

SOUTHERN CALIFORNIA



**ASSOCIATION of
GOVERNMENTS**

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Keith Millhouse, Ventura County
Transportation Commission

**No. 3
MEETING OF THE**

**TRANSPORTATION FINANCE
SUBCOMMITTEE**

**Friday, December 21, 2012
1:30 p.m. – 3:30 p.m.**

**SCAG Los Angeles Office
818 West Seventh Street, 12th Floor
Los Angeles, CA 90017
(213) 236-1800**

**Teleconference and Videoconference Available
(Location information is attached)**

If members of the public wish to review the attachments or have any questions on any of the agenda items, please contact Ruby Moreno at (213) 236-1840 or via email moreno@scag.ca.gov

SCAG, in accordance with the Americans with Disabilities Act (ADA), will accommodate persons who require a modification of accommodation in order to participate in this meeting. If you require such assistance, please contact SCAG at (213) 236-1928 at least 72 hours in advance of the meeting to enable SCAG to make reasonable arrangements. To request documents related to this document in an alternative format, please contact (213) 236-1928.

Teleconference and Videoconference Locations

Teleconference Available

Lucy Dunn, Ex-Officio Member
2 Park Plaza, Suite 100
Irvine, CA 92614

Videoconference Available

Orange County Office

600 S. Main Street, Suite 906
Orange, CA 92863

San Bernardino County Office

1170 W. 3rd Street, Ste 140
San Bernardino, CA 92410

Ventura County Office

950 County Square Drive, Suite 101
Ventura, CA 93003

Imperial County Office

1405 N. Imperial Ave., Suite 1
El Centro, CA 92243

Riverside County Office

3403 10th Street, Suite 805
Riverside, CA 92501

Transportation Finance Subcommittee Member List

San Bernardino County: Hon. Gary Ovitt, **Chair**/Member (SB)

Los Angeles County: Hon. Keith Hanks, **Vice Chair**/Member (LA)
Hon. Bruce Barrows, Member (LA)

Riverside County: Hon. Mary Craton, Member (Riv)

Orange County: Hon. Brett Murdock, Member (OC)

Ex-Officio Members

Lucy Dunn, President & CEO, Orange County Business Council

Denny Zane, Executive Director, Move LA

TRANSPORTATION FINANCE SUBCOMMITTEE

AGENDA

DECEMBER 21, 2012

The Transportation Finance Subcommittee may consider and act upon any of the items listed on the agenda regardless of whether they are listed as information or action items.

CALL TO ORDER & PLEDGE OF ALLEGIANCE

(Hon. Gary Ovitt, Chair)

PUBLIC COMMENT PERIOD – Members of the public desiring to speak on items on the agenda, or items not on the agenda, but within the purview of the Subcommittee, must fill out and present a speaker's card to the Assistant prior to speaking. Comments will be limited to three (3) minutes. The Chair may limit the total time for all comments to twenty (20) minutes.

REVIEW AND PRIORITIZE AGENDA ITEMS

	<u>Time</u>	<u>Page No.</u>
<u>CONSENT CALENDAR</u>		
<u>Approval Item</u>		
1. <u>Minutes of November 16, 2012</u>	Attachment	1
<u>INFORMATION ITEMS</u>		
2. <u>Highway System Preservation/Status of the SHOPP</u> <i>(Chris Williges, System Metrics Group)</i>	Attachment 20 mins.	5
3. <u>Local Streets and Roads Needs Assessment</u> <i>(Margot Yapp, Nichols Consulting Engineers)</i>	Attachment 30 mins.	19
4. <u>Los Angeles County System Preservation Efforts</u> <i>(Patrick DeChellis, County of Los Angeles Department of Public Works)</i>	20 mins.	
5. <u>Approaches for Transit Capital Asset Management</u> <i>(Roderick Diaz, Los Angeles County Metropolitan Transportation Authority)</i>	Attachment 30 mins.	48

CHAIR'S REPORT

(Hon. Gary Ovitt, Chair)

TRANSPORTATION FINANCE SUBCOMMITTEE

AGENDA

DECEMBER 21, 2012

STAFF REPORT

(Annie Nam, SCAG Staff)

FUTURE AGENDA ITEMS

Any Subcommittee member or staff desiring to place items on a future agenda may make such a request.

ANNOUNCEMENTS

ADJOURNMENT

The next meeting of the Transportation Finance Subcommittee meeting will be a joint meeting with the Goods Movement Subcommittee. It will be held at the SCAG Los Angeles Office on January 28, 2013 from 10:00 am to 12:00 pm.



**Transportation Finance Subcommittee
of the
Southern California Association of Governments**

November 16, 2012

Minutes

THE FOLLOWING MINUTES ARE A SUMMARY OF ACTIONS TAKEN BY THE TRANSPORTATION FINANCE SUBCOMMITTEE. AUDIO CASSETTE TAPE OF THE ACTUAL MEETING IS AVAILABLE FOR LISTENING IN SCAG'S OFFICE.

The Transportation Finance Subcommittee held its meeting at the SCAG offices in downtown Los Angeles. The meeting was called to order by Hon. Gary Ovitt, Chair, San Bernardino County. The Chair recognized Hon. Pam O'Connor (Chair of the Sustainability Subcommittee) was in attendance and invited her to join the Subcommittee members at the table. There was a quorum.

Members Present

Representing

Hon. Gary Ovitt, **Chair**

Member (SB)

Hon. Keith Hanks, Vice Chair

Member (LA)

Hon. Bruce Barrows

Member (LA)

Hon. Mary Craton

Member (Riv) (Videoconference)

Hon. Brett Murdock

Member (OC)

Ex-Officio Members Present

Denny Zane, Executive Director, Move LA

Members Not Present

Representing

Hon. Darcy Kuenzi

Member (Riv)

Ex-Officio Members Not Present

Lucy Dunn, President & CEO, Orange County Business Council

**Transportation Finance Subcommittee
of the
Southern California Association of Governments**

November 16, 2012

Minutes

CALL TO ORDER & PLEDGE OF ALLIGIANCE

Hon. Gary Ovitt, Chair, called the meeting to order at 10:00 a.m.

PUBLIC COMMENT PERIOD

None.

REVIEW and PRIORITIZE AGENDA ITEMS

None.

CONSENT CALENDAR

1. Minutes of November 16, 2012

A motion was made (Barrows) to approve the Consent Calendar. The motion was SECONDED (Hanks) and unanimously APPROVED by roll call vote.

INFORMATION ITEMS

2. Capital Cost Overview

Warren Whiteaker, SCAG staff, provided an overview of capital costs associated with the 2012-2035 RTP/SCS based upon the presentation materials included as part of the agenda packet. Mr. Whiteaker asked the Subcommittee to consider several points:

- A number of costs components are impacted by international demand
- There are nevertheless opportunities to help manage costs through local actions
- Developing a cost model is critical for financial planning

A motion was made (Hanks) that the Transportation Finance Subcommittee recommends to the Transportation Committee that it recommend that the subject of aggregate resources be reviewed by the Sustainability Subcommittee. Motion was seconded (Barrows) and unanimously APPROVED by a roll call vote.

3. Breaking Down Barriers

Richard Bacigalupo, Federal Relations Manager, OCTA, provided the background of the “Breaking Down Barriers” initiative, which became an important component in the Moving Ahead for Progress in the 21st Century (MAP-21) federal transportation reauthorization bill. MAP-21 addresses project delivery acceleration provisions. Mr. Bacigalupo presented a list summarizing the twenty-four (24) key provisions in MAP-21. Applicable materials were included in the agenda packet.

**Transportation Finance Subcommittee
of the
Southern California Association of Governments**

November 16, 2012

Minutes

4. Economic Benefits of Expediting Project Delivery

Dr. Wallace Walrod, Orange County Business Council, made a presentation updating the Subcommittee on Phase II of the Economic Strategy. He explained that the four main areas of focus were the following:

- Reforms
- Advocacy Strategy
- Economic Clusters
- Economic Impact Analysis

Dr. Wallace also covered the topic of expediting project delivery and the economic benefits associated with shorten project delivery to the SCAG region. He ended his report by highlighting the main topics to be discussed at SCAG's 3rd Economic Summit on December 6, 2012. The full presentation was included in the agenda packet.

5. Voter Thresholds for Transportation Measures

Denny Zane, Move LA, provided the Subcommittee with information regarding the result of ballot measures on new taxes or fees which required a two-thirds voter approval and what it may mean in the context of transportation financing. Mr. Zane raised the issue of the possible need to lower the approval threshold to 55 percent for most local measures. The full presentation was included in the full agenda packet.

STAFF REPORT

None was presented.

FUTURE AGENDA ITEMS

None.

ANNOUNCEMENTS

There were no announcements.

**Transportation Finance Subcommittee
of the
Southern California Association of Governments**

November 16, 2012

Minutes

ADJOURNMENT

Honorable Gary Ovitt, Chair, adjourned the meeting at 11:15 a.m. Staff announced that the next meeting of the Subcommittee will be held on Friday, December 21, 2012.

Southern California Association of Governments

Transportation Finance Subcommittee

Highway System Preservation/Status of the SHOPP

**Los Angeles, CA
December 21, 2012**

The State Highway Operation and Protection Program (SHOPP) funds operations and maintenance on the State Highway System (SHS)



California State Highway System (SHS)

- 50,000 Lane Miles
- 12,559 Bridges
- 205,000 Culverts and Drainage Facilities
- 87 Roadside Rest Areas
- 29,183 Acres of Landscape

Source: Caltrans

The SHOPP has eight categories

Operational Performance

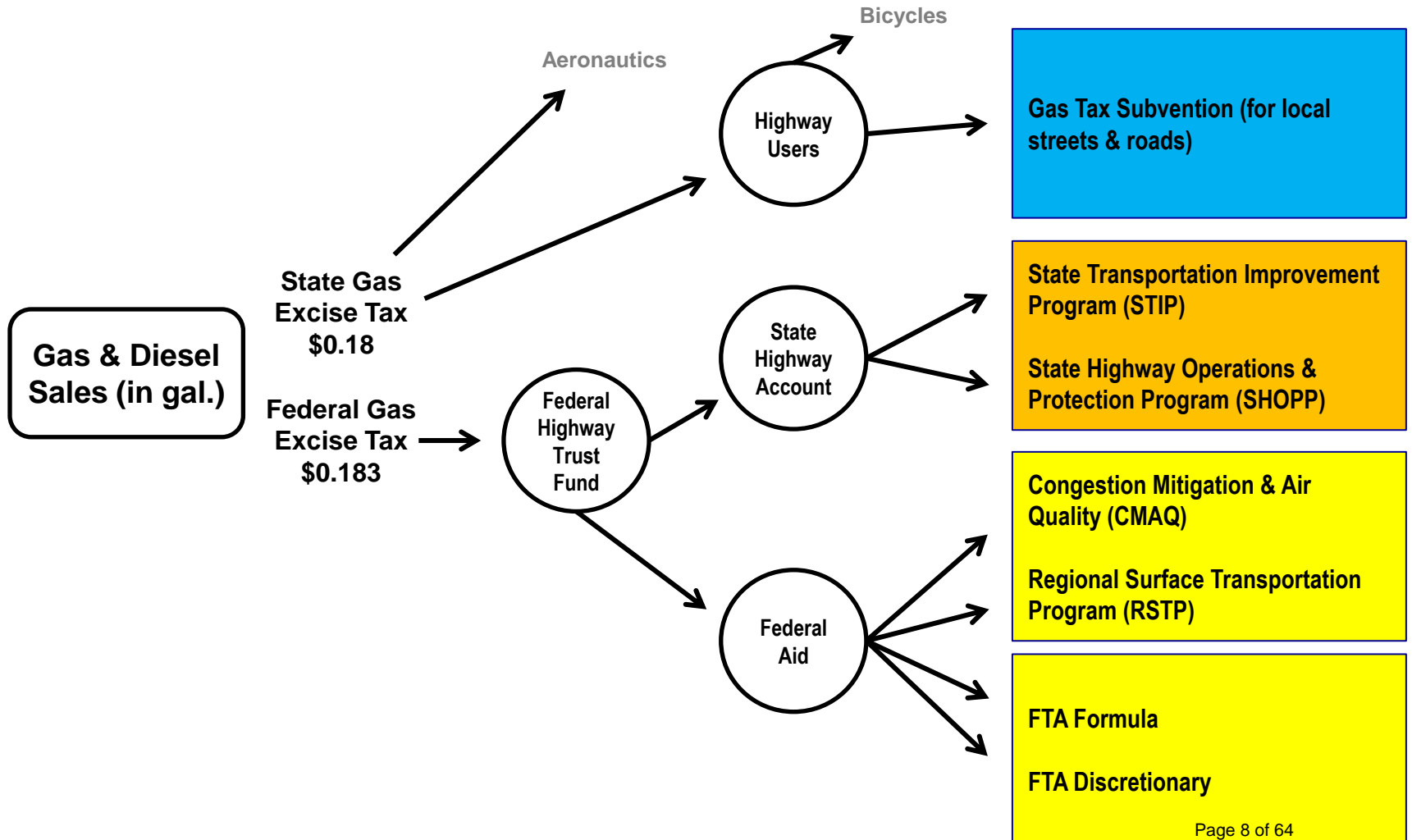
- Major damage restoration
- Collision reduction
- Legal and regulatory mandates
- Mobility improvement

