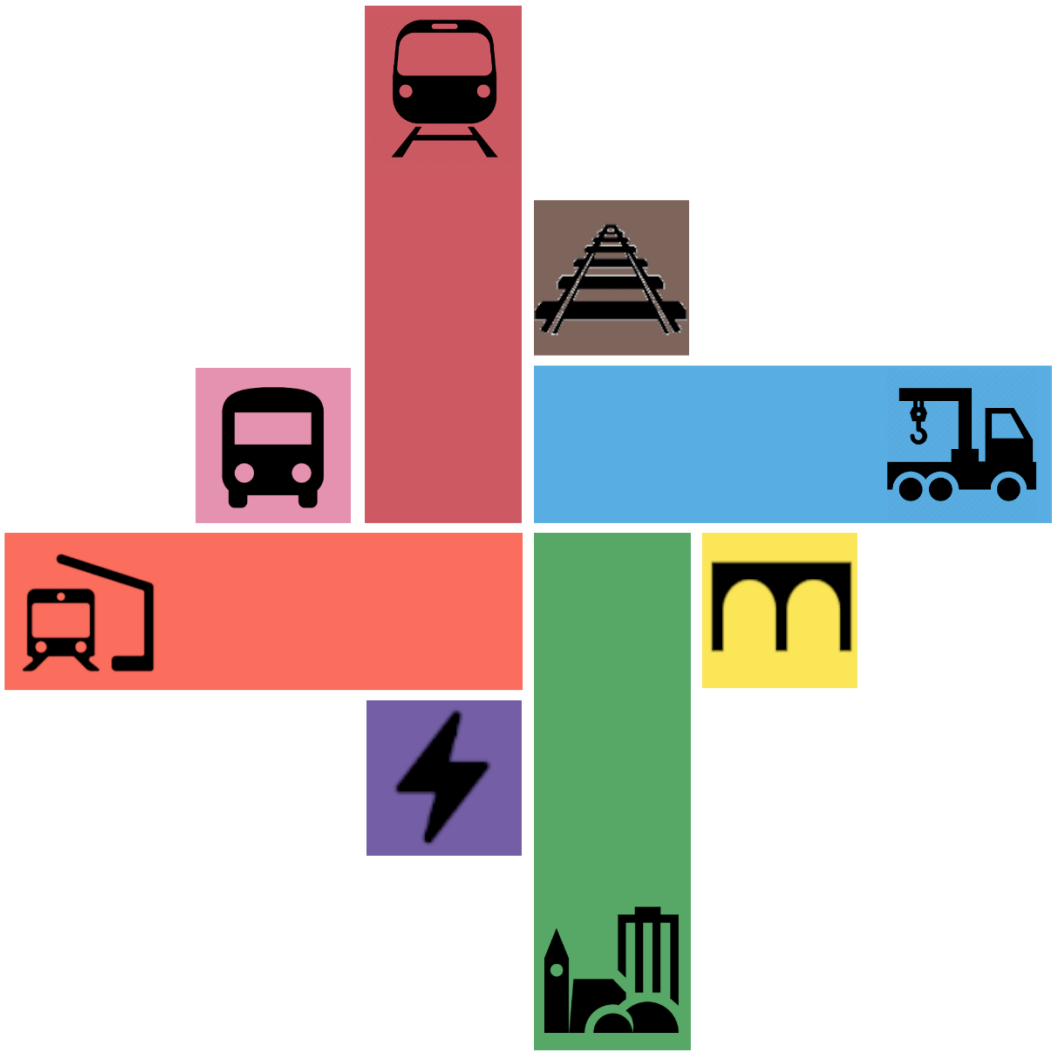
Transit Asset Management Plan
Chicago Transit Authority
Q3 2024



TRANSIT ASSET MANAGEMENT PLAN

CHICAGO TRANSIT AUTHORITY

VERSION HISTORY

REVISION	ISSUE DATE	REMARKS	PREPARED BY
1.0	June 22, 2017	Prepared and delivered by WSP under contract C14FI101529369	*WSP*: S. Cohen, J.P. O'Har, T. Goodyer, C. Roberts
1.1	October 1, 2018	Revisions to align with all MAP-21 requirements, updates and improvements to asset inventory & condition data, modifications to align with current CTA business practices	*CTA*: D. Johnson, N. Ayub, A. Makalinao
1.2	January 31, 2020	Revisions to update asset inventory and condition ratings; modernized formatting and included new visuals and design	*CTA*: D. Johnson, N. Ayub, A. Makalinao
1.3	May 1, 2021	Revisions to update asset inventory and condition ratings	*CTA:* D. Johnson, A. Nimmo
2.0	October 1, 2022	Revisions to update asset inventory and content referencing any updates	*CTA:* D. Thompson, A. Nimmo, M. Besic, M. Marasovich, D. Spell
2.1	June 23, 2023	Revisions to update asset inventory and condition ratings.	*CTA:* A. Nimmo, M. Besic, M. Marasovich, D. Spell
2.2	October 9, 2024	Revisions to update asset inventory and condition ratings.	CTA: A. Nimmo, M. Besic, M. Marasovich, D. Spell

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1 OVERVIEW

1.1 EXECUTIVE SUMMARY

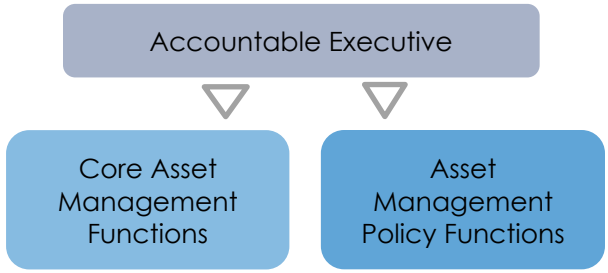
The Transit Asset Management (TAM) Plan provides an organization-wide view of the work necessary for the CTA to deliver transit services across the City of Chicago and 35 suburbs. The TAM Plan covers a 5-year period, concurrent with CTA's 5-year Capital Improvement program.

TAM Plan Purpose

- Provide an overview of CTA's asset inventory
- Describe CTA's capital investment prioritization
- Establish CTA's strategy
- Comply with Federal TAM requirements
- Document maintenance and replacement

TAM Organization

The CTA President as an Accountable Executive oversees the following:



- *Maintenance*
- *Specifications & Standards*
- *Major Capital Projects*
- *EAM Systems*

- *Resource Allocation & Controls*
- *Analysis & Program Support*
- *Long-Range Planning*
- *Safety & Hazard Management*

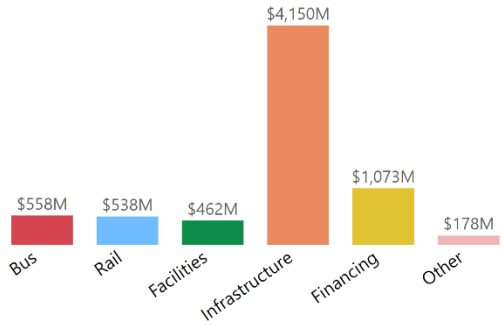
TAM Policy

The TAM policy establishes the direction of asset management activities with respect to:

The policy specifies that the TAM Plan will identify key departmental roles and responsibilities be made readily available to all CTA employees and will set employee and management expectations.

Capital Investment

CTA deploys investments from the **5-Year Capital Improvement Program*** among different departments.

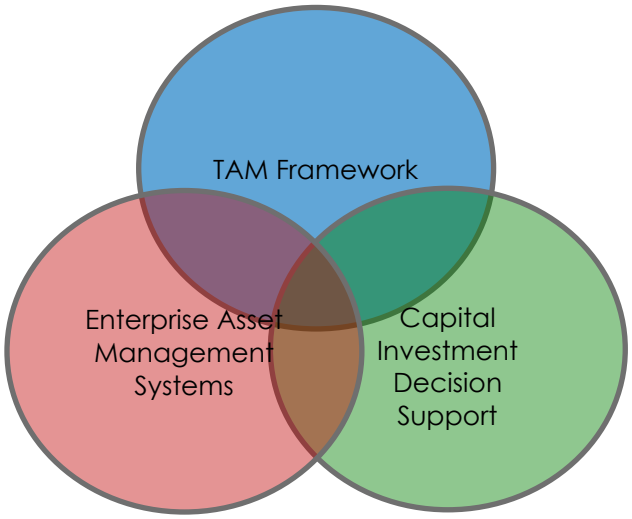


**The Capital Improvement Program's 5-year $6.9 billion budget still leaves an unfunded gap of over $5.0 billion in critical needs.*

$68.3 bn in total CTA assets
$5.0 bn critical needs funding gap

TAM Implementation Strategy

The goal of the TAM team is to improve the availability and quality of information for asset owners and policy-makers to optimize the availability and quality of information for asset owners and policy-makers to optimize the allocation of maintenance and capital investment resources. CTA's current TAM objectives are as follows:



Transit Asset Management Framework

- Incorporating Comms/IT
- Developing Data Standards
- Improving TAM Comms Channels
- Broadening Asset Condition Rating

Enterprise Asset Management Systems

- Completeing Infor EAM Migration
- Expanding Deployment of Mobile Device EAM Data Entry
- Populating Key Asset Attributes into Infor
- Developing Tools and Dashboards

Capital Investment Decision Support

- Capital Needs Solication Advancements
- Continued Development of Modeling and Analysis Tools

Ongoing TAM Initiatives

Federal Reporting Requirements

The TAM team reports asset Data to the National Transit Database annually and dynamically maintains a TAM Plan

Data Quality Improvement and Management

We are currently in the process of migrating all asset attributes to Infor to create a centralized data framework for the CTA

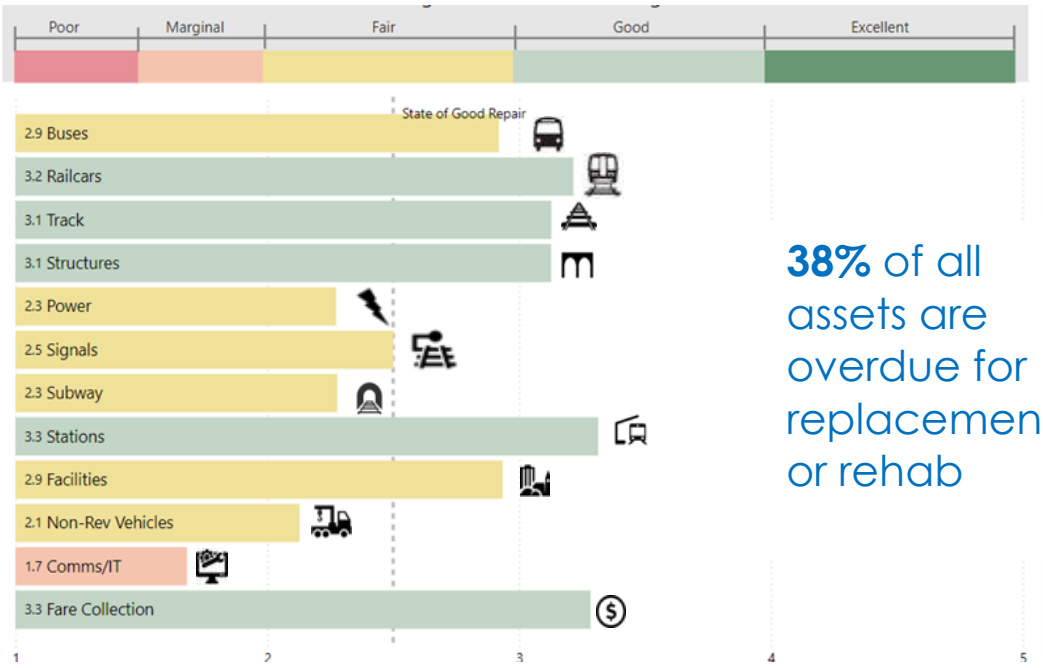
TAM Integration into Maintenance Activities

We are working closely with our CTA departments to integrate TAM Condition Ratings and data into daily business practices

