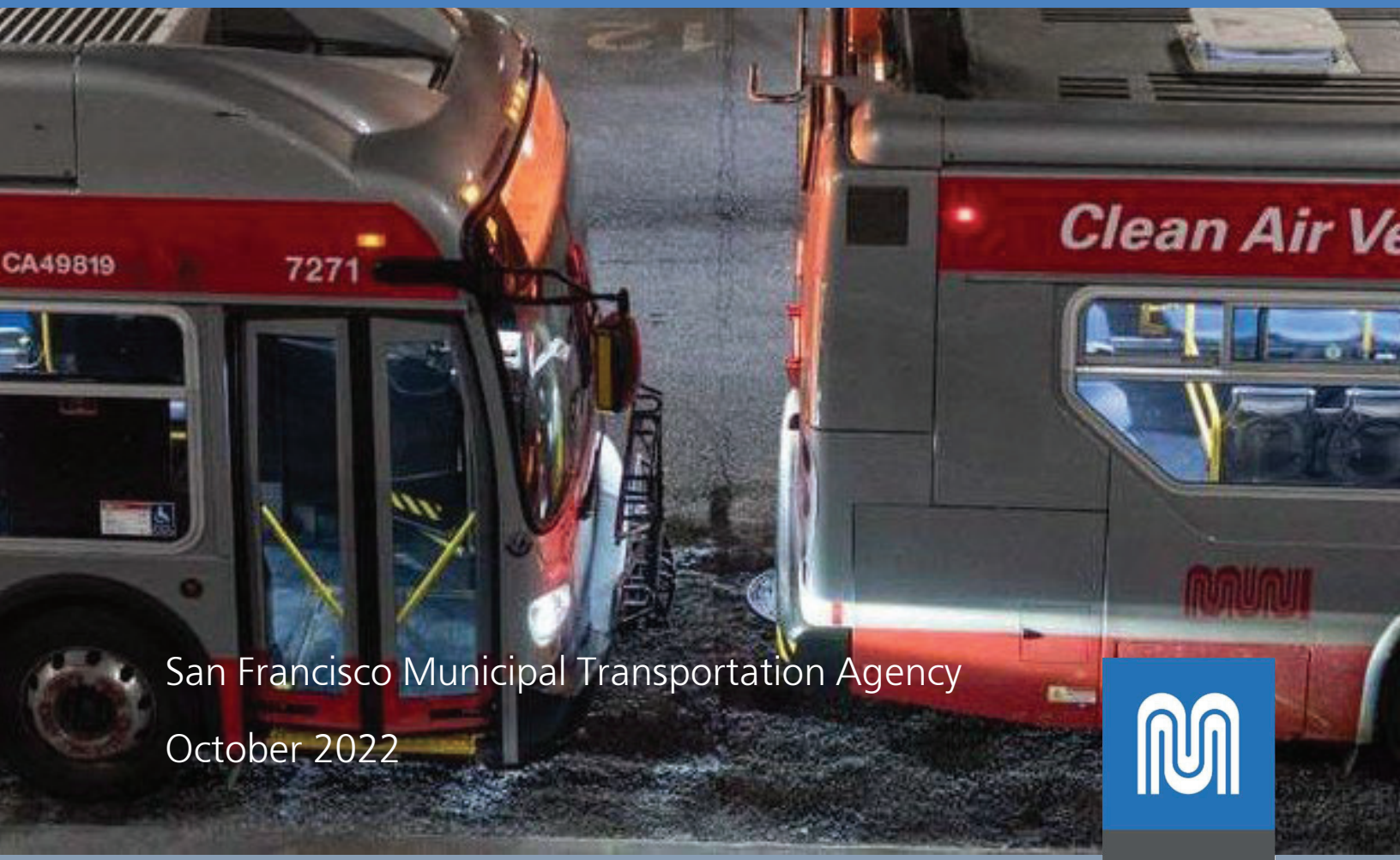
2022 Transit Asset Management Plan



San Francisco Municipal Transportation Agency

October 2022

SFMTA

Approval

In 2012, the Moving Ahead for Progress in the 21st Century Act (MAP-21) mandated the Federal Transit Administration (FTA) develop a rule to establish a strategic and systematic process of operating, maintaining and improving public transportation capital assets effectively through their entire life cycle. This was reinforced in the 2015 through the Fixing America's Surface Transportation Act (FAST).

In July 2016, FTA published a Final Rule for Transit Asset Management. The Transit Asset Management (TAM) Rule (49 CFR 625) is a set of federal regulations that sets out minimum asset management practices for transit providers. The rule requires FTA grantees to develop asset management plans for their public transportation assets, including vehicles, facilities, equipment, and other infrastructure.

The TAM rule requires every transit provider that receives federal financial assistance under 49 U.S.C. Chapter 53 to develop a TAM plan or be a part of a group TAM plan prepared by sponsor. The TAM Plan means a plan that includes an inventory of capital assets, a condition assessment of inventoried assets, a decision support tool, and a prioritization of investments.

The San Francisco Municipal Transportation Agency (SFMTA) as a recipient of federal assistance and federal grants is required to prepare a TAM Plan. Since 2010, the SFMTA has maintained an extensive inventory of capital assets, completed TERM score evaluations, has had a clear process to develop a prioritized list of investments through the 20-Year SFMTA Capital Plan, and 5-Year Capital Improvement Program.

As a Tier I transit agency, the SFMTA is required to prepare a consolidated TAM Plan. Transit Asset Management is a cornerstone for effective performance management. By leveraging data to improve investment prioritization, better asset management can more effectively use available funds to improve reliability, safety, cost management, and customer service. With aging infrastructure, limited funding, and a growing demand for service, it is essential that the SFMTA creates a better way to manage assets to optimize resource allocation. This TAM Plan details the agency's policy, approach, and implementation process to improve its asset management practices over the next four years.

In 2018, the SFMTA submitted its first TAM Plan detailing the Agency's asset management approach for 2018 through 2022. The following document is an update to the 2018 TAM Plan and is the Agency's TAM active TAM Plan for 2022 through 2026.

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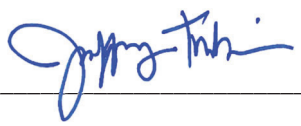

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Executive Summary

The FTA requires transit agencies to prepare a Transit Asset Management (TAM) Plan every four years. This document fulfills this requirement. It is a framework outlining an overarching strategy for how people, processes, and tools are used to enable the Agency to effectively manage its capital assets. The Plan also provides a strategy for making sound re-investment decisions to maintain transit assets in a state of good repair (SGR). Figure 1 lists the required components of a TAM plan and how the SFMTA will fulfill these requirements. There is a section in the SFMTA's TAM Plan corresponding to each of the required sections. In addition to meeting these FTA requirements, the SFMTA is committed to achieving efficient asset lifecycle management, which will be reflected throughout this TAM Plan.

FIGURE 1: TAM Plan Components and SFMTA Approach

TAM REQUIREMENT	SFMTA COMPLIANCE APPROACH
Inventory of assets	The SFMTA has a comprehensive Capital Asset Inventory (CAI) that is summarized in the TAM Plan.
A condition assessment of inventoried assets	The SFMTA currently uses TERM Lite to assign age-based condition scores to all assets in the CAI. The SFMTA incorporates condition assessments into these scores to provide a more accurate view of the condition of each asset and to inform asset investment decisions.
Description of a decision support tool	The SFMTA currently uses TERM to assign condition scores and forecast out rehabilitation and replacement timelines. To improve investment decision support, he SFMTA invested in an inventory and financial modeling tool called PSD Citywide which will be the new home of the CAI and replace TERM in forecasting.
A prioritized list of investments	The SFMTA has created a Capital Improvement Program (FY 2023 – FY 2027) that includes a list of prioritized projects. The SFMTA uses updated CAI data and financial modeling to adjust the Capital Improvement Program every two years.
TAM and SGR policy	The SFMTA has clearly defined TAM and SGR policies.
Implementation strategy	The SFMTA has a clear strategy to improve the SFMTA over the next four years and ensure its assets are fully safe, operable, and efficient.
List of key annual activities	The SFMTA has a series of annual asset management activities to ensure each year's transit asset management strategy is implemented effectively.
Identification of resources	The SFMTA has identified key resources responsible to implement annual activities and ensure the Agency is on track to meet its goals.
Evaluation plan	The SFMTA has a clearly defined plan to monitor, update, and evaluate its asset management practices with the goal of continuous improvement towards industry best practices.

SFMTA Overview

We operate today's transportation system and work with our partners to plan the transportation system of tomorrow.

Who We Are

San Francisco voters established the San Francisco Municipal Railway (Muni) in 1912, creating the nation's first publicly owned transit system. In 1999, voters created the San Francisco Municipal Transportation Agency (SFMTA) by passing Proposition E, which merged Muni with the Department of Parking and Traffic to form an integrated SFMTA to manage city streets more effectively and advance the city's Transit First policy. In 2009, the SFMTA merged with the Taxi Commission to further streamline transportation management in San Francisco. A department of the City and County of San Francisco, the SFMTA currently manages all ground transportation in the city.

A Board of Directors governs the SFMTA, providing policy oversight and ensuring the public interest is represented. The Board's duties include approving the SFMTA's budget and contracts and authorizing proposed changes to fares, fees, and fines. Its six members are appointed by the Mayor and confirmed by the Board of Supervisors.

What We Do

The SFMTA plans, designs, builds, operates, regulates and maintains one of the most comprehensive transportation networks in the world. Directly managing five types of public transit in San Francisco (motor coach, trolley coach, light rail, historic streetcar and cable car), the SFMTA keeps people moving with Muni, the nation's eighth largest public transit system. The SFMTA also manages on- and off-street public parking, facilitates, bicycling and walking, regulates taxis, and manages paratransit services for those unable to use fixed-route services.

Guided by its Strategic Plan, the SFMTA strives to deliver on priorities defined by goals centered around Safety, Travel Choices, Livability, and Service. The city's streets are made safer as the SFMTA implements a Vision Zero initiative that includes quickly building critical safety improvements to eliminate traffic deaths. The SFMTA moves "Muni Forward" with new trains and buses and improvements to its Transportation Management Center to ensure consistent delivery during its scheduled service hours. The SFMTA's Bike Program is considered one of the best in the world; and advancing electric vehicle use, ongoing conservation efforts, and implementation of sustainable transportation and land use polices help improve the quality of life and environment in San Francisco. The SFMTA provides an outstanding workplace for staff who in turn strive to provide outstanding service to the community.