System Condition

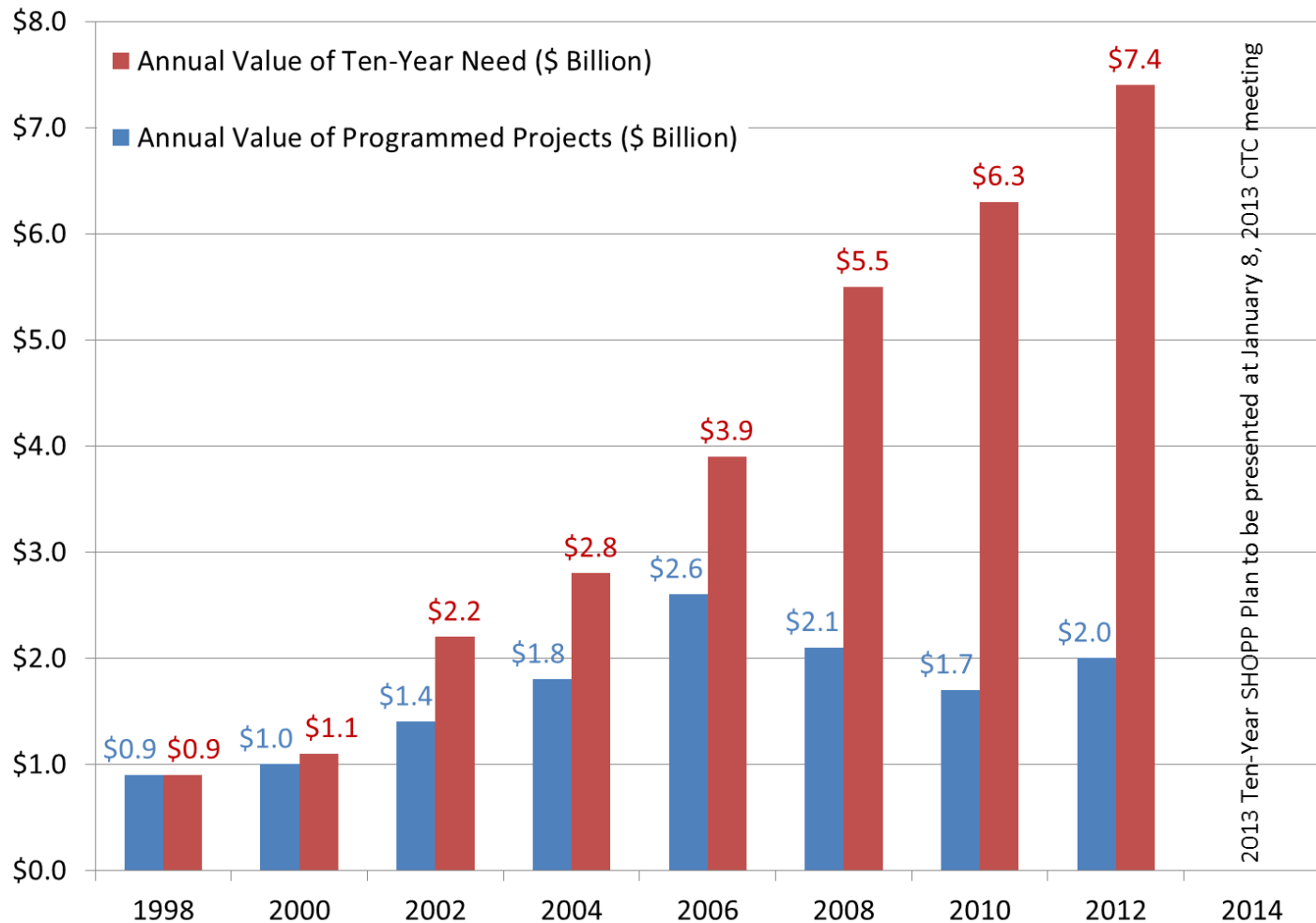
- Bridge preservation
- Roadway preservation
- Roadside preservation
- Facility improvement

... to maintain and preserve the investment in the SHS and its supporting infrastructure

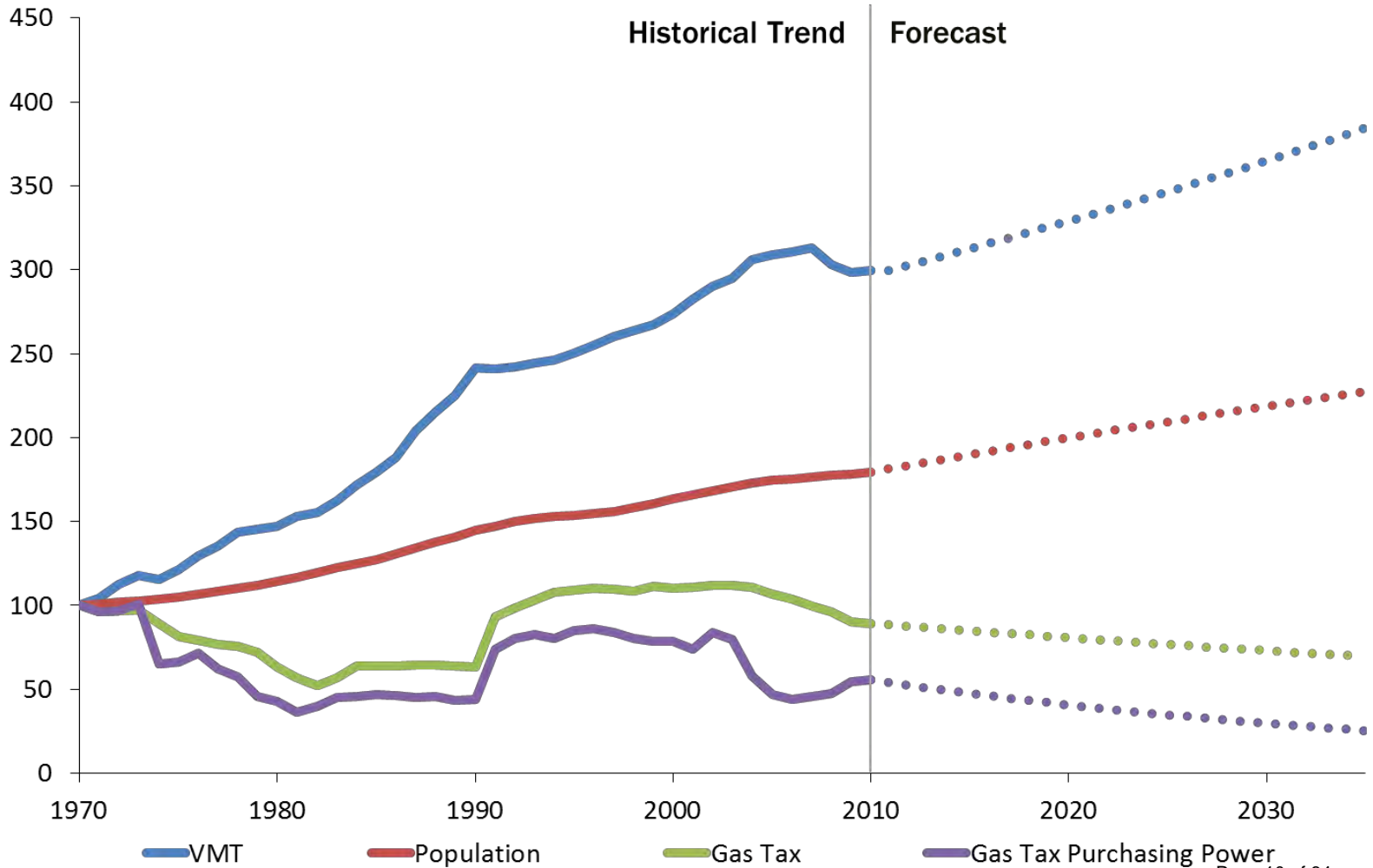
Like the State Transportation Improvement Program (STIP), the SHOPP is funded through the State Highway Account



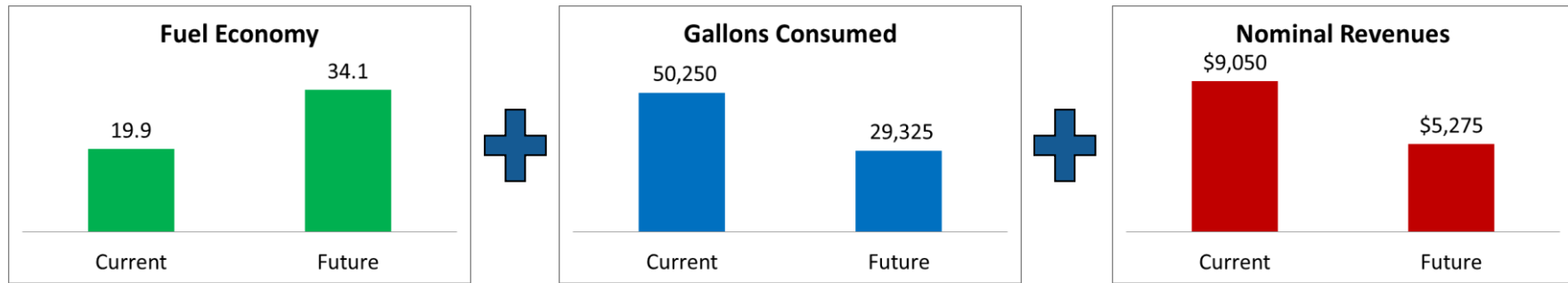
SHOPP funding increased slightly in the last cycle, but has not kept up with increasing needs over the last decade



Gas tax revenue has not kept pace with vehicle-miles traveled (VMT) and population growth



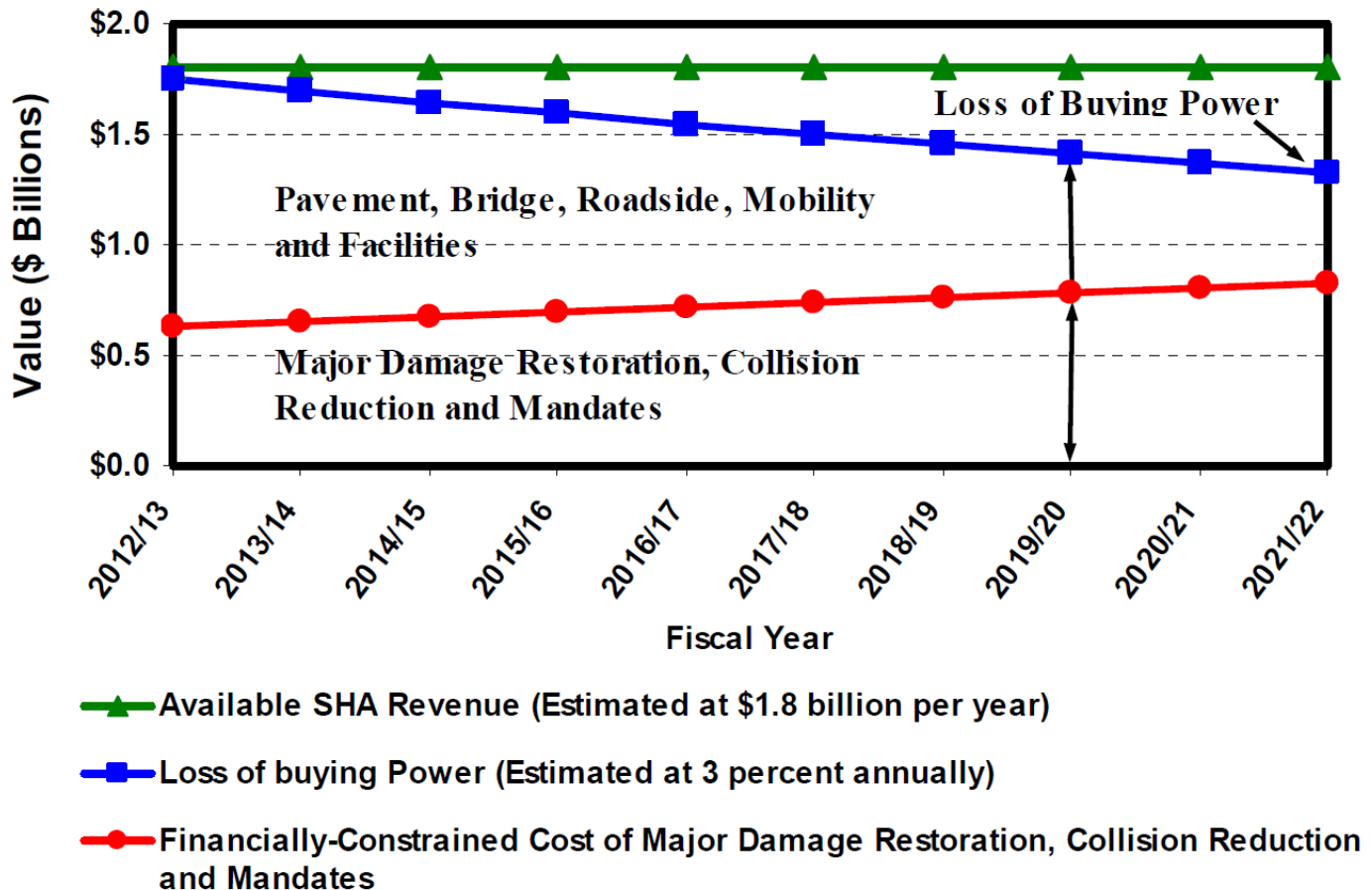
In the future, the purchasing power of fuel taxes will be impacted further by increasing fuel economy



=

72% reduction in purchasing power
by 2035

In addition, non-discretionary needs (e.g., safety, damage restoration, and mandates) are “squeezing” SHOPP revenues



Source: 2011 Ten-Year SHOPP Plan

Damage restoration addresses immediate, emergency needs



The Station Fire ravaged the Los Angeles County landscape late summer 2009, causing damage along State Route 2. The area took a second hit from storms in January 2010.

