VIRGINIA RAILWAY EXPRESS
TRANSIT ASSET MANAGEMENT PLAN

SEPTEMBER 2022

STV 100 Years

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Acronyms

American Public Transit Association (APTA)

ArcGIS Online (AGOL)

Asset Management Maturity Self-Assessment (AMMSA)

Capital Improvement Program (CIP)

Code of Federal Regulations (CFR)

CSX Transportation (CSXT)

Decision Support Tool (DST)

Department of Rail and Public Transportation (DRPT)

Environmental Protection Agency (EPA)

Federal Railroad Association (FRA)

Federal Transportation Administration (FTA)

Fixing America's Surface Transportation (FAST) Act

Fredericksburg Area MPO (FAMPO)

Geographic Information Systems (GIS)

Keolis Rail Service Virginia (KRSV)

Maintenance and Storage Facility (MASF)

Maryland Area Regional Commuter (MARC)

Metropolitan Planning Organizations (MPOs)

Metropolitan Washington Council of Governments (MWCOG)

Moving Ahead for Progress in the 21st Century (MAP-21)

National Capital Region Transportation Planning Board (TPB)

National Railroad Passenger Corporation (Amtrak)

National Transit Database (NTD)

Norfolk Southern (NS)

Northern Virginia Transportation Commission (NVTC)

Occupational Safety and Health Administration (OSHA)

Operations and Maintenance (O&M)

Positive Train Control (PTC)

Potomac and Rappahannock Transportation Commission (PRTC)

Standard Operating Procedure (SOP)

State of Good Repair (SGR)

Transit Asset Management (TAM)

Transit Economic Requirements Model (TERM)

Useful Life Benchmark (ULB)

Virginia Railway Express (VRE)

VRE Transit Asset Management System (VTAMS)

Washington Metropolitan Area Transit Authority (WMATA)

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EXECUTIVE SUMMARY

Federal Legislation

Through the Moving Ahead for Progress in the 21st Century Act (MAP-21) and the subsequent Fixing America's Surface Transportation (FAST) Act, the Federal Transit Administration (FTA) has enacted transit asset management (TAM) regulations that require transit service providers to develop a TAM Plan and establish asset management performance measures and targets. The FTA issued its Final Rule on July 26, 2016 (effective October 1, 2016) which amends Chapter VI of Title 49, Code of Federal Regulations (CFR) to add Part 625, which addresses TAM and amends 49 CFR Part 630, which contains regulations for FTA's National Transit Database (NTD).

VRE's Asset Management Approach

Virginia Railway Express (VRE) has teamed with a consultant partner to develop a transit asset management program that will not only meet Federal requirements, but which will also allow VRE to improve operational efficiency, maintain assets in a State of Good Repair (SGR), and make data-driven decisions regarding improvements and capital expenditures.

VRE's TAM program is an ongoing effort that began in 2013 and has included a review of federal requirements, development of an asset inventory, initial condition assessments, a lifecycle maintenance action plan, and a peer review of other transit agency efforts. This work represents the foundation for VRE's current program and TAM Plan development. VRE's TAM program will continue to evolve through ongoing improvements and as federal guidance and VRE's needs change.

TAM Plan Components

The Final Rule requires every transit rail provider receiving federal funds under 49 USC Section 53 to develop an individual TAM Plan. VRE's TAM plan includes each of the required elements.

1. Asset Inventory	2. Condition Assessments	3. Decision Support Tool
4. Prioritized List of Investments	5. TAM & SGR Policy	6. Implementation Strategy
7. List of Key Annual Activities	8. Identification of Resources	9. Evaluation Plan

Key 2022 TAM Plan Changes

Owing to the expected change in asset condition over time, as well as specific improvement activities that have contributed to an advancement of VRE's asset management program in general, this plan features the following key changes from the previous 2018 TAM Plan:

- Information on new resources reviewed or implemented to inform plan development (Section 1.4)
- Language to differentiate future plan updates from amendments (Section 1.6)
- An updated TAM and SGR Policy (Section 2.1)
- Results from VRE's inventory criticality assessment and a description of the methodology used (Section 3.1)
- Data on planned inventory updates expected to occur within this plan's horizon period – October 1, 2022 through September 30, 2026 (Section 1.6)
- Updated replacement cost valuation data (Section 3.2)
- Information on new data support systems implemented at VRE since 2018 and used for condition assessment purposes (Section 4.2)
- Updated condition assessment data (Sections 4.3 through 4.6) and corresponding identification of the current SGR backlog (Section 4.7)
- Updated performance targets based on new condition assessment data (Section 5.2) and discussion of how TAM performance measures support specific systemwide performance measures (Section 5.3)
- Information on the pilot of a new capital project ranking tool (Section 6.2)
- Information on planned TAM program improvement activities, based on VRE's implementation of FTA self-assessment tools (Section 7.3)

VRE's Asset Management and State of Good Repair Policy

"VRE has adopted this Asset Management and State of Good Repair policy to support VRE's mission, to provide safe, cost effective, accessible, reliable, convenient, and comfortable commuter-oriented rail passenger service. Through this policy, VRE will continue efforts to procure, maintain, and replace locomotives and railcars, stations, facilities, infrastructure, and equipment to meet State of Good Repair goals and to improve operational efficiency, make informed capital spending decisions, increase performance, reduce risk agency-wide, and provide safety benefits to VRE's riders, employees, contractors, and member communities.

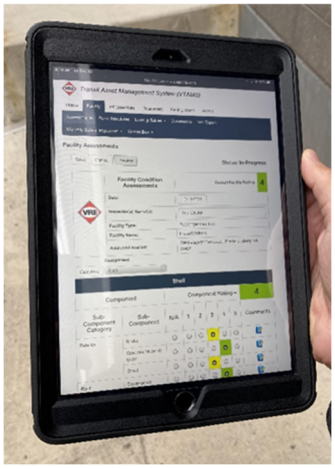
To accomplish the policy, VRE will:

1. *Work to continually improve its transit asset management program.*
2. *Perform periodic reviews of established methodologies and procedures for measuring the condition of capital assets to ensure regulatory compliance.*

3. *Continue to utilize a third-party contractor to perform facility and infrastructure condition assessments.*
4. *Perform periodic reviews of established procedures for annual reporting to the FTA to ensure regulatory compliance.*
5. *Formalize a procedure using a new decision support tool to guide the prioritization of VRE's capital investments."*

Data Support Systems

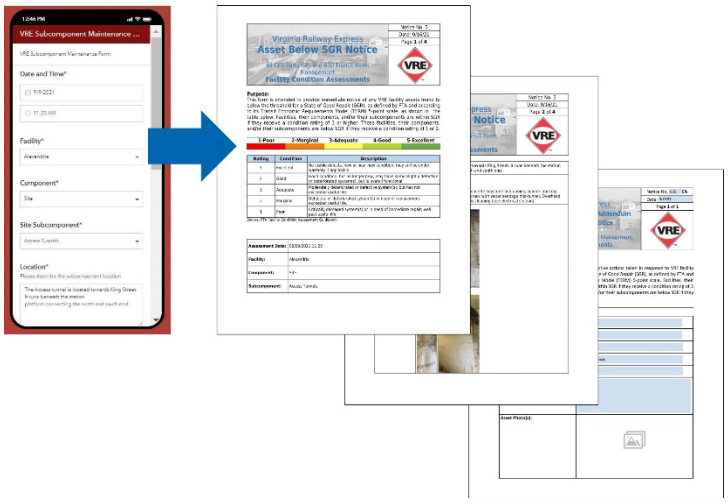
VRE has developed an online data support system that houses VRE's asset inventories and facilitates the completion of condition assessments and safety inspections. The VRE Transit Asset Management System (VTAMS) is part of a multi-phase effort, and initial functionality was deployed in 2017. VTAMS is designed to enable user-friendly access to condition assessments and asset inventories, both in the office and in the field. Using an internet-connected mobile device, users are able to input data directly into the online database, eliminating duplication of effort and saving time. Forms can then be exported to Adobe PDF or Microsoft Excel for direct use in reports or for further analysis. VTAMS's functionality includes:



- Dashboard access to summary-level inventory, condition, and SGR data;
- Procedures and forms for conducting condition assessments;
- Management of individual asset inventory attributes;
- Historical condition assessment findings data at the subcomponent-level for Facility assets and the element-level for Infrastructure;
- Automatic calculation of the useful life remaining in years for Rolling Stock and Equipment assets; and
- Online storage for VRE's library of TAM-related documentation, as well as the VTAMS User Guide.

More recently, VRE has customized two ArcGIS Online (AGOL) software applications for use in collecting specific inventory and condition data in the field. The Collector application was first used in conjunction with a system-wide inventory of parking spaces at VRE passenger stations. The Survey 1-2-3 application has been used for conducting station monthly safety inspections, as well as generating "Asset Below SGR (ASSET BELOW SGR)" notices at the subcomponent-level and follow-up "Corrective Action (CA)" notices. The two notices work in conjunction as a simple work order and maintenance tracking tool and are pictured in Figure E.1. VRE has prioritized the use of Geographic Information System GIS to support asset management and other program-level initiatives, and data integration of these custom application with VTAMS is being explored as a future enhancement to VRE's TAM-program.

Figure E.1 – GIS Based Condition Assessment Outputs

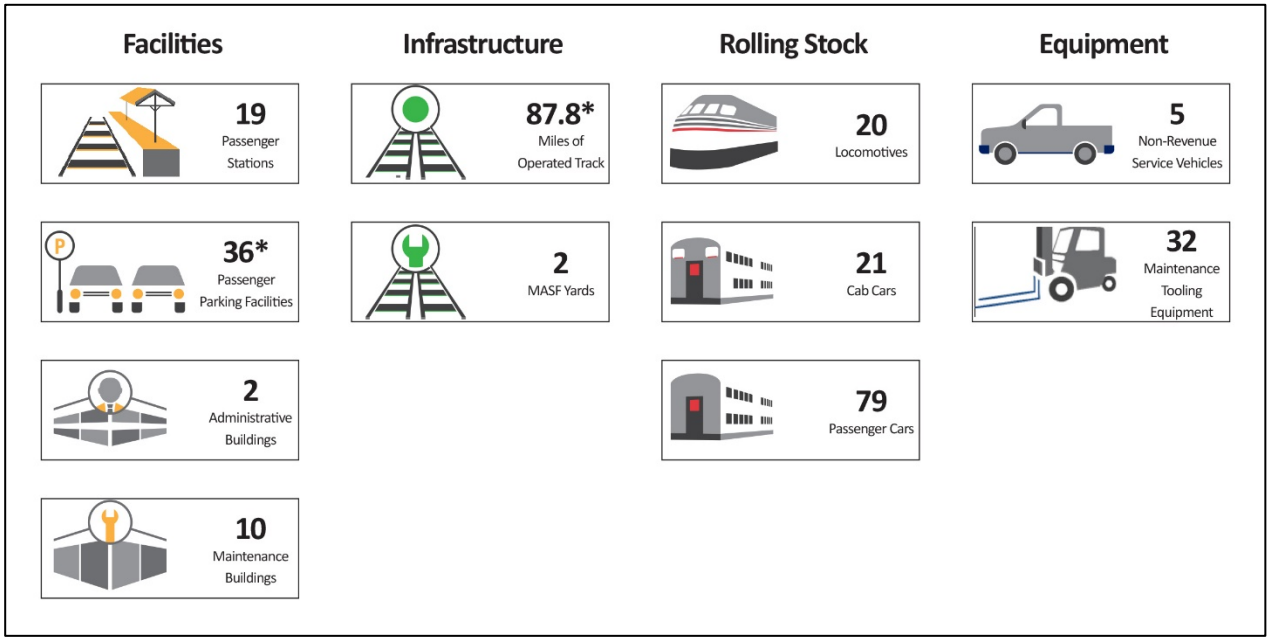


Source: VRE 2022

Asset Inventory

A high-level overview of VRE's asset inventory, including third-party owned assets, is shown in Figure E.2.

Figure E.2 – VRE Asset Inventory Overview

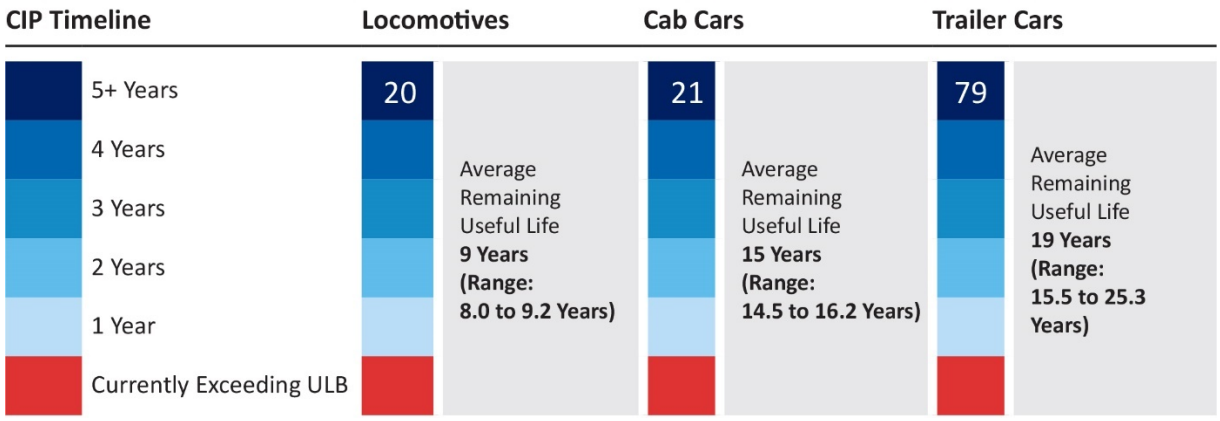


Source: VRE 2022
*Includes inventory of VRE-owned and third-party owned assets.

Condition Assessments and Ratings

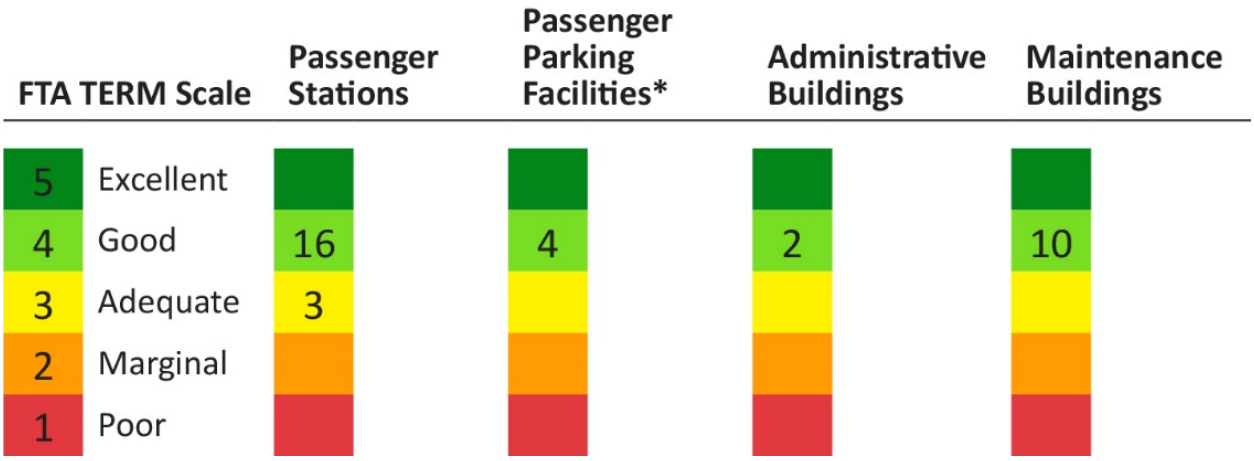
VRE performs condition assessments on four categories of assets: Rolling Stock, Facilities, Infrastructure at its maintenance and storage facilities (MASFs) and Equipment. As required by FTA, condition assessments are conducted on all VRE-owned assets, as well as on all assets where VRE has direct capital responsibility. Condition assessments are not performed on third-party owned assets, where VRE does not have direct capital responsibility. Figures E.3 through E.6 provide an overview of condition ratings for each asset category. Note that the methodologies differ by asset category and are described further in this TAM Plan.

Figure E.3 – Rolling Stock Condition Findings



Source: VRE 2022

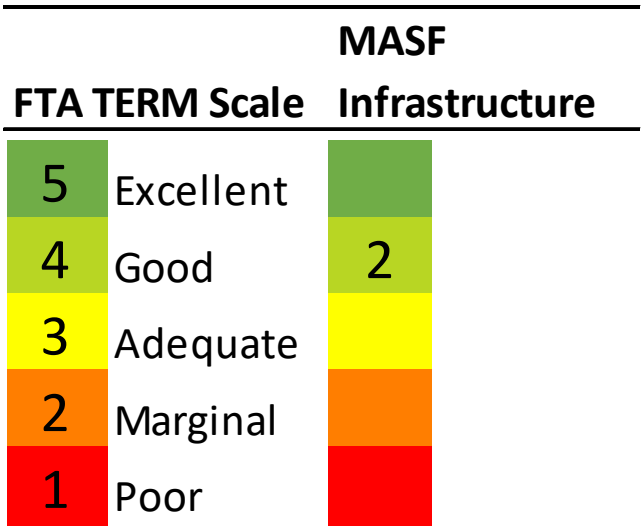
Figure E.4 – Facility Condition Assessment Ratings



Source: VRE 2022

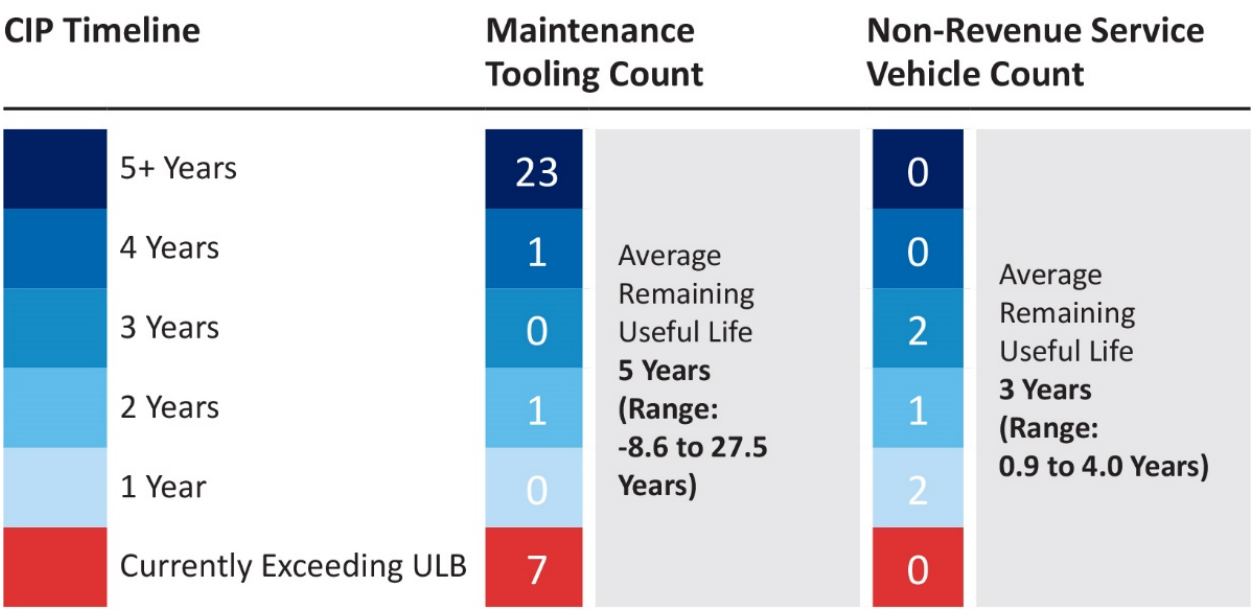
*Condition Assessments conducted on all VRE-owned assets, as well as on all assets where VRE has direct capital responsibility

Figure E.5 – Infrastructure Condition Assessment Ratings



Source: VRE 2022

Figure E.6 – Equipment Condition



Source: VRE 2022

VRE's attentiveness to the condition of its capital assets is reflected in its SGR backlog. Currently, the only asset category contributing to VRE's backlog is Equipment, within which seven (7) pieces of maintenance tooling equipment have exceeded their useful life benchmark. Despite this, there are asset components, subcomponents, or elements that need repair or replacement to maintain the parent asset within a SGR, and those costs are not reflected in the overall SGR backlog calculation for inventoried assets. They are, however; targeted for project development, and VRE's most recent Capital Improvement Plan (CIP) document provides a description of those SGR projects currently programmed. VRE will continue to perform condition assessments every four years and update condition information for its capital assets in future revisions of this TAM Plan.

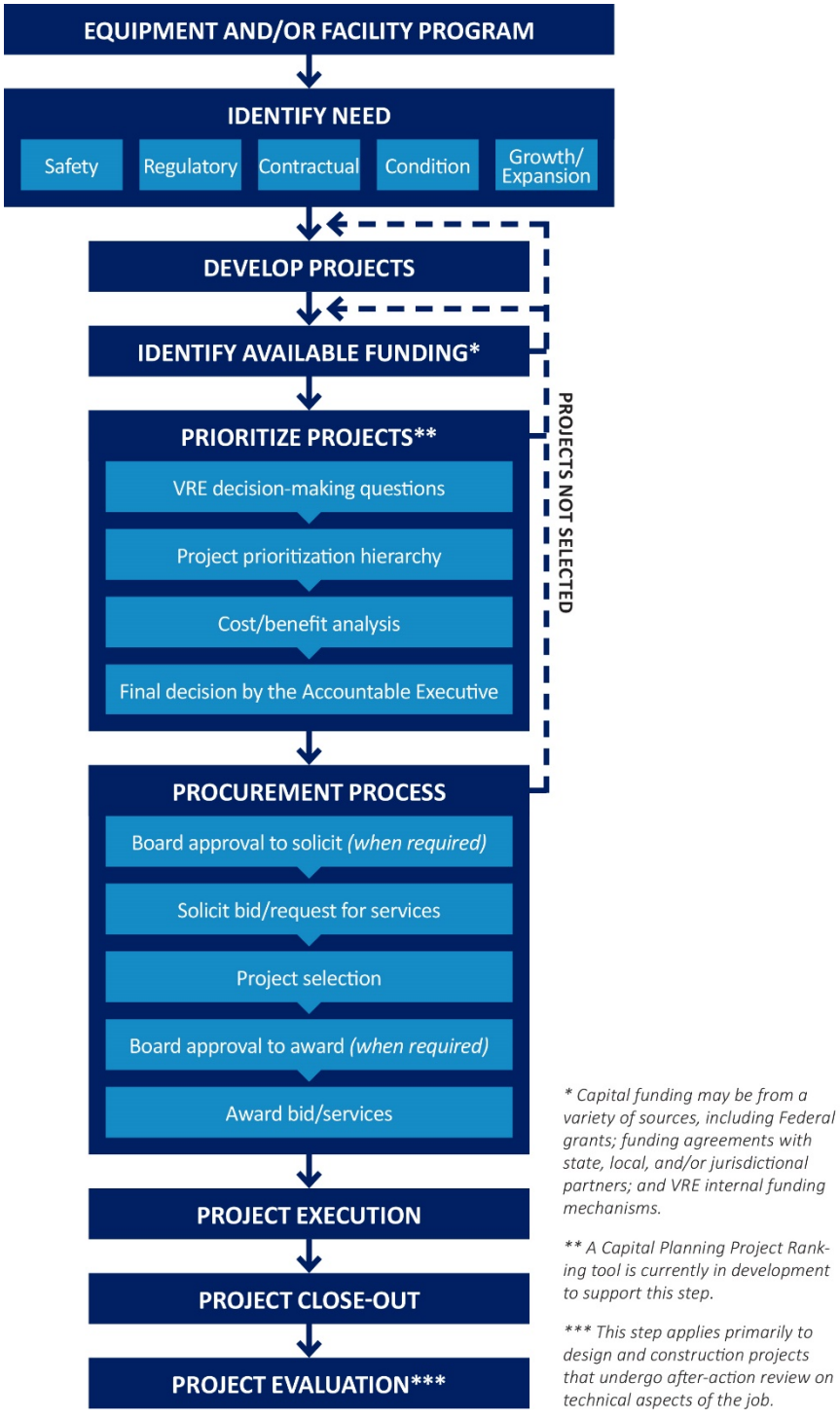
Decision Support Tools and Capital Project Prioritization

Figure E.7 illustrates VRE's process for developing and funding projects. The current decision support process is an example of process as tool, including a detailed review and evaluation process for individual projects based on VRE's predetermined criteria and prioritization hierarchy. VRE's priority for developing projects is to focus on existing assets, i.e., maintaining an existing asset versus expanding assets or implementing new services. VRE's project prioritization hierarchy used in its decision support process is as follows:

1a. Safety Requirements
1b. Regulatory Requirements
2. Contractual Obligations
3. Condition (TERM Rating/ULB)
4. Growth/Expansion

The decision support process is used to identify and select projects from the pool of SGR identified needs, then program these projects as part of the next CIP. Note, however; that VRE is also implementing two additional decision support tools – one an enterprise-level asset management software package and the other a spreadsheet-based tool. These are described in greater detail in Section 6.1 of this plan.

Figure E.7 – VRE Decision Support Process



Source: VRE 2022

Implementation Program

VRE's TAM program is an ongoing effort that began in 2013 and has included a review of federal requirements, development of an asset inventory, initial condition assessments, a lifecycle maintenance action plan, and a peer review of other transit agency efforts. This work represents the foundation for VRE's current program and TAM Plan development. VRE's TAM program will continue to evolve through ongoing improvements and as federal guidance and VRE's needs change.

During the four-year horizon period of this TAM Plan, VRE will perform key activities in support of its TAM program, illustrated in Figure E.8 and discussed in greater detail in Section 7.2 of this plan. These will include regularly scheduled activities to meet federal requirements and other non-required activities in which VRE is already engaged.

Figure E.8 – VRE's Key TAM Activities

Activity Description	2022	2023				2024				2025				2026		
	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
VRE Operations Board Update*	X X X	X X X	X X X	X X	X X X	X X X	X X X	X X	X X X	X X X	X X X	X X	X X X	X X X	X X X	X X
Monthly Station Safety Inspections	X X X	X X X	X X X	X X X	X X X	X X X	X X X	X X X	X X X	X X X	X X X	X X X	X X X	X X X	X X X	X X X
Facilities Lifecycle Maintenance Program																
Equipment Lifecycle Maintenance Program																
CIP Update	X				X				X				X			
NTD TAM Reporting	X				X				X				X			
Condition Assessments																
Stakeholder Coordination	X				X				X				X			X X
TAM Plan Update**																X

* Dates subject to change

** Subject to Section 1.6 of this TAM Plan

Continuous Effort / Range of Effort

X Required Submittal / Specific Occurrence

Source: VRE 2022

In addition to the key TAM activities above, VRE plans numerous improvement activities in support of its TAM program during the four-year horizon period of this Plan. These are illustrated in Figure E.9 and discussed in greater detail in Section 7.3 of this plan. These program enhancements are intended to advance VRE's asset management capabilities and to improve the integration of its asset management practices across functional units throughout the organization. Many planned activities are the direct result of recommendations made after implementation of FTA's two publicly available asset management self-assessment tools, as described in Section 1.4.2 (FTA Assessment Tools) of this plan.

Figure E.9 – VRE TAM Improvement Activities

Activity Description	2022	2023				2024				2025				2026		
	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
CIP Prioritization DST Development	X															
Facilities Condition Data Integration				X												
Update Rolling Stock LCM Plan					X											
Update Facilities LCM Plan					X											
Risk Management Process Integration																
TAM Training Content																
TAM Outreach Content																
Develop Equipment LCM Plan								X								
Develop Infrastructure LCM Plan								X								
TAM Self-Assessments	X														X	

	Continuous Effort / Range of Effort
X	Known Work Output

Source: VRE 2022

VRE will continue to implement its TAM program through adherence to FTA and NTD reporting requirements, further development and refinement of its overall TAM program, and efforts within VRE to encourage employees and stakeholders to fully embrace TAM as a practice for maintaining assets in a SGR over the asset's lifecycle.

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1 INTRODUCTION

This Transit Asset Management Plan (TAM Plan) sets forth Virginia Railway Express' (VRE) approach to asset management as required by the Moving Ahead for Progress in the 21st Century (MAP-21) federal transportation act. The Federal Transit Administration (FTA) issued its Final Rule on July 26, 2016 (effective October 1, 2016) which describes the Transit Asset Management (TAM) requirements[1]. VRE's first fully compliant TAM Plan was completed before the October 1, 2018 deadline and is required to be updated in its entirety at least once every four years. As VRE has not made any updates of its TAM Plan in the intervening years, this plan constitutes its first update.

In addition to the federal requirements, VRE's TAM Plan provides recommendations for capital improvement and maintenance programs to meet service and performance needs, as well as to achieve a State of Good Repair (SGR) for capital assets.

VRE is a transportation partnership of the Northern Virginia Transportation Commission (NVTC) and the Potomac and Rappahannock Transportation Commission (PRTC). VRE provides commuter rail service from the Northern Virginia suburbs, along the I-66 and I-95 corridors, to Alexandria, Crystal City, and downtown Washington, D.C. The VRE system map is shown in Figure 1.1.

Figure 1.1 – VRE System Map

Source: VRE 2022

[1] Federal Register, Volume 81 Number 143, Department of Transportation, Federal Transit Administration, 49 CFR Parts 625 and 630, National Transit Database; Transit Asset Management; Final Rule; Notices; National Transit Database: Capital Asset Reporting; Transit Asset Management: Proposed Guidebooks, July 26, 2016.

1.1 Federal TAM Requirements

Through MAP-21 and the subsequent Fixing America's Surface Transportation (FAST) Act, the FTA has enacted transit asset management regulations that require transit service providers to develop a TAM Plan and establish asset management performance measures and targets. The Final Rule amends Chapter VI of Title 49, Code of Federal Regulations (CFR) to add part 625, which addresses TAM and amends 49 CFR part 630, which contains regulations for FTA's National Transit Database (NTD).

The Final Rule requires every transit provider receiving federal funds under 49 USC Section 53 to develop an individual TAM Plan or to be part of a group plan. Basic requirements of the TAM Plan include:

- The TAM Plan must cover a horizon period of four (4) years and be updated at least once every four (4) years;
- The designation of an Accountable Executive;
- The establishment of SGR performance measures and targets for each asset class; and
- The annual submittal of an asset data report and a narrative report to the NTD.

Transit operators are categorized based primarily on size, with Tier I reporting agencies (larger, more complex) requiring nine TAM Plan elements or Tier II reporting agencies (smaller, less complex) requiring only the first four TAM Plan elements[2]. This categorization is significant, as it impacts TAM Plan responsibilities and required content. Table 1.1 identifies the nine TAM Plan elements required of VRE, as a Tier I reporting agency.

Table 1.1 – TAM Plan Elements

Tier	TAM Plan Element	Description
Tier I & II	1. An asset inventory	A register of capital assets and related data on those assets
	2. Condition assessments for inventoried assets	A rating of the asset's physical state to be completed for those assets over which an agency has direct capital responsibility; should be at a level of detail sufficient to monitor and predict performance of inventoried assets
	3. Description of a decision support tool	An analytic process or tool that (1) assists in capital asset investment prioritization and/or (2) estimates capital needs over time; not necessarily a software tool
	4. A prioritized list of investments	A prioritized list of projects or programs to manage or improve the SGR of capital assets

[2] The Final Rule categorizes transit operators based on size. Tier I operators have larger, more complex systems comprised of rail, 101 or more vehicles across fixed route modes, and/or 101 or more vehicles in one non-fixed route mode. Tier II operators have smaller, less complex systems. An operator is classified as Tier II under the Final Rule if they are a subrecipient of 5311 funds, American Indian Tribe, 100 or fewer vehicles across all fixed route modes, and/or 100 or fewer vehicles in one non-fixed route mode.

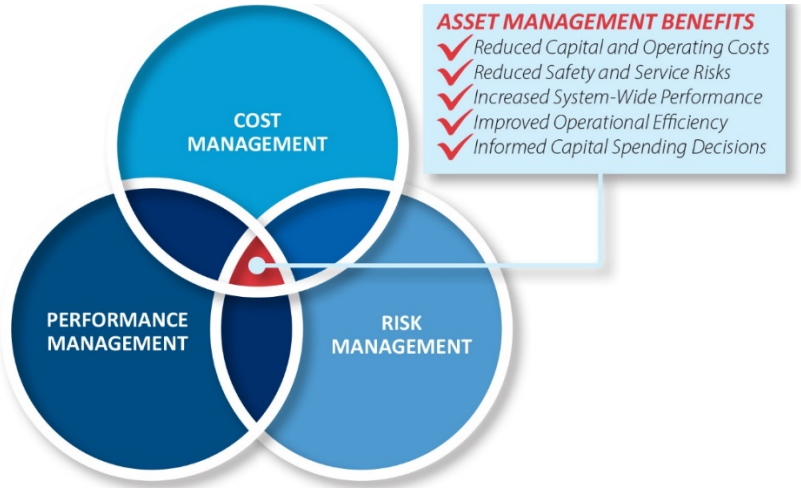
Tier	TAM Plan Element	Description
Tier I Only	5. TAM & SGR policy	A TAM policy is the executive-level direction regarding expectations for transit asset management; a TAM strategy consists of the actions that support the implementation of the TAM policy
	6. Implementation strategy	The operational actions that a transit provider decides to conduct in order to achieve its TAM goals and policies
	7. List of key annual activities	The actions needed to implement a TAM plan for each year of the plan's horizon
	8. Identification of resources	A summary or list of resources, including personnel, that a provider needs to develop and carry out the TAM plan
	9. Evaluation plan	An outline of how a provider will monitor, update, and evaluate its TAM plan and related business practices, as needed, to ensure continuous improvement of the TAM system as a whole

Source: FTA 2017

1.2 Purpose and TAM Plan Organization

Asset management is an industry standard stemming from federal requirements by which agencies use data to make better-informed business decisions. At VRE, asset management is an optimized approach to managing critical assets throughout their lifecycle, in order to deliver the organization's strategic objectives. As illustrated in Figure 1.2, asset management can be described as a better way of doing business to balance agency costs, performance, and risks through better integration of all tools and disciplines in an ongoing planning effort.

Figure 1.2 – Asset Management to Optimize Cost, Performance, and Risk



Source: STV 2022

VRE's transit asset management program meets Federal requirements and assists VRE in improving operational efficiency, maintaining assets in a SGR, and making data-driven decisions regarding improvements and capital expenditures. VRE's asset management program includes the following:

- An inventory of VRE's assets
- Condition assessments for each asset type, and data support systems to help collect condition data
- Performance targets, set annually and implementation strategies for meeting targets
- A prioritization process for guiding SGR improvements and a prioritized list of investments
- Asset management guidelines, methodologies, and forms
- Methods for tracking performance and measuring progress
- A Transit Asset Management and State of Good Repair policy
- A formal Transit Asset Management Plan, updated every 4 years

This TAM Plan has been structured to address all nine of FTA's required TAM elements (Table 1.1), consisting of an executive summary, seven chapters, and numerous appendices. Table 1.2 provides a brief description of the section and the location of content relating to each TAM element. Within the TAM Plan, each TAM element is highlighted in its corresponding section including language from the federal regulation and a summary of VRE's achievements related to that particular element.

Table 1.2 – VRE's TAM Plan Outline

Section	Description	TAM Element
Executive Summary	Overview of the 2022 TAM Plan.	
Chapter 1: Introduction	An introduction to the 2022 TAM Plan, including FTA regulation, purpose, description of plan development and organization, key changes from the 2018 TAM Plan, and conditions for future plan updates and amendments	8
Chapter 2: Asset Management and State of Good Repair Policy	VRE's TAM and SGR policy, goals, and objectives, as well as a description of the roles and responsibilities of key staff involved in VRE's TAM program.	5 and 8
Chapter 3: Asset Inventory	A comprehensive list of VRE's asset inventory, including VRE-owned and third-party assets, criticality assessment, and inventory updates planned to occur within the plan's horizon period	1
Chapter 4: Condition Assessment	A description of the methodologies used to conduct condition assessments for each asset category, an overview of data support systems used for condition assessment at VRE, most recent condition assessment results for VRE's capital assets, and identification of the SGR backlog.	2

Section	Description	TAM Element
Chapter 5: Reporting	A summary of NTD reporting requirements and processes as they related to asset management, and VRE's performance measures and targets for each asset category.	
Chapter 6: Decision Support Tools and Capital Project Prioritization	Identification of VRE's decision support tools and capital project prioritization approach, including discussion of two key programs aimed at ongoing maintenance of VRE assets within a SGR.	3 and 4
Chapter 7: Implementation Program	A narrative of VRE's implementation strategy, including an implementation schedule and key activities for VRE's TAM program. A description of VRE's continuous improvement process, including coordination with MPOs and other stakeholders.	6, 7, 8 and 9
Appendices	A – References B – VRE FY 2023 – FY 208 Capital Improvement Program C – Asset Category Condition Assessment SOPs	4

1.3 TAM Plan Development Process

Foundational asset management activities which have guided the development of VRE's TAM Plan, both in 2018 and now, are summarized in Table 1.3. Each activity, and the resulting knowledge gained, may be considered inputs into VRE's TAM Plan development process. While this table is intended to summarize key VRE asset management program elements and how they have evolved over the past four years, Section 1.5 provides detail on specific TAM plan document updates.

