



Jacksonville Transportation Authority (JTA)

2018 Transit Asset Management Plan

September 30, 2018

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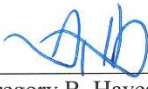
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Transit asset management plans are required for all Federal Transit Administration grantees per MAP-21 legislation (P.L. 112-141), FAST Act (P.L. 114-94), and the FTA Transit Asset Management Final Rule (49 CFR Part 625). Moreover, developing a transit asset management plan makes good business sense. The benefits from enhanced asset management practice include improved system safety and reliability, reduced costs, better customer service, and optimized resource allocation.


With aging infrastructure, limited funding and a growing demand for service, the Jacksonville Transportation Authority needs to find ways to better manage and extend the life of its existing assets, while optimizing its investment in new capital projects. This Transit Asset Management Plan outlines the JTA's policy, approach and specific actions to improve its asset management practice over the next five years.

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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 transportation services to the traveling public. The effective management, performance, and replacement of these assets directly impact the quality, performance, and ability of the JTA to deliver these services.

Federal Requirements

In 2012 the U.S. Department of Transportation (US 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 21st Century Act (MAP-21; P.L. 112-141), mandating the Federal Transit Administration (FTA) to develop a rule requiring transit agencies to create and maintain Transit Asset Management (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 Transit Asset Management Final Rule (49 CFR Part 625) requiring recipients for federal formula grants to develop a Transit Asset Management Plan detailing their ongoing asset management planning process and provide accountability through reporting to the National Transit Database (NTD).

FTA's Final Rule defines Transit Asset Management as follows

"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 life cycles, for the purpose of providing safe, cost-effective, and reliable public transportation."

The JTA's 2018 Transit Asset Management Plan Contents

The JTA's 2018 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 life cycle management, better maintenance practices, extended useful life, reduction of total life cycle cost, reduced risk, as well as increased asset efficiency and performance.

The results in this TAM Plan are summarized around five elements

- A. The JTA's TAM Policy** – What principles rule the JTA's asset management approach and what are the JTA's TAM goals?
- B. Asset Inventory and State of Good Repair (SGR) Baseline** – What are the JTA's assets and what is their current status with regard to SGR and investment backlog?
- C. Future SGR Capital Needs** – What is the JTA's capital need over the next 20 years to bring all assets into SGR?
- D. Average required funding levels** – What annual funding levels are required to keep the JTA's assets in SGR?



E. **TAM Implementation Roadmap** – What actions in what time frame will the JTA take to implement good asset management business practices and improve SGR?

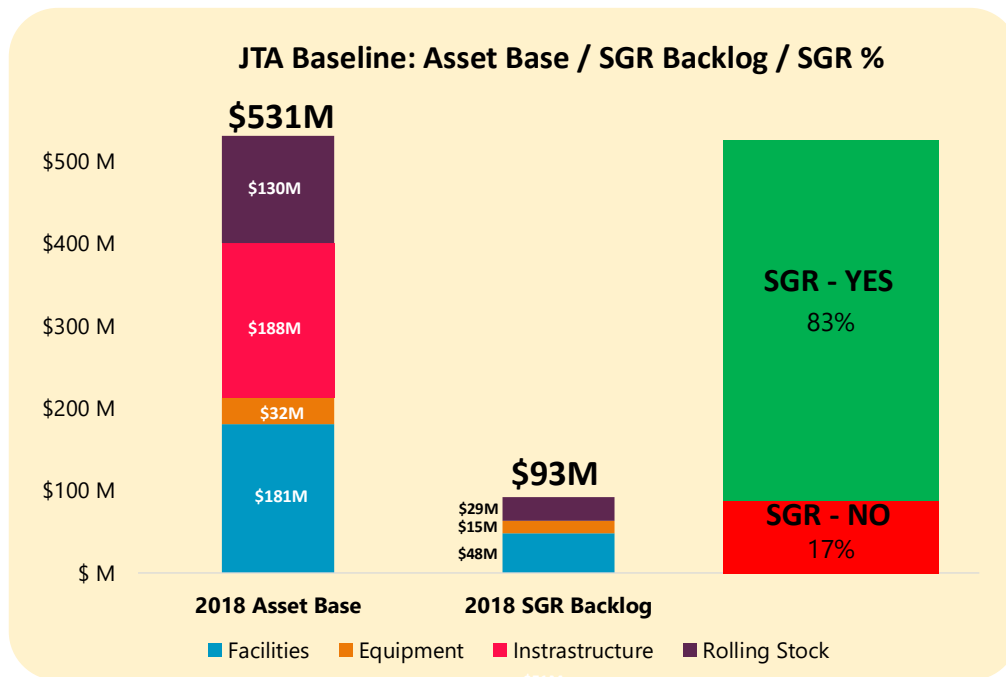
TAM Policy

The JTA adopted a TAM policy that provides direct alignment between its Mission, 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 (SGR) Baseline

The JTA's current capital asset inventory is grouped into four categories (1) Rolling Stock, (2) Equipment, (3) Facilities and (4) Infrastructure. The total value of capital included in this TAM plan is \$531 million (in 2018 dollars)¹. The Skyway infrastructure and facilities (for administration, maintenance and customers) are the two largest asset categories and represent about 70 percent of the JTA's asset base value.

Of this asset base, 83 percent (by dollar value) are in SGR. They operate at a full level of performance. 17 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. From a technical and commercial standpoint, it is suboptimal to operate assets not in SGR. The 17 percent of the current asset base not in SGR represent the 2018 SGR backlog valued at \$93 million, as shown below.



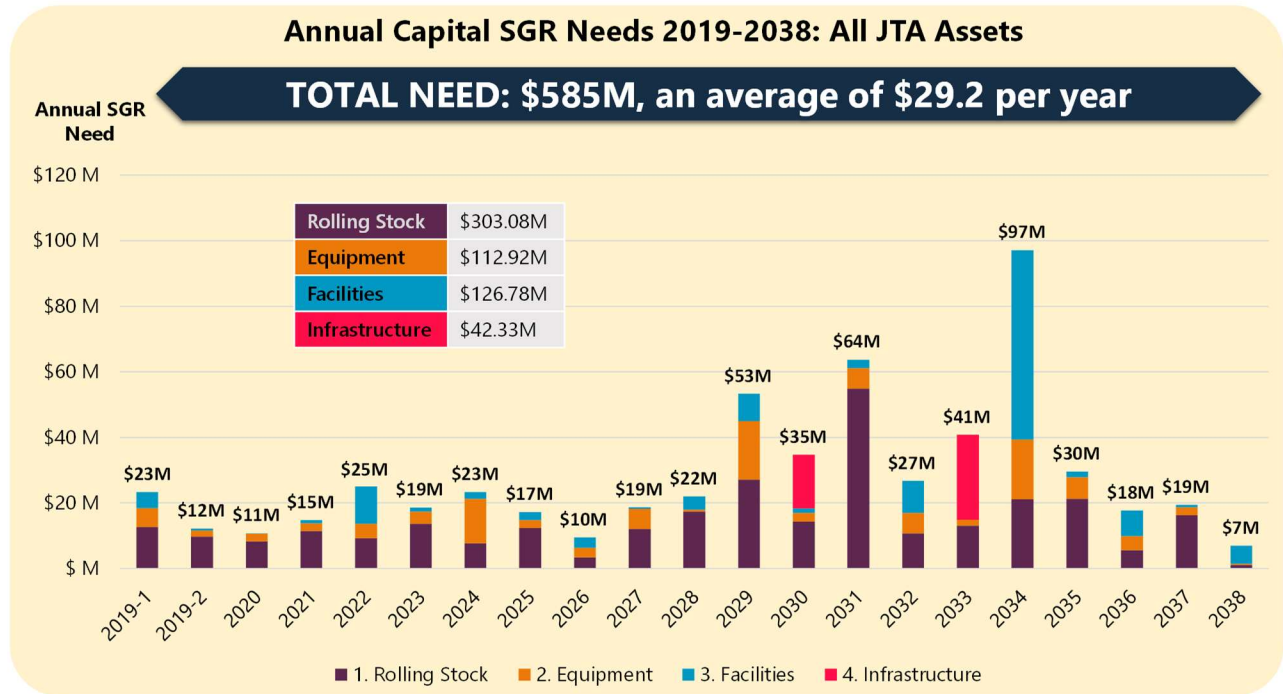
¹ Inflated historic replacement cost.



Future Life Cycle SGR Capital Needs

Over a period of 20 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 2019 through 2038, the JTA’s SGR need will be about \$585 million. The replacement need fluctuates from year to year and can be as low as \$7 million or as high as \$97 million.



Combining the 2018 SGR backlog of \$93 million with the 20-year SGR needs of \$585 million results in a total SGR need of \$678 million or about \$34 million per year.

Required Funding Levels

The TAM Plan developed a 20-year funding level estimate based on both past and present annual funding. The estimate amounts to an annual average funding amount of \$15.6 million (a total of \$311 million from 2019 through 2038). Based on the above total SGR need of \$678 million this leaves a funding gap of about \$367 million – over the 20-year reporting period.

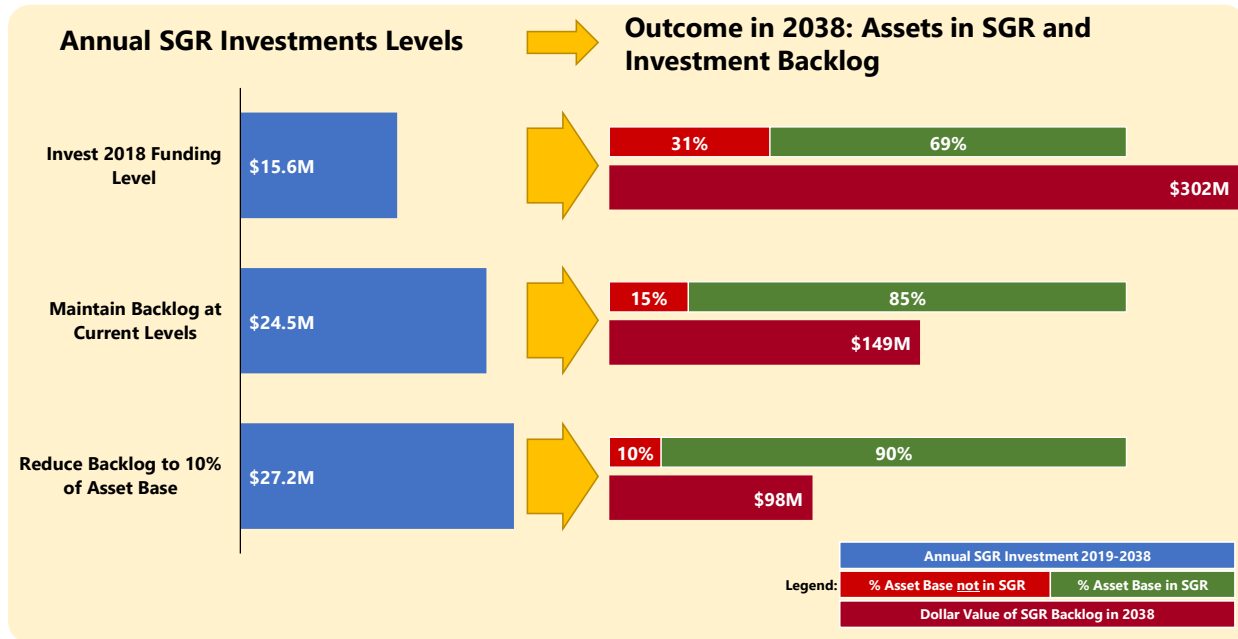
The TAM Plan conducts investment scenario analysis to apply alternative funding levels to see how they will affect the SGR backlog:

- 1) Continuing at current funding levels will increase the investment backlog to \$302 million in 2038 (from today \$93 million) and the asset SGR backlog would increase to 31 percent (from today’s level of 17 percent).
- 2) Maintaining current backlog levels and addressing all annual SGR needs would require funding of about \$24.5 million per year, on average. SGR would remain at today’s level of 15 percent.²

² Due to few new assets added in 2019 the 2038 SGR would be at 15 percent, slightly lower than today’s SGR of 17 percent.



- 3) Significantly reducing the SGR backlog to 10 percent of the asset base value in 2038 would require about \$27 million per year, on average. SGR would increase to about 90 percent. It is assumed that a ten percent backlog in low-risk assets³ is acceptable.



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 2018 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.

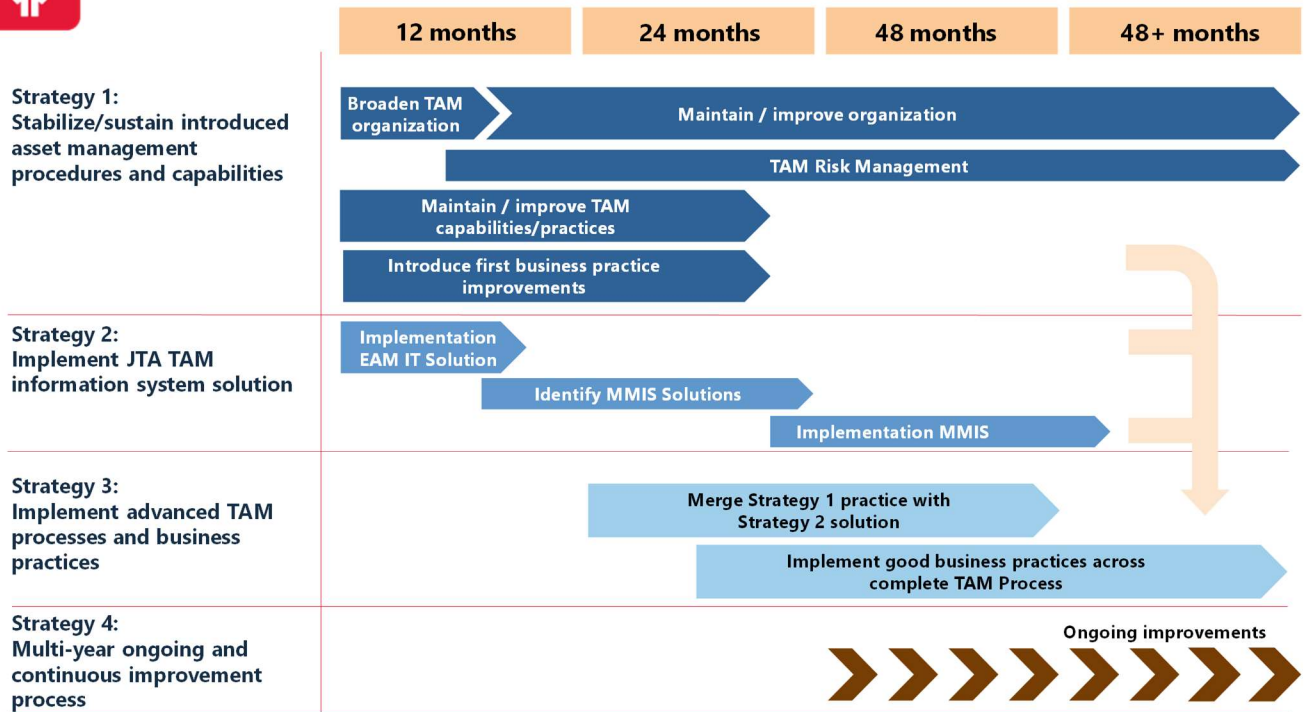
³ Failures of low-risk assets have no impact on core operations (e.g. revenue service) and only minor impact on other operations. These failures don’t require immediate replacement.



The key initial implementation is addressing the organizational change management to institutionalize the TAM Plan processes and continue with the development of an enterprise approach to a TAM asset information solution. This provides the organizational and data-driven foundation from which life cycle management practices will be improved. The objective is to reduce life cycle cost and improve reliability to ultimately reduce the SGR backlog.



High-Level Roadmap



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1 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 TAM Plan, and for ongoing asset management, the JTA has established

- 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 life cycle performance objectives, measures and indicators of state of good repair (SGR)
- Procedures for monitoring and reporting the SGR baseline and backlog
- Analytical capabilities to estimate future SGR needs over a 20-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.

The JTA underwent considerable organizational growth to implement the federal TAM requirements and assign ongoing responsibilities. Through the development of this TAM Plan, the JTA has established an Implementation Strategy that is the foundation for stabilizing and maintaining the processes developed 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, implements an asset management information system solution, and improves asset management capabilities.

1.1 Federal Requirements

The Moving Ahead for Progress in the 21st Century Act (MAP-21)⁴ required the Federal Transit Administration (FTA) to develop rules for TAM Plan content, reporting, and performance measures. The Fixing America's Surface Transportation (FAST) Act reaffirmed this requirement.

On July 26, 2016, the FTA published the Transit Asset Management (TAM) Final Rule.⁵ The purpose of the Final Rule is to help achieve and maintain SGR for the nation's public transportation assets.

FTA's rule defines Transit Asset Management as follows⁶

⁴ MAP-21, the Moving Ahead for Progress in the 21st Century Act (Public Law 112-141).

⁵ 49 CFR Parts 625 – Transit Asset Management; 49 CFR Parts 630 National Transit Database.

⁶ 49 CFR Parts 625, § 625.5 (FTA Transit Asset Management Final Rule), July 26, 2016.



“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 life cycles, for the purpose of providing safe, cost-effective, and reliable public transportation.”

In more detail, FTA's national TAM Final Rule

- Defines "state of good repair"
- 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.

In its “Frequently Asked Questions,” FTA provides guidance for the requirement of developing a TAM Plan

“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 must 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 a state of good repair)
- Identifying the unacceptable risks, including safety risks, in continuing to use an asset that is not in a state of good repair
- 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.

TAM Plans must include at a minimum an asset inventory, condition assessments of inventoried assets, and a prioritized list of investments to improve the state of good repair 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 National Transit Database (NTD)

(1) 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.

(2) Condition assessments for facilities and performance results for guideway.



(3) 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. Table 1 shows NTD reporting requirements for agencies whose fiscal year begins on October 1st.

Table 1: NTD Reporting Requirements


Reporting Requirements	Timing
Report FY 17 asset inventory module (AIM) data to NTD Submit targets for FY 18 to NTD (optional)	January 2018
Complete compliant TAM Plan Share TAM Plan with planning partners	October 2018
Report FY 18 AIM data to NTD (1st required) Submit targets for FY 19 to NTD (1st required)	January 2019
Report FY 19 AIM data to NTD Submit targets for FY 20 to NTD Submit narrative report to NTD (1st required)	January 2020
Report FY 20 AIM data to NTD Submit targets for FY 21 to NTD Submit narrative report to NTD	January 2021
Report FY 21 AIM data to NTD Submit targets for FY 22 to NTD Submit narrative report to NTD	January 2022
Complete compliant TAM Plan Share TAM Plan with planning partners	October 2022



1.3 How the JTA Addresses the Federal Requirements

The JTA uses the FTA TAM Final Rule Compliance Checklist⁷ to demonstrate that this TAM Plan addresses all FTA requirements, see Table 2.

Table 2: FTA TAM Final Rule Compliance Checklist

 Am I in Compliance with the TAM Final Rule?	
1. Do I have a TAM Plan that covers a four-year period?	Yes, covering 20 years
2. Was the TAM Plan updated within the last four years?	Yes, this is the first JTA TAM Plan
3. Do I have a TAM Plan that includes all of the required elements?	
a. An asset inventory for all assets used in the provision of public transportation, including those owned by third parties?	Yes
b. A condition assessment of all assets in my asset inventory for which I have direct capital responsibility?	Yes
c. An investment prioritization that:	Yes
• Ranks projects to improve or manage the SGR over the horizon period	
• Includes all capital assets for which I have direct capital responsibility, and	
• Is at the asset class level?	
d. Did I document the analytical processes and decision support tools used in developing my TAM Plan?	Yes
4. Do I have documentation that I calculated performance for:	
- Equipment (non-revenue service vehicles, support-service and maintenance vehicles equipment): the percentage of those vehicles that have either met or exceeded their ULB for all assets for which I have direct capital responsibility.	Yes
- Rolling Stock : the percentage of revenue vehicles by vehicle type that have either met or exceeded their ULB for all assets for which I have direct capital responsibility.	Yes
- Infrastructure (rail fixed-guideway, track, signals, and systems): the percentage of track segments with performance restrictions for all assets for which I have direct capital responsibility.	Yes
- Facilities : the percentage of facilities within an asset group rated below condition 3 on the TERM scale for all assets for which I have direct capital responsibility.	Yes
5. Do I have documentation that I set performance targets annually to project the following fiscal year for:	
• Equipment	Yes
• Rolling Stock	Yes
• Infrastructure	Yes
• Facilities	Yes
6. Did I make my TAM Plan, any supporting records or documents, performance targets, investment strategies, and the annual condition assessment report available to the State and/or MPO that provides my funding?	Yes
8. Does your tier I TAM Plan include all of the required elements?	
a. Documentation of a TAM and SGR policy?	Yes
b. An implementation strategy that outlines a plan to achieve its asset management goals?	Yes
c. A written description of the key TAM activities that you intend to engage in over the TAM Plan horizon period?	Yes
d. A summary or list of the resources, including personnel, that the recipient needs to develop and carry out the TAM Plan?	Yes
e. An outline of how I will monitor, update, and evaluate, as needed, its TAM Plan and related business practices, to ensure the continuous improvement of its TAM practices?	Yes

Note: Question number 7 is not applicable to JTA (only for tier II agencies)

⁷ From: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/regulations-and-guidance/asset-management/55371/compliancechecklistfy2018_0.pdf.



The FTA Transit Asset Management System Rule lays out specific requirements that the JTA is responding to within this report. The TAM Plan elements are described and cross-referenced in Table 3 to the report sections where the elements are covered.

Table 3: FTA TAM Plan Contents Requirements

FTA TAM Plan Requirement	Description	TAM Plan Chapter
1. Asset Inventory	Register of capital assets and information about those assets	3.2 and 3.3
2. Condition Assessment	Asset condition ratings for vehicles and facilities for the purpose of monitoring and predicting asset performance	4
3. Decision Support Tool	Methodology for prioritizing project based on condition and objective criteria	5
4. Prioritized Investments	Prioritized list of projects to manage or achieve the SGR of capital assets	5.4
5. TAM and SGR Policy	Executive-level direction for transit asset management; the actions that support implementation of the TAM policy	2
6. Implementation Strategy	Operational actions to achieve TAM goals and policies	6.2
7. Key Annual Activities	Actions required to implement the TAM Plan over the next several years	6.3
8. Identification of Resources	Summary of resources required to develop and carry out the TAM Plan	6.3
9. Evaluation Plan	Outline of how the TAM Plan and related business practices will be monitored, updated, and evaluated to ensure continuous improvement	6.3

1.4 The JTA’s Objectives for the Transit Asset Management Plan and the Ongoing Process

The preparation of the JTA’s first TAM Plan provides the foundational building blocks for improving asset management capabilities and implementing data-driven procedures for ongoing asset management. The focus is on 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 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.

This TAM Plan assists the JTA to

- Improve the tracking, measurability, management of its assets
- Improve transparency and accountability
- Optimize capital investment decision-making
- 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 life cycle through improving the SGR.

1.5 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 "line of sight" from the JTA's mission and 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 process. The inventory is maintained currently as the JTA's SGR database. The inventory is the registry of data about the asset and includes the assigned criticality.

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 Useful Life Benchmarks (ULB) are listed. Condition is reported and documented using the TERM scale.⁸ The chapter reports out of the condition measures captured in the JTA SGR 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 20-year timeframe. The chapter describes how the TERM lite

⁸ TERM: Transit Economic Requirements Model (FTA's SGR Capital Needs Analysis Tool).



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 multi-year 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 Appendix.



2 Asset Management Policy and Strategy

The TAM Plan includes the policy goals and policy statement adopted by the JTA. The JTA TAM Policy was approved by the JTA Executive Leadership Team and the CEO, with an effective date of June 1, 2018 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 JTA’s mission

“To improve Northeast Florida’s economy, environment and quality of life by providing safe, reliable, efficient and sustainable multimodal transportation services and facilities.”

The JTA’s mission is furthered through the following goals listed in Table 4.

Table 4: The JTA’s Goals

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
Transformative Mobility Solutions	Deliver innovative transportation choices providing accessible mobility throughout the community
Sustainability	Advance transportation solutions that support environmental goals and are mindful of the context of our community

The JTA’s TAM policy statement is structured into the following four sections

- I. The JTA Asset Management Policy Statement
- II. Incorporation of asset management principles into business processes
- III. Asset Management Governance, and
- IV. Roles and Responsibilities

and reads as follows

I. JTA Asset Management Policy Statement

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 manage across the whole life cycle 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.

The JTA Transit Asset Management Plan, authorized and adopted by the Chief Executive Officer and the Executive Leadership Team, is the JTA's strategic plan for improving our asset management program and provides the process through which strategies are established for the JTA assets and the plans for managing them across their life cycles. In support of implementation of the JTA's mission statement and this asset management policy, the JTA Transit Asset Management Plan includes strategies, implementing actions, and performance metrics. Performance metrics monitor JTA's success in implementing the goals and meeting the objectives of the TAM Plan and the Authority.

II. JTA's policy is to incorporate the following asset management principles into business processes

- A. A comprehensive life cycle approach for managing infrastructure assets including planning, acquisition, operation, maintenance, renewal and disposal
 - JTA invests in and maintains assets considering the total costs and ownership across their useful lives
 - JTA identifies and performs all appropriate preventive maintenance to maximize the reliability of the transit system and minimize or eliminate corrective maintenance
- B. Knowledge and information about our assets drives decision-making at all levels
 - JTA establishes and maintains enterprise asset information applying technologies to improve our business practices
 - JTA employs data to drive our decision-making across the whole life cycle and at multiple levels within the JTA organization
 - JTA identifies and addresses assets and asset management practices in need of improvement
- C. JTA management leads by promoting an asset management culture and developing the agency as a highly-performing asset management organization
 - JTA develops the organization to grow the knowledge and skills necessary to implement effective life cycle management
 - JTA empowers and trains our employees to strengthen asset management competencies
- D. Comply with applicable legislation, regulatory and statutory requirements in a way that adds the most value for our customers
 - JTA commits to employing best management practices and holding ourselves accountable for their success

III. Asset Management Governance

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

- Maintaining Enterprise Asset Management (EAM) Register
- Asset condition monitoring and SGR assessment
- Establishing asset strategies and plans for specific asset class (incl. replacement criteria, maintenance plan, life cycle 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.

