



JACKSONVILLE  
TRANSPORTATION  
AUTHORITY

# TRANSIT ASSET MANAGEMENT (TAM) PLAN



JANUARY 2023 | Version 1.0

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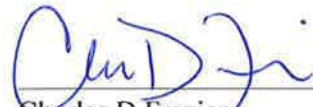
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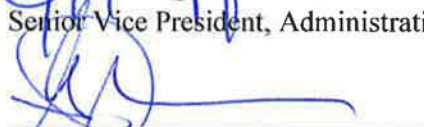
Transit asset management plans are required for all Federal Transit Administration (FTA) grantees per MAP-21 legislation (P.L. 112-141), FAST Act (P.L. 114-94), IIJA (P.L. 117-58), and the FTA Transit Asset Management Final Rule (49 CFR Part 625). Moreover, developing a transit asset management plan makes good business sense as the previous four years under the original TAM Plan have proven for the Jacksonville Transportation Authority (JTA). The benefits from enhanced asset management practices included improved system safety and reliability, reduced costs, better customer service, optimized resource allocation, and the ability to target investments to where they are needed most to maintain state of good repair.

With aging infrastructure, limited funding and a growing demand for service, the JTA must identify ways to better manage and extend the life of its existing assets while optimizing its investment in new capital projects. This understanding is born out in the Authority’s five-year strategic plan, Mobility Optimization through Vision & Excellence 2023-2027 (MOVE2027), approved by the JTA Board of Directors on June 20, 2022. The TAM Plan is critical to achieving the MOVE2027 strategic plan and is woven into each goal and initiative as depicted in Section 2 and 6.2 of the TAM Plan. Not only to meet all Federal requirements, but to reach beyond the requirements to identify, target, and guide investments that prioritize and maintain a state of good repair for our multimodal facilities and other assets in order to provide safe, reliable, innovative, sustainable, and dignified mobility solutions and facilities for all our customers.

**Concurrence  
(by Accountable Executives):**

  
Cleveland Ferguson  
Senior Vice President, Administration

  
Charles D Frazier  
Senior Vice President, Transit Ops

  
Greer Johnson Gillis  
Senior Vice President, System Development

**Approval:**

I, Nathaniel P. Ford, Sr., Jacksonville Transportation Authority Chief Executive Officer, do fully authorize and endorse JTA’s Transit Asset Management Plan, dated September 30, 2022.



9.28.22  
Date

**Administration**

Jacksonville Regional  
Transportation Center  
at LaVilla  
100 LaVilla Center Drive  
Jacksonville, FL 32204

**Operations**

P.O. Drawer "0"  
100 N. Myrtle Avenue  
Jacksonville, FL 32203

Main (904) 630-3181  
Fax (904) 630-3166  
[www.jtafla.com](http://www.jtafla.com)

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# Table of Contents

- Executive Summary ..... 1
  - Federal Requirements ..... 1
  - The JTA's 2022 Transit Asset Management Plan Contents ..... 2
  - TAM Policy ..... 3
  - Inventory and State of Good Repair Baseline ..... 3
  - Future LifeCycle SGR Capital Needs ..... 4
  - Required Funding Levels ..... 6
  - TAM Plan Implementation ..... 7
- 1. Introduction ..... 9**
  - 1.1. Federal Requirements ..... 10
  - 1.2. Federal Transit Asset Management Reporting Requirements ..... 11
  - 1.3. Addressing the Federal Requirements ..... 13
  - 1.4. The JTA's Objectives for the Transit Asset Management Plan and the Ongoing Process ..... 15
- 2. Asset Management Policy and Strategy ..... 17**
  - 2.1. The JTA Asset Management Policy Statement ..... 18
  - 2.2. Purpose ..... 18
  - 2.3. Principles ..... 19
  - 2.4. Incorporation of Asset Management Principles into Business Processes ..... 19
  - 2.5. Asset Management Governance ..... 20
  - 2.6. Roles and Responsibilities ..... 21
- 3. Asset Inventory ..... 23**
  - 3.1. The JTA's Service Area and Transportation Modes ..... 24
  - 3.2. The JTA's Current Asset Inventory ..... 27
  - 3.3. Planned Inventory Changes ..... 43
  - 3.4. Asset Criticality ..... 44
- 4. SGR Methodology and Asset Condition ..... 46**
  - 4.1. SGR Methodology ..... 46
  - 4.2. State of Good Repair and Condition Assessment Baseline Comparison ..... 53

4.3.	Current State-of-Good-Repair Backlog .....	71
<b>5.</b>	<b>State of Good Repair Analysis – 30-Year SGR Needs .....</b>	<b>74</b>
5.1.	Decision Support and Prioritization Process .....	75
5.2.	Decision Support Tool.....	75
5.3.	Asset Prioritization Criteria .....	77
5.4.	Capital Needs and State of Good Repair .....	79
5.5.	Prioritized Investments and Projects.....	90
<b>6.</b>	<b>TAM Implementation Program.....</b>	<b>94</b>
6.1.	Transit Asset Management and Safety Management Systems.....	95
6.2.	TAM and MOVE2027 Strategic Plan Alignment.....	98
6.3.	TAM Implementation Strategy .....	100
<b>A.</b>	<b>Appendices .....</b>	<b>116</b>
A.1	Transit Asset Management Plan Checklist.....	116
A.2	2022 to 2025 Facilities Inspection Schedule .....	116
A.3	Detailed Asset Category Breakdown.....	118
A.4	Asset Criticality—Top 50 Highest Ranked Assets .....	118
A.5	TERM Lite Prioritized Projects 2022–2052 .....	120

# List of Tables

- Table ES-1. Capital Asset Inventory and Value ..... 3
- Table 1. NTD Reporting Requirements – Next Two TAM Plan Horizons – 2022 to 2030 ..... 12
- Table 2. FTA TAM Plan Contents Requirements ..... 13
- Table 3. The Jacksonville Transportation Authority Goals as Stated in MOVE2027 Strategic Plan ..... 17
- Table 4. The JTA Goals and TAM Principals Alignment ..... 19
- Table 5. The JTA's TAM Roles and Responsibilities ..... 21
- Table 6. Ridership Numbers 2017, 2021 to 2022 (Projected) ..... 26
- Table 7. The JTA's Asset Category Breakdown – Overview ..... 28
- Table 8. The JTA's Capital Asset Inventory by Category ..... 30
- Table 9. The JTA's Rolling Stock Asset Inventory ..... 31
- Table 10. The JTA's Equipment Asset Inventory—Non-revenue Vehicles ..... 32
- Table 11. The JTA's Equipment Asset Inventory—Non-vehicle Equipment ..... 33
- Table 12. The JTA's Facility Assets Inventory ..... 34
- Table 13. Myrtle Avenue Operations Campus Buildings List ..... 35
- Table 14. Skyway Infrastructure Assets Breakdown ..... 42
- Table 15. Skyway Infrastructure Assets ..... 43
- Table 16. Measurement Financial Impact ..... 44
- Table 17. Measurement Likelihood of Service Loss ..... 44
- Table 18. Overview of TAM Plan Asset Useful Life Benchmarks ..... 52
- Table 19. Percent of Revenue Vehicles in SGR (by Asset Value) ..... 55
- Table 20. Revenue Vehicle ULBs ..... 55
- Table 21. Bus Average Lifetime Mileage Across all Fleet as of September 2022 ..... 56
- Table 22. Percent of Equipment Assets in SGR (by Asset Value) ..... 57
- Table 23. Aggregate Condition Score for Myrtle Avenue Campus Building 1 ..... 58
- Table 24. The JTA's Facility Condition Assessment Summary ..... 61
- Table 25. SGR for Facility Assets (by Asset Value) ..... 62
- Table 26. Percent of Infrastructure Assets in SGR (by Asset Value) ..... 62
- Table 27. The JTA's 2021 SGR Performance Target versus Actuals ..... 64

Table 28. Assets not in SGR by Asset Category .....	72
Table 29. Initial 5-Step Decision Support and Prioritization Process .....	75
Table 30. Inflation Table .....	76
Table 31. 2022 TERM Prioritization Scores .....	78
Table 32. Top TERM Prioritized SGR Investments (FY2023-FY2028) .....	90
Table 33. TAM Implementation Requirements .....	95
Table 34. MOVE2027 Strategic Plan Initiatives .....	98
Table 35. TAM Roles and Responsibilities .....	102
Table 36. The JTA's Resources for the TAM Implementation .....	105
Table 37. The JTA's TAM Implementation Starting Points .....	108
Table 38. 2022 TAM Plan Implementing Actions.....	112



# List of Figures

- Figure ES-1. The JTA Baseline: Asset Base and SGR Backlog 2018 versus 2022 Comparison .....4
- Figure ES-2. Annual Capital SGR Needs 2023–2052: All Assets.....5
- Figure ES-3. Annual SGR Investment Scenarios and Outcomes .....7
- Figure ES-4. Key Implementation Strategies .....8
- Figure 1. The JTA’s Service Area and Routes .....25
- Figure 2. The JTA’s TAM Asset Base Value by Category .....30
- Figure 3. The JTA’s Myrtle Avenue Operations Campus .....35
- Figure 4. The JTA’s Skyway Operations and Maintenance Center .....36
- Figure 5. Armsdale Park-N-Ride and U<sup>2</sup>C Autonomous Program Center .....37
- Figure 6. Park-N-Ride Example — Soutel Transit Hub, University Transit Hub, Avenues Walk, Phillips-Highway .....38
- Figure 7. The Jacksonville Regional Transportation Center .....39
- Figure 8. The JTA’s Skyway San Marco Station..... 112
- Figure 9. The JTA’s Skyway Block Layout .....41
- Figure 10. TERM Condition Rating Scale.....48
- Figure 11. Asset Condition Decay Curves .....50
- Figure 12. TERM Asset Condition Decay Curves.....51
- Figure 13. The JTA’s 2018 and 2022 SGR Status.....53
- Figure 14. Asset Condition by Asset Category (by Asset 2022 Value).....54
- Figure 15. The JTA’s Bus Fleet—Age Distribution.....56
- Figure 16. The JTA’s Investment/SGR Backlog by Asset Category .....71
- Figure 17. TERM Lite Conceptual Model .....76
- Figure 18. Annual Capital SGR Needs 2023-2052 (With LOGT Funding) .....80
- Figure 19. Annual Capital SGR Needs 2023-2052 (Without LOGT Funding).....81
- Figure 20. SGR Backlog and SGR Need over the TAM Plan Reporting Period .....82
- Figure 21. The JTA’s Assumed Funding Availability, FY2023–FY2052 .....83
- Figure 22. Development of SGR Backlog at Estimated Funding Levels, FY2023-FY2052.....85
- Figure 23. Development of Asset Condition (% by Value), FY2022/32/42/52 .....86
- Figure 24. Funding Required to Maintain Current Backlog.....87



Figure 25. Funding Required to Keep Backlog Levels at 15 percent by FY2052.....88

Figure 26. Funding Required Annually to Keep Backlog Levels at 10 percent by FY2052 .....89

Figure 27. TAM and SMS Nexus .....96

Figure 28. High-Level Whole Life Asset Cost Breakdown .....99

Figure 29. The JTA's 2022 TAM Plan Implementation Strategy ..... 101

Figure 30. The JTA's TAM Oversight and Organizational Structure ..... 104

Figure 31. The JTA's TAM Portfolio Management Tools ..... 107

Figure 32. The JTA's Ten TAM Implementation Areas ..... 108

# EXECUTIVE SUMMARY

Transit is a capital-intensive industry. The Jacksonville Transportation Authority's (JTA) service delivery capabilities and cost structure involve periodic large capital expenditures on long-life capital-intensive assets such as buildings, rolling stock, equipment, systems or infrastructure. Managing these assets is a cornerstone of the JTA's business. The safe, reliable, cost-effective management of these assets is fundamental for the daily operations of delivering safe reliable transportation services to the traveling public. The effective management, performance, and replacement of these assets directly impact the risk, quality, performance, and ability of the JTA to deliver these services in alignment with federal regulation and the goals of the JTA Mobility Optimization Through Vision and Excellence 2027 (MOVE2027) strategic plan. The JTA Transit Asset Management (TAM) Plan, authorized and adopted by the Chief Executive Officer (the Accountable Executive) and the Executive Leadership Team, is an actionable TAM Plan as defined by 49 CFR Part §625 written in alignment to the JTA's MOVE2027 strategic plan for meeting the JTA's vision and goals over the next five years and provides a means through which further tactical and operational plans and programs can be established to help manage the JTA's physical assets.

## FEDERAL REQUIREMENTS

In 2012 the U.S. Department of Transportation (U.S. DOT) identified a \$89.8 billion State of Good Repair (SGR) backlog for the transportation industry nationally, including 40 percent of bus and 23 percent of rail transit assets. In response to this Congress passed the Moving Ahead for Progress in the 21<sup>st</sup> Century Act (MAP-21; P.L. 112-141), mandating the Federal Transit Administration (FTA) to develop a rule requiring transit agencies to create, maintain, and execute TAM Plans.

The requirements enacted by MAP-21 were reaffirmed when Congress passed the Fixing America's Surface Transportation Act (FAST Act; P.L. 114-94). On July 26, 2016, the FTA published its TAM Final Rule (49 CFR Part §625) requiring recipients for Federal formula grants to develop a TAM Plan detailing their ongoing asset management planning process and provide accountability through reporting to the National Transit Database (NTD). The NTD provides the FTA with the ability to assess if agencies are meeting their TAM targets and has indicated that these will be used to also determine future funding eligibility for agencies. FTA has also designated SGR formula grant 5337 (in addition to both other discretionary grants, and agency funding) to aid agencies to fund, resource, and execute, their TAM Plans to show progress against their implementation plans during Triennials and share best practices at conferences and roundtables.



Currently, in 2022 the U.S. DOT, through the Infrastructure Investment and Jobs Act (IIJA Public Law 117-58), identified that the national backlog has increased to approximately \$105 billion in transit maintenance needs nationwide. As a result, Congress has entrusted the FTA with up to \$108 billion dollars in funding over the next five years for Public Transit investments nationwide to bring assets into a SGR and replace deficient transit vehicles with clean, zero emission vehicles.<sup>1,2</sup> Given both funding as well as the resources are limited nationally, and the deterioration of assets is dynamic, it is imperative that agencies manage their existing and new assets effectively to bridge any shortfalls in funding and other unforeseen delays by using data and tools to provide better insights into decision-making within the agencies risk appetite to ensure a safe system.

FTA's Final Rule defines TAM as follows:

“Transit Asset Management means the strategic and systematic practice of procuring, operating, inspecting, maintaining, rehabilitating, and replacing transit capital assets to manage their performance, risks, and costs over their lifecycles, for the purpose of providing safe, cost-effective, and reliable public transportation.”

## THE JTA'S 2022 TRANSIT ASSET MANAGEMENT PLAN CONTENTS

The JTA's 2022 TAM Plan:

- Addresses FTA's requirements as listed in 49 CFR Parts §625, §625.25.
- Documents the JTA's efforts to initiate, implement, and advance asset management practices for improved lifecycle management, better maintenance practices, extended useful life, reduction of total lifecycle cost, reduced risk, as well as increased asset efficiency and performance.
- Provide alignment with and support to ensure the successful achievement of all goals and initiatives outlined in the MOVE2027 Strategic Plan.

The results in this TAM Plan are summarized around five elements:

1. **The JTA's TAM Policy** – What principles rule the JTA's asset management approach, and what are the JTA's TAM goals?
2. **Asset Inventory and SGR Baseline** – What are the JTA's assets, and what is their current status with regard to SGR and investment backlog?
3. **Future SGR Capital Needs** – What is the JTA's capital need over the next 30 years to bring all assets into SGR?
4. **Average Required Funding Levels** – What annual funding levels are required to keep the JTA's assets in SGR?
5. **TAM Implementation Roadmap** – What actions in what timeframe will the JTA take to implement good asset management business practices and improve SGR?

<sup>1</sup> <https://www.transportation.gov/advancing-public-transportation-under-bipartisan-infrastructure-law-update-Federal-transit>.

<sup>2</sup> <https://www.whitehouse.gov/bipartisan-infrastructure-law/#publictransit>.

# TAM POLICY

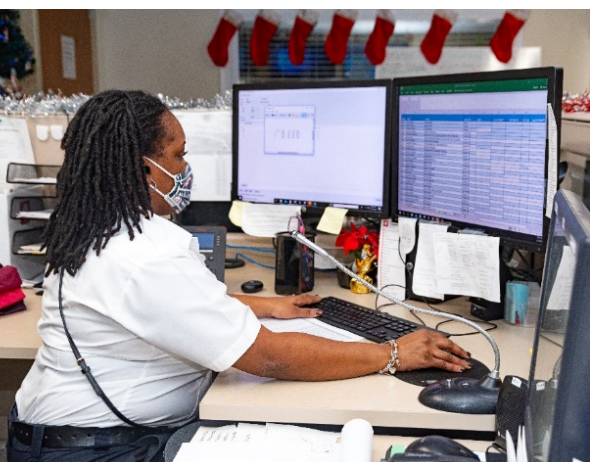
The JTA adopted a TAM policy that provides direct alignment between its mission, MOVE2027 Strategic Plan, and the TAM Plan. The policy states the JTA's commitment to effective best-in-class asset management and the continual improvement of its asset management processes. The policy provides the implementing authority to establish enterprise procedures governing asset registry, inventory, and SGR reporting and management that will drive the capital planning process.

## INVENTORY AND STATE OF GOOD REPAIR BASELINE

The JTA's current capital asset inventory is grouped into four categories and is shown below in . Only assets that have an Active status have been included in this 2022 baseline inventory.<sup>3</sup>

Table ES-1. Capital Asset Inventory and Value

Asset Category	Asset Count 2018	Asset Count 2022	Total Value (2022)
Rolling Stock	338	343	\$184,405,000
Equipment (including non-revenue vehicles)	10,069	8,457	\$36,218,246
Facilities	1,475	2,478	\$197,083,242
Infrastructure	373	2,749	\$209,013,623
<b>TOTAL</b>	<b>12,255</b>	<b>14,027</b>	<b>\$624,720,111</b>



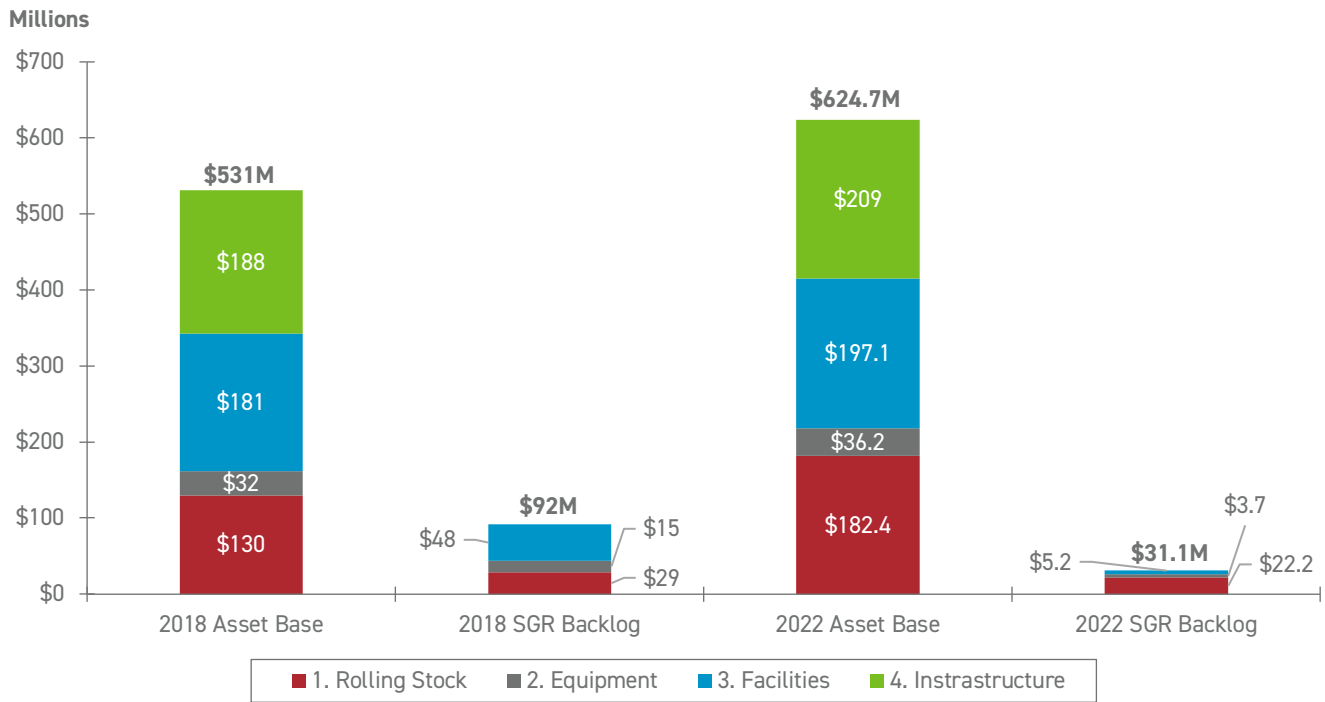
The total value of capital included in this TAM plan is \$624.7 million (in 2022 dollars).<sup>4</sup> The Skyway infrastructure and facilities (for administration, maintenance, and customers) are the two largest asset categories and represent about 65 percent of the JTA's asset base value.

Of this asset base, 95 percent (by dollar value) is in SGR and 5 percent of this asset base is not in SGR. These assets can still perform safely, due to increased maintenance efforts. However, they also may experience higher failure rates and diminishing performance. It is suboptimal for a transit agency to operate assets not in SGR. The 5 percent of the current asset base not in SGR represent the 2022 SGR backlog valued at \$31.1 million, as shown below in Figure ES-1.

<sup>3</sup> Currently in use for the provision of public transportation.

<sup>4</sup> Inflated historic replacement cost.

Figure ES-1. The JTA Baseline: Asset Base and SGR Backlog 2018 versus 2022 Comparison



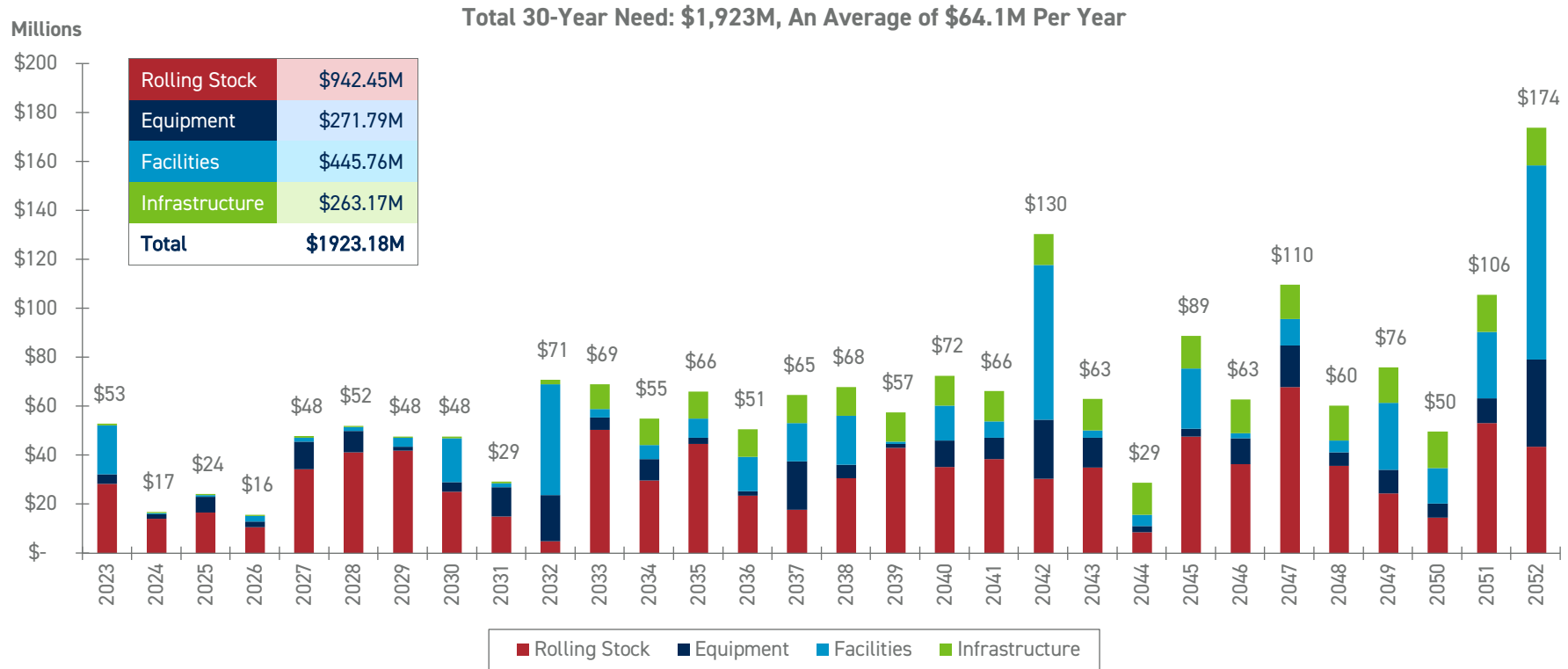
## FUTURE LIFECYCLE SGR CAPITAL NEEDS

Over a period of 30 years, many of the JTA's assets will reach the end of their useful lives and need to be replaced (some will even be replaced multiple times). The TAM Plan estimates the dollar value the JTA will need to invest into these replacements and refers to this as future capital SGR need.

From 2023 through 2052, the JTA's SGR need will be about \$1.92 billion (see Figure ES-2). The replacement need fluctuates from year to year and can be as low as \$16 million or as high as \$174 million. Key years that observe major needs (over \$100 million in value) in funding are:

- 2042 – Due to facilities rehabilitation, replacement or renewal.
- 2047 and 2051 – Due to fleet replacement.
- 2052 – Due to Fleet and Facilities rehabilitation, replacement or renewal.

Figure ES-2. Annual Capital SGR Needs 2023–2052: All Assets



Combining the 2022 SGR need of \$31.1 million with the 30-year SGR needs of \$1.92 billion results in a total SGR need of \$1.95 billion or about \$65.1 million annually

Note: This 30-year capital needs forecast has been developed with a goal of \$0 backlog by 2052 and does not consider the undefined additional assets that will result as part of future service expansion outlined in MOVE2027 strategic plan. The Local Option Gas Tax (LOGT) funding for Skyway and Ferries has been included in the \$0 backlog by 2052 scenario.

Continuing to provide stable funding sources such as the Local Option Gas Tax will provide the JTA with the funding to both reduce the backlog and create a smoother trend in capital needs for future needs.

## REQUIRED FUNDING LEVELS

During the development process for the 2022 TAM Plan a 30-year funding level estimate based on both past and present annual funding allocations was also applied against the total 30-year need. This estimate amounts to an annual average funding amount of \$34 million (a total of \$1.02 billion from 2023 through 2052). Based on the above total SGR need over a 30-year period of \$1.95 billion, a funding gap of approximately \$934 million develops over the next 30-year reporting period.

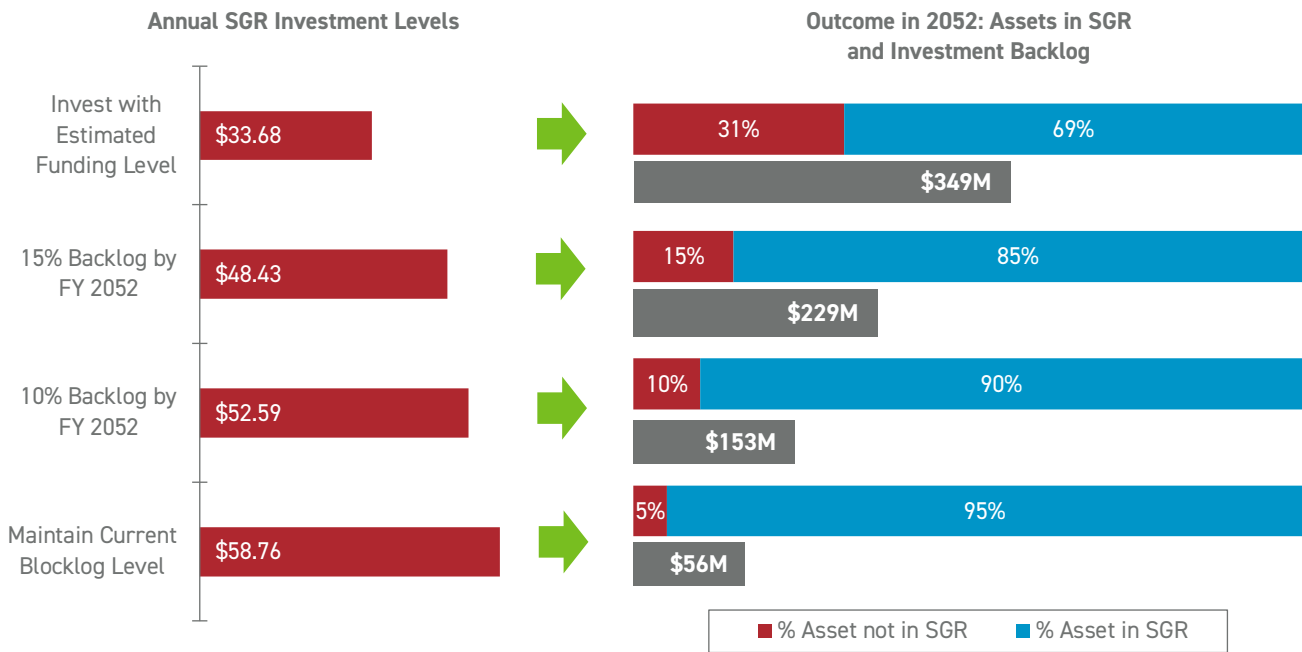
The 2022 TAM Plan development process also conducts four separate investment scenario analysis (see Figure ES-3) to apply alternative funding levels to see how they will affect the SGR backlog:

1. Continuing at current funding levels of \$34 million per year will increase the investment backlog to \$349 million by 2052 (from today \$31.1 million) and the asset SGR backlog would increase to 31 percent (from today's level of 5 percent).
2. Managing the SGR backlog at 15 percent of the asset base value in 2052 would require about \$48.4 million per year, on average. SGR backlog would increase to about \$229 million. It is assumed that a 15 percent backlog in low-risk assets is acceptable.
3. Managing the SGR backlog to 10 percent of the asset base value in 2052 would require about \$53 million per year, on average. SGR backlog would increase to about \$153 million. It is assumed that a 10 percent backlog in low-risk assets is acceptable.
4. Maintaining current SGR backlog levels at 5 percent and addressing all annual SGR needs would require funding of about \$59 million per year, on average.





Figure ES-3. Annual SGR Investment Scenarios and Outcomes



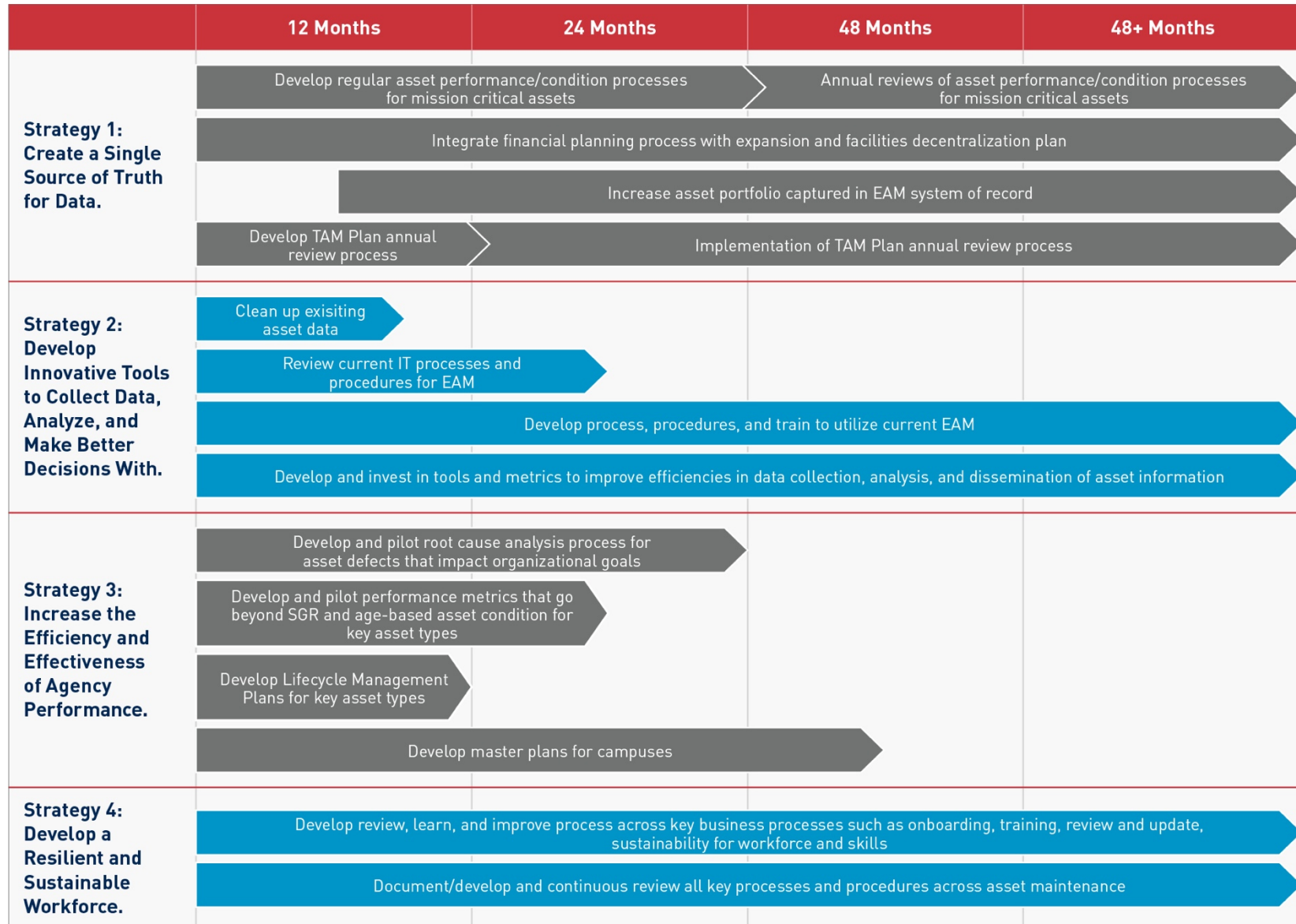
Recognizing that the JTA's SGR backlog targets cannot be reached with current funding levels, or even infusions of additional funding alone, the JTA will address the performance and funding gap by implementing programs to increase asset efficiency, useful life, intelligent investment prioritization, and optimization of available funding.

## TAM PLAN IMPLEMENTATION

The JTA's 2022 TAM Plan includes strategies and implementing actions for maintaining and building on the process developed to prepare this plan. The figure on the next page details the strategies and packages of implementing actions over a 48+ month period. The program team has developed actions across various departments enhancing already existing business practices but also addressing annual reporting needs to FTA. A high-level roadmap illustrates the phased approach supported by detailed actions.

The key implementation strategies (Figure ES-4) addresses the need to develop and sustain a single asset registry for all assets, institutionalize the TAM Plan processes, ensure new assets acquired by the JTA through service expansion or new build, and continue with the development toward an enterprise approach in TAM. This provides the organizational and data-driven foundation from which lifecycle management practices will be improved. The objective is to reduce lifecycle cost and improve reliability to ultimately reduce the SGR backlog and increase safety. These key implementation strategies identified in Figure ES-4 are required to successfully achieve any of the previously identified investment scenarios.

Figure ES-4. Key Implementation Strategies

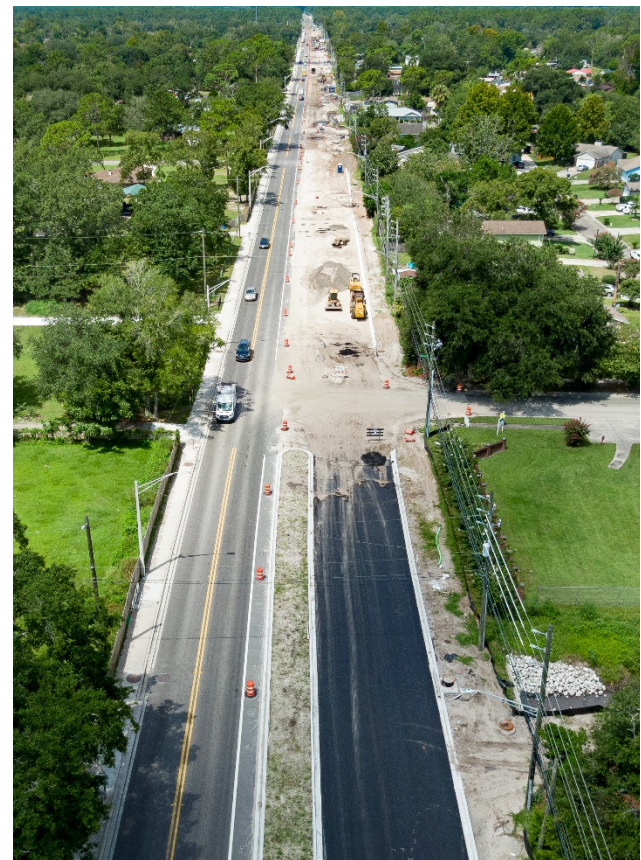


# INTRODUCTION

This document describes the Jacksonville Transportation Authority's (JTA) Transit Asset Management (TAM) Plan. The TAM Plan results from the asset management planning process that the JTA established to address Federal requirements and provide the basis for improving asset management practices throughout the authority.