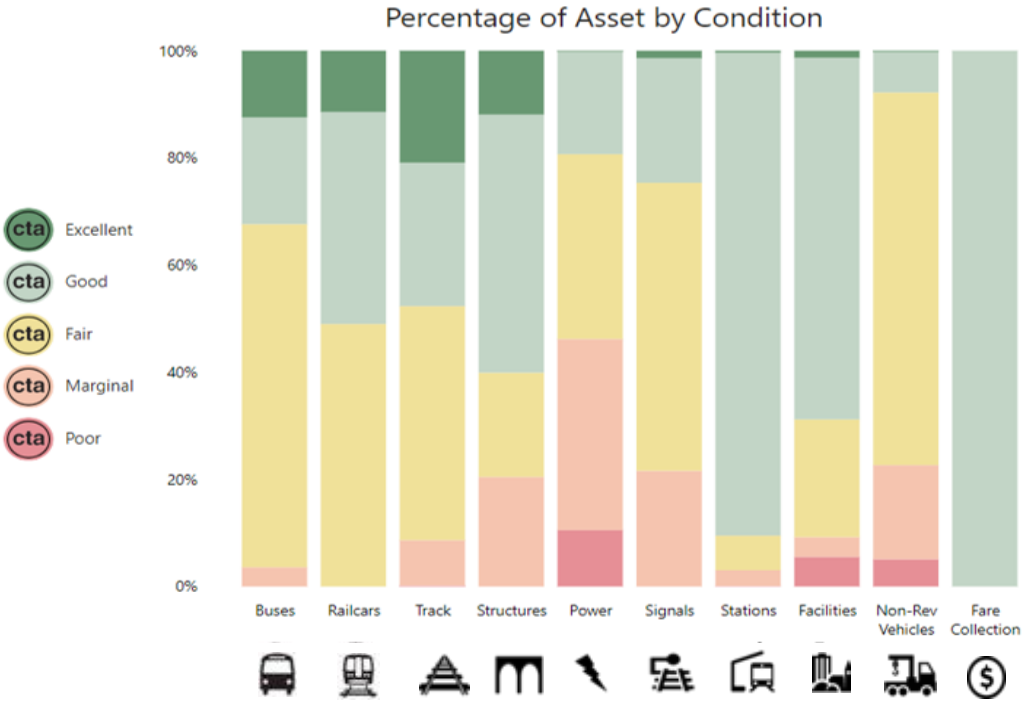
1.2 Overview

State of Assets 2024

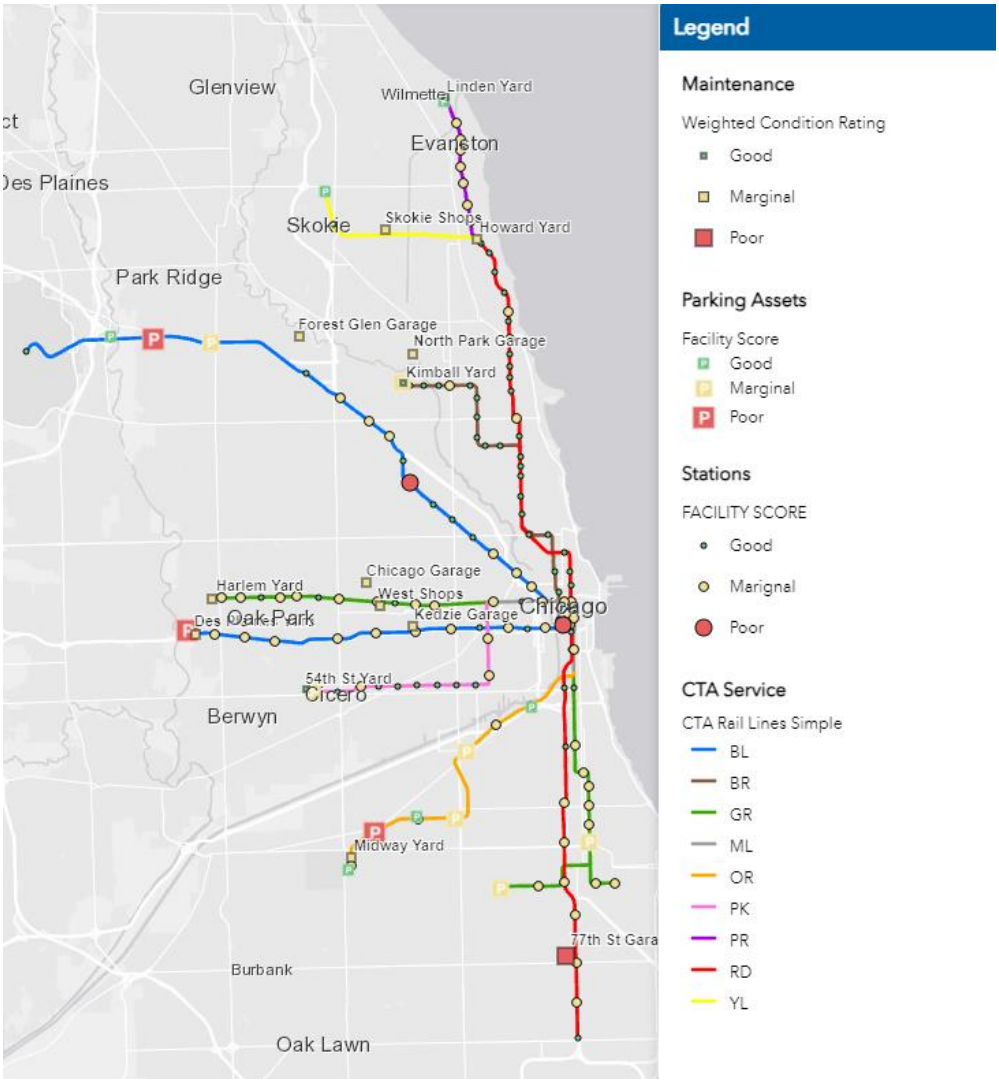
1.2.1

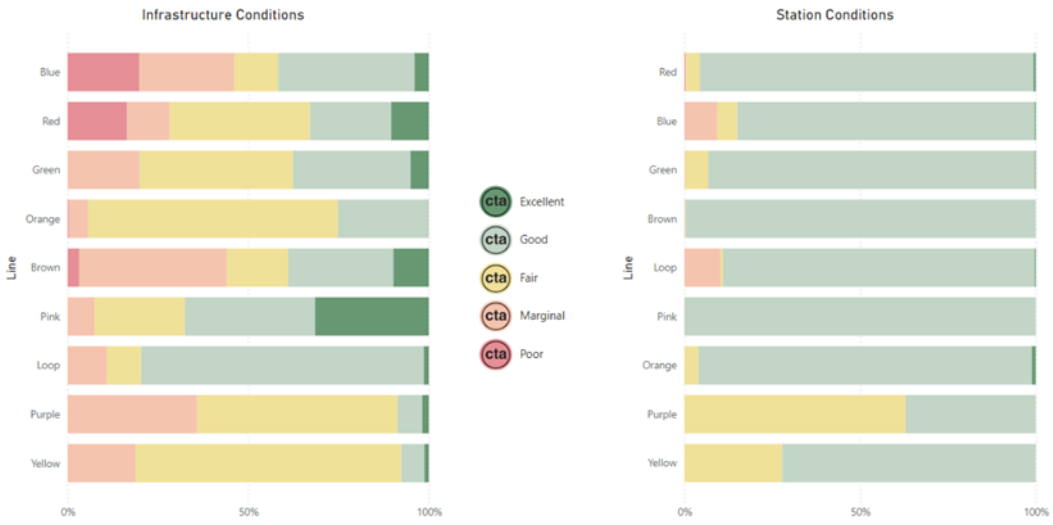


38% of all assets are overdue for replacement or rehab



Map of Facility Assets 2024





2 INTRODUCTION

2.1 CTA BACKGROUND

The Chicago Transit Authority (CTA) operates the second largest public transportation system in the United States, covering the City of Chicago and 35 surrounding suburbs. The agency provides over 80% of public transit trips in the six-county Chicago region, and its eight rail lines and 127 bus routes that provided an average of 1.6 million weekday rides daily (pre-pandemic) and 0.9 million weekday rides daily (post-pandemic).

The CTA is an independent governmental organization created by Illinois legislation in 1945, with four members of the Chicago Transit Board appointed by the Mayor of Chicago and three by the Governor of Illinois. CTA began operations in 1947 after acquiring the assets of the Chicago Rapid Transit Company and the Chicago Surface Lines. In 1952, CTA became the sole operator of Chicago transit when it purchased the Chicago Motor Coach system. Many of the assets in service today pre-date the founding of the organization, with significant portions of the rail system and several facilities dating to the late-1800s. The age of many assets from these legacy systems requires extra care to maintain a consistent state of good repair.

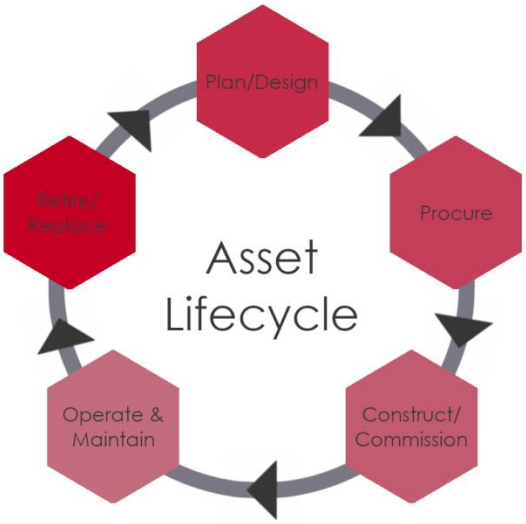
2.2 BACKGROUND ON TRANSIT ASSET MANAGEMENT (TAM)

2.2.1 WHAT IS TAM?

The Federal Transit Administration (FTA) defines Transit Asset Management (TAM) as a business model that prioritizes resources and investments based on asset conditions to provide safe, reliable, and cost-effective public transportation. TAM has taken on new importance in the U.S. transit industry, with large transit agencies nationwide grappling with limited funding to address an overwhelming backlog of deferred capital investment in an aging asset base.

Prior to its application to transit agencies, Asset Management evolved as a set of international practices defined by standards such as PAS 55 and ISO 55000:2014. These standards describe an integrated multi-disciplinary approach for organizations to manage assets across their lifecycle.

Figure 1: Asset Lifecycle Stages



2.2.2 THE TRANSIT ASSET MANAGEMENT FINAL RULE

In July 2012, the U.S. Government enacted the *Moving Ahead for Progress in the 21st Century* (MAP-21) Act, a funding and authorization bill that established specific new asset management requirements on U.S. transit operators. In July 2016, the FTA published the

Transit Asset Management (TAM) Final Rule[2a] detailing the exact products, processes, submittals, and associated deadlines to comply with the requirements of MAP-21. These included the development of a Transit Asset Management Plan (TAMP). Section 2.4 lists the requirements of FTA's TAM Final Rule and indicates the alignment of this document with the requirements.

2.3 DOCUMENT SCOPE AND OBJECTIVES

2.3.1 TAM PLAN OBJECTIVES

The purpose of this plan is to:

- Provide an overview of CTA's transit asset inventory – including the nature, extent, age, and condition of CTA's physical assets used to deliver transit service;
- Establish and document CTA's framework and approach to Transit Asset Management;
- Document the maintenance and replacement approaches used by CTA asset owners;
- Describe CTA's capital investment prioritization by detailing its decision-support processes and its adopted 5-year Capital Improvement Program (CIP); and
- Comply with Federal TAM Plan Requirements.

2.3.2 PLAN ORGANIZATION

The TAM Plan is organized as a Main Document that addresses CTA-wide subject matter. The electronic document contains internal hyperlinks to sections, tables, and figures, as well as footnote references to external sources where applicable.

2.3.3 PLAN HORIZON AND UPDATE CYCLE

The TAM Plan covers a 5-Year period, concurrent with CTA's 5-Year Capital Improvement Program. CTA's TAM Plan is a living document that will be updated periodically to reflect major changes in asset conditions, capital investment plans, maintenance programs, and/or improved data accuracy. The FTA requires the TAM Plan be updated every four years; however, CTA's planned approach is to review and update the main TAM Plan document on an annual basis.

[2a] See https://www.transit.dot.gov/TAM/rulemaking/finalrulefactsheet

2.3.4 RELATIONSHIP TO OTHER DOCUMENTS

Portions of the TAM Plan summarize information from a variety of related documents, including:

Figure 2: Other CTA Documents

The TAM Plan does not supersede these; the latest revisions of the above documents are to be considered the official documents of record for their respective subject matter.

2.4 TAM FINAL RULE CROSSWALK

Under 625 of Title 49 Code of Federal Regulations, the FTA has introduced specific compliance requirements for Transit Asset Management, including a list of required TAM Plan elements. In this document, sections addressing requirements from the Final Rule are prefaced with a callout box with the relevant citation and text from the Final Rule. For example:

> 625.25 (b) A TAM Plan must include (1) An inventory of the number and type of capital assets.

For reference, all TAM Plan requirements of the TAM Final Rule are summarized in the table below and cross referenced to the complying sections in this TAM Plan.

REF#	49 CFR PART 625	TAM PLAN SECTION
1	625.25 (b) A TAM Plan must include (1) An inventory of the number and type of capital assets.	4.1
2	(2) A condition assessment of those inventoried assets for which a provider has direct capital responsibility.	4.2
3	(3) A description of analytical processes or decision-support tools that a provider uses to estimate capital investment needs over time and develop its investment prioritization;	6.2
4	(4) A provider's project-based prioritization of investments,	6.3
5	(5) A provider's TAM and SGR policy;	3
6	(6) A provider's TAM plan implementation strategy;	7
7	(7) A description of key TAM activities that a provider intends to engage in over the TAM plan horizon period;	6.3, 7.2
8	(8) A summary or list of the resources, including personnel, that a provider needs to develop and carry out the TAM plan; and	5, 6.3, 7
9	(9) An outline of how a provider will monitor, update, and evaluate, as needed, its TAM plan and related business practices, to ensure the continuous improvement of its TAM practices.	7

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3 ASSET MANAGEMENT POLICY

625.25 (b) A TAM Plan must include (5) A provider's TAM and SGR policy;

CTA's TAM and SGR Policy was issued via Executive Order effective **October 1, 2018**.

Purpose

The purpose of this Executive Order is to reaffirm the Chicago Transit Authority's (CTA) commitment to maintain its system in a State of Good Repair (SGR) and to comply with federal laws and regulations. The guiding principles and objectives stated in this policy will inform specific plans, strategies, and projects to advance Transit Asset Management (TAM).

Asset Management Program

CTA will develop and maintain a Transit Asset Management Plan (TAMP) that will identify key departmental roles, responsibilities, and activities in support of the overall Asset Management Program. The TAMP will describe the current inventory and condition of CTA's assets and identify strategies and plans to maintain and/or improve the State of Good Repair. The TAMP and associated materials will be made readily available to all CTA employees and will be reviewed and updated periodically to ensure relevance and continuous improvement.

Asset Information & Control

Accurate information and auditable processes are essential to ensure accountability and support management decision-making. To enhance asset information and control, CTA commits to maintain its inventory of assets and document work performed on those assets in its Enterprise Asset Management (EAM) systems. Additionally, all CTA employees will adhere to existing Administrative Procedures for Property Accounting concerning the tagging, tracking, and transfer of property and supplies.

Asset Lifecycle Management

CTA aims for its assets to deliver maximum in-service reliability at the lowest possible long-term costs. CTA will document its maintenance strategies for revenue vehicles, infrastructure, and facilities in appropriate Maintenance Plans, which will describe methods used to proactively manage asset conditions through periodic inspections or assessments, preventive maintenance, predictive maintenance, or similar (as applicable). CTA will apply maintenance practices consistent with industry standards and CTA experience. Lifecycle cost and maintainability will be considered in the design of all major projects.

Asset Investment Prioritization

CTA will maintain an ongoing system-wide listing of known capital investment needs, including projects needed to achieve or maintain a state of good repair, as well as those to deliver important system enhancements. CTA will prioritize the inclusion of these capital investment needs in its 5-Year Capital Improvement Plan (CIP) on the basis of projected impacts to the following:

- *Primary Factors*: Safety & Security, Customer Service & Accessibility, and Operations & Maintenance
- *Other Key Considerations*: Risk avoidance, regulatory compliance, constructability & staging, opportunities for innovation, and community impacts

What is Asset Management?

Transit Asset Management is a business model that prioritizes resources based on asset conditions to provide safe, reliable, and cost-effective public transportation.

What is considered an "asset"?

