TRANSIT ASSET MANAGEMENT PLAN

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Massachusetts Bay Transportation Authority

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RELEASE DETAILS

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EXECUTIVE SUMMARY

The 2026 Transit Asset Management (TAM) Plan documents the MBTA's asset portfolio, current condition, and asset management practices while setting the direction, strategies, and actions to improve the management of its infrastructure. This TAM Plan covers a four-year period and aligns with other federal planning cycles, statewide transportation improvement programs, and the MBTA's capital planning and budget development cycles.

Accomplishments Since the 2022 TAM Plan

Since the 2022 TAM Plan, the MBTA has made significant progress toward its asset management practice which is reflected in this update to the plan. Over the past 4 years, the MBTA Asset Management office has accomplished the following milestones:

- Completed the 2023 Capital Needs Assessment and Inventory (CNAI).
- Developed standards for asset data and nomenclature for each asset class.
- Refined asset scoring criteria and data collection to support improved performance assessment.
- Completed Institute of Asset Management (IAM) training.
- Began coordinating with Infrastructure Planning group to support asset-based master planning.
- Developed processes for data management from design to disposal, including the establishment of the Asset Information Delivery process to collect asset data from completed capital projects.
- Completed Reliability Centered Maintenance (RCM) certification.

TAM Plan Objectives

The TAM Plan is intended to:

- Document the asset portfolio, including the age and condition of our physical infrastructure.
- Describe the policies and strategies guiding asset management at the MBTA.
- Provide a snapshot of the MBTA's capital program and asset performance.
- Identify the actions needed to address State of Good Repair and service goals.
- Detail the organizational resources, tools, and business processes that enable effective asset management.
- Establish actions for improving the MBTA's approach to asset management practice.

Asset Management Policy and Strategy

The MBTA is committed to implementing a strategic process for acquiring, operating, maintaining, upgrading, and replacing its transportation assets to support the agency's vision, mission, and values set forth in its strategic plan.

The MBTA Asset Management Policy consists of seven principles by which the MBTA manages its assets to effectively deliver public transportation services in greater Boston.

▶ See Section 2 for more details on the MBTA's asset management policy and strategic objectives.

Asset Management Practice

Asset management provides for better decision-making through asset knowledge, validated information, documented business processes, clear accountability, and enabling technology. At the MBTA, it connects strategic direction to the inspection, operation, maintenance, renewal, modernization, and disposal of the physical assets that support the transportation network.

The MBTA's asset management framework is informed by ISO 55000 principles and is tailored to the agency's public service, regulatory, operational, financial, and safety responsibilities.

▶ See Section 3 for more details on the MBTA's asset management practices.

Asset Portfolio

The MBTA system relies upon a large and diverse portfolio of physical assets. These assets include rolling stock, non-revenue equipment, track and guideway, signals, power systems, structures, facilities, and other systems needed to provide public transportation across the region.

▶ See Section 4 for more details on the MBTA's asset portfolio.

Asset Condition

The MBTA reports on the condition of our assets annually to the FTA's National Transit Database (NTD) and every four years through the Capital Needs Assessment and Inventory (CNAI). Our approach to asset condition is driven by federal requirements as well as internal standards for assessment and scoring.

▶ See Section 5 for more details on the MBTA's asset condition.

Capital Planning

Strategic and thoughtful investment of financial resources is critical to maintaining a safe, reliable, and modernized transit network. The MBTA's capital planning process aims to create a portfolio of projects that reflects the agency's infrastructure needs and strategic priorities. We allocate funds through our rolling, five-year Capital Investment Plan (CIP).

▶ See Section 6 for more details on the MBTA's capital planning process and current CIP.

Implementation and Improvement

The MBTA carries out transit asset management through recurring asset inventory, condition assessment, lifecycle management, federal reporting, capital planning, and project handover activities. This TAM Plan identifies the key activities, resources, and evaluation approach for this 4-year plan period.

▶ See Section 7 for more details on asset management program implementation and planned future improvements.

1 INTRODUCTION

The MBTA Transit Asset Management Plan sets the direction, strategies, and actions for managing the physical assets that support public transportation service. This section introduces the MBTA, defines the scope and objectives of the plan, identifies the Accountable Executive, explains strategic alignment, and documents compliance with federal requirements.

1.1 About the MBTA

The Massachusetts Bay Transportation Authority (MBTA, or "the T") is one of the oldest and largest transit agencies in the United States and the primary provider of public transportation in the Greater Boston area. Known as America's First Subway, some parts of the system date to the 1800s with the construction of the Tremont Street Subway and the creation of the Boston Elevated Railway Company.

Today the agency serves 177 cities and towns with light rail, heavy rail, regional rail, bus, paratransit, and ferry services. Together these modes account for tens of thousands of assets across four categories: rolling stock, equipment, facilities, and infrastructure. Many of the MBTA's assets come from legacy systems that predate the founding of the Authority, and their age and operational requirements call for extra care and maintenance.

In addition to MBTA-owned assets, the Authority also manages assets and agreements that extend beyond its directly operated services and require coordination with MassDOT, municipalities, contractors, Amtrak, utilities, and other partners.

1.1.1 Modal Overview

The MBTA provides light rail, heavy rail, regional rail, bus, paratransit, and ferry services. The asset portfolio supporting these services includes both assets directly operated by the MBTA and that are operated or maintained through contractual arrangements.

Table 1 Asset Summary by Mode

Mode Category	Mode	Routes / Lines	Active Vehicles	Revenue Track Miles
Transit	Heavy Rail	3	460	76.54
	Light Rail	2	192	59.81
	Bus	154	1,048	N/A
	Ferry	5	20*	N/A
	The RIDE Paratransit	N/A	698*	N/A
Regional Rail / Commuter Rail	Regional Rail / Commuter Rail	12	534*	685.81

** some vehicles owned or maintained by external contractors*

Source: 2025 NTD Submission

Regional Rail

Formerly known as the Commuter Rail, the MBTA's regional rail network covers over 685 miles of revenue track, reaching from Boston into eastern and central Massachusetts, and parts of Rhode Island. The system consists of 12 lines:

- Fairmount Line
- Fitchburg Line
- Franklin/Foxboro Line
- Haverhill Line
- Lowell Line
- Newburyport/Rockport Line
- Fall River/New Bedford Line
- Framingham/Worcester Line
- Greenbush Line
- Kingston Line
- Needham Line
- Providence/Stoughton Line

Special event trains for concerts, New England Revolution games, and other events provide service to Gillette Stadium from South Station in Boston and, for select events, Providence Station in Rhode Island. Additionally, the MBTA partners with MassDOT, the Cape Cod Regional Transit Authority (CCRTA), and operator Keolis to support seasonal CapeFLYER service to Cape Cod.

Most right-of-way used for regional rail service is owned exclusively by the MBTA, except for a portion of Amtrak's Northeast Corridor (NEC), which runs through southeastern Massachusetts and is used for Providence Line MBTA service. The Passenger Rail Investment and Improvement Act (PRIIA) 212 established an agreement by which Amtrak and MBTA share responsibilities on the MBTA-owned section of the Northeast Corridor (NEC) in Massachusetts. The new Attleboro Agreement established in 2017 and updated in 2022 governs the following:

- Amtrak access to MBTA line
- Amtrak right to dispatch line
- Amtrak maintenance of line
- MBTA and Amtrak payment of allocated share of costs
- MBTA control of jointly funded capital program

Transit Rail

The MBTA's transit rail system covers 136 miles of revenue track, consisting of five major lines connecting riders across downtown Boston. Three are heavy rail rapid transit lines (Red, Orange, and Blue lines) and two are light rail lines (Green Line and the Mattapan Line). The Red, Orange, and Blue lines run on electric third rail, while the Green, Mattapan and part of the Blue Line utilize overhead catenary systems. The Red Line includes two branches to the south (Ashmont and Braintree) while the Green Line includes four branches to the west (Boston College, Cleveland Circle, Riverside, and Heath) and two branches to the north (Union Square and Medford/Tufts).

Bus

The MBTA bus system includes more than 150 bus routes and approximately 7,000 stops throughout the region. The bus network also includes five Silver Line bus rapid transit (BRT) routes, including one line providing connection between the Boston Logan International Airport and downtown.

Ferry

The MBTA ferry system is operated by an external contractor and provides year-round service through the Boston Harbor with connections from downtown, including North Station and Aquarium Station, to Charlestown, Logan Airport, the Seaport, Hull, and Hingham. Seasonal service is available to East Boston, Lynn, Quincy, and Winthrop.

The RIDE Paratransit

The RIDE paratransit service provides door-to-door, shared-ride public transportation to people who can't use the subway, bus, or trolley all or some of the time due to temporary or permanent disability. The service is available in 58 cities and towns in the greater Boston area and is operated by external contractors.

1.1.2 Governance

The MBTA is governed by a Board of Directors that consists of nine members, including the Secretary of Transportation, one person appointed by the Mayor of the City of Boston, one person appointed by the MBTA Advisory Board, and six persons appointed by the Governor.

1.1.3 Funding Sources

The MBTA primarily generates operating revenues through its portion of the Commonwealth of Massachusetts sales tax, passenger fares, and formula assessment of cities and towns the MBTA serves. Supplemental funding for the operating budget is generated through parking lot revenue, real estate operations, and advertising.

Capital funding comprises multiple sources including federal formula funds programmed through the Boston Metropolitan Planning Organization (MPO), federal discretionary grants, MBTA sources including bonds or loans, and reimbursable funds through partnerships and formal agreements.

- Federal Funding
- State Funding
- MBTA Sources
- Reimbursable/Other Funding

▶ See Section 6.1 for more details on the MBTA's capital funding process and funding sources.

1.1.4 Strategic Goals

The MBTA's mission is to serve the public by providing safe, reliable, and accessible transportation. The current Strategic Plan organizes our work around the values of Safety, Service, Equity, Sustainability, Culture, and Accessibility, and establishes eight Authority-wide goals. Asset management supports these goals by connecting the physical system to the outcomes the MBTA seeks for riders, employees, communities, the regional economy, and the environment.

Table 2 MBTA Strategic Goals

MBTA Goal	Description
Safety	Empower and support staff to develop a culture that prioritizes and promotes safety.
Modernization and State of Good Repair	Efficiently modernize assets and improve connectivity while maintaining MBTA property in SGR.
Transparent Communication	Ensure staff and rider experiences and perspectives are reflected through transparent decision-making.
Workforce	Retain, attract, and invest in a diverse and qualified workforce that represents ridership.
Service and Economic Vitality	Support regional vitality through dependable, frequent, and accessible service that riders value.
Sustainability and Resilience	Increase environmental sustainability and resilience of the transit system.
Mode Shift	Attract new riders, retain existing riders, and increase the share of regional trips made by transit.
Communicating Our Costs	Communicate openly about costs and revenue needed to support ongoing service and system growth.

