DRAFT

FY2026-FY2035 State of Good Repair Needs Outlook

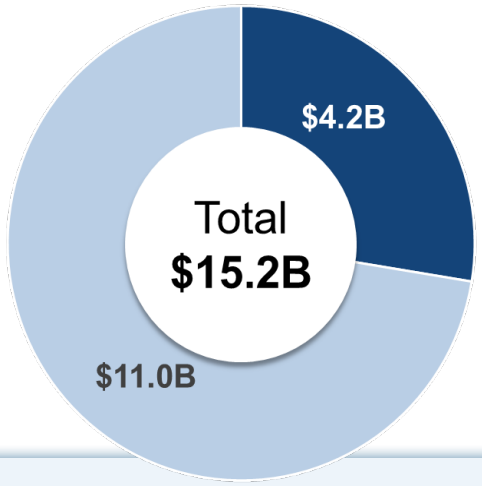
December 2024

WASHINGTON
METROPOLITAN AREA
TRANSIT AUTHORITY

State of Good Repair Needs Outlook: KEY TAKEAWAYS

The State of Good Repair Needs Outlook (SNO) provides the Washington Metropolitan Area Transit Authority (Metro) with a 10-year model of Metro's unconstrained direct state of good repair (SGR) reinvestment needs, excluding any modernization or expansion investments.

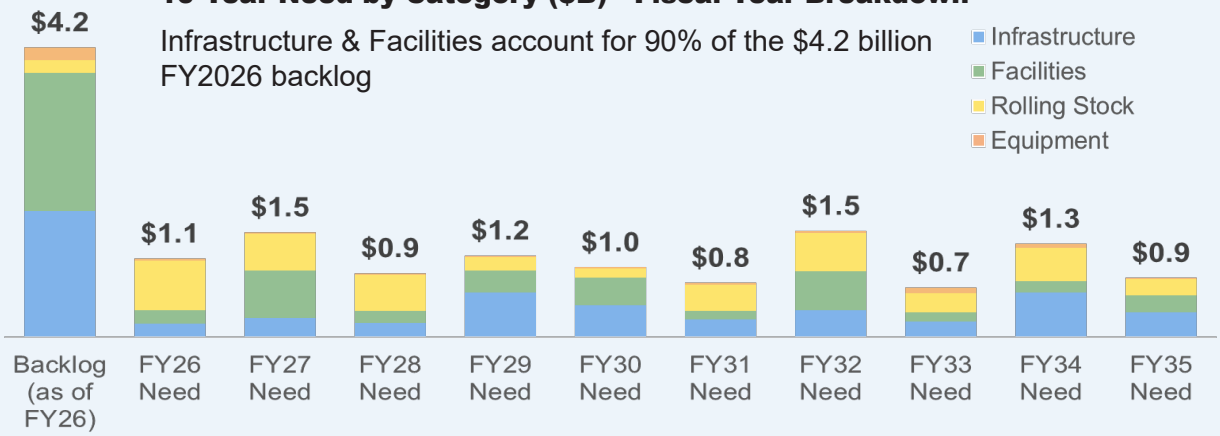
- **Minimum 10-Year Need:** $15.2 billion
- **FY2026 Backlog:** $4.2 billion
- **FY2026-FY2035 Coming Due:** $11.0 billion



1

10-Year Need by Category ($B) - Fiscal Year Breakdown

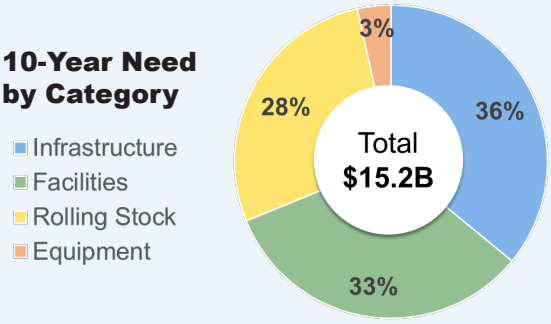
Infrastructure & Facilities account for 90% of the $4.2 billion FY2026 backlog



2

Coming due needs are split almost evenly across three of the four major asset categories

10-Year Need by Category



3

$15.2 billion total 10-year state of good repair need requires $1.5 billion of annual funding

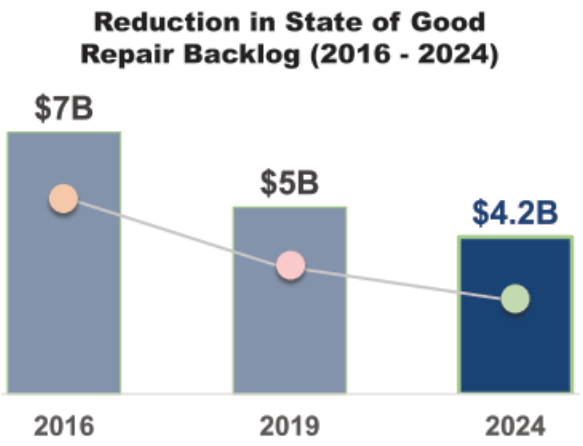
$1.5 Billion

Annual State of Good Repair Reinvestment Requirement

State of Good Repair Needs Outlook: KEY TAKEAWAYS

This document helps Metro and its stakeholders understand the condition of existing assets, predict and plan for asset replacement or rehabilitation, and communicate asset reinvestment requirements. It acts as a measurement of overall capital program success by showing Metro's progress in addressing aging assets over time.

Current funding projections over the 10-year period, when reviewed against the SNO, indicate SGR backlog progress will begin to erode in FY30. This provides advanced warning to stakeholders that Metro is returning to a period of underinvestment in SGR.



Backlog Progress Against Capital Investment ($B)

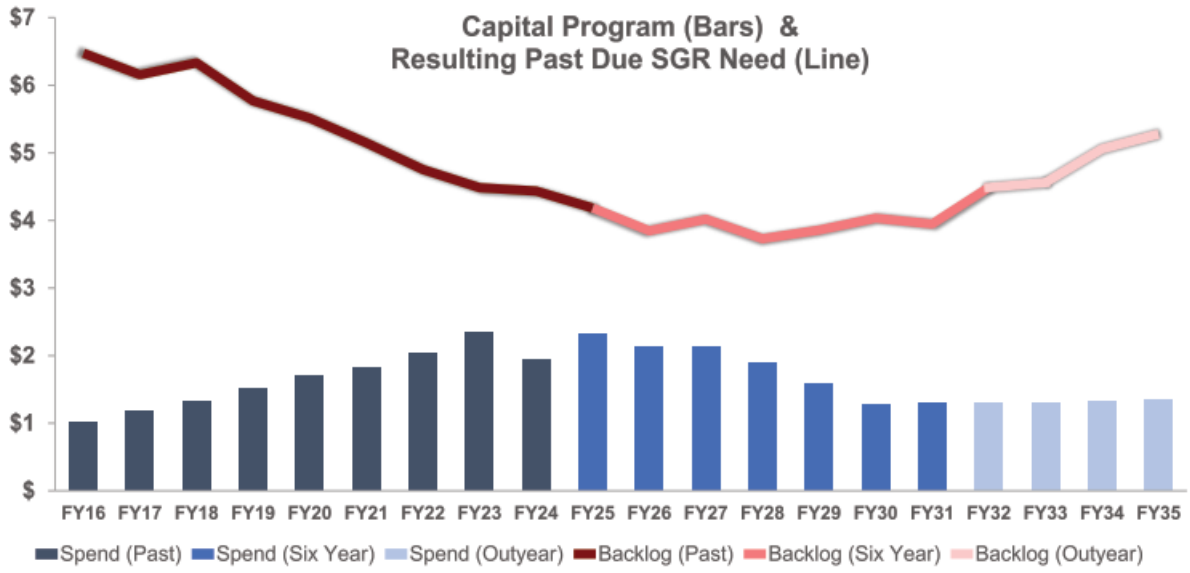


Table of Contents

State of Good Repair Needs Outlook

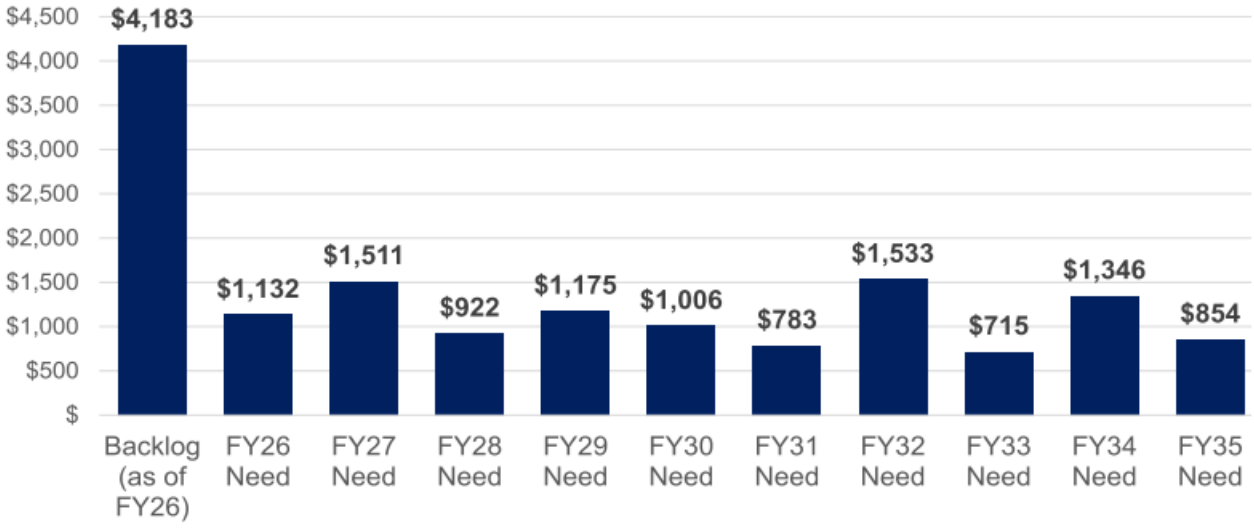
The State of Good Repair Needs Outlook estimates Metro's unconstrained direct state of good repair needs to be a minimum of $15.2 billion over 10 years, or approximately $1.5 billion annually.

OVERVIEW

The Washington Metropolitan Area Transit Authority (Metro) is the steward of millions of physical assets that, combined, serve the function of moving approximately 900,000 people across the District of Columbia, Maryland, and Virginia every day. The safety and quality of the service Metro provides hinges on the Authority's ability to understand the current condition of assets, to predict and plan for their replacement or rehabilitation, and to communicate appropriate state of good repair (SGR) reinvestment requirements to Metro's stakeholders. The 2024 State of Good Repair Needs Outlook (SNO) is the continuation, by another name, of the 2016 Capital Needs Inventory (CNI) and 2019 Capital Needs Forecast (CNF) and uses the same core methodology to consistently map where Metro has been and where the Authority is heading from an SGR perspective.

Metro's 2024 SNO has modeled over $74 billion dollars of lifecycle reinvestment needs for physical assets and identified a minimum 10-year need of $15.2 billion for direct SGR reinvestments to rehabilitate and replace aging assets and address past due capital needs. The SNO estimates Metro's unconstrained SGR needs to be approximately $1.5 billion annually in year of expenditure dollars from FY2026 to FY2035. This total does not include indirect SGR, modernization, or expansion investments. Indirect SGR investments include annual management of software fees, assessments and inspections, sub-component replacement, and preventative maintenance transfers; these are all costs associated with SGR, but do not fit neatly into lifecycle rehabilitation and replacement estimates. As displayed in Figure 1, the SNO model places all SGR reinvestment needs in the year that they

Figure 1: Overview of 10-Year Need ($M)



come due and all backlog in the current year. The model assumes all $4.2 billion in backlog is addressed in FY26 along with the $1.1 billion that comes due in that fiscal year, and does not attempt to distribute the backlog across multiple years. This approach allows for straightforward analysis that does not confuse asset modeling with the complex work of project planning and budgeting; however, this methodological decision assumes near-term expenditures that cannot be executed and will be more expensive in their actual year of execution.

