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
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

CONSENT CALENDAR

Approval Item

1. Minutes of November 16, 2012

INFORMATION ITEMS

2. Highway System Preservation/Status of the SHOPP
   (Chris Williges, System Metrics Group)
   Attachment 20 mins. 5

3. Local Streets and Roads Needs Assessment
   (Margot Yapp, Nichols Consulting Engineers)
   Attachment 30 mins. 19

4. Los Angeles County System Preservation Efforts
   (Patrick DeChellis, County of Los Angeles Department of Public Works)

5. Approaches for Transit Capital Asset Management
   (Roderick Diaz, Los Angeles County Metropolitan Transportation Authority)
   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.
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.

<table>
<thead>
<tr>
<th>Members Present</th>
<th>Representing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hon. Gary Ovitt, Chair</td>
<td>Member (SB)</td>
</tr>
<tr>
<td>Hon. Keith Hanks, Vice Chair</td>
<td>Member (LA)</td>
</tr>
<tr>
<td>Hon. Bruce Barrows</td>
<td>Member (LA)</td>
</tr>
<tr>
<td>Hon. Mary Craton</td>
<td>Member (Riv) (Videoconference)</td>
</tr>
<tr>
<td>Hon. Brett Murdock</td>
<td>Member (OC)</td>
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</tbody>
</table>

**Ex-Officio Members Present**

Denny Zane, Executive Director, Move LA

<table>
<thead>
<tr>
<th>Members Not Present</th>
<th>Representing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hon. Darcy Kuenzi</td>
<td>Member (Riv)</td>
</tr>
</tbody>
</table>

**Ex-Officio Members Not Present**

Lucy Dunn, President & CEO, Orange County Business Council
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.
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.

Source: 2011 Ten-Year SHOPP Plan
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


- Hazardous waste remediation regulation
Deferred maintenance leads to even greater SHOPP needs down the road

Timely maintenance is more cost effective in the long run

Source: 2007 Ten-Year SHOPP Plan
In the SCAG region, the 2012 RTP estimates a 75-percent gap in SHOPPP 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 SHOPPP Plan*
What are the consequences of poor maintenance?

Severe Corner Cracking

Alligator 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.

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 SHOOP Plan
What are the consequences of poor maintenance?

Deteriorated Structures

Concrete Deck Problems

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

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
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!

- Federal (8%)
- Other (2%)
- State highways (9%)
- Counties (37%)
- Cities (44%)
SCAG – Facts & Figures

- >49,000 miles
- 34% of state total
Pavements
Pavement Mgmt Software

92% of total miles are included in a PMS!

- StreetSaver: 39%
- MicroPaver: 24%
- Cartegraph: 18%
- Other: 15%
- No PMS: 4%

CALIFORNIA STATEWIDE NEEDS ASSESSMENT PROJECT
WWW.SAVECALIFORNIASTREETS.ORG
Average Statewide PCI

SCAG PCI = 69

- Good / Excellent: 68 (Cities)
- At Risk: 62 (Counties)
- Poor
- Very Poor / Failed
PCIs for SCAG

Ventura = 69
LA = 66
Orange = 77
San Bernardino = 70
Riverside = 70
Imperial = 57
What does PCI = 66 look like?
Why is 66 Critical?

- $2-4/\text{sy}$
- $15-40/\text{sy}$
- $40-70/\text{sy}$
- $60-100/\text{sy}$

PCI vs. Time (years)
## Total Transportation Needs

<table>
<thead>
<tr>
<th>Transportation Asset</th>
<th>Needs</th>
<th>Funding</th>
<th>Shortfall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pavement</td>
<td>$72.4</td>
<td>$13.3</td>
<td>$(59.1)</td>
</tr>
<tr>
<td>Essential Components</td>
<td>$30.5</td>
<td>$8.7</td>
<td>$(21.8)</td>
</tr>
<tr>
<td>Bridges</td>
<td>$4.3</td>
<td>$3.0</td>
<td>$(1.3)</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>$107.2</td>
<td>$25.1</td>
<td>$(82.1)</td>
</tr>
</tbody>
</table>

