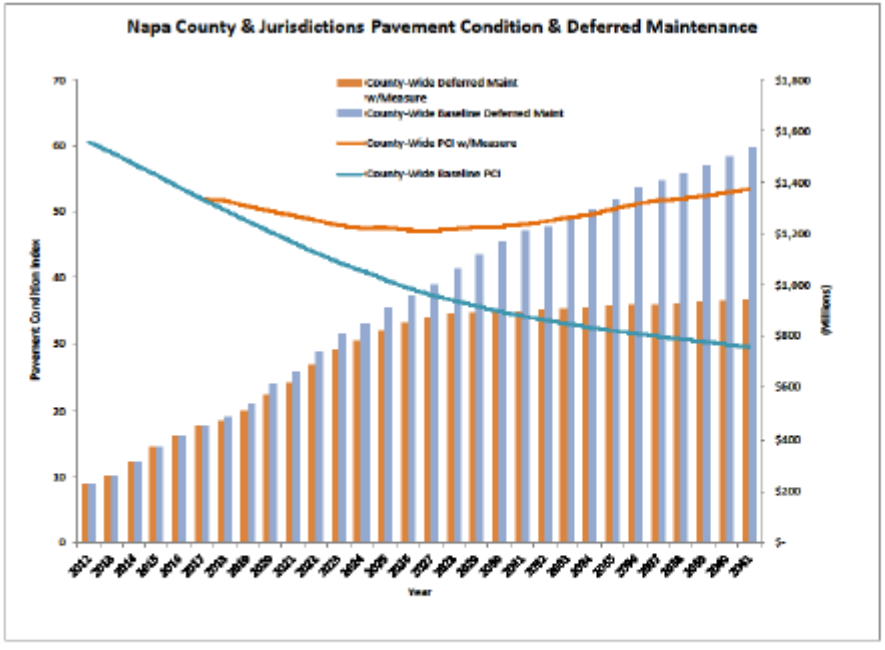
How did we get here?

Federal and State revenues over the last 10 years have been declining in both real and nominal terms. The 18.4 ¢ per gallon tax deposited in the National Highway Trust Fund for surface transportation projects has not been increased since 1993. Reductions in federal funds has been compounded by the diversion of millions in State Highway and local streets and roads funds for highway needs or to backfill shortfalls in the State's general fund.

What's the Problem?

