



# Infrastructure Appx. A

## Asset Management Plans

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**Historic Opportunities** | Amtrak's FY 2022-2027 Service and Asset Line Plans

# Appendix A: Asset Management Plan

*Since 2016, Amtrak has undertaken a review of its Asset Management maturity, developed a roadmap for improvement, and proactively progressed its Asset Management capabilities. This section provides a summary of the current state.*

## Overview

Amtrak's Asset Management Plan for managing the infrastructure it owns and/or maintains was included in Amtrak's FY 2020 Infrastructure Assets Plan as Appendix A.

(<https://www.amtrak.com/content/dam/projects/dotcom/english/public/documents/corporate/businessplanning/Amtrak-Infrastructure-ALP-Appendices-FY21-25.pdf>). Set forth below are Amtrak's Asset Management Policy; an updated version of Amtrak's Asset Management Core Supporting Technology; and an Improvement Plan that summarizes Key Improvement Actions identified through the development of this Plan.

## Asset Management Policy

*The Asset Management Policy defines the guiding principles by which Amtrak will manage the infrastructure it owns and maintains. The policy establishes the direction and objectives for developing asset management capability and implementing an asset management plan.*

### Purpose

Infrastructure asset management is the strategic and systematic practice of operating, inspecting, maintaining, rehabilitating, and replacing infrastructure assets. Underpinning asset management is the strategy of preserving existing assets to extend the asset's useful life and performance. Assets will be maintained and replaced consistent with their criticality to customer service. Infrastructure asset management is a strategic approach to maximizing useful life and high service reliability while minimizing lifecycle cost in support of existing infrastructure, high speed trainsets, increased demand, and profitable growth.

## Principles

The Asset Management Policy applies to all infrastructure assets owned or maintained by Amtrak. It is governed by the following seven standards:

- 1** **Asset management is undertaken within a transparent, integrated corporate-wide framework.** Asset management requires the delivery by all Amtrak departments of their respective responsibilities hereunder to ensure that the goals and objectives of Amtrak’s service levels are effectively and efficiently supported.
- 2** **Ownership, control, accountability, and reporting requirements for assets are established, clearly communicated, and implemented.** Explicitly defined roles and responsibilities are established for the management of infrastructure assets. Maintenance access is factored into train operating plans. There is a shared responsibility between Transportation and Engineering for safety, reliability, and on-time performance (OTP).
- 3** **Risk management (criticality) is used to inform the asset management decision-making process.** We will continually work to better understand the characteristics of infrastructure assets through a risk management framework that will advance preventive activities to reduce risks.
- 4** **Best in class, appropriate asset management practices are used throughout all stages of the infrastructure lifecycle.** The asset management system will control activities to meet the safe, reliable, high performance expectations of our customers and stakeholders. There is **one** infrastructure asset management plan in place, managed by the Engineering Department.
- 5** **Lifecycle costs are fundamental to all significant investment options and decision making.** Decisions will be data driven and consider all aspects of an asset’s lifecycle. Asset management plans will exist for each asset class (Track, Electric Traction [ET], Communications and Signals [C&S], Bridges and Buildings [B&B]). These plans define the condition and performance objectives for the assets, establish the standards for accomplishment and determine the resources necessary for implementation (of the plan). The asset management plans will be fully aligned with Federal rules and regulations. Corporate policies and/or practices will be adhered to for justification and acquisition of capital approval.
- 6** **Amtrak’s enterprise technology provides information systems that support meaningful data and information for investment and management decisions.** A single system of record will be used for all asset data. Information will be transparent and accessible to those responsible for infrastructure asset management. All work will be recorded in the single system of record. There will be no work on the infrastructure without a work order.
- 7** **Asset Management systems, processes, and practices will continually be improved.** The annual infrastructure asset management plan will include an improvement plan that will direct improvement efforts. Quality assurance will ensure that asset maintenance is conducted correctly and that asset management activities are aligned with Amtrak’s vision, goals, and objectives. This policy will align with corporate asset management policies as they are developed.

## Asset Management Practices

Infrastructure Asset Management at Amtrak is enabled through an organization, with asset and asset management decisions informed by asset knowledge and information, supported by technology and implemented through business processes that ensure we have consistent practices.

### Asset Management Core Supporting Technology

To support the execution of Amtrak’s Asset Management Practices, Amtrak is attempting to streamline the technology available to enable access to information to inform decisions, to control the execution of processes and to demonstrate compliance that activities have been completed. The table below provides a summary of Amtrak’s core asset management technologies and planned improvements.