Table 1.3 – Key Asset Management Program Elements as Plan Inputs

2018 TAM Plan		2022 TAM Plan
Review of FTA asset management requirements, peer review of other transit agency programs, and documentation in a technical memorandum		Continued tracking of FTA requirements, peer examples, and industry best practices
Formulation of VRE's TAM & SGR Policy in alignment with its mission, vision, and organizational objectives		Reevaluation of TAM & SGR Policy to ensure continued alignment with its mission, vision, and organizational objectives; reissued with slight modification to reflect program advancements during the last four years

2018 TAM Plan		2022 TAM Plan
Establishment of VRE's performance measures and initial targets based on SOP-documented methodology		Continued use of methodology developed to set annual performance targets and measure attainment
Development of methodologies and SOPs for conducting condition assessments by asset category		SOP updates, as needed, to reflect new guidance and/or requirements, and development of new SOPs to support the TAM program
Development of an online-based data support system for use with condition assessments		Continued use and enhancement of the online system and deployment of news GIS-based custom applications to support specific facilities-related condition assessment needs
Conducted first full round of condition assessments on all facility and infrastructure assets based on VRE's custom asset hierarchies		Conducted second full round of condition assessments on all facility and infrastructure assets based on VRE's updated custom asset hierarchies
Review of NTD asset-related reporting procedures and development of a corresponding SOP		Provided continued support for asset related NTD Annual Report submittals
Documentation of VRE's capital project prioritization process		Development of a Capital Project Ranking Tool that relies on a quantitative approach and which is being evaluated for use in developing future CIPs
Development of a Lifecycle Maintenance Action Plan for VRE's Rolling Stock		Development of Lifecycle Management Plans for VRE's Rolling Stock and Facility Assets covering all five lifecycle phases and based on FTA guidance
Development of first fully compliant TAM Plan, inclusive of an implementation approach for the next four years		Development of the second fully compliant TAM Plan, inclusive of an implementation approach for the next four years based largely on VRE's implementation of FTA self-assessment tools

Source: VRE 2022

1.4 Resources

Development of VRE's initial 2018 TAM Plan included a review of federal regulations, guidance documents, and a peer review of other agencies' TAM Plans. A similar effort was completed during this update, which included VRE internal planning documents (to ensure continued alignment of planning objectives), as well as new references made available by FTA and the American Public Transit Association (APTA) since 2018. References to all of these resources are provided in **Appendix A**. Additionally, this year's effort was informed by results from the implementation of two FTA tools: the Asset Management Maturity Self-Assessment (AMMSA) Tool and the TAM Plan Self-Assessment Tool.

49 CFR Part 625 Subpart C Section 625.25(b)(8) "…a TAM plan must include … (8) A summary or list of the resources, including personnel, that a provider needs to develop and carry out the TAM plan."

VRE's TAM Plan includes a list of resources used for plan development (Section 1.4 and Appendix A) and a summary of key personnel involved in plan implementation (Section 2.2).

1.4.1 Documents and Presentations

VRE's TAM team reviewed the following materials in preparation for this 2022 TAM Plan update:

- Key VRE Planning Documents
  - FY 2020 – FY 2025 Transit Development Plan (February 2019)
  - VRE System Safety Plan (March 2021)
  - VRE FY 2023 – FY 2028 Capital Investment Program (January 2022)
- FTA Materials
  - TAM Decision Support Tool State of the Practice Synthesis (September 2020)
  - FTA TAM Investment Prioritization State of Practice Synthesis (September 2020)
  - FTA 2022 TAM Plan Update Expectations and Tools Webinar (October 2021)
- APTA Standards
  - Communicating Your TAM Plan (January 2019)
  - Improving Asset Management Through Better Asset Information (March 2019)
  - Procuring Software to Support Transit Asset Management (January 2020)
  - Using Performance Targets to Drive a Transit Asset Management Program (October 2020)
  - Using Criticality to Make More Informed Decision (September 2021)

1.4.2 FTA Assessment Tools

As a foundational step to inform this plan's development, VRE has implemented FTA's publicly available AMMSA tool. Asset management maturity can be described as the quality and sophistication of an agency's asset management practices and the degree of their integration across functional units throughout the organization. FTA's AMMSA Tool was used to help VRE determine its current asset management "baseline", or characterization of its current state of practice, and to identify future asset management targets, as well as a corresponding approach for target attainment. This approach is detailed in Section 7.3 of this plan (Continuous Improvement).

VRE has also implemented FTA's TAM Plan Self-Assessment tool as a means of evaluating the quality of its previous 2018 TAM Plan with respect to overall plan content, structure, format, and specific required plan elements. That exercise has helped to inform document updates contained throughout this 2022 TAM Plan.

1.5 Key 2022 TAM Plan Changes

Owing to the expected change in asset condition over time, as well as specific improvement activities that have contributed to an advancement of VRE's asset management program in general, this plan features the following key changes from the previous 2018 TAM Plan:

- Information on new resources reviewed or implemented to inform plan development (Section 1.4)
- Language to differentiate future plan updates from amendments (Section 1.6)
- An updated TAM and SGR Policy (Section 2.1)
- Results from VRE's inventory criticality assessment and a description of the methodology used (Section 3.1)
- Data on planned inventory updates expected to occur within this plan's horizon period – October 1, 2022 through September 30, 2026 (Section 1.6)
- Updated replacement cost valuation data (Section 3.2)
- Information on new data support systems implemented at VRE since 2018 and used for condition assessment purposes (Section 4.2)
- Updated condition assessment data (Sections 4.3 through 4.6) and corresponding identification of the current SGR backlog (Section 4.7)
- Updated performance targets based on new condition assessment data (Section 5.2) and discussion of how TAM performance measures support specific systemwide performance measures (Section 5.3)
- Information on the pilot of a new capital project ranking tool (Section 6.2)
- Information on planned TAM program improvement activities, based on VRE's implementation of FTA self-assessment tools (Section 7.3)

1.6 Future Plan Updates and Amendments

In general, VRE's TAM Plan will be updated every four years at the conclusion of the plan's horizon period. The horizon period for this TAM Plan is October 1, 2022 through September 30, 2026. This section outlines how future revisions to VRE's TAM Plan are to be categorized. There are two revision types:

i. A **Full Update** of VRE's TAM Plan requires a complete review of the document and will trigger the start of a new four-year horizon period.

ii. An **Amendment** of VRE's TAM Plan does not require a complete review of the full document, will be issued in the form of a document addendum, and will not alter the plan's horizon period.

When asset inventory changes occur during the plan's horizon period, whether additions or deletions, a Full Update of this plan shall only be required if the change:

i. Involves assets identified with high criticality in Section 3.1 (VRE-Owned Assets) of this document AND

ii. The inventory change was not already anticipated and described in Section 3.4 (Planned Inventory Updates) of this document.

Amendments to VRE's TAM Plan will be issued if an inventory change:

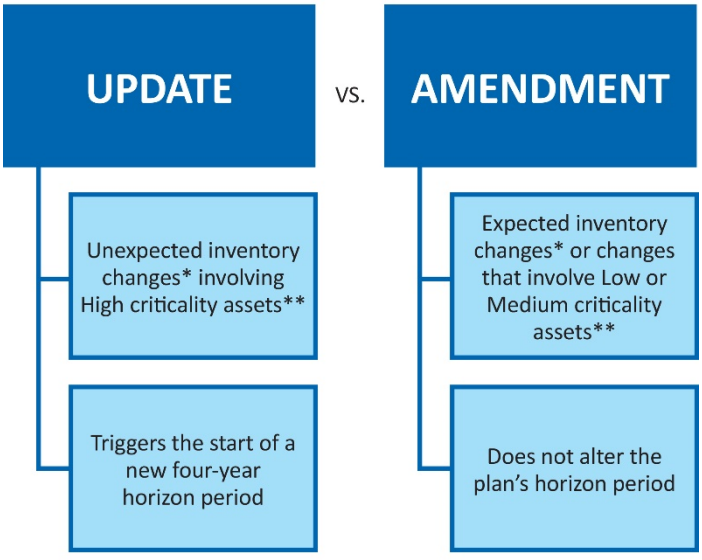
i. Involves assets identified with medium or low criticality in Section 3.1 (VRE-Owned Assets) of this document OR

ii. The inventory change was already anticipated and described in Section 3.4 (Planned Inventory Updates) of this document.

If no inventory or other unexpected changes occur during the plan's horizon period, then neither Full Update nor Amendment is required.

A summary of these distinctions is provided in Figure 1.3.

Figure 1.3 – Future Plan Updates and Amendments



* *As documented in Section 3.4 (Planned Inventory Updates)*
** *As documented in Section 3.1 (VRE-Owned Assets)*

Source: VRE 2022

2 ASSET MANAGEMENT AND STATE OF GOOD REPAIR POLICY

This chapter provides a description of VRE's Asset Management and State of Good Repair Policy, to integrate TAM concepts throughout the agency. The following policy, objectives, and responsibilities were specified as a supportive framework to implement an agency-wide TAM Program. This chapter addresses FTA TAM element 5 (TAM and SGR policy).

2.1 TAM and SGR Policy

"VRE has adopted this Asset Management and State of Good Repair policy to support VRE's mission, to provide safe, cost effective, accessible, reliable, convenient, and comfortable commuter-oriented rail passenger service. Through this policy, VRE will continue efforts to procure, maintain, and replace locomotives and railcars, stations, facilities, infrastructure, and equipment to meet State of Good Repair goals and to improve operational efficiency, make informed capital spending decisions, increase performance, reduce risk agency-wide, and provide safety benefits to VRE's riders, employees, contractors, and member communities.

To accomplish the policy, VRE will:

1. *Work to continually improve its transit asset management program.*
2. *Perform periodic reviews of established methodologies and procedures for measuring the condition of capital assets to ensure regulatory compliance.*
3. *Continue to utilize a third-party contractor to perform facility and infrastructure condition assessments.*
4. *Perform periodic reviews of established procedures for annual reporting to the FTA to ensure regulatory compliance.*
5. *Formalize a procedure using a new decision support tool to guide the prioritization of VRE's capital investments."*

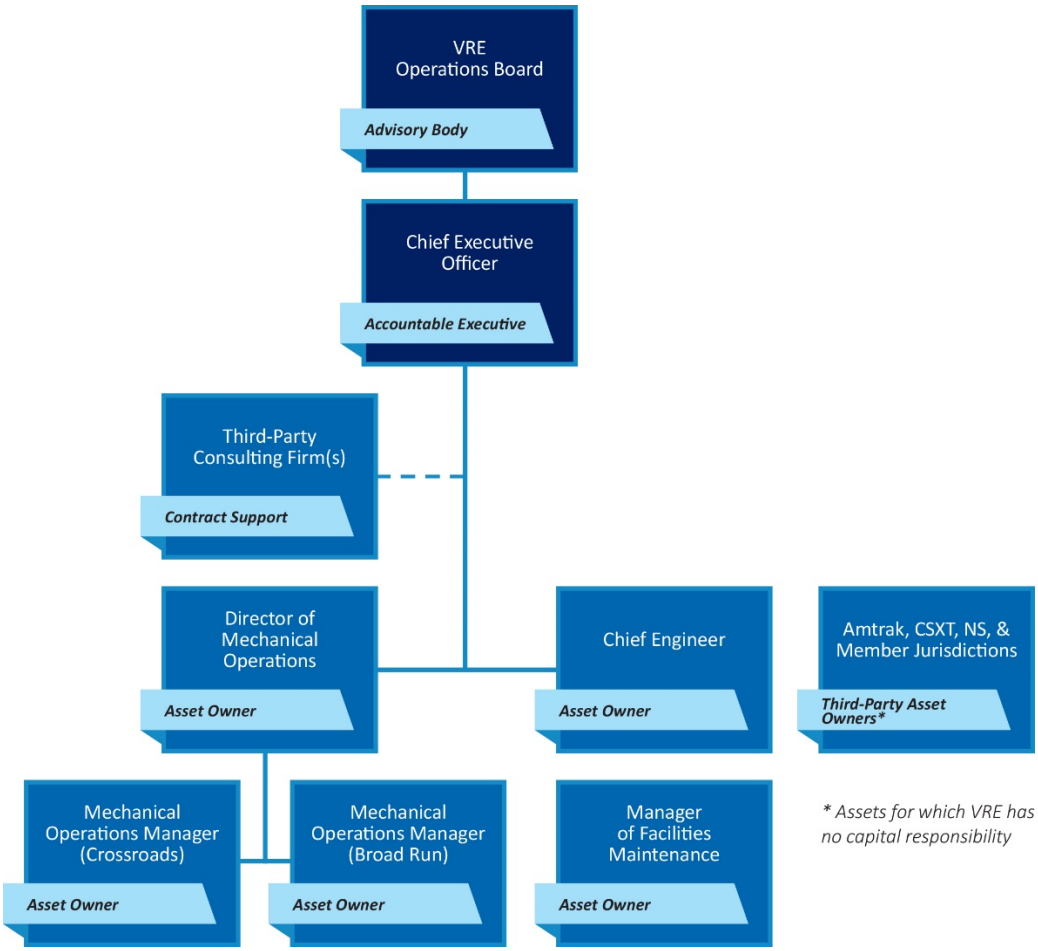
49 CFR Part 625 Subpart C Section 625.25(b)(5) "…a TAM plan must include … (5) A provider's TAM and SGR policy."

VRE has established an Asset Management and State of Good Repair Policy that is aligned to broad organizational objectives, FTA guidance, and the ISO 55000 series of standards.

2.2 Roles and Responsibilities

Key VRE and third-party personnel responsible for asset management are illustrated in an organization chart (Figure 2.1), and details of their roles and responsibilities are described below. These roles are vital for accomplishing the goals of this policy.

Figure 2.1 – VRE TAM Organizational Chart



Source: VRE 2022

Chief Executive Officer (CEO) – This position is VRE's designated **Accountable Executive** for asset management, per the FTA Transit Asset Management Final Rule. The accountable executive is the single, identifiable person who has ultimate responsibility for carrying out VRE's safety management system, TAM practices, and has control or direction over the human and capital resources needed to develop and maintain both the safety plan and TAM plan. The Accountable Executive must establish and approve the SGR performance targets that are set each year and is responsible for ensuring that a TAM plan is developed and carried out in accordance with FTA requirements. The Accountable Executive also has responsibility to endorse and attest to the accuracy of data submitted to NTD in VRE's Annual Report, including data related to its asset inventory and annual performance targets and attainment.

49 CFR Part 625 Subpart C Section 625.25(a)(3) "A provider's Accountable Executive is ultimately responsible for ensuring that a TAM plan is developed and carried out in accordance with this part."

The designated Accountable Executive for VRE is the CEO.

Director of Mechanical Operations – With support from the Mechanical Operations Managers at Broad Run and Crossroads, this position is the asset owner who oversees VRE's fleet of commuter rail locomotives and passenger vehicles and who is responsible for the operation and maintenance of

maintenance tooling equipment located at VRE's two Maintenance and Storage Facilities (MASFs). This asset owner reports condition of assets to the CEO/Accountable Executive to identify capital programming needs and provides input to the CEO/Accountable Executive for the development of asset management policies and procedures.

Chief Engineer – With support from the Manager of Facilities Maintenance, this position is the asset owner responsible for VRE's infrastructure and facility assets. These assets include VRE's revenue service siding track through the Broad Run Station and into the Broad Run MASF and all non-revenue track located at each MASF. This position has responsibility for the ongoing maintenance and operation of VRE stations, parking, administrative, and maintenance facilities, including all building systems (mechanical, electrical, and plumbing), as well as communications and safety and security systems. This position also has project management responsibility for all design and construction projects at VRE.

Third Party Asset Owners – These asset owners, including the National Railroad Passenger Corporation (Amtrak), CSX Transportation (CSXT) and Norfolk Southern (NS) are responsible for assets that are critical to VRE's service, including track and signal systems, but which are not owned by VRE. Third party asset owners also include VRE member jurisdictions that own most of the parking facilities at VRE's stations.

Contract Support – This role is fulfilled by third-party consulting firm(s) who provide technical support in developing VRE's asset management program and this TAM Plan. Technical support includes but is not limited to ongoing tracking of regulatory requirements, development of technical memorandums and standard operating procedures, development of lifecycle management plans, and completion of condition assessments.

VRE Operations Board – The VRE Operations Board serves as an advisory body to the Northern Virginia Transportation Commission (NVTC) and the Potomac and Rappahannock Transportation Commission (PRTC), which co-own VRE, and makes recommendations with respect to VRE's management, financing, and acquisition of property. Specifically, the Board must review any capital expenditure exceeding the CEO's discretionary limit of $200,000. The VRE Operations Board draws its members from each of the nine jurisdictions that fund VRE's commuter rail service, and the Commonwealth of Virginia.

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3 ASSET INVENTORY

This chapter provides a summary of VRE's asset inventory, including VRE-owned, leased, and third-party assets. Where applicable, inventory data includes replacement value, size, and quantity. This chapter addresses FTA TAM element 1 (Asset Inventory).

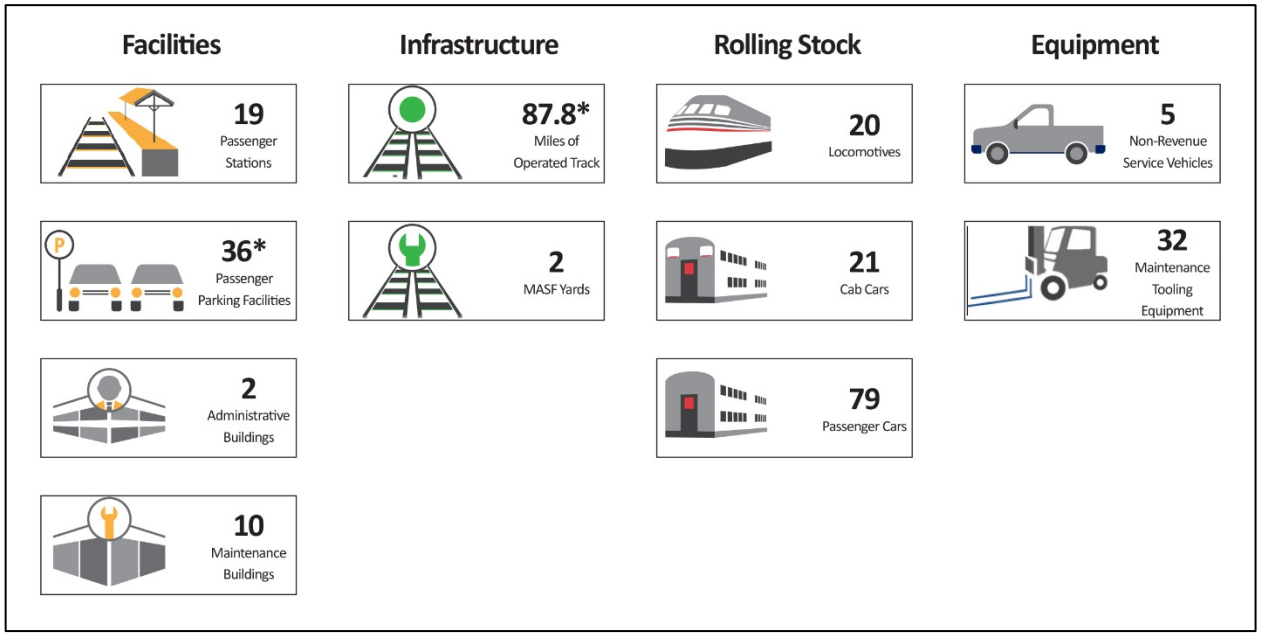
VRE provides commuter rail service from the Northern Virginia suburbs to Alexandria, Crystal City, and downtown Washington, D.C., through two (2) rail lines, the Manassas Line, and the Fredericksburg Line, running along the I-66 and I-95 corridors, respectively. Together, the two lines account for nearly 88 miles of revenue service track, with nearly all track owned by third-party entities. The Manassas Line terminates at the Broad Run MASF, and the Fredericksburg Line terminates at the Crossroads MASF.

VRE's weekly commuter service includes eight round trips daily, from each line's terminus to Union Station in Washington, D.C and back. In total, VRE's service stops at 19 passenger stations throughout the corridor; six on the Manassas Line, nine on the Fredericksburg Line, and the remaining four running on a shared line between Alexandria and Union Station. Figure 3.1 provides an overview of VRE's assets.

49 CFR Part 625 Subpart C Section 625.25(b)(1) "…a TAM plan must include … (1) An inventory of the number and type of capital assets. The inventory must include all capital assets that a provider owns, except equipment with an acquisition value under $50,000 that is not a service vehicle. An inventory also must include third-party owned or jointly procured exclusive-use maintenance facilities, passenger station facilities, administrative facilities, rolling stock, and guideway infrastructure used by a provider in the provision of public transportation. The asset inventory must be organized at a level of detail commensurate with the level of detail in the provider's program of capital projects."

VRE's inventory is reported here.

Figure 3.1 – VRE Asset Inventory Overview



Source: VRE 2022
*Includes inventory of VRE-owned and third-party owned assets.

3.1 VRE-Owned Assets

VRE's capital asset inventory is organized into four categories: *Rolling Stock*, *Facilities*, *Infrastructure*, and *Equipment*. Each category encompasses several unique asset classes. All inventoried assets have undergone criticality assessment based on consequence of failure using a qualitative approach that considers five criteria: (1) Safety Impact, (2) Level of Service Impact, (3) Cost Impact, (4) Legal/Regulatory Impact, and (5) Redundancy. Each inventoried asset was considered either individually or collectively, as appropriate, and designated as either Low, Medium, or High criticality for each criteria based on definitions in VRE's criticality assessment matrix, as shown in Table 3.1. Overall criticality was determined by using the highest criticality rating assigned to any single criteria for that asset. It is anticipated that the methodology used for criticality assessment will be evolved into a quantitative approach using numerical scoring in the future.

Table 3.1 – VRE Criticality Assessment Matrix

	Safety Impact	Level of Service Impact	Cost Impact	Legal/Regulatory Impact	Redundancy
High Criticality	Asset failure could create severely unsafe conditions for employees and/or the community, or even result in one or more fatalities or permanent disabilities.	Asset failure could lead to partial or complete loss of service.	Asset failure could lead to significant financial loss or asset replacement cost impact. (>$500,000)	Asset failure would likely result in claims against VRE and/or regulatory violation.	This asset is unique and has no comparable substitutes which may be placed into service in the event of its failure.
Medium Criticality	Asset failure could create unsafe conditions for employees and/or the community, or even result in one or more injuries.	Asset failure could lead to moderate to significant service delays.	Asset failure could lead to moderate financial loss or asset replacement cost impact. ($50,000-$500,000)	Asset failure may result in claims against VRE and/or regulatory violation.	This asset has few substitutes which may be placed into service in the event of its failure.
Low Criticality	Asset failure is unlikely to create unsafe conditions for employees and/or the community.	Asset failure is unlikely to impact service, or only minimally so.	Asset failure is associated with a relatively low financial loss or asset replacement cost impact. (<$50,000)	Asset failure is unlikely to result in claims against VRE and/or regulatory violation.	This asset has multiple substitutes which may be placed into service in the event of its failure.

Source: VRE 2022

Details on the individual assets within each category, including their criticality rating, are provided in the sections that follow.

3.1.1 Rolling Stock

VRE owns and operates 120 rolling stock assets, including: commuter rail locomotives, and three (3) types of passenger cars: cab cars (with toilets) and trailer cars (with or without toilets). Details on these assets are provided in Table 3.2.

Table 3.2 – Rolling Stock Assets

Asset Class	Manufacturer	Model	Asset Name	ULB[3]	Quantity	Vehicle Numbers	Criticality
Commuter Rail Locomotives	MotivePower, Incorporated (MPI)	MP36PH-3C	Locomotives	20 Years	20	V50-V69	High
Commuter Rail Cab Cars	Nippon Sharyo	Gallery IV Cab Car (with toilet)	Cab Car-T	30 Years	21	V710-V730	High
Commuter Rail Trailer Cars	Nippon Sharyo	Gallery IV Trailer Car (with toilet)	Passenger Car - T	30 Years	49	V800-V848	High
	Nippon Sharyo	Gallery IV Trailer Car	Passenger Car	30 Years	30	V850-V879	High

Source: VRE 2022

3.1.2 Facilities

VRE owns and operates 35 facility assets within Northern Virginia, including two (2) administrative buildings, ten (10) maintenance buildings, nineteen (19) passenger stations, and four (4) passenger parking facilities. Details on these facility assets are provided in Table 3.3.

Table 3.3 – Facility Assets

Quantity	Facilities	Size[1]	Criticality
Administrative Buildings			
2	Alexandria Headquarters	15,648 SF	High
	Fredericksburg Office	2,500 SF	Medium
Maintenance Buildings			
10	Broad Run MASF	185,000 SF	High
	Broad Run Crew Building (B1)	1,350 SF	Low
	Broad Run Trailer (B2)	750 SF	Low
	Broad Run Service & Inspection (S&I) Facility (B3)	11,000 SF	High
	Crossroads MASF	263,000 SF	High
	Crossroads Warehouse Offices (C1)	1,350 SF	Low
	Crossroads Warehouse (C2)	6,000 SF	High
	Crossroads Crew Building (C3)	1,350 SF	Low
	Crossroads S&I Facility (C4)	11,300 SF	High
	Crossroads Vehicle Wash (C5)	3,488 SF	High

[3] ULB – Useful Life Benchmark

Quantity	Facilities	Size[1]	Criticality
Passenger Stations			
19	Alexandria[2]	742 FT	High
	Backlick Road	400 FT	High
	Broad Run/Airport	600 FT	High
	Brooke	400 FT	High
	Burke Centre	680 FT	High
	Crystal City	400 FT	High
	Franconia-Springfield	550 FT	High
	Fredericksburg[2]	520 FT	High
	Leeland Road	400 FT	High
	L'Enfant	556 FT	High
	Lorton	700 FT	High
	Manassas[2]	654 FT	High
	Manassas Park	705 FT	High
	Quantico[3]	420 FT	High
	Rippon	400 FT	High
	Rolling Road	670 FT	High
	Spotsylvania	700 FT	High
	Union Station[4]	N/A	High
	Woodbridge	1,010 FT	High
Passenger Parking Facilities			
4	Broad Run Main Lot	387 Spaces	Medium
	Fredericksburg – Lot G, Gravel Lot	250/182 Spaces	Medium
	Manassas Garage	421 Spaces	High
	Quantico – South Lot	199 Spaces	High

[1] The size measure given for Passenger Stations is total platform length.
[2] The historic station buildings at Alexandria, Fredericksburg, and Manassas are owned and maintained by third-party entities.
[3] VRE maintains the asset; however, the Quantico Station building is owned by CSX.
[4] VRE owns and operates several subcomponent-level assets; however, the station itself is owned by Amtrak.

Source: VRE 2022

3.1.3 Infrastructure

The majority of revenue service track (87.8 miles) that VRE operates on is owned by CSXT, NS, and Amtrak. VRE owns only 0.11 mile of revenue service siding track through the Broad Run/Airport Station and into the Broad Run MASF, as well as the non-revenue track located at both the Broad Run and Crossroads MASFs. Details on these assets are provided in Table 3.4.

Table 3.4 – Infrastructure Assets

Asset Class	Location	Size	Criticality
Commuter Rail (Revenue Service)	Broad Run/Airport Station	0.11 mile	High
MASF	Broad Run MASF	8,768 linear feet	High
	Crossroads MASF	11,405 linear feet	High

Source: VRE 2022

3.1.4 Equipment

VRE owns and operates non-revenue service vehicles (5), as well as many pieces of maintenance tooling equipment (32) of varying types, including forklifts, scissor lifts, cargo loaders, maintenance jacks, and overhead cranes. All of the maintenance tooling equipment is located at the Broad Run or Crossroads MASFs. Details on these assets are provided in Table 3.5.

Table 3.5 – Equipment Assets

Name	Location	ULB	Quantity	Criticality
Maintenance Tooling Equipment				
Forklift – Nissan 100	Crossroads S&I	7 Years	1	Medium
Forklift – Hyster H60XM 6,000lb	Crossroads S&I/Warehouse	7 Years	2	Medium
Forklift – Crown RD5200 Standup	Crossroads Warehouse	7 Years	1	Medium
Forklift – Caterpillar GP45K1 10,000lb	Broad Run S&I	7 Years	1	Medium
Payloader Heavy Duty XL	Crossroads MASF	10 Years	2	Low
Payloader Heavy Duty XL	Crossroads Warehouse	10 Years	1	Low
Payloader Heavy Duty XL	Broad Run MASF	10 Years	2	Low
Sanding Cart	Broad Run MASF	10 Years	1	Low
Sanding Cart	Crossroads MASF	10 Years	1	Low
Genie GS-2032 Scissor Lift	Broad Run MASF	12 Years	1	Medium
Genie GS-3268RT Scissor Lift	Crossroads MASF	12 Years	1	Medium
Macton 50 Ton Loco Lifts	Crossroads MASF	20 Years	4	High
Macton 50 Ton Loco Lifts	Broad Run MASF	20 Years	4	High
Whiting 20 Ton Car Lifts	Crossroads MASF	25 Years	4	High
Whiting 20 Ton Car Lifts	Broad Run MASF	25 Years	4	High
DeShazo TR-SG-DM 10 Ton Crane	Crossroads MASF	40 Years	1	High
DeShazo TR-SG-DM 10 Ton Crane	Broad Run MASF	40 Years	1	High

Name	Location	ULB	Quantity	Criticality
Non-Revenue Service Vehicles				
2015 Ford F-250	Alexandria Headquarters	8 Years	1	Medium
2016 Ford Transit Van	Crossroads MASF	8 Years	1	Medium
2017 Ford F-150	Alexandria Headquarters	8 Years	1	Medium
2018 Ford Transit Connect Wagon	Alexandria Headquarters	8 Years	1	Medium
2018 Ford Explorer	Alexandria Headquarters	8 Years	1	Medium

Source: VRE 2022

3.2 Replacement Values

The replacement value of VRE's total asset inventory is estimated to be approximately $749,481,224 (2022 dollars). Table 3.6 provides a summary of VRE's owned assets and replacement values.

Table 3.6 – VRE-Owned Asset Inventory Replacement Cost

Asset Category	Asset Class	Number of Asset Records	Estimated Replacement Cost	% of Asset Base
Rolling Stock	Commuter Rail Locomotives	20	$147,571,200	19.69%
	Commuter Rail Cab Cars	21	$91,222,593	12.17%
	Commuter Rail Passenger Cars	79	$321,473,831	42.89%
Facilities	Administrative Buildings	2	$2,221,009	0.30%
	Maintenance Buildings	10	$18,204,645	2.43%
	Passenger Stations	19	$141,215,576	18.84%
	Passenger Parking Facilities	4	$15,350,689	2.05%
Infrastructure	Commuter Rail	0.11 mile	$228,835	0.03%
	MASF Yards	2	$10,428,162	1.39%
Equipment	Non-Revenue Vehicles	5	$242,173	0.03%
	Maintenance Tooling	32	$1,322,512	0.18%
		Total	**$749,481,224**	**100.00%**

Source: VRE 2022

Nearly all of VRE's assets will require replacement as they reach the end of their useful life. Facility and rolling stock assets will require overhauls or annual capital maintenance to ensure asset performance. Exceptions include the Alexandria, Fredericksburg, Manassas, Quantico, and Woodbridge passenger stations, which have been deemed historic and unreplaceable, and are assumed to be rehabilitated indefinitely. VRE is directly responsible for maintaining the Quantico and Woodbridge historic station buildings. The historic station buildings at Alexandria, Fredericksburg, and Manassas; while used by VRE, are owned, and maintained by third parties.

3.3 Third-Party Owned Assets

VRE will work with the freight railroads and other third-party owners to determine a reasonable method to inventory non-VRE-owned assets used in the provision of its transit services. VRE leases the rights to operate on track owned by CSXT, NS, and Amtrak. VRE's Manassas Line operates on track owned by NS, while the Fredericksburg Line operates on CSXT owned track. The majority of the shared line portion of track is also owned by CSXT, except for a small portion into Union Station which is owned by Amtrak. Details on the third-party infrastructure asset inventory are provided in Table 3.7.

Table 3.7 – Third-Party Infrastructure Asset Inventory

Asset Class	Name	Third-Party Owner	Quantity (Miles)
Commuter Rail	Manassas Line	NS	27.6
	Fredericksburg Line	CSXT	51.9
	Shared Line	CSXT	7.0
		Amtrak	1.3
		Total	**87.8**

Source: VRE 2022

In addition to the four (4) VRE-owned passenger parking facilities, VRE leases parking spaces or has availability to use parking spaces at the majority of their passenger stations. Although VRE does not directly own these passenger parking facilities, VRE provides maintenance (regular and seasonal) and resurfacing/painting services to many of these facilities. Details on the passenger parking facilities leased by VRE and passenger parking facilities used by VRE are provided in Table 3.8 and Table 3.9, respectively.

Table 3.8 – Third-Party Passenger Parking Facilities (Leased)

Name	Lessor	Spaces
Broad Run Parking (Barn Lot)	Prince William County	113
Broad Run Airport Lot (Manassas Airport Lease)	City of Manassas	80
Fredericksburg – Lot A	Tommy Mitchell	23
Fredericksburg – Lot C	AFM LLC (Thomas J. Wack Co.)	30
Fredericksburg – Lot D	Wilson Realty	19
Fredericksburg – Lot E	Jack and Mona Albertine	39
Fredericksburg – Lot H	New City Fellowship of Fredericksburg	127
Fredericksburg ADA Parking Lot	Fredericksburg City Council	13
Rippon Parking Lot – Upper	KP Big Crest Lane, LLC	319
	Total	**763**

Source: VRE 2022

Table 3.9 – Third-Party Passenger Parking Facilities (Utilized)

Name	Owner	Spaces
Backlick Road Surface Lot	Fairfax County	222
Broad Run Middle Lot	Prince William County	315
Broad Run Expansion Lot	Prince William County	180
Brooke Station Surface Lots (2)	VDOT	727
Burke Centre Surface Lots (2)	Fairfax County	211
Burke Centre Garage	Fairfax County	1,269
Fredericksburg – Lot B	City of Fredericksburg	107
Leeland Road Surface Lot	Stafford County	1,012
Lorton Surface Lot	Fairfax County	683
Manassas Surface Lots (2) and Prince William Street Dedicated Parking	City of Manassas	363
Manassas Park Surface Lots (2) and Railroad Drive Dedicated Parking	City of Manassas Park	616
Quantico Lot	Prince William County	199
Rippon Parking Lot - Lower	Prince William County	336
Rolling Road Surface Lot	Fairfax County	379
Spotsylvania Surface Lots (3)	VDOT	1,479
Woodbridge Surface Lot and Kiss-and-Ride	Prince William County	151
Woodbridge Garage	Prince William County	588
	Total	**8,837**

Source: VRE 2022

3.4 Planned Inventory Updates

During the horizon period of this 2022 TAM Plan (October 1, 2022 through September 30, 2026), there are a number of planned projects which are included in VRE's Fiscal Year (FY) 2023 – FY 2028 Capital Improvement Program (CIP) and which will have an impact on VRE's asset inventory as reported in its TAM Plan. These are listed in Table 3.10. While some projects represent new assets, others involve improvements to existing assets reported in Section 3.1 that will impact either facility size (as with numerous platform extensions being undertaken to accommodate eight-car trains) or infrastructure length (as with new trackwork being installed at existing sites). Note that projects involving multiple asset categories are listed more than once, with specific project inclusions comprising the "Description" below. The full list of projects in the current CIP is included as **Appendix B.**

Table 3.10 – TAM Plan Horizon Period Inventory Updates

Project Name & ID	Description*	New Asset?	Projected End Date*
Rolling Stock			
None			
Facilities			
Crossroads Lifecyle Overhaul and Upgrade Facility (MS-6)	This expansion project calls for the construction of an approximately 33,000 square foot addition to the existing Crossroads MASF for expanded shop capabilities that will allow VRE to perform overhaul and heavy maintenance activities on-site.	No	March 2023
Quantico Station Improvements (ST-14)	This expansion project provides for multiple improvements at Quantico Station, including construction of a new platform and an extension of the existing platform.	No	December 2023
Manassas Park Parking Expansion (PK-4)	This expansion project will add a parking garage with capacity for approximately 560 spaces at Manassas Park Station and represents a new facility asset.	Yes	September 2024
Alexandria Station Improvements (ST-1)	This rehabilitation project includes an extension of the east platform to accommodate eight-car trains and to enable simultaneous servicing of two trains.	No	October 2024
Crossroads MASF Storage Expansion (MS-3)	This expansion project includes construction of a new Administrative and Employee Welfare (AEW) building adjacent to the existing facility.	Yes	October 2024
Leeland Road Parking Expansion (PK-3)	This expansion project will increase the size of the existing surface parking lot at Leeland Road Station by approximately 225 spaces.	No	January 2025
Manassas Station Improvements (ST-21)	This expansion project calls for an extension to the existing platform to accommodate eight-car trains.	No	September 2025
Crystal City Station Improvements (ST-8)	This expansion project calls for the construction of an expanded and relocated Crystal City Station and platform. The project will construct an island platform to enable simultaneous boarding of two full-length trains. The project will also include construction of a fourth track in and around the station and additional track modifications to non-VRE owned assets.	No	October 2025
Franconia-Springfield Station Improvements (ST-9)	This expansion project calls for an extension to the existing west platform and a widening and extension of the existing east platform to accommodate eight-car trains.	No	December 2025

Project Name & ID	Description*	New Asset?	Projected End Date*
Infrastructure			
Crossroads Lifecyle Overhaul and Upgrade Facility (MS-6)	This expansion project calls for the construction of new tracks associated with the Lifecycle Overhaul and Upgrade Facility.	No	March 2023
Crossroads MASF Storage Expansion (MS-3)	This expansion project includes construction of additional tracks which will be used for overnight train storage and is associated with Fredericksburg Line capacity expansion.	No	October 2024
New York Avenue Midday Storage Facility Track (MS-7)	This replacement project calls for the construction of a midday storage facility parallel to New York Avenue in the District of Columbia to replace VRE's current storage at Amtrak's Ivy City Coach Yard. The new facility will also add storage space for future expansion needs. VRE's lease of Amtrak's Ivy City Coach Yard is near its expiration, and this replacement facility represents a new VRE asset.	Yes	December 2025
Equipment			
Crossroads Lifecyle Overhaul & Upgrade Facility (MS-6)	This expansion project includes procurement of new major equipment needed for railcar maintenance: two (2) overhead cranes, a wheel and axle drop table, and a wheel truing machine. This equipment will represent new assets.	Yes	March 2023

* Project scope and projected end dates as of September 2022 on https://projects.vre.org/list

Source: VRE 2022

While not planned for completion during this plan's horizon period, several projects underway and included in VRE's CIP are of note here:

- Broad Run Expansion (OT-2) – This expansion project is associated with Manassas Line capacity expansion and includes relocation of the existing platform at the Broad Run/Airport Station, construction of approximately 300 additional parking spaces, construction of additional storage tracks, and demolition and replacement of two small buildings on site with a consolidated new 6,200 square foot Administrative and Employee Welfare (AEW) building. The project also constructs a third main track adjacent to the existing Norfolk Southern Railway (NS) tracks between the Broad Run complex and Manassas Station and is anticipated for completion in February 2027.
- Backlick Road Station Improvements (ST-4) – This expansion project calls for an approximately 300-foot extension of the existing platform to accommodate eight-car trains and is anticipated for completion in May 2027.
- Woodbridge Station Improvements (ST-19) – This expansion project includes a platform extension to accommodate eight-car trains, enhanced pedestrian access, and will be designed to enable a planned addition of a third and fourth main track. It is anticipated for completion in July 2027.
- Leeland Road Station Improvements (ST-10) – This expansion project includes an extension of the station's existing platform to accommodate eight-car trains and is anticipated for completion in October 2027.