The Strategic Plan's overarching metrics include reductions in injuries, fatalities, and carbon emissions, and increases in the percentage of assets modernized and in SGR, rider satisfaction, employee satisfaction, mode share, accessible trips, and staffing diversity. These measures are broader than the federal TAM measures; they express the public outcomes that the asset portfolio is expected to support.

▶ See mbta.com/plans to learn more about strategic planning at the MBTA.

1.2 About the TAM Plan

1.2.1 What is a Transit Asset Management Plan?

Transit Asset Management (TAM) is a business practice that centers investment and resource decision-making around the condition and performance of an asset.

In 2016, the Federal Transit Administration (FTA) published the TAM Final Rule, requiring public transportation agencies receiving federal funding to:

- Develop and implement a transit asset management plan
- Submit annual data and narrative reports that indicate SGR performance and future targets

Per the requirements of § 625.29, this TAM Plan covers a horizon period of four years, from 2026 to 2030, and coincides with the planning cycle for relevant TIPs and STIPs.

The federal deadline to complete the updated TAM Plan is October 1, 2026. The MBTA General Manager and CEO serves as the Accountable Executive responsible for ensuring the TAM Plan is developed and carried out in accordance with 49 CFR Part 625. Once completed, the TAM Plan is made available to applicable State and MPO planning partners.

1.2.2 Scope

Transit asset management at the MBTA includes the physical assets that the Authority owns, operates, contracts for, and/or manages in support of public transportation service. The MBTA TAM Plan describes the policies, activities, resources, and improvement strategies needed to support transit asset management. This plan supersedes the 2022 TAM Plan and covers a four-year period from 2026 to 2030.

1.2.3 Objectives

The TAM Plan is intended to:

- Document the asset portfolio, including the age and condition of our physical infrastructure.
- Describe the policies and strategies guiding asset management at the MBTA.
- Provide a snapshot of the MBTA's capital program and asset performance.
- Identify the actions needed to address State of Good Repair and service goals.
- Detail the organizational resources, tools, and business processes that enable effective asset management.
- Establish actions for improving the MBTA's approach to asset management practice.

1.3 Alignment with Federal Requirements

The MBTA has developed this plan consistent with the United States (US) Code of Federal Regulations (CFR) Title 49 Parts 625 and 630 which relate to transit asset management and the National Transit Database (NTD) respectively.

1.3.1 TAM Plan Requirements

The MBTA is a Tier I transit provider under 49 CFR Part 625. The table below lists the TAM Plan requirements for Tier 1 providers and describes how this document meets those requirements.

Table 3 TAM Plan Required Elements and Location In This Document

49 CFR 625 Element	Description	Document Location
1. An inventory of assets	A register of capital assets and information about those assets.	Section 4 describes the MBTA's asset portfolio.
2. A condition assessment of inventoried assets	A rating of the assets' physical state; to be completed for assets an agency has direct capital responsibility for; should be at a level of detail sufficient to monitor and predict performance of inventoried assets.	Section 5 describes the condition of the MBTA's assets by asset class.
3. Description of a decision support tool	An analytic process or tool that (1) assists in capital asset investment prioritization and/or (2) estimates capital needs over time.	Section 6 describes the MBTA's capital planning efforts, including the Capital Needs Assessment and Inventory (CNAI) and the Capital Investment Plan (CIP).
4. A prioritized list of investments	A prioritized list of projects or programs to manage or improve the SGR of capital assets.	Section 6 describes the MBTA's Capital Investment Plan (CIP) and summarizes the Authority's investment priorities.The published FY27-31 Capital Investment Plan provides a detailed listing of the MBTA's project-based investment priorities.
5. TAM and SGR policy	A TAM policy is the executive-level direction regarding expectations for transit asset management; a TAM strategy consists of the actions that support the implementation of the TAM policy.	Section 2 presents the MBTA's Asset Management Policy and program objectives.
6. Implementation strategy	The operational actions that a transit provider decides to conduct to achieve its TAM goals and policies	Sections 3 and 7 describe the MBTA's lifecycle practices, implementation activities, and improvement actions.
7. List of key annual activities	The actions needed to implement a TAM plan for each year of the plan's horizon	Section 7 identifies the key TAM activities the MBTA intends to advance during the four-year TAM Plan horizon.

8. Identification of resources	A summary or list of the resources, including personnel, that a provider needs to develop and carry out the TAM plan	Section 3 identifies the departments and personnel functions involved in carrying out TAM activities. Section 6 summarizes the financial resources programmed through the CIP.
9. Evaluation plan	An outline of how a provider will monitor, update, and evaluate, as needed, its TAM plan and related business practices, to ensure the continuous improvement	Section 7 describes how the MBTA reviews, updates, and evaluates the TAM Plan and related practices.

1.3.2 NTD Requirements

In addition to an updated TAM Plan, the FTA requires the MBTA to submit annual reports to the National Transit Database (NTD). The deadline for NTD submissions is no later than four months after the end of the agency's fiscal year. The MBTA fiscal year ends on June 30, and NTD reporting is due on October 31. Key forms related to asset performance and the asset inventory are summarized in the table below.

Table 4 FTA National Transit Database (NTD) A-Forms

NTD Form	Description
A-15 Facilities Inventory	On form A-15, transit agencies report inventory data for transit facilities. All passenger stations and parking facilities are inventoried. Agencies would also report a condition assessment for passenger stations for which they have capital responsibility as defined by the TAM rule. Additionally, agencies report inventory and condition assessment for administrative and maintenance facilities for which they have capital responsibility.
A-20 Transit Way Mileage	Agencies operating over high intensity busway or fixed guideway provide mileage data on the Transit Way Mileage form (A-20), except for ferry services.
A-30 Revenue Vehicles Inventory	Agencies report data on revenue vehicles at their fiscal year end on the Revenue Vehicle Inventory form (A-30) by mode and TOS. All agencies that report service data also report revenue vehicle fleet information by mode and TOS on form A-30.
A-35 Service Vehicles Inventory	On form A-35, agencies report data on service vehicles, or vehicles which indirectly deliver transit service, maintain revenue vehicles, and perform transit-oriented administrative activities.
A-90 Transit Asset Management Performance Measure Targets	Agencies report next fiscal year performance targets to the NTD for assets for which they have capital responsibility. Transit agencies report targets for Rolling Stock, Equipment, Facilities, and Infrastructure.

1.3.3 Alignment with Other Planning Efforts

The MBTA Transit Asset Management Plan is one of several documents guiding asset management and planning at the MBTA. It is informed by the Strategic Asset Management Plan (SAMP), which translates the goals identified in the MBTA Strategic Plan into asset management-specific policies and objectives. The TAM Plan in turn feeds other key planning efforts including the Capital Needs Assessment and Inventory, Capital Investment Plan, Boston Metropolitan Planning Organization Long Range Transportation Plan, and the Program for Mass Transportation.

2 ASSET MANAGEMENT POLICY AND STRATEGY

The MBTA's transit asset management program is guided by seven core policy principles and six strategic objectives. It is carried out by a team of Asset Management staff and cross-departmental stakeholders.

2.1 Asset Management Policy

Guiding the MBTA's Asset Management program, plans, and strategies are seven core principles that support the delivery of safe, reliable, accessible, cost effective, and sustainable transit service.

Figure 1 MBTA Asset Management Policy Principles

STATE OF GOOD REPAIR



We will endeavor to bring all of the MBTA's assets into a state of good repair.

TRANSPARENCY



We will work to ensure all decisions are data-driven, transparent, and consistent, enabling us to clearly demonstrate priorities across asset classes.

SERVICE DELIVERY



We will work to meet or exceed service delivery goals by ensuring necessary work is undertaken for all MBTA assets and considering opportunities for improving service delivery.

RISK AWARENESS



We will effectively identify, prioritize, and manage asset risks, including safety, reliability, financial, performance, and climate-related risks.

FISCAL RESPONSIBILITY



We will sustain the MBTA's fiscal discipline by optimizing available resources through lifecycle management, reliability-centered maintenance, business process improvement, and the adoption of other best practices.

SOCIAL RESPONSIBILITY



We will work to build the confidence and trust of all internal and external stakeholders, demonstrating good practice in all that we do.

INDUSTRY LEADERSHIP

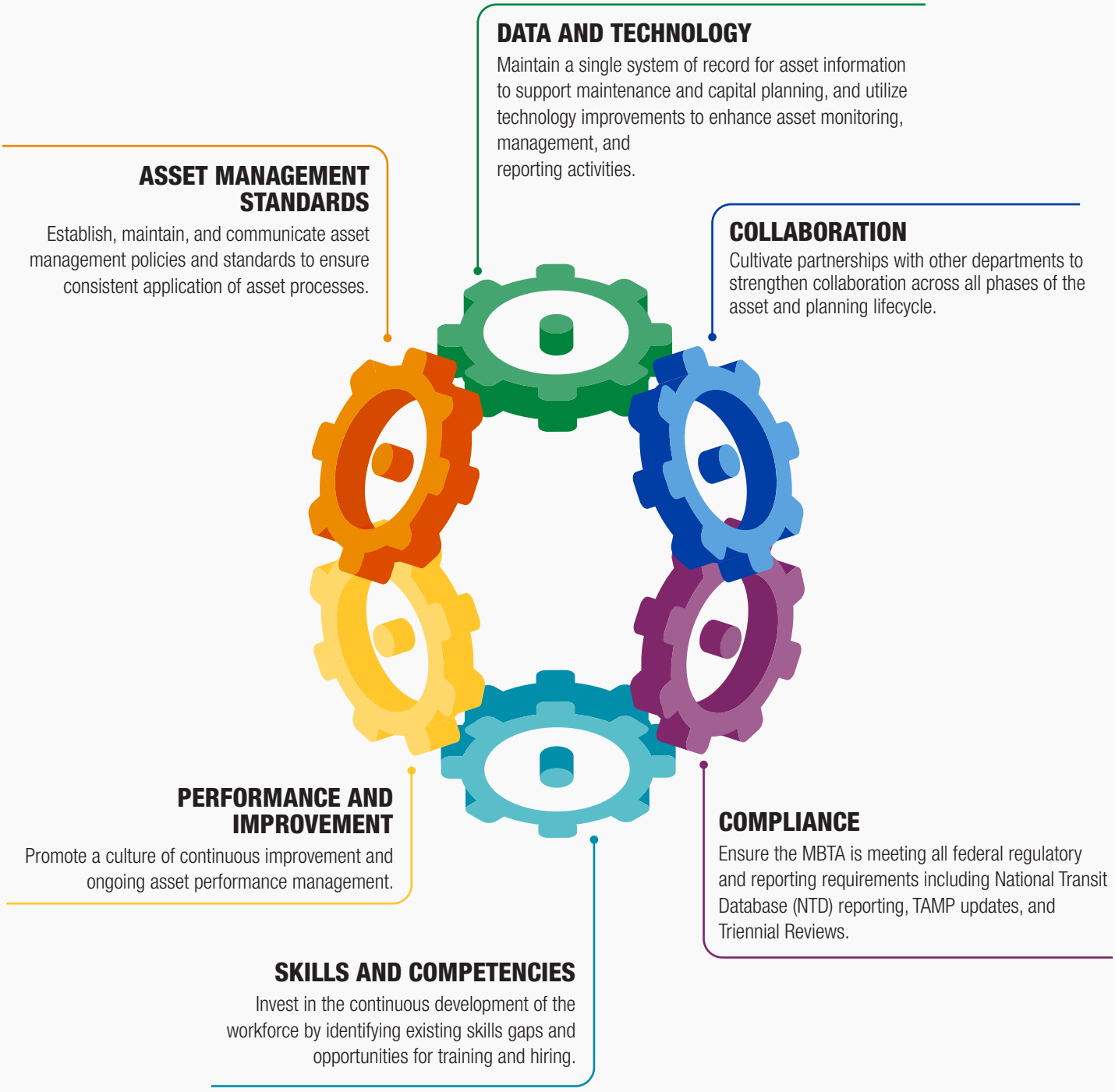


As one of the oldest and largest transit agencies in the U.S. and a pioneer in asset management practice, we will work to achieve compliance with Federal and State requirements and demonstrate leadership amongst our peers.