To prepare the 2022 TAM Plan, and for ongoing asset management, the JTA has established:

- Alignment of the 2022 TAM Plan to the Jacksonville Transportation Authorities MOVE2027 Strategic Plan.
- Policies and organizational responsibilities for implementing, managing, and improving the newly developed asset management process.
- An ongoing process for maintaining an asset registry and asset inventory.
- A cross functional asset hierarchy including lifecycle performance objectives, measures and indicators of SGR.
- Procedures for monitoring and reporting the SGR baseline and backlog.
- Incorporation of lessons learned over the 2018 TAM Plan horizon.
- Identified key linkages between TAM and the Safety Management System.
- Analytical capabilities to estimate future SGR needs over a 30-year TAM Plan horizon.
- Procedures for evaluating and prioritizing capital projects to address SGR needs that consider funding availability.
- A list of committed and prioritized SGR needs.
- An estimation of the resources required to execute and support the JTA TAM Program inline with FTA requirements.



Through the development of this TAM Plan, the JTA has established an Implementation Strategy that is the foundation for maintaining the processes developed in 2018 to prepare the TAM Plan on an ongoing basis. This process will provide the data to meet National Transit Database (NTD) reporting requirements and enable ongoing implementation of TAM principles and practices throughout the authority by providing better data for management, capital program management, and project-decision-making.

A critical part of the Implementation Strategy is an asset management improvement work program that provides a strategy and prioritized implementing actions. The work program stabilizes and institutionalizes the newly established

processes, continually updates the asset management information system solution, and looks to improving and investing in new asset management capabilities and skills throughout the authority.

## 1.1. FEDERAL REQUIREMENTS

The Moving Ahead for Progress in the 21<sup>st</sup> Century Act (MAP-21) required the Federal Transit Administration (FTA) to develop rules for TAM Plan content, reporting, and performance measures.<sup>5</sup> The Fixing America's Surface Transportation (FAST) Act reaffirmed this requirement.

On July 26, 2016, the FTA published the TAM Final Rule.<sup>6</sup> The purpose of the Final Rule is to help achieve and maintain SGR for the Nation's public transportation assets.

FTA's rule defines TAM as follows.<sup>7</sup>

"Transit Asset Management (TAM) means the strategic and systematic practice of procuring, operating, inspecting, maintaining, rehabilitating, and replacing transit capital assets to manage their performance, risks, and costs over their lifecycles, for the purpose of providing safe, cost-effective, and reliable public transportation."

In more detail, FTA's national TAM Final Rule:

- Defines "SGR."
- Requires Federal aid grant recipients (grantees) to develop a TAM Plan.
- Establishes performance measures.
- Establishes annual reporting requirements to the National Transit Database.
- Requires FTA to provide technical assistance.
- Requires agencies to resource the TAM Program (development and implementation).
- Provides funding via the Federal formula funding process (§5337 State of Good Repair).

All transit agencies that own, operate, or manage capital assets used in the provision of public transportation and receive Federal financial assistance under 49 U.S.C. Chapter 53 either as recipients or subrecipients are required to develop a TAM Plan.

A TAM Plan is a tool that will aid transit providers in:

- Assessing the current condition of its capital assets.
- Determining what the condition and performance of its assets should be (if they are not already in an SGR).
- Identifying the unacceptable risks, including safety risks, in continuing to use an asset that is not in an SGR.



<sup>5</sup> MAP-21, the Moving Ahead for Progress in the 21<sup>st</sup> Century Act (Public Law 112-141).

<sup>6</sup> 49 CFR Parts §625—Transit Asset Management; 49 CFR Parts §630 National Transit Database.

<sup>7</sup> 49 CFR Parts §625, §625.5 (FTA Transit Asset Management Final Rule), July 26, 2016.

- Deciding how to best balance and prioritize reasonably anticipated funds (revenues from all sources) towards improving asset condition and achieving a sufficient level of performance within those means.
- How the agency will resource the TAM Program to implement the TAM Plan and show progress against its stated objectives.

TAM Plans must include at a minimum an asset inventory, condition assessments of inventoried assets, and a prioritized list of investments to improve the SGR of their capital assets.

## 1.2. FEDERAL TRANSIT ASSET MANAGEMENT REPORTING REQUIREMENTS

The JTA is required to report the following information annually to FTA's NTD:

- TAM Targets must be set annually for the performance of the JTA's assets and submitted to the NTD as part of the annual data submission. Each asset category has its own performance measure by which to set targets. Those targets relevant to the JTA's asset classes are:
  - Rolling stock: percentage of revenue vehicles exceeding useful life benchmark (ULB).
  - Equipment: percentage of nonrevenue service vehicles exceeding ULB.
  - Facilities: percentage of facilities rated under 3.0 on the Transit Economic Requirements Model (TERM) scale.
  - Infrastructure: percentage of track segments with performance restrictions.
- Condition assessments for facilities and performance results for guideway.
- A narrative report on changes in transit system conditions and the progress toward achieving previous performance targets.

The JTA's fiscal year begins in October of each year.

## 1.1.2 TAM Plan Updates and Amendments

The initial TAM Plans were due from all agencies in 2018, therefore the TAM Plan horizon is every four years from 2018. The TAM Plan is required to have a full update (a complete review of the original submission including amendments from the previous TAM Plan horizon) at the end of its TAM Plan Horizon. If an agency has amended (unexpected changes in asset inventory, condition assessments, or investment prioritization) its TAM Plan prior to the horizon being completed the FTA still requires a full update of the TAM Plan at the end of the Horizon which coincides with the planning cycle (i.e., STIP/TIP).

Table 1 below provides a view of the next two TAM Plan horizons, for agencies whose fiscal year begins on October 1<sup>st</sup>, as well as current FTA mandated deliverables to the NTD and MPOs respectively.

Table 1. NTD Reporting Requirements – Next Two TAM Plan Horizons – 2022 to 2030

	Reporting Requirements	Due
2022 TAM Plan Horizon	Complete compliant TAM Plan	Oct-22
	Share TAM Plan with planning partners	
	Report FY22 AIM data to NTD	Jan-23
	Submit targets for FY23 to NTD	
	Submit narrative report to NTD	
	Report FY23 AIM data to NTD	Jan-24
	Submit targets for FY24 to NTD	
	Submit narrative report to NTD	
	Report FY24 AIM data to NTD	Jan-25
	Submit targets for FY25 to NTD	
	Submit narrative report to NTD	
	Report FY25 AIM data to NTD	Jan-26
	Submit targets for FY26 to NTD	
	Submit narrative report to NTD	
2026 TAM Plan Horizon	Complete compliant TAM Plan	Oct-26
	Share TAM Plan with planning partners	
	Report FY26 AIM data to NTD	Jan-27
	Submit targets for FY27 to NTD	
	Submit narrative report to NTD	
	Report FY27 AIM data to NTD	Jan-28
	Submit targets for FY28 to NTD	
	Submit narrative report to NTD	
	Report FY28 AIM data to NTD	Jan-29
	Submit targets for FY29 to NTD	
	Submit narrative report to NTD	
	Report FY29 AIM data to NTD	Jan-30
	Submit targets for FY 30 to NTD	
	Submit narrative report to NTD	

## 1.3. ADDRESSING THE FEDERAL REQUIREMENTS

The FTA TAM System Rule lays out specific requirements that the JTA is responding to within this plan. The TAM Plan elements are described and cross-referenced in Table 2 to the report sections where the elements are covered.

Table 2. FTA TAM Plan Contents Requirements

FTA TAM Plan Requirement	Description	TAM Plan Chapter
Asset Inventory	Register of capital assets and information about those assets	3
Condition Assessment	Asset condition ratings for vehicles and facilities for the purpose of monitoring and predicting asset performance	4
Decision Support Tool	Methodology for prioritizing project based on condition and objective criteria	5
Prioritized Investments	Prioritized list of projects to manage or achieve the SGR of capital assets	5
TAM and SGR Policy	Executive-level direction for TAM; the actions that support implementation of the TAM policy	2
Implementation Strategy	Operational actions to achieve TAM goals and policies	6
Key Annual Activities	Actions required to implement the TAM Plan over the next several years	6
Identification of Resources	Summary of resources required to develop and carry out the TAM Plan	6
Evaluation Plan	Outline of how the TAM Plan and related business practices will be monitored, updated, and evaluated to ensure continuous improvement	6

The JTA uses the FTA TAM Final Rule Compliance Checklist to demonstrate that this TAM Plan addresses all FTA requirements, see Appendix A.1.<sup>8</sup>

### 1.1.3 TAM Plan Organization

The JTA TAM Plan is organized into the following sections.

#### Chapter 2: Asset Policy and Strategy

Chapter 2 describes the JTA's adopted TAM policy and strategy. The policy and strategy provide the authority and procedural basis for TAM Plan implementation. The policy sets the organization's overall goals for asset management and the strategy to accomplish them. The policy and strategy ensure alignment and a clear alignment between the JTA's mission and MOVE2027 strategic plan to the TAM Plan.

#### Chapter 3: Asset Inventory

Chapter 3 describes the structure of the JTA's asset register and summarizes the current asset inventory. This is built by reporting and summarizing data from the asset inventory and asset hierarchy established for the ongoing TAM Plan

<sup>8</sup> From: <https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/regulations-and-guidance/asset-management/55371/compliance-checklist-2019.pdf>.

process. The inventory is maintained currently in the JTA's Enterprise Asset Management (EAM) database contains the registry of data about the asset and includes the assigned criticality and current condition.

## Chapter 4: Asset Condition

Chapter 4 summarizes the JTA's baseline asset conditions and SGR backlog. The chapter lists the approach to asset performance and condition used by the JTA for each asset class. These performance measures and ULB are listed. Condition is reported and documented using the TERM scale.<sup>9</sup> The chapter reports out of the condition measures captured in the JTAs EAM database in terms of 1) baseline performance against the 2018 Performance Targets reported into NTD; and 2) the JTA's SGR backlog.

## Chapter 5: State-of-Good-Repair Analysis

Chapter 5 describes the analytical process used to evaluate recurring annual SGR needs and analyze the JTA's future SGR capital needs over a 30-year timeframe. The chapter describes how the TERM Lite access database model is used in conjunction with this analysis as the Decision Support Tool to consider these needs and support capital planning analysis.

The chapter lists capital program plans and projects that the JTA has made commitments to implement that will impact SGR needs and the level of funding (after these commitments have been met) that is likely available to meet SGR needs.

The resulting process for how the JTA is selecting prioritized investments based on funding levels anticipated in the future is described. The outcome in terms of prioritized investments and projects is also described.

## Chapter 6: TAM Implementation Strategy

Chapter 6 details the JTA's ongoing efforts to identify roles, responsibilities, annual activities, and ongoing resources to implement TAM at the JTA. Additionally, built into the JTA TAM Plan is a multiyear asset management improvement program for improving asset management capabilities as part of an annually reviewed and updated continuous improvement process.

## Appendices and Supporting Documents

Supporting documents with additional details are referenced throughout this TAM Plan and can be found in the Appendices.



<sup>9</sup> TERM: Transit Economic Requirements Model (FTA's SGR Capital Needs Analysis Tool).



## 1.4. THE JTA'S OBJECTIVES FOR THE TRANSIT ASSET MANAGEMENT PLAN AND THE ONGOING PROCESS

The JTA's first TAM Plan provided the foundational building blocks for improving asset management capabilities and implementing data-driven procedures for ongoing asset management. The focus of this TAM Plan horizon is on supporting the JTA's new MOVE2027 strategic plan and improving asset management to deliver value for the JTA's customers and the communities within the JTA's service area.



The JTA's objective for the TAM Plan is to develop a business model, the supporting information, and program of best practices that will enable the JTA to use the condition of its assets to guide the optimal prioritization of funding so that its assets are maintained and operated in SGR subject to its fiscal constraints. The TAM Plan should also need to be in alignment with strategies and tactics as identified in the Authority's five-year MOVE2027 strategic plan.

The TAM Plan will be maintained and implemented through the ongoing processes developed to prepare this plan document which will be reviewed and updated annually. The TAM Plan includes the activities and tools necessary for the JTA to manage the efficient use of its transit assets. The TAM Plan will be updated as needed to ensure proper inclusion of MOVE2027 strategic plan programs and projects.

This TAM Plan assists the JTA to:

- Align the TAM Program with the strategic direction of the Authority.
- Improve the tracking, measurability, management of its assets.
- Improve transparency and accountability.
- Optimize capital investment decision-making.
- Take into consideration current and future strategic projects and their affect upon the asset inventory and condition.
- Implement more data-driven capital planning and maintenance decisions.
- Increase asset reliability and performance through improved performance measures.
- Improve reliability and reduce safety risk.

As the JTA's asset management process matures, the TAM Plan will provide the entire organization with the information to communicate the importance of good asset management to its employees, customers, and other stakeholders. The information will be used to communicate the business benefits and money saved over the asset lifecycle through improving the SGR.

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# ASSET MANAGEMENT POLICY AND STRATEGY

The TAM Plan includes the updated and re-approved policy goals and policy statement adopted by the JTA. The JTA TAM Policy (Policy Number 4582) was approved by the JTA Executive Leadership Team and the CEO, with an effective date of April 22, 2022, authority wide.

The purpose of the TAM policy is to communicate to the JTA's leadership and employees, business partners, and customers the authority's commitment to effective best-in-class asset management and the continual improvement of asset management processes, including the foundation on which the JTA's mission and goals are accomplished.

The TAM policy builds on the Authority's Vision and Mission as revised and established in the MOVE2027 strategic plan.

## Vision

"A thriving and connected Northeast Florida powered by seamless mobility solutions for all."

## Mission

"To enhance Northeast Florida's economy, environment, and quality of life for all by providing safe, reliable, innovative, sustainable, ethical, and dignified mobility solutions and facilities."

The JTA's mission is furthered through the following goals listed in Table 3.

**Table 3. The Jacksonville Transportation Authority Goals as Stated in MOVE2027 Strategic Plan**

Goal	Description
Safety and Security	Ensure safety and security throughout the transportation system and in the Authority work environment
Employee Success	Strengthen workforce through professional development opportunities that enhance knowledge, skills, and leadership abilities
Customer Satisfaction	Deliver a superior and reliable customer experience
Financial Sustainability	Ensure long-term financial sustainability
Organizational Efficiency and Effectiveness	Attain the highest level of agency performance
Sustainability	Advance transportation solutions that support environmental goals and are mindful of the context of our community
Transformative Mobility Solutions	Deliver innovative transportation choices providing accessible mobility throughout the community

The JTA's TAM policy statement in alignment with the MOVE2027 strategic plan is structured into the following four sections:

1. The JTA Asset Management Policy Statement
2. Incorporation of Asset Management Principles Into Business Processes
3. Asset Management Governance
4. Roles and Responsibilities

## 2.1. THE JTA ASSET MANAGEMENT POLICY STATEMENT

### Asset Management Policy

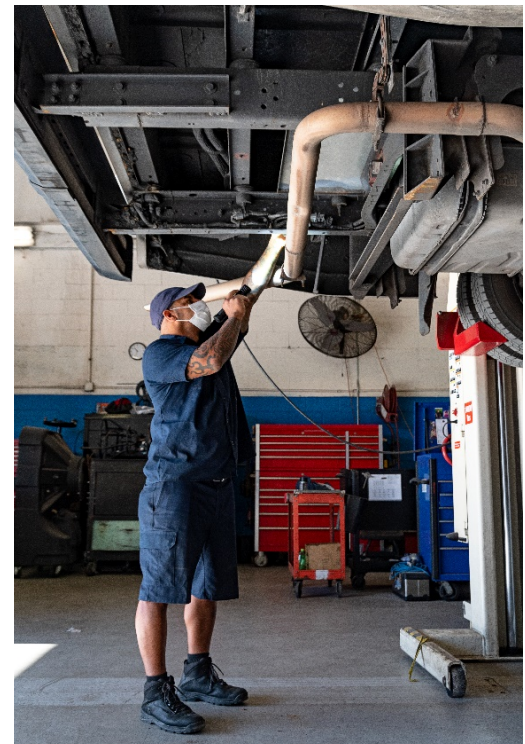
JTA is committed to establishing and maintaining an industry-leading asset management process. Our policy is to employ asset management best practices and innovate in the use of technologies to manage across the whole lifecycle to maintain assets in a State of Good Repair. In this way, our asset management process is the foundation for providing safe, reliable efficient and sustainable multimodal transportation services and facilities. We employ our asset management process to manage and monitor State of Good Repair. Through the asset management process, we make transparent cost-effective decisions in the acquisition, operation, maintenance, and reconstruction of JTA assets.

## 2.2. PURPOSE

The JTA TAM Plan, authorized and adopted by the Chief Executive Officer (the Accountable Executive) and the Executive Leadership Team, is an actionable TAM Plan as defined by 49 CFR §625 written in alignment to the JTA's MOVE2027 strategic plan for meeting the JTAs vision and goals over the next five years and provides a means through which further tactical and operational plans and programs can be established to help manage the JTA's physical assets. In support of implementation of the JTA's mission statement and this asset management policy, the JTA TAM Plan includes strategies, implementing actions, and performance metrics.

Performance metrics to aid the operations of the JTA such as Mean Distance Before Failure, On-Time Performance, PM/CM compliance and so on will be developed to monitor the JTA's success in implementing the goals in alignment with the MOVE2027 strategic plan and meeting the objectives of the TAM Plan as part of the TAM improvement plan.

Currently, the JTA reports the TAM Targets to the National Transit Database on an annual basis. The JTA is committed to implementing a strategic process for acquiring, operating maintaining, upgrading, and replacing its transit assets to support the agency's vision, mission and values set forth in MOVE2027 strategic plan.



## 2.3. PRINCIPLES

Guiding the JTA's asset management program, plans and strategies are four core principles aligned to each of the organization's strategic goals and priorities which support the delivery of safe, reliable, cost-effective and sustainable transit service.

Table 4. The JTA Goals and TAM Principals Alignment

Asset Management Principals	Corporate Goal
Comprehensive lifecycle approach to managing Assets	Safety and Security
	Customer Satisfaction
	Financial Sustainability
Knowledge and information about the JTA's Assets to drive decision-making at all levels	Organizational Efficiency and Effectiveness
Developing an Asset Management Culture within the JTA	Employee Success
Compliance with applicable legislation, regulation, and statutory requirements in a way that adds value to the customer	Sustainability
	Transformative Mobility Solutions

The JTA is committed to establishing and maintaining an industry-leading asset management process. Our policy is to employ asset management best practices and innovate in the use of technologies to effectively manage assets across the entire lifecycle, to provide value to the business, and maintain in an SGR. In this way, our asset management process is an enabler to meeting our agencies goals. We employ our asset management process to manage and monitor SGR. Through the asset management process, we make transparent cost-effective decisions in the acquisition, operation, maintenance, and reconstruction of the JTA assets.

## 2.4. INCORPORATION OF ASSET MANAGEMENT PRINCIPLES INTO BUSINESS PROCESSES

1. A comprehensive lifecycle approach for managing all assets including planning, acquisition, operation, maintenance, renewal and disposal.
  - a. The JTA invests in and maintains assets considering the total costs and ownership across their useful lives.
  - b. The JTA identifies and performs all appropriate preventive maintenance to maximize the reliability of the transit system and minimize or eliminate corrective maintenance.
2. Knowledge and information about our assets drive decision-making at all levels.
  - a. The JTA establishes and maintains enterprise asset information applying technologies to improve our business practices.
  - b. The JTA employs data to drive our decision-making across the whole lifecycle and at multiple levels within the JTA organization.
  - c. The JTA identifies and addresses assets and asset management practices in need of improvement.
3. JTA management leads by promoting an asset management culture and developing the agency as a highly performing asset management organization.

- a. The JTA develops the organization to grow the knowledge and skills necessary to implement effective lifecycle management.
- b. The JTA empowers and trains our employees to strengthen asset management competencies.
4. Comply with applicable legislation, regulatory and statutory requirements in a way that adds the most value for our customers.
  - a. The JTA commits to employing best management practices and holding ourselves accountable for their success.

## 2.5. ASSET MANAGEMENT GOVERNANCE

The JTA asset management process will be driven by policy, procedures, and standards. The TAM Plan process will define a JTA-wide enterprise process for:

- Maintaining Enterprise Asset Management (EAM) Register.
- Monitoring asset condition and SGR assessment.
- Establishing asset strategies and plans for specific asset class (including replacement criteria, maintenance plan, lifecycle cost optimization methods, asset criticality).
- Defining SGR investment needs, evaluating and prioritizing projects.
- Utilizing asset information management technology (e.g., Maintenance Management Information Systems).
- Implementing a continuous improvement process.

The intent is for these procedures to provide an agency-wide approach ensuring consistency where required and allowing for asset managers at all levels in the organization to apply their expertise and understanding.

## 2.6. ROLES AND RESPONSIBILITIES

The JTAs TAM Roles and Responsibilities are summarized in Table 5 below.

Table 5. The JTA's TAM Roles and Responsibilities

Function	Responsibilities
Chief Executive Officer (CEO)	<ul style="list-style-type: none"> <li>Defined as the "Accountable Executive" in 49 CFR §625.</li> <li>Provide overall executive leadership responsibility for determining the strategic direction and overall JTA policy for Asset Management.</li> <li>Final approval of the Asset Management policies.</li> <li>Final approval and sign-off of the JTA TAM Plan.</li> <li>Reporting on the status and effectiveness of asset management to the JTA Board.</li> </ul>
Executive Leadership Team (ELT)	<ul style="list-style-type: none"> <li>Report on status and effectiveness to the CEO.</li> <li>Provide overall coordination of all asset management activities across the departments ensuring that people, processes, and systems are in place and work together to deliver services and meet the asset management policy objectives.</li> <li>Review the update of all asset management policies, procedures, systems, and continuous improvement processes for CEO approval.</li> <li>Provide direction and support for all TAM Steering Committee activities.</li> </ul>
Chief Financial Officer (CFO)	<ul style="list-style-type: none"> <li>Executive champion of the JTA TAM Program.</li> <li>Provide overall leadership responsibility for developing models for long-term capital investment plans and funding security.</li> <li>Provide overall leadership responsibility for developing policies, procedures, systems, and continuous improvement processes.</li> <li>Serves as the committee chair for both the TAM Steering and Working Committees, and as a member of the Executive Leadership Team.</li> <li>Reporting on status and effectiveness of asset management to the ELT.</li> </ul>
TAM Steering Committee	<ul style="list-style-type: none"> <li>Develop and update all asset management policies, procedures, systems, and continuous improvement processes for CFO and ELT approval.</li> <li>Provide coordination of all asset management activities across the departments ensuring that people, processes, and systems are in place and work together to deliver services and meet the asset management policy objectives.</li> <li>Oversee the development and implementation of asset and risk management plans for all asset classes.</li> <li>Responsible for implementing of approved policies as well as continuous EAM improvement plan.</li> <li>Report on status and effectiveness of asset management to the ELT.</li> <li>Provide direction and support for all TAM Working Committee activities.</li> <li>Provide guidance and feedback on the development of annual SGR capital investment prioritization and presentation of suggested projects.</li> </ul>
TAM Project Lead—JTA TAM Program Manager	<ul style="list-style-type: none"> <li>Serve as project lead for the TAM Working Committee, liaison between the JTA and all TAM vendors, and as member of the TAM Steering Committee.</li> <li>Manage interface between technical and financial departments.</li> <li>Development of annual SGR capital investment prioritization and presentation of suggested projects.</li> <li>Responsible for the development of the 4-year JTA TAM Plan, Annual TAM Targets, Annual Narrative Report, and NTD data submissions.</li> <li>Report on status and effectiveness of asset management to the TAM Steering Committee.</li> <li>Provide direction and support for all the JTA Departments and Staff.</li> </ul>

Function	Responsibilities
TAM Working Committee	<ul style="list-style-type: none"> <li>• Represent all departments with JTA capital assets at a management level.</li> <li>• Responsible for implementing infrastructure asset management lifecycle plans, systems, policies, and procedures.</li> <li>• Development and implementation of asset and risk management plans for all asset classes.</li> <li>• Responsible for gathering, developing, reviewing, and updating all data required for the development of the 4-year JTA TAM Plan, Annual TAM Targets, Annual Narrative Report, and NTD data submissions.</li> <li>• Report on status and effectiveness of asset management to the TAM Project Lead.</li> <li>• Provide direction and support for all the JTA Department Leads.</li> </ul>
Department Leads	<ul style="list-style-type: none"> <li>• Responsible for implementing infrastructure asset management lifecycle plans, systems, policies, and procedures.</li> <li>• Report on status and effectiveness of asset management to the TAM Working Committee.</li> <li>• Provide direction and support for all the JTA Staff.</li> </ul>
JTA Staff	<ul style="list-style-type: none"> <li>• Responsible for implementing infrastructure asset management lifecycle plans, systems, policies, and procedures.</li> <li>• Report on status and effectiveness of asset management to Department Leads.</li> </ul>





# ASSET INVENTORY

The JTA TAM Plan establishes an ongoing process for maintaining the authority's asset inventory. The inventory is intended to become the "single source of truth" for assets owned and managed by the JTA in its asset inventory system of record.

The asset inventory described in this chapter includes the following:

- **Asset Register.** The inventory is the asset registry, a listing of all the assets for which the JTA has direct capital responsibility.
- **Asset Hierarchy.** The inventory is organized into an asset hierarchy that is applicable to the JTA. The hierarchy can be transposed to provide alignment with the NTD and includes the "parent-child" relationships between asset categories, groups, assets, and sub-assets/components applied by the JTA. In the asset hierarchy, each asset is organized into the applicable components and subcomponents (systems and subsystems).
- **Inventory Attributes.** For each asset in the register, the inventory record describes the asset's fixed characteristics, for example, acquisition date, condition, useful life, cost, and physical characteristics. These data items are often referred to as the attributes of the asset and provide the JTA with the basis for forward looking robust models for asset renewal, rehabilitation and replacement planning and programming.
- **Asset Criticality.** The inventory records the criticality of each asset. The TAM Plan establishes criteria that are applied by the JTA to determine asset criticality. This key attribute helps the JTA understand the impact of asset failures on business objectives and supports the risk-based prioritization of investment decisions.

The JTA TAM Plan distinguishes between useful life and asset condition or performance (addressed in Chapter 4 The inventory and the associated condition data, which is collected and maintained in the Oracle Enterprise Asset Management System Module (Oracle EAM) database, the asset inventory system of record.



## 3.1. THE JTA'S SERVICE AREA AND TRANSPORTATION MODES

This section provides an overview of the JTA's service area (see Figure 1) and the assets used to deliver service. It is the cost-effective performance of the JTA's assets over their lifecycle in delivering these services that is the subject of this TAM Plan. In providing transportation services, the JTA uses an array of different capital assets from the major asset categories of rolling stock, equipment, facilities, and infrastructure.



The JTA is responsible for providing public transportation within Duval County, FL. The JTA's service area is 875 square miles, serving more than 1 million people. This area is within Jacksonville, however the JTA also coordinates bus service with surrounding counties to provide inter-county service. The JTA operates a total of 47 routes using seven (7) different transportation modes, as shown in Figure 1.

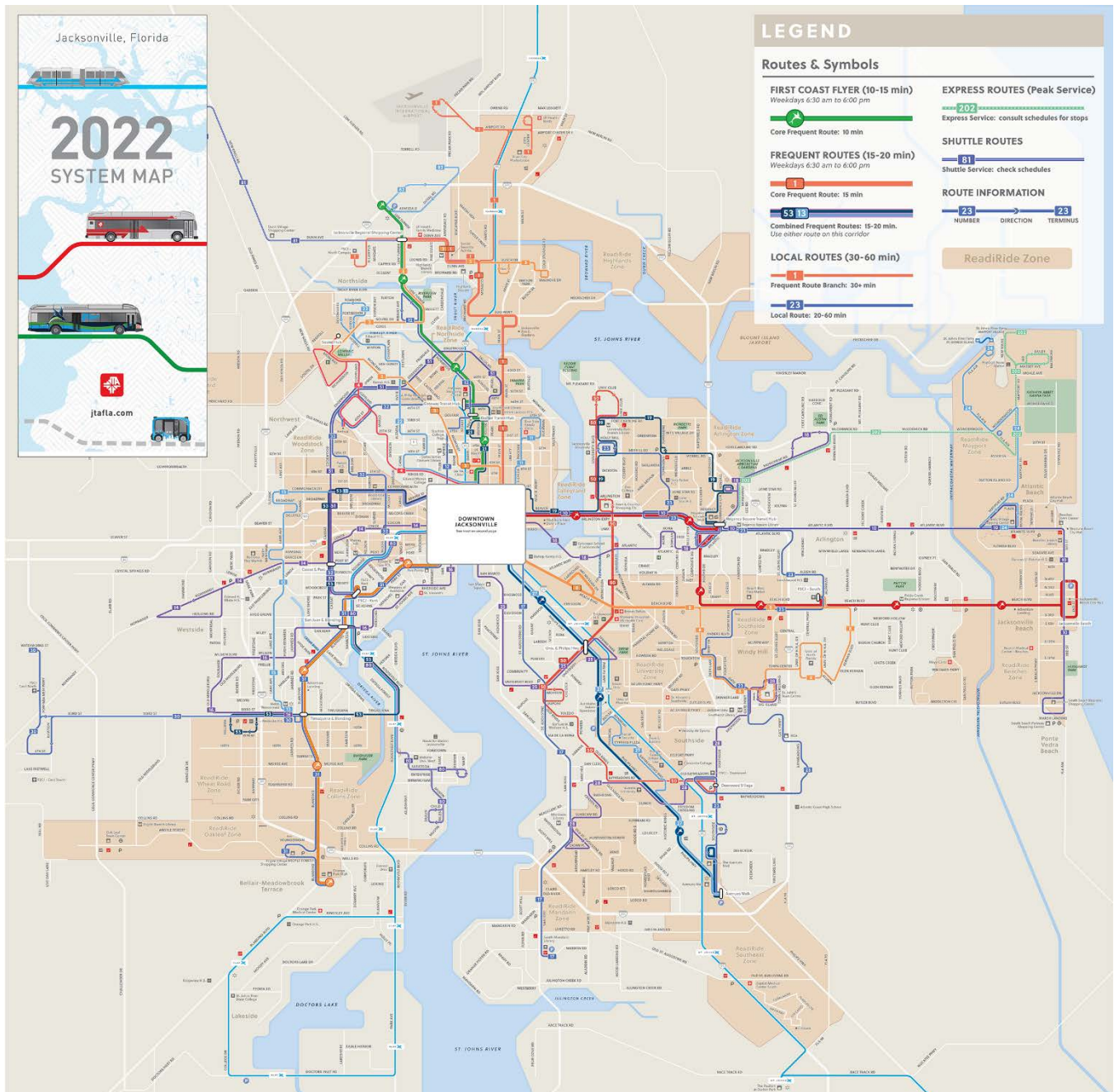
MOVE2027 strategic plan outlines a number of projects to be stated or delivered over the five-years. Many of the projects are funded through the Local Option Gas Tax (LOGT), which has a 30-year horizon, it is important to also understand that the JTA, although managing the design and construction of these assets, will not manage their remaining useful lives upon completion. In addition, the JTA will be developing a Fleet and Facilities Decentralization Plan.

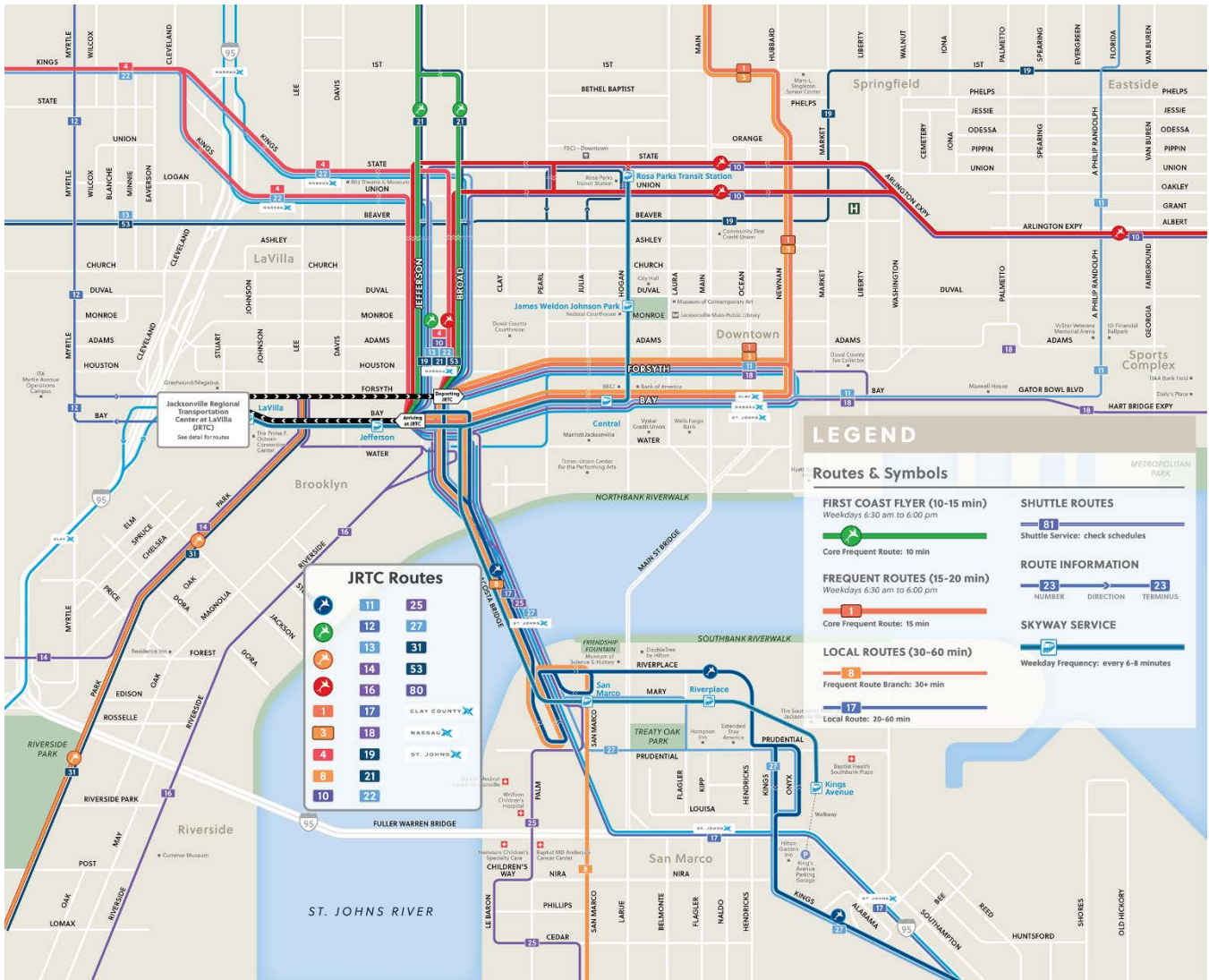
This plan will have four key elements:

1. **Service** (decentralized)
2. **Supporting Facilities**
3. **Fleet** (smaller vehicles, satellite hubs)
4. **Fuels** (CNG, electric, hydrogen).

The study will produce recommendations on these four components and will include a short, mid and long-range implementation plan, which will trigger the amendment process for the TAM Plan.

Figure 1. The JTA's Service Area and Routes





The JTA's ridership metrics for the last two years can be found in Table 6. It is important to note that due to the current pandemic (COVID-19) these metrics have been severely impacted.

Table 6. Ridership Numbers 2017, 2021 to 2022 (Projected)

Mode	2017	2021 (COVID-19)	2022 (Projected)
Fixed Route, Express Select, BRT	10,794,758	5,038,704	5,070,302
ReadiRide	N/A	12,614	23,854
St. Johns River Ferry	442,032	323,746	410,386
Skyway	1,053,631	287,809	294,870
Connexion Paratransit	348,556	223,207	177,542

In March 2016, the JTA took over the operations of the St. Johns River Ferry from the City of Jacksonville. This car and passenger ferry connects the north and south ends of Florida State Road A1A, linking Mayoport Village and Fort George Island.