- L'Enfant Station and Fourth Track (ST-11) – This expansion project includes construction of an expanded VRE L'Enfant Station and an additional mainline track between the Virginia (VA) and L'Enfant (LE) Interlockings in Washington, D.C. The expanded station will support simultaneous boarding of two full-length trains. The project will aim to improve station access and customer convenience while improving service reliability and is being coordinated with the broader Long Bridge capacity investments by the Commonwealth. The project is currently in development, with construction anticipated for completion in June 2028.
- New Rolling Stock Fleet Procurement (RS-3) – This expansion project calls for the purchase of twenty-one (21) new railcars – eleven (11) coaches to expand Fredericksburg line capacity and ten (10) coaches to expand Manassas line capacity. The project is contingent on the expansion of storage capacity at the Broad Run MASF and an extension to the Broad Run/Airport Station platform. The project is anticipated for completion in July 2028.
- Brooke Station Improvements (ST-5) – This expansion project calls for an extension of the existing platform to accommodate eight-car trains and is anticipated for completion in January 2031.

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4 CONDITION ASSESSMENT

This chapter provides a description of VRE's methodologies and processes for performing condition assessments, as well as a summary of the most recent condition assessments within each asset category. Details on the SGR backlog for each asset category are also provided. This chapter addresses FTA TAM element 2 (Condition Assessments).

VRE performs condition assessments on all four categories of assets: *Rolling Stock*, *Facilities*, *Infrastructure*, and *Equipment*. As required by FTA, condition assessments are conducted on all VRE-owned assets, as well as on all assets where VRE has direct capital responsibility. Consequently, condition assessments were not performed on third-party owned assets, where VRE does not have direct capital responsibility.

Condition data for each asset category is collected using different methodologies. VRE's assets and their components or elements deteriorate at different rates, thus requiring assessments conducted in varying timeframes. Given these differences, condition data is not easily comparable across asset categories, even when similar condition rating scales are used; consequently, this section highlights the assessment methodology and asset condition within each asset category.

49 CFR Part 625 Subpart C Section 625.25(b)(2) "…a TAM plan must include … (2) A condition assessment of those inventoried assets for which a provider has direct capital responsibility. A condition assessment must generate information in a level of detail sufficient to monitor and predict the performance of the assets and to inform the investment prioritization."

VRE completed a second full round of facility and infrastructure assessments in 2021, and rolling stock and equipment condition assessments have also been performed for inclusion in this TAM Plan.

4.1 Methodology

Using the performance measures identified by FTA's Final Rule, VRE has developed quantitative methodologies for calculating the performance or condition of each transit asset. The different methodologies applicable for each asset category are described in the sections below.

4.1.1 Rolling Stock and Equipment

The overall condition of Rolling Stock and Equipment is evaluated based on their Useful Life Benchmarks (ULBs). The Final Rule allows a transit provider to determine its own ULBs, based on knowledge of its operating environment and the performance of its individual assets. Regular maintenance of these assets can assist in the extension of the assets' ULB. Each transit provider will need to determine what investments should be made in order to improve the performance of its transit system. ULB is used for performance measure metrics not for investment prioritization.

Condition and SGR backlog of rolling stock and equipment assets are not based solely on the ULB. VRE considers safety issues, regulatory changes, performance measures, and customer comfort that may influence the SGR condition of the assets. Individual rolling stock and equipment asset components may not be in a SGR, even before the asset reaches its ULB (e.g., malfunctioning HVAC in a passenger car).

VRE has developed a comprehensive condition assessment Standard Operating Procedure (SOP) **(Appendix C)** for both Rolling Stock and Equipment assets, outlining the requirements and procedures to be followed when conducting an assessment.

4.1.2 Facilities and Infrastructure (Non-Revenue Service)

The overall condition for Facilities and Infrastructure (maintenance yards only) is reported using the five-point scale used by FTA's Transit Economic Requirements Model (TERM), outlined in Figure 4.1. While the TERM scale is prescribed for facility assets, VRE has also adopted this methodology for assessing its non-revenue service infrastructure located at its two MASFs (Broad Run and Crossroads). VRE uses integer ratings to align with the FTA Facility Performance Measure Reporting Guidebook: Condition Assessment Calculation[4].

Figure 4.1 – FTA TERM 5-Point Scale

FTA TERM Scale	
5	Excellent
4	Good
3	Adequate
2	Marginal
1	Poor

VRE's approach is to divide the facility and infrastructure assets into major components and subcomponents. Each relevant subcomponent is assessed and rated using the TERM scale. Table 4.1 provides further details on the condition rating scales established by FTA. Data from these assessments is aggregated using FTA's Median Value Method[5] to provide an overall facility and infrastructure rating. Assets with condition ratings at 3-Adequate or above are considered to be in a state of good repair, but those with condition ratings of 1-Poor or 2-Marginal are not.

Table 4.1 – General Condition Assessment Rating Scales

Rating	Condition	Description
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 system(s), but is overall functional.
3	Adequate	Moderately deteriorated or defective system(s); but has not exceeded useful life.
2	Marginal	Defective or deteriorated system(s) in need of replacement; exceeded useful life.
1	Poor	Critically damaged system(s) or in need of immediate repair; well past useful life.

Source: FTA Facility Performance Measure Reporting Guidebook: Condition Assessment Calculation, V 1.2, March 2018

VRE has developed comprehensive condition assessment SOPs for both the Facility and Infrastructure asset categories **(Appendix C)**, outlining the requirements and procedures to be followed when conducting an assessment.

4.1.3 Infrastructure (Revenue Service)

The condition of revenue service infrastructure is determined by the impact of performance restrictions (slow zones)[6] on in-service operation, as a percentage of slow zone miles compared to total miles traveled by VRE trains. Annual values are based on 244 days of standard operation, which excludes weekends and

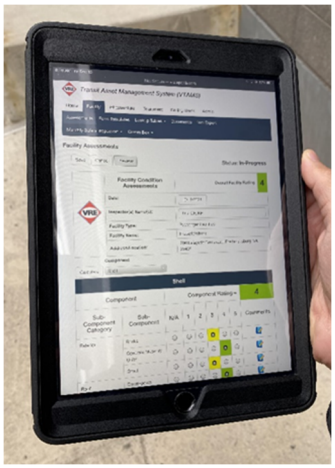
[4] FTA TAM Facility Performance Measure Reporting Guidebook: Condition Assessment Calculation, V 1.2, March 2018.
[5] FTA TAM Facility Performance Measure Reporting Guidebook: Condition Assessment Calculation, , V 1.2, Alternative 2: Median Value (pg. 22-23), March 2018.
[6] FTA TAM Infrastructure Performance Measure Reporting Guidebook: Performance Restriction (Slow Zone) Calculation, April 2017.

holidays when VRE is not operating in revenue service and also excludes "S" schedule operations, when trains are operating on a reduced schedule. However, the only revenue service track that VRE owns is considered siding track for which the slow zone calculation is not required.

4.2 Condition Assessment Data Support Systems

4.2.1 VRE Transit Asset Management System (VTAMS)

VRE has developed an online data support system that houses VRE's asset inventories and facilitates the completion of condition assessments and safety inspections. The VRE Transit Asset Management System (VTAMS) is part of a multi-phase effort, and initial functionality was deployed in 2017. VTAMS is designed to enable user-friendly access to condition assessments and asset inventories, both in the office and in the field. Using an internet-connected mobile device, users are able to input data directly into the online database, eliminating duplication of effort and saving time. Forms can then be exported to Adobe PDF or Microsoft Excel for direct use in reports or for further analysis. VTAMS's functionality includes:



- Dashboard access to summary-level inventory, condition, and SGR data;
- Procedures and forms for conducting condition assessments;
- Management of individual asset inventory attributes;
- Historical condition assessment findings data at the subcomponent-level for Facility assets and the element-level for Infrastructure;
- Automatic calculation of the useful life remaining in years for Rolling Stock and Equipment assets; and
- Online storage for VRE's library of TAM-related documentation, as well as the VTAMS User Guide.

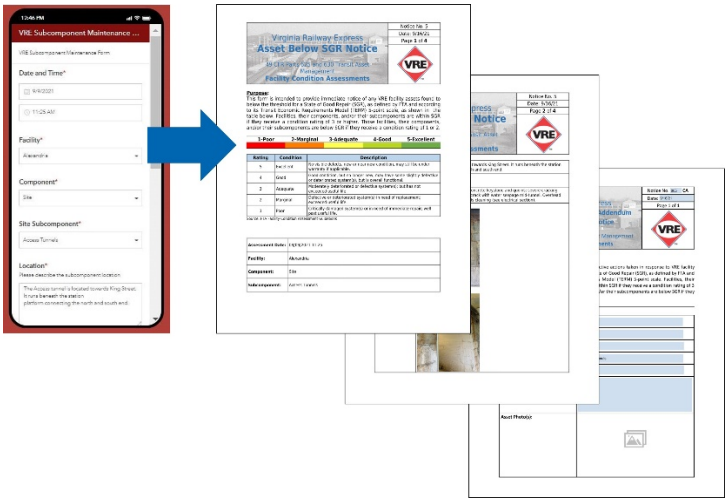
When conducting quadrennial TERM-based facility and non-revenue infrastructure assessments, VRE's inspector schedules the assessment to be conducted and, once on site, accesses the system-generated assessment form. A dropdown menu displays all components specific to that facility, and the tool provides the availability to "tab" through the different components in order to complete the assessment in any order. Once a component is selected, the site-specific subcomponents are displayed. Ratings and comments can then be added for each. The inspector can then select the calculate button to aggregate all subcomponent ratings into a component rating, then aggregate the component ratings into an overall facility rating.

Conducting ULB age-based condition assessments for Rolling Stock and Equipment assets can be done at any time. Each vehicle or piece of equipment inventoried in the tool includes its original "in-service" date and/or manufacture year. A report can be generated with one click that includes a countdown indicating when each vehicle or piece of equipment will reach its ULB, or by how many years it has exceeded its ULB.

4.2.2 GIS-Based Applications

More recently, VRE has also customized two ArcGIS Online (AGOL) software applications for use in collecting specific inventory and condition data in the field. The Collector application was first used in conjunction with a system-wide inventory of parking spaces at VRE passenger stations. The Survey 1-2-3 application has been used for conducting monthly station safety inspections, as well as generating "Asset Below SGR" notices at the subcomponent-level and follow-up "Corrective Action" notices. The two notices work in conjunction as a simple work order and maintenance tracking tool and are pictured in Figure 4.2. VRE has prioritized the use of Geographic Information System (GIS) to support asset management and other program-level initiatives, and data integration of these custom application with VTAMS is being explored as a future enhancement to VRE's TAM-program.

Figure 4.2 – GIS-Based Condition Assessment Outputs



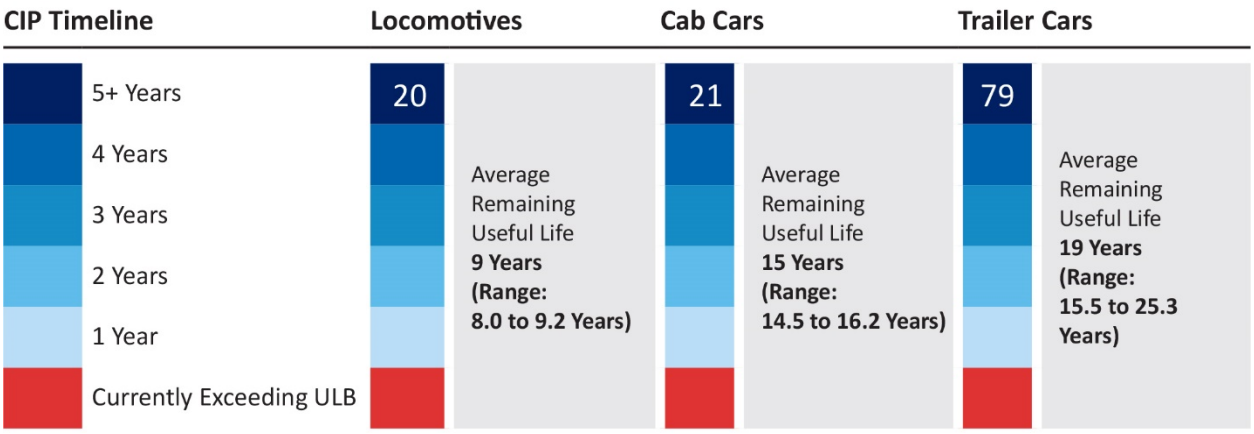
Source: VRE 2022

4.3 Rolling Stock

The ULB for VRE rolling stock is detailed in the technical specifications for each vehicle type used in revenue service. VRE's rolling stock assets include twenty (20) locomotives, twenty-one (21) passenger cab cars (all with toilets), and seventy-nine (79) passenger trailer cars, thirty (30) without toilets, and forty-nine (49) with. The ULB for each vehicle type is compared with in-service dates to determine if the vehicles have exceeded their ULB and, therefore, are not within a SGR.

Using the ULB, all VRE's rolling stock assets are within a SGR. Locomotives have a 20-year ULB, and cab/trailer cars have a 30-year ULB. The oldest locomotive went into service in 2010 and will reach its ULB in 2030. The oldest cab/trailer car went into service in 2007 and will reach its ULB in 2037. The average remaining years of useful life for VRE's rolling stock assets is 14 years. Detail for each rolling stock asset class: locomotives, cab cars, and passenger cars, is provided in Figure 4.3.

Figure 4.3 – Rolling Stock Condition Findings



Source: VRE 2022

Procurement of rolling stock is a capital expense and typically purchased in "lots" (groups). Planning for replacement or new vehicles will be included in VRE's CIP. The CIP is developed annually with a horizon period of six years. Currently all rolling stock assets are outside of the horizon period, and no vehicle replacement planning is required. Note that new fleet expansion assets are planned for procurement, and project details may be found in the current CIP.

4.4 Facilities

VRE's first full round of facility assessments, performed in accordance with the TAM Final Rule and FTA Guidance, was completed in 2017 and results reported in its previous 2018 TAM Plan. This included assessments on a total of thirty-five (35) facility assets including; two (2) administrative buildings, ten (10) maintenance buildings, nineteen (19) passenger stations, and four (4) passenger parking facilities. The assessments were completed using the newly developed VTAMS, detailed in section 4.2.1.

VRE has repeated its assessment process in 2021 for inclusion in this updated TAM Plan, and results are shown in Figure 4.4. This constitutes VRE's second full round of facility assessments. In addition to ensuring that VRE adheres to FTA requirements, conducting condition assessments provides the opportunity to inspect and ensure that subcomponent-level assets are being maintained in a SGR and safety goals are met. Regular assessment of individual subcomponents allows VRE to identify the asset condition and to assist in evaluating whether assets will require replacement or continued maintenance.

Results of VRE's 2021 condition assessments identified that the overall condition rating for each of the thirty-five (35) facilities is in a SGR[7]. The majority of VRE's facility assets (32 of 35) received an overall rating of 4-Good. As depicted in Figure 4.4, only three (3) passenger stations received a rating other than 4-Good. The Alexandria, Franconia-Springfield, and Rolling Road passenger stations received overall ratings of 3-Adequate. All three (3) stations have planned improvement projects included in the current CIP.

Regarding 2017 to 2021 change in condition, VRE had three (3) facilities – all passenger stations – that showed a decline in their overall condition rating from 2017 to 2021, moving either from a 4-Good to a 3-

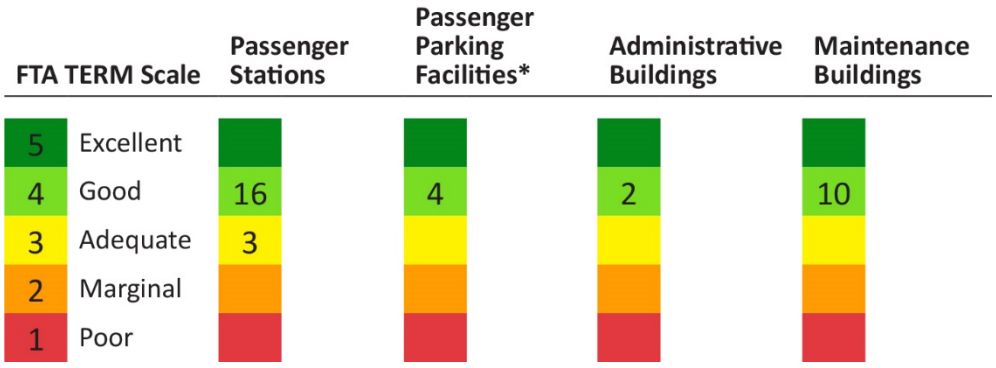
[7] VRE 2021 Facility Condition Assessment Report, January 2022.

Adequate, as was the case with the Franconia-Springfield and Rolling Road stations, or a 5-Excellent to a 4-Good, as was the case with the Spotsylvania station. This is attributable to general deterioration and wear and tear expected with time.

Two (2) facilities showed an improvement in their overall condition rating, moving from a 3-Adequate to a 4-Good – the Lorton and Quantico stations. Lorton's improvement is attributable to a completed project in FY 2018 to extend the main platform, install new components on the extended platform area (lighting, conduits, public address speakers, variable message signs, and security cameras), make repairs to the existing platform area and canopy, and to replace all existing lighting. The change at Quantico is attributable to cumulative component-level rating improvements brought on by multiple separate projects: interior updates that included waiting room painting in 2019 and coffee shop flooring replacement in 2020; replacement of rest room faucets in 2020; HVAC equipment replacement, which occurred systemwide and was completed in February 2021; and platform concrete repairs performed in the 4th quarter of 2021.

All other facilities' overall ratings remained the same, relative to 2017.

Figure 4.4 – Facility Condition Ratings



Source: VRE 2022
*Condition Assessments conducted on all VRE-owned assets, as well as on all assets where VRE has direct capital responsibility

While the overall condition of VRE's facility assets is within a SGR, two (2) facilities received component-level ratings below a SGR: Franconia-Springfield Station (conveyance) and Manassas Garage (conveyance and fire protection), and fifteen (15) of VRE's facilities have at least one subcomponent that is not within a SGR. Depending on the level of deterioration or useful life remaining, the subcomponent could require corrective action or a capital replacement to return it to a SGR. Note that component- and subcomponent-level ratings below a SGR contribute to VRE's effective backlog but are not reported in this TAM Plan.

4.5 Infrastructure

4.5.1 Revenue Service

VRE trains travel on CSXT, NS or Amtrak-owned track for the majority of revenue service. VRE only owns 0.11 mile of revenue service track that passes through the Broad Run/Airport Station and into the Broad Run MASF. This portion of revenue service track is considered siding track, and a slow zone calculation is not required.

4.5.2 Non-Revenue Service

VRE performed assessments of non-revenue track, switches, derails, ties, switch ties, and bumper blocks in the Broad Run and Crossroads MASFs in fall 2021[8]. VRE recorded the visual condition of the six (6) yard track elements (bumper blocks, derails, switches, switch ties, ties, and track) according to the TERM condition criteria. The results of the 2021 infrastructure condition assessments identified the overall condition rating for both MASFs as in a SGR (Figure 4.5).

Figure 4.5 – Infrastructure Condition Ratings

FTA TERM Scale		MASF Infrastructure
5	Excellent	
4	Good	2
3	Adequate	
2	Marginal	
1	Poor	

Source: VRE 2022

The overall rating for both MASFs is a 4-Good, and no elements were found to be below a SGR. Three (3) derails, two (2) switches, and one (1) switch tie at Broad Run MASF received a rating of 3-Adequate. Crossroads only had one (1) switch receiving a rating of 3-Adequate.

4.6 Equipment

VRE's thirty-seven (37) equipment assets consist of thirty-two (32) pieces of maintenance tooling equipment and five (5) non-revenue service vehicles. Equipment condition assessment relies on an age-based approach. The ULB of each piece of equipment is determined by manufacturer expected useful life data or by VRE-defined ULB based on FTA guidance or related to cost prohibitive maintenance benchmarks. The in-service or manufacturing date is compared to this ULB to determine whether the piece of equipment has exceeded its ULB. The manufacturing date is used when the purchase or in-service date is not available.

There is a variety of equipment included within the maintenance tooling category and the ULB for these ranges between seven (7) and forty (40) years. VRE uses FTA's eight (8) year ULB recommendation for its non-revenue service vehicles. In 2022, VRE has seven (7) pieces of maintenance tooling equipment that have exceeded their useful life:

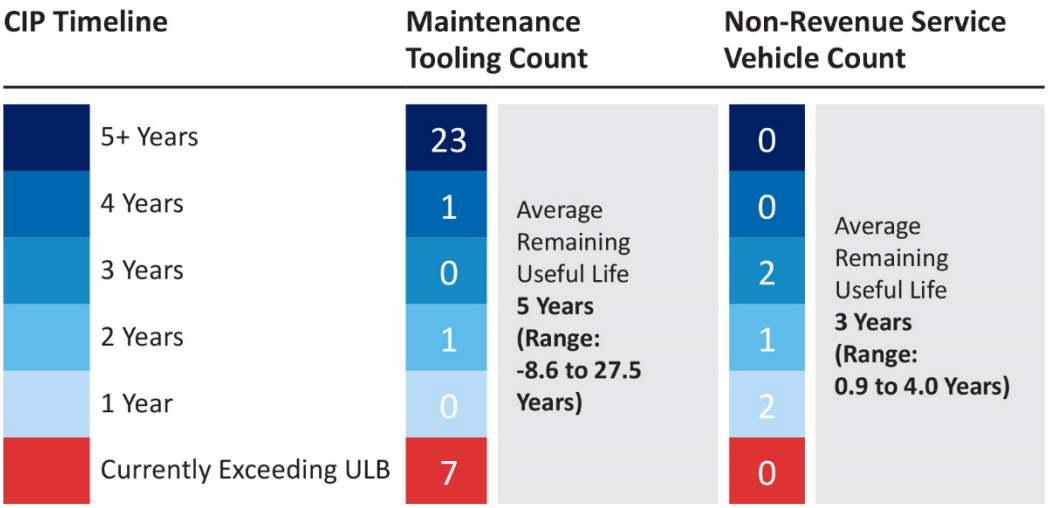
- Forklift – Nissan 100 (Crossroads S&I)
- Forklift – Hyster H60XM 6,000lb (Crossroads S&I)
- Forklift – Hyster H60XM 6,000lb (Crossroads Warehouse)
- Forklift – Caterpillar GP45K1 10,000lb (Broad Run S&I)

[8] VRE 2021 Facility Condition Assessment Report, January 2022.

- Forklift – Crown RD5200 Standup (Crossroads Warehouse)
- Scissor Lift – Genie GS-2032 (Broad Run MASF)
- Scissor Lift – Genie GS-3268RT (Crossroads MASF)

Details for the maintenance tooling equipment and non-revenue service vehicles is provided in Figure 4.6.

Figure 4.6 – Equipment Condition Findings



Source: VRE 2022

Purchase of new and replacement equipment is included within VRE's CIP. The CIP is developed annually with a horizon period of six years. In addition to the seven pieces of equipment that have already exceeded their useful life, all of VRE's service vehicles and two (2) pieces of equipment (sanding carts) will also meet or exceed their useful life during the horizon period of this TAM Plan and will require replacement.

4.7 Summary and SGR Backlog

State of Good Repair is the designation that an asset is; (1) able to perform its manufactured design function; (2) is in a condition sufficient to operate at its full level of performance and does not pose an identified safety risk and/or deny accessibility; and (3) its lifecycle management needs have been met. When these standards are not met the asset is identified as not in a SGR and included in the SGR backlog.

The majority of VRE's assets are acquired and replaced in bulk during similar time frames. Since these assets have similar maintenance and replacement schedules, they are typically maintained and replaced systemwide at the component/subcomponent level. For example, VRE could develop a single project to replace pole lighting at multiple station platforms, or to replace all HVAC units within its passenger cars. Projects of this type are developed to ensure that assets perform at their highest level throughout their service life and to consistently address, evaluate, analyze, and prioritize the condition of VRE's capital assets. They may involve improvements or repairs to prolong the useful life of an existing asset, to meet mandated requirements or otherwise modernize the asset or system, or to enhance safety and security.

VRE's attentiveness to the condition of its capital assets is reflected in its SGR backlog. Currently, the only asset category contributing to VRE's backlog is Equipment, within which seven (7) pieces of maintenance tooling equipment have exceeded their useful life benchmark, as shown in Table 4.2. Despite this, there are still asset components, subcomponents, or elements that need repair or replacement to maintain the parent asset within a SGR, and those costs are not reflected in this SGR backlog calculation for inventoried assets. They are, however, targeted for project development, and VRE's most recent CIP document provides a description of those SGR projects currently programmed. VRE will continue to perform condition assessments every four years and update condition information for its capital assets in future revisions of this TAM Plan.

Table 4.2 – VRE's TAM SGR Backlog as of September 2022

Asset	In-Service Date	ULB (Years)	Useful Life Remaining (Years)	Estimated Replacement Cost
Maintenance Tooling Equipment				
Forklift – Nissan 100	12/31/2006	7	-8.56	$96,600
Forklift – Hyster H60XM 6,000lb	12/31/2006	7	-8.56	$96,600
Forklift – Hyster H60XM 6,000lb	12/31/2006	7	-8.56	$96,600
Forklift – Caterpillar GP45K1 10,000lb	12/31/2006	7	-8.56	$150,150
Forklift – Crown RD5200 Standup	8/5/2014	7	-0.93	$16,800
Scissor Lift – Genie GS-2032	12/31/2009	12	-0.55	$34,796
Scissor Lift – Genie GS-268RT	1/4/2010	12	-0.54	$34,796
			Total	**$526,342**

Source: VRE 2022

* Excludes those subcomponents that are not within a SGR but are not reported in the TAM Plan inventory

5 REPORTING

This chapter provides a summary of TAM-related NTD reporting requirements and the applicable information for VRE, including reporting deadlines, performance measure methodologies, and current performance targets. This chapter addresses FTA's TAM requirements for NTD reporting and performance measures.

5.1 Annual NTD Reporting

The Final Rule requires transit properties to report additional information related to TAM and SGR to the NTD. FTA initially developed a draft asset inventory module (as Microsoft Excel files) for agencies to report their TAM inventory and SGR information, as well as their annual performance targets.

Along with the new module, FTA prepared a user guide, *2017 Asset Inventory Module Reporting Manual* and corresponding presentation[9] which provided instructions and guidance on using the TAM reporting module.

VRE submits required data forms and a narrative report to the FTA each year by its annual report deadline of October 31. This deadline is based on VRE's fiscal year end date of June 30. Data collected for NTD reporting overlaps some of the required information within the TAM Plan. However, there are several key differences, as identified in Table 5.1. The accompanying narrative report summarizes attainment of the prior year's set of performance targets. Required reporting elements include:

- Data reports:
  - Establishing annual performance targets
  - Facilities condition assessment ratings
  - Performance restrictions (infrastructure slow zone measure)
  - Rolling stock and equipment ULB
- Narrative report:
  - Change in condition
  - Progress toward targets

49 CFR Part 625 Subpart E Section 625.55(a) "Each provider must submit the following reports:

(1) An annual data report to FTA's National Transit Database that reflects the SGR performance targets for the following year and condition information for the provider's public transportation system.

(2) An annual narrative report to the National Transit Database that provides a description of any change in the condition of the provider's transit system from the previous year and describes the progress made during the year to meet the performance targets set in the previous reporting year."

VRE submits required forms and a narrative report via NTD's Asset Inventory Module by October 31st of each year.

[9] https://www.transit.dot.gov/ntd/ntd-asset-inventory-modules-and-information

Table 5.1 – Summary of TAM Plan and NTD Reporting Differences

Assets	TAM Plan Inventory	NTD Inventory	TAM Plan Condition Assessment	SGR Target
Revenue Vehicles				
Owned	Yes	Yes	Yes	Yes
Direct capital responsibility	Yes	Yes	Yes	Yes
3rd party owned (direct capital responsibility)	Yes	Yes	Yes	Yes
3rd party owned (NO direct capital responsibility)	Yes	Yes (Representative vehicles)	No	No
Equipment: Non-Revenue Vehicles (regardless of cost)				
Owned	Yes	Yes	Yes	Yes
Direct capital responsibility	Yes	Yes	Yes	Yes
3rd party owned	No	No	No	No
Equipment: Over $50,000 Acquisition Value				
Owned	Yes	No	Yes	No
Direct capital responsibility	Yes	No	Yes	No
3rd party owned	No	No	No	No
Equipment: Under $50,000 Acquisition Value	No	No	No	No
Facilities:				
Owned	Yes	Yes	Yes	Yes
Direct capital responsibility	Yes	Yes	Yes	Yes
3rd party owned (direct capital responsibility)	Yes	Yes	Yes	Yes
3rd party owned (NO direct capital responsibility)	Yes	Yes (Only for passenger facilities)	No	No
Infrastructure: Rail Fixed Guideway				
Owned	Yes	Yes	Yes	Yes
Direct capital responsibility	Yes	Yes	Yes	Yes
3rd party owned (direct capital responsibility)	Yes	Yes	Yes	Yes
3rd party owned (NO direct capital responsibility)	Yes	Yes	No	No

Source: FTA 2018

5.2 Performance Measures and Targets

The FTA Final Rule defines the performance measures for asset categories to be used by transit properties in development of their TAM plans. As required, VRE developed performance targets for each asset class under each of the four asset categories. VRE provided these performance targets to FTA before the optional January 1, 2017 deadline and provides updated performance targets each year by its October 31 NTD annual report deadline. A brief summary of the methodology used to develop the performance targets is listed below.

- The methodology for determining performance targets for Rolling Stock and Equipment is exclusively age-based and requires determining the ULB of each piece of equipment.
- The methodology for determining performance targets for Infrastructure (revenue service) is the percentage of miles of slow zone areas that affect the total miles traveled by VRE trains. However, the only revenue service track that VRE owns is considered siding track and the slow zone calculation is not required.
- The methodology for determining performance targets for Facilities and Infrastructure (non-revenue service) is based on the results of facility condition assessments using FTA's TERM Scale.

Table 5.2 lists the developed performance targets for each asset class. Note that there has been no change to VRE's performance targets since either its last TAM Plan or its last annual report.

Table 5.2 – VRE 2022 Transit Asset Performance Targets

Asset Category	Asset Class	Performance Measure	Performance Target
Rolling Stock	Commuter Rail Locomotive	The percentage of revenue vehicles (by asset class) that have met or exceeded their Useful Life Benchmark (ULB)	0%
	Commuter Rail Cab Car		0%
	Commuter Rail Passenger Coach		0%
Facilities	Administrative Facilities	The percentage of facilities (by asset class) with a condition rating below 3.0 on the FTA Transit Economics Requirements Model (TERM) Scale	0%
	Maintenance Facilities		0%
	Passenger Facilities		0%
	Passenger Parking Facilities		0%
Infrastructure	Commuter Rail	The percentage of track segments, signals, and systems with performance restrictions	N/A[1]
Equipment	Non-Revenue Service Vehicles	The percentage of non-revenue service vehicles that have met or exceeded their ULB	0%

[1] VRE owned portions of revenue service track is considered sidings, and performance targets are not required.

Source: VRE 2022

5.3 Relation to Systemwide Performance Measures

VRE's FY2020-FY2025 Transit Development Plan (TDP) outlines systemwide performance measures, the purpose of which is to establish a comprehensive record of progress towards TDP goals and objectives using easily obtainable data. The performance measures are shared with the VRE Operations Board, Virginia Department of Rail and Public Transportation (DRPT), staff from member jurisdictions, and the public. The currently reported measures are:

- Average Daily Ridership (by Line)
- On-Time Performance (by Line)
- Percent of Passengers Delayed
- System Capacity
- Parking Utilization
- Customer Satisfaction Rating
- Operating Ratio
- FRA-Reportable Injuries (Employees and Passengers)
- Condition of Assets (State of Good Repair)
- Project Production Date

TAM-related performance measures support these broader systemwide performance measures in fundamental ways. Performing condition assessment on all inventoried assets and establishing corresponding performance targets for each asset class assists VRE in maintaining the condition of its assets. Maintenance of inventoried assets at acceptable levels contributes to systemwide safety, on-time performance, parking availability, and reductions in the percent of passengers delayed, all of which contribute to higher customer satisfaction ratings; and higher customer satisfaction ratings can have an effect on average daily ridership as well as system capacity when VRE's service is in high demand.

6 DECISION SUPPORT TOOLS AND CAPITAL PROJECT PRIORITIZATION

This chapter provides a description of VRE's decision support tools for both capital and operational/maintenance (O&M) project planning, as well as a summary of the CIP and lifecycle management program. Details on how these programs and tools are utilized to address the SGR backlog is also provided. This chapter addresses FTA TAM elements 3 (Decision Support Tools) and 4 (Investment Prioritization).

6.1 Decision Support Process and Tools

VRE utilizes a top-down management approach and bottom-up analysis within their decision support process. VRE has an Equipment Asset Management Program (supporting its Rolling Stock and Equipment assets) and a Facilities Asset Management Program (supporting its Facility and Infrastructure assets). Each program is supported by a maintenance program (i.e. lifecycle management) where O&M funds are utilized to maintain assets at the component- and subcomponent-level. These maintenance programs help identify maintenance gaps resulting in capital needs and VRE's effective SGR backlog.

49 CFR Part 625 Subpart C Section 625.25(b)(3) "…a TAM plan must include … (3) A description of analytical processes or decision-support tools that a provider uses to estimate capital investment needs over time and develop its investment prioritization."

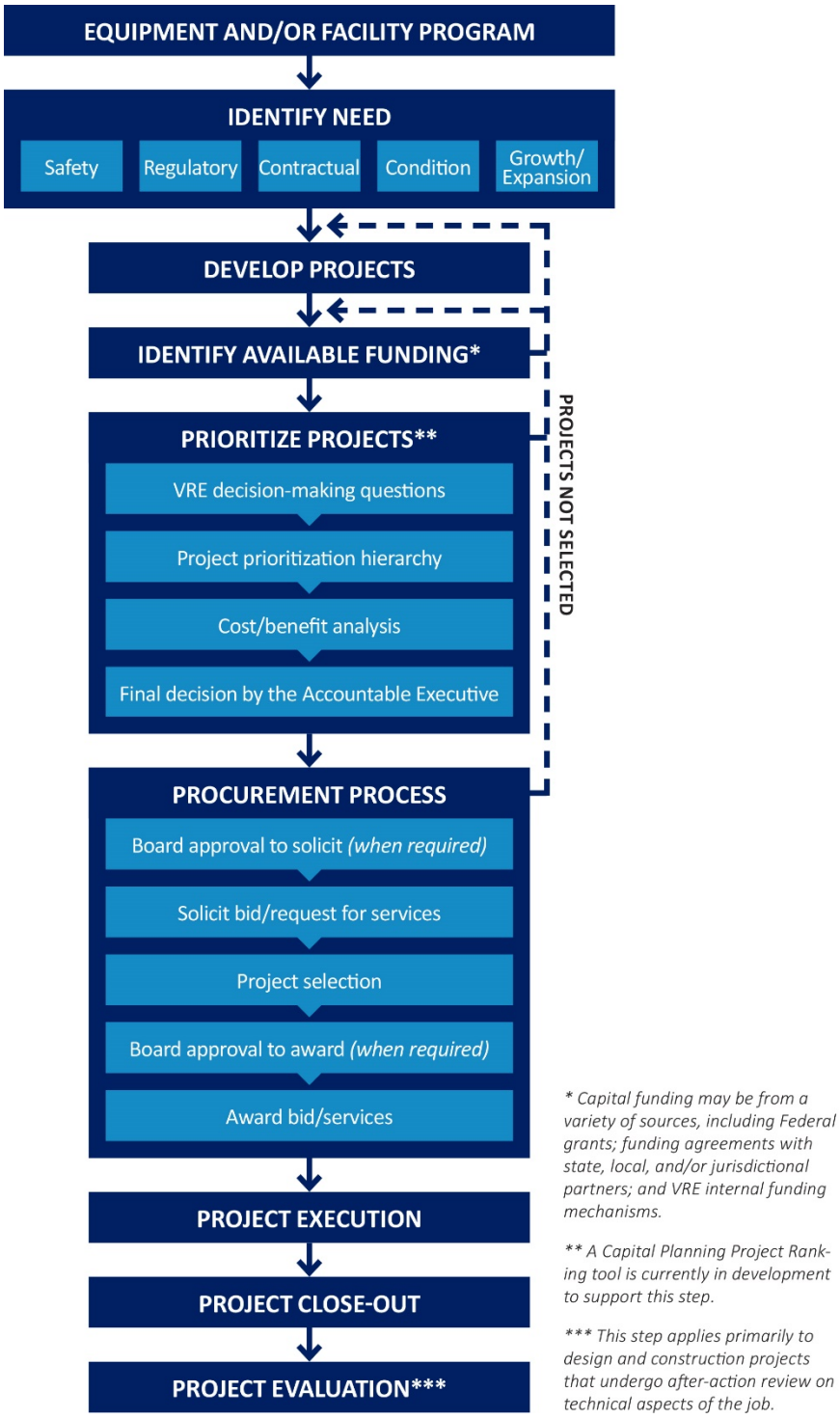
VRE's current decision support process is an example of process as tool, but implementation of additional software-based tools are underway.

VRE, along with the Washington Metropolitan Area Transit Authority (WMATA) and Maryland Area Regional Commuter (MARC) systems, receives a regional split of federal funding sources including Urbanized Area Formula Grant (5307) and State of Good Repair Grant (5337) funds. The 5337 funds can only be used for SGR projects, while the 5307 funds can be utilized to support any aspect of the Equipment and/or Facilities Programs. In unique situations, a single project can utilize both 5307 and 5337 funds.