IV. Roles and Responsibilities

Function:	Responsibilities:
Chief Executive Officer (CEO)	<ul style="list-style-type: none"> • Provide overall executive leadership responsibility for determining the strategic direction and overall JTA policy for Asset Management. • Final approval of asset management policies. • Final approval and sign-off of JTA Transit Asset Management Plan. • Reporting on the status and effectiveness of asset management to the JTA Board.
Chief Financial Officer (CFO)	<ul style="list-style-type: none"> • Provide overall leadership responsibility for developing models for long-term capital investment plans and funding security. • Report on status and effectiveness to the CEO. • Establish policies, procedures, systems, and continuous improvement process.
JTA Asset Management Steering Committee	<ul style="list-style-type: none"> • 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. • Oversee the development and implementation of asset and risk management plans for all asset classes. • Represent all departments with JTA capital assets and manage interface between technical and financial departments. • Develop and update all asset management policies (see policy list above) for CFO and CEO approval. • Responsible for implementing of approved policies as well as continuous EAM improvement plan. • Development of annual SGR capital investment prioritization and presentation of suggested projects. • Report on status and effectiveness to the CFO.
Department Leads, JTA TAM Manager	<ul style="list-style-type: none"> • Responsible for implementing infrastructure asset management life cycle plans, systems, policies, and procedures. • Report on status and effectiveness to the Steering Committee.
JTA Staff	<ul style="list-style-type: none"> • Responsible for managing assets in accordance with asset management life cycle plans, systems, policies, and procedures. • Report on status and effectiveness to Department Leads.



3 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.

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 is responsible.

Asset Hierarchy. The inventory is organized into an asset hierarchy that allows alignment with the NTD and includes the “adult-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 and cost, and physical characteristics. These data items are often referred to as the attributes of the asset.

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 asset inventory and asset condition or performance (addressed in Chapter 4). The inventory and the associated condition data which – for this TAM Plan – is collected and maintained in a Microsoft Excel based application is referred to as the JTA SGR Database.⁹

3.1 The JTA’s Service Area and Transportation Modes

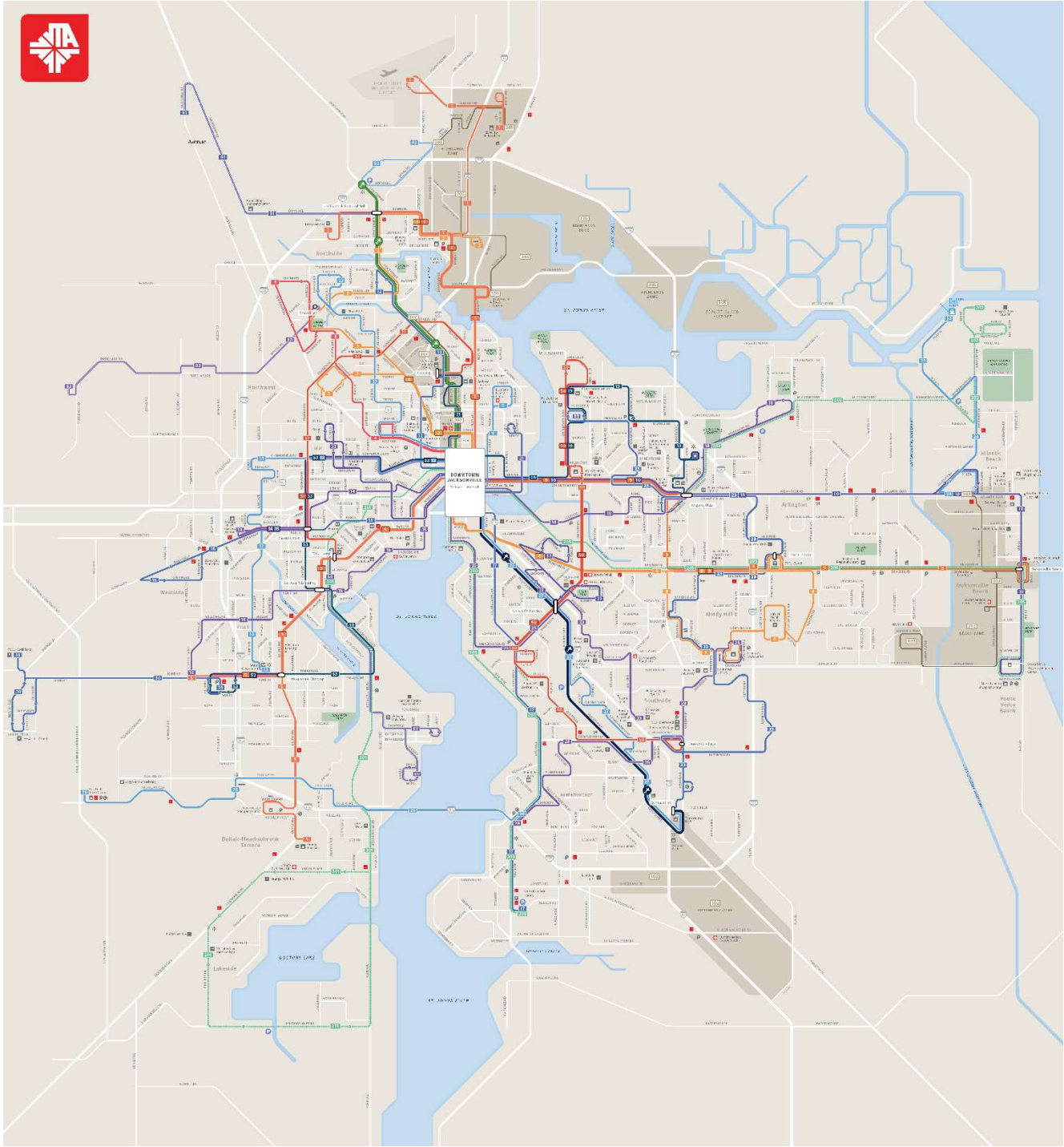
This section provides an overview of the JTA’s service area and the assets used to deliver service. It is the cost-effective performance of the JTA’s assets over their life cycle in delivering these services that is the subject of this TAM Plan. In providing transportation services, the JTA uses an array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

⁹ JTA is in the process of capturing the asset management inventory in an enterprise asset management (EAM) system.



The JTA is responsible for providing public transportation within Duval County, Florida. The JTA’s service area is 798 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 7 different transportation modes, as shown in Figure 1.

Figure 1: The JTA’s Service Area and Routes



Four different transportation modes (Regular Bus Routes, Express Bus Routes, First Coast Flyer Routes, Community Shuttles) provided approximately 12.7 million annual unlinked trips (2017).

The JTA's Connexion Paratransit service provided approximately 366,000 annual unlinked trips (2017).

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 Mayport Village and Fort George Island. In 2017, the JTA provided approximately 442,000 bi-directional trips via ferryboat.

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. It provided over 1 million annual unlinked trips in 2017.

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 responsibility for. 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 collects cost for maintenance, repairs, and operations. This is the "maintenance managed item." The asset hierarchy will be modified over time to address continuous improvements.

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 up to 109 attributes. All of the JTA's assets are linked to this categorization scheme.¹⁰

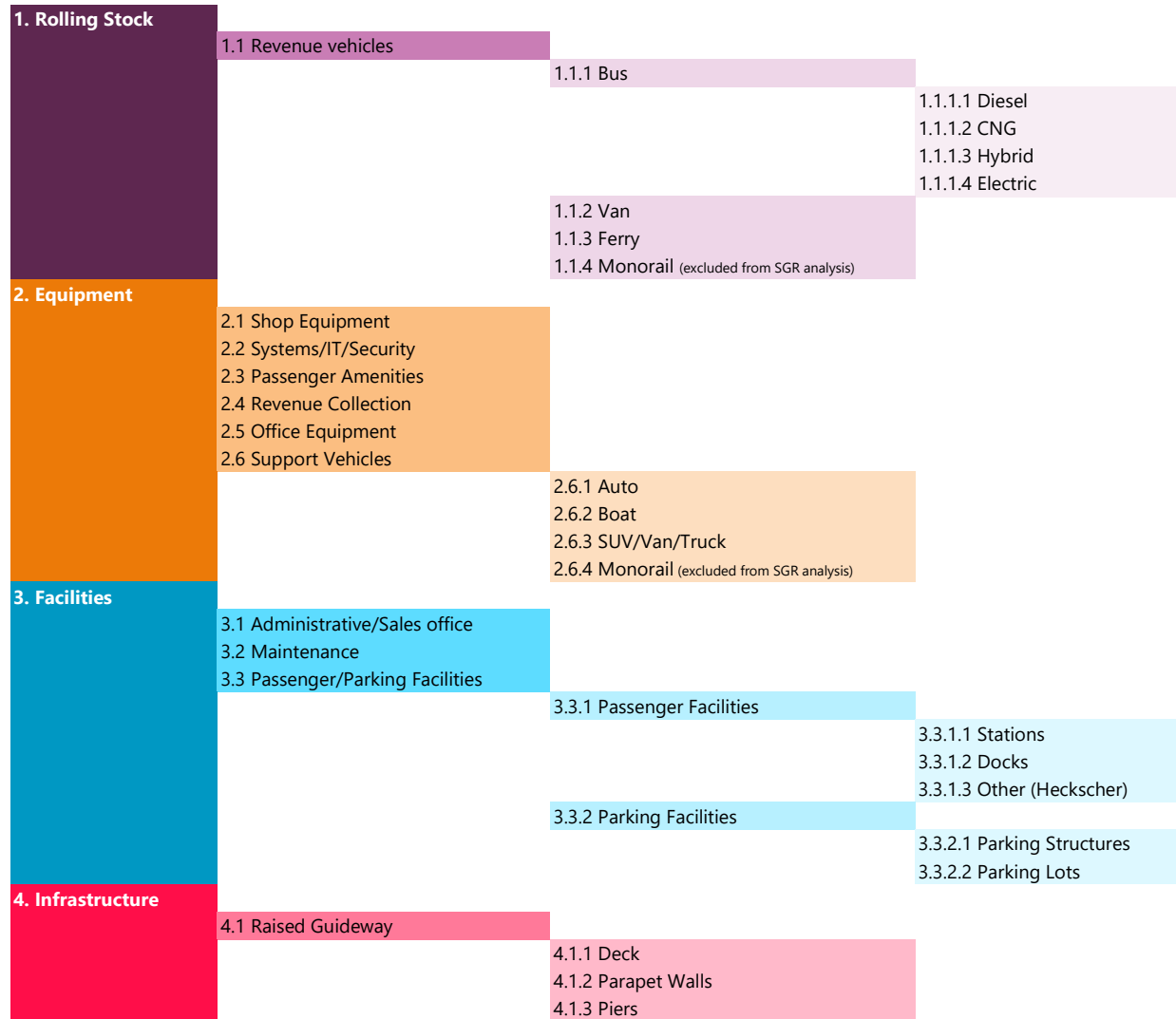
¹⁰ The asset hierarchy is too large to illustrate in the TAM Plan, but Appendix 1 provides a more detailed overview of the asset classes.



Asset Category Overview

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

Figure 2: The JTA’s Asset Category Breakdown – Overview



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 asset groups, for buses this would divide the buses by propulsion type (diesel, hybrid, CNG).



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

1. The JTA's fixed-asset accounting register
2. Asset condition assessment reports
3. Manual inventory taking by departments responsible for the asset categories.

Inventory Attributes

The JTA developed a Microsoft Excel based asset inventory that uses the asset hierarchy as logical asset structure. For each asset up to 109 asset attributes (data items) were defined. 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 system or other systems. The data is currently compiled in the Microsoft Excel based SGR database. The longer-term plan is to upload the completed register to the Oracle Enterprise Asset Management (EAM) system and start maintaining the asset inventory in this system.

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 Ultimate Urban Circulator (U²C). As part of this project, the JTA will implement 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 the JTA's assets that will continue to be used after U²C implementation. The JTA excluded assets from the TAM Plan asset base that are known not to be utilized after the U²C implementation, such as the automated Skyway vehicles (incl. the Skyway recovery vehicle), systems that are required to operate the Skyway vehicles as well as infrastructure assets that will be replaced with new technology or will not be required any more (such as cable trays, ground/signal rail and cable, guide beams, power rail/cables, switches).



The JTA’s total asset inventory consists of 12,841 assets of which 12,255 build the asset base for this TAM Plan. The difference of 586 assets represent the assets that will be affected by the U²C project as described above.

Table 5: The JTA’s Asset Inventory by Category

Category	Asset Class	Count of Asset Line Items	
		JTA Inventory	TAM Plan Asset Base
1. Rolling Stock	1.1.1 Motorbus	232	232
	1.1.1.1 Diesel	157	157
	1.1.1.2 CNG	62	62
	1.1.1.3 Hybrid	13	13
	1.1.2 Van	105	105
	1.1.3 Ferry	1	1
	1.1.4 Monorail Vehicle	10	0
2. Equipment	2.1 Shop Equipment	217	216
	2.2 Systems/IT/Security	1,599	1,504
	2.3 Passenger Amenities	7,706	7,706
	2.4 Revenue Collection	540	540
	2.5 Office Equipment	19	19
	2.6.1 Auto	38	38
	2.6.2 Boat	1	1
	2.6.3 Monorail Vehicle	1	0
3. Facilities	3.1 Administrative/Sales office	365	365
	3.2 Maintenance	470	470
	3.3.1.1 Stations	396	396
	3.3.1.2 Docks	60	60
	3.3.1.3 Other (Heckscher)	31	31
	3.3.2.1 Parking Structures	43	43
4. Infrastructure	3.3.2.2 Parking Lots	110	110
	4.1.1 Deck	70	70
	4.1.2 Parapet Walls	70	70
	4.1.3 Piers	233	233
	Cable Tray	71	0
	Drainage	2	0
	Expansion Joint	4	0
	Fall Protection System	1	0
	ATS Loop Cable	71	0
	Ground / Signal Rail	81	0
	Ground / Signal Cable	1	0
	Guide Beam	81	0
	Over Travel Buffer	6	0
	Power Cable	3	0
	Power Rail	81	0
	Switch	72	0
	Guideway	1	0
	Steel Box Girders	1	0
	Steel Crossheads	1	0
	Superstructure	1	0
Tee Beams	1	0	
Total		12,841	12,255

As illustrated in Table 5, the TAM Plan-relevant asset base are 12,255 assets sub-divided into four asset categories.

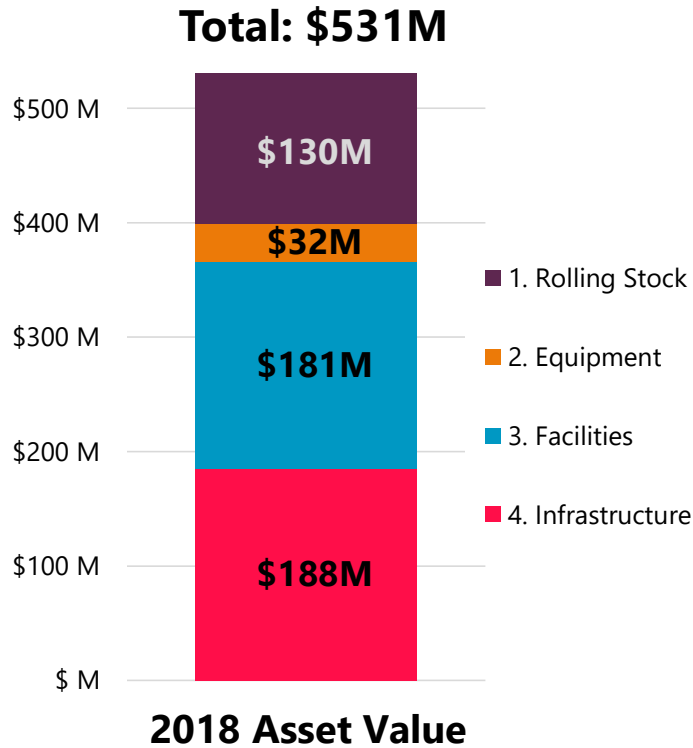
As the final U²C mobility solution has not yet been determined, cost for these asset investments are not know at this point. Once the JTA has selected the technology, all changes to the existing guideway and new assets will be included in the asset inventory.



The JTA's TAM Plan Asset Base Value

The 12,255 TAM Plan assets included in this TAM Plan, shown in Figure 3, have a total value of \$531 million (in 2018 dollars, referred to as 2018 Asset Base).

Figure 3: The JTA's TAM Asset Base Value by Category



This represents 2018 replacement cost that was either calculated by

1. Using the historic acquisition cost and escalating to 2018 values using TERM industry indices, or
2. Using 2018 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 70 percent of the 2018 Asset Base. Rolling stock's share is 25 percent and equipment is 5 percent.

The key asset categories are described below.

3.2.1 Rolling Stock

The JTA owns and operates revenue vehicles to provide public transportation services. These vehicles are included in the rolling stock asset category; 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 6 shows the JTA’s rolling stock asset base.¹¹

Table 6: The JTA’s Rolling Stock Asset Inventory

Asset Category	Count of Asset Register Line Items	Average Age
1.1.1.1 Rolling Stock, Revenue Vehicles, Motorbus, Diesel	157	9.3
1.1.1.2 Rolling Stock, Revenue Vehicles, Motorbus, CNG	62	1.1
1.1.1.3 Rolling Stock, Revenue Vehicles, Motorbus, Hybrid	13	5
1.1.2 Rolling Stock, Revenue Vehicles, Van (CTC)	105	3.5
1.1.3 Rolling Stock, Revenue Vehicles, Ferry	1	14
Total	338	

Rolling stock assets have a replacement value of about \$130 million, which represents 25 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]) buses, cutaway buses and vans, and Skyway vehicles.¹²

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 million per overhaul.¹³

3.2.2 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 \$32 million which represents 5 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.

¹¹ This category captures all revenue vehicles but is labeled “Rolling Stock”. The ferry is included due to the nature of providing revenue-earning services.

¹² Skyway vehicles are excluded from the TAM plan, as explained above.

¹³ JTA is currently collecting inventory assets for ferry components as well as system/assets operated on the ferry (e.g. radar system).



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 80 non-revenue vans, SUVs, cars, and trucks, as shown in Table 7. The JTA does not use any third-party non-revenue service vehicles.

**Table 7: The JTA’s Equipment Asset Inventory
– Non-revenue Vehicles**

Asset Category	Count of Asset Register Line Items
2.6.1 Equipment, Non-Revenue Vehicles, Auto	38
2.6.2 Equipment, Non-Revenue Vehicles, Boat	1
2.6.3 Equipment, Non-Revenue Vehicles, SUV/Van/Truck	45
Total	84

Non-vehicle Equipment:

The “non-vehicle equipment” asset class is comprised of four asset groups as shown in Table 8. Passenger amenities represent a large amount of assets which is comprised of various assets that can be found at the JTA’s 2,658 bus stops, including shelters, benches, lightings, pads, etc.

**Table 8: The JTA’s Equipment Asset Inventory
– Non-vehicle Assets**

Asset Category	Count of Asset Register Line Items
2.1 Equipment, Shop Equipment	216
2.2 Equipment, Systems/IT/Security	1,504
2.3 Equipment, Passenger Amenities	7,706
2.4 Equipment, Revenue Collection	540
2.5 Equipment, Office Equipment	19
Total	9,985

3.2.3 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.

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. The Skyway Operations and Maintenance Center at 725 Leila Street, Jacksonville, FL (operations and maintenance for Skyway vehicles)
3. Other administrative buildings (“Prudential” building, “Phillips” building)
4. Passenger facilities, such as



- a. Eight Skyway passenger stations
- b. Ferry passenger facilities (Heckscher Pavilion)
- c. Parking lots and garage.

The JTA’s office for administrative authority functions (e.g., executives, human resources, finance, procurement, etc.) is in a leased building at 121 W. Forsyth Street, Jacksonville, FL. The JTA has no capital responsibility for this building.

Table 9 below provides an overview of facility assets included in this TAM Plan.

Table 9: The JTA’s Facility Asset Invent

Asset Category	Count of Asset Register Line Items
3.1 Facilities, Administrative/Sales Office	365
3.2 Facilities, Maintenance	470
3.3.1.1 Facilities, Passenger/Parking Facilities, Passenger Facilities, Stations	396
3.3.1.2 Facilities, Passenger/Parking Facilities, Passenger Facilities, Docks	60
3.3.1.3 Facilities, Passenger/Parking Facilities, Passenger Facilities, Other (Heckscher)	31
3.3.2.1 Facilities, Passenger/Parking Facilities, Parking Facilities, Parking Structures	43
3.3.2.2 Facilities, Passenger/Parking Facilities, Parking Facilities, Parking Lots	110
Total	1,475



Myrtle Avenue Operations Campus

The Myrtle Avenue Operations Campus is comprised of ten buildings and various parking for employees and authority vehicles. An aerial picture is shown in Figure 4.

Figure 4: The JTA's Myrtle Avenue Operations Campus



A detailed listing of the buildings is in Table 10.

Table 10: Myrtle Avenue Operations Campus Buildings List

Description/ Name	Location	Facility Type	Square Footage
Building 1 "F" – Safety & Security	100 N. Myrtle Ave.	Administrative Facility	5,285
Building 2 "G" - Administration	100 N. Myrtle Ave.	Administrative Facility	9,300
Building 3 "E" – Mass Transit Operations	100 N. Myrtle Ave.	Administrative Facility	11,802
Building 4 "C" - Service Station	100 N. Myrtle Ave.	General Purpose Maintenance Facility	9,287
Building 5 "D" - Vault	100 N. Myrtle Ave.	Administrative Facility	1246
Building 6 "A" - Fleet Maintenance	100 N. Myrtle Ave.	Heavy Maintenance Facility	62,681
Building 7 "M" - Preventative Maintenance	100 N. Myrtle Ave.	General Purpose Maintenance Facility	7,380
Building 8 "B" - Connexion Maintenance	100 N. Myrtle Ave.	Heavy Maintenance Facility	4,816
Building 9 - CTC Operations	100 N. Myrtle Ave.	Administrative Facility	1,344
Building 10 – Storage	100 N. Myrtle Ave.	Maintenance Facility	974
Myrtle Avenue Operations Campus	100 N. Myrtle Ave.	Parking Lot	803,805



Skyway Operations and Maintenance Center

The JTA Skyway Operations and Maintenance Center (Figure 5) is used for the maintenance and storage of the Skyway vehicles, maintenance vehicles, and equipment. It also houses the Skyway operations center.

Figure 5: The JTA's Skyway Operations and Maintenance Center



Passenger Facilities

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

Figure 6: The JTA's Skyway San Marco Station



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 6 (example 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 combined inventory taking and facility condition assessment. This inventory organizes facility assets into components/subcomponents, as shown in Table 11. This will be refined as part of the on-going implementation.

Table 11: Example for Facility Asset Structure

Asset Class	Asset Sub-1-Class	Asset Sub-2-Class	
Building Interior	Interior Doors	Interior Access Doors	
	Interior Ceilings		
	Interior Floors		
	Interior Walls		
	Interior Windows		
Building Shell	Exterior Doors	Exterior Access Doors	
	Exterior Walls		
	Exterior Windows		
	Roofing		
	Superstructure		
Building Substructure	Foundation		
Drainage	Rain Water Drainage		
	Sewage		
Electrical System	Conduit		
	Lighting		
	Panels		Panels Greater 100 Amps
			Panels Less 100 Amps
	Transformers		
Fire & Safety Protection System	Fire Control Panel		
	Pull Station		
	Sirens		
	Strobes		
HVAC System	Duct System		
	Fixed Exhaust Fans		
	Fixed Exhaust Fans		
	Gas Heaters		
	HVAC Unit		
Plumbing System	DWV System		
	Piping		Piping Natural Gas
		Supply System	
	Fixtures		Urinals
			Water Closets
			Water Fountains
			Hot Water Heater
			Lavatories
Signage	Signage		

During the inventory collection of these assets, various asset attributes describing these assets were collected, if available.