#### Core Support Technology for Asset Management

Core Technology	Status	Improvement Initiative
EAMS	EAMS was implemented in 2006 to help monitor and execute work against the asset – primarily focused on demonstrating FRA inspection compliance. Not all functions within EAMS are utilized and the current version has been highly customized to include FRA inspection compliance functionality and a condition logic matrix. This has introduced challenges in further utilizing EAMS to support asset management decisions. This includes poor transparency between work completed and the asset on which it was performed (the linkage is there, but improvements could be made).	<p>Amtrak plans to migrate from Maximo version 7.5 to version 7.6. To do so will require a full re-implementation due to the previous highly customized configuration.</p> <p>The reimplementation rescheduled for 2021/22 will utilize more of Maximo’s standard functionality for transportation users. The previously developed condition logic matrix and FRA compliance functionality may be carried over.</p> <p>The new install will ensure EAMS provides the single source of truth of our infrastructure assets – and will do away with the EMD as a separate application.</p> <p>Several initiatives are already underway to prepare for a future upgrade including the introduction of full linear model capability, updated asset hierarchies and location referencing for all assets along the right-of-way. Work-order capability has also been improved with asset relationships rebuilt and renamed to improve search capabilities.</p>
GIS	Amtrak Engineering is currently developing a roadmap for the use of geospatial information systems (ESRI ArcGIS). This solution enables full analysis of a right-of-way section and allows Amtrak to visualize all assets, outstanding work items and other data to determine an optimal construction program – including integrating across multiple asset classes.	Continued roll-out of the geospatial information system. Full integration of these tools with EAMS will be completed as part of the upgrade to Maximo version 7.6.

## Improvement Plan

This section provides a summary of the key improvement actions highlighted in IALP2022.

### Key Improvement Actions from IALP2022

The table below presents the Key Improvement Actions identified through the development of IALP2022. Completed improvements are identified in bold. Improvements are grouped by document section.

#### Key Improvement Actions

Ref:	Key Improvement Action	Responsibility	Date
Asset Management Practices			
001a	Develop a Strategic Asset Management Plan that sets out the blueprint for how Engineering will manage infrastructure – including meeting all requirements and aligning planning cycles	Director Industrial and Systems Engineering	Updated to Q4 FY 2022
001b	As part of the SAMP establish the asset management organization capability requirements	Director Industrial and Systems Engineering	Updated to Q4 FY 2022
001c	Undertake organization change impact assessment and establish implementation plan for SAMP	Director Industrial and Systems Engineering	Updated to Q4 FY 2022
<b>002</b>	<b>Further develop existing Engineering standards into an Asset Management – management system (asset management framework). Aligned to global best practices and consistent with the requirements under the FAST Act.</b>	<b>Director Industrial and Systems Engineering</b>	<b>Complete</b>
<b>002b</b>	<b>Update capital planning process as part of the development of the Asset Management system – to include full alignment to the FAST Act</b>	<b>Director Industrial and Systems Engineering</b>	<b>Complete</b>
003a	Implement a quality assurance process to ensure that processes and procedures are followed and provide confidence that “we do what we say we do”.	Director Industrial and Systems Engineering	Updated to Q4 FY 2023
003b	Review and revise current work execution documentation and signoff procedures to enhance current quality control efforts	Director Industrial and Systems Engineering	Updated to Q4 FY 2023
003c	Identify and introduce QA/QC resources	Director Industrial and	Updated to Q1 FY 2024

		Systems Engineering	
004	Document the processes for managing asset management planning and ensuring it is integrated into other business planning processes – including maintenance and capital budgeting.	Director Industrial and Systems Engineering	Updated to Q4 FY 2022
005	Review and further development of the track outage process – including review of opportunities to re-engineer the current process to provide improved planning to enable better use of track access time. This will include developing processes to deliver better ‘piggybacking’ of track access.	Director Industrial and Systems Engineering	Updated to Q1 FY 2023
006	Establish a cost capture model for all maintenance and renewal activities at the asset level – which includes review and development of a revised G/L structure.	Finance; AVP Project Delivery	Updated to Q2 FY 2023
007	<b>Document the Infrastructure <i>Digital Strategy</i> which sets out the organizational capabilities, asset information requirements and technology solutions to enable Amtrak to meet all needs</b>	Director Industrial and Systems Engineering	Complete
007b	<b>Development of an asset information standard to ensure that ongoing improvements to Maximo and other asset management technologies are configured to align to the needs of the business and that the requirements for consistent, accurate data collection are understood.</b>	Director Industrial and Systems Engineering	Complete
008	Plan and implement the upgrade of Maximo to version 7.6, to include enabling addition functionalities within Maximo as well as completing integration with geospatial and geoschematic tools currently under development.	Information Technology	Updated to Q4 FY 2025
008b	Document the business requirements for Maximo 7.6	Information Technology	Updated to Q4 FY 2022
009	<b>Complete development of Product Lifecycle Management (PLM) application to support configuration control and QA</b>	Information Technology	Canceled
009b	Review item master functionality within ERP to drive implementation of bill of materials for Engineering inventory.	Procurement	Updated to Q4 FY 2023
010	<b>Document the business requirements for ESRI ArcGIS.</b>	Director Industrial and Systems Engineering	Complete
010b	Implementation of ESRI ArcGIS and related integrations.	Information Technology	Q4 FY2022
<b>Asset Inventory</b>			
011	<b>Review and further improve the current asset registry information for all assets in line with the gaps identified in the appendices – in time for inclusion in future infrastructure asset line plans.</b>	DCE (All assets classes)	Complete
012	<b>Complete the development of the asset class condition assessment framework.</b>	DCE (All assets classes)	Complete