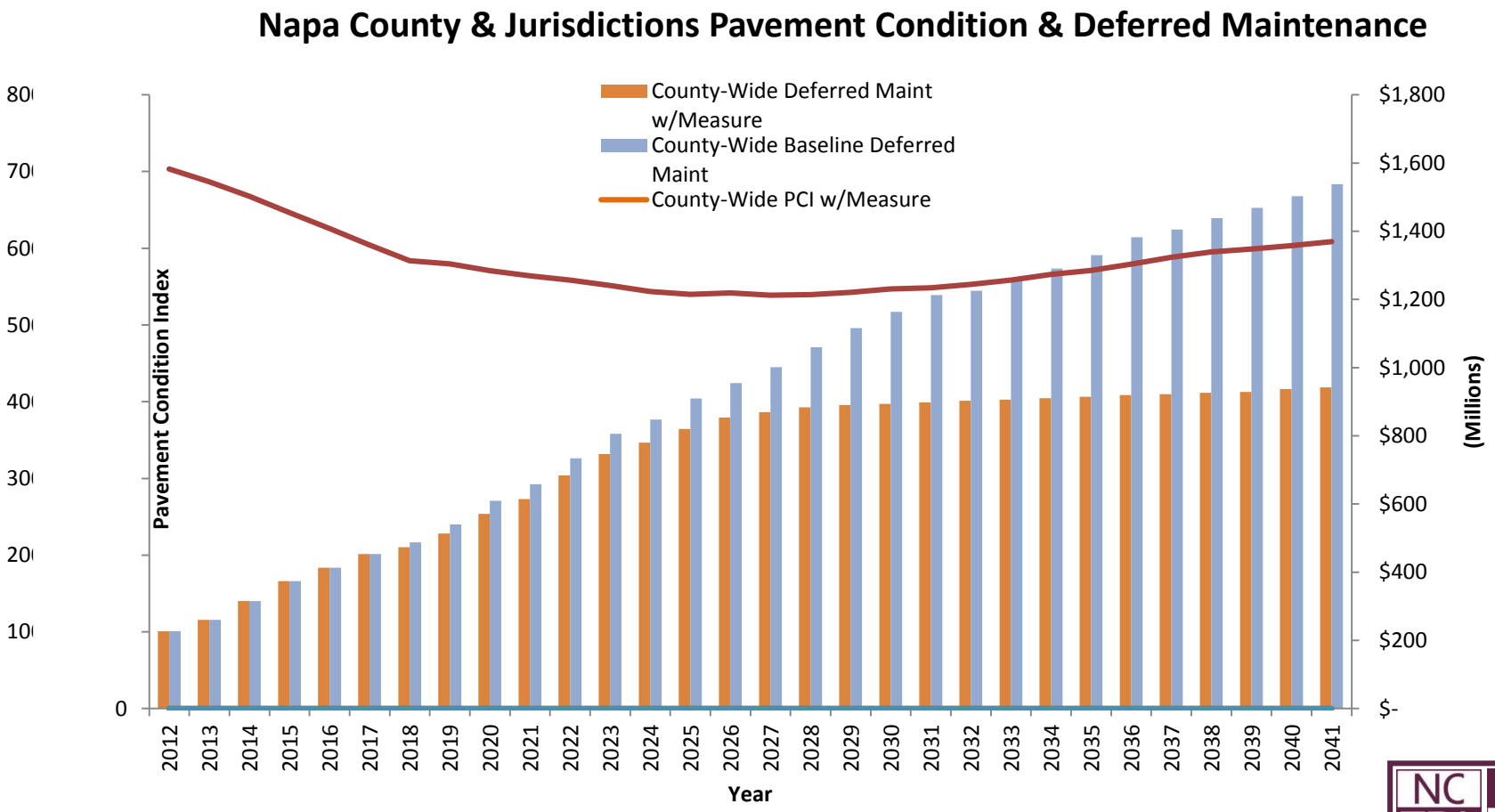
The Cities, Town, and County of Napa have almost $300 million in deferred road maintenance. Without a near term infusion of new revenues, this figure is projected to grow to almost $2 billion over the next 25 years.
Measure T will not solve all of the county's problems but will help get a handle on exponential growth of Streets & Roads Deferred Maintenance needs.

Napa's roads are the worst in the region - on a score from 25 (low) to 89 (high) - 90% of Napa's Roads are considered very poor or at risk on the region's Pavement Condition Index (PCI).