Assets covered by this policy include rolling stock, facilities, equipment worth >$50,000, and infrastructure. Note that the definition of 'asset' for Property Accounting and tagging purposes (APs 1522 & 1523) is more expansive than this and includes items worth >$5,000.

How will this document be used?

This Policy Statement outlines guiding principles and objectives, and provides sponsorship to specific plans, strategies, and projects to achieve them.

Who is responsible for adhering to this Policy?

It is the responsibility of all CTA employees involved in the maintenance, operation, and replacement of CTA assets – from upper management to front-line employees – to support the commitments and goals established by this Policy.

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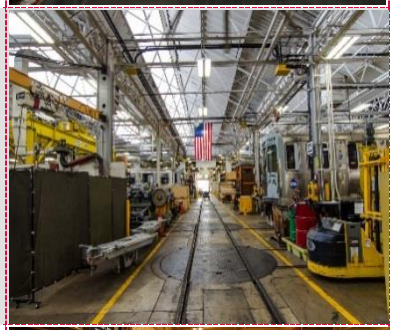
4 TRANSIT ASSET INVENTORY

4.1 ASSET PORTFOLIO

625.25 (b) A TAM Plan must include (1) An inventory of the number and type of capital assets.

A summary of CTA's asset portfolio is provided in Table 1 below.
The inventory data summarized here are updated as of December 31, 2023. It is based on data pulls from CTA's Asset Management Systems, Capital Asset Inventory/Backlog database, with input and validation from CTA subject matter experts.

Table 1: CTA Current Asset Portfolio

ASSET CLASS	INVENTORY OF ASSET TYPES	
Buses	2155 Buses (including 280 in long-term hold) 23 Series 600, Proterra, 40' Electric 1030 Series 1000, New Flyer, 40' Diesel (200 leased) 208 Series 4000, New Flyer, 60' Hybrid (all leased) 100 Series 4300, New Flyer, 60' Hybrid/Diesel Mix 2 Series 700, New Flyer, 60', Hybrid 83 Series 6400, Nova, 40' Diesel 709 Series 7900, Nova, 40' Diesel	
Railcars	1520 Rail Cars (including 40 in long-term hold) 487 Series 2600, Budd 257 Series 3200, Morrison-Knudsen 714 Series 5000, Bombardier 62 Series 7000, CRRC	
Non-revenue vehicles and Equipment	797 Rubber Tire Vehicles 662 Heavy Trucks 54 Automobiles 81 Trailers 92 Pieces of Steel-Wheel Work Equipment 18 Flat Cars 8 Ballast Regulators 12 Tie Cranes 4 Ballast Cars 5 Motor Cars 1 Trackmobile Shuttle-Wagon 24 Work Motor Cars (retired 2400 series rail cars) 20 Miscellaneous Vehicles/Equipment	
Administrative and Maintenance Facilities	7 Bus Garages 1 Heavy Maintenance Bus Shop 10 Rail Car Maintenance Terminal Shops 1 Heavy Maintenance Rail Shop 109 Bus Turnarounds 1 Central Warehouse 1 Central Administration Building (headquarters) 1 Control Center 7 other Administrative/Storage/Maintenance Buildings (Beverly Garage, West Shops, Warehouse 48/Lower Yards, Institute Place, Clifton, School Street, and Wabash) 69 ancillary facilities, inc. power substations and tie houses	
Passenger Stations and Parking	145 Stations 16 Parking Facilities	

ASSET CLASS	INVENTORY OF ASSET TYPES	
Signals	105 Miles of Wayside Signals 108 Interlockings 33 Grade Crossings	
Track Structures	105.8 miles of guideway and structures 6.8% Underground Structure 6.6% Retained Cut Structure 30.7% At Grade Exclusive Structure 41.4% Elevated Structure 14.4% Elevated Fill Structure 115 bridges and viaducts	
Track	262.36 miles of Track (including 40.8 mi of non-revenue track) 39% At-Grade/Ballast (including expressway) 12% Elevated/Retained Fill 11% Elevated/Concrete 29% Elevated/Steel Viaduct or Bridge 2% Below-Grade/Retained Cut 3% Below-Grade/Cut-and-Cover Tunnel 6% Below-Grade/Bored or Blasted Tunnel 0.03% Below-Grade/Submerged Tube 12 rail yards (accounting for 37 miles of track)	
Traction Power + Subway Life Safety	64 Substations 5 Substation Tie houses 224.8 miles of Revenue Third Rail 294.4 miles of Power Cable 42 Subway Electrical Service Rooms 44 Deep Well Pumps 66 Subway Ventilation Fans 11.5 miles of Subway Lighting 48 Emergency Exits	
Communications Technology[4a]	Camera and video system at 145 rail stations Telephones Bus & Rail Radio System Fiber Optic Network System systemwide Cable Plant Fiber over 100 miles Public Address (PA) systems Communications rooms SCADA system hardware Uninterruptible Power Supplies (UPS) Dynamic Message/Bus tracker signs	 

[4a] Incorporation of Communications Technology Assets into CTA's Asset Management Framework for lifecycle management purposes is ongoing as of early 2022; see also Section 7.3.

4.2 ASSET CONDITIONS

625.25 (b) A TAM Plan must include: (2) A condition assessment of those inventoried assets for which a provider has direct capital responsibility. A condition assessment must generate information in a level of detail sufficient to monitor and predict the performance of the assets and to inform the investment prioritization;

Knowing the condition of CTA's assets is essential both to ensure safe and reliable service on a daily basis and to optimally prioritize future capital investments. This section describes the methods CTA used to assess conditions for the purposes of long-range investment planning and provides summary data of current conditions by asset class.

4.2.1 CONDITION RATING METHODOLOGY

USEFUL LIFE BENCHMARK

An asset's Useful Life Benchmark (ULB) represents the expected length of time that an asset, when new, will remain in service before the cost of maintenance and risk of service disruption outweigh the cost of replacement. ULBs are a crucial capital planning tool because they facilitate the estimation of an asset's remaining service life and expected degradation in condition and performance. CTA has established typical ULBs for various asset classes over time, based on experience and input from subject matter experts. These ULBs may evolve over time for accuracy. It is important to note that the ULBs used for TAM may extend beyond the financial useful life parameters used to calculate asset depreciation for accounting purposes.

RATING SCALE

CTA has adopted a 1-5 asset condition rating scale in line with the FTA's Transit Economic Requirements Model (TERM), with 1 indicating poor condition and 5 indicating like-new:[4b,4c]

[4b] The TERM scale uses a score of 2.5 as the cutoff threshold for whether an asset is in a state of good repair or beyond its ULB. Condition scores may be in whole numbers or to multiple decimal places, as appropriate.
[4c] A TAM condition rating of 1-2 (Poor to Marginal) does not necessarily mean that an asset is unsafe, but rather that the asset is deemed more likely to develop defects that may disrupt service. **Any asset that develops a condition presenting an immediate identifiable safety hazard to riders, employees, or the public is immediately removed from service until repairs can be made to restore a safe operating condition, even if at reduced performance.**

Table 2: Asset Condition Rating Scale

This rating system has several benefits, including:

- Facilitating comparisons within asset classes (e.g., comparing one facility to another) as well as comparisons across different asset classes.
- Supporting consistency, with multiple individuals likely to arrive at the same or similar scores.
- Flexible precision, with the ability to use whole or decimal numbers as applicable.

Importantly, this scale has the ability to accommodate varying levels of data availability between different asset classes in informing an appropriate condition rating. Ratings may be based on comparing an asset to its ULB, by visually inspecting an asset, by inferring condition from defect and performance history, or a combination of the above.

CONDITION RATING DEVELOPMENT: FACILITIES AND STATIONS

The condition ratings for maintenance and station facilities included here are based on iterative tabletop audits by CTA subject matter experts. The ratings for maintenance facilities are informed by comprehensive component-level engineering condition assessments that were performed at these locations starting in 2012 and continuing over subsequent years. In response to the TAM Final Rule and the FTA's issuance of a Facilities Condition Assessment Calculation Guidebook, CTA has developed a compliant hierarchical component framework for stations and maintenance facilities. Ratings on all stations, passenger parking

lots/garages, administrative, warehouses/storage, and maintenance facilities were completed as of December 2021, and subsequent updates are scheduled and performed as required by the FTA.

CONDITION RATING DEVELOPMENT: ALL OTHER ASSETS

For this report, condition has generally been estimated based on asset age using the RTA's COST Model. This is a customized version of the FTA's TERM Lite model, which applies standard decay-curves to assets based on an expected useful life. These decay-curves were developed based on asset deterioration from a sampling of assets across the country.

For assets with long useful lives (especially those greater than 25 years) and complex systems of assets, estimating asset condition based solely on age from the time of original construction is only accurate and useful at an aggregate level, and is less accurate for individual assets. To account for this, the effective age of various assets was adjusted to reflect for lifecycle extensions of old assets.

As further described in Section 7, CTA will continue refining and improving its processes for asset condition rating for long-life assets and systems of assets, incorporating component-level ratings and/or utilizing defect data from enterprise asset management systems, as applicable.

4.2.2 CURRENT ASSET CONDITION

Table 3 summarizes aggregate condition measures by asset class. When taken together, the three condition measures highlight the distribution of assets in different conditions within a particular asset class. Evaluating the share of assets beyond their ULB and the share of assets rated below a "3" aligns this reporting with FTA's TAM Performance Measures (see Section 4.3).

Table 3: Summary Condition and Useful Life Information

Asset Class	Asset Type	Total Count	Total Active Vehicle Count	Useful Life Benchmark (years)	Average Condition	% w/ Condition below 3	% Beyond Useful Life
Buses	Buses	2155	1875	12-18	2.9	68%	21.0%
Railcars	Railcars	1520	1480	34	3.2	49%	32%
Facilities[4d]	Stations	145	-	60	3.4	8.3%	n/a[4e]
	Rail Terminal + Heavy Mtce. Shops	11	-	60	3.3	3%	n/a
	Bus Garages + Heavy Mtce. Shop	8	-	60	2.9	25.7%	n/a
	Other Maj. Admin & Mtce. Facilities	10	-	60	2.7	45.5%	n/a
Rail Right of Way[4f]	Signals – Interlockings	108	-	25	2.5	75%	49%
	Signals - Cabside Signals	105.3 mi	-	25	2.4	74%	53%
	Signals - Grade Crossings	33	-	25	2.7	100%	4%
	Track Structure	105.7 mi	-	80	3.1	40%	32%
	Subway – Fans	66	-	25	2.3	60%	60%
	Subway – Illumination	11.5 mi	-	20	3.3	5%	5%
	Subway – Pumps	44	-	30	2.9	100%	7%
	Track – Revenue Trackwork	221.5 mi	-	25-60	3.2	54%	29%
	Track – Yard	12	-	51	2.6	61%	46%
	Traction Power – Substation and Tie House Buildings	69	-	24-30	3.2	43%	10%
	Traction Power – Substation Distribution	294.4 mi	-	30	2.7	67%	47%
	Traction Power – ROW Traction Power	224.8 mi	-	25	2.1	88%	66%
Non-Revenue Vehicles	Rubber-Tire Vehicles - Automobiles	54	-	4-14	2.7	68%	5%

Asset Class	Asset Type	Total Count	Total Active vehicle Count	Useful Life Benchmark (years)	Average Condition	% w/ Condition below 3	% Beyond Useful Life
and Equipment	Rubber-Tire Vehicles – Trucks and Trailers[4g]	743	-	5-20	2.2	85%	79%
	Steel-Wheel Vehicles	92	-	10-34	2.1	96%	87%

[4d] For Facilities, the average condition, percentage under ULB, and percentage condition under 3 were calculated using scores from facilities condition rating assessments. These figures may change significantly in the coming years as CTA rolls out a standardized hierarchical component rating methodology for Stations and Facilities.
[4e] Comparison to ULB is of limited value for CTA stations and facilities due to many having received various partial rehabilitations and renewals that have incrementally extended their effective useful life.
[4f] For Rail Right of Way Infrastructure linear assets, average condition, Percentage under ULB, and Percentage Condition under 3 were aggregated through a weighted score based on total linear length.
[4g]Trailer Count is not included in NTD Reporting.

4.3 PERFORMANCE MEASURES AND TARGETS

625.45 Setting performance targets for capital assets. (a) General. (1) A provider must set one or more performance targets for each applicable performance measure. (2) A provider must set a performance target based on realistic expectations, and both the most recent data available and the financial resources from all sources that the provider reasonably expects will be available during the TAM plan horizon period.

In accordance with the TAM Final Rule, CTA develops performance targets by asset class as part of the annual NTD Reporting process. The Fiscal Year 2024 Performance Targets by asset class are as follows:

Table 4: Performance Targets - Rolling Stock

Asset Class	Useful Life Benchmark (ULB)	Total Vehicles[4h]	% Met or Exceeded ULB
Bus	12-18 years[4i]	1,875	23.4%
Heavy Rail Car	34 years	1,516	26.1%

Table 5: Performance Targets - Infrastructure

Asset Class	Total Track Linear Feet	% Track Linear Feet with Slow Zones
Heavy Rail	1,176,439	14.0%

Table 6: Performance Targets - Facilities

Asset Class	Total Facilities / Buildings	% With Condition Below 3
Passenger / Parking	161 Facilities	11.8%
Administrative / Maintenance	79 Buildings	19.0%

Table 7: Performance Targets – Equipment

Asset Class	Useful Life Benchmark (ULB)	Total Vehicles	% Met or Exceeded ULB
Automobiles (Sedans, SUVs)	Varies (4-14 Years)	4	0.0%
Other Rubber Tire (Trucks, Vans)	Varies (5-20 Years)	224	62.5%
Steel-Wheel	Varies (10-34 Years)	92	79.3%

[4h] These numbers may differ from the quantity of assets listed in prior sections because of 1) differences in the way that long-term holds and seasonal vehicles were counted, and 2) differing counts as of the date of Plan publication and Target-setting.

[4i] CTA has refined its ULB assumptions for the bus fleet to reflect slightly different ULBs specific to each sub-fleet.

5 ASSET MANAGEMENT ORGANIZATION

5.1 OVERVIEW

625.25 (a)(3) A provider's Accountable Executive is ultimately responsible for ensuring a TAM Plan is developed and carried out in accordance with this part.