013	Establish plan for implementation and roll-out across all divisions.	DCE (All assets classes)	Updated to Q3 FY 2023
014	Undertake a condition assessment of key assets utilizing the updated condition assessment framework.	DCE (All assets classes)	Updated to Q1 FY 2023
015	Establish a review of condition data to establish asset deterioration rates to enable better predictive analysis	DCE (All assets classes)	Q2 FY 2023
016	Develop revised asset transition processes that include the timely capture of asset information	Director Industrial and Systems Engineering	Q4 FY 2023

### Lifecycle Management Strategies

017	Plan and undertake a maintenance strategy review of all asset classes (prioritized by criticality, utilization, and location) to ensure the most appropriate strategy is in place for each asset	Director Industrial and Systems Engineering and DCE's all asset classes	Updated to Q4 FY 2022
018	<b>Develop capital evaluation and prioritization processes and procedures that require lifecycle cost analysis, consider full benefit/ costs, and include risk and criticality assessment.</b>	<b>Director Industrial and Systems Engineering</b>	<b>Complete</b>
019	<b>Review and further develop the asset lifecycle strategies set out in the appendices. This should include further analysis of the strategy based on updated asset information and further analysis of the implementation of the strategies based on funding levels and addressing other issues (track access, resourcing etc.).</b>	<b>Director Industrial and Systems Engineering</b>	<b>Complete. Ongoing Review</b>

### Work Plans and Budget Forecasts

020	<b>Update capital planning process as part of developing Engineering Asset Management system – to include full alignment to FAST Act requirements</b>	<b>Director Industrial and Systems Engineering</b>	<b>Complete</b>
021	Further analyze and breakdown operating and capital costs to activities or groups of activities to support budget forecasting.	Finance	Updated to Q4 FY 2023
022	Long-term: Introduce Activity Based Costing across all asset classes and establish requirements for the updated EAM system to support this.	Finance	Updated to Q4 FY 2022
023	Establish lifecycle strategies and condition assessments as per other key improvement actions. Develop and introduce a whole life cost modeling capability to support capital planning and investment forecasting.	Director Industrial and Systems Engineering	Updated to Q4 FY 2022

## Improvement Program

An *Asset Management Improvement Program* has been developed that sets out a roadmap for Amtrak to achieve its target asset management capability state. The overall program and the target asset management capability is achieved through four phases, with each phase providing benefits and a foundation for the subsequent phase.

The first phase of work is focused on **standardizing work practices**. Activities include defining and documenting standard processes and practices and continuing to build the organization capability. Preparation for implementation of an enterprise geospatial database (EGS) and Maximo 7.6 asset management system (EAM) will ensure that location-based records of all assets exist, and data standards are in place. Configuration of the EGS and EAM systems will be aligned to both engineering and wider Amtrak/ industry requirements.

The second phase of work is focused on **implementation**. Activities include the implementation of Esri GIS as the EGS system to house Amtrak's asset inventory database with all associated location-based information, and implementation of Maximo 7.6 as the EAM system, with associated tools and applications to support Engineering reliability analysis, capital planning, forecasting, and asset management planning. Full roll out and adoption of the standard processes and practices developed during phase 1 are also included.

The third phase of work focuses on **applying**. With standard practices, EGS, EAM, and other support tools in place, this phase focuses on applying and embedding practices across asset classes. We will continue to refine lifecycle strategies and continue to embed asset management planning as part of service commitment review and capital investment cycles.

The fourth phase of work focuses on **performing**. With improved knowledge and information available, established and implemented decision support tools to aid analysis, we will work to continue to improve performance through targeted maintenance and renewal intervention.





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