What Is Asset Management

Asset management is *the strategic and systematic practice of procuring, operating, inspecting, maintaining, rehabilitating, and replacing transit capital assets to manage their performance, risks, and costs over their life cycles, for the purpose of providing safe, cost-effective, and reliable transportation services.*

SFMTA is responsible for managing, maintaining, and delivering efficient, safe, and cost-effective transportation services to San Francisco. The agency is constantly balancing decisions that weigh our values against available resources to prioritize projects and programs to meet SFMTA strategic plan goals.

Asset management is relevant to all types of organizations, whether they are large, small, private, public, government or not-for-profit. There is growing evidence from around the world that effective asset management can improve an organizations reputation and its ability to:

- Operate safely;
- Meet its regulatory and statutory obligations;
- Evaluate future business strategies for the delivery of differing performance, cost and tolerable risk profiles; and
- Significantly reduce the cost of managing assets over their lives

Benefits of Asset Management

Asset management enables an organization to realize value from assets in the achievement of its organizational objectives. Asset management supports the realization of value while balancing financial, environmental and social costs, risk, quality of service and performance related to assets. The benefits of asset management can include, but are not limited to the following:

a) improved financial performance: improving the return on investments and reducing costs can be achieved, while preserving asset value and without sacrificing the short or long-term realization of organizational objectives

b) informed asset investment decisions: enabling the organization to improve its decision making and effectively balance costs, risks, opportunities, and performance

c) managed risk: reducing financial losses, improving health and safety, good will and reputation, minimizing environmental and social impact, can result in reduced liabilities such as insurance premiums, fines, and penalties

d) improved services and outputs: assuring the performance of assets can lead to improved services or products that consistently meet or exceed the expectations of customers and stakeholders

Some benefits can be directly assessed and quantified. For example: reduced capital and maintenance costs, increased asset availability and reduced risk exposure. Other benefits can be much more difficult to measure but may be equally important in terms of revenue generation or overall business performance. This includes improved reputation and customer/stakeholder satisfaction. Full lifecycle management will result in short, medium, and long term benefits to all stakeholders, which will continue to increase as time goes on.

Vision

Excellent transportation choices for San Francisco

Mission

We connect San Francisco through a safe, equitable, and sustainable transportation system

Transit Asset Management Policy

The following TAM Polices were taken from Section 16 of the SFMTA's *Capital Plan & Program Policies* and reflects the section numbering found there.

16.1 Asset Management is a strategic and systematic decision making process to maximize the performance, reliability and safety of the transportation system through optimal maintenance and supported through data-driven decision making (condition, cost, performance, etc.).

16.2 The SFMTA shall have an Asset Management Program in the Finance and Information Technology Division ("Asset Management Program") responsible for the SFMTA Asset Management Framework including a strategy, related plans and policy as well as the implementation of procedures to support efficient asset lifecycle management.

16.3 The Director of Transportation is defined as the "Accountable Executive" in accordance with the Federal Transportation Administration Public Transportation Safety Program, 49 U.S.C. 5329(d), and FTA Transit Asset Management Rule 49 U.S.C. 5326.

16.4 Asset Management policies and procedures will be reviewed and approved by the Asset Management Steering Committee consisting of the Director of Transportation, Director of Transit, Director of Sustainable Streets and Chief Financial Officer.

16.5 The Asset Management Program will include the Asset Hierarchy and the related performance and reporting baseline for management and monitoring of agency assets.

16.6 The Asset Hierarchy will identify appropriate asset classes, types and sub-types for the measure of performance.

16.7 The Asset Management Program will include policies and procedures for managing the SFMTA Asset Inventory and asset maintenance across the Asset Hierarchy.

16.8 The Asset Management Program will include the development of an agency Asset Management Plan minimally every 4-years consistent with FTA Transit Asset Management Rule 49 U.S.C. 5326

16.9 The Asset Management Program will include the development of an Asset Management Strategy minimally every 10-years with a program of periodic updates of the Asset Hierarchy, Asset Inventory, Asset Condition Assessments and components of the Asset Management Plan.

(1) The Asset Management Strategy is a policy document laying out the plans and assessments required to be completed over the next 10-years based on legislative, regulatory and other policy requirements.

(2) The Asset Hierarchy is the policy document that sets the pathway for components and assets to be reported on for the purposes of performance and related financial, legislative, regulatory and operational reports.

(3) Asset Condition Assessments are planning work that establish through a

scoring methodology whether an asset is in a State of Good Repair.

(4) The Asset Management Plan is the Transit Asset Management Plan required by the Federal Transit Administration including the assets that are a part of the SFMTA's Street/Department of Transportation functions.

16.10 Divisions will assign subject matter experts (SMEs) by asset classes, asset-types and sub-types who will assist in the Asset Program.

16.11 An asset is a physical object with the following attributes:

(1) A value of at least $5,000.

(2) A useful life of more than 1 year

(3) An object of work (workorder, preventative maintenance, capital investment)

(4) Owned and maintained by the SFMTA

(5) Reported on by the SFMTA for regulatory requirements

16.12 Asset Program reporting shall consider the City's financial record-keeping, work-order management, materials management, and other financial systems.

State of Good Repair Policies

The SFMTA has specific policies related to the State of Good Repair of the transportation system. These policies are integrated into the SFMTA's *Capital Plan and Program Policies*.

The SFMTA's documentation of State of Good Repair Policies is a key element in laying the foundation for a successful Asset Management Program. These policies were integrated into the SFMTA's Capital Plan and Program Policies in 2018, tying asset management into the SFMTA's capital planning process, the development of the 5-Year Capital Improvement Program and 2-Year Capital Budget.

The agency's State of Good Repair investments are informed by their State of Good Repair Polices which were taken from Section 17 of the SFMTA's *Capital Plan & Program Policies* and reflects the section numbering found there.

17.1 State of Good Repair is when an asset condition results the operation of that asset at a full level of performance.

17.2 The Asset Management Program shall set the framework for standard and reporting methods for asset condition to classify the level of performance of asset classes within the agency's Asset Hierarchy.

17.3 Each asset class will have defined metrics for evaluating State of Good Repair based on condition, safety, or other defined data metric.

17.4 State of Good Repair metrics will be reviewed and approved by the Asset Management Steering Committee.

17.5 Divisions through their respective SMEs will regularly evaluate the State of Good Repair by identifying investment levels required in the appropriate asset classes in the Capital Improvement Program.

17.6 The Capital Financial Planning and Analysis Section of the Finance and Information Technology Division shall prepare an annual State of Good Repair Report detailing capital investment impacts on SFMTA asset classes.

Implementation Strategy

The Agency established fifteen strategic objectives in the 2018 TAM Plan[1]. Below is a recap of those objectives with updates on progress:

FIGURE 2: Reflection on 2018 TAM Plan Goals

STRATEGIC GOAL	OBJECTIVE	STATUS & PROJECT UPDATE
1. Condition Assessment Methods	Develop methods to improve condition assessments and other critical data by capturing the experience and knowledge of asset owners and long-term staff, including crowd sources, interviews, and other methods.	Status: Complete; on-going 1. Completed condition assessment on Facilities in 2017. 2. Started condition assessments for SFMTA stations and traffic signals. 3. Stations condition assessment in development stage.
2. Annual SGR Report[2]	Develop a robust SGR Report that communicates an acceptable level of actionable backlog by asset category and measure actionable backlog on an annual basis.	Status: Complete; on-going 1. Have successfully completed an annual SGR report every year since 2014. 2. Completed 2021 SGR Report in September of 2022.
3. Asset Classification Hierarchy	Develop an asset hierarchy (work breakdown structure) and data collection requirements for each asset category that are consistently applied.	Status: In Progress 1. Created a new standardized asset hierarchy in 2018. 2. Uploading inventory to PSD Citywide to be able to segment out inventory more effectively. 3. Adding GIS location and spatial data
4. Update Enterprise Asset Management (EAM) System	Update or replace SFMTA's PeopleSoft and TERM Lite with the capability to automate the data collection process for all major asset classes for asset inventory, condition, and performance assessments.	Status: In Progress 1. EAMS has been implemented at SFMTA maintenance facilities with the exception of Scott Center (should be completed by EOY 2022).
5. Data Management	Develop data management procedures to ensure data quality.	Status: In Progress 1. Uploading inventory to PSD Citywide.

[1] 2018 TAM Plan
[2] 2021 SGR Report
2020 SGR Report
2019 SGR Report
2018 SGR Report
2017 SGR Report

6. Consolidate Independent Facility Asset Databases	Combine and integrate multiple Facilities asset inventory sources.	Status: In Progress 1. All facilities (except Scott Center) have consolidated their Asset Information into EAMS.
7. TAM Dashboard	Review customer feedback mechanisms and re-view opportunities to relate customer input to as-set condition where possible. Identify data access and mining needed to support this type of analysis. Develop dashboard for key TAM performance indicators.	Status: In Progress 1. Draft dashboards have been created within Power BI.
8. Link TAM Priorities to 20-year Capital Plan and 5-year Capital Improvement Program	Work with F$P to Integrate Capital Plan and Capital Improvement Program to TAM financial plan and asset inventory, condition and performance data into prioritization process for budgeting projects.	Status: Complete; on-going 1. CIP cycles incorporate findings from the State of Good Repair (SGR) report as part of its planning. This includes insights on asset condition and projected spending. 2. 20-year Capital Plan uses TERM Lite projections as basis for capital expenditure needs of existing assets.
9. Develop Estimates of Ongoing O&M Needs and Costs	Develop estimates of ongoing maintenance needs and cost. In addition to funding rehabilitation and replacement, providing steady funding or ongoing operations and maintenance to facilitate programming.	Status: Not Started 1. Not enough resources.
10. TAM Plan Development	Prepare a TAM Plan that includes asset inventories, condition assessments and investment prioritization. Review and respond to FTA requirements for TAM plan and processes to ensure that SFMTA is eligible for relevant FTA grants.	Status: Complete 1. Initial TAM Plan was completed in 2018. 2. 2022 update completed on schedule.
11. Performance Measure Monitoring	Identify TAM performance measures; and develop report card for tracking TAM conditions and performance over time.	Status: Complete; on-going 1. The annual SGR Report tracks progress towards Agency goals and looks at asset condition. 2. The TAM Dashboard outlined in (7) will provide transparency in tracking key performance measures.
12. Internal TAM Communication	Implement internal communication strategy that provides direction and promotes awareness and feedback on TAM policy, processes, and progress towards meeting goals and objectives.	Status: In Progress 1. Created Asset Management Working Group to promote awareness on TAM policy across the SFMTA. 2. Staff training in PSD Citywide will promote asset management principles.