Caltrans must also use the SHOPP to comply with several legal and regulatory mandates (e.g., stormwater and ADA)

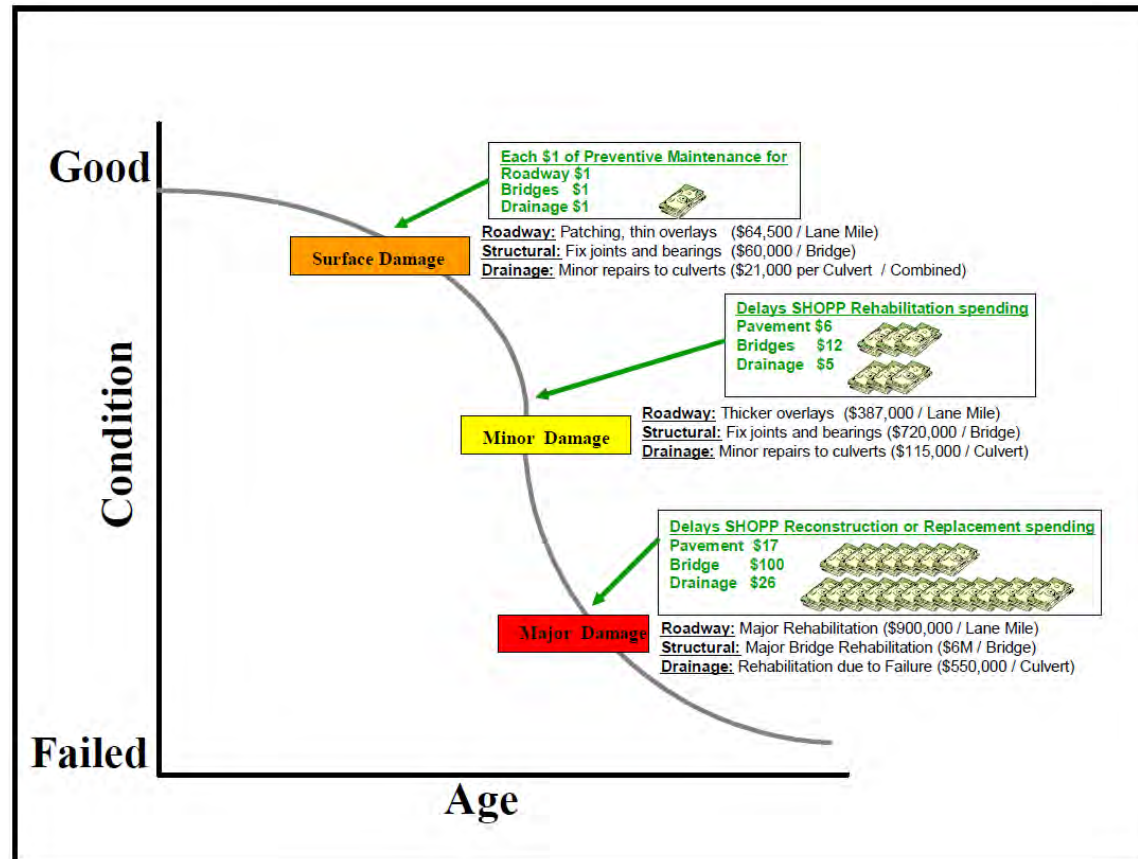
- Federal Water Pollution Control Act (33 U.S.C. 1251 et seq.)
 - Caltrans' stormwater systems are now also subject to the total maximum daily load requirements (TMDLs)
 - State Water Resources Control Board defines TMDLs as actions necessary to restore clean water

- Porter-Cologne Water Quality Control Act (Water Code, § 13000 et seq.) and evolving stormwater requirements
 - California Ocean Plan prohibits the discharge of wastes into Areas of Special Biological Significance (ASBS)
 - Caltrans has approximately 200 discharge points—the most of any discharger

- The Americans with Disabilities Act (ADA) of 1990 (P.L. 101–336 [July 26, 1990], as amended by P.L. 110–325 [September 25, 2008])

- Hazardous waste remediation regulation

Deferred maintenance leads to even greater SHOPP needs down the road



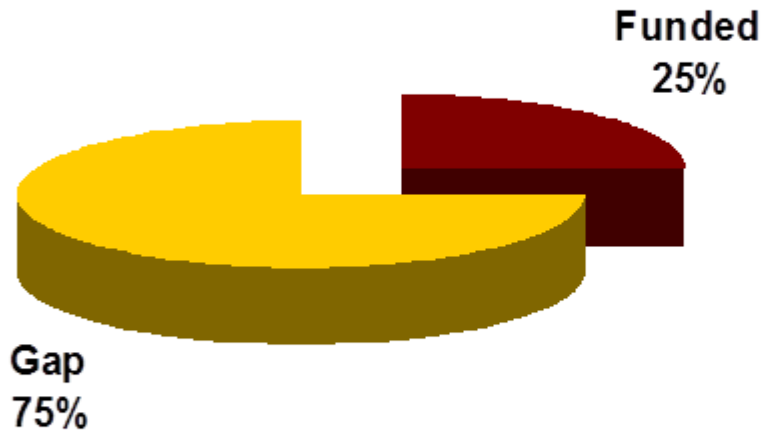
Source: 2007 Ten-Year SHOPP Plan

Timely maintenance is more cost effective in the long run

In the SCAG region, the 2012 RTP estimates a 75-percent gap in SHOPP funding over the planning period

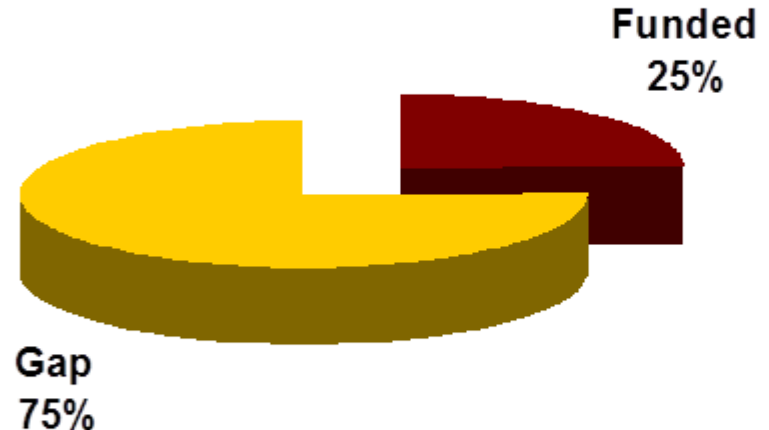
Ten-Year Needs per Plan (in nominal dollars)

- \$25.7 billion total
- \$6.4 billion funded
- \$19.3 billion gap



High-Level Needs through 2035 (in nominal dollars)

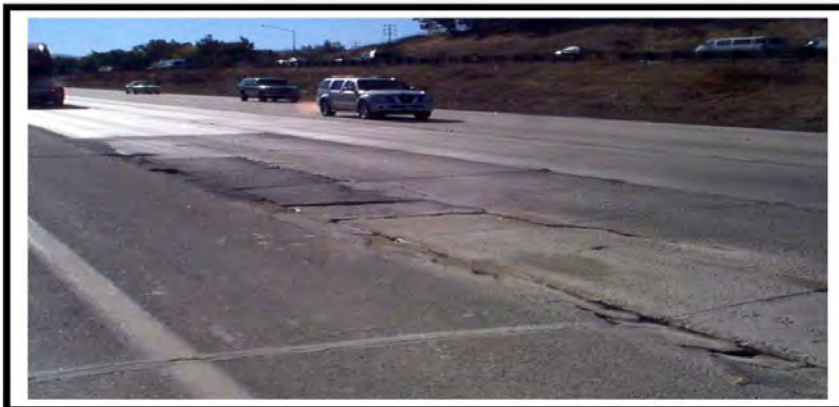
- \$130.3 billion total
- \$67.3 billion funded
- \$50.6 billion gap



Estimated from gap between goal-constrained and fiscally-constrained needs in *2011 Ten-Year SHOPP Plan*

What are the consequences of poor maintenance?

Severe Corner Cracking



This is an example of severe corner cracking of Portland cement concrete pavement caused by loss of base support, heavy loading, and severe pumping. Maintenance forces have patched the failed pavement to keep the lane in service.

Alligator Cracking



This is an example of severe fatigue cracking, also known as alligator cracking, on hot-mix asphalt concrete pavement. Maintenance forces have sealed the cracks to extend the service life of the pavement.

Source: 2011 Ten-Year SHOPP Plan

What are the consequences of poor maintenance?

Deteriorated Structures



The concrete in the Temple Street overcrossing structure has become severely deteriorated, leading to corrosion of the underlying reinforcing steel.

Source: 2011 Ten-Year SHOPP Plan

Concrete Deck Problems



A seven-foot-long hole opened up in the concrete deck of the bridge on Interstate 5 in San Diego County at the Oceanside Boulevard structure in February 2009.

Using Pavement Management To Assess Local Streets and Roads Statewide

Southern California Association of Governments
December 21, 2012



RTPA
RCTF

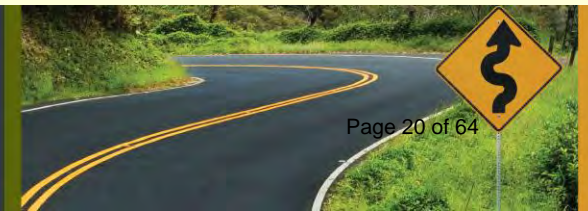
CALIFORNIA STATEWIDE NEEDS ASSESSMENT PROJECT

WWW.SAVECALIFORNIASTREETS.ORG



Questions To Answer

- **What are pavement conditions statewide?**
- **How much will it cost to maintain pavements?**
- **What are safety, traffic & regulatory needs?**
- **What is the shortfall?**
- **What is impact of funding scenarios?**



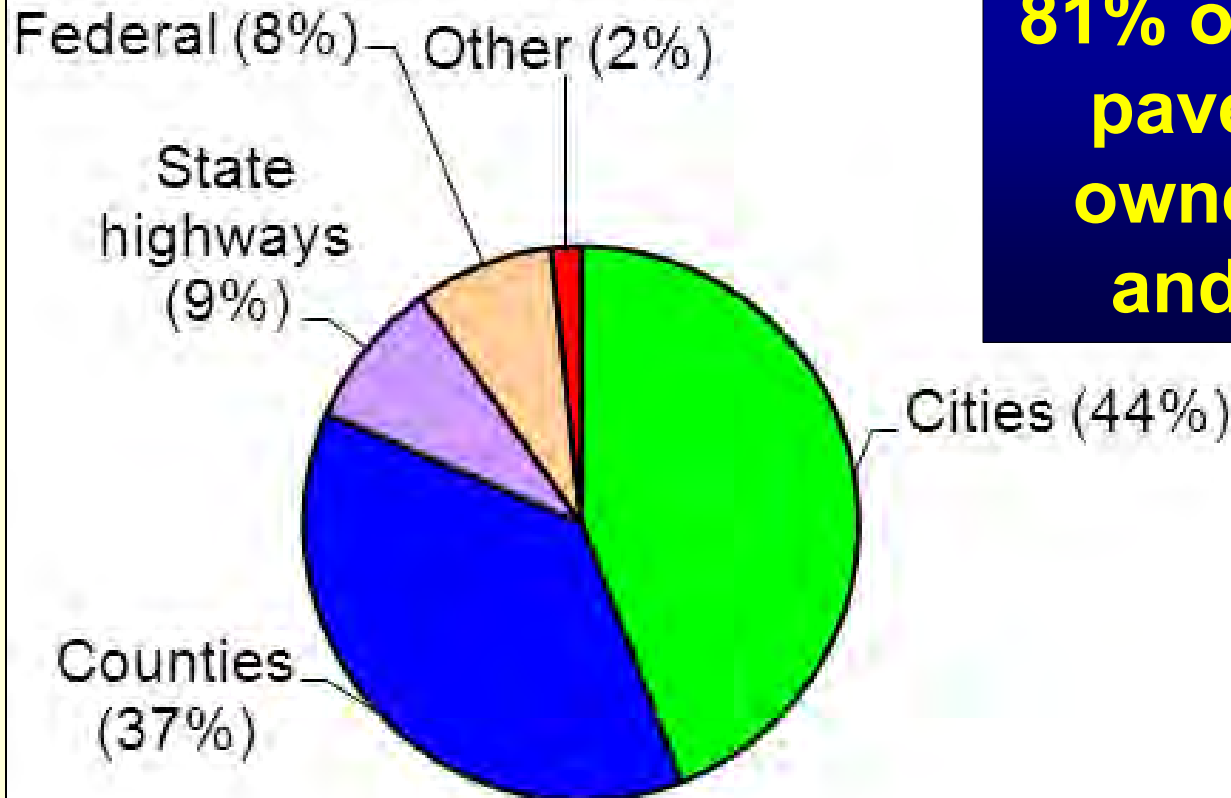
It's Not Just Pavements



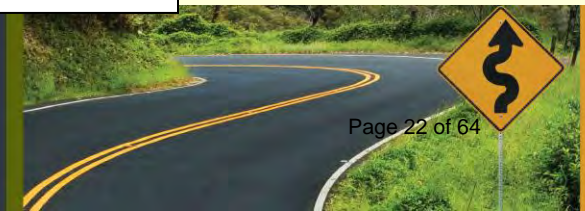
- **Sidewalks**
- **ADA ramps**
- **Curb & gutter**
- **Storm drains**
- **Others**



Local Streets & Roads are Huge Part of State Network

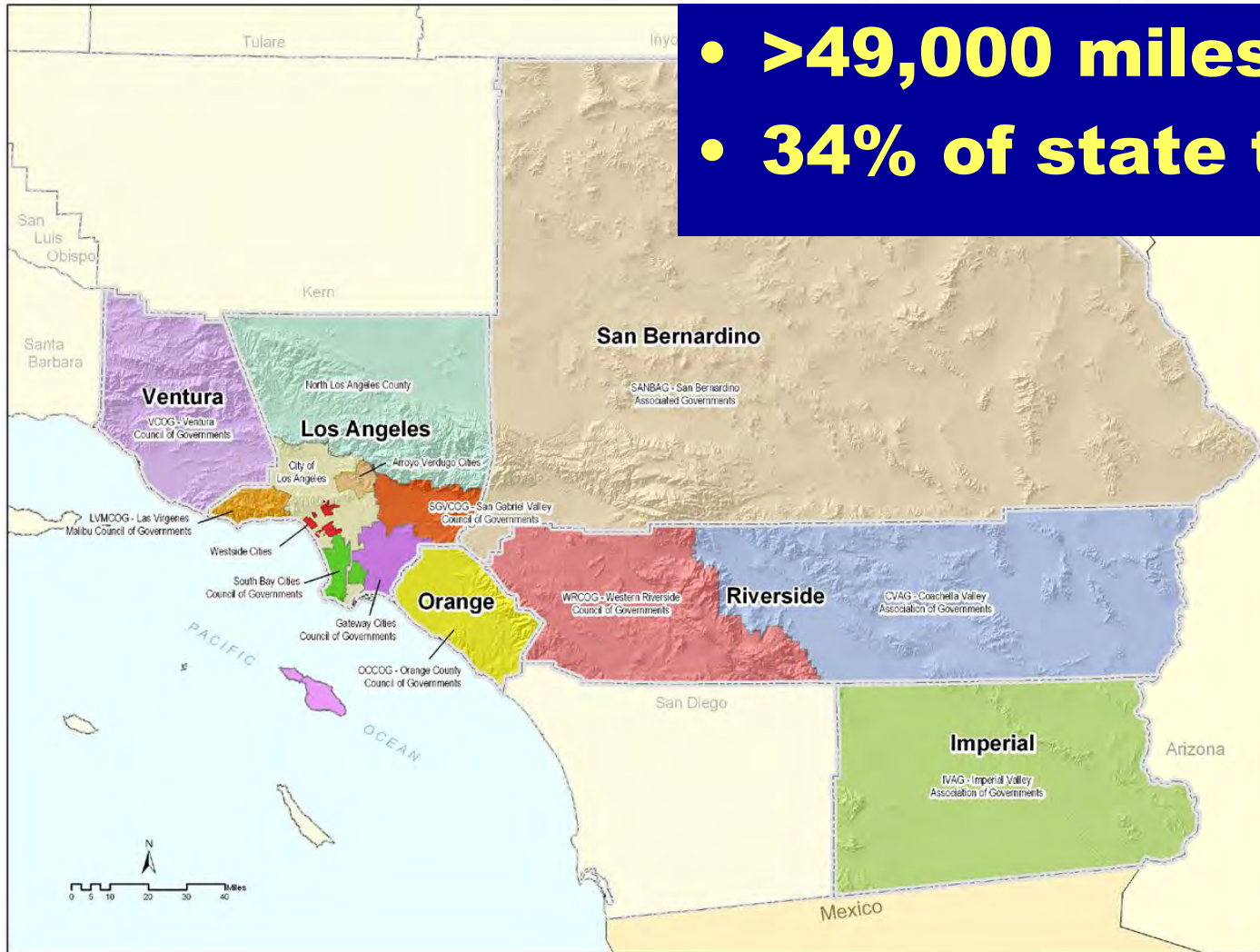


81% of California's pavements are owned by cities and counties!



