Making the TAM Connection: Capital Planning and Investment Prioritization
May 25, 2021

TRANSIT ASSET MANAGEMENT

U.S. Department of Transportation
Federal Transit Administration
Reminder

2021 FTA TAM Virtual Roundtable

June 22, 2021
1:00 - 3:30 PM EDT

Register using the link below
(and on the TAM website) before June 16, 2021:

https://bit.ly/3bJWiGx
Today’s Speakers

Jim Morrill
Senior Analyst, Asset Management Unit
San Francisco Municipal Transportation Agency

Chris Ward
Maintenance Asset Manager
Transit Authority of River City (TARC)
San Francisco Municipal Transportation Agency

Asset Management Supports Capital Planning

FTA Webinar Series
May 25, 2021
Who we are

SFMTA employees: 6,046
Muni Operators: 2,630
Muni buses and Trolleys: 901
Light Rail Vehicles (LRV’s): 215
Historic streetcars: 77
Cable cars: 40
Paratransit vehicles: 156
Signalized intersections: 1,247
Miles of Bike Route: 210

Over 700,000 average daily weekday boardings (pre-pandemic)
Asset Snapshot

$16.88 Billion
Total Asset Replacement Value

$3.85 Billion
Asset Replacement Backlog

$2.5 Billion
Target FY 21-22 Budget

$632 Million
Annual State of Good Repair Need
Overview of AM Activities @SFMTA

1st SFMTA Asset Inventory Created
1st State of Good Repair Report Issued
Asset Management Plan and Strategy Adopted
Asset Management Unit Fully Staffed

2009 2012 2018 2019

Moved from Long Range Planning Section to Finance and IT.
Agency Ecosystem

External Stakeholders

Transportation Experience

SFMTA’s Key Services

Operating Resources

Capital Resources

Agency Strategic Plan | Mission | Values

Agency Divisions

Capital Programs

Capital Plan

Capital Improvement Program

Consolidated Operating / Capital Budget

Programs and Services

Capital Projects

SFMTA's Key Services

Operating Resources

Capital Resources

Agency Strategic Plan | Mission | Values

Agency Divisions

Capital Programs

Capital Plan

Capital Improvement Program

Consolidated Operating / Capital Budget

Programs and Services

Capital Projects
Capital Program Managers

Communications & IT
Facilities
Fleet
Parking
Security
Streets
Taxi
Traffic Signals
Transit Fixed Guideway
Transit Optimization & Expansion

Transportation Capital Committee
Capital Planning Process

**Capital Need**
identified by stakeholder & SFMTA staff

**SFMTA’s Long Range Planning**
reviews need, including description & costs. Offers Recommendation to TCC

**20-Year Capital Plan**
financially unconstrained plan of all needs

**Capital Project**
scope, schedule & budget of prioritized project in Capital Plan to BFPA

**SFTMA’s Budget Financial Planning & Analysis (BFPA)**
reviews requests, matches, appropriate funds & offers recommendation to TCC

**5-Year Capital Improvement Program (CIP)**
financially constrained program of projects. First 2 years of CIP = Capital Budget
The Facilities Replacement Problem

2015 State of Good Repair Report:

High Value Assets and Increasing Investment Need:
- $1.75 billion of Facilities Assets (2015 $’s)
- $1 billion in projected needs over the next 20 years

Aging Infrastructure:
- Age based condition score of 3.14 out of 5
- 70% of the assets were rated “adequate” or lower

Missing Data:
- No recent condition assessment
- Inventory refresh needed

No investments scheduled after Fiscal Year 2017
Asset Management and Long-Term Planning Solution

2017 Facilities Framework Inventory

- Mapped and inventoried all facilities, components and uses

Condition Assessment and Prioritization

- Assessed 18 facilities to prioritize deferred maintenance backlog
- Evaluated needs for:
  - Safety
  - Cost efficiency
  - Functional use

Established phasing principles for short, mid and long term investments

- Allows Capital Program Manager to schedule prioritized projects
### Facilities Framework

