Transit Asset Management Program

Fiscal and Management Control Board

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MBTA Asset Management Overview

MBTA's Asset Management Program is more than just an information management database. The framework of the program consists of building a strategic and systematic process through which our organization procures, operates, maintains, rehabilitates, and replaces assets.

Built within the strategic framework for 2020:

1. Meet or exceed service delivery goals by achieving and maintaining a State of Good Repair for all MBTA assets to include GLX, Green Line Transformation, Orange and Red Line Transformation, Engineering and Maintenance, and Vehicle Maintenance

2. Effectively identify, prioritize, and manage risk, including safety, reliability, financial, and performance by hiring and building out both Asset/Quality Management departments to integrate across all agency departments to identify risk and develop partnerships

3. Enable transparent, consistent, and data-driven decision making for investment prioritization across asset classes through the completion of condition and performance assessments

4. Continue and sustain the MBTA's fiscal discipline by optimizing available resources through lifecycle management, reliability-centered maintenance, business process improvements, and other best practices by completing the integration of the EAM system covering a spectrum of subjects from work order processing, inventory control, and lifecycle costing

5. Achieve and exceed compliance with Federal and State requirements

Why do we need Asset Management at the MBTA?

New legislation on the concept of State of Good Repair requires public transportation agencies receiving federal assistance or grant money to develop an asset management plan. At minimum, the plan needs to address an agency's inventory, condition assessment, and investment prioritization.

Key Federal Deliverables

1. Report information for assets owned, contracted, and/or managed by the MBTA and used in the provision of providing public transportation services – due annually (Oct 31st) as part of the NTD reporting cycle

2. Fiscal year forward-looking performance targets reported to the Boston Metropolitan Planning Organization and Federal Transit Administration via the National Transit Database – due annually (Oct 31st) as part of the NTD reporting cycle

1. Transit Asset Management Plan – due every 4 years or when a major change occurs

   - Identify existing and proposed levels of service to be achieved
   - Identify life cycle management needs by asset class
   - Assess financial needs and resources required to support safe and reliable service delivery and bring assets into a State of Good Repair (SGR)
   - Document current key processes, organizational architecture, and tools for effective asset management

2020 Transit Asset Management Plan

- Further define and incorporate a number of processes, activities, and tools necessary to support the MBTA's ability to manage efficient use of its transit assets

- Integrate the MBTA's asset management goals, objectives, activities, roles, responsibilities, and timelines
  - Ensure all are guided by a strategic framework that defines the level of service the agency is expected to deliver (e.g. RL/OL 2025)

- Develop a dynamic process that has the capability to change and fine-tune to reflect changes as well as the influence of external factors:
  - Changes in federal policies, fiscal and economic conditions, and the impact of major natural disasters

- Ensure the TAMP aligns asset management goals related to preventative maintenance, delivery of the capital investment program, and SGR.
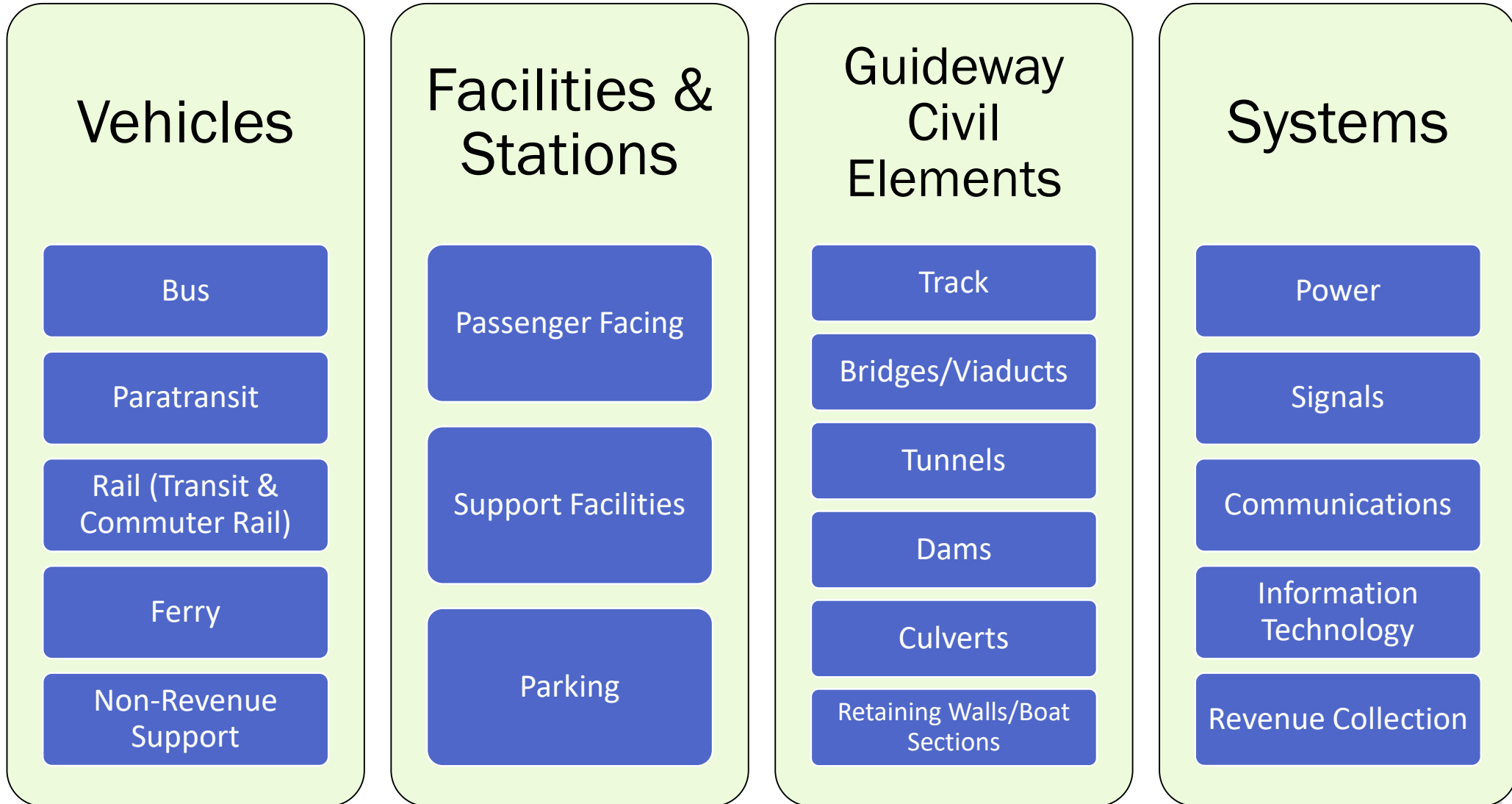
2020 Asset Data Collection, Inventory, and Performance