SCAG – Facts & Figures

- >49,000 miles
- 34% of state total

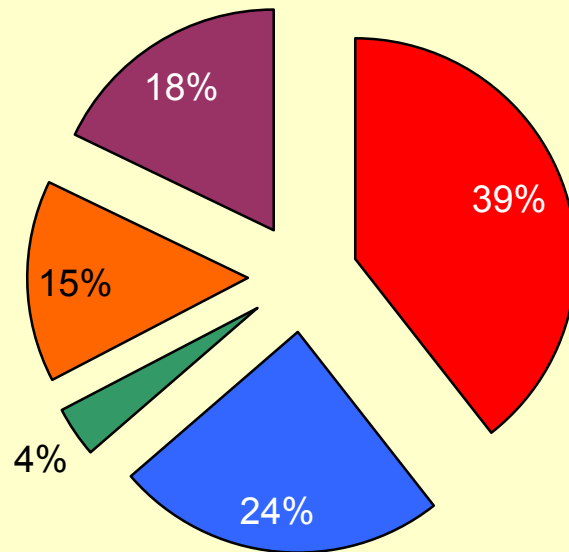




Pavements

Pavement Mgmt Software

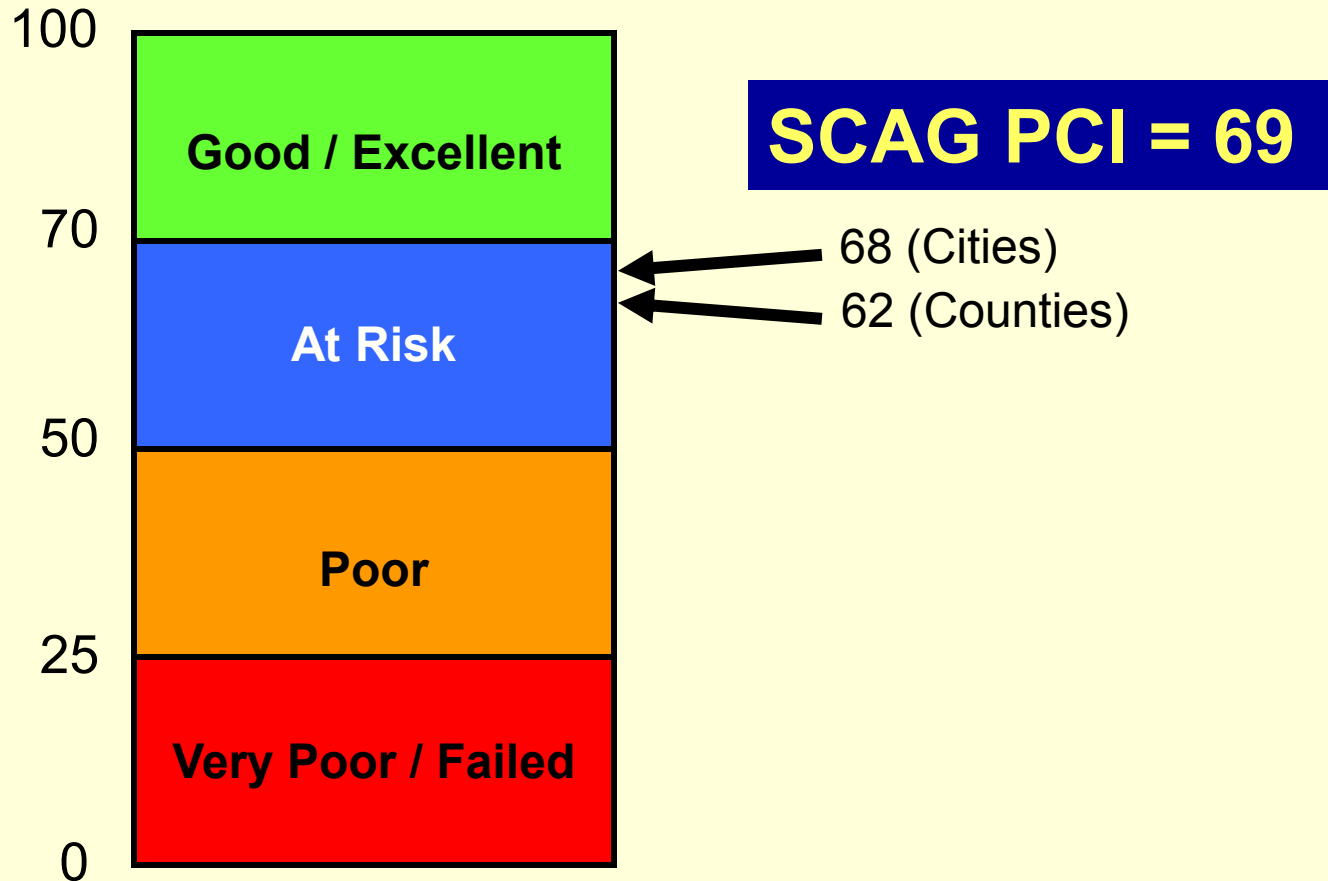
**92% of total miles
are included in a
PMS!**



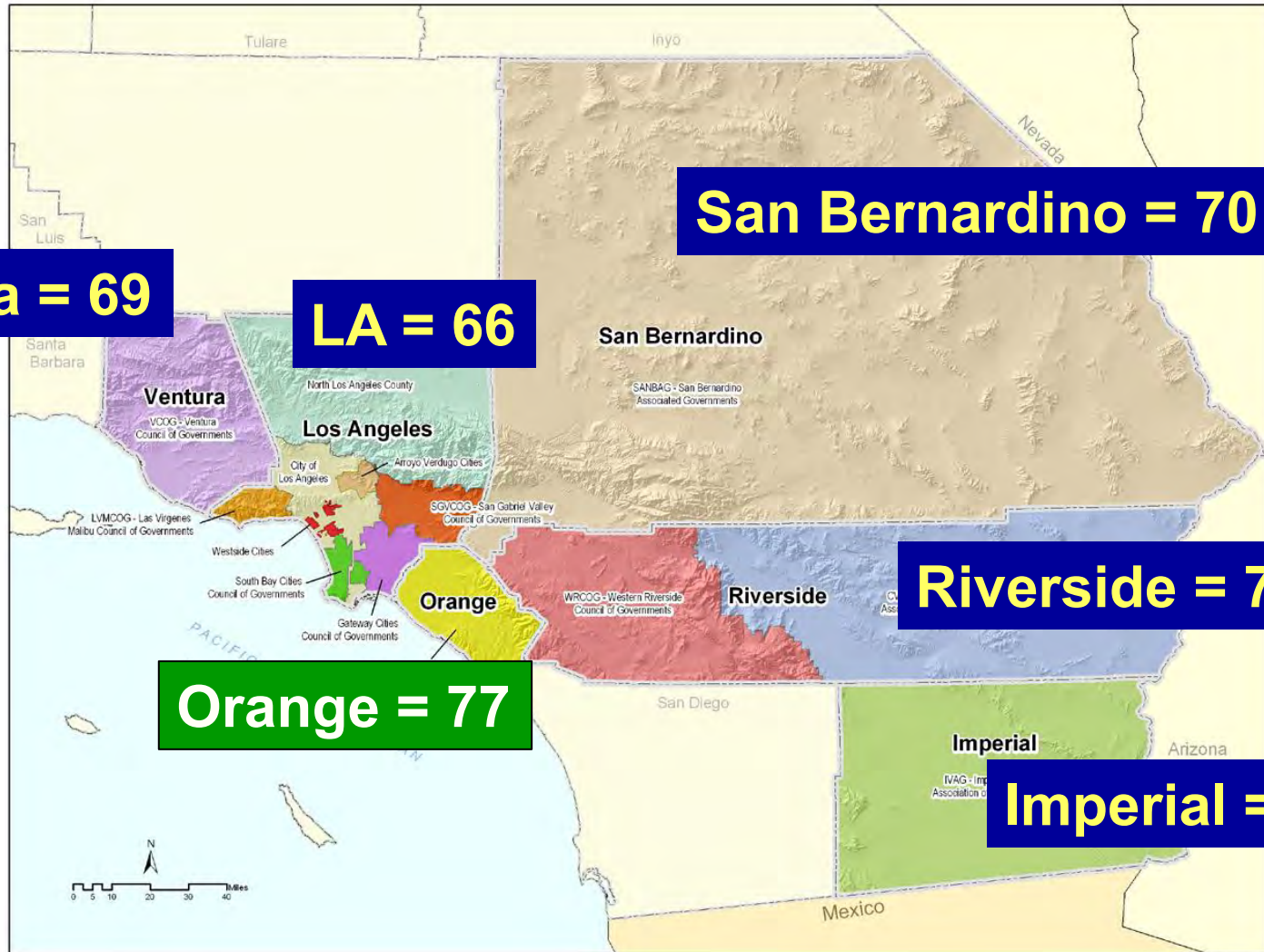
- StreetSaver
- MicroPaver
- Cartegraph
- Other
- No PMS



Average Statewide PCI



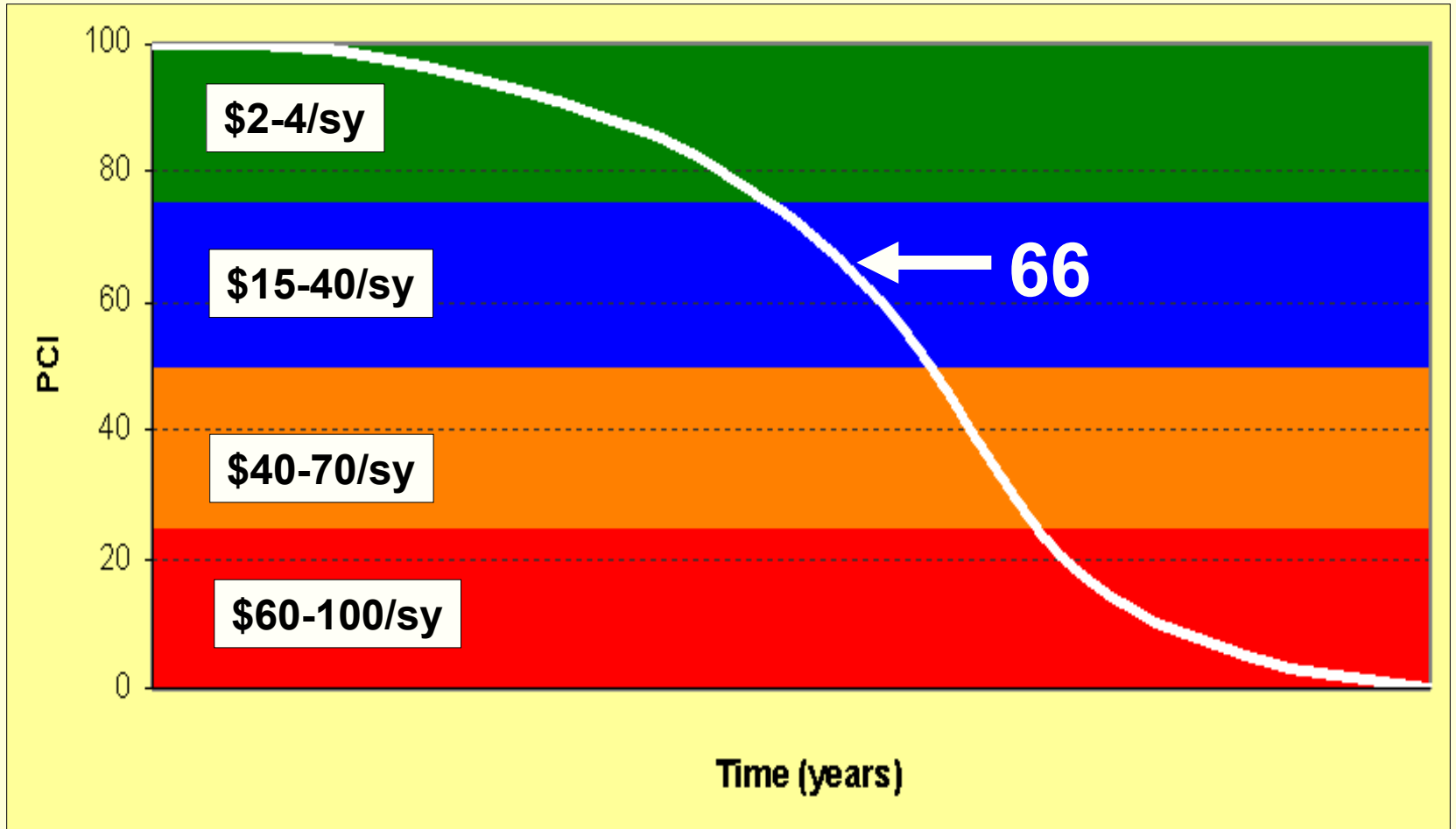
PCIs for SCAG



What does PCI = 66 look like?