The 2024 SNO includes updates and refinements to the 2019 CNF; it aligns asset categories to updated Federal Transit Administration (FTA) typologies, right-sizes asset replacement valuations to current costs, refines prioritization to align with Metro's Strategic Transformation Plan, and has removed investment estimates for modernization or expansion assumptions. This report supports the development of transit asset management (TAM) processes to align with FTA requirements. Through this report, in alignment with the TAM plan, Metro summarizes the current asset inventory and conditions; the process of asset prioritization, and how Metro tracks the SGR backlog and unconstrained 10-year capital investment need projection.

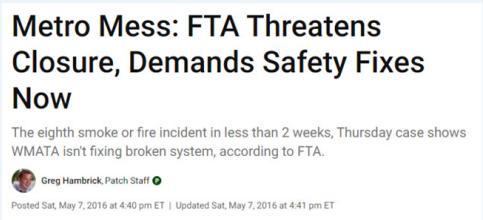
Insight Opportunity: Year-of-Expenditure Dollars

Year-of-expenditure (YOE) dollars capture the power of inflation in a model that projects into the future. Replacement values in the SNO model are set to 2024 dollars, but the model inflates expenditures in future years to YOE dollars. The inflation rate used in the SNO is a modest three percent.

Although the model inflates expenditures over time, one weakness of it is that the expenditures are always placed in the year the asset comes due, irrespective of whether that is at all possible to execute. For example, the model places all expenditures associated with $4.2 billion in backlog in year-one of the model (FY2026). Even though Metro knows that would be impossible to execute, this is done to draw clear lines between backlog and coming due reinvestment needs. The model, due to its design, will always provide the most optimistic reinvestment requirement.

Insight Opportunity: Underinvestment

Metro's SGR reports use data to predict the future, but there is a lot that can be learned from the past. Unlike the uncertainty of a modeled future, the past proves that underinvestment in SGR yields untenable problems.


Metro Mess: FTA Threatens Closure, Demands Safety Fixes Now

The eighth smoke or fire incident in less than 2 weeks, Thursday case shows WMATA isn't fixing broken system, according to FTA.

Greg Hambrick, Patch Staff

Posted Sat, May 7, 2016 at 4:40 pm ET | Updated Sat, May 7, 2016 at 4:41 pm ET

From the years 2005 to 2015, the average Capital budget was $900 million a year in 2024 dollars; this was not enough. During this period, the Metrorail system went from 0% of infrastructure being older than 30 years to 67% of infrastructure being 30 – 40 years old.

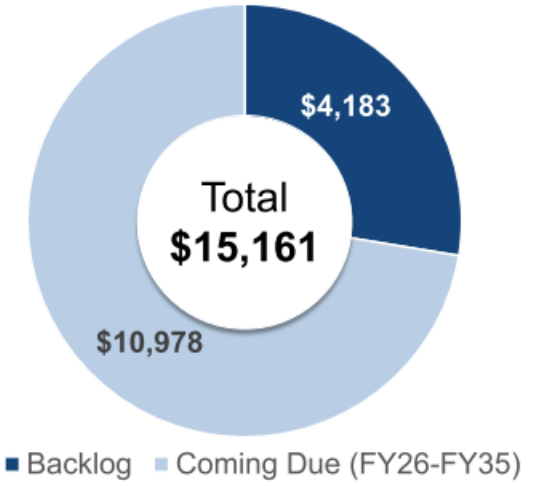
The outcome of that decade of underinvestment was infrastructure on the brink of collapse, loss of life, plans within the Federal Transit Administration for a full system shut down and takeover, and many public cries for change. Since then, Metro's infrastructure has continued to grow and age. Over the past 10 years, Metro has worked to correct the underinvestment mistakes of the past. What is known now is that what was not enough 10 years ago, will certainly not be enough today.

STATE OF GOOD REPAIR NEEDS & PRIORITIES

Metro's FY2026 backlog is modeled at $4.2 billion with 90 percent residing in the Infrastructure and Facilities categories. These categories also have the most high-priority assets.

SGR needs include the replacement, rehabilitation or annual capital maintenance necessary to preserve existing physical assets. From FY2026 to FY2035, Metro's forecasted direct SGR needs total $15.2 billion, as seen in Figure 2. This includes $4.2 billion in SGR backlog as of FY2026, which is $1 billion less than the backlog reported in the 2019 CNF.

Figure 2: FY2026 - FY2031 Total Forecasted Direct SGR Need - Backlog v. Coming Due ($M)

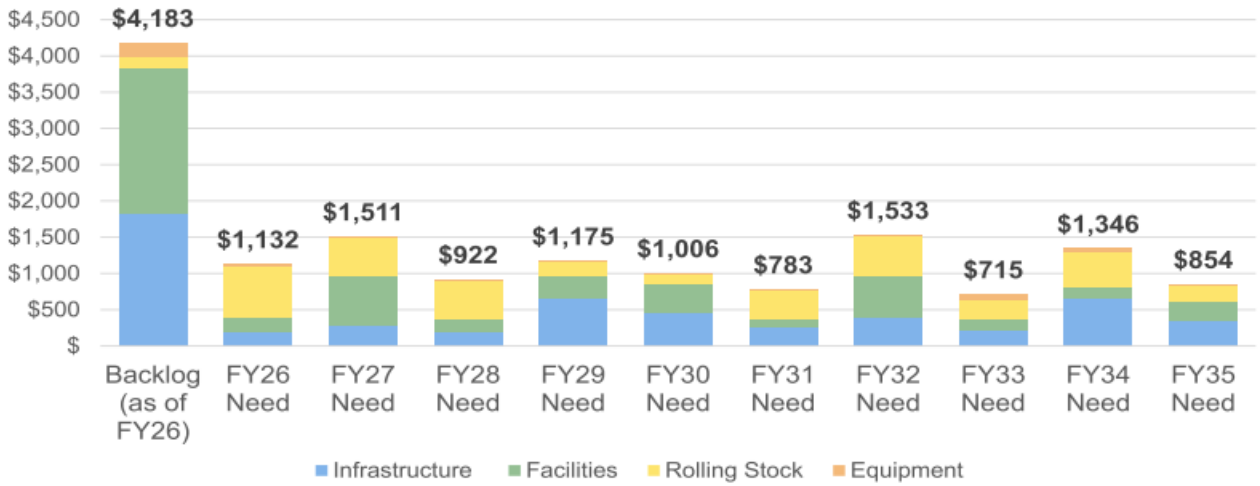


Assets in backlog are either beyond their useful life, in poor condition, or functionally obsolete because parts cannot be sourced or the technical software is no longer supported.

Over 90 percent of the SGR backlog resides in the Infrastructure and Facilities asset categories. This is a change from the 2016 CNI, when railcars made up a meaningful share. Following the arrival of dedicated funding, Metro invested in SGR reinvestments to ensure the safety of the system and win back customers. This was accomplished through public-facing improvements that increased system safety and reliability, such as investments in the replacement of aged or unreliable railcars and buses.

While the SGR backlog represents past-due needs, Metro still faces an additional $11 billion of normal, ongoing reinvestment in assets required to maintain SGR. This is over 70 percent of the ten-year need. Ongoing reinvestment needs are $1 billion more than the $10 billion reported in the 2019 CNF.

Figure 3: Overview of 10-Year Need by Category ($M)



Prioritization

Metro's Strategic Transformation Plan (STP): Your Metro, The Way Forward, adopted by the Board in 2023, was developed to guide Metro's strategy and actions over the next five years as Metro works to meet the evolving needs of its customers and employees. The SGR of Metro's assets directly supports all four goals and many objectives aimed at ensuring Metro is the region's trusted way to move more people safely and sustainably. Safety is a core value at Metro and the immutable foundation of every goal within the plan.

Every asset in the system plays an important role in the quality of the passenger and employee experience. However, the consequence of the capital-level failure of assets varies greatly, from catastrophic to negligible. Metro's top SGR priorities are driven by an understanding of the safety risk of specific asset types, where a score of 4.5 indicates the most safety-critical and 1 the least, weighted against the risk probability, where a score of 5 indicates the most probable and 1 the least. These two scores are multiplied to arrive at a priority score. The priority scores provide Metro with unique values by which to prioritize SGR activities. The detailed priority list of assets as well as a detailed explanation of the prioritization methodology can be found in Appendix 3.

Table 1 provides a list of the asset categories with the highest safety risk scores. What these highest safety risk asset types have in common is that a catastrophic failure has the highest chance of leading directly to loss of life (i.e., a train collision or fuel tank explosion) or indirectly (i.e., failure of fire life safety system in passenger spaces). Each of these asset types have specific locations/units where reinvestment is either past due or required in the next 10 years.

Table 1: Assets with Highest Safety Risk Scores

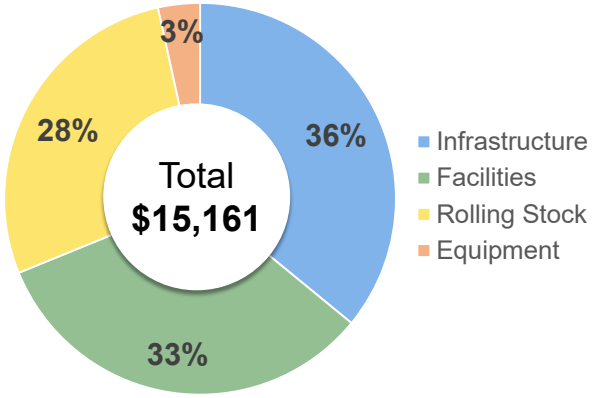
Asset	Safety Risk Score
Infrastructure	
Rail Tunnel - Fire Life Safety	4.5
Rail Bridges	4
Rail Tunnel - Structures	4
Trackwork	3.75
Signaling System	3 - 3.5
Mission Critical Software & Hardware	3.5
Traction Power System	3.5
Rail Tunnel - Pump Stations (DPS)	3
Facilities	
Fire Life Safety - Passenger Stations	3
Electrical Services - Passenger Stations	3.25
Buildings/Platforms - Passenger Stations	3
Electrical Services - Maintenance Buildings	3.25
Rolling Stock	
Railcars	3
Equipment	
Fuel Tanks & Stations	3

STATE OF GOOD REPAIR BY ASSET CATEGORIES

In addition to the $4.2 billion backlog, Metro has $11 billion in SGR needs coming due, which is split almost evenly across three of the four major asset categories.

The FTA defines four transit asset categories as a starting point for organizing asset data and for asset reporting purposes. These categories are Infrastructure, Facilities, Rolling Stock, and Equipment. The SNO model organizes all assets first into these four categories, then into sub-categories, elements, and sub-elements. This section drills down into the SGR needs in each category.

Figure 4: Summary of 10-Year Needs ($M)



Infrastructure

Metro's Infrastructure asset category makes up the largest share of total reinvestment needs over the 10-year period, with a total reinvestment need of approximately $5.4 billion dollars out of $15.2 billion. Within this category are major assets that are foundational to the ability to provide Metrorail service. About 25 percent of the total infrastructure need is for assets in backlog, with the largest share of Infrastructure

Insight Opportunity: State of Signaling Rooms

Signaling equipment is essential to the basic function of the Metrorail system. It allows trains to travel at fast speeds while keeping a safe distance apart.