- **Continue condition assessment of assets** – analyze the condition of assets relative to standard criteria, providing the MBTA with a measure of overall SGR and providing information for determining asset needs and replacement priorities supporting Capital

- **Monitor asset performance measures** – utilize measures of performance to determine the adequacy of the asset for the intended purpose

- **Determine optimum levels of asset support** – functions such as preventative maintenance, spare parts inventory, and employee training

- **Develop full asset inventory data** – collection, validation, condition/risk

- **Develop asset performance management** – KPI, dashboard development, and output goals per asset type across the MBTA

Overview of the MBTA's Asset Categories (all modes)

Vehicles

- Bus
- Paratransit
- Rail (Transit & Commuter Rail)
- Ferry
- Non-Revenue Support

Facilities & Stations

- Passenger Facing
- Support Facilities
- Parking

Guideway Civil Elements

- Track
- Bridges/Viaducts
- Tunnels
- Dams
- Culverts
- Retaining Walls/Boat Sections

Systems

- Power
- Signals
- Communications
- Information Technology
- Revenue Collection

FTA Annual Deliverables - Update

Transit Asset Management Plan

- Completed 2018 – revised in 2020

FTA/NTD Asset Inventory Module

- 2018 and 2019 – complete

2019 Performance Targets

Led by Capital Program Oversight

- 2018 and 2019 initial targets established and submitted

A few statistics so far from across the entire system

957.6	miles of track
20.36	miles of active service tunnels
322	support facilities
306	passenger stations
1022	buses
432	heavy rail vehicles
205	light rail vehicles
4	ferries (owned by the MBTA)
94	Commuter Rail locomotives
426	Commuter Rail coaches
78+	miles of catenary
1092	power cables
96	miles of third rail
2	dams
1303	culverts
459	bridges
116	parking lots
9	parking garages
1573	fareboxes
649	gate consoles

MBTA Asset Management Program Implementation Success to date

✓Achieve compliance with FTA Transit Asset Management Rule: completed as part of annual October submission

✓Collect asset inventory and condition data for National Transit Database Asset Inventory Module: Phases 1 and 2 completed as part of annual October submission 2018/2019; Phases 3 and 4 ongoing and on track for 2020/2021

✓Develop Transit Asset Management Plan: completed Oct 31, 2018

✓Set Asset Performance Targets: completed as part of annual October submission

✓Align Asset Performance Targets with Capital Investment: completed as part of annual October submission

