Infrastructure Condition Monitoring

and

Revenue/Expenditure Forecasting

Outline

1. Objective
2. Benchmarking focus
3. MPO differences
4. Infrastructure management overview
5. Financial forecasting overview
6. Forecasting checklist
7. Recommendations

Objectives of September 11th Internship Project

- Benchmark against other MPOs to identify best practices in:

    -Federal infrastructure condition monitoring
    -Revenue and expenditure forecasting

- Focus is on Regional Transportation Plan (RTPs)

- Create a step-by-step checklist for NYMTC financial forecasting

Clarification Point

- Many of the MPO acronyms are long

- For clarity, I will refer to MPOs by the city/area they represent

Benchmarking Focus

MPO City	MPO
1. San Diego	San Diego Association of Governments (SANDAG)
2. Los Angeles	Southern California Association of Governments (SCAG)
3. San Francisco	Metropolitan Planning Commission (MTC)
4. Chicago	Chicago Metropolitan Planning Agency (CMAP)
5. Detroit	Southeast Michigan Council of Governments (SEMCOG)
6. Houston	Houston Galveston Area Council (HGAC)
7. Dallas	North Central Texas Council of Governments (NCTCOG)
8. Cleveland	Northeast Ohio Areawide Coordinating Agency (NOACA)
9. Buffalo	Greater Buffalo-Niagara Regional Transportation Council (GBNRTC)
10. Philadelphia	Delaware Valley Regional Planning Commission (DVRPC)
11. Northern New Jersey	North Jersey Transportation Planning Authority (NJTPA)
12. Atlanta	Atlanta Regional Council (ARC)

MPO Differences

- It is important to highlight that MPOs have many differences like:

  -Political realities
  -Areas of focus outside of transportation (like land-use)
  -Contractor usage (*42% of MPOs report using consultants to prepare RTP)

- Of course, some MPO best practices won't fit into NYMTC's framework

*Source: 2017 FHWA study 'MPO Staffing and Organizational Structures'

MPO Unique Infrastructure Highlights

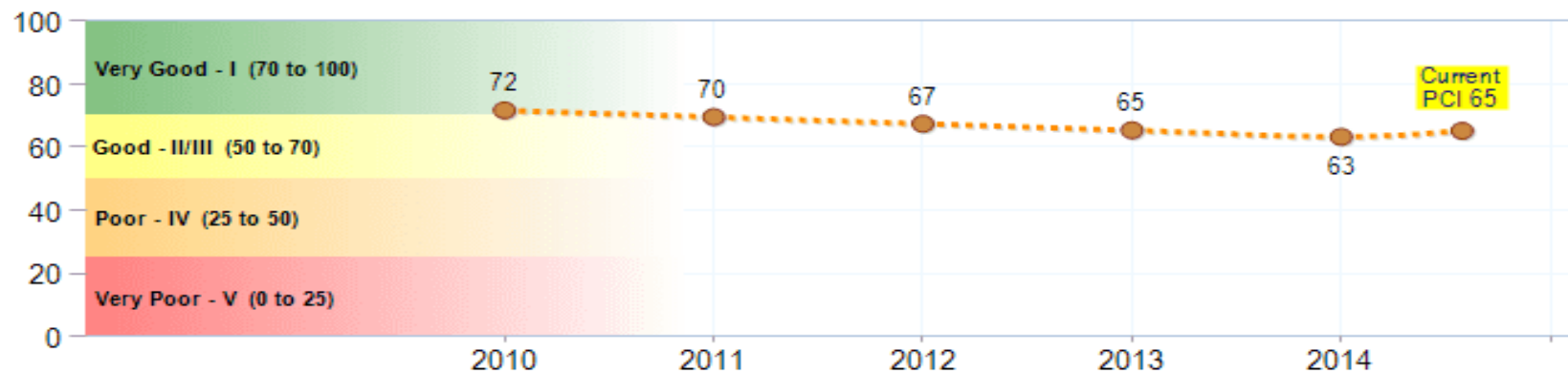# Infrastructure Management Overview

- Physical/advanced inspection methods

- Software systems

- 'Worst First' to Asset Management/life cycle
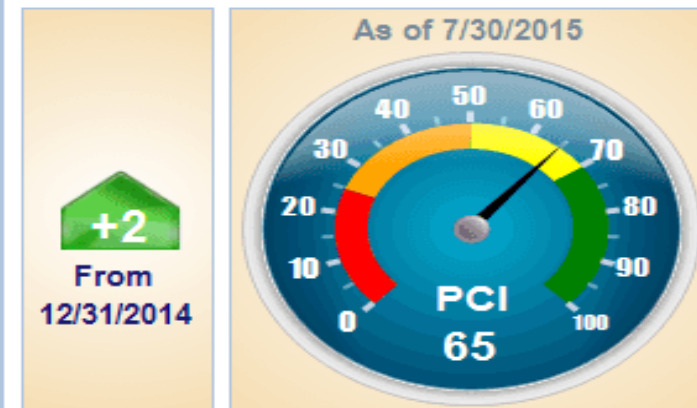
- Importance: safety/limited funding