These asset attributes include, among others

1. Position in the JTA asset hierarchy
2. Manufacturer/model/serial number
3. In-service date / acquisition/build cost
4. Grant-related information
5. Physical attributes
6. Location information
7. Asset ID / tag number
8. Useful life benchmark (ULB)
9. Warranty information
10. Asset criticality / SGR priority.¹⁴

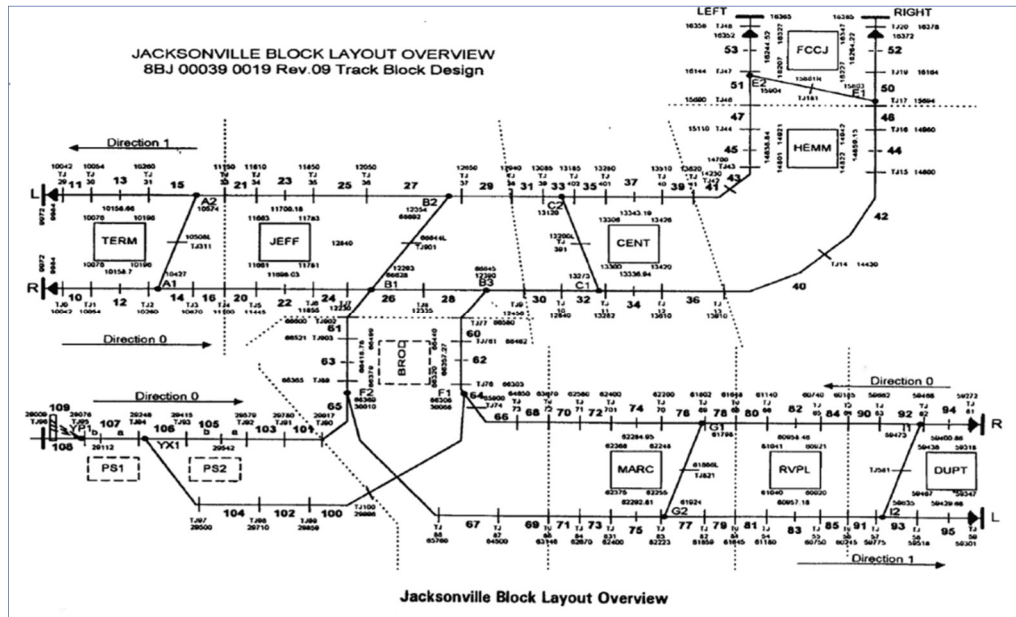
¹⁴ See details in chapter 3.4



3.2.4 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 7.

Figure 7: 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 U²C 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.

Table 12 summarizes the Skyway infrastructure assets that have been included in the TAM Plan.

Table 12: Skyway Infrastructure Assets Included in TAM Plan

Asset Category	Count of Asset Register Line Items
4.1.1 Infrastructure, Raised Guideway, Deck	70
4.1.2 Infrastructure, Raised Guideway, Parapet Walls	70
4.1.3 Infrastructure, Raised Guideway, Piers	233
Total	373

Infrastructure assets for which the JTA was able to estimate a replacement value total about \$188 million which accounts for about 35 percent of the JTA’s 2018 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 need will also include life cycle management of expansions and additions to the JTA's asset base. Future analyses will account for this. Additional projects that are ongoing or planned that will generate future SGR needs but that are not captured by this first TAM Plan include

- The JTA is developing the asset inventory for the Intercity Bus Terminal (IBT) that was recently completed. However, for this TAM Plan the inventory was not yet available.
- The JTA is currently constructing the Jacksonville Regional Transportation Center (JRTC) which, after completion, will be added to the JTA's facility asset base to plan for future SGR needs.
- The Ultimate Urban Circulator (U²C), as described above, is another project with which the JTA is planning to overhaul and expand the current Skyway system to a wider network and autonomous vehicles. However, at this stage, it is too early to include in the TAM Plan as the changes to the existing infrastructure are new and additional assets are unknown.
- By the end of 2018, the JTA expects to start operation on the bus rapid transit (BRT) East Corridor that connects the Rosa Parks Transit Station to Jacksonville Beach. Assets include, among others, traffic signal priority technology, real-time bus arrival information, and CNG buses.
- Similarly, the JTA expects to open the BRT Southwest Corridor by 2020/2021 which will operate between the Convention Center in downtown Jacksonville, via Florida State College-Jacksonville (Kent Campus), to the Orange Park Mall in Clay County.



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.

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.

Table 13: 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

The **financial impact** is measured on a rating scale using six values, as shown in Table 13.

2. **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.

Table 14: Measurement Likelihood of Service Loss

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

The **likelihood** of service loss is measured in six categories, as shown in Table 14.

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 3.

These asset criticality rankings are also used by the JTA in the long-term SGR analysis to support project prioritization (see chapter 5.2.2.)



4 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 are maintained in the SGR database as condition and performance data attributes.

4.1 SGR Methodology

The FTA SGR definition is used for the TAM Plan

“State of Good Repair (SGR) means the condition in which a capital asset is able to operate at a full level of performance.”¹⁵

To determine SGR in this TAM Plan process, the JTA establishes the

1. Asset's Useful Life Benchmark (ULB) - FTA defines the Useful Life Benchmark (ULB) as: “...the expected life cycle 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.”¹⁶
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”.

Determining Useful Life Benchmarks (ULB)

The JTA staff determined the ULBs for its assets through a combination of workshops with the Consultant Team and reviewing various documents and tools published by FTA as well as documentation and discussions with 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 Useful Life Benchmark (ULB) Cheat Sheet¹⁷

¹⁵ 49 CFR Parts 625, § 625.5 (FTA Transit Asset Management Final Rule), July 26, 2016.

¹⁶ 49 CFR Parts 625, § 625.5.

¹⁷ 2017 Asset Inventory Module Reporting Manual, Page 53.



- ULB default values used in the TERM Lite Inventory Publisher¹⁸
- Guidance on FTA’s Asset Management FAQ-pages
- Award Management Requirements Circular 5010.1E and Program Circulars.

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 8.

Figure 8: TERM Condition Rating Scale

State of Good Repair:	Rating	Condition	Description
State of Good Repair (SGR) - YES	5	Excellent	No visible defects, new or near new condition, may still be under warranty if applicable
	4	Good	Good condition, but no longer new, may have some slightly defective or deteriorated component(s), but is overall functional
State of Good Repair (SGR) - NO	3	Adequate	Moderately deteriorated or defective components; but has not exceeded useful life
	2	Marginal	Defective or deteriorated component(s) in need of replacement; exceeded useful life
	1	Poor	Critically damaged component(s) or in need of immediate repair; well past useful life

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 a 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

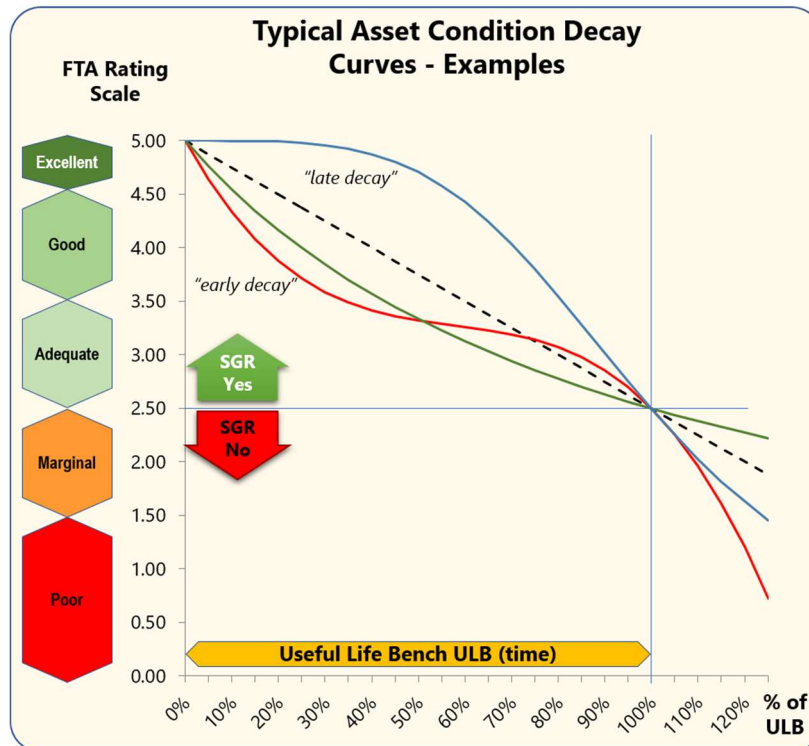
1. **Age based** – A new asset is rated at “5” on the condition rating scale with decreasing rating value until it reaches its ULB at a rating of 2.5 (or rounded to 3). Assets older than their ULB have condition ratings below 2.5 and are considered not SGR.
2. **Usage based** – Analogous to age-based 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.

¹⁸ <https://www.transit.dot.gov/TAM/TERMLite>.



Figure 9 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.

Figure 9: Asset Condition Decay Curves



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 decay curves to measure delayed asset deterioration through improved inspection/maintenance or operating practices. This would lead to longer ULBs and cost savings.

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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 decay curves to measure delayed asset deterioration through improved inspection/maintenance or operating practices. This would lead to longer ULBs and cost savings.

Use of the TERM Lite Model

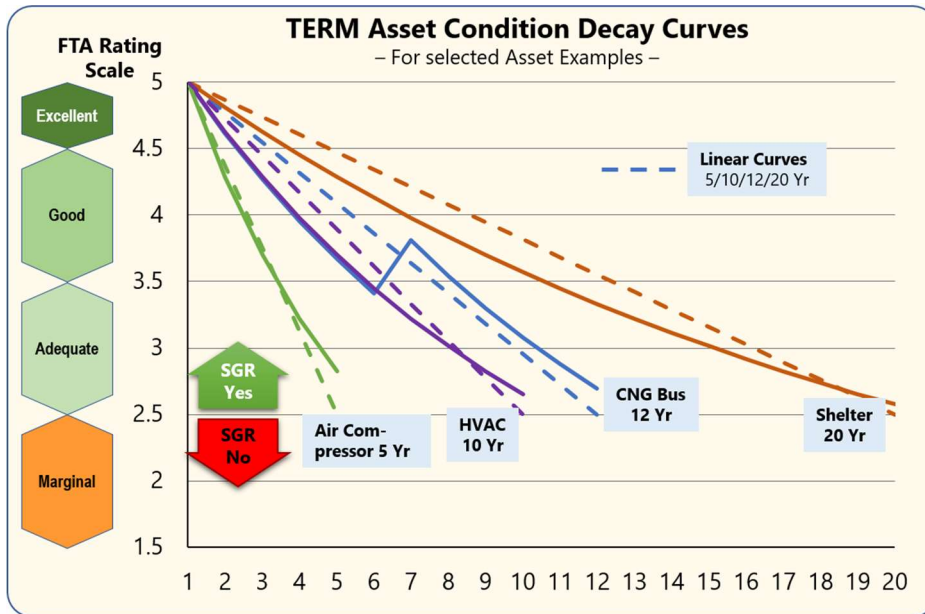
The JTA TAM Plan uses the FTA's TERM Lite model for decision support. This model primarily uses established decay curves for various asset classes, some of which are based on data collected in empirical studies.¹⁹ These asset decay curves are used to forecast the asset's condition annually over time, even beyond the asset's useful life assumption.

¹⁹ 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, California.



Figure 10 illustrates TERM decay curves for selected assets, including a linear asset decay curve as a reference point.

Figure 10: TERM Asset Condition Decay Curves



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 \$50,000 to \$60,000 per vehicle. As discussed in Chapter 4 below, the JTA’s buses have, on average, accumulated 645,000 miles.

An asset’s condition primarily deteriorates

over time due to usage, but 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 its condition.

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. 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 Table 15.

Table 15: Overview of TAM Plan Asset Useful Life Benchmarks

Asset Category	ULB (Years)	Condition Assessment
1.1.1.1 Rolling Stock, Revenue Vehicles, Motorbus, Diesel	5 to 12	Age/Usage
1.1.1.2 Rolling Stock, Revenue Vehicles, Motorbus, CNG	12	Age/Usage
1.1.1.3 Rolling Stock, Revenue Vehicles, Motorbus, Hybrid	12	Age/Usage
1.1.2 Rolling Stock, Revenue Vehicles, Van	4 to 5	Age/Usage
1.1.3 Rolling Stock, Revenue Vehicles, Ferry	50	Age/Usage/ Condition
2.1 Equipment, Shop Equipment	10 to 30	Age
2.2 Equipment, Systems/IT/Security	5 to 30	Age
2.3 Equipment, Passenger Amenities	5 to 10	Age/Condition
2.4 Equipment, Revenue Collection	5 to 10	Age
2.5 Equipment, Office Equipment	5 to 20	Age
2.6.1 Equipment, Non-Revenue Vehicles, Auto	4	Age/Usage
2.6.2 Equipment, Non-Revenue Vehicles, Boat	5	Age/Condition
2.6.3 Equipment, Non-Revenue Vehicles, SUV/Van/Truck	4	Age/Usage
3.1 Facilities, Administrative/Sales Office	10 to 50	Age/Condition
3.2 Facilities, Maintenance	5 to 50	Age/Condition
3.3.1.1 Facilities, Passenger/Parking Facilities, Passenger Facilities, Stations	10 to 50	Age/Condition
3.3.1.2 Facilities, Passenger/Parking Facilities, Passenger Facilities, Docks	20 to 50	Age/Condition
3.3.1.3 Facilities, Passenger/Parking Facilities, Passenger Facilities, Other (Heckscher)	10 to 50	Age/Condition
3.3.2.1 Facilities, Passenger/Parking Facilities, Parking Facilities, Parking Structures	10 to 50	Age/Condition
3.3.2.2 Facilities, Passenger/Parking Facilities, Parking Facilities, Parking Lots	10 to 50	Age/Condition
4.1.1 Infrastructure, Raised Guideway, Deck	50	Age
4.1.2 Infrastructure, Raised Guideway, Parapet Walls	50	Age
4.1.3 Infrastructure, Raised Guideway, Piers	50	Age



4.2 State of Good Repair and Condition Assessment Baseline

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.

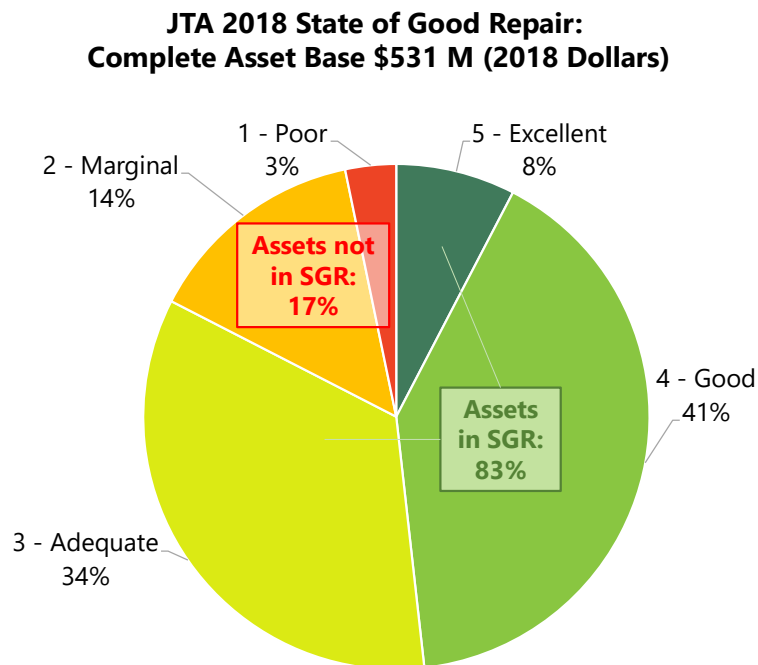
In addition, this section reports the JTA asset performance targets and measures that address FTA's reporting requirements. Performance goals and actuals are compared.

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.

4.2.1 The JTA's SGR Baseline

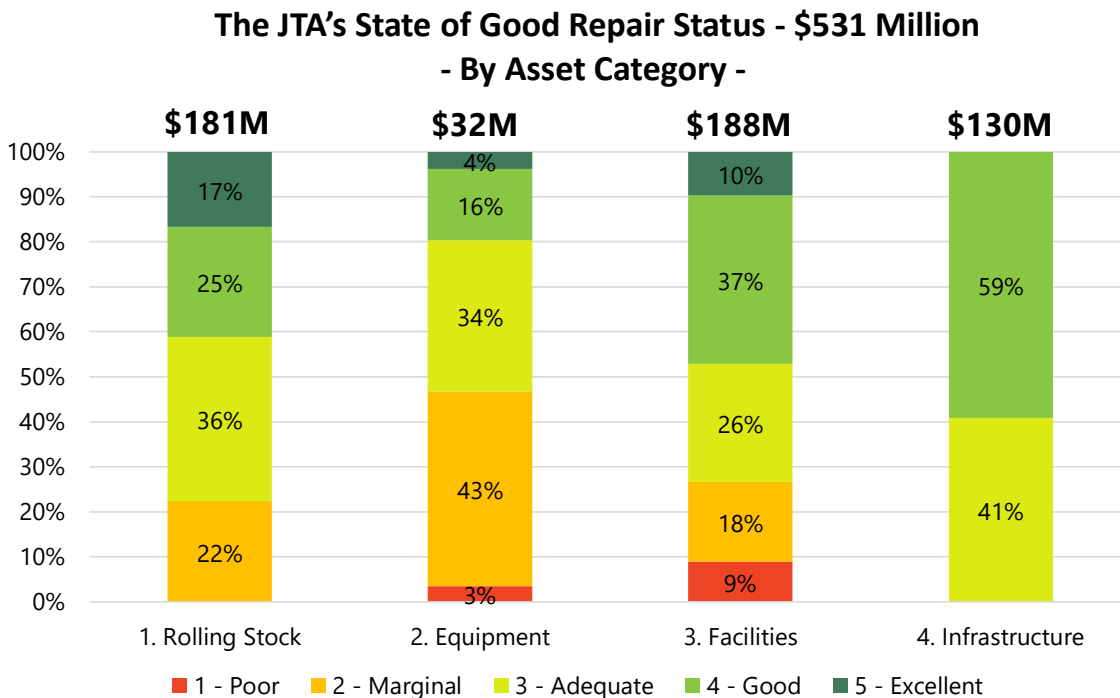
The JTA's TAM asset base valued at \$531 million was assessed for its condition applying the TERM condition rating scale. Overall, the condition ratings indicate that 17 percent of the JTA's assets (in 2018 dollars) are currently not in SGR. Figure 11 shows the distribution of condition ratings across all of the JTA's assets.

Figure 11: The JTA's 2018 SGR Status



However, the different asset categories have varying condition rating distributions, as Figure 12 shows below.

Figure 12: Asset Condition by Asset Category (by Asset 2018 Value)



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

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 doesn't support asset usage.

The percentages of revenue vehicles in SGR by asset value are shown in Table 16.

Table 16: Percent of Revenue Vehicles in SGR (by Asset Value)

Category	Asset Class	Amount (\$2018)			
		TOTAL	SGR	Non-SGR	% SGR
1. Rolling Stock	1.1.1 Rolling Stock, Revenue Vehicles, Motorbus	\$117.86M	\$90.66M	\$27.20M	77%
	1.1.1.1 Rolling Stock, Revenue Vehicles, Motorbus, Diesel	\$76.04M	\$48.84M	\$27.20M	64%
	1.1.1.2 Rolling Stock, Revenue Vehicles, Motorbus, CNG	\$34.51M	\$34.51M	\$0.00M	100%
	1.1.1.3 Rolling Stock, Revenue Vehicles, Motorbus, Hybrid	\$7.30M	\$7.30M	\$0.00M	100%
	1.1.2 Rolling Stock, Revenue Vehicles, Van	\$8.61M	\$6.64M	\$1.97M	77%
	1.1.3 Rolling Stock, Revenue Vehicles, Ferry	\$3.63M	\$3.63M	\$0.00M	100%
	Total	\$130.09M	\$100.92M	\$29.17M	78%

Overall, 78 percent of revenue vehicles are in SGR (based on vehicle age).



Revenue Vehicle Asset Performance

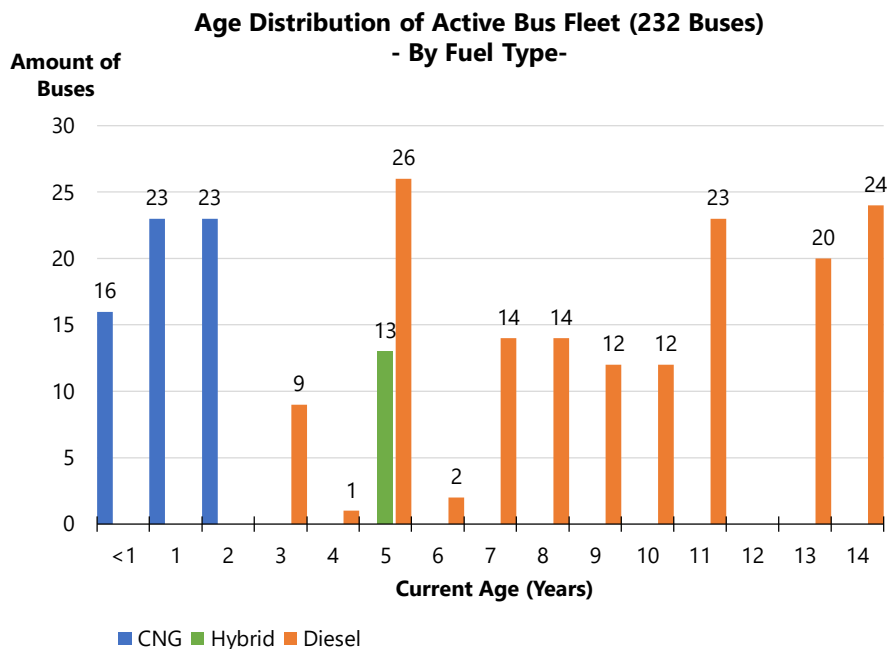
The ULBs used for these assets are as follows

- Motorbuses: 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 years²⁰
- Ferry: 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 645,000 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 9 and 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.

The age distribution of the JTA’s active bus fleet is shown in Figure 13. The JTA’s buses are fairly even distributed by age with 6 spikes at 1, 2, 5, 11, 13 and 14 years of age (with each 20 or more buses). In 2017, the JTA purchased 39 CNG buses. At a typical bus fleet size of around 200 buses and a 12-year ULB assumption, it would require the JTA to replace about 16 buses each year to achieve an even age distribution²¹. Any annual replacement amount below 16 would, over time, lead to an over-aging fleet.

Figure 13: The JTA’s Bus Fleet - Age Distribution



²⁰ Due to the JTA’s plan to modify and expand the Skyway system to autonomous vehicles as part of the U2C project, the Skyway vehicles are not included in the asset base, as indicated earlier.

²¹ A 12-year ULB is equivalent to an 8.3 percent replacement cycle of the asset base every year. E.g. a 14-year (10-year) ULB would require an annual replacement of the asset base at the 7.2 percent (10 percent). This shows what impact changing the ULB has on the replacement need of an asset every year.



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 17. Overall just over 50 percent of Equipment assets are in SGR. Particular low SGR can be observed for automobiles and SUV/Van/Truck assets.

Table 17: Percent of Equipment Assets in SGR (by Asset Value)

Category	Asset Class	Amount (\$2018)			
		Total	SGR	Non-SGR	% SGR
2. Equipment	2.1 Equipment, Shop Equipment	\$3.33M	\$2.10M	\$1.23M	63%
	2.2 Equipment, Systems/IT/Security	\$3.59M	\$1.83M	\$1.75M	51%
	2.3 Equipment, Passenger Amenities	\$17.84M	\$9.31M	\$8.52M	52%
	2.4 Equipment, Revenue Collection	\$4.64M	\$3.12M	\$1.52M	67%
	2.5 Equipment, Office Equipment	\$0.40M	\$0.17M	\$0.23M	43%
	2.6.1 Equipment, Non-Revenue Vehicles, Auto	\$1.02M	\$0.32M	\$0.70M	31%
	2.6.2 Equipment, Non-Revenue Vehicles, Boat	\$0.02M	\$0.02M	\$0.00M	100%
	2.6.4 Equipment, Non-Revenue Vehicles, SUV/Van/Truck	\$1.56M	\$0.38M	\$1.18M	24%
	Total	\$32.39M	\$17.25M	\$15.14M	53%

Facilities

The JTA used two approaches for facility condition assessments

1. An onsite visual assessment of physical conditions of all facility assets at the JTA's Myrtle Avenue Operations Campus. (This was conducted by a third-party contractor between January and May 2018.) The results were used to apply a rating scale in conformance with the FTA TERM rating scale.
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".²²

²² <https://www.transit.dot.gov/regulations-and-guidance/asset-management/tam-facility-performance-measure-reporting-guidebook>.



For example, Table 18 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.

Table 18: Aggregate Condition Score for Myrtle Avenue Campus Building 1

Building 1: Aggregation of Asset Condition Scores for Asset Classes/Assets/Sub-Assets								
Building 1 "F" - Administration								
	Asset Class Weight	Avg. Score	Sub-1-Class Weights	Sub-1-Classes	Avg. Score	Sub-2-Classes	Sub-2-Class Weights	Avg. Score
OVERALL SCORE:	1. Building Substructure - Weighting	Building Substructure						
	7%	Foundation	5.00					
	2. Building Shell- Weighting	Building Shell						
			2%	Exterior Doors	4.5			
	39%	4.68	53%	Exterior Walls	4.5			
			2%	Exterior Windows	4.5			
			7%	Roofing	4.5			
			36%	Superstructure	5			
	4.73			100%				
	FTA-Rounded Score	3. Building Interior - Weighting	Building Interior					
			5%	Interior Doors	5			
24%		4.87	11%	Interior Ceilings	4.5			
			13%	Interior Floors	4.5			
			70%	Interior Walls	5			
			2%	Interior Windows	4.5			
5				100%				
4. HVAC System - Weighting		HVAC System						
			2%	Gas Heaters	4.5			
13%		4.50	75%	HVAC Unit	4.5			
		4%	Fixed Exhaust Fans	4.5				
		19%	Duct System	4.5				
		100%						
5. Plumbing System - Weighting	Plumbing System							
		7%	DWV System	5				
7%	4.53	14%	Piping	4.5				
		58%	Fixtures					
				4.5	Hot Water Heater	32%	4.5	
					Lavatories	18%	4.5	
					Urinals	2%	4.5	
					Water Closets	21%	4.5	
					Water Fountains	26%	4.5	
		21%	Supply System	4.5			100%	
		100%						
6. Fire & Safety Protection System - Weighting	Fire & Safety Protection System							
		68%	Fire Control Panel	5				
2%	5.00	6%	Pull Station	5				
		9%	Sirens	5				
		16%	Strobes	5				
		100%						
7. Electrical System - Weighting	Electrical System							
		10%	Conduit	5				
4%	5.00	64%	Lighting	5				
		18%	Transformers	5				
			Panels					
					> 100 Amps	77%	5	
		8%	5.0		< 100 Amps	23%	5	
		100%				100%		
8. Signage - Weighting	Signage							
1%	5.00							
9. Drainage - Weighting	Drainage							
		50%	Rain Water Drainage	4.5				
3%	4.50	50%	Sewage	4.5				
		100%						
100%								



The JTA will continue with the combined inventory taking and condition assessments and have all authority facilities assessed by 2020. In 2019, seven facilities and ten parking facilities/lots in outlying areas will be assessed, and finally the eight Skyway stations and the Skyway Maintenance and Operations Center, including parking area, will complete the assessment in 2020. All buildings subject to the 2018 facility assessments represent about 27 percent of the JTA’s facilities (by number of buildings).