✓Annual PAMAC Reporting: completed as part of annual October submission

Ongoing Asset Management Support

Engaged Network Rail consultants to support asset management improvements
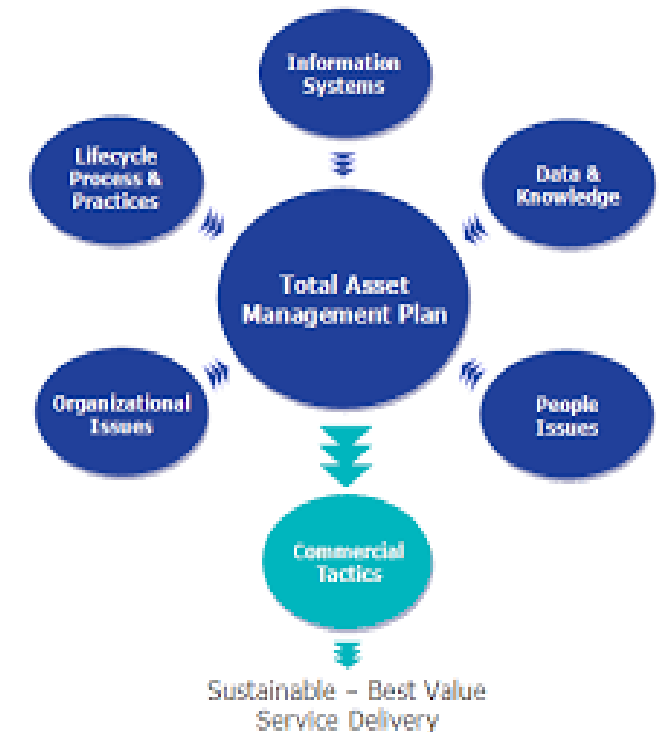
Key Deliverables for 2020

Phase 1 diagnostics and short-term improvement:

✓Asset management and maintenance

  ✓Understand current asset framework

  ✓Understand current maintenance regime

  ✓Collect data on asset failures, condition, and performance

Phase 2 and 3 improvements for 2020:

✓Introduction of new maintenance regime:

  ✓Scope asset renewals

  ✓Introduce new inspections regime

  ✓Predict asset performance

  ✓Asset performance targets

2020 Trapeze EAM Implementation

Key Deliverables for 2020

- Complete Phase 1 asset inventory of EAM across all MBTA infrastructure areas (December 2020)

- Partner with IT to implement a mobile preventative maintenance inspection program (December 2020)

- Partner with IT to implement key integrations with predictive failure systems such as Optram for track and existing management systems such as SCADA, FMIS, and historical construction records (December 2020)

- **Integrate all asset data into agency-wide system to inform (Ongoing):**
  - Risk analysis
  - Decision making
  - Analyze and understand asset lifecycle costs

- **Achieve better custodianship of assets via validated data to:**
  - Set KPIs per asset category
  - Drive maintenance programs
  - Inform capital investment decisions

Nexus between Asset Management and Quality Management

Asset Management and Quality Management roll up to Reliability Engineering under the Office of the Chief Engineer.

- Transit agencies are required by regulators to maintain both an asset management system and a quality management system.

- Quality Management should drive compliance with internal processes.
    - Close coordination and integration between quality assurance of maintenance and inspection processes and asset data collection
    - Improved quality control and thus improved asset performance
    - Quality Management will help achieve our asset management objectives

Fleet Quality Management Program

Key Deliverables for 2020

- Phase 1 hiring plan with a total of 8 positions approved
  - Fleet Quality Manager job description posted

- STV Quality Bus/Heavy/Light Rail Inspection Program
  - Random audit of bus/rail shortly after mechanic has completed the PM process to ensure that items such as brake throws, tire pressure, brake lining wear, ground brush inspection, stopping distances etc., have been completed
  - Adjustments to the current pass/fail criteria and PM inspection procedures
  - Validation of processes to eliminate technicalities that introduce ambiguity into the inspection process

Infrastructure Quality Management Program

Key Deliverables for 2020

- Phase 1 hiring plan with a total of 8 positions approved
  - Infrastructure Quality Manager job description posted
- HNTB site visits, field inspections, and weekly reports
  - HNTB reviewing current MBTA inspections
    - General ROW conditions
    - Track and special track work
    - Overhead catenary system
    - Assimilate field data from all inspections

Summary

Transit Asset Management Plan/Improvement Program

- Review and update in alignment with Strategic Asset Management Plan, Transit Asset Management Improvement Plan, and MBTA strategic and long-term planning

Asset Inventory, Data Collection, Risk, & Performance

- Continue to develop full asset inventory data by collection, validation, and condition/risk and load into Trapeze EAM
- Develop asset performance management output goals including KPIs and performance dashboards per asset type across the Authority

Quality Management Program

- Complete Phase 1 hiring for both Infrastructure and Fleet Quality Management, totaling 8 positions in 2020
- Conduct ongoing quality audits to build a formalized system that documents the structure, responsibilities, and procedures required to achieve effective quality management

Trapeze EAM Implementation

- Fully implement and deploy the EAM and mobile solution across all transit infrastructure areas
- Implement key integrations with predictive failure systems such as Optram, SCADA, and FMIS