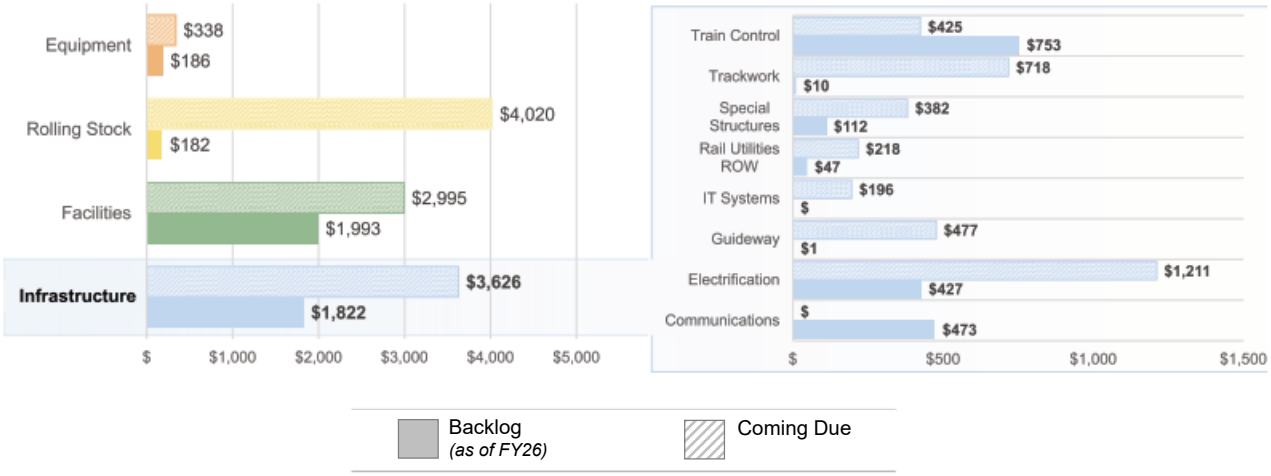
What does it take to run safe and fast rail service? Thousands of pieces of equipment in 135 signaling rooms, each small enough you can hold it in your hand. Clean and organized racks hold processors (small computers), mechanical controls (vital relays), and communications equipment that ensures Metro's central control can see where each train is at all times. This critical equipment and its cabling is constantly sending signals to trains, controlling speeds, setting routes, and ensuring the safety of everyone onboard.

The average cost to upgrade a signaling room to computer-based train control (CBTC) is $30M per room

Signaling State of Good Repair Progress

Metro's core signaling technology is original to initial construction; however, Metro added modernization components, such as microprocessors (smaller computers), replaced unreliable communications equipment (very fancy modem/routers), and developed a program to test and replace faulty signal cabling. Careful maintenance and process improvements, along with signaling investments along the track right of way, have positioned Metro to return to fully automatic train operation for the first time in 15 years. However, Metro still has a large signaling backlog and needs to decide how to address it.

Figure 5: Infrastructure 10-Year Need ($M)



backlog driven by Metro's signaling rooms. Metro's core signaling technology is original to initial construction and comprises thousands of pieces of equipment in signaling rooms. Metro continues to maintain and invest in maintenance of sub-components for signaling rooms to ensure their safety and reliability. However, the signaling system design lifecycle is considered past due and no signaling room has been comprehensively rehabilitated to re-start the clock on the system's useful life.

The second largest category in backlog are communications assets, which includes communications cabling and the radio systems. Projects are underway to replace communications cabling (converting from copper cables to fiber) and to replace all components of the radio systems (cabling, communications towers, radio amplifiers, and handheld radios). However, the entirety of the system remains in backlog in the model until these projects are complete.

Insight Opportunity: What Changes Condition in the SNO Model

The SNO model tracks the completion of capital projects and modifies the age or condition of the asset once the project is complete and the asset is operational. The SNO uses asset management software data and direct information from project managers to update the SNO inventory. Until the end of the project, the full reinvestment amount will remain in the model. In the example of Metro's radio system, the existing system is in place and operational and the new federally compliant system will turn on all at once, when every piece of the new network is complete and activated. Until the full switch is made from old to new, the reinvestment dollars will remain in the SNO model backlog, even as progress is made.

Insight Opportunity: State of Traction Power

Traction Power equipment is essential to the basic function of the Metrorail system, providing the power that moves trains.

Harnessing enough power to move trains requires a lot of equipment. Metro has 118 traction power substations (TPSS), each the size of a large 2 - bedroom apartment. They have 2 sets of AC Switchgear, 2 - 4 sets of rectifiers and transformers, and DC Switchgear, which controls the power as it flows out to the third rail.

Replacing the major components of a single traction power substation costs an average of $15M

Traction Power State of Good Repair Progress

Metro has been hard at work replacing equipment that is old (35+ years) or unreliable and instituted a program to test and replace faulty traction power cabling as needed.

2016 Traction Power Backlog	2019 Traction Power Backlog	Current Traction Power Backlog
$1,104M	$665M	$426M

Over 75 percent of the total need in infrastructure is for assets that come due within the 10-year period of analysis. The largest share of infrastructure assets with upcoming investment needs are electrification assets, which comprise traction power substations (generates and converts power), tie breaker stations (extends and isolates power), third rail (sends power to trains), power cable (sends power to third rail), insulators (isolates third rail power), and the emergency trip station system (shuts off power in case of emergency).

The next largest infrastructure category with upcoming reinvestment needs is trackwork, which comprises running rail, fasteners (holds rail to grout pads), grout pads (aligns and levels running rail on concrete trackbed), rail ties (holds rail in ballasted trackbed), and crossovers. This asset category works hand in hand with the guideway category, which comprises the structures that trackwork operates within (i.e., ballasted trackbed, concrete trackbed, tunnel structures, and bridge structures including pedestrian and road bridges). These two categories have nominal backlog amounts. Within trackwork, the backlog consists exclusively of railyard track where slow train speeds reduce the rate of wear and tear. These key asset categories have some of the highest safety criticality scores because, unlike other asset categories with fail-safe protections (like signaling) or built-in redundancy (like electrification), full asset failure would be catastrophic (e.g., a bridge or tunnel collapse).

Special structures include tunnel shafts and their fan components (for ventilation and emergency egress), retaining walls (where the trackbed transitions from at-grade to below ground), and fencing. Each of these assets are routinely inspected and maintained; but industry information on the best annual capital maintenance cost is poor. Information technology systems include hardware such as servers and computers, and also software. Software operations and maintenance costs are not included in the SNO model. Additionally, the model does not attempt to predict how hardware needs will evolve and change with new requirements from software updates or upgrades. Both of these categories are targeted for future improvements in the model.

Last are rail utilities along the rail ROW, which includes drainage pumping stations (to pump water out of tunnels into the stormwater discharge system) and chiller plants (for cooling across multiple stations).

Facilities

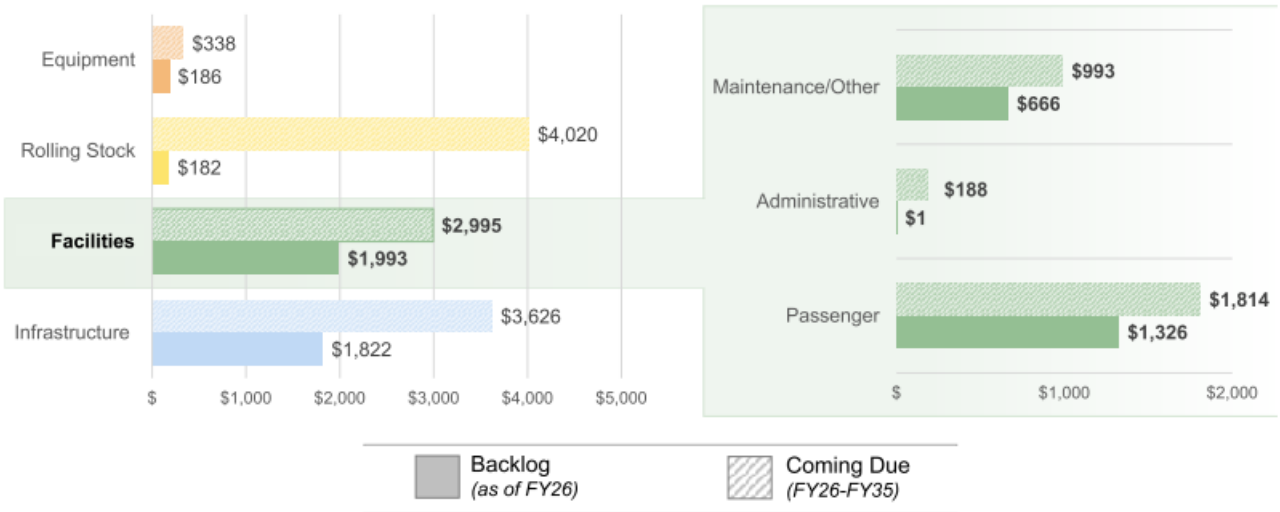
Metro's Facilities asset category makes up the second largest share of total reinvestment needs over the 10-year period, with a total reinvestment need of just under $5 billion dollars out of $15.2 billion. Within this category are major assets that are foundational to the ability to provide Metrorail, Metrobus, and MetroAccess service.

About 40 percent of the total facilities need is for assets in backlog, with the largest share of facilities in backlog driven by passenger facilities. Passenger facilities include assets such as structures (the station building itself, platform edges, station canopies, customer parking garages), electrical power rooms, elevators and escalators, public address systems, passenger information displays, intercoms, fire alarm systems, cooling systems, sewage ejector systems, security systems (CCTV and intrusion detection), surface parking lots, and fare collection systems. Eighty-six of Metro's 98 stations (88 percent) have assets that are over 30 years old and are kept operational through maintenance activities and sub-component replacements.

The second largest category in backlog is maintenance facilities. These comprise bus garages, railyard campuses, special overhaul facilities, and warehouses. Within each building, the FTA-defined facilities components of sub-structure, shell, interior, electrical/ communications, HVAC, fire protection and life safety, plumbing, and sitework are evaluated and reinvestment estimates are applied. Land value is not captured in the SNO model. The maintenance facility backlog consists of the two bus garages (Northern and Bladensburg) that are currently under construction for full replacement.