#### Recommended Next Steps

<table>
<thead>
<tr>
<th></th>
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<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Framework Scenarios</strong></td>
<td>5 Scenarios 1, 1A, 1B, 2A, 2B</td>
<td>3 Scenarios 1A, 1B, 2A</td>
<td>2 Scenarios 1A or 1B, 2A</td>
<td>2 Scenarios 1A or 1B, 2A</td>
<td>1 Scenario</td>
<td></td>
</tr>
<tr>
<td><strong>MAINTENANCE</strong></td>
<td></td>
<td>Update CIP Select and set up procurement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>NEW FACILITY</strong></td>
<td>Eliminated Scenario 1</td>
<td>SFMTA finalize program including swing needs Developer revise plans, costs and confirm purchase terms</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>POTRERO PRESIDIO KIRKLAND</strong></td>
<td>EIR Study RFP TOD Study RFP Due Diligence Reports</td>
<td></td>
<td>EIR Initial Study TOD Initial Study</td>
<td>Compare Scenarios refined scope, schedule, and budget</td>
<td>Select Scenario</td>
<td></td>
</tr>
<tr>
<td><strong>SWING</strong></td>
<td>Approved MME for swing; eliminated Scenario 2B</td>
<td>Define trolley swing needs for New Facility in Scenario 1A/1B and MME in Scenario 2A</td>
<td>Develop MME swing/rail and back shop program and concept for Scenario 2A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>16TH STREET (ENFORCEMENT)</strong></td>
<td>Approved exchange of 15th St for Bryant St</td>
<td>Start jurisdictional transfer Refine program and concept</td>
<td>Select and set-up renovation procurement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PARATRANSIT</strong></td>
<td></td>
<td>Analyze and select preferred option and eliminate Scenario 1A or 1B</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Facilities Capital Improvement Program Comparison: Fiscal Years 2015-2019 vs 2021-2024

Planned Investments by Capital Program: All Investments
FY 2015-2019 Capital Improvement Program (CIP)
Includes State of Good Repair, Expansion Projects & Enhancements Projects
All amounts shown in Millions ($M)

<table>
<thead>
<tr>
<th>Capital Program</th>
<th>FY 2015</th>
<th>FY 2016</th>
<th>FY 2017</th>
<th>FY 2018</th>
<th>FY 2019</th>
<th>CIP Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Subway</td>
<td>$203.4</td>
<td>$190.9</td>
<td>$150.0</td>
<td>$150.0</td>
<td>$98.5</td>
<td>$792.9</td>
</tr>
<tr>
<td>Security</td>
<td>$71.1</td>
<td>$10.1</td>
<td>$10.1</td>
<td>$3.0</td>
<td>$3.0</td>
<td>$33.2</td>
</tr>
<tr>
<td>Bicycle</td>
<td>$23.5</td>
<td>$26.6</td>
<td>$29.6</td>
<td>$12.6</td>
<td>$14.2</td>
<td>$119.2</td>
</tr>
<tr>
<td>Pedestrian</td>
<td>$15.5</td>
<td>$18.3</td>
<td>$13.4</td>
<td>$10.4</td>
<td>$13.3</td>
<td>$70.8</td>
</tr>
<tr>
<td>Transit Optimization/Expansion</td>
<td>$125.7</td>
<td>$162.4</td>
<td>$193.3</td>
<td>$53.6</td>
<td>$117.6</td>
<td>$652.7</td>
</tr>
<tr>
<td>Traffic/Signals</td>
<td>$14.3</td>
<td>$24.9</td>
<td>$17.3</td>
<td>$9.6</td>
<td>$4.5</td>
<td>$74.6</td>
</tr>
<tr>
<td>Transit Fixed Guideway</td>
<td>$72.0</td>
<td>$53.6</td>
<td>$30.3</td>
<td>$27.1</td>
<td>$54.7</td>
<td>$217.7</td>
</tr>
<tr>
<td>Fleet</td>
<td>$230.0</td>
<td>$321.0</td>
<td>$199.7</td>
<td>$265.0</td>
<td>$124.5</td>
<td>$1,080.3</td>
</tr>
</tbody>
</table>

Facility
Acquire and/or rehabilitate maintenance facilities used for transit, traffic, and parking operations.