San Francisco (MTC) Pavement Management

- Developed web-based Pavement Management System

- Helps Bay Area cities make better, more informed pavement investments

- Used by cities, counties, MPOs, and private entities across country/world

- Other MPOs, like Reno (RTC) in Nevada, use Streetsaver

Streetsaver Historical Pavement Condition Trends

Very Good - I (70 to 100)
Good - II/III (50 to 70)
Poor - IV (25 to 50)
Very Poor - V (0 to 25)

72 · 70 · 67 · 65 · 63 · Current PCI 65

2010 · 2011 · 2012 · 2013 · 2014

Current PCI

As of 7/30/2015
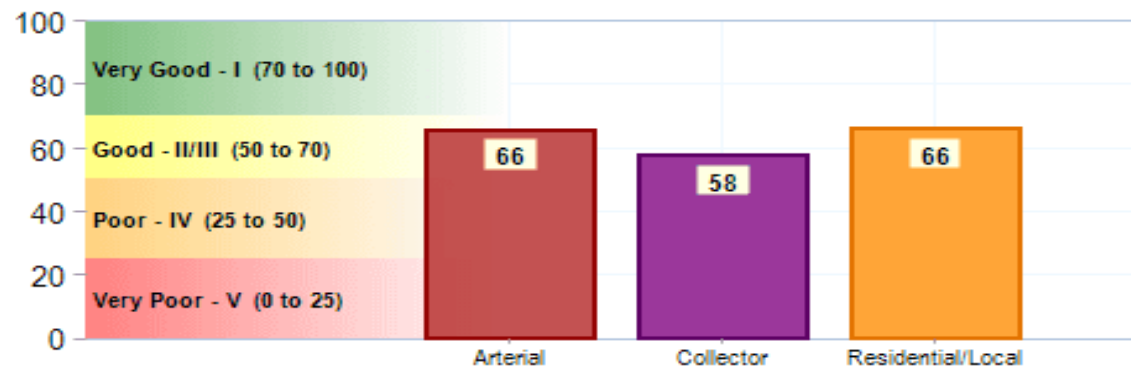
+2 From 12/31/2014

PCI 65

Network Inventory
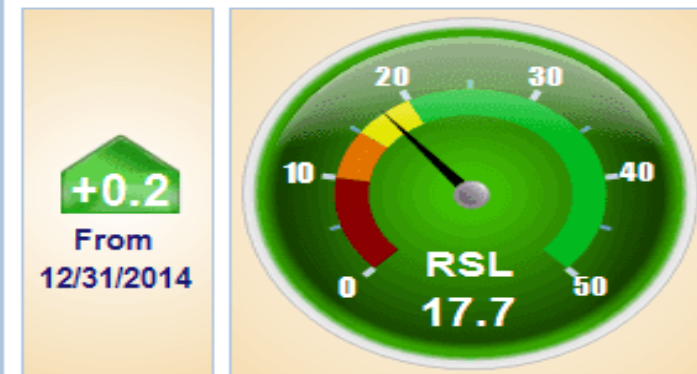
Pavement Area: **2.2**
(square miles)

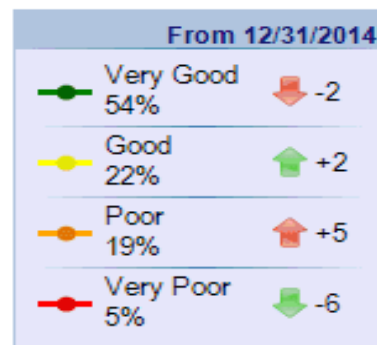Miles: **315.3**

Lane Miles: **667.4**
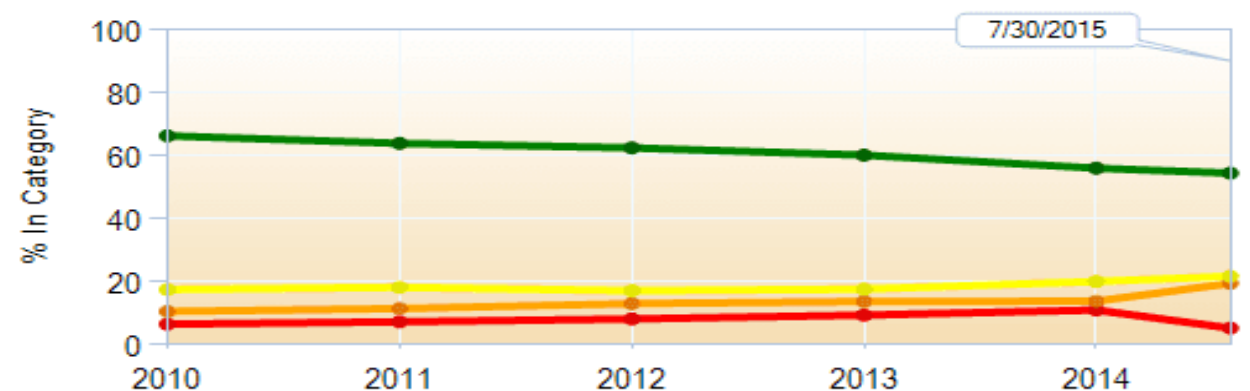
Sections: **2317**