Within the Equipment and Facilities Asset Management Programs, needs are identified and funding sources allocated to develop projects, supporting the respective programs. Projects that can be funded as part of VRE's O&M budget will be included within the Equipment or Facility Asset Management Program's maintenance program. Capital project funding is distributed amongst the appropriate funding sources, including projects solely funded through 5337 or 5307, or projects utilizing a combination of funding sources. As assets within VRE's maintenance programs approach the end of their life cycle, they can be included in the CIP to access additional funding sources (local, state, or federal), outside of VRE's O&M budget.

Figure 6.1 illustrates VRE's process for developing and funding projects. The current decision support process is an example of process as tool, including a detailed review and evaluation process for individual projects based on VRE's predetermined criteria and prioritization hierarchy. Note that VRE is also in the implementation stages for two additional decision support tools – one an enterprise-level asset management software package and the other a spreadsheet-based tool. These are described in Sections 6.1.3. and 6.1.4, respectively.

Figure 6.1 – Decision Support Process

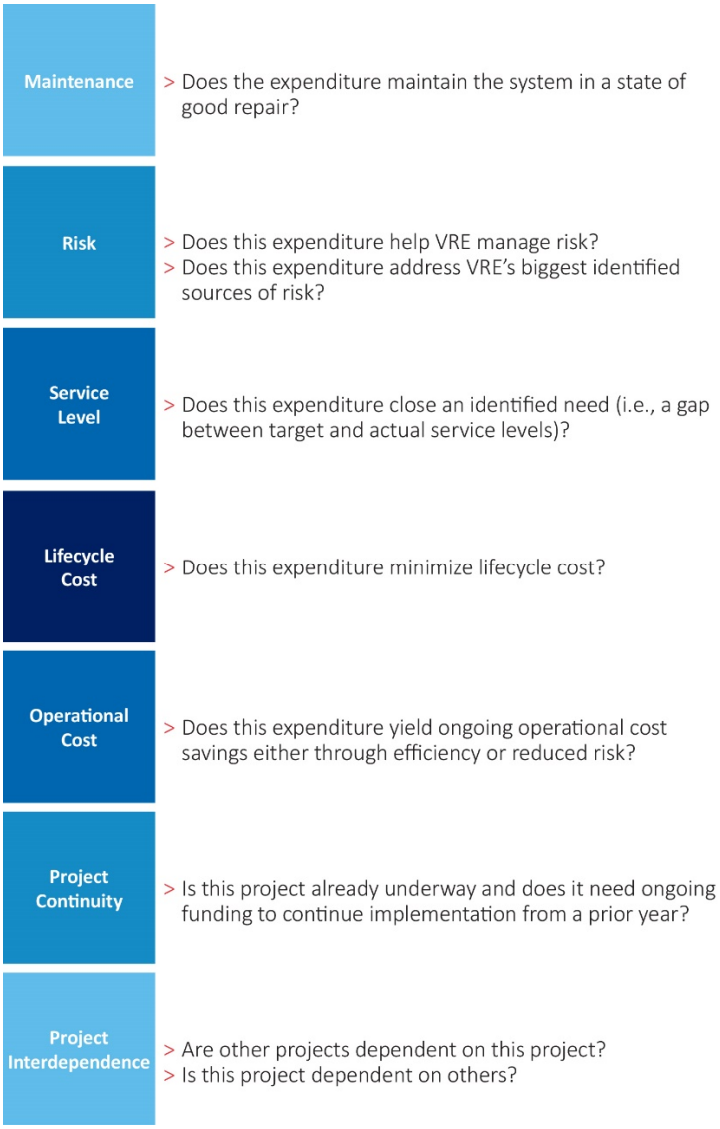


Source: VRE 2022

6.1.1 Decision-Making Factors

VRE considers a number of decision-making factors when determining which capital projects will be allocated with the limited available funding (Figure 6.2). These decision-making factors are presented in the form of questions, where a favorable response (Yes) indicates the priority of the expenditure, and whether the project would help establish a SGR, thus benefitting VRE, or whether it requires additional funding justification.

Figure 6.2 – VRE Decision-Making Factors



Source: VRE FY 2023 to FY 2028 CIP

6.1.2 Prioritization Hierarchy

VRE's priority for developing projects is to focus on existing assets, i.e. maintaining an existing asset versus expanding assets or implementing new services. VRE's project prioritization hierarchy used in its decision support tool is as follows:

1a. Safety Requirements
1b. Regulatory Requirements
2. Contractual Obligations
3. Condition (TERM Rating/ULB)
4. Growth/Expansion

49 CFR Part 625 Subpart C Section 625.25(b)(4) "…a TAM plan must include … (4) A provider's project-based prioritization of investments developed in accordance with § 625.33 of this part."

VRE prioritizes the maintenance of existing assets over growth or expansion needs and utilizes a four-tier prioritization hierarchy.

In VRE's project prioritization process, the highest priority is given to both safety and regulatory requirements, to ensure passenger and staff safety throughout VRE's service. The next project priority is given to contractual obligations, where VRE has an agreement with another agency (CSXT, NS, et. al.) to complete portions of or entire projects. The final priority for existing assets is projects developed based solely on asset condition, i.e., assets not in a SGR and not already covered under a higher priority level project. Additionally, VRE develops projects relating to growth or expansion of assets, services, and facilities. VRE's growth/expansion projects consider the capacity of its trains (seats), platforms, and parking lots (spaces). Projects can fall into multiple categories, for example, Positive Train Control (PTC) requirements are both a regulatory and safety mandate. Projects within multiple categories will be "ranked" based on the higher applicable category.

A cost-benefit analysis and VRE's Decision-Making Factors (details provided below in *6.2 Capital Improvement Program*) can also be applied to assist in the project prioritization process. However, the Accountable Executive will make an informed, final decision on which projects get selected using the available funds. Subsequently, projects selected will be completed and assets returned to a SGR. Projects not selected within the current cycle will be returned to the project development phase to await prioritization within the next cycle.

6.1.3 Enterprise Resource Planning (ERP) System

VRE is currently implementing the installation of a custom software package to support VRE operations. The new Enterprise Resource Planning (ERP) system will provide automation of process workflows related to human resources; accounting, finance, and budgeting; grant, project, and inventory management; as well as procurements. VRE is pursuing this new system to replace a number of current manual processes with data automation and improved reporting capabilities, and its deployment is expected to greatly improve process efficiencies agency-wide. It is also expected to have full geographic information system (GIS) integration that will streamline existing processes, particularly those focused on asset inventory management and condition assessments. Integration potential of the existing VTAMS system with VRE's planned ERP is also being studied. This project is currently anticipated to complete in summer 2023, and future updates of this plan will include final implementation details as they relate to VRE's decision support process.

6.1.4 Capital Project Ranking Tool

VRE is in the process of testing a Capital Project Ranking Tool that has been developed based on its existing prioritization process, but which adds a quantitative methodology to evaluate potential projects. The tool is an Excel-based workbook with two (2) primary data input forms: one for capital funding amounts by source, and another for project-level data. As a new project is added to the workbook, the decision-making questions are applied, with the project receiving points for each affirmative response. The project's total "base" points are then multiplied by a prioritization factor based on the hierarchy described in Section 6.1.2, resulting in a total project score. The tool's key analysis output is an overall ranking of projects by their total score and which can be filtered in a variety of ways, most notably by anticipated primary funding source. Also useful is an output that presents project ranking by funding source compared to that source's funding limit. While the tool is still in development, it is planned for future implementation, likely in 2023. It could then be used in the project development phase to inform the ultimate list of projects included in VRE's CIP.

6.2 Capital Improvement Program (CIP)

The CIP is a comprehensive inventory of VRE's capital needs, and the capital funding sources that have been identified for the six years of the plan. The primary purpose of the CIP is to provide a realistic picture of the funding outlook and the challenges VRE faces in securing adequate funding to pay for capital improvement projects. These projects are designed to maintain and enhance VRE's service by:

- Renovating and strengthening the core system;
- Improving the system's security and reliability; and
- Modernizing and expanding the system to accommodate increasing ridership demand.

In order to operate within funding constraints, VRE's CIP centers on the fundamental need to prioritize the most vital initiatives and investments necessary to achieve key safety, reliability, capacity, and sustainability goals. The FY 2023 capital budget is driven primarily by the need to meet established programmatic commitments and maintain the necessary financial capacity to address the most acute emerging and longstanding needs required to maintain the safety and reliability of essential capital assets.

6.2.1 CIP Project Categories and Types

In an effort to organize capital improvement projects in a logical manner, VRE has identified eight different project improvement categories for both SGR and expansion project implementation (Figure 6.3). Projects are organized within the CIP by their project improvement category.

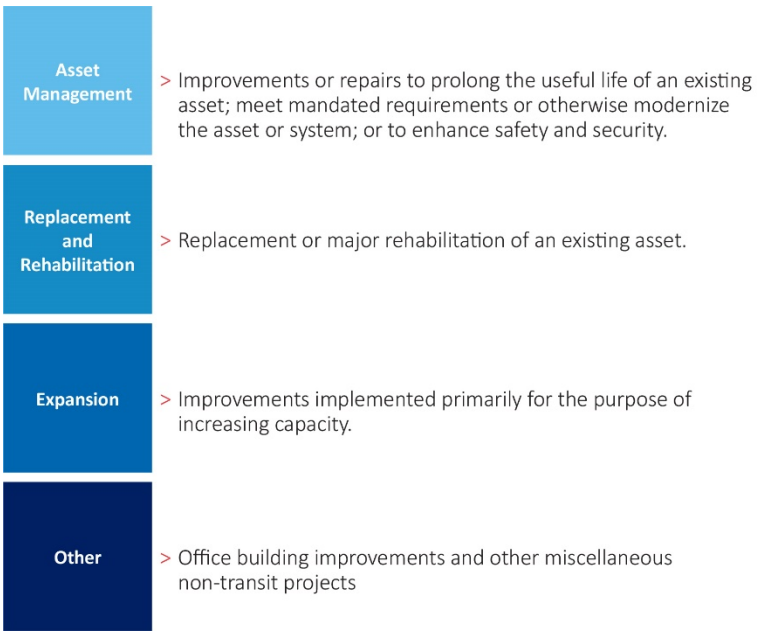
Figure 6.3 – Project Improvement Categories

Asset Management/ State of Good Repair (AM)	> Refers to projects that ensure that assets perform at their highest level throughout their service life, and to the formal effort to consistently address, evaluate, analyze and prioritize the condition of VRE's rolling stock and facilities.
Information Technology (IT)	> Includes projects that support the installation of an Enterprise Resource Planning system to support VRE operations and the upgrade of VRE's Transit Display System and Train Information Portal.
Passenger Station Facilities (ST)	> Includes projects that lengthen or widen existing station platforms, construct new platforms at current stations or add new stations to the system.
Rolling Stock Equipment (RS)	> Refers to the purchase of replacement or expansion locomotives and coaches; coaches may be either cab cars or trailers.
Station Parking (PK)	> Includes projects that modify or expand parking at specific VRE station locations. Parking may be provided in surface lots or as structured parking. Parking at a station can exclusively serve VRE riders but may also serve other users such as bus transit riders at multi-modal stations.
Track and Signal Infrastructure (TS)	> Refers to the installation of rail, ties, rail fastenings, hardware and roadbed over which trains operate; the electrical or mechanical signal devices used to control train movements; and other railroad infrastructure such as interlockings, crossovers, switches, or turnouts.
Train Maintenance and Storage Facilities (MS)	> Includes midday or overnight storage tracks and related switches, signals, or power sources; buildings, structures or equipment used to inspect, repair or maintain rolling stock; warehouse facilities; crew buildings; and other facilities or equipment such as employee parking or exterior fencing or lighting.
Other (OT)	> Projects that are unique because they span multiple categories; will be primarily funded by other stakeholders; or represent reserve contributions. Their inclusion with other categories could lead to a distorted understanding of funding needs.

Source: VRE FY 2023 to FY 2028 CIP

As described above, projects are broken down into the eight (8) improvement categories. To further categorize these capital improvement projects, VRE has established four different project types: *Asset Management*, *Replacement and Rehabilitation*, *Expansion*, and *Other*. These project types are described in Figure 6.4.

Figure 6.4 – Project Types



Source: VRE FY 2023 to FY 2028 CIP

6.3 Lifecycle Maintenance Programs

VRE's Rolling Stock and Facilities Programs both include routine maintenance programs for the upkeep of assets. The Facilities Program typically utilizes an informed process for maintaining assets, while the Equipment Program utilizes a systematic lifecycle management approach. These programs focus on project development for subcomponent-level assets (i.e. the lowest replaceable unit) in order to maintain assets in a SGR.

6.3.1 Rolling Stock Maintenance Program

The Rolling Stock Program, referred to as Equipment Program in VRE's CIP, utilizes a full lifecycle management approach, which includes routine maintenance activities, rehabilitation at quarterly intervals of asset life, and replacement at the end of an asset's lifecycle. Each subcomponent of rolling stock vehicles has an estimated lifecycle, documented in VRE's Rolling Stock Lifecycle Management Plan (2019) or subsequent updates or as specifically regulated by CFRs. In addition to structured lifecycle maintenance, VRE also tracks and evaluates the failure of subcomponents and examines technology changes, both formally and informally, to identify project development needs.

The key interval for VRE's lifecycle maintenance program is a four (4) year threshold, mandated by the Federal Railroad Association (FRA). If the frequency of change-out and/or maintenance is within four (4) years, then projects are developed and completed with O&M funds. Once the frequency of change-out

exceeds the four (4) year threshold, the project can be included within the CIP in order to utilize additional funding outside of VRE's O&M budget.

6.3.2 Facilities Maintenance Program

The Facilities Program also utilizes a lifecycle management approach, using data collected from condition assessments, safety inspections, and reports from facility staff and passengers to inform the program manager on the status of the facilities and the condition of various components and subcomponents. Projects are developed when subcomponents are found not within a SGR or when more comprehensive facility needs are identified and are often carried out "campaign style" (e.g., replacing all variable message signs systemwide). These projects can be completed by VRE directly through O&M funds or may require application of outside funds, and subsequently, included in the CIP.

VRE is planning to develop a lifecycle maintenance program for select subcomponent-level assets (i.e., elevators and generators). These assets will undergo a more detailed and systematic approach for rehabilitation and replacement, similar to the equipment's lifecycle maintenance program. VRE will document this approach in a future update of its Facilities Lifecycle Management Plan.

7 IMPLEMENTATION PROGRAM

This chapter provides a description of VRE's implementation strategy, including key activities to ensure integration of TAM program initiatives into its operational and management practices. To ensure both the TAM Plan and TAM program are meeting the needs of VRE and federal requirements, a continuous improvement plan is also provided. This chapter addresses FTA TAM Element 6 (Implementation Strategy), Element 7 (Key TAM Activities), and Element 9 (Continuous Improvement Plan).

7.1 Implementation Strategy

VRE's TAM program is an ongoing effort that began in 2013 and has included a review of federal requirements, development of an asset inventory, initial condition assessments, a lifecycle maintenance action plan, and a peer review of other transit agency efforts. This work represents the foundation for VRE's current program and TAM Plan development. VRE's TAM program will continue to evolve through ongoing improvements and as federal guidance and VRE's needs change.

49 CFR Part 625 Subpart C Section 625.25(b)(6) "…a TAM plan must include … (6) A provider's TAM plan implementation strategy ."

VRE has established a solid foundation for its TAM program and will continue to integrate asset management into all facets of the agency.

VRE's Operations Board holds monthly meetings and is provided regular updates during TAM Program development and TAM Plan progress. VRE's management team will continue to provide updates to ensure that TAM activities and needs are considered in the Operation Board's decision-making process.

7.2 Key Activities

During the four-year horizon period of this TAM Plan, VRE will perform key activities in support of its TAM program, illustrated in Figure 7.1 and discussed in greater detail in the sections that follow. These will include regularly scheduled activities to meet federal requirements and other non-required activities in which VRE is already engaged.

Figure 7.1 – VRE's Key TAM Activities

Activity Description	2022	2023				2024				2025				2026		
	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
VRE Operations Board Update*	X X X	X X X	X X X	X X	X X X	X X X	X X X	X X	X X X	X X X	X X X	X X	X X X	X X X	X X X	X X
Monthly Station Safety Inspections	X X X	X X X	X X X	X X X	X X X	X X X	X X X	X X X	X X X	X X X	X X X	X X X	X X X	X X X	X X X	X X X
Facilities Lifecycle Maintenance Program																
Equipment Lifecycle Maintenance Program																
CIP Update	X				X				X				X			
NTD TAM Reporting	X				X				X				X			
Condition Assessments																
Stakeholder Coordination	X				X				X				X			X X
TAM Plan Update**																X

* Dates subject to change

** Subject to Section 1.6 of this TAM Plan

	Continuous Effort / Range of Effort
X	Required Submittal / Specific Occurrence

Source: VRE 2022

7.2.1 VRE Operations Board Updates

VRE presents project-level update information to its Operations Board at regularly-scheduled monthly meetings. These include projects associated with its Lifecycle Maintenance programs and funding requests for TAM contract support. VRE also presents systemwide performance metrics and trend analysis, which are supported by ongoing asset maintenance and TAM performance target attainment.

7.2.2 Monthly Safety Inspections

VRE performs monthly safety inspections at all passenger stations and passenger parking facilities in which VRE operates. These inspections are conducted to identify deficiencies and to ensure the proper upkeep of these facilities. VRE uses a customized GIS-based application for collecting the condition data and for generating "Asset Below SGR" notices and follow-up "Corrective Action" forms, as described in Section 4.2.2. Safety inspections help support project decisions within the facilities program and provide maintenance tracking information for the condition assessments.

7.2.3 Lifecycle Maintenance Programs

VRE's Equipment and Facilities Programs include both a formal and informal approach to tracking and evaluating the performance of subcomponents and reviewing technology changes. The formal structure of the program includes routine maintenance, rehabilitation at quarterly intervals of asset life, and replacement at the end of an asset's life cycle. These programs include both routine daily checks of assets, as well as more targeted asset inspections/testing. Maintenance activities are typically coordinated sequentially, aligning with federally mandated thresholds and FRA inspection intervals. However, all of these activities within the lifecycle maintenance program help ensure assets are within a SGR and support the goals of VRE's TAM program. Additional detail on VRE's lifecycle maintenance programs is provided in this document in Section *6.3. (Lifecycle Maintenance Program)*, as well as in VRE's Rolling Stock and Facilities Lifecycle Management Plans (2019 and 2020, respectively).

49 CFR Part 625 Subpart C Section 625.25(b)(7) "…a TAM plan must include … (7) A description of key TAM activities that a provider intends to engage in over the TAM plan horizon period."

VRE performs both required and non-required TAM activities to ensure federal compliance as well as ongoing program development.

7.2.4 Capital Improvement Program (CIP) Update

VRE updates its CIP annually to cover a six-year horizon period. The CIP is a comprehensive inventory of VRE's capital needs and the corresponding funding sources identified to meet them. The primary purpose of the CIP is to provide a realistic picture of VRE's funding outlook and to highlight any challenges it faces in securing adequate funding to pay for capital improvement projects. VRE's most recent CIP document provides a description of the asset management projects currently programmed.

7.2.5 NTD TAM Reporting

As previously described in Section 5 (Reporting), VRE is required to submit asset inventory data and a narrative report to the FTA through NTD's Asset Inventory Module. Inventory data is submitted via multiple reporting forms – one each for facilities, revenue vehicles, service vehicles, and transit way mileage, plus a fifth for performance measures. These submittals establish VRE's annual performance targets, provide detail on existing condition/ULB of assets, and summarize progress towards performance target attainment and any change in inventory condition.

7.2.6 Condition Assessments

VRE performed condition assessments for all facility and infrastructure assets for which it has direct capital responsibility assets in the fall of 2021 to support the development of this TAM Plan. Condition assessments will be performed every four (4) years to provide updated condition information on capital assets for which an inspection-based approach is required in future revisions of the TAM Plan.

7.2.7 Stakeholder Coordination

The VRE service area lies within two (2) MPOs – the National Capital Region Transportation Planning Board (TPB), operating under the Metropolitan Washington Council of Governments (MWCOG), and the Fredericksburg Area MPO (FAMPO). In order to integrate VRE's TAM plans into statewide and metropolitan planning processes, FTA requires that transit providers share information regarding transit system condition, targets, investment priorities, and strategies. VRE accomplishes this by sending correspondence update letters to each annually to convey TAM-related NTD submittal content, as well as one (1) letter to each every four (4) years to convey VRE's final TAM Plans. In accordance with guidance offered to VRE in its most recent Triennial Review, VRE sends the same communications to DRPT. Additionally, TPB and FAMPO are legislatively empowered to authorize the use of federal funds on transit projects, and since the inception of MAP-21, are also required to coordinate their state of good repair performance measures with VRE.

7.2.8 TAM Plan Update

Ongoing development of VRE's TAM program and subsequent update of its TAM Plan will ensure that both VRE's needs and federal requirements are still being met. This TAM Plan will be reviewed and revised in accordance with Section 1.6 (Future Plan Updates and Amendments). As required by the FTA, a full comprehensive update of the TAM Plan will be conducted at least once every four (4) years before the conclusion of the existing plan's horizon period. Revisions of the TAM Plan will ensure that the TAM Plan meets both VRE's needs and federal requirements, and that it reflects program enhancements or milestones achieved.

49 CFR Part 625 Subpart C Section 625.25(b)(9) "…a TAM plan must include … (9) An outline of how a provider will monitor, update, and evaluate, as needed, its TAM plan and related business practices, to ensure the continuous improvement of its TAM practice ."

A full comprehensive update of the TAM Plan will be conducted at least once every 4 years, and numerous program enhancements are planned for implementation during its horizon period.

7.3 Continuous Improvement

In addition to the key TAM activities above, VRE plans numerous improvement activities in support of its TAM program during the four-year horizon period of this Plan. These are illustrated in Figure 7.2 and discussed in greater detail in the sections that follow. These program enhancements are intended to advance VRE's asset management capabilities and to improve the integration of its asset management practices across functional units throughout the organization. Many planned activities are the direct result of recommendations made after implementation of FTA's two publicly available asset management self-assessment tools, as described in Section 1.4.2 (FTA Assessment Tools) of this plan.

Figure 7.2 – VRE TAM Improvement Activities

Activity Description	2022	2023				2024				2025				2026		
	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
CIP Prioritization DST Development	X															
Facilities Condition Data Integration				X												
Update Rolling Stock LCM Plan					X											
Update Facilities LCM Plan					X											
Risk Management Process Integration																
TAM Training Content																
TAM Outreach Content																
Develop Equipment LCM Plan								X								
Develop Infrastructure LCM Plan								X								
TAM Self-Assessments	X														X	

Continuous Effort / Range of Effort
X Known Work Output

Source: VRE 2022

7.3.1 CIP Prioritization Decision Support Tool (DST) Development

This activity involves development of Capital Project Ranking Tool, previously described in Section 6.1.4. This new planned DST will supplement VRE's existing decision support processes by offering a quantitative methodology and approach for determining which projects get selected for VRE's CIP.

7.3.2 Facilities Condition Data Integration

This activity focuses on opportunities for integration between VRE's two existing condition assessment data support systems – VTAMS and its GIS-based applications. VTAMS currently reflects facilities and infrastructure condition data based on results from assessments conducted once every four years. VRE's GIS-based applications reflect more frequent condition data specific to passenger stations and parking facilities. Integrating condition data from VRE's GIS-based applications into VTAMS would provide the most up-to-date data and is planned in conjunction with an update of the Facilities Lifecycle Management Plan. Note that this activity has overlap with ERP system implementation, for which GIS integration is also being pursued, and there is potential for the ERP to replace VTAMS as the preferred implementation option for these data support capabilities.

7.3.3 Lifecycle Management Planning

VRE plans to update its two (2) existing Lifecycle Management Plans at the same frequency as its TAM Plans – once every four (4) years. Its Rolling Stock and Facilities Lifecycle Management Plans are targeted for update in the year following each TAM Plan update. Key goals of the first scheduled update are to develop workflow diagrams for those lifecycle phases currently discussed in text only; to review asset hierarchies of components and subcomponents, updating as needed; to perform and document the results of subcomponent-level criticality assessments; to better integrate asset condition and performance data outputs available from VRE's rolling stock contract operator, Keolis Rail Service Virginia (KRSV); to integrate facilities asset condition data among VRE's data support systems; to document data gains necessary for improving future performance modeling capability; and to generally advance capabilities necessary for the identification of total cost of ownership.

VRE also plans to development Lifecycle Management Plans for its Equipment (non-revenue vehicles) and Infrastructure (track) assets. These should follow the same outline as the existing Rolling Stock and Facilities Lifecycle Management Plans but may be completed with reduced effort, given lower criticality of the assets in question and lower proportional share of VRE's asset inventory.

7.3.4 Risk Management Process Integration

While a formalized risk management process is not required as part of an agency's TAM program, it is a best practice and a supportive process that is useful for project prioritization. VRE is committed to developing an initial TAM-related risk framework, inclusive of scoring metrics based on risk probability and severity, a custom risk register, and supporting SOP(s) as needed. Among other attributes, the risk register will identify each risk's owner, a description of the risk and its likely impacts, its overall risk rating, and corresponding mitigation strategies. Another key component of the framework is the establishment of appropriate time intervals and designation of personnel for ongoing review and update of the register. The new risk management framework is planned to complement but not necessarily to mirror the approach established in VRE's System Safety Program Plan and will be implemented at the category level in each of VRE's Lifecycle Management Plans. It can then be compiled at a summary level for inclusion in the next update of this TAM Plan.

7.3.5 TAM Training and Outreach Content

In multiple AMMSA interviews, VRE personnel identified the need for greater internal communication of TAM program initiatives, as well as expanded training opportunities. To this end, VRE has developed the first issue of its planned new TAM Newsletter and is planning the development of additional training and outreach content for VRE personnel to increase internal awareness of best practices and TAM program milestones and achievements. Future content may vary depending on the target audience and their asset management responsibilities and may include a mix of digital and print content. The frequency and scope of content development will be determined in the near future.

7.3.6 TAM Self-Assessments

VRE plans to perform asset management maturity self-assessments in conjunction with future TAM Plan updates, or at least every four (4) years, in order to track quantifiable progress over time and to identify opportunities for additional program advancement. VRE will also perform an assessment of each TAM plan document version as a component of its after-action review.

7.4 Ongoing Engagement

The ability to efficiently manage VRE's transit assets depends on more than just VRE employees and stakeholders already identified with which VRE coordinates. Member agencies, elected officials, customers/community, regulators, and vendors all have their own expectations for the transit system. This TAM Plan was written to help meet those expectations, while simultaneously balancing VRE's internal priorities. Additional stakeholders will be engaged in meaningful ways in the implementation of the actions from this Plan.

7.4.1 Riding Public

VRE would not exist if not for the customers that use its transit service. VRE's customers depend on transit for commuting to jobs, education, healthcare, etc., and they put their trust in the equipment and operators to get them to their destination safely. VRE strives to ensure that its assets remain in a SGR to minimize the occurrence of asset failures during operation, thus maintaining the confidence of VRE's most important stakeholder.

Each neighborhood in VRE's service area has its own unique transit needs based on its demographics, business composition, services, culture, environmental attributes, and physical design. In addition, residents of these communities that do not currently ride transit have their own expectation and influence on the transit system through community organizations and their legislative representatives.

7.4.2 Member Agencies

VRE is a transportation partnership of the Northern Virginia Transportation Commission (NVTC) and the Potomac and Rappahannock Transportation Commission (PRTC). The NVTC is comprised of Arlington, Fairfax, and Loudon counties, and the cities of Alexandria, Falls Church and Fairfax. PRTC encompasses Prince William, Stafford and Spotsylvania counties and the cities of Manassas, Manassas Park and Fredericksburg. VRE depends on these member agencies for funding, especially with respect to communicating current and future investment needs.

7.4.3 Metropolitan Planning Organizations (MPOs)

As a required component of FTA's TAM Final Rule, VRE's ongoing coordination with its MPOs is described in Section 7.2 (Key Activities).

7.4.4 Regulators

The Federal Transit Administration (FTA), Federal Railroad Administration (FRA), Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), and other agencies all directly influence how VRE's transit assets are managed, through rulemaking and oversight. VRE will monitor regulatory changes and implement future TAM Program updates as warranted.

7.4.5 Vendors

The performance and pricing of service providers, contractors, consultants, material supplies, and other vendors directly affect VRE's ability to deliver projects on-time and on-budget. Issues with vendor performance and/or pricing may have a profound impact on the performance of the transit system at large.

7.5 Summary

VRE will continue to implement its TAM program through adherence to FTA and NTD reporting requirements, further development and refinement of its overall TAM program, and efforts within VRE to encourage employees and stakeholders to fully embrace TAM as a practice for maintaining assets in a SGR over the asset's lifecycle.

APPENDIX A

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Transit Cooperative Research Program (TCRP) Report 157 – State of Good Repair: Prioritizing the Rehabilitation and Replacement of Existing Capital Assets and Evaluation the Implications for Transit (2012)

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Virginia Railway Express (VRE) System Plan 2040 Study – Final Report (February 2014)

Virginia Railway Express (VRE) 2020-2025 Transit Development Plan

Virginia Railway Express (VRE) System Safety Plan

VRE FY22 Annual Budget, Fiscal Year 23 Recommended Budget, and 6-year Financial Forecast and Capital Program

VRE Recommended Budget for Fiscal Year 2019, Amended Budget for Fiscal Year 2018, Six-Year Financial Forecast and Capital Program (December 15, 2017)

VRE Long Range Life Cycle Maintenance Action Plan – FINAL (February 13, 2013)

APPENDIX B

VRE Fiscal Year 2023 to Fiscal Year 2028

Capital Investment Program

FY 2023 - FY 2028

Capital Improvement Program

Introduction

The FY 2023 – 2028 VRE Capital Improvement Program (CIP) is an integrated set of projects and programs that will improve passenger safety and operational efficiency, maintain the system in a state of good repair, and expand capacity. The six-year CIP includes both fully- and partially-funded projects. Future projects that are unfunded are not shown in the six-year program but are discussed separately.

- **Funded** projects are those that are funded through federal formula grants received annually by VRE; through state funding in accordance with the Commonwealth's Six-Year Improvement Program (SYIP); through already allocated funds from other entities, such as NVTA, FAMPO or a VRE jurisdiction; or through other committed sources.
- **Partially funded** projects are those that are pending a discretionary allocation by a funding authority or for which a funding source has not yet been identified. Because discretionary funding relies on the actions of other entities, funds may not be available when needed.

In addition to grants and other funding agreements with outside partners, VRE has the following internal funding mechanisms to support the capital program:

- **The Commuter Rail Operating and Capital (C-ROC) Fund** was created by the General Assembly in 2018. C-ROC funding is dedicated to "retaining, maintaining, improving, and developing commuter rail-related infrastructure improvements and operations" in the Commonwealth. VRE receives a dedicated allocation of $15 million annually from C-ROC that may be used to support the cost of VRE's commuter rail operations as well as to make necessary capital investments and improvements, either on a pay-as-you-go basis or through the issuance of debt. C-ROC funding may be used as matching funds for state and federal grants.
- **The Capital Reserve** was created in order to complete projects, take advantage of grant opportunities that require substantial local match, or to fund initial costs to support major grant proposals or evaluate alternatives. Funding is provided from prior year surpluses, the sale of assets, and, beginning in FY 2015, from a $3 million annual jurisdictional contribution included in the budget.

Description of the CIP

The VRE Capital Improvement Program is designed to maintain VRE passenger equipment and facilities in a state of good repair and to accommodate growth within adopted service and safety standards. Projects and programs in the CIP fall into one of the following categories:

- The acquisition of land for a public purpose.
- The construction or purchase of an asset of significant size, including rolling stock and other equipment, facilities, railroad infrastructure and automated systems.
- Rehabilitation or major repair to all or part of a major facility, piece of equipment, or other asset, beyond the level considered as routine annual maintenance.
- Any specific planning, engineering, design work or grant and project management costs related to an individual project falling within the first three categories.
- Any long-term grant funded projects for which inclusion in the CIP is considered appropriate.

Priorities: Projects included in the CIP are prioritized with an emphasis on passenger safety, regulatory requirements, and maintaining current equipment and facilities in a state of good repair. In addition, expansion projects are selected in accordance with VRE's System Plan 2040 and with the state's Transforming Rail in Virginia (TRV) program.

Board/Commission Approval: Once the CIP has been developed, it is forwarded as part of the budget to the VRE Operations Board. With their approval, the budget goes to the Commissions for final authorization. The VRE budget process begins in the summer, with approval by the Operations Board in December and Commissions in January. Grant applications for the next fiscal year are prepared based on the approved CIP. The Operations Board and Commissions formally approve the current year of the CIP and amendments to the prior year.

Project Information: Detailed project information is provided, including a summary of funding sources for each project. FY 2022 funding reflects the amended budget for that year. In order to provide a complete picture of each project, funding and cost information is provided from the inception of the project through to its conclusion.

Prior Year Projects: Projects fully funded in prior years are reported in the CIP until all work on the project is completed.

The Capital Improvement Program (CIP) is a comprehensive inventory of VRE's capital needs, and the capital funding sources that have been identified for the six years of this plan (FY 2023 to FY 2028). The primary purpose of the CIP is to provide a realistic picture of the funding outlook and any challenges VRE may face in securing adequate funding to pay for needed capital improvements. The majority of the projects in VRE's six-year program are fully funded; however, certain key projects are only partially funded and additional funding must be identified. VRE's internal funding sources (C-ROC funds and the Capital Reserve) may be programmed to fill some of these gaps, but VRE will also continue to pursue additional funding at the federal, state, and local level in order to fully fund the capital program.

In FY 2016, VRE developed a financial analysis that compared the capital and operating needs associated with various service profiles (including implementation of System Plan 2040) to available funding sources and quantified the need for additional funding. This analysis was critical to making the case to the General Assembly for the creation of the CROC Fund. In FY 2019, VRE completed an update of the financial analysis that accounted for changes in operating expense and revenue trends, available capital funding, and project scopes and schedules. This analysis confirmed that C-ROC support for operations is not expected to be needed in the near- to medium-term, which will allow C-ROC to continue to support transformative capacity-enhancing capital projects during the next ten years.

The capital improvement projects are designed to maintain and enhance VRE's service by renovating and strengthening the core system; improving the system's security and reliability; and modernizing and expanding the system to accommodate increasing ridership demand. This CIP is a snapshot of the current outlook and is updated periodically as projects are further developed and the funding environment evolves.

Capital Financial Outlook

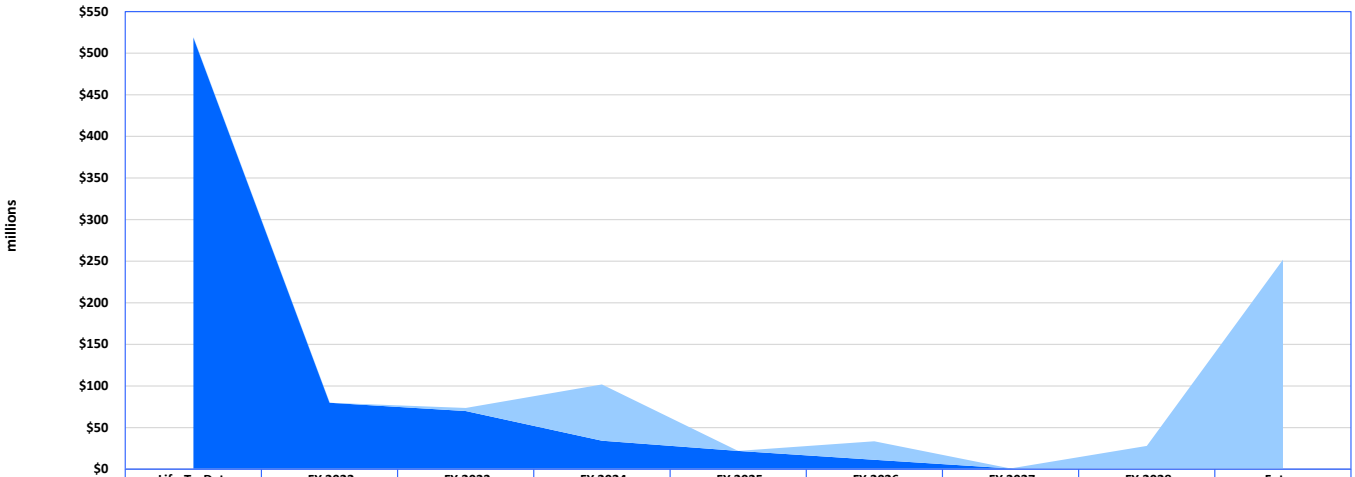
The overall outlook for the FY 2023 to FY 2028 CIP is generally positive, despite the ongoing COVID-19 pandemic. Political and legislative actions over the past few years – including the creation of the dedicated C-ROC Fund at $15 million per year, the commitment by the Commonwealth to continue current levels of reimbursement for track access fees, and the creation of the Virginia Passenger Rail Authority as part of the Transforming Rail in Virginia program – have created an environment that is supportive of VRE's long-term growth.

Some funding challenges do remain, however, particularly beyond the immediate six-year period. On the capital side, certain key near-term projects are still partially unfunded, and while CROC and Capital Reserve funds may be available to fill some gaps, an ongoing VRE priority for FY 2023 will be to continue to work with local, state and other partners on securing additional funding for the commuter rail system. The statutory limitations on the use of VRE's primary source of federal formula funding (the Section 5337 State of Good Repair program) further complicates the capital funding picture.

Finally, this six-year CIP includes new projects to expand VRE's rolling stock (both locomotives and coaches). This expansion is currently programmed for roughly the FY 2028 to FY 2032 period, with the first major expenditures expected in FY 2028, which is why they are included in this six-year plan. This fleet expansion is currently unfunded and represents a significant majority of the total unfunded amount in the CIP.

Given current estimates, total project costs for projects in the FY 2023-FY 2028 CIP (including all costs to complete) are approximately **$1.109 billion**. Committed funding for these projects currently totals **$736.4 million** (66% funded) from a range of federal, state, regional, and local sources. This figure includes life-to-date funding through FY 2022. The graph below represents VRE's funded and unfunded project costs for projects included in the FY 2023 – 2028 Six Year Plan, with future unfunded amounts for those projects also shown.