This section documents the roles, responsibilities, and relationships of CTA's asset management framework. The CTA President is the Accountable Executive, with specific asset management activities and roles decentralized across many departments based on their ownership of specific assets or business processes.

The abridged organizational chart below illustrates the basic reporting relationships of major asset management functions.

Figure 3: Abridged Organization Chart

Asset management activities and functions are broadly organized into the following groups:

CORE FUNCTIONS	POLICY FUNCTIONS
Essential asset lifecycle management	Establishing the overall parameters and priorities of asset management activities
Maintenance Specifications & Standards Major Capital Projects EAM System Functionality	Resource Allocation & Controls Analysis & Program Support Long-range Planning Safety & Hazard Management

Subsequent sections further describe these functions and contain responsibility matrices identifying the corresponding accountable CTA departments.

5.2 CORE ASSET MANAGEMENT FUNCTIONS

Core functions are handled by the associated groups exerting day-to-day control over assets. The following table identifies the CTA departments responsible for these functions for each major category of transit asset.

Table 8: Core Asset Management Functions Responsibility Matrix

ASSET CATEGORY	MAINTENANCE	SPECIFICATIONS & STANDARDS	MAJOR CAPITAL PROJECTS[5A]	EAM SYSTEM FUNCTIONALITY
Buses	Bus Maintenance	Bus Engineering & Technical Services	Bus Engineering & Technical Services	Bus Engineering & Technical Services
Railcars	Rail Maintenance	Rail Engineering & Technical Services	Rail Engineering & Technical Services	Rail Engineering & Technical Services
Non-Revenue Vehicles	Non-Revenue Fleet Maintenance	Non-Revenue Fleet Maintenance *(w/ Using Groups)*	Non-Revenue Fleet Maintenance	n/a (Contracted Service)
Railborne Work Equipment	Rail Maintenance	Rail Engineering & Technical Services *(w/ Using Groups)*	Rail Engineering & Technical Services *(w/ Using Groups)*	Rail Engineering & Technical Services
Facilities[5b]	Facilities Maintenance	Small Projects & Maintenance: Facilities Maintenance Engineering Major Projects: Infrastructure Engineering	Capital Construction	Facilities Maintenance
Rail Infrastructure (Power & Way)	Power & Way Maintenance	Infrastructure Engineering	Capital Construction	Power & Way Maintenance
Communications Technology	Communication Systems Maintenance	Technology Engineering	Technology Engineering	Technology Engineering

MAINTENANCE

Groups responsible for Maintenance are the primary asset owners. Maintenance activities include periodic inspections, scheduled or other preventive maintenance, corrective maintenance, and major/heavy repairs (including e.g., fabrication and shop rebuilds). The Maintenance group is also responsible for ensuring that its workforce has been trained in the requisite technical skills to perform the work, though it may coordinate with the CTA Training department and/or outside organizations for training curriculum development and training delivery.

[5A] Due to its scope, management of all aspects of the Red-Purple Modernization ("RPM") project is being executed by an independent group reporting directly to the CTA President.

[5b] Maintenance of three CTA facilities (567 W. Lake, 120 N. Racine, 901 W. Division) is outsourced and managed by CTA's Real Estate department.

DESIGN, SPECIFICATION, STANDARDS, & PROCEDURES

Engineering and Technical Services groups develop and maintain a variety of requirements that define the asset lifecycle. These include designs and specifications for new assets (including the design of new solutions to complex maintenance problems) and for replacement parts/material, the parameters of scheduled inspection and maintenance programs, and the procedures and manuals to be followed by Maintenance groups in the execution of their responsibilities. Such work products may be developed in-house or by outside contractors managed by CTA. The groups performing these activities are also responsible for ensuring that all of the above technical documents are appropriately controlled for revisions and authorship, and that the most recent versions are made readily available to those performing work on assets.

MAJOR CAPITAL PROJECTS

Executing major capital projects entails project management responsibility for managing the contracting lifecycle (procurement through close-out), construction management and quality assurance (as applicable), and handover of delivered assets to Maintenance groups in accordance with CTA specifications and designs. For rolling stock, this role generally refers to management of the new bus/car build and delivery process, while for fixed assets this generally refers to construction projects. This function also entails financial management activities such as budgeting and cost accounting.

EAM SYSTEM FUNCTIONALITY

Accurately capturing the inventory, performance, and work performed on assets is essential to provide all levels of management the information needed to best allocate resources and maintain appropriate control and accountability. This information is captured by CTA's Enterprise Asset Management (EAM) software systems, as shown in the table below [5c]:

Table 9: List of EAM Systems Used by Asset Category

ASSET CATEGORY	EAM SYSTEM
Buses Railcars Railborne Work Equipment Trailers	Maintenance Management Information System (MMIS) *Trapeze*
Facilities Infrastructure Communication Technology	Infor EAM
Communications Technology	SolarWinds
Non-Revenue Vehicles	Assetworks M5 *System maintained by City of Chicago Fleet Management*

Each asset category has one or more individuals who ensure that Enterprise Asset Management systems are configured and deployed to accurately capture:

- The inventory of assets being managed, including hierarchical structures (e.g., parent-child, system-position, etc.) to facilitate the roll-up of cost and performance data;

[5c] CTA's asset inventory for financial accounting purposes is maintained in the Oracle ERP system.

- Maintenance business processes and workflows, including the scheduling of preventive maintenance, creation and assignment of work, and supervisory/review close-out;
- Sufficient information to support root-cause and reliability analysis; and
- System interface and usability requirements, to facilitate ease of use and accurate data input by front-line personnel.

This entails ongoing coordination between maintenance managers, front line workers, CTA Information Technology system administrators, and software vendors to modify data, forms, reports, and system functionality.
An additional key responsibility is to provide templates and instructions to Major Capital Project managers to ensure that newly delivered operational assets are accurately and promptly inducted into EAM systems for lifecycle management.

5.3 ASSET MANAGEMENT POLICY FUNCTIONS

The following matrix lists the department(s) responsible for asset management policy functions:

Table 10: Asset Management Policy Function Responsibilities

Resource Allocation & Control	Analysis & Program Support	Long Range Planning	Safety & Hazard Management
Finance *(Budget & Capital Finance, Accounting)*	Performance Management	Planning	Safety & Security Safety Management System

RESOURCE ALLOCATION & CONTROL

The Finance department is responsible for preparing and managing CTA's Operating Budget and 5-Year Capital Improvement Program. This entails ongoing dialogue with asset owners regarding available resources for ongoing maintenance activities, current capital projects, and requirements for major new projects. The Budget & Capital Finance group in Finance ultimately prepares the budgetary constraints under which asset management activities occur. See also Section 6.2.1.
The Accounting department ensures accurate control and accounting of CTA's assets via property tagging, periodic inventories, and its development of CTA financial statements.

ANALYSIS & PROGRAM SUPPORT

The CTA Performance Management department produces independent reports and analysis to support short-, medium-, and long-term management decision-making. CTA's dedicated TAM team reports through the Performance Management department, providing inter-departmental coordination and identification and oversight of strategic priorities.

LONG-RANGE PLANNING

The CTA Planning department leads studies of potential system expansions/equity investments, vision plans for major transit corridor rehabilitation, and projection of future ridership and service levels. Each of the above are likely to have significant implications for the future needs of CTA's asset base, and in turn inform the nature and timing of major

capital investments. Additionally, the Planning department coordinates regional planning policy matters with other agencies. See also Section 6.2.3.

SAFETY & HAZARD MANAGEMENT

CTA maintains Hazard Logs, which are master listings of potential safety hazards faced by CTA (and their mitigation measures or disposition). Safety and the user departments monitor the hazards in the Log and alert senior management if any of the hazards become severe risks and/or determine if eliminating the hazard requires extensive work beyond routine maintenance.

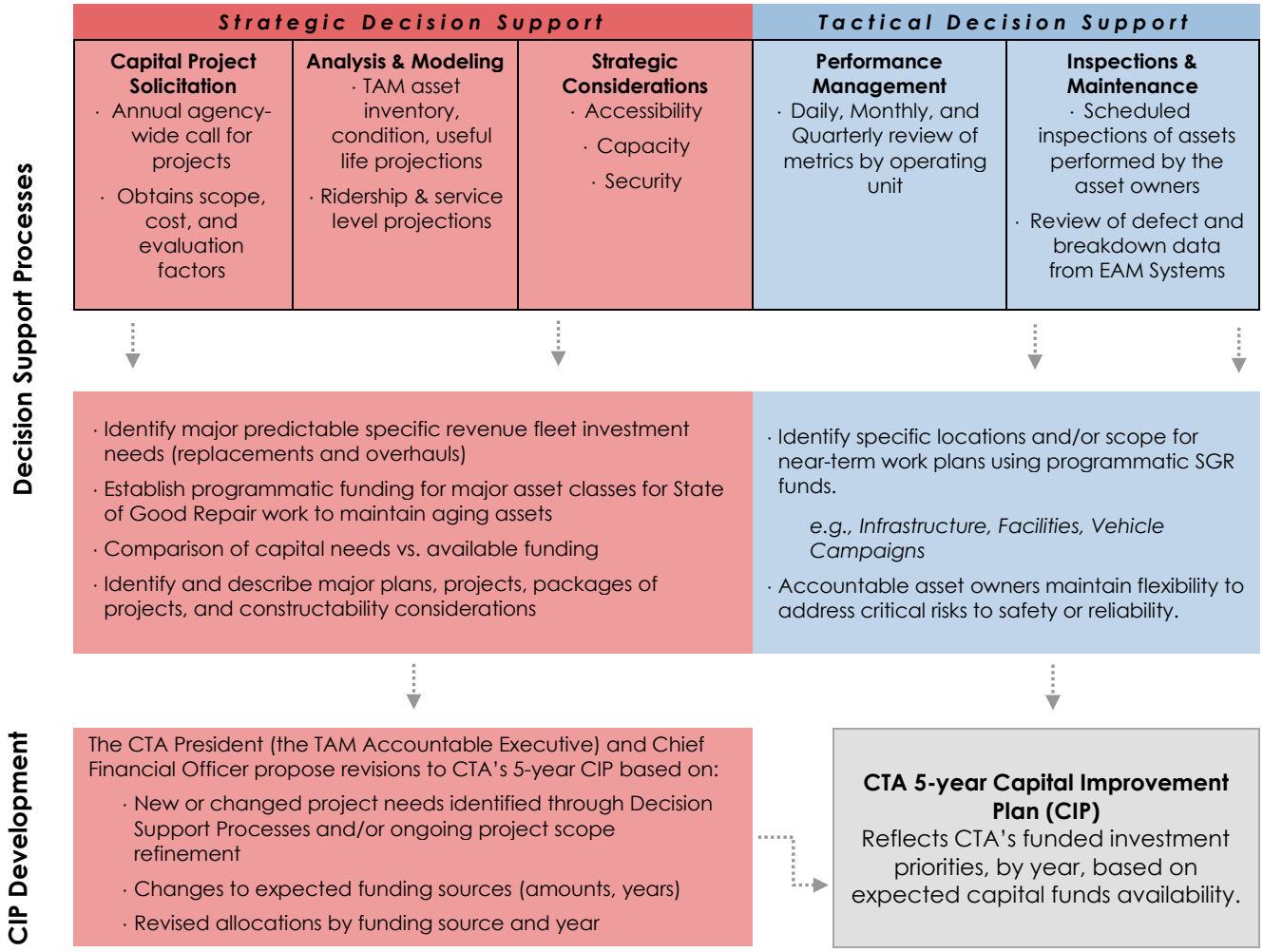
6 CAPITAL INVESTMENT

6.1 OVERVIEW

This section describes the processes by which CTA allocates capital investment funds to maintain, improve, or expand CTA's asset base, and summarizes CTA's currently adopted 5-year investment plan.

CTA maintains a rolling 5-Year Capital Improvement Program (CIP), which represents the CTA's investment priorities for the next five years based on anticipated available funding. CTA deploys several processes and tools to ensure that the Accountable Executive and other key decision-makers have meaningful information to guide when and where to invest scarce capital funding. These information and process flows are illustrated in the following figure:

Figure 4: Capital Investment Decision Process Overview



6.2 DECISION SUPPORT

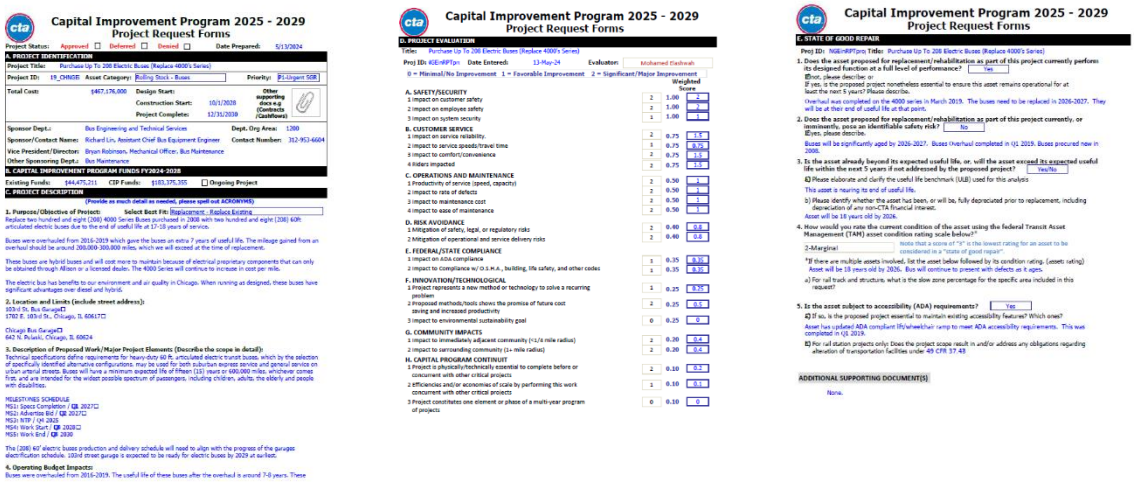
625.25 (b) A TAM Plan must include: (3) A description of analytical processes or decision-support tools that a provider uses to estimate capital investment needs over time and develop its investment prioritization;