Source: MTC—Pavement Management System

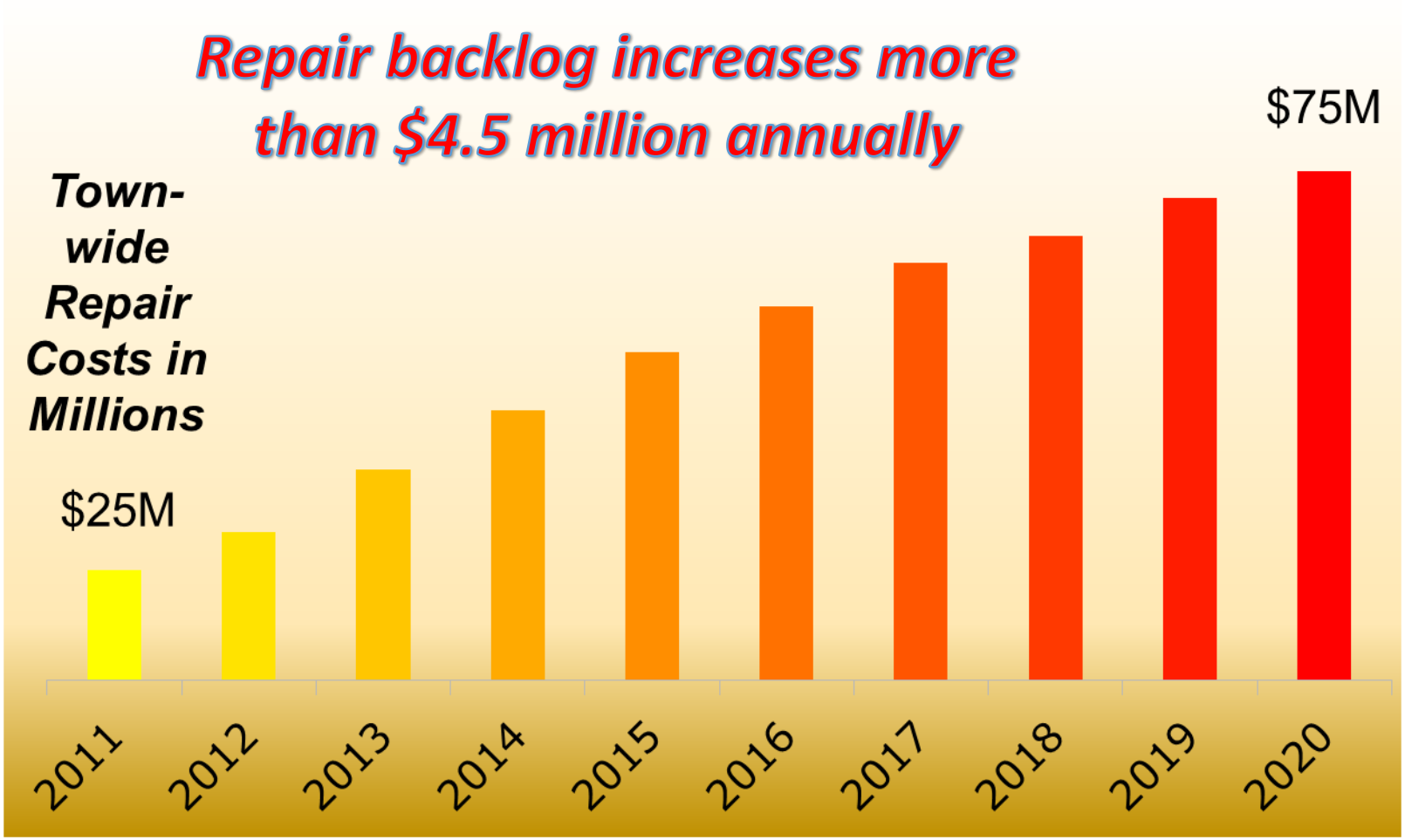
Delay Results in Exponential Growth of Deferred Maintenance



