Planning and Programming for Transit State of Good Repair at the Regional Level

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Overview

Development of a Regional Transit Capital Inventory (RTCI)

Use of RTCI and FTA TERM to:

- Project short-term and long-term asset replacement and rehabilitation needs
- Assess state of repair of region’s transit system, set targets for improvement
- Inform priority-setting in Regional Transportation Plan
- Evaluate funding alternatives for capital needs

Coordination of asset management at regional and operator levels

Next steps
Metropolitan Planning Organization for San Francisco Bay Area

- 9 counties, 12 urbanized areas, 101 cities & towns
- Population ~7 million
- Served by 27 independent transit operators
- MTC develops long-range Regional Transportation Plan - includes projected needs & funding for transit capital replacement & rehabilitation
Metropolitan Transportation Commission (MTC)

Designated Recipient of federal formula funds:

- FTA Urbanized Area & Fixed Guideway Modernization
- FHWA Surface Transp. Program

MTC programs formula funds to 21 transit operators, including:

- San Francisco MTA
- BART
- Santa Clara VTA
- AC Transit
- SamTrans
- Caltrain
- Golden Gate Transit
Regional Transit Capital Inventory

Comprehensive & consistent asset inventory for entire region - 25 operators, ~80,000 assets:

- Buses & vans, railcars, ferry vessels, trolleys, cable cars
- Tracks, guideway, bridges, tunnels
- Stations, fare collection equipment
- Facilities - operations & maintenance, equipment
- Systems - train control, traction power, communications
Regional Transit Capital Inventory

Why? Improved basis for projecting region’s preservation costs for RTP & annual funding programs

- Limited funds, increasing reinvestment needs
- Systems reaching mid-life, e.g., BART car replacement
- Wide variation in asset data by operator & asset type
- Shift from project-based to asset-based need projections - more comprehensive & consistent
Regional Transit Capital Inventory

Data included:
- Year in service
- Useful life, rehab cycles
- Replacement & rehab costs

Condition estimated based on age

Data from variety of sources:
- Maintenance management systems
- Financial systems
- Condition assessments

RTCI developed 2006 - 2007, updated 2010 - 2011
RTP Transit Capital Need Projections

RTCI data used with FTA Transit Economic Requirements Model (TERM)

- Developed by FTA to project needs at national level
- Used for National SGR Assessment, C&P reports
- Uses empirically derived asset decay curves to estimate condition based on age & other factors
- MTC projections based on regional funding priority policy
Two types of needs:

- Backlog - assets already past useful life or missed scheduled rehabs at beginning of planning period
- Normal, recurring needs as assets come due for replacement or rehab during planning period

Projected needs under alternative scenarios:

- 10 Years to SGR - backlog addressed over 10 years, meet normal recurring needs on schedule
- Maintain Current State of Repair - defer replacements & rehabs so backlog & other SGR measures remain ~ constant
- Revenue Constrained - SGR at projected funding level
RTP Transit Capital Need Projections

Investment Needs: Investment in Backlog and Normal Replacement By Category

- Backlog of Deferred Replacement & Rehab ($6.3B)
- Average Annual Normal Replacement ($1.5B)

Billions of $YOE
RTP Transit Capital Need Projections

Attain SGR in 10 Years Scenario

Investment Needs: Investment in Backlog and Normal Replacement By Category

Average Annual Normal Replacement + Backlog ($1.8B)
RTP Transit Capital Need Projections

Maintain Current State of Repair Scenario

Investment Needs: Investment in Backlog and Normal Replacement By Category

Average Annual Normal Replacement + Backlog ($1.3B)
Assessing State of Good Repair

Attain SGR in 10 Years Scenario

SGR Backlog by Category

Billions of $YOE


- Systems
- Facilities
- Stations
- Guideway Elements
- Vehicles
Assessing State of Good Repair

Maintain Current State of Repair Scenario

SGR Backlog by Category ($2010)

Billions of $YOE

- Vehicles
- Guideway Elements
- Stations
- Facilities
- Systems
Assessing State of Good Repair