2.2 Program Objectives

The MBTA's Strategic Asset Management Plan (SAMP) establishes six high-level objectives for the Asset Management program, which are aligned to the agency's values and strategic goals. Together, these objectives form a bridge between the Authority-wide Strategic Plan and the four-year implementation priorities documented in this TAM Plan.

Figure 2 MBTA Asset Management Program Objectives



3 ASSET MANAGEMENT PRACTICE

Asset management provides for better decision-making through asset knowledge, validated information, documented business processes, clear accountability, and enabling technology. At the MBTA, it connects strategic direction to the inspection, operation, maintenance, renewal, modernization, and disposal of the physical assets that support the transportation network.

The MBTA's asset management framework is informed by ISO 55000 principles and is tailored to the agency's public service, regulatory, operational, financial, and safety responsibilities.

This chapter describes the organization, responsibilities, business processes, and information systems that enable the MBTA to implement transit asset management.

3.1 Organization

3.1.1 Accountable Executive

The FTA requires each transit provider to designate an Accountable Executive with ultimate responsibility for carrying out TAM practices and control or direction over the resources needed to implement the TAM Plan. At the MBTA, this role is the General Manager.

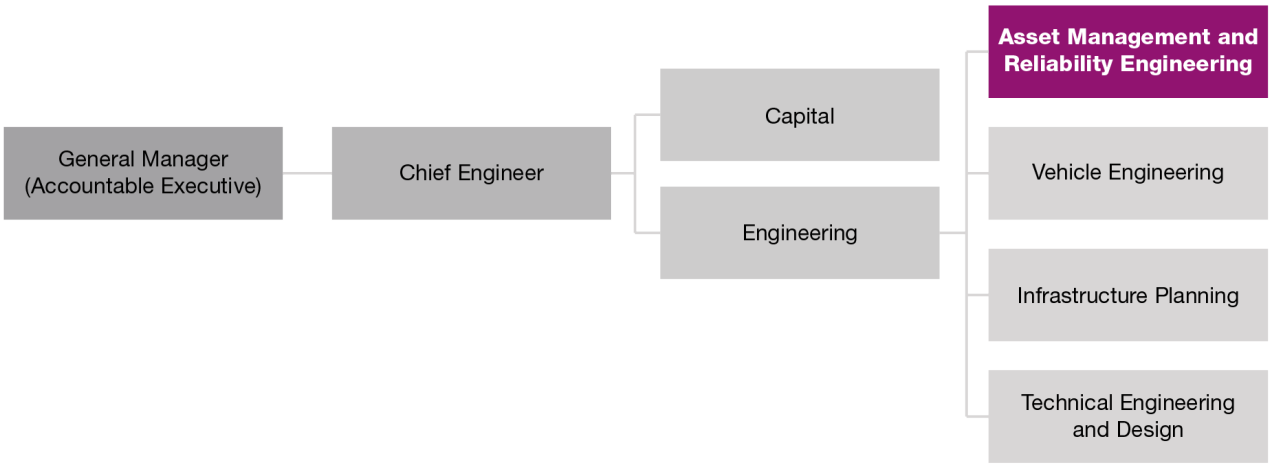
3.1.2 Asset Management Team

The MBTA Asset Management team is within the Engineering and Capital division and is responsible for:

- Overseeing the ongoing development of the MBTA's asset inventory through the collection, validation, and maintenance of asset data.
- Establishing standards for measuring asset condition and criticality and developing scores for each asset in the inventory.
- Performing asset reporting and SGR analyses, including the annual NTD process and the Capital Needs Assessment and Inventory (CNAI).
- Translating asset data into useful tools for planning and prioritization.

The Asset Management team is a key stakeholder in the entire life cycle of assets —including initial planning, design, construction, commissioning, operating, maintaining, repairing, modifying, replacing and decommissioning / disposal of physical and infrastructure assets across the MBTA network.

Figure 3 Location of Asset Management Team Within the MBTA Organization



3.1.3 Additional Stakeholders

Asset management is a distributed agency practice rather than the responsibility of a single office. Successful management of the MBTA's assets requires coordination across multiple groups within the organization.

Table 5 Key Asset Management Stakeholders

Group	Roles and Responsibilities
Reliability Engineering	• Configures EAMS to support operations and ongoing management of assets. • Create, update, and monitor PMI/maintenance plans. • Determine optimum reliability centered maintenance to minimize lifecycle costs. • Perform failure analyses to identify areas to optimize preventative maintenance.
Engineering and Maintenance	• Performs daily maintenance and inspection of the system. • Provides recommendations on maintenance actions. • Completes short/medium term repairs that do not require design/permits.
Vehicle Maintenance	• Performs scheduled inspections, preventative and corrective maintenance, and repairs for MBTA vehicle fleets. • Maintains vehicle maintenance and performance records that support condition, reliability, lifecycle, and asset planning activities.
Operations	• Operates transit service and identifies operational needs, service impacts, and asset issues affecting service delivery.
Stations, Facilities, and Structures	• Inspects, maintains, and repairs stations, facilities, structures, and associated assets in accordance with applicable requirements and standards. • Identifies defects and asset needs and coordinates maintenance, specialized repairs, and capital renewal as appropriate.

Quality, Compliance, and Oversight	• Coordinates and oversees regulatory corrective actions and commitments associated with agencies such as FTA and DPU. • Partners with Asset Management to develop asset inventory, EAM, and information-management solutions needed to implement and track asset-related corrective actions.
Infrastructure Planning	• Uses condition, criticality, and additional resources to identify key investment needs and make recommendations for prioritizing assets. • Develops programming, concept design packages, budgets, and schedules for large facility and fixed guideway projects.
Technical Engineering and Design	• Provides technical support to address operational and safety challenges, root cause analysis, and corrective actions. • Performs design reviews/approvals. • Maintains engineering standards and guidelines. • Implements the MBTA's design quality assurance program.
Vehicle Engineering	• Leads the development and purchase of new revenue vehicles. • Manages the overhaul of existing revenue fleets to ensure they meet or exceed their useful life benchmark.
Capital Programs	• Manages the design, construction, and turnover of major capital projects. • Oversees contract activities for capital projects, from initial procurement through project closeout.
Capital Finance and Accounting	• Manages implementation of capital funds and allocation of capital funding sources to projects based on eligibility. • Maintains the MBTA's financial Fixed Asset Register and financial reporting.
Policy and Strategic Planning	• Leads initiatives tied to the MBTA Strategic Plan including capital planning, climate planning, fare policy, and regional planning partnerships. • Manages the development, implementation, and analysis of the MBTA's five-year, fiscally constrained CIP and programs available funding to priority projects. • Oversees federal and discretionary grant proposals to support capital work.
Safety	• Primarily responsible for leading safety culture, standards, and compliance. • Provides operational safety oversight and training, engages with personnel, and maintains a strong and consistent field presence throughout the system. • Ensures that safety is embedded into the fabric of MBTA infrastructure projects and vehicle procurements through construction safety, safety certification, and construction safety planning. • Works closely with the DPU and other stakeholders to ensure regulatory compliance related to investigations and corrective actions. • Works to ensure that projects receive the appropriate environmental review and required federal and state environmental permits.

3.2 Lifecycle Management

The MBTA manages assets throughout their lifecycle through inspection and condition assessment, monitoring, preventative and corrective maintenance, overhaul and renewal, replacement, and disposal. Lifecycle activities are performed by responsible asset owners and maintenance departments and, where applicable, contracted service providers.

Figure 4 Lifecycle Management Activities

INSPECTION / ASSESSMENT

Includes visual inspection and technical testing to ensure safe operating capability, inspection activities are typically on a time or mileage interval. Asset assessment or asset health is typically graded on a scale and supports long-term planning for the asset.

MONITORING

Includes real-time sensors or electronic equipment that continuously monitor the status of an asset and provide alerts when thresholds have been exceeded.

PREVENTIVE / ROUTINE MAINTENANCE

Includes regular, sometimes daily activities or tasks to ensure assets continue to operate in safe and reliable conditions. Also includes seasonal preventive programs for extreme temperature in the summer or winter.

CORRECTIVE MAINTENANCE / REPAIRS

Includes standard repair tasks that occur due to a condition or fault issue discovered through inspection, monitoring, or during operations.

OVERHAUL / RENEWAL

Includes more extensive capital maintenance activities required to bring a set of assets up to an acceptable condition or extend their useful life. Overhauls and renewals are typically assigned on time-, usage-, and/or condition-based intervals.

UPGRADE / ENHANCEMENT

Includes asset or system-wide capital improvement activities that go beyond like-for-like replacement and enhance current service levels, performance, reliability, capacity, or technology for existing assets, such as increasing track capacity, track class upgrades, and vehicle upgrades.

Detailed maintenance and inspection requirements are established by the responsible departments through applicable maintenance manuals, standards and procedures, regulatory requirements, Original Equipment Manufacturer (OEM) guidance, and operating contracts. Where maintenance activities are digitized in EAM, the responsible department provides the applicable preventative maintenance inspection (PMI) requirements and Reliability Engineering in collaboration with Asset Management configures and assigns those PMIs to the appropriate assets. The underlying maintenance manuals, standards, regulatory requirements, and contracts remain the controlling source.

This TAM Plan summarizes the MBTA's lifecycle management approach and does not replace or supersede the maintenance, inspection, regulatory, or contractual requirements applicable to individual assets.