Capital Financial Outlook FY 2023 - FY 2028



	Life-To-Date	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Future
Unfunded	0.00	0.00	3.77	67.57	0.00	22.12	0.00	27.80	251.70
Funded	518.56	79.75	69.71	34.21	21.85	11.33	0.92	0.11	0.00

Capital Sources and Uses

Capital projects frequently rely on funds obligated in prior years, unlike operating expenses. Most grants are awarded on a reimbursement basis, and grant allocations can be obtained for specific projects and programs over multiple years during which they can "accumulate" and be committed to a contract when the balance is sufficient for that phase of the project to proceed. The construction phase of a capital project will not be initiated unless and until the entire underlying funding commitment is in place.

In order to operate within funding constraints, VRE's CIP centers on the fundamental need to prioritize the most vital initiatives and investments necessary to achieve key safety, reliability, capacity, and sustainability goals. The FY 2023 capital budget is driven primarily by the need to meet established programmatic commitments and maintain the necessary financial capacity to address emerging and longstanding needs required to maintain the safety and reliability of essential capital assets.

Capital funds come from a wide variety of federal, state, regional, and local sources. Except for FTA Section 5307 and 5337 formula allocations and the associated state transit capital match and local matching funds, most of VRE's capital funding sources are one-time competitive or discretionary grants. Given the magnitude of VRE's capital needs over the next six years and beyond, an aggressive approach to securing discretionary grants has been pursued in recent years and will continue to be necessary. Advocacy for project grant funding must be continuous at the local, regional, state, and federal levels from the moment a project is initiated. This process is intensive and requires the

coordinated efforts of VRE staff, other local and regional bodies, and elected officials. The charts and graphs at the end of this section show the magnitude of the various funding sources on which VRE relies.

Decision-Making Factors

VRE considers several factors when determining which capital projects are allocated the limited funding that is available, including:

- Does the expenditure maintain the system in a state of good repair?
- Does this expenditure help VRE manage risk? Does this expenditure address VRE's biggest identified sources of risk?
- Does this expenditure close an identified need (i.e., a gap between target and actual service levels)?
- Does this expenditure minimize life-cycle cost?
- Does this expenditure yield ongoing operational cost savings either through efficiency or reduced risk?
- Project continuity: Is this project already underway and does it need ongoing funding to continue implementation from a prior year?
- Project interdependence: Are other projects dependent on this project? Is this project dependent on others?

Commuter Rail Operating and Capital (C-ROC) Fund

As part of the FY 2020 budget, the Operations Board adopted the follow criteria for programming of C-ROC funds:

1) C-ROC funds should be prioritized to projects that are not eligible for typical VRE discretionary capital funding sources, such as DRPT Smart Scale or NVTA regional funding.
2) C-ROC funds should be prioritized to projects where a commitment of local funding could leverage significant state or federal matching funds.
3) C-ROC funds should support projects that are necessary in order to allow for future capacity expansion.
4) VRE should continue to use the Capital Reserve to fund smaller needs (such as minor cost or scope changes in an existing project) and should use C-ROC funds on 'transformative' projects.
5) VRE should consider C-ROC funds as a supplementary funding source for the replacement of major existing assets such as railcars.

Based on these criteria, the Operations Board committed three years of C-ROC funding to two critical projects:

- FY 2019: $15 million for L'Enfant Station Improvements
- FY 2020: $15 million for Crystal City Station Improvements
- FY 2021: $15 million for L'Enfant Station Improvements

In March 2021, VRE executed a Funding Agreement with DRPT (that was subsequently assigned to the Virginia Passenger Rail Authority) for a contribution to the TRV program using C-ROC funds. The agreement lays out a basic structure whereby VRE will issue debt backed by the C-ROC (with an expected term of 30 years) and contribute the proceeds of the debt issuance to the Commonwealth for the purchase of rail right-of-way from CSXT. In addition, for a period of ten years, VRE will contribute any remaining C-ROC funds not being used for debt service on a pay-as-you-go (PAYGO) basis to the Commonwealth for use on critical rail projects in VRE's service territory, including the Long Bridge, the Alexandria Fourth Track, and the Springfield Bypass.

Unfunded Projects and Unprogrammed Funding Sources

Approximately $373.0 million (34%) of VRE's $1.109 billion CIP is currently unfunded. This figure includes the Broad Run Expansion and the L'Enfant Station and Fourth Track projects that are within the six-year window, and Fleet Expansion railcars and locomotives that are primarily beyond the next six years, as well as other smaller projects. These unfunded needs will be addressed in future budget cycles through a combination of applications for discretionary funding as well as the programming of internal VRE funds.

In addition to these unfunded projects, the six-year CIP period also includes federal grant funds – primarily Section 5337 State of Good Repair (SGR) funds and the associated state and local match – that are not currently programmed to a specific project. The total unprogrammed amount (inclusive of the required match) is approximately $123 million over the entire CIP period, with the majority of those unprogrammed funds in the last three years of FY 2026-2028. VRE's total projected federal grant allocation plus match over the FY 2023-2028 period is approximately $237 million.

In the past, when VRE's allocation of federal funds was smaller and its investment needs for SGR projects were larger, VRE was able to fully program its federal funds each year. Now, while VRE is still able to program the majority of its funds for projects such as debt service, Washington Union Terminal, midday storage, and asset management activities, a portion of the funds remains unprogrammed. Unfortunately, these SGR funds are not available to support VRE's capacity expansion projects, and VRE's primary existing assets – railcars, locomotives, stations, parking lots, and yards – do not require significant rehabilitation or replacement at this time. VRE is working with stakeholders, including the Federal Transit Administration, on alternative strategies to utilize this SGR funding in a timely manner. In addition, VRE believes it is prudent at this time to keep some of these funds unprogrammed in the event that economic changes or other uncertainties lead to significant cost increases for existing SGR projects.

CIP Project Sheets

The CIP includes 30 separate projects. For ease of understanding, these individual projects have been grouped into **categories** with identifying project IDs:

Asset Management/State of Good Repair (AM) – refers to projects that ensure that assets perform at their highest level throughout their service life, and to the formal effort to consistently address, evaluate, analyze and prioritize the condition of VRE's rolling stock and facilities.

Information Technology (IT) – Includes project that supports the installation of an Enterprise Resource Planning system to support VRE operations and the Upgrade of VRE's Transit Display system and train information portal.

Passenger Station Facilities (ST) – includes projects that lengthen or widen existing station platforms, construct new platforms at current stations or add new stations to the system.

Rolling Stock Equipment (RS) – refers to the purchase of replacement or expansion locomotives and coaches; coaches may be either cab cars or trailers.

Station Parking (PK) – includes projects that modify or expand parking at specific VRE station locations. Parking may be provided in surface lots or as structured parking. Parking at a station can exclusively serve VRE riders but may also serve other users such as bus transit riders at multi-modal stations.

Track and Signal Infrastructure (TS) – refers to the installation of rail, ties, rail fastenings, hardware and roadbed over which trains operate; the electrical or mechanical signal devices used to control train movements; and other railroad infrastructure such as interlockings, crossovers, switches, or turnouts.

Train Maintenance and Storage Facilities (MS) - includes midday or overnight storage tracks and related switches, signals, or power sources; buildings, structures or equipment used to inspect, repair or maintain rolling stock; warehouse facilities; crew buildings; and other facilities or equipment such as employee parking or exterior fencing or lighting.

Other (OT) – projects that are unique because they span multiple categories; will be primarily funded by other stakeholders; or represent reserve contributions.

In addition, projects are classified by project **type**, as follows:

Asset Management – improvements or repairs to prolong the useful life of an existing asset; meet mandated requirements or otherwise modernize the asset or system; or to enhance safety and security.

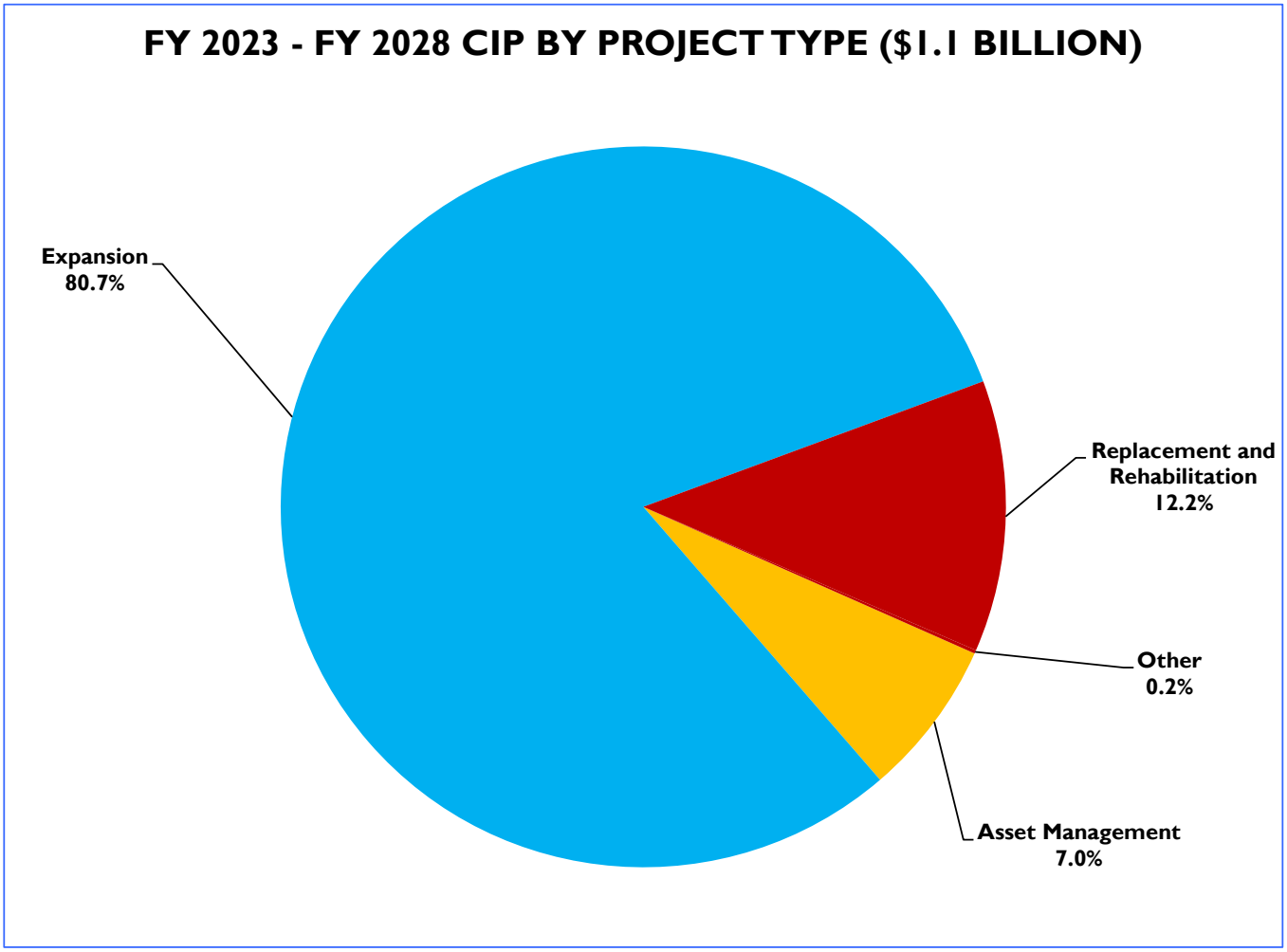
Replacement and Rehabilitation - replacement or major rehabilitation of an existing asset.

Expansion – improvements implemented primarily for the purpose of increasing capacity.

Other – Office building improvements and other miscellaneous non-transit projects.

Several projects are in process that will benefit VRE but are being undertaken by others: the construction of the Potomac Shores VRE station; the Fredericksburg Line Third Track project(s) and the Fourth Track between RO (Rosslyn) and AF (Alexandria) being undertaken by DRPT and VPRA; and potential parking additions. Although these projects are important to the operation of the VRE system, they are not included in the CIP. More information on these projects is provided after the project pages, along with a brief discussion of other future projects that may or may not be undertaken by VRE.

The tables below list the individual projects within each category and show the funding needs by year for the total program. A summary of the funding sources for the FY 2023 to FY 2028 CIP indicating the amount unfunded by year is also provided. No unfunded amounts are reflected through FY 2023, since project work cannot be authorized unless funding is available. Any funding-related delays to the project schedule are noted on the individual project sheets.



(amounts in millions of $)

Project Type	Project Cost	Funded	Unfunded
Asset Management	77.8	77.8	
Expansion	894.9	521.9	373.0
Replacement and Rehabilitation	135.0	135.0	
Other	1.7	1.7	
Total	**1,109.4**	**736.4**	**373.0**

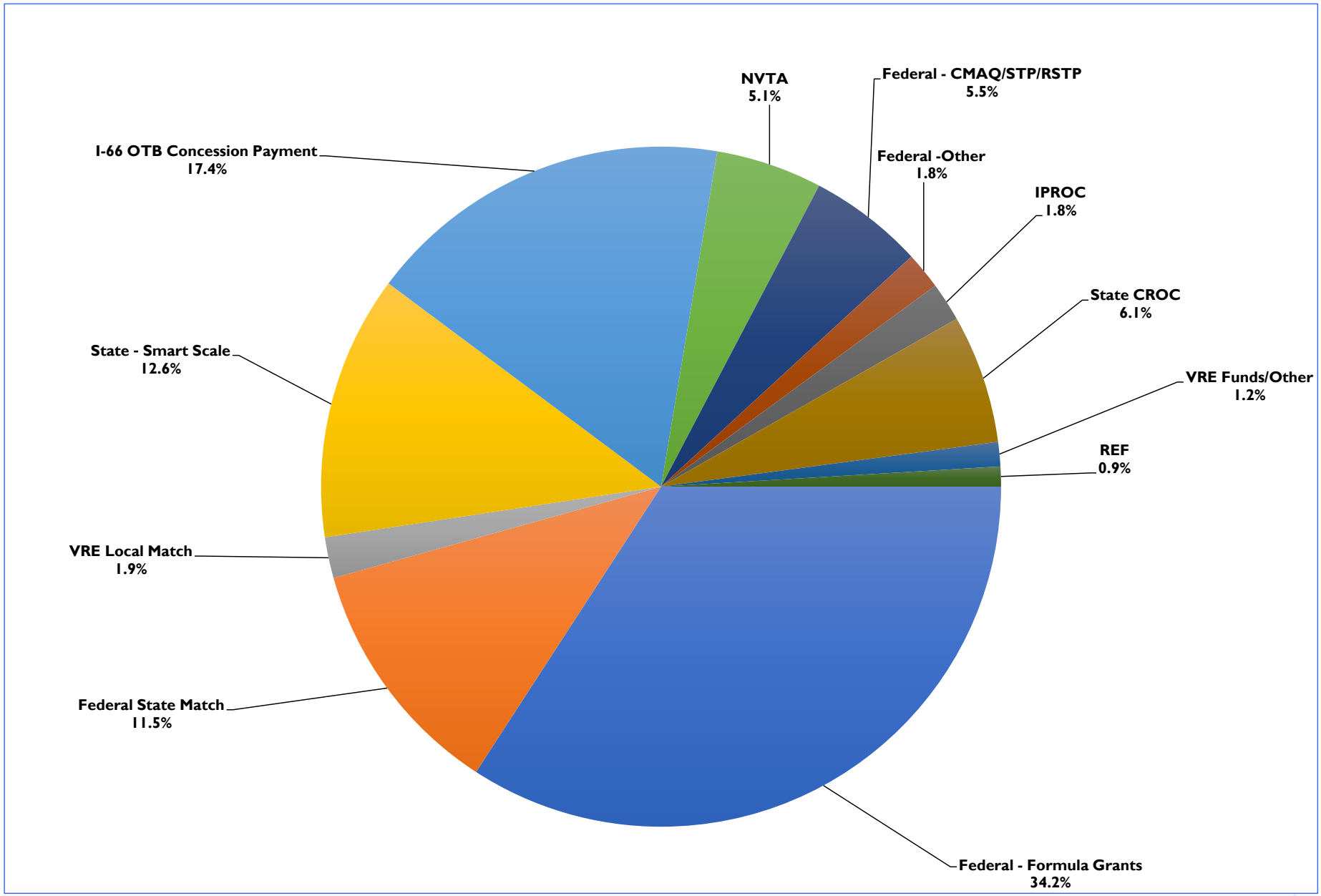
Capital Improvement Program by Program Area *(amounts in millions of $)*

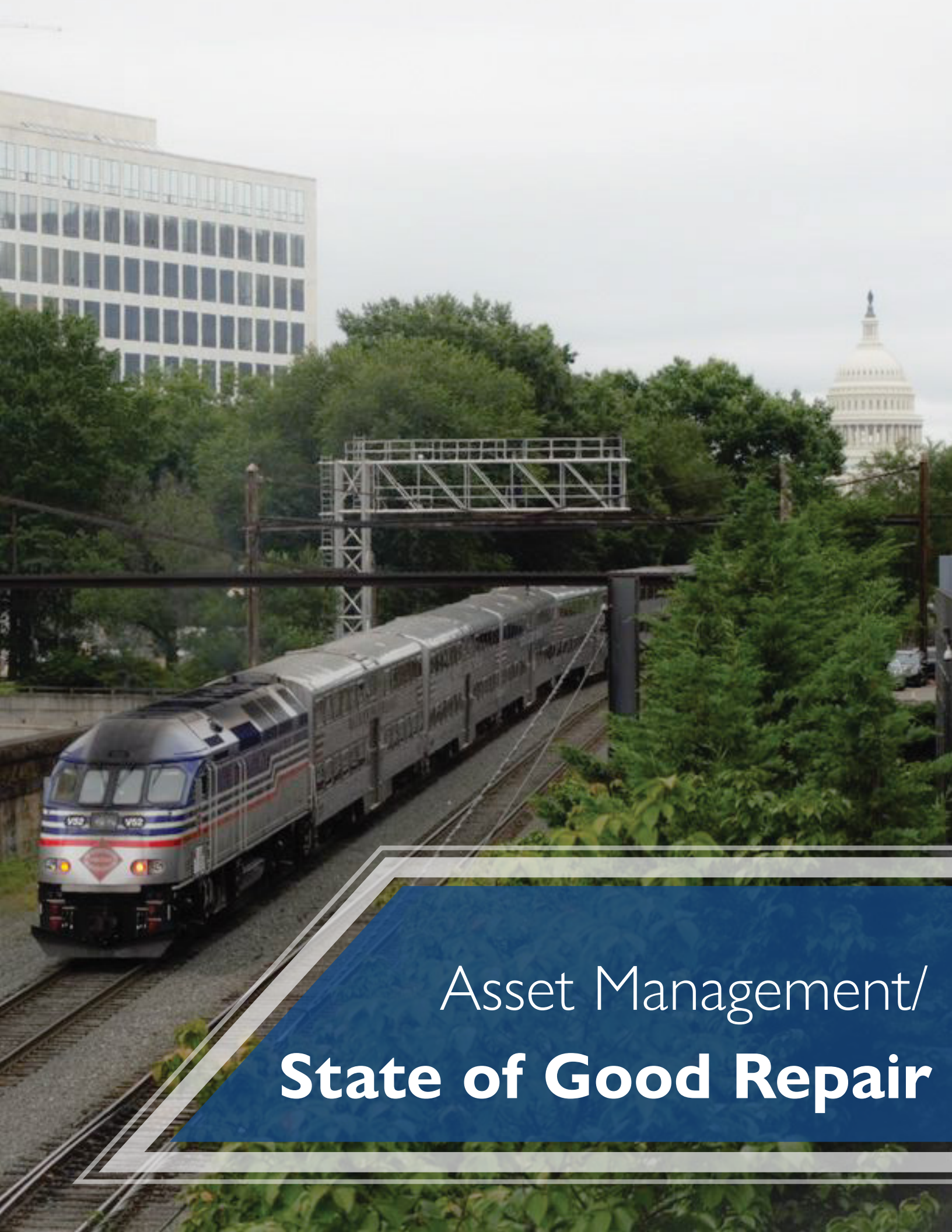
Program Name	Project Name	Life-To-Date	FY 2022 Amended Budget	FY 2023 Proposed Budget	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Future	Total
Asset Management/State of Good Repair	Automatic Passenger Counters	1.3	1.6								2.9
	Enhancement Grant - Security	0.7	0.3	0.1	0.1	0.1	0.1	0.1	0.1		1.7
	Equipment Asset Management Program	9.5	6.6	10.9	9.4	4.2	2.3	2.2	2.1		47.4
	Facilities Asset Management Program	4.1	3.0	2.6	1.5	1.7	0.7	0.5	0.7		14.9
	Fredericksburg Station Rehabilitation	0.5	1.4	3.2							5.0
	Security Cameras	1.2	0.3	0.6	0.3						2.4
	Realtime Multimodal Traveler Information		0.4	1.0	2.1						3.5
Asset Management/State of Good Repair Total		**17.4**	**13.6**	**18.4**	**13.4**	**6.1**	**3.1**	**2.8**	**2.9**		**77.8**
Information Technology	ERP Implementation	0.9	0.8	1.1							2.8
	TRIP /VMS Upgrade	0.5	0.5								1.0
	Website Redesign		0.4								0.4
Information Technology Total		**1.3**	**1.7**	**1.1**							**4.1**
Passenger Station Facilities	Alexandria Station Improvements	3.8	0.2	5.0	16.0	6.6					31.6
	Backlick Road Station Improvements				0.3	0.2	0.5	1.3	3.8		6.0
	Brooke Station Improvements	0.5						0.4	1.3	6.5	8.8
	Crystal City Station Improvements	1.5	1.3	2.8	14.8	14.8	14.8				50.1
	Franconia-Springfield Station Improvements	1.1	0.4	0.8	5.7	6.9	3.9				18.9
	Leeland Road Station Improvements	0.4			0.3	0.3	1.3	2.6	1.3		6.3
	L'Enfant Station Improvements	0.5	0.4	2.0	4.1	3.0	24.6	25.0	25.0		84.6
	Quantico Station Improvements	1.6	8.9	8.8	4.7						24.0
	Rolling Road Station Improvements	0.8	4.2								5.0
	Washington Union Station Improvements		24.8	10.0	10.0	10.0					54.8
	Woodbridge Station Improvements					1.4	1.4				2.7
	Manassas Station Improvements		0.0	0.3	1.6	3.2	4.0				9.1
Passenger Station Facilities Total		**10.1**	**40.3**	**29.7**	**57.5**	**46.5**	**50.6**	**29.3**	**31.4**	**6.5**	**301.8**
Rolling Stock Equipment	Fleet Expansion Coaches (21 New Railcars)		16.1	6.5	3.2	0.8		56.4		1.6	84.6
	Fleet Expansion Locomotives - Manassas Line								5.8	53.0	58.8
	Fleet Expansion Coaches - Fredericksburg Line								22.0	198.7	220.7
Rolling Stock Equipment Total			**16.1**	**6.5**	**3.2**	**0.8**		**56.4**	**27.8**	**253.3**	**364.1**
Station Parking	Leeland Road Parking Improvements		0.2	0.4	2.5	2.5					5.5
	Manassas Park Parking Improvements	1.9	1.0	2.5	25.0						30.4
Station Parking Total		**1.9**	**1.2**	**2.9**	**27.5**	**2.5**					**36.0**
Train Maintenance and Storage Facilities	Crossroads MSF Storage Expansion		0.3	0.4	2.4	5.3					8.4
	Life-Cycle Overhaul and Upgrade Facility	11.5	18.0	22.7							52.2
	New York Avenue Midday Storage Facility	2.9	2.7	39.5	18.1	18.1	18.1				99.4
	Broad Run Expansion (BRX)	6.0	26.0	29.2	40.0	40.0	22.8				164.0
Train Maintenance and Storage Facilities Total		**20.5**	**47.0**	**91.8**	**60.5**	**63.4**	**40.8**				**323.9**
Misc. (Multiple Categories)	Forklifts purchase		0.3								0.3
	Office Renovation - Suite 202	0.5	1.0								1.4
Misc. (Multiple Categories) Total		**0.5**	**1.2**								**1.7**
Grand Total		**51.6**	**121.2**	**150.3**	**162.2**	**119.2**	**94.5**	**88.5**	**62.1**	**259.8**	**1,109.4**

Capital Improvement Program by Commited Funding Source *(amounts in millions of $)*

Source	Funding Source	Life-To-Date	FY 2022 Amended Budget	FY 2023 Proposed Budget	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Total
Federal - Formula Grants	Federal - Formula Grants	168.8	25.1	25.1	20.4	8.6	2.7	0.7	0.1	251.5
	Federal State Match	56.4	8.8	8.8	6.2	3.8	0.5	0.1	0.0	84.8
	VRE Local Match	9.6	1.4	1.4	1.1	0.6	0.1	0.0	0.0	14.3
Federal - Formula Grants Total	-	234.8	35.3	35.3	27.8	13.1	3.4	0.9	0.1	350.7
Discretionary Grants & Other	State Smart Scale	25.6	39.6	27.5						92.6
	I-66 OTB Concession Payment	128.5								128.5
	NVTA	21.4				7.9	7.9			37.2
	Federal - CMAQ/STP/RSTP	24.3	3.6	6.3	5.2	0.9				40.3
	Federal CARES Act	0.9								0.9
	Federal Funds - Other	9.3								9.3
	Federal -Other	1.0		0.6	1.1					2.8
	IPROC	13.6								13.6
	State CROC	45.0								45.0
	VRE Capital Reserve	6.4	1.3		0.0					7.7
	REF	7.0								7.0
	City of Manassas Park	0.7								0.7
	VRE Capital Planning Fund (98)	0.1								0.1
Discretionary Grants & Other Total		283.8	44.4	34.4	6.4	8.8	7.9			385.8
Grand Total		**518.6**	**79.7**	**69.7**	**34.2**	**21.9**	**11.3**	**0.9**	**0.1**	**736.4**

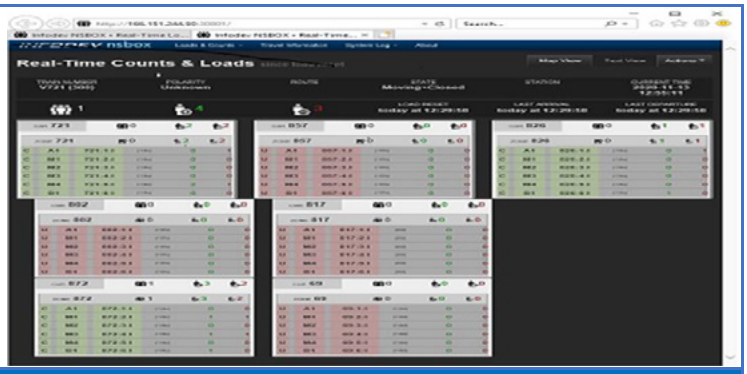
FY 2023 - FY 2028 CIP: Committed Funding By Source





Asset Management/
State of Good Repair

Project Name:
Automatic Passenger Counters
Project ID:
AM-2
Program Name:
Asset Management/State of Good Repair
Project Type:
Asset Management
Location:
N/A



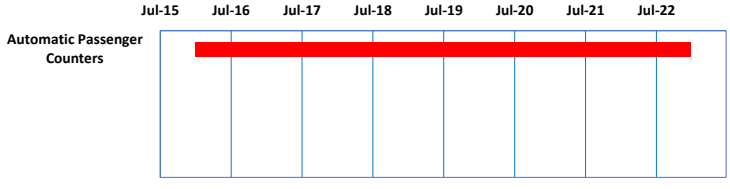
Project Description

In the past, passenger counts have been performed manually by train conductors each morning and evening to comply with the National Transit Database (NTD) and internal VRE reporting needs. This project provides for the installation of automatic passenger counters as riders board and detrain. The passenger counters will also allow gathering of additional passenger information for use in planning and operational analyses. All new rail cars purchased by VRE will have the APC equipment installed during the construction process. As of December 2021, APC installation is complete, but final testing and validation have not been completed.

Project Funding

This project is funded with federal 5307 (Urbanized Area formula program) grants requiring a 20% local match.

Schedule Information		
Phase	**Start Date**	**Finish Date**
Automatic Passenger Counters	1/1/2016	12/31/2022



Project Schedule as of 11/22/2021

Funding Source	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Federal - Formula Funds	2,320,000									2,320,000
Federal State Match	464,000									464,000
VRE Local Match	116,000									116,000
Unfunded (To Be Determined)										
Total Funding	**2,900,000**									**2,900,000**

Spending Plan	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Total Spending Plan	**1,409,635**	**1,490,365**								**2,900,000**

Project Name:
Enhancement Grant - Security
Project ID:
AM-4
Program Name:
Asset Management/State of Good Repair
Project Type:
Asset Management
Location:
N/A

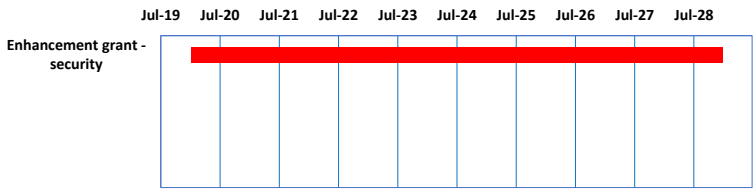
Project Description

Grantees receiving federal 5307 funds must certify that at least 1% of funding received each fiscal year is being used for transit security projects. Eligible projects include improvements to station lighting and security, systems safety consulting, and security drills with first responders.

Project Funding

Projects are funded through 1% set-aside of federal 5307 annual allocations for transit security projects. Annual allocation is $105,000.

Schedule Information		
Phase	**Ongoing**	
Enhancement grant - security		



Funding Source	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Federal - Formula Funds	728,178	84,000	84,000	84,000	84,000	84,000	84,000	84,000		1,316,178
Federal State Match	141,162	16,800	16,800	16,800	16,800	16,800	16,800	16,800		258,762
VRE Local Match	85,505	4,200	4,200	4,200	4,200	4,200	4,200	4,200		114,905
Unfunded (To Be Determined)										
Total Funding	**954,844**	**105,000**	**105,000**	**105,000**	**105,000**	**105,000**	**105,000**	**105,000**		**1,689,844**

Spending Plan	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Total Spending Plan	**718,446**	**341,398**	**105,000**	**105,000**	**105,000**	**105,000**	**105,000**	**105,000**		**1,689,844**

Project Name:
Equipment Asset Management Program
Project ID:
AM-5
Program Name:
Asset Management/State of Good Repair
Project Type:
Asset Management
Location:
N/A

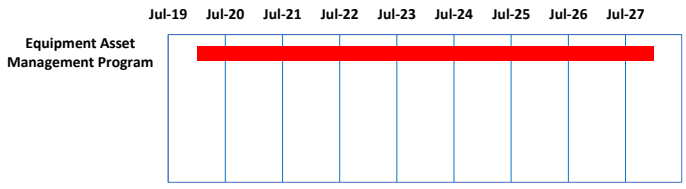
Project Description

This ongoing program provides funding for major lifecycle overhaul and upgrade costs for VRE rolling stock to ensure all equipment is maintained in a state of good repair in accordance with VRE's Maintenance Management Plan and Transit Asset Management program.

Project Funding

This program is funded with federal 5337 (Rail State of Good Repair) formula grants requiring a 20% local match.

Schedule Information		
Phase	**Ongoing**	
Equipment Asset Management Program		



Funding Source	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Federal - Formula Funds	28,459,600	1,672,000	1,584,294	1,357,492	1,520,000	2,663,200	648,000			37,904,587
Federal State Match	5,691,920	334,400	316,859	271,498	304,000	532,640	129,600			7,580,917
VRE Local Match	1,422,980	83,600	79,215	67,875	76,000	133,160	32,400			1,895,229
Unfunded (To Be Determined)										
Total Funding	**35,574,500**	**2,090,000**	**1,980,368**	**1,696,865**	**1,900,000**	**3,329,000**	**810,000**			**47,380,733**

Spending Plan	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Total Spending Plan	**9,529,117**	**6,643,816**	**10,930,000**	**9,429,800**	**4,245,000**	**2,303,000**	**2,200,000**	**2,100,000**		**47,380,733**

Project Name:
Facilities Asset Management Program
Project ID:
AM-6
Program Name:
Asset Management/State of Good Repair
Project Type:
Asset Management
Location:
System-wide

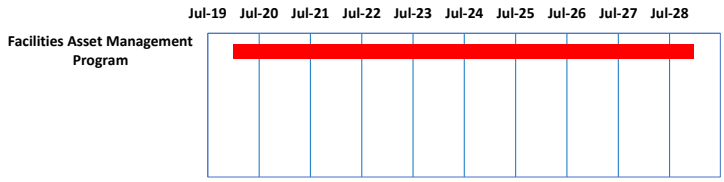
Project Description

As VRE facilities age, there is an increasing need for repairs and improvements to maintain these assets in a State of Good Repair (SGR). An independent evaluation of all station, maintenance, storage, office facilities and systems was conducted at the beginning of FY 2018 in accordance with VRE's Transit Asset Management program, in order to establish maintenance, rehabilitation and replacement cycles and priorities. This ongoing program supports those required rehabilitation and replacement efforts at VRE facilities.

Project Funding

This ongoing program is funded with federal 5337 (Rail State of Good Repair) formula grants requiring a 20% local match.

Schedule Information		
Phase	**Ongoing**	
Facilities Asset Management Program		



Funding Source	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Federal - Formula Funds	11,897,830									11,897,830
Federal State Match	2,354,566									2,354,566
VRE Local Match	619,892									619,892
Unfunded (To Be Determined)										
Total Funding	**14,872,288**									**14,872,288**

Spending Plan	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Total Spending Plan	**4,097,342**	**3,000,000**	**2,625,000**	**1,450,000**	**1,749,946**	**725,000**	**500,000**	**725,000**		**14,872,288**

Project Name:
Fredericksburg Station Rehabilitation
Project ID:
AM-6A
Program Name:
Passenger Station Facilities
Project Type:
Rehabilitation
Location:
Fredericksburg

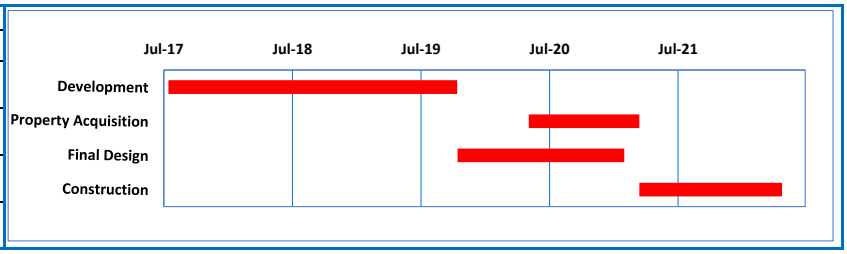
Project Description

The project supports rehabilitation of the existing Fredericksburg station. Work includes repair of approximately 125 feet of the southernmost portion of each platform, dental concrete repairs, lighting, and signage. The project will improve the boarding capacity for VRE and Amtrak trains. In conjunction with the platform repairs, stairs will be added at the southeast corner of the station for safe passenger movements to nearby parking. This new passenger path will not require crossing Princess Anne Street at-grade.

Project Funding

This project is funded with federal 5337 (Rail State of Good Repair) formula grants requiring a 20% local match.

Schedule Information		
Phase	**Start Date**	**Finish Date**
Development	7/14/2017	10/14/2019
Property Acquisition	5/5/2020	3/16/2021
Final Design	10/15/2019	2/1/2021
Construction	3/16/2021	4/26/2022



Project Schedule as of 11/22/2021

Funding Source	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Federal - Formula Funds	1,480,000	2,526,400								4,006,400
Federal State Match	296,000	505,280								801,280
VRE Local Match	74,000	126,320								200,320
Unfunded (To Be Determined)										
Total Funding	**1,850,000**	**3,158,000**								**5,008,000**

Spending Plan	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Total Spending Plan	**213,821**	**1,636,179**	**3,158,000**							**5,008,000**

Project Name:
Security Cameras
Project ID:
AM-8
Program Name:
Asset Management/State of Good Repair
Project Type:
Asset Management
Location:
System-wide

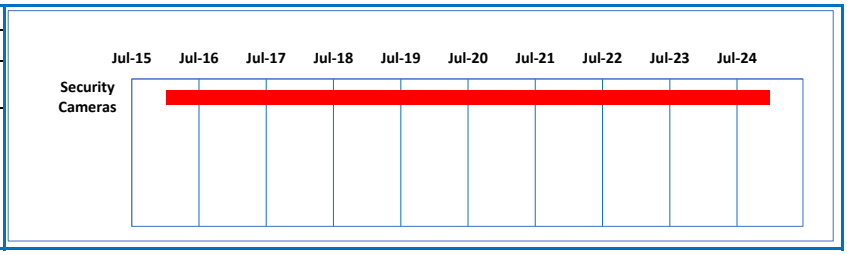
Project Description

The system of security cameras and infrastructure at VRE stations and yards is being modernized and expanded. This project covers cameras at VRE's existing facilities; the cost of the initial installation of cameras associated with construction projects is included in the budgets for these projects. Funding is currently provided for cameras and associated hardware at 22 locations.

Project Funding

This project is funded with federal 5307 (Urbanized Area formula program) grants requiring a 20% local match as well as the required 1% safety/security set aside in the federal CARES Act funds allocated to VRE in March 2020.

Schedule Information		
Phase	**Start Date**	**Finish Date**
Security Cameras	1/1/2016	12/31/2024



Project Schedule as of 11/22/2021

Funding Source	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Federal - Formula Funds	862,960									862,960
Federal State Match	172,592									172,592
VRE Local Match	43,148									43,148
VRE Capital Reserve	500,000									500,000
CARES Act	860,605									860,605
Unfunded (To Be Determined)										
Total Funding	**2,439,305**									**2,439,305**

Spending Plan	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Total Spending Plan	**1,231,872**	**300,000**	**583,470**	**323,963**						**2,439,305**

Project Name:
Real-Time Multimodal Traveler Information
Project ID:
AM-9
Program Name:
Asset Management/State of Good Repair
Project Type:
Asset Management
Location:
System-wide

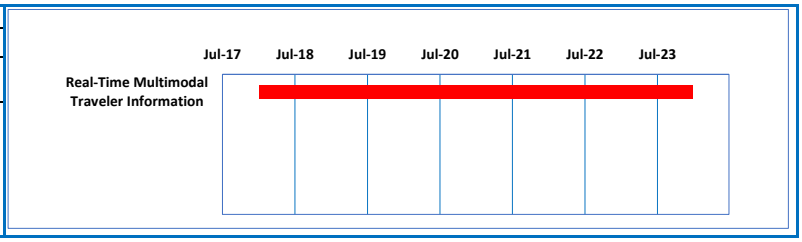
Project Description

VRE has a system-wide program to implement automatic passenger counters in all rail cars and automatic parking counters at all VRE parking facilities. While train location information is currently provided on the internet and on screens at the stations, there are plans to provide real-time train arrival information in the future. Software upgrades will be required to provide these real-time data feeds that can then be integrated with VRE Mobile and other third-party apps and websites, as well as on display screens at VRE stations and other locations along the I-66 corridor. Separate funding has been committed for implementing automatic passenger counters and automatic parking counters at existing VRE facilities.