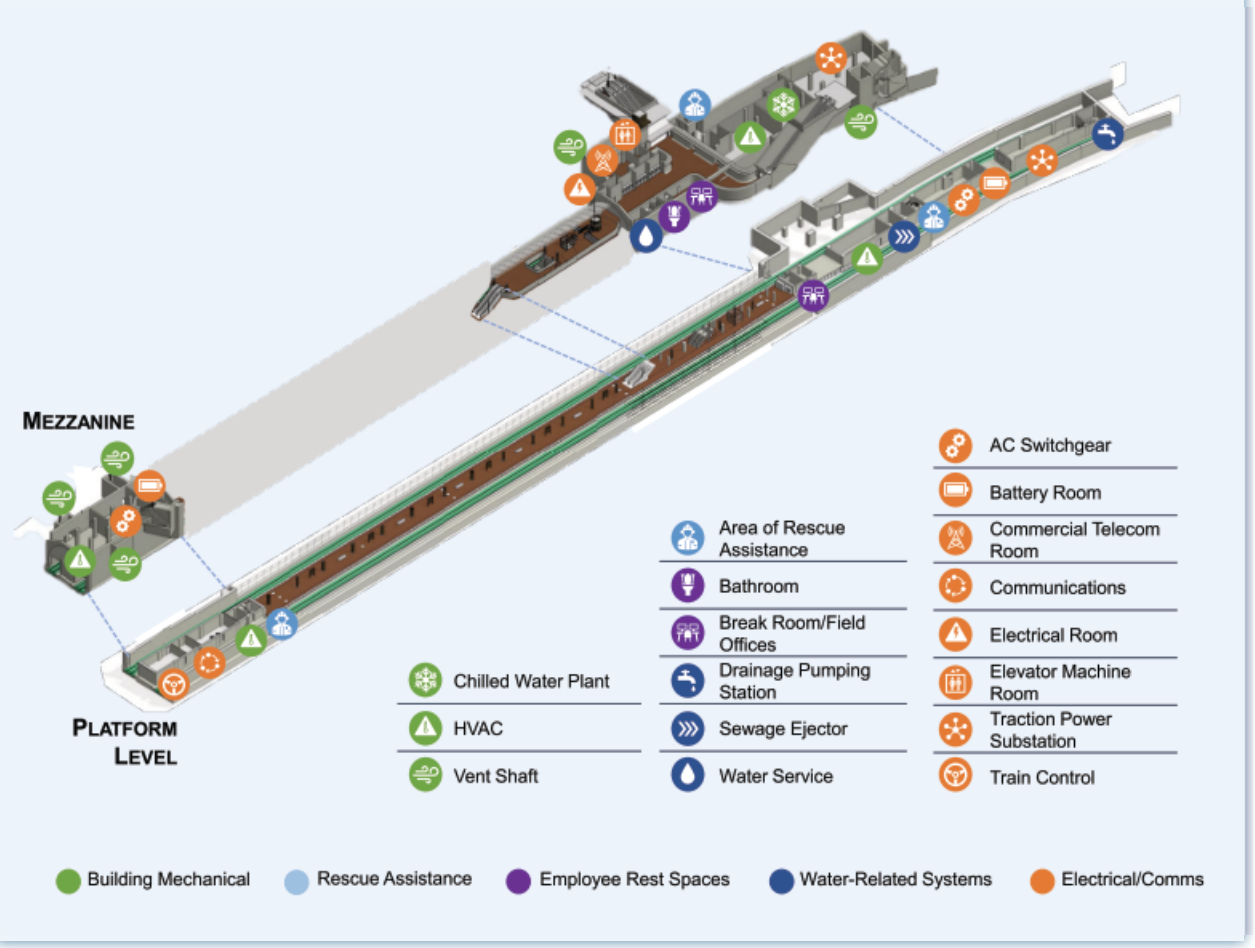
Approximately 60 percent of the total need for facilities is for assets that come due within the 10-year period of analysis. The largest share of facilities assets with upcoming investment needs are passenger facilities. Within the 10-year period, 15 Metrorail stations will exceed 30 years since construction. Thirty years is when many asset types are either past their useful life or prone to early failure, based on operating conditions.

Figure 6: Facilities 10-Year Need ($M)



Insight Opportunity: Scale of a Station

Metro users may be intimately familiar with the layout of their Metrorail station; however, a seamless customer experience relies on back-of-house spaces and complex equipment that riders never see. The image below is a schematic of a typical underground station, where 40 percent of station square footage is behind closed doors or gates. The unglamorous back-of-house equipment powers the station and trains, moves water and sewage up and out of stations, controls train movement and speeds, keeps passengers cool and well informed, and ensures safety in case of an emergency.



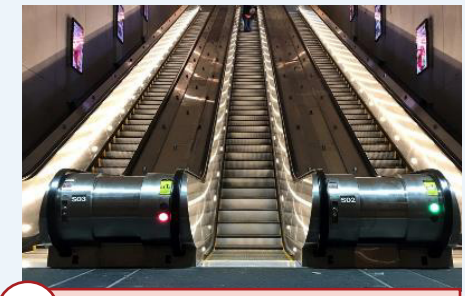
Maintenance facilities make up the second largest share of upcoming reinvestment needs. Western and Four Mile Run Bus Garages are slated to come due within the 10-year period. Reinvestment in railyards assumes annual capital maintenance costs based on specific building components. The equipment within these various maintenance buildings is carried in the Equipment asset category.

Metro's administrative facilities make up a small portion of the 10-year reinvestment need. Metro's three largest administrative facilities were all constructed within the last four years and will not need meaningful capital reinvestment within the 10-year period. Metro does have various other administrative buildings spread across the Facilities portfolio, such as Telegraph Road, parts of the Carmen

Insight Opportunity: State of Escalators

Access to Metrorail stations begins and ends with escalators (and elevators).

Metro has the largest inventory of escalators of any organization in the US. The steel machines ensure that every small child, rider with a sprained ankle, or visitor can easily access Metro's deep and large stations and that even the most agile are moved quickly to reduce crowding.



Escalator replacement costs vary by length, ranging from $900K to $6M

Escalator State of Good Repair Progress

Metro has replaced over 250 escalators since 2016 through a replacement program developed around age and reliability data on 600+ escalators.

2016 Escalator Backlog	2019 Escalator Backlog	Current Escalator Backlog
$508M	$283M	$69M

Insight Opportunity: State of AC Power Rooms

Replacing the major components of a single AC Power Room costs an average of $10M

AC Power Rooms provide power to stations and railyards

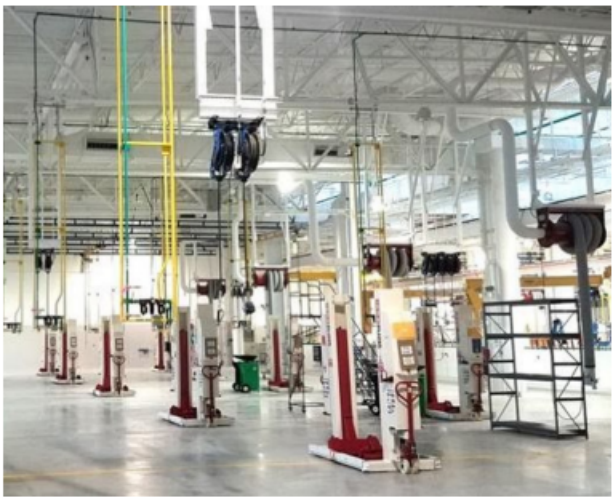
The underappreciated "other" power source at Metro is essential to the basic functions of the Metrorail system. Every light, emergency fan, fire alarm, escalator, and pump functions thanks to the 103 rooms packed with equipment spread across every station

AC Power Room State of Good Repair Progress

Metro has replaced the AC Power Room equipment at 25 stations; however, the cost of this equipment has continuously increased, and the pace of replacement cannot keep up with the rate it is aging out.

2016 AC Power Rooms Backlog	2019 AC Power Rooms Backlog	Current AC Power Rooms Backlog
$20M	$42M	$86M

Turner Facility campus, and buildings within railyards; these are the buildings with the majority of reinvestment needs in the model.



Equipment

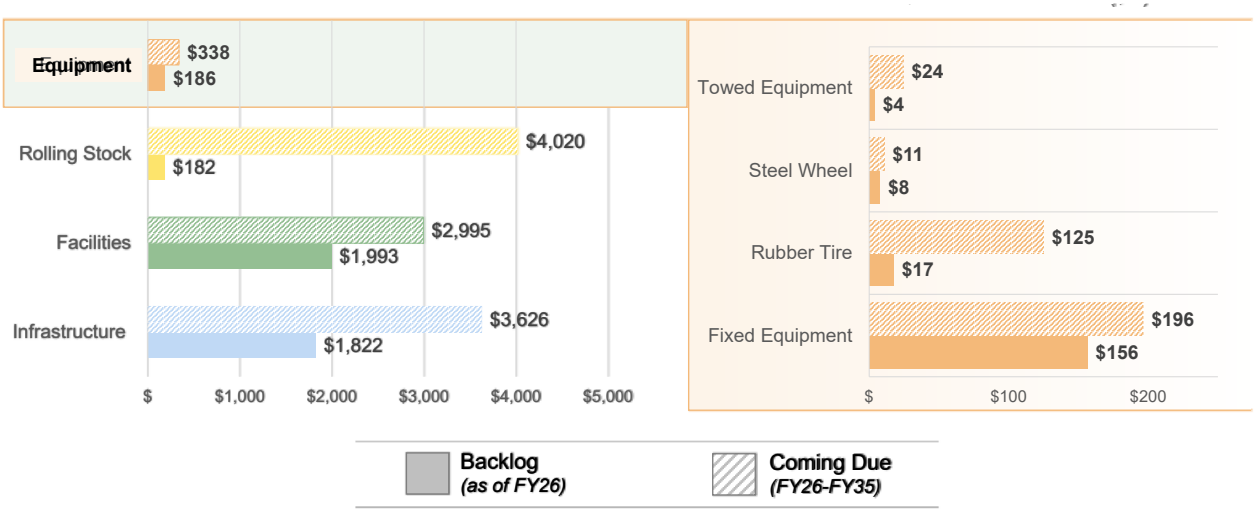
Metro's Equipment asset category makes up the smallest share of total reinvestment needs over the 10-year period, with a total reinvestment need of approximately $530 million dollars out of $15.2 billion. Within this category are assets that support the maintenance, protection, and management of Metro service.

About 35 percent of the total equipment need is for assets in backlog, with the largest share of equipment in backlog driven by fixed equipment. Fixed equipment is mostly in railyards, bus garages, and the heavy overhaul shop in the Carmen Turner Facility campus. Fixed equipment includes hoists, lifts, turntables, cranes, fuel tanks and fueling stations, wheel lathes, paint booth equipment, and vehicle wash components. Fixed equipment is constantly in use and is maintained to ensure its functionality and the safety of the employees working around or under it. Useful life is an unreliable metric for this equipment due to piecemeal replacement of parts that extend the life of these high-use - and-touch assets. Fixed equipment is targeted for future improvements in the model.

The second largest category in backlog is rubber-tire equipment. This comprises service vehicles such as sedans and SUVs (for operations supervisors, Metro police, and service fleet), and trucks and vans (for maintenance crews). Metro has been in the process of reducing the non-revenue service vehicle fleet, allowing vehicles to age out and not replace them. The process is underway; until such time as it is complete, older rubber-tire vehicles will remain in the SNO model backlog.

Approximately 65 percent of the total need in Equipment is for assets that come due within the 10-year period. The largest share of Equipment assets with upcoming investment

Figure 7: Equipment 10-Year Need ($M)



needs are fixed equipment, followed by rubber-tire vehicles. Towed equipment, such as light trailers, wood chipper trailers, box trailers, and pipe flusher trailers are all used for specific and limited maintenance tasks. For these assets, low utilization allows many of these assets to last much longer than their assumed useful life. Steel-wheel equipment (or rail maintenance machines), such as ballast regulators, flatcars, prime movers, ballast cars, rail crane, over/under inspection car, and drain jet rodder units make up the smallest reinvestment need due to recent replacements and the equipment's long useful life.

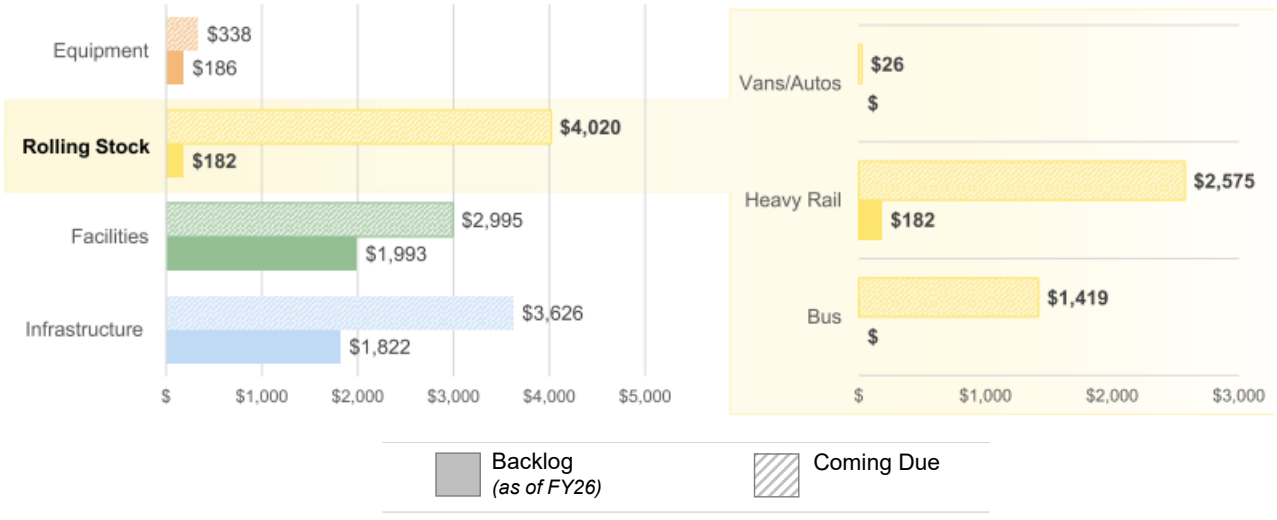
Rolling Stock

Metro's Rolling Stock asset category makes up the third largest share of total reinvestment needs over the 10-year period, with a total reinvestment need of just under $5 billion dollars of the $15.2 billion, close to reinvestment totals for Facilities. Rolling Stock (railcars, buses, and MetroAccess) vehicles are the number-one touch point for passengers when using transit and they are foundational to everything Metro does.