Table 6 Lifecycle Management Approach by Asset Category

Asset Category	Lifecycle Approach
Rolling Stock	Revenue fleets are inspected and maintained based on applicable mileage, time, usage, regulatory, OEM, and MBTA requirements. Condition, reliability, useful life, maintenance history, service needs, accessibility, and obsolescence inform overhaul and replacement decisions. For contracted services, including The RIDE and Ferry, the operating contractors perform applicable vehicle inspection, maintenance, and lifecycle activities in accordance with contract requirements and MBTA oversight.
Equipment	Inspection and maintenance requirements for non-revenue vehicles and equipment vary by asset type, use, and applicable regulatory or manufacturer requirements. Age, mileage or usage, condition, operational need, and available resources inform repair and replacement decisions.
Facilities	Facilities are inspected and maintained in accordance with applicable codes, standards, manufacturer requirements, and MBTA procedures. Defects are addressed based on factors such as safety, accessibility, service impact, and asset condition, while condition, criticality, resilience, and lifecycle needs inform rehabilitation and replacement.
Infrastructure	Track, signals, communications, power, structures, and related infrastructure are inspected, tested, and maintained in accordance with applicable federal, state, MBTA, and contractual requirements. Condition, defects, criticality, reliability, service impact, and obsolescence inform corrective maintenance, renewal, and capital investment.

3.3 Additional Business Processes

Enterprise-level processes establish consistent, agency-wide practices through which asset information is validated, needs are identified, risks are evaluated, investments are prioritized, projects are delivered, and completed work is reflected in the asset record. They also connect operating and capital decisions so that short-term interventions and long-term renewal strategies reinforce one another.

Table 7 Additional Business Processes Related to Asset Management

Process	Description
Quality Management	Quality management supports maintenance by validating the completeness and accuracy of inspection, maintenance, and condition assessment data. The Quality Management department develops standard management and data processes to guide this work.
Capital Planning	Capital Planning is the process in which the MBTA invests capital resources to support organizational goals and objectives. The Capital Investment Plan (CIP) is a short-term, fiscally constrained investment program that funds the planning, construction, and capital maintenance of assets across the MBTA. It is a rolling, five-year plan that is updated annually. Proposed capital projects are evaluated and prioritized based on asset condition, operational needs, and the Authority's goals. Asset Management supports this prioritization process by assessing the condition of our assets and identifying areas of the system with SGR needs.
Capital Program Delivery	Capital Programs manages the procurement, design, and construction, and project close-out for all infrastructure projects. Capital Programs supports asset management practice by identifying key infrastructure assets being added, retired, or replaced in the MBTA asset inventory. Asset management practices support capital project delivery by ensuring that design choices support overall lifecycle management, ease of maintenance, and long-term reliability of infrastructure assets.
Asset Handover and Asset Information Delivery	Asset Handover refers to the process in which the MBTA officially accepts responsibility for an asset that is procured, built, or transferred. During this step, important information related to maintenance, cost, and other asset attributes is transferred between responsible parties. Drawings, maintenance records, warranty, and contract close-out specifications all need to be preserved at this time. The MBTA's new Asset Information Delivery (AID) process was established in 2024 to streamline the collection of new asset records from completed capital projects.
Service Planning	The Planning and Scheduling group works with MassDOT's Office of Performance Management and Innovation (OPMI) to define the standards and metrics related to service and meet those goals based on available resources, fleet, and staffing capacity. These performance standards and the management of resources to meet service goals are key components in asset management practice. Understanding level of effort required to meet a certain level of service informs important decisions about how we invest in our assets.

Track Access Planning	Track access and diversion planning are managed by the ROW Diversion Planning group. Track access planning is key to coordinating the various Engineering and Maintenance groups responsible for guideway assets, maintenance of way, signals, and power as well as ensuring safety of crews operating on the guideway. Each group has generic work windows every night, but can request additional time in the schedule that is distributed through the Operations Control Center. Understanding where work is being performed across the network is important to asset management to property document renewal and replacement work. Asset information supports track access planning by supporting efficient work phasing, coordinating between different asset maintainers, and efficiently coordinating limited nightly work windows. Track maps are built and maintained to provide critical planning resources.
Decommissioning and Disposal	Asset decommissioning and disposal marks the end of an asset's lifecycle, when it is no longer needed by the operating department and is removed from the asset register. Depending on the scale of the asset being decommissioned or disposed of, there are different responsible parties who initiate this process. Revenue vehicles are the responsibility of Vehicle Engineering, non-revenue vehicles are the responsibility of Vehicle Maintenance, and other infrastructure assets are managed by the Capital Programs group. This process supports asset management by documenting the end of lifecycle for a specific asset, ensures that the asset registry and relevant records are updated, and that lifecycle costs and statistics are properly assessed.

3.4 Supporting Technologies

Asset information is created and used throughout the lifecycle—from planning and design through procurement, commissioning, operation, inspection, maintenance, renewal, and disposal.

The MBTA Asset Management program intends to maintain asset records to support system maintenance and capital planning. In practice, this requires integrating information from a variety of different sources to support ongoing maintenance activities and long-term planning. The MBTA continues the work to simplify processes, improve integration between systems, and maintain consistency wherever possible.

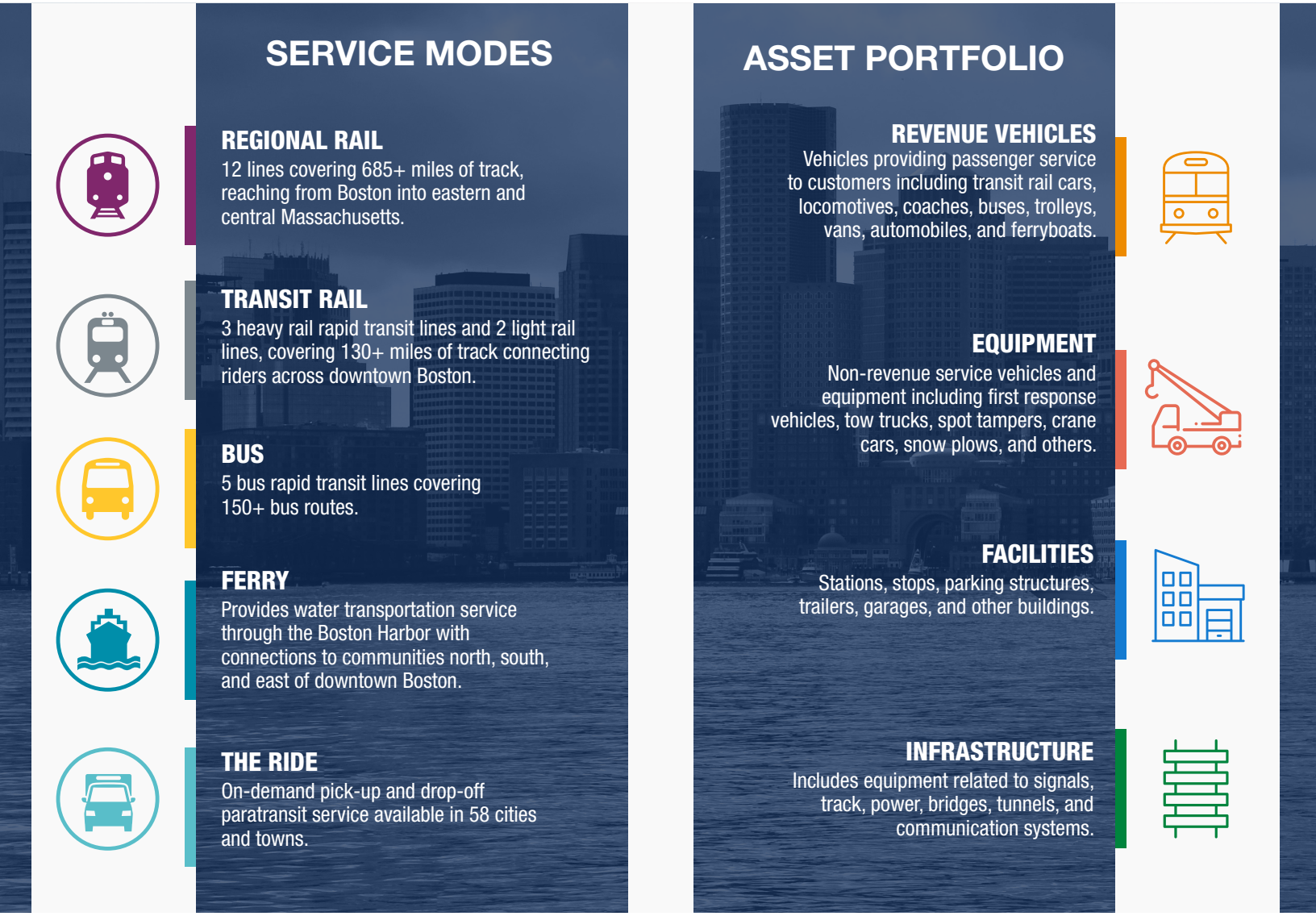
Currently, the following supporting technologies are in use:

- **Trapeze Enterprise Asset Management (EAM):** Primary system used by the MBTA to manage asset information. Serves the maintenance management function for bus, transit rail, fixed guideway, facilities, and non-revenue vehicles.
- **Trapeze Maintenance Control and Reporting System 2 (MCRS2):** System used to manage maintenance and reporting for non-Commuter Rail vehicle assets.
- **Financials and Materials Information System (FMIS):** The MBTA's financial system of record and materials management system for transit assets.
- **Max Trax:** Track maintenance field application used by the Track Department to perform and document preventative maintenance inspections (PMIs), submit service requests, and support track maintenance workflows.
- **Tableau:** Data visualization software used to synthesize and summarize asset information from various sources.

4 ASSET PORTFOLIO

The MBTA system relies upon a large and diverse portfolio of physical assets. These assets include rolling stock, non-revenue equipment, track and guideway, signals, power systems, structures, facilities, and other systems needed to provide public transportation across the region.

Figure 5 Summary of MBTA Modes and Asset Categories



4.1 Asset Inventory

The asset inventory is the foundation of the TAM Plan. Federal reporting requires the MBTA to identify capital assets used to provide public transportation, including assets operated by contractors.

Transit assets fall into four asset categories, consistent with FTA guidelines: facilities, rolling stock, equipment, and infrastructure. Each asset category is then further broken down into asset classes and asset types.