Table 19 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 19: The JTA’s Facility Condition Assessment Summary

JTA TAM Facility Physical Condition Assessment Inspection			
Report Summary - Myrtle Campus			
Facility	Facility Weight (by asset replacement cost)	Overall Building Score	Rounded Building Score
Administrative / Maintenance Facilities			
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
Administrative / Maintenance Facilities Weighted Average	36%	4.10	4
Passenger / Parking Facilities			
Parking Lots	100%	3.40	3
Parking Facilities Weighted Average	64%	3.40	3
Total Weighted Average			
		3.65	4
Transit Asset Management Performance Measures			
Percent of Facilities rated <u>below "3"</u> on the TERM Condition Scale:			
Passenger / Parking Facilities	0%		
Administrative / Maintenance Facilities	0%		

Overall, the assessed administrative/maintenance facilities are scored at a (rounded) 4-good, the parking facilities at a (rounded) 3-adequate (see also chapter 4.3 referencing the JTA asset performance measures).



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 20 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 20: SGR for Facility Assets (by Asset Value)

Category	Asset Class	Amount (\$2018)			
		Total	SGR	Non-SGR	% SGR
3. Facilities	3.1 Facilities, Administrative/Sales Office*	\$11.94M	\$9.12M	\$2.81M	76%
	3.2 Facilities, Maintenance*	\$15.41M	\$7.08M	\$8.33M	46%
	3.3 Facilities, Passenger/Parking Facilities	\$153.19M	\$116.12M	\$37.08M	76%
	3.3.1.1 Facilities, Passenger/Parking Facilities, Passenger Facilities, Stations	\$71.55M	\$57.87M	\$13.69M	81%
	3.3.1.2 Facilities, Passenger/Parking Facilities, Passenger Facilities, Docks	\$11.43M	\$10.63M	\$0.80M	93%
	3.3.1.3 Facilities, Passenger/Parking Facilities, Passenger Facilities, Other (Heckscher)	\$0.36M	\$0.20M	\$0.16M	55%
	3.3.2.1 Facilities, Passenger/Parking Facilities, Parking Facilities, Parking Structures	\$27.93M	\$27.60M	\$0.33M	99%
	3.3.2.2 Facilities, Passenger/Parking Facilities, Parking Facilities, Parking Lots	\$41.93M	\$19.83M	\$22.10M	47%
	Total	\$180.54M	\$132.32M	\$48.22M	73%

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 of 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 21.

Table 21: Percent of Infrastructure Assets in SGR (by Asset Value)

Category	Asset Class	Amount (\$2018)			
		Total	SGR	Non-SGR	% SGR
4. Infrastructure	4.1.1 Infrastructure, Raised Guideway, Deck	\$99.96M	\$99.96M	\$0.00M	100%
	4.1.2 Infrastructure, Raised Guideway, Parapet Walls	\$9.46M	\$9.46M	\$0.00M	100%
	4.1.3 Infrastructure, Raised Guideway, Piers	\$78.20M	\$78.20M	\$0.00M	100%
	Total	\$187.62M	\$187.62M	\$0.00M	100%

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 U²C project. At this point, these new assets and their required investments are not known.



Asset Performance against the JTA’s 2018 Targets

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. The requirement for each category is listed below

- **Rolling Stock** – Percentage of revenue vehicles that have met or exceeded their ULB (by vehicle type)
- **Equipment** – Percentage of service vehicles that have met or exceeded their ULB (by vehicle type)
- **Facilities** – Percentage of facilities rated below 3 on the TERM condition scale (by passenger/parking and administrative/ maintenance facilities)
- **Infrastructure** – Percent of track segments under performance restrictions

Table 22 shows the percentage of the JTA’s assets that have met or exceeded their ULB for each asset class compared to their goals for 2018.²³ 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.

Table 22: The JTA’s 2018 SGR Performance Measures vs. Actuals

Asset Category	Performance Measure	JTA 2018 Goals	JTA 2018 Actuals
Rolling Stock	Percent of revenue vehicles that have met or exceeded their ULB (by vehicle type)		
	Buses	55%	30%
	Cutaway Bus	61%	0%
	Vans	12%	56%
	Monorail Cars	0%	0%
	Ferry	0%	0%
Equipment	Percent of non-revenue vehicles that have met or exceeded their ULB (by vehicle type)		
	Automobile	80%	68%
	SUVs	73%	67%
	Trucks	88%	80%
	Vans	57%	50%
	Boats	0%	0%
Facilities	Percent of facilities rated below 3 on the TERM condition scale (by passenger/parking and administrative/maintenance facilities)		
	Admin/Maintenance Facility	5%	0%
	Passenger/Parking Facilities	22%	0%
Infrastructure	Percent of track segments with performance restrictions	11%	8.2%

The JTA calculated the SGR performance measures through the thorough effort of applying the asset management steps (inventory, condition rating, ULB, replacement values and time) towards the assets relevant to the performance measures.

²³ SGR performance goals are based on combined ULB and mileage while performance actuals only use ULB.



For infrastructure, the JTA followed FTA reporting guidelines²⁴ as quoted below

“Performance restrictions are reported by mode and type of service as an average length of track route mileage operating under performance restriction. To determine this measure agencies are required to calculate the track miles (measured to the nearest hundredth of a mile) under performance restrictions as a result of all causes at the same time each month: 9:00 AM local time on the first Wednesday of each month.”

Reporting started October 2017, the beginning of the JTA’s current 2017/2018 fiscal year on a weekly basis. The reporting to FTA is based on monthly data as shown in Table 23 (with monthly updates to continue). The reported performance restrictions are due to construction at or around two Skyway passenger stations.

Table 23: Skyway Guideway with Performance Restrictions

Skyway Guideway Infrastructure

Performance Restriction (Slow Zone) Calculation

Year	Fiscal Year	Month	Date	Track under Performance Restriction [miles]
2017	2018	October	4-Oct	0
2017	2018	November	1-Nov	0
2017	2018	December	6-Dec	0
2018	2018	January	3-Jan	0.563
2018	2018	February	7-Feb	0.563
2018	2018	March	7-Mar	0.563
2018	2018	April	3-Apr	0.563
2018	2018	May	2-May	0.563
2018	2018	June	6-Jun	0.563
2018	2018	July	4-Jul	0.563
2018	2018	August	1-Aug	0.563
2018	2018	September	5-Sep	0.563
Average Annual Length of Track under Performance Restriction [miles]				0.42
Total Length of Track [miles]				5.165
% of Track with Performance Restriction				8.2%

²⁴ <https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/regulations-and-guidance/asset-management/60356/tam-infrastructure-performance-measure-reporting-guidebook.pdf>.



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) 2018 values. The JTA’s total investment/SGR backlog is valued at approximately \$93 million, with \$15 million in assets entering the SGR backlog in 2018 alone. The remaining \$77 million in assets fell out of a SGR prior to FY2018. Figure 14 illustrates the total investment/SGR backlog value by asset category.

Figure 14: The JTA’s Investment/SGR Backlog by Asset Category

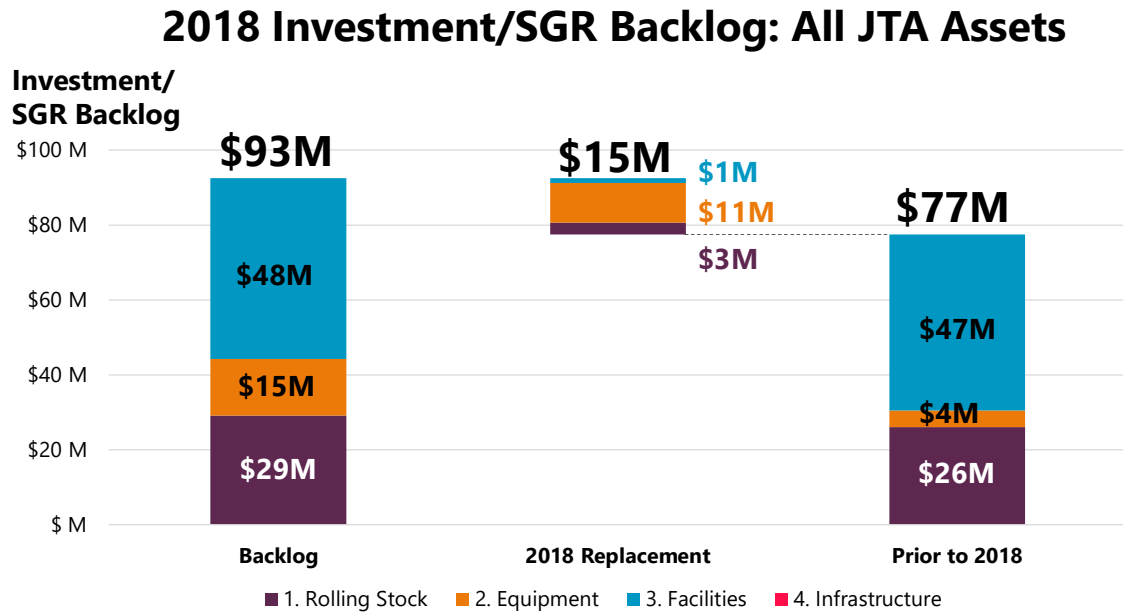


Table 24 provides a summary and examples of the over 2,500 assets in the FY2018 investment/SGR backlog by asset category.

Table 24: Assets not in SGR by Asset Category

Category	Asset	Total Value (2018 Dollars)
1. Rolling Stock	44 Gillig Low Floor Buses	\$24.08M
	26 Freightliner Buses (CTC/Turtletops)	\$3.12M
	24 MV1s	\$1.97M
	<i>Total Rolling Stock</i>	<i>\$29.17M</i>
2. Equipment	Bus stop amenities	\$8.30M
	19 Ford Trucks/SUVs	\$0.69M
	14 Toyota Hybrids	\$0.40M
	10 Chevrolet Impala	\$0.28M
	Enterasys C5G124-48P2	\$0.23M
	Starcard AFM POS System D74378/DU0910	\$0.13M
	Ricoh C901S GAE Production Copier	\$0.10M
	Sylvania Electrical System	\$0.09M
	Microsoft Office Pro 2010	\$0.09M
	Microsoft Windows 7 Upgrade	\$0.09M
	Other Equipment	\$4.74M
	<i>Total Equipment</i>	<i>\$15.14M</i>
3. Facilities	Myrtle Campus Parking Lots - Asphalt 1	\$8.97M
	Myrtle Campus Parking Lots - Supply System	\$4.48M
	Heckscher Parking Lot - Asphalt Pavement	\$1.61M
	Myrtle Campus Parking Lots - Concrete 1	\$1.40M
	Skyway O&M Building - Rolling	\$1.00M
	Jefferson Station - Roofing	\$0.95M
	Riverplace Station - Roofing	\$0.95M
	San Marco Station - Roofing	\$0.95M
	Convention Center Station - Roofing	\$0.95M
	Kings Station - Roofing	\$0.95M
	Rosa Parks Station - Roofing	\$0.95M
	Central Station - Roofing	\$0.95M
	Hemming Station - Roofing	\$0.95M
	Gator Parking Lot - Asphalt	\$0.94M
	Other Facility Assets	\$22.22M
	<i>Total Facilities</i>	<i>\$48.22M</i>
Total SGR Backlog		\$92.52M



5 State of Good Repair Analysis – 20-year SGR Needs

This chapter analyzes SGR need over the 20-year TAM Plan horizon for the asset inventory. 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 over the TAM Plan horizon between 2018 and 2038, 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
- 20-year forecast of annual SGR capital needs
- Estimates of available funding levels for SGR investments
- 20-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 25) 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 25: Initial 5-Step Decision Support and Prioritization Process

Step	Description	Comment
Step 1	Develop prioritization methodology	Currently based weighted scoring model using asset condition and asset criticality (using two parameters: cost of liability, likelihood of service loss)
Step 2	Utilize TERM model to create annual and multi-year lists of prioritized investments	Initial years will use TERM prioritization, later potentially alternative approach
Step 3	<ol style="list-style-type: none"> 1. Consolidate investment lists to capture initial multi-year and annual capital investment plan (CIP), these serve as draft suggestions 2. Compare CIPs to available funding levels 	TERM outputs will be developed on annual and multi-year basis and consolidated. Include CIP suggestions from previous years.
Step 4	<p>Review CIPs (by the JTA staff and leadership):</p> <ol style="list-style-type: none"> 1. Review higher priority investments and “manually” lower priority rating, if appropriate 2. Review low priority investments and “manually” elevate priority to higher levels, as appropriate 3. Combine investments to concerted investment program to leverage synergies 	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	Develop final annual and multi-year CIP approval if needed.	



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.”²⁵ This decision support tool is described below.

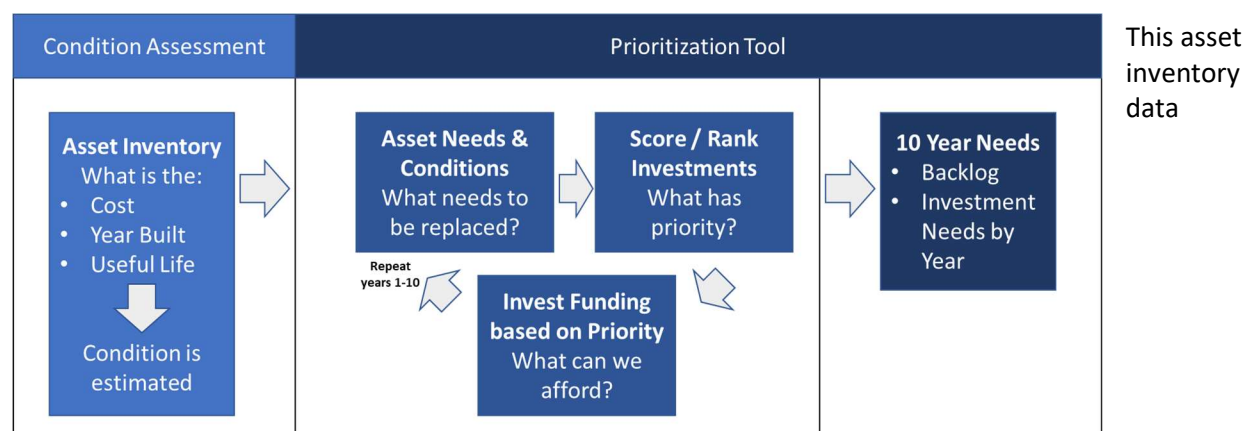
As the JTA will most likely not have the funding to invest in replacing all assets not in SGR every year, a decision-support tool is used to support capital planning and prioritization by considering SGR needs under different investment levels (referred to as scenarios). This provides information to assist the JTA to allocate available investment dollars to high-priority assets.

The JTA chose to use FTA’s TERM, which is available as a “Lite” version, to use as a PC-based application as the decision support tool. This section describes how FTA’s TERM Lite model was used to estimate JTA’s capital investment needs over the 20-year horizon and describes the asset prioritization method used to rank assets in terms of most critical to least critical.

5.2.1 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 JTA’s asset inventory (see chapter 3). A conceptual model of TERM Lite is depicted in Figure 15. TERM Lite outputs are based on inventory data, not field condition assessments. As such, the outputs depend on the quality and completeness of the inventory input data.

Figure 15: TERM Lite Conceptual Model



documents the asset type, date built, expected useful life, replacement value, rehabilitation history, and life cycle investment requirements of assets owned and operated by the JTA. TERM uses the asset inventory data regarding current age, expected useful life, and other life cycle investment requirements to first assess which assets have deferred reinvestment requirements (e.g., which assets are in service past their SGR and what level of investment is required to replace those assets). This assessment provides a measure of the size of the SGR backlog (i.e., the level of investment required to attain a complete SGR).

²⁵ 49 CFR § 625.25(b)(3) (FTA Transit Asset Management Final Rule), July 26, 2016.



The tool next simulates the ongoing aging of these assets over the upcoming 20-years (2019-2038) to determine the level of investment required to replace (or rehabilitate) assets that will reach the end of their useful life over this 20-year period.

Assets' historic acquisition cost were escalated to FY2018 values using TERM industry indices. Between 2018 and 2038, an annual escalation rate of 3 percent was applied to any asset replacement or overhaul cost.

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 SGR backlog. 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 20-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 5.3.

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 20-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 5.2.2.

The analysis of using estimated funding to invest into the current investment/SGR backlog and annual Capital Need is described in chapter 5.3.3.

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).

5.2.2 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 chapter 3.4) that are aggregated to an asset-specific score

1. **Asset Condition (weight 60 percent):** Condition score assigned to assets in TERM Lite by age and decay curves
2. **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



3. **Likelihood of Service Loss Criticality²⁶ (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.

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

Figure 16: 2019 TERM Prioritization Scores

Asset Name	Score	Action
Phillips Building - Roofing	90.54	Replace
Prudential Building - Roof	90.54	Replace
Skyway O&M Building - Roofing	90.54	Replace
Skyway O&M Building - Specialty Suppression	90.54	Replace
Heckscher Bathrooms Building - Roofing	90.54	Replace
Skyway O&M Building - Tanks	88.12	Replace
Myrtle Campus Building 3 - Exterior Access Doors	85.87	Replace
Myrtle Campus Building 4 - Exterior Access Doors	85.87	Replace
Myrtle Campus Building 4 - Pull Stations	85.87	Replace
Myrtle Campus Building 4 - Sirens	85.87	Replace
Myrtle Campus Building 4 - Strobes	85.87	Replace
Myrtle Campus Building 5 - Exterior Access Doors	85.87	Replace
Myrtle Campus Building 6 - Exterior Access Doors	85.87	Replace
Myrtle Campus Building 6 - Wet Fire Suppression System	85.87	Replace
Myrtle Campus Building 6 - Chem. Suppression System	85.87	Replace
Myrtle Campus Building 8 - Exterior Access Doors	85.87	Replace
Myrtle Campus Building 10 - Exterior Access Doors	85.87	Replace
Skyway O&M Building - Rolling	84.29	Replace
Heckscher Bathrooms Building - Sewage Grinder Pump	82.67	Replace
Heckscher Parking Lot - Asphalt Pavement	82.67	Replace



Kuul Aire Portable A/C	47.60	Backlog
Millermatic 140 Welder	47.60	Backlog
Ram Jack	47.60	Backlog
Alignment Lift	47.60	Backlog
Alignment System	47.60	Backlog
Port-a-cool Evaporative Air Cooler	47.60	Backlog
Vmware 2015	47.60	Backlog
Adobe 2015	47.60	Backlog
Symantec 2015-2016	47.60	Backlog
Idea Data Analysis Software 2015	47.60	Backlog



Mayport Seawall Sheet Pile (Replaced in 2019)	18.96	No Action
Mayport Seawall Coping (Replaced in 2019)	18.96	No Action
Heckscher Seawall Sheet Pile (Replaced in 2019)	18.96	No Action
Heckscher Seawall Coping (Replaced in 2019)	18.96	No Action
Armsdale Bldg Interior Stairs (Replaced in 2019)	18.67	No Action

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, Figure 16 illustrates the range of priority scores TERM assigned to the assets up for replacement in FY2019. TERM selected the highest ranked assets to be replaced and brought to a 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.

²⁶ 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.



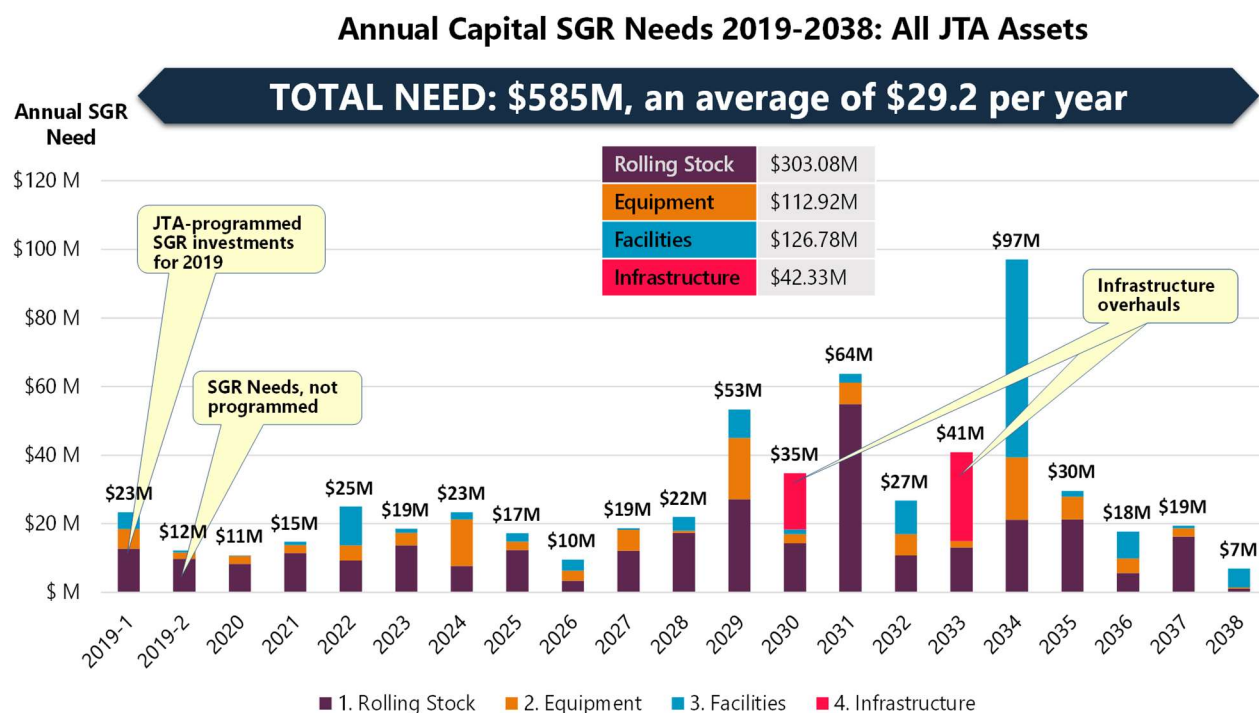
5.3 Capital Needs and State of Good Repair

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 20-year period.

5.3.1 20-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 17, the JTA’s capital SGR needs fluctuates from \$7 million to \$97 million between FY2019 and FY2038, for a total of \$585 million. This total also includes SGR needs associated with mid-life overhauls, where applicable.

Figure 17: Annual Capital SGR Needs 2019-2038

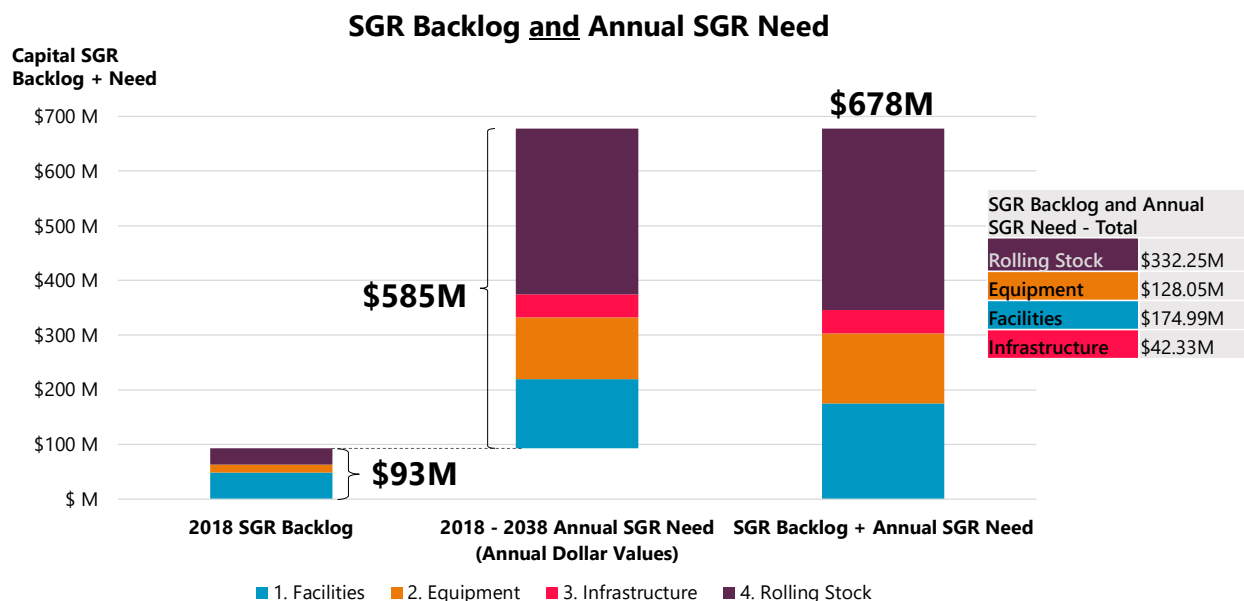


As part of the annual capital investment plan, the JTA has already planned SGR investments for \$23 million for 2019 (labeled as 2019-1 SGR needs in Figure 17). These are separate from SGR needs (labeled as 2019-2) that are driven by assets reaching their ULB in 2019 and need to be replaced (and that are not included in the programmed replacements).



