

Infrastructure Asset Line Plan

FY26 - FY31

AMTRAK®

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Overview

Amtrak — America's Railroad — strives to deliver a high quality, safe, on–time rail passenger service that exceeds customer expectations. With 21,000 route miles in 46 states, the District of Columbia, and three Canadian provinces, Amtrak operates more than 300 trains each day — at speeds up to 160 mph — to more than 500 destinations. In addition to providing passenger service, Amtrak carries the critical responsibility of managing and improving the rail infrastructure that makes much of this service possible. On the Northeast Corridor (NEC), Amtrak owns 363 route–miles of the 457–mile main line and is responsible for maintenance between Boston, MA, and the Massachusetts–Rhode Island border. Nationally, Amtrak owns and maintains rail line segments between Philadelphia and Harrisburg, PA; Porter, IN, and Kalamazoo, MI; and New Haven, CT, and Springfield, MA. Additionally, the company operates and maintains (but does not own) segments between Kalamazoo and Dearborn, MI, and between Poughkeepsie and Hoffmans, N.Y.

Infrastructure Asset Line Plan

The Infrastructure Asset Line Plan is a comprehensive roadmap for managing Amtrak's railroad infrastructure assets. This is the Infrastructure Asset Line Plan for 2026 (IALP2026), spanning fiscal years 2026–2031. It fulfills federal requirements under 49 U.S.C. §24320 and §24904, serving as both the Asset Management Plan for the Northeast Corridor (NEC) and the national Infrastructure Asset Line Plan. More than a compliance document, IALP2026 is a strategic framework that defines the current state of Amtrak's infrastructure, outlines the resources and processes needed to maintain and improve performance, and aligns infrastructure management goals with Amtrak's broader mission to connect more people and places.

State of Good Repair

Central to this plan is the pursuit of a State of Good Repair (SOGR), a condition in which infrastructure assets are safe, reliable, and perform as designed, fully supporting delivery of uninterrupted service to Amtrak's customers. Achievement of SOGR is the driving force behind prioritization of asset lifecycle investments, including planned and preventive maintenance, and capital renewal. While some assets may operate safely beyond their nominal service life, doing so increases costs and risks. Implementing the IALP2026 asset management strategies to reach SOGR for infrastructure will extend the life of Amtrak's infrastructure, reduce disruptions, control long–term costs, and deliver consistent, high–quality passenger rail service.

IALP2026 Supports Amtrak's Long–Term Growth & Service Commitments



Provides a framework to achieve and sustain SOGR



Prioritizes investments that improve safety, reliability, sustainability, and resilience



Sets clear goals and objectives for assets by technical discipline



Establishes consistent processes and data–driven decision–making across the organization

Amtrak has used previous funding rounds to address long–standing infrastructure challenges and recent progress shows the value of this investment. Standardized asset condition assessments have been developed, targeted renewal programs implemented, and upgrades across key asset categories accelerated. Growth of the SOGR backlog has slowed as the company improves risk forecasting to better prioritize capital investments. Notably, although the SOGR backlog grew by $13.6 billion between 2020 and 2022, expanded funding received through the Infrastructure Investment and Jobs Act (IIJA) slowed SOGR backlog growth to $380 million from 2023 to 2024.

However, the scale and complexity of Amtrak’s infrastructure demands sustained and expanded financial support. Many systems remain outdated, and critical infrastructure assets continue to operate beyond their intended service life. The pressures of increasing ridership, weather extremes, and new intermodal connections further underscore the urgency of continued investment. IALP2026 outlines the next phase of strategic actions required to build on recent progress and move closer to achieving a comprehensive SOGR for Amtrak’s infrastructure. Without additional funding, momentum could stall, jeopardizing the gains already made and the broader goals of network modernization.

Continued support is not just beneficial, it is essential to ensure that Amtrak can deliver safe, efficient, and future–ready rail service for generations to come.

Our Portfolio

Amtrak's Nationwide Infrastructure Portfolio

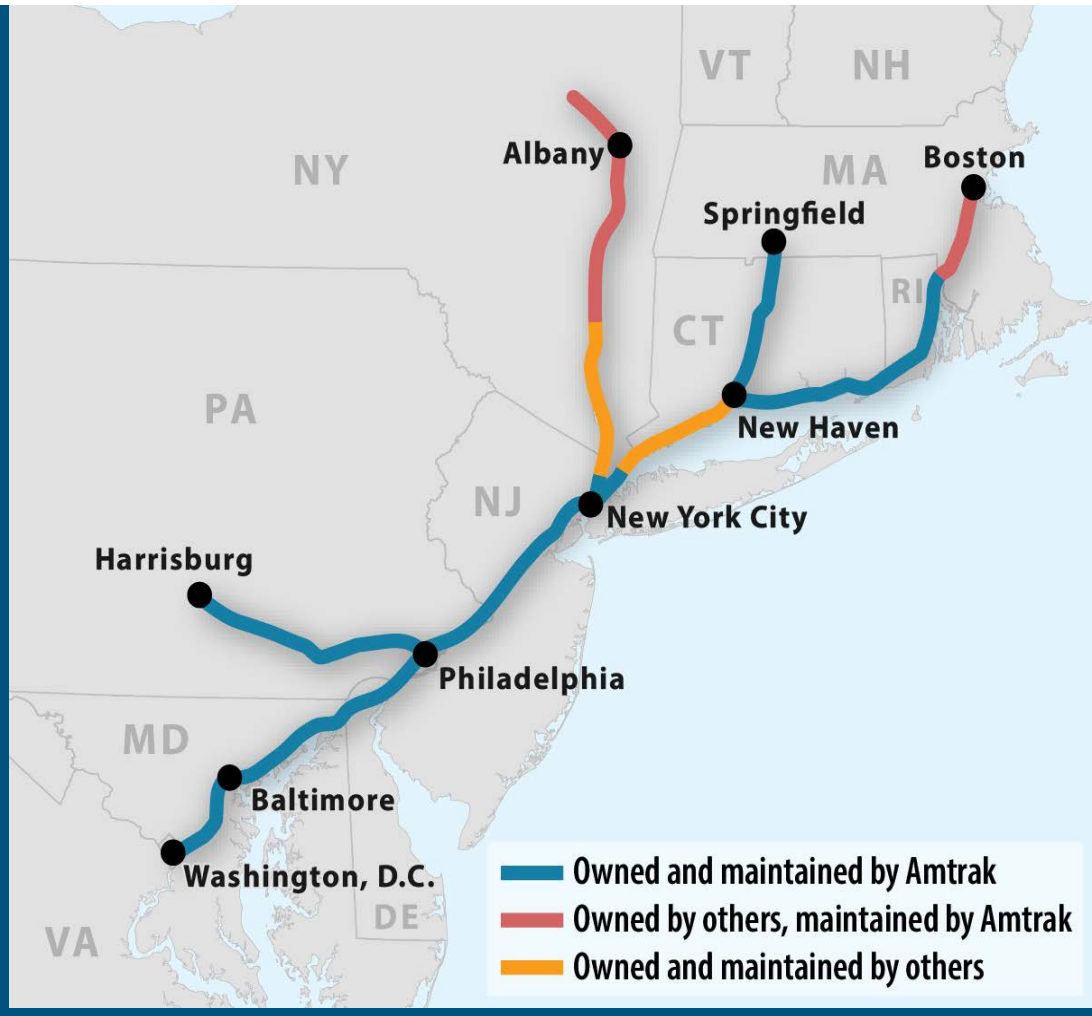
Amtrak owns and/or maintains a $103.73 billion infrastructure portfolio spanning the country and serving over 32 million passengers annually. While the Northeast Corridor is the most asset intensive part of the infrastructure network — accounting for more than 75% of Amtrak–managed track — the inventory also includes 2,045 track miles, 1,310 undergrade bridges, 1,455 track miles of catenary system, and 269 signaling interlockings nationwide. Within the NEC, 1,725 track miles form the backbone of the nation's highest–speed rail line, while outside the corridor, much of the infrastructure is concentrated along the Michigan Line in Illinois and Michigan.

NEC Main Line

The **NEC main line** consists of 1,205 track miles of infrastructure, excluding yards and sidings. It is primarily built to operate as an FRA Class 7 railroad with passenger speeds up to 125 mph, with limited segments classified as Class 8 for speeds up to 160 mph.

NEC Branch

In addition to the NEC main line, Amtrak owns several NEC branch lines that are considered part of the corridor's infrastructure footprint. Designed primarily to operate as an FRA Class 6 railroad, these lines support passenger speeds up to 110 mph:



- **Keystone Corridor from Philadelphia, PA to Harrisburg, PA:** 258 track miles of infrastructure
- **Springfield Line from New Haven, CT to Springfield, MA:** 115 track miles, including 19.5 miles of main line track added in 2018 as part of the Springfield double–track program
- **West Side Connection from New York Penn Station to Spuyten Duyvil, NY:** 19 track miles
- **Post Road Branch from Post Road Junction to Rensselaer, NY:** 13 track miles of infrastructure
- Amtrak also maintains 70 track miles of sidings along the NEC branch lines.

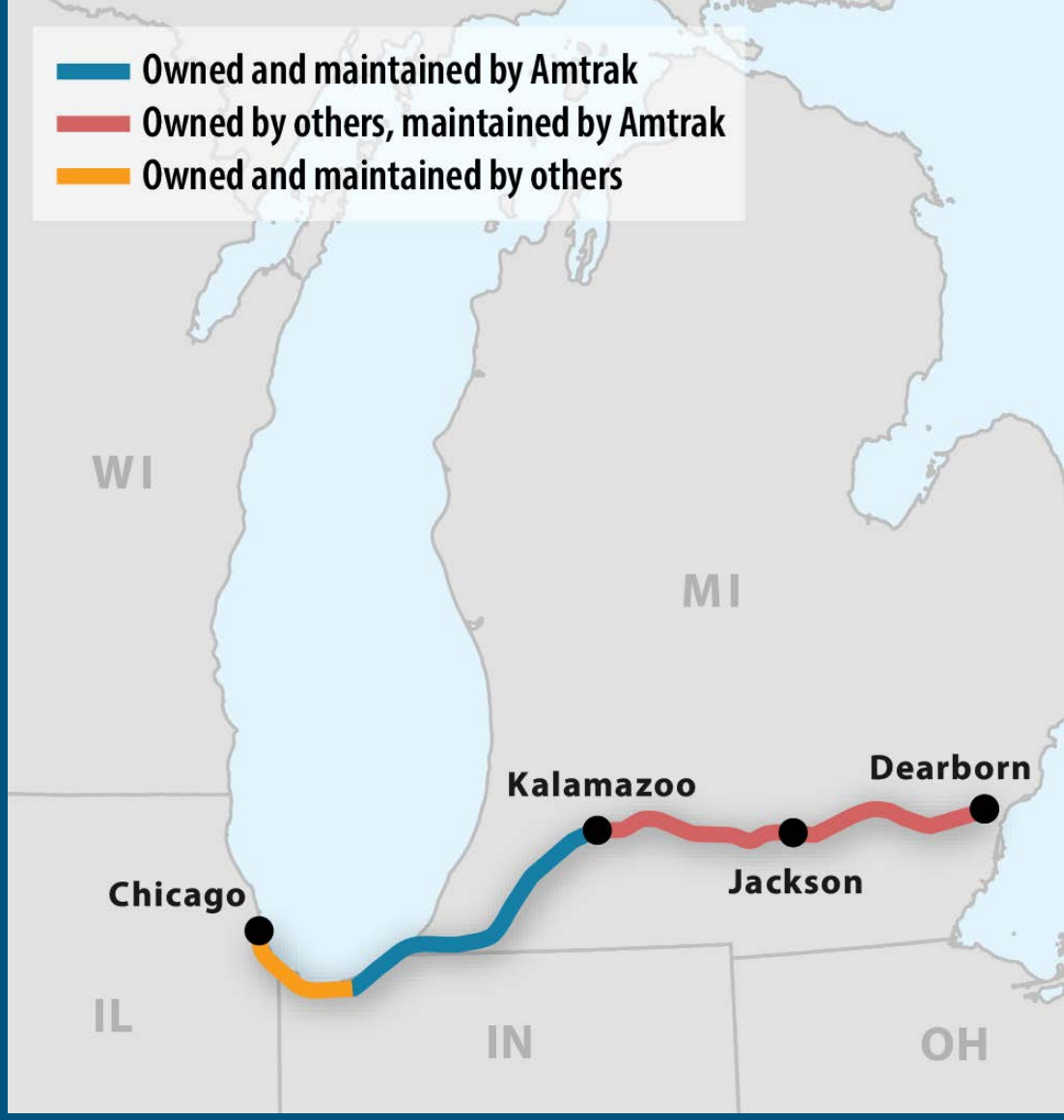
State of New York

In the State of New York, Amtrak serves as the responsible infrastructure manager for the long–term lease infrastructure on the 116–track–mile Empire Corridor on the Hudson Line between Poughkeepsie, NY, and Hoffmans, NY, along with 14 track miles of sidings. This lease agreement with CSX began in 2012. Amtrak further owns two short segments of the Hudson Line in New York City and the Schenectady area. The State of New York contributes to the capital and operating expenses of portions of this infrastructure.

National Network

Beyond the NEC and New York, Amtrak manages track infrastructure assets nationwide — the **National Network** — and is responsible for the following:

- **Kalamazoo, MI to Dearborn, MI:** 181 track miles of up to 110 mph track owned and financially supported by the state of Michigan, along with 49 track miles of sidings
- **Porter, IN to Kalamazoo, MI:** 93 track miles of up to 110 mph track, along with 17 track miles of sidings
- **Major yards and sidings:** 49 track miles of key terminals, including Chicago, IL; Los Angeles, CA; New Orleans, LA; New York City, NY; Oakland, CA; Orlando, FL; Portland, OR; Saint Paul, MN; and Seattle, WA
- **Florida:** 2 main line track miles owned and 11 track miles of yard tracks in Hialeah, near Miami, leased from the State of Florida





Our Team

Amtrak's infrastructure programs are led by Infrastructure Maintenance & Construction Services (IMCS) and Capital Delivery (CAPD) Engineering Services, and are supported by partners across the company. IMCS and CAPD form the backbone of Amtrak's infrastructure management, providing the technical direction, standards, and delivery capacity needed to sustain safe, reliable operations and support long–term growth. Their coordination ensures that investment priorities are aligned with the maintenance and renewal programs that advance Amtrak's long–term goals.

Infrastructure Maintenance & Construction Services (IMCS)

IMCS manages both the field execution of infrastructure work and the support services that enable effective asset management. Its functions cover daily maintenance, large–scale renewal, and the tools and oversight required to sustain performance.

Production & Construction Services (Production)

The **Production & Construction Services (Production)** group is responsible for major construction work on the railroad infrastructure. Production's dedicated gangs focus on large–scale asset renewals such as undercutting track, replacing ties and rail, and upgrading turnouts. The primary production season runs from March through November, when the majority of State of Good Repair (SOGR) program work is completed. During the off–season, the group focuses on next–season planning, equipment overhauls, non–main line refurbishment work, and smaller projects.

The **Roadway Equipment (RWE)** team is part of the Production & Construction Services team. They support the efforts of the group by managing and maintaining Amtrak's fleet of roadway machines, trucks, and specialized maintenance equipment, ensuring the availability and reliability of the machinery required to deliver both large–scale construction programs and ongoing infrastructure maintenance needs. Equipment is included as one of the five technical engineering disciplines.

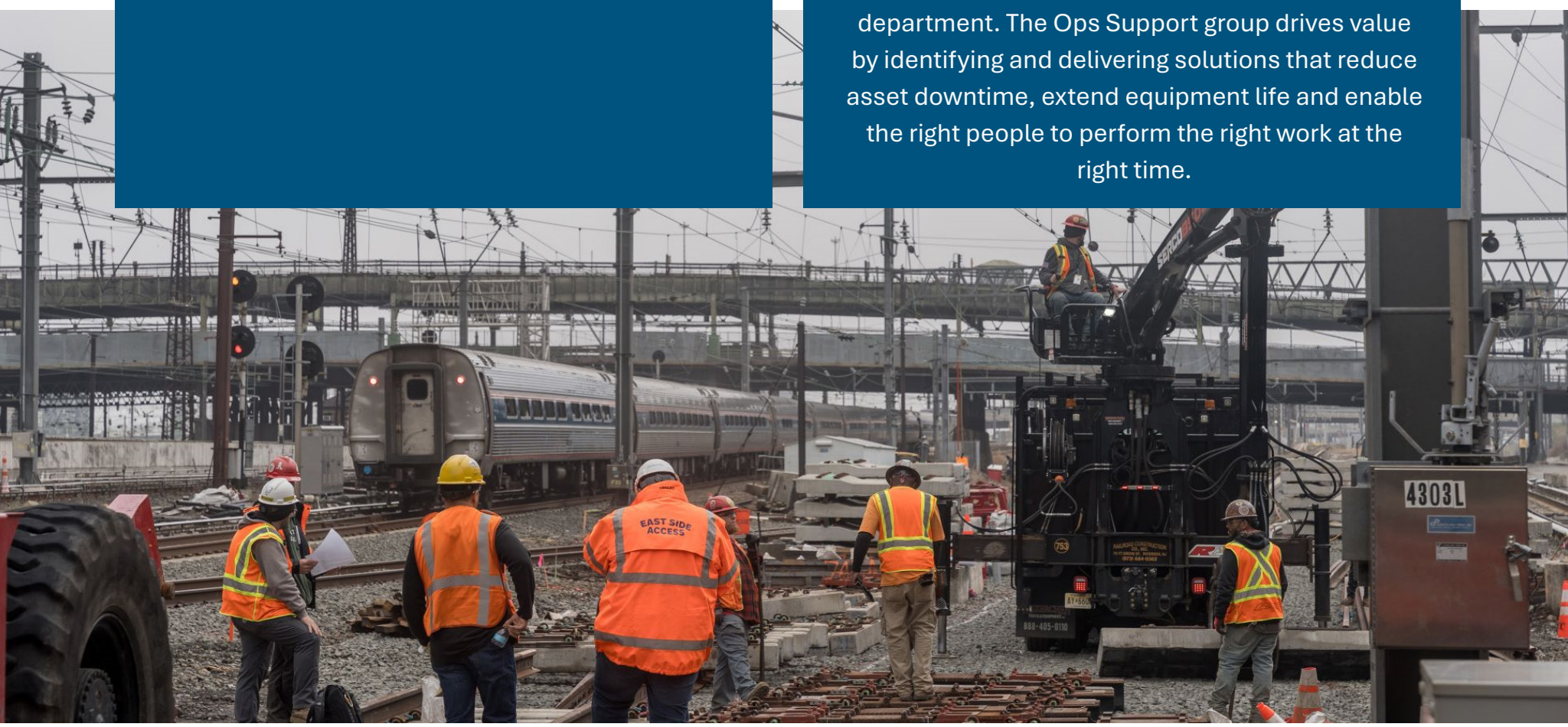
Roadway Equipment (RWE)

Maintenance of Way
(Division Maintenance)

The **Maintenance of Way (Division Maintenance)** group oversees day–to–day inspections, testing, and corrective maintenance across Amtrak's infrastructure. These teams ensure asset reliability and manage resources effectively to support continued safe operations. Led by Deputy Chief Engineers of Division Maintenance and their Deputy Division Engineers (DDEs), this highly skilled workforce performs maintenance across Track, Structures, Electric Traction, and Communications & Signals. Division Maintenance works in close coordination with Capital Delivery Engineering Services to ensure that field activities align with technical standards and capital priorities.

IMCS Operations Support
(Ops Support)

The **IMCS Operations Support (Ops Support)** group provides the systems, data, and processes that strengthen Amtrak's infrastructure asset management. The **Asset Management Strategy** team develops and drives the infrastructure asset management strategy, aligning tactical direction for the department, Engineering Disciplines, and Divisions with Amtrak's corporate objectives and the goals of the Vice President of IMCS. The **Infrastructure Geographic Information System (IGIS)**, **Asset Management System (Maximo)**, **Data Analytics**, and **Industrial Engineering (IE)** teams promote continuous improvement by developing and implementing tools and technology that support asset management processes and data management to improve infrastructure decision–making. The **Operations Effectiveness** team delivers organizational change management and training to support strategic initiatives across the department. The Ops Support group drives value by identifying and delivering solutions that reduce asset downtime, extend equipment life and enable the right people to perform the right work at the right time.

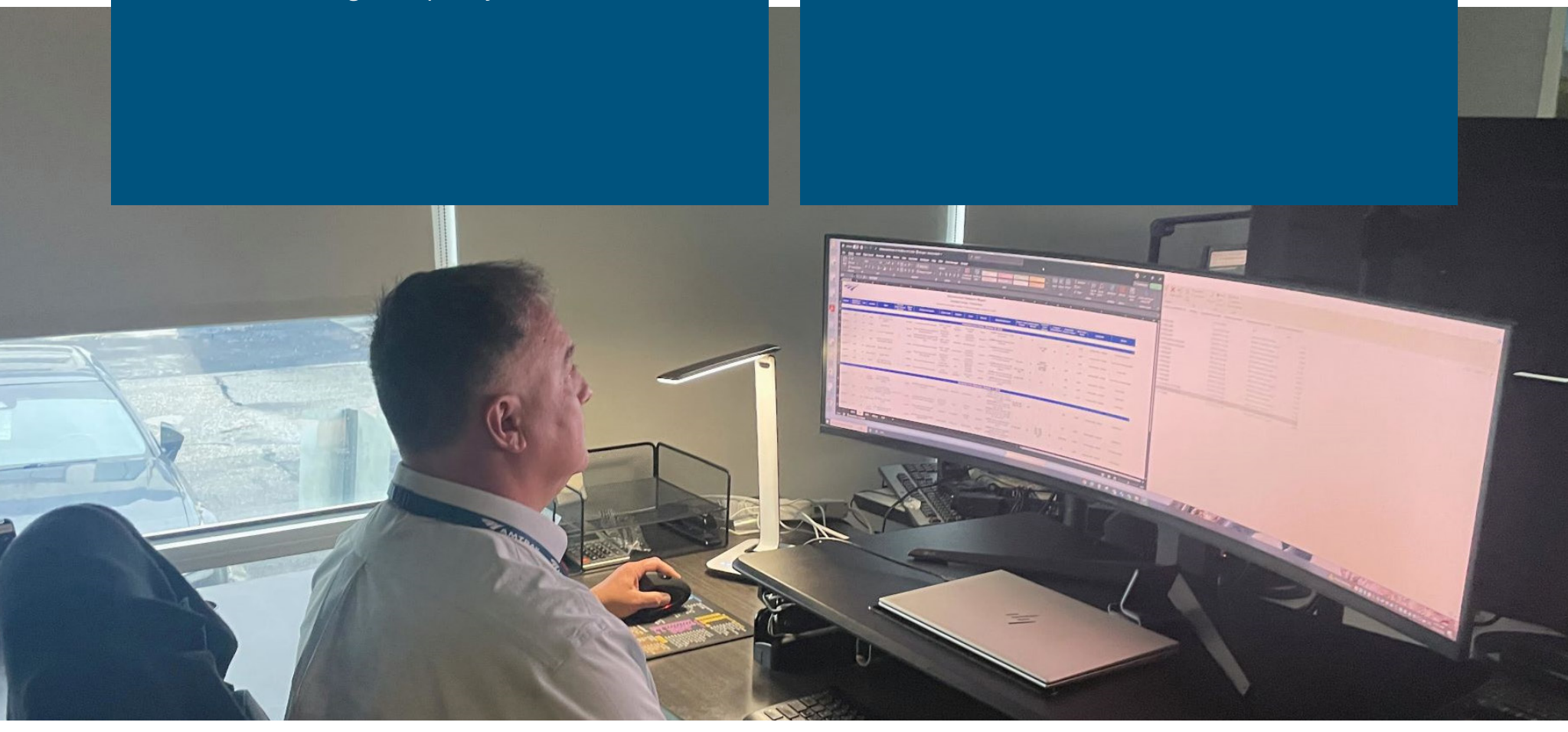


Quality Management
(QM)

The **Quality Management (QM)** group implements a comprehensive Quality Management System for IMCS. They establish processes to elevate safety, productivity, financial outcomes, and customer service standards. QM identifies solutions for process optimization, resource standardization, risk reduction, and cost–savings, to support the department's strategic direction. As asset management policies evolve, the team ensures alignment of work activities and supports implementation of asset maintenance standards. Among the QM team's key strategic initiatives are establishing a robust quality assurance system to validate adherence to processes and procedures, introducing dedicated QA/QC resources, and improving documentation and approval processes to strengthen quality control.

Maintenance of Way Operations Desk
(MOW Ops Desk)

The **Maintenance of Way Operations Desk (MOW Ops Desk)** group oversees recording of all infrastructure asset failures, entering work reporting for Production gangs and distributing a Daily Summary Report to IMCS leadership that details employee illnesses and injuries, estimated FRA reportable rates, significant operating rule violations, temporary speed restrictions, customer on–time performance, and infrastructure failures with associated delays. In the future, the MOW Ops Desk will be included in the newly formed Unified Operations Center (UOC), integrating them with the Consolidated National Operations Center (CNOC), Amtrak Police Department (APD), Stations, Mechanical, and field personnel to streamline processes that improve the safety and dependability of Amtrak's train service.



Capital Delivery (CAPD) Engineering Services

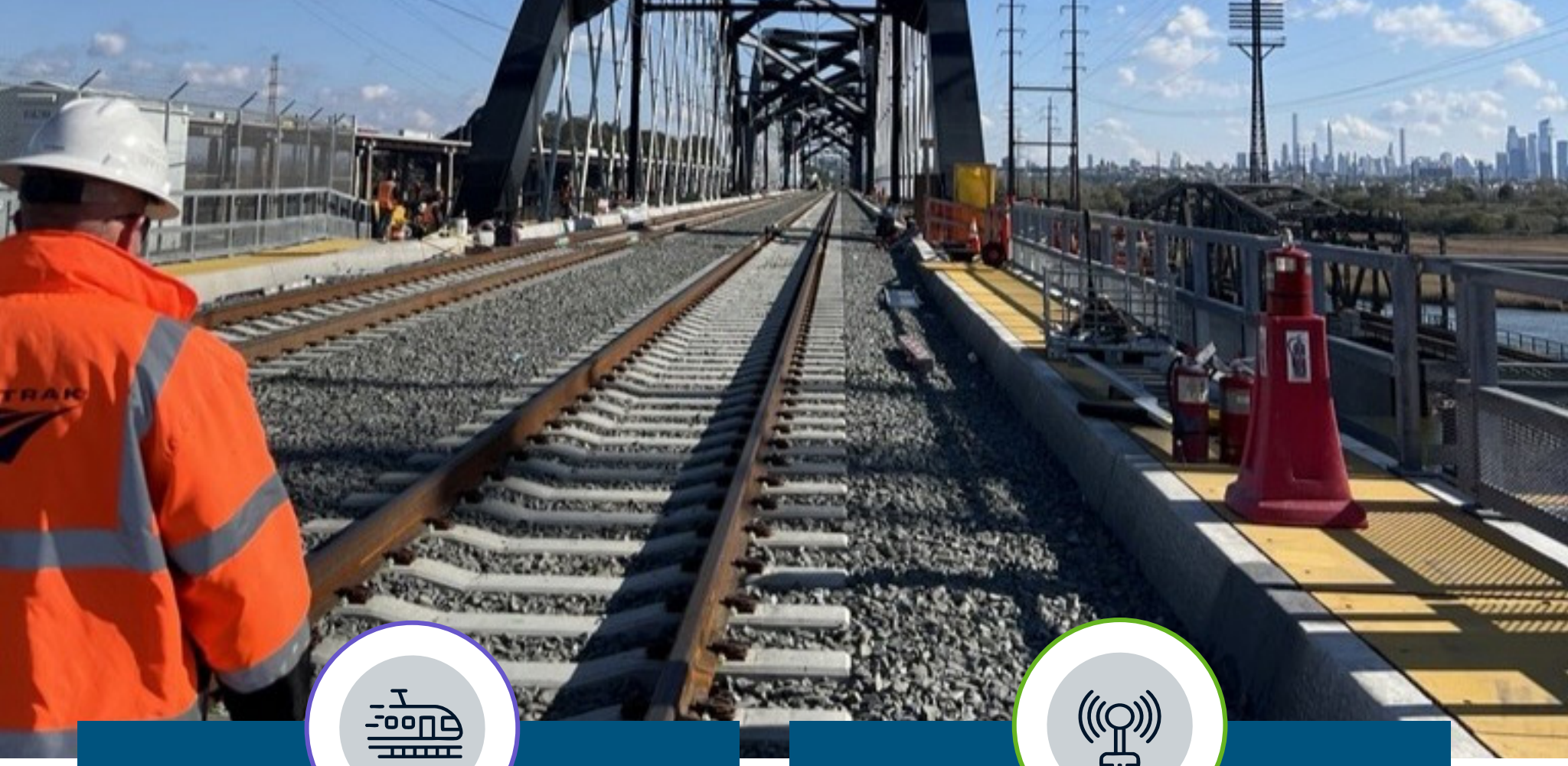
CAPD Engineering Services provides the technical leadership and strategic direction that guide Amtrak's capital investment in infrastructure. The department develops the capital work bank, establishes engineering standards and processes, and provides technical design support to ensure that renewal and replacement programs align with safety, reliability, and state of good repair priorities. CAPD works closely with IMCS to ensure that technical standards are consistently applied in field programs and maintenance practices. This work is carried out through four engineering System Offices - Track, Structures, Electric Traction, and Communications & Signals - where engineering teams provide standards, technical guidance, and program oversight in support of Production, Division Maintenance, and Capital Projects.

Track

The **System Track Office** serves as the technical authority for track engineering across Amtrak's network. The **Compliance** team mentors Track Foremen and consults with the FRA to ensure track work meets mandated standards and supports derailment investigations when required. **Track Design & Standards** provides engineering design support for major track renewal programs, including interlocking renewals, undercutting, and the Track Laying System (TLS). The team also is responsible for the design and procurement packages for Special Trackwork (turnouts, double slip switches, and miter rail), maintains the Track Design Specification, Standard Plans, and Engineering Practices, and performs track and turnout condition assessments. **Civil Design & Surveying** develops drainage and geotechnical design packages and conducts existing condition, stakeout, and as-built surveys throughout project delivery, along with ballast and drainage condition assessments. **Clearances, Testing & Analytics** enforces clearance requirements, conducts on-track and wayside testing including FRA-mandated geometry measurements, and oversees the rail grinding program.

Structures

The **System Structures Office** provides engineering oversight and technical authority for structural assets across the network, including tunnels, bridges, stations, and facilities. The office ensures compliance with Bridge Safety Standards under 49 CFR 237, coordinates third-party and tenant projects, supports pipe and wire reviews, and manages legal agreements and code interpretation or exception processing to ensure regulatory alignment. The team supports Capital Delivery by assisting with scope development, participating in procurement reviews through the Technical Evaluation Committee (TEC), reviewing design submittals and changes, and maintaining involvement through construction, commissioning, and project completion to ensure safe and compliant infrastructure performance.



Electric Traction

The **Electric Traction (ET) System Office** serves as the technical authority for the electrification system that powers train operations, ensuring safe, reliable, and compliant performance. The office supports traction power operations and outage coordination to minimize service disruptions. ET provides oversight for catenary and transmission infrastructure upgrades, substation design, and frequency converter projects. The team also delivers engineering design support, QA and commissioning services, and emergency response expertise when needed. In addition, ET conducts safety audits and annual qualifications to maintain compliance with AMT-2 rules and advances modernization initiatives that strengthen system reliability, safety, and capacity.

Communications & Signals

The **System Communications & Signals (C&S) Office** oversees all signal, communications, and wayside Positive Train Control (PTC) assets. The **Signal Standards, Maintenance & Compliance** team sets and enforces standards and maintenance policies for signal assets, provides production support, and conducts condition assessments for SOGR planning. **Signal Design** develops and reviews design documents for SOGR and improvement projects from concept to commissioning and manages configuration of wayside hardware and microprocessor software. **PTC Engineering** ensures reliable operation of PTC systems (ACSES, I-ETMS, ITCS) by managing infrastructure, design changes, and system improvements, while leading engagement with NEC interoperability stakeholders, FRA, vendors, and internal teams. The **Communication Systems** team manages Amtrak's communication infrastructure—including transport systems, voice radio, and OT networks—while setting standards, policies, and performing asset condition assessments and SOGR planning.

Partners Across Amtrak

Amtrak's infrastructure programs also rely on support from partners across the company. **Workforce Planning** ensures that skilled staff are available to deliver maintenance and capital projects. **Finance** develops cost models and aligns funding strategies with capital and operating budgets. **Government Affairs and Planning** works with federal and state partners to secure funding and advance delivery commitments. **Safety, Operations, and other enterprise functions** provide oversight and systems that keep programs coordinated, efficient, and compliant.

These partnerships integrate resources, oversight, and expertise, ensuring that Amtrak's infrastructure strategies and investments are delivered effectively and sustainably.



Our Asset Inventory

Amtrak's infrastructure portfolio is defined by the following **five technical engineering disciplines**. Each discipline has specific asset types that fall within its scope. This section defines these assets and provides standardized descriptions to establish consistent terminology across IALP2026.



Track

Rail, ballast, turnouts, and ties across main lines, yards, and sidings

Structures

Movable bridge spans, undergrade bridges, tunnels, culverts, and maintenance of way and off–yard facilities

Electric Traction

Power systems on the NEC's South and North Ends

Communications & Signals

Train control systems, radios, and network infrastructure

Equipment

Maintenance machinery, trucks, and freight rolling stock

The following asset definitions are limited to the scope of each engineering discipline and are intended to establish consistent terminology across IALP2026. These definitions are technical in nature and may not represent the total scope of the asset when viewed across Amtrak's broader portfolio, programs, or projects.



Track Asset Definitions

Bridge Timbers
The transverse part of the track structure that cushions, distributes, and transmits forces from the rails to the structure of an open deck bridge. Rails are fastened to the bridge timbers to provide correct gauge. Typically larger than conventional wood ties and usually made of hardwood.

Block Ties
The transverse part of the track structure that cushions, distributes, and transmits forces from the rails to a concrete slab. Rails are fastened to the ties to provide correct gauge. Typically partially embedded in concrete and often used in stations.

Concrete Ties
The transverse part of the track structure that cushions, distributes, and transmits forces from the rails to the ballast. Rails are fastened to the ties to provide correct gauge. Made of steel–reinforced concrete.

Wood Ties
The transverse part of the track structure that cushions, distributes, and transmits forces from the rails to the ballast. Rails are fastened to the ties to provide correct gauge. Made of wood.

Turnouts
An arrangement of a switch and a frog with closure rails that allows rolling stock to be diverted from one track to another.

Rail
A rolled steel shape designed to be laid end to end in two parallel lines on crossties or other suitable supports to form a track for railroad rolling stock. Rail transmits forces from rolling stock to crossties and has three parts: the head, which interacts with rolling stock wheels; the web, which is the thinner, middle part; and the base, which is fastened to the crosstie.