Table 8 MBTA Asset Categories and Types

Asset Category	Asset Types
Facilities	• Passenger Facilities • Parking Facilities • Administrative and Maintenance Facilities
Rolling Stock	• Heavy Rail Passenger Cars • Light Rail Vehicles • Buses • Ferryboats • Commuter Rail Locomotives • Commuter Rail Coaches • Paratransit Sedans • Paratransit Vans
Equipment	• Automobiles • Steel Wheel Vehicles • Trucks and Other Rubber Tire Vehicles
Infrastructure	• Track • Power and Substations • Signals • Communications • Bridges • Tunnels • Culverts • Retaining Walls

4.1.1 Facilities

Table 9 Facilities Inventory Summary

Mode Category	Facility Type	Quantity
Transit	Maintenance and/or Administrative Facilities	234
Transit	Passenger Facilities	155
Transit	Parking Facilities	33
Regional Rail / Commuter Rail	Maintenance and/or Administrative Facilities	112
Regional Rail / Commuter Rail	Passenger Facilities	136
Regional Rail / `Commuter Rail	Parking Facilities	100
	Total	**770**

Data Source: FY2025 NTD Submission

4.1.2 Rolling Stock

Table 10 Rolling Stock Inventory Summary

Mode Category	NTD Vehicle Type	Active Vehicles (MBTA-Owned)
Transit Rail	Heavy Rail Passenger Car (HR)	460
Transit Rail	Light Rail Vehicle (LR)	186
Transit Rail	Vintage Trolley (VT)	6
Bus	Bus (BU)	934
Bus	Articulated Bus (AB)	114
Ferry	Ferryboat (FB)	3
The RIDE	Automobile (AO)	300
The RIDE	Van (VN)	398
Regional Rail / Commuter Rail	Commuter Rail Locomotive (RL)	90
Regional Rail / Commuter Rail	Commuter Rail Passenger Coach (RP)	444
	Total	**2,935**

Data Source: FY2025 NTD Submission

4.1.3 Equipment

Table 11 Equipment Inventory Summary

Mode Category	NTD Vehicle Type	Total Vehicles
Transit	Automobiles	124
Transit	Trucks and other Rubber Tire Vehicles	802
Transit	Steel Wheel Vehicles	21
Regional Rail / Commuter Rail	Automobiles	32
Regional Rail / Commuter Rail	Trucks and other Rubber Tire Vehicles	458
Regional Rail / Commuter Rail	Steel Wheel Vehicles	52
	Total	**1,489**

Data Source: FY2025 NTD Submission

4.1.4 Infrastructure

Table 12 Track Inventory Summary

Mode Category	Asset Element	Unit	Quantity
Transit	Revenue Track - Tangent	Track Miles	99.29
Transit	Revenue Track - Curve	Track Miles	37.06
Transit	Non-Revenue Track	Track Miles	40.99
Transit	Total Track Miles	Track Miles	177.34
Transit	Double Crossovers	Count	19
Transit	Single Crossovers	Count	133
Transit	Single Turnouts	Count	374
Transit	Grade Crossings	Count	55
Transit	Rail Crossings	Count	17
Transit	Slip Switches	Count	0
Transit	Intersections	Count	12
Regional Rail / Commuter Rail	Revenue Track - Tangent	Track Miles	490.77
Regional Rail / Commuter Rail	Revenue Track - Curve	Track Miles	195.04
Regional Rail / Commuter Rail	Non-Revenue Track	Track Miles	179.77
Regional Rail / Commuter Rail	Total Track Miles	Track Miles	865.58
Regional Rail / Commuter Rail	Double Crossovers	Count	1
Regional Rail / Commuter Rail	Single Crossovers	Count	169
Regional Rail / Commuter Rail	Single Turnouts	Count	539
Regional Rail / Commuter Rail	Grade Crossings	Count	402
Regional Rail / Commuter Rail	Rail Crossings	Count	9
Regional Rail / Commuter Rail	Slip Switches	Count	14
Regional Rail / Commuter Rail	Intersections	Count	0

Data Source: FY2025 NTD Submission

Table 13 Signal Assets Age Distribution

Mode	Pre-1940	1940-1949	1950-1959	1960-1969	1970-1979	1980-1989	1990-1999	2000-2009	2010-2019	2020-2029
Heavy Rail	0.0%	0.0%	0.0%	0.0%	3.8%	1.9%	42.3%	5.8%	3.8%	42.4%
Light Rail	0.0%	0.0%	0.0%	4.3%	4.3%	17.4%	13.0%	13.0%	0.0%	48.0%
Regional Rail / Commuter Rail	0.0%	0.0%	0.0%	0.0%	0.0%	2.8%	16.7%	8.3%	25.0%	47.2%

Data Source: FY2025 NTD Submission

Table 14 Power Assets Age Distribution

Mode	Power Element	Count	Pre-1940	1940-1949	1950-1959	1960-1969	1970-1979	1980-1989	1990-1999	2000-2009	2010-2019	2020-2029
Heavy Rail	Substation Building	69	0.0%	0.0%	52.2%	7.3%	10.1%	21.7%	0.0%	5.8%	0.0%	2.9%
Heavy Rail	Substation Equipment	N/A	0.9%	0.0%	62.5%	5.0%	14.9%	10.8%	1.7%	1.5%	0.1%	2.6%
Heavy Rail	Third Rail/Power Distribution	N/A	0.0%	0.0%	3.5%	0.0%	29.1%	64.6%	0.8%	0.0%	0.9%	1.1%
Heavy Rail	Overhead Contact System/Power Distribution	N/A	0.0%	0.0%	15.7%	0.0%	0.3%	23.8%	32.0%	22.2%	1.7%	4.3%
Light Rail	Substation Building	30	0.0%	0.0%	50.0%	0.0%	13.3%	13.3%	13.4%	0.0%	0.0%	10.0%
Light Rail	Substation Equipment	N/A	1.4%	3.3%	52.2%	0.0%	3.5%	3.8%	4.3%	3.7%	0.1%	27.7%
Light Rail	Overhead Contact System/Power Distribution	N/A	0.0%	0.0%	25.5%	0.7%	1.6%	43.0%	9.1%	3.3%	0.0%	16.8%
Regional Rail / Commuter Rail	Substation Building	6	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Regional Rail / Commuter Rail	Substation Equipment	N/A	0.0%	0.0%	3.7%	0.8%	12.3%	29.1%	30.3%	11.9%	11.9%	0.0%

Data Source: FY2025 NTD Submission

Table 15 Structures Inventory Summary

Mode Category	Structure Type	Unit	Quantity
Transit	Steel Bridges	Count	95
Transit	Non-Steel Bridges	Count	57
Transit	Culverts	Count	101
Transit	Tunnels	Track Miles	50
Regional Rail / Commuter Rail	Steel Bridges	Count	172
Regional Rail / Commuter Rail	Non-Steel Bridges	Count	135
Regional Rail / Commuter Rail	Culverts	Count	1,202
Regional Rail / Commuter Rail	Tunnels	Track Miles	22
Regional Rail / Commuter Rail	Dams	Count	2

Data Source: 2023 CNAI

5 ASSET CONDITION

The MBTA reports on the condition of our assets annually to the FTA's National Transit Database (NTD), and every four years through the Capital Needs Assessment and Inventory (CNAI). Our approach to asset condition is driven by federal requirements as well as internal standards for assessment and scoring.

The MBTA relies on a large portfolio of tens of thousands of physical assets to deliver transportation services across the Greater Boston area. Given the age of the system, many assets are past their useful life and require significant maintenance costs – some are over a century old. Understanding our state of good repair needs and the level of investment required to address these needs is an important step toward fixing the transit system, reestablishing public trust, and advancing our modernization goals.

5.1 Condition Standards

Condition performance measures for the MBTA's assets vary depending on the asset type and availability of data. At a minimum, asset condition is assessed using standards established by the FTA where applicable. The list below describes this minimum standard to which the MBTA aligns for facilities, vehicles, and track, per FTA NTD guidance.

- Facility performance is based on physical condition assessments. Per FTA requirements, the performance measure is the percentage of facilities within an asset class that are rated below 3.0 on the 1-5 TERM scale.
- Vehicle performance is based on age and Useful Life Benchmark (ULB). Per FTA requirements, the performance measure is the percentage of vehicles within an asset class that have met or exceeded their ULB.
- Track performance is based on the average percentage of track miles with speed restrictions in a given year, per FTA requirements.
- Although bridges are not directly included in NTD performance measures, bridge condition performance is based on physical condition assessments as rated in accordance with the National Bridge Inspection Standards (NBIS).

In addition to the above requirements, the Asset Management program uses a variety of metrics to determine an asset's condition rating. Condition assessment and scoring at the MBTA are driven by two guiding documents:

- The **Asset Condition Standard** provides an enterprise framework for evaluating asset condition consistently across a diverse portfolio. It identifies five condition indicators that can be used to assess the condition of assets.
- **Asset Class Condition Guidelines (ACCGs)** tailor the high-level condition framework to each asset class and determine how each condition indicator is used for certain assets. They identify the specific criteria, weights, and data sources needed to score an asset.

Across both standards, the MBTA utilizes a five-point scale for overall condition similar to the TERM scale. Assets with a condition rating below 3 are considered out of a state of good repair and in need of repair, rehabilitation, or replacement.

Table 16 MBTA Asset Condition Indicators

Condition Indicator	Description
Reliability	Assesses whether an asset continues to perform its required function, informed by failures, availability, and operating history.
Measured	Uses repeatable manual or automated measurements that indicate physical or functional condition.
Visual	Uses observable signs of wear, deterioration, damage, or material distress.
Maintenance	Considers whether planned maintenance can sustain performance and whether outstanding work indicates deterioration.
Age	Estimates the share of expected useful life consumed and may serve as a proxy where direct condition data are limited.

The MBTA is in the process of refining these standards to support the upcoming 2027 Capital Needs Assessment. The development and adoption of these standards and guidelines supports consistent data across asset classes and portfolios. This ensures the MBTA has quality information to prioritize resources, develop projects, and conduct effective capital and operations planning.

5.2 NTD TAM Performance Measures

As noted in section 1.3, the MBTA is required to submit annual reporting to the FTA's National Transit Database (NTD). This submission includes asset inventories as well as reporting on four key asset performance indicators:

Table 17 NTD Asset Performance Measures and Source Forms

Asset Category	NTD Form Source	Performance Measure
Rolling Stock	A-30	Percentage of revenue vehicles that have reached or exceeded their Useful Life Benchmark (ULB), by vehicle type
Equipment	A-35	Percentage of non-revenue support vehicles that have reached or exceeded their Useful Life Benchmark (ULB), by vehicle type
Facilities	A-15	Percentage of facilities with condition ratings lower than 3.0 on the FTA TERM scale, by facility type
Infrastructure	A-20	Average percentage of revenue track miles with speed restrictions, by mode

The tables below summarize the performance measures and targets reported to the NTD for FY25.

5.2.1 Rolling Stock

The rolling stock measure uses vehicle age as a proxy for SGR. It should trend downward as older vehicles are retired and replacements enter service. It may rise when existing fleets age past their ULB, when replacement delivery or acceptance is delayed, or when vehicles remain in the reported inventory during transition.