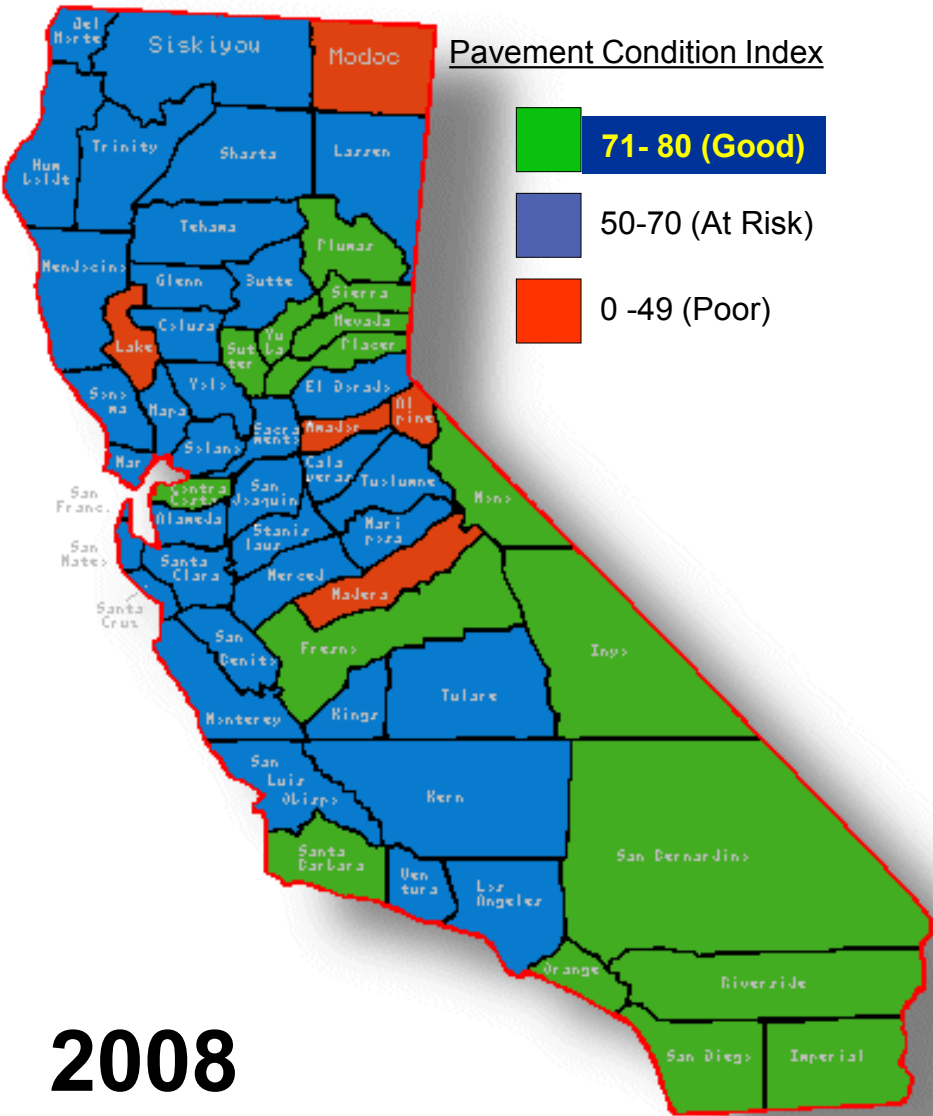
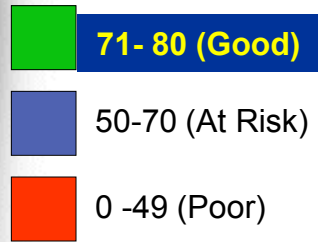


Why is 66 Critical?



Statewide Trends

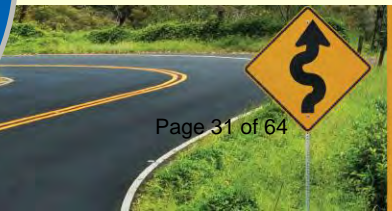
Pavement Condition Index



Total Transportation Needs

Transportation Asset	10 Year (\$B)		
	Needs	Funding	Shortfall
Pavement	\$ 72.4	\$ 13.3	\$ (59.1)
Essential Components	\$ 30.5	\$ 8.7	\$ (21.8)
Bridges	\$ 4.3	\$ 3.0	\$ (1.3)
Totals	\$ 107.2	\$ 25.1	\$ (82.1)

**56 ¢/gal
or
76 ¢/day!**

SCAG's Transportation Needs

Transportation Asset	10 Year Needs (\$B)
Pavement	\$ 25.2
Essential Components	\$ 11.6
Bridges	\$ 1.7
Totals	\$ 38.4

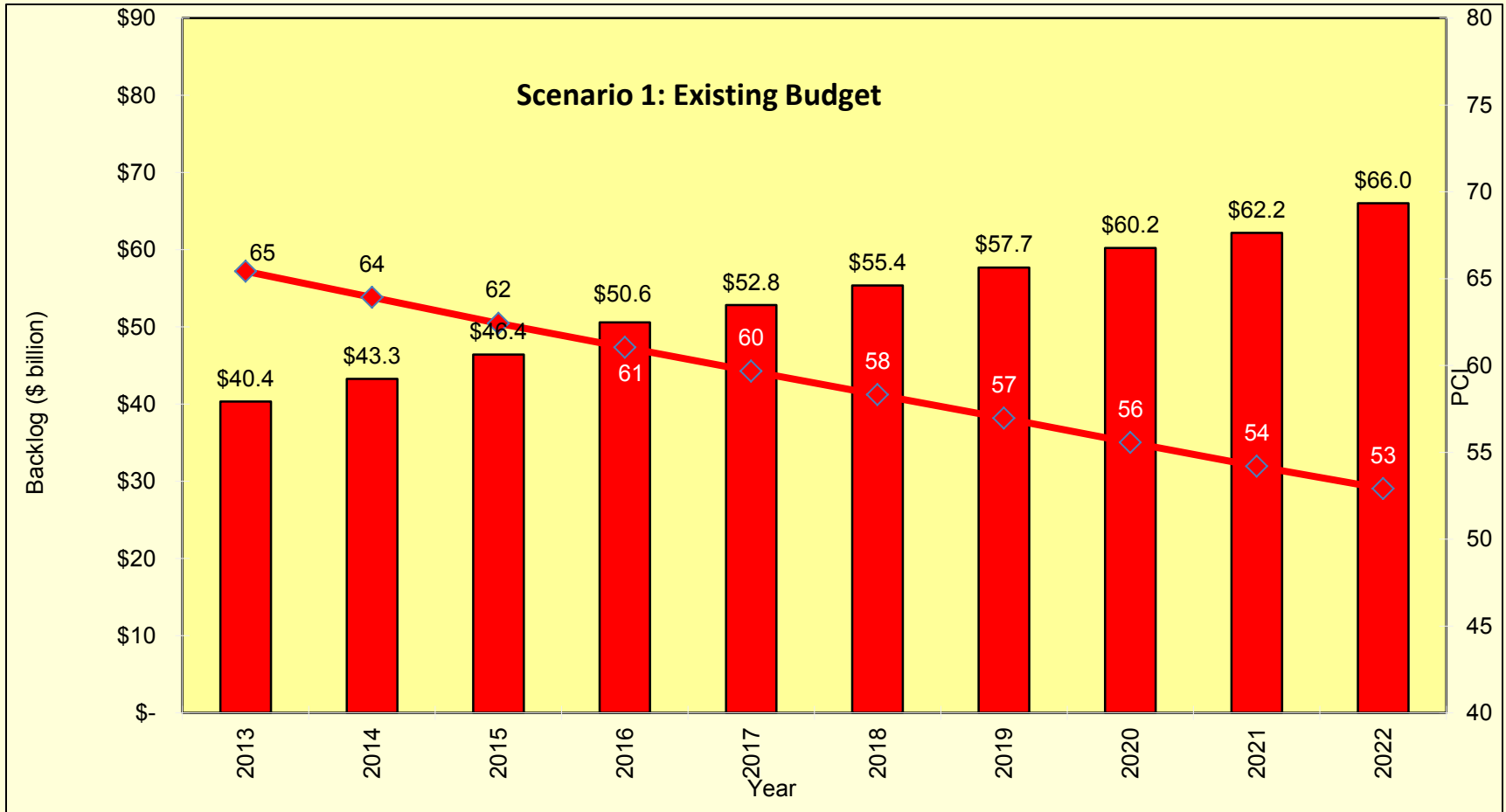


Pavement Funding Scenarios

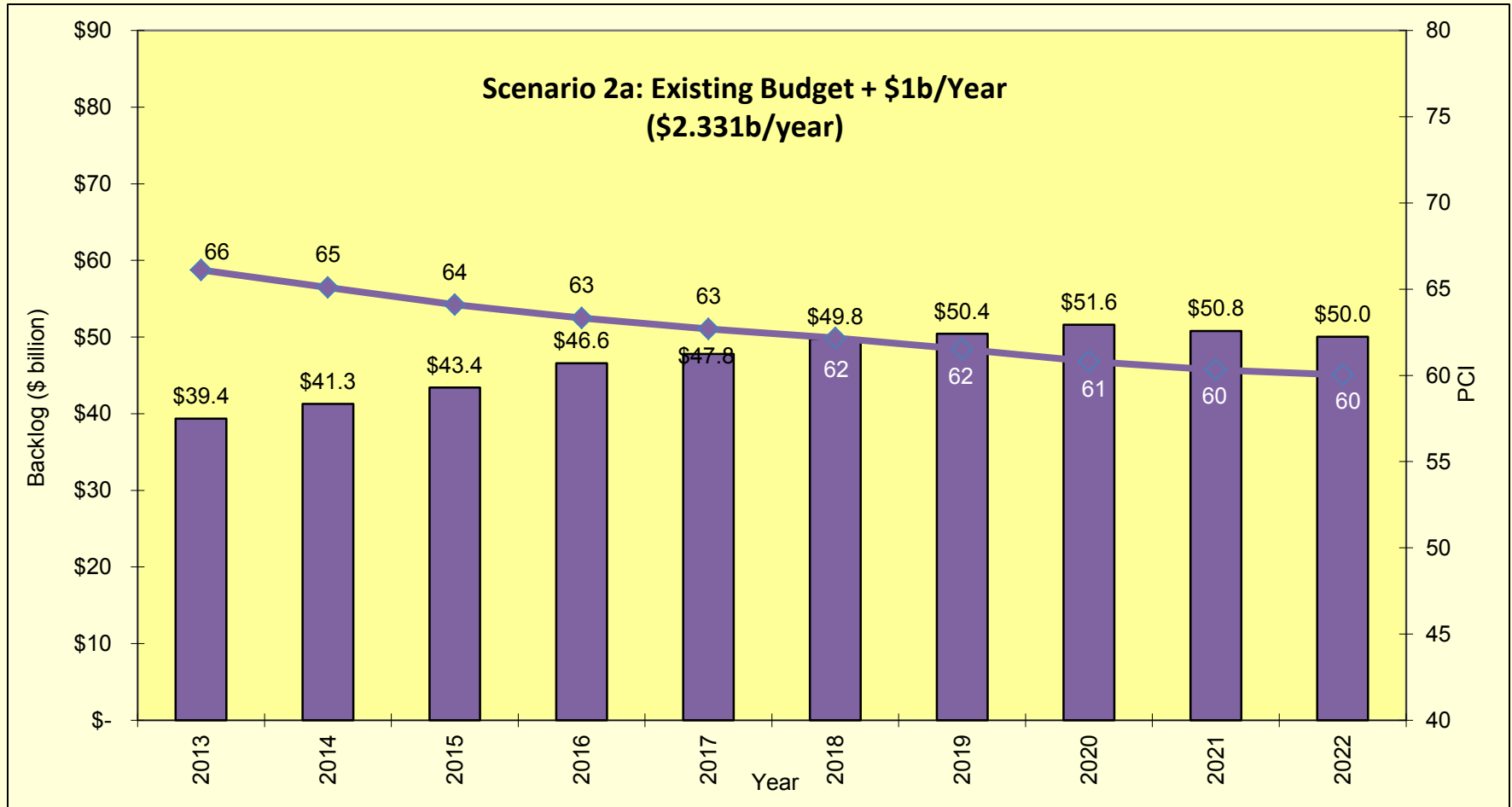
- 1. Existing funding (\$1.33 billion/year)**
- 2. Transportation CA measure (\$1B/yr)**
 - a. Bond i.e. \$4.23 billion/year for first 5 years, \$1.33 billion for next 5 years
 - b. No bond i.e. \$2.33 billion/year
- 3. Maintain current PCI at 66**
- 4. Efficiency scenarios**
- 5. Best management practices**