13. Review Agency TAM Maturity	Measure the SFMTA's TAM maturity level over time through qualitative inputs, including performance measurement framework, decision-support tools, and staff awareness.	Status: In Progress 1. Utilizing Asset Management Maturity Scale to track the SFMTA's progress against key strategic objectives.
14. Workforce Capacity Analysis	Develop process to estimate workforce capacity needs for asset replacement and renewal.	Status: Not Started 1. No longer a major strategic priority.
15. TAM Training	Identify new training needs and implement ongoing training of staff.	Status: In Progress 1. Training has been provided periodically through the Asset Management Working Group meetings on various topics.

Looking towards the future, the Agency wants to continue building on some key objectives outlined in the 2018 TAM Plan, while also incorporating new strategic objectives primarily around data integrity and usefulness. The following are the Agency's strategic objectives it will be focusing on from 2022-2026:

FIGURE 3: 2022 TAM Plan Goals

STRATEGIC GOAL	OBJECTIVE	2022-2026 GOALS
1. Condition Assessment Methods	Develop methods to improve condition assessments and other critical data by capturing the experience and knowledge of asset owners and long term staff, including crowd sources, interviews, and other methods.	1. Complete assessments for Traffic Signals and Stations. 2. Develop plan for future condition assessments prioritizing assets at risk.
2. Asset Classification Hierarchy	Develop plan on cleaning up the Asset Hierarchy into more SFMTA pertinent classifications and defining how FTA classifications fit within SFMTA assets.	1. Define SFMTA standard asset class hierarchy. 2. Tag each asset to updated asset class hierarchy. 3. Upload assets to PSD Citywide with new asset classes as well as segments needed for reporting.
3. Update Enterprise Asset Management (EAM) System	Update or replace SFMTA's PeopleSoft and TERM Lite with the capability to automate the data collection process for all major asset classes for asset inventory, condition, and performance assessments.	1. Implement EAMS at Scott Center 2. Review EAMS data and work on how to integrate into PSD Citywide 3. Develop crosswalk between EAMS and PSD Citywide
4. TAM Dashboard	Review customer feedback mechanisms and re-view opportunities to relate customer input to as-set condition where possible. Identify data access and mining needed to support this type of analysis. Develop dashboard for key TAM performance indicators.	1. Develop dashboard using PSD Citywide to provide a snapshot of performance for a particular period of time. 2. Explore if data can be aggregated so that we can see asset data related to High Injury Corridor and Social Equity Neighborhoods.
5. Link TAM Priorities to 20-year Capital Plan and 5-year Capital Improvement Program	Work with F$P to Integrate Capital Plan and Capital Improvement Program to TAM financial plan and asset inventory, condition and performance data into prioritization process for budgeting projects.	1. Incorporate TAM Plan goals into next 20 Year Capital Plan. 2. Continue using State of Good Repair Report as an input in developing the 5 Year Capital Improvement Plan

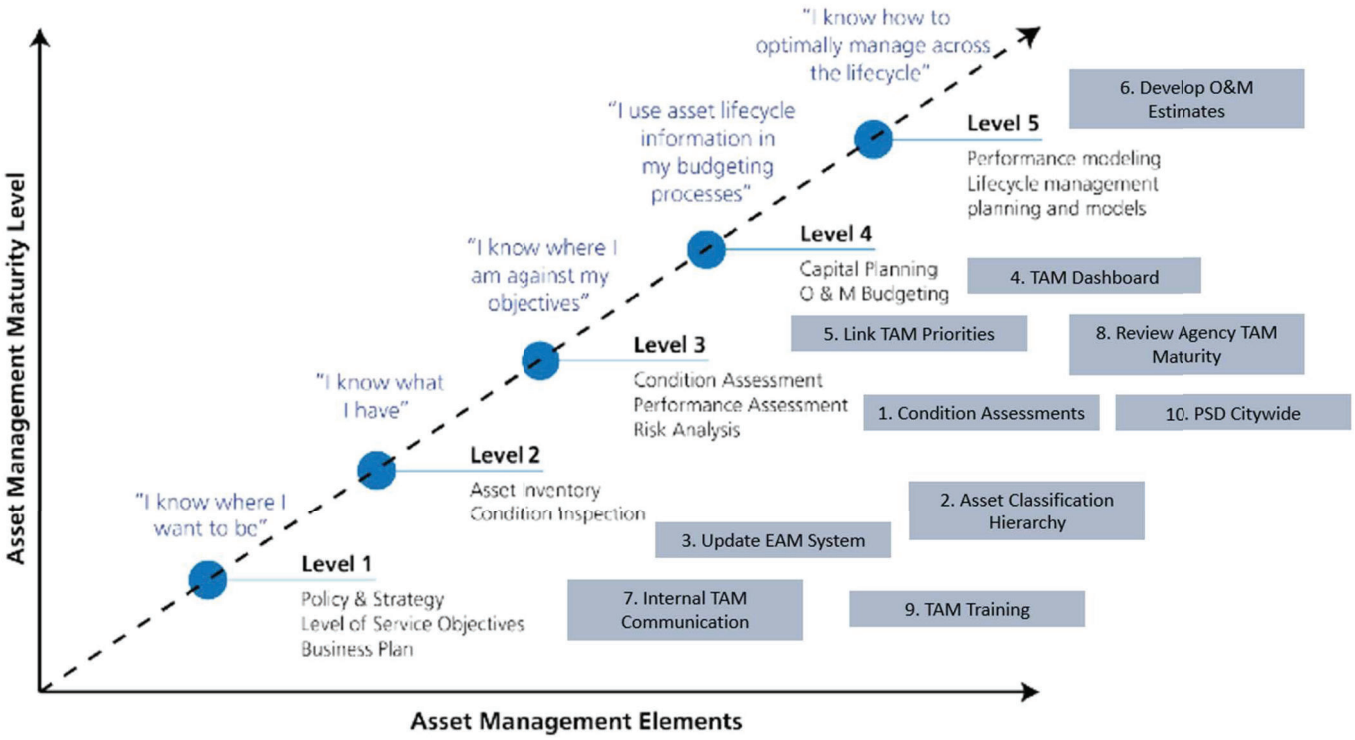
6. Develop Estimates of Ongoing O&M Needs and Costs	Develop estimates of ongoing maintenance needs and cost. In addition to funding rehabilitation and replacement, providing steady funding or ongoing operations and maintenance to facilitate programming.	1. Create plan to map out needed maintenance and associated costs for each asset in the Capital Asset Inventory.
7. Internal TAM Communication	Implement internal communication strategy that provides direction and promotes awareness and feedback on TAM policy, processes, and progress towards meeting goals and objectives.	1. Develop a procedure on reporting to TCC more frequently. 2. Use TCC and the fact that information and data is public facing as a springboard to initiate further engagement from staff.
8. Review Agency TAM Maturity	Measure the SFMTA's TAM maturity level over time through qualitative inputs, including performance measurement framework, decision-support tools, and staff awareness.	1. Develop plan to incorporate Asset Management Maturity Model into the different asset classes to work towards Level 5.
9. TAM Training	Identify new training needs and implement ongoing training of staff.	1. Develop plan to do training refresh sessions with new staff across the SFMTA. 2. Continue Asset Management Working Group meetings.
10. PSD Citywide (NEW)	Use PSD Citywide as the new home of the Capital Asset Inventory. Use PSD Citywide functionality to segment out assets, determine asset scores, and provide an overview of the Agency's assets.	1. Upload entire Capital Asset Inventory to PSD Citywide. 2. Create a new model for asset condition score. 3. Use PSD Citywide functionality to report on data and for dashboards.

One important artifact that informs the SFMTA's strategic priorities is the Asset Management Maturity scale (Figure 4 below). Perfect asset lifecycle management can never be achieved, it can only be strived for. The Agency's goals for short, medium and long-term is to continuous improvement towards optimal lifecycle management. The model of Asset Management Maturity provides realistic steps to achieve in pursuit of this goal. The model can be viewed holistically across the Agency, or granularly within an asset class or business practice. The key is to identify where the activity currently falls on the maturity scale and to focus on actions that will improve asset management performance, always advancing towards the next step in the maturity process.

Using this guiding principle, the SFMTA analyzes progress from the division down to the individual business unit and identifies the maturity level at which asset management practice is integrated into existing business processes. Asset Management Maturity advances at different rates depending on the state of existing processes, staff awareness, and capacities.

As the SFMTA has increased emphasis on its Asset Management Unit, the SFMTA has moved up overall levels in the Asset Management Maturity model.

FIGURE 4: ASSET MANAGEMENT MATURITY SCALE



Holistically, the SFMTA is at a Level 3+ on the Asset Management Maturity scale. The SFMTA has a clearly defined Policy & Strategy, Level of Service Objectives, and a Business Plan. This strategy is highlighted prevalently both in the annual State of Good Repair reports and every four years in the SFMTA's Transit Asset Management Plan. The SFMTA also has an asset inventory and performs condition assessments.

The goal is to reach level 5, a state of practice where asset information is so integrated into the organization's functions that it optimizes each asset to extract the most value over its entire lifecycle with minimal waste. Performance against the 10-Year Strategy can be measured by the maturity of asset management across the SFMTA.

Figure 4 outlines the Asset Management Maturity Scale and pinpoints where each of the SFMTA's strategic objectives for the next four years impacts its maturity.