Ballast
Crushed stone or gravel placed beneath and around ties to provide stability, drainage, and support for the track structure.

Undercutting
Mechanized process whereby existing fouled ballast is removed from below the ties, is sifted to separate fines from reusable ballast, which is replenished with additional new ballast and returned to the track structure and compacted. Undercutting restores track structure and improves drainage.

Surfacing
Mechanized ballast tamping process whereby track surface (vertical evenness or smoothness) and alignment is maintained.

Miter Rail
A rail assembly on a movable bridge that crosses the gap between the fixed and movable bridge spans. In the open position, the miter rail allows the bridge to move, and when closed, the miter rail makes the rail continuous to allow train traffic.

Structures Asset Definitions

Undergrade Bridges
Any single opening under the track, measuring five feet or more along the centerline of track; also, any open deck, undergrade structure regardless of length. Any other structure with less than a five foot span is a Culvert or Pipe.

Movable Bridge Spans
Undergrade bridges with movable spans to allow increased clearance for boat passage.

Signal Bridges
Any overhead structure specifically designed for mounting of railroad signal lights and which is supported by structural elements on one or both sides of the tracks(s) (except bracket masts).

Tunnels
Passageways built to allow trains to travel underground or through terrain. For the Structures discipline, scope is limited to components in which they inspect and maintain.

Culverts
For purposes of inspection, any drainage structure supporting the railroad, not possessing an open deck, and having a clear opening of less than five feet and greater than a 24" diameter pipe. All stone boxes, regardless of opening will be considered culverts.

Maintenance of Way Facilities*
Facilities where trains and on–track equipment are serviced, repaired, and stored. May include material control, crew welfare, Amtrak Police Department (APD), water treatment, 60Hz substation and other associated buildings. Current asset depth target is to the building level with additional refinement (drop tables, sand towers, HVAC units, compressors, cranes, etc.) to follow.

Off-Yard Facilities*
Support equipment/sub–assets at facilities outside of rail yards that house utilities or functions essential to railroad operations. These facilities are typically not Structures assets (e.g., CIH hut generators, ET substation roofs, MOW siding modular buildings) but may be supported for by Structures for design and SOGR.

** Note: For this IALP, corporate facilities are not included within these categories. Despite the "Facilities" title, the scope is limited to facilities directly supporting railroad operations (e.g., maintenance, crew, and operational facilities).*

Electric Traction Asset Definitions

Caternary Structures	Pole or support structures that carry overhead catenary wires for electric train power. These can consist of single cantilevers with foundation or multiple support structures.
Circuit Breakers	Protective devices that interrupt power flow during faults, preventing equipment damage and ensuring safety.
Transformers	Electrical equipment that converts voltage levels for train power distribution.
Frequency Convertors	Equipment that converts commercial power frequency to Amtrak's traction power frequency.
Signal Machines	Equipment that transmits power for the operation of the signal system.
Switches	Traction power switches used in electrified systems to route or isolate sections of the power supply.
Main Line Wiring	Overhead wires that supply power to electric trains along the main line.
Third Rail	Rail–level power supply used as an alternative to overhead catenary for electric train operation.

Communications & Signals Asset Definitions

Automatic Block Signal (ABS) Track Circuits	Electrical systems that detect track occupancy or condition within an ABS block (between interlockings) by monitoring current in the rails. These circuits activate block signals to indicate where the block ahead is clear or occupied, ensuring safe train operations.
Interlocking Control Systems	Collection of subsystems/assets typically within and including an instrument house(s) controlling operation and monitoring of interlocking appliances and functions.
Switch Heaters	C&S control systems used to operate and monitor heating devices on C&S switches that work to melt ice/snow.
Grade Crossing Mechanism	Control mechanism that lowers and raises highway crossing gates and lights blocking access to railroad tracks during train movements.

Insulated Joints	Rail joints that electrically separate track circuits for signaling purposes.
Defect Detectors	Wayside equipment used to detect defects or anomalies such as equipment dragging or hot bearings on a train consist or potential obstructions to rail traffic such as fallen rocks or boulders.
Interlockings Signals	A wayside governing signal at the entrance to an interlocking or controlled point. It authorizes or restricts train movements into junctions, crossovers, or other controlled areas, ensuring that routes are properly aligned and protected against conflicting movements.
Automatic Block Signals	A wayside signal activated by a track circuit or in conjunction with interlocking/ controlled point circuits. The block signal automatically indicates track condition and block occupancy — whether the block ahead is clear or occupied by a train, on–track equipment, or a shunt device — and provides train crews with the authority to proceed or stop.
Switch Machines	Power–operated mechanisms — electric, hydraulic, or air–driven — that move and lock switch points, allowing trains and equipment to change tracks.
Interlockings	The portion of track between two or more home signals. Interlockings include the switches, signals, and control systems needed to ensure train routes are properly aligned and protected against conflicting movements.
Radios	Wireless communication devices used by train crews, dispatchers, and maintenance personnel for operational coordination and safety.
Network Infrastructure	The digital backbone supporting communications, signaling, and data exchange. Includes fiber optics, wireless networks, servers, and control systems.

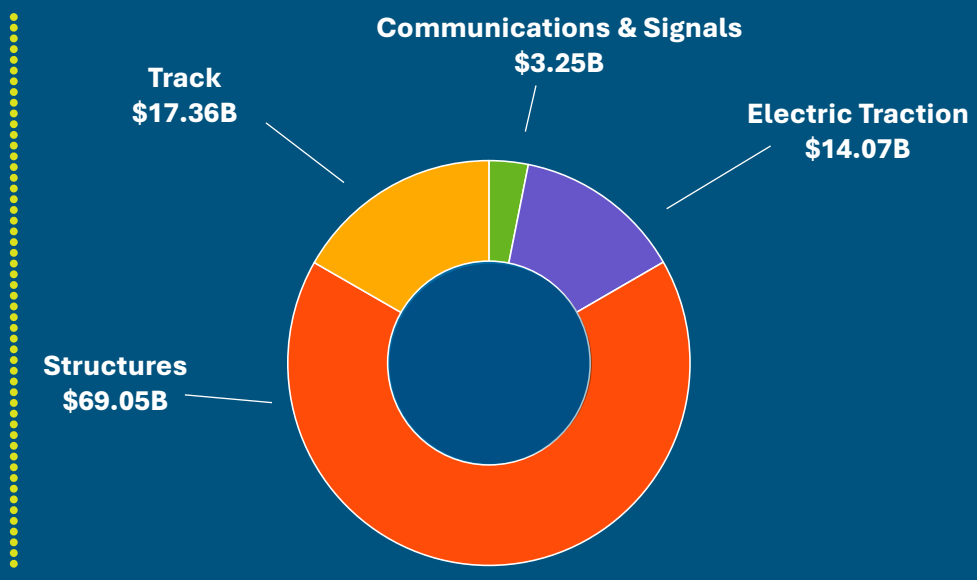


Equipment Asset Definitions

Maintenance Machinery	Specialized vehicles and tools used to inspect, repair, and maintain track, signals, and other infrastructure. Examples include tampers, rail grinders, and track geometry cars.
Trucks	Road vehicles used for transporting personnel, tools, and materials to and from work sites. May include hi–rail trucks capable of operating on tracks.
Freight Rolling Stock	Rail vehicles designed for transporting goods. Includes boxcars, flatcars, tank cars, hopper cars, and intermodal containers.

Value of Infrastructure Asset Portfolio

$103.73
BILLION



Below is an overview of asset types and counts by discipline and location. More detailed asset inventories, current asset conditions, lifecycle strategies for achieving and maintaining SOGR, and associated funding requirements for each discipline are included in the appendices.

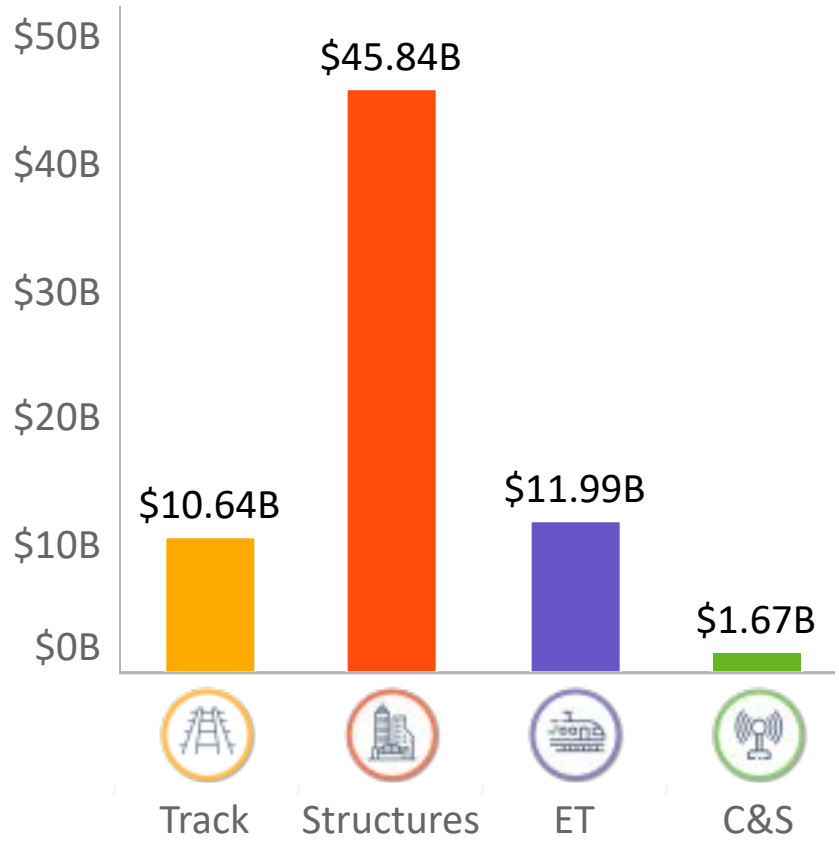
NEC Main Line

Track
- 2,410 Rail Miles of Main Line Rail
- 408 Rail Miles of Sidings & Yard Rail
- 1,178 Track Miles of Ballast
- 2,103 Turnouts
- 2,834,262 Main Line Concrete Ties
- 74,134 Siding Concrete Ties
- 466,919 Main Line Wood Ties
- 540,119 Sidings & Yard Wood Ties

Communications & Signals
- 163 Interlocking Control Systems
- 2,852 Switch Machines
- 1,567 Interlocking Signals
- 643 Automatic Block Signals
- 12 Grade Crossings
- 276 Switch Heaters
- 236 Defect Detectors
- 2,089 ABS Track Circuits

Structures
- 10 Movable Bridge Spans
- 815 Undergrade Bridges
- 14 Tunnels
- 454 Culverts
- 460 Signal Bridges
- 25 Maintenance Facilities
- 2 Off–Yard Facilities

Electric Traction
- 1,205 Track Miles of Main Line Wiring
- 11,284 Catenary Structures
- 73 Substations
- 39 Track Miles of Third Rail
- 27 Signal Machines
- 16 Frequency Converters
- 52 Frequency Converter Transformers
- 121 Other Transformers
- 120 Frequency Converter Switches
- 3,727 Other Switches
- 101 Frequency Converter Circuit Breakers
- 990 Other Circuit Breakers



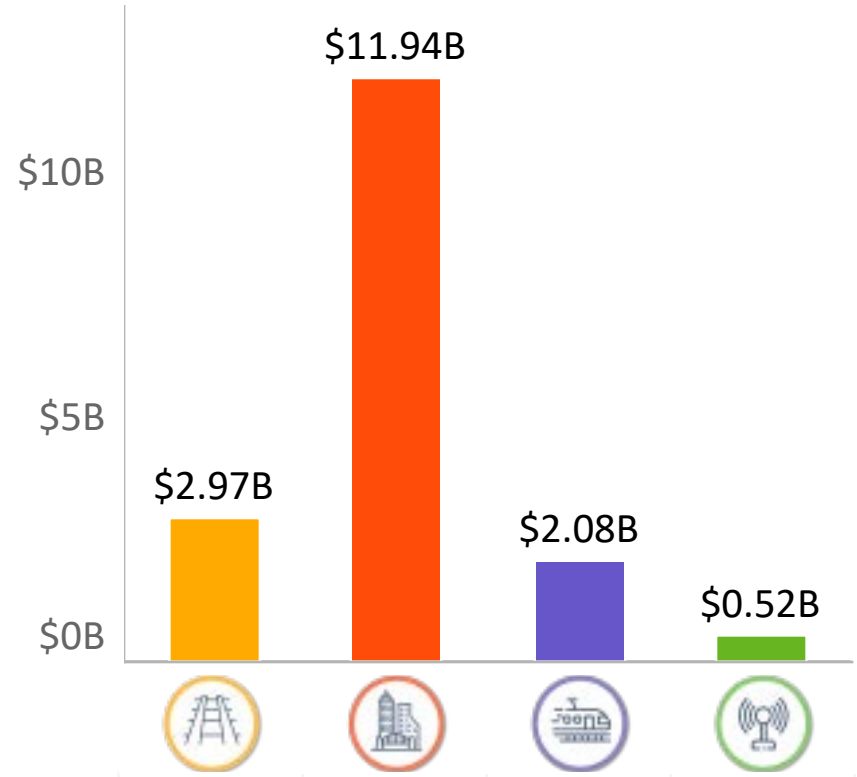
NEC Branch Line

Track
- 807 Rail Miles of Main Line Rail
- 140 Rail Miles of Sidings & Yard Rail
- 366 Track Miles of Ballast
- 486 Turnouts
- 609,704 Main Line Concrete Ties
- 10,801 Siding Concrete Ties
- 554,852 Main Line Wood Ties
- 195,862 Sidings & Yard Wood Ties

Structures
- 1 Movable Bridge Span
- 273 Undergrade Bridges
- 3 Tunnels
- 356 Culverts
- 86 Signal Bridges
- 13 Maintenance Facilities
- 1 Off–Yard Facility

Electric Traction
- 250 Track Miles of Main Line Wiring
- 2,152 Catenary Structures
- 20 Substations
- 1 Track Mile of Third Rail
- 5 Signal Machines
- 3 Frequency Converters
- 7 Frequency Converter Transformers
- 13 Other Transformers
- 214 Frequency Converter Switches
- 543 Other Switches
- 15 Frequency Converter Circuit Breakers
- 148 Other Circuit Breakers

Communications & Signals
- 48 Interlocking Control Systems
- 493 Switch Machines
- 304 Interlocking Signals
- 145 Automatic Block Signals
- 38 Grade Crossings
- 86 Switch Heaters
- 42 Defect Detectors
- 1,215 ABS Track Circuits

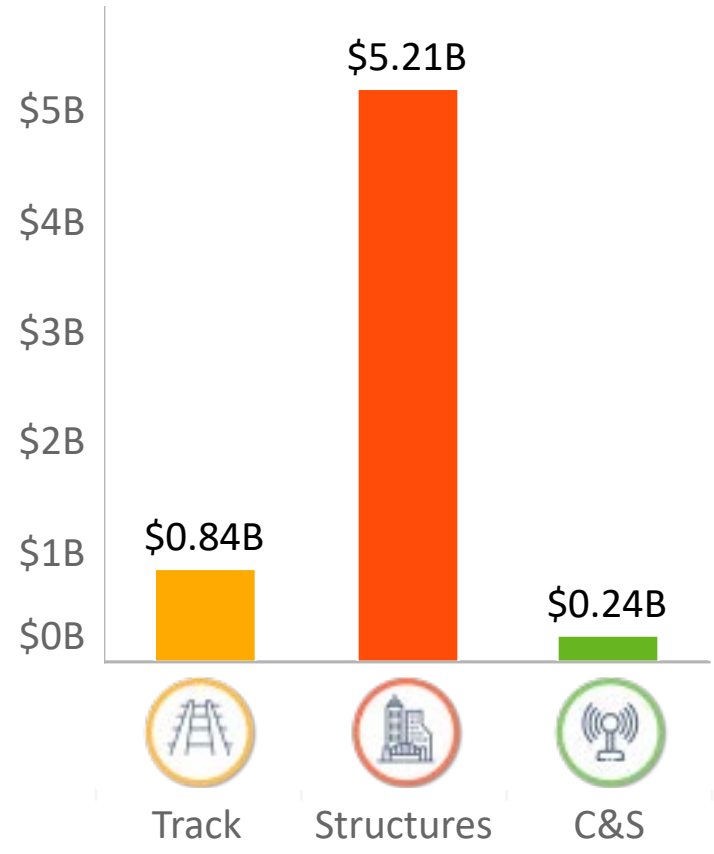


NEC Branch Line – Funded by State of New York; Leased from CSX; Maintained & Operated by Amtrak

Track
- 233 Rail Miles of Main Line Rail
- 29 Rail Miles of Sidings & Yard Rail
- 108 Track Miles of Ballast
- 132 Turnouts
- 31,467 Main Line Concrete Ties
- 337,156 Main Line Wood Ties
- 234,083 Sidings & Yard Wood Ties

Structures
- 1 Movable Bridge Span
- 114 Undergrade Bridges
- 1 Tunnel
- 131 Culverts
- 13 Signal Bridges

Communications & Signals
- 21 Interlocking Control Systems
- 103 Switch Machines
- 90 Interlocking Signals
- 102 Automatic Block Signals
- 14 Grade Crossings
- 36 Switch Heaters
- 27 Defect Detectors
- 869 ABS Track Circuits

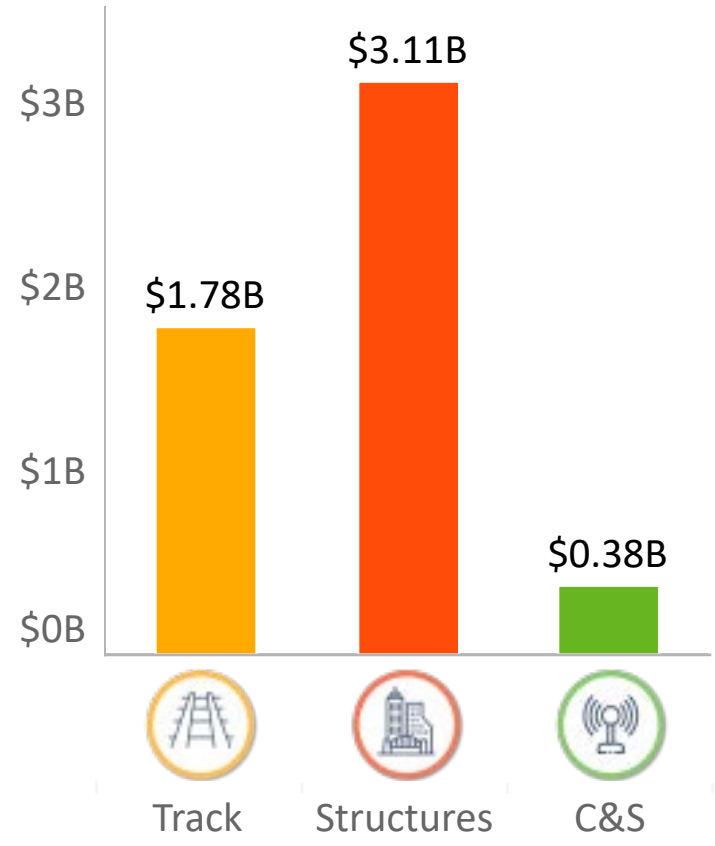


National Network

Track
- 279 Rail Miles of Main Line Rail
- 189 Rail Miles of Sidings & Yard Rail
- 98 Track Miles of Ballast
- 577 Turnouts
- 13,137 Main Line Concrete Ties
- 7,166 Siding Concrete Ties
- 393,036 Main Line Wood Ties
- 192,298 Sidings & Yard Wood Ties

Structures
- 2 Movable Bridge Spans
- 44 Undergrade Bridges
- 71 Culverts
- 4 Signal Bridges
- 4 Maintenance Facilities

Communications & Signals
- 18 Interlocking Control Systems
- 471 Switch Machines
- 225 Interlocking Signals
- 57 Automatic Block Signals
- 82 Grade Crossings
- 58 Switch Heaters
- 9 Defect Detectors
- 1,755 ABS Track Circuits

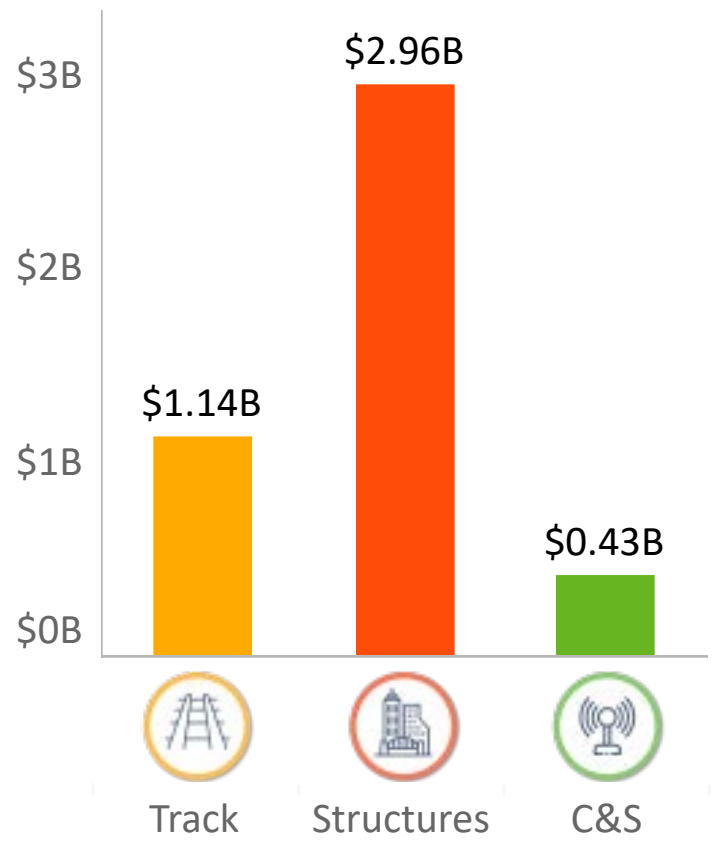


National Network – Owned and Funded by State of Michigan; Maintained & Operated by Amtrak

Track
- 362 Rail Miles of Main Line Rail
- 98 Rail Miles of Sidings & Yard Rail
- 171 Track Miles of Ballast
- 166 Turnouts
- 966 Main Line Concrete Ties
- 534,562 Main Line Wood Ties
- 137,414 Sidings & Yard Wood Ties

Structures
- 64 Undergrade Bridges
- 190 Culverts
- 15 Maintenance Facilities
- 2 Off–Yard Facilities

Communications & Signals
- 19 Interlocking Control Systems
- 92 Switch Machines
- 81 Interlocking Signals
- 108 Automatic Block Signals
- 145 Grade Crossings
- 38 Switch Heaters
- 20 Defect Detectors
- 2,105 ABS Track Circuits



Equipment

Equipment*

- 1 Track Laying Machine
- 3 Undercutters
- 4 Specialty Cranes
- 15 High Speed Surfacing Tampers
- 10 Units of Specialty Equipment
- 22 Units of Catenary Inspection Equipment
- 953 Units of Rail Bound / HyRail Equipment
- 748 Units of Rubber Tire Equipment
- 136 Light Plants
- 263 Units of Storage / Utility Equipment
- 111 Large Power Tools
- 1,018 Units of Freight Rolling Stock
- 10 Boats
- 184 Units of Handling / Motive Power Equipment

** Note: Inventory includes equipment currently in operating status.*

Value of Equipment Asset Portfolio

$823.1 MILLION



Our Accomplishments

Since the release of the 2024 Infrastructure Asset Line Plan (IALP2024), Amtrak has strengthened its asset management capabilities and accelerated infrastructure renewal, directly supporting the IALP's goal of closing the gap to SOGR. Expanded funding, improved processes, and stronger interdepartmental coordination have established a solid foundation for implementation of asset management strategies. **These accomplishments support SOGR goals and lay the groundwork for continued progress, reinforcing Amtrak's commitment to strategic asset management to attain long–term infrastructure resilience.**

Key achievements over the last two years include:

- Launching upgraded technology platforms
- Expanding and upskilling the workforce
- Refining infrastructure asset inventories
- Developing standardized asset condition assessments
- Creating a Renewal and Maintenance Priority (RaMP) Index
- Advancing capital projects and infrastructure improvements initiatives

$5.5B
Capital Project Investments in Infrastructure

25%
Infrastructure Investment Increase from FY24 to FY25

$1.1B
Investment in Infrastructure Maintenance

Upgraded Technology Platforms

Amtrak is upgrading its technology platforms to support more thoughtful decision–making and more efficient execution. After a multi–year effort to develop comprehensive requirements, update data structures, and evaluate alternatives, the IBM Maximo Application Suite (MAS) has been chosen as the new work management platform for infrastructure assets. It will replace the legacy IBM Maximo 7.5 system, which is heavily customized and focused primarily on inspection compliance. MAS is a cloud–based solution designed to integrate with the other enterprise systems that comprise Amtrak's asset management product ecosystem, including ArcGIS. The MAS platform will serve as the single source for work management, allowing IMCS to track execution of linear work and understand complete lifecycles of assets, enabling relational data modeling and supporting work programs that help Amtrak advance toward its SOGR goals for infrastructure.

Amtrak's Infrastructure Geographic Information System (IGIS) — recently restructured to support real–time data capture, connectivity analysis, and in–house track chart creation — is part of the asset management product ecosystem. It is the single source of truth for the infrastructure asset inventory, storing locational and key asset data in a centralized database to provide the foundational data for the work management system and support greater visibility and precision for asset management.



Workforce Development

Since October 2024, the IMCS workforce has grown from 4,608 to 5,527 employees, with year–over–year improvements in attrition rates. Hiring efforts have strategically shifted toward filling roles in critical disciplines such as Communications & Signals (C&S) and Electric Traction (ET) to support major infrastructure initiatives including signal upgrades and catenary system modernization. In the Mid–Atlantic South, targeted recruitment of C&S Maintainers has helped close staffing gaps and drive progress on high–impact projects including the Frederick Douglass Tunnel, Susquehanna River Bridge Replacement, and ongoing SOGR efforts. To strengthen field leadership, Amtrak has expanded its Foreman training programs, adding 100 new Foremen and preparing 45 more to graduate by the end of 2025. These new leaders are already impacting management of track outages and coordinating capital and maintenance projects.

These recent workforce investments and structural changes have repositioned Amtrak as a stronger, more agile organization and increased capacity to deliver more reliable infrastructure. Amtrak is committed to the continued cultivation of a capable and resilient workforce to advance its long–term infrastructure asset management strategy. In FY26, the focus will be on upskilling existing teams, fostering career progression, and maintaining a stable headcount to ensure fiscal responsibility.

Refined Infrastructure Asset Inventories

Amtrak's recent efforts to enhance infrastructure asset inventories reflect a strategic shift toward data–driven planning and operational precision. Over the past year, the organization has made meaningful progress in improving the accuracy and consistency of asset information used for analysis and decision–making. While full standardization across systems remains a work in progress, several notable milestones have been achieved and are detailed in the discipline–specific appendices.

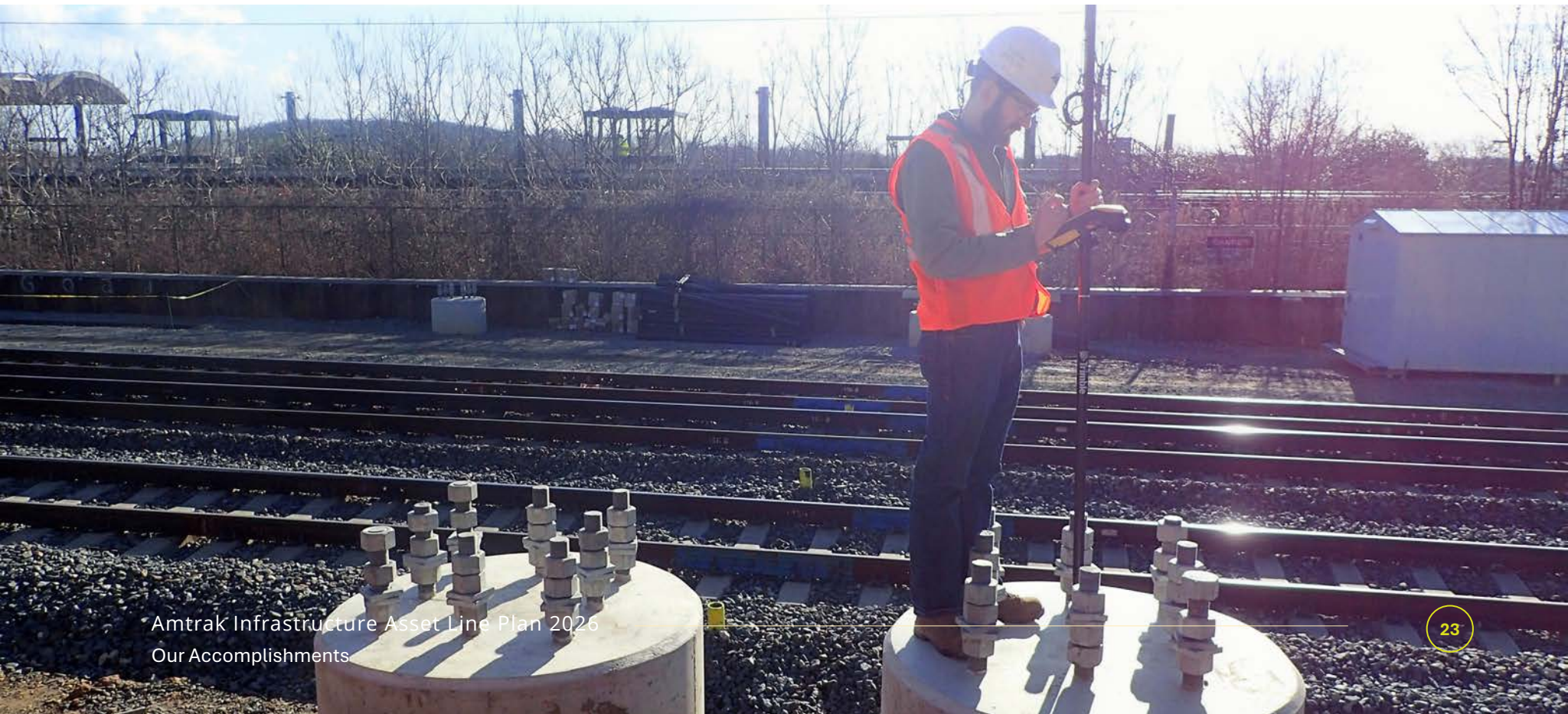
Initiatives to refine asset records, broaden attribute coverage, and harmonize location data across platforms are already underway and will continue through FY31. These improvements are foundational to Amtrak's long–term infrastructure asset management strategy, enabling better forecasting, prioritization, and execution of capital programs.

Asset Attributes

To address gaps in asset data, a new Engineering Practice, EP0008 – Asset Inventory and Information Updates, was issued to establish a definitive process for identifying, documenting, and submitting infrastructure data impacted by capital projects and programs. This process ensures all new, modified, relocated, or retired assets resulting from capital work are accurately reflected in the Infrastructure GIS, Amtrak's official system of record for its infrastructure asset inventory. Included with EP0008, is a Data Collection Template that supports collection of approximately 300 unique attributes for more than 140 asset classes.

Common Referencing

When IALP2024 was published, asset records were maintained in several different systems, with a future goal of consolidation into a common referencing system. Today, after significant validation and standardization efforts, the complete infrastructure asset data inventory is contained in the Infrastructure GIS. Asset condition data is supplied by defined data–pipelines into a centralized IALP database that encodes and aligns data and allows for regular updates and continuous data monitoring for each of the asset types. Some asset data collection tools still use a referencing structure that requires manual translation to align with the Infrastructure GIS inventory, but substantial progress has been made that allows for quick, accurate asset condition reporting.



Standardized Asset Condition Assessment

One of the most transformative recent achievements was a collaborative effort by IMCS and CAPD to develop and roll out standardized methods for assessing asset condition across asset classes. Historically, asset age served as a proxy for condition. Now, Amtrak is using a quantitative framework that combines asset age with visual inspection data, measurements and meters, and performance history to generate an SOGR score. This shift has enabled more accurate prioritization of capital investments for renewal and replacement work to better align with asset lifecycle strategies across many asset categories.

The standardized Asset Condition Assessment (ACA) methodologies have been approved by the Capital Delivery Engineering Services and establish consistent practices for field inspections and implementation, specifying:

- Roles and responsibilities for implementing the guidelines
- How condition monitoring assessments will be conducted
- Components and sub–components to be classified and grouped
- Frequency of assessments for each asset/component
- Condition monitoring priorities for calculating scores

Although there are differences in the approach to various asset types, in general the new ACA methodology evaluates assets using up to five factors. These include:



Age

Extent of expected useful life that has been consumed



Visual Assessment

Observable physical condition based on appearance



Measured Condition

Results from automated, equipment–based, or manual inspections



Maintenance History

Ability to sustain condition through maintenance, considering outstanding work and availability of resources



Reliability

Historical performance and failure rates

Each factor is scored from 0 (non–operable) to 5 (new or nearly new) and the factor scores are combined to produce an overall asset SOGR score. **Assets scoring 2.5 or above are considered to be in a state of good repair.** To date, the new ACA methodologies have been implemented for the following asset types:

- Turnouts
- Rail
- Ballast – Surfacing and Undercutting
- Wood Ties
- Catenary Structures
- Grade Crossings
- Interlocking Control Systems
- Switch Machines (Wilmington Subdivision)
- Undergrade Bridges
- Culverts
- Movable Bridge Spans
- Tunnels

ACA methodologies for the remaining asset types are under development; until they are approved and implemented, age will remain the basis for their SOGR score. Below is a summary of the ACA methodologies in use by discipline and asset class; the asterisk denotes methodology under development.



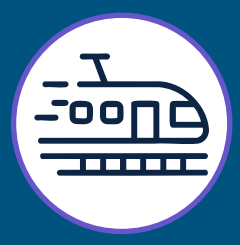
Track

Turnouts	Age, Measured, Visual
Rail	Age, Measured
Ballast (Undercutting)	Measured
Ballast (Surfacing)	Measured
Wood Ties	Age, Measured



Structures

Undergrade Bridges	Visual
Movable Bridge Spans	Age, Visual
Tunnels	Visual
Culverts	Visual



Electric Traction

Catenary Structures	Age, Maintenance, Visual
Power Transformers	Age*, Maintenance*, Measured*, Visual*



Communications & Signals

Switch Heaters	Age*, Visual*
Grade Crossings	Age, Maintenance, Visual*
Interlocking Control Systems	Age, Maintenance
Defect Detectors	Age*, Maintenance*
Signals	Age*, Visual*
Switch Machines	Age, Visual

Renewal and Maintenance Priority (RaMP) Index

Although asset condition assessments provide insight into the physical state of the infrastructure — helping to identify wear, deterioration, and potential maintenance needs — condition alone does not determine how essential an asset is to operations. To close this gap, a cross–functional team from CAPD Engineering Services, IMCS Operations Support, and Commissioning and Corridor Optimization developed the **Renewal and Maintenance Prioritization (RaMP) Index**. This data–driven framework integrates condition with asset criticality to support smarter, risk–based investment decisions. Asset criticality measures an asset's importance to train operations and service reliability, reflecting factors such as traffic volume, redundancy, and service impact. By combining condition and criticality, RaMP allows investments to be directed to the assets most essential to safe and reliable service – reducing the risk of funds being allocated to less critical assets while more vital infrastructure is overlooked.