Figure 18 illustrates the JTA’s SGR backlog and annual capital need over the TAM Plan reporting period (FY2018 – FY2038). This includes the 2018 SGR backlog and the total capital need for the remaining years, FY2019 – FY2038). The total need for the FY2018 – FY2038 period is \$678 million.

Figure 18: SGR Backlog and Annual SGR Need over the TAM Plan reporting period (FY2018-FY2038)



5.3.2 Capital Funding Availability

The SGR analysis is undertaken by establishing a 20-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 20-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
- Passenger Ferry Grant
- Low or No Emissions Grant (Discretionary)
- Local Real Estate Sales
- Passenger revenues.

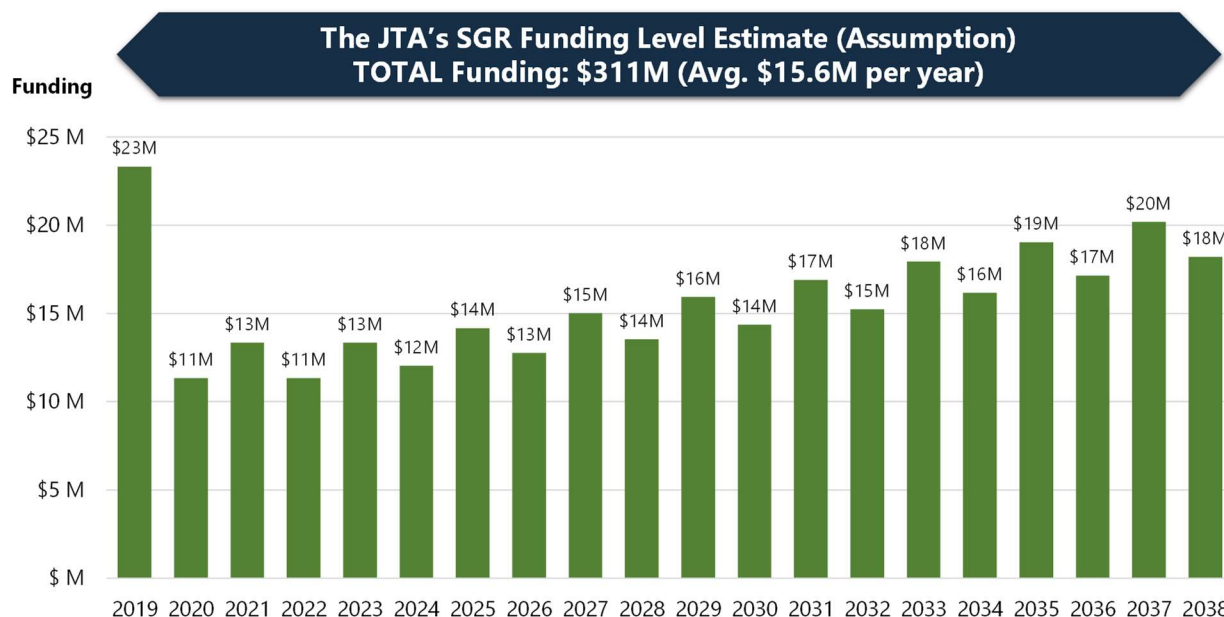


Available funding is somewhat predictable for FY2018 to FY2020. For the years until FY2038, the funding levels are assumed to remain at the FY2020 level with an annual increase of 3 percent assumed (similar escalation assumption as with the asset replacement values). The funding forecast includes alternating 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 20-year period is \$311 million, which averages to about \$15.6 million per year. Figure 19 shows the JTA’s estimated available funding for FY2018 through FY2038.

Figure 19: The JTA’s Assumed Funding Availability, FY2018-FY2038



Chapter 5.3.1 explained that the JTA’s SGR capital need totals \$678 million, comprising the 2018 investment/SGR backlog plus the SGR need for each year between 2019 and 2038. However, estimated funding levels for this planning period amount to only \$311 million, revealing a funding gap of about \$367 million. Consequently, it is predicted that over this reporting period, the investment/SGR backlog will increase.

TAM Plan Investment Scenarios – Decision Support Analysis Results

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

1. **Scenario 1: State of Good Repair at Available Funding Levels.** The scenario for investing the JTA’s estimated funding level and implications on the investment backlog between 2018 and 2038 (TERM prioritization applied) and the consequences on the SGR of the JTA’s assets (in FY2038, what assets by value are in SGR/not in SGR?) – Chapter 5.3.3
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) – Chapter 5.3.4
3. **Scenario 3: Funding Required to Reach 10 percent SGR By 2038.** The approximate funding levels the JTA would need to significantly reduce the investment/SGR backlog amount to 10 percent and have all other assets in SGR by 2038 – Chapter 5.3.5.

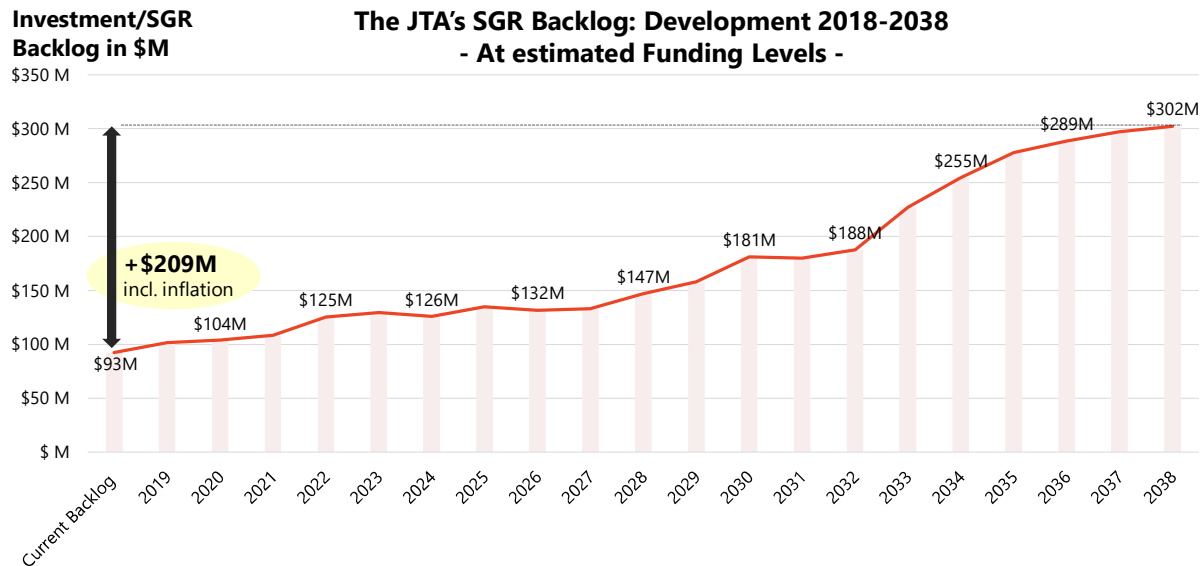


5.3.3 Scenario 1: State of Good Repair at Available Funding Levels

Over the 20-year planning period, the JTA’s investment/SGR backlog will increase due to capital needs that are higher than the available funding.

By FY2038, the backlog will reach \$302 million, as illustrated in the Figure 20.

Figure 20: Development of Investment/SGR Backlog, FY2018-FY2038



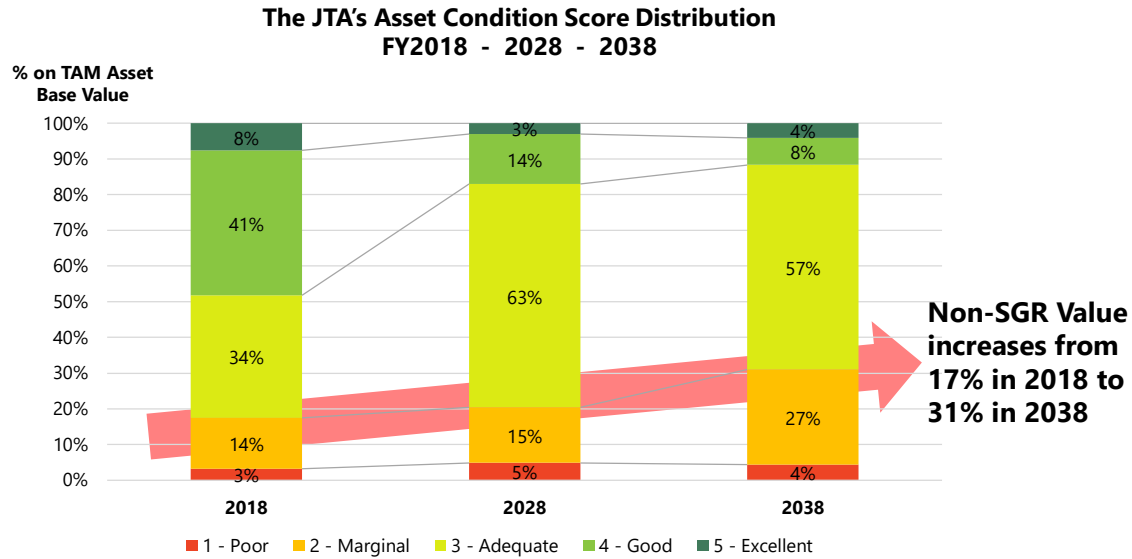
The SGR backlog is increasing every year between the base year 2018 and 2038, indicating that the estimated funding in every year is below the combined SGR from the investment/SGR backlog and the annual SGR need.

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.



The rise of investment/SGR backlog by 2038 indicates that, increasingly, the JTA’s assets are not in SGR. Figure 21 shows how, over the 20-year period, the overall condition of the assets shifts to lower condition ratings. While in 2018 about 17 percent of the JTA’s TAM asset base (in dollars) is not in SGR, this share increases to about 31 percent in 2038 – at the assumed SGR funding levels.

Figure 21: Development of Asset Condition (% by Value), FY2018/28/38



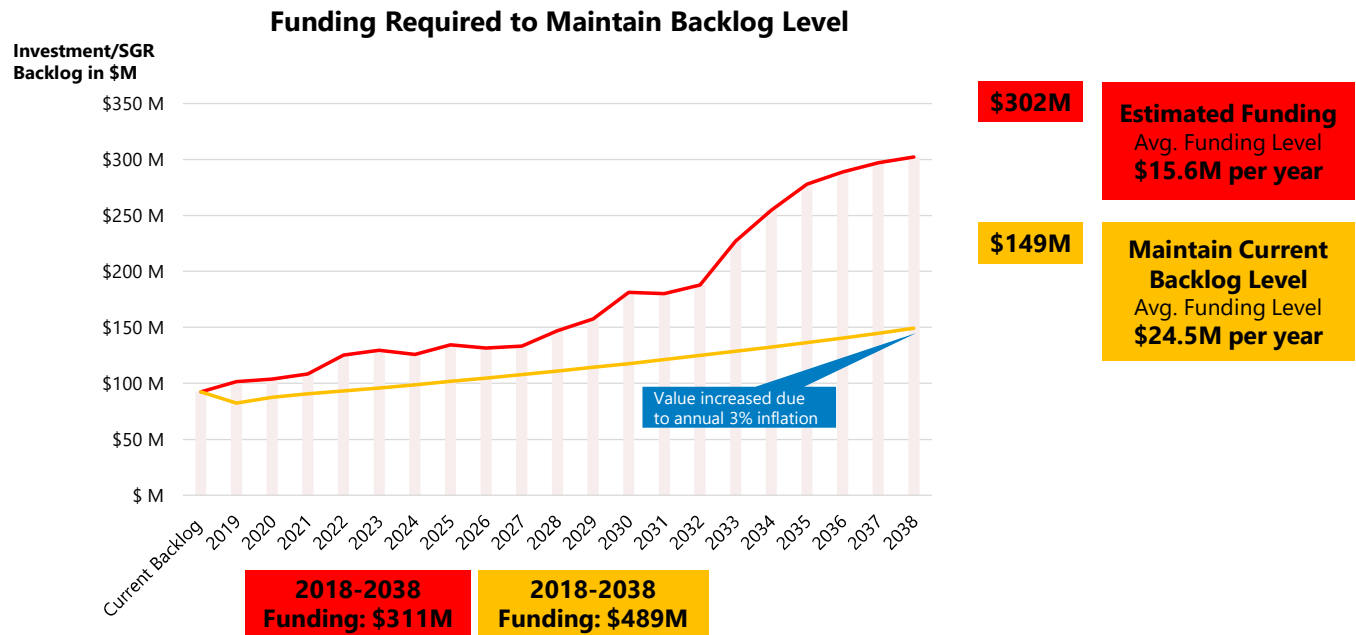
If the estimated funding levels are not sufficient to address the SGR backlog and annual SGR need, the question needs to be answered: what funding levels are needed to at least maintain the backlog at current levels or reduce the backlog over time?



5.3.4 Scenario 2: No Increase in SGR Backlog

If the JTA wanted to maintain an investment backlog of \$92 million, what funding would be required to accomplish this? Figure 22 illustrates the output of an analysis that calculated over the 20-year period how much annual funding would be needed.

Figure 22: Funding Required Annually to Maintain Current Backlog



By FY2038, the backlog will increase to approximately \$149 million due to inflation, and the JTA will need an average funding level of just over \$24 million per year 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 57 percent.

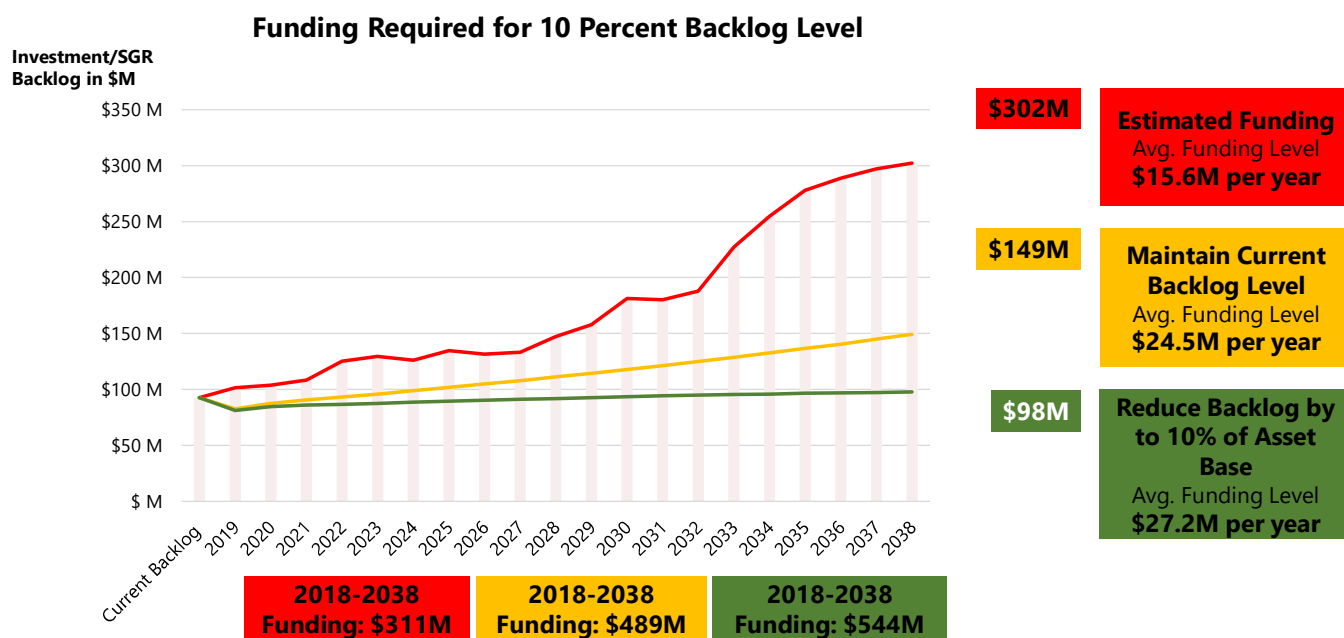
5.3.5 Scenario 3: Funding Required to Reach 10 Percent SGR By 2038

The following describes the funding required to reduce the SGR backlog to 10 percent by 2038. Maintaining this low investment/SGR backlog 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 2038 asset base (which is estimated to be approximately \$972 million). The annual funding needed to address annual SGR and reduce the investment/SGR backlog to 10 percent of the 2038 asset base is estimated at \$27 million (approximate value) per year, on average. This is shown in Figure 23.



Figure 23: Funding Required to Reduce Backlog Levels to 10 Percent by FY2038



For this scenario, the JTA would require funding levels of about \$544 million over the 20-year planning period. If the JTA determines that a higher level of remaining SGR is acceptable, the annual average funding need will decrease below the \$27 million level. On the other hand, if the JTA determines to completely reduce the SGR backlog and address all annual SGR need, the average annual funding level will be above \$27 million.

5.3.6 Summary of Capital Needs and State of Good Repair

The results and findings of the “Capital Needs and State of Good Repair” analysis can be summarized in four key statements

- Capital SGR need:** Between 2018 and 2038, the JTA has a capital SGR need of \$678 million to bring and keep its asset in SGR (including the current investment/SGR backlog of \$93 million).
- Funding level estimate:** Current funding estimates for the same planning horizon amount to \$311 million.
- SGR investments at current funding levels:** If the JTA invested the current funding estimate of \$311 million over the 20-year period, the investment/SGR backlog would grow to about \$302 million – resulting in the JTA’s assets only being in SGR to about 31 percent (by asset value).
- Estimated funding level to maintain or eliminate investment/SGR backlog by 2038:** If the JTA maintained the current investment/SGR backlog level and kept all other assets in SGR, it would require about \$24.5 million in annual funding (annual average). If the JTA wanted to reduce the backlog to around 10 percent of the asset base, this average annual funding need would grow to about \$27 million.



5.4 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 2019, the available funding of \$23 million is invested in close to 70 different assets; however, the 2019 SGR need in addition to the existing SGR backlog (together nearly \$116 million) far exceed that funding level. Consequently, about 3,400 assets not in SGR remain in the backlog at the end of 2019. In later years, the number of assets in the backlog increases. In 2024, about 8,000 assets remain in the investment/SGR backlog while the \$12 million available funding is invested into about 45 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 chapter 5.1).

The 2019-2024 TERM-prioritized asset groups are summarized in Table 26 and indicate the priorities the JTA is following when (initially) selecting asset investments. The five key investment drivers are (in no order of importance)

1. Ensure continuation of revenue service by
 - a. Investing into revenue vehicles and
 - 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 chapter 5.1 above, step 3) to determine which asset replacements will have priority over other assets that are up for replacement.

Table 26: 2019-2024 Prioritized Asset Groups

Asset Group	Examples	Driver for Investment
Revenue Vehicles	Revenue vehicles	Ensure revenue service
	Key components for revenue vehicles	Ensure revenue service
	Ferry overhauls	Ensure revenue service
Critical IT Equipment	Enterprise software (incl. updates)	Ensure functionality
	Servers	Ensure functionality
	Switches	Ensure functionality
Safety/ security critical equipment	Fire control panel	Fire safety
	Access controlling assets	Access control to JTA property
	Vault security assets	Access control to JTA property
	Wayside control units	Safety for passenger/employees
	Intrusion sensors	Access control to JTA property
	Cameras	Access control to JTA property
ADA Compliance	Bus stops	Allow all passenger adequate access
Critical facility/ equipment assets	Lifts/forklifts	Ensure asset function (replace damaged/overaged assets)
	Roofs	Limit consequential damage to building
	Overaged assets	Ensure asset function (replace damaged/overaged assets)
	Ferry dock assets	Allow all passenger adequate access, replace damaged/overaged assets
Infrastructure	None in this time frame	

In more detail, Table 27 summarizes the top TERM-prioritized SGR investments over the next six years by cost, totaling \$80 million.



Table 27: Top TERM-prioritized SGR Investments (FY2019-FY2024)

SGR Investments (2019-2024)	Description	Asset Category
\$42.10M	Replace 64 Existing Gillig Buses	Rolling Stock, Motorbus
\$7.97M	13 New CNG Buses	Rolling Stock, Motorbus
\$4.62M	Ferry Rehabs	Rolling Stock, Ferry
\$5.10M	Skyway Station Roofing	Facilities, Passenger
\$3.42M	Replace 26 Existing Freightliner Buses (CTC/Turtletops)	Rolling Stock, CTC
\$2.50M	ADA Compliance Renovations of Bus Stops - Concrete Pads, Shelters, and Amenities	Equipment, Amenities
\$2.34M	24 MV1s (replaced with Cutaways)	Rolling Stock, CTC
\$1.71M	Heckscher Parking Lot - Asphalt Pavement	Facilities, Passenger
\$1.34M	2 New Electric Buses	Rolling Stock, Motorbus
\$1.13M	Seawall Steel Sheet Piles	Facilities, Passenger
\$0.67M	11 New CTC Vehicles	Facilities, Passenger
\$0.65M	Hyper Converged Infrastructure	Equipment, IT Equipment
\$0.63M	Myrtle Ave Bus Apron - Pavement & Resurfacing	Facilities, Maintenance
\$0.53M	Myrtle Campus Building 6 - Floor 2 - Lighting	Facilities, Maintenance
\$0.50M	Replace CCTV Systems - Myrtle Campus, Rosa Parks, Hemming Plaza, Armsdale, St. Johns Ferry, JRTC	Equipment, Systems
\$0.40M	Service Station (Myrtle Bldg 4) -improvements	Facilities, Maintenance
\$0.33M	General Employee Computer Equipment	Equipment, IT Equipment
\$0.26M	Heckscher Ferry Dock - Seawall Concrete Coping	Facilities, Passenger
\$0.26M	Mayport Ferry Dock - Seawall Concrete Coping	Facilities, Passenger
\$0.26M	Convention Center Station - Fire Control Panel	Facilities, Passenger
\$0.25M	ERP/EAM - Phase 2 Enhancmeents and Stream Lining	Equipment, IT Equipment
\$0.22M	Bus Stop Shelters	Equipment, Amenities
\$0.21M	Skyway O&M Building - Specialty Suppression	Facilities, Maintenance
\$0.21M	Skyway O&M Building - Roofing	Facilities, Maintenance
\$0.20M	Oracle EAM Software Enhancements for TAMP	Equipment, IT Equipment
\$0.20M	Upgrade Fuel Management System - Replace GasBoy Software System	Equipment, IT Equipment
\$0.19M	Heckscher Ferry Dock - Terminal Bridge Pedestrian Walkway	Facilities, Passenger
\$0.19M	Mayport Ferry Dock - Terminal Bridge Pedestrian Walkway	Facilities, Passenger
\$0.18M	Bus Stop Shelter Site Work	Equipment, Amenities
\$0.18M	Prudential Building - Roof	Facilities, Admin
\$0.18M	Myrtle Avenue Interior Lighting Improvements	Facilities, Maintenance
\$0.15M	Heckscher Ferry Dock - Terminal Bridge Floor Beams	Facilities, Passenger
\$0.15M	Mayport Ferry Dock - Terminal Bridge Floor Beams	Facilities, Passenger
\$0.15M	Phillips Building - Roofing	Facilities, Maintenance
\$0.15M	Network Upgrade of aging Routers, Firewalls, Switches	Equipment, IT Equipment
\$0.15M	Park & Ride Lot Improvements	Facilities, Parking
\$0.15M	Plumbing Improvements	Facilities, Maintenance
\$0.14M	Upgrade of Current Customer Service Phone System	Equipment, IT Equipment
\$0.13M	Skyway O&M Building - Interior Access Doors	Facilities, Maintenance
\$80.08M	97% of TERM-prioritized investments in 2019 to 2024 (Total \$82.7M)	

For 2019-2024, Appendix 4 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.



6 TAM Implementation Program

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

- Achieve the TAM Plan goals and objectives
- Address the Asset Management Policy
- And work towards a high level of asset SGR.

The program consists of the implementation strategy that provides the framework and approach for the multi-year implementation of asset management best practices. 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.

The JTA has a phased approach to implementation that builds on the capabilities developed to prepare this TAM Plan and establish a continuous TAM improvement process. A high-level roadmap illustrates the implementation supported by detailed actions addressing all steps in asset management.

6.1 FTA Requirements

Table 28 explains how the TAM Plan addresses FTA requirements.

Table 28: TAM Implementation Requirements

FTA TAM Plan Requirement	Description
<p>6. Implementation Strategy <i>How is the JTA planning to execute the TAM Plan?</i></p>	<p>Two key strategic elements</p> <ol style="list-style-type: none"> 1. Establish an organizational framework 2. Phased implementation approach that <ol style="list-style-type: none"> a) Builds from existing capabilities b) Develops an asset information system c) Advances TAM to data-driven life cycle management
<p>7. Key Annual Activities <i>Annual activities that the JTA will perform to maintain the TAM Plan?</i></p>	<p>Actions to implement the TAM Plan over the next several years, such as</p> <ul style="list-style-type: none"> • Maintaining the asset registry and annual inventory update • NTD reporting for performance targets and annual reporting • Facility assessments at a rate of 25percent per year (or more) • TAM Plan update • Implementing good TAM business practices
<p>8. Identification of Resources <i>Who “owns” TAM at the JTA?</i></p>	<p>Maturing the existing TAM program organization and carrying the TAM principles into the authority and daily operations.</p>
<p>9. Evaluation Plan <i>How will the JTA update the TAM Plan and move to continuous TAM improvements?</i></p>	<p>Implement phased approach and key annual activities structured into overall implementation roadmap, supported by detailed action items.</p>



6.2 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 an asset management information system platform (embedded or with interfaces to authority system and processes).