<table>
<thead>
<tr>
<th>Project Name</th>
<th>CIP ID</th>
<th>Total Carryforward Budget</th>
<th>CIP Total</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facility Reserve</td>
<td>FC000</td>
<td>10,219,329</td>
<td>10,219,329</td>
<td></td>
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<tr>
<td>Facility Condition Assessment Implementation</td>
<td>FC014</td>
<td>7,724,975</td>
<td>8,224,975</td>
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<tr>
<td>Castro Station Accessibility Improvement Project</td>
<td>FC050</td>
<td>15,657,590</td>
<td>17,615,590</td>
<td></td>
</tr>
<tr>
<td>1200 15th Street Renovation</td>
<td>FC066</td>
<td>3,500,000</td>
<td>3,300,000</td>
<td></td>
</tr>
<tr>
<td>Muni Metro East Expansion - Trolley Yard</td>
<td>FC088</td>
<td>3,487,532</td>
<td>118,917,532</td>
<td></td>
</tr>
<tr>
<td>Woods Facility Modernization</td>
<td>FC073</td>
<td>4,300,000</td>
<td>4,021,953</td>
<td></td>
</tr>
<tr>
<td>Potrero Modernization Project</td>
<td>FC074</td>
<td>35,300,000</td>
<td>35,300,000</td>
<td></td>
</tr>
<tr>
<td>Bus Simulator</td>
<td>FC078</td>
<td>612,500</td>
<td>305,062</td>
<td></td>
</tr>
<tr>
<td>BART Canopies /Market Street Entrance Modernization</td>
<td>FC081</td>
<td>42,080,000</td>
<td>42,080,000</td>
<td></td>
</tr>
<tr>
<td>SFMTA Facilities Framework - Parking Facilities Plan</td>
<td>FC069</td>
<td>000,000</td>
<td>000,000</td>
<td></td>
</tr>
<tr>
<td>Facilities Campaign Planning</td>
<td>FC080</td>
<td>100,000</td>
<td>100,000</td>
<td></td>
</tr>
<tr>
<td>Bus Washer Renovation Campaign</td>
<td>FC091</td>
<td>1,353,000</td>
<td>1,353,000</td>
<td></td>
</tr>
</tbody>
</table>

Total: 7,009,985 242,539,233 250,430,218

Facilities projects planned for the next five years include...

11 Projects, $243M Investment
- More efficient maintenance facilities
- Fewer delays due to vehicle maintenance
- Better working environment for SFMTA employees
Thank You.
San Francisco Municipal Transportation Agency
ASSET CONDITION AND TRANSITION

Prioritizing the Old with the New
ABOUT TARC

- Tier 1, bus only
- Kentucky and Indiana
- 28 routes
- 235 fixed-route buses, 15 electric
- 645 team members

- 2 campuses
- 10 buildings
- Fixed-route fleet
- Paratransit fleet
- Service vehicles
- On-route chargers
• Inventory of assets
• Decision support tool(s)
• TAM & SGR policy
• Prioritization
FACILITIES

UNION STATION
FACILITIES

UNION STATION
FACILITIES

ALYCE FRENCH-JOHNSON TRAINING CENTER
FACILITIES

UMTA ERA (1976-1984 BUILT OR REPURPOSED)
TURNING 50

Substructure → Foundation heave, poor fill

Shell → Roof replacements (ARRA)
   → Overhead doors

Interiors → Worn / Dated / Inefficient

Conveyance → Elevators

Plumbing & Supply lines

Fire Protection

HVAC → 2 replacements, 1 pending

Conveyance → Elevators

Equipment → In-ground lifts
ELECTRIC BUSES
DECISION SUPPORT TOOLS

• ABB / Ellipse EAM – Source
• Microsoft Power BI – Visualization
• TransTrack – Reporting data from Ellipse
• Excel – Where the prioritization work will be done
DECISION SUPPORT TOOLS

- ABB / Ellipse EAM – Source
- Microsoft Power BI – Visualization
- TransTrack – Reporting data from Ellipse
- Excel – Where the prioritization work will be done

<table>
<thead>
<tr>
<th>Work Request</th>
<th>Request Description 1</th>
<th>Classification...</th>
<th>Request Type ...</th>
<th>Raised Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>000000000005</td>
<td>Solar Array for Union Station Barn</td>
<td>Facility</td>
<td>Capital Request</td>
<td>07/02/2019</td>
</tr>
<tr>
<td>000000000006</td>
<td>Construct Extended Bay - Diesel West</td>
<td>Facility</td>
<td>Capital Request</td>
<td>07/02/2019</td>
</tr>
<tr>
<td>000000000007</td>
<td>Renovate Transportation dispatch office</td>
<td>Facility</td>
<td>Capital Request</td>
<td>07/03/2019</td>
</tr>
<tr>
<td>000000000009</td>
<td>R&amp;R 6 in-ground lifts, +1 in steam room</td>
<td>Facility</td>
<td>Capital Request</td>
<td>07/03/2019</td>
</tr>
<tr>
<td>000000000010</td>
<td>Spec Roof replacement, Union Station</td>
<td>Facility</td>
<td>Capital Request</td>
<td>07/03/2019</td>
</tr>
<tr>
<td>000000000011</td>
<td>Purchase automated fuel mgmt system</td>
<td>Facility</td>
<td>Capital Request</td>
<td>07/09/2019</td>
</tr>
<tr>
<td>000000000021</td>
<td>Replace sixteen 40' buses acquired 2005</td>
<td>Bus</td>
<td>Capital Request</td>
<td>08/13/2019</td>
</tr>
<tr>
<td>000000000023</td>
<td>Replace ten (10) 2011 cutaways</td>
<td>Bus</td>
<td>Capital Request</td>
<td>09/09/2019</td>
</tr>
</tbody>
</table>
### DECISION SUPPORT TOOLS