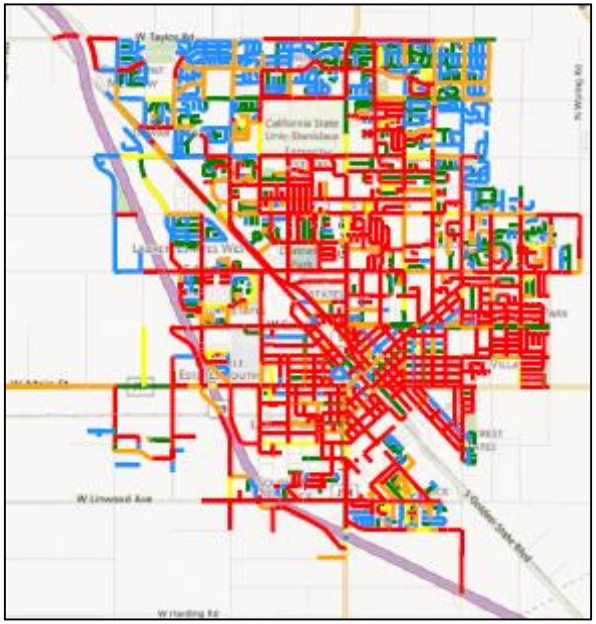
Source: MTC

State of Pavement

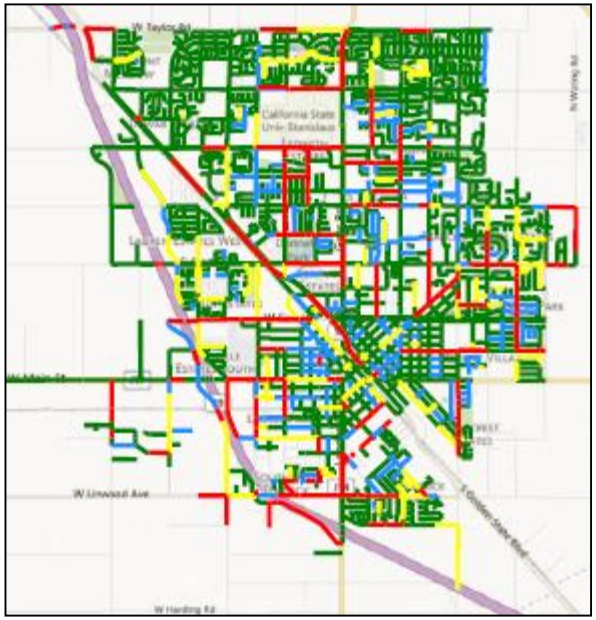
If We do Nothing…Repair Costs will Triple