Amtrak has begun applying RaMP across the infrastructure network. Criticality scoring is actively being piloted system–wide, while the aggregate condition measurement framework is still being refined to align with industry best practices and Amtrak's asset management strategy. Once fully implemented, the RaMP Index will provide a standardized prioritization tool that ensures funding is used where it has the highest impact on network reliability.

Capital Projects and Infrastructure Improvements

Amtrak has advanced major renewal and modernization projects across disciplines, strengthening core infrastructure, improving system reliability, and positioning the system for long–term resiliency and growth. These initiatives demonstrate measurable progress towards closing the SOGR gap and modernizing Amtrak's infrastructure portfolio.

Improved System Reliability

Track renewal accelerated with the installation of more than 140,000 concrete ties system–wide, and full replacement of all remaining wood ties on the Harrisburg Line. These efforts extend asset life and have already improved on–time performance. Interlocking and signal upgrades increased operational flexibility and reduced delays across the corridor.

Enhanced Safety and Resiliency

Investments in electric traction systems include substation renewals, transformer replacements, and catenary upgrades in New Jersey. These upgrades reduce service disruptions, protect against failures, and strengthen the Northeast Corridor power system.

Expanded Capabilities

The Gateway Program, the largest rail investment on the NEC, reached major milestones with early construction and tunnel site preparation. Once complete, this project will modernize aging infrastructure, eliminate key bottlenecks, and double train capacity into New York Penn Station.

Increased Efficiency

Amtrak has expanded its fleet of roadway machinery, trucks, and specialized maintenance equipment, enabling crews to deliver larger construction programs more effectively and realize greater value from federal investments.

Asset Condition & SOGR Backlog

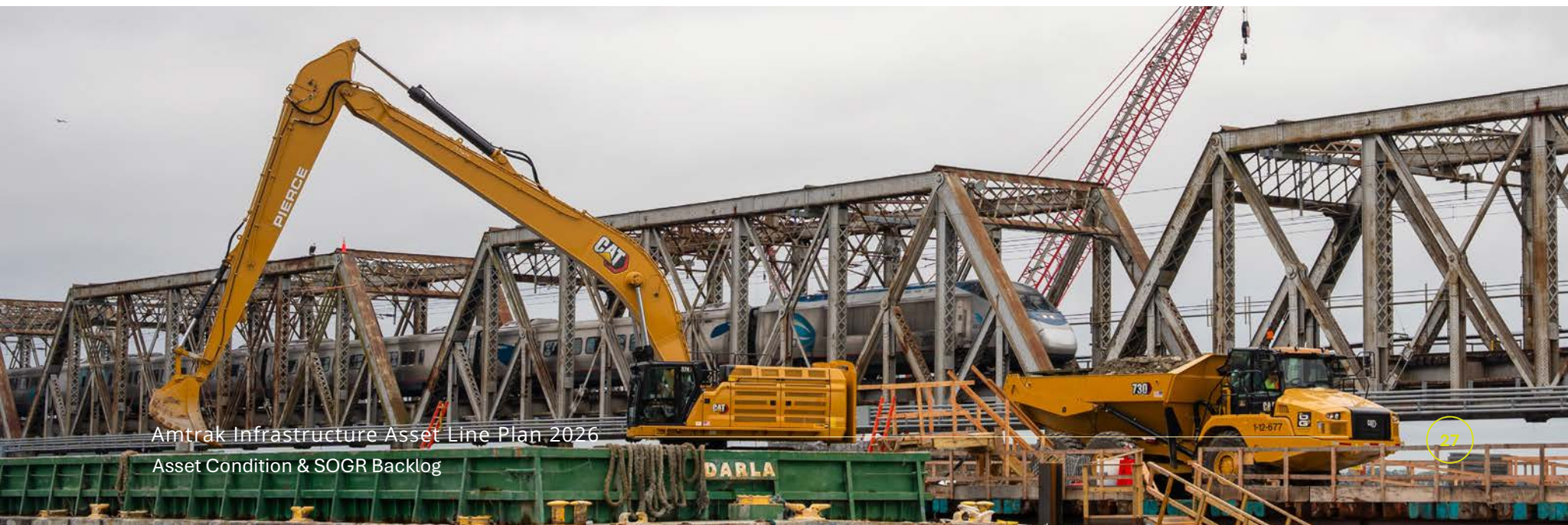
Understanding the condition of Amtrak's infrastructure assets is essential to managing risk, prioritizing investment, and sustaining reliable service. As part of IALP2026, Amtrak has refined its approach to assessing asset health and quantifying the state of good repair (SOGR) backlog. These updates reflect a shift toward more consistent, transparent, and data–driven methodologies that align with federal asset management standards. By integrating useful life benchmarks with condition–based assessments, Amtrak now has a clearer picture of where assets stand relative to their operational thresholds. This evolving framework not only improves the credibility of SOGR estimates but also enhances the organization's ability to target renewal and replacement efforts where they are most needed.

Asset Methodology Update and Impact on Scores

As part of Amtrak's ongoing asset management framework development, all asset's useful life benchmarks (ULBs) were aligned to the SOGR threshold of 2.5. Under this approach, assets are considered to reach the SOGR threshold at the point they approach the end of their useful life. This creates a consistent and transparent framework across all asset classes and strengthens comparability with regulatory standards.

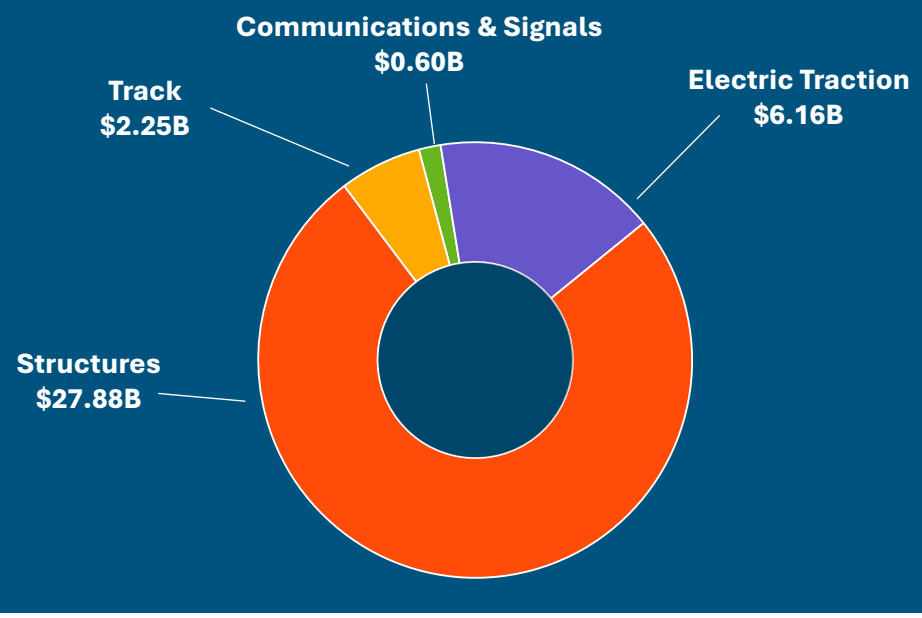
This change, combined with the expansion of condition–based assessments across multiple asset types, has influenced how asset condition is represented. For some categories, age–based scoring now places a higher share of assets below the SOGR threshold than in prior years. In other areas, the introduction of condition assessments has provided more accurate and discipline–specific insights, sometimes reducing the backlog previously overstated by age–only methods.

These updates reflect a more disciplined and data–driven approach to asset management. While they represent a shift in how assets are categorized relative to SOGR compared to past plans, they also provide a more credible and actionable understanding of Amtrak's infrastructure condition. The result is a clearer basis for prioritizing renewal and replacement needs, advancing alignment with Amtrak's asset management goals, and ensuring that resources are targeted to the most critical system requirements.



Estimated Cost of SOGR Backlog

$36.90 BILLION



SOGR Backlog

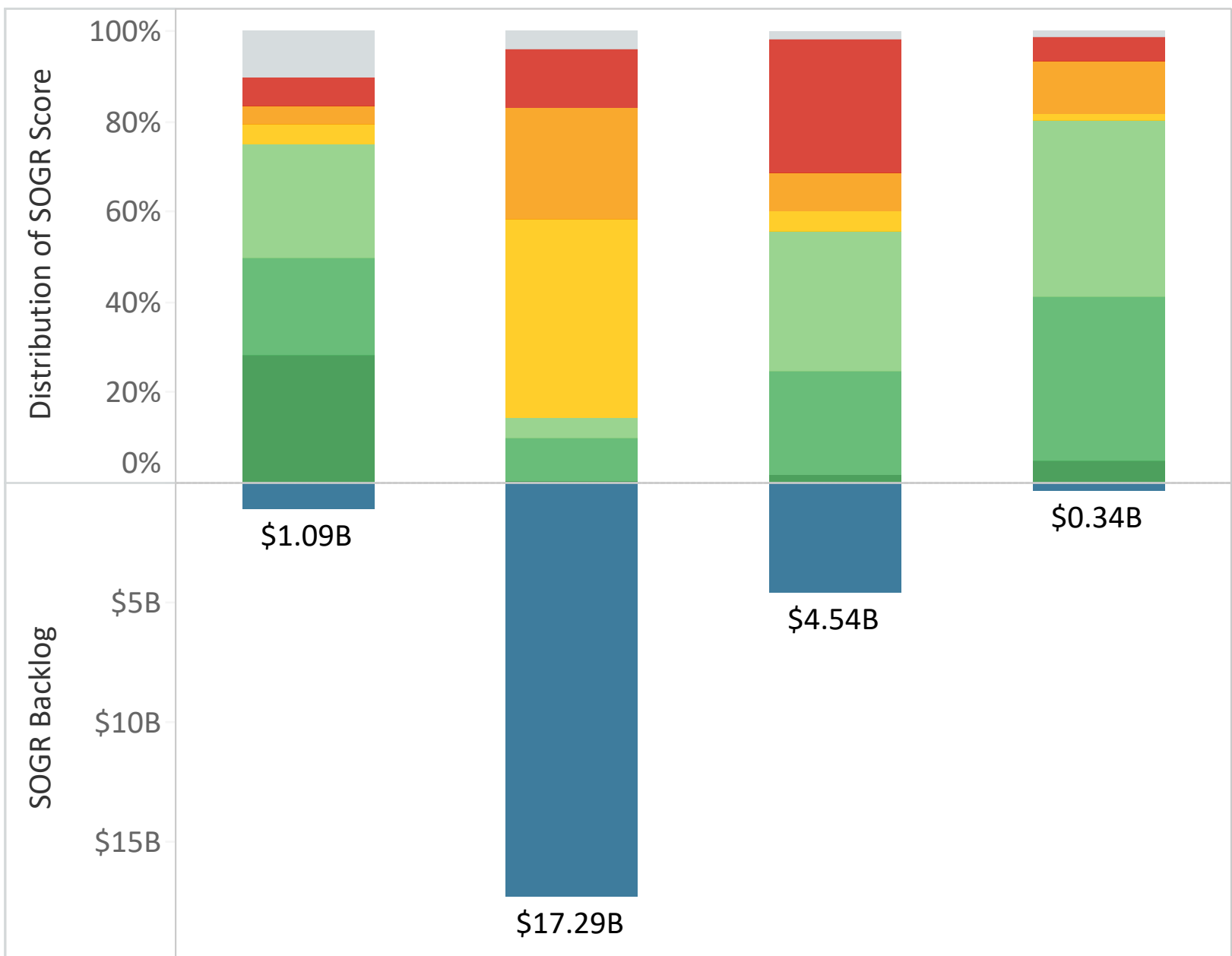
Applying individual asset SOGR scores across Amtrak's infrastructure network provides a comprehensive view of its overall health and quantifies the SOGR gap, allowing for the development of focused asset management strategies by asset class. While the inventory includes all assets, SOGR scores represent only assets with available data at the time of reporting. The charts on the following pages show the percent of assets not in a state of good repair, average SOGR scores and distribution of SOGR scores, and the estimated cost of the SOGR backlog by asset class and location in Amtrak's infrastructure network.

Note: The SOGR backlog represents assets with condition scores below 2.5 — those considered not in a state of good repair — and its cost is estimated using updated replacement costs. These estimates were refined in this IALP cycle to align with current Amtrak cost–estimating practices and reflect average direct costs for labor, materials, and equipment. Soft costs such as project management, design, and other non–construction–related efforts and expenses are excluded.



NEC Main Line

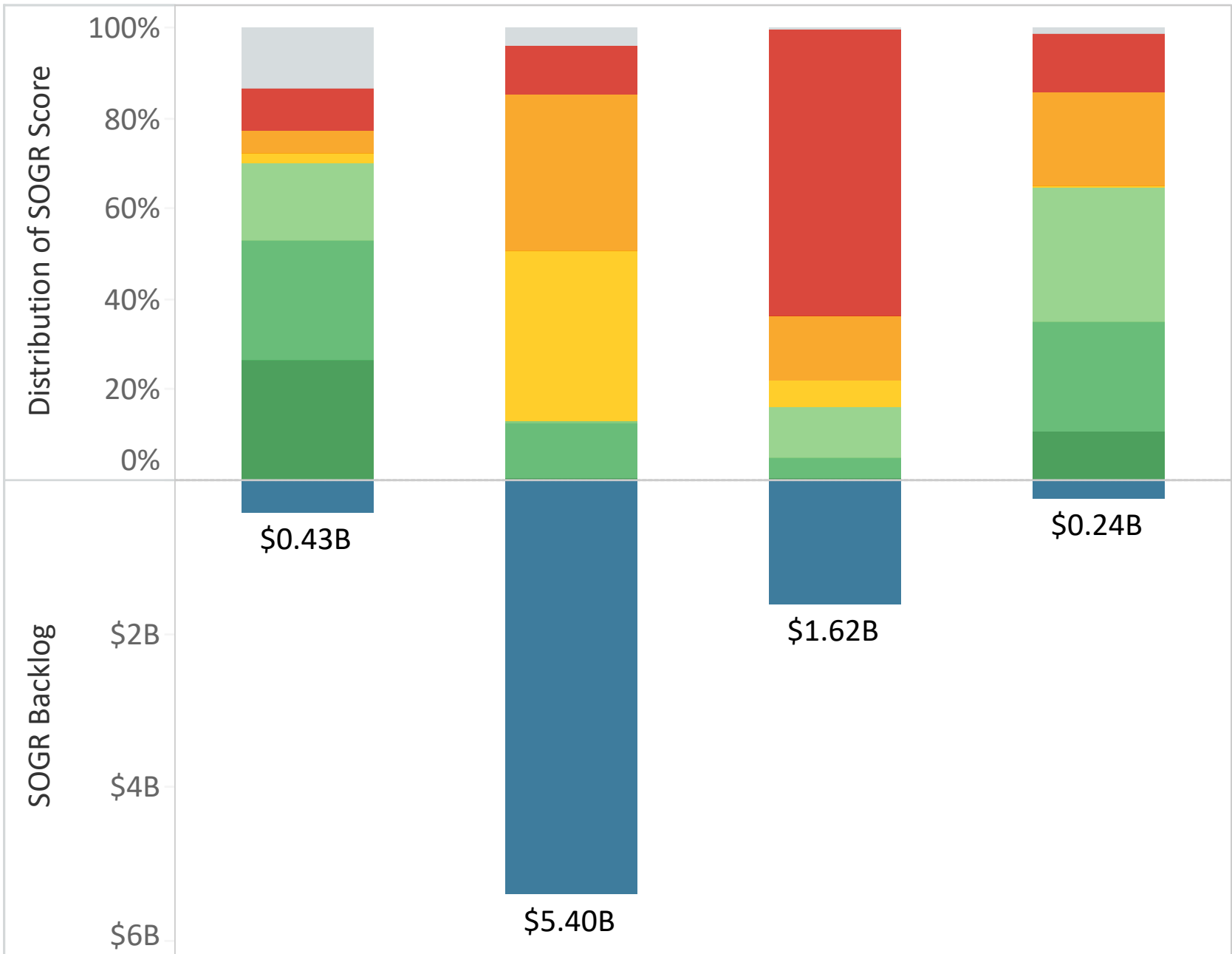
	Track	Structures	ET	C&S
% NOT in SOGR	10%	38%	38%	20%
Avg SOGR Score	3.8	2.4	2.8	3.4



SOGR Score
- Score Unavailable
- 1.0 - 1.9: Very Poor, Past Useful Life
- 2.0 - 2.4: Poor, Past Useful Life
- 2.5 - 2.9: Marginal, Nearing End of Useful Life
- 3.0 - 3.9: Fair
- 4.0 - 4.9: Good
- 5.0: Excellent

NEC Branch Line

	Track	Structures	ET	C&S
% NOT in SOGR	15%	45%	78%	46%
Avg SOGR Score	3.8	2.4	1.8	3.1



SOGR Score
- Score Unavailable
- 1.0 - 1.9: Very Poor, Past Useful Life
- 2.0 - 2.4: Poor, Past Useful Life
- 2.5 - 2.9: Marginal, Nearing End of Useful Life
- 3.0 - 3.9: Fair
- 4.0 - 4.9: Good
- 5.0: Excellent

NEC Branch Line – Funded by State of New York: Leased from CSX; Maintained & Operated by Amtrak

	Track	Structures	C&S
% NOT in SOGR	10%	50%	3%
Avg SOGR Score	3.7	2.2	4.2



SOGR Score
- Score Unavailable
- 1.0 - 1.9: Very Poor, Past Useful Life
- 2.0 - 2.4: Poor, Past Useful Life
- 2.5 - 2.9: Marginal, Nearing End of Useful Life
- 3.0 - 3.9: Fair
- 4.0 - 4.9: Good
- 5.0: Excellent

National Network

	Track	Structures	C&S
% NOT in SOGR	15%	51%	1%
Avg SOGR Score	3.1	2.0	3.2



SOGR Score
- Score Unavailable
- 1.0 - 1.9: Very Poor, Past Useful Life
- 2.0 - 2.4: Poor, Past Useful Life
- 2.5 - 2.9: Marginal, Nearing End of Useful Life
- 3.0 - 3.9: Fair
- 4.0 - 4.9: Good
- 5.0: Excellent

National Network – Owned and Funded by State of Michigan; Maintained & Operated by Amtrak

	Track	Structures	C&S
% NOT in SOGR	33%	35%	1%
Avg SOGR Score	3.5	1.7	4.8



SOGR Score
- Score Unavailable
- 1.0 - 1.9: Very Poor, Past Useful Life
- 2.0 - 2.4: Poor, Past Useful Life
- 2.5 - 2.9: Marginal, Nearing End of Useful Life
- 3.0 - 3.9: Fair
- 4.0 - 4.9: Good
- 5.0: Excellent

Asset Investment and Funding Summary

Amtrak has established a company-wide 15-year SOGR backlog reduction program to systematically address infrastructure assets identified as not in a state of good repair. This initiative is designed to reduce risk, improve reliability, and support a sustainable steady-state renewal program across all asset classes.

The table below summarizes Amtrak's investment requirements by network, highlighting the total SOGR backlog, programmed capital through FY26–FY31, and the remaining unfunded need. These figures provide a high-level view of system-wide funding requirements, while discipline-specific investment details can be found in the appendices.

Amtrak–Owned

	Total SOGR Backlog	Estimated Annual Cost	2026 – 2031 Investment Need
NEC Main Line	$23,257,487,911	$1,550,499,194	$9,302,995,164
NEC Branch Line	$7,695,621,716	$513,041,448	$3,078,248,686
National Network	$1,848,144,037	$123,209,602	$739,257,615

Maintained & Operated by Amtrak

	Total SOGR Backlog	Estimated Annual Cost	2026 – 2031 Investment Need
NEC Branch, Owned by CSX and Funded By State of New York	$2,673,673,921	$178,244,928	$1,069,469,569
National Network, Owned by State of Michigan	$1,423,222,897	$94,881,526	$569,289,159

	Total SOGR Backlog	Estimated Annual Cost	2026 – 2031 Investment Need
Amtrak SOGR Backlog 15–Year Program	$36,898,150,482	$2,459,876,699	$14,759,260,193

Infrastructure Asset Management

Amtrak's infrastructure assets are managed through a **coordinated, cross–departmental approach** that connects the asset management strategy, capital investment priorities, and planned investments to field–level work execution, balancing performance, cost, and risk to move ever closer to SOGR and ensure long–term reliability, safety, and efficiency. The clearly defined organizational roles and responsibilities articulated below help ensure that asset management is conducted through an integrated, transparent framework.

Department & Key Personnel	Asset Management Roles & Responsibilities
CAPD Engineering Services — Deputy Chief Engineers for Track, Structures, Electric Traction, and Communications & Signals IMCS — Director Roadway Equipment	• Ensure infrastructure assets achieve their ideal economic life through an asset maintenance strategy • Determine the optimal point of replacement prescribed by the asset renewal strategy • Prioritize asset renewal requirements to ensure cross–asset investment optimization • Establish asset criticality through the identification of infrastructure
IMCS — Asset Management Strategy Team, Infrastructure GIS Team, Data Analytics Team	• Work closely with the Deputy Chief Engineers and Director of Roadway Equipment to update asset management strategies within each of the discipline–specific appendices • Collaborate with IMCS and CAPD Leadership to ensure context within the IALP accurately depicts current processes and strategies. • Ensure infrastructure asset inventory remains up to date within the Infrastructure GIS database and discipline–specific data models are accessible to Deputy Chief Engineers and executive leadership • Update and deliver the Infrastructure Asset Line Plan biennially
IMCS — Vice President Infrastructure Maintenance & Construction Services, Assistant Vice President Maintenance of Way, Deputy Chief Engineers, Division Engineers	• Implement the maintenance strategies developed by the technical disciplines • Provide asset condition and risk assessment information to technical disciplines • Document all infrastructure work through work orders • Share reliability and performance goals with appropriate stakeholders
CAPD — Vice President Engineering Services, Vice President Infrastructure Project Delivery IMCS — Vice President Infrastructure Maintenance & Construction Services, Assistant Vice President Engineering Production & Construction Services	• Manage delivery of capital projects within scope, schedule, and budget • Ensure opportunities for piggybacking maintenance on capital projects are explored • Manage the transition of new and rehabilitated assets to operations and maintenance

At the strategic level, leadership and planning teams define business objectives, financial requirements, and service needs. In collaboration with the strategy, planning, marketing, finance, and engineering teams, these goals are translated into asset strategies, shaping priorities that guide future investments.

As priorities evolve, technical teams, including engineering, maintenance, and operations, take the lead in identifying infrastructure needs and developing programs to maintain asset condition. They assess asset health, manage data, and apply lifecycle strategies to target investments where they are most needed. Their work informs the capital planning process, which balances funding constraints with timely execution.

Implementing a structured framework for monitoring asset performance, addressing field issues, and enabling continuous improvement is crucial to support these efforts. Responsibilities span across planning, engineering, operations, and technology, flowing through the entire asset lifecycle. This integrated structure, from strategic direction to tactical response, ensures a unified and high–performing asset management program.

Asset management activities support optimal asset lifecycle performance. They include:

Inspection and Monitoring
Confirms assets meet standards for safe operations.

Preventive Maintenance
Ensures assets reliably support performance requirements.

Corrective Maintenance
Restores asset functions following failure or degradation.

Capital Maintenance
Rehabilitates assets to operational design standards to maintain performance.

Capital Replacement
Replaces assets nearing the end of functional life to maintain performance.

Capital Improvement
Renews assets to enhance functionality, increase capacity, or improve network performance.

To successfully implement asset management activities, efforts are focused on key strategic areas.

Controlling Costs: Streamlining delivery methods and increasing productivity to maximize the impact of available funding.

Building Workforce Capability: Investing in talent pipelines and retention strategies to ensure skilled personnel are available for planning and execution.

Securing Sustainable Funding Commitments: Aligning multi–year funding with asset needs and delivery capacity to ensure consistency.

Ensuring Equipment Availability: Expanding access to modern tools and machinery that enable faster, safer, and more effective work.

Optimizing Track Time: Improving coordination and planning to access infrastructure more efficiently and minimize service disruptions.

Coordinating Strategic Planning Activities: Enhancing data integration and cross–functional collaboration to improve execution and feedback.

Amtrak's framework for delivering infrastructure asset management embraces a proactive strategy that balances investment in maintenance, renewal, and replacement. This approach integrates predictable lifecycle patterns, performance goals, and risk–based priorities, allowing the organization to stabilize asset conditions over time and plan with increasing efficacy.

Building for the Future

This section outlines a comprehensive portfolio of capital projects and infrastructure improvements aimed at revitalizing and modernizing Amtrak's infrastructure across the Northeast Corridor (NEC) and beyond. The investments span critical categories including tunnel and bridge replacements, signal and traction upgrades, and fleet and facility enhancements.

To realize the full potential of this transformative infrastructure portfolio, sustained and expanded funding is not just beneficial, it is essential. As indicated by the SOGR backlog, many of the assets targeted for renewal and modernization are operating well beyond their intended service lives, posing increasing risks to reliability, safety, and operational efficiency. Without timely investment, deferred maintenance will continue to compound, leading to escalating costs and service disruptions.

Strategic funding now enables Amtrak to address critical vulnerabilities, accelerate progress toward SOGR, and unlock long–term cost savings through lifecycle–based asset management.



SOGR Program Overview

This section describes key activities within the four major SOGR/Normalized Replacement program categories for Amtrak–owned and maintained right–of–way infrastructure: Track, Structures, Electric Traction, and Communications & Signals. Activities within these programs are ongoing and support our efforts to achieve and maintain SOGR on the NEC and across the US.

Track Program

The Track program is extensive and designed to increase the overall health of the track assets by improving its state of good repair and by making targeted improvements to address site specific concerns for assets that have not yet reached the end of their useful life. The program also seeks to modernize asset components and reduce the need for reactive maintenance interventions that can be caused by legacy components. Solutions that are used to improve SOGR include tie replacement, tie conversion, ballast cleaning and replacement, rail replacement, and life extension activities such as rail grinding.

Structures Program

The Structures program is designed to extend the useful life of critical assets and to renew assets that are beyond their useful life or that no longer function as intended. The portfolio for Structures is broad and targets improvements to movable bridge spans, culverts, undergrade bridges, tunnels, and bridge timbers. The Structures program also maintains facility fixed equipment and building SOGR for maintenance of way locations, provides design review for yard modernization and takes over SOGR maintenance once yard projects are completed.

Electric Traction Program

The Electric Traction program is designed to improve the function and reliability of Amtrak's electric traction network. The portfolio is designed to replace or renew substations, auto–transformers, transmission networks and overhead catenary wire, structures, and components.

Communications & Signals Program

The Communications & Signals program is designed to ensure a high level of functionality and uninterrupted operations are maintained on Amtrak's train control system. Interventions and renewals are designed to manage the risk of obsolescence, state of good repair backlog and specific component condition concerns. Work includes improvements to Amtrak's grade crossings, key interlocking component replacements, and management of the Positive Train Control (PTC) and radio networks across the NEC and National Network.

Equipment Program

In addition to the four major SOGR/Normalized Replacement programs, Amtrak invests in equipment upgrades to support infrastructure renewal and maintenance at scale. This includes the acquisition and renewal of large production machines, freight equipment to transport rail materials, and improvements to equipment maintenance shops and support facilities.



Five–Year Capital Program

Amtrak's Five–Year Capital Program represents a transformative investment strategy aimed at modernizing the nation's passenger rail infrastructure. Spanning fiscal years 2026 to 2031, the program is designed to address long–standing SOGR backlogs, enhance service reliability, and expand connectivity across key corridors.

Enabled by historic funding levels from the Infrastructure Investment and Jobs Act (IIJA), the program prioritizes capital investments across asset classes including Track, Structures, Electric Traction, Communications & Signals, and Roadway Equipment. These investments are categorized into the following categories: safety and mandates, SOGR programs, NEC major backlog projects, improvement projects and strategic initiatives, and moving toward steady state and addressing SOGR backlog.

The program integrates lifecycle planning and asset management principles to ensure that infrastructure renewal aligns with Amtrak's broader goals of safety, efficiency, and growth. It also supports the transition to steady state maintenance, improves outage coordination, and leverages technology to optimize capital delivery.

Through this capital program, Amtrak is building a more resilient and future–ready railroad — one that connects more people and places, reduces travel times, and delivers a superior passenger experience.

SAFETY & MANDATES

Safety & Mandates

Projects and activities that enhance the safety of our right–of–way infrastructure and/or respond to legislative mandates.

SOGR PROGRAMS

SOGR Programs

Focused on Track, Structures, Electric Traction, and Communications & Signals, these efforts support maintenance of current SOGR levels across the NEC and nationwide.

NEC MAJOR BACKLOG

NEC Major Backlog Projects

Non–routine initiatives, such as bridge and tunnel rehabilitation, led by Amtrak and scheduled to progress between FY26 and FY31.

STRATEGIC INITIATIVES

Improvement Projects & Strategic Initiatives

Strategic initiatives from FY26–FY31 to boost reliability, safety, OTP, and capacity, aligned with CONNECT NEC planning.

STEADY STATE

Steady State & SOGR Backlog

Projects that address the SOGR backlog and move to a steady state capital replacement program.

Capital Renewal & Replacement Projects Underway

Amtrak is investing in transformative infrastructure projects that will improve reliability, increase capacity, and ensure long–term resilience across the NEC and beyond. These efforts address aging assets while preparing the rail network for future growth and performance.



Hudson Tunnel Project

The construction of a new two–track rail tunnel beneath the Hudson River and the rehabilitation of the existing North River Tunnel will improve train reliability and operational flexibility for service traveling to and from New York City while supporting future growth in passenger rail capacity.

Related Investment Categories:

SAFETY & MANDATES | STRATEGIC INITIATIVES



Connecticut River Bridge Replacement

The replacement of the Connecticut River Bridge between Old Saybrook and Old Lyme, CT, will improve train speeds and reliability by modernizing the aging movable span and eliminating outdated mechanical components.

Related Investment Categories:

SAFETY & MANDATES | SOGR PROGRAMS | NEC MAJOR BACKLOG | STRATEGIC INITIATIVES | STEADY STATE



Dock Bridge, State of Good Repair Investments

The conversion of Dock Bridge from a movable to a fixed structure, along with structural steel enhancements, will extend the bridge's lifespan and improve reliability by removing complex, failure–prone components. Located between Newark and Harrison, NJ, Dock Bridge spans the Passaic River and serves a vital role in NEC rail operations.

Related Investment Categories:

SAFETY & MANDATES | SOGR PROGRAMS | NEC MAJOR BACKLOG | STRATEGIC INITIATIVES | STEADY STATE

East River Tunnel Rehabilitation



The rehabilitation of Tubes 1 and 2 of the East River Tunnel between Penn Station and Queens, NY, will reduce congestion and restore full functionality by addressing long–term damage caused by saltwater intrusion during Superstorm Sandy.

Related Investment Categories:

SAFETY & MANDATES | SOGR PROGRAMS | NEC MAJOR BACKLOG

Pelham Bay Bridge Replacement



The replacement of the over 100–year–old Pelham Bay Bridge, which spans the Hutchinson River in New York, will eliminate speed restrictions and improve train performance along the NEC through a modernized design.

Related Investment Categories:

SAFETY & MANDATES | SOGR PROGRAMS | STRATEGIC INITIATIVES | STEADY STATE

Baltimore and Potomac Tunnel Replacement



The replacement of the Civil War–era Baltimore and Potomac Tunnel with two new single–track bores will reduce travel time by permitting speeds up to 100 mph, increase capacity, and improve reliability for intercity and commuter rail service in Baltimore, MD.

Related Investment Categories:

SAFETY & MANDATES | SOGR PROGRAMS | NEC MAJOR BACKLOG | STRATEGIC INITIATIVES | STEADY STATE

Susquehanna River Bridge Replacement



The replacement of the Susquehanna River Bridge, a key rail crossing between Havre de Grace and Perryville, Maryland, with a high–level fixed structure will eliminate delays caused by river traffic and improve operational efficiency along the NEC.

Related Investment Categories:

SAFETY & MANDATES | SOGR PROGRAMS | NEC MAJOR BACKLOG | STRATEGIC INITIATIVES | STEADY STATE

Infrastructure Improvement Initiatives Underway

Amtrak is advancing infrastructure improvement initiatives that build on its capital renewal and replacement efforts. These projects are reshaping key rail corridors across the NEC and beyond, delivering long–term gains in capacity, reliability, and service quality.



New Jersey Electric Traction Improvements

A major investment in electric traction infrastructure is underway to improve system performance along one of the busiest segments of the NEC. The program includes substation renewals, transformer replacements, and upgrades to critical electrical components to enhance reliability and support future service growth.

Related Investment Categories:

SOGR PROGRAMS

STEADY STATE



Harrisburg Line Signal Modernization

Along the Harrisburg Line in Pennsylvania, signal systems are being modernized to improve asset reliability and operational performance. The project includes renewing interlocking components and upgrading signaling from single–direction to bi–directional, increasing flexibility and improving on–time performance between Harrisburg and Philadelphia.

Related Investment Categories:

SAFETY & MANDATES

SOGR PROGRAMS

STRATEGIC INITIATIVES

STEADY STATE



Clark to Ham Constant Tension Upgrade Project

Between Clark, NJ, and Ham Interlocking near Rahway, NJ, approximately seven route miles of four–track main line are being upgraded with constant tension catenary systems over multiple years. The work, including installing new foundations, portal beams, and catenary wires, will improve power reliability, reduce maintenance needs, and support higher–speed operations.

Related Investment Categories:

SAFETY & MANDATES

SOGR PROGRAMS

STRATEGIC INITIATIVES

STEADY STATE



Tie Conversion Program

Across key segments of the NEC and the National Network, wood ties are being replaced with concrete ties to extend asset life and reduce long–term maintenance costs. This conversion supports more durable infrastructure and improved track stability.

Related Investment Categories:

SOGR PROGRAMS

STEADY STATE



562 Bi–Directional Signal System Upgrade

Signal system upgrades are being implemented between Baltimore, MD, and Washington, D.C., as well as in New Jersey between County and Elmora Interlockings. These improvements will replace legacy systems with modern equivalents, increasing operational flexibility and capacity along heavily trafficked corridors.

Related Investment Categories:

SAFETY & MANDATES

STRATEGIC INITIATIVES



Penn Station Access

The Penn Station Access project is expanding rail capacity between New Rochelle, NY, and Penn Station. The project includes eight miles of new track, rehabilitation of 11 miles of existing track, upgrades to four bridges, and installation of modern signal, power, and communication systems. It will also accommodate four new Metro–North stations in the Bronx.