The CIP allocates funds to specific major discrete projects and to programs that support capital renewal at the asset class level. Programmatic funding is an essential tool in capital allocation since CTA's capital investment needs far exceed available funding; programmatic funding ensures that resources will be available for asset owners to target the most critical assets for renewal to maintain safety and reliability.
However, several strategic decision support processes are used to determine high-level investment needs over time and across all asset classes, so as to inform the overall allocation of funds in the CIP:

6.2.1 CIP SOLICITATION / CALL FOR PROJECTS

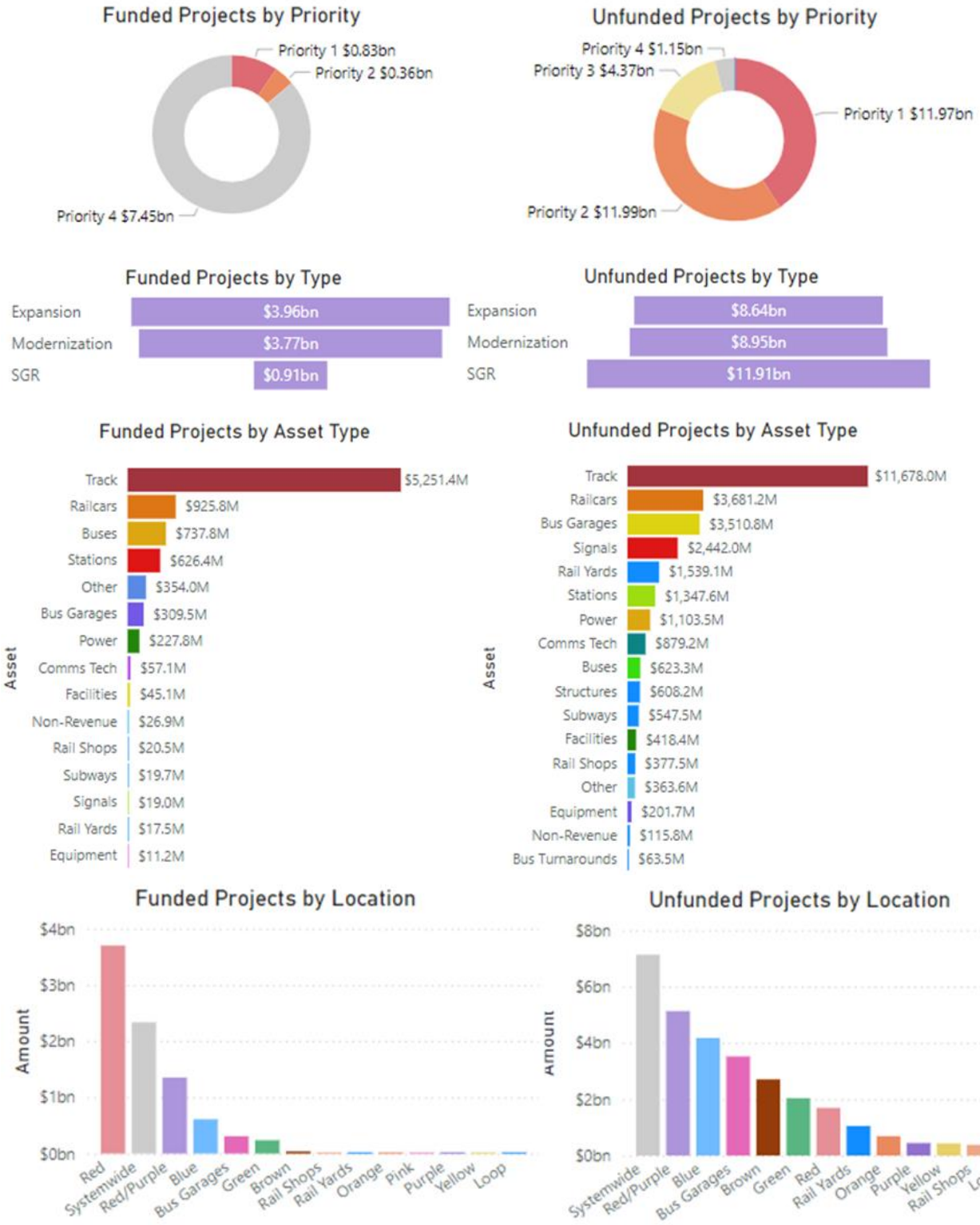
CTA's Capital Finance department conducts an annual solicitation process to request new and revised capital project proposals from CTA departments. The solicitation is conducted and compiled using a database and standard forms, which facilitate consistent analysis and evaluation of funding requests across projects and departments. Capital requests are submitted using a standardized Request Form, and requestors are also to provide information in an evaluation rubric and a State of Good Repair questionnaire.

Figure 5: CIP Solicitation Form Examples



The Request Form collects high-level information about the capital need (e.g., asset category, location, estimated costs, departmental sponsorship) as well as descriptions of project objectives and other means of project justification. Requestors also have the option to attach supporting reference documentation, if desired.
The evaluation rubric reflects the factors identified in CTA's TAM Policy Statement for reference by project requestors. For projects that involve replacing or renewing existing assets, the SGR questionnaire is used to collect TAM-specific information, such as an evaluation of age/condition against useful life benchmark, and whether the proposed project impacts accessibility or identifiable safety risks. As shown in Figure 6, CTA has currently identified 192 discrete capital project needs through this process, totaling approximately $38 billion in cost:

Figure 6: Overview of Capital Project Solicitation Submittals – FY2025-2029



6.2.2 ANALYSIS & MODELING

COST MODEL

From 2010 through 2016, CTA collaborated with the Regional Transportation Authority (RTA) and the other two Chicagoland transit operators (Metra and Pace, the "Service Boards") to develop estimates of the region's backlog[6a] of capital investment and estimate long-term capital investment needs. This effort entailed developing a regional model based on TERM Lite[6b] , a decision support tool offered by the FTA designed specifically to support State of Good Repair analysis.

Figure 7: An Overview of Updated Revenue Vehicles and Equipment Assets

	Asset Category	Quantity	Replacement Values *(In 2020 Dollars)*
CTA	Revenue Vehicles	3,493	$5,840,785,405
	Equipment	909	$165,153,449
	Total	4,402	$6,005,938,854
Metra	Revenue Vehicles	1,220	$6,689,508,729
	Equipment	766	$127,104,320
	Total	1,986	$6,816,613,049
Pace	Revenue Vehicles	3,407	$872,880,595
	Equipment	243	$11,738,237
	Total	3,650	$884,618,831
ALL	Revenue Vehicles	**8,120**	**$13,403,174,729**
	Equipment	**1,918**	**$303,996,006**
	Total	**10,038**	**$13,707,170,734**

Source of Figure: RTA Report: FY22 SAM/TAM Memo

[6a] "Backlog" refers to the replacement value of assets that are already beyond their expected useful life.

[6b] See https://www.transit.dot.gov/TAM/TERMLite

The COST model is constructed based off an inventory (types and quantities) of capital assets, and utilizes assumptions regarding age, useful life benchmarks, and approximate replacement costs to estimate the current backlog of investment needs as well as project out which assets will likely need replacement in a 20- or 30-year time horizon. Current and future asset conditions are expressed in a 1-5 rating scale (see Section 4.2.1) and are either inputted manually based on actual measured condition or estimated using decay curves applied to the age of the asset.[6c]

Much of the inventory and condition data reflected in the TAM Plan are based on COST outputs. CTA has continued the development and refinement of its capital asset inventory and capital program assumptions in COST and intends to continue its use for various TAM and Capital Planning purposes.

Additionally, the COST model can apply prioritization criteria to different assets (based on impact to Safety, Operations, etc.), as well as financial constraints limiting how many assets may be replaced in any given future year in the mode. This functionality permits scenario modeling to evaluate - e.g., how future asset conditions will trend based on different levels of funding, or to identify highest-priority capital investments under various assumed priority criteria. See also Section 6.4 for how model outputs can be used for benchmark comparison against adopted CIP allocations.

FLEET MANAGEMENT PLANS

In accordance with FTA guidelines and requirements, CTA's Planning and Vehicle Engineering and Technical Services departments have jointly developed a Bus Fleet Management Plan and Rail Fleet Management Plan, which are updated as needed to reflect major changes in the fleet outlook.

The Fleet Management Plans are essential inputs to the capital planning process because they:

(a) estimate the required size of the vehicle fleets over the next 10 years, based on expected ridership, service levels, and maintenance programs;
(b) specify the target timeline and sizing of future vehicle procurements (including vehicle length, for buses); and
(c) identify any major constraints or deficiencies in maintenance facilities impacting vehicle maintenance.

Figure 8: Fleet Requirement Calculation

[6c] A "decay curve" is a model of how an asset condition deteriorates as time goes on, based on when it entered service and its expected lifespan. The COST model includes standard decay curves for various types of assets, developed through Federal research programs.

CTA's Fleet Management Plans were updated in 2022. Both the bus and rail fleet are expected to remain roughly constant from 2023-2027. The total size of the bus fleet is projected to be between 1,891-1,924 buses, and the rail fleet is expected to fluctuate between 1,487 and 1,532 cars. Major capital projects identified in the Fleet Management Plans during the 5-year period of CTA's current CIP are as follows:

Table 11: Summary of Major Fleet Capital Needs per Fleet Management Plans - FY2023-2027

Capital Need	Bus Fleet	Rail Fleet
Replacements	• Acquire 557 new 40' Buses • Acquire 210 new 60' Buses • Fully Retire 6400 Series Buses • Retire Portion of 1000 Series	• Retire 502 2600-Series • Acquire 600 new 7000-Series
Overhauls	• Life Extension Overhaul for up to 430, 1000-Series New Flyer buses to extend their service life by four years and space out fleet replacements. • Mid-life Overhaul on 96 Buses	• Quarter-Life "C" Overhaul on 462 5000-Series through 2027 • Life Extension Overhaul on 100 3200-Series cars in 2026

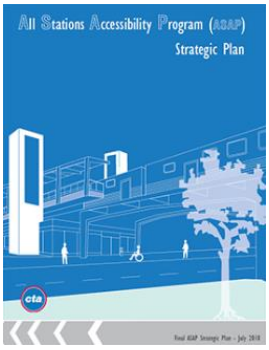
6.2.3 STRATEGIC CONSIDERATIONS

Major capital investment decisions are informed not only by the goal of maintaining the existing asset base in a State of Good Repair, but also long-term strategic analyses. In addition to the projection of future fleet size requirements, the Planning department leads a variety of strategic technical analyses and policy interfaces that result in critical imports to the CIP development process.

STRATEGIC PROJECT AND PROGRAM DEVELOPMENT

CTA is a mature, legacy system, and as such, many aspects of current system design present limitations or other deficiencies that should be addressed comprehensively and strategically through major programs, rather than by tactical "like-for-like" replacements. Such deficiencies may lead to limited customer accessibility, constrained operational capacity, or systemically deficient infrastructure and facilities. Major studies addressing these issues, and whose recommendations are reflected in CTA's CIP, are briefly summarized below:

ALL STATIONS ACCESSIBILITY



CTA has made substantial progress in increasing system accessibility since the passage of the Americans with Disabilities Act in 1990: at the time of passage, only 10 (6%) of CTA rail stations were accessible, and similarly small proportions of the bus and rail fleets were fully accessible. At present, the entire vehicle fleet is accessible, and 103 (>70%) of 145 rail stations have been reconstructed or rehabilitated to provide step-free access.

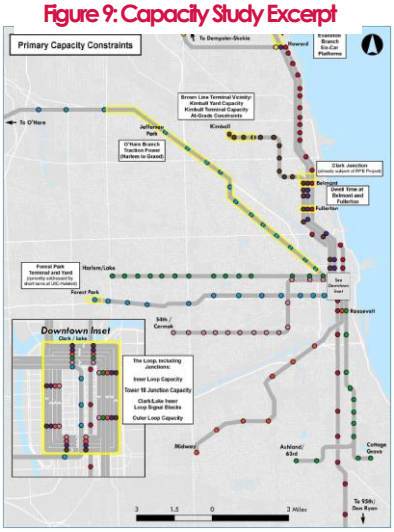
In December 2022, CTA received $118.5 million from the FTA "All Stations Accessibility Program" grant program to make three additional stations meet modern accessibility requirements. So far, funding has been secured for 14 stations that are currently inaccessible. Once construction at these stations is complete, we will have 118 accessible stations out of a total of 146 stations (81%).

In July 2018, CTA published its All Stations Accessibility Plan (ASAP)[6d] , laying out a multi-phase blueprint to achieve 100% accessibility within the next two decades, pending funding availability.

RAIL SYSTEM CAPACITY STUDY

CTA's legacy infrastructure has several existing bottlenecks that prevent CTA from increasing service levels to meet demand. In the near-term, these often result in very high crowding and reduced service reliability during peak periods, and over the long run, they risk limiting potential growth in ridership and revenue.
In 2017, CTA completed a *system-wide rail capacity study*, which comprehensively considered peak passenger demand and the existing or potential capacity limitations due to infrastructure design, asset conditions, and station/facility operations. The study identified primary capacity constraints including traction power capacity on the O'Hare branch of the Blue Line, throughput through Clark junction (busy junction north of Belmont station, where northbound Brown Line trains crossed Red Line and Purple Line trains prior to the 2021 completion of the Red-Purple bypass project), and short platforms on the Evanston branch that limit Purple Line trains to six cars.

Figure 9: Capacity Study Excerpt



REFRESH AND RENEW PROGRAM

As part of CTA's ongoing efforts to provide safe and comfortable rides, more than $6.5 million in improvements and repairs are planned for rail stations in 2024/2025 through the Refresh & Renew (R&R) program.
This program is a key initiative outlined in the "Meeting the Moment" Action Plan, focuses on the Customer experience, both Internal and external, and provides for improved overall lighting and wayfinding signage, newly painted & refreshed stations, safety, cleanliness, and appearance.
R&R crews will be performing maintenance and repairs at 29 rail stations and 14 bus turnarounds to provide a safe and welcoming transit travel experience.