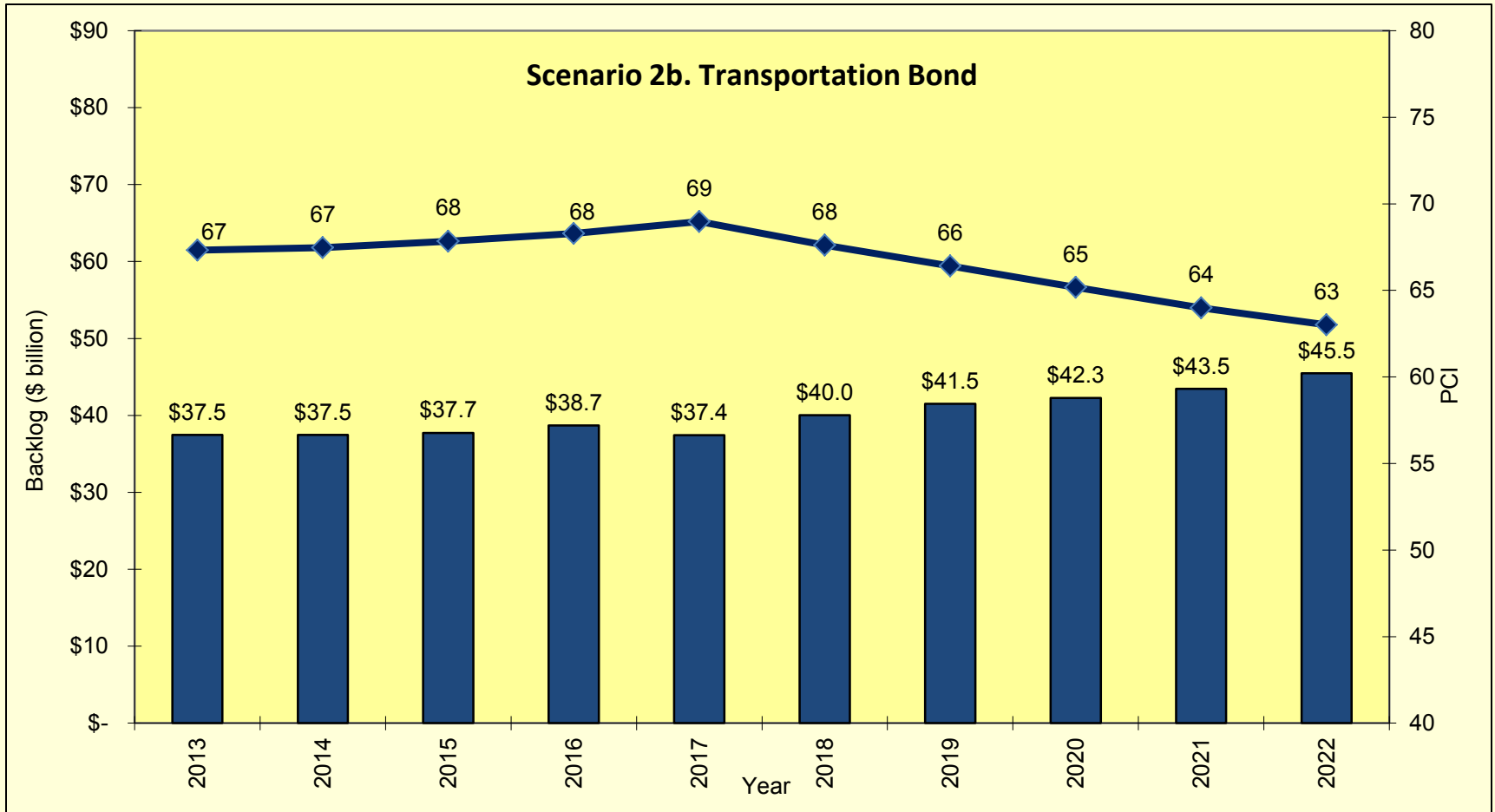
1. Exist. Funding (\$1.33 B/yr)



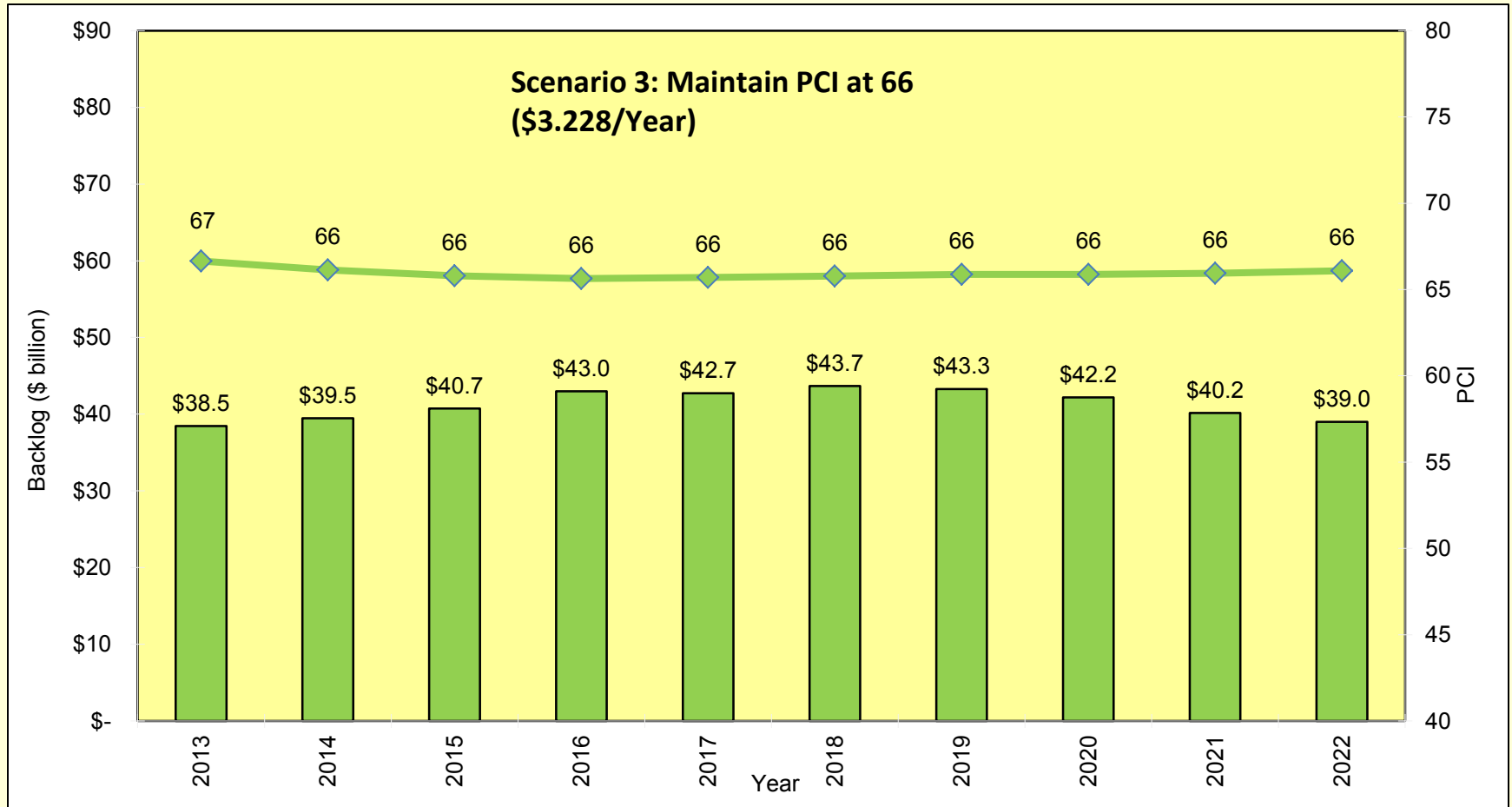
2a. No bond (\$2.33 B/yr)



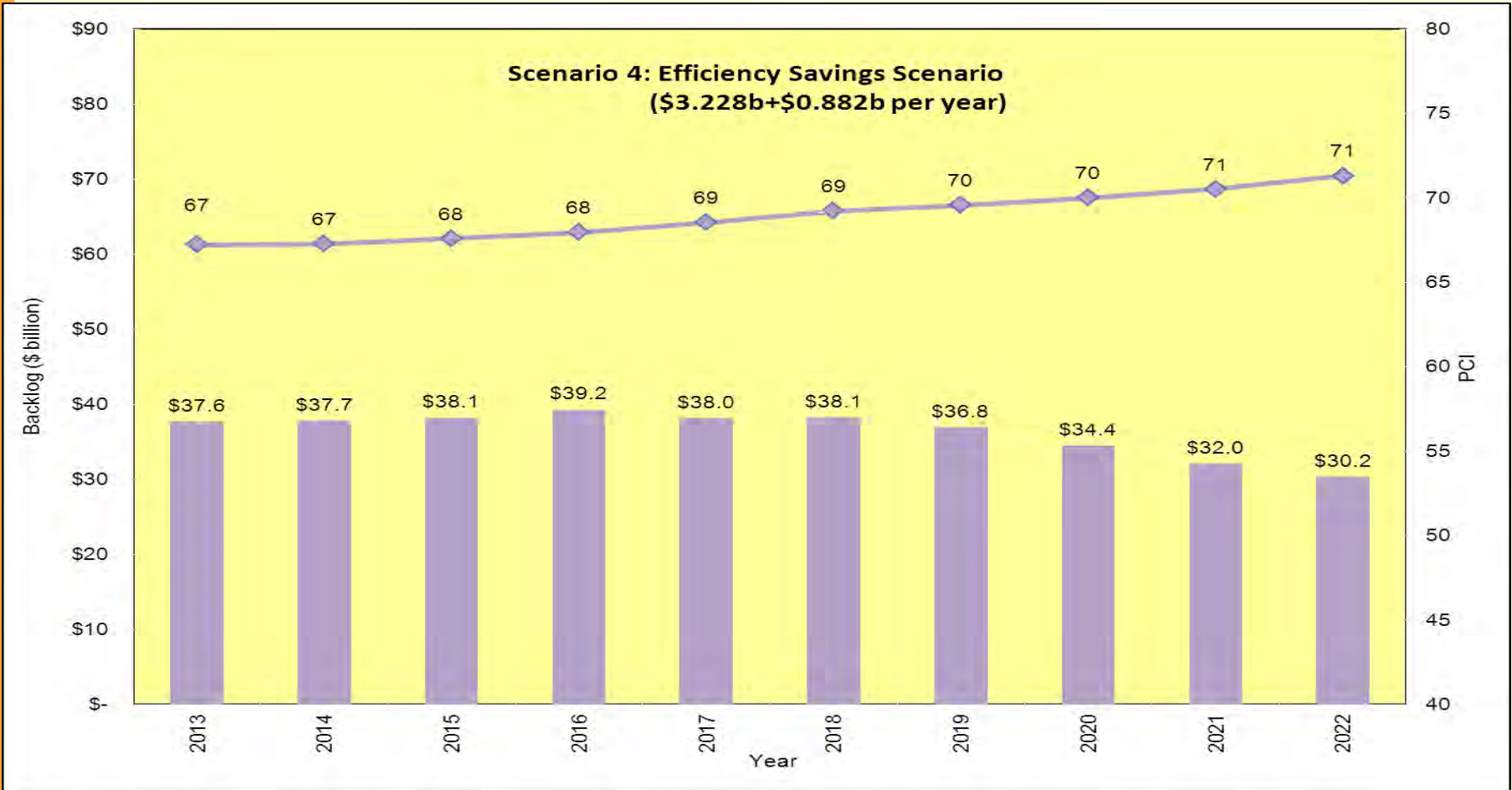
2b. Bond (\$4.2B/\$1.3B)



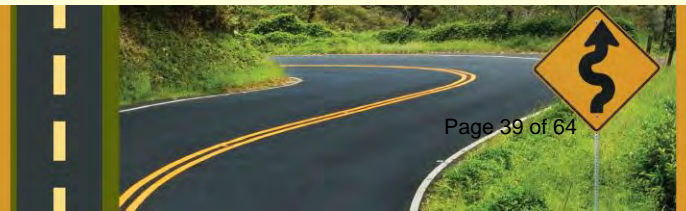
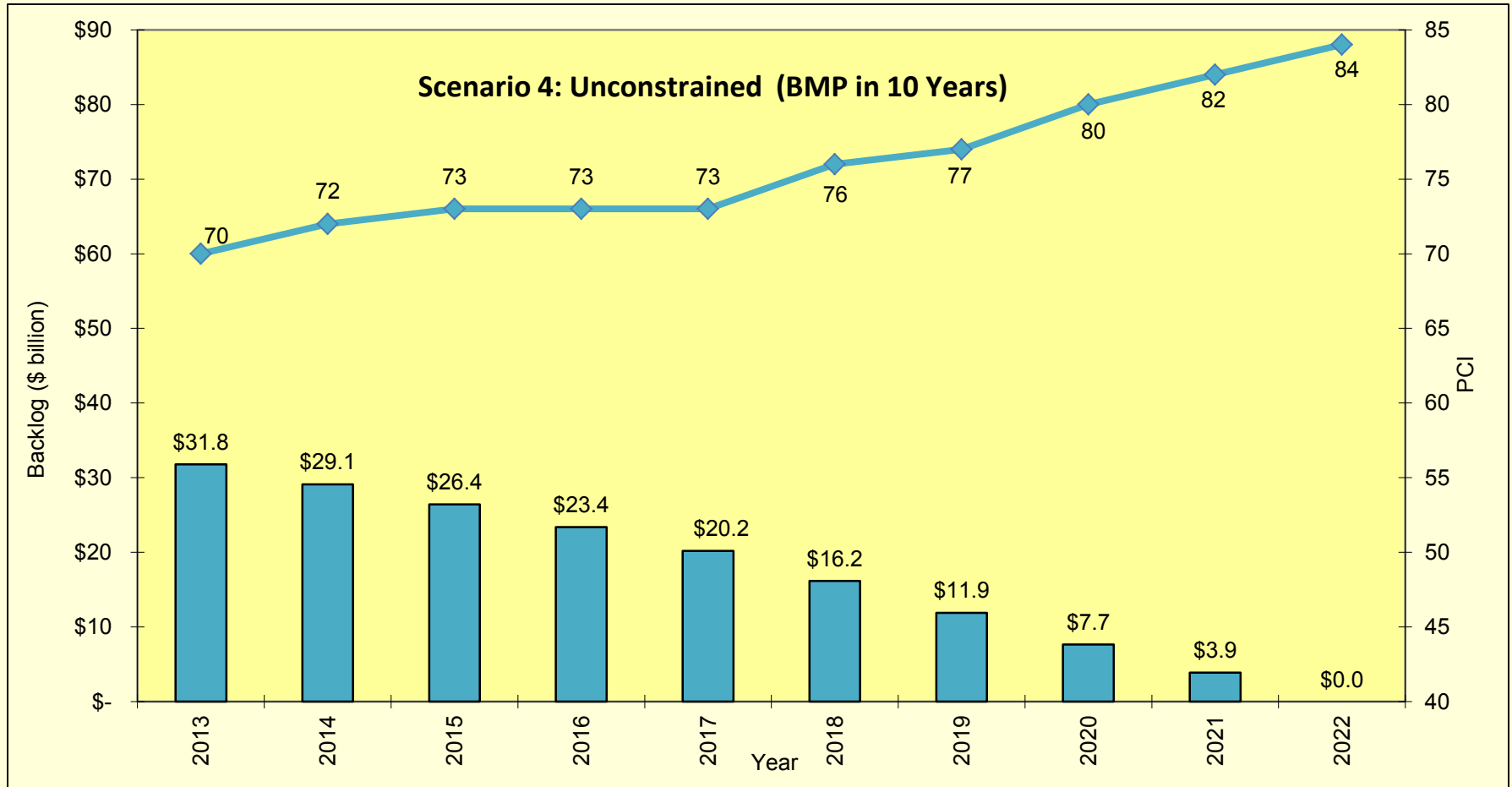
3. Maintain PCI = 66 (\$3.2 B/yr)



4. Efficiencies (\$4.1 B/yr)



5. BMP (\$7.2 B/yr)

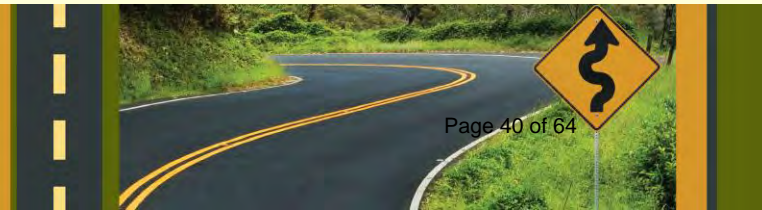


Impacts of Different Scenarios

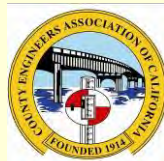
Scenarios	Annual Budget (\$B)	PCI in 2022	%	Cost Savings* (\$B)
Current Conditions				
1. Existing Funding				-
2A. No bond		68%		\$ 26
2B. E		71%		\$ 34
3. Ma		78%	20%	\$ 44
4. Effic		83%	16%	\$ 59
5. Best	7.23	84	0%	\$ 108

The % of roads in failed condition will increase from 6.6% to 25% by 2022 under current funding.