Current PCI by Functional Class

Very Good - I (70 to 100)
Good - II/III (50 to 70)
Poor - IV (25 to 50)
Very Poor - V (0 to 25)

66 — Arterial
58 — Collector
66 — Residential/Local

Remaining Service Life (years)

+0.2 From 12/31/2014

RSL 17.7

Surface Type

AC
AC/AC

AC - 88 %
AC/AC - 12 %
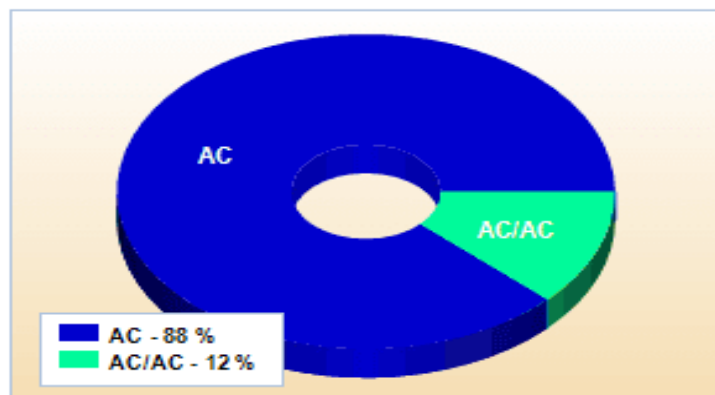
Historical Network Condition Trends

From 12/31/2014

Very Good 54%   -2
Good 22%   +2
Poor 19%   +5
Very Poor 5%   -6

7/30/2015

% In Category

2010 · 2011 · 2012 · 2013 · 2014

San Francisco (MTC) Infrastructure Database

- MTC Regional Transit Capital Inventory (RTCI) is web-based and developed by MTC Staff

- Comprehensive regional database of all transit assets owned by 25 Bay Area Transit operators

- RTCI database used for State of Good Repair status and financial analysis at local/MPO level

- RTCI also feeds data into MTC ***customized*** FTA Term Lite model

Regional Transit Capital Inventory

Percent of Revenue Vehicles Above Useful Life
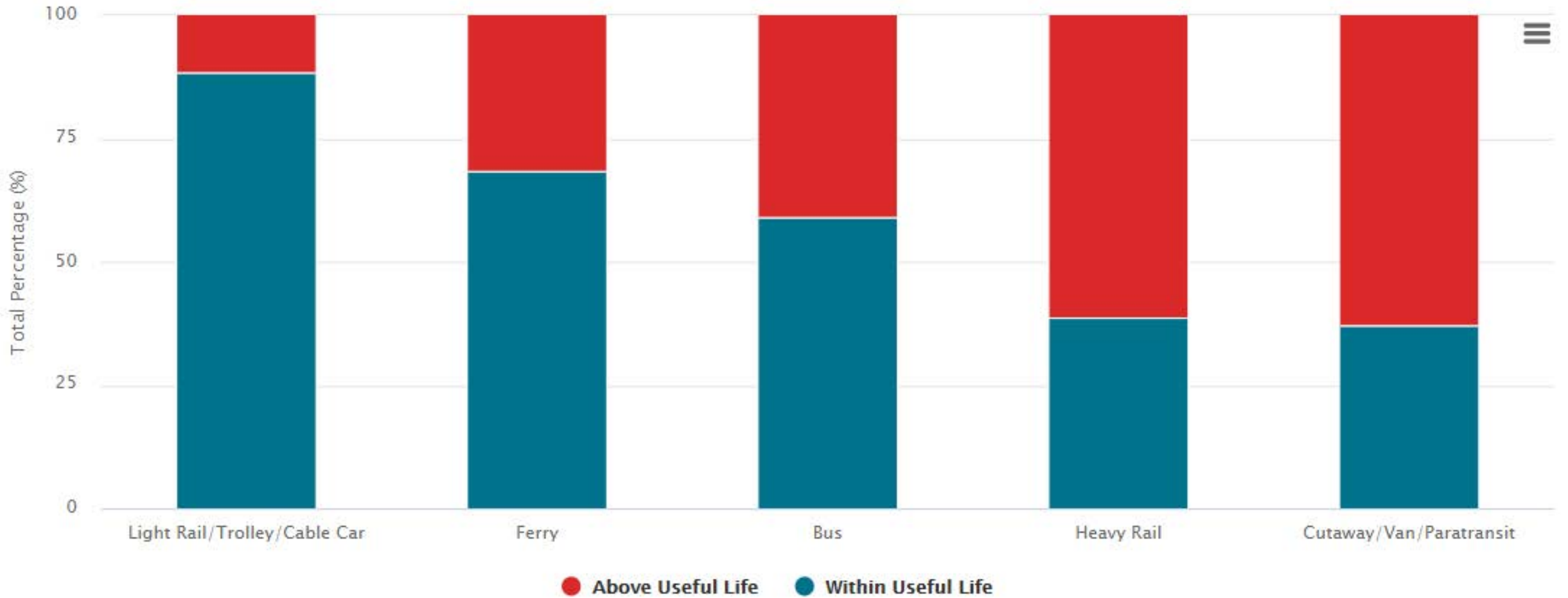
San Francisco (MTC) FTA Term Lite Customization