The JTA also operates a 2.5-mile long, fully automated monorail service known as the Skyway. Its first segment was put into service in 1989 with further extensions between 1997 and 2000. Today, the Skyway has eight stations on two lines in downtown Jacksonville. The Skyway network is to be retired and replaced with the Ultimate Urban Circulator (U<sup>2</sup>C) Program utilizing autonomous vehicles. As part of phase 2 of the U<sup>2</sup>C program, monorail trainsets will be retired and the skyway converted to a dedicated fixed guideway for the autonomous vehicles, currently Phase I (Bay Street Innovation Corridor) is planned to be in service in 2025. Phase II's process will commence in 2023.

## 3.2. THE JTA'S CURRENT ASSET INVENTORY

The JTA's asset inventory is a systematic register of all the capital assets that the JTA owns, operates, or has direct capital oversight and responsibility. The JTA inventory organizes assets into an asset hierarchy that follows the organizational structure the JTA uses to manage and maintain its assets. The asset hierarchy is also structured to enable NTD reporting.

The JTA's goal was to identify the optimal lowest hierarchy level at which it captures asset attributes, but also collect cost for maintenance, repairs, and operations. This is the "maintenance managed asset." The asset hierarchy will be modified and expanded over time to address continuous improvement opportunities and granularity of JTA's assets and maintenance practices.

The development and ongoing maintenance of the asset hierarchy and inventory provide the basis for the ongoing asset inventory process established by this TAM Plan. The current asset hierarchy, at the highest level, begins with four asset categories:

- Rolling Stock.
- Equipment.
- Facilities.
- Infrastructure.

It is further broken down into asset classes (three different levels) and, ultimately, to asset components (maintenance managed item). Across all hierarchy levels, the hierarchy captures more than 318 asset categorizations and over 109 attributes. All of the JTA's assets are linked to this categorization scheme and shown in Appendix A.1.<sup>10</sup> In addition as the JTA continues to collect its full asset base additional Asset Categories will be developed and subsequent Asset Types.



<sup>10</sup> The asset hierarchy is too large to illustrate in the TAM Plan, but Appendix A.1 provides a more detailed overview of the asset classes.

### 3.1.2 Asset Category Overview

Table 7 shows the category breakdown used throughout the TAM Plan process for asset categories and asset levels 1 and 2.

Table 7. The JTA's Asset Category Breakdown – Overview

FTA Category	Asset Category	ULB (Years)	Condition Assessment Methodology
Facilities	Admin and Maintenance Facilities	5 to 50	Age/Condition
	Passenger and Parking Facilities	5 to 50	Age/Condition
	Parking Lots	50	Age/Condition
Infrastructure	Docks	100	Age/Condition
	Raised Guideway	20 to 50	Age/Condition
	Guideway Equipment	5 to 40	Age
Equipment	Non-Revenue Vehicles: (Automobiles, Trailer, Water Craft, Skyway Vehicles, SUV, Van, Truck)	4 to 10	Age/Usage/Condition
	Equipment: (Office, Storage, Shop, Motorized, Print Shop, IT, Amenities, Lifts, Hoist)	3 to 25	Age
	Systems: (CCTV, Security, Drive Cam, Revenue Collection, Passenger Information, Passenger Counters, CAD/AVL/GPS, Dispatch, Scheduling, Call Center, PA, ATS, Signal, SCADA, Monitoring, Dispersion, Software)	3 to 10	Age/Condition
Vehicles	Revenue Vehicles: (Bus, Cutaway Bus, Van, Monorail, Ferry)	4 to 30	Age/Usage/Condition

Each asset category (e.g., rolling stock) is broken down to level 1 asset groups that each category is comprised of (in our example the different types of rolling stock such as buses, cutaways, etc.) and each level 1 asset group is then further subdivided into level 2 and 3 asset groups, for buses this would divide the buses by current propulsion type (Diesel, Hybrid, CNG, Battery Electric Bus) and so on.

The JTA used various sources to compile the asset inventory. The three main sources of input and methodology to assemble the asset inventory are as follows:

- The JTA's fixed-asset accounting register.
- Asset condition assessment reports.
- Facilities condition assessment reports from 2018 to 2022.
- Capital construction department databases.
- Manual inventory validation efforts by departments responsible for the asset categories.
- Department-led third-party consultants inventory collection efforts.
- JTA internal Subject Matter Experts.

### 3.2.2 Inventory Attributes

The JTA developed a Microsoft Excel-based asset hierarchy as logical asset structure. For each asset up to 102 asset attributes (data items) were defined, though many are for specific types of assets. Some attributes are captured for every asset, such as the JTA's asset tag number, date of procurement/service date, acquisition cost, manufacturer, etc. Other attributes are asset specific, for example "fuel type" which only applies to certain asset groups (vehicles, fuel tanks, etc.).

These attributes to the extent possible use available information from the JTA's Oracle Fixed Asset Accounting Module, Oracle Enterprise Asset Management System Module, or other systems. The comprehensive data collection will be upload to the JTAs asset inventory system of record, Oracle EAM. Future updates will be conducted in Oracle, thus creating a single system of record for all the JTA assets with the applicable attributes collected and the foundation for a more robust asset management program and subsequent strategic decision-making.

### 3.3.2 The JTA's TAM Plan Asset Base Count

The JTA is planning to overhaul the entire Skyway system as part of a comprehensive overhaul, system upgrade, and expansion; a project called the Ultimate Urban Circulator (U<sup>2</sup>C). As part of this project, the JTA will implement the latest mobility technology including autonomous vehicles, that will require modifying the guideway infrastructure and operations systems.



Because of this comprehensive system overhaul, the JTA's TAM Plan only includes replacement cost planning for the JTA's assets that will continue to be used after U<sup>2</sup>C implementation. The JTA excluded capital replacement costs for assets scheduled to be decommissioned once U<sup>2</sup>C is in full revenue service from the TAM Plan's capital needs analysis, such as the automated Skyway vehicles (including the Skyway recovery vehicle). However, as part of the comprehensive inventory collection, all Skyway assets have been captured and stored in the JTA's asset inventory system of record because the JTA will continue to have capital responsibility for system overhauls of the Skyway asset base until the transition to U<sup>2</sup>C has been fully completed which will be beyond the 2022 TAM Plan horizon. These system overhauls have been included in the analysis.

The final U<sup>2</sup>C mobility solution has been determined, and initial funding for the conversion has been secured. Once all changes to the existing guideway and new assets are in full revenue service, they will be included in the asset inventory.

As illustrated in Table 8, the TAM Plan-relevant asset base are 14,027 assets subdivided into four asset categories.

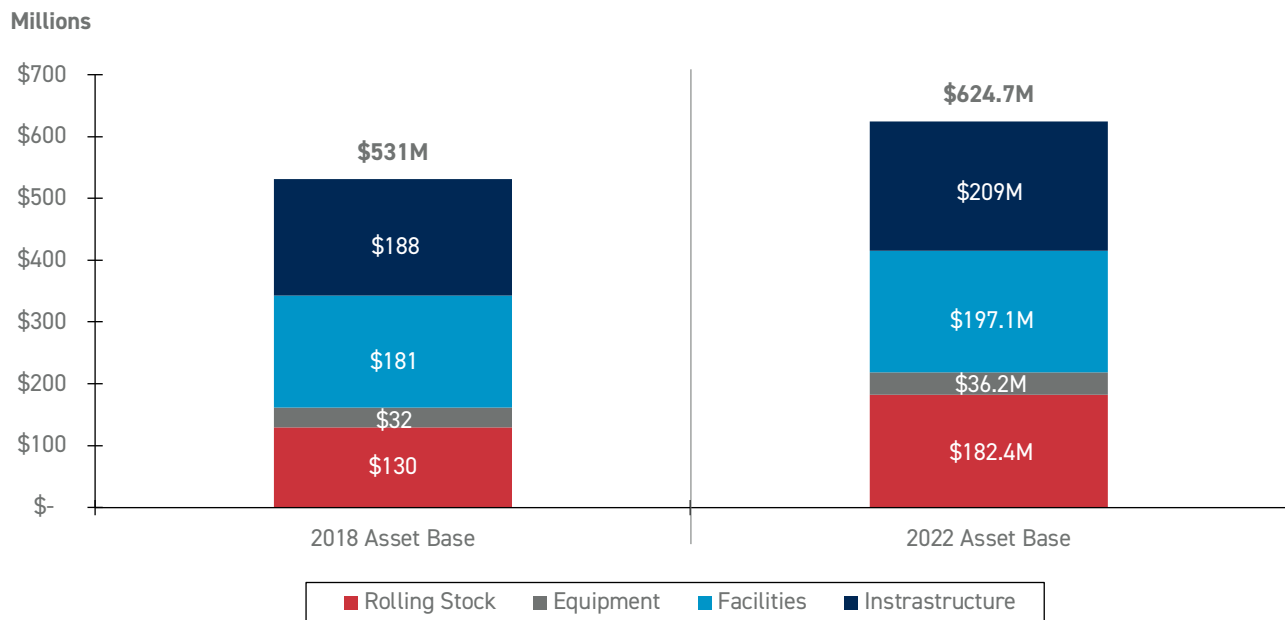
Table 8. The JTA's Capital Asset Inventory by Category

Asset Category	Asset Count 2018	Asset Count 2022
Rolling Stock	338	343
Equipment (including non-revenue vehicles)	10,069	8,457
Facilities	1,475	2,478
Infrastructure	373	2,749
<b>TOTAL</b>	<b>12,255</b>	<b>14,027</b>

### 3.4.2 The JTA's TAM Plan Asset Base Value

The 2018 TAM Plan accounted for 12,255 active assets. Since then, the JTA has continued to expand its asset collection efforts for all assets employed in the provision of public transit and in 2022 the total asset count stands at 14,027 active assets included in this TAM Plan. The asset base, shown in Figure 2, for the JTA has grown by \$93 million, to have a total value of \$624 million (in 2022 dollars). As the JTA continues to collect its entire asset base as well as expand services with new and inherited assets, this value will increase.

Figure 2. The JTA's TAM Asset Base Value by Category



The charts above represent the 2022 replacement cost in comparison to the 2018 baseline (2018 baseline has been converted to 2022 dollars for comparison purposes) that was either calculated by:

- Using the historic acquisition cost and escalating to 2022 values using TERM industry indices.
- Using 2022 replacement cost known by the JTA (due to recent purchases of similar items, available studies, or professional estimates).



The asset categories infrastructure and facilities account for nearly 65 percent of the 2022 Asset Base. Rolling stock’s share is 29 percent and equipment is approximately 6 percent. The increase in cost can be attributed to a higher inflation cost, as well as an increase in the number of validated assets collected from 2018 such as the entire Skyway asset base (fleet \*capital spares only and guideway), Amenities, Revenue, expanded IT Assets, and Clay County.

The key asset categories are described below.

### 3.5.2 Rolling Stock

The JTA owns and operates revenue vehicles to provide public transportation services. These vehicles are included in the rolling stock asset category (see Table 9); non-revenue and other support vehicles are included under the equipment asset category. The JTA does not operate any third-party rolling stock assets.

**Table 9. The JTA’s Rolling Stock Asset Inventory**

Asset Category	Asset Count	Average Age
Rolling Stock, Revenue Vehicles, Motorbus, Diesel	69	11.4
Rolling Stock, Revenue Vehicles, Motorbus, CNG	135	3.9
Rolling Stock, Revenue Vehicles, Motorbus, Electric	2	1
Rolling Stock, Revenue Vehicles, Vans (CTC)	130	17.7
Rolling Stock, Ferry	1	18
Rolling Stock, Monorail Vehicle	6	21.7
<b>Total</b>	<b>343</b>	

Rolling stock assets have a replacement value of about \$182.4 million, which represents 29 percent of the JTA’s asset base.

The JTA’s fixed-route fleet consists of buses using three different propulsion technologies (diesel, diesel/hybrid, CNG [compressed natural gas], and Battery Electric), cutaway buses and vans, and Skyway vehicles.<sup>11</sup>

The JTA also operates one ferry boat as car and passenger ferry linking Mayport Village and Fort George Island. Apart from its initial investment of procuring the vessel, this ferry requires significant overhaul efforts every two years in the approximate amount of \$2.5 million per overhaul.<sup>12</sup>



In addition, the MOVE2027 strategic plan speaks to service expansion by both microtransit expansion solutions as well as fixed-route expansions across regional centers in Duval County and expansion into the Southside/St Johns Town Center.

<sup>11</sup> Skyway vehicles are excluded from the TAM plan, as explained above.

<sup>12</sup> JTA is currently collecting inventory assets for ferry components as well as system/assets operated on the ferry (e.g., radar system).

## 3.6.2 Equipment

The equipment evaluated in this TAM Plan includes all non-revenue service vehicles, and any agency-owned equipment (for example, revenue collection equipment, all the vehicle maintenance equipment, and office equipment, IT assets). The equipment inventory includes at a minimum all assets valued \$50,000 or more, as well as assets with lower values where data was available, or assets were deemed imperative to operations.

Equipment assets have a replacement value of about \$36.2 million which represents less than 6 percent of the JTA's asset base.

The equipment asset category is divided into two asset classes:

1. Non-revenue vehicles.
2. Non-vehicle equipment.

### Non-revenue Vehicles

Non-revenue vehicles are used primarily to support maintenance and repair work, supervisory work, or for the delivery of materials, equipment, or tools. The JTA operates more than 78 non-revenue vans, SUVs, cars, and trucks, as shown in Table 10. The JTA does not use any third-party non-revenue service vehicles.

Table 10. The JTA's Equipment Asset Inventory—Non-revenue Vehicles

Asset Category	Asset Count
Equipment, Non-Revenue Vehicles, Auto	15
Equipment, Non-Revenue Vehicles, SUV/Van/Truck	63
<b>Total</b>	<b>78</b>

### Non-vehicle Equipment

The “non-vehicle equipment” asset class is comprised of four asset groups as shown in Table 11. Passenger amenities represent a large amount of assets which is comprised of various assets that can be found at the JTA's 2,383 bus stops, including shelters, benches, lightings, pads, etc.

In addition, the 2022 inventory collection and update also included an expanded Amenities asset list, IT equipment/software, signs, and lifts. As the JTA continues to collect and expand its inventory this category is expected to grow.

Table 11. The JTA's Equipment Asset Inventory—Non-vehicle Equipment

Asset Category	Asset Count
Equipment, Shop Equipment	60
Equipment, Systems/IT/Security	3,647
Equipment, Passenger Amenities	4,385
Equipment, Revenue Collection	–
Equipment, Office Equipment	287
<b>Total</b>	<b>8,379</b>

### 3.7.2 Facilities

Facilities are defined as any structure used to support public transportation services that the JTA owns or has a direct capital responsibility. Facilities used and owned or operated by the JTA include administrative buildings, maintenance buildings, and passenger facilities.

All facilities were assessed in accordance with the FTA's TAM Facilities Performance Measures Reporting Guidebook: Condition Assessment Calculation, version 1.2 between 2018 and 2021. As per the final ruling these inspections are to be repeated within four years from their last assessment year. The JTA is currently in the process of repeating the 2018 assessments. The schedule for these assessments and all subsequent facilities inspections over this TAM Plan horizon can be found in Appendix A.1.



The JTA owns, maintains, and operates several buildings at different locations, of which the most important are described below:

1. **The Myrtle Avenue Operations Campus** at 100 Myrtle Avenue N, Jacksonville, FL (operations and maintenance for non-Skyway vehicles).
2. **Jacksonville Regional Transportation Center (JRTC)** at 100 LaVilla Center Drive, Jacksonville, FL (Primary transfer for all fixed-route buses; western terminus of the Skyway system; the primary JTA office for administrative authority functions e.g., executives, human resources, finance, procurement, etc.).
3. **The Skyway Operations and Maintenance Center** at 725 Leila Street, Jacksonville, FL (operations and maintenance for Skyway vehicles).
4. **Armsdale Test and Learn Facility** at 3191 Armsdale Road, Jacksonville, FL (primary facility for the JTA's Autonomous program, fleet maintenance). In addition, it provides a remote location for ticket sales, as well as a lounge for passengers and bathrooms.

5. **Park and Rides** located at Armsdale, Avenues Walk, Phillips Highway, Soutel Transit Hub, and University Transit Hub provide a means for ridership to park their personal vehicles and board public transportation and access to the network and use of advanced Bus stops.
6. **Avenues Walk**, is part of the Park & Ride, also provides a remote location for ticket sales, as well as a lounge for passengers and bathrooms.
7. **Other administrative buildings** (“Prudential” building, “Phillips” building).
8. Passenger facilities, such as:
  - a. Eight Skyway passenger stations.
  - b. Ferry passenger facilities (Heckscher Pavilion).
  - c. Parking lots and garage.



Table 12 below provides an overview of facility assets included in this TAM Plan.

**Table 12. The JTA's Facility Assets Inventory**

Asset Category	Asset Count
Facilities, Administrative/Sales Office	706
Facilities, Maintenance	695
Facilities, Passenger/Parking Facilities, Passenger Facilities, Stations	679
Facilities, Passenger/Parking Facilities, Passenger Facilities, Docks	109
Facilities, Passenger/Parking Facilities, Passenger Facilities, Other (Heckshare)	32
Facilities, Passenger/Parking Facilities, Parking Facilities, Parking Structures	-
Facilities, Passenger/Parking Facilities, Parking Facilities, Parking Lots	257
<b>Total</b>	<b>2,478</b>

## Myrtle Avenue Operations Campus

The Myrtle Avenue Operations Campus is comprised of 10 buildings and various parking for employees and authority vehicles. An aerial picture is shown in Figure 3.

Figure 3. The JTA's Myrtle Avenue Operations Campus



A detailed listing of the buildings is in Table 13.

Table 13. Myrtle Avenue Operations Campus Buildings List

Description/Name	Location	Facility Type	Sq. Footage
Building 1 – Safety & Security	100 N. Myrtle Avenue	Administrative Facility	5,285
Building 2 – Administration	100 N. Myrtle Avenue	Administrative Facility	9,300
Building 3 – Mass Transit Operations	100 N. Myrtle Avenue	Administrative Facility	11,802
Building 4 – Service Station	100 N. Myrtle Avenue	General Purpose Maintenance Facility	9,287
Building 5 – Vault	100 N. Myrtle Avenue	Administrative Facility	942
Building 6 – Fleet Maintenance	100 N. Myrtle Avenue	Heavy Maintenance Facility	62,681
Building 7 – Preventative Maintenance	100 N. Myrtle Avenue	General Purpose Maintenance Facility	7,380
Building 8 – Connexion Maintenance	100 N. Myrtle Avenue	Heavy Maintenance Facility	4,816
Building 9 – CTC Operations	100 N. Myrtle Avenue	Administrative Facility	1,344
Building 10 – Operations Storage Facility	100 N. Myrtle Avenue	Administrative Facility	700
Building 11A – Facilities Maintenance	136 N Myrtle Avenue	Administrative Facility	7,652
Building 11B – Maintenance Storage	136 N Myrtle Avenue	Administrative Facility	8,237

Myrtle Avenue Operations Campus	100 N. Myrtle Avenue	Lanes, greenery/sidewalks, gates, fencing, fuel tanks	276,463
Myrtle Avenue Operations Campus	100 N. Myrtle Avenue	Parking Lot	610,000
<b>Total</b>			<b>1,017,933</b>

## Skyway Operations and Maintenance Center

The JTA Skyway Operations and Maintenance Center (see Figure 4) is used for the maintenance and storage of the Skyway vehicles, maintenance vehicles, and equipment. It also houses the Skyway operations center.

Figure 4. The JTA's Skyway Operations and Maintenance Center



## Armsdale Park-N-Ride and U<sup>2</sup>C Autonomous Program Center

The JTA Armsdale campus encompasses (see Figure 5) both a park-n-ride and is home to the JTA's Autonomous vehicle program (U<sup>2</sup>C) and is used for the maintenance and storage of the U<sup>2</sup>C vehicles, maintenance vehicles, and equipment.

Figure 5. Armsdale Park-N-Ride and U<sup>2</sup>C Autonomous Program Center



## Park-N-Rides—Avenues Walk, Phillips-Highway, Soutel Transit Hub, University Transit Hub

The JTA has several Park-N-Ride areas (see Figure 6) which serve as opportunities for customers to take public transit and reduce congestion.

Figure 6. Park-N-Ride Example — Soutel Transit Hub, University Transit Hub, Avenues Walk, Phillips-Highway



Soutel Transit Hub



University Transit Hub



Avenues Walk



Phillips Highway

## Jacksonville Regional Transportation Center (JRTC)

The Jacksonville Regional Transportation Center (see Figure 7) is the JTA's primary office where administrative authority functions e.g., executives, human resources, finance, procurement, etc. are performed. It also serves as a transit hub, where both bus and Skyway services interact.



Figure 7. The Jacksonville Regional Transportation Center



## Passenger Facilities

Along the two Skyway lines in downtown Jacksonville, the JTA is operating the eight stations listed below:

1. Rosa Parks Transit Station.
2. Hemming Plaza Station.
3. Central Station.
4. Jefferson Street Station.
5. Convention Center Station.
6. San Marco Station.
7. Riverplace Station.
8. Kings Avenue Station.

All stations are at the elevated level of the Skyway guideway, as shown in Figure 8 (example San Marco Station).

Figure 8. The JTA's Skyway San Marco Station



## Source of Asset Inventory Information for All of the JTA's Facility Assets

The JTA collected facility asset inventory information from two main sources:

1. Fixed asset accounting system for all assets that are inventoried there
2. For all facility assets at the Myrtle Avenue Operations Campus, the JTA conducted a facility condition assessment of all facilities between 2018 and 2021. This inventory organizes facility assets into components/subcomponents, as shown in Appendix A.1. This will be refined as part of the ongoing implementation.

During the inventory collection of these assets, various asset attributes describing these assets were collected, if available. These asset attributes include, among others:

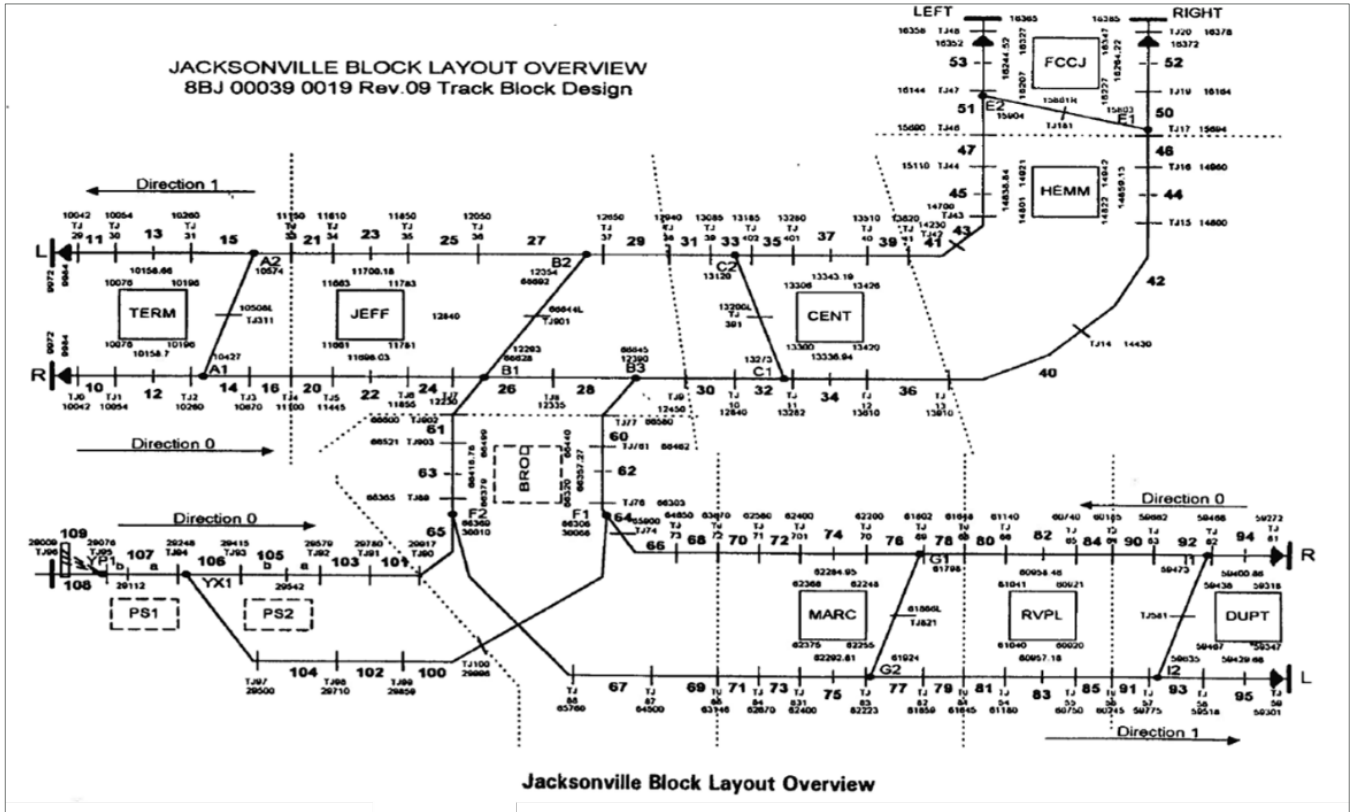
- Position in the JTA asset hierarchy.
- Manufacturer/model/serial number.
- In-service date/acquisition/build cost.
- Grant-related information.
- Physical attributes.
- Location information.
- Asset ID/tag number.
- Useful life benchmark.
- Warranty information.
- Asset criticality/SGR priority.<sup>13</sup>

<sup>13</sup> See details in Chapter 3.4.

### 3.8.2 Infrastructure

The Skyway system currently comprises two routes across 2.5-mile (4.0 km) of double-track crossing the St. Johns River on the Acosta Bridge. The total length of track is 5.165 miles segmented into 109 blocks, as illustrated in Figure 9.

Figure 9. The JTA's Skyway Block Layout



The guideway was built in five sections beginning in the mid 1980s. Most of the guideway is built on its own infrastructure and within its own right-of-way, but the segment crossing the St. Johns River is supported by the Acosta Bridge and is barrier separated from the vehicular traffic. The guideway is split into a left guideway and a right guideway, for separate, two-directional traffic. "Crossover" segments connect the two sides at strategic locations so that, for example, when a Skyway vehicle comes into a terminal station, it can cross over to the other side to make its way back in the opposite direction.

Due to the U<sup>2</sup>C project, as indicated earlier, only infrastructure assets that will carry over to the new upgraded Skyway system are part of the JTA TAM asset base. In addition, only those assets which will be continued to be utilized for the U<sup>2</sup>C post conversion are budget for replacement in the 30-year needs analysis.

Table 14 and Table 15 summarize the Skyway infrastructure assets that have been included in the TAM Plan.

Table 14. Skyway Infrastructure Assets Breakdown

FTA Category	Asset Category	Asset Class	Asset Sub-Class	Asset Type
Infrastructure	At-Grade/Ballast (including expressway)	Substructure	PSC Pile	
	At-Grade/In-Street/Embedded		PSC Pier Cap	
	Elevated/Retained Fill		RC Column	
	Elevated/Concrete		RC Pile Cap	
	Elevated/Steel Viaduct or Bridge		RC Pier Cap	
	Below-Grade/Retained Cut		Bearings	Elastomeric Bearings
	Below-Grade/Cut-and-Cover Tunnel			Movable Bearings
	Below-Grade/Bored or Blasted Tunnel			Bearings—Fixed (Rotation Only)
	Below-Grade/Submerged Tube			Pot Bearing
				RC Walls
		Superstructure	Steel Box Girder	
			PSC Girder Beam	
			RC Box Girder	
			RC Girder Beam	
		Decks	RC Deck	
			PSC Top Flange	
			RC Slab	
			RC Bridge Railing	
			Compression Joint Seal Assembly Joint w/o Seal	
			Emergency Walkway	
		Guideway	Drainage Systems	
			GuideBeam	
			Over Travel Buffer	
			Switch	
		Power & Signal	Substation	
			Ground/Signal Rail	
			Power Rail	
			ATS Loop Cable System	
			Signal/UPS	

Table 15. Skyway Infrastructure Assets

Asset Category	Asset Count
Infrastructure, Raised Guideway, Deck	1,422
Infrastructure, Raised Guideway, Piers	465
Infrastructure, At-Grade/Ballast (including expressway)	15
Infrastructure, Elevated/Concrete	847
<b>Grand Total</b>	<b>2,749</b>

Infrastructure assets for which the JTA was able to estimate a replacement value total about \$209 million which accounts for about 33 percent of the JTA's 2022 asset base.

### 3.3. PLANNED INVENTORY CHANGES

The TAM Plan asset inventory is used to determine the SGR backlog and future years SGR needs. Future SGR needs will also include lifecycle management of expansions and additions to the JTA's asset base. Additional projects that are being implemented as a result of MOVE2027 strategic plan will also generate future SGR needs, but are not captured by this 2022 TAM Plan include:

- Satellite operating facilities beyond Duval County.
- Zero Emission fleet and infrastructure investments.
- Myrtle Avenue Facilities modernization.
- Expansion of fixed routes, BRT's and mobility on demand services.
- U<sup>2</sup>C Fleets and Facilities.
- Future software tools development.
- Future transit stops, amenities and ADA Improvements.
- Street, housing, and structures investments.
- Future bicycle and pedestrian infrastructure expansion.
- Urban quick build and "Pop-Up" investments.
- Investments in the Emerald Trail.
- Development of new passenger mobility hubs.
- First Coast Commuter Rail infrastructure.
- Environmental and Sustainable investments.

### 3.4. ASSET CRITICALITY

Asset criticality is generally understood as the relative risk of a negative impact to the safe, reliable delivery of service arising from the failure of an asset. This provides the basis for a risk-based approach to asset management with consideration against the corporate objectives indirectly using financial impact and service loss measures.

The JTA evaluates asset criticality from two perspectives:

1. **Cost from (Legal) Liability**—This includes, for example, injury/death and the consequential legal dispute or any legal dispute due to safety/oversight negligence. Typical assets with potential high liability cost are, for example, train control systems and signaling systems.

The **financial impact** is measured on a rating scale using six values, as shown in Table 16.

**Table 16. Measurement Financial Impact**

Rating	Financial Impact in \$
A1	<\$100,000
A2	\$100,000—\$999,999
A3	\$1,000,000—\$4,999,999
A4	\$5,000,000—\$9,999,999
A5	\$10,000,000—\$24,999,999
A6	\$25,000,000

**Likelihood of Service Loss** — This reflects the estimated probability that a failure of an asset will lead to loss of service which can cause loss of riders and revenue, loss of customer loyalty, additional cost for bus lease, etc.

The **likelihood** of service loss is measured in six categories, as shown in Table 17.

**Table 17. Measurement Likelihood of Service Loss**

Rating	Likelihood
B1	<10%
B2	10%—24%
B3	25%—49%
B4	50%—74%
B5	75%—99%
B6	100%

All asset classes were evaluated based on these two elements. In some cases, the scoring was applied to individual assets if there was reason to apply higher or lower criticality scores.

Asset criticality scoring allows the JTA to generally understand the high-impact/high-risk assets. These assets receive higher attention for condition and performance monitoring, but also have priority when it comes to making asset replacement decisions. The list below provides an overview the JTA's highest ranked asset areas. It is measured as a combined high score on both parameters: Cost from (Legal) Liability and Likelihood of Service Loss.

- Building structure.
- Dock structure.
- Asset regulating property access.
- Electrical systems.
- Fire safety systems.
- Skyway guideway assets.
- HVAC systems.
- Rolling stock components.

A list of the 50 highest-ranked assets can be found in Appendix A.4.

These asset criticality rankings are also used by the JTA in the long-term SGR analysis to support project prioritization (see Section 5.2).



# SGR METHODOLOGY AND ASSET CONDITION

The TAM Plan establishes an ongoing procedure for measuring, monitoring and evaluating SGR. This chapter describes:

- The SGR methodology that results in agreed performance and condition measures that are used to measure SGR.
- Current conditions of the JTA's assets when this methodology is applied.

The condition data described in this chapter is maintained in the Oracle EAM database as condition and performance data attributes.

## 4.1. SGR METHODOLOGY

The FTA SGR definition is used for the TAM Plan.

### FTA SGR Definition

"State of Good Repair means the condition in which a capital asset is able to operate at a full level of performance."

To determine the JTA's SGR the following was established:

1. Asset's ULB—FTA defines ULB as, "...the expected lifecycle or the acceptable period of use in service for a capital asset, as determined by a transit provider, or the default benchmark provided by the FTA."<sup>14</sup>
2. Asset condition measurement methodologies utilizing a standardized asset condition rating scale. This TAM Plan is using the TERM asset condition rating scale with a rating scale value of "1" representing "poor condition" to "5" representing "excellent condition."

<sup>14</sup> 49 CFR Parts §625, §625.5.





### 4.1.1 Determining Useful Life Benchmarks

The JTA staff determined the ULBs for its assets through a combination of workshops with the internal SME's, external consultant led condition assessments, physical inspections, and reviewing various documents and tools published by FTA as well as documentation and discussions with OEM vendors.

In these workshops, the JTA staff members developing the TAM Plan met with department representatives responsible for the JTA's assets to understand the historical and current decision-making policies of each department related to asset replacement and how typical ULBs are determined. This included capturing if asset life-extending measures, such as bus mid-life overhauls, are being implemented.

During these discussions, FTA sources for typical or default ULBs functioned as examples, or reference, points, including:

- Default ULB Cheat Sheet.<sup>15</sup>
- ULB default values used in the TERM Lite Inventory Publisher.<sup>16</sup>
- Guidance on FTA's Asset Management FAQ-pages.
- Award Management Requirements Circular 5010.1E and Program Circulars.

### 4.2.1 Asset Condition and Rating Scale

The FTA TERM asset condition rating scale is an integer value rating scale from 1 representing "poor condition" (the value "0" can be applied to non-functioning assets) to 5 representing "excellent condition," as illustrated in Figure 10.

<sup>15</sup> <https://www.transit.dot.gov/TAM/ULBcheatsheet>.

<sup>16</sup> <https://www.transit.dot.gov/TAM/TERMLite>.

Figure 10. TERM Condition Rating Scale



Ratings of 1 and 2 are considered not in SGR where the asset’s performance is somewhat impaired. Ratings of 3 and above present asset conditions in an SGR such that assets achieve full performance levels.

Asset condition ratings are often not based on integer values, but rather score values with one decimal place which allows for better representation of actual condition values along asset-specific condition decay curves, or to aggregate scores across multiple facility assets to one score for a whole building. Ultimately, all condition ratings at the highest level are rounded to full integer values when reported to FTA.

The most common approaches to perform asset condition assessments are:

1. **Age based** – A new asset is rated at “5” on the condition rating scale with decreasing rating value until it reaches its ULB at a rating of 2.5 (or rounded to 3). Assets older than their ULB have condition ratings below 2.5 and are considered not SGR.
2. **Usage based** – Analogous to age-based condition measurements, the condition determining factor is asset usage (e.g., measured in hours performed or miles run).
3. **Condition based** – Asset condition ratings are developed by assessing the condition of the assets, usually through onsite visual and/or physical assessments during routine inspection or maintenance work or as separate condition assessment effort. The likelihood of moving from one condition state to another in the future years is then used to determine future SGR need.

The JTA plans to research and introduce, as part of its TAM Improvement Program, the area of performance management in relation to assets as a means to assess asset health. Through the use of measurement using modern techniques and technology, the JTA will be able to assess an asset’s performance as a proxy for the three common approaches to asset condition. Through best practice research, it has been determined, that if an asset is well maintained, and its key components monitored and managed for optimal performance, the asset itself will be able to last

well beyond its useful life. In addition, if economic useful life is also factored into the decision-making criteria, the JTA will be able to assess assets based on total cost of ownership and make better decisions based on asset health and whole life cost. Examples of this can be found in several industries outside of Public Transit, such as aeronautics, defense, NASA, oil and gas, pharmaceuticals, and other major transit agencies outside of North America such as London Underground and Sydney Trains.