Related Investment Categories:

STRATEGIC INITIATIVES



Portal North Bridge Replacement Project

Spanning the Hackensack River in New Jersey, the Portal North Bridge is being replaced with a modern fixed structure to eliminate delays caused by bridge openings and improve reliability. The new 2.5–mile alignment will increase operational flexibility and capacity through one of the most congested sections of the NEC.

Related Investment Categories:

SAFETY & MANDATES | SOGR PROGRAMS | NEC MAJOR BACKLOG | STRATEGIC INITIATIVES | STEADY STATE



County to Newark Catenary Upgrades

This 25–mile catenary upgrade project in New Jersey will replace aging overhead contact systems with modern fixed termination assemblies. The work includes new signal power systems, grounding and bonding upgrades, and demolition of legacy structures to improve reliability and reduce maintenance needs.

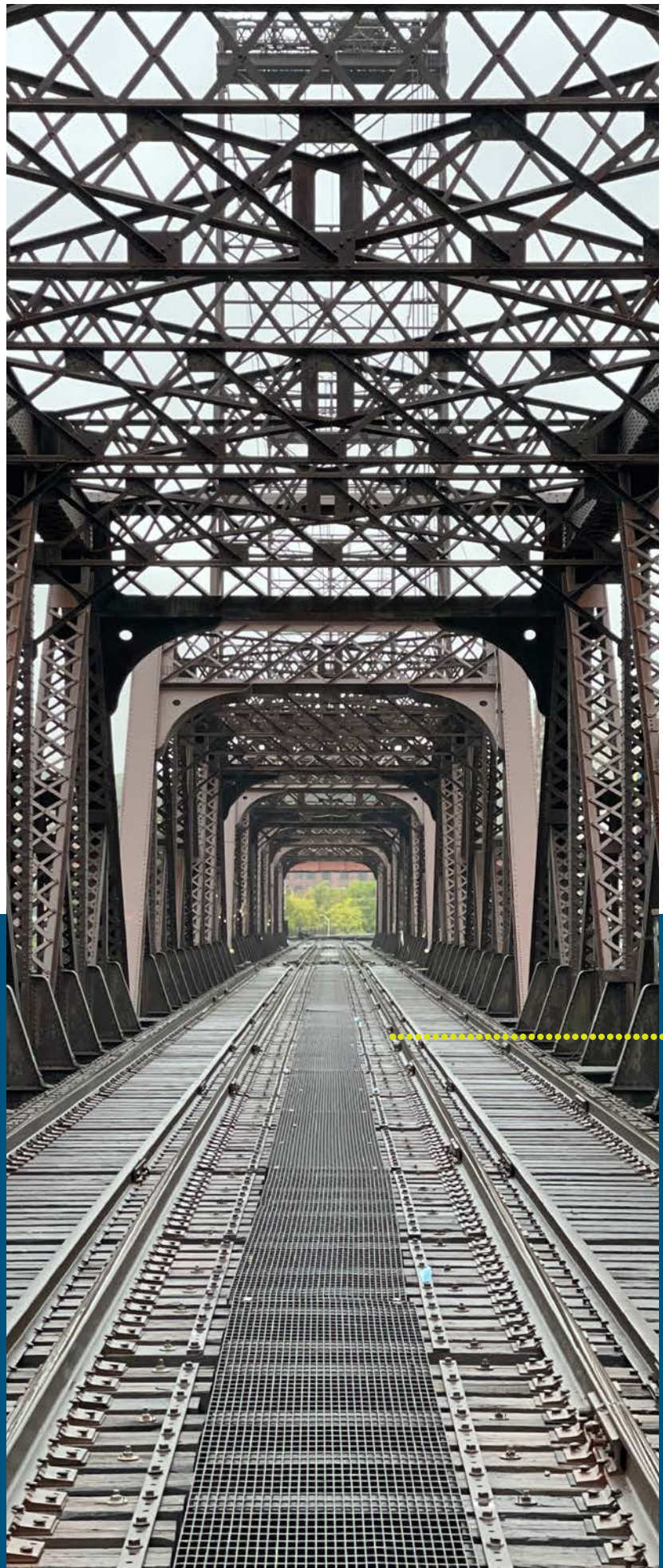
Related Investment Categories:

SAFETY & MANDATES | SOGR PROGRAMS | STEADY STATE




SWAC

Our Vision



The IALP2026 vision supports Amtrak's overall goal of connecting more people and places. It describes a future where asset management activities are integrated into organization–wide policies and processes. Lifecycle approaches and risk–based prioritization to managing assets are used to inform decisions, enabling the organization to adapt to changing, real–world conditions. Ownership, control, accountability, and reporting requirements for assets are established, clearly communicated, and implemented. The asset management technology ecosystem holds the data needed to provide actionable insights on asset health. Ultimately, realization of the IALP2026 vision has a steady state maintenance program in place, and Amtrak has achieved SOGR for its infrastructure.

The right people perform the right work at the right time, delivering an efficient and reliable infrastructure to Amtrak's customers.

Amtrak Corporate Strategies

Amtrak's corporate strategies are centered on delivering safe, reliable, and customer–focused rail service while driving long–term growth and sustainability. These strategies are supported by actions such as lifecycle asset management, risk–based prioritization, and enterprise–wide alignment to ensure Amtrak remains future–ready and responsive to evolving transportation needs.



Amtrak is focused on delivering a high–performing railroad experience through four key outcomes: Safe, Reliable, Clean, and Courteous. Safety is prioritized by tracking the number of NTSB accidents and fatalities, ensuring that operations meet the highest standards of protection for passengers and employees. Reliability is measured through the Completion Factor and Customer On–Time Performance, reflecting Amtrak's commitment to consistent and timely service. Cleanliness remains a core value, supporting a pleasant travel environment, though its specific metric is not defined in this framework. Courtesy is evaluated using the Blue Sky Customer Satisfaction Index, capturing how well Amtrak meets customer expectations for service and professionalism.



Focusing on the future underscores Amtrak's commitment to modernizing infrastructure and enhancing service quality. This initiative centers on four key outcomes: achieving a State of Good Repair, delivering construction projects on time and within budget, acquiring a new fleet, and modernizing technology systems. Progress toward these goals is measured through two primary metrics, Capital Projects Milestones Achieved (percentage) and State of Good Repair (units), which provide clear indicators of advancement in infrastructure renewal and operational readiness.



Amtrak's strategic focus on delivering business results centers on three key outcomes: achieving train operations profitably by FY28, increasing ridership, and growing revenue. To measure progress toward these goals, Amtrak tracks adjusted operating income from passenger operations (excluding fuel costs), total ridership, overall revenue, and cost per available seat mile. This performance–driven approach reflects Amtrak's commitment to financial sustainability and operational efficiency, ensuring that its services remain competitive, customer–focused, and aligned with long–term growth objectives.

Our Goals & Objectives

Aligning focus areas with corporate strategies is essential for translating vision into measurable progress. The five strategic focus areas listed below are intentionally designed to support each of Amtrak's corporate strategies. By embedding strategic intent into the foundation of asset management practices, Amtrak fosters cross–functional collaboration, clarifies ownership, and enables smarter investment decisions. The result is a more agile organization capable of delivering reliable service while advancing long–term sustainability and growth.

1 Focus Area 1: Standards and Processes (Foundation)

Establish clear policies, procedures, and inspection protocols for consistent, efficient asset management.

Associated corporate strategies:



Goal 1: Establish a strategic foundation for asset management through a defined asset management policy and strategic asset management plan.

Objective 1
Develop and adopt an Asset Management Policy that articulates the strategic direction of the organization and its infrastructure assets.

Measured Outcome: Asset Management Policy adopted
Responsible Parties: IMCS and CAPD Engineering Services
Key Actions: Draft the Policy, obtain senior leadership endorsement, and communicate the Policy organization–wide

Objective 2
Develop and adopt a Strategic Asset Management Plan (SAMP) to document and communicate the business drivers, strategic objectives, and infrastructure asset deployments needed within the organization.

Measured Outcome: Strategic Asset Management Plan (SAMP) adopted
Responsible Parties: IMCS and CAPD Engineering Services
Key Actions: Draft the SAMP, align it with Amtrak's goals and adopted Asset Management Policy, obtain senior leadership endorsement, and communicate the SAMP organization–wide

Goal 2: Advance a consistent, lifecycle–based approach to asset management through standardized processes.

Objective 1
Develop and implement foundational, high–level asset lifecycle processes that guide planning, maintenance, renewal activities, asset handover, and support data–driven decision–making.

Measured Outcome: Lifecycle process framework established
Responsible Parties: IMCS and CAPD Engineering Services
Key Actions: Define lifecycle processes, assign responsible roles to the processes, and implement the processes to support data–driven asset decisions

Objective 2
Conduct a gap analysis and update asset lifecycle procedures.

Measured Outcome: Gaps and areas for improvement in existing lifecycle procedures identified and documented
Responsible Parties: CAPD Engineering Services and IMCS
Key Actions: Review existing procedures, compare with desired lifecycle practices, perform gap analysis, and refine procedures to support uniform methods and actionable outcomes

Objective 3
Develop and/or update discipline–specific lifecycle procedures based on identified gaps.

Measured Outcome: Revised procedures prepared and incorporated into discipline documentation and planning practices
Responsible Parties: CAPD Engineering Services and IMCS
Key Actions: Use gap analysis findings to refine discipline procedures, align practices with overarching lifecycle guidance, and document updates to support consistent planning, maintenance, and renewal

2 Focus Area 2: Organizational Design and Alignment (Ownership)

Define roles, responsibilities, and accountability to optimize collaboration and clarify ownership across asset classes.

Associated corporate strategies:



Goal 1: Strengthen organizational alignment to support consistent and effective asset management practices.

Objective 1
Asset management organizational structure established to support coordination between IMCS and CAPD.

Measured Outcome: Implement a structure within 12 months
Responsible Parties: IMCS and CAPD Engineering Services
Key Actions: Develop an organizational framework for asset management, establish dedicated roles and teams for asset management, and clarify reporting relationships and collaboration between both groups

Objective 2
Designate asset reliability engineers within each discipline to guide maintenance strategies that extend asset life.

Measured Outcome: Asset reliability role or responsibilities designated within each of the technical disciplines
Responsible Parties: CAPD Engineering Services
Key Actions: Develop and implement a plan to designate asset reliability engineers, define the scope and budget for the roles, and integrate the positions into the asset management process

Goal 2: Foster shared accountability and clarify asset ownership and maintenance responsibilities across departments and operating entities.

Objective 1
Define asset ownership, maintenance, and life cycle decision–making responsibilities across departments within Amtrak.

Measured Outcome: Asset ownership and lifecycle responsibilities defined and documented across departments
Responsible Parties: CAPD Engineering Services
Key Actions: Clarify and document asset ownership and maintenance responsibilities, ensure alignment with life cycle strategies, create a library of ownership agreements for each asset class, and promote organization–wide awareness through tools like RACI charts

Objective 2
Collaborate with external operating entities (e.g., Class I Rail, New Jersey Transit, Metro–North Railroad, State of Connecticut) to determine, align, and execute shared asset management responsibilities.

Measured Outcome: Shared responsibilities with external operating entities defined and alignment initiated
Responsible Parties: IMCS and CAPD Engineering Services
Key Actions: Clarify and align ownership and maintenance responsibilities with external operating entities and promote awareness of these responsibilities across these entities

Objective 3
Coordinate asset management responsibilities and priorities with the Northeast Corridor (NEC) Commission to ensure alignment.

Measured Outcome: Asset management responsibilities coordinated with NECC and documented for alignment
Responsible Parties: IMCS and CAPD Engineering Services
Key Actions: Clarify and define asset management responsibilities and priorities and ensure alignment between Amtrak's and NEC Commission's goals

3 Focus Area 3: Technology Advancement to Support Asset Management (Enabler)

Leverage advanced tools, including enterprise systems, AI, and remote monitoring, to make smarter, data–driven decisions.

Associated corporate strategies:



Goal 1: Implement an Enterprise Asset Management (EAM) system.

Objective 1
Advance EAM implementation across asset classes by addressing functionality gaps and aligning progress with available resources.

Measured Outcome: EAM System requirements and supporting data structures completed to enable enterprise asset management capabilities
Responsible Parties: IMCS and CAPD Engineering Services
Key Actions: Align life cycle processes with EAM system functionality, develop an implementation plan based on this alignment, and execute the plan to support effective system adoption.

Objective 2
Pilot EAM system implementation with Structures and Electric Traction asset classes.

Measured Outcome: EAM pilot initiated to assess functionality and support planning for broader deployment
Responsible Parties: Digital Technology, IMCS, and CAPD Engineering Services
Key Actions: Define the scope, goals, and KPIs for the EAM pilot, implement functionality starting with Structures, expand to other disciplines or asset classes, and establish a feedback loop for continuous improvement

Goal 2: Leverage technology and innovation to enhance asset management and support SOGR.

Objective 1
Develop a vision for adoption and implementation for asset intelligence across all asset classes.

Measured Outcome: Asset intelligence vision established to guide future analytical and monitoring capabilities
Responsible Parties: IMCS and CAPD Engineering Services
Key Actions: Define guiding principles and use cases for applying asset intelligence to asset management and lifecycle strategies

Objective 2
Explore and enable advanced analytics and Artificial Intelligence/Machine Learning (AI/ML) applications to support predictive asset management.

Measured Outcome: Opportunities for AI/ML and advanced analytics identified and positioned for future integration into maintenance and assessment practices
Responsible Parties: CAPD Engineering Services, IMCS, and Digital Technology
Key Actions: Assess emerging technologies, define use cases for predictive analytics, and evaluate integration pathways with EAM/CMMS systems to support data–driven decision–making

Objective 3
Develop and implement a remote condition monitoring strategy to enhance asset assessment and lifecycle management.

Measured Outcome: Remote monitoring strategy documented and prepared for adoption across select asset classes
Responsible Parties: CAPD Engineering Services and IMCS
Key Actions: Define guiding principles and use cases for remote monitoring, align technology requirements with assessment processes, document protocols to support more frequent condition insights, and benchmark approach against other companies to confirm strategic direction

4 Focus Area 4: Asset Performance and Management (Execution)

Restore and sustain assets in a state of good repair while prioritizing investments to maximize safety, reliability, and operational performance.

Associated corporate strategies:



Goal 1: Establish and formalize risk–based asset prioritization for all assets.

Objective 1
Assess and document the condition of all assets in accordance with Technical Discipline specific guidance.

Measured Outcome: Condition assessments completed and documented for all IALP–reported assets
Responsible Parties: IMCS and CAPD Engineering Services
Key Actions: Finalize condition assessment frameworks for all asset classes, assess the condition of the assets, and integrate prioritization results into investment planning and scheduling tools

Objective 2
Assess and document the criticality of all assets in accordance with Technical Discipline specific guidance.

Measured Outcome: Criticality framework established to support risk–based prioritization
Responsible Parties: IMCS and CAPD Engineering Services
Key Actions: Develop a criticality framework for all asset classes, assign criticality to the assets, and integrate prioritization results into investment planning and scheduling tools

Objective 3
Finalize and implement the RaMP index.

Measured Outcome: RaMP Index finalized and applied to capital planning work prioritization
Responsible Parties: IMCS and CAPD Engineering Services
Key Actions: Complete condition metrics to calculate condition scores by operating block, then combine with criticality measure to complete the RaMP index

Objective 4
Implement problem/cause remedy and root cause analysis across asset classes to improve asset reliability.

Measured Outcome: Implement problem/cause/remedy structure with rollout of EAM system
Responsible Parties: IMCS and CAPD Engineering Services
Key Actions: Establish a standardized problem/cause remedy and root cause analysis process, train maintenance teams to apply and document it, and use insights to inform preventive maintenance and capital renewal planning

Goal 2: Implement work planning for each asset class across all lifecycle strategies.

Objective 1
Develop and/or refine asset class–based work planning practices aligned to lifecycle strategies and asset prioritization frameworks.

Measured Outcome: Documented work planning standards that support consistent scheduling and lifecycle–based decision–making
Responsible Parties: Project Delivery, CAPD Engineering Services, and IMCS
Key Actions: Define work planning expectations across asset classes, align planning practices with lifecycle strategies and prioritization outputs (e.g., RaMP), and document standards to support coordination and resource planning

Objective 2
Formalize and align the work bank with lifecycle strategies and capital planning priorities.

Measured Outcome: Work bank practices documented and integrated to support consistent prioritization and investment decisions across asset classes
Responsible Parties: Project Delivery, Strategy and Planning, CAPD Engineering Services, and IMCS
Key Actions: Coordinate with Project Delivery to synchronize work bank practices, align backlog and funding decisions with lifecycle plans and prioritization frameworks (e.g., RaMP), and maintain a centralized repository of work items to support asset investment planning

Goal 3: Progress infrastructure asset classes towards a state of good repair.

Objective 1
Develop asset–class SOGR polices to guide maintenance and planning decisions that support optimal asset performance and progress on closing the gap towards SOGR.

Measured Outcome: Asset–class SOGR policies established and adopted to guide maintenance and planning decisions
Responsible Parties: CAPD Engineering Services and IMCS
Key Actions: Develop and document asset–class SOGR policies, align maintenance and planning expectations with defined SOGR criteria and provide guidance for applying SOGR policies in decision–making processes

Objective 2
Establish and communicate clear asset performance KPIs that are visible across the organization.

Measured Outcome: KPIs adopted and integrated into asset reporting to track SOGR progress
Responsible Parties: IMCS and CAPD Engineering Services
Key Actions: Develop a core set of KPIs to monitor asset condition and work execution, identify data sources and automate reporting, define data needs, build visualization dashboards, and use KPI trends and quarterly reviews to inform strategy, work planning, and target setting

5 Focus Area 5: Asset Management Awareness and Engagement (Adoption)

Build understanding of asset management through training, education, and outreach to foster a culture of stewardship.

Associated corporate strategies:





Goal 1: Build enterprise–wide awareness and shared understanding of asset management, state of good repair, and lifecycle principles.

Objective 1
Clearly articulate the “why” behind asset management and communicate a truly holistic approach to lifecycle management, specifically the appropriate balance between corrective work versus preventive work.

Measured Outcome: Messaging developed and shared to promote understanding of asset management culture
Responsible Parties: IMCS
Key Actions: Develop communication materials highlighting the benefits and preventive maintenance impact, and establish an internal resource site to share these materials organization–wide

Objective 2
Promote the value of asset management and communicate its role in achieving a state of good repair.

Measured Outcome: Communications and awareness campaigns delivered to support adoption of assset management culture
Responsible Parties: IMCS and CAPD Engineering Services
Key Actions: Develop a communication strategy highlighting asset management benefits, align staff responsibilities to emphasize time savings, and conduct awareness campaigns to educate all levels on asset management principles

Goal 2: Strengthen asset management knowledge across Amtrak and with external stakeholders.

Objective 1
Provide structured training and resources on asset management concepts, life cycle management, and performance strategies tailored to various internal stakeholders across Amtrak.

Measured Outcome: Training resources developed and made accessible to internal stakeholders
Responsible Parties: IMCS
Key Actions: Conduct workshops to align stakeholders on asset management standards, enhance field skills through training and hiring, develop collaboration tools for consistent practices, and establish a Structures training program

Objective 2
Engage external partners, third parties, and contractors through education and guidance on Amtrak’s asset management approach and their roles in supporting its implementation.

Measured Outcome: Guidance and outreach delivered to external partners to support asset management alignment
Responsible Parties: IMCS, CAPD Engineering Services, and Procurement
Key Actions: Develop outreach materials and conduct workshops for external stakeholders and contractors to align on asset management standards, supported by collaboration tools to engage partners and ensure consistent asset management practices

Implementation Plan

Successful implementation of Amtrak's vision for infrastructure requires a purposeful approach that balances near–term actions with long–term improvements, ensuring progress is both measurable and sustainable. Grouping actions into short–, medium–, and long–term phases lays the groundwork for an efficient, sustainable, and optimized asset management program and establishes accountability, provides clear benchmarks for success, and allows for adjustments as the program matures.



Short–Term Actions | Phase 1 (2026)

The first phase focuses on building a strong asset management foundation and delivering early wins. In this phase, Amtrak will:

- Set clear direction with an Asset Management Policy and a Strategic Asset Management Plan (SAMP) to guide decisions and establish accountability.
- Strengthen collaboration by clarifying roles and responsibilities so IMCS, CAPD, and other departments can work together seamlessly and effectively.
- Build core processes through the development and adoption of asset lifecycle processes, procedures, and standards that are aligned with ISO 55000 and industry best practices for the various engineering disciplines.
- Collect data and begin performance reporting to build a shared understanding of asset condition, risk, and performance.

Medium–Term Actions | Phase 2 (2027–2028)

The second phase builds on the established asset management foundation by extending core processes and implementing new technologies to make more informed decisions and continue advancing asset management practices. In this phase, Amtrak will:

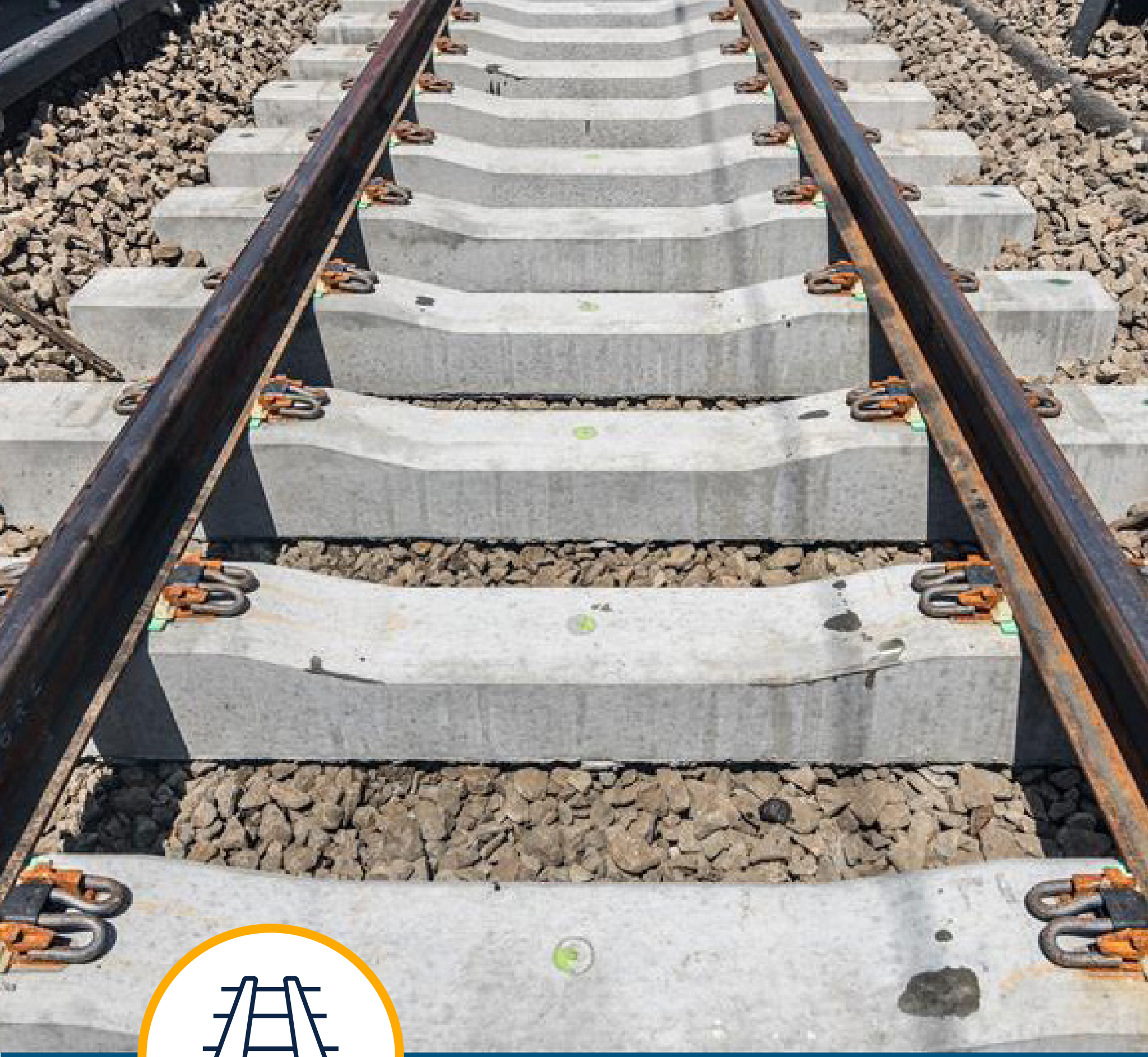
- Expand lifecycle planning across more asset types, from inspections and preventive maintenance to replacements and long–term improvements.
- Harness technology and data through upgraded data systems, dashboards, and reporting tools – including optimized use of IBM Maximo Application Suite (MAS) – to deliver timely, reliable information for decision–making.
- Invest in workforce development with structured training and skills development so staff at all levels can effectively apply asset management principles.
- Align funding with performance by connecting capital planning and resource allocation more directly to asset needs, risks, and organizational priorities.

Long–Term Actions | Phase 3 (2029–2031)

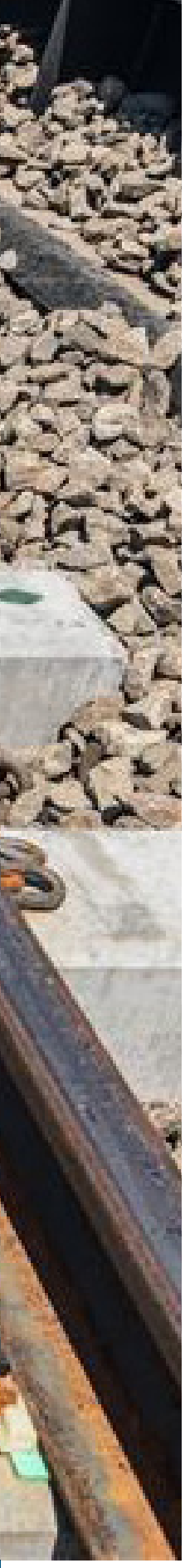
The third phase focuses on integrating asset management principles across Amtrak and adopting predictive methodologies that anticipate future needs. Priorities center on full adoption of long–term decision–making and lifecycle thinking that guides every investment. Procedures and protocols established during earlier phases will be expanded across disciplines, so asset management principles carry across departments and project planning phases. In this phase, Amtrak will:

- Monitor and optimize performance by tracking performance across all asset classes and refining strategies based on evidence.
- Leverage advanced analytics through predictive modeling to anticipate future needs and optimize long–term investments.
- Plan sustainable investments by aligning lifecycle strategies with planning and budgeting so assets are managed for long–term sustainability and resilience.
- Embed a culture of asset management where principles guide planning, investment, and operations, lessons learned are shared, and cross–departmental collaboration is standard practice.

Appendices



Track Asset Strategy



Track Asset Strategy

Pursuant to 49 U.S.C § 24320(a)(2), this appendix captures the unconstrained funding needs to adopt a normalized or steady state management strategy necessary to achieve SOGR. It also identifies the scope of work that needs to be accomplished based on the condition of the assets and the current state of backlog.

This appendix contains the following sections:

- **Asset Inventory** – provides details on the scope of assets and progress made in strengthening the asset registry.
- **Asset Condition and Monitoring** – describes how assets are inspected, monitored, and scored, including the transition from age–based methods to broader condition assessment frameworks.
- **Asset Lifecycle Planning** – outlines the steady state actions required to maintain assets and reduce the SOGR backlog.
- **Actions by Focus Area & Goal** – outlines how the strategy advances the goals of Amtrak's five focus areas through discipline–specific actions.
- **Funding Needs** – provides an assessment of the unconstrained steady state program and the forecasted work bank necessary to bring the assets into SOGR.

Responsible Official

Pursuant to 49 U.S.C § 24320(c)(3)(c), the following individual is responsible for Track infrastructure owned or managed by Amtrak:

Herbert Wescott, Deputy Chief Engineer Track

Overview

Track is the backbone of Amtrak's infrastructure, directly influencing safety, ride quality, and service reliability. In IALP2024, Track assets were assessed solely by age, which limited Amtrak's ability to fully evaluate condition and prioritize renewals. Since then, Track has advanced by introducing condition assessment frameworks that provide transparency into asset health and create a stronger foundation for lifecycle planning and investment.

IALP2026 builds on that baseline, demonstrating measurable progress in developing data–driven methodologies, strengthening consistency across asset types, and aligning Track strategies with Amtrak's asset management goals in the five focus areas. This appendix highlights those advances while identifying the continued funding and renewal actions needed to achieve and sustain a state of good repair.

Amtrak owns and/or maintains most of the Northeast Corridor's main line track infrastructure, including the 1,205–track–mile spine that connects Washington D.C., Philadelphia, New York, and Boston – the busiest passenger rail corridor in the nation. Amtrak also maintains additional track on several branch lines and state–supported corridors through agreements with states and freight railroads. In total, Amtrak is responsible for 2,478 miles of track infrastructure nationwide, including main line, yards, and sidings, valued at approximately $17.36 billion.



Asset Inventory

Since IALP2024, Amtrak has made meaningful progress in strengthening the Track asset registry, improving the accuracy and consistency of information available for planning and analysis. While significant improvements have been made, there are still gaps in the data, and additional work is required to achieve a complete and standardized inventory. Efforts to refine asset records, expand attribute coverage, and improve consistency in how asset locations are recorded across systems will continue in FY26–FY31.

Turnout Asset Records – To address the issue of incomplete and/or inaccurate data for Amtrak's turnout assets, IMCS Operations Support developed a GIS–based data collection tool for Track to use while performing condition assessments. The tool allows for the collection of any missing attributes related to each turnout and has been crucial in the efforts to provide and maintain an accurate turnout inventory.

Asset Condition & Monitoring

Inspection and Monitoring Program

Track conducts a comprehensive inspection and monitoring program designed to identify faults, ensure regulatory compliance, and maintain safe operations. These activities range from daily on–the–ground visual inspections to advanced automated technologies that measure geometry, detect rail flaws, and evaluate tie condition. All inspections are carried out in accordance with the Amtrak MW 1000 standard—Limits and Specifications for Track Safety, Maintenance and Construction, Revised Date July 21, 2025—which exceeds FRA requirements and provides a higher level of quality assurance.

Because monitoring is a core part of managing Track assets, these activities not only safeguard daily operations but also provide the information needed to prioritize maintenance, support condition assessments, and inform long–term planning. The major inspection and monitoring activities are summarized below.

Visual Inspection: Walking or High-Rail	Visual inspections to check general track and roadbed conditions, safety limits, gauge, alignment, surface, ties, rail, etc. Some seasonal inspections are conducted.
Track Geometry Car	Assess the geometric profile of the track system, including both vertical and horizontal alignments, super–elevation, rail profile, ride quality, etc.
Sperry Rail Defect Car and Handheld Ultrasonic Inspection	Assess the rail for internal defects. Handheld ultrasonic test conducted following Sperry Car to confirm defects.
Ground Penetrating Radar	Assess the track bed foundation and identify defects.
Automated Wood Tie Inspection	Assess the condition of crossties across a 4–point rating system to identify problematic conditions and forecast deteriorating conditions

The results of monitoring activities provide the foundation for Track's condition assessment frameworks. These frameworks lean heavily on inspection results from field personnel, whose expertise remains critical to understanding asset condition across the network. By structuring these results into standardized ratings and supplementing them with available datasets, Track is building a more consistent and transparent basis for renewal prioritization.

Over time, additional data sources will be leveraged to strengthen condition assessments and support predictive analytics to forecast future performance. This evolution reflects a shift from purely compliance–driven monitoring to proactive lifecycle management, aligning Track with Amtrak's asset management goals of improving safety, strengthening financial stewardship, and accelerating progress toward SOGR.

Condition Assessment Frameworks

To date, Track has made significant advances in asset condition assessment and renewal efforts, expanding standardized methodologies across multiple asset types and delivering measurable improvements in system performance. For IALP2026, condition assessments have been applied to turnouts, rail, ballast, and wood ties, providing consistent, data–driven ratings to guide renewal priorities. Methodologies for additional asset types, including concrete ties, miter rail, and non–ballast/direct fixation (railway track that eliminates the need for traditional gravel ballast and wooden ties), are progressing through data collection, validation, or implementation.

This approach is already producing measurable results. For turnouts and rail, the percentage of assets not in SOGR decreased significantly after incorporating visual and measured condition data, and for wood ties, the percentage increased, providing a more accurate representation of track asset health, a clearer view of the backlog, and facilitating more accurate, data driven prioritization.

The chart below further illustrates these outcomes and demonstrates how condition based assessments are beginning to reshape renewal priorities across track assets.

Track Assets	Current Methodology	% Not in SOGR Since Implementing Condition Assessment Frameworks
Turnouts	Age, Measured, Visual	Decreased by 35%
Rail	Age, Measured	Main Line: Decreased by 46% Siding/Yards: Decreased by 31%
Ballast (Undercutting)	Measured	Baseline set at 8%
Ballast (Surfacing)	Measured	Baseline set at 5%
Wood Ties	Age, Measured	Main Line: Increased by 24%

SOGR & Backlog

Amtrak considers a Track asset to be in a state of good repair when it meets the maintenance limits described in the Amtrak MW 1000, can continue to perform the functional requirements for which it was designed, and when lifecycle investment needs have been met, including all scheduled maintenance. Under the updated framework, assets are graded on a 0–5 scale, with 2.5 as the threshold for SOGR, consistent with 49 CFR §625.17. This definition ensures consistency across all Track assets and provides a transparent basis for evaluating renewal needs.