Identification of Resources

The following positions make up a fully staffed Asset Management Unit:

- Manager IV (9174)
- Principal Administrative Analyst (1824)
- Senior Administrative Analyst (1823)
- Administrative Analyst (1822)
- Junior Administrative Analyst (1820)
- Planner I (5277)
- Student Design Trainee II (5381)

In addition to the Asset Management Unit, the SFMTA also needs positions in the individual departments to effectively manage all of its assets. Some of those positions include:

- Manager VIII (9182)
- Senior Engineer (5211)
- Deputy Chief Mechanical Officer (9182)
- Manager IV (9174)
- Street Operation Manager (9180)
- Parking Meter Repairer Supervisor (7243)
- Principal Administrative Analyst (1824)
- Project Manager II (5504)
- Associate Engineer (5207)
- Manager VI (9180)
- Project Manager III (5506)
- Chief Maintenance Officer (9182)
- Project Manager I (5502)
- IT Project Director
- IS Engineer Principal (1044)
- Eng/Arch/Landscape Arch Senior (5211)
- Maintenance Controller (7340)
- Carpenter Supervisor I (7226)
- Automotive Transit Shop Supervisor I (7228)
- Campus Planning Manager
- Traffic Sign Manager (5306)
- Policy Manager
- Department of Public Works
- Engineer (5241)
- Long Range Asset Development Manager

List of Key Annual Activities

From an asset management perspective, the primary annual activity critical to asset management is the completion of the State of Good Repair Report.

The State of Good Repair Report is completed annually and provides the SFMTA a regular interval with which to evaluate progress towards its goals and reprioritize as necessary. The SFMTA uses the TAM Plan to inform its annual strategy outlined in the State of Good Repair Report. There is natural overlap between the TAM Plan and the State of Good Repair Report, because many of the strategic goals outlined in the TAM Plan are geared towards ensuring that the SFMTA's assets are operating in a state of good repair. The State of Good Repair Report provides a number of useful purposes that the SFMTA uses on a regular basis including an opportunity to:

- Reflect on progress made towards strategic goals outlined in the TAM Plan
- Update the Capital Asset Inventory with key additions and retirements
- Check on asset condition score for all SFMTA assets
- Forecast out spending for rehabilitation and replacement on all assets based on condition

The SFMTA views the TAM Plan as a living document that it uses to inform its State of Good Repair Reports, annual budget cadences, and overall strategy. Therefore, the SFMTA plans to continue to use the TAM Plan to inform its strategy, specifically around the key strategic goals outlined in the Implementation Strategy section.

Evaluation Plan

When capital needs are identified, they are incorporated into the Capital Plan through a three-step process:

1. Developing and weighting criteria to prioritize the capital needs
2. Identifying and reviewing capital needs
3. Prioritizing capital needs

After the completion of these steps, the Transportation Capital Committee (TCC) then follows established policies and processes to both adopt and amend the Capital Plan.

The TCC is responsible for developing, amending, and implementing the 20-Year Capital Plan, the 5-Year Capital Improvement Program (CIP), and the 2-Year Capital Budget. This responsibility includes approving new capital needs for inclusion in the Capital Plan and prioritizing needs based on criteria established by the Director of Transportation and their Executive Team. The committee meets monthly to consider changes to the Capital Plan or the CIP and is comprised of representatives for each of the SFMTA's ten programs.

The Capital Plan is a need-based assessment of the SFMTA's anticipated capital needs for the upcoming 20 years meant to identify all of the agency's fiscally unrestrained capital investment needs to achieve the SFMTA's and the San Francisco's transportation goals. It also provides the foundation for developing the fiscally constrained 5-year CIP and the 2-year Capital Budget.

Moreover, it informs citywide and regional capital funding priorities for the City and County of San Francisco and the Bay Area.

The SFMTA 5-Year Capital Improvement Program takes the needs from the Capital Plan and prioritizes them based on funding type and funding availability. The purpose of the 5-Year CIP is to develop a financially constrained 5-Year Program of Projects for the Transportation System, review potential revenues for those projects, complete a strategic and value analysis for project prioritization and funding, and finally serve as an implementation tool for the SFMTA Strategic Plan and other Plans and Strategies.

Projects are then appropriated funds through the SFMTA 2-Year Capital Budget. This process ensures funding is strategic and that projects are properly prioritized.

To evaluate progress in the TAM Plan, the SFMTA plans to report on progress for the SFMTA's key strategic goals in its annual State of Good Repair Report and continue crafting a TAM Plan every four years.

Decision Support

TERM-Lite

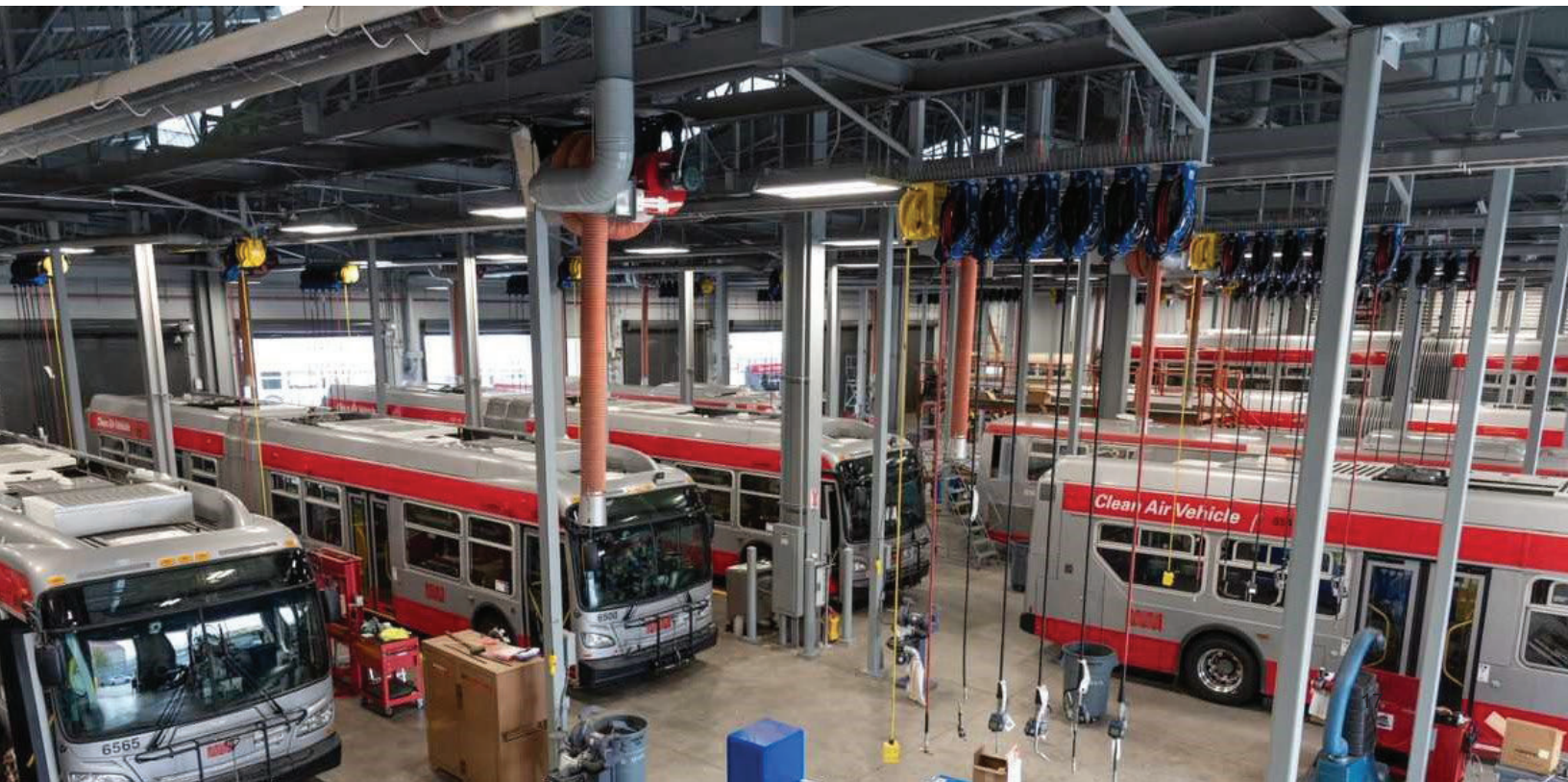
SFMTA currently uses the TERM-Lite (Transit Economic Requirements Model-Lite), a model provided by the Federal Transit Authority, to conduct age-based condition assessments on the population of its transit assets. In addition to providing current condition scores for the population of SFMTA's assets, TERM-Lite also produces analysis on the Agency's State of Good Repair backlog and a 20-year forecast of investment requirements. The TERM-Lite output and corresponding analysis for State of Good Repair reporting for SFMTA's ten asset classes be found in the Appendix.

PSD Citywide

TERM-Lite runs on specific software that may not be supported by newer computers. It is also reliant on an on-premises dataset for which access control and auditability is limited. Therefore, SFMTA has procured PSD Citywide, a cloud-based solution, to help support transit asset management routines.

In addition to providing transit asset data security and global accessibility, PSD Citywide has maintenance management and decision support functionality, providing SFMTA with a more detailed lens with which to view its transit assets and prioritize future investment needs.

SFMTA is in the process of transitioning all transit asset data to this new solution, with the goal of leveraging the new tool for all strategic transit asset management analysis and reporting starting in 2023. SFMTA plans to use more data inputs than the age of assets to assign future condition scores since the modules in the PSD Citywide portal provide additional levels of insight.



Prioritized List of Investments

Several documents describe the SFMTA's need for capital investments, most notably the 20-Year Capital Plan and the 5-Year Capital Improvement Program (CIP). These planning documents support the SFMTA's overarching strategic goals:

- Create a safer transportation experience for everyone.
- Make transit and other sustainable modes of transportation the most attractive and preferred means of travel.
- Improve the quality of life and environment in San Francisco and the region.
- Create a workplace that delivers outstanding service.

Formally updated every two years, the most recent 20-Year Capital Plan was updated in November 2021. The purpose of the Capital Plan is to identify and characterize all of the SFMTA's potential capital investments needed to achieve the City's transportation goals. It is a financially unconstrained document, meaning that it includes capital needs for which funding has not yet been identified or committed. It also provides the foundation for developing the fiscally constrained 5-Year CIP. The 5-Year CIP consists of the prioritized list of investments that the SFMTA plans to fund over a five-year period. A capital project must be included in the 20-Year Capital Plan to be eligible for inclusion in the 5-Year CIP. The 2021 Capital Plan identifies over $31.3 billion in potential SFMTA capital investments over the next 20 years.