2013



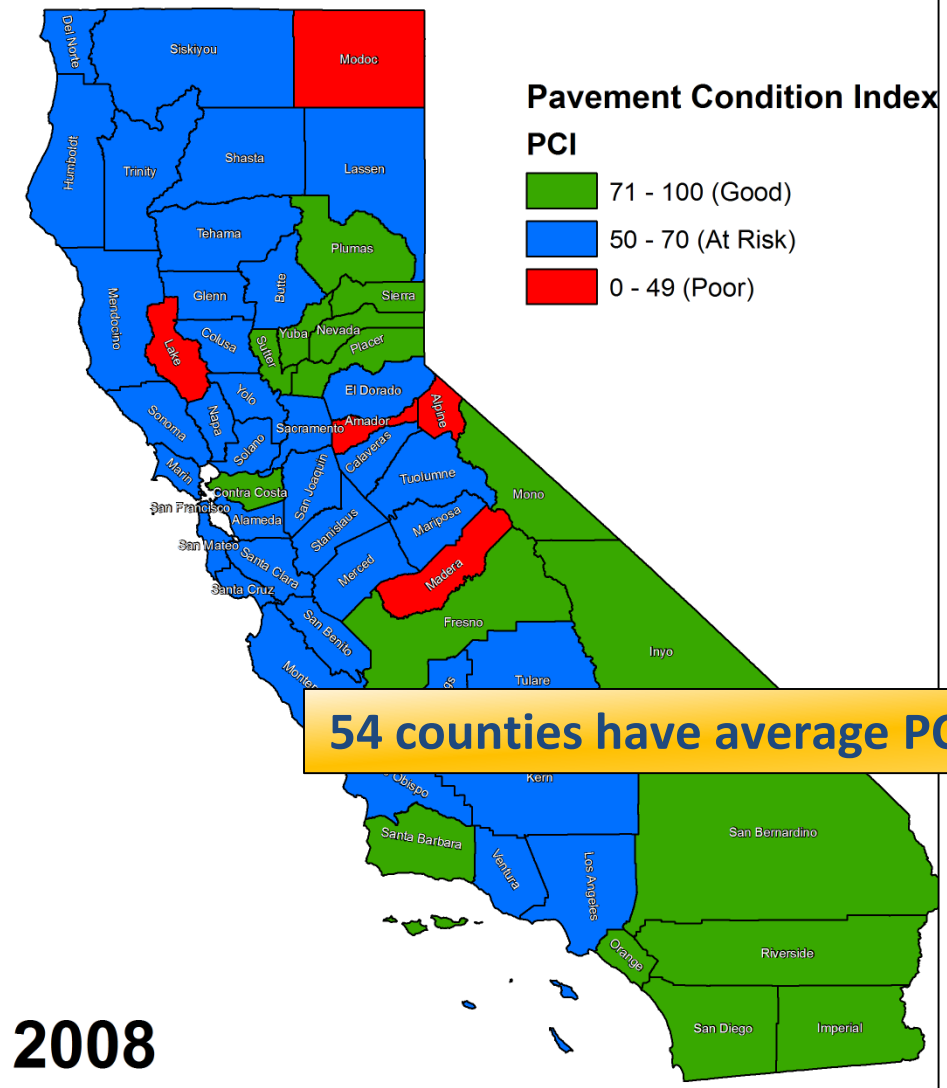
2032 with current funding $1.25 m/year



2032 with sales tax $6.25 m/year

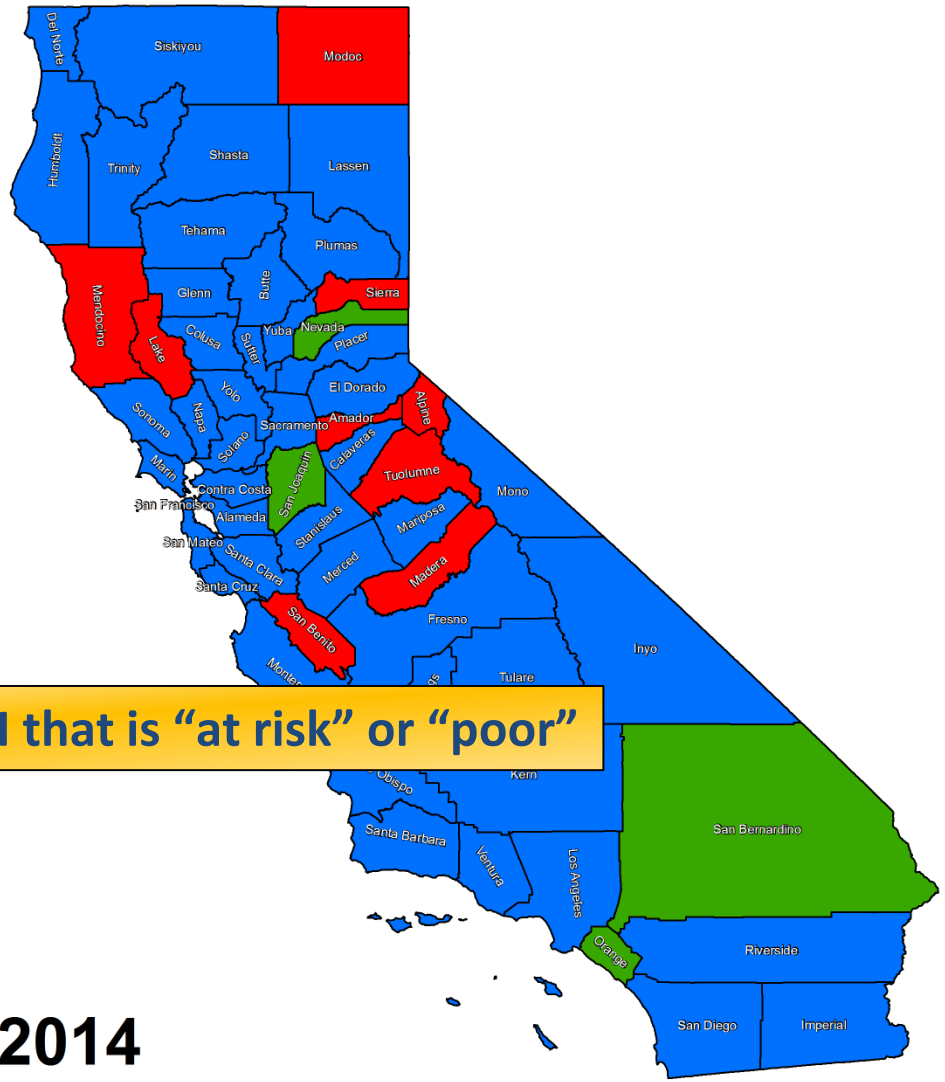
SAVE CALIFORNIA STREETS

California Statewide Local Streets & Roads Needs Assessment



54 counties have average PCI that is “at risk” or “poor”