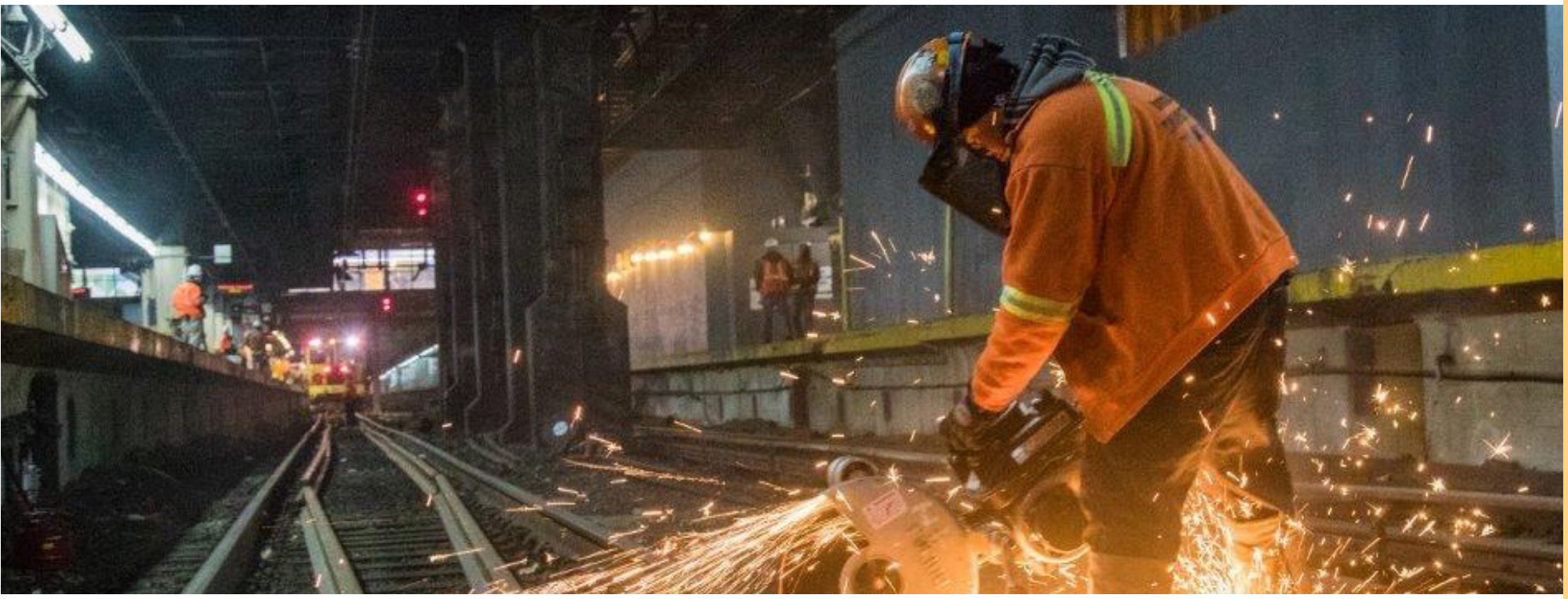
While condition–based assessments have been adopted for key asset types, others continue to rely on age–based scoring until additional data is collected. By incorporating condition data where available, Amtrak is now measuring the SOGR backlog with greater accuracy, avoiding the tendency of age–only methods to overstate renewal needs. This blended approach reflects both current limitations and the progress already achieved, providing a more credible picture of which assets are truly outside of SOGR and which remain serviceable.

The replacement cost of Track assets with a condition rating below 2.5 — those assessed as not being in SOGR — is estimated to be over $2.25 billion in 2025 dollars. The largest portion of this backlog is concentrated on the NEC main line and branch line assets owned by Amtrak, representing nearly $1.52 billion in 2025 dollars. An additional $84.7 million backlog is present on the CSX leased lines which are capitally funded by the State of New York. The National Network accounts for $269.7 million in backlog, with an additional $376.9 million backlog on the Michigan–owned infrastructure. Turnouts represent the largest portion of the backlog at $1.34 billion, with the backlog on the NEC main line and branch lines alone representing $1.09 billion.

Inventory, Condition, & Backlog Charts

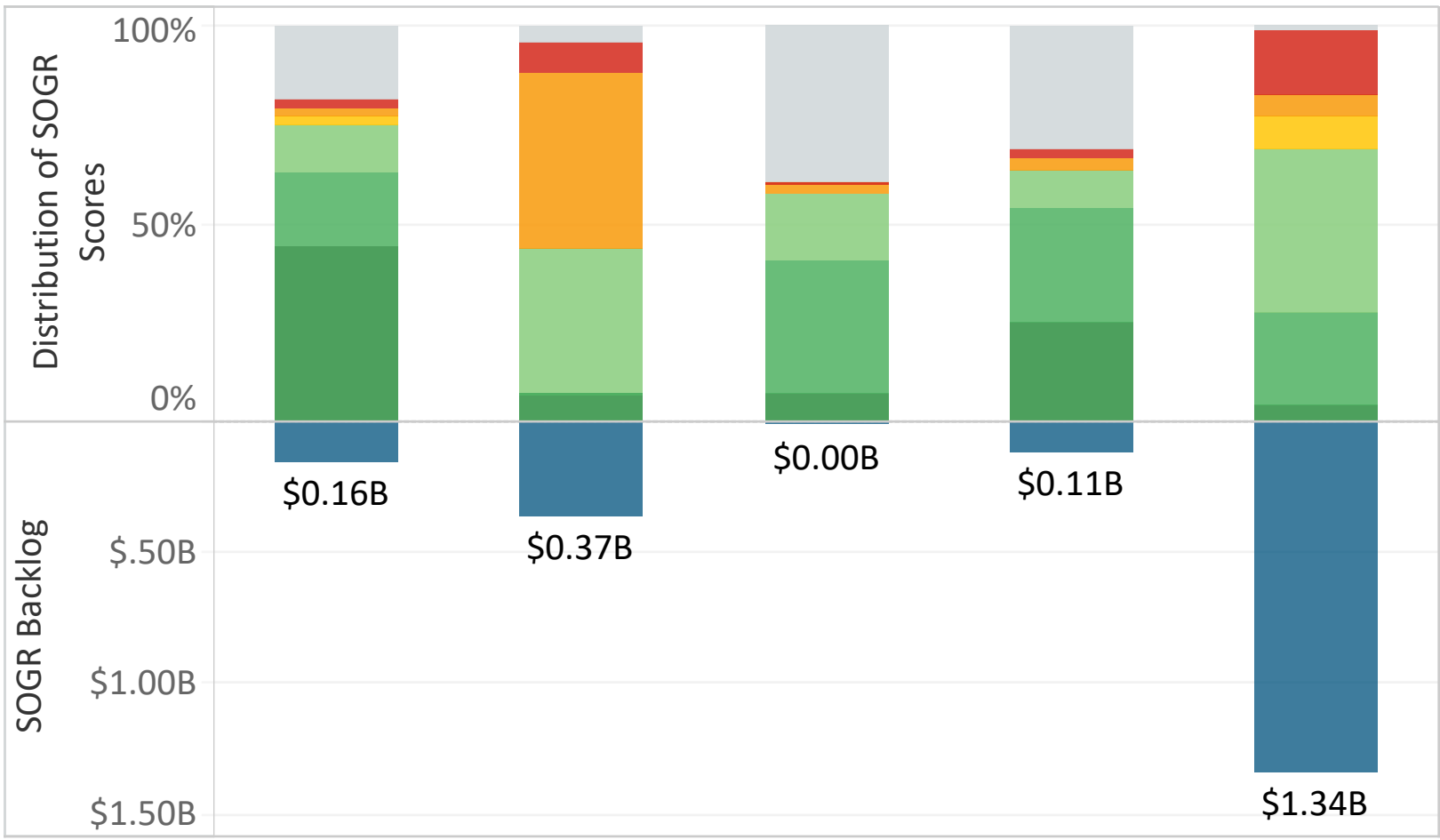
The charts on the following pages show the Track infrastructure inventory by asset type across the NEC main and branch lines and the National Network. They include a count of each asset and the average date of installation where available. Track miles reflect the actual mileage of a length of track, while rail miles reflects the length of both rails that make up the track; rail miles are double track miles to better represent rail as an asset type.

The charts show the percent of assets not in SOGR and average SOGR score by asset type, along with the distribution of SOGR scores and estimated costof the backlog. While the inventory includes all assets, SOGR scores represent only assets with available data at the time of reporting.



Track Asset Inventory, Condition, & Backlog

	Rail Main Line	Rail Siding Yard	Ballast Surfacing	Ballast Undercutting	Turnouts
Count	4,091	865	1,922	1,922	3,464
Unit	Rail Miles	Rail Miles	Track Miles	Track Miles	Each
Avg Install Date	2004	1974	–	–	1992
% NOT in SOGR	6%	54%	5%	8%	22%
Avg SOGR Score	4.3	2.5	3.7	4.0	3.2



SOGR Score
- Score Unavailable
- 1.0 - 1.9: Very Poor, Past Useful Life
- 2.0 - 2.4: Poor, Past Useful Life
- 2.5 - 2.9: Marginal, Nearing End of Useful Life
- 3.0 - 3.9: Fair
- 4.0 - 4.9: Good
- 5.0: Excellent

Track Asset Inventory, Condition, & Backlog

	Concrete Ties Main Line	Concrete Ties Sidings	Wood Ties Main Line	Wood Ties Sidings & Yards
Count	3,489,535	92,101	2,286,525	1,299,776
Unit	Each	Each	Each	Each
Avg Install Date	2010	2008	2011	1992
% NOT in SOGR	–	1%	24%	57%
Avg SOGR Score	4.4	4.4	3.6	2.1



Asset Lifecycle Planning

Asset lifecycle strategies capture the activities necessary to ensure Track assets remain functional, safe, and sustainable across Amtrak's rail network. IALP2026 Track strategies are focused on maintaining minimum safety standards and addressing known concerns through programmed capital replacement, and moving assets toward a state of good repair while establishing the path to a steady state program in future years. These strategies are aligned to FRA and the Amtrak MW 1000 standards and are supported by engineering judgment and knowledge drawn from maintenance inspection reports.

Because the NEC main line is the busiest railroad in North America, obtaining track access to perform work is a significant constraint to implementing asset lifecycle strategies. To mitigate this constraint, IALP2026 introduces the following work execution principles to make more efficient use of track access windows.

- Replacement of the entire track system if more than two primary assets (rail, ties, or ballast) are within 10 years of their useful life benchmark.
- Extension of the length of planned track system renewal should other sections within the vicinity be within 10 years of their useful life benchmark.
- Improved coordination with Communications & Signals to upgrade integrated components simultaneously — such as head timbers or turnout renewals with switch machine and other devices — to ensure that multiple track occupancies are avoided.

Capital investment decisions are prioritized using a committee approach that reviews risks and other inputs to shape the capital plan. This provides a clear implementation framework that ties asset condition to investment decisions and ensures progress is measured and updated with each IALP cycle.



Inspection & Monitoring

Confirms assets meet standards for safe operations.

Periodically test and assess condition of Track assets; continue to perform activities based on FRA requirements and the Amtrak MW 1000. Where and when possible, do joint turnout inspections with Communications & Signals (C&S).

Conduct on–track testing and inspections to assess track condition, including:

- Track Geometry Car: Provides track geometry measurements and Ground Penetrating Radar (GPR) scan of ballast and subgrade
- Sperry Ultrasonic Rail Inspection Car: Scans rails to identify internal rail defects
- Track Structure Assessment Vehicle (TSAVe) and Automated Track Inspection Vehicle (ATIV) (online summer 2026): Provide track geometry measurements, gauge restraint measurements (GRMS) and scanning LiDAR measurements for right–of–way clearances
- Acela monitoring systems (ARMS)
- 49 CFR 213 routine track visual inspections
- Automated wood tie inspection system: Perform on as–needed basis, typically not more frequently than current cycle of approximately 5 years

Implement location–specific remote condition monitoring systems, including:

- Wheel Impact Load Detectors (WILDs)
- Truck performance (L/V sensor) detector
- Weather stations and rail temperature monitoring: Provides real–time data used to determine when speed restrictions are put in place during periods of high heat to protect against track buckling
- Hot box detectors and dragging equipment detectors: These are C&S assets whose primary purpose is to monitor vehicles to mitigate against derailments but provide a secondary benefit to Track
- Slope monitoring and rock fall detectors

Preventive Maintenance

Ensures assets reliably support performance requirements.

Strategically intervene as Track asset conditions decline to achieve maximum life; continue to perform activities based on FRA requirements and the Amtrak MW 1000.

Perform preventive maintenance activities to achieve the asset useful life benchmark for operations (geometry, track class, etc.), including:

- Vegetation control
- Ditch cleaning
- Rail lubrication
- Spotting ties
- Grinding frogs
- Summer and winter preparation activities for seasonal changes

Corrective Maintenance

Restores asset functions following failure or degradation.

Reactively address failures and defects in Track assets, returning them to maintenance standards; continue to perform activities based on FRA requirements and the Amtrak MW 1000.

Perform unplanned maintenance following identification of safety defects to return track to maintenance level standards per the Amtrak MW 1000.

Perform planned corrective maintenance to remove emerging defects based on risk and install permanent solutions where appropriate.

Capital Maintenance

Rehabilitates assets to operational design standards to maintain performance.

Perform capital maintenance to restore Track assets to construction standards as defined by FRA and the Amtrak MW 1000.

Conduct surfacing and lining operations to restore track geometry design, including:

- Performing cyclical track surfacing driven by analysis of geometry car data
- Performing track surfacing on a 3 – 4 year cycle for Track Class 6 – 8 to maintain operational performance and support network capability
- Returning to perform settlement surfacing at interlocking install locations within 12–18 months to correct for initial settlement

Perform limited rail grinding to restore the railhead profile, remove rail corrugation and reduce rail deterioration.

Capital Replacement

Replaces assets nearing the end of functional life to maintain performance.

Replacement in whole or part of the Track structure to restore design capability of assets when maintenance is no longer cost–effective or presents an unacceptable safety or operational risk. Factors considered in capital replacement decisions include defect rate, wear, inability to source spare parts, and age.

Replace rail on a schedule depending on track usage and class to achieve SOGR and maintain operational performance. **This IALP cycle introduces a rail replacement program.**

- Track Class 1–4
- Replace rail every 60 years on all off–corridor running rail.
  - – Replace rail every 55 years on all curved running rail.
  - – Deliver the work bank spread over a 10–year period to manage the backlog of rail renewals and provide a levelled work program.
- Track Class 5–8
  - – Replace rail every 50 years on all tangent running rail.
  - – Replace rail every 40 years on all curved running rail.
  - – Deliver the work bank spread over a 5–year period to manage the backlog of rail renewals and provide a levelled work program.
  - – For efficient use of track access, replace rail to coincide with tie renewal if tie life will expire within 10 years of planned work or if ties are wood.
- Obsolete Sections
  - – Replace all 119LB, 152LB, and 155LB rail sections at the earliest opportunity as these sections are no longer manufactured.
- Cascading
  - – When rail is replaced, cascade fit rail from high track classes to low track classes, yards, and sidings.

Rehabilitate ballast through undercutting every 15–18 years to improve quality, restore track geometry design, achieve SOGR, and maintain operational performance.

- Use GPR data to develop undercutting plan.
- Perform undercutting during tie replacement to extend tie lifespan.

Replace turnouts on a schedule depending on track usage and class to achieve SOGR and maintain operational performance. **This IALP cycle introduces a turnout replacement program.**

- Track Class 1–4
  - – Replace turnouts every 35 years.
  - – Continue to subject proposals for new interlockings and configurations to a heightened level of scrutiny to ensure zero net gain in turnouts and that removal of redundant or obsolete assets is included in the proposals.

Track Class 5–8

- – Replace turnouts every 35 years.
- – To maintain operational performance, replace wood tie turnouts with concrete turnouts only when the surrounding wood tie tracks are replaced with concrete.
- – Continue to subject proposals for new interlockings and configurations to a heightened level of scrutiny to ensure zero net gain in turnouts and that removal of redundant or obsolete assets is included in the proposals.

Replace concrete ties on a schedule depending on track usage and class to achieve SOGR and maintain operational performance.

- Track Class 1–4
  - Replace concrete ties every 60 years on all off–corridor running rail.
  - Deliver the work bank spread over a 15–year period to manage the backlog of concrete tie renewals and provide a levelled work program.
- Track Class 5–8
  - Replace concrete ties every 45 years.
  - Replace any remaining Rocla ties (found in small clusters) in ones and twos as they wear out.
  - Deliver the work bank spread over a 10–year period to manage the backlog of concrete tie renewals and provide a levelled work program.
  - Replace concrete ties to coincide with rail renewal if rail life will expire within 10 years of planned work.

Replace wood ties on a schedule depending on track usage and class to achieve SOGR and maintain operational performance.

- Track Class 1–4
  - Replace wood ties every 35 years on all off–corridor running rail.
  - Deliver the work bank spread over a 10–year period to manage the backlog of wood tie renewals and provide a levelled work program.
  - Typical production delivery replaces every third tie. As a result, each location should be visited four times in a 35–year period, roughly every eight years.

Track Class 5–6

- Replace wood ties every 25 years on all off–corridor running rail.
- Replace wood ties with concrete ties on corridor at the earliest cost–effective opportunity.
- Replace wood ties with concrete ties where economical to do so on higher class lines (e.g., the Harrisburg Line).
- Deliver the work bank spread over a 10–year period to manage the backlog of wood tie renewals and provide a levelled work program.
- Typical production delivery replaces every third tie only. As a result, each location should be visited three times in a 25–year period, roughly every eight years.
- For efficient use of track access, replace wood ties to coincide with ballast renewal or rail renewal if ballast or rail life will expire within 10 years of planned work.

Capital Improvement

Renews assets to enhance functionality, increase capacity, or improve network performance.

Replacement in whole or part of the Track structure to improve the capability of the infrastructure. Improvements include raising track class to operate at higher speeds and reconfiguring interlockings to improve network capacity.

Capital Renewal activities are detailed in the 5–Year Plan section.

Actions by Focus Area & Goal

Building on the five focus areas established in IALP2026, the following actions represent Track's discipline–level application of Amtrak's asset management goals.

1 Focus Area 1: Standards & Processes (Foundation)

Establishes clear policies, procedures, and inspection protocols for consistent, efficient asset management.

Goal 1: Establish a strategic foundation for asset management through a defined asset management policy and strategic asset management plan.

Actions

Support development of an Asset Management Policy and implement within Track.

Support and contribute to the development of a Strategic Asset Management Plan and deploy within Track.

Goal 2: Advance a consistent, lifecycle–based approach to asset management through standardized processes.

Actions

Support development of foundational asset lifecycle processes.

Update inspection protocols and procedures to align to new and/or updated lifecycle processes.

Incorporate condition assessment evaluations during safety inspections.

Undertake a review of the Amtrak MW 1000 for preventive maintenance and ensure its incorporation into practice.

Implement new engineering practice on ballast maintenance.

Review and/or develop asset configuration standards from a maintenance and operations perspective.

2 Focus Area 2: Organizational Design and Alignment (Ownership)

Defines roles, responsibilities, and accountability to optimize collaboration and clarify ownership across asset classes.

Goal 1: Strengthen organizational alignment to support consistent and effective asset

Action

Formalize asset reliability engineering responsibilities within existing roles and/or create a new role within Track.

Goal 2: Foster shared accountability and clarify asset ownership and maintenance responsibilities across departments and operating entities.

Actions

Support definition of asset ownership and maintenance responsibilities for Track assets.

Coordinate asset management activities for assets shared with Communications & Signals.

Work with Structures to clearly define and document maintenance and inspection responsibility for bridge timbers.

3 Focus Area 3: Technology Advancement to Support Asset Management (Enabler)

Leverages advanced tools, including enterprise systems, AI, and remote monitoring, to make smarter, data–driven decisions.

Goal 1: Implement an Enterprise Asset Management (EAM) system.

Action

Support pilot EAM system implementation.

Goal 2: Leverage technology and innovation to enhance asset management and support SOGR.

Actions

Expand remote slope and cross–level monitoring.

Develop a plan and explore first steps toward automated inspections.

4 Focus Area 4: Asset Performance and Management (Execution)

Restores and sustains assets in a state of good repair while prioritizing investments to maximize safety, reliability, and operational performance.

Goal 1: Establish and formalize risk–based asset prioritization for all assets.

Actions

Conduct condition assessments on all Track assets based on IMCS' established asset condition assessment frameworks.

Assign criticality scores to all Track assets and add weighting factors defined through the RaMP Index.

Support implementation of RaMP Index.

Develop a documented problem/cause/remedy hierarchy to analyze asset failures.

Develop a documented procedure to implement solutions based on root cause analysis after a problem occurs.

Goal 2: Implement work planning for each asset class across all lifecycle strategies.

Actions

Define work planning goals and standard practices for Track assets.

Document planning cycles, inputs, and outputs to support repeatable, scalable practices.

Use data collected from inspections to generate condition assessments.

Support the creation of a centralized work bank.

Goal 3: Progress Technical Discipline asset classes towards a state of good repair.

Actions

Advance preventive maintenance programs to achieve a higher proportion of assets in SOGR.

Prioritize monitoring, planned and corrective maintenance, and root cause analysis programs to ensure assets can function in their required state.

Introduce and/or continue to execute enhanced assessment regimes to guard against decline of condition and ensure the asset remains in a safe operational state.

Maintain assets in a steady state once they have reached a state of good repair.

Support network capability improvements that allow infrastructure assets to contribute to capability targets established through the Amtrak Service Plans, including enabling higher speed operations.

Support the development of SOGR and asset performance KPIs.

Align data collection methods within Track to the established asset performance KPIs.

5 Focus Area 5: Asset Management Awareness and Engagement (Adoption)

Builds understanding of asset management through training, education, and outreach to foster a culture of stewardship.

Goal 1: Build enterprise–wide awareness and shared understanding of asset management, state of good repair, and lifecycle principles.

Action

Promote the value of asset management and its role across Amtrak.



Funding Needs

Despite progress in advancing condition assessments and lifecycle planning, Amtrak's track infrastructure continues to face a significant state of good repair (SOGR) backlog that requires sustained investment to address. The most recent analysis identified approximately $2.25 billion (in 2025 dollars) in track assets not currently in a state of good repair. Addressing this backlog is critical to maintaining safe and reliable service while transitioning toward a sustainable steady state track renewal program.

Amtrak's approach balances immediate backlog reduction needs with long term asset sustainability. The FY26–FY31 Capital Program identifies priority investments that address the most critical track renewal needs while supporting the transition toward a steady state maintenance program. In accordance with 49 U.S.C. §24320(a)(2), the funding needs for track assets beyond amounts already authorized or otherwise available are summarized below.

To advance backlog reduction, Amtrak has established a 15-year track SOGR backlog reduction program focused on systematically addressing track assets identified as not in a state of good repair. Over the FY26–FY31 planning horizon, approximately $901.6 million in investment is required to advance backlog reduction efforts and improve the overall condition of the track network.

The tables on the following page summarize track SOGR backlog and associated funding needs by route, including total backlog, estimated annual renewal cost, and investment needs for FY26–FY31.

Amtrak–Owned

	Total SOGR Backlog	Estimated Annual Cost	2026 – 2031 Investment Need
NEC Main Line	$1,091,063,816	$72,737,588	$436,425,526
NEC Branch Line	$431,684,683	$28,778,979	$172,673,873
National Network	$269,740,881	$17,982,725	$107,896,352

Maintained & Operated by Amtrak

	Total SOGR Backlog	Estimated Annual Cost	2026 – 2031 Investment Need
NEC Branch, Owned by CSX and Funded By State of New York	$84,734,565	$5,648,971	$33,893,826
National Network, Owned by State of Michigan	$376,860,784	$25,124,052	$150,744,314

	Total SOGR Backlog	Estimated Annual Cost	2026 – 2031 Investment Need
Amtrak SOGR Backlog 15–Year Program	$2,254,084,729	$150,272,315	$901,633,892



Structures Asset Strategy

Structures Asset Strategy



Pursuant to 49 U.S.C § 24320(a)(2), this appendix captures the unconstrained funding needs to adopt a normalized or steady state management strategy necessary to achieve SOGR. It also identifies the scope of work that needs to be accomplished based on the condition of the assets and the current state of backlog.

This appendix contains the following sections:

- **Asset Inventory** – provides details on the scope of assets and progress made in strengthening the asset registry.
- **Asset Condition and Monitoring** – describes how assets are inspected, monitored, and scored, including the transition from age–based methods to broader condition assessment frameworks.
- **Asset Lifecycle Planning** – outlines the steady state actions required to maintain assets and reduce the SOGR backlog.
- **Actions by Focus Area & Goal** – outlines how the strategy advances the goals of Amtrak's five focus areas through discipline–specific actions.
- **Funding Needs** – provides an assessment of the unconstrained steady state program and the forecasted work bank necessary to bring the assets into SOGR.

Responsible Official

Pursuant to 49 U.S.C § 24320(c)(3)(c), the following individual is responsible for Structures owned or managed by Amtrak:

Michael Zecca, Deputy Chief Engineer Structures

Overview

Structures are among the largest and most complex assets in Amtrak's infrastructure portfolio, encompassing bridges, movable bridge spans, tunnels, culverts, and facilities. These assets are essential to safe operations and reliable service yet are also some of the most resource–intensive assets to maintain and renew. Their size, complexity, and capital intensity make them critical to both daily operations and long–term system resilience. Unlike other infrastructure areas, Structures' assets face unique challenges due to their age, exposure to environmental stressors, and complex engineering requirements. Effective management demands tailored inspection protocols, condition monitoring, and long–term renewal strategies that address both structural integrity and evolving operational needs.

In IALP2024, condition assessments for Structures were limited to undergrade bridges, while other assets were evaluated using age records alone. This limited Amtrak's ability to fully capture asset health and prioritize effectively. Since then, methodologies have been refined for undergrade bridges and expanded to include movable bridge spans, tunnels, and culverts. The Structures portfolio also includes certain operational facilities (including maintenance and off–yard facilities) that support railroad functions. While not customer–facing, they play an essential role in day–to–day operations and are within or near station and yard environments. These areas are not currently subject to comprehensive condition assessments but including them in the portfolio ensures they are recognized in planning efforts and sets the stage for more consistent evaluation in future cycles.

IALP2026 applies more consistent and data–driven evaluation methods across multiple asset types and aligning Structures strategies with Amtrak's broader asset management goals and five focus areas. This appendix highlights these improvements and outlines the continued renewal and funding needs required to sustain SOGR.



Asset Inventory

Since IALP2024, Amtrak has made meaningful progress in strengthening the Structures asset registry, improving the accuracy and consistency of information available for planning and analysis.

Bridges, Tunnels, and Culverts Asset Records – IMCS Operations Support collaborated with the Structures team to conduct a comprehensive validation and cleanup of undergrade bridge, movable bridge, tunnel, and culvert asset datasets. This effort improved alignment between the Structures inventory and IMCS Operations Support's Maximo and IGIS systems.

Facilities Asset Records – This plan introduces certain operational facilities that support railroad functions as a distinct asset class within Structures, including buildings used for train servicing, crew support, and utility infrastructure. The facility inventory and asset hierarchy will continue to evolve in future iterations.

While progress has been made, additional work is required to achieve a complete and standardized inventory and resolve data gaps. Ongoing efforts through FY26–FY31 will focus on refining asset records, expanding attribute coverage, and improving consistency in how asset locations are recorded across systems.

Asset Condition & Monitoring

Inspection and Monitoring Program

Structures conducts a comprehensive inspection and monitoring program aligned with its bridge management manuals and FRA requirements. Routine inspections of bridges, tunnels, and culverts are conducted in accordance with FRA requirements and Amtrak standards, documenting condition, identifying defects, and ensuring safe day–to–day operation of the railroad.

Certified Structural Engineers perform annual inspections, applying engineering judgment to evaluate results and develop prioritized condition assessments. Their involvement ensures consistent evaluation of safety risks, deterioration trends, and renewal needs across the portfolio.

A key challenge for Structures is the limited availability of qualified and trained personnel. Expanding inspection capacity and building a skilled workforce are critical to reducing backlog and ensuring long–term asset stewardship. Increased funding is essential to support workforce development, training, and retention, enabling Amtrak to execute capital plans effectively and safely.

The major inspection and monitoring activities are summarized on the following page.

Fixed Bridges	
Inspection and Defect Identification (Annual)	Comprehensive visual assessment of bridge components with standard scoring from 0–6 (which is converted to a 1–5 scale for IALP purposes). Defects are coded as emergency and non–emergency. Covers undergrade bridges, signal bridges, public overhead highway bridges, and private overhead bridges.
Inspection and Defect Identification (Semi–Annual)	Visual assessment of deck components and rail fasteners of open deck and undergrade bridges. Pin connections of undergrade through and deck truss bridges.
Special Inspections (As Needed)	Comprehensive inspections are required for emergency situations (e.g., incidents) or unusual conditions.
Testing and Analysis	Concrete and Steel Corrosion Testing and Analysis (e.g., sampling, boundary element methods (BEM) developed to analyze the rate of corrosion, etc.).
Cyclical Maintenance	Concrete and steel surface painting, coating, waterproofing, etc. Replacement/rehab of expansion joints.
Movable Bridge Spans	
Monthly and Quarterly Inspections	Monthly comprehensive inspections of cables, electrical equipment, machinery, miter rails, shoes, etc.
Monthly and Quarterly Detailed Assessments	Detailed assessment and measurement of miter rails and expansion joints are completed in parallel with monthly/quarterly assessments.
Cyclical Maintenance	Greasing and lubrication of mechanical components.
Other Structures	
Bridges Over Waterways (Monthly)	Monthly comprehensive inspections and as needed. Underwater: Inspect foundations for scour. Substructures receive periodic diving inspections. With sounding line, measuring probe, or hydrographic instrument, record soundings around all in–water piers, and abutments. Flash floods: special inspections after flooding incidents by Track Inspection Foreman and Bridge Inspector.
Tunnel Inspections (Annual)	Conventional tunnels (constructed by mining or boring). Cut & cover type structures and overbuilds are treated as overhead highway bridges and inspected at the same frequency required for such highway structures.
Culvert Inspections (Annual)	Timing of these inspections may vary to take advantage of the lack of vegetation or dry periods.

The results of these monitoring activities form the foundation for Structures' condition assessment framework, supporting the development of standardized ratings and renewal prioritization.

Condition Assessment Frameworks

Amtrak has made significant advances in its approach to evaluating Structures assets. The methodology for undergrade bridges has been refined to improve accuracy, while condition–based assessments have been introduced for movable bridge spans, tunnels, and culverts. Together, these changes expand the use of inspection–driven scoring and reduce reliance on age–only methods.

Applying condition data provides a clearer and more defensible view of asset health. It allows Amtrak to distinguish between assets requiring full replacement and those where rehabilitation can extend service life, directing renewal funds more effectively and reducing the risk of overstating backlog needs.

The introduction of these methods has already demonstrated measurable benefits. Under age–only scoring, many Structures assets appeared to be in better condition than they truly were, masking risks and delaying necessary renewals. Condition–based assessments now provide a more accurate picture of asset health, ensuring that investment decisions are guided by actual conditions.

Structures Assets	Current Methodology	% Not in SOGR Since Implementing Condition Assessment Frameworks
Undergrade Bridges	Visual	Increased by 22%
Movable Bridge Spans	Age, Visual	Increased by 7%
Tunnels	Visual	Increased by 11%
Culverts	Visual	Decreased by 52%

For facilities, Amtrak has developed a facilities inventory structure that organizes assets into seven categories: civil/landscape, building exterior, building interior, HVAC, electrical, plumbing, and fire/life safety and security. A Facilities Asset Condition Assessment Guide is in development and will draw on industry best practices, including guidance from the Federal Transit Administration. A subsequent implementation plan will ensure these assessments, conducted by external resources, follow the new guide.

SOGR & Backlog

An asset is considered in SOGR when it performs its intended function and its lifecycle investment needs have been met, consistent with 49 CFR § 625.17. Assets scoring 2.5 or higher are considered to be in SOGR. This definition ensures consistency across all Structures assets and provides a transparent basis for evaluating renewal needs.

While condition–based assessments have been adopted for key asset types, others continue to rely on age–based scoring until additional data is collected. By incorporating condition data where available, Amtrak is now measuring the SOGR backlog with greater accuracy, avoiding the tendency of age–only methods to overstate renewal needs. This blended approach reflects both current limitations and the progress already achieved, providing a more credible picture of which assets are truly outside of SOGR and which remain serviceable.

The replacement cost of Structures assets (excluding Facilities) with a condition rating below 2.5 – those assessed as not being in SOGR – is estimated to be nearly $27.88 billion in 2025 dollars. The largest portion of this backlog is concentrated on the NEC main line, representing nearly $17.29 billion in 2025 dollars. An additional $2.58 billion backlog is present on the CSX–leased lines that are capitally funded by the State of New York. The National Network accounts for $1.57 billion million in backlog, with an additional $1.04 billion backlog on the Michigan–owned infrastructure.

While the overall backlog for Structures has decreased by $7.42 billion since 2024, undergrade bridges represented the largest part of the overall backlog in 2025, $18.43 billion, and the largest increase in backlog since 2024, $13.36 billion.

Inventory, Condition, & Backlog Charts

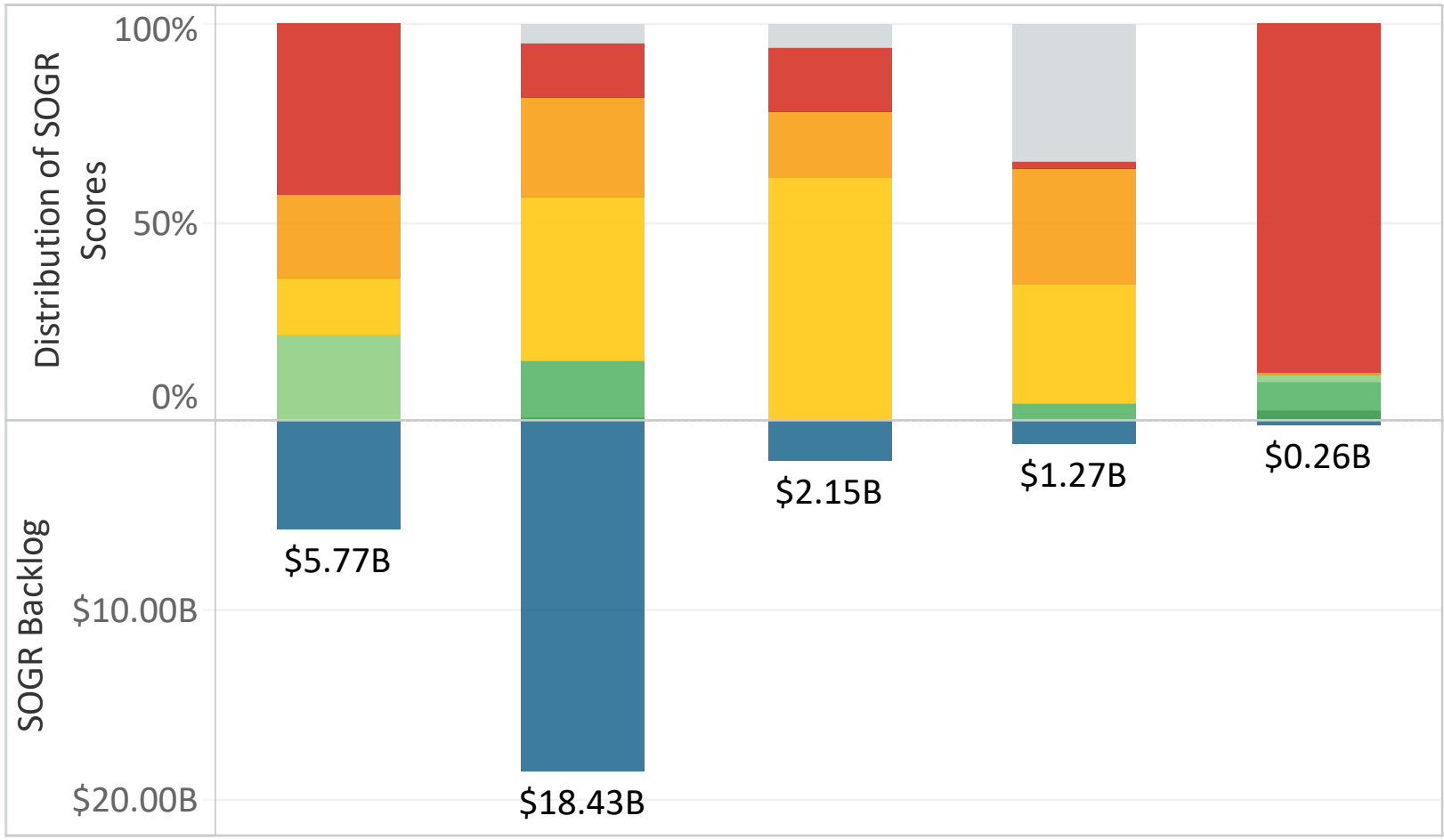
The charts on the following pages show the Structures infrastructure inventory by asset type across the NEC main and branch lines and the National Network. They include a count of each asset and the average date of installation where available.