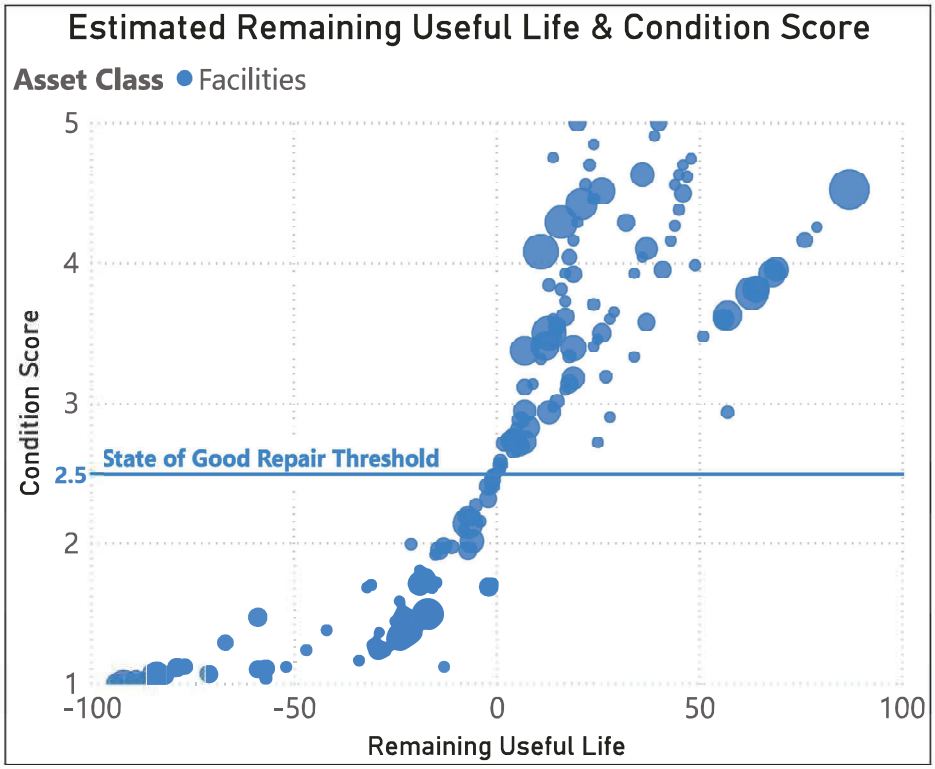
Like the 20-Year Capital Plan, the 5-Year CIP is formally updated every two years. The SFMTA's 5-Year CIP is a fiscally constrained program of capital projects that is organized into 10 Capital Programs: Communications/IT, Facility, Fleet, Parking, Security, Traffic Signals, Streets, Taxi & Accessible Services, Transit Fixed Guideway, and Transit Optimization & Expansion.

The FY2023-27 CIP was adopted on April 19, 2022. It includes approximately $2.6 billion dollars across more than 178 projects that the SFMTA plans to implement during the next five years. Of these investments, $1.85 billion correspond towards State of Good Repair investments. These projects will improve the safety, reliability, equity, and efficiency of San Francisco's transportation system.

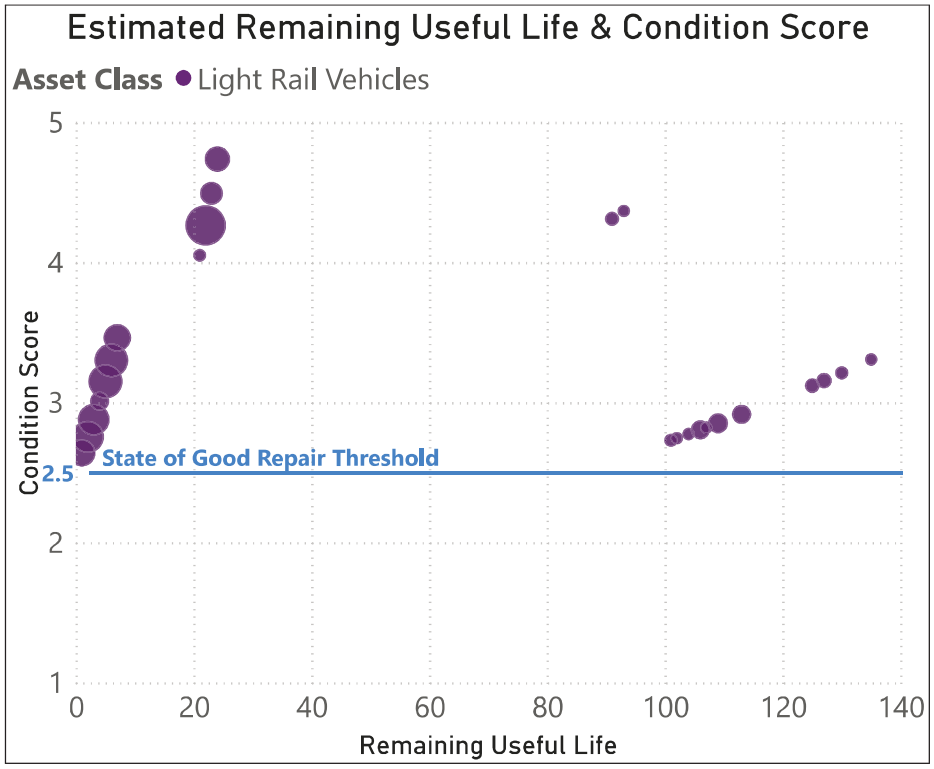
The FY2023-27 CIP is included in the appendix and encompasses the prioritized list of investments that the SFMTA is focused on.

Appendix

Appendix A: Asset Class Summary Pages



Number of Assets in Asset Class	479
Weighted Asset Class Condition Score	3.00
Asset Class Replacement Value	$2.6bn
Asset Class Replacement Value in Backlog	$905.8M
% of Asset Class Replacement Value in Backlog	34.8%