Strategy 1: Stabilize and sustain the TAM Plan introduced asset management procedures and capabilities as enterprise-wide business as usual processes

Strategy 2: Continue to implement an asset management information system platform embedded and integrated with other business systems and processes

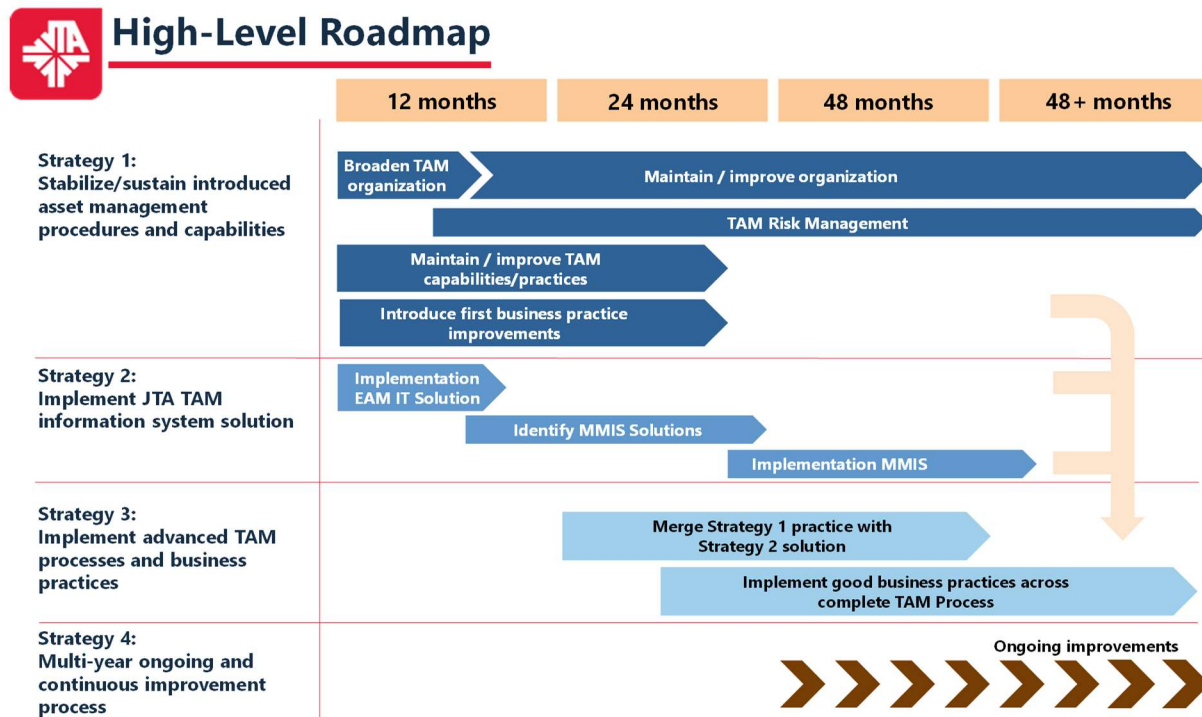
Strategy 3: Move the JTA to advanced TAM practices based on data-driven analytics and decision making to optimize its asset SGR and efficiency

Strategy 4: Ongoing and continuous improvements of organization, information solution, and business practices to improve the authority's SGR and asset performance

Figure 24 below illustrates the JTA's short to long-term TAM implementation roadmap across the strategies described above.



Figure 24: The JTA’s Implementation Strategy



6.3 TAM Implementation Plan

The implementation plan includes the implementing actions that advance the strategy.

6.3.1 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. The Table 29 below explains the responsibility levels across the TAM organization.



Table 29: TAM Roles and Responsibilities

Function:	Responsibilities:
Chief Executive Officer (CEO)	<ul style="list-style-type: none"> • Provide overall executive leadership responsibility for determining the strategic direction and the JTA’s overall policy for Asset Management. • Final approval of asset management policies. • Final approval and sign-off of the JTA Transit Asset Management Plan. • Reporting on the status and effectiveness of asset management to the JTA Board.
Chief Financial Officer (CFO)	<ul style="list-style-type: none"> • Provide overall leadership responsibility for developing models for long-term capital investment plans and funding security. Report on status and effectiveness to the CEO. • Establish policies, procedures, systems, and continuous improvement process.
JTA Asset Management Steering Committee	<ul style="list-style-type: none"> • 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. • Oversee the development and implementation of asset and risk management plans for all asset classes. • Represent all departments with the JTA capital assets and manage interface between technical and financial departments. • Develop and update all asset management policies (see policy list above) for CFO and CEO approval. • Responsible for implementing of approved policies as well as continuous EAM improvement plan. • Development of annual SGR capital investment prioritization and presentation of suggested projects. • Report on status and effectiveness to the CFO.
TAM Working Committee, Department Leads, JTA TAM Manager /Administrator	<ul style="list-style-type: none"> • Responsible for implementing infrastructure asset management life cycle plans, systems, policies, and procedures. • Report on status and effectiveness to the Steering Committee.
JTA Staff	<ul style="list-style-type: none"> • Responsible for managing assets in accordance with asset management life cycle plans, systems, policies, and procedures. • Report on status and effectiveness to Department Leads.

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. The CEO and CFO are thought leaders and also accountable executives. They oversee a TAM leadership team (TAM Plan Steering Committee with senior representatives from all departments with heavy involvement in asset management) that provides oversight and guidance to the TAM Plan Working Committee.



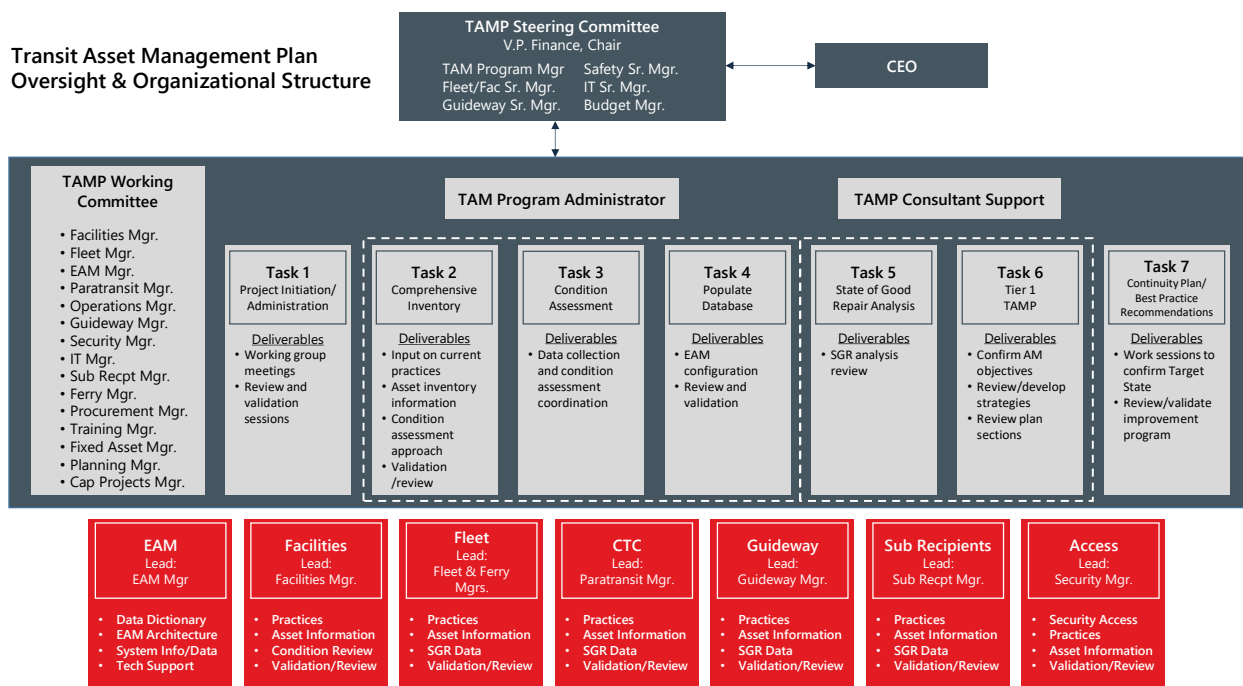
This organizational framework ensures that:

1. The TAM process is integrated across all departments and decisions are aligned with policy and overall goals,
2. Interfaces are seamless,
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 expected outcomes and benefits to the JTA.

The TAM Plan Working Committee, under the leadership of the TAM Plan Program Administrator, is primarily implementing good TAM business practices for their individual asset groups (linked to the JTA departments).

The JTA’s current TAM program organization is shown in Figure 25.

Figure 25: The JTA’s TAM Oversight and Organizational Structure



The JTA anticipates that over the next years at least four full time equivalent (FTE) staff resources will be needed for the TAM implementation. This is comprised of dedicated staff resources in combination with members of the steering and working committees as well as staff from various technical and commercial departments. In addition, at least for the coming two to four years, the JTA expects an annual budget around \$400,000 to invest into asset condition assessments and IT and system support.



Table 30 below provide an overview of these anticipated resources.

Table 30: The JTA’s Resources for the TAM Implementation

JTA TAM Implementation Resources		
Organizational Level	Personnel Resources (FTE)	Annual TAM Budget
Dedicated TAM Staff (TAM Manager, data analyst, EAM IT support)	2.5	~\$230-300K for TAM, ~\$150K for asset condition assessments
TAM Steering Committee	0.6	
TAM Working Committee	1.2	
JTA Staff supporting TAM	Various staff in different departments, fluctuating level of involvement	
TOTAL	4.3 FTE (plus JTA staff)	~\$380-450K

6.3.2 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.

6.3.2.1 Strategy 1: Stabilize and sustain current TAM capabilities

Goal of strategy 1 is to ensure all of the JTA’s efforts invested into the development 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. Continue further the collection of relevant asset attributes
5. Continuation of asset condition assessments
6. For selected high-priority asset groups:
 - a. Advance life cycle management practices to extend assets’ ULB, improve asset performance measurement, and limit risk of asset failures
 - b. Initiate the development of life cycle 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. Develop overall internal and external TAM communication plan
9. Train staff in TAM principles, establish asset management culture at the JTA.

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



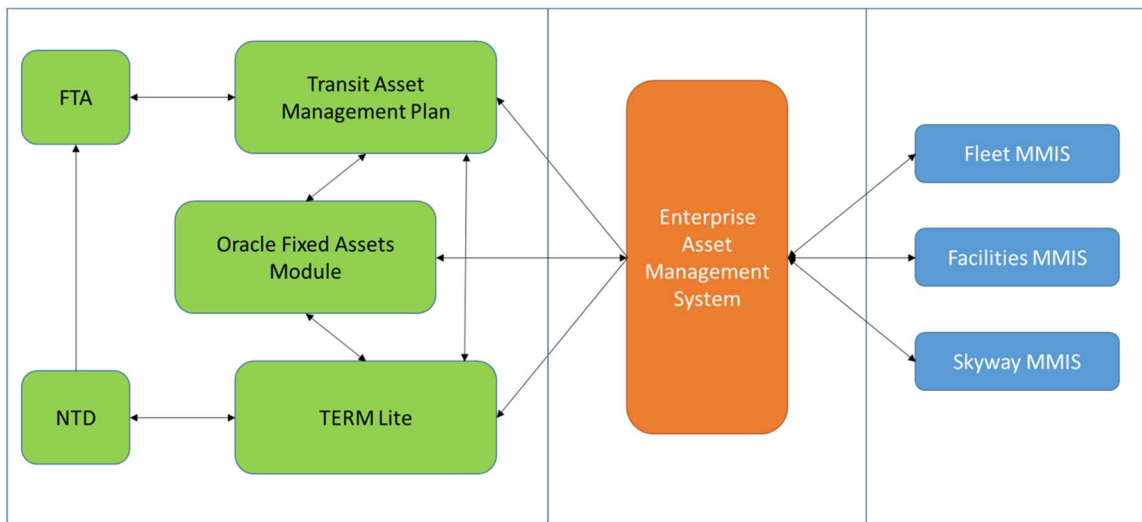
TAM Plan goals. This will support the ongoing management of TAM Plan implementation and reporting accountabilities set out in the asset management policy and described above.

This strategy will be executed short-term, within the next 16 months.

6.3.2.2 Strategy 2: Continue implementing the EAM strategy and information system solution definition

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, especially the planned maintenance management information system (MMIS) for some of the departments responsible for the larger asset groups. This approach is shown below in Figure 26.

Figure 26: The JTA's TAM System Implementation



This strategy will also be executed short to mid-term, within the next 48 months.

6.3.2.3 Strategy 3: Implement advanced TAM processes and business practices

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 now in place the JTA has full technology capabilities to manage the assets' whole life cycle 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 27 below.

Figure 27: 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 31 below explains some of the areas’ starting points to identify opportunities for improvements.



Table 31: The JTA’s TAM Implementation Starting Points

Implementation Area	Implementation starting points and ideas
1. TAM Policy / Strategy	<ul style="list-style-type: none"> Use policy to allocate TAM implementation effort to assets with highest expected benefit to the JTA
2. Asset Inventory	<ul style="list-style-type: none"> Maintain and advance asset hierarchy, including asset attributes Take inventory on assets not yet captured, focus on high-value and high-risk assets Determine process to add new and eliminate disposed assets Complete asset inventory, ideally in enterprise database Initiate analysis (“zero-based approach”) to identify assets that provide little value/benefit to authority Investigate outsourcing potential (including leasing) Investigate asset homogenization, where beneficial
3. Condition Assessment	<ul style="list-style-type: none"> Improve asset condition assessment methods and frequencies, incl. determining components with higher wear and tear or high failure rates Improve rating scale to allow more granular assessments (where beneficial) SGR Baseline Analysis
4. Useful Life / Decay Curves	<ul style="list-style-type: none"> Refine ULB standards and adjust where needed Development of asset-specific decay curves (where most appropriate) and forecasting methods to determine optimal replacement times Determining useful life benchmarks (ULB) Interface with maintenance methods (see 8.) – how do alternative maintenance methods impact decay curves and ULB
5. Life Cycle Costing (replacement \$ and date)	<ul style="list-style-type: none"> Develop life cycle cost methodology and decision support (for relevant assets) Determine commercial optimal replacement times (in addition to technical replacement time determined by asset operations and maintenance, see 8) Determine replacement cost (build data base for high value items and frequently procured asset). Leverage purchasing power through demand pooling.
6. Level of Service (LOS)/ Performance	<ul style="list-style-type: none"> Determine LOS required or desired (in relation to risk and impact resulting from asset failure) Determine asset specific performance metrics, measure units, frequency of measurements, and data storage method/location Determine link between performance metrics support asset condition rating and replacement times
7. Asset Criticality (Risk)	<ul style="list-style-type: none"> Review current practice of determining asset criticality and risk, expand asset criticality assessment by adding adequate parameters Risk of asset failure and its implications help making investment decisions, incl. prioritization Elevated risk assets require more detailed performance metrics, monitoring, forecasting, documentation (risk profile helps to also priorities where to allocate TAM resources) Determine comprehensive risk assessment for all asset groups (or individual assets). Low risk assets are candidates that could be used beyond ULB
8. Maintenance Methodology	<ul style="list-style-type: none"> For prioritized assets, determine if more sophisticated maintenance methods can improve performance and reduce SGR need
9. Capital Investment Plan / Prioritization	<ul style="list-style-type: none"> Improve investment prioritization method Improve decision process for prioritization and investment selection
10. Funding Strategy	<ul style="list-style-type: none"> Leverage national, regional, and local funding sources



The JTA has developed implementation action lists that address these areas and are detailed in section 6.3.3 below.

This strategy will also be executed mid-term over the next 3-4 years.

6.3.2.4 *Strategy 4: Ongoing and continuous TAM improvement process*

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

This strategy will also be executed mid to long-term.

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.

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 developed a plan with actions in all strategic areas with implementation activities covering at least the next four years. 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
4. Asset inventory
 - a. Completion of asset inventory
 - b. Develop interface with relevant authority systems
 - c. Discuss asset reduction actions, e.g. move IT hardware to cloud-based technology
2. Condition assessments
 - a. Continue facility inventory taking and condition assessments
 - b. Develop approach for condition assessment for Skyway infrastructure assets
3. ULB / decay curves
 - a. Detailed review of ULB policies
 - b. Develop plan to establish asset condition decay curves
4. Life cycle cost model
 - a. Develop life cycle cost model, including operating cost, for key asset classes
5. Develop performance metrics
6. Establish a more comprehensive asset criticality model



7. Maintenance methodologies
 - a. Move to predictive maintenance on Skyway trains
 - b. Implement tools to better predict technical useful life for vehicles
 - c. Research technologies to expand ULB for buildings
8. Capital plan/prioritization
 - a. Integrate SGR need with capital planning
9. Identify additional funding sources
10. Continue EAM Optimization.

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



Number	Area	Process	Action Title	Action Detail	Short-Term: 0-24			Mid-Term: 3-5			Long-Term:	
					0-6 mths	6-12 mths	12-24 mths	Year 3	Year 4	Year 5	Year 6-10	Year 10+
	1: Policy and Governance											
		1: Policy										
1.1.1			Review and update policy annually	Steering Committee review every August with change implementation October 1		X	X	X	X	X	X	X
1.1.2			Policy updates should be linked to SMP during annual review	Steering Committee review every August with change implementation October 1		X	X	X	X	X	X	X
1.1.3			Strategic Vision Document	Review and update annually for changes in Enterprise Level Guiding Strategy (such as reaching ISO 55000 status) and Progress toward Strategic Goal Achievement Steering Committee review every August with change implementation October 1		X	X	X	X	X	X	X
1.1.4			Operational vs Capital: Capital eligibility policy	Review and update the Capital eligibility requirement policy. Train decision makers to ensure everyone understands when capital or operational funds should be used.		X	X	X	X	X		
		2: Organization										
1.2.1			Review, update, and expand TAM Org Chart as standing item for each steering committee/ working group meeting	Move from original workgroups that were for the purpose of developing the TAM Plan to workgroups to sustain TAM activities over time.	X	X	X	X	X	X	X	X
1.2.2			Steering committee meetings monthly	Review all ongoing projects and outstanding work, discuss future projects, and maintain and update action list	X	X	X	X	X	X	X	X
1.2.3			Working group meetings bi-weekly	Execute projects against project plan	X	X	X	X	X	X	X	X
1.2.4			Training	Develop a training program; cross-agency, cross-regimen training program across all levels	X							
1.2.5			Provide High/Mid Level TAM Road Map Progress Report	Provide ELT progress report on Strategic Goal Attainment			X	X	X	X	X	X
		3: TAM Plan Update										
			Monthly reporting on guideway infrastructure (slow zones)	First Wednesday of each month at 9AM local time	X	X	X	X	X	X	X	X
1.3.1			TAM Plan certification	Every four years OR when there is a significant change to the SGR base					X		X	X
1.3.2			SGR Targets	Annually		X	X	X	X	X	X	X
1.3.3			Inventory report	Annually		X	X	X	X	X	X	X
1.3.4			Narrative	Annually (3 years, off, 3 years, etc.)		X	X	X	X	X	X	X

Number	Area	Process	Action Title	Action Detail	Short-Term: 0-24			Mid-Term: 3-5			Long-Term:	
					0-6 mths	6-12 mths	12-24 mths	Year 3	Year 4	Year 5	Year 6-10	Year 10+
	2: Business Practices											
2.1		1: TAM Policy and Strategy										
2.1.1			Build Reporting Library	Identify and Develop Reports/Files to support External Report requirements (External Audits/Reviews, NTD submissions, ABBG, Capital Equipment Grant support, etc.)		X	X		X		X	X
2.1.2			Standardize Information Elements used across TAMP interfaced systems and reporting	Define and Develop Matrix of Standard Data Elements across TAMP and interfaced systems	X	X	X					
2.1.3			Develop Compliance Requirements Matrix	Identify and document all Federal, State, Local Government, Contractual, and Industry Standard Compliance Requirements mapped to support Laws, Regulations, Contracts, Grants, and JTA agreements. Update every 2 years.		X	X		X		X	X
2.2		2: Asset Inventory										
2.2.1			Complete EAM data load	Set up schedule for individual department loads, licensing, and training	X							
2.2.2			EAM Inventory review plan	Develop a plan for the expansion of inventory to include assets not currently included and review if any current assets should be removed; Hierarchy breakdown by department with a timetable within 12 months to complete; assigns agreed upon responsibility of ownership going forward	X							
2.2.3			Annual inventory	Review disposed items and retire from asset inventory; Convert to use of EAM as base for asset inventory		X						
2.2.4			Develop plan for EAM to FA interface	Interface of Fixed Assets system and EAM System			X					
2.2.5			Execute EAM to FA interface plan	Interface of Fixed Assets system and EAM System				X				
2.2.6			Inventory: Develop and implement Drawdown plan for Skyway	Work with inventory department to adjust min/max levels of parts based off new baseline for life cycle expectancy.			X					
2.2.7			Evaluate and Establish EAM/Oracle FA Module Database Elements	Attest/Reconcile Common Asset Term Values between both Databases		X	X	X	X	X	X	X

Number	Area	Process	Action Title	Action Detail	Short-Term: 0-24			Mid-Term: 3-5			Long-Term:	
					0-6 mths	6-12 mths	12-24 mths	Year 3	Year 4	Year 5	Year 6-10	Year 10+
	2: Business Practices											
2.2.8			Maximize the labor schedules to reduce necessary buildings/equipment	Research and develop a plan with IAM & HROD to increase shift work and flex hours/days. This will maximize the utilization of equipment and building space therefore stabilizing facility/equipment counts.			X					
2.2.9			Repurpose trolleys to use in regular fixed route service	Request permission from FTA to rebrand and change seating to match fixed route regular service			X					
2.2.10			Business Intelligence: Divert workload to the Amazon Cloud	While a cost benefit analysis is required, there are potential SGR benefits of embracing Cloud only development and operations of our BI stack, rather than sizing new server purchases to house BI workloads (could avoid new hardware assets of 500K)		X						
2.2.11			Desktops: Implement Virtual Desktop Infrastructure	Replace certain desktop workstations with Virtual appliances that are cheaper to purchase and maintain, and have a longer useful life than traditional desktop. (potential SGR reduction of 50-100K)				X	X	X		
2.2.12			Infrastructure: Hyper converged Infrastructure	HCI consolidates separate assets into one functional unit, providing greater scaling and cheaper maintenance costs. Most importantly, less servers are required to perform the same workload that runs on our current servers. (SGR reduction estimate of 200K)			X	X	X	X		
2.2.13			Annual Inventory: Automate the annual asset inventory	Implement the bar code system and asset tag update			X					
2.2.14			Flatten vehicle procurement plan	Create a procurement plan to spread vehicle procurements across multiple years	X							
2.2.15			Audit all ITS systems to identify redundancies	Conduct audit on all JTA systems and ITS software to look for duplication of function and combine any and all programs that would allow for reduction in systems. 12-24 months.			X					

Number	Area	Process	Action Title	Action Detail	Short-Term: 0-24			Mid-Term: 3-5			Long-Term:	
					0-6 mths	6-12 mths	12-24 mths	Year 3	Year 4	Year 5	Year 6-10	Year 10+
	2: Business Practices											
2.3		3: Condition Assessment										
2.3.1			Assess condition of facilities on a 3-year cycle	Myrtle Campus (year 1), Offsite locations (year 2), guideway stations (year 3); review to see if in-house execution is a viable option. Evaluate switching to 4 year cycle		X	X	X	X	X	X	X
2.3.2			Review and update infrastructure condition assessment process	Develop a TAM compliant condition assessment process for guideway to augment or replace current process		X						
2.3.3			Assess condition of infrastructure on a 2-year cycle	Guideway only			X		X		X	X
2.4		4: Useful Life / Decay Curves										
2.4.1			Review current useful life	Departmental review of currently established useful life for all asset categories	X							
2.4.2			Develop plan to establish decay curves based on categories	Start with the most critical asset categories and work towards the least critical			X		X		X	X
2.4.3			Complete a risk assessment on items displaying accelerated decay	Start with the most critical asset categories and work towards the least critical			X	X	X	X		
2.5		5: Life Cycle Costing										
2.5.1			Review replacement costs	Review and establish replacement costs for all assets, including methodology to valuations			X					
2.5.2			Establish life cycle operating cost	Develop methodology and procedures to identify the life cycle cost by asset category (operating budget)			X					
2.6		6: Level of Service / Performance										
2.6.1			Implement agency-level goals and targets annually, due to NTD annually in December	Expand the targets to include entirety of asset registry, not just FTA requirements		X						
2.6.2			Develop TAM specific metrics	Identify up to five metrics to measure TAM Performance for JEMMS (at the program level, not asset level)		X						

Number	Area	Process	Action Title	Action Detail	Short-Term: 0-24			Mid-Term: 3-5			Long-Term:	
					0-6 mths	6-12 mths	12-24 mths	Year 3	Year 4	Year 5	Year 6-10	Year 10+
	2: Business Practices											
2.7		7: Asset Criticality (Risk)										
2.7.1			Review established ratings	Review and update on an asset category level by department		X						
2.8		8: Maintenance Methodology										
2.8.1			Predictive Maintenance Develop Life Cycle of train parts	Build off the knowledge gain over the pass few years from back engineering of parts and components for Skyway trains and develop new baseline for life cycle expectancy.			X					
2.8.2			Modification of parts and components	Continue to work on mod program for back engineering parts and components for the Skyway trains to decrease failure rate, maintenance cost and increase vehicle availability				X				
2.8.3			Establish life cycle expectancy	Use the CMMS to capture failure hours or miles to set life expectancy for all vehicle sub components	X							
2.8.4			Warranty and Maintenance agreement audit	Conduct a value audit for all warranty and maintenance agreements purchased with capital funds on initial project/purchase to see if ROI is appropriate		X						
2.8.5			Building Maintenance: Extend the lifecycle for buildings and support components	Conduct extensive reasearch for new technology to deveope/implement programs for extending the lifecycle of the building envelope thereby increasing the life of interior elements.			X					
2.8.6			Automated Vehicle Maintenance Monitoring: Purchase Clever Devices AVM module	Purchase and implement the Clever AVM system. The system will allow real time monitoring and maintenance alerts from the vehicles as issues happen. Maintenance can monitor and respond in time to avoid catastrophic failure bringing repair costs down and revenue service times increased.			X					