Project Funding

This project is funded through the I-66 Outside the Beltway (OTB) Concessionaire Payment as part of the broader Manassas Line Capacity Expansion program.

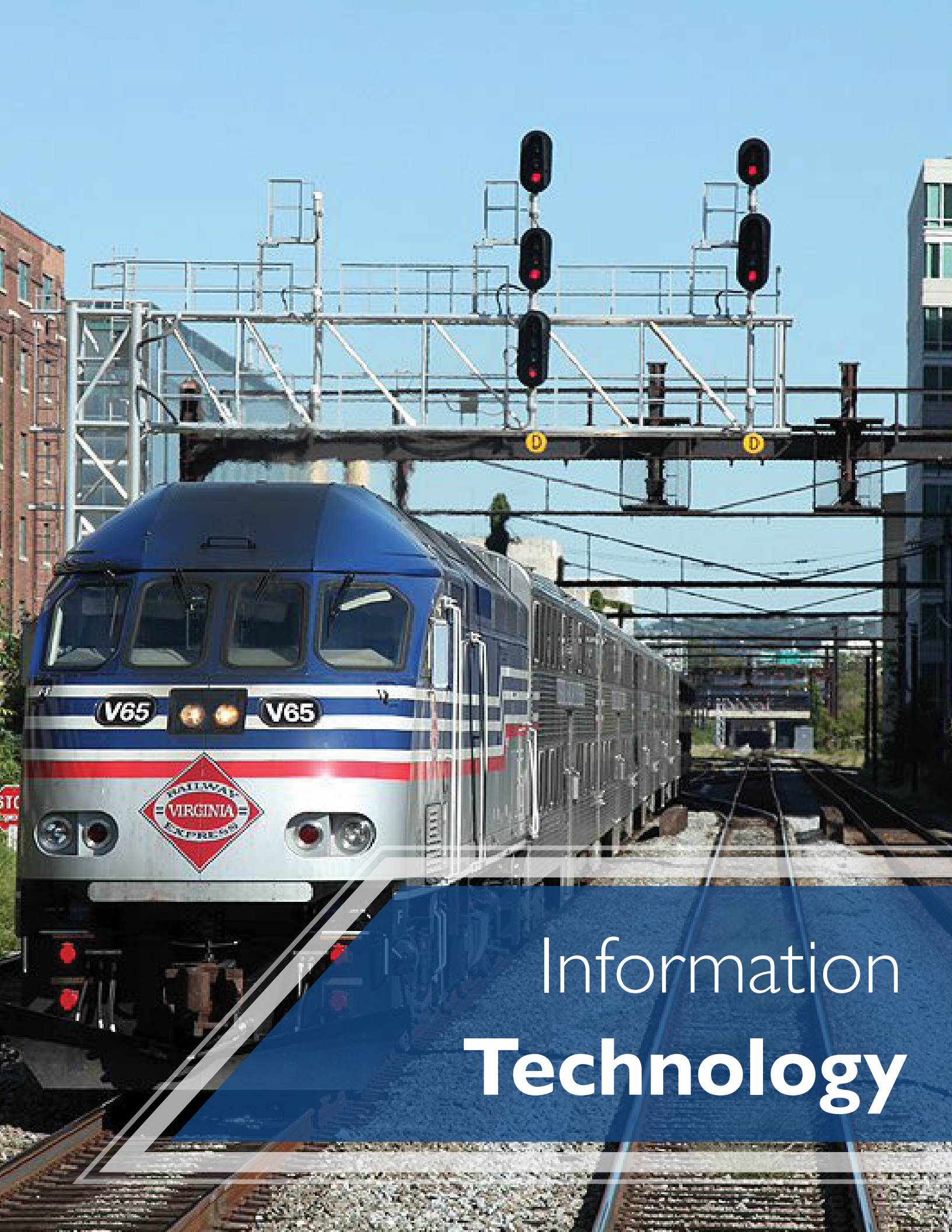
Schedule Information		
Phase	**Start Date**	**Finish Date**
Real-Time Multimodal Traveler Information	1/1/2018	12/31/2023



Project Schedule as of 11/22/2021

Funding Source	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
I-66 OTB Concession Payment	3,481,000									3,481,000
Unfunded (To Be Determined)										
Total Funding	**3,481,000**									**3,481,000**

Spending Plan	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Total Spending Plan		**350,000**	**1,000,000**	**2,131,000**						**3,481,000**



Information **Technology**

Project Name:
ERP Implementation
Project ID:
IT-2
Program Name:
Information Technology
Project Type:
New Installation
Location:
N/A

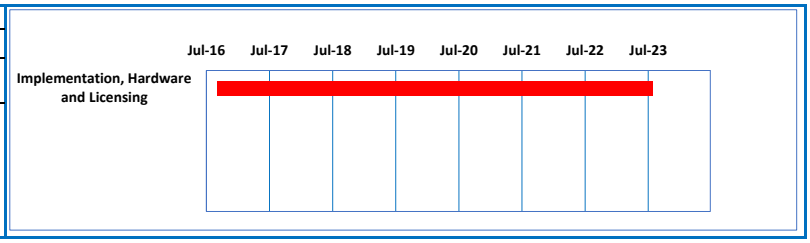
Project Description

This project supports the installation of an Enterprise Resource Planning system (ERP) to support VRE operations. The project will target implementation of a new system to provide automation of process workflows related to Human Resources, Accounting, Finance, Budgeting, Grant Management, Inventory Management, Project Management and Procurements. The project aims to replace a number of current manual processes with data automation and improved reporting. This project will enhance the effectiveness of VRE operations by creating greater process efficiencies throughout the organization.

Project Funding

The project is fully funded with VRE internal funds (Capital Reserve).

Schedule Information		
Phase	**Start Date**	**Finish Date**
Implementation, Hardware and Licensing	9/1/2016	8/2/2023



Project Schedule as of 11/22/2021

Funding Source	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
VRE Capital Planning Fund (98)	140,000									140,000
VRE Capital Reserve	2,610,000									2,610,000
Unfunded (To Be Determined)										
Total Funding	**2,750,000**									**2,750,000**

Spending Plan	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Total Spending Plan	**893,454**	**773,000**	**1,083,546**							**2,750,000**

Project Name:
TRIP/VMS Upgrade
Project ID:
IT-3
Program Name:
Information Technology
Project Type:
New Installation
Location:
N/A

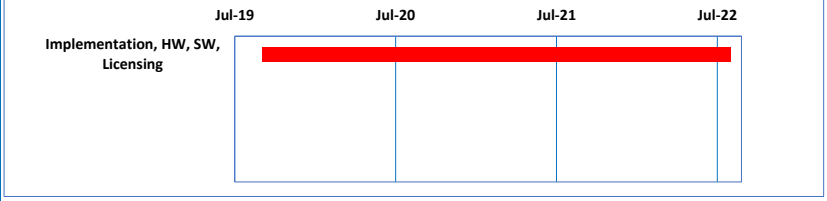
Project Description

This project supports the upgrade of VRE's Transit Display system and train information portal. The project will replace the current infrastructure and system which was installed more than ten years ago. This project will enhance the effectiveness of VRE operations through communication of multi-modal transit data and an updated GTFS feeds to VDOT for their use on VDOT Variable Message Signs.

Project Funding

This project is funded with VRE internal funds (Capital Reserve).

Schedule Information		
Phase	**Start Date**	**Finish Date**
Implementation, HW, SW, Licensing	9/1/2019	8/2/2022



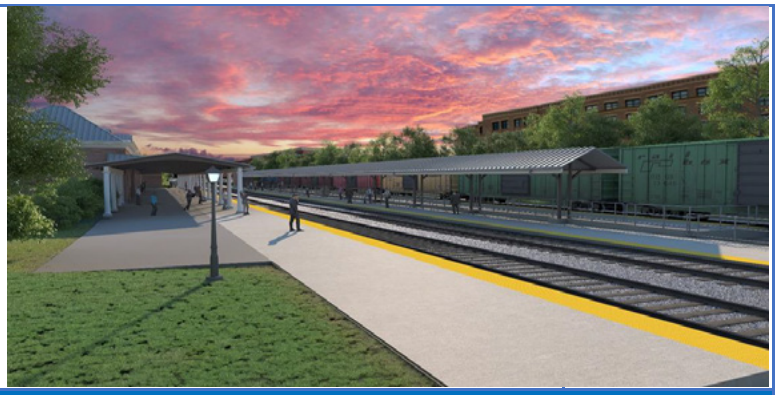
Project Schedule as of 11/22/2021

Funding Source	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
VRE Capital Reserve	1,000,000									1,000,000
Unfunded (To Be Determined)										
Total Funding	**1,000,000**									**1,000,000**

Spending Plan	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Total Spending Plan	**454,802**	**545,198**								**1,000,000**

Passenger
Station Facilities

Project Name:
Alexandria Station Improvements
Project ID:
ST-1
Program Name:
Passenger Station Facilities
Project Type:
Replacement and Rehabilitation
Location:
City of Alexandria



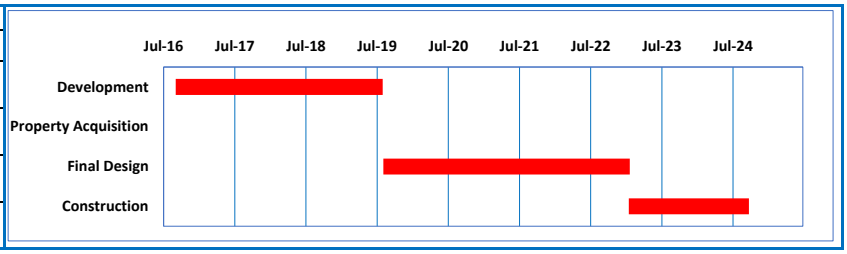
Project Description

The project will provide an ADA-compliant, grade-separated pedestrian tunnel and elevator access between the two platforms at the VRE/Amtrak station in Alexandria and modify and extend the east platform at the station to accommodate eight-car trains and enable the platform to service two trains simultaneously, from a track on each side of the platform. The west platform adjacent to the station building will also be modified to raise its height relative to the top of rail as part of the project.

Project Funding

The project is funded primarily through the Commonwealth of Virginia SmartScale program (as part of VRE's broader Fredericksburg Line Expansion program) as well as Federal funds to eliminate railroad grade crossings and improve railroad safety.

Schedule Information		
Phase	**Start Date**	**Finish Date**
Development	9/1/2016	8/2/2019
Property Acquisition	5/9/2019	5/9/2019
Final Design	8/5/2019	1/23/2023
Construction	1/18/2023	9/27/2024



Project Schedule as of 11/22/2021

Funding Source	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Federal - Formula Funds	320,000									320,000
Federal State Match	64,000									64,000
VRE Local Match	16,000									16,000
Federal Funds - VDOT	2,256,346									2,256,346
Federal Funds - Other	6,362,381									6,362,381
Local match - Federal Other	706,932									706,932
State - Smart Scale	9,233,452	6,284,000	6,335,000							21,852,452
Unfunded (To Be Determined)										
Total Funding	**18,959,111**	**6,284,000**	**6,335,000**							**31,578,111**

Spending Plan	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Total Spending Plan	**3,758,040**	**216,974**	**5,000,000**	**16,000,000**	**6,603,097**					**31,578,111**

Project Name:
Backlick Road Station Improvement
Project ID:
ST-4
Program Name:
Passenger Station Facilities
Project Type:
Expansion
Location:
Fairfax County

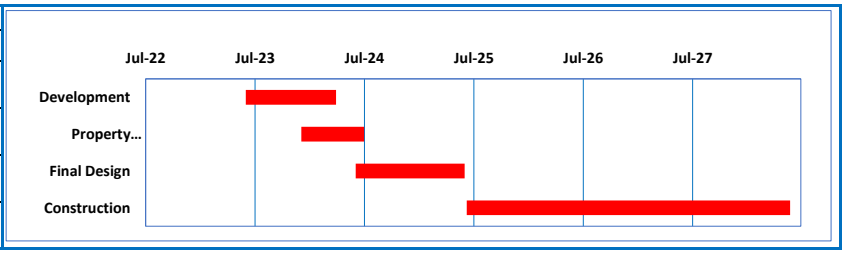
Project Description

The existing platform at the VRE Backlick Road Station on the Manassas Line only accommodates five-car train sets for boarding and detraining. Some passengers must move to different cars for detraining longer trains. The platform extension project will construct an approximately a 300-foot platform extension to accommodate eight-car trains.

Project Funding

This project is currently supported with Federal CMAQ/RSTP funds. Additional CMAQ funds will be sought for the unfunded portion of the project.

Schedule Information		
Phase	**Start Date**	**Finish Date**
Development	6/1/2023	3/29/2024
Property Acquisition	12/4/2023	7/1/2024
Final Design	6/3/2024	6/2/2025
Construction	6/9/2025	5/26/2028



Project Schedule as of 11/22/2021

Funding Source	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Federal - CMAQ/STP/RSTP	1,600,000			400,000						2,000,000
State - CMAQ/STP/RSTP Match	400,000			100,000						500,000
Unfunded (To Be Determined)				3,500,000						3,500,000
Total Funding	**2,000,000**			**4,000,000**						**6,000,000**

Spending Plan	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Total Spending Plan				**260,000**	**200,000**	**540,000**	**1,250,000**	**3,750,000**		**6,000,000**

Project Name:
Brooke Station Improvements
Project ID:
ST-5
Program Name:
Passenger Station Facilities
Project Type:
Expansion
Location:
Stafford County

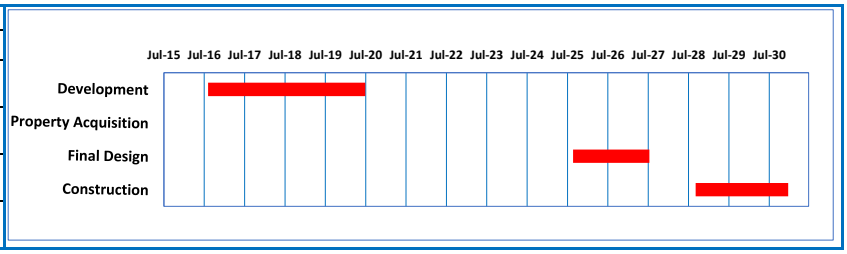
Project Description

This project previously included the design and construction of an extension to the existing platform, a new second platform, and a new pedestrian overpass at Brooke Station. With the introduction of the Transforming Rail in Virginia program, the project is being rescoped to include only an expansion of the existing side platform. These capacity enhancements will improve operational efficiency and accommodate eight-car trains.

Project Funding

The project is funded primarily through the Commonwealth of Virginia SmartScale program (as part of VRE's broader Fredericksburg Line Expansion program) as well as Federal CMAQ funds. Rail Enhancement Fund (REF) funding that supported the original larger project has been reallocated.

Schedule Information		
Phase	**Start Date**	**Finish Date**
Development	8/4/2016	6/30/2020
Property Acquisition		
Final Design	8/27/2025	7/20/2027
Construction	9/13/2028	12/31/2030



Project Schedule as of 11/22/2021

Funding Source	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
5307 GWRC vanpool program	507,519		313,394	574,863						1,395,776
State - Smart Scale			7,393,331							7,393,331
Unfunded (To Be Determined)										
Unfunded (To Be Determined)										
Total Funding	**507,519**		**7,706,725**	**574,863**						**8,789,107**

Spending Plan	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Total Spending Plan	**495,100**						**414,700**	**1,347,776**	**6,531,531**	**8,789,107**

Project Name:
Crystal City Station Improvements
Project ID:
ST-8
Program Name:
Passenger Station Facilities
Project Type:
Expansion
Location:
Arlington County

Project Description

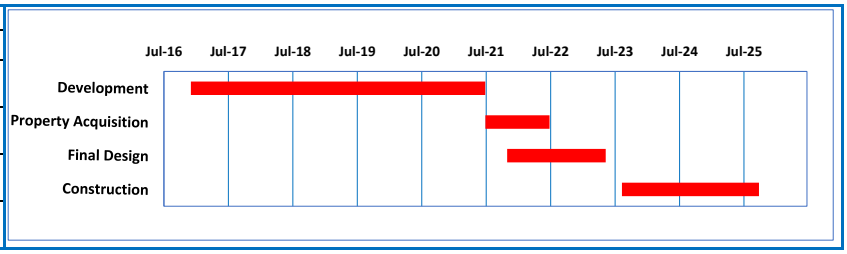
This project includes the planning, design, permitting, and construction for an expanded and relocated station and platform for the VRE Crystal City Station and related track modifications. The project will construct an island platform to enable simultaneous boarding of two trains and accommodate full-length trains and the planned fourth track in and around the station. This project is related to and must be coordinated with the fourth track project between AF and RO interlockings, part of the DC2RVA project, the planned CC2DCA pedestrian bridge connection to Ronald Reagan National Airport, and Long Bridge Capacity Improvements.

Project Funding

The project is funded with multiple funding sources including Federal formula grants, NVTA funds, Rail Enhancement funds (REF), Commuter Rail Operating and Capital (C-ROC) funds, and VRE Capital Reserve funds.

Schedule Information

Phase	Start Date	Finish Date
Development	12/1/2016	6/30/2021
Property Acquisition	7/1/2021	6/30/2022
Final Design	11/1/2021	5/15/2023
Construction	8/15/2023	10/1/2025



Project Schedule as of 11/22/2021

Funding Source	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Federal - Formula Funds		535,770	10,415,000							10,950,770
Federal State Match		107,154	2,083,000							2,190,154
VRE Local Match		26,789	520,750							547,539
NVTA	400,000	4,000,000			7,900,000	7,900,000				20,200,000
State - REF	707,000									707,000
VRE - State REF Local Match	303,000									303,000
VRE Capital Reserve	174,619			41,537						216,156
State CROC	15,000,000									15,000,000
Unfunded (To Be Determined)										
Total Funding	**16,584,619**	**4,669,713**	**13,018,750**	**41,537**	**7,900,000**	**7,900,000**				**50,114,619**

Spending Plan	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Total Spending Plan	**393,642**	**3,190,977**	**2,000,000**	**14,844,000**	**14,843,000**	**14,843,000**				**50,114,619**

Project Name:
Franconia-Springfield Station Improvements
Project ID:
ST-9
Program Name:
Passenger Station Facilities
Project Type:
Expansion
Location:
Fairfax County

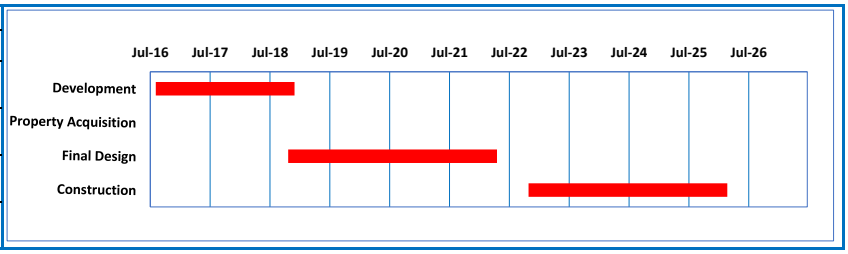
Project Description

This project supports the design and construction of an extension to the existing west platform (adjacent to WMATA) and a widening/extension of the existing east platform at the VRE Franconia-Springfield Station. These capacity expansions will improve operational efficiency and accommodate eight-car trains. The project is within the limits of the broader DRPT Atlantic Gateway third track project.

Project Funding

This project is funded with with NVTA funds and federal 5337 (state of good repair) formula funds.

Schedule Information		
Phase	**Start Date**	**Finish Date**
Development	8/4/2016	11/30/2018
Property Acquisition		
Final Design	10/22/2018	4/21/2022
Construction	10/31/2022	2/28/2026



Project Schedule as of 11/22/2021

Funding Source	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Federal - Formula Funds				3,883,897	837,025					4,720,922
Federal State Match				776,779	83,702					860,482
VRE Local Match				194,195	125,554					319,749
NVTA	13,000,000									13,000,000
Unfunded (To Be Determined)										
Total Funding	**13,000,000**			**4,854,871**	**1,046,281**					**18,901,152**

Spending Plan	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Total Spending Plan	**1,147,387**	**412,613**	**769,910**	**5,720,000**	**6,921,242**	**3,930,000**				**18,901,152**

Project Name:
Leeland Road Station Improvements
Project ID:
ST-10
Program Name:
Passenger Station Facilities
Project Type:
Expansion
Location:
Stafford County

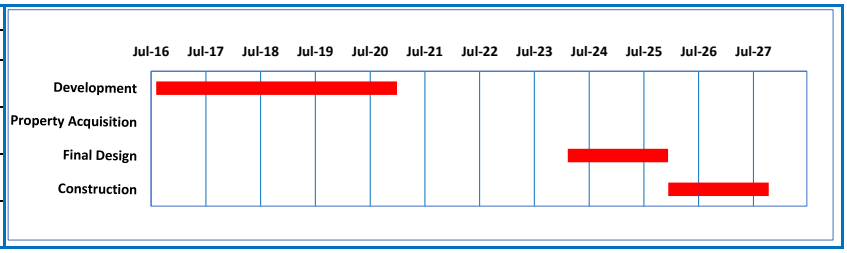
Project Description

This project previously included the design and construction of an extension to the existing platform, a new second platform, and a new pedestrian overpass at Leeland Road Station. With the introduction of the Transforming Rail in Virginia program, the project is being rescoped to include only an expansion of the existing side platform. These capacity enhancements will improve operational efficiency and accommodate eight-car trains.

Project Funding

The project is funded primarily through the Commonwealth of Virginia SmartScale program (as part of VRE's broader Fredericksburg Line Expansion program) as well as Federal CMAQ funds.

Schedule Information		
Phase	**Start Date**	**Finish Date**
Development	8/4/2016	12/31/2020
Property Acquisition		
Final Design	2/15/2024	12/17/2025
Construction	12/18/2025	10/20/2027



Project Schedule as of 11/22/2021

Funding Source	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Federal - CMAQ/STP/RSTP	210,000	196,016	250,714	459,890						1,116,620
State - CMAQ/STP/RSTP Match	52,500	49,003	62,680	114,973						279,156
State - Smart Scale			2,749,725	2,109,789						4,859,514
Unfunded (To Be Determined)										
Total Funding	**262,500**	**245,019**	**3,063,119**	**2,684,652**						**6,255,290**

Spending Plan	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Total Spending Plan	**365,141**	**92,659**	**289,875**	**289,875**		**1,304,435**	**2,608,871**	**1,304,435**		**6,255,290**

Project Name:
L'Enfant Station and Fourth Track
Project ID:
ST-11
Program Name:
Passenger Station Facilities
Project Type:
Expansion
Location:
District of Columbia

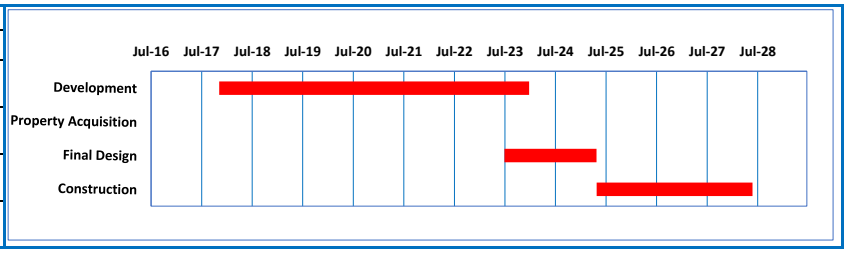
Project Description

This project includes the planning, design, permitting, and construction for an expanded VRE L'Enfant Station and an additional mainline track between the Virginia (VA) and L'Enfant (LE) Interlockings in Washington, DC. The expanded station will support simultaneous boarding of two full-length trains. The project will aim to improve station access and customer convenience while improving service reliability. The project will be coordinated with the broader Long Bridge capacity investments by the Commonwealth.

Project Funding

This project will be supported by Federal formula funds, C-ROC funds and REF funds, as well as other sources yet to be determined.

Schedule Information		
Phase	**Start Date**	**Finish Date**
Development	11/6/2017	12/29/2023
Property Acquisition	1/2/2023	1/2/2023
Final Design	7/3/2023	4/30/2025
Construction	5/1/2025	6/2/2028



Project Schedule as of 11/22/2021

Funding Source	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Federal - Formula Funds		1,950,966	12,542,472	8,898,338						23,391,777
Federal State Match		390,193	2,508,494	1,779,668						4,678,355
VRE Local Match		97,548	627,124	444,917						1,169,589
State CROC	30,000,000									30,000,000
State - REF	2,226,000									2,226,000
VRE - State REF Local Match	954,000									954,000
VRE Capital Reserve	46,000									46,000
Unfunded (To Be Determined)						22,124,279				22,124,279
Total Funding	**33,226,000**	**2,438,708**	**15,678,090**	**11,122,923**		**22,124,279**				**84,590,000**

State REF corrected 3/4/2021

Spending Plan	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Total Spending Plan	**450,433**	**441,546**	**2,000,000**	**4,108,021**	**3,000,000**	**24,590,000**	**25,000,000**	**25,000,000**		**84,590,000**

Project Name:
Quantico Station Improvements
Project ID:
ST-14
Program Name:
Passenger Station Facilities
Project Type:
Expansion
Location:
Prince William County

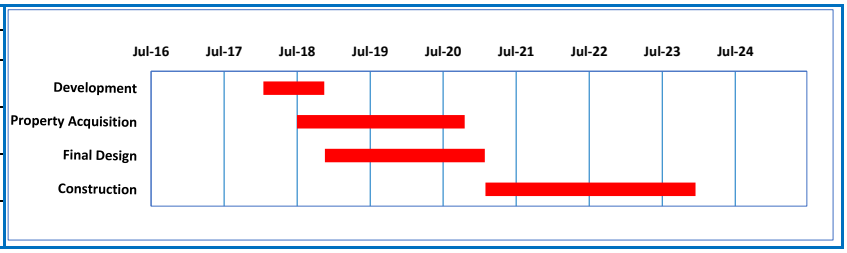
Project Description

This project provides for improvements at the Quantico Station, including design and construction of an island platform and pedestrian bridges; extension of the existing platform; and site/civil, track bed and drainage improvements (including Retaining Wall) in conjunction with Track and Signal Work provided by CSXT under scope of separate but concurrent contract/project with DRPT. Improvements are being coordinated with the Arkendale to Powell's Creek third track project being implemented by the DRPT and CSXT, of which Quantico Station Improvements is a sub-project.

Project Funding

This project is funded through a combination of Intercity Passenger Rail Operating and Capital (IPROC) and SMART SCALE grants through the Commonwealth of Virginia.

Schedule Information		
Phase	**Start Date**	**Finish Date**
Development	1/15/2018	11/16/2018
Property Acquisition	7/2/2018	10/20/2020
Final Design	11/19/2018	1/29/2021
Construction	2/1/2021	12/21/2023



Project Schedule as of 11/22/2021

Funding Source	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
State - IPROC	13,622,204									13,622,204
State - Smart Scale	4,600,045	5,150,700	600,112							10,350,857
Unfunded (To Be Determined)										
Total Funding	**18,222,249**	**5,150,700**	**600,112**							**23,973,061**

Spending Plan	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Total Spending Plan	**1,578,300**	**8,930,870**	**8,810,000**	**4,653,891**						**23,973,061**

Project Name:
Rolling Road Station Improvements
Project ID:
ST-17
Program Name:
Passenger Station Facilities
Project Type:
Expansion
Location:
Fairfax County

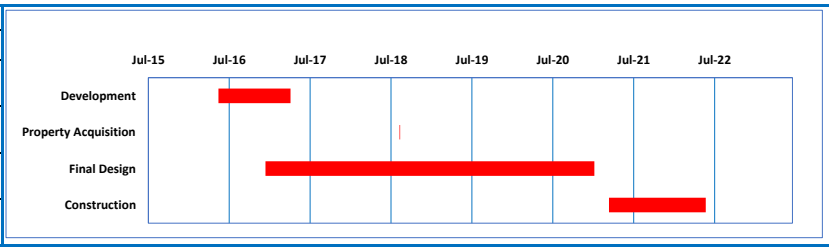
Project Description

The Rolling Road Station currently has a platform which accommodates a five-car train set for boarding and detraining. This project provides for a 290-foot platform extension to accommodate an eight-car train set.

Project Funding

This project is funded with Federal CMAQ grants.

Schedule Information		
Phase	**Start Date**	**Finish Date**
Development	5/13/2016	4/4/2017
Property Acquisition	8/10/2018	8/13/2018
Final Design	12/12/2016	1/8/2021
Construction	3/15/2021	5/27/2022

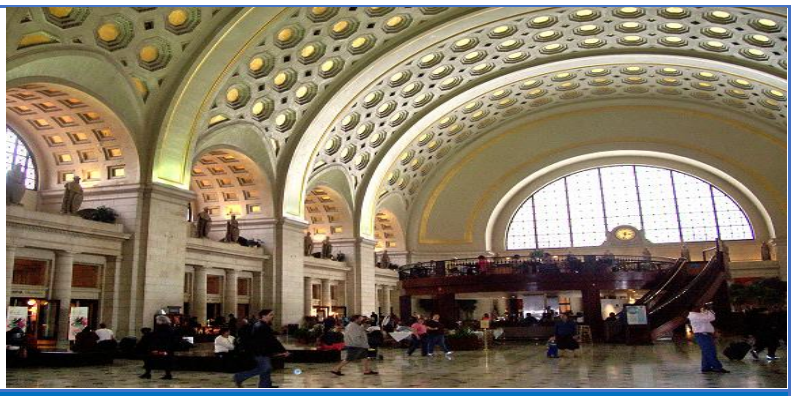


Project Schedule as of 11/22/2021

Funding Source	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Federal - CMAQ/STP/RSTP	4,000,000									4,000,000
State - CMAQ/STP/RSTP Match	1,000,000									1,000,000
Unfunded (To Be Determined)										
Total Funding	**5,000,000**									**5,000,000**

Spending Plan	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Total Spending Plan	**425,177**	**3,574,823**	**1,000,000**							**5,000,000**

Project Name:
Washington Union Station Improvements
Project ID:
ST-18
Program Name:
Passenger Station Facilities
Project Type:
Expansion
Location:
District of Columbia



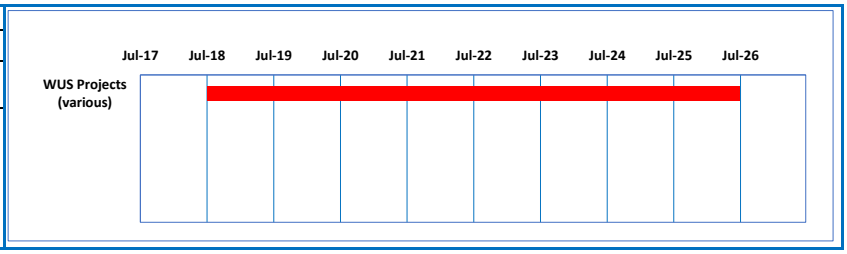
Project Description

This project will fund track, signal, platform and passenger facility upgrades and realignments at Amtrak's Washington Union Terminal, in accordance with the Northeast Corridor Capital Investment Plan. Costs for the project will be allocated to the users of the terminal in accordance with the Northeast Corridor Commuter and Intercity Rail Cost Allocation Policy, which is still under discussion for capital improvements. VRE's allocated share of the project(s) has not yet been determined. Some priority projects may be carried out under an interim agreement with Amtrak.

Project Funding

This project is funded with federal formula grants (5307 and/or 5337) requiring a 20% local match.

Schedule Information		
Phase	**Start Date**	**Finish Date**
WUS Projects (various)	7/1/2018	7/1/2026



Project Schedule as of 11/22/2021

Funding Source	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Federal - Formula Funds	12,400,000	2,951,948	6,200,000	6,200,000	6,200,000					33,951,948
Federal State Match	6,800,000	1,618,810	3,400,000	3,400,000	3,400,000					18,618,810
VRE Local Match	800,000	190,448	400,000	400,000	400,000					2,190,448
Unfunded (To Be Determined)										
Total Funding	**20,000,000**	**4,761,206**	**10,000,000**	**10,000,000**	**10,000,000**					**54,761,206**

Spending Plan	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Total Spending Plan		**24,761,206**	**10,000,000**	**10,000,000**	**10,000,000**					**54,761,206**

Project Name:
Woodbridge Station Improvements
Project ID:
ST-19
Program Name:
Passenger Station Facilities
Project Type:
Expansion
Location:
Fairfax County

Project Description

This project includes the development of initial concepts for an expansion of the VRE Woodbridge Station to serve full length trains, enhance pedestrian access, and enable the planned addition of a third and fourth main track as part of future phases (Phase 3 or beyond) of the Transforming Rail in Virginia program.

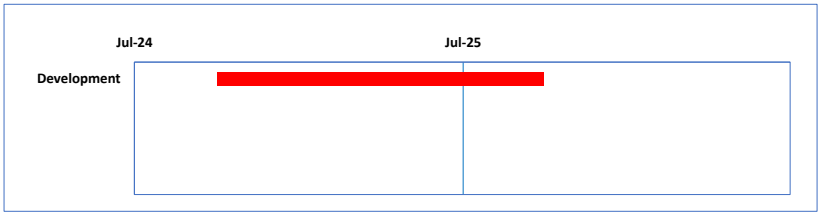
Project Funding

This project is funded with Federal CMAQ grants.

Project Description

This project includes the development initial concepts for an expansion of the VRE Woodbridge Station to serve full length trains, enhance pedestrian access, and enable the planned addition of a third and fourth main track as part of future phases (Phase 3 or beyond) of the Transforming Rail in Virginia program.

Schedule Information		
Phase	**Start Date**	**Finish Date**
Development	10/1/2024	9/30/2025



Project Schedule as of 9/17/21

Funding Source	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Federal - CMAQ/STP/RSTP		1,469,582			722,912					2,192,494
State - CMAQ/STP/RSTP Match		367,396			180,728					548,124
Unfunded (To Be Determined)										
Total Funding		**1,836,978**			**903,640**					**2,740,618**

Spending Plan	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Total Spending Plan					**1,370,309**	**1,370,309**				**2,740,618**

Project Name:
Manassas Station Improvements
Project ID:
ST-21
Program Name:
Passenger Station Facilities
Project Type:
Expansion
Location:
City of Manassas

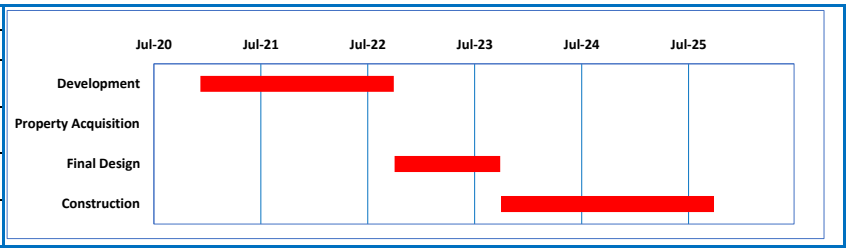
Project Description

This project includes the development, design, permitting and construction of an expansion to the south side (railroad east) platform at the VRE Manassas Station to serve full length trains and enhance pedestrian access.

Project Funding

This project is funded through the I-66 Outside the Beltway (OTB) Concessionaire Payment as part of the broader Manassas Line Capacity Expansion program.

Schedule Information		
Phase	**Start Date**	**Finish Date**
Development	12/7/2020	9/30/2022
Property Acquisition	10/7/2021	10/7/2021
Final Design	10/3/2022	9/29/2023
Construction	10/2/2023	9/30/2025



Project Schedule as of 11/22/2021

Funding Source	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
I-66 OTB Concession Payment	9,125,000									9,125,000
Unfunded (To Be Determined)										
Total Funding	**9,125,000**									**9,125,000**

Spending Plan	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Total Spending Plan		**21,000**	**300,000**	**1,627,000**	**3,177,000**	**4,000,000**				**9,125,000**

Rolling Stock **Equipment**

Project Name:

Fleet Expansion Coaches - 21 Railcars

Project ID:

RS-3

Program Name:

Rolling Stock

Project Type:

Expansion

Location:

N/A

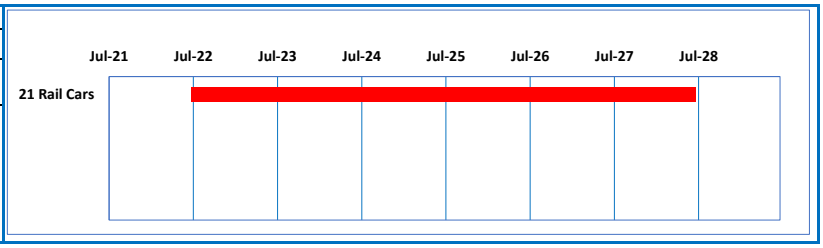
Project Description

This project supports the purchase of eleven (11) coaches to expand capacity on Fredericksburg Line trains and the purchase of ten (10) expansion coaches to facilitate near-term Manassas Line capacity expansion. This project is contingent on the expansion of storage capacity at the Broad Run Maintenance and Storage Facility (MSF) and expansion of the Broad Run Station facilities.

Project Funding

The project is funded with Federal 5307 formula funds in addition to state Smart Scale and I-66 Outside the Beltway funds.