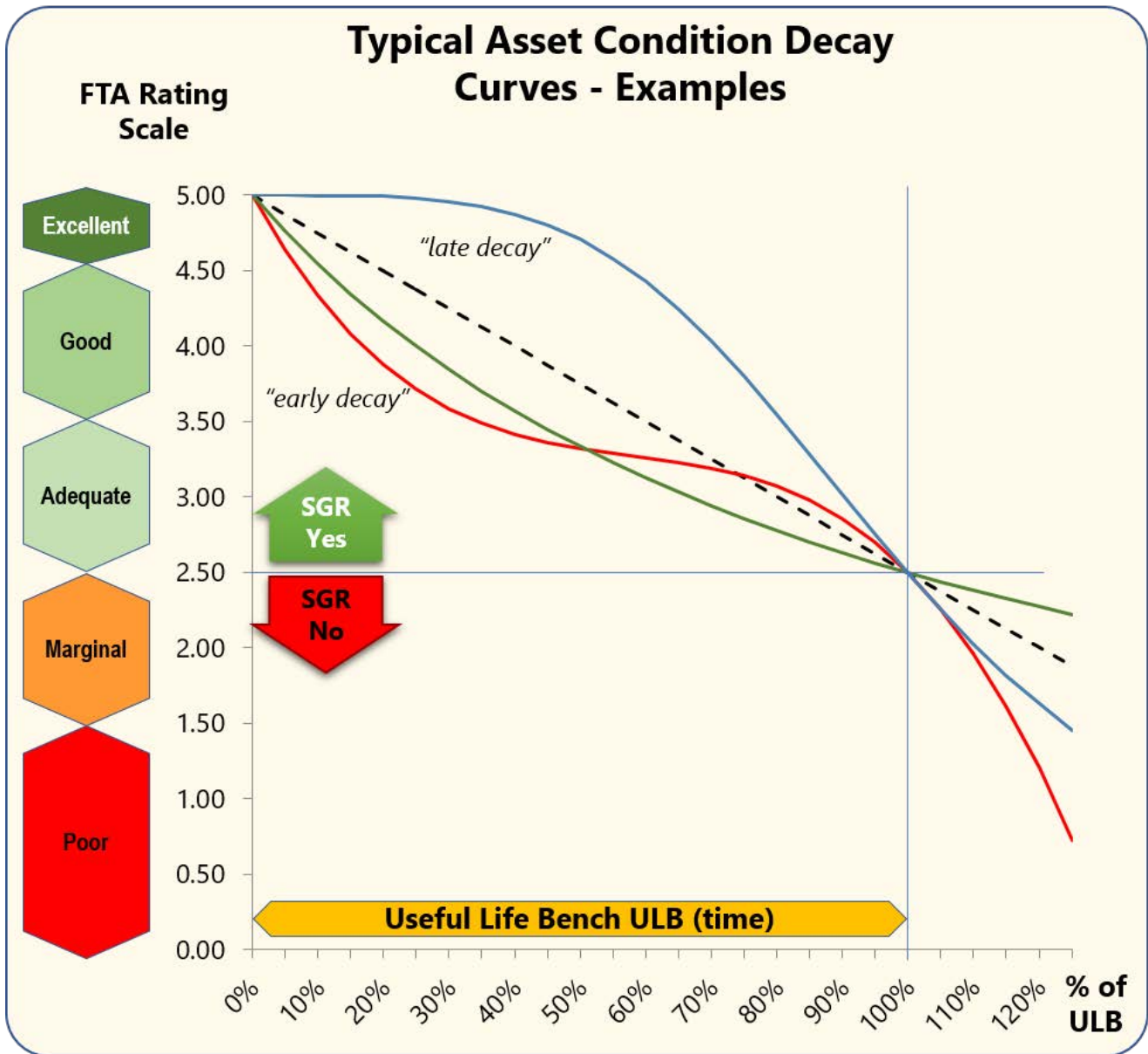
Figure 11 illustrates the concept of applying specific decay curves over the lifetime of an asset (and beyond), indicating an asset condition score at any point in time. In this model, an asset condition of 2.5 (rounded to 3) presents a condition in SGR, the minimal condition threshold to be considered in SGR.

The shape of the decay curve differs between asset types. Early decay curves are typical for assets, such as buses or light rail vehicles. Software products, for example, normally do not follow typical deterioration patterns, as they can become obsolete due to new product updates or technology developments. Late or very late decay curves better represent the decreasing condition and approaching end of a software's lifetime.

Asset-specific decay curves allow the JTA to predict an asset's future condition and indicates when to replace assets before the performance decreases to non-SGR levels. A longer-term asset management goal for the JTA is to use its operating and maintenance data to develop better asset health data which will help to provide specific "treatments" for assets to prolong its useful life. In turn this will lead to improved inspection and operating practices, longer ULB's, optimized maintenance practices, and cost savings.



Figure 11. Asset Condition Decay Curves



### 4.3.1 Use of the TERM Lite Model

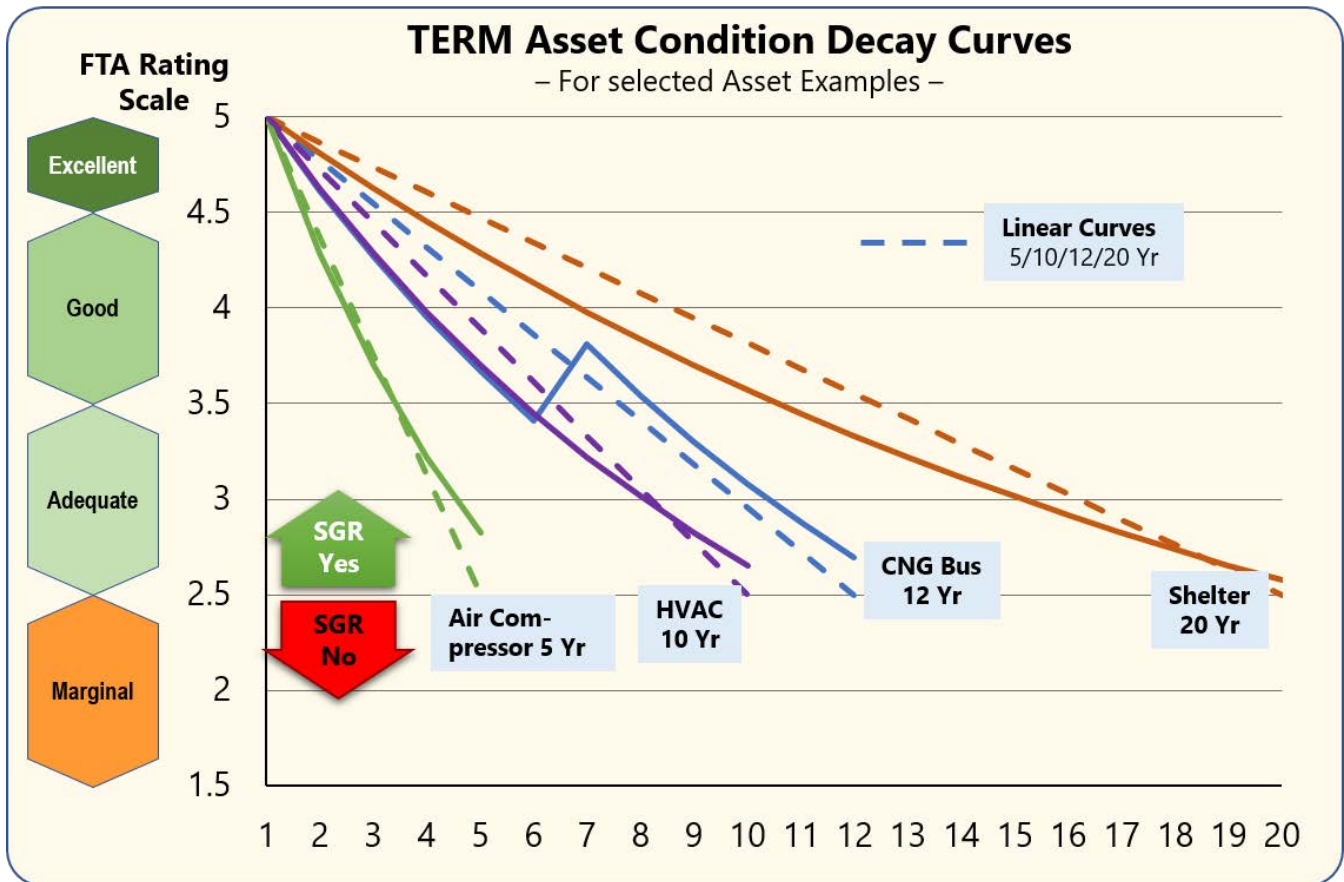
The JTA TAM Plan uses the FTA's TERM Lite model for decision support. This model primarily uses a generic decay curve which is adjusted for various asset classes, some of which are based on data collected in empirical studies.<sup>17</sup> These asset decay curves are used to forecast the asset's condition annually over time, even beyond the asset's useful life assumption.

<sup>17</sup> FTA Research on Decay Curves Between 1998 and 2006, Asset Conditions Decay over Time: 40 Foot Buses SGR Spline—Bus (High/Avg/Low PM), also referenced in "Forecasting Asset Conditions with Decay Curves," April 16, 2012, 9th National Conference on Transportation Asset Management San Diego, CA.

Figure 12 illustrates TERM decay curves for selected assets, including a linear asset decay curve as a reference point.

For example, the asset condition decay curve for the CNG bus shows an increase in the condition rating in year 7 because of the vehicle's mid-life overhaul that replaces the engine and transmission, costing approximately \$60,000 per vehicle. The rebuilds for the busses which will result in an extended useful life from 12 to 18 years is expected to cost approximately \$250k per vehicle. As discussed in Section 4.2 below, the JTA's buses have, on average, accumulated 325,119 miles across all propulsion methods.

Figure 12. TERM Asset Condition Decay Curves



An asset's performance and condition primarily deteriorates over time due to usage, other factors, such as environmental impacts (e.g., salt, rain/water, sun, road conditions, etc.), operating parameters (e.g., topography of service areas, vehicles speed during service, acceleration/braking patterns, etc.) or quality/frequency of maintenance and repairs also can affect both its condition and performance.

While the TERM decay curves offer a good approximation of an asset's useful life, specific circumstances, such as high air salt content or high vehicle mileage, affect the JTA's assets. Therefore, the JTA's goal is to routinely inspect its assets in the future to better determine asset-specific decay curves over time and build custom tools that mimic the JTA's working environment. This will allow the JTA to estimate condition ratings and forecast optimal replacement times for its various assets. This will also help the JTA to maintain a minimum asset condition rating of 3 for all its assets, as discussed in the Asset Management Policy included in the TAM Plan.

## The JTA's ULBs and Condition Assessment Approach

A summary of the ULB and condition assessment method for the key asset classes or for individual assets is presented in below in Table 18.

Table 18. Overview of TAM Plan Asset Useful Life Benchmarks

Asset Category	ULB (Years)	Condition Assessment Methodology
Admin and Maintenance Facilities	5 to 50	Condition
Passenger and Parking Facilities	5 to 50	Condition
Parking Lots	50	Condition
Docks	100	Condition
Raised Guideway	20 to 50	Condition
Guideway Equipment	5 to 40	Age/Condition
Revenue Vehicles: (Bus, Cutaway Bus, Van, Monorail, Ferry)	4 to 30	Age/Usage/Condition
Non-Revenue Vehicles: (Automobiles, Trailer, Water Craft, Skyway Vehicles, SUV, Van, Truck)	4 to 10	Age/Usage/Condition
Equipment: (Office, Storage, Shop, Motorized, Print Shop, IT, Amenities, Lifts, Hoist)	3 to 25	Age/Condition
Systems: (CCTV, Security, Drive Cam, Revenue Collection, Passenger Information, Passenger Counters, CAD/AVL/GPS, Dispatch, Scheduling, Call Center, PA, ATS, Signal, SCADA, Monitoring, Dispersion, Software)	3 to 10	Age/Condition

## Using the “Equivalent Year Built” in Calculating the JTA 2022 SGR Backlog

The TERM Lite system, which is being used to develop the needs analysis for the JTA, predominantly utilizes an age-based methodology to calculate backlog. This methodology does not take into consideration the amount of capital investment the JTA has spent on bringing the condition of assets and components into a state of SGR since 2018 and the subsequent increase in useful life remaining as a result.

Therefore, the JTA has developed a methodology to determine an “Equivalent year built” which will be used in place of the “Actual year built” across all asset types (except for Rolling Stock), which takes into consideration the current condition rating of the asset (after capital investment), its original useful life, and its years past replacement to calculate a new equivalent year built from which to base the needs analysis upon. This methodology addresses concerns that the JTA's SGR backlog would have been artificially higher for the majority of assets than actual, due to the current age-based methodology. Therefore, as part of the TAM Implementation Plan the JTA will be seeking to develop processes and tools to determine the performance of its assets based upon its maintenance and operations data.

For Rolling Stock the original in-service year and overhaul schedule to increase useful life was used to allow for the JTA to continue to smooth out the vehicle replacement cycle.

## 4.2. STATE OF GOOD REPAIR AND CONDITION ASSESSMENT BASELINE COMPARISON

This section reports the JTA's SGR baseline, in total and by asset group, applying the SGR methodology described above. The condition assessment baseline is the 2018 investment/SGR backlog and is compared with the 2022 SGR data collected for this update of the TAM Plan.

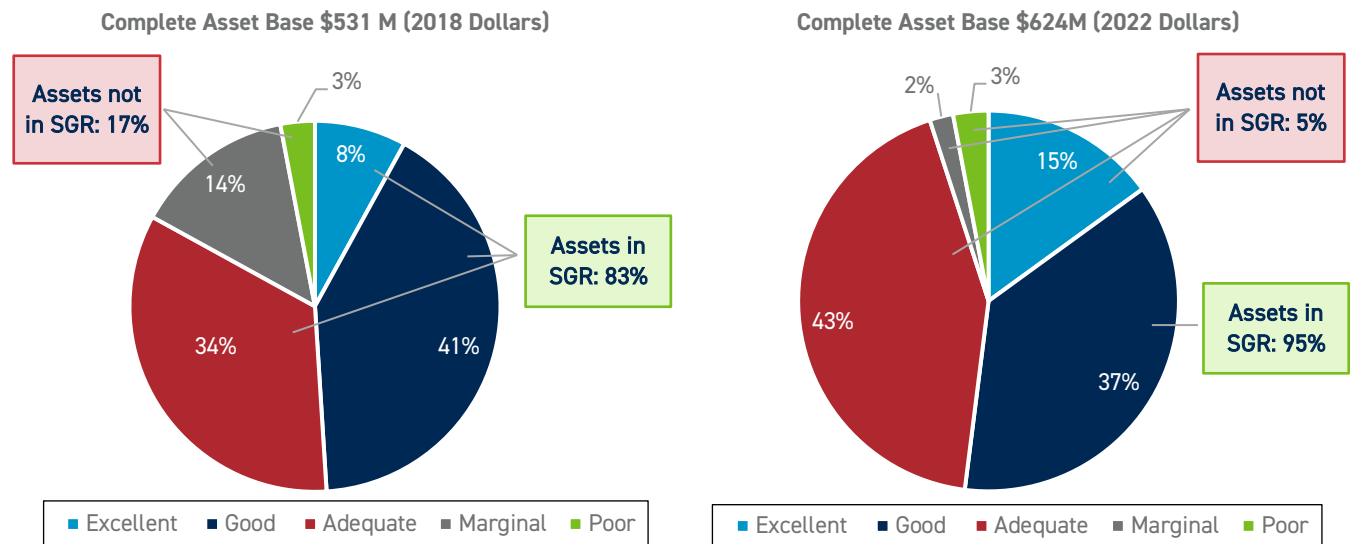
In addition, this section reports the JTA asset performance targets and measures that address FTA's reporting requirements. Performance goals and actuals are compared.

The SGR baseline uses dollar values to measure SGR versus non-SGR. While for some assets that form a homogeneous asset group (e.g., buses), it is appropriate to also indicate the number of assets in SGR, for many other asset groups, the number of assets can be misleading. IT systems or facility assets have a wide spread of asset values from a few thousand dollars to many hundred thousand dollars. The number of assets in SGR may not reflect the true need for replacements.

### 4.1.2 The JTA's SGR Baseline 2018 versus 2022

The JTA's TAM asset base valued at \$624.7 million was assessed for its condition applying the TERM condition rating scale. Overall, the condition ratings indicate that 5 percent of the JTA's assets (\$31.1 million in 2022 dollars) are currently not in SGR (assets not in an SGR are classified as "Marginal" or "Poor"). Figure 13 shows the distribution of condition ratings across all of the JTA's assets and the 2018 breakdown as a comparison. The reduction in backlog can be directly attributed to the targeted investments in Facilities, Equipment and Rolling stock since 2018 and 2022.

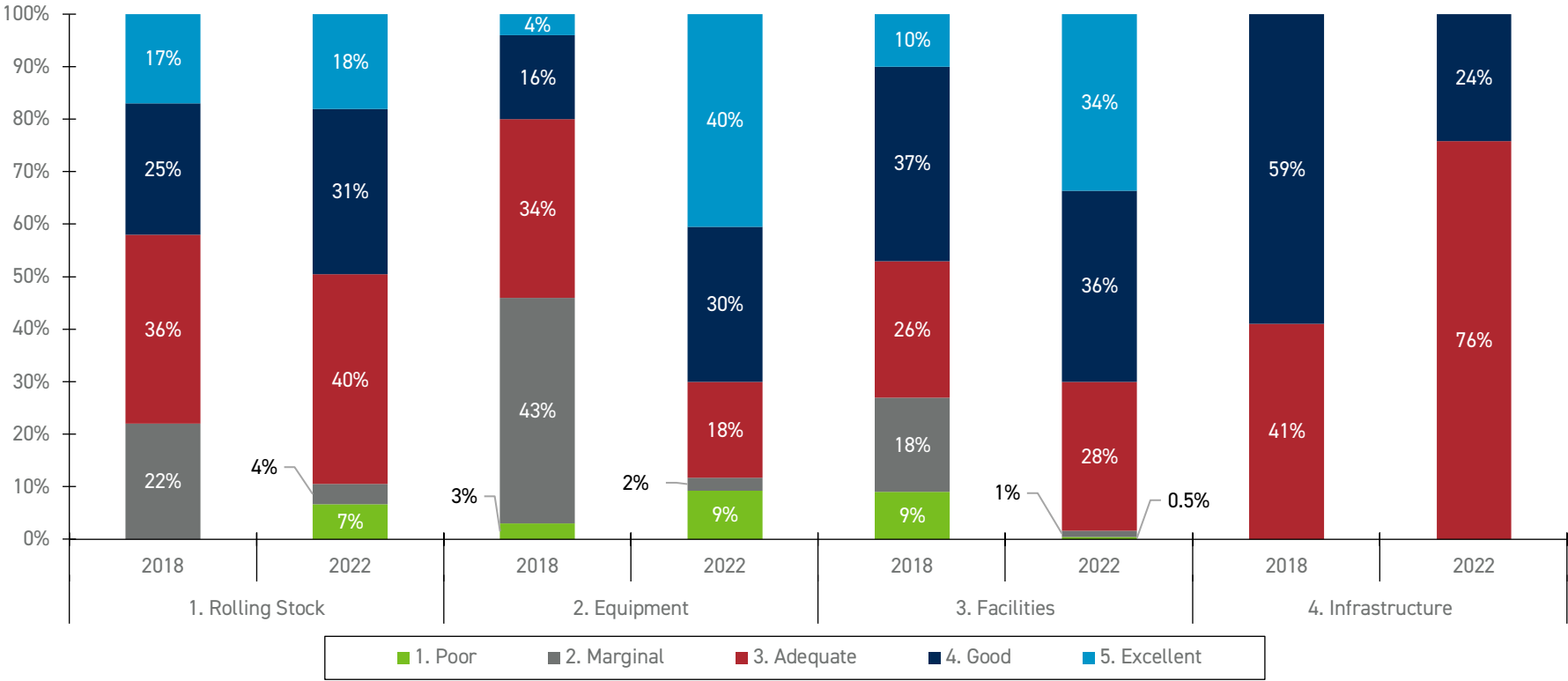
Figure 13. The JTA's 2018 and 2022 SGR Status



However, the different asset categories have varying condition rating distributions, as Figure 14 shows below.

Each asset category and its SGR status are briefly described below.

Figure 14. Asset Condition by Asset Category (by Asset 2022 Value)





## Revenue Vehicles

The condition assessment methodology for revenue vehicles is based on the ULB and the age of the asset. The TERM decay curves are used to determine future condition. Vehicles usage measured in mileage will be included in the future; however, TERM currently does not support asset usage.

The percentages of revenue vehicles in SGR by asset value are shown in Table 19.

**Table 19. Percent of Revenue Vehicles in SGR (by Asset Value)**

Asset Class	Amount (2022 \$)			
	Total Value	Total SGR	Non-SGR	%SGR
Rolling Stock, Revenue Vehicles, Motorbus, Diesel	\$50.99M	\$28.79M	\$22.20M	56%
Rolling Stock, Revenue Vehicles, Motorbus, CNG	\$105.21M	\$105.21M	\$0.00M	100%
Rolling Stock, Revenue Vehicles, Motorbus, Electric	\$2.40M	\$2.40M	\$0.00M	100%
Rolling Stock, Revenue Vehicles, Vans (CTC),	\$15.81M	\$15.81M	\$0.00M	100%
Rolling Stock, Ferry	\$8.00M	\$8.00M	\$0.00M	100%
<b>TOTAL</b>	<b>\$182.41M</b>	<b>\$160.21M</b>	<b>\$22.20M</b>	<b>88%</b>

Overall, 88 percent of revenue vehicles are in SGR (based on vehicle age and milage).

## Revenue Vehicle Asset Performance

The ULBs used for these assets are as follows:

**Table 20. Revenue Vehicle ULBs**

Vehicle Type	ULB
Motorbus	12 years (or 500,000 miles)
Cutaways/Automobiles	4 years (light duty) (or 100,000 miles)
Medium duty buses	5 years (or 150,000 miles)
Skyway Vehicles	25 years
Ferry	30 years (extended to 50 years due to continuous overhauls)

Due to its large service area, the JTA's revenue vehicles quickly accumulate mileage, particularly the JTA's bus fleet. After 12 years (the assumed useful life), the average mileage for a motorbus is more than 650,000 miles (diesel/CNG buses around 620,000/680,000 miles). If the ULB were solely based on mileage, the JTA buses would reach a 500,000-mile ULB between nine (9) and ten (10) years of age. Current maintenance practices allow the JTA to maintain the buses for their full useful lives. It is the JTA's goal to improve the performance of the motorbus fleet and extend the ULB.

Table 21. Bus Average Lifetime Mileage Across all Fleet as of September 2022

Propulsion	Average Lifetime Mileage Across Fleet
Gas	176,145
Diesel	871,314
CNG	185,200
Hybrid	380,484
Electric	12,453

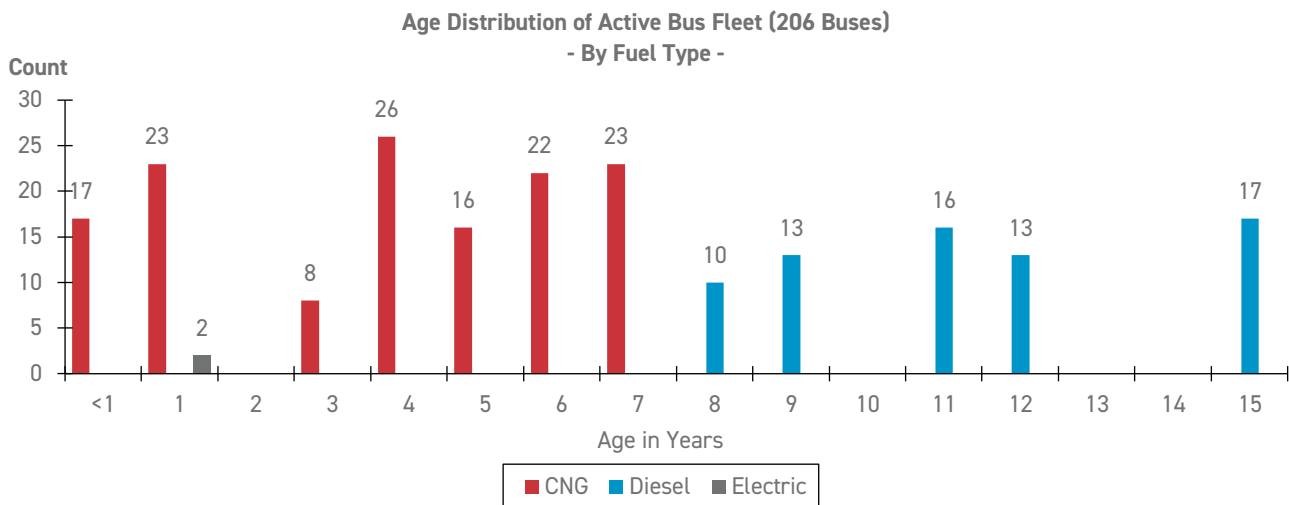
The JTA's current fleet plans also include the replacement of 20 vans and 6 cutaways for paratransit per year for the JTA vehicles. In addition, funding to commence the annual replacement of the Clay County vehicles will also need to be programmed.

The age distribution of the JTA's active bus fleet is shown in Figure 15. The JTA's buses are fairly even distributed by age with 4 spikes at 1, 4, 6, and 7 years of age (with each 20 or more buses).

The most recent Fleet Replacement Plan completed, denotes a replacement pace of seven (7) Fixed Route Buses per year with another seven (7) Fixed Route Buses to be rebuilt annually, extending their useful lives from 12 years or 500,000 miles to 18 years or 900,000 miles. This is due to the fact that the annual budget currently is only able support the replacement of seven (7) Fixed route along with seven (7) Rebuilds per year in order to maintain a total fleet in SGR over time. However, due to the recent awarding of fiscal year 2022 Federal Low-No Grant funding, the seven (7) annual rebuilds for fiscal years 2023, 2024, and 2025 will be forgone in exchange for 21 new buses instead of rebuilds. Rebuilds will be re-implemented beginning in fiscal year 2026.

Given the results of the 30-year needs analysis in Chapter 5 an increase in funding over time for the revenue fleet as a whole is recommended. In addition, with the service expansion goals as stated in the MOVE2027 strategic plan the JTA is also likely to inherit addition revenue fleets (currently unbudgeted) that will contribute toward the backlog that will also need to be programmed for replacement if the JTA is to meet its SGR goal over the next 30-years.

Figure 15. The JTA's Bus Fleet—Age Distribution



## Equipment

SGR for Equipment assets are based on the ULB, the age of the asset, and the TERM decay curve. The percentages of Equipment assets in SGR by asset value are shown in Table 22. Overall, just over 90 percent of Equipment assets are in SGR.

Table 22. Percent of Equipment Assets in SGR (by Asset Value)

Asset Class	Amount (2022 \$)			
	Total Value	Total SGR	Non-SGR	%SGR
Equipment, Non-Revenue Vehicles, Auto	\$.63M	\$.47M	\$.17M	74%
Equipment, Non-Revenue Vehicles, SUV/Van/Truck	\$3.41M	\$3.19M	\$.22M	94%
Equipment, Shops Equipment	\$1.09M	\$.99M	\$.10M	91%
Equipment, Systems/IT/Security	\$12.63M	\$10.56M	\$2.07M	84%
Equipment, Passenger Amenities	\$17.70M	\$16.51M	\$1.19M	93%
Equipment, Office Equipment	\$.75M	\$.75M	\$.00M	100%
<b>Total</b>	<b>\$36.22M</b>	<b>\$32.48M</b>	<b>\$3.74M</b>	<b>90%</b>

## Facilities

The JTA used two approaches for facility condition assessments:

1. An onsite visual assessment of physical conditions of all facility assets was conducted from 2018 to 2021, and will continue on a 4-year cycle, by a third-party contractor. The results of which were used to apply a rating scale in conformance with the FTA TERM rating scale and also fed into the agencies Capital Investment Program.
2. For bus stop facilities, the JTA used ULB and TERM decay curves to estimate the assets' condition.

**Facility Condition Assessment.** For each inspected building, an aggregated condition score was calculated by using the "Alternative 1: Weighted Average Condition" following FTA guidance document "TAM Facility Performance Measure Reporting Guidebook."<sup>18</sup>

For example, Table 23 describes the condition assessment results and building score calculation for the JTA Building 1 "Administration" on the Myrtle Avenue Operations Campus. Each sub-component received an asset condition rating which is aggregated to a condition rating for each component, and ultimately for the complete building (weighting factors are based on asset replacement values). In this case, the aggregate score is 4.73, rounded to an integer value of 5.

<sup>18</sup> <https://www.transit.dot.gov/regulations-and-guidance/asset-management/tam-facility-performance-measure-reporting-guidebook>.

Table 23. Aggregate Condition Score for Myrtle Avenue Campus Building 1

				Rating Scale	Assessment (individual =	Comment	
				1. Yes - General Scale 2. Yes - Specific Scale	assessment per unit/ group = assessment for group of assets)		
Facilities	Maintenance Facilities	Building Structure				Aggregate Assessment Score	
			Structure		2	Group	
			Doors		2	Individual	Only External and Security Doors
			Roof		2	Individual	
			Windows		2	Group	
	Electrical System					Aggregate Assessment Score	
		Electrical Panel		2	Individual		
		Lighting		2	Group		
		Fixed Generator		2	Individual		
		Transformers		2	Individual		
		Receptacle		1	Group		
		Switch		1	Group		
		Breakers		1	Group		
Fire & Safety Protection System			2		Aggregate Assessment Score		
	Fire Control Panel		N/A	Individual			
	Fall Protection System		N/A	Group			
	Pull Station		N/A	Group			
	Strobes		N/A	Group			
	Suppression System		N/A	Group			

		Rating Scale		Assessment (individual = assessment per unit/ group = assessment for group of assets)		Comment	
		1. Yes - General Scale	2. Yes - Specific Scale				
HVAC System						Aggregate Assessment Score	
	Gas Heaters		2	Individual			
	HVAC Unit		2	Individual			
	Fixed Exhaust Fans		2	Individual			
	Duct Work		2	Individual		Duct Per System	
Plumbing System			1			Aggregate Assessment Score	
	Oil/Water Separator System		2	Individual			
	Pumps		1	Individual			
	Fixtures			1	Group		All Fixtures Per Room
		Water Fountains		N/A	N/A		
		Water Closets		N/A	N/A		
		Urinals		N/A	N/A		
		Showers		N/A	N/A		
		Lavatories		N/A	N/A		
	Supply System		1	Individual			
DWV System		1	Individual		Per System		

Facilities Maintenance Facilities		Rating Scale		Assessment (individual = assessment per unit/ group = assessment for group of assets)	Comment
		1. Yes - General Scale	2. Yes - Specific Scale		
Conveyance System	Elevator		2	Individual	Aggregate Assessment Score
		Emergency Phone	N/A		
		Motor	N/A		
		Drive System	N/A		
		Car	N/A		
	Escalators		2	Individual	
		Step Treads	N/A		
		Drive System	N/A		
		Motor	N/A		
	Drainage		2	Group	
Signage		2	Group		

Table 24 presents the aggregate facility condition ratings for all facilities assessed on the Myrtle Avenue Operations Campus. Also, at the building-level, the weighting method applied to calculate the aggregate score is based on facility asset replacement cost.

Table 24. The JTA's Facility Condition Assessment Summary

Facility	Facility Weight (by Asset Replacement Cost)	Overall Building Score	Rounded Building Score
<b>Administrative/Maintenance Facilities</b>			
Building 1 "F" – Administration	7%	4.73	5
Building 2 "G" – Annex	9%	4.76	5
Building 3 "E" – Operations	14%	3.99	4
Building 4 "C" – Service Station	8%	3.64	4
Building 5 "D" – Vault	2%	4.15	4
Building 6 "A" – Fleet Maintenance	50%	3.99	4
Building 7 "M" – Preventative Maintenance	3%	4.27	4
Building 8 "B" – Connexion Maintenance	5%	4.12	4
Building 9 – CTC Trailer	1%	4.49	4
Building 10	1%	3.56	4
<b>Administrative/Maintenance Facilities Weighted Average</b>	<b>36%</b>	<b>4.10</b>	<b>4</b>
<b>Passenger/Parking Facilities</b>			
Parking Lots	100%	3.40	3
<b>Parking Facilities Weighted Average</b>	<b>64%</b>	<b>3.40</b>	<b>3</b>
<b>Total Weighted Average</b>		<b>3.65</b>	<b>4</b>

<b>Transit Asset Management Performance Measures</b>	
<b>Percent of Facilities rated below "3" on the TERM Condition Scale</b>	
Passenger/Parking Facilities	0%
Administrative/Maintenance Facilities	0%

**TERM Lite calculated SGR.** SGR calculated by the TERM model may deviate from actual assessment results because TERM applies its model-inherent decay curves while condition assessments use more up-to-date asset conditions. Table 25 shows the SGR status for all of the JTA's facilities based on the ULB, the age of the asset, and the TERM decay curves.

Table 25. SGR for Facility Assets (by Asset Value)

Asset Class	Amount (2022 \$)			
	Total Value	Total SGR	Non-SGR	%SGR
Facilities, Administrative/Sales Office	\$35.13M	\$35.13M	\$0.00M	100%
Facilities, Maintenance	\$22.87M	\$21.82M	\$1.05M	95%
Facilities, Passenger/Parking Facilities, Passenger Facilities, Stations	\$53.85M	\$52.39M	\$1.46M	97%
Facilities, Passenger/Parking Facilities, Passenger Facilities, Docks	\$18.37M	\$18.37M	\$0.00M	100%
Facilities, Passenger/Parking Facilities, Passenger Facilities, Other (Heckshare)	\$0.30M	\$0.30M	\$0.00M	99%
Facilities, Passenger/Parking Facilities, Parking Facilities, Parking Lots	\$66.56M	\$63.91M	\$2.64M	96%
<b>Total</b>	<b>\$197.08M</b>	<b>\$191.92M</b>	<b>\$5.16M</b>	<b>97%</b>

## Infrastructure

SGR for infrastructure assets is based on the ULB, the age of the asset, and the TERM decay curves. The Skyway infrastructure assets are long lasting assets with an assumed ULB from five (5) to 50 years (which includes two renovations/overhauls during its lifetime, after 17 and 34 years of asset life). None of the infrastructure assets have reached their ULBs, consequently all assets are in SGR as shown in Table 26. The JTA has collected a full inventory of the infrastructure assets used in the Skyway and as part of the 30-year capital needs analysis only the finding needs for those assets that will remain in-service post conversion for the U<sup>2</sup>C will be included.

Table 26. Percent of Infrastructure Assets in SGR (by Asset Value)

Asset Class	Amount (2022 \$)			
	Total Value	Total SGR	Non-SGR	%SGR
Infrastructure, Raised Guideway, Deck	\$55.50M	\$55.50M	\$0.00M	100%
Infrastructure, Raised Guideway, Piers	\$32.30M	\$32.30M	\$0.00M	100%
Infrastructure, At-Grade/Ballast (including expressway)	\$5.42M	\$5.42M	\$0.00M	100%
Infrastructure, Elevated/Concrete	\$115.80M	\$115.80M	\$0.00M	100%
<b>Total</b>	<b>\$209.01M</b>	<b>\$209.01M</b>	<b>\$0.00M</b>	<b>100%</b>

The other guideway assets will be replaced as part of the JTA’s plan to overhaul the entire Skyway infrastructure with innovative technology and associated assets as part of the U<sup>2</sup>C project. At this point, these new assets and their required investments are not known.



## Asset Performance against the JTA's 2021 Targets

Under the FAST Act and MAP-21, the JTA is required to submit a yearly report to the FTA that describes changes to the agency's asset conditions over the past year and provides commentary on performance compared to submitted performance targets.

Performance is reported using the standardized national performance measures established by the FTA and requires the JTA to set yearly targets, by FTA Asset Category, using the following measures:

- **Rolling Stock:** Percentage of revenue vehicles (by type) that exceed the useful life benchmark (ULB).
- **Equipment:** Percentage of non-revenue service vehicles (by type) that exceed ULB.
- **Facilities:** Percentage of facilities (by group) that are rated as not in an SGR (measured as less than 3.0 using a 5-point scale as in FTA's Transit Economic Requirements Model (TERM) Scale).
- **Infrastructure:** Percentage of track segments (by mode) that have performance restrictions. Track segments are measured to the nearest 1/100th of a mile. Performance restrictions include infrastructure defects, signaling issues, slow zones, construction or maintenance zones, or other causes, and are measured monthly as a snapshot at 9:00AM local time on the first Wednesday of the month.

The following section discusses the most recent of these performance metrics submitted to the FTA via the NTD as well as the JTA's annual performance compared to the performance targets and discusses the JTA's overall strategy for managing assets to ensure they are in an SGR across their lifecycle.

Performance illustrated is for fiscal year (FY) 2021, which runs from October 1, 2020, to September 30, 2021. Targets were revisited for FY2022 and were submitted January 1, 2022 but are not due until September 30, 2022. While the targets are set using FTA and NTD baseline performance measurement requirements, in some cases the JTA uses more refined measurements to include additional factors such as vehicle miles traveled for rolling stock to account for the large service area in which the JTA operates. The targets also account for the JTA SGR budget gaps, as these gaps leave the Authority unable to achieve the level of performance attainable with full funding.

The TAM Rule requires that transit agencies establish SGR performance measures and targets for Rolling Stock, Non-Revenue Vehicles, Facilities, and Infrastructure assets by asset class.

Table 27 shows the percentage of the JTA's assets that have met or exceeded their ULB for each asset class compared to their goals for 2021.<sup>19</sup> The SGR actuals for vehicles are based on the ULB developed by the JTA and explained above. For facilities, the actuals are based on the TERM ratings calculated during the condition assessment and are only valid for the assessed facilities.

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<sup>19</sup> SGR performance goals are based on combined ULB and mileage while performance actuals only use ULB.