Number	Area	Process	Action Title	Action Detail	Short-Term: 0-24			Mid-Term: 3-5			Long-Term:	
					0-6 mths	6-12 mths	12-24 mths	Year 3	Year 4	Year 5	Year 6-10	Year 10+
	2: Business Practices											
2.9		9: Capital Investment Plan / Prioritization										
2.9.1			Review and update capital budget plan	Create a new matrix to integrate SGR analysis results to establish base capital investment requests for future capital budgets		X						
2.9.2			Revise 5 Year capital budget outlook	Create new plan that builds upon the direction of the U2C system to better utilize capital our investments			X					
2.9.3			Prioritization Review	Review current prioritization metrics and identify additional metrics that should be integrated into the current prioritization matrix, including SMP metrics - Annually		X	X	X	X	X	X	X
2.10		10: Funding Strategy										
2.10.1			Review annual grant opportunities related to safety & security	Identify up to three capital projects that will enhance safety & security to include cyber security			X	X	X	X		
2.10.2			Identify new funding sources	Research various funding sources outside of FTA formula funding			X	X	X	X		
2.10.3			Flatten/spreading funding plan to support vehicle replacements	Create a funding plan that would allow for even annual spending and remove replacement spike purchases.	X							

Number	Area	Process	Action Title	Action Detail	Short-Term: 0-24			Mid-Term: 3-5			Long-Term:	
					0-6 mths	6-12 mths	12-24 mths	Year 3	Year 4	Year 5	Year 6-10	Year 10+
	3: Process/ Technology/ Tools											
3.1		1: Asset Management Register										
3.1.1			EAM Reporting/EAM Optimization	Utilizing Business Object/BI tool reporting, so end users can create/build reports themselves			X					
3.1.2			Full EAM Optimization Project	Conduct EAM optimization project and identify ways to automate data updates for areas like location, condition, status, ownership, retirements, etc.			X					
3.2		2: Asset Management Work Maintenance Management										
3.2.1			EAM and work order integration	Utilizing barcoding technology				X				
3.2.2			MMIS Systems	Review Oracle EAM to identify missing capabilities or needs in regards to individual departments work management needs, and research MMIS systems available that would be able to integrate with Oracle EAM while providing the missing capabilities or needs for each individual department		X	X					
3.3		3: Project Prioritization										
3.3.1			Prioritization tool	Research, test, select, purchase, and implement a prioritization tool			X					
3.3.2			Utilize information received from threats and vulnerability assessments (TVAs) to prioritize capital projects.	Acquire TVAs from multiple agencies annually to ensure our priorities are in line with best practice and actual threats.			X	X	X	X	X	X
3.4		4: Capital Planning										
3.4.1			Revise capital budget plan	Create new plan for using SGR dollars to purchase parts and components for Skyway train and wayside equipment instead of operational funds.		X						

Number	Area	Process	Action Title	Action Detail	Short-Term: 0-24			Mid-Term: 3-5			Long-Term:	
					0-6 mths	6-12 mths	12-24 mths	Year 3	Year 4	Year 5	Year 6-10	Year 10+
	3: Process/ Technology/ Tools											
3.5		5: Grants Management										
3.5.1			Grants Review and Software Identification	Review current EAM data and update to include Grant data for all identified assets. Review data elements to see if additional attributes are required for Grant tracking purposes, and research if current Grant Projects module or additional software can be modified or integrated to provide Grant reporting requirements		X						
		6: ERP										
3.6.1			Evaluation of Oracle Fusion Cloud	Determine if this is a viable path for JTA to embrace.	X							
3.6.2			Migration of Oracle EBS to Oracle Fusion Cloud	If Oracle Fusion cloud is deemed viable, migration from on-premise solution could represent a significant reduction in Software Assets (potentially several million over a 5 yr period)			X					

7 Appendices

Overview:

Appendix 1: Detailed Asset Class Breakdown

Appendix 2: Asset Criticality – 50 highest ranked Assets

Appendix 3: TERM-Prioritized Project 2019-2024



Appendix 1: Detailed Asset Class Breakdown

Asset Break Down
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Level 1	Level 2	Level 3	
	Category	Class	
Rolling Stock	Revenue Vehicles	Bus	
		Cutaway Bus	
		Monorail Vehicle	
		Ferry	
Equipment	Equipment	Shop Equipment	
		Storage Equipment	
		Motorized Equipment	
		Lifts	
		Hoists	
		Office Equipment	
		Amenities	
		Print Shop Equipment	
		Network Equipment	
		Desktop Equipment	
		Application Software	
		Systems	CCTV System
			Automated Passenger Counting System
			CAD/AVL/GPS
			Drive Cam System
			Dispatch Systems
			Scheduling Systems
	Call Center System		
	Automatic Train Supervision (ATS)		
	Passenger Communication System		
	Real Time Passenger Information System		
	Guideway Intrusion System		
	Early Warning Detection System		
	Signal Priority Transmitter		
	Signal/UPS System		
	Revenue Collection System		
	SCADA System		
	Dispersion Systems		
	Monitoring Systems		
	Support Vehicles	Passenger Car	
		Truck	
		SUV	
		Van	
		Boat	
		Skyway Recovery Vehicle	



Asset Break Down

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Level 1	Level 2	Level 3
	Category	Class
Facilities	Maintenance Facilities	Building Structure
		Electrical System
		Fire & Safety Protection System
		HVAC System
		Plumbing System
		Conveyance System
		Drainage
	Signage	
	Admin Facilities	Building Structure
		Electrical System
		Fire & Safety Protection System
		HVAC System
		Plumbing System
		Conveyance System
		Drainage
	Signage	
	Passenger Facilities	Building Structure
		Electrical System
		Fire & Safety Protection System
		HVAC System
		Plumbing System
		Conveyance System
		Drainage
	Signage	
	Docks	Structure
		Slipwalls
		Electrical Systems
Signage		
Fencing		
Access Gate		
Drainage		
Parking Facility	Building Structure	
	Electrical System	
	Fire & Safety Protection System	
	HVAC System	
	Plumbing System	
	Conveyance System	
	Drainage	
Signage		
Parking Lots	Parking Lot	
	Drainage	
	Signage	
	Fencing	
	Access Gate	
	Electrical Systems	
	Improvements	
Infrastructure	Raised Guideway	Deck Elements
		Piers
		Parapets



Appendix 2: Asset Criticality – 50 highest ranked Assets

ASSET GROUP	SGR Liability	SGR Service Loss
BuildingSubstructure.Foundation	A5	B6
BuldingShell.Superstructure	A5	B6
BuldingShell.ExteriorWalls	A5	B6
BuildingShell.Roofing	A5	B6
BuildSubStructure.Foundation	A5	B6
BuildingShell.Superstructure	A5	B6
BuildingShell.ExteriorWalls	A5	B6
BuildingShell.Superstrcutre	A5	B6
DockStructure.PileStructure	A5	B6
DockStructure.ApproachSlab	A5	B6
DockStructure.GantryLiftSystem	A5	B6
DockStructure.TerminalBridges	A5	B6
BuildingSuperstructure.Foundation	A5	B6
AccessGates.GateControl	A6	B4
AccessSystem.BarcodeScanner	A6	B4
AccessGate.GateControl	A6	B4
ElectricalSystem.Conduit	A5	B4
ElectricalSystem.Transformers	A5	B4
PlumbingSystem.Tanks	A5	B4
FireSafetyProtectionSystem.SpecialtySuppression	A5	B4
BuildingShell.ExteriorAccessDoors	A5	B4
ElectricalSystem.PanelsGreater100Amps	A5	B4
ElectricalSystem.PanelsLess100Amps	A5	B4
FireSafetyProtectionSystem.FireControlPanel	A5	B4
FireSafetyProtectionSystem.PullStation	A5	B4
FireSafetyProtectionSystem.Sirens	A5	B4
FireSafetyProtectionSystem.Strobes	A5	B4
HVACSystem.FixedExhaustFans	A5	B4
HVACSystem.GasHeaters	A5	B4
HVACSystem.HVACUnit	A5	B4
PlumbingSystem.SupplySystem	A5	B4
ElectricalSystem.<100Amps	A5	B4
ElectricalSystem.>100Amps	A5	B4
VehicleWashSystem.WashEquipmentPump	A5	B4
FireSafetyProtectionSystem.FireSprinkler	A5	B4
ElectricalSystem.AutomaticTransferSwitch	A5	B4
ElectricalSystem.FixedGenerator	A5	B4
PlumbingSystem.HighPressureGas	A5	B4
PlumbingSystem.NaturalGas	A5	B4
Ferry.Ferry Boat	A3	B6
PlumbingSystem.Pumps	A2	B6
SYSTEM.PowerDistribution	A2	B6
SYSTEM.SCADAPowSupp	A2	B6
SYSTEM.SCADAPLC	A2	B6
SYSTEM.SCADASystem	A2	B6
SYSTEM.SCADASoftware	A2	B6
Equipment.BusLifts	A4	B4
ElectricalSystems.Conduit	A4	B4
ElectricalSystems.Lighting	A4	B4
DriveCamSystems.Camera	A6	B2



Appendix 3: TERM Prioritized Projects 2019-2024

2019 Projects

Asset Categories / Asset Descriptions	2019 Replacement Cost
1.1.1.2 CNG	\$7,803,422
New CNG Bus 1	\$624,531
New CNG Bus 10	\$561,435
New CNG Bus 11	\$561,435
New CNG Bus 12	\$561,435
New CNG Bus 13	\$561,435
New CNG Bus 2	\$624,531
New CNG Bus 3	\$624,531
New CNG Bus 4	\$624,531
New CNG Bus 5	\$624,531
New CNG Bus 6	\$624,531
New CNG Bus 7	\$624,531
New CNG Bus 8	\$624,531
New CNG Bus 9	\$561,435
1.1.1.4 Electric	\$1,900,000
New Electric Bus 1	\$950,000
New Electric Bus 2	\$950,000
1.1.2 Van	\$994,700
CTC Transmissions, Engines (Undefined as to what CTC Vehicles this will be needed for)	\$40,000
Replacement of 11 CTC Vehicles (Mode: Demand Response in column U of Master Registry)	\$954,700
1.1.3 Ferry	\$1,991,691
Jean Ribault Ferry Rehab Type 1	\$1,991,691
Jean Ribault Ferry Rehab Type 2	\$0
2.1 Shop Equipment	\$50,000
Purchase Shop Equipment	\$50,000
2.2 Systems/IT/Security	\$2,781,704
Avaya Phone Replacements (Not sure if IT included the Avaya Phones in the TAMP Inventory)	\$85,000
CRM enhancements - Customer Service Data Base	\$80,000
ERP/EAM - Phase 2 Enhancements and Stream Lining	\$250,000
General Employee Computer Equipment - Undetermined as to what this will replace	\$325,000
Hyper Converged Infrastructure	\$651,500
Network Upgrade of aging Routers, Firewalls, Switches	\$150,000
New Electronic Signage	\$40,000
Oracle EAM Software Enhancements for TAMP	\$200,000
Renovation of Call Center	\$75,000
Replace CCTV Systems - Myrtle Campus, rosaParks, Hemming Plaza, Armsdale, St. Johns Ferry, JRTC	\$500,000
Replacement Radios	\$30,204
Sharepoint Upgrade and Enhancements	\$20,000
Upgrade and Replace Radios (Not Currently in the TAMP Inventory)	\$35,000
Upgrade Fuel Management System - Replace GasBoy Software System	\$200,000
Upgrade of Current Customer Service Phone System (Not Currently in the TAMP Inventory)	\$140,000
2.3 Passenger Amenities	\$2,900,000
ADA Compliance Renovations of Bus Stops - Concrete Pads, Shelters, and Amenities	\$2,500,000
Bus Stop Shelter Site Work	\$180,000
Bus Stop Shelters	\$220,000
2.6.1 Auto	\$50,000
Replace Non-Revenue Vehicles	\$50,000
3.1 Administrative/Sales office	\$50,000
Plumbing Improvements	\$50,000
3.2 Maintenance	\$865,032
Electrical Upgrades	\$50,000
Lighting Upgrade - LED Retrofit	\$100,000
Myrtle Avenue Interior Lighting Improvements	\$175,000
Plumbing Improvements	\$100,000
Service Station (Myrtle Bldg 4) -improvements	\$400,000
Unleaded Fuel Tank Enhancement - Myrtle Campus	\$40,032
3.3.1.2 Docks	\$3,068,988
Heckscher Ferry Dock - Seawall Concrete Coping	\$257,500
Heckscher Ferry Dock - Seawall Steel Sheet Pile	\$566,500
Heckscher Ferry Dock - Terminal Bridge	\$103,000
Heckscher Ferry Dock - Terminal Bridge Floor Beams	\$154,500
Heckscher Ferry Dock - Terminal Bridge Floor Stringers	\$15,450
Heckscher Ferry Dock - Terminal Bridge Grating	\$82,400
Heckscher Ferry Dock - Terminal Bridge Handrail	\$82,400
Heckscher Ferry Dock - Terminal Bridge Ladder	\$82,400
Heckscher Ferry Dock - Terminal Bridge Pedestrian Walkway	\$190,344
Mayport Ferry Dock - Seawall Concrete Coping	\$257,500
Mayport Ferry Dock - Seawall Steel Sheet Pile	\$566,500
Mayport Ferry Dock - Terminal Bridge	\$103,000
Mayport Ferry Dock - Terminal Bridge Floor Beams	\$154,500
Mayport Ferry Dock - Terminal Bridge Floor Stringers	\$15,450
Mayport Ferry Dock - Terminal Bridge Grating	\$82,400
Mayport Ferry Dock - Terminal Bridge Handrail	\$82,400
Mayport Ferry Dock - Terminal Bridge Ladder	\$82,400
Mayport Ferry Dock - Terminal Bridge Pedestrian Walkway	\$190,344
3.3.2.1 Parking Structures	\$20,000
Kings Avenue Garage Structural Repair	\$20,000
3.3.2.2 Parking Lots	\$850,000
Myrtle Ave Bus Apron - Pavement & Resurfacing	\$625,000
Park & Ride Lot Improvements	\$150,000
Park-n-Ride Lighting Improvements	\$75,000
Grand Total	\$23,325,537



2020 Projects

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Asset Categories / Asset Descriptions	2020 Replacement Cost
1.1.1.1 Diesel	\$3,310,008
FREIGHTLINER - Bus 1301	\$127,308
FREIGHTLINER - Bus 1302	\$127,308
FREIGHTLINER - Bus 1303	\$127,308
FREIGHTLINER - Bus 1304	\$127,308
FREIGHTLINER - Bus 1305	\$127,308
FREIGHTLINER - Bus 1306	\$127,308
FREIGHTLINER - Bus 1307	\$127,308
FREIGHTLINER - Bus 1308	\$127,308
FREIGHTLINER - Bus 1309	\$127,308
FREIGHTLINER - Bus 1310	\$127,308
FREIGHTLINER - Bus 1311	\$127,308
FREIGHTLINER - Bus 1312	\$127,308
FREIGHTLINER - Bus 1313	\$127,308
FREIGHTLINER - Bus 1314	\$127,308
FREIGHTLINER - Bus 1315	\$127,308
FREIGHTLINER - Bus 1316	\$127,308
FREIGHTLINER - Bus 1317	\$127,308
FREIGHTLINER - Bus 1318	\$127,308
FREIGHTLINER - Bus 1319	\$127,308
FREIGHTLINER - Bus 1320	\$127,308
FREIGHTLINER - Bus 1321	\$127,308
FREIGHTLINER - Bus 1322	\$127,308
FREIGHTLINER - Bus 1323	\$127,308
FREIGHTLINER - Bus 1324	\$127,308
FREIGHTLINER - Bus 1325	\$127,308
FREIGHTLINER - Bus 1326	\$127,308
1.1.3 Ferry	
Jean Ribault Ferry Rehab Type 1	
Jean Ribault Ferry Rehab Type 2	
2.1 Shop Equipment	\$487,342
BUS LIFT 05 STERTIL KONI ST-1072	\$12,731
BUS LIFT 06 STERTIL KONI ST-1072	\$12,731
BUS LIFT 07 STERTIL KONI ST-1072	\$12,731
BUS LIFT 08 STERTIL KONI ST-1072	\$12,731
BUS LIFT 09 STERTIL KONI ST-1072	\$12,731
BUS LIFT 10 STERTIL KONI ST-1072	\$12,731
BUS LIFT 11 STERTIL KONI ST-1072	\$12,731
BUS LIFT 12 STERTIL KONI ST-1072	\$12,731
BUS LIFT 15 STERTIL KONI ST-1082R	\$12,731
BUS LIFT 16 STERTIL KONI ST-1082R	\$12,731
BUS LIFT 17 STERTIL KONI ST-1082R	\$12,731
BUS LIFT 18 STERTIL KONI ST-1082R	\$12,731
BUS LIFT 19 STERTIL KONI ST-1082R	\$12,731
BUS LIFT 20 STERTIL KONI ST-1082R	\$12,731
BUS LIFT 21 STERTIL KONI ST-1082R	\$12,731
BUS LIFT 22 STERTIL KONI ST-1082R	\$12,731
BUS LIFT 23 STERTIL KONI ST-1082R	\$12,731
BUS LIFT 24 STERTIL KONI ST-1082R	\$12,731
BUS LIFT 25 STERTIL KONI ST-1082R	\$12,731
BUS LIFT 26 STERTIL KONI ST-1082R	\$12,731
BUS LIFT 33 STERTIL KONI ST-1072	\$12,731
BUS LIFT 34 STERTIL KONI ST-1072	\$12,731
BUS LIFT 35 STERTIL KONI ST-1072	\$12,731
BUS LIFT 36 STERTIL KONI ST-1072	\$12,731
BUS LIFT 37 ALM WE-18	\$12,731
BUS LIFT 40 ALM WE-18	\$1,273
BUS LIFT 41 STERTIL-KONI SKWD500	\$20,793
DRIVE-ON BUS LIFT 04 STERTIL KONI ST-4250-10	\$31,827
DRIVE-ON BUS LIFT 06 HUNTER L451-18K	\$24,367
DRIVE-ON BUS LIFT 41 STERTIL KONI ST-4250-9	\$84,872
YALE GC030BFNUAV084 FORKLIFT – Veh Number 10020	\$5,941



2020 Projects

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Asset Categories / Asset Descriptions	2020 Replacement Cost
2.2 Systems/IT/Security	\$126,148
Badge Reader - Bay St - Bus Entrance	\$650
Badge Reader - Forsyth - Bus Exit	\$650
Badge Reader - Myrtle Building 7 - Exterior door (left side of building)	\$650
Badge Reader - Myrtle Gate - Entrance	\$650
Badge Reader -Central Station - Skyway - Exterior door - Electrical room	\$650
Badge Reader -Central Station - Skyway - Exterior door - Equipment room	\$650
Badge Reader -Convention Center - Skyway - Exterior door - Electrical room	\$650
Badge Reader -Convention Center - Skyway - Exterior door - Equipment room	\$650
Badge Reader -Hemming Plaza - Skyway - Exterior door - Electrical room	\$650
Badge Reader -Hemming Plaza - Skyway - Exterior door - Equipment room	\$650
Badge Reader -Hemming Plaza - Skyway - Interior door - Equipment room	\$650
Badge Reader -Jefferson Station - Skyway - Exterior door - Electrical room	\$650
Badge Reader -Jefferson Station - Skyway - Exterior door - Equipment room	\$650
Badge Reader -JRTC - Exterior door - Back Door	\$650
Badge Reader -JRTC - Exterior door - Front Door	\$650
Badge Reader -JRTC - Exterior door - Pedestrian Gate	\$650
Badge Reader -Kings Ave - Skyway - Exterior door - Electrical room	\$650
Badge Reader -Kings Ave - Skyway - Exterior door - Equipment room	\$650
Badge Reader -Kings Ave - Skyway - Exterior door - Restroom Door	\$650
Badge Reader -Kings Ave - Skyway - Exterior door - Station Office Door- badge reader	\$650
Badge Reader -Kings Ave - Skyway - Exterior door - Ticketbooth Door	\$650
Badge Reader -Myrtle Building 1 - Exterior Exit	\$650
Badge Reader -Myrtle Building 2 - Exterior Entrance	\$650
Badge Reader -Myrtle Building 2 - Exterior Exit	\$650
Badge Reader -Myrtle Building 3 - 314-1	\$650
Badge Reader -Myrtle Building 3 - Elevator	\$650
Badge Reader -Myrtle Building 3 - Exterior entrance - Dispatch room	\$650
Badge Reader -Myrtle Building 3 - Exterior Entrance - facing elevator	\$650
Badge Reader -Myrtle Building 3 - Exterior entrance - HR	\$2,606
Badge Reader -Myrtle Building 3 - Exterior entrance - Lost and found	\$650
Badge Reader -Myrtle Building 3 - Exterior Entrance - Next to elevator	\$650
Badge Reader -Myrtle Building 3 - Exterior entrance - Stairwell - Lost and found	\$650
Badge Reader -Myrtle Building 3 - Interior entrance - 315-1	\$650
Badge Reader -Myrtle Building 3 - Interior entrance - 321-1 - Stairwell	\$650
Badge Reader -Myrtle Building 3 - Interior entrance - Command center	\$650
Badge Reader -Myrtle Building 3 - Interior entrance - Dispatch office	\$650
Badge Reader -Myrtle Building 3 - Interior entrance - Dispatch room - 316-1	\$650
Badge Reader -Myrtle Building 3 - Interior entrance - End Stairwell door - 320-1	\$650
Badge Reader -Myrtle Building 3 - Interior entrance - HR - 310-1	\$650
Badge Reader -Myrtle Building 3 - Interior entrance - IT/Server Room	\$650
Badge Reader -Myrtle Building 3 - Interior entrance - Training room - 304-1	\$650
Badge Reader -Myrtle Building 5 - Exterior Entrance	\$650
Badge Reader -Myrtle Building 5 - Interior Entrance - Biometrics	\$650
Badge Reader -Myrtle Building 5 - Interior Entrance (Keypad)- badge reader	\$650
Badge Reader -Myrtle Building 6 - Exterior entrance - JTM Admin	\$650
Badge Reader -Myrtle Building 6 - Exterior entrance - Parts Room	\$650
Badge Reader -Myrtle Building 6 - Interior entrance - Gym	\$650
Badge Reader -Myrtle Building 6 - Interior entrance - JTM Admin - 123	\$650
Badge Reader -Myrtle Building 6 - Interior entrance - Maintenance Training room	\$650
Badge Reader -Myrtle Building 6 - Interior entrance - Stock Room	\$650
Badge Reader -Myrtle Building 7 - Exterior door (right side of building)	\$650
Badge Reader -Myrtle Building 8 - Exterior door to Facilities Shop	\$650
Badge Reader -Myrtle Building 8 - Exterior door to Old Maintenance shop (Right side building)	\$650
Badge Reader -O & M Building - Exterior door - Employee Gate	\$650
Badge Reader -O & M Building - Exterior door - Loading Dock Door	\$650
Badge Reader -O & M Building - Exterior door - Loading Dock Gate	\$650
Badge Reader -O & M Building - Exterior Entrance - Front Door	\$650
Badge Reader -O & M Building - Interior door - Control Room Door	\$650
Badge Reader -O & M Building - Interior door - Server Room Door	\$650
Badge Reader -Riverplace Station - Skyway - Exterior door - Electrical room	\$650
Badge Reader -Riverplace Station - Skyway - Exterior door - Equipment room	\$650
Badge Reader -Rosa Parks - Exterior door - Supervisor Office Door	\$650
Badge Reader -Rosa Parks - Exterior entrance to booth	\$650
Badge Reader -Rosa Parks - Interior entrance to booth - biometric reader	\$2,276
Badge Reader -Rosa Parks - Skyway - Exterior door - Electrical room	\$650
Badge Reader -Rosa Parks - Skyway - Exterior door - Signal Equipment room	\$650
Badge Reader -Rosa Parks - Skyway - Exterior door - Ticketbooth	\$650
Badge Reader -TPO Building - Exterior door - Front Door	\$650
Badge Reader -TPO Building - Exterior door - Side Door	\$650
Badge Reader -TPO Building - Interior door - IT Storage Room Door	\$650
Badge Reader -TPO Building - Interior door - Upstairs IT Offices Door	\$650