Attain SGR in 10 Years Scenario

Percent of Assets Over Age

Weighted Average Asset Age

- All Assets
- Replaceable Assets
- Non-Replaceable Assets
Assessing State of Good Repair

Maintain Current State of Repair Scenario

Weighted Average Asset Age

Percent of Assets Over Age

- All Assets
- Replaceable Assets
- Non-Replaceable Assets
Assessing State of Good Repair

Attain SGR in 10 Years Scenario

Percent of Assets Over Age by Category

- 10000 Guideway Elements
- 20000 Facilities
- 30000 Systems
- 40000 Stations
- 50000 Vehicles
Assessing State of Good Repair

Maintain Current State of Repair Scenario

Percent of Assets Over Age by Category

- 10000 Guideway Elements
- 20000 Facilities
- 30000 Systems
- 40000 Stations
- 50000 Vehicles
Regional Transportation Plan

Regional SGR Target: Replace all assets at end of useful life

2013 - 2040 Total projected needs for 10 Years to SGR scenario - $47B

Regional priorities - fund assets most directly related to safety and reliability of services:

1. Revenue vehicle replacement - $16B
2. Tracks, guideway, train control, traction power, communications, & fare collection systems - $17B
3. Stations, facilities, maintenance equipment - $14B
Investment Strategy #2: Fix-It First

Proposed Approach
- Continue T2035 Functional Investment Approach
  - Maintain existing pavement conditions
  - Fully fund revenue vehicles and 70%+ of total other Score 16 assets
- Fully fund operating needs for existing transit services
- Invest in State Bridge Rehab & Retrofit
- Falls short of new Plan Bay Area targets (see below)

Related Performance Targets
- Maintain transportation system
  - Local Streets & Roads – Pavement Condition Index of 75 and corresponding Non-Pavement State of Repair
  - Transit Rehab – Replace All Assets by End of Useful Life
  - Reduce distressed state highway lane miles

Trade-Off Investment Proposal
$24 Billion
Regional Transportation Plan

Investment Strategy #2:
Fix-It First

Maintenance & Operations Needs and Revenues Summary
($ Billions, YOEs$)

- Remaining Need to Meet Performance Target
- Regional Investment
- Committed Revenue

Regional Investment Detail

- Includes funding for Lifeline
Plan Bay Area Summary

T2035 by Function - $218 B

- O&M - Roads and Bridges 30%
- Expansion - Roads & Bridges 5%
- Expansion - Transit 14%
- O&M - Transit 51%

Plan Bay Area by Function - $277 B

- O&M - Roads and Bridges 30%
- Expansion - Roads and Bridges 3%
- Expansion - Transit 9%
- O&M - Transit 58%

- See detail in Appendices 1-3
Investment Strategy #2:
Plan Bay Area Emphasizes Fix-It First
Comparison of O&M Expenditures with other Regions
Programming FTA Formula Funds for SGR

Attachment B. Transit Capital Priorities 10-Year CIP Projections

Projected Revenues

$ millions


Fixed Guideway Caps
Other Score 16
Other Vehicle Replacements
SFMTA Trolleys
Caltrain Cars
BART Cars Phase 1
Coordination of Asset Management at Regional & Operator Levels

**BART**

- Integrating maintenance management & financial system data with TERM Lite to improve capital planning

**SFMTA**

- Developed inventory for SGR analysis for New Starts application & CIP development, using MBTA SGR model
- First step in broader TAM program, including asset condition assessments

**VTA**

- Refined inventory using RTCI template & construction data, used for SGR analysis for New Starts application

BART & SFMTA projects supported by FTA SGR grants
Next Steps

- Implement TERM Lite - MTC & operators
- Make RTCI data & analysis more accessible for operator asset management
- Use RTCI data for upcoming NTD asset reporting
- Incorporate condition assessment data
- Outcome analysis - tie reinvestment level → SGR → reliability & quality → ridership → GHG emissions, air quality & congestion - SGR is a means to an end