Schedule Information		
Phase	**Start Date**	**Finish Date**
21 Rail Cars	7/1/2022	7/1/2028



Project Schedule as of 11/22/2021

Funding Source	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
State - Smart Scale	10,677,000	15,855,000	7,762,442							34,294,442
I-66 OTB Concession Payment	28,120,000									28,120,000
Federal - Formula Funds	17,768,097									17,768,097
Federal State Match	3,017,045									3,017,045
VRE Local Match	1,424,980									1,424,980
Unfunded (To Be Determined)										
Total Funding	**61,007,121**	**15,855,000**	**7,762,442**							**84,624,563**

Spending Plan	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Total Spending Plan		**16,141,265**	**6,456,507**	**3,228,252**	**807,063**		**56,377,350**		**1,614,126**	**84,624,563**

Station **Parking**

Project Name:
Leeland Road Parking Improvements
Project ID:
PK-3
Program Name:
Station Parking
Project Type:
Expansion
Location:
Stafford County

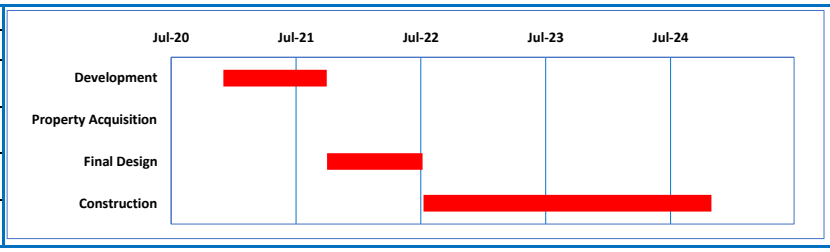
Project Description

This project will expand the surface parking lot at the Leeland Road station by approximately 225 spaces to accommodate future demand.

Project Funding

This project is funded through the SMART SCALE program as part of the broader Fredericksburg Line Capacity Expansion program.

Schedule Information		
Phase	**Start Date**	**Finish Date**
Development	12/1/2020	9/30/2021
Property Acquisition	12/1/2020	12/1/2020
Final Design	10/1/2021	7/8/2022
Construction	7/11/2022	11/1/2024



Project Schedule as of 11/22/2021

Funding Source	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
State - Smart Scale	360,000	5,159,178								5,519,178
Unfunded (To Be Determined)										
Total Funding	**360,000**	**5,159,178**								**5,519,178**

Spending Plan	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Total Spending Plan		**150,000**	**400,000**	**2,500,000**	**2,469,178**					**5,519,178**

Project Name:
Manassas Park Parking Expansion
Project ID:
PK-4
Program Name:
Station Parking
Project Type:
Expansion
Location:
City of Manassas Park

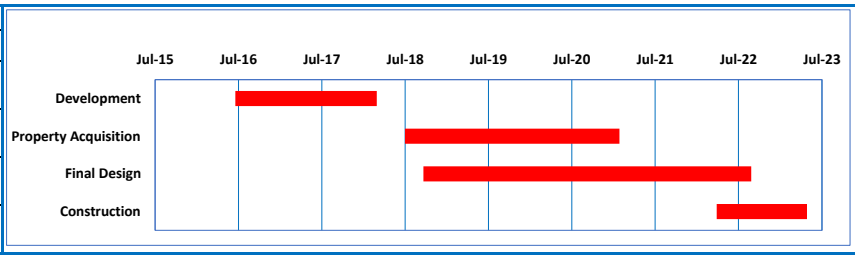
Project Description

This project will add a parking facility (approximately 560 spaces) at the Manassas Park station to increase station parking capacity for VRE riders to 1,100 spaces. The facility has the potential to be shared with other private or public uses in the vicinity.

Project Funding

Project funding sources include NVTA and I-66 Outside the Beltway funds as well as City of Manassas Park funds.

Schedule Information		
Phase	**Start Date**	**Finish Date**
Development	6/17/2016	2/28/2018
Property Acquisition	7/2/2018	1/29/2021
Final Design	9/21/2018	8/31/2022
Construction	4/1/2022	5/3/2023



Project Schedule as of 11/22/2021

Funding Source	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
NVTA	2,500,000									2,500,000
I-66 OTB Concession Payment	23,483,000									23,483,000
City of Manassas Park	678,764									678,764
Unfunded (To Be Determined)			3,771,739							3,771,739
Total Funding	**26,661,764**		**3,771,739**							**30,433,503**

Spending Plan	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Total Spending Plan	**1,909,920**	**1,045,777**	**2,477,806**	**25,000,000**						**30,433,503**

Train Maintenance & **Storage Facilities**

Project Name:
Crossroads MSF - Storage Expansion
Project ID:
MS-3
Program Name:
Train Maintenance and Storage Facilities
Project Type:
Expansion
Location:
Spotsylvania

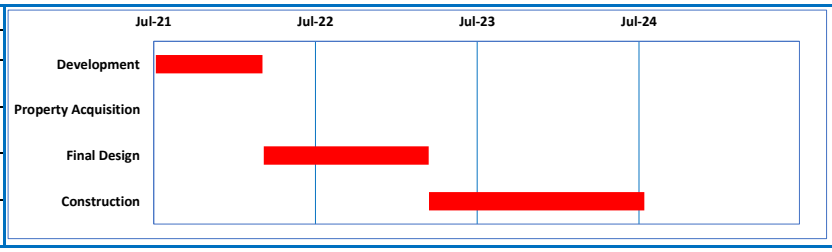
Project Description

This project will construct storage tracks for overnight train storage at the Crossroads Maintenance and Storage Facility (MSF) needed to store the additional expansion coaches being purchased for the Fredericksburg Line Capacity Expansion.

Project Funding

This project is funded through the SMART SCALE program as part of the broader Fredericksburg Line Capacity Expansion program.

Schedule Information		
Phase	**Start Date**	**Finish Date**
Development	7/6/2021	3/4/2022
Property Acquisition	7/6/2021	7/6/2021
Final Design	3/7/2022	3/15/2023
Construction	3/16/2023	7/15/2024



Project Schedule as of 11/22/2021

Funding Source	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
State - Smart Scale		5,057,000	3,308,765							8,365,765
Unfunded (To Be Determined)										
Total Funding		**5,057,000**	**3,308,765**							**8,365,765**

Spending Plan	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Total Spending Plan		**275,000**	**408,094**	**2,408,094**	**5,274,578**					**8,365,765**

Project Name:
Lifecycle Overhaul & Upgrade (LOU) Facility
Project ID:
MS-6
Program Name:
Train Maintenance and Storage Facilities
Project Type:
Expansion
Location:
Spotsylvania County

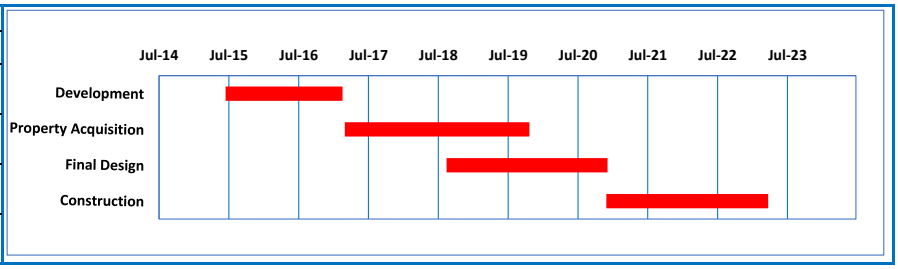
Project Description

This project funds the design and construction of a rolling stock equipment maintenance facility in order to carry out those components of a life-cycle maintenance program that can be most efficiently accomplished at the VRE yards. New shop facilities will include overhead cranes, a wheel and axle drop table and wheel truing machine. The project will build two tracks on recently acquired adjacent property to accommodate the new facility.

Project Funding

Project is funded with federal formula grants and associated state and local match.

Schedule Information		
Phase	**Start Date**	**Finish Date**
Development	6/15/2015	2/17/2017
Property Acquisition	3/1/2017	10/24/2019
Final Design	8/16/2018	12/7/2020
Construction	12/1/2020	3/29/2023



Project Schedule as of 11/22/2021

Funding Source	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Federal - Formula Funds	38,941,190									38,941,190
Federal State Match	11,539,685									11,539,685
VRE Local Match	1,702,757									1,702,757
Unfunded (To Be Determined)										
Total Funding	**52,183,632**									**52,183,632**

Spending Plan	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Total Spending Plan	**11,497,436**	**18,009,236**	**22,676,960**							**52,183,632**

Project Name:
New York Avenue Midday Storage Facility
Project ID:
MS-7
Program Name:
Train Maintenance and Storage Facilities
Project Type:
Replacement and Rehabilitation
Location:
District of Columbia

Project Description

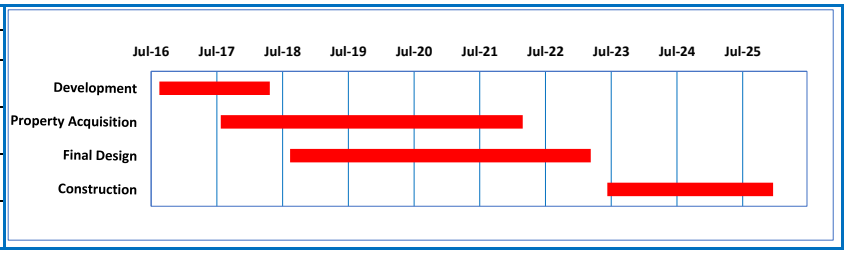
This project includes the design, permitting, property acquisition and construction for a midday storage facility parallel to New York Avenue in the District of Columbia to replace VRE's current storage at Amtrak's Ivy City Coach Yard. The new facility will replace the current coach yard and also add storage space for future expansion.

Project Funding

This project is funded with Federal formula grants and associated state and local match.

Schedule Information

Phase	Start Date	Finish Date
Development	8/16/2016	4/23/2018
Property Acquisition	7/24/2017	3/1/2022
Final Design	8/14/2018	3/15/2023
Construction	6/15/2023	12/24/2025

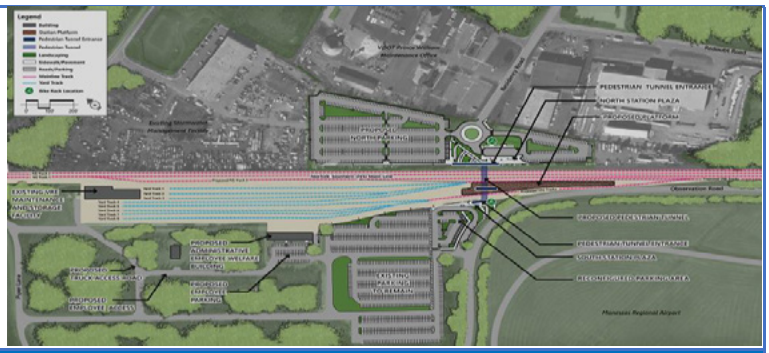


Project Schedule as of 11/22/2021

Funding Source	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Federal - Formula Funds	50,525,046	7,999,777	4,663,065							63,187,888
Federal State Match	25,259,820	4,386,975	2,557,165							32,203,959
VRE Local Match	3,157,703	516,115	300,842							3,974,660
Unfunded (To Be Determined)										
Total Funding	**78,942,569**	**12,902,866**	**7,521,072**							**99,366,508**

Spending Plan	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Total Spending Plan	**2,943,881**	**2,716,060**	**39,466,567**	**18,080,000**	**18,080,000**	**18,080,000**				**99,366,508**

Project Name:
Broad Run Expansion (BRX)
Project ID:
OT-2
Program Name:
Train Maintenance and Storage Facilities
Project Type:
Expansion
Location:
Prince William County



Project Description

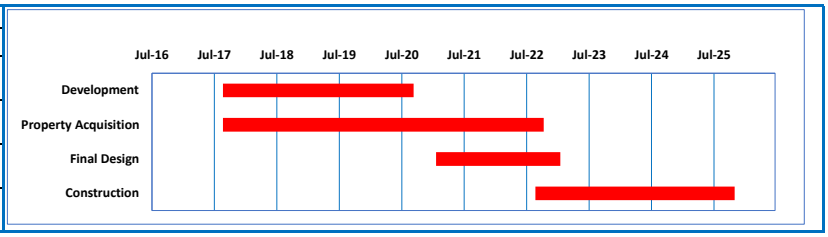
This project includes expansion of the Broad Run Maintenance and Storage Facility (MSF) and Station to support expanded Manassas Line service. Improvements include: expansion of the MSF site and construction of storage tracks for additional trains and equipment, construction of 300 additional station parking to accommodate short-term (2030) demand, and platform modifications to provide access to expanded parking, and construction of about 1.8 miles of third track within the NSR right-of-way. The estimated cost also includes real estate acquisition to expand the station and MSF footprint and accommodate the third track.

Project Funding

This project is currently funded through a combination of Federal CMAQ/RSTP Funds, state Rail Enhancement funds, and the I-66 OTB Concessionaire payment. Additional funding to complete the project is yet to be determined.

Schedule Information

Phase	Start Date	Finish Date
Development	8/21/2017	9/11/2020
Property Acquisition	8/21/2017	10/14/2022
Final Design	1/21/2021	1/19/2023
Construction	8/26/2022	11/6/2025



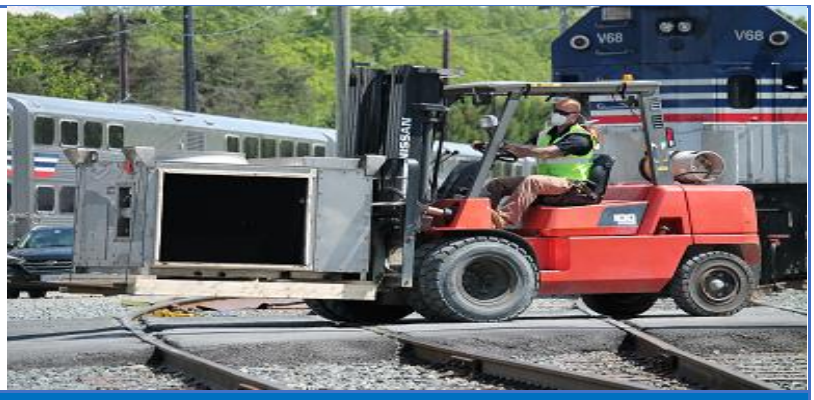
Project Schedule as of 11/22/2021

Funding Source	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Federal - CMAQ/STP/RSTP	13,851,830	1,378,946	5,031,944	3,790,400						24,053,119
State - CMAQ/RSTP Match	3,462,957	344,736	1,257,986	947,600						6,013,280
NVTA	1,500,000									1,500,000
State - REF	2,785,714									2,785,714
VRE - Capital Reserve	1,294,362									1,294,362
I-66 OTB Concession Payment	64,287,000									64,287,000
Unfunded (To Be Determined)				64,066,525						64,066,525
Total Funding	**87,181,863**	**1,723,682**	**6,289,930**	**68,804,525**						**164,000,000**

Spending Plan	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Total Spending Plan	**6,014,386**	**26,009,214**	**29,222,717**	**40,000,000**	**40,000,000**	**22,753,683**				**164,000,000**

Miscellaneous

Project Name:
Forklifts purchase
Project ID:
OT-4
Program Name:
Train Maintenance and Storage Facilities
Project Type:
New Installation
Location:
Prince William County



Project Description

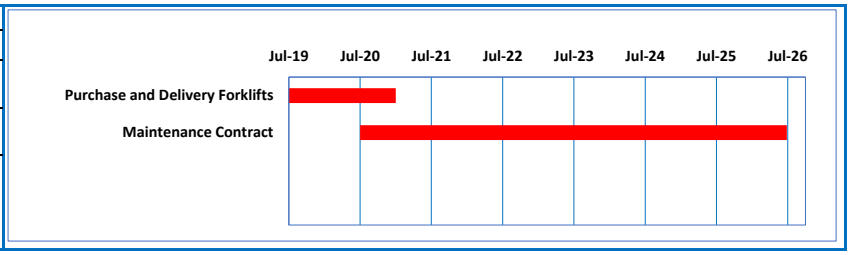
The project provides funding for the purchase and delivery of 5 forklifts to VRE's Maintenance and Storage Facilities. The scope of work for this purchase includes delivery of one (1) large capacity forklift at each yard (Fredericksburg/Manassas, VA) to lift locomotive traction motor/wheel/axle combinations; one (1) medium capacity forklift at each yard to lift and move materials, tooling, and shop equipment; and one (1) at the Crossroads Warehouse to accommodate material movement needs.

Project Funding

This project is funded with VRE Capital Reserve funds.

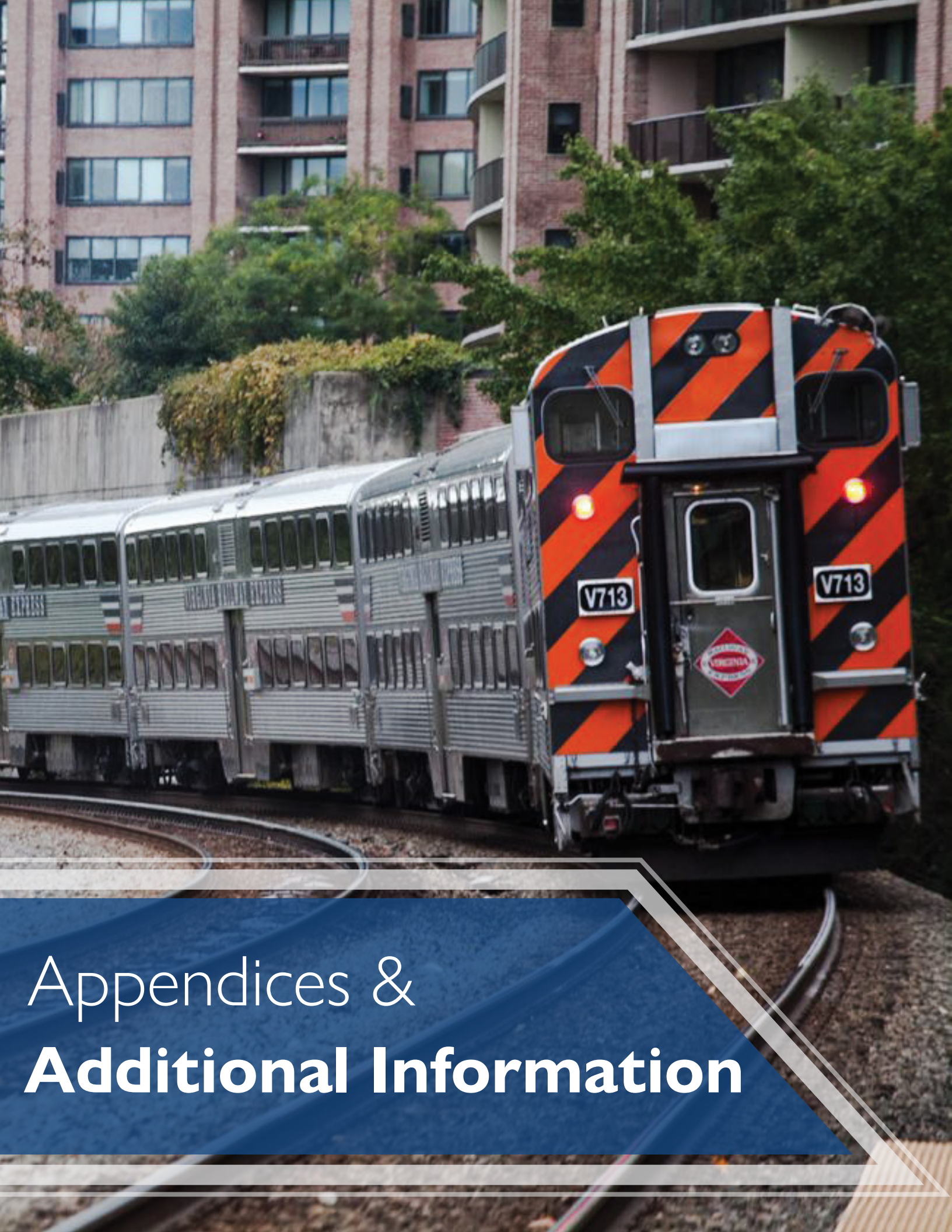
Schedule Information

Phase	Start Date	Finish Date
Purchase and Delivery Forklifts	7/1/2019	12/31/2020
Maintenance Contract	7/1/2020	7/1/2026



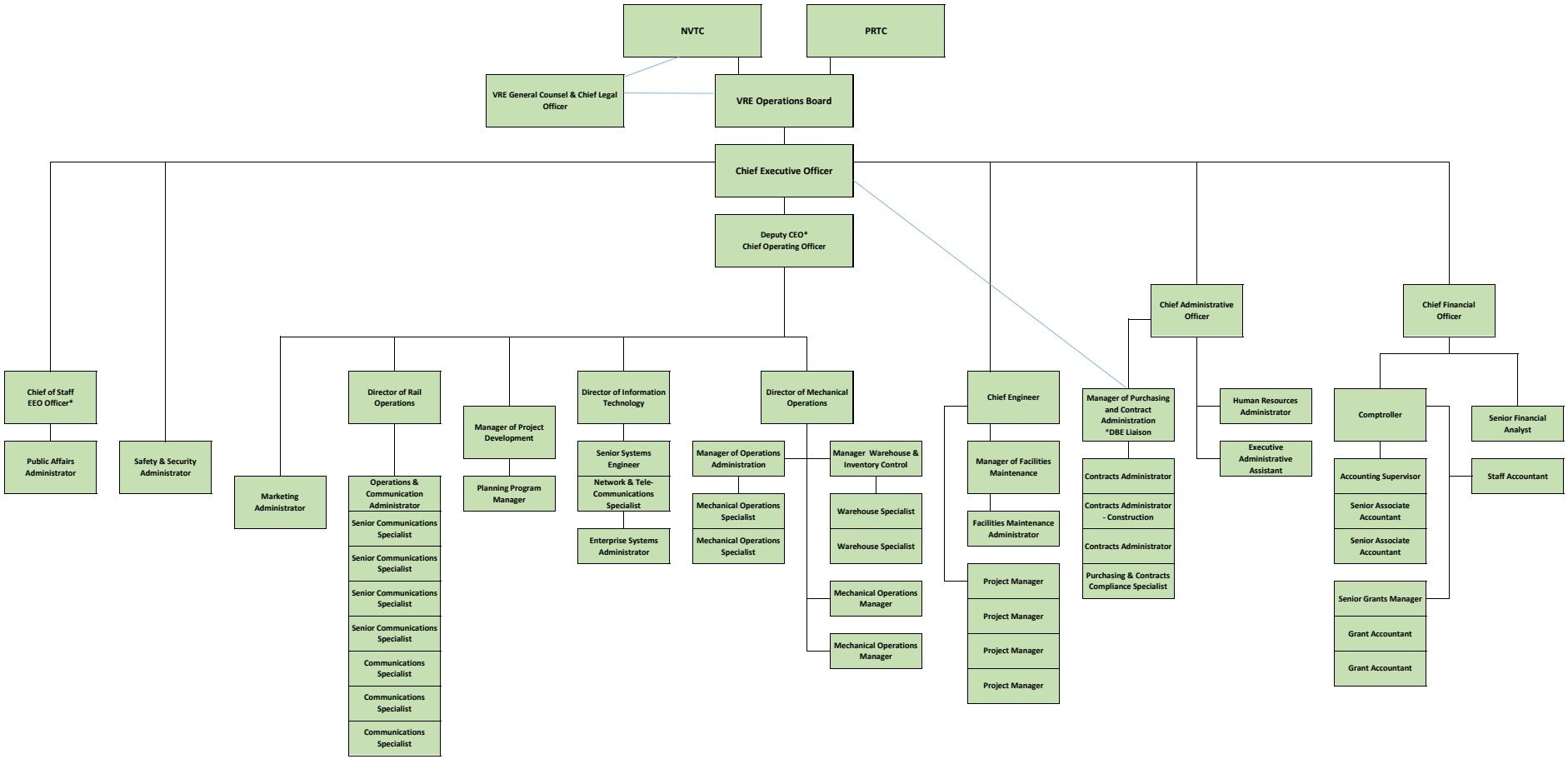
Funding Source	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
VRE Capital Reserve	290,146									290,146
Unfunded (To Be Determined)										
Total Funding	**290,146**									**290,146**

Spending Plan	Life to Date	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	Future	Total
Total Spending Plan		**269,346**	**5,200**	**5,200**	**5,200**	**5,200**				**290,146**



Appendices & **Additional Information**

Virginia Railway Express
Organizational Chart
As of June 30, 2021



** Note:* *Manager of Purchasing and Contract Administration reports to the CEO in matters related to their duties as DBE liason*

Chief of Staff - primary EEO Officer for VRE

Deputy CEO/COO position is currently being re-evaluated for reporting lines

VRE General Counsel & Chief Legal Officer reports to the Operatins Board and also assists the NVTC Commission with legal matters

VRE Fiscal Year 2023 Recommended Departmental Budget

	FY 2021 Amended	FY 2022 Amended July 2021	FY 2023 Recommended
Revenue:			
VRE - Non-Departmental			
Fare Revenue	9,700,000	18,236,000	25,296,000
Miscellaneous Revenue	300,000	300,000	200,000
Appropriation from Operating Reserve	-	-	-
Appropriation from Capital Reserve	-	-	-
Jurisdictional Revenue	18,300,780	4,756,658	13,544,122
Other Revenue (Incld. Use of Prev. FY Surplus)	669,200	-	-
State CROC Dedicated Funding - Operations	-	-	-
State Operating Grant	12,030,000	10,000,000	11,000,000
Federal Pandemic Relief Funds	32,015,783	54,035,604	28,518,808
Federal Grants - Operations and Debt	20,448,613	5,418,501	5,418,361
State Grants - Operations and Debt	1,731,043	979,700	18,050,992
State CROC Dedicated Funding - Capital Program	15,000,000	15,000,000	15,000,000
Regional Grants - Capital Program	-	-	-
Federal Grants - Capital Program	30,476,409	27,175,122	30,607,205
State Grants - Capital Program	20,730,076	49,611,139	37,692,100
Interest Income	250,000	350,000	150,000
Total Revenue	161,651,904	185,862,724	185,477,588
Expenditures:			
Non-Departmental Operating			
Liability Insurance	6,792,052	7,167,000	7,580,000
Operating Reserve/Contingency	-	754,699	1,743,429
Capital Reserve	-	-	-
Other	-	50,000	50,000
VRE-Financing-Administration Fees	-	-	-
Total VRE - Non-Departmental	6,792,052	7,971,699	9,373,429
General Counsel			
Salaries/Fringes	-	-	386,000
Travel/Training/Employee Expenses	-	-	1,800
Legal/Audit	-	-	51,200
Consulting/Professional/Other	-	-	1,200
Total General Counsel	-	-	440,200
HR & Administration			
Salaries/Fringes	1,000,000	1,238,500	1,382,000
Travel/Training/Employee Expenses	17,000	2,500	10,500
Board Member Expenses	2,500	1,500	1,500
Office Administration Expenses	57,500	75,000	39,000
Legal/Audit	175,000	225,000	-
Consulting/Professional/Other	511,000	2,200	210,800
Total HR & Administration	1,763,000	1,544,700	1,643,800
Chief of Staff			
Salaries/Fringes	373,000	375,000	394,000
Travel/Training/Employee Expenses	12,500	8,500	8,500
Marketing/PR/Special Events/Consulting	298,100	307,500	299,500
Total Chief of Staff/Public Affairs	683,600	691,000	702,000
Marketing			
Salaries/Fringes	117,200	110,000	116,000
Travel/Training/Employee Expenses	73,900	45,500	25,500
Production/Media/Promotion/Other	218,000	220,000	185,000
Special Events/Other	200	-	-
Total Marketing	409,300	375,500	326,500

VRE Fiscal Year 2023 Recommended Departmental Budget

	FY 2021 Amended	FY 2022 Amended July 2021	FY 2023 Recommended
Project Development			
Salaries/Fringes	674,500	389,000	368,000
Travel/Training/Employee Expenses	24,900	22,105	11,000
Professional Services/Consulting/Other	257,500	321,700	571,400
Total Office of Development	956,900	732,805	950,400
Rail Operations			
Salaries/Fringes	1,027,000	995,000	1,042,000
Travel/Training/Employee Expenses	17,000	6,000	1,000
Printing/Admin/Other	30,000	30,000	11,000
Leases/Events	23,500	22,000	21,000
Professional Services	354,000	354,000	354,000
Ticket Stock/R&M Fare Collection	935,000	925,000	1,050,000
Total Customer Communications	2,386,500	2,332,000	2,479,000
Finance and Accounting			
Salaries/Fringes	1,592,000	1,530,000	1,435,000
Travel/Training/Employee Expenses	30,000	28,000	21,500
Audit/Maint Service Agreements/Consulting	423,300	377,000	517,000
Retail Sales/TLC Commissions	665,000	814,000	925,000
Bank Discounts/Other	197,500	302,500	343,000
Total Budget and Finance	2,907,800	3,051,500	3,241,500
Information Technology			
Salaries/Fringes	666,000	671,000	700,000
Travel/Training/Employee Expenses	13,000	9,850	2,850
Computer Equipment/Software	747,000	778,000	756,000
Consulting/Communications	652,500	712,500	760,150
Total Communication and Info Tech	2,078,500	2,171,350	2,219,000
Design & Construction			
Salaries/Fringes	1,013,000	986,000	1,036,000
Travel/Training/Employee Expenses	33,000	14,000	28,000
Other Professional Services/Other Expenses	71,500	27,500	32,000
Total Design & Construction	1,117,500	1,027,500	1,096,000
Facilities Maintenance			
Salaries/Fringes	357,000	342,000	358,000
Travel/Training/Employee Expenses	11,300	11,300	11,300
Office/Other Professional Service	344,400	309,400	320,400
Station Electricity/Utilities/Taxes	824,600	836,100	841,100
Repairs and Maintenance	2,990,000	2,515,000	2,553,000
Total Facilities Maintenance	4,527,300	4,013,800	4,083,800
Purchasing and Contract Administration			
Salaries/Fringes	710,000	717,000	746,000
Travel/Training/Employee Expenses	35,850	47,850	47,100
Total Procurement and Contract Admin	745,850	764,850	793,100
Mechanical Operations			
Salaries/Fringes	1,012,000	1,025,000	1,093,000
Travel/Training/Employee Expenses	11,000	7,000	7,000
Consulting/Admin/Warehouse Management	192,700	182,700	183,300
Equipment/Warehouse Leases	-	-	-
Utilities	1,085,000	1,085,000	1,185,000
Diesel Fuel	3,000,000	2,975,000	4,590,000
Repairs and Maintenance	4,355,000	4,365,000	4,315,000
Total Equipment Operations	9,655,700	9,639,700	11,373,300

VRE Fiscal Year 2023 Recommended Departmental Budget

	FY 2021 Amended	FY 2022 Amended July 2021	FY 2023 Recommended
System Safety & Security			
Salaries/Fringes	304,000	117,000	123,000
Travel/Training/Employee Expenses	69,000	33,000	43,000
Office/Other Professional Services	510,200	309,200	267,850
Yard/Station Security	605,000	720,000	727,500
Total Safety and Security	1,488,200	1,179,200	1,161,350
PRTC			
Professional Services	102,000	102,000	102,000
Total PRTC	102,000	102,000	102,000
NVTC			
Professional Services	90,000	90,000	90,000
Total NVTC	90,000	90,000	90,000
Train Operations			
Contract Operations and Maintenance	16,591,500	16,787,500	17,797,500
Total Train Operations	16,591,500	16,787,500	17,797,500
Amtrak			
Contract Operations and Maintenance	5,181,000	4,450,000	4,578,000
Total Amtrak	5,181,000	4,450,000	4,578,000
Maintenance of Equipment			
Maintenance of Equipment	7,832,285	7,898,500	8,771,000
Total Maintenance of Equipment	7,832,285	7,898,500	8,771,000
Amtrak Access Fees			
Access Fees	6,879,000	6,830,000	8,167,000
Total Amtrak Access Fees	6,879,000	6,830,000	8,167,000
Norfolk Southern			
Access Fees	2,745,000	2,556,000	2,642,000
Contract Operations and Maintenance	697,000	688,000	709,000
Total Norfolk Southern	3,442,000	3,244,000	3,351,000
CSXT			
Access Fees	7,657,000	7,904,000	8,355,000
Contract Operations and Maintenance	811,000	640,000	450,000
Total CSXT	8,468,000	8,544,000	8,805,000
CIP Expenditures			
CIP Expenditures	71,283,079	96,198,922	87,710,687
Total CIP Expenditures	71,283,079	96,198,922	87,710,687
CIP VRE - Non-Departmental			
Allowance for Doubtful Accounts	50,000	-	-
Debt Service	6,220,838	6,222,198	6,222,023
Total CIP VRE - Non-Departmental	6,270,838	6,222,198	6,222,023
Total Expenditures	161,651,904	185,862,724	185,477,588

Future Projects and Projects Administered by Other Entities

In previous years, VRE included several major projects in the Capital Improvement Program (CIP) that were largely or entirely unfunded. These 'future projects' had been identified as important to VRE's long-term service planning but generally were still in the conceptual stages of project design; did not have identified funding commitments or plans to apply for such funding; and in some cases were unlikely to be administered by VRE.

Beginning in FY 2020, VRE has chosen to remove these future projects from the formal six-year CIP and instead describe them separately. The decision to present these future projects separately does not mean the projects are not important; instead, it reflects that the projects are relatively undeveloped and are unlikely to be completed (or even substantially underway) during the six-year CIP period. As the projects move forward and as more reliable cost estimates are developed, they may be candidates to move into the formal six-year CIP in future budget years if VRE is identified as the lead entity responsible for project implementation.

The future projects that are important to VRE but not identified in the six-year CIP include:

- *Long Bridge Capacity Improvements*: The Long Bridge Project consists of improvements to the bridge corridor and related railroad infrastructure located between the RO Interlocking near Long Bridge Park in Arlington and the L'Enfant Interlocking near 10th Street SW in Washington, DC. The Long Bridge Corridor is owned and operated by CSX Transportation, but VRE and Amtrak passenger trains currently use the bridge in addition to CSXT freight. The purpose of the project is to provide additional long-term railroad capacity to improve the reliability of railroad service through the Long Bridge Corridor. Currently, there is insufficient capacity, resiliency, and redundancy to accommodate the projected demand in future rail services.

  Following the completion of an Environmental Impact Statement (EIS) and publication of a Record of Decision (ROD) by the Federal Railroad Administration (FRA) in 2020, the Long Bridge project has now entered preliminary engineering. DRPT is leading this phase of the project, and the current estimated construction cost is $2.0 billion.

- *Third Track Projects*: Previous VRE CIPs included third track and bridge projects that would expand capacity along the CSX right-of-way south of Franconia-Springfield. These projects were identified by the waterways crossed by each section of third track (Aquia Creek, Potomac Creek, Powells Creek, Rappahannock River, Neabsco Creek, and Occoquan River). Going forward, this track work will be managed

by DRPT and VPRA as part of the Atlantic Gateway Project (for Franconia to Occoquan), the Washington DC to Richmond Segment (DC2RVA) of the FRA Southeast High-Speed Rail Corridor project, and the broader Transforming Rail in Virginia (TRV) program.

- *Fourth Track between RO (Rosslyn) and AF (Alexandria)*: As with the third track projects, this work will be coordinated by DRPT and VPRA as part of the Atlantic Gateway and DC2RVA projects.
- *Fredericksburg Station Expansion and Parking Structure*: VRE had previously contemplated station expansion and a parking structure at Fredericksburg to accommodate future increased demand. However, this work will now be coordinated with the DC2RVA project.
- *Long-term expansion investments*: Following the completion of the Long Bridge expansion, the RO-to-AF fourth track project, and certain other capacity enhancement projects, VRE will need to consider additional investments to support additional service capacity, including increased peak-hour service frequency and the potential for reverse-commute, midday, and other expanded services. These investments would likely include further expansion of the Crossroads and Broad Run storage yards and track and signal improvements on the Manassas Line.

In addition to the future projects described above, the projects listed below are important to the VRE commuter rail service but are not listed in the CIP because they are funded and administered by other stakeholders.

- *Potomac Shores Station*: The Potomac Shores VRE station will be constructed by the Potomac Shores developer as part of an agreement with Prince William County.
- *Rolling Road Parking Garage*: Fairfax County is reviewing the potential construction of a 300-space parking garage at the Rolling Road VRE station.

A TRANSPORTATION PARTNERSHIP

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APPENDIX C

Asset Category Condition Assessment SOPs

VRE SOP#: TAM-001
Date: 10/05/2020
1 of 9

Rev	Date	Descriptions	Approvals	
	10/23/2017	Draft	Issued By:	STV Incorporated
Original	10/23/2017	Original Final	Approved By:	VRE
Rev. 1	10/05/2020	Routine updates and COVID-19	Approved By:	VRE

Subject:

Facility Condition Assessments

Purpose:

This Standard Operating Procedure (SOP) and corresponding forms provided in **Appendix A**, prescribe the approach and methodology for performing facility condition assessments.

Related Documents:

Federal Register, Volume 81, No. 143
- 49 CFR Parts 625 and 630
- National Transit Database: Transit Asset Management; Final Rule; Notices
- National Transit Database: Capital Asset Reporting; Transit Asset Management; Proposed Guidebooks

FTA's Transit Asset Management Facility Condition Assessment Guidebook, v. 1.2, March 2018
VRE Task 8 – Quantitative Methodologies for Conducting Facility Condition Assessments
- Technical Memorandum (latest revision)

VRE Task 11 – Performance Targets for Capital Assets Technical Memorandum, (latest revision)

Drawings Required:

None

Equipment Affected:

All capital assets located at Administrative Facilities, Maintenance Facilities, Passenger Stations, and Passenger Parking Facilities, for which VRE has direct capital responsibility.

Location(s) Affected:

Asset Class	Number of Facilities	Facilities	
Administrative Facilities	2	Alexandria Headquarters	Fredericksburg Office
Passenger Parking Facilities	3	Broad Run Main Lot Fredericksburg (Lot G & Gravel Lot *only*)	Manassas Garage Quantico South Lot
Maintenance Facilities	9	Broad Run MASF Broad Run S&I Facility Broad Run Trailer Broad Run Crew Building	Crossroads MASF Crossroads S&I Facility Crossroads Vehicle Wash Crossroads Warehouse Offices Crossroads Crew Building
Passenger Facilities	19	Alexandria Backlick Road Broad Run Brooke Burke Centre Crystal City Franconia/Springfield Fredericksburg L'Enfant Leeland Road	Lorton Manassas Manassas Park Quantico Rippon Rolling Road Spotsylvania Union Station Woodbridge

Special Tools and/or Equipment Required:

Digital camera
Facility Condition Assessment Internet Tool Module with backup copies of assessment forms

Inspector(s) Qualifications:

These condition assessments are primarily intended to assess the overall physical condition of the facility to support capital investment decisions. However, inspectors must also note and report any defects that may constitute a safety concern or potential service delay as these types of defects may require immediate attention.

VRE's policy is to use a third party contractor to perform the condition assessments. The inspectors will be required to be competent persons and have general knowledge on the component and sub-component systems to be assessed.