Number of Assets in Asset Class

269

Weighted Asset Class Condition Score

3.41

Asset Class Replacement Value

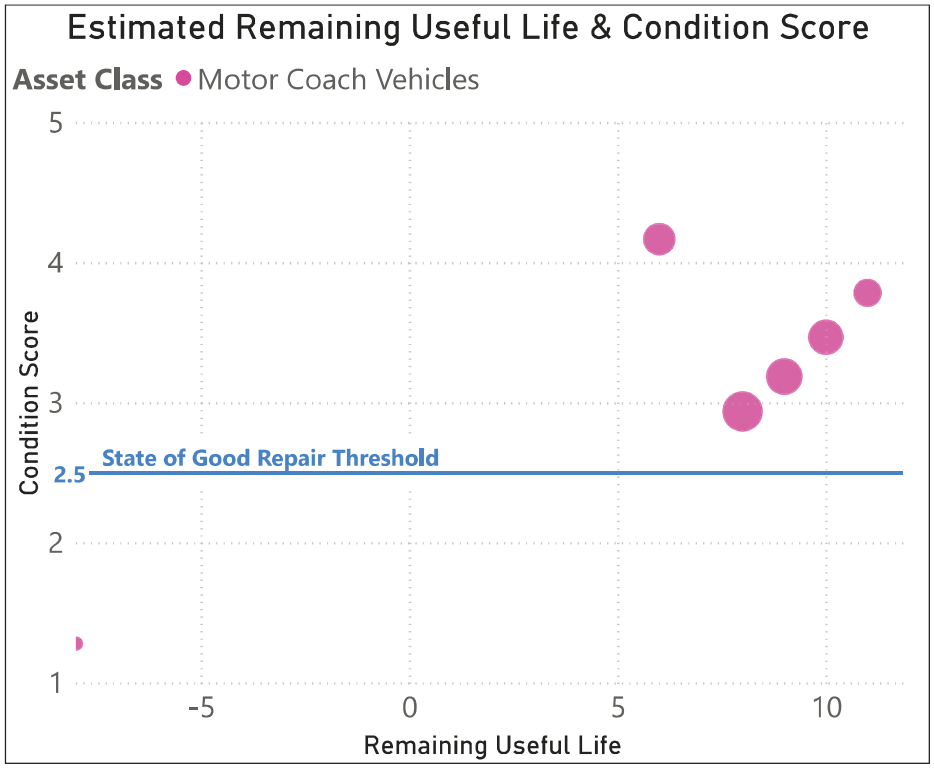
$901.1M

Asset Class Replacement Value in Backlog

$0.0

% of Asset Class Replacement Value in Backlog

0.0%



Number of Assets in Asset Class

585

Weighted Asset Class Condition Score

3.36

Asset Class Replacement Value

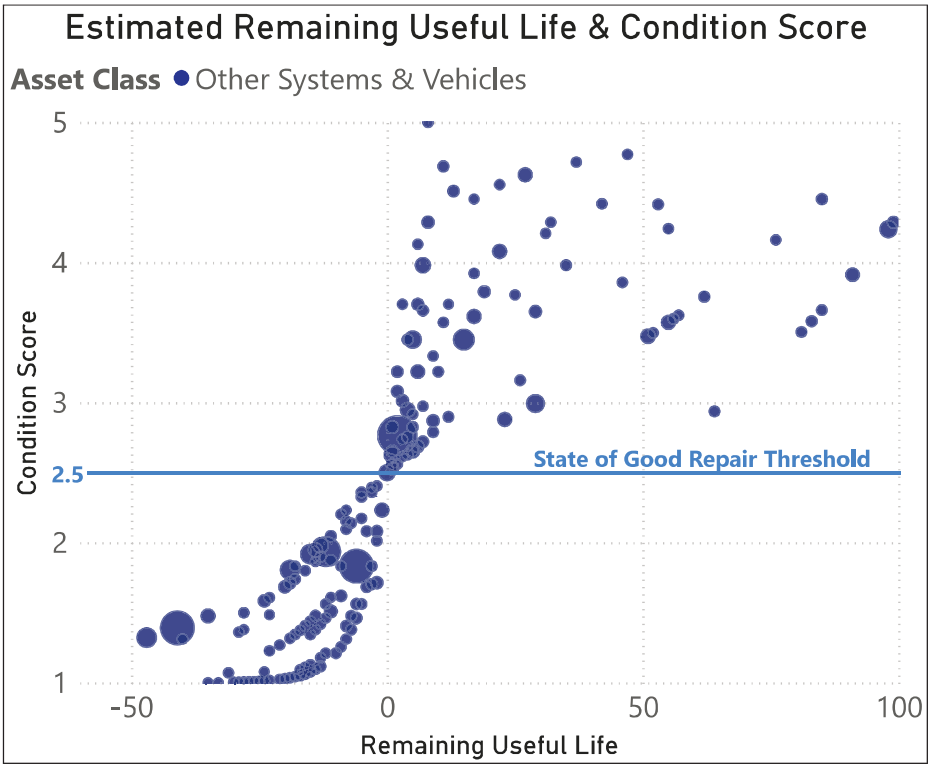
$500.4M

Asset Class Replacement Value in Backlog

$21.7M

% of Asset Class Replacement Value in Backlog

4.3%



Number of Assets in Asset Class

1,164

Weighted Asset Class Condition Score

2.44

Asset Class Replacement Value

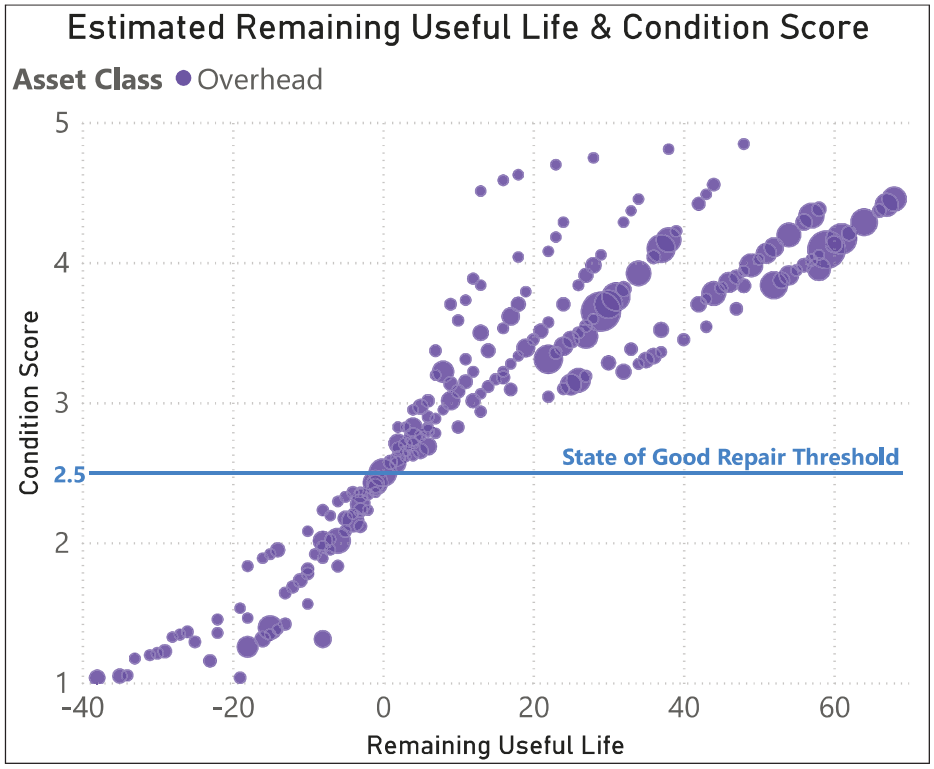
$595.2M

Asset Class Replacement Value in Backlog

$309.6M

% of Asset Class Replacement Value in Backlog

52.0%



Number of Assets in Asset Class

12,797,622

Weighted Asset Class Condition Score

3.35

Asset Class Replacement Value

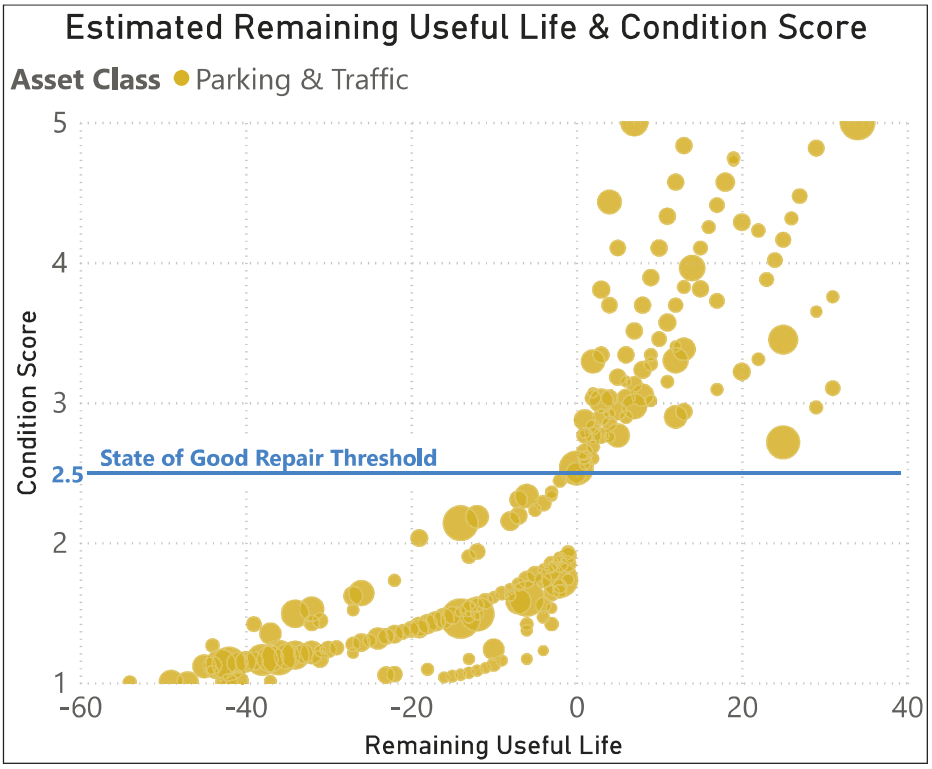
$3.2bn

Asset Class Replacement Value in Backlog

$663.2M

% of Asset Class Replacement Value in Backlog

20.9%



Number of Assets in Asset Class

1,177,651

Weighted Asset Class Condition Score

2.26

Asset Class Replacement Value

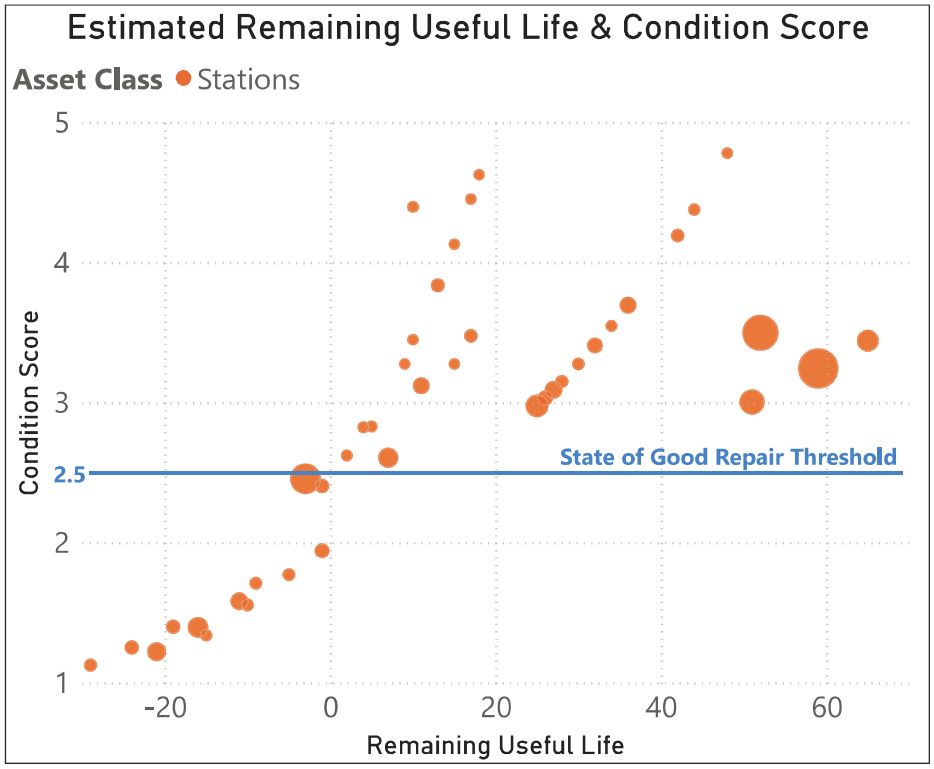
$1.9bn

Asset Class Replacement Value in Backlog

$1.2bn

% of Asset Class Replacement Value in Backlog

64.3%



Number of Assets in Asset Class

33,398

Weighted Asset Class Condition Score

2.89

Asset Class Replacement Value

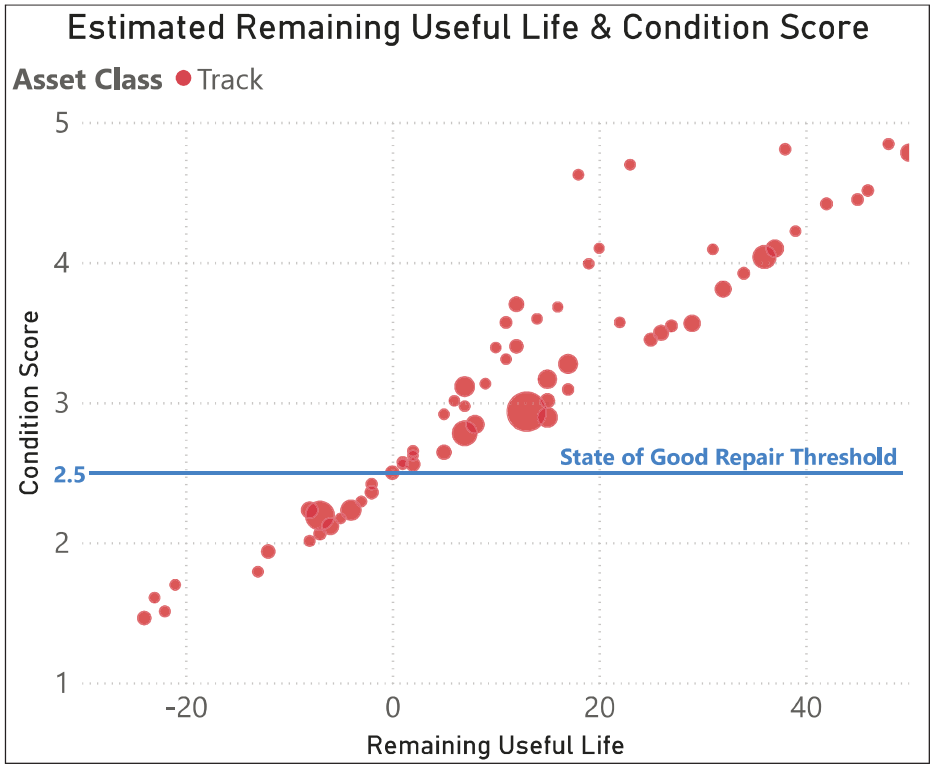
$4.0bn

Asset Class Replacement Value in Backlog

$656.6M

% of Asset Class Replacement Value in Backlog

16.5%



Number of Assets in Asset Class

496,268

Weighted Asset Class Condition Score

3.00

Asset Class Replacement Value

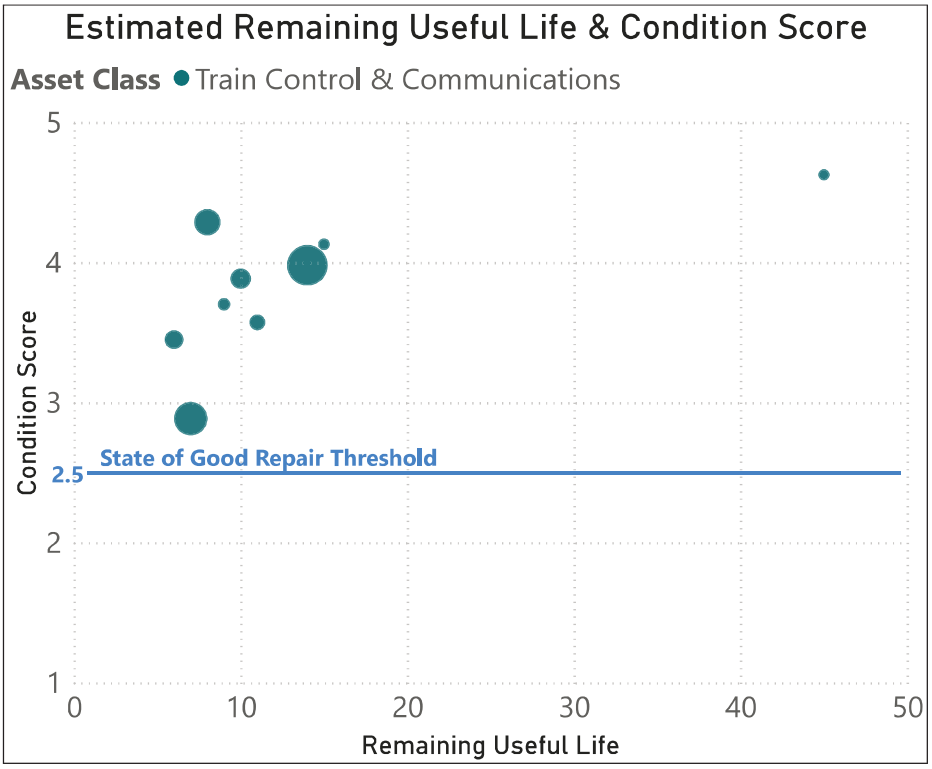
$1.3bn

Asset Class Replacement Value in Backlog

$319.8M

% of Asset Class Replacement Value in Backlog

25.2%



Number of Assets in Asset Class

11

Weighted Asset Class Condition Score

3.68

Asset Class Replacement Value

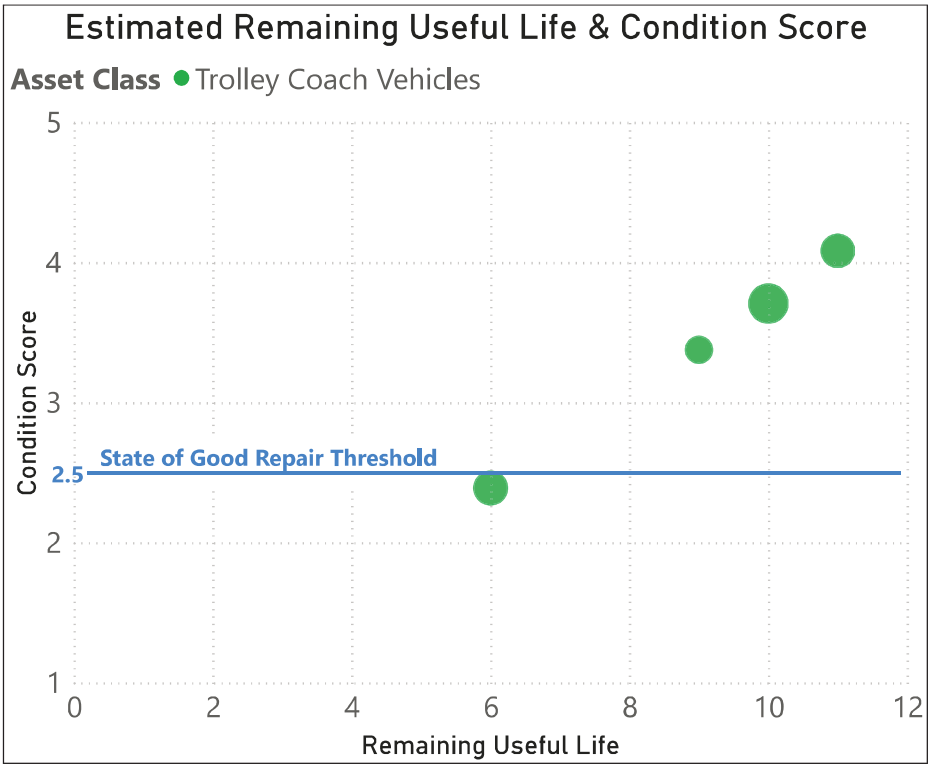
$746.1M

Asset Class Replacement Value in Backlog

$0.0

% of Asset Class Replacement Value in Backlog

0.0%



Number of Assets in Asset Class

278

Weighted Asset Class Condition Score

3.42

Asset Class Replacement Value

$331.1M

Asset Class Replacement Value in Backlog

$0.0

% of Asset Class Replacement Value in Backlog

0.0%

Appendix B: Transit Asset Inventory Summary

Asset Class	Category	Sub-Category	Element	Sub-Element	Quantity	Avg Condition Score	Total Valuation	Avg Remaining Useful Life
Facilities	Facilities	Buildings	--	--	40	4.1	$10,117,907	32
Facilities	Facilities	Buildings	Administration	--	3	2.0	$12,600,841	(6)
Facilities	Facilities	Buildings	Building Components	Built-in Equipment and Specialties	22	2.7	$226,488,364	(7)
Facilities	Facilities	Buildings	Building Components	Electrical	24	2.8	$226,726,585	1
Facilities	Facilities	Buildings	Building Components	Elevators and Conveying Systems	14	2.5	$16,502,729	(11)
Facilities	Facilities	Buildings	Building Components	Exterior	23	3.2	$200,870,247	11
Facilities	Facilities	Buildings	Building Components	Fire Alarm	24	3.3	$105,021,781	6
Facilities	Facilities	Buildings	Building Components	HVAC	25	2.9	$199,227,752	0
Facilities	Facilities	Buildings	Building Components	Interior	23	2.2	$133,913,498	(17)
Facilities	Facilities	Buildings	Building Components	Other	59	3.6	$719,060,863	31
Facilities	Facilities	Buildings	Building Components	Plumbing	62	3.1	$199,819,653	5