Table 18 Rolling Stock - Percentage of vehicles at or beyond ULB

Mode	Vehicle Type	FY25 Actual	FY26 Target	Expected Trend
Bus	Articulated Bus (AB)	21.05%	21.05%	Level →
Bus	Bus (BU)	14.67%	14.11%	Decrease ↘
Regional Rail / Commuter Rail	Commuter Rail Locomotive (RL)	21.11%	21.11%	Level →
Regional Rail / Commuter Rail	Commuter Rail Passenger Coach (RP)	6.31%	16.89%	Increase ↗
Ferry	Ferryboat (FB)	0.00%	0.00%	Level →
Heavy Rail	Heavy Rail Passenger Car (HR)	41.74%	37.94%	Decrease ↘
Light Rail	Light Rail Vehicle (LR)	38.17%	38.17%	Level →
Light Rail	Vintage Trolley (VT)	100.00%	100.00%	Level →
Paratransit	Automobile (AO)	55.00%	55.00%	Level →
Paratransit	Van (VN)	25.13%	45.30%	Increase ↗

5.2.2 Equipment

The equipment measure covers non-revenue rubber tire and steel wheel vehicles and uses age as a proxy for SGR. It should trend downward as older fleets are replaced and removed from the inventory. Because some support equipment is used intermittently, stored indoors, or retained for specialized functions, age alone may not reflect its actual condition or operational value. Non-cyclical retirement schedules and the lead time needed to remove vehicles from the inventory can also affect reported performance.

Table 19 Equipment - Percentage of vehicles at or beyond ULB

Vehicle Type	FY25 Actual	FY26 Target	Expected Trend
Automobile	19.87%	19.35%	Decrease ↘
Other Rubber Tire Vehicle	18.02%	18.99%	Increase ↗
Steel Wheel Vehicle	41.10%	42.47%	Increase ↗

5.2.3 Facilities

The facilities measure relies on the FTA TERM composite condition rating system, which uses a 1-5 scale. Facilities with ratings below 3.0 are considered in marginal or poor condition and are reported as not in SGR. Per FTA requirements, each facility asset is assessed once every four years. This means that each year, only a subsection of the facilities inventory is eligible for an updated condition rating. Completed repairs or projects may not be visible in the reported measure until the next scheduled assessment takes place.

Table 20 Facilities - Percentage of facilities assets with a condition rating < 3

Facility Type	FY25 Actual	FY26 Target	Expected Trend
Administrative / Maintenance	19.05%	19.05%	Level →
Passenger / Parking	2.18%	2.18%	Level →

5.2.4 Infrastructure

The federal infrastructure measure is limited to rail fixed guideway and uses speed restrictions as a proxy for condition. Permanent restrictions associated with curves, bridges, grade crossings, or other design features are not included. The measure should trend downward as maintenance and renewal remove restrictions and restore track to the designed operating performance.

Table 21 Infrastructure - Average percentage of track miles under speed restriction

Mode	Total Revenue Miles	FY25 Actual	FY26 Target	Expected Trend
Light Rail	59.81	0.30%	4.50%	Increase ↗
Heavy Rail	76.54	2.18%	4.50%	Increase ↗
Regional Rail / Commuter Rail	685.81	1.68%	4.00%	Increase ↗

5.3 Capital Needs Assessment and Inventory

In addition to the FTA-required asset performance measures, the MBTA also completes an SGR analysis to understand the state of the overall system and the magnitude of the agency's capital needs. The Capital Needs Assessment and Inventory (CNAI) is a routine exercise the MBTA performs approximately every four years to help the agency:

- Understand the condition and age of MBTA's capital assets and the approximate costs to replace or repair them, and
- Leverage this information to support smarter capital investment decision making.

This analysis uses a data-driven, risk-informed approach to identify the agency's SGR needs and support the prioritization of assets for renewal. A key output of the CNAI is the State of Good Repair (SGR) Index, which documents the magnitude of our capital needs in dollars. It reflects the baseline cost to bring the MBTA's existing assets into a state of good repair. The SGR Index represents a single moment in time and can be used to inform investment priorities and allocate resources to areas with the most need.

The most recent CNAI was completed in 2023; the next iteration is planned to complete in 2027.

▶ See mbta.com/cnai for the full 2023 Capital Needs Assessment and Inventory (CNAI) report.

5.3.1 2023 CNAI Results

The 2023 CNAI improved upon previous analyses to establish a robust, repeatable, and data-informed approach to identifying and understanding the MBTA's most critical asset needs. The inventory used in this analysis was collected between 2018 and 2021 and includes nine functional asset classes, each consisting of several different subgroupings and asset types. Updated asset counts, condition, and costs were used to calculate an SGR Index that reflects the magnitude of our SGR needs as of July 1, 2021.

This analysis found approximately 64% of the MBTA's assets to be out of a State of Good Repair (SGR), totaling to an SGR Index of $24.5 billion. Of the nine functional asset classes included, Facilities ($6.4B), Structures ($5.3B), and Power ($5.1B) represent the highest need in terms of dollars to address SGR.

Table 22 2023 CNAI Results by Functional Asset Class

Functional Asset Class	% Out Of SGR	SGR Index
Facilities	35%	$6.4 billion
Structures	22%	$5.3 billion
Power	76%	$5.1 billion
Rolling Stock	55%	$2.4 billion
Track – Regional Rail / Commuter Rail	9%	$2.0 billion
Signals – Transit	53%	$1.3 billion
Track – Transit	89%	$1.2 billion
Signals – Regional Rail /Commuter Rail	80%	$753 million
Equipment	28%	$52 million
Total	**64%**	**$24.5 billion**

6 CAPITAL PLANNING

Strategic and thoughtful investment of financial resources is critical to maintaining a safe, reliable, and modernized transit network. The MBTA's capital planning process aims to create a portfolio of projects that reflects the agency's infrastructure needs and strategic priorities.

6.1 Capital Investment Plan

The MBTA Capital Investment Plan (CIP) is a short-term, financially constrained investment program that funds the planning, construction, and capital maintenance of assets across the MBTA. It is a rolling five-year plan that is updated on an annual basis and includes all planned capital expenditures over the next five years. The CIP includes over 660 unique capital projects that aim to maintain a state of good repair, modernize the Authority's assets, expand service, and meet strategic priorities and performance goals.

The CIP is driven by two overarching priorities:

- **Reliability and Modernization:** Improve the safety and reliability of the MBTA's transit system and modernize existing assets to reduce safety risks, lower maintenance costs, enhance system performance, and accommodate current or anticipated growth.
- **Expansion:** Make targeted investments in the expansion of the transportation network to increase capacity or provide riders with more options across transit modes.

Each priority is broken out into programs, which are sized annually to align with the MBTA's identified needs and strategic goals. Programs under the Reliability and Modernization priority are largely asset-based while the Expansion programs fund and planning and design for targeted expansion projects.

Figure 6 FY27-31 MBTA CIP - Reliability and Modernization Programs

Program	Description
Structures	Repairs, reconstructs, and replaces bridges, tunnels, culverts, and dams
Guideway, Signal, and Power	Rehabilitates, replaces, and upgrades guideway, signal, and power assets across the system.
Maintenance and Administrative Facilities	Rehabilitates and upgrades maintenance and administrative facilities.
Passenger Facilities	Rehabilitates and upgrades stations, stops, and parking facilities to improve accessibility and the customer experience
Vehicles	Rehabilitates and replaces revenue fleet and non-revenue equipment.
Technology and Innovation	Investments in technology to enhance productivity, modernize the system, and improve the quality of service.
Business and Operational Support	Investments in asset management, safety and security, communications, and other systems.
North Station Draw One	Replaces and upgrades the critical drawbridge, track and signal assets, and station platforms at North Station.
Green Line Core Capacity	Green Line infrastructure investments included in the ongoing Core Capacity program

6.1.1 Funding Sources

The primary funding sources available for capital investment fall under four categories:

- **Federal:** Includes FTA formula funding and discretionary funds through federal pograms
- **State:** Includes proceeds from general obligation bonds, special obligatoin bonds, the Commonwealth Match Fund, Fair Share program, and FTA Directive Response funding program.
- **MBTA:** Includes taxable, tax-exempt, and sustainability bonds; Build America Bureau (BAB) loans; operating budget transfers; and the Capital Maintenance Fund (CMF).
- **Other:** Includes outside funds through partnerships and formal agreements, including Amtrak.

Figure 7 FY27-31 MBTA CIP - Funding Sources

Type	Source	FY 27-31 Total ($M)	%
Federal	Future 5207 Formula Funds (Urbanized Area)	1,196	11.63
	Future 5337 Formula Funds (State of Good Repair)	1,423	13.84
	Future 5339 Formula Funds (Bus and Bus Facilities)	43	0.42
	Obligated FTA Funding (Formula and Discretionary)	1,035	10.06
	Obligated FHWA Funding	2	0.02
	Obligated FRA Funding	18	0.18
	Full Funding Grant Agreement for GLX	6	0.05
	Transit Security Grant Program	2	0.02
	Other Unobligated Federal Funding	503	4.89
State	Commonwealth Transportation Fund - RRP & STAR	1,273	12.38
	Fair Share	187	1.82
	FTA Directive Response	7	0.07
	Other State	670	6.52
MBTA	Bonds	3,707	36.06
	Loans	73	0.71
	Pay-Go (Cash on Hand)	35	0.34
Other	Amtrak Funds	41	0.39
	Other Reimbursable	61	0.61
	Grand Total	**10,282**	**100.00%**

The MBTA evaluates all capital funding requests based on how they address critical operational needs, mitigate safety risks, address regulatory requirements, address programmatic and contractual commitments, or achieve substantial completion of an existing project. Relative program sizes are then reviewed as needed to ensure that overall programs are sized appropriately.

This evaluation process is informed by annual asset performance measures, ongoing discussions with asset owners, and condition information from the Capital Needs Assessment and Inventory (CNAI).

6.1.2 FY27-31 CIP

The FY27–31 CIP is the current approved five-year capital program and is the principal source for the project-based investment priorities required by the TAM rule. It programs $10.3 billion across more than 660 projects.

Table 23 FY27-31 CIP - Programmed Spending by Mode

Mode	Programmed Spend	Share Of Total
Rapid Transit	$4,039 M	39.3%
Regional Rail / Commuter Rail	$2,877 M	28.0%
Systemwide	$1,496 M	14.5%
Bus	$1,279 M	12.4%
Multimodal	$529 M	5.1%
Ferry	$38 M	0.4%
Paratransit	$24 M	0.2%
Total	**$10,282 M**	**100.0%**

Table 24 FY27-31 CIP - Programmed Spending by Capital Program

Capital Program	Programmed Spend	Share Of Total
Vehicles	$2,950 M	28.7%
Guideway, Signal, and Power	$1,442 M	14.0%
Passenger Facilities	$1,276 M	12.4%
Maintenance and Administrative Facilities	$1,041 M	10.1%
North Station Draw One	$949 M	9.2%
Green Line Core Capacity	$891 M	8.7%
Technology and Innovation	$654 M	6.4%
Structures	$624 M	6.1%
Business and Operational Support	$300 M	2.9%
Expansion Projects	$154 M	1.5%
Total	**$10,282 M**	**100.0%**

Note: values may not sum due to rounding.