Metro's rolling stock is considered in SGR. The model retired and removed the 2000-series railcars when Metro decided to right-size the railcar fleet to post-Covid 19 pandemic ridership. The small amount in backlog in the model is for the oldest 3000-series railcars that turned 40 in 2024. Only the 3000-series railcars come due in the 10-year period, and all replacement needs are covered in the 8000-series railcar contract.

Buses and MetroAccess vehicles have replacement cycles that are also fully funded. The model captures the rehabilitation investment need based on Metro rehabilitation programs for buses and railcars. Buses receive investment for midlife overhaul and railcars receive investment for specific rehabilitations actions on a six-year cycle, per the Scheduled Maintenance Program (SMP).

Figure 8: Rolling Stock 10-Year Need ($M)



Insight Opportunity: State of Bus Vehicles

Metrobus requires 1,500 buses to provide service to the region every day.

A transit bus is not a large car. In addition to powerful engines and a rugged frame, buses include technology that provides real-time tracking, payment options, passenger safety, and bus operator communication.

Bus Vehicle State of Good Repair Progress

Metro has developed a predictable bus vehicle replacement program, as well as small upgrades such as bus operator shields and new fareboxes.

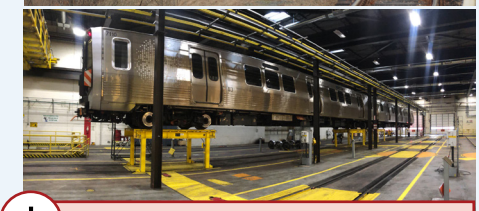
2016 Bus Vehicle Backlog	2019 Bus Vehicle Backlog	Current Bus Vehicle Backlog
$72M	$25M	$0M

The average replacement cost for a fully-loaded 40-ft hybrid bus is $1M and $1.4M for an electric bus

Insight Opportunity: State of Rail Vehicles

Metrorail requires over 1,200 railcars to provide service to the region every day.

Railcars do more than meets the eye. Metro's 40-ton vehicles are powered by high-voltage electricity, controlled by an automated signaling system, climate controlled, monitored by CCTV, and can comfortably carry 100 passengers per car.



Rail Vehicle State of Good Repair Progress

Metro has replaced old (40+ years) or unreliable railcars and has proactively planned for the replacement of the next batch of oldest cars, some of which have just turned 40 years old.

2016 Rail Vehicle Backlog	2019 Rail Vehicle Backlog	Current Rail Vehicle Backlog
$606M	$13M	$182M

The average replacement cost for a single railcar is $3M

THE STATE OF GOOD REPAIR NEEDS OUTLOOK'S IMPACT ON THE CAPITAL PROGRAM

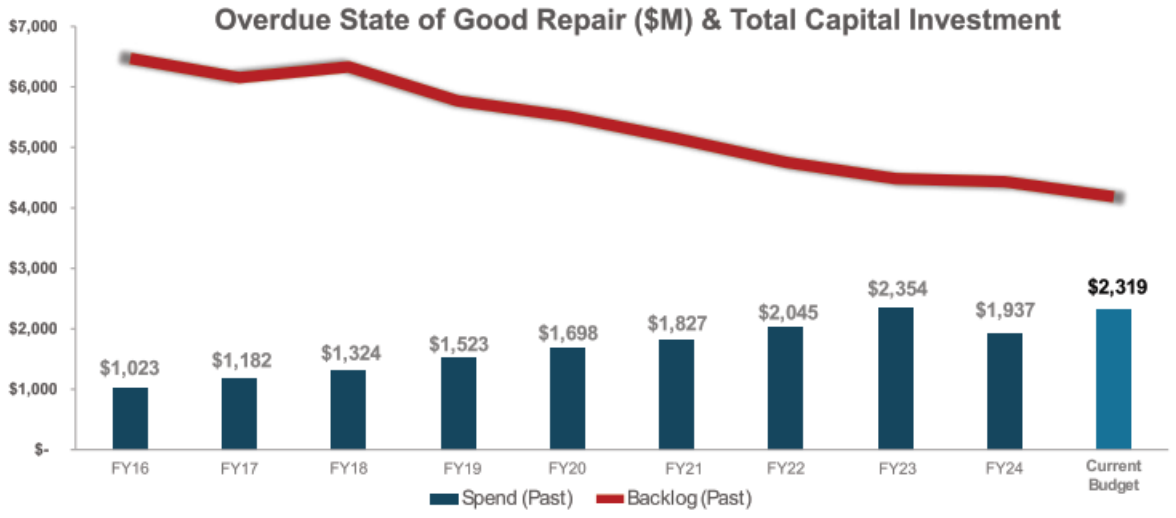
The SNO is a critical input into the capital program planning process and one of the means by which Metro measures the overall success of the capital program.

Since FY2015, Metro's pace of capital investments has increased significantly to meet critical reinvestment needs. To account for the increase, Metro refined its capital program development process and established a structured and centralized approach to identify, develop, evaluate, align, select, and approve capital investments to advance through the capital program.

The SNO is one of the inputs into the capital planning process and is the yardstick Metro uses to measure the success of the capital program. Every SGR need that is modeled in the SNO as backlog or coming due in the 10-year period of analysis is entered into the capital planning process. From there, the process aligns assets to ongoing projects where applicable, validates asset conditions with asset owners, and checks for readiness and delivery constraints (i.e., fully closing three bus garage divisions would provide an untenable impact to service, even if they are all past their useful life, or specialized inspections and engineering studies are required to understand the best rehabilitation approach for complex rail bridges).

Following the initial alignment of modeled asset needs to capital delivery realities, the capital planning process has the SGR information it needs to build Metro's financially unconstrained capital program. Metro must then constrain the program to available funding. The SNO is an input into prioritizing what will advance into the approved six-year Capital Improvement Program (CIP). Priority scores are assigned to assets in the SNO and are driven by an understanding of the safety risk of specific asset types and weighted against risk probability, which is derived from asset condition. Assets with the highest priority scores are vetted carefully for readiness. Each budget cycle, Metro tests budget scenarios against SGR asset data to check whether progress is being made toward SGR. Metro measures the overall success of the capital program by its ability to address SGR needs identified in this document. As shown in Figure 10, Metro

Figure 10: Capital Program Success ($M)



has been communicating that progress each budget cycle to Metro's Board of Directors by displaying the overall trajectory of Metro's asset backlog, as well as more detailed information on what major assets have reinvestment needs that are being deferred.

Capital planning includes an analysis of how the priorities defined in the SNO align with the six-year CIP. Asset priorities are detailed in Appendix 3 of the SNO. The analysis of how those unique asset priorities align with the Capital Budget can be found in Appendix C of the 10-Year Capital Plan: FY26 Proposed CIP SGR Performance Assessment.

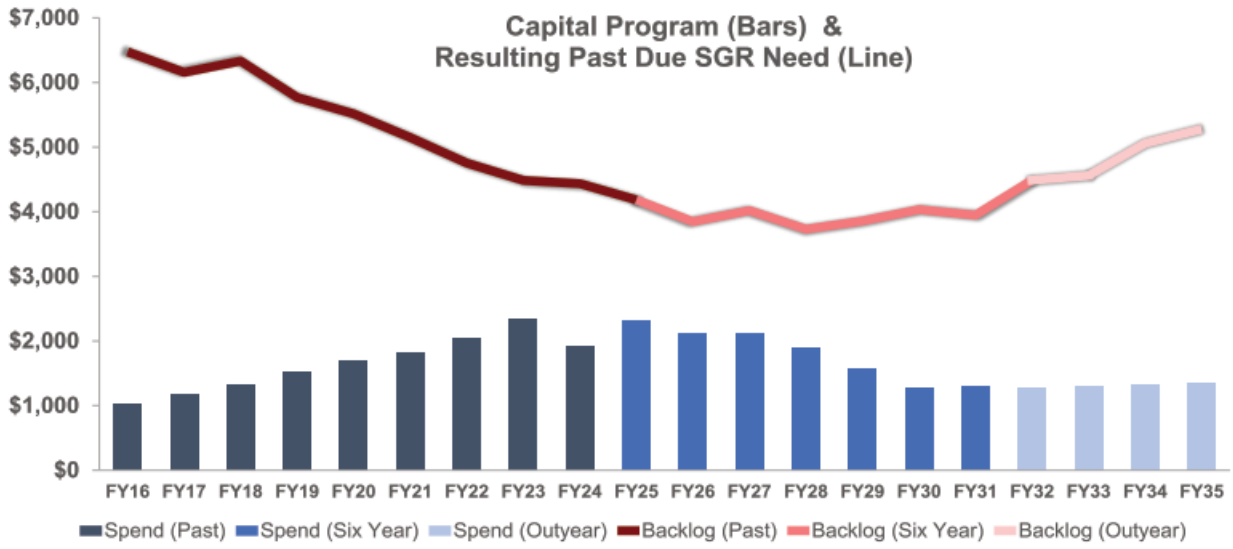
The SNO allows Metro to project and then communicate the risk that reduced funding levels pose to maintaining the progress of the past eight years. What is clear from Metro's projections of funding against SGR needs, shown in Figure 11, is that backsliding on progress has compounding effects. The SNO recommends that the capital program funds $15.2 billion in next 10 years, but the proposed capital program is not meeting this recommendation.

Metro's commitment to understanding and documenting physical asset reinvestment needs, through the 2024 SNO report, will allow Metro to communicate the trajectory of SGR and support prioritizing investments.

Metro is currently preparing to transition away from a proactive capital program, shifting back to primarily reactive SGR due to funding constraints that force the program to return to a more reactive stance – or repairing assets after they have failed. Proactive SGR, and the funding required to provide it, yielded tangible improvements in the performance, safety, and reliability of Metro. Presently, Metro is experiencing the highest levels of customer satisfaction in years, coupled with material ridership growth following the pandemic.

Metro is approaching funding shortfalls armed with the knowledge of the outcomes of past periods of underinvestment and the importance of communicating to regional stakeholders where we are headed and the anticipated effects. In 2016, with a backlog of $7 billion (~$9 billion in 2024 dollars), Metro experienced tragic safety incidents and decreasing reliability.