Facilities	Facilities	Buildings	Building Components	Roof	61	3.3	$109,437,189	8
Facilities	Facilities	Buildings	Maintenance	--	20	2.4	$310,289,111	(6)
Facilities	Facilities	Buildings	Maintenance	Bus Stratum 1 < 200 Vehicles	2	2.9	$4,447,909	57
Facilities	Facilities	Central Control	--	--	1	2.6	$6,020,643	1
Facilities	Facilities	Equipment	Maintenance	Bus Washer	15	2.7	$7,180,505	7
Facilities	Facilities	Equipment	Maintenance	Fuel Tank	7	4.7	$898,607	23
Facilities	Facilities	Equipment	Maintenance	Lifts - Fixed	40	1.7	$69,695,737	(49)
Facilities	Facilities	Equipment	Maintenance	Misc Equip	7	4.5	$6,286,872	22
Facilities	Facilities	Equipment	Maintenance	Rail	1	4.3	$16,509,942	32
Facilities	Facilities	Equipment	Maintenance	Train Washer	1	3.8	$2,608,020	16
Facilities	Facilities	Equipment	MIS/IT/Network Systems	Computers/Hardware	1	1.1	$140,105	(13)
Facilities	Systems	Communications	Safety and Security	Emergency Location System	1	3.8	$3,838,982	13
Facilities	Systems	Utilities	Drainage	--	3	2.9	$12,709,831	13
Light Rail Vehicles	Vehicles	Revenue Vehicles	Light Rail	Historic Street Car	56	3.2	$117,687,976	113
Light Rail Vehicles	Vehicles	Revenue Vehicles	Light Rail	LRV	213	3.5	$783,876,106	10
Motor Coach Vehicles	Vehicles	Revenue Vehicles	Bus	Articulated Bus (60 ft)	224	3.2	$237,818,669	9
Motor Coach Vehicles	Vehicles	Revenue Vehicles	Bus	Bus (30 ft)	30	2.5	$15,672,620	0
Motor Coach Vehicles	Vehicles	Revenue Vehicles	Bus	Bus (40 ft)	331	3.1	$246,957,169	6
Other Systems & Vehicles	Facilities	Buildings	Building Components	Electrical	3	3.8	$773,036	42
Other Systems & Vehicles	Facilities	Buildings	Building Components	Fire Alarm	14	2.6	$5,322,439	0
Other Systems & Vehicles	Facilities	Buildings	Building Components	HVAC	7	2.0	$3,548,292	(14)
Other Systems & Vehicles	Facilities	Buildings	Building Components	Interior	2	2.2	$139,412	(5)
Other Systems & Vehicles	Facilities	Buildings	Building Components	Other	36	3.5	$13,276,051	49
Other Systems & Vehicles	Facilities	Buildings	Building Components	Plumbing	9	2.1	$2,851,306	(10)
Other Systems & Vehicles	Facilities	Buildings	Building Components	Roof	7	2.0	$4,435,366	(15)
Other Systems & Vehicles	Facilities	Equipment	MIS/IT/Network Systems	--	3	2.1	$65,256,021	(3)
Other Systems & Vehicles	Facilities	Equipment	MIS/IT/Network Systems	Software	1	4.0	$7,250,385	7
Other Systems & Vehicles	Guideway Elements	Special Structures	--	--	9	1.9	$44,967,387	(12)
Other Systems & Vehicles	Systems	Communications	Phone System	--	1	1.5	$1,401,047	(11)
Other Systems & Vehicles	Systems	Communications	Safety and Security	CCTV -- Fixed	1	3.4	$11,821,422	5
Other Systems & Vehicles	Systems	Communications	SCADA	--	1	4.5	$1,659,690	13
Other Systems & Vehicles	Systems	Electrification	Substations	--	26	2.0	$145,708,923	(23)
Other Systems & Vehicles	Systems	Electrification	Substations	Building	21	3.1	$35,151,927	28
Other Systems & Vehicles	Systems	Electrification	Substations	Built-in Equipment and Specialties	18	2.8	$9,434,043	2
Other Systems & Vehicles	Systems	Electrification	Substations	DC Switchgear	5	2.6	$11,088,414	(2)
Other Systems & Vehicles	Systems	Electrification	Substations	Exterior	19	3.3	$8,203,164	19
Other Systems & Vehicles	Systems	Electrification	Substations	Fire Alarm	36	2.8	$3,234,529	4
Other Systems & Vehicles	Systems	Electrification	Substations	HVAC	20	2.6	$2,201,791	(2)
Other Systems & Vehicles	Systems	Electrification	Substations	Plumbing	18	2.4	$1,347,720	(5)
Other Systems & Vehicles	Systems	Electrification	Substations	Rectifier	3	1.9	$6,653,048	(16)