10 Year ($B)  

56 ¢/gal  
or  
76 ¢/day!
## SCAG’s Transportation Needs

<table>
<thead>
<tr>
<th>Transportation Asset</th>
<th>10 Year Needs ($B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pavement</td>
<td>$ 25.2</td>
</tr>
<tr>
<td>Essential Components</td>
<td>$ 11.6</td>
</tr>
<tr>
<td>Bridges</td>
<td>$ 1.7</td>
</tr>
<tr>
<td>Totals</td>
<td>$ 38.4</td>
</tr>
</tbody>
</table>
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)

Scenario 1: Existing Budget

<table>
<thead>
<tr>
<th>Year</th>
<th>Backlog ($ billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>$40.4</td>
</tr>
<tr>
<td>2014</td>
<td>$43.3</td>
</tr>
<tr>
<td>2015</td>
<td>$46.4</td>
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<tr>
<td>2016</td>
<td>$50.6</td>
</tr>
<tr>
<td>2017</td>
<td>$52.8</td>
</tr>
<tr>
<td>2018</td>
<td>$55.4</td>
</tr>
<tr>
<td>2019</td>
<td>$57.7</td>
</tr>
<tr>
<td>2020</td>
<td>$60.2</td>
</tr>
<tr>
<td>2021</td>
<td>$62.2</td>
</tr>
<tr>
<td>2022</td>
<td>$66.0</td>
</tr>
</tbody>
</table>

PCI:

- 40
- 45
- 50
- 55
- 60
- 65
- 70
- 75
- 80

CALIFORNIA STATEWIDE NEEDS ASSESSMENT PROJECT
WWW.SAVECALIFORNIASTREETS.ORG
2a. No bond ($2.33 B/yr)

Scenario 2a: Existing Budget + $1b/Year
($2.331b/year)
2b. Bond ($4.2B/$1.3B)

Scenario 2b. Transportation Bond

<table>
<thead>
<tr>
<th>Year</th>
<th>Backlog ($ billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>$37.5</td>
</tr>
<tr>
<td>2014</td>
<td>$37.5</td>
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<tr>
<td>2015</td>
<td>$37.7</td>
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<tr>
<td>2016</td>
<td>$38.7</td>
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<tr>
<td>2017</td>
<td>$37.4</td>
</tr>
<tr>
<td>2018</td>
<td>$40.0</td>
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<tr>
<td>2019</td>
<td>$41.5</td>
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<tr>
<td>2020</td>
<td>$42.3</td>
</tr>
<tr>
<td>2021</td>
<td>$43.5</td>
</tr>
<tr>
<td>2022</td>
<td>$45.5</td>
</tr>
</tbody>
</table>
3. Maintain PCI = 66 ($3.2 B/yr)

Scenario 3: Maintain PCI at 66 ($3.228/Year)

<table>
<thead>
<tr>
<th>Year</th>
<th>PCI</th>
<th>Backlog ($ billion)</th>
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<tr>
<td>2013</td>
<td>67</td>
<td>$38.5</td>
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<tr>
<td>2014</td>
<td>66</td>
<td>$39.5</td>
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<tr>
<td>2015</td>
<td>66</td>
<td>$40.7</td>
</tr>
<tr>
<td>2016</td>
<td>66</td>
<td>$43.0</td>
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<tr>
<td>2017</td>
<td>66</td>
<td>$42.7</td>
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<tr>
<td>2018</td>
<td>66</td>
<td>$43.7</td>
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<tr>
<td>2019</td>
<td>66</td>
<td>$43.3</td>
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<tr>
<td>2020</td>
<td>66</td>
<td>$42.2</td>
</tr>
<tr>
<td>2021</td>
<td>66</td>
<td>$40.2</td>
</tr>
<tr>
<td>2022</td>
<td>66</td>
<td>$39.0</td>
</tr>
</tbody>
</table>
4. Efficiencies ($4.1 B/yr)

Scenario 4: Efficiency Savings Scenario
($3.228b+$0.882b per year)