RED AHEAD – RED/PURPLE MODERNIZATION AND RED LINE EXTENSION

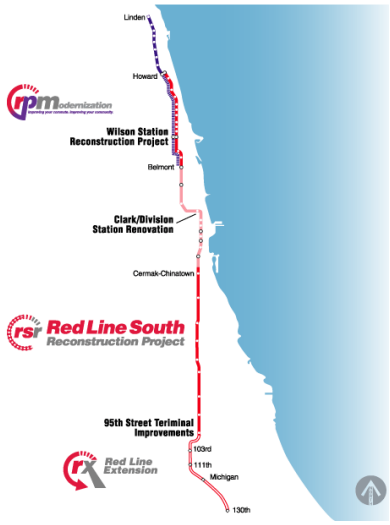
The Red Ahead program is a comprehensive initiative for maintaining, modernizing, and expanding Chicago's most-traveled rail line. Several major projects have already been completed, including the reconstruction of infrastructure on the southern Dan Ryan branch, the full reconstruction of Wilson station and adjacent infrastructure, the renovation of Clark/Division station, and interim improvements to stations on the North Mainline branch. Additionally, the complete reconstruction of the 95th Street intermodal terminal.

[6d] Plan document and other material available at: https://www.transitchicago.com/accessibility/asap/

The remaining key elements are the Red-Purple Modernization (RPM)[6e] and the Red Line Extension (RLE)[6f] . RPM is the largest capital investment project in CTA history and over multiple phases will completely rebuild roughly 10 miles of rail system infrastructure and intermediary stations, most dating to the early part of the 20th century.

CTA has obtained full funding for Phase 1 of RPM, which entails the Red-Purple Bypass and the reconstruction of all infrastructure and stations from Lawrence to Bryn Mawr. These work elements will address both existing capacity constraints and state of good repair needs. The proposed Red Line Extension would add four new stations over 5.3 miles running south from the existing 95th Street Terminal. CTA has issued its Draft Environmental Impact Statement (DEIS) and Preferred Alignment for the route and will advance to Preliminary Engineering in the coming years.

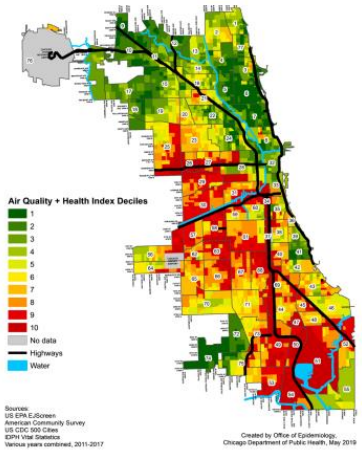
Figure 10: Red Ahead Overview



THE EQUITY IN INFRASTRUCTURE PROJECT

In April 2022, the Equity in Infrastructure Project (EIP) was launched to drive federal infrastructure funds to historically underutilized businesses (HUBs).
By October 2022, the Chicago Transit Board voted to formally adopt the EIP Pledge, reinforcing our agency's commitment to increase the number, size, and proportion of contracting opportunities for HUBs.
CTA is proud to participate in this program as one of its "First Movers" – a designation given to the five initial pledge signatories, which include Denver International Airport, the Port of Long Beach, the Metropolitan Water District of Southern California, and the Southeastern Pennsylvania Transportation Authority.

ELECTIRIC BUS EQUITY CONSIDERATION [6g] Equity considerations have been critical priorities as CTA has identified the initial routes and garages for electric buses, leading to early deployments on the South and West Sides of Chicago.

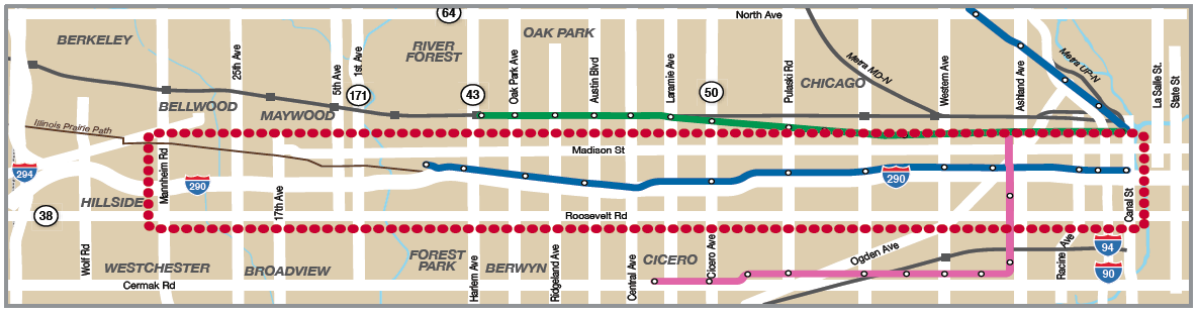


[6e] See https://www.transitchicago.com/rpm/ for more information.
[6f] See https://www.transitchicago.com/redext/ for more information.
[6g] See https://www.transitchicago.com/assets/1/6/Charging_Forward_Report_2-10-22_(FINAL).pdf for more information.

BLUE LINE FOREST PARK BRANCH FEASIBILITY & VISION STUDY[6h]

The Blue Line Forest Park Branch was constructed in the late 1950s, replacing a former elevated branch that was displaced by construction of what is now the Eisenhower Expressway (I-290). Both the transit line and the expressway have reached the end of their useful life and have systemic asset condition issues that warrant full reconstruction. The Illinois Department of Transportation (IDOT) produced an Environmental Impact Statement for the reconstruction and modernization of the expressway, while CTA has coordinated a concurrent vision study for the Blue Line, which predominantly runs either in the expressway median or immediately adjacent to the expressway. The need for reconstruction affords the opportunity to comprehensively study station locations, access, and infrastructure needs.

Figure 12: Forest Park Branch Vision Study Area



REGIONAL POLICY COORDINATION

CTA's strategic considerations exist within a regional and national context, and thus CTA's long-term goals and major investment decisions are made in coordination with regional bodies. Such regional coordination is all the more vital in the process of prioritization of major "megaprojects" such as the capacity expansions and extensions described above.
CTA continues to work with the Regional Transportation Authority in the development and implementation of its *Regional Transit Strategic Plan*[6i] which both establishes broad policy goals for regional transit operations and identifies regional investment priorities.
CTA also collaborates with the Chicago region's Metropolitan Planning Organization (MPO); the Chicago Metropolitan Agency for Planning (CMAP). This includes aligning investments with the regional priorities of the pending new 30-year comprehensive plan (*ON TO 2050*[6j],and participating in the management of the region's Transportation Improvement Program (TIP) and administration of the federally funded Congestion Mitigation and Air Quality (CMAQ) Improvement Program, an important competitive grant funding source for capital projects[6k] .

6.2.4 TACTICAL DECISION SUPPORT

CTA's Capital Investment strategy includes the use of programmatic funding allocated for as-needed capital maintenance and rehabilitation of specific asset classes. These funds are used to perform capital work such as vehicle component campaigns, localized infrastructure renewals, and targeted station enhancements. The identification, scoping, and execution of this work happens on a shorter time frame than major capital projects such as the

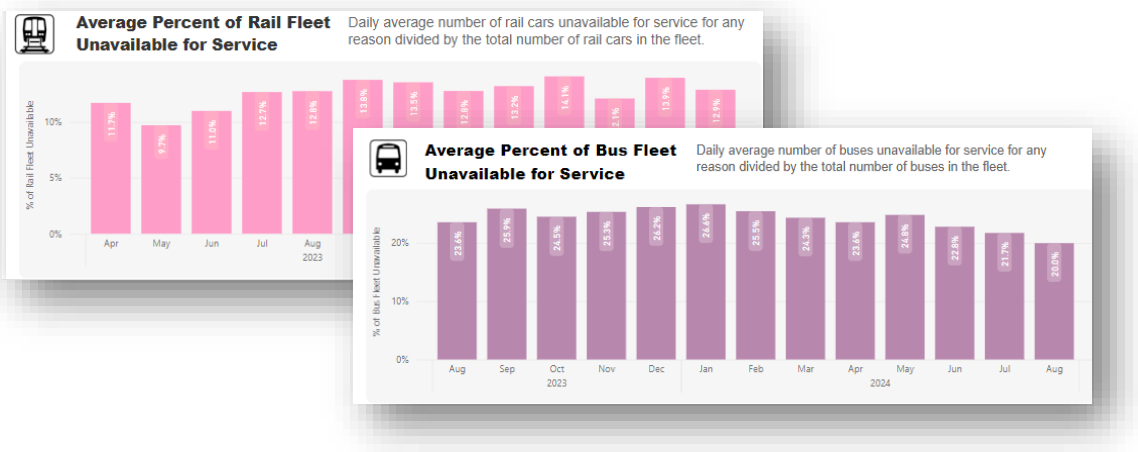
[6h] See https://www.transitchicago.com/blueweststudy/ for more information.
[6i] See https://www.rtachicago.org/plans-programs/2023-regional-transit-strategic-plan for more info.
[6j] See http://www.cmap.illinois.gov/onto2050 for more information.
[6k] See http://www.cmap.illinois.gov/programs for more information.

strategic investments identified through the processes described in the previous section and is needed to best maintain safety and reliability on an aging asset base based on emerging conditions.

PERFORMANCE MANAGEMENT

Performance Management (PM) is the CTA's centralized reporting and performance tracking department. PM continuously develops and monitors a range of metrics and targets with each department to improve operations and efficiency. PM compiles and connects data from across the CTA to create visualized analyses and data tracking capabilities, relying on automated processes. The information is then disseminated throughout the organization using data visualization and dashboarding tools.
A scorecard of monthly performance measures is published on a regular basis at transitchicago.com/performance.

Figure 13: Examples of Performance Management Reporting



INSPECTION & MAINTENANCE

Core maintenance functions result in regular "eyes and ears" on operating assets, which means subject matter experts are regularly positioned to identify new or recurring issues resulting from asset conditions. All operational assets are subject to a scheduled maintenance program; depending on the type of assets, such scheduled maintenance may entail inspection, testing, adjustments, or combinations of the above.

Regular inspections, by their nature, are intended to identify and prioritize any new defects on assets. Such defects typically result in smaller maintenance fixes but depending on the type of asset and scope of the issue, inspection findings may propagate into capital work. For example, the identification of a structural defect may require the fabrication of new steel and significant coordination for installation, or a flaw discovered during inspection or troubleshooting of one vehicle may point to a looming issue with all vehicles of the same sub-fleet.

EAM Systems (see Section 5.2) are also a critical source of information for managers and coordinators planning capital work. By capturing a variety of asset, failure, and workforce measures, roll-up reporting and analyses enable easier identification of trends and facilitate more efficient planning of work.

For example, reports from EAM can help Rail Maintenance determine whether a change-out of a full sub-system with a new or rebuilt capital item is warranted rather than a simple replacement or adjustment of a single failed component. Such reporting capability are especially important for Infrastructure (Power & Way), as it helps managers efficiently coordinate targeted capital replacement work across multiple functions during limited work windows.

6.3 PRIORITIZED CAPITAL INVESTMENT PLAN

625.25 (b) A TAM Plan must include: (3) A description of analytical processes or decision-support tools that a provider uses to estimate capital investment needs over time and develop its investment prioritization; (4) A provider's project-based prioritization of investments;

CTA investment priorities are represented by its rolling 5-Year Capital Improvement Program, whose time horizon advances one year (e.g., from FY2023-27 to FY2024-28) concurrent with the annual budget process. The CTA President and Chief Financial Officer present incremental CIP revisions for consideration and approval by the Chicago Transit Board, based on information provided through CTA's decision support processes, changes in expected funding, and/or revised project needs and schedules.

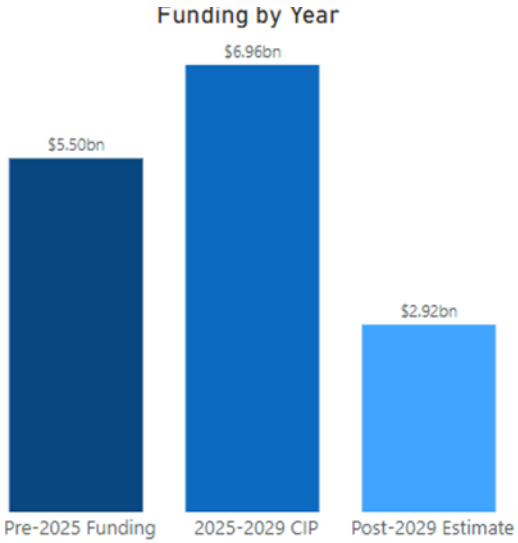
CTA's financial plan, including its operating budget, CIP, and long-range projections, are developed in coordination with the Regional Transportation Authority (RTA) and are subject to annual approval by the RTA board. Additionally, the federally funded portions of CTA's capital program are coordinated with the Chicago Metropolitan Agency for Planning (CMAP), the region's Metropolitan Planning Organization (MPO) responsible for maintaining the region's Transportation Improvement Program (TIP).

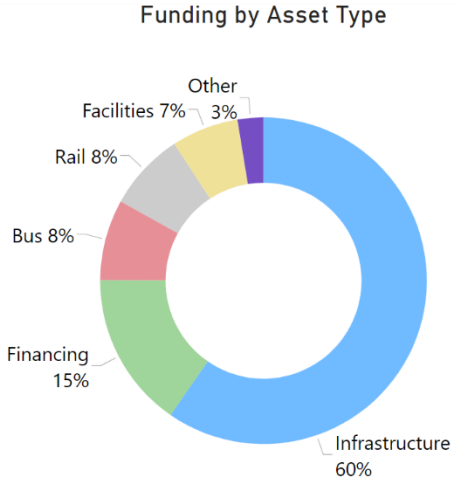
Table 12 reflects CTA's CIP for FY2025-2029. More detail on individual projects in the CIP can be found in CTA's annual budget book.