The charts show the percent of assets not in SOGR and average SOGR score by asset type, along with the distribution of SOGR scores and estimated cost of the backlog. While the inventory includes all assets, SOGR scores represent only assets with available data at the time of reporting.



Structures Asset Inventory, Condition, & Backlog

	Movable Bridge Spans	Undergrade Bridges	Tunnels	Culverts	Signal Bridges
Count	14	1,310	18	1,201	563
Unit	Each	Each	Each	Each	Each
Avg Install Date	1935	1923	1910	1968	1921
% NOT in SOGR	64%	41%	35%	47%	88%
Avg SOGR Score	2.2	2.4	2.2	2.5	1.4



Asset Lifecycle Planning

Asset lifecycle strategies capture the activities necessary to ensure Structures assets – Bridges, Tunnels, Culverts, and Facilities – remain functional, safe, and sustainable across Amtrak's rail network. For IALP2026, the strategies for Structures are focused on maintaining minimum safety standards and addressing known concerns through programmed capital replacement, and moving assets toward a state of good repair while addressing the existing backlog and establishing the path to a steady state program in future years. These strategies are aligned to Amtrak standards and are supported by engineering judgment and knowledge drawn from maintenance inspection reports.

Maintaining structures requires longer planning horizons and larger capital commitments than other asset classes due to their complexity and cost, therefore rehabilitation strategies are frequently used to extend service life and sustain SOGR prior to full replacement. Priority assets have been identified to focus resources where they will have the greatest impact on safety and network reliability.

Amtrak applies a systematic approach to maintaining and rehabilitating Structures through scheduled inspections and planned interventions across divisions. Given the number and cost of critical assets requiring renewal, the approach incorporates both useful life benchmarks and targeted strategies for high–priority replacements and to promote consistency and alignment with broader maintenance objectives.

Transitioning to steady state maintenance requires first addressing the backlog. Near term asset management strategies are guided by condition–based needs and other operational considerations including asset configuration (e.g., alignment, capacity, etc.).

Capital investment decisions are prioritized using a committee approach that reviews risks and other inputs to shape the capital plan. This provides a clear implementation framework that ties asset condition to investment decisions and ensures progress is measured and updated with each IALP cycle.

Inspection & Monitoring

Confirms assets meet standards for safe operations.

Sustain structural integrity of Bridges and Facilities through inspection and monitoring programs in accordance with Amtrak standards and FRA–mandated requirements.

Bridges, Tunnels, & Culverts

Increase inspection and data collection granularity (including remote monitoring of load cycles, opening operations, trouble desk frequencies, etc.) and refined prioritization schema for advanced repair programming.

Implement real time monitoring of critical bridges (including load, vibrations, movement, etc.) and conduct inspections following flood events, earthquakes, or bridge strikes.

Conduct annual inspections designed for each bridge asset utilizing a 0–6 scale (better to worse), identify defects or potential defects at a component level, and use findings to drive the capital plan.

- Provide comprehensive follow–up and monitoring of all bridges rated at 6, 5 and 4.

Perform periodic inspections aligned to Amtrak and regulatory standards.

- Movable Bridge Spans
  - Continue monthly and quarterly program of comprehensive inspections of all movable bridge components and all movable bridge spans over waterways in accordance with 49 CFR 237.
- Signal Bridges
  - Implement a periodic inspection program to align with industry standards and be consistent with other bridge types. Focus on structural integrity, corrosion, and load–movable bearing safety.
- Undergrade Bridges
  - Execute Division–based program to inspect three to four small– to medium–sized undergrade bridges per year, with condition ratings feeding into rehabilitation planning.
- Tunnels and Culverts
  - Maintain established programs for annual tunnel and culvert inspections.

Facilities

Implement a building inspection program that commits to inspections every five years.

Establish a facility asset hierarchy based on inventory classification to enable lifecycle planning.

- Facilities inventory classification is underway.

Implement phased facility condition assessments targeting 20% of the nationwide portfolio annually, with a focus on identifying and documenting the top 20% of high–impact deficiencies.

- Assess the site, building envelope, and most critical asset systems to identify potential compliance issues with current applicable code, and assign condition scores on a scale from “Poor” to “Excellent”, based on priority factors including operations impacts, safety, time–to–impact, age, proximity to upcoming major programs, etc.

Preventive Maintenance

Ensures assets reliably support performance requirements.

Execute preventive maintenance programs aligned to Amtrak policies and procedures and evolve programs to incorporate all available asset data.

Develop preventive maintenance regimes by bridge type.

Create a manual to set minimum maintenance requirements for facilities, and transition to automatic generation of work orders based on manufacturer–recommended maintenance intervals.

Corrective Maintenance

Restores asset functions following failure or degradation.

Perform corrective maintenance as required based on inspection findings and asset criticality to maintain safe, reliable operations.

Perform corrective maintenance activities aligned to Amtrak standards.

Conduct corrective maintenance for Undergrade Bridges, Overhead Bridges, and Movable Bridge Spans according to updated asset condition assessment methodologies.

Finalize and adopt updated asset condition assessment methodologies for Signal Bridges, Tunnels, and Culverts and conduct corrective maintenance accordingly.

Better communicate facility repair needs utilizing standard maintenance orders and reporting protocols, and capture service requests for unplanned incidents.

Capital Maintenance

Rehabilitates assets to operational design standards to maintain performance.

Perform capital maintenance for all Structures assets in alignment with Amtrak and regulatory standards.

Significant capital maintenance of Bridges, generally accomplished through selective component replacement, ensures service levels and ongoing safe operations.

Conduct capital maintenance of Facilities as indicated by facilities assessments.

Overhaul Adams and Wilmington maintenance facilities.

Capital Replacement

Replaces assets nearing the end of functional life to maintain performance.

Execute lifecycle–based replacement programs to return Structure assets to a state of good repair and achieve steady state conditions. Transition to a predictive capital renewal program.

Design the long–term capital replacement program for Structures according to the expected design life of assets, listed below.

- Movable Bridges – 100 years
- Signal Bridges – 70 years
- Undergrade Bridges – 100 years
- Culverts – 80 years
- Tunnels – 150 years

Implement separate, asset–specific strategies for Movable Bridge Spans, Signal Bridges, Undergrade Bridges, Culverts, Tunnels, and Facilities to achieve a state of good repair and improve network performance. Phase implementation for select asset types.

- Implement Signal Bridge strategy for four per year.
- Implement Undergrade Bridge strategy for one medium–sized bridge per Division per year (three to four per corridor).
- Implement two to four major rehabs per year under the Culvert replacement program, starting in the MidAtlantic and New York Divisions.

Capital Improvement

Renews assets toenhance functionality, increase capacity,or improve network performance

Advance major projects to improve the capacity, resilience, and long–term performance of critical Structures assets.

Baltimore and Potomac Tunnel Replacement

- Replace the existing B&P tunnel with a new two–track tunnel and an improved alignment to increase reliability and accommodate demand for future train service.

East River Tunnel Rehabilitation

- Rehabilitate all four tunnels, beginning with Tunnels 1 and 2.

Pelham Bay Bridge Replacement

- Replace the existing Pelham Bay Bridge with a new, higher–level, fixed bridge that provides improved clearance for marine traffic.

Portal North Bridge
- Replace the existing Portal North Bridge with a new, high–level, fixed–span bridge to prevent malfunctions and improve reliability.

Hudson Tunnel Project
- Construct a new two–track Hudson Tunnel to allow the existing North River Tunnel to be closed for reconstruction.

Bush River Bridge
- Replace the existing two–track movable Bush River Bridge Spans with new, modern high–level, fixed structures with four tracks, increasing efficiency and network operations.

Gunpowder River Bridge
- Replace the existing Gunpowder River Bridge with new, modern, high–level, fixed structures with four tracks, increasing efficiency and network operations.

Connecticut River Bridge (Springfield Line)
- Replace the existing single–track Connecticut River Bridge with a new double–track bridge to increase speeds for commuter and intercity trains, eliminate bottlenecks, and enhance on–time performance.

Dock River Bridge Rehabilitation
- Perform major rehabilitation.

Lab Bridge
- Replace the existing swing Lab Bridge with a vertical lift bridge over the Hudson River. This project will be led by New York State DOT.

Facilities
- Add rail in Groton facility to create additional maintenance capacity.
- Extend transfer table in Wilmington.
- Expand facility capacities to support expansion goals throughout the corridor; prioritize improvements based on needs of technical disciplines.

Actions by Focus Area & Goal

Building on the five focus areas established in IALP2026, the following actions represent Structures's discipline–level application of Amtrak's asset management goals.

1 Focus Area 1: Standards & Processes (Foundation)

Establishes clear policies, procedures, and inspection protocols for consistent, efficient asset management.

Goal 1: Establish a strategic foundation for asset management through a defined asset management policy and strategic asset management plan.

Actions

Support the development of an Asset Management Policy and implement it within Structures.

Support and contribute to the development of a Strategic Asset Management Plan and deploy within Structures.

Goal 2: Advance a consistent, lifecycle–based approach to asset management through standardized processes.

Actions

Support development of foundational asset lifecycle processes.

Update inspection protocols and procedures to align with the new and/or updated lifecycle process.

Develop clear guidelines for how bridges, tunnels, culverts, and facilities are handled in work planning, from inspections to the capital pipeline.

Review and/or develop asset configuration standards from a maintenance and operations perspective.

Create a facility hierarchy (e.g., roofs, doors, etc.) to better categorize facility assets and condition.

Implement a comprehensive lifecycle approach upon acquisition of new assets.

2 Focus Area 2: Organizational Design and Alignment (Ownership)

Defines roles, responsibilities, and accountability to optimize collaboration and clarify ownership across asset classes.

Goal 1: Strengthen organizational alignment to support consistent and effective asset management practice.

Action

Formalize asset reliability engineering responsibilities within existing roles and/or create a new role within Structures as appropriate to guide maintenance strategies.

Goal 2: Foster shared accountability and clarify asset ownership and maintenance responsibilities across departments and operating entities.

Actions

Support the definition of asset ownership and maintenance responsibilities for Structures assets.

Work with Track to clearly define and document maintenance and inspection responsibility for bridge timbers.

Work with the other technical disciplines to clearly define ownership and management for facilities.

3 Focus Area 3: Technology Advancement to Support Asset Management (Enabler)

Leverages advanced tools, including enterprise systems, AI, and remote monitoring, to make smarter, data–driven decisions.

Goal 1: Implement an Enterprise Asset Management (EAM) system.

Action

Support pilot EAM system implementation.

Goal 2: Leverage technology and innovation to enhance asset management and support SOGR.

Actions

Explore remote sensing and monitoring technologies for Structures assets.

Explore Artificial Intelligence/Machine Learning (AI/ML) applications for predictive asset

4 Focus Area 4: Asset Performance and Management (Execution)

Restores and sustains assets in a state of good repair while prioritizing investments to maximize safety, reliability, and operational performance.

Goal 1: Establish and formalize risk–based asset prioritization for all assets.

Actions

Conduct condition assessments on all Structures assets based on IMCS' established asset condition guidance.

Assign criticality scores to all Structures assets and add weighting factors defined through the RaMP Index.

Support implementation of RaMP Index.

Develop a documented problem/cause remedy procedure to analyze everyday failures.

Develop a documented procedure to implement solutions based on root cause analysis after a problem occurs.

Goal 2: Implement work planning for each asset class across all lifecycle strategies.

Actions

Define work planning goals and standard practices for Structures assets.

Document planning cycles, inputs, and outputs to support repeatable, scalable practices.

Create a structured follow–up process for issues identified during inspections, categorized by time horizon.

Establish a work plan for facilities.

Support the creation of a centralized work bank.

Goal 3: Progress Technical Discipline asset classes towards a state of good repair.

Actions

Advance preventive maintenance program to achieve a higher proportion of assets in a state of good repair.

Prioritize monitoring, planned and corrective maintenance, and root cause analysis programs to ensure assets can function in their required state.

Introduce and/or continue to execute enhanced assessment regimes to guard against the decline of condition and ensure the asset remains in a safe operational state.

Maintain assets in a steady state once assets have reached a state of good repair.

Support network capability improvements that allow infrastructure assets to contribute to capability targets established through the Amtrak Service Plans, including enabling higher speed operations.

Support the development of SOGR and asset performance KPIs.

Align data collection methods within Structures to established performance KPIs.

5 Focus Area 5: Asset Management Awareness and Engagement (Adoption)

Builds understanding of asset management through training, education, and outreach to foster a culture of stewardship.

Goal 1: Build enterprise–wide awareness and shared understanding of asset management, state of good repair, and lifecycle principles.

Action

Promote the value of asset management and its role across Amtrak.

Funding Needs

Despite progress in advancing condition assessments and lifecycle planning, Amtrak's structure infrastructure continues to face a significant state of good repair (SOGR) backlog that requires sustained investment to address. The most recent analysis identified approximately $27.88 billion (in 2025 dollars) in structure assets not currently in a state of good repair. Addressing this backlog is critical to maintaining safe and reliable service while transitioning toward a sustainable steady state structure renewal program.

Amtrak's approach balances immediate backlog reduction needs with long term asset sustainability. The FY26–FY31 Capital Program identifies priority investments that address the most critical structure renewal needs while supporting the transition toward a steady state maintenance program. In accordance with 49 U.S.C. §24320(a)(2), the funding needs for structure assets beyond amounts already authorized or otherwise available are summarized below.

To advance backlog reduction, Amtrak has established a 15-year structure SOGR backlog reduction program focused on systematically addressing structure assets identified as not in a state of good repair. Over the FY26–FY31 planning horizon, approximately $11.15 billion in investment is required to advance backlog reduction efforts and improve the overall condition of the structure network.

The tables on the following page summarize structure SOGR backlog and associated funding needs by route, including total backlog, estimated annual renewal cost, and investment needs for FY26–FY31.

Amtrak–Owned

	Total SOGR Backlog	Estimated Annual Cost	2026 – 2031 Investment Need
NEC Main Line	$17,287,735,200	$1,152,515,680	$6,915,094,080
NEC Branch Line	$5,398,687,600	$359,912,507	$2,159,475,040
National Network	$1,573,091,200	$104,872,747	$629,236,480

Maintained & Operated by Amtrak

	Total SOGR Backlog	Estimated Annual Cost	2026 – 2031 Investment Need
NEC Branch, Owned by CSX and Funded By State of New York	$2,580,457,600	$172,030,507	$1,032,183,040
National Network, Owned by State of Michigan	$1,044,000,000	$69,600,000	$417,600,000

	Total SOGR Backlog	Estimated Annual Cost	2026 – 2031 Investment Need
Amtrak SOGR Backlog 15–Year Program	$27,883,971,600	$1,858,931,440	$11,153,588,640



Electric Traction Asset Strategy



Electric Traction Asset Strategy

Pursuant to 49 U.S.C § 24320(a)(2), this appendix captures the unconstrained funding needs to adopt a normalized or steady state management strategy necessary to achieve SOGR. It also identifies the scope of work that needs to be accomplished based on the condition of the assets and the current state of backlog.

This appendix contains the following sections:

- **Asset Inventory** – provides details on the scope of assets and progress made in strengthening the asset registry.
- **Asset Condition and Monitoring** – describes how assets are inspected, monitored, and scored, including the transition from age–based methods to broader condition assessment frameworks.
- **Asset Lifecycle Planning** – outlines the steady state actions required to maintain assets and reduce the SOGR backlog.
- **Actions by Focus Area & Goal** – outlines how the strategy advances the goals of Amtrak's five focus areas through discipline–specific actions.
- **Funding Needs** – provides an assessment of the unconstrained steady state program and the forecasted work bank necessary to bring the assets into SOGR.

Responsible Official

Pursuant to 49 U.S.C § 24320(c)(3)(c), the following individual is responsible for Electric Traction owned or managed by Amtrak:

Christopher White, Deputy Chief Engineer Electric Traction

Overview

Electric Traction (ET) infrastructure is essential to Amtrak's high–speed service, powering operations across the Northeast Corridor through a combination of legacy and modern systems. These assets operate continuously in demanding, high–speed environments, requiring precise coordination and robust condition monitoring to ensure an uninterrupted power supply and safe maintenance access.

IALP2024 established a foundational approach to ET asset evaluation – using condition–based scoring for catenary structures and age–based indicators for other components. IALP2026 builds on that baseline, demonstrating measurable progress in developing data–driven methodologies, strengthening consistency across asset types, and aligning ET strategies with Amtrak's asset management goals and five strategic focus areas. This appendix highlights those advances while identifying the continued funding and renewal actions needed to achieve and sustain SOGR.

Amtrak operates two electrification systems along the Northeast Corridor: a 25 Hz traction power system on the southern end between Washington, D.C., and New York, and a 60 Hz system on the northern end between New Haven and Boston. The 25 Hz system, originally built in the late 1920s, spans 235 route miles and delivers power through six converter stations, including the Safe Harbor hydroelectric facility. It also supports 106 route miles between Philadelphia and Harrisburg, PA. The 60 Hz system, commissioned in 2000, covers 155 route miles and features a modern constant–tension catenary designed for reliable service at speeds above 125 mph. Powered by local utilities through an autotransformer network, the system reflects Amtrak's most advanced electrification design.



Asset Inventory

Since IALP2024, Amtrak has made meaningful progress in strengthening the ET asset registry, improving the accuracy and reliability of information available for planning and analysis. This progress is demonstrated through targeted efforts to enhance data quality and verification. Efforts to refine asset records, expand attribute coverage, and improve consistency in how asset locations are recorded across systems will continue in FY26–FY31.

Catenary Structure Asset Records – IMCS Operations Support, in collaboration with ET, validated aerial inspection data to improve the accuracy of the catenary structure inventory. This effort ensured that asset counts reflect the actual number of structures rather than estimates based on the number of catenary poles. Additional refinement of these records will continue in the next plan period.

Asset Condition & Monitoring

Inspection and Monitoring Program

ET conducts a comprehensive inspection and monitoring program designed to identify faults, prioritize intervention, and maintain safe operations. Inspections are carried out across ET infrastructure assets at intervals in line with Amtrak catenary and substation inspection manuals. Each of the catenary and substation manuals is further divided into New York, Atlantic, and New England division manuals to guide unique inspection requirements.

Because monitoring is a core part of managing ET assets, these activities safeguard daily operations and provide the information needed to prioritize maintenance, support condition assessments, and inform long–term planning. The major inspection and monitoring activities are summarized below.

Catenary Lines/Structures	
Catenary Maintenance Vehicle (Cat Car) Inspection (Biennially)	Inspection of the overhead contact system, including alignment, tensioning, and cable diameter for potential wear. Visual inspection by engineers riding in the car.
Catenary Geometry Car Inspection (Quarterly)	The Catenary geometry car records height, stagger, gradient, and cable diameter (wear) and creates a list of suspected defects.
Visual Inspections	Visual inspection by engineers riding at the head of the train, main line weekly. Visual inspection by engineers walking elsewhere on the network – various intervals. Temperature extremes may necessitate daily inspections in accordance with inspection manuals.
Substations/Feeder Stations	
General Inspection (ET–28A/ETS–1) (Monthly)	Visual inspection of the general condition of the substation, including grounds, fence, buildings, safety devices, structures, and the status of critical grounding equipment.
Semi–Annual Inspection (ET–28C/ ETS–2 through ETS–7) (Semi–Annually)	Visual assessment of general condition as per above, plus further detailed review and operational checks of switches and disconnects, transformers, circuit breakers, switchgear, signal power machines, and substation batteries.

The results of inspection and monitoring activities will provide the foundation for ET's future condition assessment frameworks. These frameworks will lean heavily on inspection results from field personnel, whose expertise remains critical to understanding asset condition across the network. By structuring these results into standardized ratings and supplementing them with available datasets, ET plans to build a more consistent and transparent basis for renewal prioritization.

Over time, additional data sources will be leveraged to strengthen these assessments and support predictive practices that forecast future performance. This evolution reflects a shift from purely compliance–driven monitoring to proactive lifecycle management, aligning ET with Amtrak's asset management goals of improving safety, strengthening financial stewardship, and accelerating progress toward SOGR.

Condition Assessment Frameworks

Although ET's asset condition assessment methodologies remain unchanged since IALP2024, Amtrak has advanced inventory development and data validation processes. Through these efforts, Amtrak has a more credible picture of which assets are truly outside of SOGR and which remain serviceable. Namely, the percent of assets not in SOGR for catenary structures – the only ET asset type that considers multiple condition factors – decreased by nearly 20% since 2024.



SOGR & Backlog

Amtrak considers an ET asset to be in SOGR when the asset continues to perform the functional requirements for which it was designed, and when lifecycle investment needs have been met, including all scheduled maintenance. Under the updated framework, assets are graded on a 0–5 scale, with 2.5 as the threshold for SOGR, consistent with 49 CFR §625.17. This definition ensures consistency across all ET assets and provides a transparent basis for evaluating renewal needs.

The replacement cost of Electric Traction assets with a condition rating below 2.5—those assessed as not being in SOGR—is estimated to be over $6.16 billion in 2025 dollars, a significant increase from the $4.60 billion in 2024. The largest portion of Electric Traction backlog is concentrated on the South End of the NEC main line representing over $4.52 billion, with an additional backlog of almost $1.62 billion on the NEC Branch Lines. While overall changes in SOGR methodology and the introduction of condition assessments for catenary structures have contributed to changes in SOGR, the biggest contributor to the backlog increase is main line wiring, with a $1.87 billion increase in backlog. In contrast, the backlog for frequency converter switches has decreased by $4.2 million since 2024, showing the results of increased investment/asset renewals.

Inventory, Condition, & Backlog Charts

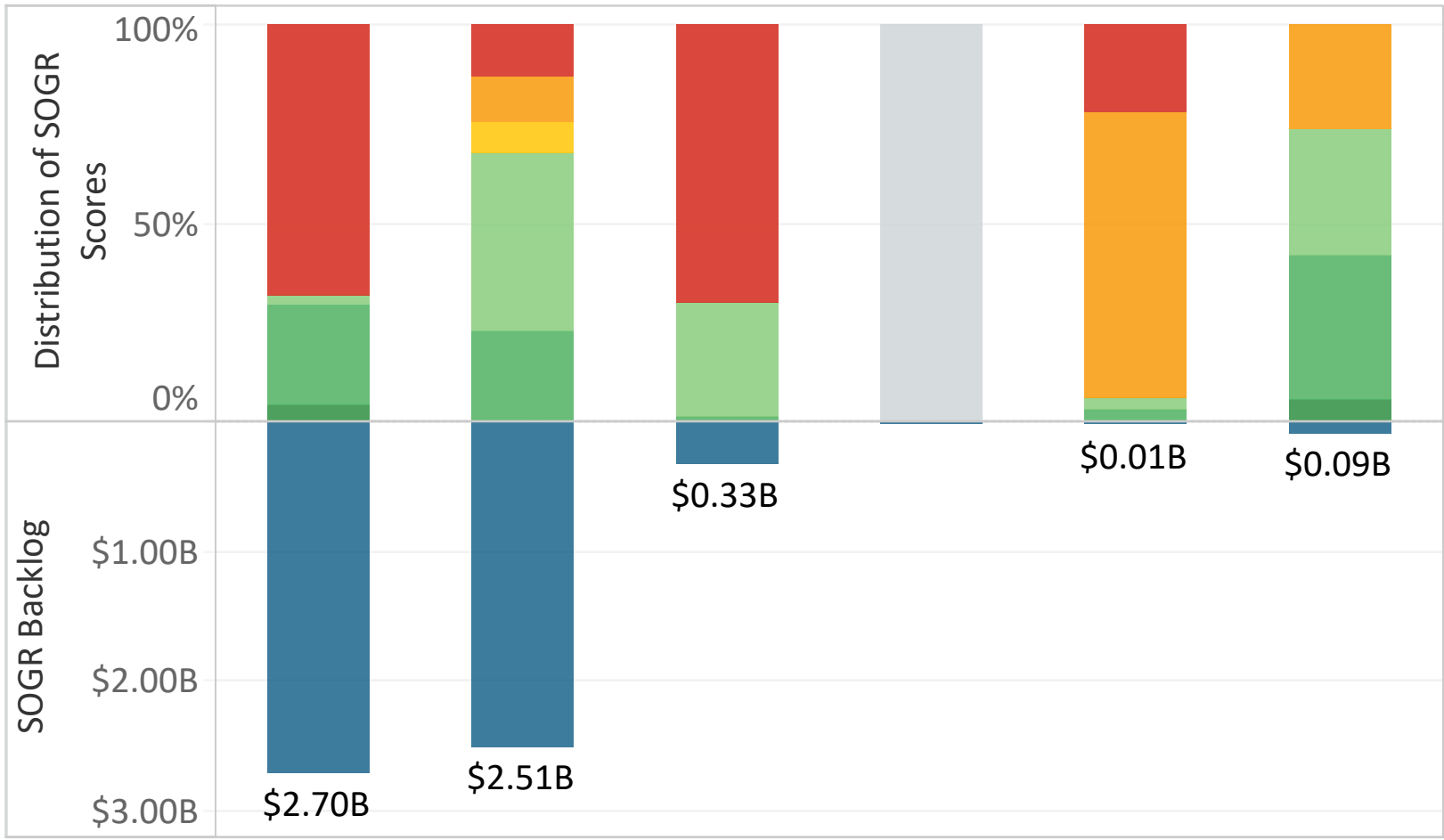
The charts on the following pages show the Electric Traction infrastructure inventory by asset type across the NEC main and branch lines and the National Network. They include a count of each asset and the average date of installation where available.

The charts show the percent of assets not in SOGR and average SOGR score by asset type, along with the distribution of SOGR scores and estimated cost of the backlog. While the inventory includes all assets, SOGR scores represent only assets with available data at the time of reporting.



Electric Traction Asset Inventory, Condition, & Backlog

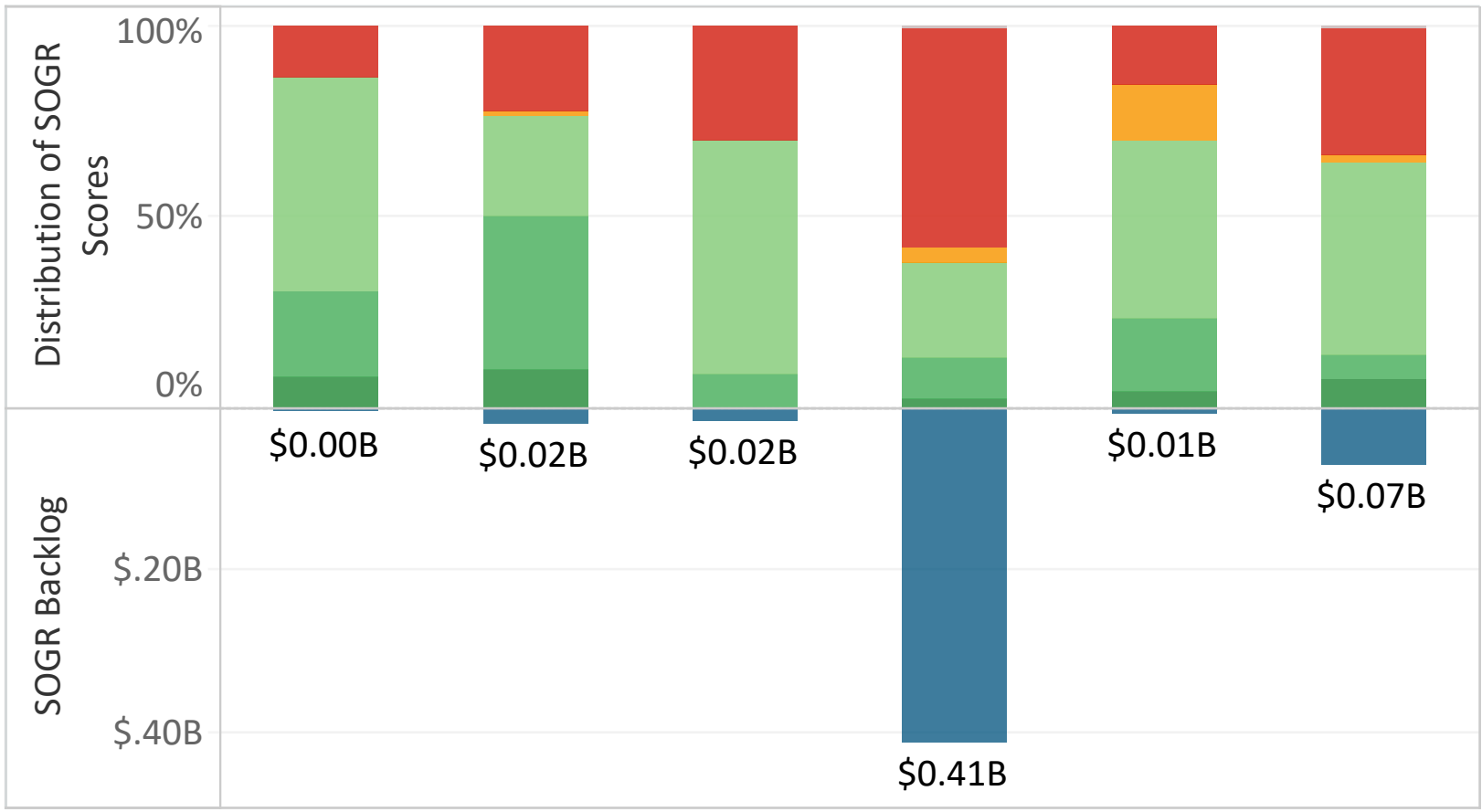
	Main Line Wiring	Catenary Structures	Substations	Third Rail	Signal Machines	Frequency Converters
Count	1,454	20,323	93	40	32	19
Unit	Track Miles	Each	Each	Track Miles	Each	Each
Avg Install Date	1961	1977	1952	–	1974	2005
% NOT in SOGR	68%	25%	70%	–	94%	26%
Avg SOGR Score	2.0	3.2	1.6	–	1.9	3.2



SOGR Score
- Score Unavailable
- 1.0 - 1.9: Very Poor, Past Useful Life
- 2.0 - 2.4: Poor, Past Useful Life
- 2.5 - 2.9: Marginal, Nearing End of Useful Life
- 3.0 - 3.9: Fair
- 4.0 - 4.9: Good
- 5.0: Excellent

Electric Traction Asset Inventory, Condition, & Backlog

	Freq Conv XFMRs	Other XFMRs	Freq Conv Switches	Other Switches	Freq Conv Circuit Breakers	Other Circuit Breakers
Count	59	134	334	4,270	116	1,138
Unit	Each	Each	Each	Each	Each	Each
Avg Install Date	1993	1993	1982	1964	1992	1983
% NOT in SOGR	14%	24%	30%	62%	30%	36%
Avg SOGR Score	3.1	3.1	2.5	2.0	2.8	2.5



SOGR Score
- Score Unavailable
- 1.0 - 1.9: Very Poor, Past Useful Life
- 2.0 - 2.4: Poor, Past Useful Life
- 2.5 - 2.9: Marginal, Nearing End of Useful Life
- 3.0 - 3.9: Fair
- 4.0 - 4.9: Good
- 5.0: Excellent

Asset Lifecycle Planning

Asset lifecycle strategies capture the activities necessary to ensure Electric Traction assets remain functional, safe, and sustainable across Amtrak's rail network. IALP2026 ET strategies are focused on maintaining minimum safety standards and addressing known concerns through programmed capital replacement, and moving assets toward a state of good repair while establishing the path to a steady–state program in future years. These strategies are aligned to Amtrak standards and are supported by engineering judgment and knowledge drawn from maintenance inspection reports.

The ET strategy emphasizes the importance of timely execution of asset lifecycle activities; despite resource constraints, it is vital to initiate replacements before assets reach the end of their useful life. Maintenance alone will not be sufficient if large groups of assets exceed their useful life at the same time. In particular, timely investment in New England is critical to prevent a rate of failure that outpaces replacement efforts, as occurred on the NEC South End.

Capital investment decisions are prioritized using a committee approach that reviews risks and other inputs to shape the capital plan. This provides a clear implementation framework that ties asset condition to investment decisions and ensures progress is measured and updated with each IALP cycle.

Inspection & Monitoring

Confirms assets meet standards for safe operations.

Perform general condition assessments of all Electric Traction infrastructure assets to support predictive analytics and investment planning and prioritization. Roll out condition assessment frameworks throughout this plan period.

Inspections to assess the condition of catenary lines and structures, including:

- Automated inspections by catenary car and catenary geometry car
- Visual inspections by engineers in rail car and on foot
- Aerial assessment of catenary structures

Visual assessment of substations and feeder stations, including:

- Monthly visual safety inspections
- Visual assessment of all asset conditions

Preventive Maintenance

Ensures assets reliably support performance requirements.

Perform basic operational checks and limited servicing where applicable.

Corrosion treatment and painting of catenary structures (limited due to resource constraints).

Revisit preventive maintenance programs. Currently they are not consistently applied and little to no maintenance is carried out on off–corridor transmission lines.

Corrective Maintenance

Confirms assets meet standards for safe operations.

Perform corrective maintenance activities to restore functionality and maintain service reliability.

Perform corrective maintenance activities aligned to Amtrak standards.

Repair failed or at–risk substation and feeder station components (e.g., Circuit Breakers, Transformers, Switches, etc.).

Perform limited replacement of catenary structures based on failure or high risk of failure. (Most corrective maintenance of failed catenary components is treated as capital replacement.)

Capital Maintenance

Rehabilitates assets to operational design standards to maintain performance.

Perform targeted, major rehabilitation of assets to achieve a state of good repair.

Perform targeted rehabilitation of catenary hardware, wire, and support structures to extend useful life and defer full replacement. **This IALP cycle introduces a catenary hardware and wire replacement program and a third rail replacement program.**

- Catenary Hardware
  - Replace catenary hardware every 30 years.
  - Schedule the replacement program to align with the mid–life rehabilitation of catenary structures.
- Catenary Wire
  - Replace the catenary wire when it reaches 20% of the installed cross section (approximately at 50 years).
  - Schedule the replacement program to align with catenary hardware / structure replacement.
- Third Rail
  - Replace third rail every 40 years.
  - Schedule the placement program to coincide with the replacement of running rail or ties if either will reach end of life within six years of the third rail.
  - Deliver the work bank spread over a 5–year period to manage the backlog of third rail renewals and provide a levelled work program.
  - Establish and continually utilize a Production workforce.

Perform major rehabilitation of substations and feeder stations to maintain reliability until full renewal is needed.

Capital Replacement

Replaces assets nearing the end of functional life to maintain performance.

Replace assets as needed to reduce failures and minimize risk of failure.