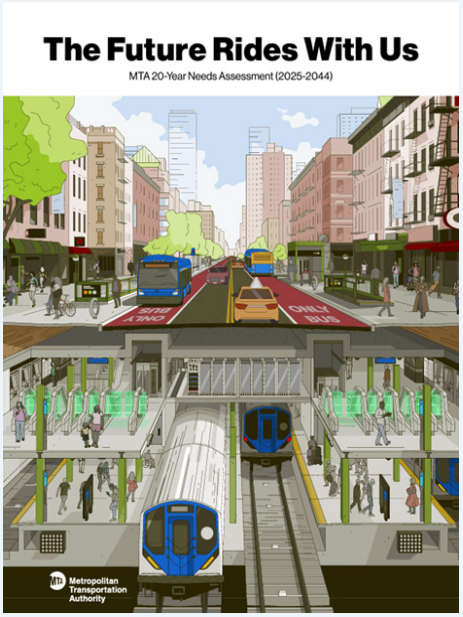
Figure 11: Projected Funding Against SGR Needs ($M)



Insight Opportunity: How Metro Compares to Peer Agencies

The results of various transit agencies' asset management analysis are starting to provide greater insight into SGR needs across the country. In 2016, the FTA estimated that all transit agencies had a combined backlog of approximately $86 billion. That same year, Metro was the first to openly communicate its SGR reinvestment backlog as $7 billion with a total 10-year SGR reinvestment need of $17 billion through the release of the CNI. Other transit agencies took longer to produce their own estimates, but their results show that the challenges that Metro faced and continues to face are not unique.

The Massachusetts Bay Transit Authority (MBTA) released their major report on SGR in 2019 and provided an update in November of 2023, citing a backlog number of $10 billion and total 10-year SGR reinvestment need of $24.5 billion. MBTA's SGR reinvestment estimate increased by $14.5 billion from 2019 to 2023; in the agency's press release, they cited factors such as better inventory, infrastructure and construction cost increases, continued aging of assets faster than they are replaced, and the delay between the start of investment and it being reflected in their model.



The New York Metropolitan Transportation Authority (MTA) released their 20-Year Needs Assessment in 2023, their most transparent public accounting of the SGR of their assets. MTA does not publicly publish a backlog number; however, in its 2025-2029 Capital Plan they state the need to reinvest $23 billion annually in capital assets, and that within that is included $7 billion a year to "address MTA's outsized state-of-good repair backlog." Similar to Metro's history, the MTA asserts that years of underinvestment culminated in a "Summer of Hell" in 2017, which was followed by a $55 billion 2020-2024 Capital Plan that allowed New York to correct course. Similar to the MBTA, time and investments have not reduced MTA's capital need. MTA's 2025-2029 Capital Plan is $68 billion, an increase of $13 billion from 2020.

Metro, MBTA, and MTA systems are of meaningfully different size, age, and design. One-to-one comparison of Capital Plans is full of nuance; however, the unrelenting need for capital reinvestment is shared across these and other transit agencies.

APPENDIX 1: ASSET INVENTORY

Sub-Category	Element	Condition Measure
Category	**Equipment**	
Fixed Equipment	Train Washer	Age
Fixed Equipment	Bus Vehicle Paint booth	Age
Fixed Equipment	Brake Lathe	Age
Fixed Equipment	Hoist	Age
Fixed Equipment	Lifts	Age
Fixed Equipment	Shop Machinery - Bus	Age
Fixed Equipment	Shop Machinery - Rail	Age
Fixed Equipment	Wheel Press	Age
Fixed Equipment	CNG Refueling Station	Age
Fixed Equipment	Crane	Age
Fixed Equipment	Fuel Tank/Gasoline/Diesel Station	Age
Rubber Tire	Police (Motorcycle, Prisoner Transport, Sedan)	Age
Rubber Tire	Maintenance Transportation/Cargo (Pick Up Truck/Van)	Age
Rubber Tire	Maintenance Equipment (Fuel Tanker, Welder, or Crane Truck)	Age
Rubber Tire	Emergency Response (i.e., Mobile Command Unit, SWAT)	Age
Steel Wheel	Track and ROW Structure Maintenance (ballast car, prime mover, tunnel washer)	Age
Steel Wheel	Response/Emergency (i.e., rerailer)	Age
Steel Wheel	Track/Structure Inspection (TGV, Down and Under)	Age
Towed	Maintenance Grounds Equip (asphalt patch, chipper)	Age
Towed	Emergency Response (i.e., bomb trailer, generator, lighting)	Age
Towed	Maintenance ROW Equip (jet rodder, flatbed trailer)	Age
Category	**Facilities**	
Administrative	Interior	Condition
Administrative	Sitework	Condition
Administrative	Conveyance	Condition
Administrative	Shell (Roof/Windows/Walls)	Condition
Administrative	Mechanical - HVAC	Condition
Administrative	Fire Life Safety and Protection	Condition
Administrative	Electrical/Communications	Condition

Sub-Category	Element	Condition Measure
Category	**Facilities**	
Maintenance - Bus	Interior	Condition
Maintenance - Bus	Sitework	Condition
Maintenance - Bus	Conveyance	Condition
Maintenance - Bus	Plumbing Fixtures & Water Distribution	Condition
Maintenance - Bus	Substructure/Foundation	Condition
Maintenance - Bus	Shell (Roof/Windows/Walls)	Condition
Maintenance - Bus	Mechanical - HVAC	Condition
Maintenance - Bus	Fire Life Safety and Protection	Condition
Maintenance - Bus	Electrical/Communications	Condition
Maintenance - Rail	Interior	Condition
Maintenance - Rail	Sitework	Condition
Maintenance - Rail	Conveyance	Condition
Maintenance - Rail	Plumbing Fixtures & Water Distribution	Condition
Maintenance - Rail	Substructure/Foundation	Condition
Maintenance - Rail	Shell (Roof/Windows/Walls)	Condition
Maintenance - Rail	Mechanical - HVAC	Condition
Maintenance - Rail	Fire Life Safety and Protection	Condition
Maintenance - Rail	Electrical/Communications	Condition
Passenger - Bus	Interior	Age
Passenger - Bus	Sitework	Age
Passenger - Bus	Conveyance	Age
Passenger - Bus	Plumbing Fixtures & Water Distribution	Age
Passenger - Bus	Substructure/Foundation	Age
Passenger - Bus	Shell (Roof/Windows/Walls)	Age
Passenger - Bus	Mechanical - HVAC	Age
Passenger - Bus	Fire Life Safety and Protection	Age
Passenger - Bus	Electrical/Communications	Age
Passenger - Bus	Passenger Communication	Age
Passenger - Rail	Bus Loop	Age
Passenger - Rail	Conveying Systems Elevator	Age
Passenger - Rail	Conveying Systems Escalator	Age
Passenger - Rail	Customer Parking Garage	Age
Passenger - Rail	Customer Parking Surface lot	Age
Passenger - Rail	Electrical AC Switchgear	Age
Passenger - Rail	Electrical Platform Edge Lighting	Age
Passenger - Rail	Electrical Station Lighting	Age

Sub-Category	Element	Condition Measure
Category	**Facilities**	
Passenger - Rail	Station Manager Kiosk	Age
Passenger - Rail	Sewage Ejectors	Age
Passenger - Rail	Passenger Communications - Intercom	Age
Passenger - Rail	Passenger Communications - Passenger Displays	Age
Passenger - Rail	Passenger Communications Public Address	Age
Passenger - Rail	Revenue Collection Faregates	Age
Passenger - Rail	Revenue Collection Ticket Vendors	Age
Passenger - Rail	Safety and Security CCTV	Age
Passenger - Rail	Safety and Security Chem/Bio Detection	Age
Passenger - Rail	Safety and Security Fire Alarm System	Age
Passenger - Rail	Safety and Security Intrustion Detection	Age
Passenger - Rail	Structure Building	Age
Passenger - Rail	Structure Platform	Age
Category	**Infrastructure**	
Communications	Radio System	Condition
Communications	Communications Cable/Fiber	Condition
Electrification	Third Rail: Mainline	Inspection - Annualized
Electrification	Third Rail: Pocket	Inspection - Annualized
Electrification	Third Rail: Yard	Inspection - Annualized
Electrification	Third Rail Heaters	Inspection - Annualized
Electrification	Emergency Trip Station (ETS) System	Age
Electrification	Third Rail Insulators	Inspection - Annualized
Electrification	Traction Power Substations	Condition
Electrification	Tie Breaker Stations	Condition
Electrification	Power Cable	Inspection - Annualized
Guideway	Bridge Pedestrian	Inspection - Annualized
Guideway	Bridge Road	Inspection - Annualized
Guideway	Bridge Rail	Inspection - Annualized
Guideway	At-grade track bed	Inspection - Annualized
Guideway	Tunnel	Inspection - Annualized
IT Systems	Software Not mission critical	Age
IT Systems	Computers/Hardware Not mission critical	Age
IT Systems	Computers/Hardware Mission Critical	Age
IT Systems	Software Mission Critical	Age
ROW Utilities	Chiller Plant	Age

Sub-Category	Element	Condition Measure
Category	**Infrastructure**	
ROW Utilities	Drainage Pumping Station	Age
Special Structures	ROW fencing	Age
Special Structures	Shafts Vent only	Age
Special Structures	Shafts - Fan	Age
Special Structures	ROW retaining walls	Inspection - Annualized
Trackwork	Turntable	Age
Trackwork	Yard	Inspection - Annualized
Trackwork	Ballasted	Inspection - Annualized
Trackwork	Direct Fixation	Inspection - Annualized
Trackwork	Special	Inspection - Annualized
Train Control	Switch Machine	Age
Train Control	Train Control Cable	Inspection - Annualized
Train Control	Train Control Room (all non-vital equipment)	Age
Train Control	Train Control Room (all vital equipment)	Age
Category	**Rolling Stock**	
MetroAccess	Raised Roof Van	Age
MetroAccess	Sedan	Age
Bus	CNG 40-Foot	Age + Rehabilitation
Bus	CNG 60-Foot	Age + Rehabilitation
Bus	Diesel 30-Foot	Age + Rehabilitation
Bus	Diesel 40-Foot	Age + Rehabilitation
Bus	Diesel 60-foot	Age + Rehabilitation
Bus	Electric 40-Foot	Age + Rehabilitation
Bus	Hybrid 30-Foot	Age + Rehabilitation
Bus	Hybrid 40-Foot	Age + Rehabilitation
Bus	Hybrid 60-Foot	Age + Rehabilitation
Railcar	3000 Series	Age + Rehabilitation
Railcar	6000 Series	Age + Rehabilitation
Railcar	7000 Series	Age + Rehabilitation

APPENDIX 2: MODEL METHODOLOGY

The foundation of the methodology is a detailed inventory documenting Metro's Capital-level physical asset holdings, including each asset's type, replacement cost, quantities, location, age, and useful life. This asset inventory provides the basis to model the timing and cost of asset rehabilitation or replacement investments. It has been developed over nearly 10 years, first in the 2016 Capital Needs Inventory (CNI). The inventory is improved whenever new data is available; however, major updates were made through the 2019 Capital Needs Forecast (CNF), through a 2022 effort to update replacement values and re-align to Federal Transit Administration (FTA) asset categories, and in 2024 in preparation for the publication of this State of Good Repair Needs Outlook (SNO).

The asset inventory data (type, quantity, location, age) comes primarily from Metro's asset management and work order software. Replacement costs were updated in 2022 through a top-to-bottom review of the inventory by Capital Project cost estimating experts to capture high inflation during the Covid-19 pandemic and to incorporate cost knowledge gained from Metro's executed projects.

Asset condition, which dictates in what year the model places reinvestment dollars, is determined through asset-specific decay curves, provided by FTA via TERM Lite (Transit Economic Requirements Model). TERM Lite is an analysis tool designed to help transit agencies assess their deferred SGR capital needs. Metro uses TERM Lite for its ability to take the inputs of age, useful life, and asset type and chart that asset over its useful life to determine age-based condition and reinvestment timing. Metro runs all assets where condition is based on age and useful life through the TERM Lite model to arrive at condition and reinvestment year. Where Metro has condition data, developed through a more complex condition assessment methodology beyond age, Metro uses the TERM Lite decay curve for that asset type, but uses the assessed condition as the starting point rather than age. Lastly, TERM Lite provides Annual Capital Maintenance (ACM) reinvestment rates for assets that do not fit neatly into the age-replace/rehabilitate format; this includes long-life structures such as tunnels and bridges as well as trackwork, where the subcomponents are so routinely replaced that condition modeling is outdated the moment it is calculated.