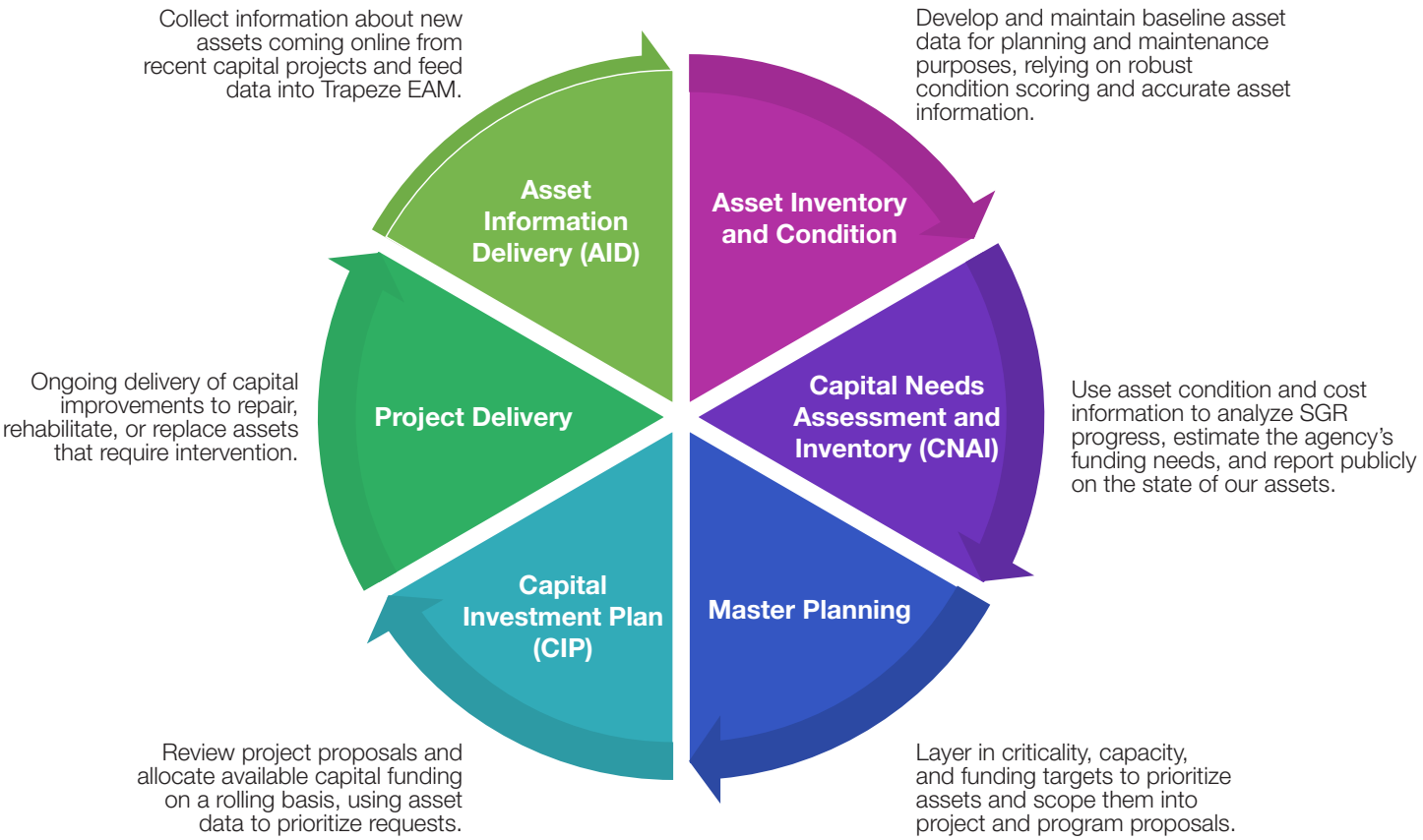
▶ See mbta.com/cip for the full FY27-31 MBTA Capital Investment Plan (CIP) project listing.

6.2 Capital Asset Planning

While the CIP reflects the MBTA's planned capital expenditures over a given five-year period, it is one component of the asset planning cycle. Tracking capital assets, identifying needs, prioritizing investments, and executing capital improvements requires cross-departmental coordination.

Asset information is collected and analyzed by the Asset Management team on a rolling basis, and is fed into the four-year CNAI. The asset inventory and SGR Index from the CNAI provide an asset-based foundation for project scoping and initial asset prioritization based on criticality, capacity, and funding targets. Proposed projects and programs are submitted to the annual CIP process, and available funding is programmed to high-priority investments. Capital projects are then delivered by executing departments who work with the Asset Management team to ensure any new or replaced assets are incorporated into the asset inventory and managed appropriately.

Figure 8 MBTA Capital Asset Planning Cycle

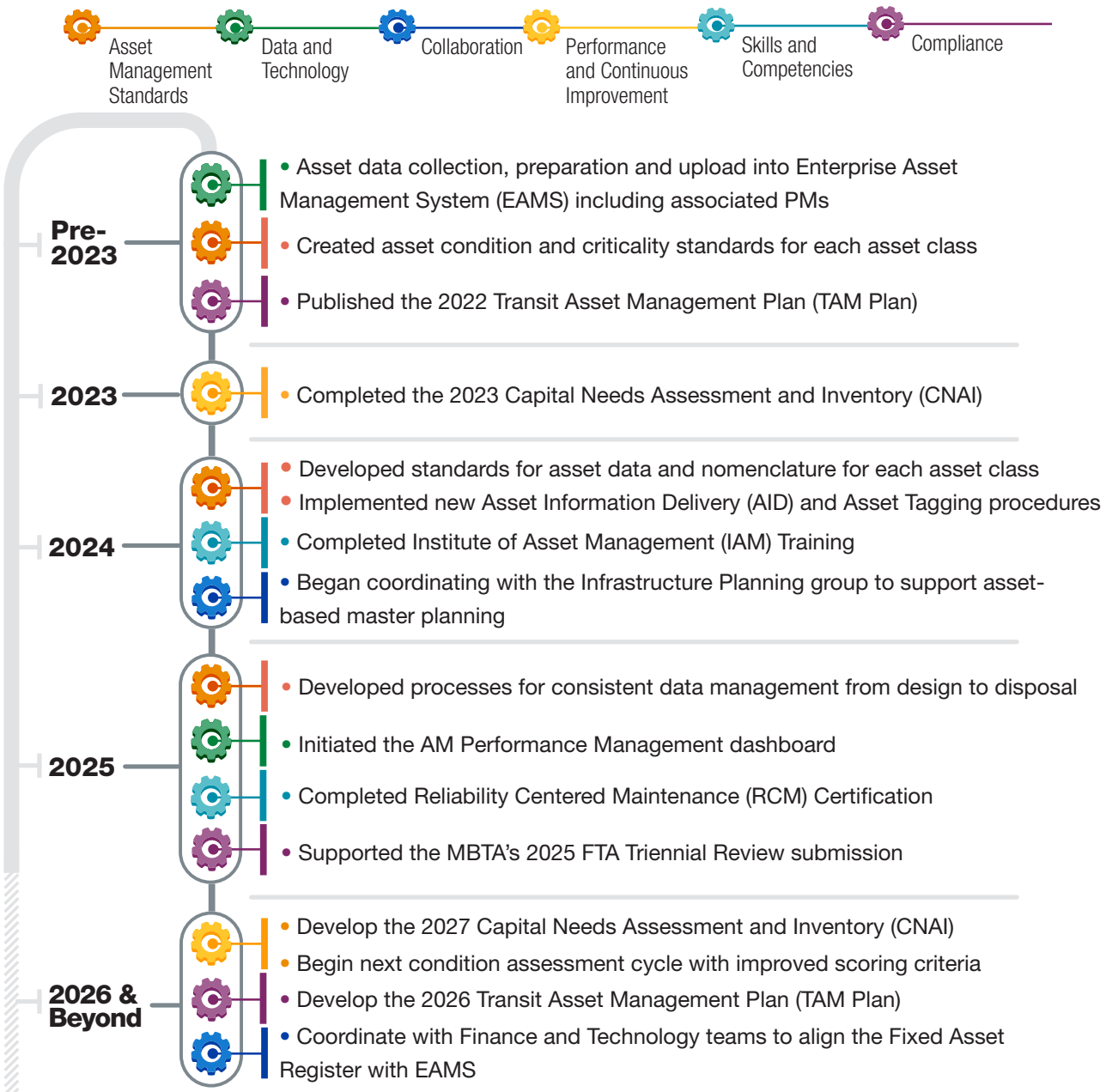


7 IMPLEMENTATION AND IMPROVEMENT

Asset Management at the MBTA is a practice that matures over time through cycles of continuous improvement. This section summarizes the MBTA's current asset management capability and provides a roadmap for asset management improvement.

7.1 Milestones

Figure 9 Implementation Timeline - 2022 to 2026



7.2 Evaluation

7.2.1 Methodology

The MBTA reviews the TAM Plan as part of the annual TAM and NTD reporting cycle to determine whether material changes or updates are needed. The review considers progress on key TAM activities, changes to asset inventory and condition information, performance results and targets, and relevant changes to business practices. The TAM Plan may be updated between full cycles when warranted and will be updated in its entirety at least once every four years.

As part of the 2018 TAM Plan development, the MBTA undertook an independent assessment of the maturity of its asset management practice. This assessment served as a baseline from which the Asset Management team and the organization could develop a comprehensive and organized set of improvement actions to expand asset management capacity and improve the nature of the practice.

This assessment of our progam's maturity uses the Institute of Asset Management (IAM) internationally accepted conceptual model for asset management. This model is comprised of a suite of six subject groups covering a total of 39 asset management subjects. These subjects connect to organizational functions across the MBTA and allow for a comprehensive understanding of how existing practice aligns with industry standards.

Figure 10 IAM Conceptual Asset Management Model



7.2.2 Results

Based on the 2018 Asset Management Maturity Assessment and subsequent evaluations of the state of the practice at the MBTA, the following areas of excellence and improvement have been identified.

Areas of strength:

- Establishment of a dedicated Asset Management office and continued investment in staff IAM training and reliability-centered maintenance.
- Documentation of asset operations and maintenance activities through manuals maintained by asset owners.
- The creation of various standards to codify asset naming, define condition and criticality scoring, and standardize reporting procedures.
- Through the 2023 CNAI, the creation of a repeatable and transparent approach for consolidating the asset inventory, assessing condition, and calculating cost to estimate SGR needs and advocate for funding.
- Creation of an Asset Information Delivery process and accompanying contract language to ensure asset information is collected from capital projects in a standardized manner.
- Deployment of mobile solutions for E&M and third parties to support digital management.
- Development of an updated Strategic Asset Management Plan (SAMP) to align agency goals with asset management policy and practice.