Limited replacement of catenary/transmission lines based on failure or high risk of failure to maintain reliability and achieve a state of good repair. (Catenary wire replacement is based on wear measurements from the catenary car and the catenary geometry car.) **This IALP cycle introduces an underground cable replacement program.**

- Transmission Lines
  - – Replace transmission lines every 50 years.
  - – Focus the program on off–corridor transmission lines, which are at high risk.
  - – Schedule replacement of on–corridor lines to coincide with catenary structure replacement.
- Underground Cable
  - – Replace underground cable every 60 years based on insulation.

Replace transformers, breakers, and switches to reduce risk of failure. Replace insulators on transmission lines on an as–needed basis. **This IALP cycle develops and introduces a transformer/insulator replacement program.**

- Transformers / Insulators
  - – Replace transformers / insulators every 40 years.
- Circuit Breakers
  - – Continue in–progress circuit breaker component replacement program (20% completion rate per year based on condition).

Rehabilitate and replace substations to maintain reliability and achieve a state of good repair. **This IALP cycle introduces a program to rehabilitate substations and replace control houses.**

- Substations
  - – Perform mid–life rehabilitation of substations every 20 years (estimated to cost 25% of capital replacement cost).
  - – Replace individual components of substations every 30 years.

Capital Improvement

Renews assets to enhance functionality, increase capacity, or improve network performance.

Limited modernization of overhead catenary wires to constant tension along a 23–mile section of track in New Jersey to accommodate operating at speeds up to 160 mph and increase reliability. Improvements include whole–scale replacement of motor generator sets with static frequency converters.

Off–Corridor Transmission Line Replacement

- Replace the off–property transmission lines to maintain reliability and support network capability improvement.

New Jersey High Speed Program

- Upgrade the catenary and power systems on the NEC to maintain reliability and support network capability improvement.

Zoo to Paoli Catenary Replacement

- Replace the overhead catenary system and the off–property transmission lines to maintain reliability and support network capability improvement.

River Towers

- Replace transmission poles crossing the Passaic River to improve the safety and reliability of the NEC.

Bridge to Hanson

- Replace SAP assemblies to maintain reliability.

County to Newark, Bridge to Landover, and Brill to Landlith Catenary Replacements

- Replace overhead catenary system to maintain reliability and support higher operating speeds.

New Static Frequency Converters to Replace Motor Generators

- Replace motor generators to improve signal power stability.

Substation Rehab and Control House Replacement Program

- Address critical SOGR backlog.



Actions by Focus Area & Goal

Building on the five focus areas established in IALP2026, the following actions represent Electric Traction's discipline–level application of Amtrak's asset management goals.

1 Focus Area 1: Standards & Processes (Foundation)

Establishes clear policies, procedures, and inspection protocols for consistent, efficient asset management.

Goal 1: Establish a strategic foundation for asset management through a defined asset management policy and strategic asset management plan.

Actions

Support the development of an Asset Management Policy and implement it within ET.

Support and contribute to the development of a Strategic Asset Management Plan and deploy within ET.

Goal 2: Advance a consistent, lifecycle–based approach to asset management through standardized processes.

Actions

Support development of foundational asset lifecycle processes.

Update inspection protocols and procedures to align with the new and/or updated lifecycle process.

Develop obsolescence guidance, including direction for coordinating with vendors.

Review and update substation inspection tasks to better align with NETA requirements and manufacturer recommendations.

Review and update AMT–2.

Review and/or develop asset configuration standards from a maintenance and operations perspective.

2 Focus Area 2: Organizational Design and Alignment (Ownership)

Defines roles, responsibilities, and accountability to optimize collaboration and clarify ownership across asset classes.

Goal 1: Strengthen organizational alignment to support consistent and effective asset management practices.

Action

Formalize asset reliability engineering responsibilities within existing roles and/or create a new role within ET as appropriate to guide maintenance strategies.

Goal 2: Foster shared accountability and clarify asset ownership and maintenance responsibilities across departments and operating entities.

Actions

Support the definition of asset ownership and maintenance responsibilities for ET assets.

3 Focus Area 3: Technology Advancement to Support Asset Management (Enabler)

Leverages advanced tools, including enterprise systems, AI, and remote monitoring, to make smarter, data–driven decisions.

Goal 1: Implement an Enterprise Asset Management (EAM) system.

Action

Support pilot EAM system implementation.

Goal 2: Leverage technology and innovation to enhance asset management and support SOGR.

Actions

Garner additional utility from the helicopter inspection program by creating a timeframe, prioritization, and assignments from visual inspections.

Digitize data from substation inspections to develop an ability to understand how many are overdue for Preventive Maintenance.

Build processes around the use of Pantograph scanners to flag defects, derive trends, and determine locations (use data, scale processes, and integrate into maintenance process).

Develop data processes around the Predictive and Automated monitoring system.

Look at technology to utilize online monitoring data; align with verification measurements, flag deterioration, and determine maintenance response (e.g. transformers and oil).

4 Focus Area 4: Asset Performance and Management (Execution)

Restores and sustains assets in a state of good repair while prioritizing investments to maximize safety, reliability, and operational performance.

Goal 1: Establish and formalize risk–based asset prioritization for all assets.

Actions

Conduct condition assessments on all ET assets based on IMCS' established asset condition frameworks.

Assign criticality scores to all ET assets and add weighting factors defined through the RaMP Index.

Support implementation of RaMP Index.

Develop a documented problem/cause remedy procedure to analyze everyday failures.

Develop a documented procedure to implement solutions based on root cause analysis after a problem occurs.

Verify asset data and fill in missing details during transformer and circuit breaker inspections.

Update ET database to quantify wire type

Goal 2: Implement work planning for each asset class across all lifecycle strategies.

Actions

Define work planning goals and standard practices for ET assets.

Document planning cycles, inputs, and outputs to support repeatable, scalable practices.

Support the creation of a centralized work bank.

Goal 3: Progress Technical Discipline asset classes towards a state of good repair.

Actions

Advance preventive maintenance program to achieve a higher proportion of assets in SOGR.

Prioritize monitoring, planned and corrective maintenance, and root cause analysis programs to ensure assets can function in their required state.

Introduce and/or continue to execute enhanced assessment regimes to guard against the decline of condition and ensure the asset remains in a safe operational state.

Maintain assets in a steady state once assets have reached SOGR.

Support network capability improvements that allow infrastructure assets to contribute to capability targets established through the Amtrak Service Plans, including enabling higher speed operations.

Support the development of SOGR and asset performance KPIs.

Align data collection methods within ET to established performance KPIs.

5 Focus Area 5: Asset Management Awareness and Engagement (Adoption)

Builds understanding of asset management through training, education, and outreach to foster a culture of stewardship.

Goal 1: Build enterprise–wide awareness and shared understanding of asset management, state of good repair, and lifecycle principles.

Action

Promote the value of asset management and its role across Amtrak.



Funding Needs

Despite progress in advancing condition assessments and lifecycle planning, Amtrak's electric traction infrastructure continues to face a significant state of good repair (SOGR) backlog that requires sustained investment to address. The most recent analysis identified approximately $6.14 billion (in 2025 dollars) in electric traction assets not currently in a state of good repair. Addressing this backlog is critical to maintaining safe and reliable service while transitioning toward a sustainable steady state electric traction renewal program.

Amtrak's approach balances immediate backlog reduction needs with long term asset sustainability. The FY26–FY31 Capital Program identifies priority investments that address the most critical electric traction renewal needs while supporting the transition toward a steady state maintenance program. In accordance with 49 U.S.C. §24320(a)(2), the funding needs for electric traction assets beyond amounts already authorized or otherwise available are summarized below.

To advance backlog reduction, Amtrak has established a 15-year electric traction SOGR backlog reduction program focused on systematically addressing electric traction assets identified as not in a state of good repair. Over the FY26–FY31 planning horizon, approximately $2.46 billion in investment is required to advance backlog reduction efforts and improve the overall condition of the electric traction network.

The tables on the following page summarize electric traction SOGR backlog and associated funding needs by route, including total backlog, estimated annual renewal cost, and investment needs for FY26–FY31.

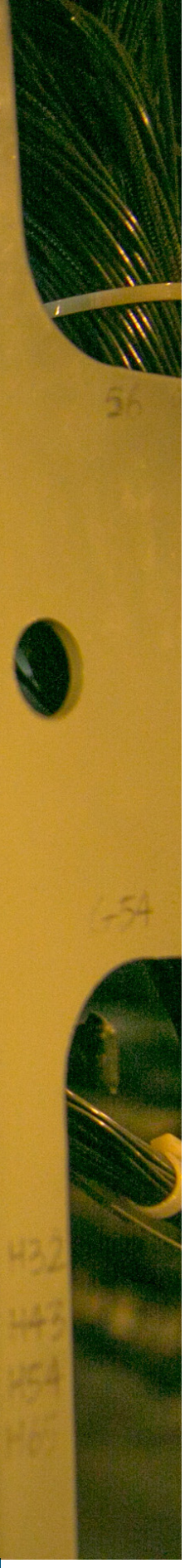
Amtrak–Owned

	Total SOGR Backlog	Estimated Annual Cost	2026 – 2031 Investment Need
NEC Main Line - North End	$18,850,000	$1,256,667	$7,540,000
NEC Main Line - South End	$4,521,752,407	$301,450,160	$1,808,700,963
NEC Branch Line - South End	$1,623,481,363	$108,232,091	$649,392,545

	Total SOGR Backlog	Estimated Annual Cost	2026 – 2031 Investment Need
Amtrak Electric Traction SOGR Backlog 15–Year Program	$6,164,083,770	$410,938,918	$2,465,633,508



Communications & Signals Asset Strategy



Communications & Signals Asset Strategy

Pursuant to 49 U.S.C § 24320(a)(2), this appendix captures the unconstrained funding needs to adopt a normalized or steady state management strategy necessary to achieve SOGR. It also identifies the scope of work that needs to be accomplished based on the condition of the assets and the current state of backlog.

This appendix contains the following sections:

- **Asset Inventory** – provides details on the scope of assets and progress made in strengthening the asset registry.
- **Asset Condition and Monitoring** – describes how assets are inspected, monitored, and scored, including the transition from age–based methods to broader condition assessment frameworks.
- **Asset Lifecycle Planning** – outlines the steady state actions required to maintain assets and reduce the SOGR backlog.
- **Actions by Focus Area & Goal** – outlines how the strategy advances the goals of Amtrak's five focus areas through discipline–specific actions.
- **Funding Needs** – provides an assessment of the unconstrained steady state program and the forecasted work bank necessary to bring the assets into SOGR.

Responsible Official

Pursuant to 49 U.S.C § 24320(c)(3)(c), the following individual is responsible for Communications & Signals owned or managed by Amtrak:

Nicholas Croce, Deputy Chief Engineer Communications & Signals

Overview

Communications & Signals (C&S) assets are critical to the safe and efficient operation of Amtrak's network. They provide the systems that safeguard train movements, protect passengers and employees, and enable reliable, coordinated service across the railroad. C&S assets are distinct from other infrastructure assets because many components face risks tied not only to physical condition but also to technological obsolescence. Managing these systems requires inspections, monitoring, and lifecycle strategies that address both wear–and–tear and the replacement of aging or unsupported technology.

In IALP2024, C&S assets were assessed using age–based methods alone, which limited Amtrak's ability to accurately reflect system condition or prioritize asset renewal. Since then, the C&S program has made substantial progress in asset management and reliability, marking a strategic shift toward condition–based planning and targeted modernization. Amtrak has introduced condition–based assessments for select assets and formally incorporated obsolescence as a key risk factor. While age remains part of the scoring framework, these updates provide a more accurate and actionable view of infrastructure needs.

IALP2026 builds on this momentum by applying more consistent evaluation methods and aligning C&S strategies with Amtrak's broader asset management goals and five strategic focus areas. This appendix summarizes the improvements made since IALP2024 and outlines continued actions to strengthen the reliability and resilience of C&S assets across the network.



Asset Inventory

Since IALP2024, Amtrak has made meaningful progress in strengthening the C&S asset registry, improving the accuracy and consistency of information available for planning and analysis. This progress is demonstrated through targeted efforts to enhance data quality and verification. Amtrak will continue efforts to refine asset records, expand attribute coverage, and improve consistency in how asset locations are recorded across systems throughout FY26–FY31.

Interlocking Control & Grade Crossing Warning Systems Asset Records – Communications & Signals assisted IMCS Operations Support in the refinement of interlocking control and grade crossing warning system asset data. The vital and non–vital microprocessor types in use at each interlocking have been identified.

Asset Condition & Monitoring

Inspection and Monitoring Program

C&S conducts an established inspection and monitoring program designed to identify faults, ensure regulatory compliance, and maintain safe operations. For signals, asset inspections are conducted at intervals in line with the Amtrak AMT–27 standard, which is fully compliant with federally mandated tests and inspections under 49 CFR § 236 and 49 CFR § 234. For communication assets, intervals are defined in Amtrak's internal standards.

Because monitoring is a core part of managing C&S assets, these activities safeguard daily operations and provide the information needed to prioritize maintenance, support renewal decisions, and inform long–term planning.

Amtrak has advanced this approach through the development of a C&S Asset Condition Assessment Guide, which defines the framework for evaluating asset condition and outlines the monitoring activities needed to support consistent data collection. Plans for implementation are progressing, with the guide serving as the foundation for expanding condition–based practices across additional asset types.



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Condition Assessment Frameworks

Amtrak has recently developed and implemented new condition assessments methodologies across key C&S assets, moving beyond age–based evaluations to approaches that more accurately reflect actual condition, obsolescence risks, and overall system performance. Advancing condition–based assessments represents a significant step forward in strengthening Amtrak's understanding of C&S infrastructure needs and renewal priorities.

Condition assessments have been introduced for switch machines (Wilmington Subdivision), interlocking control systems, and grade crossing control systems. These efforts provide a more reliable, data–driven picture of asset condition to help ensure that renewal funds are directed at the highest–priority needs.

Early results of these assessments have provided clearer insight into the C&S portfolio. In some cases, the percentage of assets identified as not in a SOGR increased, reflecting more accurate identification of renewal needs. In other cases, the share decreased, demonstrating that the assets were in better condition than previously measured through age–based methods. This enhanced transparency allows Amtrak to refine renewal and rehabilitation priorities, allocate resources more effectively, and more strategically plan for long–term system needs.

The chart below further illustrates these outcomes and demonstrates how condition–based assessments are beginning to reshape renewal priorities across C&S assets.

C&S Assets	Current Methodology	Change in % SOGR Since Implementing Condition Assessment Frameworks
Grade Crossings	Age, Maintenance	Increased by 3%
Interlocking Control Systems	Age, Maintenance	Increased by 28%
Switch Machines	Age, Visual	Decreased by 33%

SOGR & Backlog

Amtrak considers a C&S asset to be in SOGR when the asset continues to perform the functional requirements for which it was designed, and when lifecycle investment needs have been met, including all scheduled maintenance. Under the updated framework, assets are graded on a 0–5 scale, with 2.5 as the threshold for SOGR, consistent with 49 CFR §625.17. This definition ensures consistency across all C&S assets and provides a transparent basis for evaluating renewal needs.

While condition–based assessments have been adopted for key asset types, others continue to rely on age–based scoring until additional data is collected. By incorporating condition data where available, Amtrak is now measuring the SOGR backlog with greater accuracy, avoiding the tendency of age–only methods to overstate renewal needs. This blended approach reflects both current limitations and the progress already achieved, providing a more credible picture of which assets are truly outside of SOGR and which remain serviceable.

The replacement cost of C&S assets with a condition rating below 2.5 – those assessed as not being in SOGR– is estimated to be $596.0 million in 2025 dollars. The largest portion of this backlog is concentrated on the NEC main line and branch line assets owned by Amtrak, representing over $579.9 million in 2025 dollars. An additional $8.5 million backlog is present on the CSX–leased lines which are capitally funded by the State of New York. The National Network accounts for $5.3 million in backlog, with an additional $2.4 million backlog on the Michigan–owned infrastructure.

Inventory, Condition, & Backlog Charts

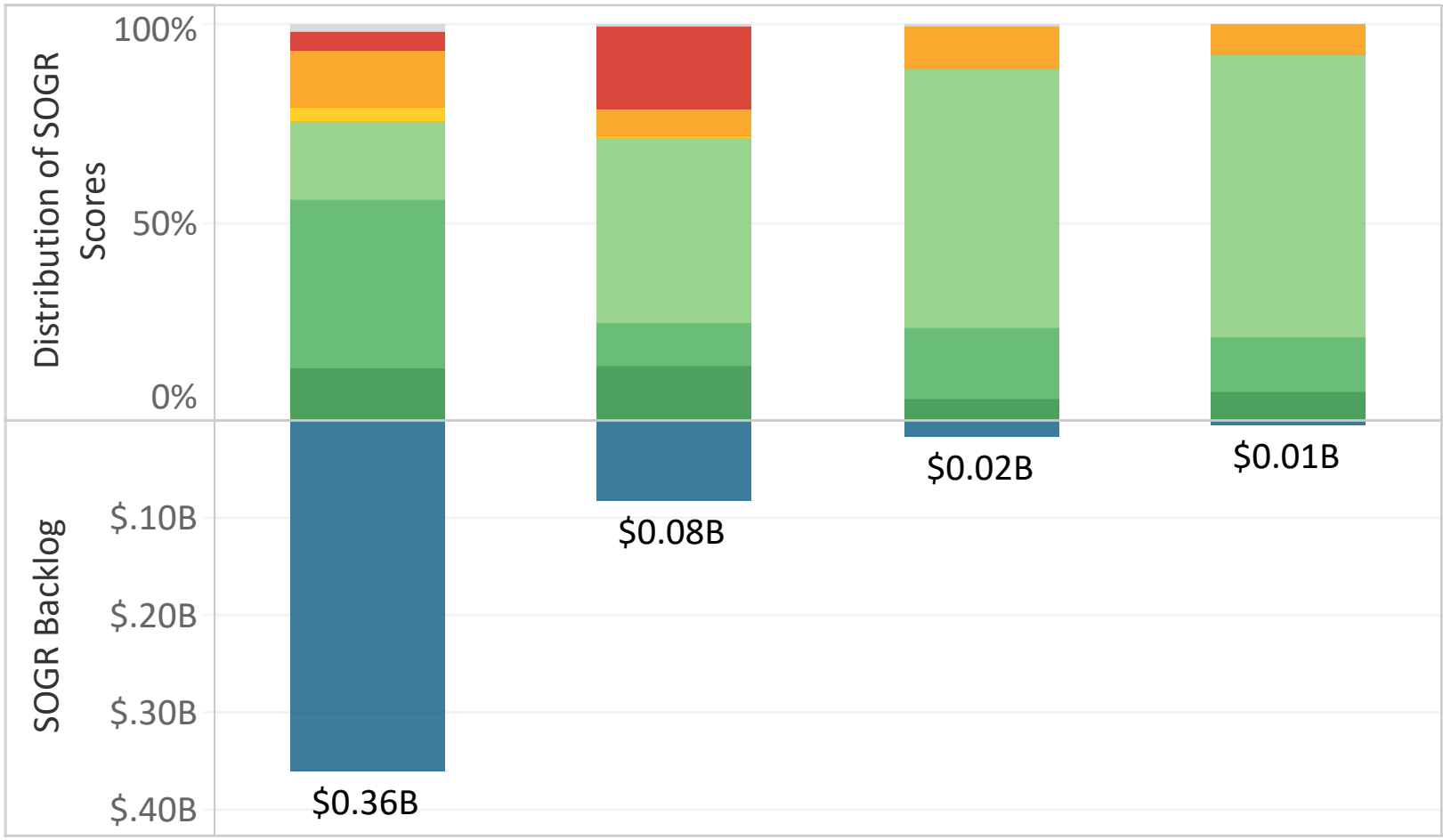
The charts on the following pages show the Communications & Signals infrastructure inventory by asset type across the NEC main and branch lines and the National Network. They include a count of each asset and the average date of installation where available.

The charts show the percent of assets not in SOGR and average SOGR score by asset type, along with the distribution of SOGR scores and estimated cost of the backlog. While the inventory includes all assets, SOGR scores represent only assets with available data at the time of reporting.



Communications & Signals Asset Inventory, Condition, & Backlog

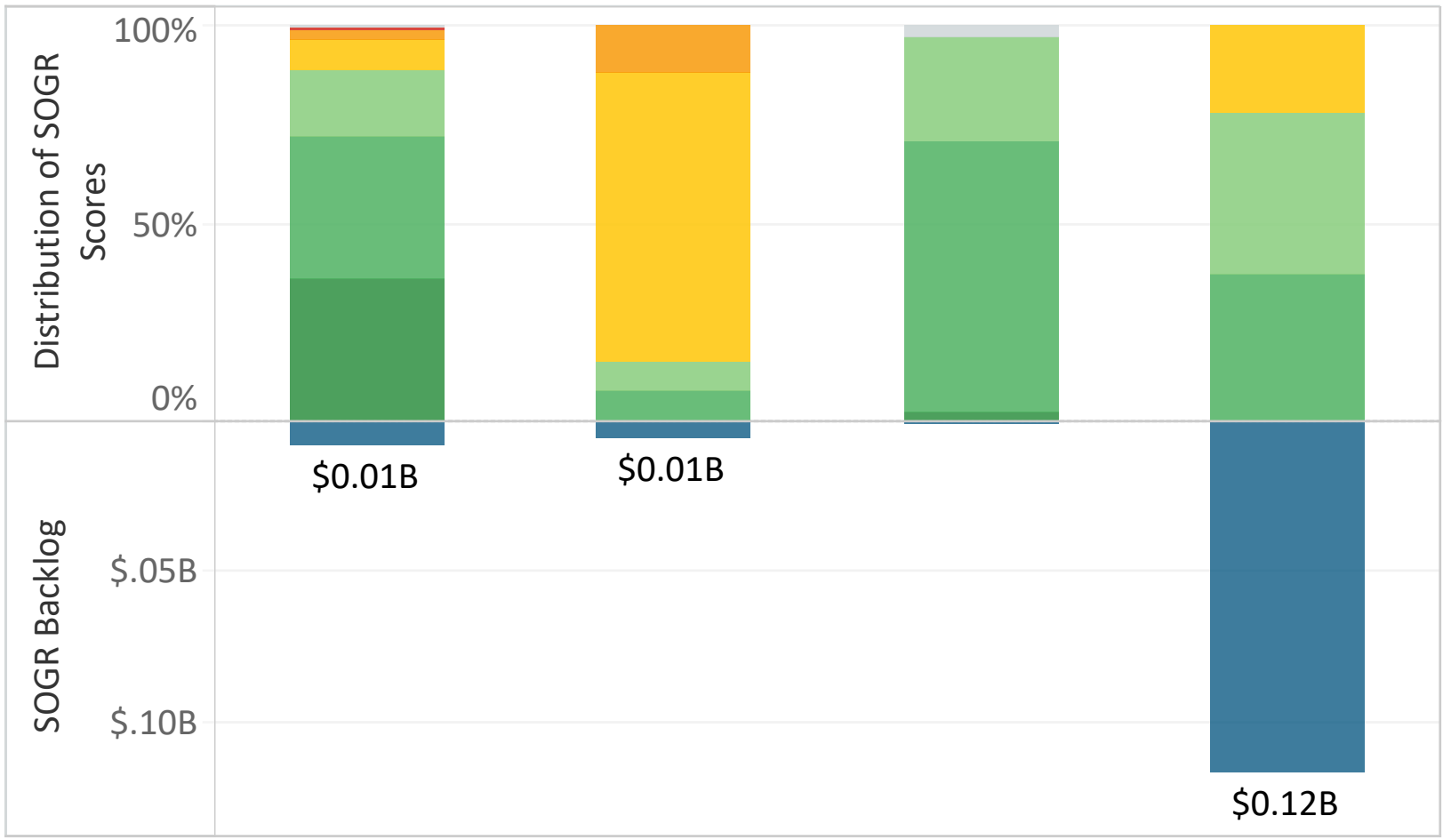
	Interlocking Control Systems	Switch Machines	Interlocking Signals	Automatic Block Signals
Count	269	4,011	2,267	1,055
Unit	Each	Each	Each	Each
Avg Install Date	1993	1995	1996	1994
% NOT in SOGR	20%	28%	11%	8%
Avg SOGR Score	3.6	2.9	3.2	3.2



SOGR Score
- Score Unavailable
- 1.0 - 1.9: Very Poor, Past Useful Life
- 2.0 - 2.4: Poor, Past Useful Life
- 2.5 - 2.9: Marginal, Nearing End of Useful Life
- 3.0 - 3.9: Fair
- 4.0 - 4.9: Good
- 5.0: Excellent

Communications & Signals Asset Inventory, Condition, & Backlog

	Grade Crossings	Switch Heaters	Defect Detectors	ABS Track Circuits
Count	291	494	334	8,033
Unit	Each	Each	Each	Each
Avg Install Date	2010	1989	2009	1992
% NOT in SOGR	3%	31%	–	20%
Avg SOGR Score	4.2	2.9	3.8	3.6



SOGR Score
- Score Unavailable
- 1.0 - 1.9: Very Poor, Past Useful Life
- 2.0 - 2.4: Poor, Past Useful Life
- 2.5 - 2.9: Marginal, Nearing End of Useful Life
- 3.0 - 3.9: Fair
- 4.0 - 4.9: Good
- 5.0: Excellent

Asset Lifecycle Planning

Asset lifecycle strategies capture the activities necessary to ensure Communications & Signals assets remain functional, safe, and sustainable across Amtrak's rail network.
IALP2026 C&S strategies are focused on maintaining minimum safety standards and addressing known concerns through programmed capital replacement, and moving assets toward a state of good repair while establishing the path to a steady state program in future years. These strategies are aligned to Amtrak standards and are supported by engineering judgment and knowledge drawn from maintenance inspection reports.

C&S activities are focused on addressing high–risk assets and leveraging efficiencies by coordinating asset replacements with other initiatives, such as switch renewals. Because track access for work is limited, the C&S program is closely tied to the Track program to maximize work completed during track outage windows while reducing multiple track occupancies. This approach also promotes increased awareness of interrelated issues and failures.

Capital investment decisions are prioritized using a committee approach that reviews risks and other inputs to shape the capital plan. This provides a clear implementation framework that ties asset condition to investment decisions and ensures progress is measured and updated with each IALP cycle.

Inspection & Monitoring

Confirms assets meet standards for safe operations.

Periodically inspect and test Communications & Signals assets to ensure safe operations.

Perform Communications inspections as required by Amtrak's regular inspection program.

Perform federally mandated inspections for signals as detailed in the AMT–27 standard.

Coordinate with Track on interlocking inspections and joint turnout inspections.

Preventive Maintenance

Ensures assets reliably support performance requirements.

Perform preventive maintenance activities as supported by available resources according to AMT–23 and AMT–27 standards to ensure safe operations and prevent asset decline.

Perform preventive maintenance activities for Signals assets based on AMT–27 standards.

Introduce additional preventive maintenance to ensure Signals assets remain within AMT–23 standards to increase reliability.

Analyze Communications & Signals asset failures and develop a preventive maintenance program to remove common causes of failure.

Conduct winter prep inspections for switch heater system components and replace electric elements as needed.

Corrective Maintenance

Restores asset functions following failure or degradation.

Perform corrective maintenance activities as needed to ensure safe operations and prevent asset decline.

Correct faults and issues identified during inspections and preventive maintenance activities, for example, replacing switch machine lock rods that show wear but still pass inspections.

Perform corrective maintenance activities for Signals assets based on AMT–27 and AMT–23 standards.

Capital Maintenance

Rehabilitates assets to operational design standards to maintain performance.

Rehabilitate assets as needed to maintain system reliability.

Rehabilitate and selectively replace Level A asset components, for example replacement of interlocking control system microprocessors, batteries, track circuits, etc. to maintain system reliability.

- Communication Facilities
  - – Rehabilitate shelters, cabinets, towers, duct banks, etc. every 15 years.
- Radio Systems
  - – Rehabilitate batteries, etc. every seven years.
  - – Spread rehabilitation work over a two–year period to provide a levelled work program.
- WAN / Other Network Devices
  - – Replace WAN and other network devices (estimated to be over 20 years old) every ten years.
  - – Note that there is an urgent need to address the backlog over the next ten years and replace all wayside equipment with fiber.
- Application Systems
  - – Replace access control devices (intrusion detection, etc.) every 15 years.
  - – Spread access control replacements over a five–year period to provide a levelled work program.
  - – Replace CCTV every ten years.
  - – Note that CCTV replacements are typically driven by changes to technology and often funded by grants. Replacement decisions are based on whole–life cost justification.
- CNOC Servers
  - – Replace CNOC servers every five years.
  - – Spread server replacements over a two–year period to provide a levelled work bank.
- ABS
  - – Selectively replace/refurbish ABS components based on individual component lifecycle and condition – e.g. batteries replaced per manufacturer recommended schedule, obsolete or aged microprocessor equipment replaced based on condition score, etc.

  This IALP cycle introduces an ABS section rehabilitation program based on whole–life cost justification.

- ACSES (Positive Train Control)
  - Replace ACSES subsystem components as required by individual component lifecycle and condition – i.e. replace back–office servers every seven years, replace communication managers every ten years or as required by obsolescence, replace WIU equipment within interlocking control systems, etc.

  This IALP cycle introduces an ACSES system rehabilitation program based on whole–life cost justification.
- Interlocking Control Systems
  - Selectively refurbish interlocking control system components based on individual component condition score – i.e. replace micro–processors and equipment with reduced reliability or obsolescence issues.

  This IALP cycle introduces an interlocking control system rehabilitation program based on whole–life cost justification.
- Highway Grade Crossings
  - Selectively refurbish highway grade crossing control system components based on individual component condition score.

  This IALP cycle introduces a highway grade crossing system rehabilitation program based on whole–life cost justification.

Capital Replacement

Replaces assets nearing the end of functional life to maintain performance.

Rehabilitate assets as needed to maintain system reliability. Replace assets at the end of their useful life to restore service reliability. Plan for replacements through long–range capital programs and funding cycles. When possible, replace assets where Track or other discipline capital programs provide an opportunity to take advantage of allocated track access and production resources.

Replace Level 1 asset systems where components are collectively nearing the end of useful life such that life extension through capital maintenance replacement of individual components is not cost–feasible compared to complete asset system renewal.

- Switch Machines
  - Replace switch machines according to updated asset condition assessment methodology.
  - Spread switch machine replacements over a ten–year period to provide a levelled work program and allow for the establishment and continual use of a Production workforce.
  - For efficient use of track access, schedule replacement of switch machines to coincide with work on other interlocking hardware.

  This IALP cycle introduces a switch machine replacement program.
- Switch Heaters
  - Replace the full switch heater cabinet and other components according to updated asset condition assessment methodology.
  - Replacement will be conducted based on whole–life cost justification and be scheduled to coincide with Interlocking maintenance/replacement.

- ABS
  - Replace trackside equipment, such as impedance bonds, according to updated asset condition assessment methodology.
  - Spread delivery of the work bank over a ten–year period to provide a levelled work program and allow for the establishment and continual use of a Production workforce.
  - Replace signals cable prior to complete infrastructure renewal—as required by cablecondition assessment through AMT–27 inspection— based on whole–life cost justification.

  This IALP cycle introduces an ABS replacement program with microprocessor–based cab, no wayside signal configuration.
- ACSES (Positive Train Control)
  - As ACSES infrastructure is a number of subsystems that function as a complete system across the rail network, system–wide replacement will occur as an incremental evolution of the system as subsystems are replaced with functional enhancements.
  - For budget purposes, it is assumed that all system components will be replaced within a 25–year period, where some components are replaced multiple times within that timeframe.
  - System replacement will be based on whole–life cost justification of replacement or introduction of new technology to support network capability improvements.
- Interlocking Control Systems
  - Replace central instrument housing assets every 40 years or as required by asset condition.
  - Note that this IALP cycle introduces an interlocking control system replacement program.
- Grade Crossings
  - Replace wayside assets including gate mechanisms, flashes and control systems every 40 years or as required by asset condition.

  This IALP cycle introduces a grade crossing replacement program.
- Movable Bridge Detection Systems
  - Replace movable bridge detection systems according to updated asset condition assessment methodology.
  - Schedule detection system replacement to coincide with replacement of other movable bridge components.

Capital Improvement

Renews assets to enhance functionality, increase capacity, or improve network performance.

Incrementally modernize Communications & Signals systems to improve network reliability and functionality (e.g., fiber optic upgrades, replacement of obsolete equipment, and deployment of new digital systems). Undertake improvement work to align with broader corridor or Track programs to maximize efficiency of track access.

Establish a program to replace Interlocking and ABS section control systems in advance of end of useful life to improve network performance. The introduction of new technologies will be considered based on whole–life cost justification.

- Work will be undertaken at Ham Interlocking, Guilford Interlocking, Conn Interlocking, Spring and Sweeney Interlockings, replacement of Winans and retirement of Bridge in support of FDT construction, and establishment of renewed 562 Territory at NEC various locations.

  This IALP cycle introduces a complete signal system upgrade program.

Radio Program
- Upgrade voice radio infrastructure across all systems, excluding portable radio communication.
- Spread server replacements over a two–year period to provide a levelled work bank.

Optical Transport Network (OTN)
- Improve overall bandwidth and functionality of fiber–optic network.
- Install new fiber optic lines in existing right–of–way and renew existing fiber–optic lines. More equipment will be installed in local hubs for increased capacity to increase bandwidth.

Positive Train Control (PTC)
- Introduce system functional enhancements and defect corrections in PTC subsystems to improve network performance.
- Maintain PTC infrastructure installed to meet 2020 compliance requirements and make functional
  improvements to additional subsystems or modifications of subsystem software.

Intermediate Wayside Signal Elimination
- Remove and replace wayside signals between interlockings with modern cab, no wayside systems.
- Design a program for systematic wayside signal replacement to address reliability issues and remove old, obsolete technology. Examples include the 562 Program from Baltimore to Washington County to Elmora, and Thorn to Zoo.

Air Switch Machine Modernization
- Establish a program to replace older air switch machines with more modern electric switch machines (Penn Station is an exception due to operational necessities) to improve network performance.
  - Replace the majority of air switches over the next five–year period.
  - For efficient use of track access schedule replacements to coincide with Track renewal work.

Interlocking Renewal Work
- Maintain the interlocking renewal program, as informed by regular inspection and coordination with Track, to improve network performance and reliability.



Actions by Focus Area & Goal

Building on the five focus areas established in IALP2026, the following actions represent Communications & Signals's discipline–level application of Amtrak's asset management goals.

1 Focus Area 1: Standards & Processes (Foundation)

Establishes clear policies, procedures, and inspection protocols for consistent, efficient asset management.

Goal 1: Establish a strategic foundation for asset management through a defined asset management policy and strategic asset management plan.

Actions

- Support the development of an Asset Management Policy and implement it within C&S.
- Support and contribute to the development of a Strategic Asset Management Plan and deploy within C&S.

Goal 2: Advance a consistent, lifecycle–based approach to asset management through standardized processes.