#### Asset Management System Risk Matrix

<table>
<thead>
<tr>
<th>IMPACT</th>
<th>LIKELIHOOD</th>
<th>NOT LIKELY TO OCCUR</th>
<th>COULD OCCUR</th>
<th>KNOWN TO OCCUR</th>
<th>COMMON OCCURRENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Probability</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Improbable (1)</td>
<td>Not Likely to Occur (2)</td>
<td>Could Occur (3)</td>
<td>Known to Occur (4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Likely to occur once in 10 or more years</td>
<td>Likely to occur once in 5 to 8 years</td>
<td>Likely to occur once in 2 to 4 years</td>
<td>Likely to occur once in 1 year</td>
</tr>
</tbody>
</table>

#### DECISION SUPPORT TOOLS

### DECISION SUPPORT TOOLS
### Asset Risk Scoring - Individual

<table>
<thead>
<tr>
<th>Risk ID</th>
<th>Project #</th>
<th>Project Name</th>
<th>Highest Impact Category</th>
<th>Pre-Mitigation Impact (1-5)</th>
<th>Pre-Mitigation Likelihood (1-5)</th>
<th>Pre-Mitigation Risk Score (1-25)</th>
<th>Post-Mitigation Impact (1-5)</th>
<th>Post-Mitigation Likelihood (1-5)</th>
<th>Post-Mitigation Risk Score (1-25)</th>
<th>Risk Reduction Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>FC-0002</td>
<td>0008</td>
<td>Patch and recoat shop floors (USTA)</td>
<td>Health and Safety</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>FC-0003</td>
<td>0009</td>
<td>Remove and replace 6 inground lifts</td>
<td>Financial and Asset Loss</td>
<td>3</td>
<td>3</td>
<td>9</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>FC-0004</td>
<td>0010</td>
<td>Spec roof replacement, Union Station</td>
<td>Financial and Asset Loss</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>IS-0001</td>
<td>0011</td>
<td>Purchase automated fuel mgmt system</td>
<td>Regulatory / Legal Impact</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>BU-0001</td>
<td>0020</td>
<td>Replace five 40’ buses acquired 2004</td>
<td>Service Impact</td>
<td>3</td>
<td>4</td>
<td>12</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>8</td>
</tr>
</tbody>
</table>

#### DECISION SUPPORT TOOLS

**RISK SCORES ONLY, SCALE 1 - 25**
GETTING STARTED

- Endorsed by Finance, then Executive Director
- Increased interest and involvement from staff
- New processes needed to collect and package requests
- Weighting expected to be SGR and safety heavy

- Focus is on maintaining facilities from the last 50 years
- Social, economic, and environmental well-being
POLICIES

TARC Mission:

To explore and implement transportation opportunities that enhance the social, economic, and environmental well-being of the Greater Louisville community.

TAM Policy Commitment:

TARC is committed to maintaining assets in a state of good repair to support safe, efficient, reliable transportation.
Figure 3-12
Asset Management-Focused Capital Program Prioritization Inputs

**Top-Down Approach:**
Leadership provides strategic direction, sets expectations, empowers managers, and allocates resources.

**Bottom-Up Approach:**
Middle management and staff implement and improve upon the asset management initiative.

FTA Report No. 0098, p.73
CHANGE

INTERNAL

- New Executive Director
- New Board of Directors
- New departmental directors
- Generational turnover
- Retention
- COVID response
CHANGE

EXTERNAL

• Global – COVID, climate change
• Federal – Proposed $25 billion for electric buses
• Regional – MPO and city government
Change
CHANGE

2 additional routes over the next 3 – 5 years

- Do not cover the service currently provided
- Finds roughly $10 million for service
- Additional and sustainable revenue is essential
- $20 million in operating funds per year
About The New Dixie Highway Project

DIXIE HIGHWAY CORRIDOR

To downtown
OPPORTUNITY

TOOLS

• Comprehensive Operational Analysis (2021)
• Long-Range Plan (2022)
• Zero Emission Fleet Strategic Transition Plan
• Catalog Options to Provide Transit Access to Exurban Location
• Connecting Kentuckiana 2050, MTP
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Maintenance Asset Manager
P 502.213.3481 | www.ridetarc.org