<table>
<thead>
<tr>
<th>Year</th>
<th>Backlog ($billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>$37.6</td>
</tr>
<tr>
<td>2014</td>
<td>$37.7</td>
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<tr>
<td>2015</td>
<td>$38.1</td>
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<td>2017</td>
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<tr>
<td>2019</td>
<td>$36.8</td>
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<tr>
<td>2020</td>
<td>$34.4</td>
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<tr>
<td>2021</td>
<td>$32.0</td>
</tr>
<tr>
<td>2022</td>
<td>$30.2</td>
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</tbody>
</table>
5. BMP ($7.2 B/yr)

Scenario 4: Unconstrained (BMP in 10 Years)

- Year 2013: $31.8 billion
- Year 2014: $29.1 billion
- Year 2015: $26.4 billion
- Year 2016: $23.4 billion
- Year 2017: $20.2 billion
- Year 2018: $16.2 billion
- Year 2019: $11.9 billion
- Year 2020: $7.7 billion
- Year 2021: $3.9 billion
- Year 2022: $0.0 billion
## Impacts of Different Scenarios

<table>
<thead>
<tr>
<th>Scenarios</th>
<th>Annual Budget ($B)</th>
<th>PCI in 2022</th>
<th>Pavements in Failed Condition %</th>
<th>Pavements in Good Condition %</th>
<th>Cost Savings * ($B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Conditions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Existing Funding</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>2A. No bond</td>
<td></td>
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<td></td>
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<tr>
<td>2B. Bond $4.23/$1.33</td>
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<td></td>
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<tr>
<td>3. Maintain PCI = 66</td>
<td></td>
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<td></td>
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<tr>
<td>4. Efficiency Savings</td>
<td></td>
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<td>5. Best Mgmt Practices</td>
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<tr>
<td>* Annual escalation of 5%</td>
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</table>

The % of roads in failed condition will increase from 6.6% to 25% by 2022 under current funding.
What’s “failed” condition?
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
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
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

PLANNING
SYSTEMWIDE PLANNING
Long-Range Planning
Regional Programming
Grants Management

CONSTRUCTION
Major Capital Projects Engineering
Facilities Engineering

OPERATIONS
TRANSIT SYSTEMS ENGINEERING
Facilities/Property Maintenance
Rail Operations
Bus Operations
Rail Wayside Services
Rail Fleet Services
Rail Maintenance
Bus Maintenance
Vehicle Technology and Support

FINANCE
Accounting / Controller

Asset Management / State of Good Repair

OMB
TAP

* 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
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).

<table>
<thead>
<tr>
<th>Excellent</th>
<th>Good</th>
<th>Adequate</th>
<th>Marginal</th>
<th>Poor</th>
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<tbody>
<tr>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
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</table>

> 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 SRTP

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.

* 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.

* All dollars in 2014
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)

### II. State of Good Repair Needs for the SRTP

<table>
<thead>
<tr>
<th>Years</th>
<th>Cumulative Life Cycle Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cumulative Replacement Need (Age-Based Assessment Local Factors)</td>
</tr>
<tr>
<td>2014</td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td></td>
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<tr>
<td>2018</td>
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<td>2020</td>
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<td>2042</td>
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</tbody>
</table>

* 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 SRTP

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

> Funding levels during the first six years of the SRTP 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.

* 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

<table>
<thead>
<tr>
<th>Safety – critical to prevent accidents</th>
<th>Service Delivery – critical for delivering reliable service</th>
<th>Quality of Service – useful to keeping the system clean, attractive, and user-friendly</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Guideway Elements – Cross-overs and Turnouts</td>
<td>• Facilities – Most Items (including Buildings, Maintenance Facility Equipment)</td>
<td>• Facilities – Scrubbers and Sprayers</td>
</tr>
<tr>
<td>• Systems – Most Items including Communications Equipment (for fire &amp; seismic monitoring, etc), Signals, Electrical Systems and Fleet Voice Radio System</td>
<td>• Systems – SCADA, ATMS</td>
<td>• Systems – Voice Annunciation Equipment, Fare Collection Equipment</td>
</tr>
<tr>
<td></td>
<td>• Vehicles – Revenue and Non-Revenue</td>
<td>• Stations – Platforms, Parking Lots, Elevators, Escalators</td>
</tr>
</tbody>
</table>

* All dollars in 2014
SGR needs are divided across these three classes: Safety, Service Delivery, Service Quality. Much of the costs are for rail and bus vehicles alone.
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))