Actions

- Support development of foundational asset lifecycle processes.
- Update inspection protocols and procedures to align with new and/or updated lifecycle processes.
- Develop obsolescence guidance, including direction for coordinating with vendors.
- Create a preventive maintenance procedure for communication assets.
- Review AMT–23 and AMT–27 to identify opportunities for additional preventive maintenance activities during inspection.
- Review and/or develop asset configuration standards from a maintenance and operations perspective.

2 Focus Area 2: Organizational Design and Alignment (Ownership)

Defines roles, responsibilities, and accountability to optimize collaboration and clarify ownership across asset classes.

Goal 1: Strengthen organizational alignment to support consistent and effective asset management practices.

Action

- Formalize asset reliability engineering responsibilities within existing roles and/or create a new role within C&S as appropriate to guide maintenance strategies.

Goal 2: Foster shared accountability and clarify asset ownership and maintenance responsibilities across departments and operating entities.

Actions

Support definition of asset ownership and maintenance responsibilities for C&S assets.

Define signal bridge, switch heater, and low voltage signal ownership and maintenance responsibility.

Transfer signal bridge ownership to Electric Traction.

Coordinate asset management activities for assets shared with Track.

3 Focus Area 3: Technology Advancement to Support Asset Management (Enabler)

Leverages advanced tools, including enterprise systems, AI, and remote monitoring, to make smarter, data–driven decisions.

Goal 1: Implement an Enterprise Asset Management (EAM) system.

Action

Support pilot EAM system implementation.

Goal 2: Leverage technology and innovation to enhance asset management and support SOGR.

Action

Continue piloting technologies to determine what remote monitoring systems can be advanced for efficiency and scalability (e.g. switch machines for turnouts).

4 Focus Area 4: Asset Performance and Management (Execution)

Restores and sustains assets in a state of good repair while prioritizing investments to maximize safety, reliability, and operational performance.

Goal 1: Establish and formalize risk–based asset prioritization for all assets.

Actions

Conduct condition assessments on all C&S assets based on IMCS' established asset condition guidance.

Assign criticality scores to all C&S assets and add weighting factors defined through the RaMP Index.

Support implementation of RaMP Index.

Develop a documented problem/cause remedy procedure to analyze everyday failures.

Develop a documented procedure to implement solutions based on root cause analysis after a problem occurs.

Goal 2: Implement work planning for each asset class across all lifecycle strategies.

Actions

Define work planning goals and standard practices for C&S assets.

Document planning cycles, inputs, and outputs to support repeatable, scalable practices.

Coordinate signal capital replacement with turnout replacements.

Support the creation of a centralized work bank.

Goal 3: Progress Technical Discipline asset classes towards a state of good repair.

Actions

Advance preventive maintenance program to achieve a higher proportion of assets in SOGR.

Prioritize monitoring, planned and corrective maintenance, and root cause analysis programs to ensure assets can function in their required state.

Introduce and/or continue to execute enhanced assessment regimes to guard against the decline of condition and ensure the asset remains in a safe operational state.

Maintain assets in a steady state once assets have reached SOGR.

Support network capability improvements that allow infrastructure assets to contribute to capability targets established through the Amtrak Service Plans, including enabling higher speed operations.

Support the development of SOGR and asset performance KPIs.

Align data collection methods within C&S to established performance KPIs.

5 Focus Area 5: Asset Management Awareness and Engagement (Adoption)

Builds understanding of asset management through training, education, and outreach to foster a culture of stewardship.

Goal 1: Build enterprise–wide awareness and shared understanding of asset management, state of good repair, and lifecycle principles.

Action

Promote the value of asset management and its role across Amtrak.

Funding Needs

Despite progress in advancing condition assessments and lifecycle planning, Amtrak's communications and signals infrastructure continues to face a significant state of good repair (SOGR) backlog that requires sustained investment to address. The most recent analysis identified approximately $596 million (in 2025 dollars) in communications and signals assets not currently in a state of good repair. Addressing this backlog is critical to maintaining safe and reliable service while transitioning toward a sustainable steady state communications and signals renewal program.

Amtrak's approach balances immediate backlog reduction needs with long term asset sustainability. The FY26–FY31 Capital Program identifies priority investments that address the most critical communications and signals renewal needs while supporting the transition toward a steady state maintenance program. In accordance with 49 U.S.C. §24320(a)(2), the funding needs for communications and signals assets beyond amounts already authorized or otherwise available are summarized below.

To advance backlog reduction, Amtrak has established a 15-year communications and signals SOGR backlog reduction program focused on systematically addressing communications and signals assets identified as not in a state of good repair. Over the FY26–FY31 planning horizon, approximately $238 million in investment is required to advance backlog reduction efforts and improve the overall condition of the communications and signals network.

The tables on the following page summarize communications and signals SOGR backlog and associated funding needs by route, including total backlog, estimated annual renewal cost, and investment needs for FY26–FY31.

Amtrak–Owned

	Total SOGR Backlog	Estimated Annual Cost	2026 – 2031 Investment Need
NEC Main Line	$338,086,488	$22,539,099	$135,234,595
NEC Branch Line	$241,768,069	$16,117,871	$96,707,228
National Network	$5,311,956	$354,130	$2,124,782

Maintained & Operated by Amtrak

	Total SOGR Backlog	Estimated Annual Cost	2026 – 2031 Investment Need
NEC Branch, Owned by CSX and Funded By State of New York	$8,481,756	$565,450	$3,392,703
National Network, Owned by State of Michigan	$2,362,113	$157,474	$944,845

	Total SOGR Backlog	Estimated Annual Cost	2026 – 2031 Investment Need
Amtrak SOGR Backlog 15–Year Program	$596,010,383	$39,734,026	$238,404,153



Equipment Asset Strategy



Equipment Asset Strategy

Pursuant to 49 U.S.C § 24320(a)(2), this appendix captures the strategy to acquire and maintain a fleet of roadway equipment that is essential in supporting the work necessary to bring Amtrak's infrastructure into a state of good repair. This asset strategy enables Amtrak to address the challenges we face from outmoded, unproductive, and insufficient equipment and facilities to maintain current and future equipment inventory and outlines a plan for the acquisition of new equipment that will help Amtrak achieve its business goals.

This appendix contains the following sections:

- **Asset Inventory** – provides details of assets owned and maintained by Roadway Equipment.
- **Asset Lifecycle Planning** – outlines the steady state actions required to sustain Equipment assets throughout their lifecycles and reduce the SOGR backlog.
- **Actions by Focus Area** – delineates discipline–specific actions required to advance the goals of Amtrak's five focus areas for Equipment.
- **Funding Needs** – specifies the unconstrained budget for the Equipment Acquisition and Overhaul Program necessary to acquire and maintain an equipment and vehicle fleet capable of supporting the efforts to bring Amtrak's infrastructure into a state of good repair.

Responsible Official

Pursuant to 49 U.S.C § 24320(c)(3)(c), the following individual is responsible for Roadway Equipment owned or managed by Amtrak:

Joshua Kessler, AVP, Engineering Production & Construction Services

Overview

Roadway Equipment is a critical component of Amtrak's infrastructure, enabling the inspection, maintenance, and renewal work that sustains safe and reliable operations across disciplines. The safety andproductivity of Amtrak's workforce is dependent on the equipment available and IMCS leadership has an obligation to ensure employees have dependable tools that promote both safety and efficiency. Unlike Class I railroads, Amtrak field personnel often work on or adjacent to tracks where trains operate at speeds up to 160 miles per hour. While some teams work under a continuous outage, others only have access to limited nightly work windows – often just a few hours – to perform critical work. Reliable equipment is therefore critical to safely maintaining productivity under these conditions.

While limited emphasis was placed on equipment in IALP2024, the continued challenges of an outdated, underperforming, and insufficient fleet of assets have prompted the IMCS Department to develop a comprehensive equipment asset strategy for IALP2026.

This strategy outlines a forward–looking plan for equipment acquisition, maintenance, overhaul, and storage that is closely aligned with Amtrak's business objectives. Grounded in current and projected production capacity, the strategy is designed to meet SOGR requirements and support the transition to steady–state maintenance. Although this strategy marks a significant step toward closing the SOGR gap, accomplishing it will require continued investment and targeted actions.

In recent years, Amtrak has made substantial progress in modernizing its equipment management practices to better support infrastructure renewal and achieve SOGR. The IMCS Department introduced a comprehensive lifecycle strategy for equipment that includes inspection, preventive and corrective maintenance, capital upgrades, and replacement planning. These improvements reflect Amtrak's broader commitment to modernizing its equipment fleet and improving lifecycle performance through technology, process enhancements, and safety innovations.

Key improvements include:

- Deployment of centralized systems for inspection scheduling and real–time issue tracking, enabling predictive maintenance and streamlined work order management.
- Implementation of engine–hour and meter–based tracking, digitized condition monitoring, and integration of regulatory inspection data.
- Acquisition of high–output machinery to address backlog and enhance operational readiness.
- Expansion of maintenance capabilities at key facilities, including covered track areas for large–scale repairs.
- Establishment of quality assurance protocols to ensure reliability and safety across the equipment fleet.
- Samsara GPS tracking provides real–time visibility of rubber–tire and rolling stock assets, reducing time spent locating equipment.
- Limits Compliance and Collision Avoidance System (LCCAS) technology improves GPS tracking and prevents collisions between rail–bound vehicles.
- Equipment commissioning processes are being streamlined in collaboration with contractors and internal stakeholders to better align equipment intake with production needs and capital cost schedules.
- Warranty procedures are being strengthened to improve labor cost recovery when Amtrak technicians are required to service equipment still under warranty.
- A "Red Zone" lighting pilot is underway to improve visibility of equipment in active work zones, enhancing worker safety and reducing the risk of accidental contact.

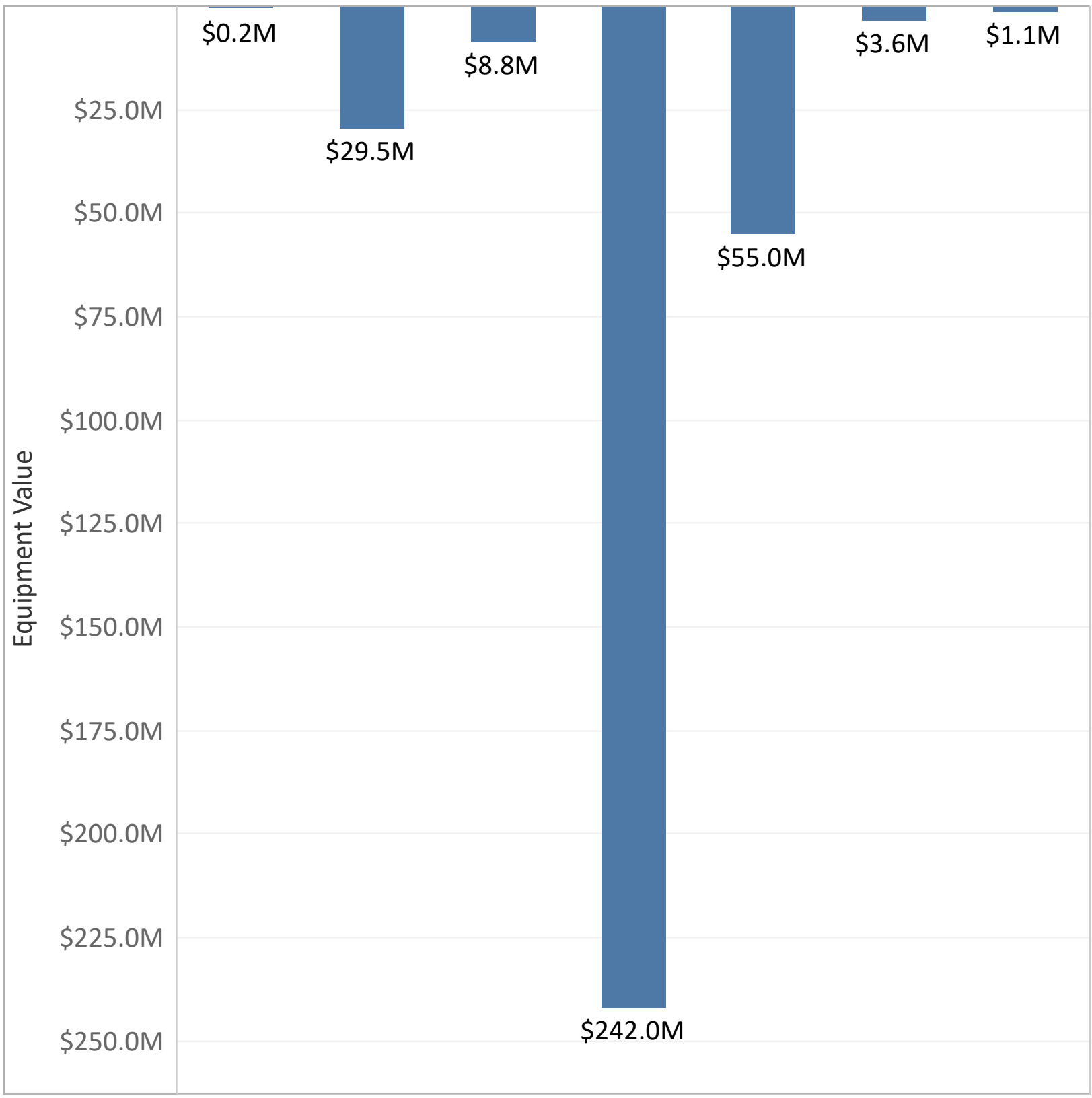
Asset Inventory

Amtrak owns and/or manages over 5,600 units of Maintenance of Way (M/W) equipment, trucks, and freight rolling stock assets supporting infrastructure maintenance and capital programs across its network, and a diverse inventory of roadway equipment used by its crews to perform a wide range of activities, from inspections and routine maintenance to track bed rehabilitation and major infrastructure projects. To supplement this fleet, Amtrak also leases 95 assets. Approximately 3,400 of these assets directly contribute to the lifecycle management strategies outlined in IALP2026.



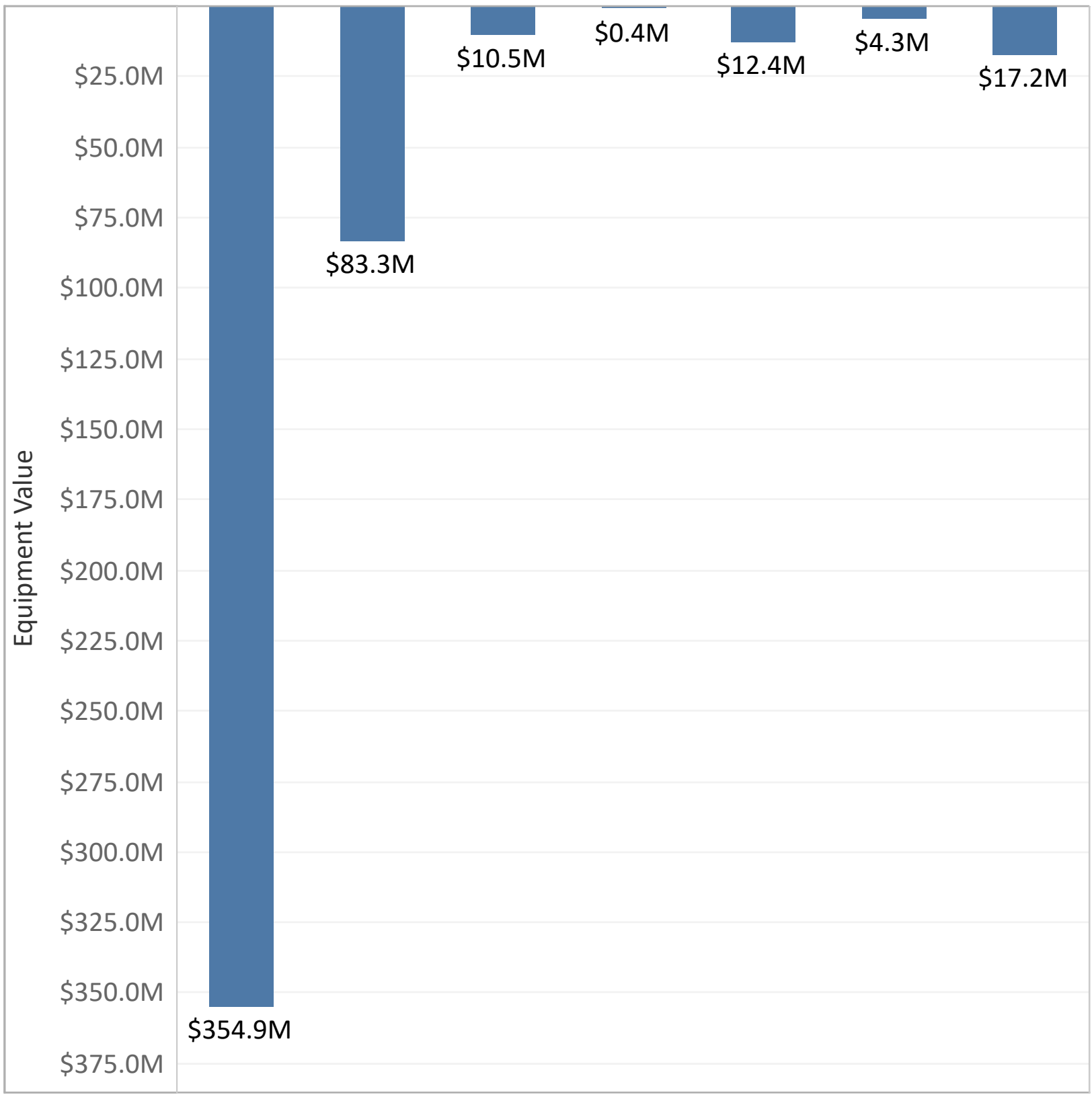
Equipment Asset Summary

	Boat	Catenary Insp Equip	Equip Handling / Motive Power	Freight Rolling Stock	High Speed Surfacing Tampers	Large Power Tools	Light Plant
Equipment Count	10	22	184	1,018	15	111	136
Avg Year of Manufacture	2011	2002	2005	2004	2010	2012	2015



Equipment Asset Summary

	Rail Bound / HyRail Equip	Rubber Tire Equip	Specialty Cranes	Specialty Equip	Storage / Utility	Track Laying Machine	UNDR
Equipment Count	953	748	4	10	263	1	3
Avg Year of Manufacture	2013	2013	2009	2020	2007	1977	2015



Equipment Condition and Operational Limitations

Amtrak's equipment assets are critical for maintaining a state of good repair and supporting safe, reliable, and efficient infrastructure operations. The average useful life of large equipment assets is 25 years, and 18 years for smaller equipment.

Newly developed digital and automation tools allow Amtrak to better assess equipment condition. Daily equipment inspection logs have been digitized, improving visibility into asset condition, streamlining reporting, and supporting preventive maintenance activities. Engine–hour data captured through these logs is now used to initiate preventive maintenance at manufacturer–recommended intervals, with tracked usage automatically generating corresponding service work orders in Maximo. Together, these improvements enhance maintenance planning and lay the foundation for Amtrak's forthcoming Equipment Asset Condition Assessment Guide. Although the new assessment tools are improving visibility into equipment condition, maintenance efforts are increasingly challenged by limited spare parts and constrained facility space.

The Wilmington Shop in Delaware serves as Amtrak's primary hub for heavy equipment maintenance, repair, and overhauls. While centralizing these activities helps ensure consistent quality and oversight, operational challenges are ever–present, as equipment must be transported to Wilmington when smaller satellite facilities, which may be much closer, lack capacity. The Wilmington Shop also faces several constraints within the facility space, as condemned areas within the building limit workspace, and the propensity for flooding disrupts operations. The existing transfer table is also not long enough to service all available tracks in the shop (e.g., equipment can only be moved within the current limits of the table), restricting mobility. The shop's design – featuring only one single entry and exit point – further complicates equipment logistics, demanding more labor and inadvertently driving up costs.



In New England, servicing of rail–bound equipment is limited to the Providence Shop, which is the only local facility with track access. There are other shops in the area that support regional operations, (Boston, Hamden, and Groton), but limited space and capability to accommodate larger machinery, such as track–laying machines (TLMs) or undercutters, greatly hinders the speed at which equipment is repaired and returned to service. The expansion of these facilities, for example adding shop tracks or covered work areas, would allow Amtrak to increase regional maintenance capacity, reducing the need to transport to Delaware, and improve overall program efficiency. Similarly, adding covered track areas at the Perryville, Adams, and Thorn Shops would support larger–scale repairs in the Mid–Atlantic and New York divisions – closer to where work is occurring – further reducing downtime and maximizing productivity.

As equipment becomes more technologically advanced, incorporating both computerized and mechanical systems, the skills required for maintenance are evolving. Current training programs support workforce development and competitive wages, however, expanded training and partnerships with trade schools are needed to ensure a pipeline of skilled personnel. Amtrak's maintenance workforce has doubled in recent years, yet equipment scheduled for retirement or already beyond its useful life remains in service to meet growing operational demands. This dynamic makes it difficult to maintain all assets in optimal condition.

To strengthen its asset management practices and meet federal requirements under 49 U.S.C. § 24904(c), Amtrak will develop an Equipment Asset Condition Assessment Guide. This guide will lay the foundation for a more data–driven and standardized approach to evaluating asset health and its implementation. It will set a framework that provides multiple condition factors, each graded on a scale of 0 (asset is non–operable) through 5 (asset is new or nearly new), producing a condition index for each asset. This index will support consistent SOGR assessments and help prioritize investment decisions. Under the new framework, an asset would be considered in a state of good repair if it scores a minimum of 2.5 on the condition index, consistent with the definition laid out in U.S. 49 CFR § 625.17.



Asset Lifecycle Planning

Equipment assets underpin infrastructure repairs and overhauls across multiple technical disciplines, and their performance directly influences Amtrak's ability to maintain consistent operations. As part of the IALP2026 initiative, Amtrak has updated the lifecycle management strategies listed below to define the activities required to maintain equipment and maintenance facilities throughout their lifecycle.

Inspection & Monitoring

Confirms assets meet standards for safe operations.

Ensure parts availability prior to maintenance to reduce downtime. Conduct full equipment assessments to determine maintenance and replacement needs.

- Continue both inbound and outbound equipment inspections.
- Track and schedule inspections using centralized system.
- Prioritize high–need equipment for service.

Preventive Maintenance

Ensures assets reliably support performance requirements.

Maximize reliability of production and subdivision equipment. Extend useful life through scheduled maintenance.

- Continue engine–hour and meter–based tracking (e.g., Maximo) on undercutter equipment and expand to other equipment types to ensure warranty compliance.
- Schedule regular preventive checks for critical equipment.

Corrective Maintenance

Restores asset functions following failure or degradation.

Address equipment failures promptly and minimize unplanned downtime. Current maintenance practices follow AREMA standards, OPM, clearance standards, ET bonding/grounding policies, manufacturer requirements, and FRA regulations.

- Continue to perform season winter overhauls.
- Utilize predictive maintenance based on engine–hour and meter data.
- Conduct analysis of electronic work orders that are generated from real–time issue tracking.

Capital Maintenance

Rehabilitates assets to operational design standards to maintain performance.

Maintain facilities and equipment to ensure safe, efficient, and reliable operations.

Prioritize key facility improvements (e.g., transfer tables, shop tracks, covered areas).

Standardize equipment configurations and model management.

Capital Replacement

Replaces assets nearing the end of functional life to maintain performance.

Scheduled replacement of aging equipment to maintain operational readiness.

Purchase new cat cars, cranes, TLMs, undercutters, and other key machines according to lifecycle schedule.

Replace equipment after designated overhaul cycles (e.g., trip machines after three overhauls, cat cars every 25 years).

Capital Improvement

Renews assets to enhance functionality, increase capacity, or improve network performance.

Upgrade facilities to improve maintenance efficiency and operational capacity.

Support facility expansions and upgrades (e.g., Groton rail tracks, Wilmington transfer table).

In addition to the six core lifecycle strategy categories, Amtrak's equipment assets fulfill four critical roles that extend beyond routine maintenance. These roles underscore the need for strategic investment, modernization, and cross–disciplinary coordination:

- **Track lifecycle support –** Achieving and maintaining SOGR for track infrastructure depends on the timely replacement of capital components using large production machines, such as track–laying machines (TLMs) and tampers, supported by smaller equipment, skilled personnel, and efficient material logistics. However, productivity is often constrained by shortages of qualified personnel, aging facilities, and gaps in equipment availability. Strategic acquisitions, including leased equipment and specialized rolling stock, help mitigate these limitations.

- **Equipment acquisition for major SOGR projects –** Major SOGR efforts, such as those at New York Penn Station, require specialized equipment and customized workflows to complete work within narrow service windows. These projects rely on precision planning and purpose–built tools to meet stringent safety and operational requirements.
- **Maintenance and repair –** Division Maintenance teams perform ongoing maintenance and repairs using available equipment — much of which is secondhand or beyond its intended service life. In this context, reliable equipment is essential to maintaining operational continuity and minimizing service disruptions.
- **Production planning –** Logistical efficiency is vital to the coordinated movement of materials, replacement assets, and rolling stock across the network. These efforts directly support both SOGR and steady state operations. However, challenges such as limited siding capacity, storage constraints, and high maintenance demands on Amtrak's freight fleet persist. Strategic investments in new rolling stock, such as rail trains and Amberg trolleys, and targeted leasing arrangements enhance material handling and enable execution of both capital and maintenance work systemwide.



Actions by Focus Area & Goal



Building on the five focus areas established in IALP2026, the following actions represent Equipment's discipline–level application of Amtrak's asset management goals.

1 Focus Area 1: Standards & Processes (Foundation)

Establishes clear policies, procedures, and inspection protocols for consistent, efficient asset management.

Goal 1: Establish a strategic foundation for asset management through a defined asset management policy and strategic asset management plan.

Actions

Support the development of an Asset Management Policy and implement it within Equipment.

Support and contribute to the development of a Strategic Asset Management Plan and deploy within Equipment.

Goal 2: Advance a consistent, lifecycle–based approach to asset management through standardized processes.

Actions

Support development of foundational asset lifecycle processes.

Update inspection protocols and procedures to align with the new and/or updated lifecycle process.

Develop obsolescence guidance, including direction for coordinating with vendors.

Create a documentation procedure for the management of change for new equipment.

Establish a QA/QC standard for critical equipment repairs.

Review and/or develop asset configuration standards from a maintenance and operations perspective.

2 Focus Area 2: Organizational Design and Alignment (Ownership)

Defines roles, responsibilities, and accountability to optimize collaboration and clarify ownership across asset classes.

Goal 1: Strengthen organizational alignment to support consistent and effective asset management practices.

Action

Formalize asset reliability engineering responsibilities within existing roles and/or create a new role within Equipment as appropriate to guide maintenance strategies.

Goal 2: Foster shared accountability and clarify asset ownership and maintenance responsibilities across departments and operating entities.

Actions

Support the definition of asset ownership and maintenance responsibilities, specifically for Equipment assets.

Ensure strong contract and warranty language to hold manufacturers accountable for asset quantity and delivery standards.

Work with Structures to coordinate maintenance facility repairs.

3 Focus Area 3: Technology Advancement to Support Asset Management (Enabler)

Leverages advanced tools, including enterprise systems, AI, and remote monitoring, to make smarter, data–driven decisions.

Goal 1: Implement an Enterprise Asset Management (EAM) system.

Action

Support pilot EAM system implementation.

Goal 2: Leverage technology and innovation to enhance asset management and support SOGR.

Action

Explore remote sensing and monitoring technologies for Structures assets.

Explore Artificial Intelligence/Machine Learning (AI/ML) applications for predictive asset management and SOGR for Structures assets.

4 Focus Area 4: Asset Performance and Management (Execution)

Restores and sustains assets in a state of good repair while prioritizing investments to maximize safety, reliability, and operational performance.

Goal 1: Establish and formalize risk–based asset prioritization for all assets.

Actions

Create a methodology for Equipment condition

Conduct condition assessments on all Equipment assets based on IMCS' established asset condition guidance.

Assign criticality scores to all Equipment assets based on IMCS' established asset criticality guidance.

Support implementation of asset prioritization framework.

Develop a documented problem/cause remedy procedure to analyze everyday failures.

Develop a documented procedure to implement solutions based on root cause analysis after a problem occurs.

Goal 2: Implement work planning for each asset class across all lifecycle strategies.

Actions

Define work planning goals and standard practices for Equipment assets.

Document planning cycles, inputs, and outputs to support repeatable, scalable practices.

Support the creation of a centralized work bank.

Goal 3: Progress Technical Discipline asset classes towards a state of good repair.

Actions

Advance preventive maintenance program to achieve a higher proportion of assets in a state of good repair.

Prioritize monitoring, planned and corrective maintenance, and root cause analysis programs to ensure assets can function in their required state.

Introduce and/or continue to execute enhanced assessment regimes to guard against the decline of condition and ensure the asset remains in a safe operational state.

Maintain assets in a steady state once assets have reached a SOGR.

Support network capability improvements that allow infrastructure assets to contribute to capability targets established through the Amtrak Service Plans, including enabling higher speed operations.

Support the development of SOGR and asset performance KPIs.

Align data collection methods within Equipment to established performance KPIs.

5 Focus Area 5: Asset Management Awareness and Engagement (Adoption)

Builds understanding of asset management through training, education, and outreach to foster a culture of stewardship.

Goal 1: Build enterprise–wide awareness and shared understanding of asset management, state of good repair, and lifecycle principles.

Action

Promote the value of asset management and its role across Amtrak.

Funding Needs

Reliable, modern equipment is critical to Amtrak's ability to execute infrastructure renewal and maintenance programs safely, efficiently, and at scale. The Equipment Acquisition and Overhaul Program ensures that Maintenance–of–Way equipment and support vehicles are available and capable of meeting production targets across all Engineering disciplines.

Targeted investment in this fleet is essential to maintain steady state operations, improve productivity, and reduce reliance on aging or underperforming assets that limit program delivery. These investments directly support Amtrak's efforts to advance work toward reducing the SOGR backlog and sustaining system reliability.

The FY26 Approved AOP is valued at more than $49M and the Five–Year Plan (FY27 through FY31) calls for an investment of $182.5M to acquire and maintain equipment necessary to support Amtrak's infrastructure renewal and steady state maintenance programs. Funding is summarized below.

Asset Category	FY26 Approved AOP	FY27	FY28	FY29	FY30	FY31
Vehicle Acquisition	$10,000,000	$10,000,000	$10,000,000	$10,000,000	$10,000,000	$10,000,000
Major Equipment Purchase	$6,963,959	$20,000,000	$20,000,000	-	-	-
Track Equipment Purchase	$21,031,994	$25,000,000	$25,000,000	$25,000,000	$25,000,000	$25,000,000
Rolling Stock Heavy Overhaul	$2,905,000	$2,000,000	$2,000,000	$2,000,000	$2,000,000	$2,000,000
Track Equipment Heavy Overhauls	$8,310,000	$9,500,000	$9,500,000	$9,500,000	$9,500,000	$9,500,000

The scope of the **Vehicle Acquisition Program** is to evaluate, identify and procure the vehicles needed to maintain an efficiently functioning departmental vehicle fleet. These vehicles are necessary for repair and maintenance personnel to perform work tasks that ensure Amtrak meets its commitment to efficient and safe operation of assets and infrastructure. Work vehicles are ordered on a routine or annual basis. The scope for FY26 includes the purchase and deliveries of the following:

- (3) Scissor Lift trucks
- (2) Weld Trucks
- (2) Grapple Trucks
- (1) Positive Train Control Truck
- (2) Fuel Trucks

Additionally, procurement will begin for Knuckleboom Stakes and Rotary Dump Trucks, and LCCAS will be installed on all vehicles with rail gear. Other purchases may occur as needed, depending on the availability of vehicles and funding. Program Management will continue to identify possible new vendors, review and update vehicle specifications, and issue solicitations for FY26 and beyond.

The **Major and Track Equipment Purchase Programs** have been established for the replacement of existing Maintenance of Way Equipment beyond their useful life, plus the procurement of new equipment This equipment is used by Division and Production personnel in the routine and annual construction and maintenance of infrastructure assets to address State of Good Repair backlog. In FY26, Amtrak will procure:

- Switch Tampers
- Dual Anchor Squeezers
- Mark IV Tampers
- Catenary Maintenance Cars
- NORDCO 1600 Cranes
- LCCAS Kits (Collision Avoidance System)
- Rolling Stock– Flat Cars

The **Engineering Rolling Stock Heavy Overhaul Program** was established to facilitate the overhaul of the Maintenance of Way (MOW) rolling stock fleet, including ballast cars, side dump cars, concrete tie cars, bridge plate cars, and other ad hoc overhaul or rebuild needs, to establish and maintain a State of Good Repair, as well as efficient and safe operation for engineering rolling stock, in order to remain compliant with current regulations and standards. This work is performed on a routine or annual basis. The scope for FY26 includes:

- Refurbishment of Concrete Tie Cars and Side Dump Cars
- Modifications of Gondolas to Bridge Plate Cars

The **Track Equipment Heavy Overhaul Program** seeks to establish and maintain the efficient and safe operation of track work equipment to remain compliant with current regulations and standards. The completion of equipment heavy overhaul work and capital repairs ensures that Amtrak will meet its commitment to safe operation of trains by way of the preventive and predictive maintenance of heavy repair equipment. This work is performed on a routine or annual basis. In FY26, there are plans to overhaul the following equipment:

- Track Laying Machine
- RM80 Undercutters
- Romper Wagon
- Portal Crane
- Catenary Inspection Car(s)



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Amtrak–Owned

	Total SOGR Backlog	Estimated Annual Cost	2026 – 2031 Investment Need
NEC Main Line	$23.26B	$1.55B	$9.30B
NEC Branch Line	$7.70B	$513.04M	$3.08B
National Network	$1.85B	$123.21M	$739.26M

Maintained & Operated by Amtrak

	Total SOGR Backlog	Estimated Annual Cost	2026 – 2031 Investment Need
NEC Branch, Owned by CSX and Funded By State of New York	$2.67B	$178.24M	$1.07B
National Network, Owned by State of Michigan	$1.42B	$94.88M	$569.29M

	Total SOGR Backlog	Estimated Annual Cost	2026 – 2031 Investment Need
Amtrak SOGR Backlog 15–Year Program	$36.90B	$2.46B	$14.76B

Amtrak–Owned

	Total SOGR Backlog ($M)	Estimated Annual Cost ($M)	2026 – 2031 Investment Need ($M)
NEC Main Line	$23,257	$1,550	$9,303
NEC Branch Line	$7,696	$513	$3,078
National Network	$1,848	$123	$739

Maintained & Operated by Amtrak

	Total SOGR Backlog ($M)	Estimated Annual Cost ($M)	2026 – 2031 Investment Need ($M)
NEC Branch, Owned by CSX and Funded By State of New York	$2,674	$178	$1,069
National Network, Owned by State of Michigan	$1,423	$95	$569

	Total SOGR Backlog ($M)	Estimated Annual Cost ($M)	2026 – 2031 Investment Need ($M)
Amtrak SOGR Backlog 15–Year Program	$36,898	$2,460	$14,759