Continuing areas of improvement:

- Standardizing project handover, configuration management, systems engineering, asset creation and disposal, and benefit verification.
- Aligning EAM, GIS, the Fixed Asset Register, NTD, capital project information, condition data, and financial records through common identifiers and quality controls.
- Strengthening the integration of asset condition and criticality with safety, climate, risk, and other agency priorities.
- Establishing consistent lifecycle costing, steady state maintenance, and resource forecasting.
- Improving asset performance monitoring activities.

7.3 Improvement Actions

The set of improvement activities that follow are based on the MBTA's Asset Management team evaluation of the state of the practice, updates to actions identified in the Transportation Asset Management Improvement Plan, and the incorporation of evolving organizational priorities, goals, and objectives.

The following improvement actions represent key TAM activities the MBTA intends to advance during the 4-year TAM Plan horizon.

Table 25 Strategy and Planning Improvement Actions

Action	Description
Develop master plans for each asset class	Develop and maintain master plans tailored to each asset class to address SGR and modernization needs.
2026 Transit Asset Management Plan Update	FTA-required update of the TAM Plan.
Perform steady state budget analysis and SGR Index modeling	Utilize improved asset information to develop funding targets to meet the needs necessary to maintain the system.

Table 26 Asset Management Decision-Making Improvement Actions

Action	Description
Continue to implement PMI and corrective work package planning	Improving on the lifecycle maintenance planning processes. PMI and corrective work planning will help communicate and coordinate these activities.
Complete the 2027 Capital Needs Assessment and Inventory	Completion of the next Capital Needs Assessment and Inventory to support investment prioritization and planning. The 2027 CNAI represents an update to the 2023 CNAI.
Improve criticality factors and prioritization methodology	Continue to refine and validate criticality factors and data sources so that safety, climate vulnerability, operations and maintenance, ridership, equity, and accessibility consequences are applied consistently and transparently across asset classes.
Incorporate SGR into the capital planning and decision-making process	Continue to develop a decision-making process that is grounded in the CNAI and asset condition data.
Develop the SGR module and streamline data calculation	Continue adoption of SGR module in EAM to support planning and SGR analyses.
Develop the Network Restriction module	Continue to add functionality to the EAM system to support Maintenance of Way and Signals work management of right of way track restrictions.

Table 27 Lifecycle Delivery Improvement Actions

Action	Description
Streamline the asset creation, disposal, and handover process	Document and make transparent the process for asset creation, acquisition, and disposal. Determine key stakeholders in these processes and align them to the overall asset management goals and objectives.
Define the systems engineering approach	Define a Systems Engineering approach that tailors the level of requirements management of a project to its complexity and criticality and is scalable.
Define the reliability engineering approach	Develop a reliability engineering methodology setting out the approach to managing asset reliability and in particular how it relates to the Asset Management objectives and the impact of asset reliability on network reliability.
Improve usability of the EAMS	Establish a simple workflow to gather user feedback, prioritize issues, and implement usability changes to the EAM configuration in a way that is consistent and repeatable.
Improve linear asset work management	Improve configuration of EAM to accommodate linear assets.

Table 28 Asset Information Improvement Actions

Action	Description
Improve the Asset Class Condition Guidelines (ACCGs)	Continue to refine condition scoring methodologies tailored to each asset class and incorporate new, live data sources.
Create a Useful Life Standard	Develop a standard that accounts for minimum useful life, expected useful life, and useful life benchmarks by asset type. This standard will incorporate information about various asset-related business processes and reporting needs, including financial reporting and asset replacement planning.
Streamline annual NTD Reporting	Document and standardize data management process and report development for the annual FTA NTD submission.
Periodic updates to EAMS	Maintain a consistent cycle of EAM system updates and user announcements to ensure solution is meeting the needs of the MBTA.
Develop the asset inventory	Continue to expand the asset classes and types included in the asset inventory and apply similar standards and documentation for all newly added asset classes and types.
Integrate and consolidate systems	Identify other systems used in infrastructure inspection, maintenance, and management to be mapped, consolidated, and configured into the current EAM platform.
Integrate EAMS with GIS data	Continue integration of GIS and EAM to support planning and prioritization.

Table 29 Organization and People Improvement Actions

Action	Updated Description
Expand team capacity	Continue to build out asset management human resources to address the scope and scale of improvement actions identified in this plan and that are necessary to successfully bring the MBTA's asset management practices to the next level of maturity and competency.
Build relationships across departments	Continue to build relationships between the Asset Management and Reliability Engineering groups and other teams throughout the MBTA including Engineering and Maintenance, Quality Management, Infrastructure Engineering and Planning, Policy and Strategic Planning, Capital Programs, Finance, Technology, and Safety.
Improve public communications	Maintain accessible internal and public information explaining the purpose and progress of the Asset Management program. Provide ongoing presentations to the MBTA Board and executive leadership so they are well connected to asset management practice.
Develop the Asset Management training curriculum	Develop a standard curriculum to build asset management capacity and competency across the MBTA.

Table 30 Risk and Review Improvement Actions

Action	Updated Description
Complete remote monitoring pilot	Evaluate and pilot remote monitoring for asset types where sensors, telemetry, or automated measurement can improve safety, identify deterioration earlier, reduce inspection burden, or improve service reliability.
Link assets to financial management systems	Develop links between financial records and asset infrastructure records. Link historic costs, ongoing expenses, and operating data to develop clearer perspective of asset lifecycle costs.
Continue annual asset condition assessments	Maintain the cycle of condition assessments and build this into an ongoing and consistent practice at the MBTA

8 APPENDIX

8.1 Glossary of Acronyms

ADA	Americans with Disabilities Act
AIM	Asset Inventory Module
AM	Asset Management
CFR	Code of Federal Regulations
CIP	Capital Investment Plan
CNAI	Capital Needs Assessment and Inventory
DPU	Massachusetts Department of Public Utilities
EAM	Enterprise Asset Management
E&M	Engineering and Maintenance
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
FY	Fiscal Year
GIS	Geographic Information System
IAM	Institute of Asset Management
ISO	International Organization for Standardization
KPI	Key Performance Indicator
LOS	Level of Service
MassDOT	Massachusetts Department of Transportation
MBTA	Massachusetts Bay Transportation Authority
MPO	Metropolitan Planning Organization
NTD	National Transit Database
O&M	Operations and Maintenance
OEM	Original Equipment Manufacturer
PATI	Plan for Accessible Transit Infrastructure
PM	Preventative Maintenance
PTASP	Public Transportation Agency Safety Plan
QA	Quality Assurance
SGR	State of Good Repair
SMS	Safety Management System
SOP	Standard Operating Procedure
TAM	Transit Asset Management
TAMP	Transit Asset Management Plan
TERM	Transit Economic Requirements Model
ULB	Useful Life Benchmark

8.2 Key Definitions

Accountable Executive	Defined by 49 CFR 625.5 as a "single, identifiable person who has ultimate responsibility for carrying out the safety management systems of a public transportation agency; responsibility for carrying out transit asset management practices; and control or direction over the human and capital resources needed to develop and maintain both the agency's public transportation agency safety plan, in accordance with 49 U.S.C. 5329(d), and the agency's transit asset management plan in accordance with 49 U.S.C. 5326."
Asset	An item, entity or thing that has actual or potential value to the organization. A tangible item of value that is owned, contracted, and/or managed by MBTA for the purposes of providing transit services. This includes fleet, equipment, facilities, and infrastructure assets that are repairable, replaceable and subject to a preventive maintenance schedule or inspection or calibration or need to be tracked from a capital depreciation point of view.
Asset Management	The integrated, multidisciplinary set of strategies in sustaining infrastructure. Generally, includes processes focused on the infrastructure lifecycle, maintenance, rehabilitation, and replacement.
Capital Asset	Defined by 49 CFR 625.5 as a "unit of rolling stock, a facility, a unit of equipment, or an element of infrastructure used for providing public transportation."
Capital Investment Plan	The annual fiscally constrained rolling five-year investment program that funds the planning, construction, and capital maintenance of asset across the MBTA.
Capital Needs Assessment	The Capital Needs Assessment is an effort performed by MBTA staff to evaluate the capital inventory of the organization, identify infrastructure assets in need of replacement due to documented age or condition, determine a cost estimate for the capital replacement need, and develop insights by asset category.
Directional Route Miles	The mileage in each direction over which public transportation vehicles travel while in revenue service. It excludes non-revenue track such as yards, turn-arounds, and storage tracks.
Lifecycle	The time interval that begins with the acquisition of a transit asset or land asset and ends with the disposal of the asset. Lifecycle phases may include planning, design, procurement, construction, operations, maintenance, rehabilitation, and asset replacement/disposal.
State of Good Repair (SGR)	Defined by 49 CFR 625.5 as the "condition in which a capital asset is able to operate at a full level of performance."
State of Good Repair (SGR) Index	The baseline cost to replace, rehabilitate, or renew capital assets that are out of a state of good repair.
TERM Scale	The five-category rating system used in the FTA's Transit Economic Requirement Model (TERM) to describe the condition of an asset, where 5 is excellent condition and 1 is poor condition.
Tier 1 Transit Provider	An entity that receives federal financial assistance under 49 U.S.C. Chapter 53, either directly from FTA or as a subrecipient, that owns, operates, or manages either (1) one hundred and one (101) or more vehicles in revenue service during peak regular service across all fixed route modes or in any one non-fixed route mode, or (2) rail transit.
Transit Asset Management	Defined by 49 CFR 625.5 as "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 lifecycles, for the purpose of providing safe, cost-effective, and reliable public transportation."

Transit Asset Management Plan	This document, which describes: the capital asset inventory; condition of inventoried assets; TAM performance measures, targets, and prioritization of investments aligned with the agency's TAM and SGR policy, strategic goals, and objectives; as well as the strategies, activities, and resources required for delivering this plan (including decision support tools and processes); and other agency-wide approaches to continually improve TAM practices. While this TAM Plan exists as a standalone document, asset class plans may be considered an extension of the TAM Plan by reference.
Track Miles	The sum of the one-way linear miles of all trackage in a system, including all main track and trackage in yards, car barns, switches, and turnouts.
Useful Life	Defined by 49 CFR 625.5 as "either the expected lifecycle of a capital asset or the acceptable period of use in service determined by FTA." It generally defines the minimum eligibility for retirement, replacement, or disposal of an asset. See also definition for Estimated Useful Life (EUL).
Useful Life Benchmark (ULB)	Defined by 49 U.S.C. Chapter 53 as "the expected lifecycle or the acceptable period of use in service for a capital asset, as determined by a transit provider, or the default benchmark provided by FTA." The ULB is the realistic expectation for when an asset would be disposed or replaced based on operating environment and procurement timelines. It is not the same as "Useful Life" in FTA grant programs, is reported by age (in years), and usually only pertains to rolling stock or equipment. It is a single number shared for or within specified asset classes, although may vary across different asset classes and providers. See also definition for Estimated Useful Life (EUL)



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