Table 12: FY 2025-2029 Capital Improvement Program – Adopted October 2024

Class	Project Asset	Prior Funding	2025	2026	2027	2028	2029	5yr Total	Outyear	Total Project
Buses	Perform Bus Maintenance Activities	$12,373,828	$12,373,828	$12,373,828	$12,373,828	$12,373,828	$12,373,828	$61,869,141	$0	$74,242,969
	Perform Bus Overhaul	$65,001,746	$36,689,623	$33,662,000	$14,750,116	$6,301,946	$25,709,204	$117,112,889	$20,171,521	$202,286,156
	Replace Buses	$315,910,868	$73,514,103	$54,392,504	$124,938,218	$63,208,564	$63,253,286	$379,306,675	$128,925,590	$824,143,133
	Subtotal	$393,286,442	$122,577,554	$100,428,332	$152,062,162	$81,884,338	$101,336,318	$558,288,705	$149,097,111	$1,100,672,258
Rail Cars	Perform Rail Car Overhaul	$382,731,164	$30,241,135	$90,036,182	$43,181,985	$0	$25,284,872	$188,744,174	$325,856,940	$897,332,278
	Perform Rail Car Maintenance Activities	$0	$0	$0	$0	$0	$0	$0	$0	$0
	Purchase Rail Cars	$986,994,188	$53,053,368	$70,927,987	$22,779,834	$70,661,104	$132,224,125	$349,646,417	$1,500,188,766	$2,836,829,371
	Sub-Total	$1,369,725,352	$83,294,503	$160,964,169	$65,961,819	$70,661,104	$157,508,997	$538,390,591	$1,826,045,706	$3,734,161,649
Facilities and Infrastructure	Red Line Extension	$918,099,481	$612,109,069	$639,090,000	$1,075,199,250	$1,027,047,569	$602,534,409	$3,955,980,297	$131,978,348	$5,006,058,126
	Infrastructure Safety & Renewal Program	$59,911,108	$9,595,891	$9,595,891	$17,752,512	$27,401,891	$111,708,270	$176,054,453	$0	$235,965,561
	Bus Turnaround ADA & Site Improvements	$0	$3,344,922	$4,555,078	$30,000,000	$22,025,000	$0	$59,925,000	$1,000,000	$60,925,000
	Rehabilitate Rail Stations	$9,000,000	$3,000,000	$3,000,000	$8,000,000	$6,301,946	$23,398,054	$43,700,000	$0	$52,700,000
	All Stations Accessibility Program	$99,059,053	$20,960,000	$21,050,000	$0	$72,929,164	$5,179,414	$120,118,578	$0	$219,177,631
	Improve Facilities - Systemwide	$168,998,909	$17,200,383	$33,018,169	$19,221,879	$9,220,968	$26,417,418	$105,078,818	$4,000,000	$278,077,727
	Electric Bus Facilities	$123,239,730	$0	$0	$77,620,546	$55,379,454	$0	$133,000,000	$0	$256,239,730
	Subtotal	$1,378,308,281	$666,210,265	$710,309,138	$1,227,794,187	$1,220,305,992	$769,237,565	$4,593,857,146	$136,978,348	$6,109,143,775
Comms Tech	Information Technology	$3,000,000	$4,200,000	$0	$1,911,743	$4,500,000	$0	$10,611,743	$0	$13,611,743
	Implement Security & Communication Projects	$4,000,000	$21,000,000	$20,568,629	$8,000,000	$6,000,000	$6,000,000	$61,568,629	$6,000,000	$71,568,629
	Fiber Optics Communication /Network Upgrade	$0	$5,000,000	$1,500,000	$5,000,000	$5,000,000	$3,428,917	$19,928,917	$0	$19,928,917
	Bus Shelter Signs Upgrade	$0	$3,200,000	$0	$0	$0	$0	$3,200,000	$0	$3,200,000
	Train Tracker Digital Signage Upgrade	$0	$7,967,000	$7,033,000	$0	$0	$0	$15,000,000	$0	$15,000,000
	Subtotal	$7,000,000	$41,367,000	$29,101,629	$14,911,743	$15,500,000	$9,428,917	$110,309,289	$6,000,000	$123,309,289
Non-Rev Vehicles	Equipment and Non-Revenue Vehicles Replacement	$100,879,549	$61,601,336	$5,000,000	$761,025	$0	$0	$67,362,361	$29,062,492	$197,304,402
Misc.	Subway Life Safety	$3,000,000	$5,250,000	$12,750,000	$0	$0	$0	$18,000,000	$0	$21,000,000
	Bond Repayment, Interest Cost, & Finance Cost	$2,243,313,158	$212,133,826	$190,871,343	$212,575,143	$189,269,644	$181,226,523	$986,076,479	$0	$3,229,389,637
	Capital Improvement Program Management	$9,381,556	$9,436,827	$19,458,880	$19,481,155	$19,503,653	$19,526,377	$87,406,892	$0	$96,788,448
Subtotal		$2,356,574,263	$288,421,989	$228,080,223	$232,817,323	$208,773,297	$200,752,900	$1,158,845,732	$29,062,492	$3,544,482,487
Total		$5,504,894,338	$1,201,871,311	$1,228,883,491	$1,693,547,234	$1,597,124,731	$1,238,264,697	$6,959,691,463	$2,147,183,657	$14,611,769,458

Figure 14: Visual Summary Representation of FY2025-2029 CIP





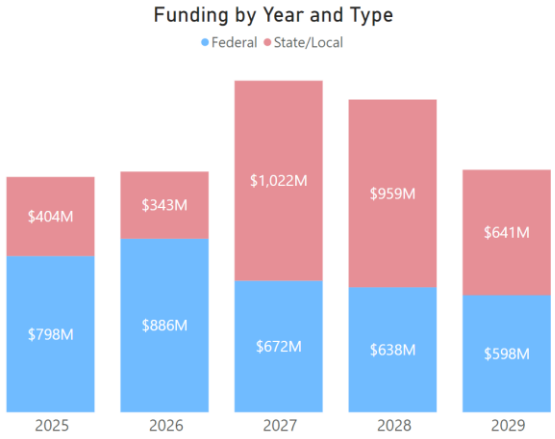
*"Other includes Non-Revenue &,CommsTech

Sources of Capital Funds

625.33 (e) When developing an investment prioritization, a provider must take into consideration its estimation of funding levels from all available sources that it reasonably expects will be available in each fiscal year during the TAM plan horizon period.

In order to pay for its capital investments over the next five years, CTA will rely on funding from the sources as summarized in Figure 14.

Figure 15: FY2025-29 Capital Funding Sources



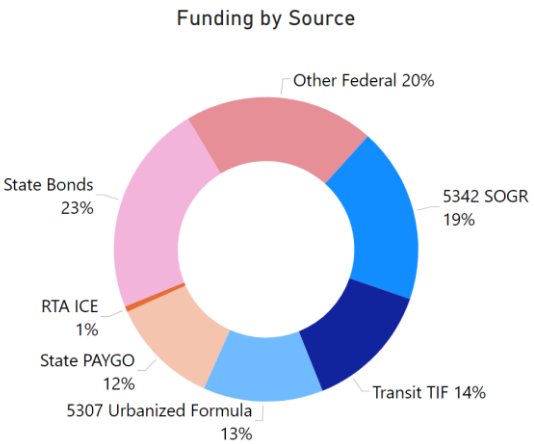


Table 13: Capital Improvement Program Expected Funds, 2025-2029

Sources of Funds	2025	2026	2027	2028	2029	Total
5307 Urbanized Formula	$173,275,536	$175,008,292	$177,799,637	$179,577,634	$181,373,410	$887,034,509
5337 State of Good Repair	$254,953,917	$257,503,457	$258,958,670	$261,548,257	$264,163,739	$1,297,128,040
5339 Bus and Bus Facilities Formula	$12,860,801	$12,989,409	$13,197,862	$13,329,840	$13,463,139	$65,841,051
Subtotal FTA	**$441,090,254**	**$445,501,158**	**$449,956,169**	**$454,455,731**	**$459,000,288**	**$2,250,003,600**
Sec. 5309 Capital Investment Grant *	$350,000,000	$350,000,000	$132,000,000	$132,000,000	$132,000,000	$1,096,000,000
CMAQ	$0	$74,255,332	$68,107,815	$0	$0	$142,363,147
Carbon Reduction Program	$0	$10,000,000	$15,000,000	$45,000,000	$0	$70,000,000
Sec. 5303 UWP Planning	$500,000	$500,000	$500,000	$500,000	$500,000	$2,500,000
Transit Security Grant Program (DHS)	$6,000,000	$6,000,000	$6,000,000	$6,000,000	$6,000,000	$30,000,000
Subtotal Other Federal	**$356,500,000**	**$440,755,332**	**$221,607,815**	**$183,500,000**	**$138,500,000**	**$1,340,863,147**
Total Federal	**$797,590,254**	**$886,256,490**	**$671,563,984**	**$637,955,731**	**$597,500,288**	**$3,590,866,747**
Transit Motor Fuel (PAYGO)	$161,190,000	$161,190,000	$161,190,000	$161,190,000	$161,190,000	$805,950,000
RTA ICE	$7,967,000	$8,222,000	$8,469,000	$8,689,000	$8,915,000	$42,262,000
Transit TIF	$18,100,000	$173,090,000	$402,199,250	$189,165,000	$167,445,750	$950,000,000
CTA Bond	$216,899,057	$0	$450,000,000	$600,000,000	$303,088,659	$1,569,987,716
Total State/Local	**$404,156,057**	**$342,502,000**	**$1,021,858,250**	**$959,044,000**	**$640,639,409**	**$3,368,199,716**
Reprogrammed Funds	$0	$0	$0	$0	$0	$0
CTA Share for Competitive Grants	$125,000	$125,000	$125,000	$125,000	$125,000	$625,000
Total Funds	**$1,201,871,311**	**$1,228,883,490**	**$1,693,547,234**	**$1,597,124,731**	**$1,238,264,697**	**$6,959,691,463**

Projects funded by these sources are supplemented with funds made available in prior years totaling $746 million.

CTA capital investment funds have historically come from a variety of sources, including federal formula funds, federal grants programs, State bonds from State capital programs, bonds issued by the CTA or RTA, and other locally derived sources such transit value capture/tax increment financing and the Ground Transportation Tax.

The table indicates average new funding of roughly $1.4 billion per year over the current 5-year plan. From 2009-2024, on average $722.0 million in new funds were available annually.

6.4 CIP EVALUATION

IMPACT RATING (PRIORITY RANKING)

Because CTA's capital investment needs exceed available capital funds, all projects that are included in the CIP are considered high priority. As part of the CIP solicitation process and in accordance with the TAM Policy, capital projects are assessed on the basis of the projected impact on three primary factors and several other key considerations:

- Primary Factors: Safety & Security, Customer Service & Accessibility, Operations & Maintenance
- Other Key Considerations: Risk avoidance, regulatory compliance, constructability & staging (inc. capital program continuity), opportunities for innovation, and community impacts

Non-expansion capital projects are evaluated into priority tiers, with "P1" meaning "Priority 1", or highest priority. Expansion projects are evaluated through the regional planning process (see Section 6.2.3).

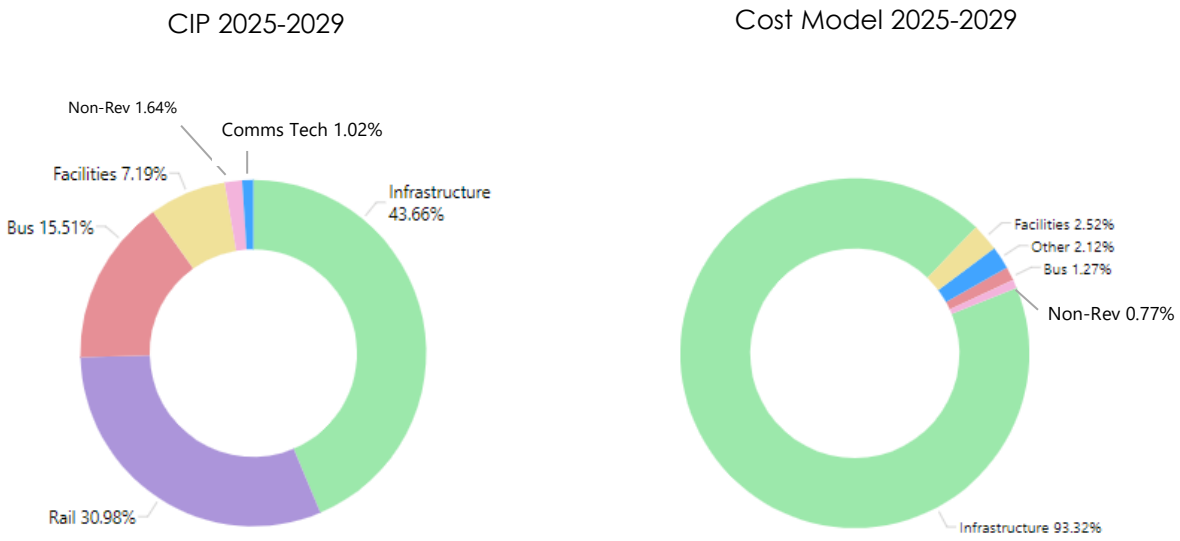
Table 14: FY2025-2029 CIP Project Impact Evaluation Rankings Summary

Capital Project	Safety & Security	Cust. Service	Ops & Mntce	Other Key Considerations
Perform Bus Maintenance Activities	P2	**P1**	P2	
Perform Mid-Life Bus Overhaul	P2	**P1**	**P1**	Capital Program Continuity
Replace Buses	P2	**P1**	**P1**	Capital Program Continuity, Accessibility, Technology/Innovation
Perform Rail Car Overhaul	P2	**P1**	**P1**	Capital Program Continuity
Perform Rail Car Maintenance Activities	P2	**P1**	**P1**	
Purchase Rail Cars	P2	**P1**	**P1**	Capital Program Continuity, Accessibility, Technology/Innovation
Rehabilitate Blue Line - O'Hare Branch	**P1**	P2	**P1**	Accessibility, Community Impacts
Forest Park Branch – Phase I	**P1**	P1	**P1**	Capital Program Continuity, Accessibility, Community Impacts
Green Line Improvements	P2	**P1**	**P1**	
Replace/Upgrade Power Distribution and Signals	**P1**	**P1**	**P1**	
Infrastructure Safety & Renewal Program	**P1**	**P1**	**P1**	
Rehabilitate Rail Stations	P2	P2	P2	Accessibility, Community Impacts
Improve Facilities - Systemwide	P2		P2	
Information Technology	P2			Technology/Innovation
Implement Security & Communication Projects	**P1**			Technology/Innovation
Equipment and Non-Revenue Vehicles Replacement			P2	

BENCHMARK / MODEL COMPARISON

The COST model (see Section 6.2.2) produces hypothetical investment scenarios based on asset conditions, replacement costs, financial constraints, and assumptions regarding the relative priority criteria weightings of different types of assets (i.e. their impact on Safety, number of riders impacted, and so on). This functionality provides a helpful cross-check for overall programmatic allocations amongst asset categories in the CTA CIP as shown in Figure 15.