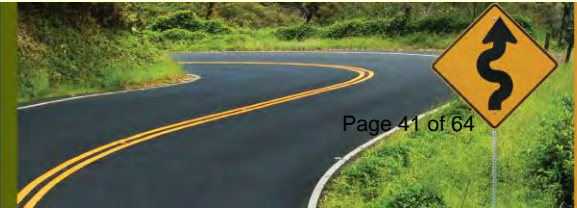
* Annual e



What's "failed" condition?



RTPA
RCTF







Essential Components' Failures



Bridge Failures



How Will Results Be Used?

- **Governor & State Legislature**
- **California Transportation Commission (CTC)**
- **Regional Transportation Planning Agencies**
- **City Councils/Board of Supervisors**
- **Statewide ballot initiative**

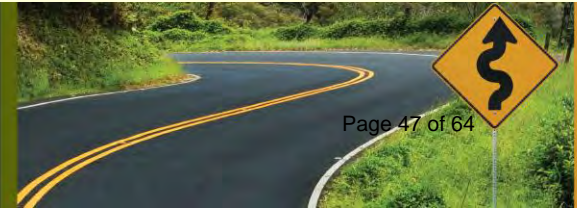


Questions?

Contact:
Margot Yapp, P.E.
myapp@ncenet.com
(510) 215-3620



RTPA
RCTF



Approaches for Transit Capital Asset Management

December 2012

Systemwide Planning/Transit Corridors



Maintaining system State of Good Repair is a good practice for growing and aging systems and is a consistent practice in the transit industry

- Asset Management and State of Good Repair are terms synonymous with ensuring that transit systems are maintained in such a condition as to provide efficient, reliable, and safe transit service;
- Recognizing costs and funding needs ensures that our system will be maintained in a state of good repair (SGR);
- Our analysis is consistent with FTA national assessments and practices of other major transit agencies across the nation;
- FTA is developing requirements for agencies applying for New Starts (major capital project) grants that they demonstrate resources are in place to maintain the entire transit system in a State of Good Repair;
- MAP-21 now requires an Asset Management Plan. This report sets the foundation for developing a more detailed Asset Management Plan.



* All dollars in 2014

II. State of Good Repair Needs for the SRTP

The State of Good Repair Needs for the SRTP are established through several steps

- > Development of costs and needs with other departments
- > Sum Annual Costs for Capital Replacement and Rehabilitation over the longer term LRTP time period
- > Review funding levels programmed in the Long Range Financial Forecast
- > Compare Cumulative Costs and Funding for both the LRTP and SRTP Periods
- > Identify Funding Shortfalls and Surpluses
- > Characterize the Needs over the 10-year SRTP time period
- > Develop Various Funding Scenarios to Address Needs



* All dollars in 2014

II. State of Good Repair Needs for the SRTP

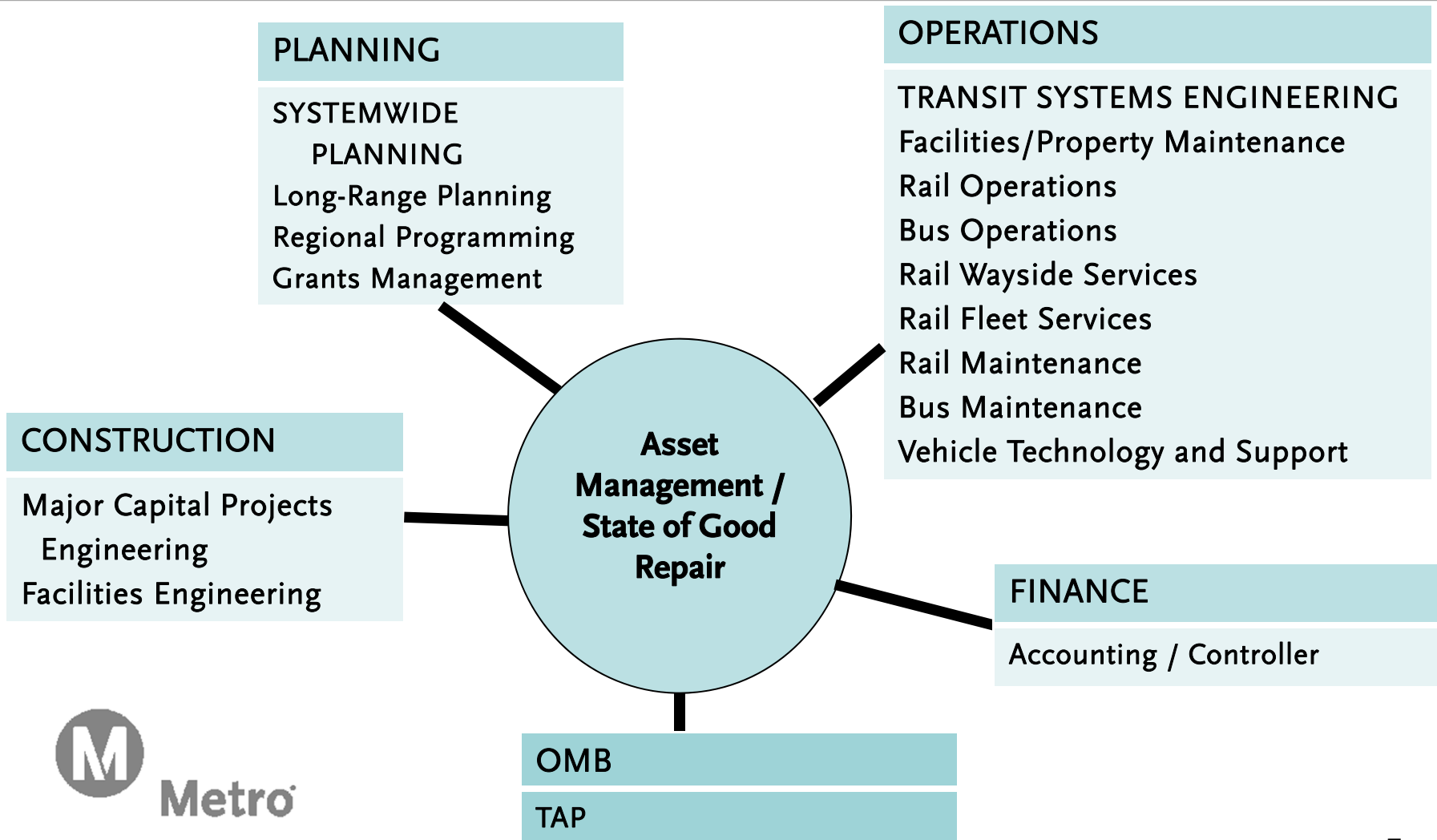
Assessment of SGR repair needs is based on comprehensive databases on the useful life of assets and the cost of rehabilitating and replacing those assets

- Asset Life and Replacement Cost Databases are developed and maintained by Metro's Transit Systems Engineering Group
- Comprehensive Asset Database – includes all assets owned by Metro by category
- Detailed Cost Data – includes cost of capital rehabilitation and replacement of assets based upon project history at Metro
 - Historical Local Experience – Useful life of assets are based on operating conditions in Los Angeles County
 - National Review – The FTA has been conducting national assessments of transit asset condition and provided useful data on asset conditions by age



* All dollars in 2014

Many Departments Contribute to Asset Management and State of Good Repair



* All dollars in 2014

Partial list of individuals from departments who provided input/consultation for this analysis

- > Wayside Systems Engineering
- > Project Management Oversight
- > Long Range Planning
- > Regional Programming
- > Operations Administration
- > Rail Operations
- > Maintenance
- > Facilities Engineering
- > OMB



* All dollars in 2014

II. State of Good Repair Needs for the SRTTP

Metro's asset condition databases follow general FTA guidance and represent an important foundation for long-term asset management and capital replacement planning

- > FTA does not require transit agencies to have any particular system for managing assets, just that they have one
- > There are two general ways to measure SGR:
 - by the age of asset(age-based) or
 - by the condition of the asset (condition-based – affected by age and intensity of use)
- > Metro uses an age-based SGR measurement and currently determines that asset replacement should be initiated when assets are within 1 to 5 years of the end of their useful life depending on the time to deliver the new asset
- > A condition-based approach would require a systematic assessment of asset conditions; FTA suggests a 1 to 5 scale in its Transit Economic Requirements Model (TERM)

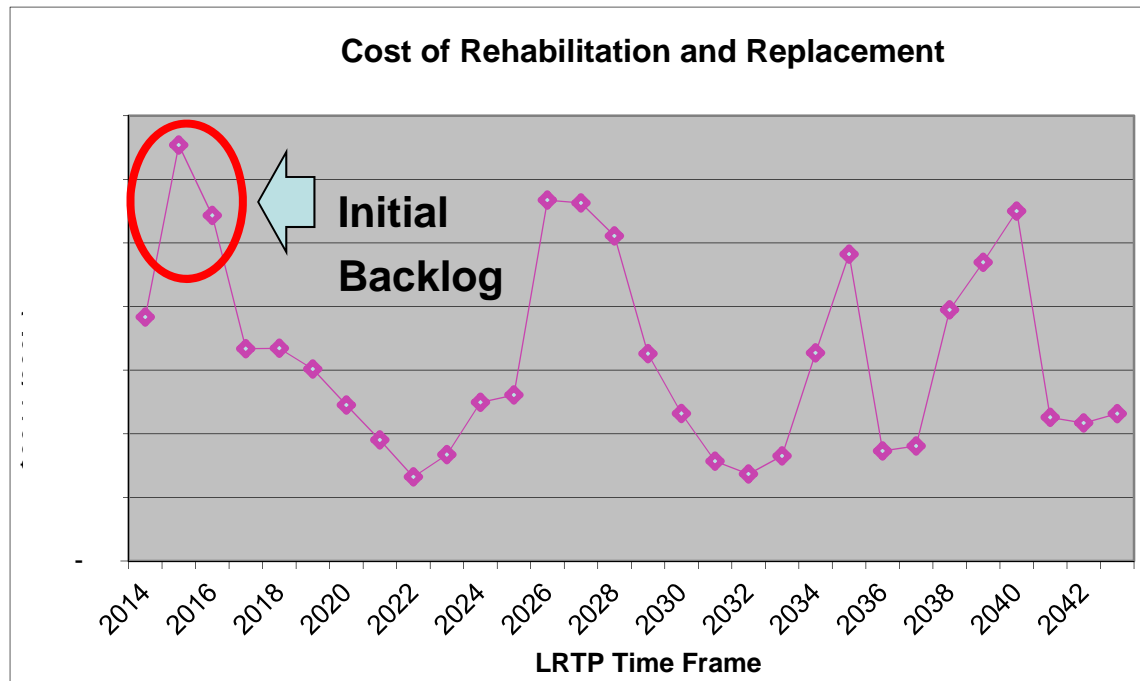
Excellent	Good	Adequate	Marginal	Poor
5	4	3	2	1
- > Developing a more condition-based approach would require more resources to conduct a systematic data collection and analysis; Metro is working with FTA on pilot projects to refine analysis tools



* All dollars in 2014

II. State of Good Repair Needs for the SRTTP

The SGR costs to maintain the system follow a recurring pattern as the end of useful life of assets is reached and they need to be rehabilitated or replaced



- > There is an initial backlog of unmet rehab and replacement needs in FY2014 and FY2015
- > Adjustments were made to account for recently completed work and to align with SGR items accounted for in the LRTP