An additional key input in Metro's SNO model, is the action that must be taken against the asset, which informs how much of the specific asset valuation is applied in the year the asset comes due. If the asset type is one that gets fully replaced, the full asset value (in modeled-year dollars) is allocated in the appropriate year. If a rehabilitation is required, a percentage of the full asset value is applied (that percentage is provided by TERM Lite and modified where needed). If Annual Capital Maintenance is required, an annualized reinvestment rate is put in each year of the model.

APPENDIX 3: PRIORITIZATION

The SNO also includes data fields designed to prioritize asset reinvestment needs with rankings based on each asset's safety criticality. The prioritization of assets in the SNO has meaningfully changed between the 2016 CNI and 2019 CNF. The change in prioritization methodology reflects Metro's dedication to the Strategic Transformation Plan, where safety is a core value and at the foundation of every goal within the plan.

As such, the prioritization methodology in the SNO removed factors such as ridership impact and service delivery and focuses exclusively on safety criticality, as defined in Metro's Public Transportation Agency Safety Plan (PTASP) and risk probability, as defined by asset condition. Every asset type was assigned a risk severity score by senior members of Metro's Safety Department that aligns with the MIL-STD-882E System Safety Standard Practice, detailed in the PTASP.

Table 2 shows the risk severity classifications, as defined in the PTASP. Capital-level asset risk severity is measured based on the consequences expected from a weighted view of both the most probable Capital-level asset failure (higher weight) and the most improbable catastrophic Capital-level asset failure (lower weight). For example, the most probable Capital-level failure of a rail bridge is that there will be a concentration of bridge defects (cracks, spalls, rusted bearings, etc.) that will require rehabilitation to preserve the safety and longevity of the bridge. The most improbable,

Table 2: Risk Severity Classifications

Severity	Safety Score	Meaning
Catastrophic	**4**	**Risk realization expected to result in one or more of the following:** Death, permanent total disability, loss of passenger/crew occupied volume with equipment damage causing separations in structure, infrastructure damage that suspends service through the affected area for greater than 24 hours.
Critical	**3**	**Risk realization expected to result in one or more of the following:** Permanent partial disability, injuries/illness that results in hospitalization, loss of passenger/crew occupied volume with equipment damage that causes openings but no separations in structure, infrastructure damage that suspends service through the affected area for greater than 2 and up to 24 hours.
Marginal	**2**	**Risk realization expected to result in one or more of the following:** Injury or illness resulting in one or more lost work day(s), loss of passenger/crew occupied volume with equipment damage that causes no openings in structure, infrastructure damage that suspends service through the affected area for more than 30 minutes and up to 2 hours.
Negligible	**1**	**Risk realization expected to result in one or more of the following:** Injury or occupational illness that does not result in a lost work day, no loss of passenger/crew occupied volume, equipment or infrastructure damage that does not suspend service nor cause a delay through the affected area for more than a maximum of 30 minutes.

* SNO Safety scores break each four categories into quartiles, creating a score range of 1 to 4.75.

but catastrophic, capital-level failure of a rail bridge is collapse with a train on it, seriously injuring or killing those onboard.

Most asset failures are routinely mitigated through both operational measures (inspections, operational closures, testing) and through Capital investment that preempts the need for meaningful operational mitigations. Risk probability is defined based on reinvestment timing as modeled in the SNO. The SNO uses modeled condition data to assign a reinvestment need into a specific year, or for past due assets they are placed in backlog. The MIL-STD-882E System Safety Standard Practice defines risk by how probable it is for something to occur.

The guidance and definitions can be applied to operational and maintenance level risks as well as capital risks. Table 3 shows the MIL-STD-882E risk probability measures and qualitative definitions aligned to SNO outputs. Table 4 of this appendix provides a prioritized list of Metro assets. To arrive at the priority score, the safety risk scores were multiplied by the probability risk score. The prioritized list groups assets based on type and score. The annual capital program development process uses the prioritized list of assets to identify investments and balance ongoing SGR programs. Modernization and expansion priorities are driven by the Strategic Transformation Plan, Metro's Board, and regional stakeholders' priorities.

Table 3: Risk Probability Measures

Probability	Value	Quality Measure	SNO Equivalent
Frequent	**5**	Opportunity for risk to be realized expected to occur often	Asset is in backlog
Probable	**4**	Opportunity for risk to be realized expected on a recurring basis	Reinvestment modeled in coming three years
Occasional	**3**	Opportunity for risk to be realized expected to occur	Reinvestment modeled in coming three to six years
Remote	**2**	Opportunity for risk to be realized not expected to occur but possible	Reinvestment modeled in six to 10 years
Improbable	**1**	Opportunity for risk to be realized not expected to occur and almost inconceivable	Reinvestment falls outside of 10-year model

Table 4: Prioritized List of Metro Assets

Table Definitions

Category - FTA-defined transit asset categories include facilities, infrastructure, equipment, and rolling stock

Safety Score - safety risk indicator ranging from most critical (4.5) to least critical (1) safety needs.

Prob. (Probability) Score - risk probability indicator ranging from most probable (5) to least probable (1) risk of failure.

Priority Score - outcome of safety score multiplied by probability score; provides values by which Metro prioritizes SGR activities.

Group - priority group legend

Group	Priority Level	Score Range
A	**Highest**	>= 16
B	**High**	< 16 - 12
C	**Moderate**	< 12 - 8
D	**Low**	< 8 - 4
E	**Lowest**	< 4

Sub-Category	Element	Safety Score	Prob. Score	Priority Score	Group	Quantity	Unit
Category	**Facilities**						
• Passenger Rail	AC Switchgear	3.25	5	**16.25**	A	11	Ea.
• Passenger Rail	Platform	3	5	**15**	B	7	Ea.
• Passenger Rail	Safety Systems	2.75	5	**13.75**	B	89	Ea.
• Passenger Rail	AC Switchgear	3.25	4	**13**	B	17	Ea.
• Administrative	Services	2.5	5	**12.5**	B	148,900	Sq. Ft.
• Passenger Rail	Sewage Ejectors	2.5	5	**12.5**	B	78	Ea.
• Maintenance/Other	Substructure	3	4	**12**	B	57,741	Sq. Ft.
• Passenger Rail	Building	3	4	**12**	B	77	Ea.
• Passenger Rail	Parking Garage	2.25	5	**11.25**	C	7,125	Spaces
• Passenger Rail	Station Lighting	2.25	5	**11.25**	C	26	Ea.
• Passenger Rail	Fire System	2.75	4	**11**	C	28	Ea.
• Administrative	Services	2.5	4	**10**	C	1,403,925	Sq. Ft.
• Maintenance/Other	Shell	2.5	4	**10**	C	1,191,646	Sq. Ft.
• Maintenance/Other Bus	Bus Division (all assets)	2	5	**10**	C	2	Ea.
• Passenger Rail	PA/Intercom & Sewage Ejectors	2	5	**10**	C	117	Ea.
• Passenger Rail	AC Switchgear	3.25	3	**9.75**	C	11	Ea.
• Passenger Rail	Building, Canopy & Station Lighting	3	3	**9**	C	17	Ea.
• Passenger Rail	Garage	2.25	4	**9**	C	6,965	Spaces
• Administrative	Shell & Substructure	1.75	5	**8.75**	C	306,500	Sq. Ft.

Sub-Category	Element	Safety Score	Prob. Score	Priority Score	Group	Quantity	Unit
Category	**Facilities**						
• Passenger Rail	Kiosk & Platform Edge Lighting	1.75	5	**8.75**	C	31	Ea.
• Passenger Rail	Intrusion/Chem/Bio Detection	2.75	3	**8.25**	C	26	Ea.
• Maintenance/Other Bus	Bus Division (all assets)	2	4	**8**	C	1	Ea.
• Passenger Bus	Bus Shelters	1.5	5	**7.5**	D	301	Ea.
• Passenger Rail	Passenger Displays & Sewage Ejectors	1.5	5	**7.5**	D	491	Ea.
• Administrative	Shell	1.75	4	**7**	D	1,252,925	Sq. Ft.
• Passenger Rail	Kiosk & CCTV	1.75	4	**7**	D	44	Ea.
• Passenger Rail	Station Lighting	2.25	3	**6.75**	D	2	Ea.
• Passenger Rail	AC Switchgear	3.25	2	**6.5**	D	9	Ea.
• Maintenance/Other Bus	Bus Division (all assets)	2	3	**6**	D	1	Ea.
• Passenger Rail	Building, PA/ Intercom & Platform	2	3	**6**	D	21	Ea.
• Passenger Rail	Intrusion Detection	2.75	2	**5.5**	D	6	Ea.
• Administrative	Interiors & Sitework	1	5	**5**	D	13,200	Sq. Ft.
• Maintenance/Other	Services	1.25	4	**5**	D	1,191,646	Sq. Ft.
• Passenger Rail	Escalator, Sewage Ejectors & Ticket Vendors	1	5	**5**	D	482	Ea.
• Passenger Rail	Station Lighting	2.25	2	**4.5**	D	6	Ea.
• Passenger Rail	Garage	2.25	2	**4.5**	D	3,053,893	Spaces
• Administrative	FF&E, Interiors & Sitework	1	4	**4**	D	3,010,671	Sq. Ft.
• Maintenance/Other	Interiors & Sitework	1	4	**4**	D	2,383,292	Sq. Ft.
• Maintenance/Other Bus	Bus Division (all assets)	2	2	**4**	D	1	Ea.
• Passenger Rail	Elevator, Escalator & Intercom/PA	1	4	**4**	D	395	Ea.
• Passenger Rail	Surface Lot	1	4	**4**	D	15,192	Spaces
• Passenger Rail	CCTV, Kiosk & Platform Edge Lighting	1.75	2	**3.5**	E	20	Ea.
• Passenger Rail	AC Switchgear	3.25	1	**3.25**	E	48	Ea.
• Maintenance/Other	Substructure	3	1	**3**	E	1,133,905	Sq. Ft.

Sub-Category	Element	Safety Score	Prob. Score	Priority Score	Group	Quantity	Unit
Category	**Facilities**						
• Passenger Rail	Building, Canopy, Escalator, Platform & Ticket Vendors	3	1	**3**	E	299	
• Passenger Rail	Fire System & Intrusion/Chem/Bio Detection	2.75	1	**2.75**	E	139	
• Administrative	Services	2.5	1	**2.5**	E	227,000	
• Maintenance/Other	Entire Building & Shell	2.5	1	**2.5**	E	119,846	
• Passenger Rail	Sewage Ejectors	2.5	1	**2.5**	E	9	
• Passenger Rail	Garage	2.25	1	**2.25**	E	18,228	
• Passenger Rail	Garage	2.25	1	**2.25**	E	61	
• Administrative	Sitework	1	2	**2**	E	1,270,639	
• Maintenance/Other Bus	Bus Division (all assets)	2	1	**2**	E	5	
• Passenger Rail	Intercom, PA, Escalator, Ticket Vendors	2	1	**2**	E	118	
• Administrative	Shell & Substructure	1.75	1	**1.75**	E	2,000,225	
• Passenger Rail	CCTV, Faregates, Kiosk, Platform Edge Lighting	1.75	1	**1.75**	E	1,265	
• Passenger Rail	Passenger Displays	1.5	1	**1.5**	E	280	
• Maintenance/Other	Services	1.25	1	**1.25**	E	59,923	
• Administrative	FF&E & Sitework	1	1	**1**	E	1,044,965	
• Maintenance/Other	FF&E, Interiors & Sitework	1	1	**1**	E	1,371,415	
• Passenger Bus	Escalator	1	1	**1**	E	8	
• Passenger Rail	Surface Lot	1	1	**1**	E	2,076	
• Passenger Rail	Elevator, Escalator & Ticket Vendors	1	1	**1**	E	430	
Category	**Infrastructure**						
• Special Structures	Fan Shafts	4.5	5	**22.5**	A	36	
• Guideway	Rail Bridge	4	5	**20**	A	3,079	
• Train Control	Train Control Room	3.5	5	**17.5**	A	68	
• Communications	Data Transmission System Cable	3.5	5	**17.5**	A	1	
• Electrification	TPSS, TBS	3.25	5	**16.25**	A	30	