Figure 16: Comparison of COST Model Estimation and FY2025-29 CIP Funds*



**The FY 2025-2029 CIP funds are programmed to certain project category types where infrastructure assets are included in a number of the funding categories.*

7 TAM IMPLEMENTATION STRATEGY

625.25 (b) A TAM Plan must include: (6) A provider's TAM plan implementation strategy

625.25 (b) A TAM Plan must include (8) A summary or list of the resources, including personnel, that a provider needs to develop and carry out the TAM plan;

625.25 (b) A TAM Plan must include (9) An outline of how a provider will monitor, update, and evaluate, as needed, its TAM Plan and related business practices, to ensure the continuous improvement of its TAM practices

7.1 BRIEF HISTORY OF CTA TAM ACTIVITIES

As a legacy system – with some assets dating to the late 1800s still in service, and numerous replacement cycles completed for other assets – CTA has incrementally developed many fundamental asset management practices as a matter of necessity over the course of decades. The following timeline of key modern-era activities provides context for the present Transit Asset Management framework at CTA:

- **1992-1994**: CTA conducted a comprehensive engineering review, producing an asset inventory and capital needs assessment to guide maintenance and capital renewal activities.
- **2001-2008**: CTA and its Capital Program Management consultant developed and maintained a rolling 20-year capital needs assessment for Infrastructure and Facilities.
- **2007-2008**: CTA completed initial deployment of the new Maintenance Management Information System (MMIS), the enterprise asset management system for managing the vehicle fleet.
- **2009-2016**: CTA, Metra, and Pace coordinated with the Regional Transportation Authority in the development of a regional capital needs analysis and "Capital Optimization Support Tool" based on the Transit Economic Requirements Model (TERM).
- **2009-Present**: CTA began regular and active participation in the State-of-Good-Repair/Transit Asset Management roundtable meetings hosted by the Federal Transit Administration.
- **2012-2013**: CTA's Capital Program Manager conducted comprehensive Facilities Condition Assessments at CTA maintenance facilities and substations.
- **2012**: CTA began a multi-year effort to re-implement the Infor-based work order system, with a key goal of migrating various maintenance management systems in use by different departments in Power & Way and Facilities Maintenance into a single enterprise asset management system.
- **2016-2017**: CTA retained WSP USA, Inc. to perform a gap assessment of CTA's asset management practices compared to best practices, provide a recommended program of asset management improvement initiatives, and develop CTA's first TAM Plan in anticipation of the TAM Final Rule.
- **2018**: A dedicated Transit Asset Management team is formally established and staffed within CTA's Performance Management department; first FTA-compliant TAM Plan issued.
- **2022**: FTA-compliant agency required quadrennial TAM Plan update completed and reissued.

7.2 CTA'S TAM STRATEGY

CTA's organizational approach to TAM can be summarized as a decentralization of core asset management functions to asset owners, with program monitoring, coordination, and support provided by a small, independent team dedicated to TAM (see also Section 5)[7a]. This decentralized approach is justified based on the large scope and scale of CTA's asset base.

The dedicated TAM team is staffed within the Performance Management department, which performs a variety of operational and data analysis and custom reporting to support all levels of CTA management. Having the TAM program coordinated from this department reflects the overarching strategy of CTA's TAM program: **Improving the availability and quality of information for asset owners and policymakers to optimize the allocation of maintenance and capital investment resources.**

7.3 TAM FOCUS AREAS

In support of this strategy, CTA is pursuing a variety of actions within three tactical focus areas (standards development, improved communications, and condition rating process), as informed by the best practices gap assessment and recommended improvement actions.

7.3.1 ONGOING TAM FRAMEWORK

Completion and adoption of this Transit Asset Management Plan and accompanying Transit Asset Management Policy provide the foundation for CTA's asset management framework. The Plan and Policy establish TAM as a key management framework to achieve and maintain a state of good repair and lays out key activities and departmental ownership. The expectations and goals defined in the Policy and the practices described in the Plan also provide a template against which CTA's management practices can be compared on an ongoing basis to identify gaps.

In accordance with 49 CFR 625.53, the CTA TAM team shall maintain, or otherwise ensure maintenance thereof by responsible departments, all supporting TAM Plan records and documents by use of several process/decision support tools and asset information systems that manage, store, and help prioritize its Asset Information, including Excel spreadsheets, Access databases, MMIS, INFOR, and RedShift.

These TAM Plan records shall be made available to Federal (FTA) and other entities that may provide funding and aid in the planning process to CTA (e.g., State [IDOT] and the Chicago Metropolitan Agency for Planning [CMAP]).

CTA TAM team shall also maintain and submit the following reports on an annual basis to the National Transit Database (NTD) in accordance with 49 CFR 625.55:

- Inventory of assets;
- SGR performance targets for the following year;
- Condition inspection assessments and performance measures of capital assets; and
- An annual narrative that provides a description of any change in the condition of CTA's transit system or operations from the previous year, and a description of the progress made during the reporting year to meet the performance targets set in the previous reporting year.

[7a] As of September 2024, the TAM team is staffed with one Senior Manager and one analyst.

PLANNED & ONGOING ACTIVITY: STANDARDS DEVELOPMENT

A lack of standards can result in various asset management challenges, such as confusion over the use of certain terminology, a lack of data compatibility between uses and systems, and so on. In order to improve the long run integrity and usability of asset-related data, CTA will prepare documentation of key asset data standards, in order to codify and standardize CTA's practices with respect to:

- Asset hierarchy, identification, and classification rules
- Minimally required attributes by asset type, and how they're stored
- Condition rating calculations

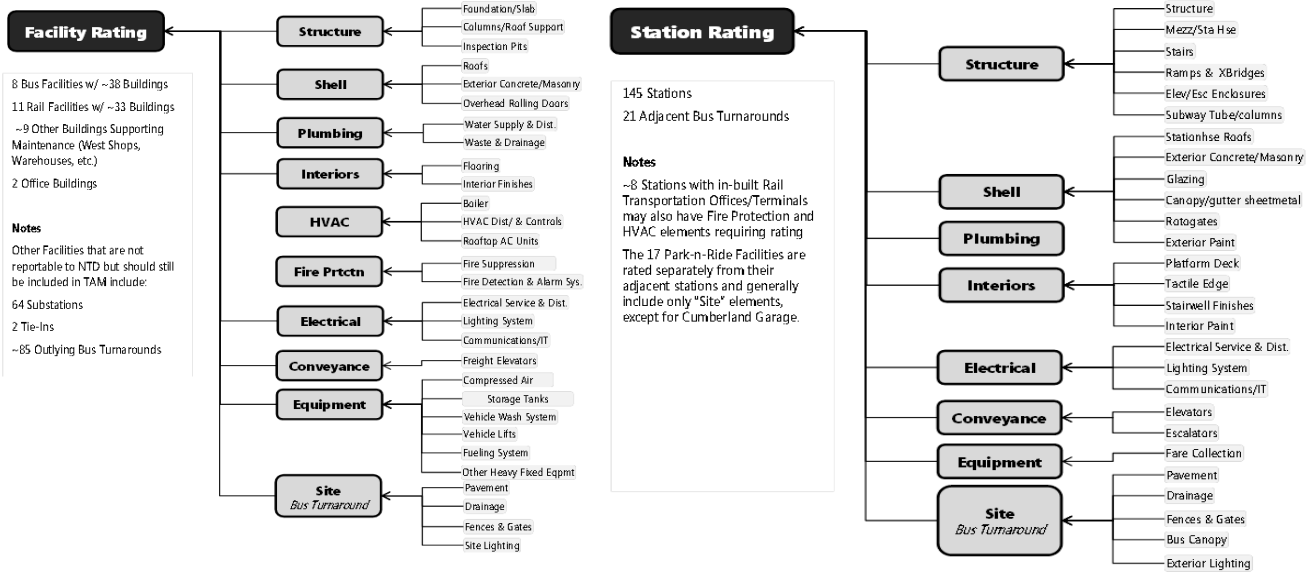
PLANNED & ONGOING ACTIVITY: IMPROVED TAM COMMUNICATION CHANNELS

Improvements in TAM communication also includes the use of visualization tools to represent complex, multi-variable information and making these available to a broader audience.

PLANNED & ONGOING ACTIVITY: CONDITION RATING PROCESSES

As described in Section 4.2.1 CTA has developed a station and facility component hierarchy for TAM Condition Rating purposes. This will establish a consistent methodology for determining overall facility conditions and deficiencies in a manner that complies with guidelines issued by the FTA. Ratings are being performed by CTA subject matter experts in the Facilities trades, structural inspections, and other groups. A minimum of 25% of facilities were rated according to the new methodology by Dec 31, 2018, with all facilities fully rated as of Dec 31, 2021. Thereafter, all facility condition rating scores are reviewed and updated as appropriate at least every four years.

Figure 17: CTA Facility Component Rating Hierarchies



7.3.2 EAM SYSTEM ENHANCEMENT

Further development and input are required to ensure CTA is obtaining the maximum possible benefit from its investments in Enterprise Asset Management (EAM) systems.

ONGOING ACTIVITY: COMPLETE THE MIGRATION OF FIXED ASSETS INTO INFOR EAM

CTA is nearing completion of a multi-year effort to migrate the management of its major fixed assets (Power & Way, Facilities) into the Infor EAM system. This includes the creation of hierarchically structured asset records, and the configuration of scheduled maintenance to automatically generate inspection and preventive maintenance work orders according to planned intervals.

As of mid-2023 the key remaining assets whose migration into Infor is ongoing are:

- Signals
- Facilities (Facilities Maintenance assets are fully created; configuration of preventive maintenance is ongoing)

PLANNED ACTIVITY: POPULATE KEY ATTRIBUTES IN INFOR EAM

While hierarchical asset systems are largely built out and assets are identified in a consistent fashion, there remain significant unutilized capabilities within Infor EAM to store essential asset attributes that facilitate improved asset management analyses. Accurately and consistently populating attributes across tens of thousands of assets will be an extended task, albeit with significant long-term benefits. Such work will include building out linear references for right-of-way assets, including asset age/installation dates, storing key measurements and other technical parameters, etc.

PLANNED AND ONGOING ACTIVITY: DEVELOP ADDITIONAL TOOLS FOR MAINTENANCE AND DEFECT ANALYSIS

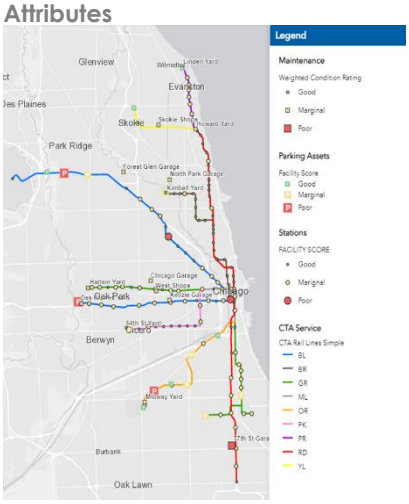
Data visualizations and dashboards are crucial tools to convey a large quantity of dense information to CTA asset managers. Such interactive tools may take the form of "canned" or built-in reports from EAM systems or may stand alone and draw on the underlying data from EAMs. The levels of development of such tools vary considerably within CTA by function and system.

The Performance Management department, of which the TAM team is a part, is in progress developing interactive dashboards and maintenance analysis tools for Bus and Rail Vehicle Maintenance based on data from MMIS and operations management systems. Going forward, similar capabilities will be developed for Facilities Maintenance and Power & Way.

Infrastructure assets present unique challenges and opportunities for data analysis and visualization. These assets typically function as elements in larger systems of assets that extend over a broad geographic area. It is therefore preferable to perform analysis and reporting of these assets visually, rather than through large tables of numbers. CTA is advancing development of the following methods of visual asset representation:

- Integration between Infor EAM and its Geographic Information System (GIS), so that asset attributes, defects, and other factors can be visualized and analyzed geospatially;
- Linear representation, which allows for the display of multiple assets and their attributes aligned to a linear reference system.

Figure 18: Example GIS Visualization of Asset Condition Attributes



7.3.3 CAPITAL INVESTMENT DECISION SUPPORT

ONGOING ACTIVITY: CAPITAL NEEDS SOLICITATION ADVANCEMENTS

CTA's annual CIP Solicitation process has historically requested capital project requests in the same format, irrespective of whether the request entailed a state-of-good-repair asset replacement need, a major expansion project, or other forms of capital expense. Over time, CTA will align its CIP solicitation with its TAM capital asset inventory for a more integrated state-of-good-repair capital investment analysis.
In practice, this means related capital project requests directly to one or more capital assets, with their deficiency reflected in an outstanding investment need and in a commensurate condition rating. Additionally, CTA is developing tools and dashboards to aid in the communication of CTA's capital needs and programming (see e.g. Sections 6.2.1and 6.3).

ONGOING ACTIVITY: FURTHER DEVELOPMENT OF MODELING TOOLS (COST MODEL)

As a result of CTA's multi-year collaboration with the Regional Transportation Authority (RTA), Metra, and Pace, CTA maintains a capital asset inventory in a modified instance of TERM Lite, the capital decision support tool provided by the FTA. This inventory and tool have provided various outputs and benefits to date, including informing the regional conversation on transit capital funding needs and benchmarking for CTA's CIP development process (see Section 6.2.2).
CTA will continually review and update the inventory, ULB assumptions, and replacement cost assumptions used in the model. There are nonetheless gaps, assumptions, and other issues in the current capital asset inventory data that limit the applicability of outputs from the COST model outside of very high-level programmatic analysis. Additionally, for many asset classes, the COST inventory does not align with the asset hierarchies of CTA's EAM systems. These discrepancies introduce long-term risks to accuracy and integrity and make periodic data updates very labor-intensive. The following activities will address these issues:

- Aligning asset types, asset delineation, and asset identification to prepare for future data updates by data exports from Infor EAM and MMIS.
- Adding improved component level detail for Track (e.g., running rail, crossties), Structures, and Facilities (Elevators/Escalators, MEP, Building Envelope, etc.).
- Continuing the build-out of Communications Technology as capital assets with lifecycle investment needs.
- Programming expansion assets to model proposed and planned expansion projects.

TRANSIT ASSET MANAGEMENT PLAN

CHICAGO TRANSIT AUTHORITY