Table 27. The JTA's 2021 SGR Performance Target versus Actuals

Asset Category	Performance Measure	Target	Actuals	Calculated SGR	Performance Measure
Rolling Stock	Buses	24%	22%	78%	% of fleet exceeds UL of 12 yrs. or 500k miles
	Cutaway Bus	66%	71%	29%	% of fleet exceeds UL of 5 yrs. or 150k miles
	Vans	15%	57%	43%	% of fleet exceeds UL of 4 yrs. or 100k miles
	Monorail Cars	0%	0%	100%	% of fleet exceeds UL of 25 yrs.
	Ferry	0%	0%	100%	% of fleet exceeds UL of 25 yrs.
Equipment	Automobile	91%	95%	5%	% of non-revenue service vehicles exceed UL of 4 yrs or 100k miles
	SUVs	41%	38%		% of non-revenue service vehicles exceed UL of 4 yrs or 100k miles
	Trucks	59%	76%	43%	% of non-revenue service vehicles exceed UL of 18 yrs
	Vans	100%	100%		% of track segments under performance restriction
	Boats	0%	0%	100%	% of facilities rated under 3.0 on TERM scale
Facilities	Admin/Maintenance Facility	6%	6%	94%	% of facilities rated under 3.0 on TERM scale
	Passenger/Parking Facility	3%	3%	97%	% of fleet exceeds UL of 12 yrs. or 500k miles
Infrastructure	Performance restriction	8%	0%	100%	% of fleet exceeds UL of 5 yrs. or 150k miles

Note: Target and Actual performance levels, per FTA & NTD requirements, is represented as the inverse of the expected SGR level, i.e., the expected percentage out of SGR

The JTA uses the following terminology when measuring and reporting performance:

- Target SGR: Per FTA & NTD requirements, the target percentage of assets out of SGR.
- Actual SGR: Per FTA & NTD requirements, the actual percentage of assets out of SGR.
- Calculated SGR Rating: The percentage of assets in an acceptable SGR (i.e., the inverse of Actual SGR).
- Performance Measure: ULB for given performance measure, per TAM Plan and FTA requirements.

There are several overall items to note when reviewing the JTA asset performance. Notably, the JTA has an unusually large service area relative to the size of its operations, resulting in high-mileage service for much of its fleet and a need for tailored maintenance processes. The high vehicle mileage, when combined with the regional climate and proximity to corrosive maritime air, impacts vehicle service life greater than is accounted for by the FTA baseline ULB.

The JTA has the following strategic initiatives that have the potential to reduce the SGR needs identified in the TAM Plan:

- Evaluating its approach to asset ownership to consider leasing of non-revenue vehicles.
- Incorporating advanced technological approaches to service delivery and analysis which would improve the efficiency of resources used and maintenance performed.
- Exploring potential for innovative funding sources.
- Seeking efficiencies and savings through a revised and right-sized Fleet Replacement Plan.

- Identifying and implementing alternative service options for customers.
- Route optimization projects to provide better and more efficient services with reduced capital needs.

As these are vetted, they will be factored into the TAM Plan via the amendment and SGR management processes.

There are several ongoing strategic efforts that will improve and impact overall long-term SGR, including:

- **U<sup>2</sup>C Project:** A conversion of the existing Skyway infrastructure into dedicated ROW for autonomous vehicles. This project will remove the SGR need through a project that modernizes and/or replaces the assets for which the Authority is currently responsible. The skyway rolling stock would be decommissioned and guideway infrastructure rehabbed and repurposed as a new fixed guideway.
- **Connexion:** The Authority is planning for the implementation of a strategy to reduce vehicle size for demand-responsive service to better align with demand and ridership patterns. This will reduce SGR needs and ongoing maintenance costs. The JTA expects additional operational benefits because the smaller vehicles have lower frequency of crashes and other incidents impacting service reliability.
- **Bus:** Modernization of lifecycle management procedures, as well as strategies to shift cost and extend useful life (e.g., mid-life overhauls, alternative operating models, advanced analytics, data-driven maintenance management).

These strategic efforts will have positive implications on overall SGR, however short-term implications and long-term uncertainties must also be realized including:

- Transition of fleets based on right-sizing measures will take time in order to ensure SGR can be maintained over the long-term at the cost of some short-term intervals.
- Oversight and/or direct maintenance of the fleets and operations for neighboring counties.
- Skyway ROW downtime while U<sup>2</sup>C conversion is taking place.
- The full breadth of JRTC's impact on SGR needs and operations.

## Rolling Stock

While NTD-required ULBs focus on asset years and fleet averages, the JTA measures fleet SGR using both years of service and vehicle miles traveled, on individual vehicles, to better reflect its SGR performance and needs.

The JTA manages a diverse range of rolling stock assets serving several modes of transportation: bus, demand response/paratransit (vans and cutaway buses), ferry, and monorail. The SGR performance goals (targets) are set based on anticipated asset availability and overall budget allocations. While following a long-range strategy, the annual targets are adjusted to account for anticipated repairs and service needs.

The Authority is looking to implement low and no emission propulsion technologies, such as electricity, fuel cell and compressed natural gas (CNG) for buses, which are creating new lifecycle management needs.

The JTA is taking several strategic steps at an enterprise level to enhance rolling stock SGR. First, the Authority will undertake a review of its maintenance management system (MMS) to identify a plan for broader system integrations and better use of data for rolling stock maintenance and lifecycle management.

Second, the Authority intends to use and develop new software and technology to improve monitoring of bus performance and onboard systems. This will augment preventative maintenance protocols and is targeted to reduce costly unscheduled maintenance. The JTA intends to enhance use of advanced analytics methods as well as its internal business intelligence (BI) team to help analyze, improve, and optimize fleet performance.

Overall, these enhancements to rolling stock maintenance management are expected to accomplish the following:

- Reduce costs of traditional preventative maintenance procedures.
- Upgrade existing EAM-related technology and allow for more data-driven maintenance management.
- Reduce unscheduled maintenance and the resulting costs.

Thirdly, the Authority is working on route optimization and facilities decentralization efforts to improve delivery of services to its customers as a normal cyclical process for the Authority combined with recovery efforts and lessons learned throughout the COVID pandemic. The goal of this initiative is to ensure the fleet is right sized in a way that meets customers' needs appropriately to rebuild a revitalized, maintainable, and expandable core service for customers into the future under new realities brought on by the COVID Pandemic.

Finally, management is exploring alternative means to vehicle ownership, such as leasing arrangements. Where deemed feasible and of a high return on investment, resource requirements and dollars spent could potentially be reduced via an altered fleet size and the transferal of maintenance responsibilities away from the agency. Decisions on this regard have not been made and are still undergoing internal evaluation at the JTA.

## Buses

The Authority has challenges to overcome in maintaining the SGR of buses moving forward. In FY2020, the JTA took ownership and management of regional transportation services previously owned and operated by Clay County. Soon after the COVID Pandemic hit the United States causing shortages in parts, replacements, and maintenance personnel.

Planned fleet expansion generally helps provide relief for the loss of vehicles due to catastrophic occurrences, such as accidents. However, this expansion only occurs every two to three years. It occurred in FY2021 as the Southwest Bus Rapid Transit line was brought online but is not assured to occur again for some time due to changes in ridership from the Pandemic. Such expansion is insufficient to offset annual loss of vehicles from service. It remains to be seen how these factors, combined with the noted annual SGR funding shortfalls, will impact SGR in FY2022 and beyond.

Additional fleet replacement (e.g., as a result of successful grant funding requests) occasionally factors into SGR. An example is the anticipated eight (8) new direct-replacement vehicles—eight (8) Clean Diesel buses arriving in FY2022 as relief for old diesel buses. This is expected to slightly improve overall SGR.



Additionally, the JTA budgeted eight (8) replacement buses as part of the FY2021 budget cycle which will be delivered during FY2022, six (6) replacement buses funded as part of the FY2022 budget cycle will be delivered during FY2023. The JTA has also integrated plans as part of the fleet replacement plan to begin rebuilds on buses to extend useful life of qualified vehicles to 18 years or 900,000 miles. This rebuild initiative was scheduled to begin in FY2021 but was delayed due to the Pandemic and is now expected to begin in FY2022. All of this was identified and funded as part of the fleet right-sizing project conducted by the JTA during FY2020.

Additional expansion expectations, as depicted in MOVE2027 strategic plan, will also need to be considered given the experiences of the Clay County service expansion.

### Connexion Paratransit Services (CTC)



The JTA analysis demonstrates that the vehicles currently in service are significantly larger than what is required to provide service efficiently. Transition to smaller vehicles and fleet rightsizing that match ridership demand as well as operations and maintenance needs to optimize the size and type of vehicle in the CTC fleet. This will reduce the capital cost to address SGR needs because larger vehicles will be replaced with smaller vehicles. Reducing vehicle size will simplify maintenance, reduce vehicle acquisition costs, lower ongoing repair costs, and improve driver "fit" due to smaller vehicles that are easier to operate.

In 2020, Clay County's cutaway and van fleet was integrated into a new TD fleet operated and maintained by the JTA for Clay County. From the perspective of capital planning, maintenance oversight, and performance reporting processes, the combined fleet moving forward will be reassessed as part of a 10-year plan for rightsizing the CTC fleet with the goal of reducing the number of larger, cutaway vehicles in favor of smaller vans to best serve customer needs as part of comingling paratransit and microtransit trips.

### Cutaway Buses

Cutaway rolling stock SGR is expected to improve in future years, as the JTA intends to reduce the number of cutaway vehicles in favor of vans as part of a 10-year fleet rightsizing plan.

### Vans

Van SGR is expected to improve massively in future years because the JTA plans to procure new van assets as opposed to cutaway buses as part of a 10-year fleet rightsizing plan. This includes the procurement of forty (40) vans in FY2022 to replace forty (40) cutaways buses. Additionally, funding is being requested to replace two (2) Clay County TD Vans during FY2022. This should be a major factor in improving overall Van SGR ratings as a whole for the JTA. It should also be noted that procurement of these vans is based on the addition of the vans to the State contract through CUTR.

## Monorail Cars

The JTA owns, operates, and maintains a fleet of 10 married pair monorail cars delivering its Skyway service. Target SGR performance goals are set based upon the logistical maintenance challenges noted below, and the long-term strategy of decommissioning them when the Skyway ROW is repurposed for the U<sup>2</sup>C program. Today, the entire monorail fleet has been in service less than the FTA's ULB of 25 years. However, due to the logistical maintenance challenges noted in this section, performance targets are instead based on SGR. This method is used because SGR scores more accurately reflect the true SGR of the JTA's monorail fleet than the FTA's ULB.

Currently, six (6) cars are in service and four (4) are out of service. It is important to note that the Skyway is obsolete, and when the cars are out of service, they require support from the original manufacturer, which is not available. Parts and service require extensive reverse engineering and custom fabrication. This maintenance is achieved by the JTA through a mixture of in-house and external maintenance processes. Managing SGR has entailed the JTA evolving its maintenance processes to meet the complex maintenance required to maintain service provision.

Given the JTA's U<sup>2</sup>C project, further JTA capital spending on the Skyway cars is not a priority. The Authority has been in conversation with the FTA regarding the challenges with their current monorail asset base and has been advised that a reinvestment plan is a likely course of action. Because the monorail is targeted for decommission within five years as its right-of-way is rehabbed for use by the U<sup>2</sup>C project's autonomous vehicles. The JTA will invest only the minimum amount of resources required to maintain current Skyway service levels until the U<sup>2</sup>C conversion has occurred.



## Ferry

The JTA owns a single ferry operating seven (7) days per week between Mayport Village and Ft. George Island. The Authority assumed ownership of this service in 2016, which serves as a key connection point across the St. John's River in lieu of proximal bridge infrastructure.

This performance level is expected to continue in FY2022. The asset is, however, entering its 26th year of service, and therefore in 2026 will not be in SGR using ULB of 30 years. Ferries are subject to annual U.S. Coast Guard inspection and certification to ensure safe operations. In practice, vessels that are in-service are by definition in SGR. The JTA is planning on replacing the ferry using funding from the LOGT.



## Equipment (Non-Revenue, Support Service, and Maintenance Vehicles)

The Authority has no plans to replace pool vehicles moving forward. This is likely to slightly decrease SGR in the near term. The JTA is undertaking a full review of the non-revenue vehicles to identify the potential for fleet reduction and optimization, due to the pandemic major supply chain shortages effected the achievement of the TAM SGR Targets as a result the JTA is exploring the potential to move from a vehicle purchase/ownership approach towards a leasing model. This could significantly reduce SGR needs since maintenance requirements would be transferred away from the agency and maintenance resources previously used to maintain the equipment fleet would be focused on other priorities throughout the agency.

### Automobiles

Vehicle aging combined with a reduction of automobile assets resulted in a lower target SGR rating. The lower SGR is accepted by the JTA and is to be expected based on the fleet management strategies noted above. The JTA notes that though the SGR Target is lower based on required measures of age and mileage all vehicles continue to be maintained in a safe operational condition.

### Other Rubber Tire Vehicles (SUV/Van/Truck)

The wheeled non-automobile fleet's SGR moving forward is expected to increase in FY2022 and the decrease in years beyond consistent with the JTA strategy and investment plans.

### Boats

The JTA maintains a single boat which remained in a good SGR in FY2021 and met performance targets. This asset is entering its 7th year of service compared to an 18-year ULB and is expected to remain in SGR for the foreseeable future.

## Infrastructure

The JTA infrastructure assets consist of an elevated railway fixed guideway which supports Skyway service operations. In FY2020 the Authority was forced to shut down guideway services due to the COVID Pandemic. The shutdown period was utilized to bring the fixed rail guideway system up to date on maintenance needs, and after implementing multiple

safety measures to deal with the effects of COVID returned to service late in FY2020. The combination of these factors resulted in an exceeded performance compared to the FY2021 target.

The JTA will maintain a safe, functioning monorail and associated infrastructure until the U<sup>2</sup>C modernization results in decommissioning of the monorail service.

In support of the U<sup>2</sup>C project, the JTA will overhaul the entire Skyway system, footprint, and associated infrastructure as part of a transition towards the new autonomous vehicle network. The current guideway will be overhauled down to the substructure and rebuilt as elevated roadway on which new autonomous vehicles are to be routed using funding from the local option gas tax. Though the U<sup>2</sup>C transition is not expected to occur for several years, there will be testing and evaluation efforts in the nearer term which are expected to compromise SGR scoring due to portions of track being taken out of service for trial and analysis.

## Facilities

Over 3.27M square feet across 45 facilities are maintained by the Authority; 0.248M square feet are allocated to admin/maintenance facilities, and 3.024M square feet are allocated to parking/passenger facilities. Performance targets and scoring are calculated based on the total square footage of facilities in acceptable SGR based on the TERM scale.



The JTA is making strategic progress towards improving the long-term SGR and performance of its facilities assets. The Authority is exploring the renovation and conversation of legacy facilities to accommodate the new U<sup>2</sup>C autonomous vehicles. The agency also continues to evaluate potential innovative funding sources and operating models for facilities elements such as the bus washes, where efficiencies could be gained, and opportunities afforded, to refocus maintenance resources on other priorities.

## Administrative/Maintenance

The JTA aims to improve the future SGR of its administrative and maintenance buildings through several capital projects currently in progress as part of the CARES Act and a new Bus and Bus Facilities Grant aimed at improving SGR for several maintenance facilities across the Agency during FY2021 and FY2022. The Authority also continues to recognize that operational changes will result in new and/or different facility requirements that will reduce or change SGR, such as:

- Conversion of relevant maintenance facilities to handle automated vehicles instead of only buses.
- Fleet right-sizing project which will change the overall needs of the Agency.



## Parking/Passenger

Performance was positive after concerted efforts to make property improvements at park-n-ride and parking lot facilities over the last several fiscal years, which were previously out of SGR. A project is currently under way to overhaul the Myrtle Campus Bus Lot parking facility, which accounts for over 33 percent of measured assets in the combined parking/passenger facilities asset class. A phased approach to rehabilitating the Myrtle Campus Bus Lot has been chosen to spread cost over time, which will result in a maintained SGR rating over multiple fiscal years until the rehabilitation is completed.

### 4.3. CURRENT STATE-OF-GOOD-REPAIR BACKLOG

All of the JTA's assets that are not in SGR represent the "investment/SGR backlog," Fiscal Year (FY) 2022 values. The JTA's total investment/SGR backlog is valued at approximately \$31.1 million. With \$15.1 million in assets entering the SGR backlog in 2022 alone. The remaining \$16.1 million fell out of SGR prior to FY2022. Figure 16 illustrates the total investment/SGR backlog value by asset category.

Figure 16. The JTA's Investment/SGR Backlog by Asset Category

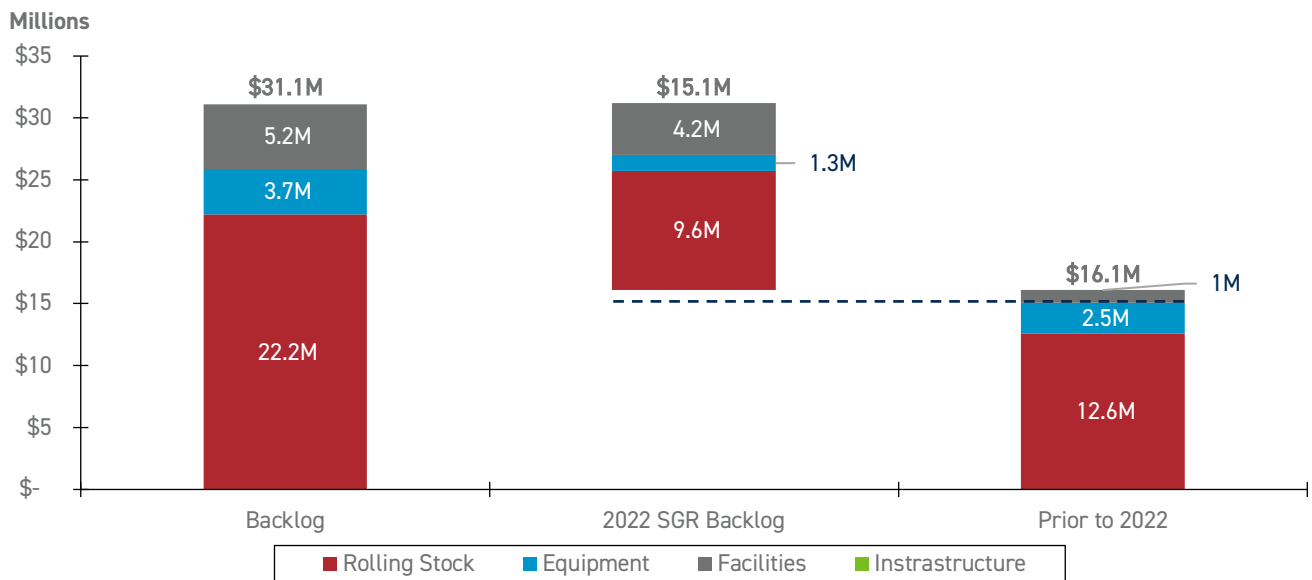


Table 28 provides a summary and examples of the over 2,500 assets in the FY2022 investment/SGR backlog by asset category.

**Table 28. Assets not in SGR by Asset Category**

Category	Asset Classification	Total Value (2022 Dollars)
Equipment	Facilities, Equipment, MIS/IT/Network Systems, Computers/Hardware	\$1.96M
	Facilities, Equipment, Maintenance, Lifts—Portable	\$0.10M
	Systems, Electrification	\$0.27M
	Systems, Communications, Safety and Security	\$0.09M
	Systems, Communications, Safety and Security, CCTV	\$0.02M
	Stations, Complete Station, Bus	\$0.01M
	Stations, Building	\$0.05M
	Stations, Building, Building Components, Shelter	\$0.61M
	Stations, Signage & Graphics, Electronic	\$0.26M
	Vehicles, Non-Revenue Vehicles, Car	\$0.17M
	Vehicles, Non-Revenue Vehicles, Truck	\$0.22M
	Total Equipment	\$3.74M
Facilities	Facilities, Buildings	\$2.29M
	Facilities, Buildings, Building Components, Electrical	\$0.04M
	Facilities, Buildings, Building Components, Plumbing	\$0.03M
	Facilities, Buildings, Building Components, HVAC	\$0.16M
	Facilities, Buildings, Building Components, Roof	\$0.06M
	Facilities, Buildings, Building Components, Access and Parking	\$0.03M
	Facilities, Buildings, Building Components, Fencing	\$0.02M
	Stations, Building, Building Components, Lighting	\$0.01M
	Stations, Access, Parking, Lot	\$2.53M
	Stations, Signage & Graphics	\$0.01M
	Total Facilities	\$5.16M
Rolling Stock	Vehicles, Revenue Vehicles, Bus, Bus (40 ft)—Diesel	\$22.20M
	Total Rolling Stock	\$22.20M
<b>Grand Total</b>		<b>\$31.10M</b>

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# STATE OF GOOD REPAIR ANALYSIS – 30-YEAR SGR NEEDS

This chapter analyzes the SGR capital needs over the next 30-years. The future SGR need is determined by:

- How assets perform over time; this is the relationship between their remaining service life and their age, use, condition, and level of maintenance.
- The starting backlog.
- The level of funding available each year to address the backlog and maintain assets in SGR.

This section describes the annual SGR needs and predicts SGR needs beyond the TAM Plan horizon between 2022 and 2052, based on financial planning and budgetary assumptions regarding the funds that will be available to address SGR needs.

It is organized into the following sections:

- Description of the decision and prioritization process.
- Description of the decision and prioritization support, including the prioritization criteria.
- 30-year forecast of annual SGR capital needs.
- Estimates of available funding levels for SGR investments.
- 30-year SGR investments based on available funding (funding constrained SGR investments).
- Analysis of required funding levels to address investment/SGR backlog and annual SGR capital needs.



## 5.1. DECISION SUPPORT AND PRIORITIZATION PROCESS

The JTA developed a five-steps process (see Table 29) supported by the SGR baseline and analysis results to create a short and mid-term capital investment plan (prioritized investments) that also considers expected funding levels. This initial process will be modified and improved over time, as needed.

Table 29. Initial 5-Step Decision Support and Prioritization Process

Step	Description	Comment
Step 1	<ul style="list-style-type: none"> <li>Develop prioritization methodology</li> </ul>	Currently based weighted scoring model using asset condition and asset criticality (using two parameters: cost of liability, likelihood of service loss)
Step 2	<ul style="list-style-type: none"> <li>Utilize the Transit Economic Requirements Model (TERM) model to create annual and multi-year lists of prioritized investments</li> </ul>	Initial years will use TERM prioritization, later potentially alternative approach
Step 3	<ul style="list-style-type: none"> <li>Consolidate investment lists to capture initial multi-year and annual capital investment plan (CIP), these serve as draft suggestions</li> <li>Compare CIPs to available funding levels</li> </ul>	TERM outputs will be developed on annual and multi-year basis and consolidated. Include CIP suggestions from previous years.
Step 4	<ul style="list-style-type: none"> <li>Review CIPs (by the JTA staff and leadership):</li> <li>Review higher priority investments and “manually” lower priority rating, if appropriate</li> <li>Review low priority investments and “manually” elevate priority to higher levels, as appropriate</li> <li>Combine investments to concerted investment program to leverage synergies</li> </ul>	The JTA staff (with CIP responsibility) and leadership will manually review CIP drafts to account for circumstances that the automated prioritization process cannot cover (e.g., overwrite TERM prioritization, combine multiple asset replacements at one facility, shift investments across years to avoid high SGR needs in certain years)
Step 5	<ul style="list-style-type: none"> <li>Develop final annual and multi-year CIP approval if needed.</li> </ul>	

## 5.2. DECISION SUPPORT TOOL

Per FTA’s TAM Rule, the TAM Plan should include “a description of any analytical processes or decision-support tool used to estimate capital investment needs over time and to develop the investment prioritization.”<sup>20</sup> This decision support tool is described below.

Funding for SGR investments will be limited and as such the JTA will strategically invest in those assets that pose the most unacceptable risk to the Authority, a decision-support tool is used to support capital planning and prioritization by considering SGR needs under different investment levels (referred to as scenarios). This provides information to assist the JTA to allocate available investment dollars to high-priority assets.

The JTA chooses to use the FTA’s Transit Economic Requirements Model (TERM), which is available as a “Lite” version, to use as a PC-based application as the decision support tool, although limited in the functionality that the JTA desires

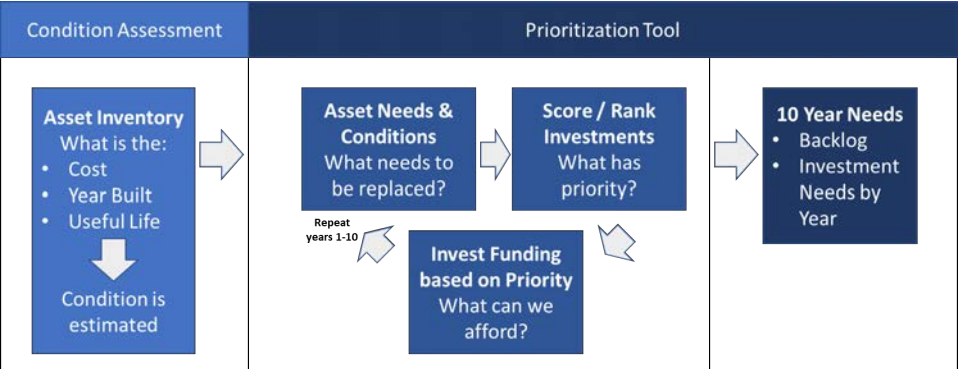
<sup>20</sup> 49 CFR §625.25(b)(3) (FTA Transit Asset Management Final Rule), July 26, 2016.

(such as basing prediction on asset performance, investment, and resulting condition with respect to better maintenance practices, rather than age) it is currently used until further investment in developing a successor tool is made available. This section describes how FTA’s TERM Lite model was used to estimate the JTA’s capital investment needs over the 30-year horizon and describes the asset prioritization method used to rank assets in terms of most critical to least critical.

### 5.1.2 TERM Lite Model

TERM Lite (or TERM) is a Microsoft Access-based analysis tool provided by the FTA that is used to evaluate the asset inventory data stored in the JTA’s asset inventory (see Chapter 3). A conceptual model of TERM Lite is depicted in Figure 17. TERM Lite outputs are based on inventory data, age, but not field condition assessments. As such, the outputs depend on the quality and completeness of the inventory input data. Presently, the FTA has confirmed that they will not be investing in or providing an update the TERM Lite software.

Figure 17. TERM Lite Conceptual Model



The tool next simulates the ongoing aging of these assets over the upcoming 30-years (2023-2053) to determine the level of investment required to replace (or rehabilitate) assets that will reach the end of their useful life over this 30-year period.

Assets’ historic acquisition cost were escalated to FY2022 values using current the JTA financial records, inflation increases, SME input, and existing replacement values based on recent purchases and current contracts. Between 2019 and 2021, due to the fluctuation of inflation (see Table 30) the following rates were applied to any asset replacement or overhaul cost subject to the year the asset had its last replacement value. For example, assets which had a replacement value collected in 2018 (which was the case for the initial 25 percent of facilities condition assessment), an overall increase of 17.2 percent was applied to bring the value to 2022 dollars.

Table 30. Inflation Table

Year	Percentage
2019	1.4%
2020	0.6%
2021	5.8%
2022	9.4%
<b>Total</b>	<b>17.2%</b>

For decision support purposes, an unconstrained funding scenario is presented in this TAM Plan. This can be used to show the funds required to eliminate the entire SGR backlog. However, the reader is reminded that this number is “static” and deterioration of assets and therefore its replacement cost is “dynamic,” the value provided is used for discussion purposes. In the unconstrained funding scenario, the tool fully eliminates the investment/SGR backlog while also addressing all other normal replacement needs (e.g., asset replacements, rehabilitations, and other minor capital needs) over the 30-year analysis period. The output of this “unconstrained” analysis is the dollar values needed to keep the JTA’s asset base in SGR, year by year. This is referred to as the “SGR Capital Need” (or just Capital Need). This analysis is described in Chapter 5.

However, using TERM with actual or estimated funding amounts—which can be (and often are) below the annual Capital Need—allows for the use of TERM’s prioritization tool. In such “financially constrained” scenarios (i.e., with insufficient funding to address all needs), TERM helps to determine 1) which assets will and will not obtain scarce funding over the 30-year period of analysis, and 2) what the impact is of this constrained funding on the investment/SGR backlog and asset conditions for those assets that do not obtain any reinvestment funding. The criteria used for asset prioritization are explained in further detail in Section 5.3.

The analysis of using estimated funding to invest into the current investment/SGR backlog and annual Capital Need is described in Section 5.4.

Finally, the tool output includes an assessment of both current asset conditions (estimated conditions based on decay curves) and deferred investment needs, as well as a forecast of future asset conditions and needs subject to the assumed level of future funding (either unconstrained or some constrained level of reinvestment).

## 5.3. ASSET PRIORITIZATION CRITERIA

The JTA uses TERM Lite as a prioritization tool to provide input into the process for determining which assets should receive investment funding.

The TAM Plan prioritization of assets is based on three weighted criteria (see reference to asset criticality above in Section 3.4) that are aggregated to an asset-specific score:

- **Asset Condition (weight 60 percent):** Condition score assigned to assets in TERM Lite by age and decay curves.
- **Cost Criticality from (Legal) Liability (weight 20 percent):** This includes, for example, injury/death and the consequential legal dispute or any legal dispute due to safety/oversight negligence.
- **Likelihood of Service Loss Criticality (weight 20 percent):** This reflects the estimated probability that a failure of an asset will lead to loss of service which can cause loss of customers and revenue, loss of customer loyalty, additional cost for bus lease, etc.<sup>21</sup>

The asset condition score is calculated by TERM using asset decay curves. The JTA has already used the ratings for “Cost from (Legal) Liability” and “Likelihood of Service Loss” in previous prioritization efforts as part of the capital

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<sup>21</sup> TERM only operates with a 1 to 5 rating scale for the prioritization criteria. For both, Cost from (Legal) Liability and Likelihood of Service Loss, the two highest rankings (A5 and A6, B5 and B6) were combined to allow TERM to use these values.

planning and budgeting process. Consequently, this established method was expanded to all asset groups and individual assets in the TAM Plan inventory.

While every asset has constant scores for “Cost from (Legal) Liability” and “Likelihood of Service Loss,” the value for asset condition decreases over time as the asset ages. The asset condition score approaches 2.5 as the asset’s ULB is reached, and resets to a 5-condition rating when replaced. The combined prioritization score (condition / liability / likelihood) consequently changes every year due to the annually adjusting condition score.

The TERM prioritization—in years when available funding is less than SGR need (annual need plus backlog in that particular year)—uses the prioritization scores to allocate the limited funding to the highest-scored asset investments.

From the criteria above, TERM calculates a priority score of 1-100 for each asset, with 1 being the lowest priority and 100 being the highest priority. For example, Table 31 illustrates the range of priority scores TERM assigned to the assets up for replacement in FY2022. TERM selected the highest ranked assets to be replaced and brought to an SGR. The assets that are not selected for replacement remain not in SGR and enter the FY2019 backlog. Assets that are not up for replacement are still given a score; however, no action is taken.

**Table 31. 2022 TERM Prioritization Scores**

Asset Name	Score	Action
Skyway Starter Line – ATS Loop Cable System Block 11	68.58	Replace
Skyway North Line – ATS Loop Cable System Block 39	68.58	Replace
Skyway O&M Line – ATS Loop Cable System Block 100	68.58	Replace
Skyway River Line – ATS Loop Cable System Block 60	68.58	Replace
Skyway South Line – ATS Loop Cable System Block 82	68.58	Replace
JRTC Campus Exterior Rolling Door	64.07	Replace
JRTC Campus Electrical Transformers	64.07	Replace
JRTC Campus Electrical Conduit	64.07	Replace
JRTC Campus Fire Sprinkler System	64.07	Replace
JRTC Campus Pedestrian Bridge Pier 1	66.98	Replace
IBT Campus Fire Sprinkler System	64.07	Replace
IBT Campus Exterior Access Doors	64.07	Replace
IBT Campus Exterior Windows	64.07	Replace
Myrtle Campus Building 4 – Wash Brushes 1	66.30	Replace
2015 Turtle Top Cutaway – #CC113	66.68	Replace
2014 Ford Turtle Top E450 Odyssey – #938	66.68	Replace
Dodge Braun Van – #610	68.50	Replace
Gillig G31D102N4 – Fixed Route Bus 2715	65.30	Replace
Acer 22" Monitor	66.16	Replace
Acer B246HL	66.16	Replace
Armsdale Building – HVAC Air Handler Unit	58.24	Backlog
Avenues Walk PNR – Duct System	58.24	Backlog
Avenues Walk PNR – Exhaust Fan EF-1	58.24	Backlog



Asset Name	Score	Action
Armsdale Parking Lot – High Security Slide Drive with Motor	58.24	Backlog
JRTC Campus Security Access System: 1 <sup>st</sup> Floor Card Reader RP40 SE Black	58.24	Backlog
JRTC Campus Security Access System: 2 <sup>nd</sup> Floor Card Reader Symmetry Blue 939M-KP Wallswitch Reader with Keypad	58.24	Backlog
JRTC Campus Security Access System: 1 <sup>st</sup> Floor Controller Symmetry M2150 8DBC Panel	58.24	Backlog
JRTC Campus Security Access System: Fingerprint Biometric Reader BioEntry W2	58.24	Backlog
JRTC Campus CCTV System Software	58.24	Backlog
JRTC Campus Metalaire HVAC Unit SP0004047-2	58.24	Backlog
Concrete U-shaped Stairs with Step Handle	29.92	No Action
Myrtle Campus Building 8 – Interior Ceilings	29.92	No Action
Avenues Walk PNR – Lavatories 109	29.57	No Action
Myrtle Campus Building 1 – DWV System	29.57	No Action
IBT Building – Signage	28.45	No Action

## 5.4. CAPITAL NEEDS AND STATE OF GOOD REPAIR

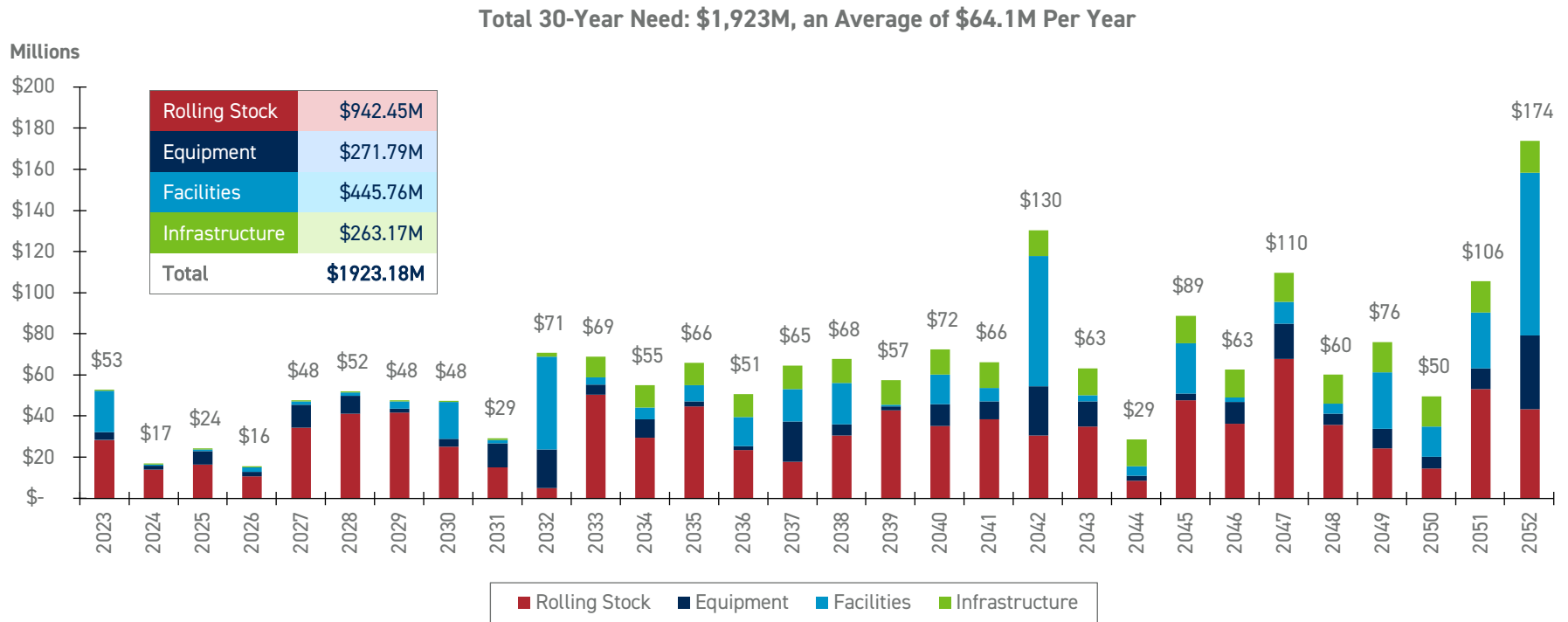
This section discusses the JTA's annual capital SGR needs, how the JTA's available funding will affect the SGR backlog, and the annual capital needed to keep assets in SGR over the 30-year period.