Asset Class	Category	Sub-Category	Element	Sub-Element	Quantity	Avg Condition Score	Total Valuation	Avg Remaining Useful Life
Other Systems & Vehicles	Systems	Electrification	Substations	Roof	18	2.4	$2,695,441	(6)
Other Systems & Vehicles	Systems	ITS	--	--	3	2.6	$4,470,954	(4)
Other Systems & Vehicles	Systems	ITS	APC	--	4	2.5	$5,746,256	0
Other Systems & Vehicles	Systems	Revenue Collection	Central Revenue Collection	Vault	1	1.5	$2,647,979	(11)
Other Systems & Vehicles	Systems	Revenue Collection	In-Station	Change Machines	1	1.6	$56,042	(11)
Other Systems & Vehicles	Systems	Revenue Collection	In-Station	Fare Control System	1	2.6	$571,627	1
Other Systems & Vehicles	Systems	Revenue Collection	In-Station	Turnstiles	1	2.9	$6,304,713	4
Other Systems & Vehicles	Systems	Revenue Collection	In-Station	TVMs	2	1.9	$9,106,808	(6)
Other Systems & Vehicles	Systems	Revenue Collection	On-Vehicle	Fareboxes	2	2.8	$85,239,720	2
Other Systems & Vehicles	Systems	Utilities	--	--	1	3.2	$4,903,666	6
Other Systems & Vehicles	Vehicles	Non-Revenue Vehicles	--	--	385	2.0	$32,110,485	(8)
Other Systems & Vehicles	Vehicles	Non-Revenue Vehicles	Special	--	272	2.3	$10,390,351	(2)
Other Systems & Vehicles	Vehicles	Revenue Vehicles	Cable Car	Cable Car	40	3.0	$32,591,535	46
Other Systems & Vehicles	Vehicles	Revenue Vehicles	Vans, Cutaways and Autos	Automobile	6	4.1	$180,768	6
Other Systems & Vehicles	Vehicles	Revenue Vehicles	Vans, Cutaways and Autos	Medium-Duty Van	167	3.5	$12,442,179	5
Overhead	Systems	Electrification	Overhead Catenary	--	188275	3.8	$478,509,145	47
Overhead	Systems	Electrification	Overhead Catenary	Decorative Streetlighting	2560823	3.3	$183,995,858	14
Overhead	Systems	Electrification	Overhead Catenary	Ductbank	541910	4.0	$626,583,530	55
Overhead	Systems	Electrification	Overhead Catenary	Feed Span (+ and -)	1285605	2.4	$70,912,325	(3)
Overhead	Systems	Electrification	Overhead Catenary	Manhole	541603	3.9	$132,437,026	45
Overhead	Systems	Electrification	Overhead Catenary	Pole Grounding	1280412	3.5	$29,817,975	19
Overhead	Systems	Electrification	Overhead Catenary	Poles and Foundation	2560823	3.7	$828,469,575	29
Overhead	Systems	Electrification	Overhead Catenary	Tangent Span	1280412	2.6	$81,908,897	(1)
Overhead	Systems	Electrification	Overhead Catenary	Trolley Wire	2557759	2.3	$744,650,959	(5)
Parking & Traffic	Facilities	Buildings	Building Components	HVAC	11	3.2	$64,701,974	11
Parking & Traffic	Facilities	Buildings	Building Components	Plumbing	16	2.8	$110,010,237	8
Parking & Traffic	Facilities	Buildings	Building Components	Roof	14	2.1	$59,600,554	(12)
Parking & Traffic	Guideway Elements	Guideway	--	--	1177495	2.1	$1,003,245,768	(17)
Parking & Traffic	Stations	--	--	--	16	2.2	$25,141,271	(8)
Parking & Traffic	Stations	Access	Elevators	--	11	2.3	$19,967,026	(9)
Parking & Traffic	Stations	Access	Parking	Garage	32	1.8	$372,342,340	(10)
Parking & Traffic	Stations	Access	Parking	Lot	19	1.7	$878,134	(4)
Parking & Traffic	Systems	Electrification	Building	Electrical Systems	16	2.1	$126,934,889	(13)
Parking & Traffic	Systems	Revenue Collection	Central Revenue Collection	--	18	5.0	$26,096,377	7
Parking & Traffic	Systems	Revenue Collection	In-Station	Parking Meters	3	2.9	$44,716,755	4
Stations	Guideway Elements	Guideway	Underground	Tunnel Light Rail	33160	2.9	$1,234,479,280	19
Stations	Stations	Access	Elevators	--	12	2.4	$39,929,849	(1)
Stations	Stations	Access	Escalators	--	28	3.8	$55,765,600	12
Stations	Stations	Building	At-Grade / Center Platform	At-Grade / Center Platform	66	3.2	$204,527,638	27
Stations	Stations	Building	At-Grade / Center Platform	At-Grade / Side Platform	75	3.3	$445,757,626	29
Stations	Stations	Building	Building Components	Building Electrical	9	1.5	$183,887,323	(13)
Stations	Stations	Building	Building Components	Emergency backup system: UPS	1	3.3	$1,538,756	9
Stations	Stations	Building	Building Components	Fire Alarm	9	2.3	$149,401,188	(3)
Stations	Stations	Building	Building Components	HVAC	9	1.2	$111,096,170	(22)
Stations	Stations	Building	Building Components	Other	9	3.2	$1,288,162,813	58
Stations	Stations	Building	Building Components	Plumbing	9	1.4	$187,706,206	(17)
Stations	Stations	Complete Station	Light Rail	--	9	2.0	$75,940,823	(2)
Stations	Stations	Signage & Graphics	Electronic	--	2	3.9	$12,986,583	10
Track	Guideway Elements	Trackwork	Ballasted	Curve	17208	2.7	$18,792,416	1
Track	Guideway Elements	Trackwork	Ballasted	Tangent	195347	3.5	$280,954,036	22
Track	Guideway Elements	Trackwork	Direct Fixation	Curve	14251	3.0	$21,509,183	4
Track	Guideway Elements	Trackwork	Direct Fixation	Tangent	223628	3.7	$337,005,232	29
Track	Guideway Elements	Trackwork	Embedded	Curve	6344	2.2	$129,219,845	(7)
Track	Guideway Elements	Trackwork	Embedded	Tangent	39159	2.9	$259,967,278	13
Track	Guideway Elements	Trackwork	Special	--	48	2.4	$49,891,265	(4)
Track	Guideway Elements	Trackwork	Special	Ballasted Single Crossover	12	2.6	$11,810,829	1
Track	Guideway Elements	Trackwork	Special	Ballasted Turnout	143	2.4	$53,293,039	(3)
Track	Guideway Elements	Trackwork	Special	Diamond Crossover	9	2.7	$8,196,127	1
Track	Guideway Elements	Trackwork	Special	Direct Fixation Diamond Crossover	7	2.5	$8,063,898	(4)

Asset Class	Category	Sub-Category	Element	Sub-Element	Quantity	Avg Condition Score	Total Valuation	Avg Remaining Useful Life
Track	Guideway Elements	Trackwork	Special	Direct Fixation Single Crossover	10	3.0	$14,919,336	4
Track	Guideway Elements	Trackwork	Special	Direct Fixation Turnout	95	2.9	$70,567,952	4
Track	Guideway Elements	Trackwork	Special	Single Crossover	2	2.1	$1,849,382	(6)
Track	Guideway Elements	Trackwork	Special	Turnout	1	2.1	$372,679	(6)
Track	Guideway Elements	Trackwork	Special	Turntable	3	2.4	$4,203,142	(2)
Train Control & Communications	Systems	Communications	--	Light Rail	3	4.3	$609,481	25
Train Control & Communications	Systems	Communications	Cable Transmission System (CTS)	Fiber Optic Cable Transmission System (FOCS)	1	3.7	$4,024,439	9
Train Control & Communications	Systems	Communications	Passenger Communications Systems	Passenger Emergency (Blue Light) Phones	1	3.9	$57,060,380	10
Train Control & Communications	Systems	Communications	Radio	--	1	4.3	$112,754,446	8
Train Control & Communications	Systems	Communications	Safety and Security	CCTV -- On-board vehicle	1	3.6	$21,015,710	11
Train Control & Communications	Systems	Communications	SCADA	--	1	3.4	$42,031,420	6
Train Control & Communications	Systems	Train Control	Centralized Train Control	--	1	3.6	$1,401,047	11
Train Control & Communications	Systems	Train Control	Centralized Train Control	Commuter Rail	1	2.9	$199,022,137	7
Train Control & Communications	Systems	Train Control	Centralized Train Control	Light Rail	1	4.0	$308,230,414	14
Trolley Coach Vehicles	Vehicles	Revenue Vehicles	Trolleybus	Trolleybus	278	3.4	$331,100,299	9