Sub-Category	Element	Safety Score	Prob. Score	Priority Score	Group	Quantity	Unit
Category	**Infrastructure**						
Train Control	Switch Machine	3.25	5	**16.25**	A	169	Ea.
Electrification	Emergency Trip Station (ETS)	3.25	5	**16.25**	A	2,010	Ea.
Guideway	Rail Bridge & Tunnels	4	4	**16**	A	601,113	Lin. Ft.
Special Structures	Retaining Walls	4	4	**16**	A	10,514	Lin. Ft.
Special Structures	Shafts - Tunnel Fire Lines	3	5	**15**	B	65,410	Lin. Ft.
Trackwork	Ballasted, Special, Direct Fixation	3.75	4	**15**	B	1,274,386	Track Ft
Guideway	At-Grade	3.75	4	**15**	B	171,458	Lin. Ft.
Rail Utilities ROW	Pump Stations	3	5	**15**	B	3	Ea.
Train Control	Supervisor Blockhouse	3	5	**15**	B	5	Ea.
IT Systems	Mission Critical Software & Hardware Systems	3.5	4	**14**	B	26	Ea.
Electrification	Power Cable	3.25	4	**13**	B	261,686	Track Ft
Electrification	TPSS	3.25	4	**13**	B	1	Ea.
Train Control	Switch Machine	3.25	4	**13**	B	56	Ea.
Communications	Radio System	2.5	5	**12.5**	B	1	Ea.
Special Structures/ Guideway	Retaining Walls/ Pedestrian Bridges/ Road Bridges	3	4	**12**	B	45,556	Lin. Ft.
Special Structures	Fan Shaft - Structure/Stairs/ Ladders	3	4	**12**	B	170	Ea.
Rail Utilities ROW	Pump Station	3	4	**12**	B	3	Ea.
Rail Utilities ROW	Chiller Plant	2.25	5	**11.25**	C	4	Ea.
Train Control	Train Control Room	3.5	3	**10.5**	C	2	Ea.
Electrification	Third Rail - Insulators	2.5	4	**10**	C	150,256	Ea.
Trackwork	Yard	2.5	4	**10**	C	305,317	Track Ft
Electrification	TPSS, TBS	3.25	3	**9.75**	C	48	Ea.
Train Control	Switch Machine	3.25	3	**9.75**	C	8	Ea.
Rail Utilities ROW	Pumping Station	3	3	**9**	C	9	Ea.
Special Structures	Shafts - Fire Lines	3	3	**9**	C	10,840	Lin. Ft.

Sub-Category	Element	Safety Score	Prob. Score	Priority Score	Group	Quantity	Unit
Category	**Infrastructure**						
Special Structures	Fan Shafts	3	3	**9**	C	31	Ea.
Electrification	Third Rail	2	4	**8**	C	1,567,295	Lin. Ft.
Special Structures	Retaining Walls	2	4	**8**	C	12,476	Lin. Ft.
IT Systems	Computers/ Hardware System	1.5	5	**7.5**	D	1	Ea.
Trackwork	Turntable	1.5	5	**7.5**	D	35	Ea.
Train Control	Train Control Room	3.5	2	**7**	D	13	Ea.
IT Systems	Mission Critical Software	3.5	2	**7**	D	2	Ea.
Rail Utilities ROW	Chiller Plant	2.25	3	**6.75**	D	1	Ea.
Train Control	Switch Machine	3.25	2	**6.5**	D	83	Ea.
Special Structures	Fencing	1.25	5	**6.25**	D	67,076	Lin. Ft.
IT Systems	Computers/ Hardware	1.5	4	**6**	D	10,302	Ea.
Special Structures	Shafts - Fire Lines	3	2	**6**	D	29,463	Lin. Ft.
Rail Utilities ROW	Drainage Pumping Station	3	2	**6**	D	2	Ea.
Trackwork	Turntable	1.5	4	**6**	D	2	Ea.
Train Control	Supervisor Blockhouse	3	2	**6**	D	1	Ea.
Special Structures	Fencing	1.25	4	**5**	D	158,154	Lin. Ft.
Special Structures	Vent Shafts - Structure/Stairs/ Ladders	1.25	4	**5**	D	182	Ea.
IT Systems	Software	1.25	4	**5**	D	2,004	Ea.
Special Structures	Fan Shafts	4.5	1	**4.5**	D	76	Ea.
Rail Utilities ROW	Chiller Plant	2.25	2	**4.5**	D	7	Ea.
Guideway	Rail Tunnel	4	1	**4**	D	17,316	Lin. Ft.
Special Structures	Retaining Walls	4	1	**4**	D	236,091	Lin. Ft.
Electrification	Third Rail Heaters	2	2	**4**	D	1,169	Ea.
Special Structures	Fencing	1.25	3	**3.75**	E	129,894	Lin. Ft.
Train Control	Train Control Room	3.5	1	**3.5**	E	31	Ea.
Electrification	TPSS, TBS	3.25	1	**3.25**	E	133	Ea.
Train Control	Switch Machine	3.25	1	**3.25**	E	347	Ea.
Rail Utilities ROW	Pumping Station	3	1	**3**	E	41	Ea.
Trackwork	Turntable	1.5	2	**3**	E	1	Ea.
Train Control	Supervisor Blockhouse	3	1	**3**	E	2	Ea.

Sub-Category	Element	Safety Score	Prob. Score	Priority Score	Group	Quantity	Unit
Category	**Infrastructure**						
Special Structures	Shafts - Fire Lines	3	1	**3**	E	266,511	Lin. Ft.
Special Structures	Fencing	1.25	2	**2.5**	E	108,678	Lin. Ft.
Rail Utilities ROW	Chiller Plant	2.25	1	**2.25**	E	21	Ea.
Trackwork	Turntable	1.5	1	**1.5**	E	38	Ea.
Special Structures	Fencing	1.25	1	**1.25**	E	165,902	Lin. Ft.
Fixed Equipment	Fuel Tank	3	5	**15**	E	6	Ea.
Category	**Equipment**						
Fixed Equipment	Lifting Equipment & Shop Machinery	2.75	5	**13.75**	B	126	Ea.
Other	N/A	3.25	4	**13**	B	2	Ea.
Fixed Equipment	Fuel Tank & Refueling Station	3	4	**12**	B	7	Ea.
Fixed Equipment	Rail Shop Machinery	2.75	4	**11**	C	81	Ea.
Fixed Equipment	Fuel Tank	3	3	**9**	C	2	Ea.
Steel Wheel	Rail Maintenance Machines	1.75	5	**8.75**	C	8	Ea.
Rubber Tire	Maintenance & Utility Trucks	1.75	5	**8.75**	C	4	Ea.
Towed Equipment	Trailers	1.75	5	**8.75**	C	101	Ea.
Fixed Equipment	Shop Machinery	1.75	5	**8.75**	C	83	Ea.
Fixed Equipment	Rail Shop Machinery	2.75	3	**8.25**	C	14	Ea.
Fixed Equipment	Vehicle Paint booth	1.5	5	**7.5**	D	2	Ea.
Rubber Tire	Passenger, Utility, Cargo Vehicles	1.5	5	**7.5**	D	189	Ea.
Rubber Tire	Passenger, Utility, Cargo Vehicles	1.75	4	**7**	D	427	Ea.
Fixed Equipment	Bus Shop Machinery	1.75	4	**7**	D	38	Ea.
Towed Equipment	Trailers	1.75	4	**7**	D	38	Ea.
Fixed Equipment	Train Washer	1.25	5	**6.25**	D	3	Ea.
Rubber Tire	Police Sedan	1.25	5	**6.25**	D	39	Ea.
Fixed Equipment	Fuel Tank	3	2	**6**	D	8	Ea.
Fixed Equipment	Lifting Equipment	2.75	2	**5.5**	D	141	Ea.
Rubber Tire	Passenger, Utility, Cargo, Maintenance Vehicles	1.75	3	**5.25**	D	385	Ea.
Towed Equipment	Trailers	1.75	3	**5.25**	D	43	Ea.
Fixed Equipment	Bus Shop Machinery	1.75	3	**5.25**	D	15	Ea.
Towed Equipment	Trailers	1	5	**5**	D	2	Ea.

Sub-Category	Element	Safety Score	Prob. Score	Priority Score	Group	Quantity	Unit
Category	**Equipment**						
Rubber Tire	Specialty Police Vehicles	2.25	2	**4.5**	D	2	Ea.
Towed Equipment	Trailers	1	4	**4**	D	4	Ea.
Steel Wheel	Rail Maintenance Machines	1.75	2	**3.5**	E	14	Ea.
Towed Equipment	Trailers	1.75	2	**3.5**	E	55	Ea.
Rubber Tire	Maintenance Trucks	1.75	2	**3.5**	E	57	Ea.
Towed Equipment	Trailers	1	3	**3**	E	2	Ea.
Fixed Equipment	Fuel Tank	3	1	**3**	E	36	Ea.
Steel Wheel	Track Geometry Vehicle	3	1	**3**	E	1	Ea.
Rubber Tire	Passenger, Utility, Cargo Vehicles	1.5	2	**3**	E	116	Ea.
Steel Wheel	Rail Maintenance Machines	2.75	1	**2.75**	E	4	Ea.
Fixed Equipment	Lifting Equipment & Shop Machinery	2.75	1	**2.75**	E	242	Ea.
Rubber Tire	Surveillance Van	1.25	2	**2.5**	E	1	Ea.
Towed Equipment	Trailers	1	2	**2**	E	21	Ea.
Steel Wheel	Rail Maintenance Machines	1.75	1	**1.75**	E	176	Ea.
Towed Equipment	Trailers	1.75	1	**1.75**	E	43	Ea.
Rubber Tire	Maintenance Trucks	1.75	1	**1.75**	E	25	Ea.
Rubber Tire	Passenger, Utility, Cargo Vehicles	1.5	1	**1.5**	E	234	Ea.
Rubber Tire	Specialty Police Vehicles	1.25	1	**1.25**	E	5	Ea.
Fixed Equipment	Train Washer	1.25	1	**1.25**	E	6	Ea.
Towed Equipment	Trailers	1	1	**1**	E	9	Ea.
Category	**Rolling Stock**						
Railcars	Backlog 3000 Series	3	5	**15**	B	58	Ea.
Railcars	3/6/7000 Series	3	4	**12**	B	793	Ea.
Buses	Hybrid, CNG, Diesel	2.75	4	**11**	C	443	Ea.
Vans/Autos	Sedan	2.75	4	**11**	C	177	Ea.
Buses	Hybrid, CNG	2.75	4	**11**	C	246	Ea.
Railcars	6/7000 Series	3	3	**9**	C	380	Ea.
Vans/Autos	Raised Roof Van	2.75	3	**8.25**	C	274	Ea.
Buses	Hybrid, CNG	2.75	3	**8.25**	C	301	Ea.

Sub-Category	Element	Safety Score	Prob. Score	Priority Score	Group	Quantity	Unit
Category	**Rolling Stock**						
• Railcars	3000 Series	3	2	**6**	D	46	Ea.
• Buses	Electric, Hybrid, CNG, Diesel	2.75	2	**5.5**	D	447	Ea.
• Vans/Autos	Raised Roof Van	2.75	1	**2.75**	E	315	Ea.
• Buses	Hybrid	2.75	1	**2.75**	E	102	Ea.