### 5.1.4 30-year Capital SGR Needs

Every year a number of assets reach their ULB and are up for replacement. The annual capital SGR need is the dollar value of assets that need to be replaced in a particular year. As shown in Figure 18, the JTA's capital SGR needs fluctuate from \$16 million to \$174 million between FY2023 and FY2052, for a total of \$1.92 billion. This total also includes SGR needs associated with mid-life overhauls, guideway infrastructure renewals where applicable.

When aligning the 2022 TAM Plan with the JTA's MOVE2027 strategic plan the affects of the LOGT investment (currently assigned to Ferries and Guideway Infrastructure) upon the JTA's asset base (Infrastructure) was analyzed and its overall influence on the overall backlog of the Authority.

Figure 18. Annual Capital SGR Needs 2023-2052 (With LOGT Funding)



Without the LOGT funding (see Figure 19) an expected spike in capital needs occurs in 2047 predominantly due to all infrastructure guideway assets aging out. It will be essential for the Authority to secure funding to address this deficiency prior to the assets reaching a state of disrepair and ultimately produce a less than desirable performance as well as pose a foreseeable and preventable safety risk. But, with the LOGT, the capital needed to address the Guideway is dispersed more manageably across several years.

The remainder of the 30-years needs analysis takes into consideration that the LOGT will be available to the JTA.

Figure 19. Annual Capital SGR Needs 2023-2052 (Without LOGT Funding)

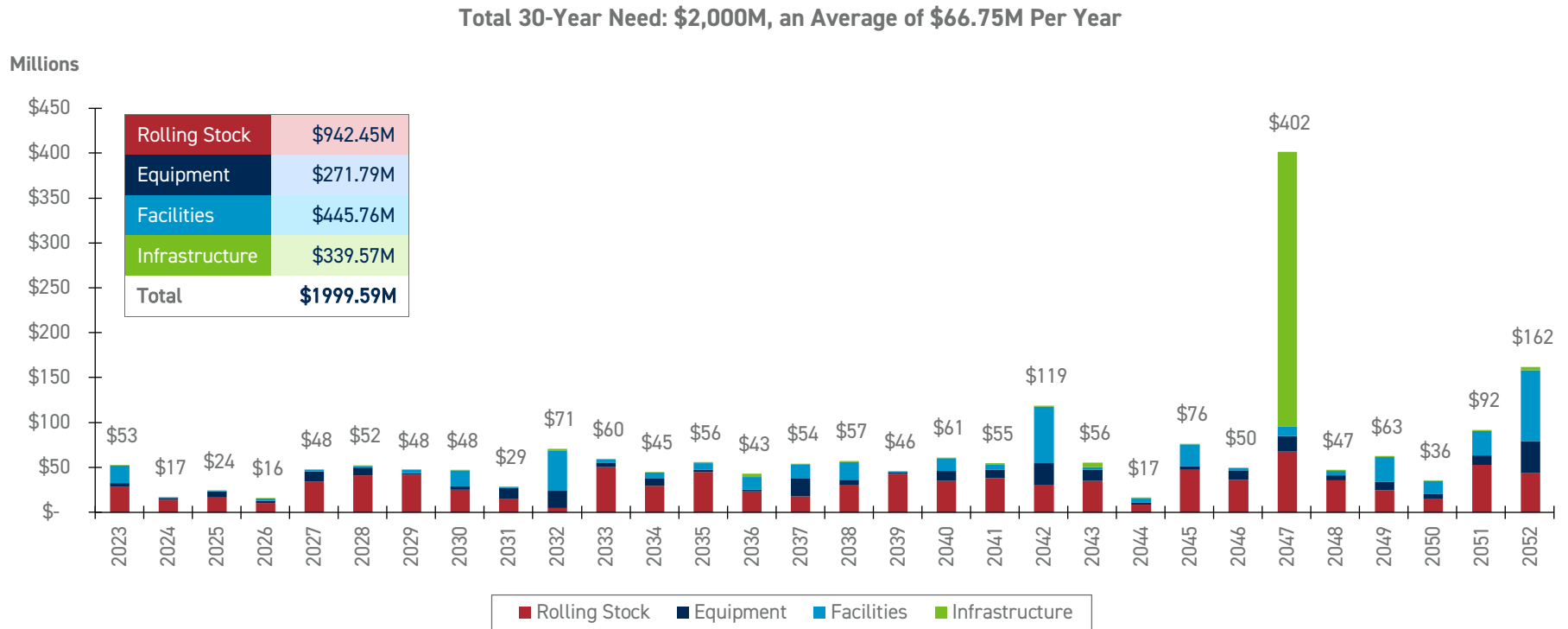
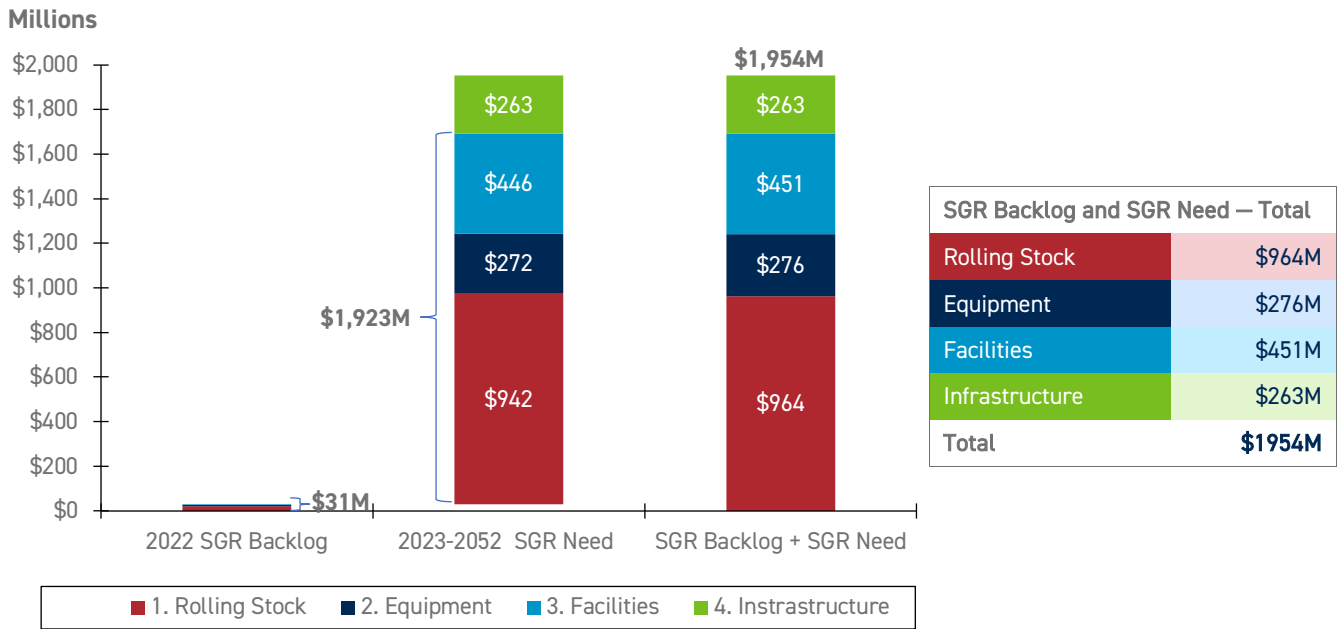


Figure 20 illustrates the JTA's SGR backlog and annual capital need over the TAM Plan reporting period (FY2022–FY2052). This includes the 2022 SGR backlog of \$31.1 million and the total capital need of \$1.92 billion from FY2023 to FY2053. The total need for the FY2022–FY2052 period is \$1.95 billion.

Figure 20. SGR Backlog and SGR Need over the TAM Plan Reporting Period



## 5.2.4 Capital Funding Availability

The SGR analysis is undertaken by establishing a 30-year budget for addressing SGR needs. This budget is based on assumptions about Federal and local funding that will be available to finance SGR capital needs. These assumptions were made based on a review of historical funding, including the source and use of funds. This was supplemented by consideration of funds already committed to capital projects. The intent is to identify for planning purposes an estimate of future funding availability to address SGR needs.

The JTA's financial planning is typically performed on an annual basis (and rolling 5-year forecast) and Federal funds identified over the life of the Federal transportation bill. The 30-year funding prediction applies the sources of funds available to the JTA through current Federal funding programs and the JTA revenue sources. These include:

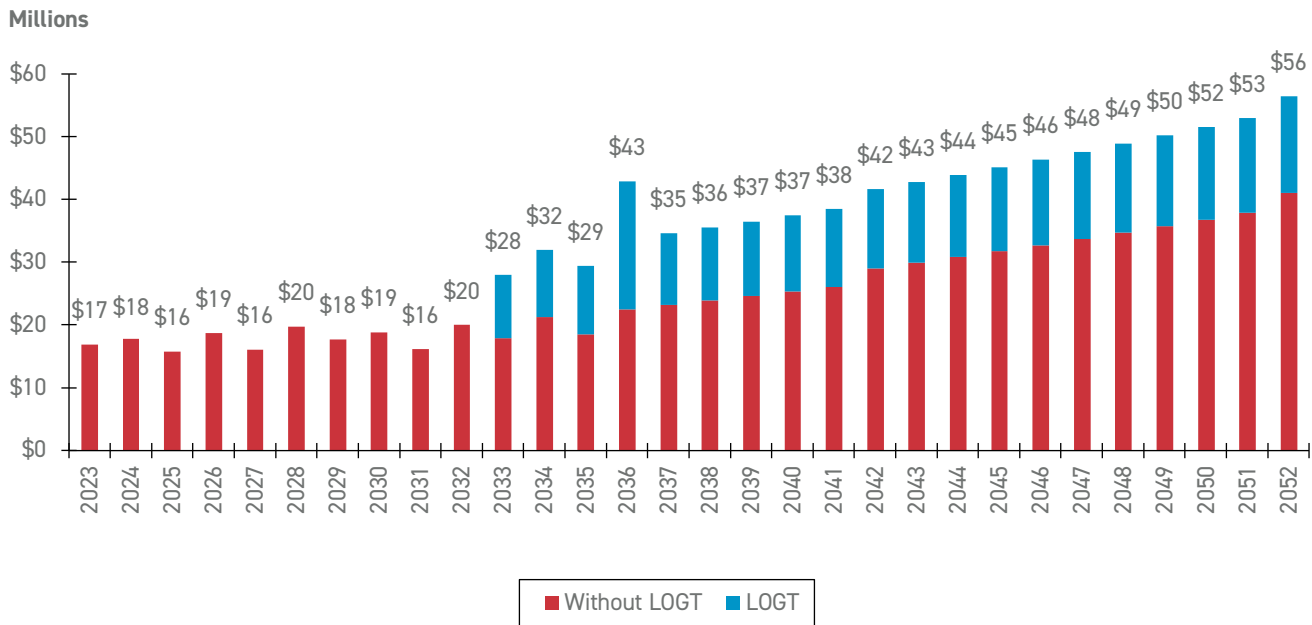
- FTA Section 5307 formula.
- FTA Section 5339 formula.
- FTA Section 5337 formula.
- FTA Section 5310 formula.
- FTA Section 5311(f) formula.
- CARES.
- RAISE.
- Passenger Ferry Grant.
- Bus Facilities and Fleets Grant (Discretionary).
- Low or No Emissions Grant (Discretionary).

- Local Real Estate Sales.
- Local Option Gas Tax (LOGT).
- Passenger revenues.

Available funding is somewhat predictable for FY2022 to FY2024. For the years until FY2052, the funding levels are assumed to remain at the FY2022 level with an annual increase of 2 percent inflation assumed (similar escalation assumption as with the asset replacement values). The funding forecast includes alternating ferry overhaul funding; consequently, funding fluctuates from year to year in a regular pattern.

For the TAM Plan, it is assumed that this funding can be applied to any SGR asset. Based on the above assumptions, the JTA's total SGR funding level estimate for the 30-year period is \$1.02 billion, which averages to about \$34 million per year. Figure 21 shows the JTA's estimated available funding for FY2022 through FY2052 with and without LOGT funding for the update of Skyway guideway infrastructure and the purchase of a new ferry.

Figure 21. The JTA's Assumed Funding Availability, FY2023–FY2052



Section 4.3 explained that the JTA's SGR capital need totals \$1.95 bn, comprising the 2022 investment/SGR backlog plus the SGR need for each year between 2023 and 2052. However, estimated funding levels for this planning period amount to only \$1.02 bn, revealing a funding gap of about \$934 million. Consequently, it is predicted that over this reporting period, the investment/SGR backlog will increase as backlog is a dynamic number in addition to increase service demands and environmental affects due to the JTA's assets being in close proximity to the ocean.

## TAM Plan Investment Scenarios—Decision Support Analysis Results

The following three sections describe the TAM Plan investment scenarios analyzed:

1. **Scenario 1: SGR at Available Funding Levels.** The scenario for investing the JTA's estimated funding level and implications on the investment backlog between 2022 and 2052 (TERM prioritization applied) and the consequences on the SGR of the JTA's assets (in FY2052, what assets by value are in SGR/not in SGR?).
2. **Scenario 2: No increase in SGR backlog.** The approximate funding levels the JTA would need to maintain the investment/SGR backlog amount at the current levels (and have all other assets in SGR).
3. **Scenario 3: Funding Required to Reach 15 percent SGR Backlog by 2052.** The approximate funding levels the JTA would need to significantly increase the investment/SGR backlog amount to 15 percent and have all other assets in SGR by 2052.
4. **Scenario 4: Funding Required to Reach 10 percent SGR Backlog by 2052.** The approximate funding levels the JTA would need to significantly increase the investment/SGR backlog amount to 10 percent and have all other assets in SGR by 2052.

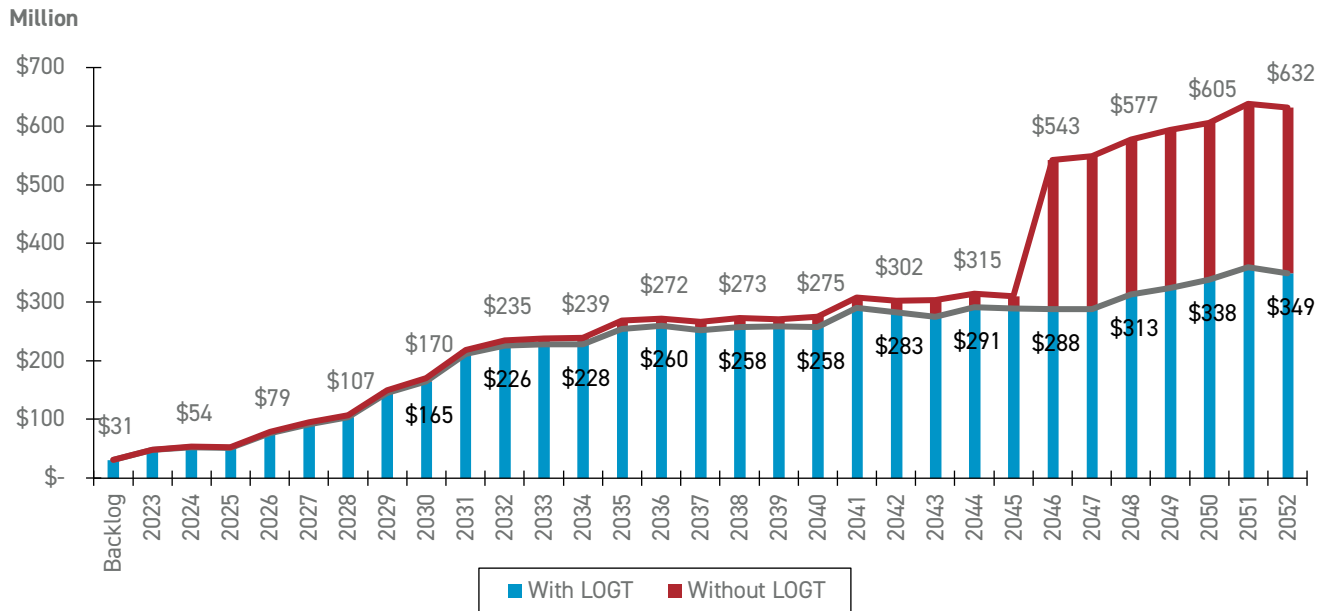
### 5.3.4 Scenario 1: SGR at Available Funding Levels

Over the 30-year planning period, the JTA's investment/SGR backlog will increase due to capital needs that are higher than the available funding.

By FY2052, the backlog will reach \$349 million by 2052 with the estimated available funding. The backlog increase will be event more significant without the LOGT funding, reaching \$632 million by 2052, as illustrated in the Figure 22.



Figure 22. Development of SGR Backlog at Estimated Funding Levels, FY2023-FY2052

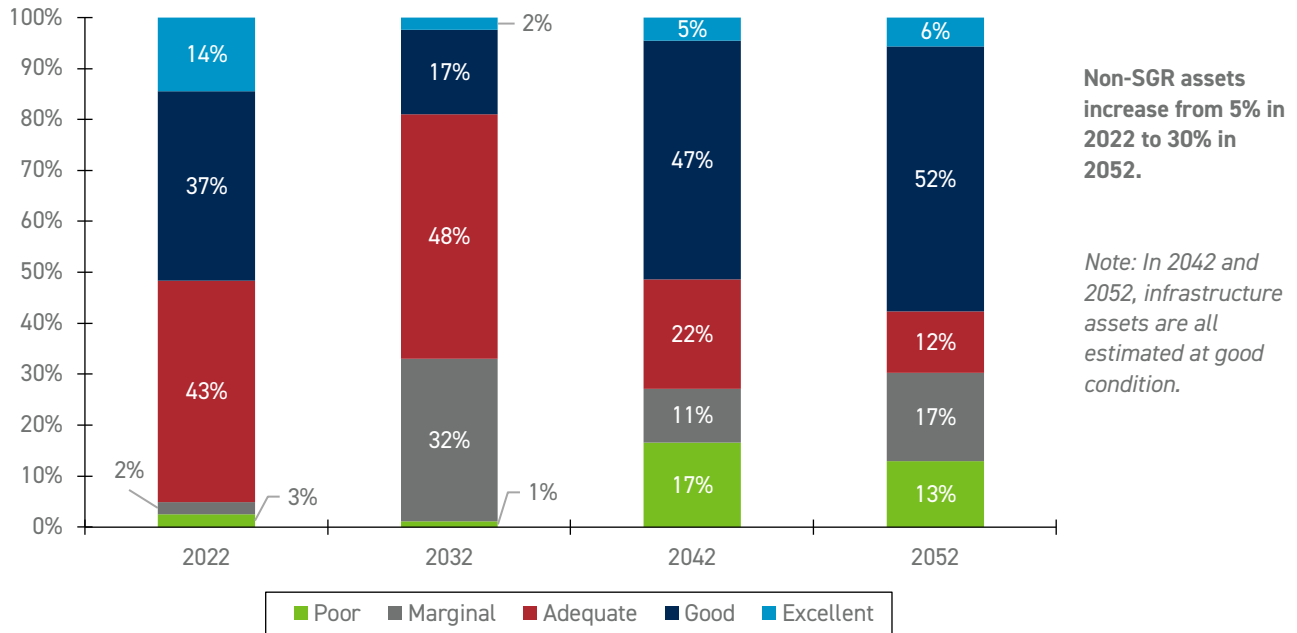


The SGR backlog is increasing every year between the base year 2028 and 2052, indicating that the estimated funding needed in every subsequent year is below the combined SGR from the investment/SGR backlog and the annual SGR need.

An increase in SGR backlog means that more assets are being operated beyond their ULB, which likely will increase maintenance and repair costs, asset failure and/or breakdowns, the rising number of failures affecting service operations, and—worst case—the risk of not ensuring safety of passengers, employees, property, or other parties. This risk can be reduced if the JTA were to implement a reliability program for its assets designed to prolong the useful life of assets and therefore maintaining a sufficient and manageable level of backlog with minimal safety risk. This process is not new and is practiced in many industries such as defense, oil and gas, pharmaceuticals, automotive, facilities management. It is important to note that employing reliability programs will not extend the useful life of an asset indefinitely and should have a continuing program of assessment to ensure the asset is performing within desired parameters as well as a strong change management program to sustain the recommended changes to the business processes.

The rise of investment/SGR backlog by 2052 indicates that, increasingly, the JTA's assets are not in SGR. Figure 23 shows how, over the 30-year period, the overall condition of the assets shifts to lower condition ratings (marginal and poor) post 2022. While in 2022 about 5 percent of the JTA's TAM asset base (in dollars) is not in SGR, this share increases to about 30 percent in 2052—at the current assumed SGR funding levels.

Figure 23. Development of Asset Condition (% by Value), FY2022/32/42/52



If the estimated funding levels are not sufficient to address the SGR backlog and annual SGR need, the question needs to be answered: what funding levels are needed to at least maintain the backlog at current levels or reduce the backlog over time? We shall explore this in scenarios 2, 3, and 4.

### 5.4.4 Scenario 2: No Increase in SGR Backlog

If the JTA wanted to maintain an investment backlog of \$31 million (5 percent), what funding would be required to accomplish this? Figure 24 illustrates the output of an analysis that calculated over the 30-year period how much annual funding would be needed.

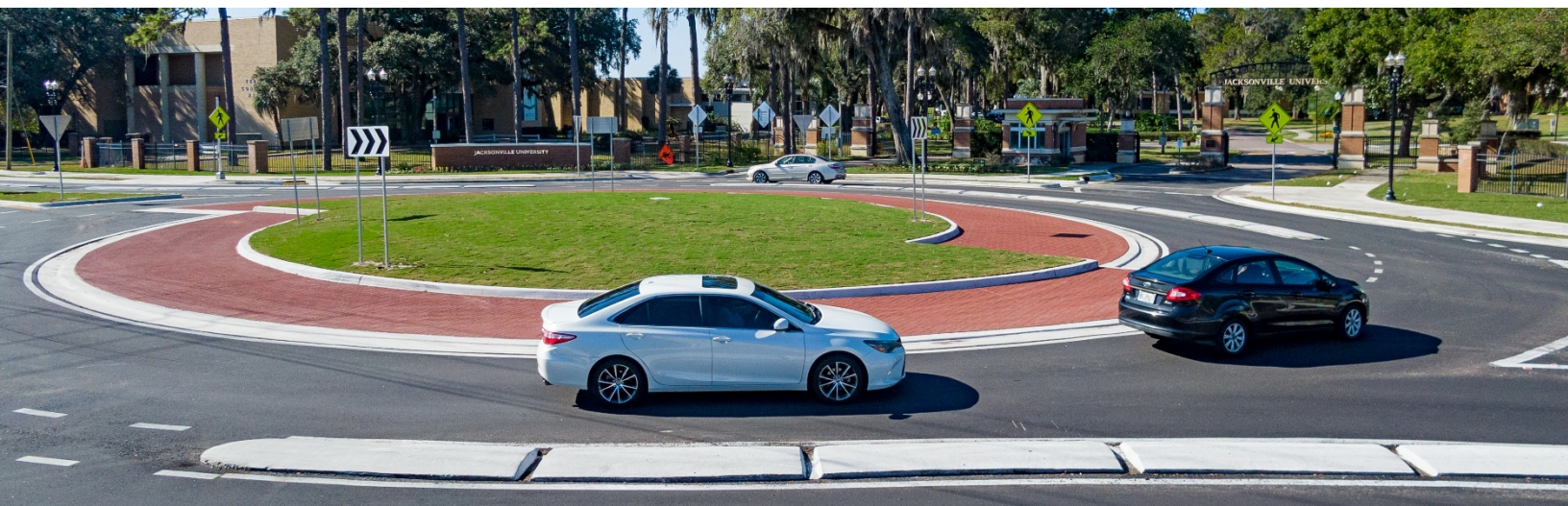
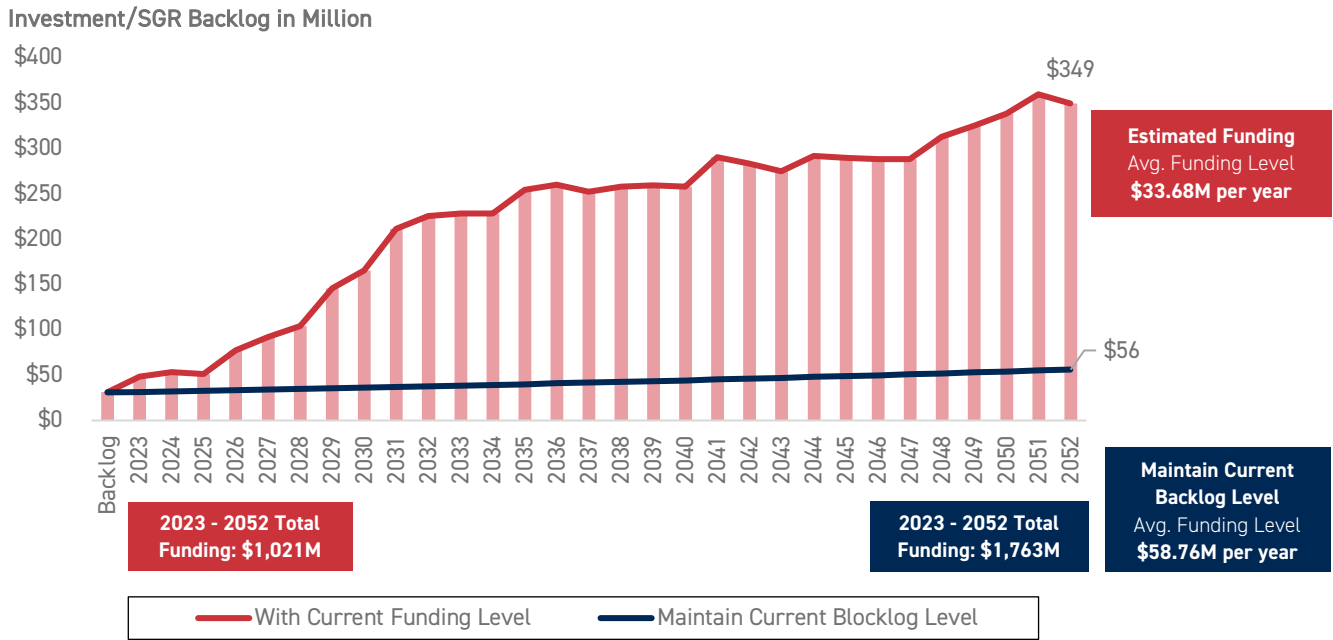




Figure 24. Funding Required to Maintain Current Backlog



By FY2052, the current backlog will increase to approximately \$56 million due to inflation, and the JTA will need an approximate funding level of just over \$59 million per year, or \$1.68bn, over 30 years, to maintain the current backlog level.

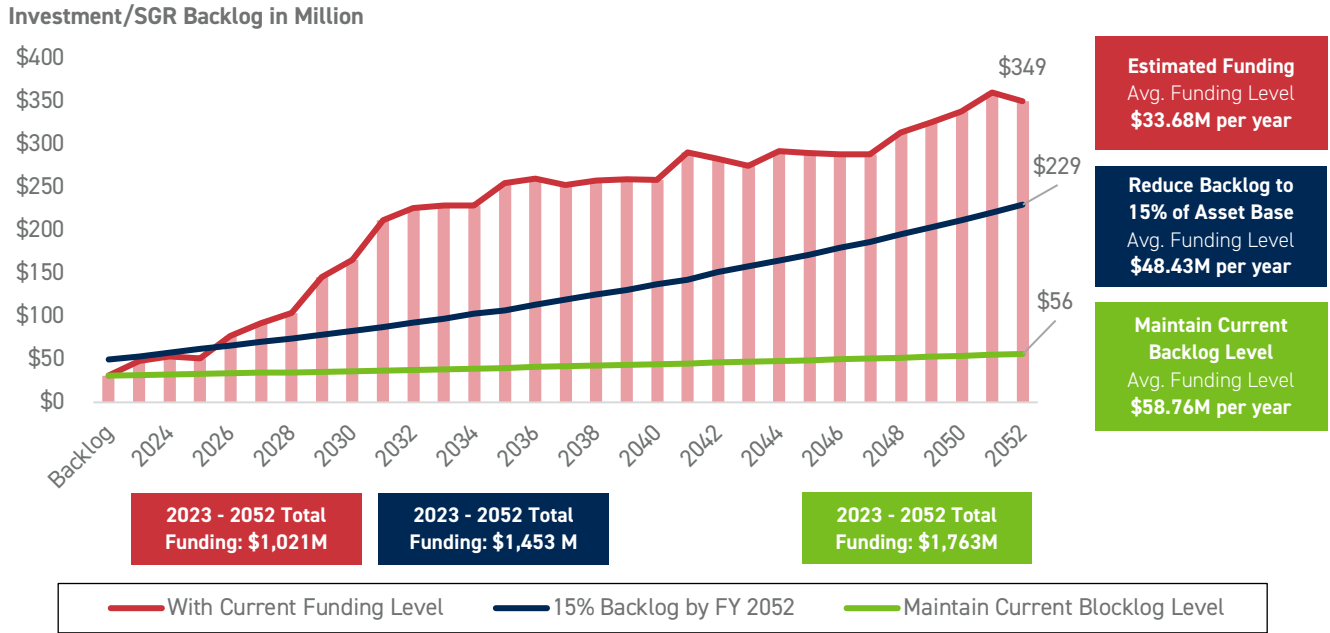
Based on today's average funding, maintaining the current backlog level would require increasing the current funding levels by about 74 percent.

### 5.5.4 Scenario 3: Funding Required to Keep Backlog at 15 percent by FY2052

The following describes the funding required to reduce the SGR backlog to 15 percent by 2052. Maintaining this low investment/SGR backlog (shown in Figure 25). is an acceptable level of risk to the JTA as long as it is limited to assets that have low impacts in the event they fail and do not require a large amount of investment to be replaced.

For this scenario, it is assumed that the JTA maintains a backlog of around 15 percent of the 2052 asset base (which is estimated to be approximately \$229 million). The approximate annual funding needed to address annual SGR and keep the investment/SGR backlog to 15 percent is estimated at \$48.4 million per year, on average. For this scenario, the JTA would require funding levels of about \$1.45 billion over the 30-year planning period.

Figure 25. Funding Required to Keep Backlog Levels at 15 percent by FY2052

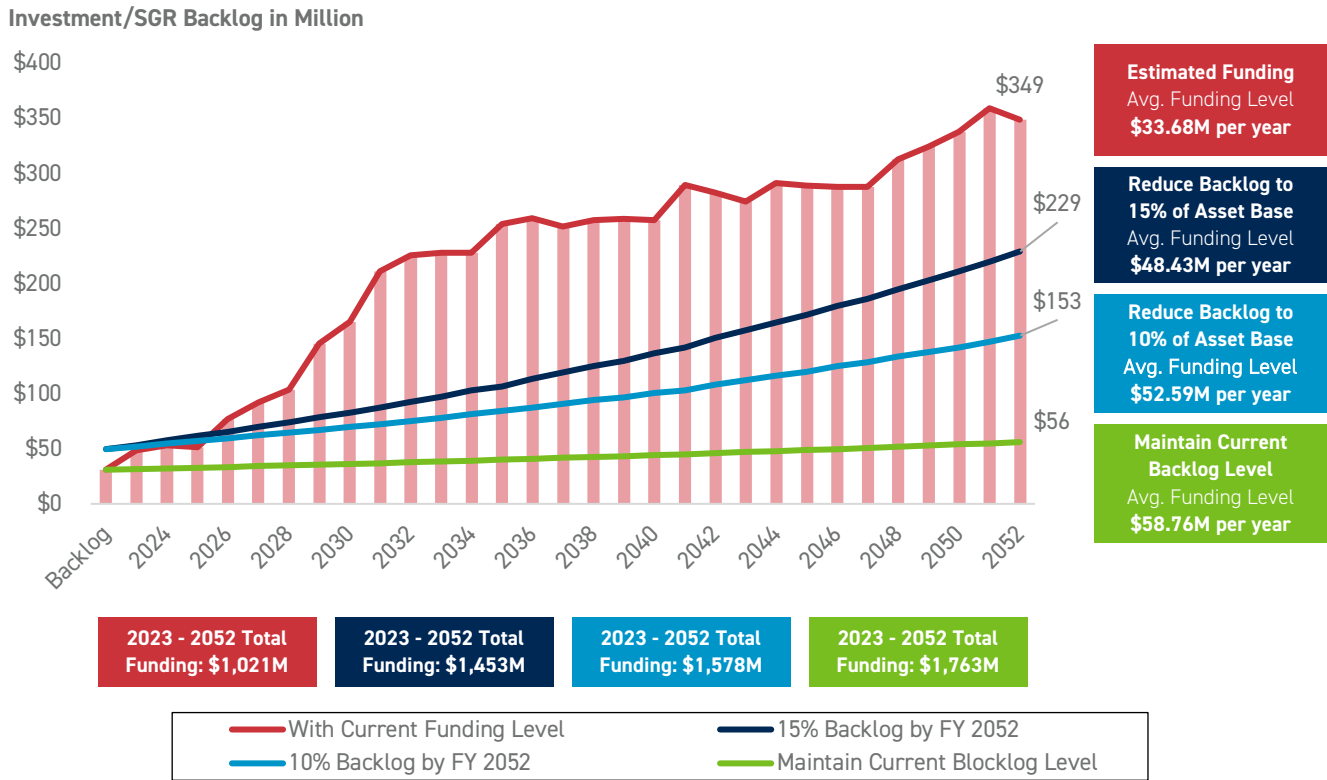


### 5.6.4 Scenario 4: Funding Required to Keep Backlog at 10 percent by FY2052

The following describes the funding required to reduce the SGR backlog to 10 percent by 2052. Maintaining this low investment/SGR backlog (shown in Figure 26). is an acceptable level of risk to the JTA as long as it is limited to assets that have low impacts in the event they fail and do not require a large amount of investment to be replaced.

For this scenario, it is assumed that the JTA maintains a backlog of around 10 percent of the 2052 asset base (which is estimated to be approximately \$153 million). The approximate annual funding needed to address annual SGR and keep the investment/SGR backlog to 10 percent is estimated at \$52.3 million per year, on average. For this scenario, the JTA would require funding levels of about \$1.6 billion over the 30-year planning period.

Figure 26. Funding Required Annually to Keep Backlog Levels at 10 percent by FY2052



## 5.7.4 Summary of Capital Needs and SGR

The results and findings of the “Capital Needs and SGR” analysis can be summarized in five key statements:

1. **Capital SGR need:** Between 2022 and 2052, the JTA has a capital SGR need of \$1.92 billion to bring and keep its asset in SGR (including the current investment/SGR backlog of \$31 million).
2. **Funding level estimate:** Current funding estimates for the same planning horizon amount to \$1.02 billion.
3. **SGR investments at current funding levels:** If the JTA invested the current funding estimate of \$1.02 billion over the 30-year period (\$34 million annually), the investment/SGR backlog would grow to approximately \$349 million—resulting in 30 percent of the JTA’s assets being in backlog.
4. **Estimated funding level to maintain current investment/SGR backlog by 2052:** If the JTA maintained the current investment/SGR backlog level (5 percent) and kept all other assets in SGR, it would require about \$59 million in annual funding (annual average).
5. **Estimated funding level to keep investment/SGR backlog at 10 or 15 percent by 2052:** If the JTA wanted to keep the backlog to around 15 percent of the asset base, this average annual funding need would be approximately \$48.4 million. If the JTA wanted to keep the backlog to around 10 percent of the asset base, this average annual funding need would be approximately \$53 million.

## 5.5. PRIORITIZED INVESTMENTS AND PROJECTS

For every year, TERM selects a list of asset replacements, overhauls, procurements based on the highest investment prioritization ranking and available funding. All other assets that are not in SGR and need to be replaced remain in the investment/SGR backlog.

For 2023, the available funding of \$17 million is invested in close to 120 different assets; however, the 2023 SGR need in addition to the existing SGR backlog (together nearly \$35.8 million) far exceed that funding level. Consequently, about 1,055 assets not in SGR remain in the backlog at the end of 2023. In later years, the value of assets in the backlog increases. In 2028, about 963 assets remain in the investment/SGR backlog while the \$20 million available funding is invested into about 1,555 assets.

These TERM investments present a starting point for the JTA to review and decide if TERM-selected investments can be deferred or investments into other assets need to be brought forward (as discussed under the decision support and prioritization process in Section 5.3).

The 2023-2028 TERM-prioritized asset groups are prioritized in alignment with MOVE2027 strategic plan to ensure asset investments are in alignment. The five key investment drivers are (in no order of importance).

1. Ensure continuation of revenue service by:
  - a. Investing into revenue vehicles.
  - b. Key components/systems supporting revenue vehicles.
2. Ensure the JTA can continue core operations in all areas.
3. Ensure assets provide safety to passengers and employees.
4. Ensure assets (and the JTA's property) are kept secure.
5. Ensure assets are in SGR, especially if:
  - a. They limit passengers access to public transportation service.
  - b. Bad condition leads to further deterioration of other assets.

This list is the starting point for the JTA (see “Decision and Prioritization Process in Section 5.1 above, step 3) to determine which asset replacements will have priority over other assets that are up for replacement.