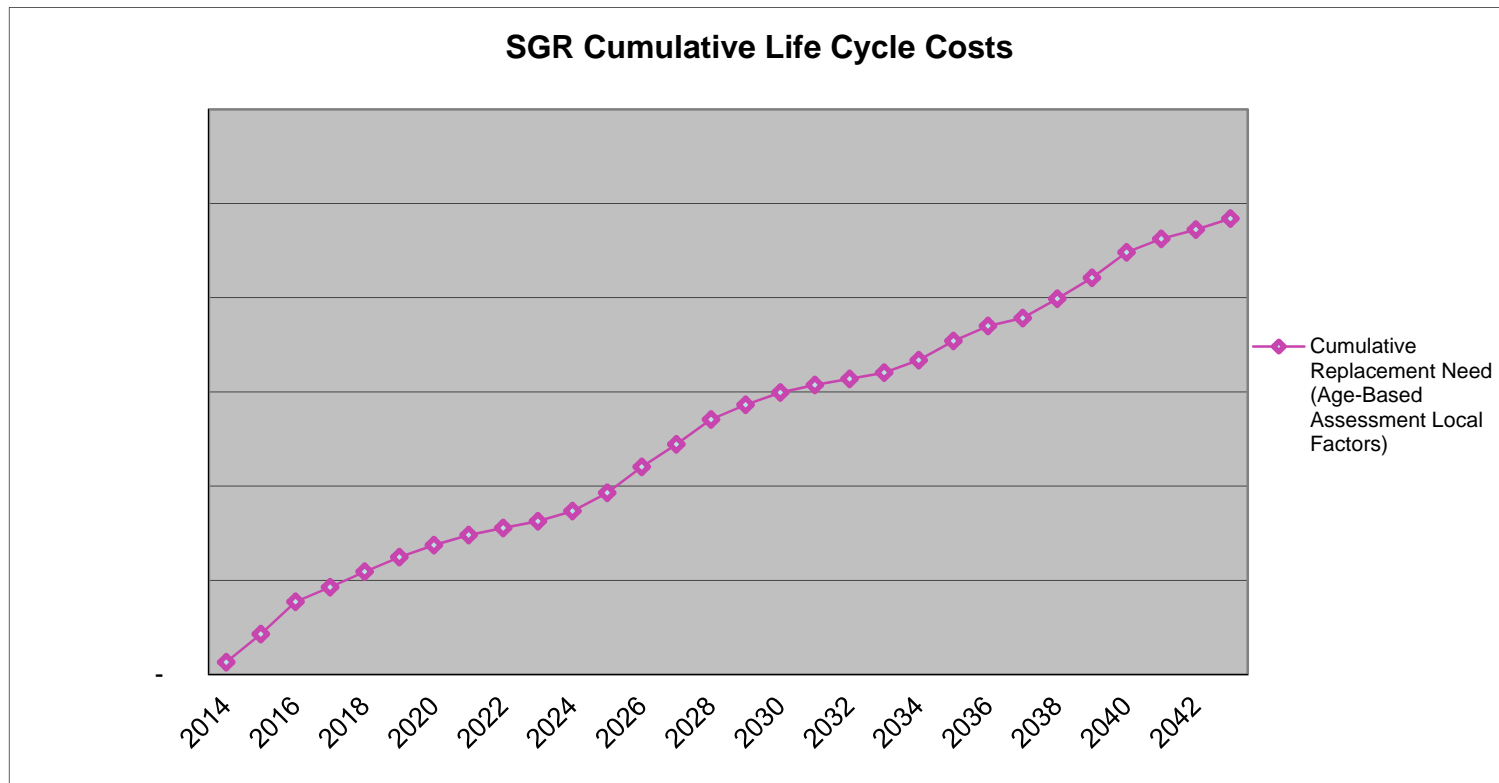
DRAFT FOR DISCUSSION ONLY



* All dollars in 2014

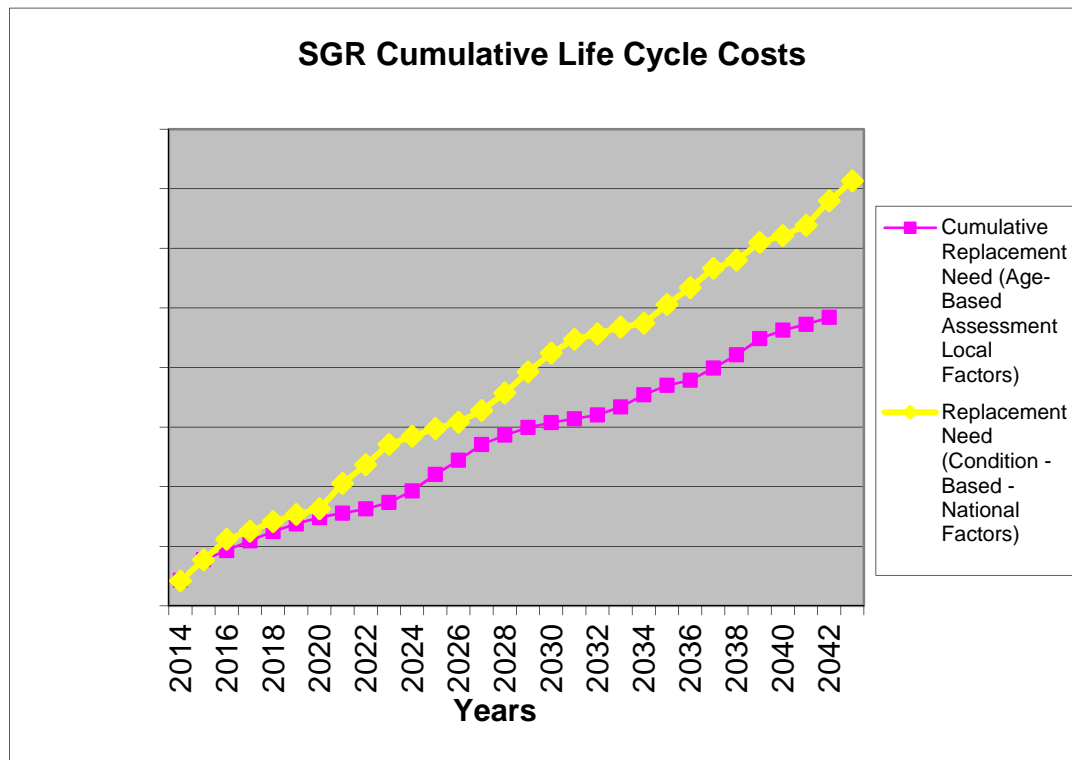
II. State of Good Repair Needs for the SRTP

Over the SRTP Period (between 2014 and 2023) and the LRTP period, the cumulative need for replacement and rehabilitation of assets is assessed



II. State of Good Repair Needs for the SRTTP

Metro's Assessment of State of Good Repair is appropriate and rigorous when compared with other methods for assessing capital replacement needs



- > A comparison was made to a condition-based assessment using a FTA model that uses national data and benchmarks for capital replacement
- > Metro's age-based assessment of capital replacement needs tracks the condition-based assessment
- > Metro's model diverges beyond 6 years due to FTA condition ratings based on the nation's older systems.
- > This is justified as Metro experiences generally longer lives for many assets when compared to national averages. (Factors such as climate, load factors, frequencies of service affect this difference)



* All dollars in 2014

II. State of Good Repair Needs for the SRTP

A comparison of LRTP funds with actual need will determine how sufficient SGR funds are for existing assets

- Although funds to support SGR for the existing system may be adequate over the long term, costs to maintain new lines (including every line starting with the Expo Line) need to be evaluated over the extended LRTP time period.
 - New lines are not expected to generate major rehabilitation or replacement costs within the SRTP time frame (before 2024), but will during the LRTP time frame beyond FY 2024.

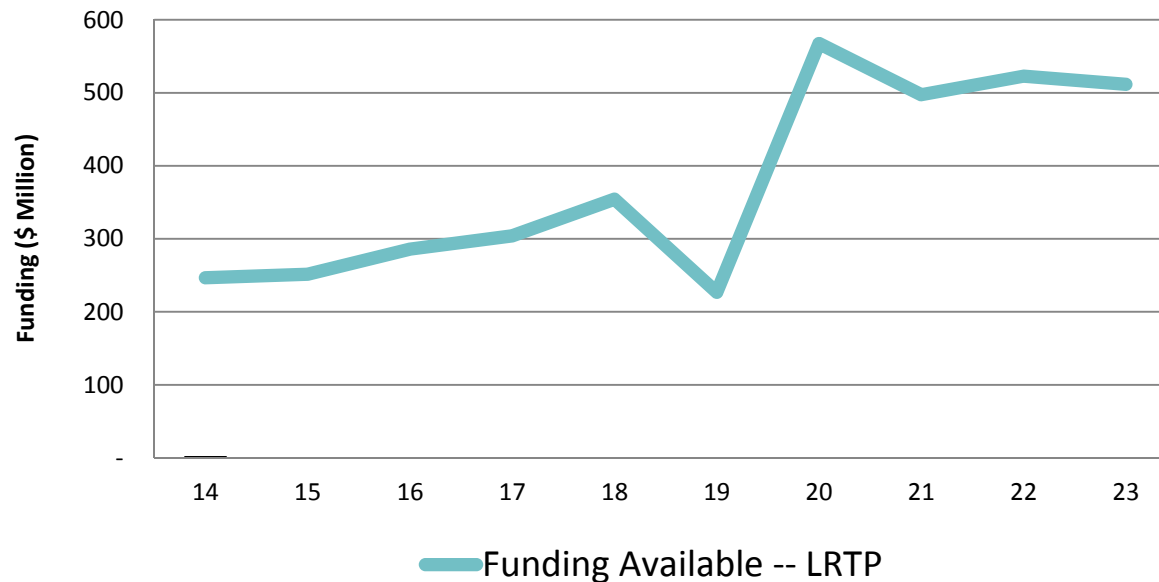


II. State of Good Repair Needs for the SRTTP

Needs for SGR will be compared to available funds during several time periods

- > Funding levels during the first six years of the SRTTP are relatively constant and range between \$200 to \$350 million per year. Starting in 2020, funding levels increase to between \$500 to \$600 million per year.

L RTP Funding for SGR



* All dollars in 2014

II. State of Good Repair Needs for the SRTP

To help prioritize needs, SGR Needs can be divided into three general categories

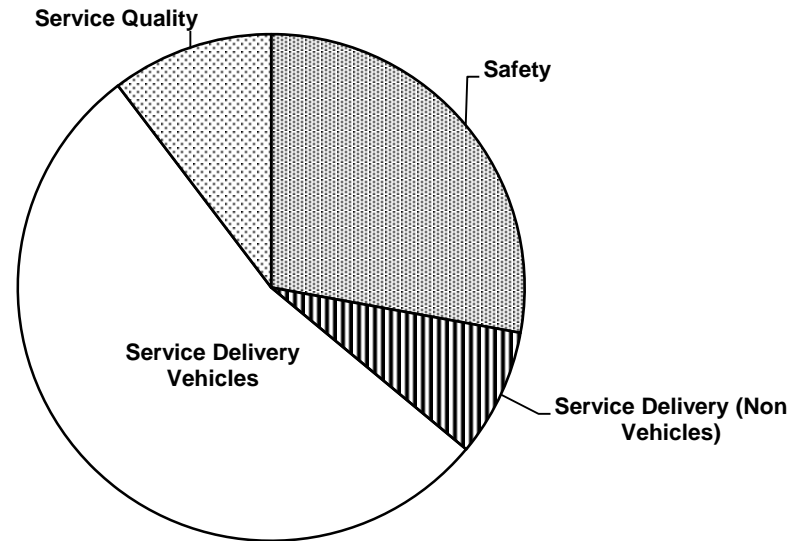
Safety – critical to prevent accidents	Service Delivery – critical for delivering reliable service	Quality of Service – useful to keeping the system clean, attractive, and user-friendly
<ul style="list-style-type: none">• Guideway Elements – Cross-overs and Turnouts• Systems – Most Items including Communications Equipment (for fire & seismic monitoring, etc), Signals, Electrical Systems and Fleet Voice Radio System	<ul style="list-style-type: none">• Facilities – Most Items (including Buildings, Maintenance Facility Equipment)• Systems – SCADA, ATMS• Vehicles – Revenue and Non-Revenue	<ul style="list-style-type: none">• Facilities – Scrubbers and Sprayers• Systems – Voice Annunciation Equipment, Fare Collection Equipment• Stations – Platforms, Parking Lots, Elevators, Escalators



* All dollars in 2014

II. State of Good Repair Needs for the SRTTP

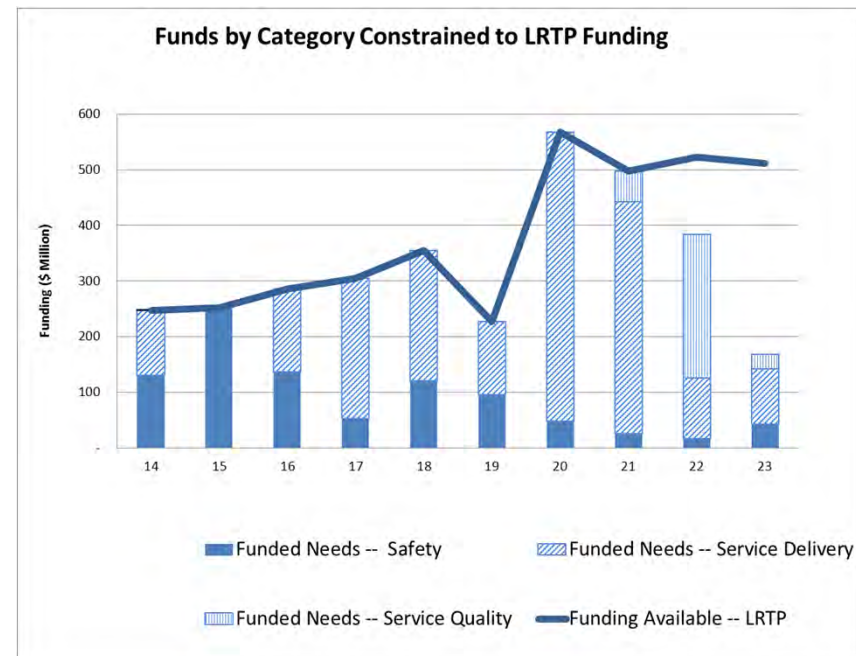
SGR needs are divided across these three classes: Safety, Service Delivery, Service Quality. Much of the costs are for rail and bus vehicles alone



II. State of Good Repair Needs for the SRTTP

A Next Step involves Comparing LRTP Funding to Needs by Category

- > Safety SGR needs will be prioritized first
- > Service Delivery and Service Quality needs will have next priority
- > We are still in the process of setting priorities



* All dollars in 2014

II. State of Good Repair Needs for the SRTP

Addressing the funding requirements also must consider our own workforce capacity

- > A constraint on delivering SGR projects is related to project management capacity (both internal and contracted)
- > One scenario could consider adjusting funding gradually to match growth capacity of the project management capability (Example: 25%/yr)



* All dollars in 2014

Some Next Steps for Consideration

Funding

- > Develop policy framework for identifying necessary funding for the early part of the SRTP Plan period (FY2014 – 2020);
- > Examine work capacity to adequately address the backlog and rehabilitation/replacement needs and use this analysis to guide funding recommendations;

Coordination

- > Explore processes to better collect, analyze and integrate information among Metro departments :
 - > On transit asset conditions
 - > To support rehabilitation and replacement projects
- > Incorporate SGR analysis as a routine input into the Short and Long Range Transportation Plans

Analysis Tools

- > Refine analysis to account for costs for new lines and new assets (although SGR costs for new lines are not expected to be significant during SRTP);
- > Refine our analysis tools (e.g. better integrate Metro's Asset Database with data and analysis from FTA's Transportation Economic Requirements Model (TERM))