2020 Projects

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Asset Categories / Asset Descriptions	2020 Replacement Cost
2.2 Systems/IT/Security	\$126,148
Early Warning Alarm System CENTRAL	\$446
Early Warning Alarm System CONVENTION	\$446
Early Warning Alarm System HEMMING PLAZA	\$446
Early Warning Alarm System JEFFERSON	\$446
Early Warning Alarm System KINGS AVE.	\$446
Early Warning Alarm System RIVERPLACE	\$446
Early Warning Alarm System ROSA PARKS	\$446
Early Warning Alarm System SAN MARCO	\$446
Early Warning Alarm System SENSOR CENTRAL	\$307
Early Warning Alarm System SENSOR CONVENTION	\$307
Early Warning Alarm System SENSOR HEMMING PLAZA	\$307
Early Warning Alarm System SENSOR JEFFERSON	\$307
Early Warning Alarm System SENSOR KINGS AVE.	\$307
Early Warning Alarm System SENSOR RIVERPLACE	\$307
Early Warning Alarm System SENSOR ROSA PARKS	\$307
Early Warning Alarm System SENSOR SAN MARCO	\$307
Early Warning Alarm System SIREN CENTRAL	\$81
Early Warning Alarm System SIREN CONVENTION	\$81
Early Warning Alarm System SIREN HEMMING PLAZA	\$81
Early Warning Alarm System SIREN JEFFERSON	\$81
Early Warning Alarm System SIREN KINGS AVE.	\$81
Early Warning Alarm System SIREN RIVERPLACE	\$81
Early Warning Alarm System SIREN ROSA PARKS	\$81
Early Warning Alarm System SIREN SAN MARCO	\$81
Early Warning Alarm System STROBE CENTRAL	\$58
Early Warning Alarm System STROBE CONVENTION	\$58
Early Warning Alarm System STROBE HEMMING PLAZA	\$58
Early Warning Alarm System STROBE JEFFERSON	\$58
Early Warning Alarm System STROBE KINGS AVE.	\$58
Early Warning Alarm System STROBE RIVERPLACE	\$58
Early Warning Alarm System STROBE ROSA PARKS	\$58
Early Warning Alarm System STROBE SAN MARCO	\$58
EXAGRID EX5000	\$105
Guideway Intrusion System CENTRAL	\$7,546
Guideway Intrusion System CONVENTION	\$7,546
Guideway Intrusion System HEMMING PLAZA	\$7,546
Guideway Intrusion System JEFFERSON	\$7,546
Guideway Intrusion System ROSA PARKS	\$7,546
Guideway Intrusion System Sensor CENTRAL	\$3,529
Guideway Intrusion System Sensor CONVENTION	\$3,529
Guideway Intrusion System Sensor HEMMING PLAZA	\$3,529
Guideway Intrusion System Sensor JEFFERSON	\$3,529
Guideway Intrusion System Sensor ROSA PARKS	\$3,529
Guideway Intrusion System Software Control Unit CENTRAL	\$652
Guideway Intrusion System Software Control Unit CONVENTION	\$652
Guideway Intrusion System Software Control Unit HEMMING PLAZA	\$652
Guideway Intrusion System Software Control Unit JEFFERSON	\$652
Guideway Intrusion System Software Control Unit KINGS	\$652
Guideway Intrusion System Software Control Unit RIVERPLACE	\$652
Guideway Intrusion System Software Control Unit ROSA PARKS	\$652
Guideway Intrusion System Software Control Unit SAN MARCO	\$652
LTS IP Camera,2.80mm,0.05 Lux,2 MP,5W Model - Breakroom - Bldg 5	\$3,172
LTS IP Camera,2.80mm,0.05 Lux,2 MP,5W Model - Inside Moneyroom - Bldg 5	\$1,586
LTS IP Camera,2.80mm,0.05 Lux,2 MP,5W Model - Inside Vault Room - Bldg 5	\$793
LTS IP Camera,2.80mm,0.05 Lux,2 MP,5W Model - Outside Moneyroom - Bldg 5	\$2,379
Network Smart Switch, 8 GBPoE+2RJ45/SFP - Bldg 6 - Bus Maintenance Enclosure	\$340
Network Smart Switch, 8 GBPoE+2RJ45/SFP - Bldg 7 - Shop	\$340



2020 Projects

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Asset Categories / Asset Descriptions	2020 Replacement Cost
3.1 Administrative/Sales office	\$687,463
Myrtle Campus Building 3 - Carrier HVAC Unit	\$15,277
Myrtle Campus Building 3 - Exterior Access Doors	\$25,462
Myrtle Campus Building 3 - Fixed Exhaust Fans 3	\$2,971
Myrtle Campus Building 3 - Gas Heaters 1	\$2,546
Myrtle Campus Building 3 - Gas Heaters 2	\$2,546
Myrtle Campus Building 3 - Gas Heaters 3	\$2,546
Myrtle Campus Building 3 - Gas Heaters 4	\$2,546
Myrtle Campus Building 3 - Gas Heaters 5	\$2,546
Myrtle Campus Building 3 - Gas Heaters 6	\$2,546
Myrtle Campus Building 5 - Exterior Access Doors	\$7,638
Myrtle Campus Building 5 - Lavatories 2	\$2,546
Myrtle Campus Building 5 - Water Closets 2	\$2,228
Phillips Building - Duct System	\$7,214
Phillips Building - Exterior Access Doors	\$10,185
Phillips Building - Exterior Windows	\$42,118
Phillips Building - Fixed Exhaust Fans	\$2,546
Phillips Building - Gas Heaters	\$5,092
Phillips Building - HVAC Air Handler Unit	\$7,426
Phillips Building - HVAC Condenser Unit	\$7,426
Phillips Building - Interior Access Doors	\$59,092
Phillips Building - Roofing	\$150,648
Prudential Building - Duct System	\$9,760
Prudential Building - Exterior Access Doors	\$5,092
Prudential Building - Exterior Windows	\$23,128
Prudential Building - Fixed Exhaust Fans	\$2,546
Prudential Building - Hot Water Heater	\$5,305
Prudential Building - HVAC Air Handler Unit	\$10,185
Prudential Building - HVAC Condenser Unit	\$11,882
Prudential Building - Interior Access Doors	\$59,092
Prudential Building - Lavatories	\$20,794
Prudential Building - Roof	\$175,473
Prudential Building - Urinals	\$1,061
3.2 Maintenance	\$2,874,084
Myrtle Campus Building 10 - Exterior Access Doors	\$5,092
Myrtle Campus Building 10 - Lighting 1st Floor	\$849
Myrtle Campus Building 10 - Rolling 1	\$6,471
Myrtle Campus Building 10 - Rolling 2	\$6,471
Myrtle Campus Building 4 - Exterior Access Doors	\$17,823
Myrtle Campus Building 4 - Pull Stations	\$1,697
Myrtle Campus Building 4 - Sirens	\$3,077
Myrtle Campus Building 4 - Strobes	\$637
Myrtle Campus Building 6 - Antifreeze Tanks	\$6,790
Myrtle Campus Building 6 - Chemical Suppression System	\$8,593
Myrtle Campus Building 6 - Exterior Access Doors	\$45,831
Myrtle Campus Building 6 - Fixed Exhaust Fans 1	\$2,971
Myrtle Campus Building 6 - Fixed Exhaust Fans 12	\$2,971
Myrtle Campus Building 6 - Fixed Exhaust Fans 18	\$2,971
Myrtle Campus Building 6 - Fixed Exhaust Fans 19	\$2,971
Myrtle Campus Building 6 - Fixed Exhaust Fans 2	\$2,971
Myrtle Campus Building 6 - Fixed Exhaust Fans 20	\$2,971
Myrtle Campus Building 6 - Fixed Exhaust Fans 21	\$2,971
Myrtle Campus Building 6 - Fixed Exhaust Fans 22	\$2,971
Myrtle Campus Building 6 - Fixed Exhaust Fans 23	\$2,971
Myrtle Campus Building 6 - Fixed Exhaust Fans 24	\$2,971
Myrtle Campus Building 6 - Fixed Exhaust Fans 3	\$2,971
Myrtle Campus Building 6 - Fixed Exhaust Fans 4	\$2,971
Myrtle Campus Building 6 - Motor Oil Tanks	\$6,790
Myrtle Campus Building 6 - Overhead 1	\$7,957
Myrtle Campus Building 6 - Overhead 10	\$7,957
Myrtle Campus Building 6 - Overhead 11	\$7,957
Myrtle Campus Building 6 - Overhead 12	\$7,957
Myrtle Campus Building 6 - Overhead 13	\$7,957
Myrtle Campus Building 6 - Overhead 14	\$7,957
Myrtle Campus Building 6 - Overhead 15	\$7,957
Myrtle Campus Building 6 - Overhead 16	\$7,957
Myrtle Campus Building 6 - Overhead 17	\$7,957
Myrtle Campus Building 6 - Overhead 18	\$7,957
Myrtle Campus Building 6 - Overhead 19	\$7,957
Myrtle Campus Building 6 - Overhead 2	\$7,957
Myrtle Campus Building 6 - Overhead 20	\$7,957
Myrtle Campus Building 6 - Overhead 21	\$7,957
Myrtle Campus Building 6 - Overhead 22	\$7,957
Myrtle Campus Building 6 - Overhead 23	\$7,957
Myrtle Campus Building 6 - Overhead 24	\$7,957
Myrtle Campus Building 6 - Overhead 25	\$7,957
Myrtle Campus Building 6 - Overhead 26	\$7,957
Myrtle Campus Building 6 - Overhead 27	\$7,957
Myrtle Campus Building 6 - Overhead 28	\$7,957
Myrtle Campus Building 6 - Overhead 29	\$15,914
Myrtle Campus Building 6 - Overhead 3	\$7,957
Myrtle Campus Building 6 - Overhead 30	\$23,870
Myrtle Campus Building 6 - Overhead 4	\$7,957
Myrtle Campus Building 6 - Overhead 5	\$7,957
Myrtle Campus Building 6 - Overhead 6	\$7,957
Myrtle Campus Building 6 - Overhead 7	\$7,957
Myrtle Campus Building 6 - Overhead 8	\$7,957
Myrtle Campus Building 6 - Overhead 9	\$7,957
Myrtle Campus Building 6 - Rolling 1	\$2,864
Myrtle Campus Building 6 - Rolling 2	\$2,864
Myrtle Campus Building 6 - Rolling 3	\$2,864
Myrtle Campus Building 6 - Rolling 5	\$2,864
Myrtle Campus Building 6 - Rolling 7	\$6,896
Myrtle Campus Building 6 - Rolling 8	\$6,896
Myrtle Campus Building 6 - Transmission Oil Tanks	\$6,790
Myrtle Campus Building 6 - Wet Fire Suppression System	\$21,324



2020 Projects

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Asset Categories / Asset Descriptions	2020 Replacement Cost
Myrtle Campus Building 8 - Exterior Access Doors	\$5,092
Myrtle Campus Building 8 - Fixed Exhaust Fans 1	\$2,971
Myrtle Campus Building 8 - Fixed Exhaust Fans 2	\$2,971
Myrtle Campus Building 8 - Fixed Exhaust Fans 3	\$2,971
Myrtle Campus Building 8 - Lavatories 1	\$2,546
Myrtle Campus Building 8 - Overhead 1	\$7,957
Myrtle Campus Building 8 - Overhead 2	\$7,957
Myrtle Campus Building 8 - Overhead 3	\$7,957
Myrtle Campus Building 8 - Overhead 4	\$7,957
Myrtle Campus Building 8 - Showers 1	\$5,941
Myrtle Campus Building 8 - Urinals 1	\$849
Myrtle Campus Building 8 - Water Closets 1	\$2,228
Skyway O&M Building - Duct System	\$25,886
Skyway O&M Building - Exterior Access Doors	\$12,731
Skyway O&M Building - Fixed Exhaust Fans 1	\$2,971
Skyway O&M Building - Fixed Exhaust Fans 2	\$2,971
Skyway O&M Building - Gas Heater 1	\$2,546
Skyway O&M Building - Gas Heater 2	\$2,546
Skyway O&M Building - Hot Water Heater	\$5,305
Skyway O&M Building - HVAC Unit AHU #7	\$6,790
Skyway O&M Building - HVAC Unit AHU #8	\$6,790
Skyway O&M Building - HVAC Unit CU #7	\$6,790
Skyway O&M Building - HVAC Unit #4 AHU	\$6,790
Skyway O&M Building - HVAC Unit #4 CU	\$6,790
Skyway O&M Building - HVAC Unit AHU #3	\$6,790
Skyway O&M Building - HVAC Unit AHU #6	\$6,790
Skyway O&M Building - HVAC Unit AHU#2	\$6,790
Skyway O&M Building - HVAC Unit Belt	\$15,914
Skyway O&M Building - HVAC Unit Belt	\$15,914
Skyway O&M Building - HVAC Unit CU #3	\$6,790
Skyway O&M Building - HVAC Unit CU #6	\$6,790
Skyway O&M Building - HVAC Unit CU#2	\$6,790
Skyway O&M Building - HVAC Unit CU#8	\$6,790
Skyway O&M Building - HVAC Unit ROOM 119	\$6,790
Skyway O&M Building - HVAC Unit ROOM 119 COND	\$6,790
Skyway O&M Building - HVAC Unit TIRE SHOP	\$20,369
Skyway O&M Building - Interior Access Doors	\$132,400
Skyway O&M Building - Lavatories 1	\$64,715
Skyway O&M Building - Lavatories 2	\$17,611
Skyway O&M Building - Rolling	\$1,060,900
Skyway O&M Building - Roofing	\$211,862
Skyway O&M Building - Showers 1	\$64,715
Skyway O&M Building - Showers 2	\$17,611
Skyway O&M Building - Signage	\$5,092
Skyway O&M Building - Specialty Suppression	\$212,180
Skyway O&M Building - Tanks	\$53,045
Skyway O&M Building - Urinals 1	\$64,715
Skyway O&M Building - Urinals 2	\$17,611
Skyway O&M Building - Water Closets 1	\$64,715
Skyway O&M Building - Water Closets 2	\$17,611
Skyway O&M Building - Water Fountains 1	\$127,308
Skyway O&M Building - Water Fountains 2	\$20,688
3.3.1.1 Stations	\$2,015,710
Central Station - Roofing	\$1,007,855
Convention Center Station - Roofing	\$1,007,855
3.3.1.3 Other (Heckscher)	\$28,825
Heckscher Bathrooms Building - Exterior Access Doors	\$7,638
Heckscher Bathrooms Building - Interior Access Doors	\$2,122
Heckscher Bathrooms Building - Lavatories	\$2,546
Heckscher Bathrooms Building - Roofing	\$4,636
Heckscher Bathrooms Building - Sewage Grinder Pump	\$5,305
Heckscher Bathrooms Building - Signage	\$2,122
Heckscher Bathrooms Building - Water Closets	\$4,456
3.3.2.2 Parking Lots	\$1,811,110
Heckscher Parking Lot - Asphalt Pavement	\$1,708,035
Heckscher Parking Lot - Decorative Ferry Perimeter Fence	\$13,458
Heckscher Parking Lot - Ferry Perimeter Gate	\$6,790
Heckscher Parking Lot - Irrigation System	\$15,914
Heckscher Parking Lot - Signage	\$10,609
Mayport Parking Lot - Fuel Farm Exterior Chainlink Fence	\$9,167
Mayport Parking Lot - Fuel Farm Exterior Gate	\$5,092
Mayport Parking Lot - Fuel Farm Interior Chainlink Fence	\$5,763
Mayport Parking Lot - Fuel Farm Interior Gate	\$5,092
Mayport Parking Lot - Irrigation System	\$15,914
Myrtle Campus Parking Lots - Tanks	\$6,790
Skyway O&M Parking Lot - Signage	\$8,487
Grand Total	\$11,340,691



2021 Projects

Asset Categories / Asset Descriptions	2021 Replacement Cost
1.1.1.1 Diesel	\$11,117,453
GILLIG "LOW FLOOR" - Bus 1425	\$585,129
GILLIG "LOW FLOOR" - Bus 1424	\$585,129
GILLIG "LOW FLOOR" - Bus 1423	\$585,129
GILLIG "LOW FLOOR" - Bus 1422	\$585,129
GILLIG "LOW FLOOR" - Bus 1421	\$585,129
GILLIG "LOW FLOOR" - Bus 1420	\$585,129
GILLIG "LOW FLOOR" - Bus 1419	\$585,129
GILLIG "LOW FLOOR" - Bus 1417	\$585,129
GILLIG "LOW FLOOR" - Bus 1416	\$585,129
GILLIG "LOW FLOOR" - Bus 1415	\$585,129
GILLIG "LOW FLOOR" - Bus 1414	\$585,129
GILLIG "LOW FLOOR" - Bus 1413	\$585,129
GILLIG "LOW FLOOR" - Bus 1412	\$585,129
GILLIG "LOW FLOOR" - Bus 1410	\$585,129
GILLIG "LOW FLOOR" - Bus 1409	\$585,129
GILLIG "LOW FLOOR" - Bus 1408	\$585,129
GILLIG "LOW FLOOR" - Bus 1406	\$585,129
GILLIG "LOW FLOOR" - Bus 1405	\$585,129
GILLIG "LOW FLOOR" - Bus 1404	\$585,129
1.1.3 Ferry	\$1,777,659
Jean Ribault Ferry Rehab Type 2	\$1,777,659
Jean Ribault Ferry Rehab Type 1	
2.1 Shop Equipment	\$53,544
DRIVE-ON BUS LIFT 02 ROTARY SM18N000	\$27,318
BUS LIFT 39 ALM WE-18	\$13,113
BUS LIFT 38 ALM WE-18	\$13,113
2.2 Systems/IT/Security	\$21,188
Network Smart Switch, HP2620-24 Switch - Bldg 3 - IDF Room	\$959
Network Smart Switch, 8 GBPoE+2RJ45/SFP - Bldg 8 - Office	\$350
Network Smart Switch, 24 GBPoE+2RJ45/SFP - Bldg 6 - 2nd floor Network Room	\$1,616
Network Smart Switch, 24 GBPoE+2RJ45/SFP - Bldg 3 - IDF Room	\$997
Network Smart Switch, 20SFP Gb +4RJ45 Gb - 2nd floor Network Room	\$1,234
Network Smart Switch, 16 GBPoE+2RJ45/SFP - Bldg 6 - HVAC Shop	\$496
Network Smart Switch, 16 GBPoE+2RJ45/SFP - Bldg 6 - Body Shop	\$496
Guideway Intrusion System Sensor SAN MARCO	\$3,634
Guideway Intrusion System Sensor RIVERPLACE	\$3,634
Guideway Intrusion System KINGS AVE.	\$7,772
3.3.1.1 Stations	\$378,630
Convention Center Station - Strobes 2	\$19,123
Convention Center Station - Strobes 1	\$19,123
Convention Center Station - Sirens 2	\$19,123
Convention Center Station - Sirens 1	\$19,123
Convention Center Station - Pull Station 2	\$22,947
Convention Center Station - Pull Station 1	\$22,947
Convention Center Station - Fire Control Panel	\$256,244
Grand Total	\$13,348,472



2022 Projects

Asset Categories / Asset Descriptions	2022 Replacement Cost
1.1.1.1 Diesel	\$9,964,315
GILLIG "LOW FLOOR" - Bus 1401	\$602,683
GILLIG "LOW FLOOR" - Bus 1402	\$602,683
GILLIG "LOW FLOOR" - Bus 1403	\$602,683
GILLIG "LOW FLOOR" - Bus 1407	\$602,683
GILLIG "LOW FLOOR" - Bus 1418	\$602,683
GILLIG "LOW FLOOR" - Bus 1432	\$631,900
GILLIG "LOW FLOOR" - Bus 1434	\$631,900
GILLIG "LOW FLOOR" - Bus 1435	\$631,900
GILLIG "LOW FLOOR" - Bus 1436	\$631,900
GILLIG "LOW FLOOR" - Bus 1437	\$631,900
GILLIG "LOW FLOOR" - Bus 1439	\$631,900
GILLIG "LOW FLOOR" - Bus 1440	\$631,900
GILLIG "LOW FLOOR" - Bus 1441	\$631,900
GILLIG "LOW FLOOR" - Bus 1442	\$631,900
GILLIG "LOW FLOOR" - Bus 1443	\$631,900
GILLIG "LOW FLOOR" - Bus 1444	\$631,900
1.1.2 Van	\$184,583
VHPG MV1G - #80	\$92,292
VHPG MV1G - #81	\$92,292
1.1.3 Ferry	
Jean Ribault Ferry Rehab Type 1	
Jean Ribault Ferry Rehab Type 2	
2.1 Shop Equipment	\$28,138
DRIVE-ON BUS LIFT 01 ROTARY SM18N000	\$28,138
2.2 Systems/IT/Security	\$20,067
Guideway Intrusion System RIVERPLACE	\$8,005
Guideway Intrusion System SAN MARCO	\$8,005
Guideway Intrusion System Sensor KINGS AVE.	\$3,743
HP TFT5600RKM	\$156
MICROSOFT VISTA ULTIMATE	\$156
3.1 Administrative/Sales office	\$12,493
Myrtle Campus Building 3 - Fall Protection System 1	\$12,493
3.2 Maintenance	\$38,155
Myrtle Campus Building 4 - Duct System	\$3,377
Myrtle Campus Building 8 - Fire Sprinkler	\$34,778
3.3.1.1 Stations	\$1,084,990
Central Station - Duct Systems	\$4,502
Central Station - Fixed Exhaust Fans	\$1,126
Convention Center Station - Duct System	\$4,502
Jefferson Station - Duct System	\$4,502
Jefferson Station - Fixed Exhaust Fans	\$1,126
Jefferson Station - Roofing	\$1,069,233
3.3.2.2 Parking Lots	\$7,918
Armsdale Parking Lot - High Security Slide Drive w/Motor	\$7,918
Grand Total	\$11,340,659



2023 Projects

Asset Categories / Asset Descriptions	2023 Replacement Cost
1.1.1.1 Diesel	\$10,413,713
GILLIG "LOW FLOOR" - Bus 1433	\$650,857
GILLIG "LOW FLOOR" - Bus 1438	\$650,857
GILLIG "LOW FLOOR" - Bus 1445	\$650,857
GILLIG "LOW FLOOR" - Bus 1446	\$650,857
GILLIG G29D102N4 - Bus 1611	\$650,857
GILLIG G29D102N4 - Bus 1613	\$650,857
GILLIG G29D102N4 - Bus 1614	\$650,857
GILLIG G29D102N4 - Bus 1615	\$650,857
GILLIG G29D102N4 - Bus 1616	\$650,857
GILLIG G29D102N4 - Bus 1617	\$650,857
GILLIG G29D102N4 - Bus 1618	\$650,857
GILLIG G29D102N4 - Bus 1619	\$650,857
GILLIG G29D102N4 - Bus 1620	\$650,857
GILLIG G29D102N4 - Bus 1621	\$650,857
GILLIG G29D102N4 - Bus 1622	\$650,857
GILLIG G29D102N4 - Bus 1623	\$650,857
1.1.2 Van	\$95,060
VHPG MV1G - #74	\$95,060
1.1.3 Ferry	\$2,241,666
Jean Ribault Ferry Rehab Type 1	\$2,241,666
Jean Ribault Ferry Rehab Type 2	
2.2 Systems/IT/Security	\$1,844
ADOBE FLASH CS4	\$61
HP DL320	\$1,622
MICROSOFT VISTA ULTIMATE	\$161
3.2 Maintenance	\$527,817
Myrtle Campus Building 10 - Interior Ceilings 1st Floor	\$1,391
Myrtle Campus Building 6 - Floor 2 - Lighting	\$526,426
3.3.1.1 Stations	\$68,397
Convention Center Station - HVAC Air Handler Unit	\$56,457
Jefferson Station - Water Fountains	\$11,941
Grand Total	\$13,348,498



2024 Projects

Asset Categories / Asset Descriptions	2024 Replacement Cost
1.1.1.1 Diesel	\$8,714,976
GILLIG G27D102N4 - Bus 1701	\$670,383
GILLIG G27D102N4 - Bus 1702	\$670,383
GILLIG G27D102N4 - Bus 1703	\$670,383
GILLIG G27D102N4 - Bus 1704	\$670,383
GILLIG G27D102N4 - Bus 1705	\$670,383
GILLIG G27D102N4 - Bus 1706	\$670,383
GILLIG G27D102N4 - Bus 1707	\$670,383
GILLIG G27D102N4 - Bus 1708	\$670,383
GILLIG G27D102N4 - Bus 1709	\$670,383
GILLIG G27E102N2 - Bus 2009	\$670,383
GILLIG G27E102N2 - Bus 2010	\$670,383
GILLIG G27E102N2 - Bus 2011	\$670,383
GILLIG G29D102N4 - Bus 1612	\$670,383
1.1.2 Van	\$2,056,158
VHPG MV1G - #66	\$97,912
VHPG MV1G - #67	\$97,912
VHPG MV1G - #68	\$97,912
VHPG MV1G - #69	\$97,912
VHPG MV1G - #70	\$97,912
VHPG MV1G - #71	\$97,912
VHPG MV1G - #72	\$97,912
VHPG MV1G - #73	\$97,912
VHPG MV1G - #75	\$97,912
VHPG MV1G - #76	\$97,912
VHPG MV1G - #77	\$97,912
VHPG MV1G - #78	\$97,912
VHPG MV1G - #79	\$97,912
VHPG MV1G - #82	\$97,912
VHPG MV1G - #83	\$97,912
VHPG MV1G - #84	\$97,912
VHPG MV1G - #85	\$97,912
VHPG MV1G - #86	\$97,912
VHPG MV1G - #87	\$97,912
VHPG MV1G - #88	\$97,912
VHPG MV1G - #89	\$97,912
1.1.3 Ferry	
Jean Ribault Ferry Rehab Type 1	
Jean Ribault Ferry Rehab Type 2	
2.2 Systems/IT/Security	\$55,320
Badge Reader -121 Forsyth - 2nd Flr - Interior door - NW Stairwell	\$731
Badge Reader -121 Forsyth - 3rd Flr - Interior door - Elevator Lobby	\$731
Badge Reader -Myrtle Building 1 - Interior Entrance - Lobby	\$731
Geutebruck Server - G-Scope/8000-IP16 - Bldg 1 - Server closet - Rm 111	\$42,986
SONY 2MP IP88 BULLET CAM W/IR, 3-9 MM MOTOR LENS - Bldg 2	\$8,873
SONY 2MP IP88 BULLET CAM W/IR, 3-9 MM MOTOR LENS - Bldg 9	\$1,268
3.3.1.1 Stations	\$1,204,799
Convention Center Station - HVAC Condenser	\$58,150
Convention Center Station - Water Fountains	\$12,299
San Marco Station - Roofing	\$1,134,350
Grand Total	\$12,031,252