2008



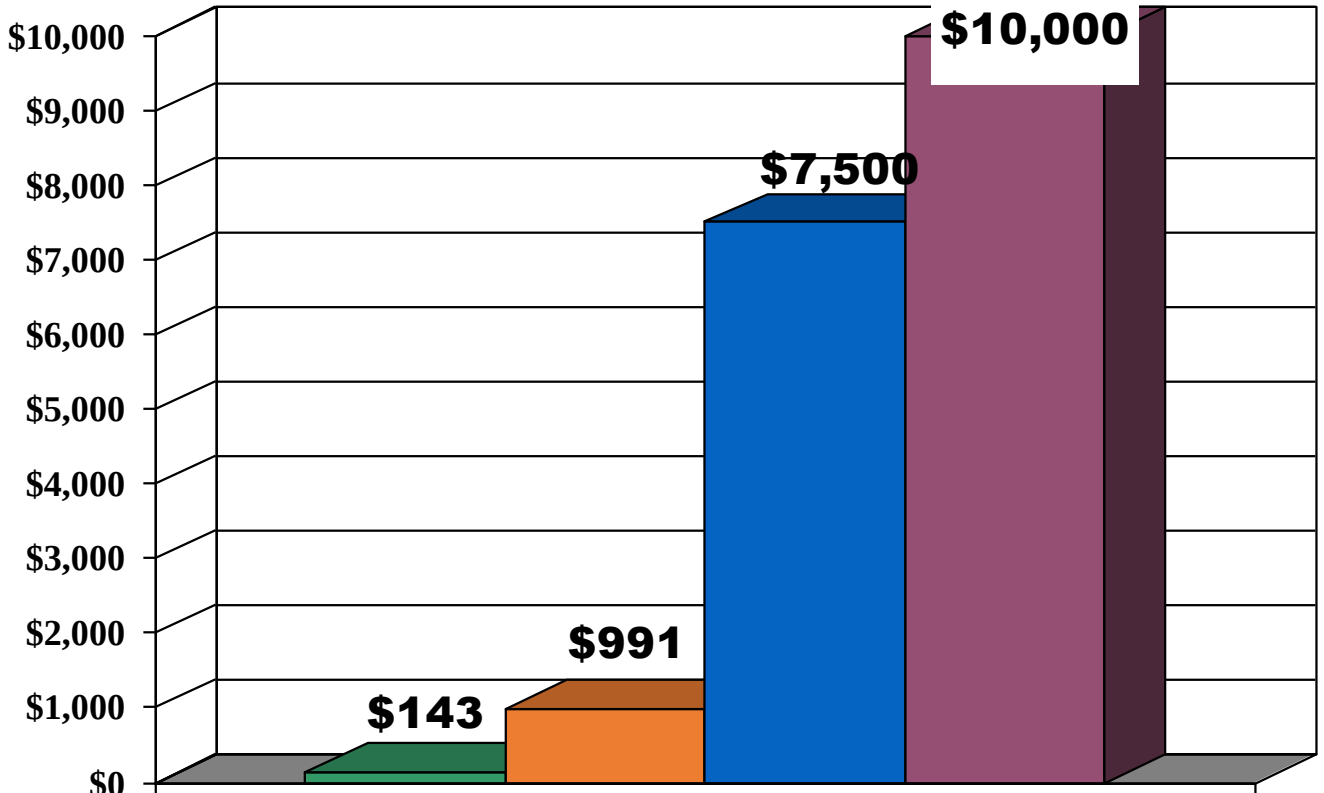
2014

Asset Management Benefits Realized

- Better allocation of resources
  - We know what the “need” is and consequence of under-investment
  - Cost effective vs. “worst first”
  - Prioritization of critical assets
- Can monitor progress towards performance goals
- Improved public information / engagement
- Establishment of best practices
- Improved access to inventory data
- Accountability to Taxpayers / Trust

Impact of Data on Regional Policy

Growth in Regional Investment in Local Streets & Roads Over Consecutive Regional Transportation Plans



	Regional Investment in LS&R (In Millions)
2001 RTP	$143
T2030	$991
T2035	$7,500
PBA	10,000

Future Asset Management Focus / Challenges

- Expand data collection
  - LSR non-pavement assets
- Streamline asset information
  - Standardize for regional analyses
  - Focus on critical assets
- Enhance prioritization models
  - Multi-objective Models
- Coordinate with FHWA on MAP-21 Requirements
- Improve data accessibility and integration among assets
- Improve Benefit/Cost Assessments

Questions / Contact Information

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THANK YOU!