- MTC developed an enhancement to modeling software to enable allocation of specific funding sources

- Allocation is only to assets that are eligible for that funding

- Distinction between funding sources wasn't technically feasible within FTA Term Lite

- Allows more accurate allocation of funding in fiscally constrained scenarios

Atlanta (ARC) Infrastructure Database

- ARC manages Tableau portal for asset management tracking for all local transit agencies

- Transit agencies submit their data annually

- ARC uses portal for capital planning, decision support, and State of Good Repair assessments

MPO Unique Financial Highlights

Financial Forecasting Overview

- Common forecasting methods:

  -Historical trend analysis/econometric models

  -Expert consensus

- MPOs rely heavily on data from State DOTs and transit agencies

- Some State-Wide MPO Associations do bulk of forecasting for MPOs (Michigan)

Texas T.R.E.N.D.S

- Transportation Revenue Estimation and Needs Determination System (T.R.E.N.D.S)

- Web-based tool for forecasting revenues and expenses through 2050

- State level agencies feed data into T.R.E.N.D.S and MPOs input local data

- Cash forecasts and letting schedules (monthly update), other updates annually

TRENDS

Transportation Revenue Estimator and Needs Determination System

SCENARIO	REVENUE ENHANCEMENTS	LOCAL OPTIONS	BONDING OPTIONS	ECONOMIC IMPACTS

LOCAL OPTIONS   SET TEST VALUES

Local Revenue Options

Select the Metropolitan Planning Organization to be included in the analysis:

Check here to select ALL ☐

Abilene	☐
Amarillo	☐
Beaumont	☐
Brownsville	☐
Bryan/College Station	☐
Capital Area	☐
Corpus Christi	☐
El Paso	☐
Harlingen/San Benito	☐
Hidalgo	☐
Houston/Galveston	☑

Internal RTP Rev/Expenditure Forecasting Checklist

- Initiate a written step-by-step checklist for financial forecasting

- Building off Max Sokol's 2011 efforts

- Goals: 1.) continuity as personnel turnover
          2.) ensure key steps are not missed

- 14/17 MPOs surveyed about internal checklists have responded

Step 2(a) - Revenue Forecasts; Federal Authorizations

NYMTC Staff

1. Using the funding tables from the <u>authorized</u> TIP years which fall within the planning period, determine the total <u>authorized</u> federal funding in the first year of the planning period and subsequent years.

2. Identify the number and period of successor authorization acts within the planning horizon from the last authorized year. Assume each successor act is five years in duration.

3. Apply the default escalation rate from Step 1-3 to the final year of the authorized funding determined in Step 2(a)-1 to determine the annual federal authorization for the first successor act. Assume this calculated annual authorization amount in <u>each</u> year in the first successor.

4. Apply the default escalation rate from Step 1-3 to the first successor's annual federal authorization in Step 2(a)-3 to determine the annual federal authorization for the second successor act. Assume this calculated annual authorization amount in <u>each</u> year in the second successor.

5. Repeat Step 2(a)-4 for all subsequent successor acts.

Recommendations

- Explore a standardized Pavement Management System like Streetsaver for NYMTC members

- Explore a T.R.E.N.D.S model for MPOs in NY State

- Investigate a web-based infrastructure database like San Francisco's RTCI

- Explore financial forecasting initiative at the state-wide MPO level (i.e. NYSMPOs)

- Coordinate with MPOs in Philadelphia, Chicago, and Atlanta to compare financial checklists in the future

Questions?

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