In more detail, Table 32 summarizes the top TERM-prioritized SGR investments over the next six years by cost, totaling \$84.3 million.

**Table 32. Top TERM Prioritized SGR Investments (FY2023-FY2028)**

Asset Category	Description	SGR Investments (2023-2028)
Rolling Stock, Bus	59 Diesel Gillig Buses	\$47.83M
Rolling Stock, Bus	38 CNG Gillig Buses	\$18.65M
Rolling Stock, Cutaway Bus	112 Ford Turtle Top Cutaways	\$15.71M

Asset Category	Description	SGR Investments (2023-2028)
Equipment, Automobiles	48 Non-Revenue Vehicles	\$2.13M
Facilities, Improvements	Golfair Parking Lot—Asphalt	\$1.99M
Rolling Stock, Van	24 Van Revenue Vehicles	\$1.83M
Facilities, Building Shell	Kings Avenue Walkway—Superstructure	\$1.57M
Equipment, IT Software	Giro Hastus Project License & Service	\$1.21M
Facilities, Building Shell	Philips Buildings Structures	\$0.88M
Facilities, Improvements	Gator Parking Lot—Dirt and Asphalt	\$0.66M
Facilities, Improvements	Monument Park and Ride Pavement—Improvements	\$0.63M
Equipment, Passenger Amenities	105 Bus Stop Solar Systems	\$0.59M
Equipment, CCTV System	403 Dome Cameras	\$0.57M
Equipment, IT Software	Trapeze System Software and Licenses	\$0.55M
Equipment, IT Equipment	Cisco Data Center Switching Subscription PDI Service	\$0.52M
Facilities, Improvements	Mayport Parking Lot—Asphalt Pavement	\$0.50M
Equipment, IT Equipment	EnteraSys Switches/Hubs	\$0.44M
Equipment, IT Equipment	171 HP Elitebooks	\$0.31M
Equipment, IT Software	Software SharePoint 2010 (Software House)	\$0.31M
Equipment, Passenger Amenities	7 Digital Totems	\$0.30M
Rolling Stock, Cutaway Bus	Two M2 Defender Cutaways	\$0.28M
Equipment, Lifts	20 Stertil-Koni Mobile Column Lifts	\$0.28M
Equipment, IT Software	LogRhythm Application Licenses	\$0.24M
Equipment, IT Software	2 Licenses of Proofpoint: ObserveIT ITM Agent/Console 36 Months	\$0.23M
Equipment, IT Software	Citrix Application Licenses	\$0.20M
Facilities, Building Substructure	JRTC Campus Foundation	\$0.20M
Equipment, Passenger Amenities	121 Bus Stop Trash Cans	\$0.19M
Facilities, Building	IBT Campus Building Foundation and Shell	\$0.19M
Facilities, Improvements	JRTC Campus Johnson Parking Lot Improvements	\$0.17M
Facilities, HVAC System	Myrtle Building 11 HVAC	\$0.17M
Equipment, IT Equipment	42 DR Kits	\$0.17M
Equipment, IT Software	Device 42 Software Software Management and Application Licensing	\$0.15M
Equipment, IT Software	Microsoft Office 2010 (Software House)	\$0.15M
Equipment, Lifts	Stertil-Koni 4250 4-Post Vehicle Lift	\$0.15M
Equipment, IT Software	Adobe Licenses	\$0.15M
Equipment, IT Equipment	335921-B21	\$0.14M
Equipment, IT Software	Office 365	\$0.14M

Asset Category	Description	SGR Investments (2023-2028)
Facilities, Building	Myrtle Building 11 Shell	\$0.11M
Equipment, IT Software	Tenable.io Software Licenses	\$0.10M
Facilities, Access Gates	Hy Security Access Gates	\$0.10M
<b>80 percent of TERM-prioritized investments in 2023 to 2028 (Total \$104.9M)</b>		<b>\$84.32M</b>

For 2023-2052, Appendix A.5 lists all projects, replacements, overhauls, etc. that are in the backlog and presents the annual SGR need, by year. This will be used by the JTA to follow the decision and prioritization process through to step five.



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# TAM IMPLEMENTATION PROGRAM

The TAM implementation program describes the actions and activities that the JTA will conduct over the next several years to:

- Achieve TAM Plan goals and objectives in alignment with the MOVE2027 strategic plan.
- Evolve and align the Asset Management Policy, Philosophy, and integration throughout the Agency.
- Work towards a higher level of asset identification, assessment, and prioritization methods.

The program consists of the implementation strategy that provides the framework and approach for the multi-year implementation of asset management best practices and elements that further complement the MOVE2027 strategic plan. The target state for the JTA is to ultimately accomplish a cost-efficient and data-driven TAM process with a high percentage of assets in SGR based on assessment ratings rather than general useful life measures.

Table 33 explains how the TAM Plan addresses FTA requirements.





Table 33. TAM Implementation Requirements

FTA TAM Plan Requirement	Description
<b>1. Implementation Strategy</b> How is the JTA planning to execute the TAM Plan?	Two key strategic elements: 1. Established an organizational framework. 2. Phased Implementation approach that. a. Builds from existing capabilities. b. Develops and asset information system. c. Advances TAM to data driven lifecycle management. d. Aligns with the MOVE2027 strategic plan.
<b>2. Key Annual Activities</b> Annual activities that the JTA will perform to maintain the TAM Plan	Actions to implement the TAM Plan over the next several years, such as: <ul style="list-style-type: none"> <li>• Maintaining the asset registry and annual inventory update.</li> <li>• NTD reporting for performance targets and annual reporting.</li> <li>• Facility assessments at a rate of 25 percent per year (or more).</li> <li>• TAM Plan update.</li> <li>• Implementing good TAM business practices.</li> <li>• Building stronger links with the JTA Safety Management System.</li> </ul>
<b>3. Identification of Resources</b> Who "owns" TAM at the JTA?	Maturing the existing TAM Program organization and carrying the TAM principles into the authority daily operations.
<b>4. Evaluation Plan</b> How will the JTA update the TAM Plan and move to continuous TAM improvements?	Implement phased approach and key annual activities structured into overall implementation roadmap, supported by detailed action items.

## 6.1. TRANSIT ASSET MANAGEMENT AND SAFETY MANAGEMENT SYSTEMS

Both the TAM and Safety final rulings (49CFR §625 and 49 CFR§673) The safety and performance of the system depend, in part, on the condition and performance of its assets. When transit assets are not in an SGR the consequences that the JTA will inevitably experience fit broadly in the following categories:

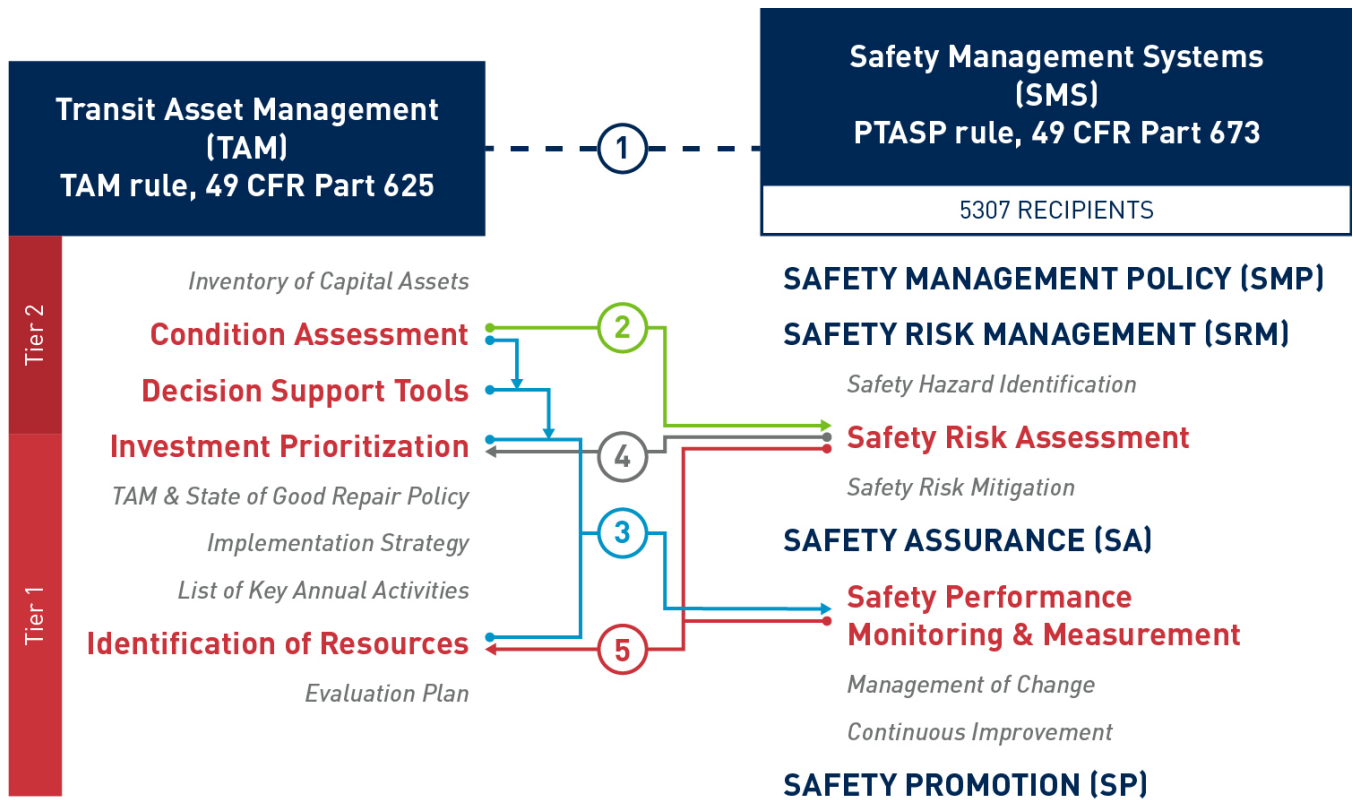
- Increased safety risk.
- Decrease in system reliability.
- Higher maintenance cost (both capital replacement and operating).
- Turnover of leadership and management.
- Lower system performance.

The relationship between the TAM and Public Transportation Agency Safety Plan (PTASP) rule is bidirectional where information learned through TAM analysis could direct and inform the JTA's PTASP and inversely the JTA's PTASP could direct and inform its TAM Plan priorities. Safety performance improvements will depend upon:

- Information exchanges between TAM and Safety.
- Dedicated implementation and resourcing (financial and personnel) of both the TAM Plan and an Agency Safety Plan.
- Consistent condition inspection and assessment.
- Targeted safety oversight and monitoring program.

The performance measures and targets for both safety and TAM will help the JTA and FTA quantify progress in enhancing safety and improving the condition of assets. In addition, the TAM targets and progress toward them will be used to prequalify the JTA for additional future funding opportunities. Figure 27 depicts the nexus between TAM and PTASP, which is detailed in the narrative below.

Figure 27. TAM and SMS Nexus



### 6.1.1 Nexus 1 – Executive Leadership

In both the TAM and Public Transit Agency Safety Plans, the Accountable Executive is the same individual, typically by position, defined as the CEO, General Management of the Transit Agency and the only signatory required by both plans. The Accountable Executive is accountable for both plans being implemented and providing the resources for the plans. In both TAM and PTASP the executive leadership team is involved in decision-making about risks and investments (capital and operating).

### 6.2.1 Nexus 2 – Condition Assessment

Regular condition assessments allow the JTA to identify potential safety issues. These are in turn assessed through the agency's Safety Risk Management (SRM) process. Data collected via TAM can be used by Safety to determine the level of acceptable risk to the agency, which can then be integrated back into the TAM Plan through risk ratings for project prioritization. Typically, in the State Safety Oversight Agency (SSOA) process the SSOA will review how hazards and consequences were identified by the JTA and addresses through the SRM process.

The JTA has spent the last four-years enhancing its asset monitoring process by moving towards a performance-based approach. This will allow the JTA to assess an asset's health to identify potential asset failures before they occur by monitoring how an asset is performing against an allowable standard. This approach provides greater control and relies upon a data based decision-making process which enables the JTA to make targeted investments to ensure assets are performing as required.

### 6.3.1 Nexus 3 – Decision Support Tools

The data collected by the JTA is a static measurement of system performance and measurement against the original specification of the asset in Safety Assurance. This will enable the JTA to monitor the performance of the asset at specific intervals. As the JTA invests in new technology and equipment over the next five-years as part of its MOVE2027 strategic plan these additional investments will provide the Authority the opportunity to incorporate devices that will measure the key outputs of components in real time. This will enable the JTA to monitor and make key decisions to increase asset reliability and output, as well as identify restrictions to inform key strategic decisions. In addition, this data set can be used to evaluate changes to the maintenance regime in accordance with the operating environment as well evaluate the affects of cost and asset useful life.

### 6.4.1 Nexus 4 – Investment Prioritizations

Asset data is provided to safety to inform its Safety Risk and Safety Performance monitoring and measurement activities, the output of which informs the prioritization of a particular asset renewal or replacement. This is where the asset condition is scrutinized through a safety lens to ensure that the prioritization in the Authorities Capital Plan and TAM Plan is being targeted where needed. In this context the data is leading where the agency is investing in its existing asset portfolio based on performance, condition and safety allowing for targeted investments based on data.








### 6.5.1 Nexus 5 – Identification of Resources

In this nexus the outcomes of safety risk assessments or safety performance monitoring and measurement is informing the need for resources for TAM. This is, but is not limited to, additional staff for maintenance, monitoring, execution of TAM initiative programs etc. Resources can be in the form of finance, materials, tools, consultants, FTE's, temporary workers, etc. required to execute both the TAM and the SMP.

## 6.2. TAM AND MOVE2027 STRATEGIC PLAN ALIGNMENT

The JTA's MOVE2027 strategic plan is a bold plan consisting of approximately \$795M investment in Transit in the region. The program has approximately 70 Tactics that implement the seven (7) MOVE2027 strategic plan initiatives over the next five years. These initiatives are shown below in Table 34.

Table 34. MOVE2027 Strategic Plan Initiatives

Initiative	Description
 <b>TEAMWORKS</b>	Create a more resilient and agile organization ready to take on future challenges.
 <b>TRANSITWORKS</b>	Create a more convenient, nimble and responsive transit network built around the evolving needs of our customers.
 <b>MOBILITYWORKS</b>	Build-out multimodal infrastructure for a safer and more resilient region.
 <b>CUSTOMERWORKS</b>	Improve the customer experience and make the JTA the regional integrator of mobility services.
 <b>REGIONALWORKS</b>	Establish a more seamless transportation network for the entire region.
 <b>INNOVATIONWORKS</b>	Establish the JTA as a leader in transportation innovation through the adoption of autonomous and green solutions.
 <b>COMMUNITYWORKS</b>	Create stronger partnerships to support a thriving Northeast Florida.

As the majority of this plan will be executed during the TAM Plan horizon it is essential that this TAM Plan be consistently reviewed and update, if necessary, on an annual basis, given the changes brought by the MOVE2027 strategic plan. Therefore, the development of a process by which this TAM Plan is annually reviewed and updated against the progress of the MOVE2027 strategic plan will be on the high-level roadmap.

Projects funded by the LOGT will be the initial influencers of the TAM Plan these projects are as follows:

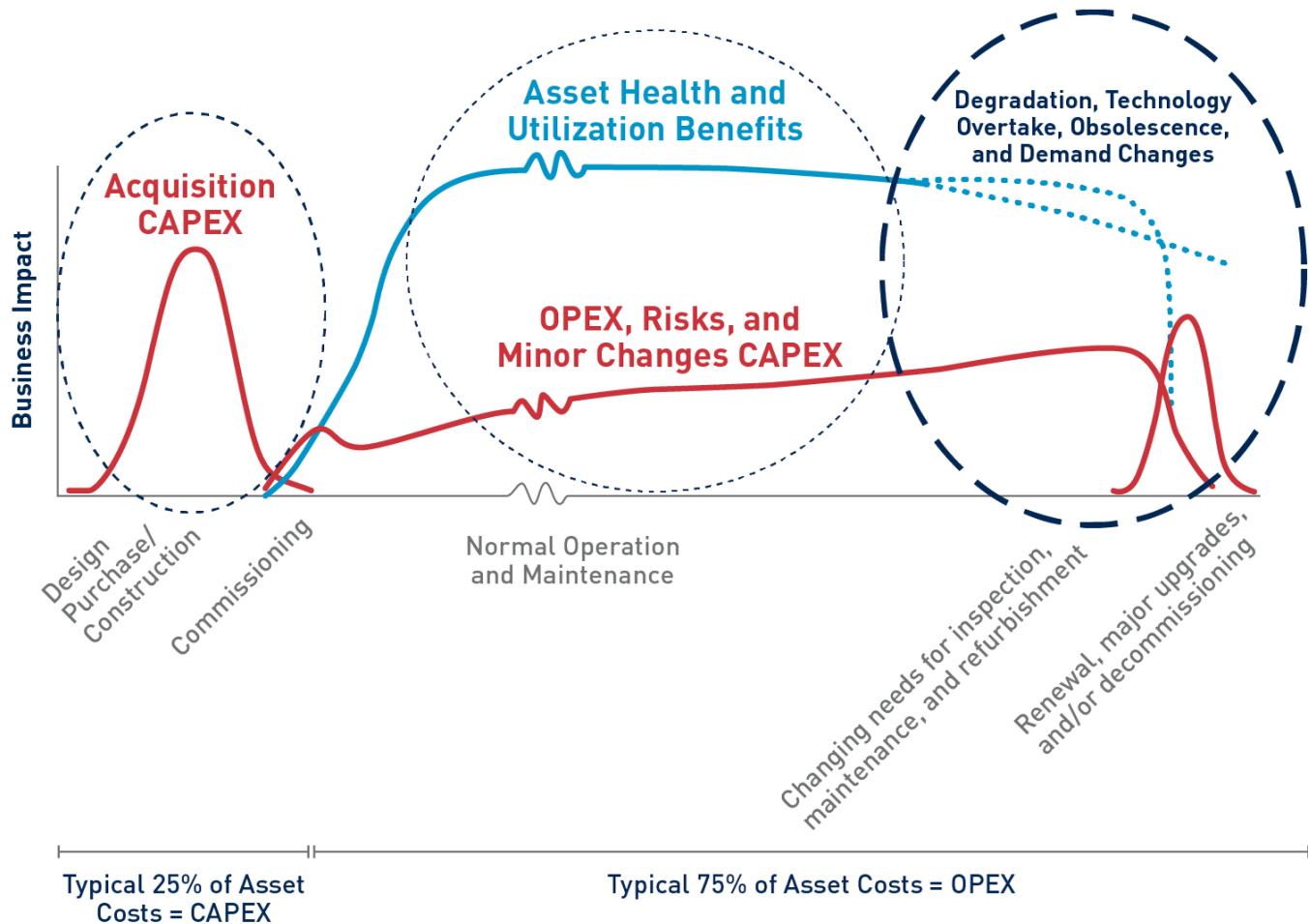
- |   |               |
|---|---------------|
| 1. Upgrade St. Johns River Ferry Facilities and Service | \$20,000,000  |
| 2. Skyway Rehabilitation and Downtown Service Expansion | \$246,951,000 |

These projects, and more, will be key to keeping the SGR backlog for the asset categories both manageable as well as low. Figure 18 and Figure 19 show the effects of having and not having the LOGT funding and what it can do to the capital needs in a given year, as well as the risk it places upon the JTA when dealing with a large asset base that is not in a SGR.

It will be essential for the JTA to ensure that both existing and new assets are appropriately resourced, maintained, and repaired in a timely manner. The progress the JTA has made to create a central repository for all assets in its current Oracle EAM system is the first step toward tracking this. Completing the necessary maintenance as well as analyzing the behavior of asset in its operating environment can lead to better management of assets, efficient use of the workforce, and cost savings. The development of a pilot program to establish root causes and performance metrics for an asset type is listed in the high-level road map due to need to understand the behavior of the JTA's critical assets as well as start the planning process for future wholistic capital and operating needs that is data and performance driven.

The process for successful asset stewardship begins at the initial design phase and continues to asset renewal or decommissioning, Figure 28 below depicts a typical relationship of an asst lifecycle vs. business impact and cost. Given the magnitude of the effects that the MOVE2027 strategic plan will have upon the JTA's TAM program it will be essential for the Authority to plan funding needs not just to build new assets but to continue to invest in its existing asset base throughout its entire lifecycle. The MOVE2027 strategic plan program calls for building new assets (both technologically, and physically), as well as expanding services to either create new or assimilate existing with the JTA's workforce and its physical assets at the heart of the program. When funding is inadequately provided for existing assets, these assets can degrade to produce less than desirable performance as well as pose a viable safety risk. Asset management can assist in better and planning and custodianship to maximize the useful life of assets.

Figure 28. High-Level Whole Life Asset Cost Breakdown



The continuation of gathering data on all of the JTA's assets is essential to provide an all-encompassing asset register and financial outlook. For example, assets such as land and property that are not in use today by the JTA but are owned by the JTA are assets that have potential future value to the agency. The forthcoming Facility Decentralization and Alternative Fuel Master Plan could potentially call for utilizing those assets and save the JTA money in acquisition costs but will add to the operating and capital expense of the Authority. The high-level roadmap calls for the JTA to continue to collect all its assets in a single portfolio to better enable the JTA to plan for future enhancements of the network.

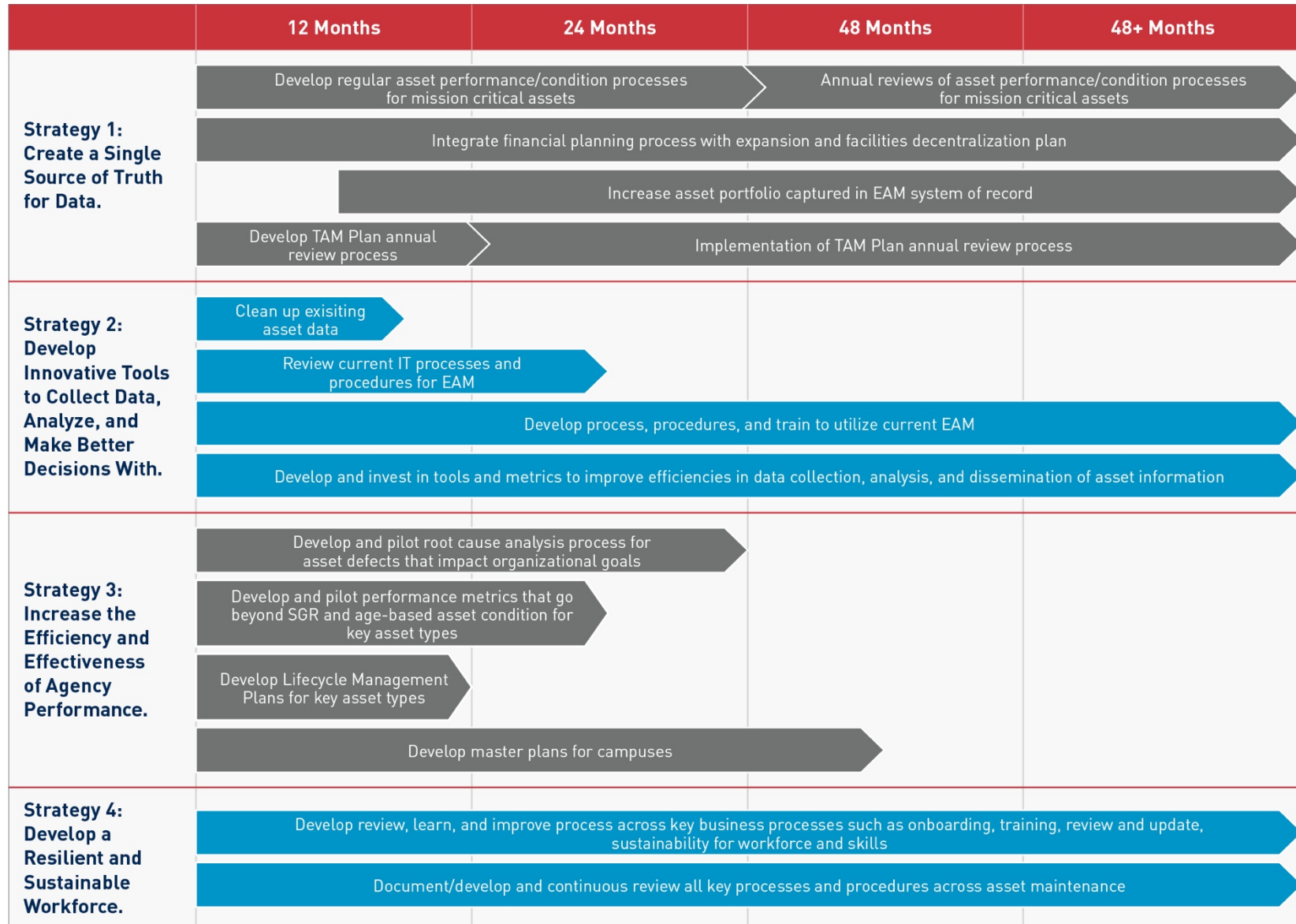
## 6.3. TAM IMPLEMENTATION STRATEGY

The JTA's TAM implementation strategy has two key elements

1. **Organizational framework:** Update and advance the JTA's asset management organization responsible for providing resources and knowledge to institutionalize TAM at the JTA. It owns and manages the broad implementation efforts for the various asset groups and its owners, advancing asset management policies and procedures, and the TAM continuous improvement at the JTA.
2. **Phased implementation:** Build-on existing TAM capabilities and move toward an advanced and mature data-driven asset management process utilizing the current asset management information system platform, Oracle EAM (embedded or with interfaces to authority system and processes).
  - a. **Strategy 1: Create a Single Source of Truth of Data.** Stabilize and sustain the TAM Plan to introduce asset management procedures; develop new asset management standards for data collection of existing assets and delivery from capital projects; develop procurement specifications to ensure current and future technology is aligned with advanced asset management processes; leverage existing JTA standards for synergies; and develop capabilities as enterprise-wide business as usual processes.
  - b. **Strategy 2: Develop Innovative Tools to Collect Data, Analyze, and Make Better Decisions.** Continue to populate and update the asset management information system (Oracle EAM) to create a base asset inventory and integrate with other business systems and processes; expand attribute data to collect operational metrics; ensure maintenance areas are utilizing the system to track (at a minimum) maintenance work orders, costs, defects, labor, asset status and materials.
  - c. **Strategy 3: Increase the Efficiency and Effectiveness of Agency Performance.** Move the JTA toward advanced TAM practices based on data-driven analytics and decision-making to optimize its asset SGR and efficiency; leveraging the existing Business Intelligence business unit and strategically investing/developing in software tools; develop and invest in asset health and performance monitoring and productivity tools for front line personnel to better manage assets.
  - d. **Strategy 4: Develop a Resilient and Sustainable Workforce.** Develop processes that drive continuous improvement throughout the organization to provide information solutions, and business practices to improve the authority's SGR and asset performance; Recruit personnel and add consulting support to ensure the asset management program continues to move forward in alignment with MOVE2027 strategic plan.

Figure 29 below illustrates the JTA's short to long-term TAM implementation roadmap across the strategies described above.

Figure 29. The JTA's 2022 TAM Plan Implementation Strategy



### 6.1.3 Organizational Framework

The JTA has established an organizational framework as specified in the JTA TAM Policy (also mentioned in Chapter 2). The policy provides an organizational framework with clear authorities, responsibilities, and accountability for implementation. Table 35 below explains the responsibility levels across the TAM organization.

**Table 35. TAM Roles and Responsibilities**

Function	Responsibilities
Chief Executive Officer (CEO)	<ol style="list-style-type: none"> <li>1. Provide overall executive leadership responsibility for determining the strategic direction and overall JTA policy for Asset Management.</li> <li>2. Final approval of asset management policies, procedures, systems, and continuous improvement processes.</li> <li>3. Final approval and sign-off of the JTA TAM Plan.</li> <li>4. Reporting on the status and effectiveness of asset management to the JTA Board.</li> <li>5. Authority: Final Draft Report Approval</li> </ol>
Executive Leadership	<ol style="list-style-type: none"> <li>1. Report on status and effectiveness to the CEO.</li> <li>2. Provide overall coordination of all asset management activities across the departments ensuring that people, processes, and systems are in place and work together to deliver services and meet the asset management policy objectives.</li> <li>3. Review and update of all asset management policies, procedures, systems, and continuous improvement processes for CEO approval.</li> <li>4. Reporting on status and effectiveness of asset management to the CEO.</li> <li>5. Provide direction and support for all TAM Steering Committee activities.</li> <li>6. Authority: TAM Policy Approval, Draft Report Midpoint Review &amp; Approval, Final Draft Report Review (Level 3).</li> </ol>
Chief Financial Officer (CFO)	<ol style="list-style-type: none"> <li>1. Executive Champion of the JTA TAM Program.</li> <li>2. Provide overall leadership responsibility for developing models for long-term capital investment plans and funding security.</li> <li>3. Provide overall leadership responsibility for developing policies, procedures, systems, and continuous improvement process.</li> <li>4. Serve as Committee Chair for both the TAM Steering Committee and the TAM Working Committee, and as member of the Executive Leadership Team.</li> <li>5. Reporting on status and effectiveness of asset management to the ELT.</li> <li>6. Authority: JTA Stakeholder Matrix Approval, TAM Policy Review (Level 2).</li> </ol>
The JTA Asset Management Steering Committee	<ol style="list-style-type: none"> <li>1. Develop and update all asset management policies, procedures, systems, and continuous improvement processes for CFO and ELT approval.</li> <li>2. Provide coordination of all asset management activities across the departments ensuring that people, processes, and systems are in place and work together to deliver services and meet the asset management policy objectives.</li> <li>3. Oversee the development and implementation of asset and risk management plans for all asset classes.</li> <li>4. Responsible for implementing of approved policies as well as continuous EAM improvement plan.</li> <li>5. Reporting on status and effectiveness of asset management to the ELT.</li> <li>6. Provide direction and support for all TAM Working Committee activities.</li> <li>7. Authority: Draft Report Layout Approval, Stakeholder Engagement Plan Approval, Analysis Draft Approval, Draft Report Midpoint Review, Final Draft Report Review (Level 2).</li> </ol>



Function	Responsibilities
The JTA TAM Program Manager	<ol style="list-style-type: none"> <li>1. Serve as project lead for the TAM Working Committee, liaison between the JTA and all TAM vendors, and as member of the TAM Steering Committee.</li> <li>2. Manage interface between technical and financial departments.</li> <li>3. Development of annual SGR capital investment prioritization and presentation of suggested projects.</li> <li>4. Responsible for the development of the 4-year JTA TAM Plan, Annual TAM Targets, Annual Narrative Report, and NTD data submissions.</li> <li>5. Report on status and effectiveness of asset management to the TAM Steering Committee.</li> <li>6. Provide direction and support for all JTA Departments and Staff.</li> <li>7. Authority: Draft Report Layout Review, Analysis Draft Review, JTA Stakeholder Matrix Review, Stakeholder Engagement Plan Review, Tam Policy Review (Level 1), Working Committee Meeting Decks Review &amp; Approval.</li> </ol>
JTA Working Committee	<ol style="list-style-type: none"> <li>1. Represent all departments with JTA capital assets at a management level.</li> <li>2. Responsible for implementing infrastructure asset management lifecycle plans, systems, policies, and procedures.</li> <li>3. Development and implementation of asset and risk management plans for all asset classes.</li> <li>4. Responsible for gathering, developing, reviewing, and updating all data required for the development of the 4-year JTA TAM Plan, Annual TAM Targets, Annual Narrative Report, and NTD data submissions.</li> <li>5. Report on status and effectiveness of asset management to the TAM Project Lead.</li> <li>6. Provide direction and support for all JTA Department Leads.</li> <li>7. Authority: Draft Sections Review, Final Draft Report Review (Level 1).</li> </ol>
Department Leads	<ol style="list-style-type: none"> <li>1. Responsible for implementing infrastructure asset management lifecycle plans, systems, policies, and procedures.</li> <li>2. Report on status and effectiveness of asset management to the TAM Working Committee.</li> <li>3. Provide direction and support for all JTA Staff.</li> <li>4. Authority: Delegated as required by Committees.</li> </ol>
JTA Staff	<ol style="list-style-type: none"> <li>1. Responsible for implementing infrastructure asset management lifecycle plans, systems, policies, and procedures.</li> <li>2. Report on status and effectiveness of asset management to Department Leads.</li> <li>3. Authority: Delegated as required by Department Leads.</li> </ol>

At the program level, the JTA implemented an organizational structure that reflects the strategic and now emphasized role for TAM in the accomplishment of the JTA's mission and strategy.

This organizational structure ensures that:

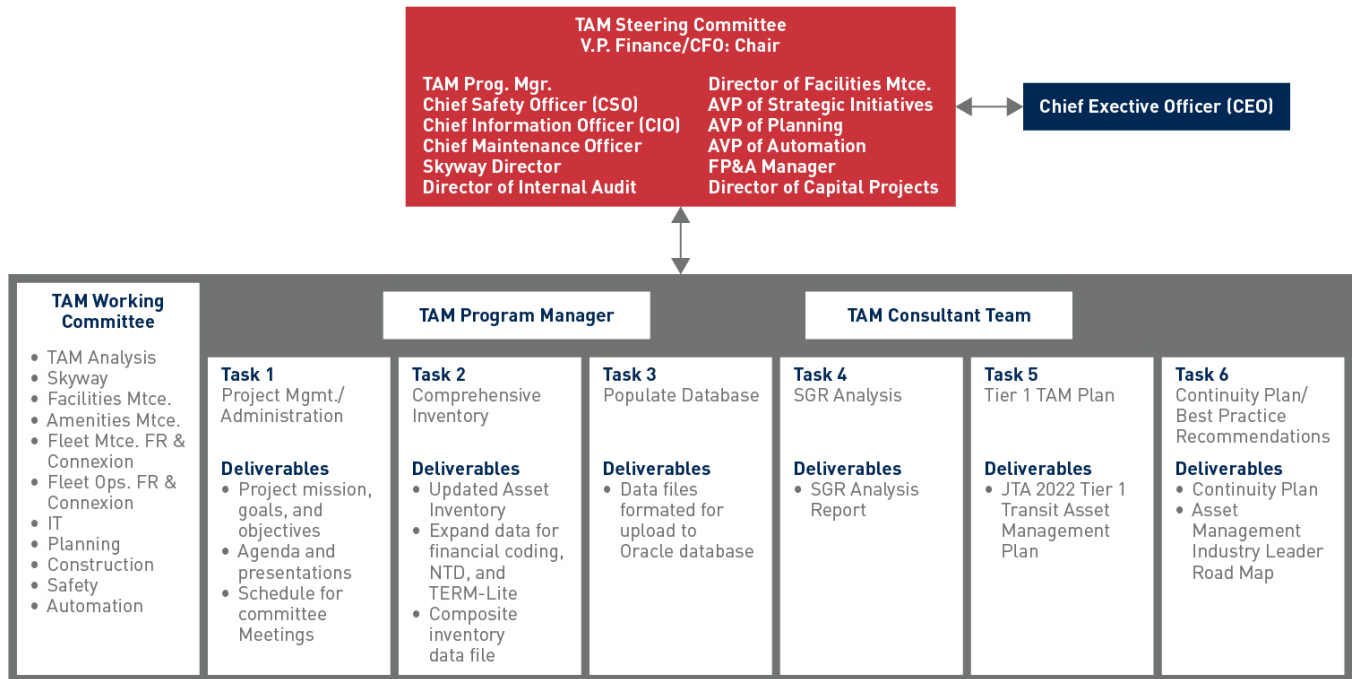
1. The TAM process is integrated across all departments and decisions are aligned with policy and overall goals.
2. Collaboration across key strategic areas of the Authority is identified.
3. Implementation has appropriate proportionality in precision and quantification of risks, costs, performance, data collection/analysis/management, and decision-making process.
4. Overall implementation achieves alignment with business objectives, expected outcomes, and benefits to the JTA.

The CEO and CFO are thought leaders and the CEO is defined as the Accountable Executive. Together they oversee a TAM leadership team (TAM Plan Steering Committee with senior representatives from all departments that interact and influence asset management and the direction of the agency) that provides oversight and guidance to the TAM Plan Working Committee.

The TAM Plan Working Committee, under the leadership of the TAM Program Manager, is primarily implementing good TAM business practices for their individual asset groups (linked to the JTA departments) as well as collecting, validating and updating asset data to form the foundational layer of strategic decision-making.

The JTA's current TAM oversight and program organization is shown in Figure 30.

Figure 30. The JTA's TAM Oversight and Organizational Structure



The JTA anticipates that over the next 4 years at least 2.5 full-time equivalent (FTE) staff resources will be needed for TAM implementation, monitoring, management, and control. In addition, this team will be supported by a cross section comprised of dedicated staff resources in combination with members of the steering and working committees, external consulting support, as well as staff from various technical and commercial departments. In addition, the JTA expects an annual budget of approximately \$890,000 (Total of \$3.6 million over the 4-year TAM Plan Horizon) to invest into physical asset condition assessments as required by the final ruling, software development/investments, pilot programs, and IT and system support. The transition of moving away from age-based condition assessments to more performance based will also commence. This will provide the JTA additional data to better plan and target budgets for renewals and replacement of existing assets.



The FTA, in alignment with 49 CFR Part §625, updated the eligibility of projects funded by Formula 5337—State of Good Repair Grants to include the actions and resources for an agency to implement its TAM Plan. The JTA is eligible for these funds and can use them to provide the necessary funding of both personnel and resources to implement the plan. This includes but is not limited to, funding, updating, managing, and executing the implementing actions.

Table 36 below provide an overview of these anticipated resource needs.

**Table 36. The JTA's Resources for the TAM Implementation**

Organizational Level		FTE's	Year 1	Year 2	Year 3	Year 4
Dedicated TAM Staff (TAM Director, TAM Analyst, IT Support) <sup>1</sup>		2.5	\$290,000	\$290,000	\$290,000	\$290,000
TAM Steering Committee – Existing Personnel		-	-	-	-	-
TAM Working Committee – Existing Personnel		-	-	-	-	-
JTA Supporting Staff – Existing Personnel		-	-	-	-	-
TAM Consulting Support	Mandated Condition Assessments	-	\$250,000	\$250,000	\$250,000	\$250,000
	TAM Plan Updates/ Re-Writes	-	\$350,000	\$350,000	\$350,000	\$350,000
<b>Total</b>		-	<b>\$890,000</b>	<b>\$890,000</b>	<b>\$890,000</b>	<b>\$890,000</b>

<sup>1</sup> Does not include annual salary increases or adjustments for inflation.

### 6.2.3 Phased Implementation Strategy

As described above, the JTA's second implementation element will be phased in four strategies to ultimately achieve an advanced and mature data-driven asset management process integrated with an asset management information system platform.

#### Strategy 1: Create a Single Source of Truth of Data

Goal of strategy 1 is to ensure all of the JTA's efforts invested into the update of the TAM Plan as well as internally developed practices, staff, and system capabilities are sustained.

This is implemented through the following key TAM activities:

1. Further institutionalizing the organizational framework.
2. Documenting key policies and procedures.
3. Maintaining the asset inventory, adding new assets, updating current assets, and retiring disposed assets.
4. Continuing further the collection of relevant asset attributes.
5. Continuation of asset condition assessments.
6. For selected high-priority asset groups:

- a. Advance lifecycle management practices to extend assets' ULB, improve asset performance measurement, and limit risk of asset failures.
  - b. Initiate the development of lifecycle cost modeling as foundation for holistic asset cost optimization (capital and operating cost).
7. Reporting to NTD for performance targets, narrative reports, and the next comprehensive TAM Plan.
  8. Developing overall internal and external TAM communication plan.
  9. Training staff in TAM principles, establish asset management culture at the JTA.
  10. Developing and documenting Asset Management Standards and enhance existing standards to include asset management needs.
  11. Developing data collection tools for both existing and new capital construction assets for contractors to complete as part of the commissioning process.

The JTA will establish a TAM Plan risk management process that focuses on the identification, assessment, and active management of the risks to the implementation and the accomplishment of the TAM Plan goals. In addition, the JTA will also establish an annual review process to ensure the TAM Plan is kept updated and in alignment with the MOVE2027 strategic plan. This will support the ongoing management of TAM Plan implementation and reporting accountabilities set out in the asset management policy and described above.

This strategy will be executed short to midterm, within the next 12 to 24 months.

## Strategy 2: Develop Innovative Tools to Collect Data, Analyze, and Make Better Decisions With

This strategy allows the JTA to complete developing the asset information and systems solution that will support advanced asset management processes. It involves enhancing the Oracle EAM functionalities and interfaces to existing or new supplemental systems as well as ensuring all applicable personnel (both existing and new) are trained to utilize the system to ensure the data is relevant, accurate, and timely. Due to the nature of the Transit industry, it is common to find that tools need to be developed by agencies to suit their own needs. Therefore, funding the research and design of bespoke tools for JTA to better manage and maintain assets as well as develop better investment models based on actual maintenance data will be essential for better managing the current and future asset portfolio. This approach is shown below in Figure 31.

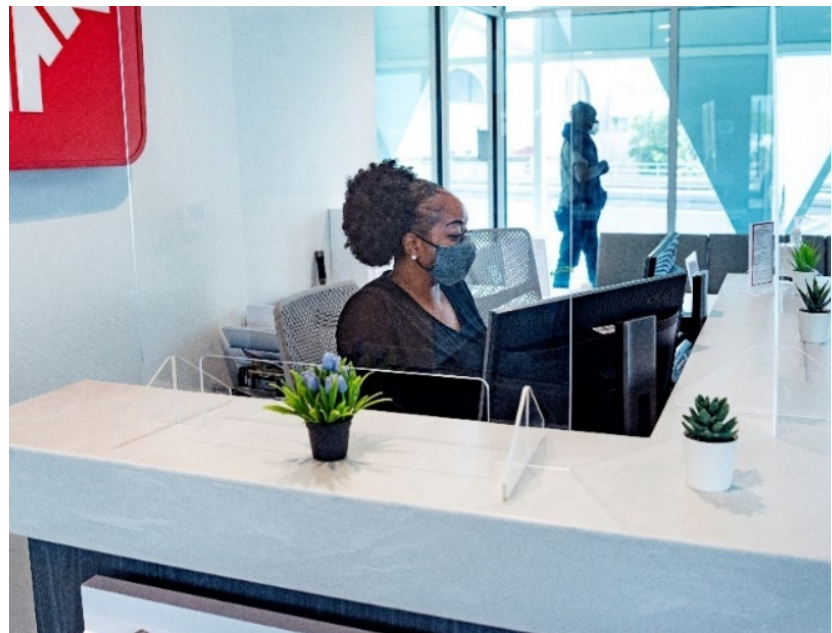
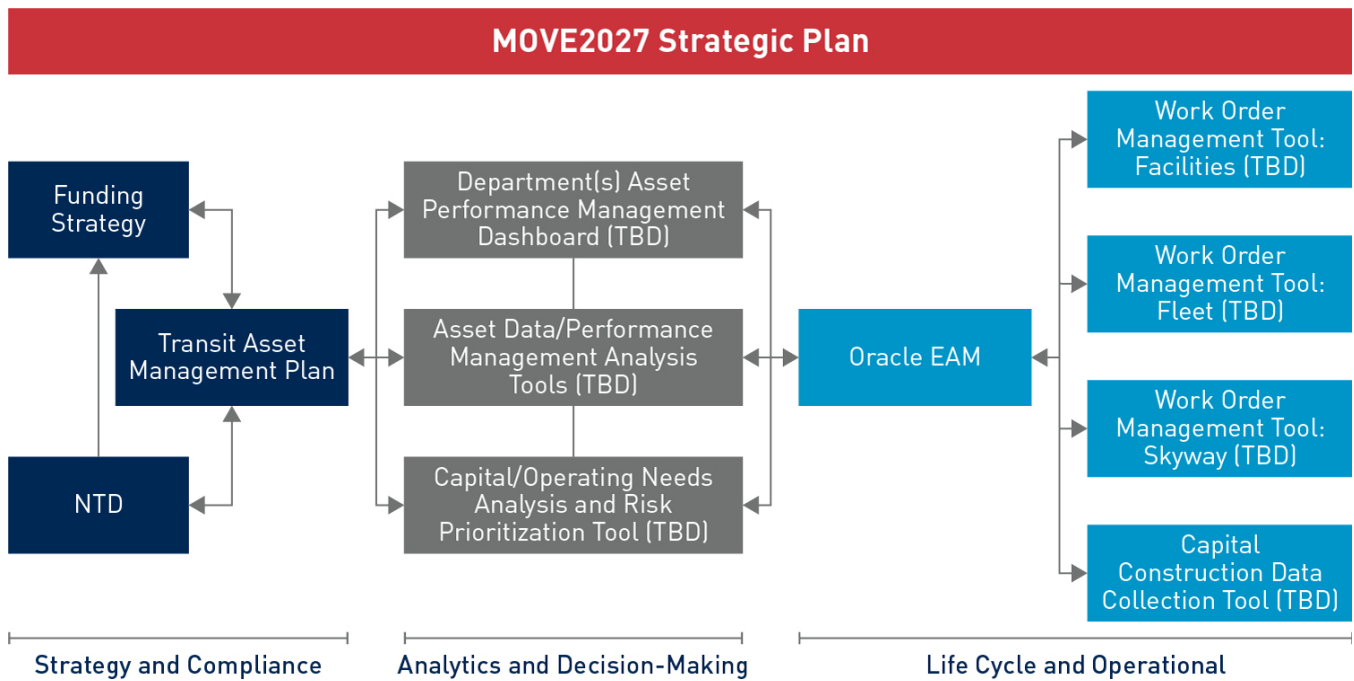


Figure 31. The JTA's TAM Portfolio Management Tools



Note: This strategy will also be executed short to long-term, within the next 48+ months.

### Strategy 3: Increase the Efficiency and Effectiveness of Agency Performance

Goal of strategy 3 is to ultimately move the JTA to advanced TAM practices based on data-driven analytics and decision-making to optimize its asset SGR and efficiency. With the asset information platform, Oracle EAM, now in place the JTA will need to invest in developing and procuring technological capabilities to manage the assets' whole lifecycle cost, risks, and performance to achieve operating and capital cost savings, improve service reliability, and contribute to safety for all stakeholders involved.

Implementation efforts will focus around ten implementation areas across all of the JTA's asset groups, as illustrated in Figure 32 below.

Figure 32. The JTA's Ten TAM Implementation Areas



Implementation efforts can either focus on individual areas or span across multiple areas due to the close interrelationship of these areas.

Table 37 below explains some of the areas' starting points to identify opportunities for improvements.

Table 37. The JTA's TAM Implementation Starting Points

Implementation Area	Implementation Starting Points and Ideas
1. TAM Policy/Strategy	<ul style="list-style-type: none"> <li>Use policy to allocate TAM implementation effort to assets with highest expected benefit to the JTA.</li> </ul>
2. Asset Inventory	<ul style="list-style-type: none"> <li>Maintain and advance asset hierarchy, including asset attributes.</li> <li>Take inventory on assets not yet captured.</li> <li>Determine process to add new and eliminate disposed assets.</li> <li>Develop single master asset registry in Oracle EAM, Complete asset inventory.</li> <li>Initiate analysis ("zero-based approach") to identify assets that provide little value/benefit to authority.</li> <li>Investigate outsourcing potential (including leasing).</li> <li>Investigate asset homogenization, where beneficial.</li> <li>Develop simplified controlled process to collection existing and new asset data.</li> </ul>
3. Condition Assessment	<ul style="list-style-type: none"> <li>Improve asset condition assessment methods and frequencies, incl. determining components with higher wear and tear or high failure rates.</li> <li>Develop performance-based asset condition analysis to ensure capital investments are prolonging the useful life of assets and delivering the desired performance outputs.</li> <li>Improve rating scale to allow more granular assessments (where beneficial).</li> <li>SGR Baseline Analysis.</li> </ul>

Implementation Area	Implementation Starting Points and Ideas
4. Useful Life/Decay Curves	<ul style="list-style-type: none"> <li>• Refine ULB standards and adjust where needed.</li> <li>• Development of asset-specific decay curves (where most appropriate) and forecasting methods to determine optimal replacement times.</li> <li>• Determining useful life benchmarks (ULB) in relation to asset performance.</li> <li>• Interface with maintenance methods (see 8.)—how do alternative maintenance methods impact decay curves and ULB</li> </ul>
5. Lifecycle Costing (Replacement \$ and Date)	<ul style="list-style-type: none"> <li>• Develop lifecycle cost methodology and decision support (for relevant assets).</li> <li>• Determine commercial optimal replacement times (in addition to technical replacement time determined by asset operations and maintenance, see 8).</li> <li>• Determine replacement cost (build data base for high value items and frequently procured asset). Leverage purchasing power through demand pooling.</li> </ul>
6. Level of Service (LOS)/ Performance	<ul style="list-style-type: none"> <li>• Determine LOS required or desired (in relation to risk and impact resulting from asset failure).</li> <li>• Determine asset specific performance metrics, measure units, frequency of measurements, and data storage method/location.</li> <li>• Determine link between performance metrics support asset condition rating and replacement times.</li> </ul>
7. Asset Criticality (Risk)	<ul style="list-style-type: none"> <li>• Review current practice of determining asset criticality and risk, expand asset criticality assessment by adding adequate parameters.</li> <li>• Risk of asset failure and its implications help making investment decisions, incl. prioritization.</li> <li>• Elevated risk assets require more detailed performance metrics, monitoring, forecasting, documentation (risk profile helps to also priorities where to allocate TAM resources).</li> <li>• Determine comprehensive risk assessment for all asset groups (or individual assets). Low risk assets are candidates that could be used beyond ULB.</li> </ul>
8. Maintenance Methodology	<ul style="list-style-type: none"> <li>• For prioritized assets, determine if more sophisticated maintenance methods can improve performance, prolong useful life, and reduce SGR need.</li> </ul>
9. Capital Investment Plan/ Prioritization	<ul style="list-style-type: none"> <li>• Improve investment prioritization method.</li> <li>• Improve decision process for prioritization and investment selection.</li> </ul>
10. Funding Strategy	<ul style="list-style-type: none"> <li>• Leverage national, regional, and local funding sources.</li> </ul>

The JTA has developed implementation action lists that address these areas below. This strategy will also be executed over the next 1 to 4+ years.

## Strategy 4: Develop a Resilient and Sustainable Workforce

Parallel to strategy 3, the JTA will utilize the broad TAM organizational framework to develop the culture of continuous improvements of the JTA's TAM business practices. In addition, as is currently the case in the transit industry workforce sustainment and resiliency is also a focus for ensuring assets remain in a safe state of operation. To also ensure the TAM Program progresses, additional support for the program by investing in personnel and consulting support to ensure alignment with MOVE2027 strategic plan will also need to occur.

This strategy will also be executed short to long-term to ensure the program progresses in line with Federal TAM requirements.

### 6.3.3 TAM Implementation Actions

Through the TAM Plan organization, the JTA has established the organizational structure and implementation accountabilities. The TAM Plan identifies implementing actions for the strategies as detailed in Figure 29.

#### Implementation Management

The JTA has set up a routine meeting schedule for the TAM Steering Committee as well as Working Committee. In these meetings, the status of actions is reviewed, risks and possible mitigations discussed, new actions opened, and overall progress compared to the implementation schedule measured.

#### Implementation Actions

The JTA has developed a plan with actions in all strategic areas with implementation activities covering the 2022 TAM Plan horizon and in alignment with MOVE2027 strategic plan. Implementation management is an ongoing process with the action plan, a living document, a management report, used to capture all actions, report on status and progress, and assign responsibilities.

The initial action list covers the following actions, among others:

1. Overall schedule for formal committee meetings.
2. Plan for TAM activities, such as NTD reporting.
3. Staff training for TAM, and use of the Oracle EAM and any new tools.
4. Asset inventory.
  - a. Ongoing collection of asset inventory beyond the minimal requirements.
  - b. Develop interfaces with relevant authority systems.
  - c. Discuss asset reduction actions, e.g., move IT hardware to cloud-based technology, master agreements for licensing, removal of obsolete equipment, and so on.
5. Condition assessments.
  - a. Commence update of facilities condition assessments per final ruling. Further refine condition assessment process for all assets and develop standard.
  - b. Develop approach for aligning asset performance, capital investment to condition ratings.
6. ULB / decay curves.
  - a. Detailed review of ULB policies.
  - b. Develop software to create dynamic asset condition decay curves based on asset data and performance.
7. Lifecycle cost model.
  - a. Develop lifecycle cost model, including operating cost, for key asset classes.
  - b. Develop Capex, Opex, and Risk modeling tool (see 11 a.).
8. Develop performance metrics and maintenance department dashboards.
9. Establish a more comprehensive asset criticality model.
10. Maintenance methodologies.
  - a. Develop monitoring systems for critical systems on Skyway trains.
  - b. Develop and implement tools to better predict technical useful life for vehicles.



- c. Research technologies to expand ULB for buildings.
  - d. Develop Reliability and monitoring program pilot for assets.
11. Capital plan/prioritization.
- a. Integrate SGR need with capital planning and risk.
12. Identify additional funding sources.
13. Continue EAM Optimization.

The detailed action lists can be found on the following pages in Table 38.



Table 38. 2022 TAM Plan Implementing Actions

Strategy	Process	Action Title	Action Detail	12 M	24 M	48 M	48+ M
1. Create a single source of truth for data	Increase asset portfolio captured in EAM system of record.	Complete EAM Data load and review inventory.	<ul style="list-style-type: none"> <li>Continue to populate asset data and expand validated inventory.</li> <li>Develop department data ownership roles.</li> </ul>	●	●	●	●
		Establish lifecycle operating costs.	<ul style="list-style-type: none"> <li>Develop methodology and procedures to identify the lifecycle cost by asset category (operating budget).</li> </ul>		●		
	Annual Review of asset performance / condition processes for mission critical assets.	Develop plan for EAM to Fixed Asset (FA) interface.	<ul style="list-style-type: none"> <li>Interface FA and EAMS.</li> </ul>	●	●		
		Execute EAM to FA interface plan.	<ul style="list-style-type: none"> <li>Interface FA and EAMS.</li> </ul>		●	●	
		Evaluate and Establish EAM/FA database elements.	<ul style="list-style-type: none"> <li>Reconcile common asset term values between datasets.</li> </ul>	●	●		
	Data Management and Utilization	Data Quality	<ul style="list-style-type: none"> <li>Develop data quality standard and assign owner.</li> <li>Review data contained within EAM to ensure it is current.</li> <li>Create performance metrics on progress of data quality.</li> </ul>	●	●	●	●
		EAM Utilization	<ul style="list-style-type: none"> <li>Develop processes, procedures, and train to utilize current EAM and execute.</li> </ul>	●	●	●	●
	Integrate financial planning process with expansion and facilities decentralization plan.	Review replacement costs.	<ul style="list-style-type: none"> <li>Review and establish replacement costs for all assets, including methodology for valuations.</li> </ul>	●	●		
	Condition Assessment	Assess condition of facilities on a 4-year cycle	<ul style="list-style-type: none"> <li>Myrtle Campus (year 1)</li> <li>Offsite Locations (year 2)</li> <li>JRTC, IBT (year 3)</li> <li>Stations (year 4)</li> <li>And repeat for TAM Plan 2026 horizon</li> </ul>	●	●	●	●
		Assess condition of infrastructure (on a 2-year cycle)	<ul style="list-style-type: none"> <li>Guideway infrastructure against FDOT and U.S. DOT standards.</li> </ul>		●	●	●

Strategy	Process	Action Title	Action Detail	12 M	24 M	48 M	48+ M
2. Develop innovative tools to collect data, analyze, and make better decisions with.	Project prioritization.	Develop and implement a Prioritization tool.	<ul style="list-style-type: none"> <li>Through consulting support, research, develop, test, and implement a customizable flexible prioritization tool compatible with the JTA systems and in alignment with the goals of MOVE2027 strategic plan.</li> </ul>	●	●		
		Utilize information received from threats and vulnerabilities assessments (TVAs) to prioritize capital projects (Environmental, Safety and Security).	<ul style="list-style-type: none"> <li>Acquired TVAs from multiple agencies (both transit and Government) annually to ensure our priorities are in line with best practice and actual threats.</li> </ul>		●	●	●
	Review current IT processes and procedures for EAM.	EAM Reporting/EAM Optimization.	<ul style="list-style-type: none"> <li>Utilizing business object/BI tool reporting, so end users can create/build reports themselves.</li> </ul>	●	●		
		Full EAM optimization project.	<ul style="list-style-type: none"> <li>Conduct EAM optimization project and identify ways to automate data updated for areas like location, condition, status, ownership, retirements, etc.</li> </ul>	●	●		
	Develop and invest in tools and metrics to improve efficiencies in data collection, analysis, and dissemination of asset information.	Develop asset metrics to manage by.	<ul style="list-style-type: none"> <li>Identify, develop, and measure metrics that provide insight into the overall performance of an asset and its critical component parts to manage by.</li> </ul>	●	●	●	●
		Funding needs transformation.	<ul style="list-style-type: none"> <li>Explore new and existing funding opportunities to support the MOVE2027 strategic plan plan through better asset management and leveraging the TAM Plan</li> <li>Develop funding profiles that grow linearly that promote better asset utilization and prolong the useful life of assets to balance future investment needs.</li> </ul>	●	●		
		MMIS Successor System.	<ul style="list-style-type: none"> <li>Develop and document current (As-Is) and develop To-Be business processes for maintenance management. Focus in gaps between current and best practice.</li> <li>Evaluate functionality of existing system for underutilization or non-use.</li> <li>Develop technical specifications including data transition, transactions, and phasing of integrations current and future needs.</li> <li>Develop new system requirements and categorize (must/should/nice to have).</li> <li>Canvass industry vs. custom developed EAM solution to fit the JTAs business model as well as future technology integration along with merits and shortcomings of each solution.</li> <li>Evaluate hosting options, total cost of ownership profiles, and develop independent cost estimate.</li> </ul>			●	●

Strategy	Process	Action Title	Action Detail	12 M	24 M	48 M	48+ M
3. Increase the efficiency and effectiveness of agency performance	Develop and Implement TAM Plan annual review process.	Annual Review	<ul style="list-style-type: none"> <li>• Create policy, process, and procedures which become enacted once specific criteria is met to warrant a TAM Plan amendment.</li> <li>• Integrate into existing the JTA policies and procedures to ensure the TAM Plan is consulted.</li> <li>• Ensure all processes which create, operate, maintain or dispose assets have a TAM component.</li> </ul>	●			
	Develop pilot root cause analysis process for asset defects that impact organizational goals.	Warranty and maintenance agreement audit.	<ul style="list-style-type: none"> <li>• Conduct a value audit for all warranty and maintenance agreements purchased with capital funds on initial project/purchase to see if ROI is appropriate.</li> </ul>	●	●		
		Establish Lifecycle expectancy	<ul style="list-style-type: none"> <li>• Utilize existing EAM to capture failure hours or miles to set life expectancy for all vehicles subcomponents.</li> </ul>	●	●	●	
	Develop and pilot performance metrics that go beyond SGR and age-based asset condition for key asset types.	Asset Performance Metrics	<ul style="list-style-type: none"> <li>• Identify key asset types and key components.</li> <li>• Develop new processes and tools which leverage the JTA maintenance data and SME knowledge to develop better performance indicators for assets.</li> <li>• Where needed, invest in remote monitoring technologies for critical components in assets.</li> <li>• Develop trend, threshold, and behavioral data for each key asset and components.</li> <li>• Ensure quality standards for all component parts for key assets are documented and incorporated into purchase specifications.</li> <li>• Develop QA/QC process (pass fail) criteria for component performance.</li> </ul>	●	●	●	●
	Develop lifecycle management plans and master replacement plans for key and high cost/priority asset types.	Lifecycle Planning	<ul style="list-style-type: none"> <li>• Document key asset lifecycle management plans.</li> <li>• As a minimum Identify: <ul style="list-style-type: none"> <li>○ Asset Class Information</li> <li>○ Replacement Value</li> <li>○ Owners and Stakeholders</li> <li>○ Health, Safety and Environment,</li> <li>○ Lifecycle Strategies,</li> <li>○ Budget (capital and operating)</li> <li>○ Risks</li> <li>○ Improvement Actions</li> </ul> </li> </ul>	●	●	●	

Strategy	Process	Action Title	Action Detail	12 M	24 M	48 M	48+ M
3. Increase the efficiency and effectiveness of agency performance	Develop lifecycle management plans and master replacement plans for key and high cost/priority asset types.	Develop Master replacement plans	<ul style="list-style-type: none"> <li>Building upon the best practice of Revenue Fleet plans, develop master plans for high cost and/or priority assets such as:</li> <li>Campuses</li> <li>HVAC Systems</li> <li>Roofs</li> <li>Stations</li> <li>Facilities</li> <li>Fire Life Safety Systems</li> <li>Power infrastructure</li> <li>Environmental Resiliency Assets</li> <li>Amenities</li> </ul>	●	●	●	
4. Develop a resilient and sustainable workforce.	Asset Management Processes	Asset Management Standards	<ul style="list-style-type: none"> <li>Develop suite of the JTA Asset Management standards which leverage existing process and procedures and fills gaps.</li> <li>Incorporate department champions and develop change management processes.</li> <li>Train and rollout standards across all departments.</li> <li>Monitor and review compliance.</li> </ul>	●	●	●	●
	Continuous Improvement	Review, Learn, and Improve (RLI)	<ul style="list-style-type: none"> <li>Develop Review, Learn, and Improve process across key business processes such as onboarding, training, review and update, sustainability for workforce and skills.</li> <li>Leverage existing process of accident and investigation to provide key elements to design the RLI Process.</li> <li>Incorporate Safety Risk into the process to create a consistent process for RLI.</li> <li>Train personnel</li> </ul>	●	●	●	●
			<ul style="list-style-type: none"> <li>Document/develop and continuously review all key processes and procedures across asset maintenance.</li> <li>Develop competency profiles across all roles to ascertain standards for training and development.</li> <li>Identify key gaps (single point failures) that impede efficiency of the JTA personnel and mitigate.</li> <li>Ensure only suitably qualified and experienced staff are assigned tasks to ensure safety and efficiency.</li> </ul>	●	●	●	●

# APPENDICES

## A.1 TRANSIT ASSET MANAGEMENT PLAN CHECKLIST

## A.2 2022 TO 2025 FACILITIES INSPECTION SCHEDULE

Insp. Cycle	Last Insp	Next Insp	Description/ Building Name	NTD Facilities ID	Street	Facility Type
1	2018	2022	Myrtle Building 1	10773	100 N. Myrtle Avenue	Administrative Office/ Sales Office
1	2018	2022	Myrtle Building 2	10996	100 N. Myrtle Avenue	Administrative Office/ Sales Office
1	2018	2022	Myrtle Building 3	10998	100 N. Myrtle Avenue	Administrative Office/ Sales Office
1	2018	2022	Myrtle Building 4	10999	100 N. Myrtle Avenue	Other, Administrative & Maintenance (describe in notes)
1	2018	2022	Myrtle Building 5	11000	100 N. Myrtle Avenue	Administrative Office/ Sales Office
1	2018	2022	Myrtle Building 6	11001	100 N. Myrtle Avenue	General Purpose Maintenance Facility/Depot
1	2018	2022	Myrtle Building 7	11002	100 N. Myrtle Avenue	General Purpose Maintenance Facility/Depot
1	2018	2022	Myrtle Building 8	11003	100 N. Myrtle Avenue	General Purpose Maintenance Facility/Depot
1	2018	2022	Myrtle Building 9	11004	100 N. Myrtle Avenue	Administrative Office/ Sales Office
1	2018	2022	Myrtle Building 10	11005	100 N. Myrtle Avenue	Administrative Office/ Sales Office
1	2019	2022	Myrtle Building 11A	11006	136 N. Myrtle Avenue	Administrative Office / Sales Office
1	2019	2022	Myrtle Building 11B	11007	136 N. Myrtle Avenue	Administrative Office/ Sales Office
1	2018	2022	Myrtle Campus Bus Lot	11026	100 N. Myrtle Avenue	Surface Parking Lot

Insp. Cycle	Last Insp	Next Insp	Description/ Building Name	NTD Facilities ID	Street	Facility Type
2	2019	2023	TPO/Prudential Building	11008	1022 Prudential Drive	Administrative Office/ Sales Office
2	2019	2023	Documents Retention Offices	11009	5343 Phillips Highway	Administrative Office/ Sales Office
2	2019	2023	Kings Avenue Parking Garage	11025	1201 Kings Avenue	Parking Structure
2	2019	2023	Armsdale Park-n-Ride Lot	11028	3191 Armsdale Road	Surface Parking Lot
2	2019	2023	Soutel Park-n-Ride	11029	5107 Leander J Shaw Jr Street	Bus Transfer Center
2	2019	2023	Gator Lot	11030	540 Victoria Street	Surface Parking Lot
2	2019	2023	Golfair Lot	11031	813 Golfair Boulevard	Surface Parking Lot
2	2019	2023	Heckshire Drive Ferry Lot	11032	0 Ocean Street	Other, Passenger or Parking (describe in Notes)
2	2019	2023	Mayport Ferry Lot	11033	9618 Hecksher Drive	Other, Passenger or Parking (describe in Notes)
2	2019	2023	Jefferson Lot	17702	660 W Bay Street	Surface Parking Lot
2	2019	2023	A1A & Wonderwood Park-n-Ride Lot	17703	2893 SR A1A	Surface Parking Lot
2	2019	2023	JTB/Phillip Park-n-Ride Lot	17704	7000 Phillips Highway	Surface Parking Lot
2	2019	2023	Avenues Walk Park-n-Ride Lot	17705	10508 Avenues Walk Blvd	Surface Parking Lot
2	2019	2023	Heckshire Drive Ferry Terminal	11019	9618 Hecksher Drive	Ferryboat Terminal
2	2019	2023	Mayport Ferry Terminal	11020	0 Ocean Street	Ferryboat Terminal
2	2019	2023	Heckshire Drive Pavillion	11021	9618 Hecksher Drive	Other, Passenger or Parking (describe in Notes)
2	2019	2023	Heckshire Drive Restrooms	11022	9618 Hecksher Drive	Other, Passenger or Parking (describe in Notes)
2	2019	2023	Armsdale Road Park & Ride Building	11023	3191 Armsdale Road	Bus Transfer Center
2	2019	2023	Avenues Walk Park & Ride Building	17700	10508 Avenues Walk Blvd	Bus Transfer Center
3	2020	2024	JRTC at LaVilla—Building	18789	100 LaVilla Center Drive	Administrative Office/ Sales Office
3	2020	2024	Johnson Street Lot	17701	103 Johnson Street	Surface Parking Lot

Insp. Cycle	Last Insp	Next Insp	Description/ Building Name	NTD Facilities ID	Street	Facility Type
3	2020	2024	JRTC at LaVilla—Hub	18790	100 LaVilla Center Drive	Bus Transfer Center
3	2020	2024	Inter-City Bus Terminal	11024	1111 W. Forsyth Street	Bus Transfer Center
4	2021	2025	Skyway O&M Building	11010	725 Leila Street	Combined Administrative and Maintenance Facility (describe in Notes)
4	2021	2025	Rosa Parks Transit Station	11011	201 W. Union Street	Elevated Fixed Guideway Station
4	2021	2025	Hemming Plaza Station	11012	315 Hogan Street	Elevated Fixed Guideway Station
4	2021	2025	Central Station	11013	312 W. Bay Street	Elevated Fixed Guideway Station
4	2021	2025	JRTC at LaVilla Station	11014	100 LaVilla Center Drive	Elevated Fixed Guideway Station
4	2021	2025	Jefferson Street Station	11015	7211 W. Bay Street	Elevated Fixed Guideway Station
4	2021	2025	San Marco Station	11016	938 Mary Street	Elevated Fixed Guideway Station
4	2021	2025	Riverplace Station	11017	801 Flagler Street	Elevated Fixed Guideway Station
4	2021	2025	Kings Avenue Station	11018	1003 Kings Avenue	Elevated Fixed Guideway Station

### A.3 [DETAILED ASSET CATEGORY BREAKDOWN](#)

### A.4 ASSET CRITICALITY—TOP 50 HIGHEST RANKED ASSETS

Asset Description	Prioritization Score	Condition Rating	Liability Score	Service Loss Score
Bldg 11 Offices - Roofing	77.65	2.12	A5	B6
Philips-04 Building - Overall Structure	77.09	2.15	A5	B6
Philips-05 Building - Overall Structure	77.09	2.15	A5	B6
Philips-07 Building - Overall Structure	77.09	2.15	A5	B6
Philips-08 Building - Overall Structure	77.09	2.15	A5	B6
Gillig G29d102n4 - Fixed Route Bus 1601	71.00	1.56	A3	B2
Gillig G29d102n4 - Fixed Route Bus 1602	71.00	1.56	A3	B2
Gillig G29d102n4 - Fixed Route Bus 1603	71.00	1.56	A3	B2
Gillig G29d102n4 - Fixed Route Bus 1604	71.00	1.56	A3	B2



Asset Description	Prioritization Score	Condition Rating	Liability Score	Service Loss Score
Gillig G29d102n4 - Fixed Route Bus 1605	71.00	1.56	A3	B2
Gillig G29d102n4 - Fixed Route Bus 1606	71.00	1.56	A3	B2
Gillig G29d102n4 - Fixed Route Bus 1607	71.00	1.56	A3	B2
Gillig G29d102n4 - Fixed Route Bus 1609	71.00	1.56	A3	B2
Gillig G29d102n4 - Fixed Route Bus 1611	71.00	1.56	A3	B2
Gillig G29d102n4 - Fixed Route Bus 1612	71.00	1.56	A3	B2
Gillig G29d102n4 - Fixed Route Bus 1613	71.00	1.56	A3	B2
Gillig G29d102n4 - Fixed Route Bus 1614	71.00	1.56	A3	B2
Gillig G29d102n4 - Fixed Route Bus 1615	71.00	1.56	A3	B2
Gillig G29d102n4 - Fixed Route Bus 1616	71.00	1.56	A3	B2
Gillig G29d102n4 - Fixed Route Bus 1620	71.00	1.56	A3	B2
Gillig G29d102n4 - Fixed Route Bus 1621	71.00	1.56	A3	B2
Gillig G29d102n4 - Fixed Route Bus 1622	71.00	1.56	A3	B2
Kings Avenue Walkway - Superstructure	70.73	2.46	A5	B6
Philips-03 Building - Foundation	70.58	2.47	A5	B6
Philips-06 Building - Foundation	70.58	2.47	A5	B6
Philips-09 Building - Foundation	70.58	2.47	A5	B6
LTS IP Camera 2.80mm, 0.05 Lux2 MP5W Model— Inside Vault Room - Bldg 5	70.17	2.01	A6	B2
LTS IP Camera 2.80mm, 0.05 Lux2 MP5W Model— Breakroom - Bldg 5	70.17	2.01	A6	B2
LTS IP Camera 2.80mm0.05 Lux2 MP5W Model— Breakroom - Bldg 5	70.17	2.01	A6	B2
LTS IP Camera 2.80mm, 0.05 Lux2 MP5W Model— Breakroom - Bldg 5	70.17	2.01	A6	B2
LTS IP Camera 2.80mm, 0.05 Lux2 MP5W Model - Breakroom - Bldg 5	70.17	2.01	A6	B2
LTS IP Camera 2.80mm, 0.05 Lux2 MP5W Model - Inside Moneyroom - Bldg 5	70.17	2.01	A6	B2
LTS IP Camera 2.80mm, 0.05 Lux2 MP5W Model - Inside Moneyroom - Bldg 5	70.17	2.01	A6	B2
LTS IP Camera 2.80mm, 0.05 Lux2 MP5W Model - Outside Moneyroom - Bldg 5	70.17	2.01	A6	B2
LTS IP Camera 2.80mm, 0.05 Lux2 MP5W Model - Outside Moneyroom - Bldg 5	70.17	2.01	A6	B2
LTS IP Camera 2.80mm, 0.05 Lux2 MP5W Model - Outside Moneyroom - Bldg 5	70.17	2.01	A6	B2
2015 Turtle Top Cutaway - #CC113	69.05	1.68	A3	B2

Asset Description	Prioritization Score	Condition Rating	Liability Score	Service Loss Score
2014 Ford Turtle Top E450 Odyssey - #920	69.05	1.68	A3	B2
2014 Ford Turtle Top E450 Odyssey - #929	69.05	1.68	A3	B2
2014 Ford Turtle Top E450 Odyssey - #930	69.05	1.68	A3	B2
2014 Ford Turtle Top E450 Odyssey - #931	69.05	1.68	A3	B2
2014 Ford Turtle Top E450 Odyssey - #932	69.05	1.68	A3	B2
2014 Ford Turtle Top E450 Odyssey - #934	69.05	1.68	A3	B2
2014 Ford Turtle Top E450 Odyssey - #935	69.05	1.68	A3	B2
2014 Ford Turtle Top E450 Odyssey - #936	69.05	1.68	A3	B2
2014 Ford Turtle Top E450 Odyssey - #937	69.05	1.68	A3	B2
2014 Ford Turtle Top E450 Odyssey - #938	69.05	1.68	A3	B2
Heckscher Bathrooms Building - HVAC Unit	68.96	2.08	A2	B2
2016 Toyota Sienna - #CC122	68.50	1.72	A3	B2
2016 Toyota Sienna - #CC123	68.50	1.72	A3	B2

## A.5 TERM LITE PRIORITIZED PROJECTS 2022-2052

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**JACKSONVILLE  
TRANSPORTATION  
AUTHORITY**

[jtafla.com](http://jtafla.com)

100 LaVilla Center Drive, Jacksonville FL 32204  
Phone (904) 630-3181



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