Components with a portion or all of their quantity assigned a rating of 1 may have issues warranting a structural or detailed review. The terms "structural review" and "detailed review" are defined as **review by a person qualified to evaluate the field observed conditions and make a determination of the impacts of the conditions on the performance of the component**. Such reviews may include examination of the field inspection results, as well as any notes or photos of the component from the inspection, review of as-built plans, and/or supplemental analysis as deemed appropriate to evaluate the performance of the component.

VRE may establish additional guidance to aid the inspector in determining field circumstances where structural or other detailed review is warranted, taking into consideration the education, training and experience of their inspection staff.

Contractor Safety:

Inspectors will be expected to familiarize themselves with VRE's operating environment as well as follow VRE's Rules to Live By when conducting work on or about VRE property. All contracted employees will need to follow strict adherence to these rules for their own personal safety and as required for authorization to access the premises. Inspectors are also required to watch the Safety and Security Orientation video, provided on the VRE website, before arriving for the first day of work.

According to the VA COVID-19-Emergency-Temporary-Standard, this field work is classified as a "medium exposure risk" for COVID-19. To reduce transmission, the following measures will be taken: inspectors will socially distance and stay 6-feet apart; masks or similar face coverings will be worn during field work; wash hands or use hand sanitizer frequently, especially around high contact surfaces. Inspectors that think they may have symptoms of the virus or may have been exposed to the virus should not report for field work. Inspectors should avoid using other's phones/tablets for data collection and sanitize shared tools prior to use. See Appendix A for the VA COVID-19-Emergency-Temporary-Standard.

Pre-Assessment Procedures

An assessment schedule will be established to provide ample time for inspections and to ensure that all reporting timelines are met. Prior to a facility condition assessment, the inspector will gather and review the following information:

- Results of any previous facility condition assessments including records of past defects found and/or corrected;
- This facility condition assessment SOP and all other applicable facility inspection and maintenance SOPs;
- All pertinent warranty status and/or additional information regarding the age of systems and building materials;
- All other known issues, including adherence to current construction standards;
- Applicable inspection records and/or certificates for HVAC and Conveyance components; and
- Supplies needed: Digital camera, facility condition assessment SOP and forms (**Appendix B**).

General Procedures

During the on-site assessment, the inspector will have all pertinent records on hand to be used as references and will observe the condition of all the components and sub-components. Each component and sub-component will require different tasks for proper inspection as outlined in the Standard Operating Procedures – Assessment Tasks section.

Components and sub-components are expected to be readily accessible and visible for the inspection. Inspectors will not be required to enter limited access areas such as crawl spaces, utility pits, or sloped roofs. All condition assessments should be observed from an easy point of access location.

As part of the inspection/assessment the condition of each sub-component will be rated and recorded using the FTA's Transit Economic Requirements Model (TERM) 5 point scale, which can be applied using the sub-component condition rating descriptions in the table below.

1-Poor	2-Marginal	3-Adequate	4-Good	5-Excellent

Rating	Condition	Description
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 system(s), but is overall functional.
3	Adequate	Moderately deteriorated or defective system(s); but has not exceeded useful life.
2	Marginal	Defective or deteriorated system(s) in need of replacement; exceeded useful life.
1	Poor	Critically damaged system(s) or in need of immediate repair; well past useful life.

Source: FTA Facility Condition Assessment Guidebook

Standard Operating Procedures – Assessment Tasks

Component	Sub-Component Assessment Tasks
Substructure	• Inspect foundations including walls, columns, pilings, concrete precast, and other structural components for signs of decay. • Inspect basement including non-foundation and structural components such as facing materials
Shell	• Inspect superstructure / structural frame, including columns, pillars, beams, trusses, base plates, concrete masonry units, cast-in-place, precast, bricks, grout, and walls. • Inspect building envelope including façade, curtain wall system, glazing system, vinyl insulation blankets, exterior sealants, exterior balconies, canopies, doors, louvers, walkways, parapets, and fire escapes. • Inspect windows, aluminum windscreens, doors, and all finishes (paint and masonry). • Inspect roof, including roof surface (tiles, membrane, shingles, gravel etc.), gutters, downspouts, eaves, skylights, flashing, chimney surrounds, and sealants, hardware and painted or coated surfaces. Note evidence of ponding, or roof leaks, significant age – and other indicators that repair may be necessary. Note age of roof(s) and whether warranty is still in effect.
Interior	• Inspect soundness and finish of drywall, gypsum wallboard, partitions, interior doors, fittings, ceiling tiles, and signage. • Inspect passenger areas including access tunnels, passageways, and platforms. • Inspect stairs and balusters, including fire and access issues. • Inspect interior finishes, including millwork and materials used on walls, floors, and ceilings, such as tile, paint, epoxy and other coatings. Look for roughness and damage. • Inspect site furnishings, including entrance mats, lockers, shelving, window treatments, and towel/waste combos.
Conveyance	• Inspect condition, function, and code compliance of elevators, escalators, lifts, exit ladders/hatch and any other fixed apparatuses for the movement of goods or people. • Confirm a current state inspection certificate is on file at the facility or VRE's headquarters for applicable conveyance subcomponents.

Component	Sub-Component Assessment Tasks
Plumbing	• Inspect fixtures and pipes for water distribution, water heaters, sanitary waste systems, and Murdock hydrants for damage or leaks including any drainage.
HVAC	• Note apparent or reported age of the equipment, past material component replacements/upgrades, and the apparent level of maintenance exercised. If heating equipment is shut down or not operational at the time of the walk-through survey, provide an opinion of the condition to the extent observed. • Confirm records for a routine inspection by HVAC specialist.
Fire Protection	• Inspect sprinklers, standpipes, hydrants, fire alarms, emergency lighting, smoke evacuation, stairwell pressurization, and any other specialized components relating to overall protection system and compliance.
Electrical	• Examine other electrical system-related pieces such as lightning protection, generators, emergency lighting, and components related to electrical service and distribution such as conduit, boxes, solar panels and mountings for any damage wire chaffing or loose or corroded connections. Evaluate overall performance of the system. • Inspect security cameras for apparent damage or deficiencies. Confirm proper camera operation through contact with VRE communications staff during inspection. • Confirm routine operation (monthly) of emergency generator (for a minimum ½ hour), if applicable.
Equipment	• Inspect equipment (major pieces of equipment integral to the function of the facility), noting age, condition, and functional deficiencies.
Fare Collection	• Inspect fare collection system(s) and any associated components, noting age, condition, and functional deficiencies

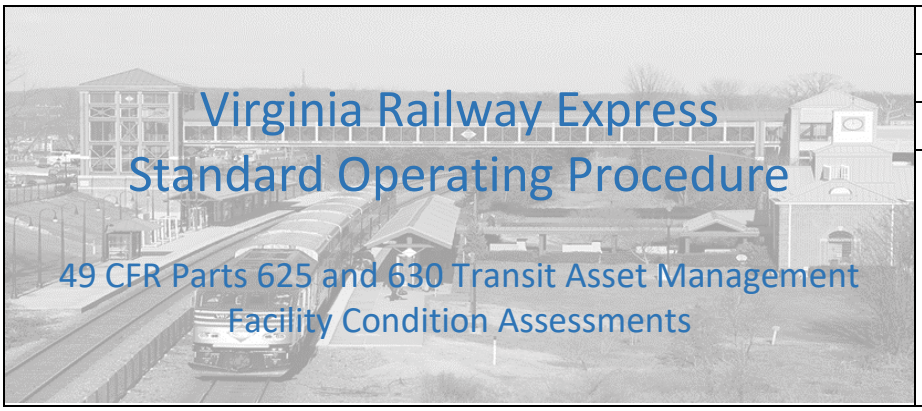
Component	Sub-Component Assessment Tasks
Site	• Inspect roadways/driveways and associated signage, markings, and equipment. Look for cracking or settling of the concrete or asphalt. • Inspect parking lots and associated signage, markings, and equipment. Look for cracking or settling of the concrete or asphalt. • Inspect pedestrian areas and associated signage, markings, and equipment. Inspect the curbing and ramps for cracking, settling, holes, uneven surfaces and trip hazards. Pay special attention to wheelchair ramp areas and other ADA / access considerations. • Inspect site development subcomponents, including fences, walls, and miscellaneous structures. Look for corrosion, structural integrity and condition of paint. • Inspect landscaping and site utilities. Look for signs of drainage problems such as flooded areas, eroded soil and water damage to the asphalt and clogged storm drain inlets. • Inspect irrigation systems, if installed. Look for signs of leaks, such as sagging areas in grass and/or pooling water. Look for dead spots in the grass indicating lack of water possibly caused by a mechanical failure. • Inspect passenger huts and benches for corrosion, paint condition, glass condition and damage.

Overall Condition Rating – All Components

Upon completion of the facility condition assessments the condition ratings recorded for each of the sub-components will be aggregated to provide a component condition rating. In turn, the component condition ratings will be used to calculate an overall condition rating for each VRE facility. VRE will use the FTA's **Median Value Method** to aggregate the assessment condition ratings, as described below.

Step	Description
Step 1	Determine median value of each component. Calculate this by tabulating the component quantity inspected at each condition rating, and use as the overall component rating **the lowest rating achieved by at least half of the component quantity**. For instance, if 60% of a component quantity has a rating of 2, 20% has a rating of 3, and 20% has a rating of 4, then the overall rating would be 2, as over half of the component quantity has a rating of 2 or less. Likewise, if half of the quantity has a rating of 1 and half has a rating of 5, then the overall rating would be 1.
Step 2	Determine median value across components. Calculate this by tabulating the number of components inspected at each condition rating, and use as the overall rating **the lowest rating achieved by at least half of the components.** For instance, if 10 components were inspected and the results were evenly distributed between ratings (2 components with each of the 5 rating values), the overall rating would be 3 as at least half of the ratings would have a value of 3 or less.

Source: FTA Facility Condition Assessment Guidebook



VRE SOP#: TAM-001
Date: 10/05/2020
Appendix A

APPENDIX A: VA COVID-19-EMERGENCY-TEMPORARY-STANDARD

(Provided as a separate electronic attachment to this document)

§16VAC25-220, Emergency Temporary Standard

Infectious Disease Prevention:

SARS-CoV-2 Virus That Causes COVID-19

As Adopted by the

Safety and Health Codes Board

on July 15, 2020

DEPARTMENT OF LABOR AND INDUSTRY

VIRGINIA OCCUPATIONAL SAFETY AND HEALTH (VOSH) PROGRAM

VIRGINIA DEPARTMENT OF LABOR AND INDUSTRY (DOLI)

Effective Date:

The Emergency Temporary Standard will take immediate effect upon publication in a newspaper of general circulation, published in the City of Richmond, Virginia. The Department anticipates that publication of the Emergency Temporary Standard will occur during the week of July 27, 2020, although the exact date is not known at this time.

§16VAC25-220

Emergency Temporary Standard

Infectious Disease Prevention: SARS-CoV-2 Virus That Causes COVID-19

§16VAC25-220

§16VAC25-220-10. Purpose, scope, and applicability.

A. This emergency temporary standard is designed to establish requirements for employers to control, prevent, and mitigate the spread of SARS-CoV-2, the virus that causes coronavirus disease 2019 (COVID-19) to and among employees and employers.

B. This standard shall not be extended or amended without public participation in accordance with the Virginia Administrative Process Act, §§ 2.2-4000 et seq. of the Code of Virginia and 16VAC25-60-170.

C. This standard adopted in accordance with §40.1-22(6a) of the Code of Virginia shall apply to every employer, employee, and place of employment in the Commonwealth of Virginia within the jurisdiction of the VOSH program as described in §§16VAC25-60-20 and 16VAC25-60-30.

D. This standard is designed to supplement and enhance existing VOSH laws, rules, regulations, and standards applicable directly or indirectly to SARS-CoV-2 virus or COVID-19 disease-related hazards such as, but not limited to, those dealing with personal protective equipment, respiratory protective equipment, sanitation, access to employee exposure and medical records, occupational exposure to hazardous chemicals in laboratories, hazard communication, §40.1-51.1.A of the Code of Virginia, etc. Should this standard conflict with an existing VOSH rule, regulation, or standard, the more stringent requirement from an occupational safety and health hazard prevention standpoint shall apply.

E. Application of this standard to a place of employment will be based on the exposure risk level presented by SARS-CoV-2 virus-related and COVID-19 disease-related hazards present or job tasks undertaken by employees at the place of employment as defined in this standard (i.e., “very high”, “high, “medium”, and “lower”).

1. It is recognized that various hazards or job tasks at the same place of employment can be designated as “very high”, “high, “medium”, or “lower” exposure risk for

purposes of application of the requirements of this standard. It is further recognized that various required job tasks prohibit an employee from being able to observe physical distancing from other persons.

2. Factors that shall be considered in determining exposure risk level include, but are not limited to:

a. The job tasks being undertaken; the work environment (e.g. indoors or outdoors); the known or suspected presence of the SARS-CoV-2 virus; the presence of a person known or suspected to be infected with the SARS-CoV-2 virus; the number of employees and/or other persons in relation to the size of the work area; the working distance between employees and other employees or persons; the duration and frequency of employee exposure through contact inside of six feet with other employees or persons (e.g., including shift work exceeding 8 hours per day);

b. The type of hazards encountered, including potential exposure to the airborne transmission of SARS-CoV-2 virus; contact with contaminated surfaces or objects, such as tools, workstations, or break room tables, and shared spaces such as shared workstations, break rooms, locker rooms, and entrances/exits to the facility; shared work vehicles; industries or places of employment where employer sponsored shared transportation is a common practice, such as ride-share vans or shuttle vehicles, car-pools, and public transportation, etc.

F. This standard shall not conflict with requirements and guidelines applicable to businesses set out in any applicable Virginia executive order or order of public health emergency.

G. 1. To the extent that an employer actually complies with a recommendation contained in CDC guidelines, whether mandatory or non-mandatory, to mitigate SARS-CoV-2 virus and COVID-19 disease related hazards or job tasks addressed by this standard, and provided that the CDC recommendation provides equivalent or greater protection than provided by a provision of this standard, the employer's actions shall be considered in compliance with this standard. An employer's actual compliance with a recommendation contained in CDC guidelines, whether mandatory or non-mandatory,

to mitigate SARS-COV-2 and COVID19 related hazards or job tasks addressed by this standard shall be considered evidence of good faith in any enforcement proceeding related to this standard.

2. Public and private institutions of higher education that have received certification from the State Council of Higher Education of Virginia that the institution's re-opening plans are in compliance with guidance documents, whether mandatory or non-mandatory, developed by the Governor's Office in conjunction with the Virginia Department of Health, shall be considered in compliance with this standard, provided the institution operates in compliance with their certified reopening plans and the certified reopening plans provide equivalent or greater levels of employee protection than this standard. Public school divisions and private schools that submit their plans to the Virginia Department of Education to move to Phase II and Phase III that are aligned with CDC guidance for reopening of schools that provide equivalent or greater levels of employee protection than a provision of this standard and who operate in compliance with the public school division's or private school's submitted plans shall be considered in compliance with this standard. An institution's actual compliance with recommendations contained in CDC guidelines or the Virginia Department of Education guidance, whether mandatory or non-mandatory, to mitigate SARS-CoV-2 and COVID-19 related hazards or job tasks addressed by this standard shall be considered evidence of good faith in any enforcement proceeding related to this standard.

H. Nothing in the standard shall be construed to require employers to conduct contact tracing of the SARS-CoV-2 virus or COVID-19 disease.

§16VAC25-220-20. Dates.

This emergency temporary standard shall take immediate effect upon publication in a newspaper of general circulation, published in the City of Richmond, Virginia.

With the exception of §16VAC25-220-80.B.10 regarding training required on infectious disease preparedness and response plans, the training requirements in §16VAC25-220-80 shall take effect thirty (days) after the effective date of this standard. The training requirements

under §16VAC25-220-80.B.10 shall take effect sixty (60) days after the effective date of this standard.

The requirements for §16VAC25-220-70, Infectious Disease Preparedness and Response Plan, shall take effect sixty (60) days after the effective date of this standard.

This emergency temporary standard shall expire within six months of its effective date, upon expiration of the Governor's State of Emergency, or when superseded by a permanent standard, whichever occurs first, or when repealed by the Virginia Safety and Health Codes Board.

§16VAC25-220-30. Definitions.

"Administrative Control" means any procedure which significantly limits daily exposure to SARS-CoV-2 virus and COVID-19 disease related workplace hazards and job tasks by control or manipulation of the work schedule or manner in which work is performed. The use of personal protective equipment is not considered a means of administrative control.

"Airborne infection isolation room (AIIR)", formerly a negative pressure isolation room, means a single-occupancy patient-care room used to isolate persons with a suspected or confirmed airborne infectious disease. Environmental factors are controlled in AIIRs to minimize the transmission of infectious agents that are usually transmitted from person to person by droplet nuclei associated with coughing or aerosolization of contaminated fluids. AIIRs provide negative pressure in the room (so that air flows under the door gap into the room); *and* an air flow rate of 6-12 ACH (6 ACH for existing structures, 12 ACH for new construction or renovation); and direct exhaust of air from the room to the outside of the building or recirculation of air through a HEPA filter before returning to circulation.

"Asymptomatic" means a person who does not have symptoms.

"Building/facility owner" means the legal entity, including a lessee, which exercises control over management and record keeping functions relating to a building and/or facility in which activities covered by this standard take place.

"CDC" means Centers for Disease Control and Prevention.

"Cleaning" means the removal of dirt and impurities, including germs, from surfaces. Cleaning alone does not kill germs. But by removing the germs, it decreases their number and therefore any risk of spreading infection.

"Community transmission", also called "community spread" means people have been infected with SARS-CoV-2 in an area, including some who are not sure how or where they became infected. The level of community transmission is classified by the CDC as:

1. "No to minimal" is where there is evidence of isolated cases or limited community transmission, case investigations are underway, and no evidence of exposure in large communal settings (e.g., healthcare facilities, schools, mass gatherings, etc.);
2. "Moderate" is where there is sustained community transmission with high likelihood or confirmed exposure within communal settings and potential for rapid increase in cases;
3. "Substantial, controlled" is where there is large scale, controlled community transmission, including communal settings (e.g., schools, workplaces, etc.); or
4. "Substantial, uncontrolled" is where there is large scale, uncontrolled community transmission, including communal settings (e.g., schools, workplaces, etc.).

"COVID-19" means Coronavirus Disease 2019, which is primarily a respiratory disease, caused by the SARS-CoV-2 virus.

"Disinfecting" means using chemicals approved for use against SARS-CoV-2, for example EPA-registered disinfectants, to kill germs on surfaces. This process does not necessarily clean dirty surfaces or remove germs. But killing germs remaining on a surface after cleaning further reduces any risk of spreading infection.

"Duration and frequency of employee exposure" means how long ("duration") and how often ("frequency") an employee is potentially exposed to the SARS-CoV-2 virus or COVID-19 disease. Generally, the greater the frequency or length of exposure, the greater the probability is for potential infection to occur. Frequency of exposure is generally more significant for acute acting agents or situations, while duration of exposure is generally more significant for chronic acting agents or situations. An example of an acute SARS-CoV-2 virus or COVID-19 disease situation would be an unprotected customer, patient, or other person coughing or sneezing directly into the face of an employee. An example of a chronic situation would be a job task

that requires an employee to interact either for an extended period of time inside six feet with a smaller static group of other employees or persons; or for an extended period of time inside six feet with a larger group of other employees or persons in succession but for periods of shorter duration.

“Economic feasibility” means the employer is financially able to undertake the measures necessary to comply with one or more requirements in this standard. The cost of corrective measures to be taken will not usually be considered as a factor in determining whether a violation of this standard has occurred. If an employer’s level of compliance lags significantly behind that of its industry, an employer’s claim of economic infeasibility will not be accepted.

“Elimination” means a method of exposure control that removes the employee completely from exposure to SARS-CoV-2 virus and COVID-19 disease related workplace hazards and job tasks.

"Employee" means an employee of an employer who is employed in a business of his employer. Reference to the term “employee” in this standard also includes, but is not limited to, temporary employees and other joint employment relationships, persons in supervisory or management positions with the employer, etc., in accordance with Virginia occupational safety and health laws, standards, regulations, and court rulings.

“Engineering control” means the use of substitution, isolation, ventilation, and equipment modification to reduce exposure to SARS-CoV-2 virus and COVID-19 disease related workplace hazards and job tasks.

“Exposure risk level” means an assessment of the possibility that an employee could be exposed to the hazards associated with SARS-CoV-2 virus and the COVID-19 disease. The exposure risk level assessment should address all risks and all modes of transmission including airborne transmission, as well as transmission by asymptomatic and presymptomatic individuals. Risk levels should be based on the risk factors present that increase risk exposure to COVID-19 and are present during the course of employment regardless of location. Hazards and job tasks have been divided into four risk exposure levels: “very high”, “high”, “medium”, and “lower”:

"Very high" exposure risk hazards or job tasks are those in places of employment with high potential for employee exposure to known or suspected sources of the SARS-CoV-2 virus (e.g., laboratory samples) or persons known or suspected to be infected with the SARS-CoV-2 virus, including, but not limited to, during specific medical, postmortem, or laboratory procedures:

1. Aerosol-generating procedures (e.g., intubation, cough induction procedures, bronchoscopies, some dental procedures and exams, or invasive specimen collection) on a patient or person known or suspected to be infected with the SARS-CoV-2 virus;
2. Collecting or handling specimens from a patient or person known or suspected to be infected with the SARS-CoV-2 virus (e.g., manipulating cultures from patients known or suspected to be infected with the SARS-CoV-2 virus);
3. Performing an autopsy that involves aerosol-generating procedures on the body of a person known or suspected to be infected with the SARS-CoV-2 virus at the time of their death.

"High" exposure risk hazards or job tasks are those in places of employment with high potential for employee exposure inside six feet with known or suspected sources of SARS-CoV-2, or persons known or suspected to be infected with the SARS-CoV-2 virus that are not otherwise classified as "very high" exposure risk, including, but not limited to:

1. Healthcare (physical and mental health) delivery and support services provided to a patient known or suspected to be infected with the SARS-CoV-2 virus, including field hospitals (e.g., doctors, nurses, cleaners, and other hospital staff who must enter patient rooms or areas);
2. Healthcare (physical and mental) delivery, care, and support services, wellness services, non-medical support services, physical assistance, etc., provided to a patient, resident, or other person known or suspected to be infected with the SARS-CoV-2 virus involving skilled nursing services, outpatient medical services, clinical services, drug treatment programs, medical outreach services, mental health services, home health care, nursing home care, assisted living care, memory care support and services, hospice care, rehabilitation services, primary and specialty medical care, dental care, COVID-19

testing services, blood donation services, contact tracer services, and chiropractic services;

3. First responder services provided to a patient, resident, or other person known or suspected to be infected with the SARS-CoV-2 virus;

4. Medical transport services (loading, transporting, unloading, etc.) provided to patients known or suspected to be infected with the SARS-CoV-2 virus (e.g., ground or air emergency transport, staff, operators, drivers, pilots, etc.);

5. Mortuary services involved in preparing (e.g., for burial or cremation) the bodies of persons who are known or suspected to be infected with the SARS-CoV-2 virus at the time of their death.

"Medium" exposure risk hazards or job tasks are those not otherwise classified as "very high" or "high" exposure risk in places of employment that require more than minimal occupational contact inside six feet with other employees, other persons, or the general public who may be infected with SARS-CoV-2, but who are not known or suspected to be infected with the SARS-CoV-2 virus. "Medium" exposure risk hazards or job tasks may include, but are not limited to, operations and services in:

1. Poultry, meat, and seafood processing; agricultural and hand labor; commercial transportation of passengers by air, land, and water; on campus educational settings in schools, colleges, and universities; daycare and afterschool settings; restaurants and bars; grocery stores, convenience stores, and food banks; drug stores and pharmacies; manufacturing settings; indoor and outdoor construction settings; correctional facilities, jails, detentions centers, and juvenile detention centers; work performed in customer premises, such as homes or businesses; retail stores; call centers; package processing settings; veterinary settings; personal care, personal grooming , salon, and spa settings; venues for sports, entertainment, movies, theaters, and other forms of mass gatherings; homeless shelters; fitness, gym, and exercise facilities; airports, and train and bus stations; etc.; and

2. Situations not involving exposure to known or suspected sources of SARS-CoV-2: hospitals, other healthcare (physical and mental) delivery and support services in a non-

hospital setting, wellness services, physical assistance, etc.; skilled nursing facilities; outpatient medical facilities; clinics, drug treatment programs, and medical outreach services; non-medical support services; mental health facilities; home health care, nursing homes, assisted living facilities, memory care facilities, and hospice care; rehabilitation centers, doctors' offices, dentists' offices, and chiropractors' offices; first responders services provided by police, fire, paramedic and emergency medical services providers, medical transport; contact tracers, etc.

"Lower" exposure risk hazards or job tasks are those not otherwise classified as "very high", "high", or "medium" exposure risk that do not require contact inside six feet with persons known to be, or suspected of being, or who may be infected with SARS-CoV-2. Employees in this category have minimal occupational contact with other employees, other persons, or the general public, such as in an office building setting; or are able to achieve minimal occupational contact through the implementation of engineering, administrative and work practice controls, such as, but not limited to:

1. Installation of floor to ceiling physical barriers constructed of impermeable material and not subject to unintentional displacement (e.g., such as clear plastic walls at convenience stores behind which only one employee is working at any one time);
2. Telecommuting;
3. Staggered work shifts that allow employees to maintain physical distancing from other employees, other persons, and the general public;
4. Delivering services remotely by phone, audio, video, mail, package delivery, curbside pickup or delivery, etc., that allows employees to maintain physical distancing from other employees, other persons, and the general public; and
5. Mandatory physical distancing of employees from other employees, other persons, and the general public.
6. Employee use of face coverings for contact inside six feet of coworkers, customers, or other persons is not an acceptable administrative or work practice control to achieve minimal occupational contact. However, when it is necessary for brief contact with others inside the 6 feet distance a face covering is required.

"Face covering" means an item normally made of cloth or various other materials with elastic bands or cloth ties to secure over the wearer's nose and mouth in an effort to contain or reduce the spread of potentially infectious respiratory secretions at the source (i.e., the person's nose and mouth). A face covering is not intended to protect the wearer, but it may reduce the spread of virus from the wearer to others. A face covering is not a surgical/medical procedure mask. A face covering is not subject to testing and approval by a state or government agency, so it is not considered a form of personal protective equipment or respiratory protection equipment under VOSH laws, rules, regulations, and standards.

"Face shield" means a form of personal protective equipment made of transparent, impermeable materials intended to protect the entire face or portions of it from droplets or splashes.

"Feasible" as used in this standard includes both technical and economic feasibility.

"Filtering facepiece respirator" means a negative pressure air purifying particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium. These are certified for use by the National Institute for Occupational Safety and Health (NIOSH).

"Hand sanitizer" means an alcohol-based hand rub containing at least 60% alcohol, unless otherwise provided for in this standard.

"HIPAA" means Health Insurance Portability and Accountability Act.

"Known to be infected with the SARS-CoV-2 virus" means a person, whether symptomatic or asymptomatic, who has tested positive for SARS-CoV-2 and the employer knew or with reasonable diligence should have known that the person has tested positive for SARS-CoV-2.

"May be infected with SARS-CoV-2 virus" means any person not currently a person known or suspected to be infected with SARS-CoV-2 virus, and not currently vaccinated against the SARS-CoV-2 virus.

"Occupational exposure" means the state of being actually or potentially exposed to contact with SARS-CoV-2 virus or COVID-19 disease related hazards at the work location or while engaged in work activities at another location.

"Personal protective equipment" means equipment worn to minimize exposure to hazards that cause serious workplace injuries and illnesses. These injuries and illnesses may result from contact with chemical, radiological, physical, electrical, mechanical, biological or other workplace hazards. Personal protective equipment may include, but is not limited to, items such as gloves, safety glasses, shoes, earplugs or muffs, hard hats, respirators, surgical/medical procedure masks, gowns, face shields, coveralls, vests, and full body suits.

"Physical distancing" also called "social distancing" means keeping space between yourself and other persons while conducting work-related activities inside and outside of the physical establishment by staying at least 6 feet from other persons. Physical separation of an employee from other employees or persons by a permanent, solid floor to ceiling wall constitutes physical distancing from an employee or other person stationed on the other side of the wall.

"Respirator" means a protective device that covers the nose and mouth or the entire face or head to guard the wearer against hazardous atmospheres. Respirators are certified for use by the National Institute for Occupational Safety and Health (NIOSH). Respirators may be:

1. Tight-fitting, that is, half masks, which cover the mouth and nose, and full face pieces that cover the face from the hairline to below the chin; or
2. Loose-fitting, such as hoods or helmets that cover the head completely.

There are two major classes of respirators:

1. Air-purifying, which remove contaminants from the air; and
2. Atmosphere-supplying, which provide clean, breathable air from an uncontaminated source. As a general rule, atmosphere-supplying respirators are used for more hazardous exposures.

"Respirator user" means an employee who in the scope of their current job may be assigned to tasks which may require the use of a respirator in accordance with this standard or required by other provisions in the VOSH/OSHA standards.

"SARS-CoV-2" means a betacoronavirus, like MERS-CoV and SARS-CoV. Coronaviruses are named for the crown-like spikes on their surface. The SARS-CoV-2 causes what has been designated as the Coronavirus Disease 2019 (COVID-19).

"Signs" of COVID-19 include trouble breathing, persistent pain or pressure in the chest, new confusion, inability to wake or stay awake, bluish lips or face, etc.

"Surgical/medical procedure mask" means a mask to be worn over the wearer's nose and mouth that is fluid resistant and provides the wearer protection against large droplets, splashes, or sprays of bodily or other hazardous fluids, and prevents the wearer from exposing others in the same fashion. It protects others from the wearer's respiratory emissions. It has a loose fitting face seal. It does not provide the wearer with a reliable level of protection from inhaling smaller airborne particles. It is considered a form of personal protective equipment, but is not considered respiratory protection equipment under VOSH laws, rules, regulations, and standards. Testing and approval is cleared by the U.S. Food and Drug Administration (FDA).

"Suspected to be infected with SARS-CoV-2 virus" means a person that has signs or symptoms of COVID-19 but has not tested positive for SARS-CoV-2 and no alternative diagnosis has been made (e.g., tested positive for influenza).

"Symptomatic" means the employee is experiencing symptoms similar to those attributed to COVID-19 including fever or chills, cough, shortness of breath or difficulty breathing, fatigue, muscle or body aches, headache, new loss of taste or smell, sore throat, congestion or runny nose, nausea or vomiting, or diarrhea. Symptoms may appear in 2 to 14 days after exposure to the virus.

"Technical feasibility" means the existence of technical know-how as to materials and methods available or adaptable to specific circumstances which can be applied to one or more requirements in this standard with a reasonable possibility that employee exposure to the SARS-CoV-2 virus and COVID-19 disease hazards will be reduced. If an employer's level of compliance lags significantly behind that of their industry, allegations of technical infeasibility will not be accepted.

"VOSH" means Virginia Occupational Safety and Health.

"Work practice control" means a type of administrative control by which the employer modifies the manner in which the employee performs assigned work. Such modification may result in a reduction of exposure to SARS-CoV-2 virus and COVID-19 disease related workplace

hazards and job tasks through such methods as changing work habits, improving sanitation and hygiene practices, or making other changes in the way the employee performs the job.

§16VAC25-220-40. Mandatory requirements for all employers.

Employers in all exposure risk levels shall ensure compliance with the following requirements to protect employees from workplace exposure to the SARS-CoV-2 virus that causes the COVID-19 disease:

A. Exposure assessment and determination, notification requirements, and employee access to exposure and medical records.

1. Employers shall assess their workplace for hazards and job tasks that can potentially expose employees to the SARS-CoV-2 virus or COVID-19 disease. Employers shall classify each job task according to the hazards employees are potentially exposed to and ensure compliance with the applicable sections of this standard for "very high," "high," "medium," or "lower" risk levels of exposure. Tasks that are similar in nature and expose employees to the same hazard may be grouped for classification purposes.

2. Employers shall inform employees of the methods of and encourage employees to self-monitor for signs and symptoms of COVID-19 if they suspect possible exposure or are experiencing signs of an oncoming illness.

3. Serological testing, also known as antibody testing, is a test to determine if persons have been infected with SARS-CoV-2 virus. It has not been determined if persons who have the antibodies are immune from infection.

a. Serologic test results shall not be used to make decisions about returning employees to work who were previously classified as known or suspected to be infected with the SARS-CoV-2 virus.

b. Serologic test results shall not be used to make decisions concerning employees that were previously classified as known or suspected to be infected with the SARS-CoV-2 virus about grouping, residing in or being admitted to congregate settings, such as schools, dormitories, etc.

4. Employers shall develop and implement policies and procedures for employees to report when they are experiencing symptoms consistent with COVID-19, and no

alternative diagnosis has been made (e.g., tested positive for influenza). Such employees shall be designated by the employer as "suspected to be infected with SARS-CoV-2 virus".

5. Employers shall not permit employees or other persons known or suspected to be infected with SARS-CoV-2 virus to report to or remain at the work site or engage in work at a customer or client location until cleared for return to work (see §16VAC25-220-40.B). Nothing in this standard shall prohibit an employer from permitting an employee known or suspected to be infected with SARS-CoV-2 virus from engaging in teleworking or other form of work isolation that would not result in potentially exposing other employees to the SARS-CoV-2 virus.

6. To the extent feasible and permitted by law, including but not limited to the Families First Coronavirus Response Act, employers shall ensure that sick leave policies are flexible and consistent with public health guidance and that employees are aware of these policies.

7. Employers shall discuss with subcontractors and companies that provide contract or temporary employees about the importance of employees or other persons who are known or suspected to be infected with the SARS-CoV-2 virus staying home. Known or suspected to be infected with the SARS-CoV-2 virus subcontractor, contract, or temporary employees shall not report to or be allowed to remain at the work site until cleared for return to work. Subcontractors shall not allow their known or suspected to be infected with the SARS-CoV-2 virus employees to report to or be allowed to remain at work or on a job site until cleared for return to work.

8. To the extent permitted by law, including HIPAA, employers shall establish a system to receive reports of positive SARS-CoV-2 tests by employees, subcontractors, contract employees, and temporary employees (excluding patients hospitalized on the basis of being known or suspected to be infected with SARS-CoV-2 virus) present at the place of employment within the previous 14 days from the date of positive test, and the employer shall notify:

a. Its own employees who may have been exposed, within 24 hours of discovery of their possible exposure, while keeping confidential the identity of the known to be infected with SARS-CoV-2 virus person in accordance with the requirements of the Americans with Disabilities Act (ADA) and other applicable federal and Virginia laws and regulations; and

b. In the same manner as §16VAC25-220-40.A.8.a, other employers whose employees were present at the work site during the same time period; and

c. In the same manner as §16VAC25-220-40.A.8.a, the building/facility owner. The building/facility owner will require all employer tenants to notify them of the occurrence of a SARS-CoV-2-positive test for any employees or residents in the building. This will allow them to take the necessary steps to sanitize the common areas of the building. In addition, the building/facility owner will notify all employer tenants in the building that one or more cases have been discovered and the floor or work area where the case was located. The identity of the individual will be kept confidential in accordance with the requirements of the Americans with Disabilities Act (ADA) and other applicable federal and Virginia laws and regulations.

d. The Virginia Department of Health within 24 hours of the discovery of a positive case.

e. The Virginia Department of Labor and Industry within 24 hours of the discovery of three (3) or more employees present at the place of employment within a 14-day period testing positive for SARS-CoV-2 virus during that 14-day time period.

9. Employers shall ensure employee access to their own SARS-CoV-2 virus and COVID-19 disease related exposure and medical records in accordance with the standard applicable to its industry. Employers in the agriculture, public sector marine terminal, and public sector longshoring industries shall ensure employees access to their own SARS-CoV-2 virus and COVID-19 disease related exposure and medical records in accordance with §1910.1020, Access to Employee Exposure and Medical Records.

B. Return to Work.

1. The employer shall develop and implement policies and procedures for known or suspected to be infected with the SARS-CoV-2 virus employees to return to work using either a symptom-based or test-based strategy, depending on local healthcare and testing circumstances. While an employer may rely on other reasonable options, a policy that involves consultation with appropriate healthcare professionals concerning when an employee has satisfied the symptoms based strategy requirements in §16VAC25-220-40.B.1.a will constitute compliance with the requirements of §16VAC25-220-40.B.

a. For known or suspected to be infected with the SARS-CoV-2 virus employees the symptom-based strategy excludes an employee from returning to work until at least 3 days (72 hours) have passed since recovery, defined as resolution of fever without the use of fever-reducing medications and improvement in respiratory symptoms (e.g., cough, shortness of breath); and, at least 10 days have passed since symptoms first appeared.

b. The test-based strategy excludes an employee from returning to work until resolution of fever without the use of fever-reducing medications, and improvement in respiratory symptoms (e.g., cough, shortness of breath), and negative results of an FDA Emergency Use Authorized COVID-19 molecular assay for detection of SARS-CoV-2 RNA from at least two consecutive respiratory specimens collected ≥24 hours apart (total of two negative specimens).

i. If a known or suspected to be infected with the SARS-CoV-2 virus employee refuses to be tested, the employer compliance with §16VAC25-220-40.B.1.a, symptom-based strategy, will be considered in compliance with this standard. Nothing in this standard shall be construed to prohibit an employer from requiring a known or suspected to be infected with the SARS-CoV-2 virus employee to be tested in accordance with §16VAC25-220-40.B.1.b.

ii. For purposes of this section, COVID-19 testing is considered a “medical examination” under §40.1-28 of the Code of Virginia. The employer shall not

require the employee to pay for the cost of COVID-19 testing for return to work determinations.

2. The employer shall develop and implement policies and procedures for known to be infected with SARS-CoV-2 asymptomatic employees to return to work using either a time-based or test-based strategy depending on local healthcare and testing circumstances. While an employer may rely on other reasonable options, a policy that involves consultation with appropriate healthcare professionals concerning when an employee has satisfied the time based strategy requirements in §16VAC25-220-40.B.2.a will constitute compliance with the requirements of §16VAC25-220-40.B.

a. The time-based strategy excludes an employee from returning to work until at least 10 days have passed since the date of their first positive COVID-19 diagnostic test assuming they have not subsequently developed symptoms since their positive test. If they develop symptoms, then the symptom-based or test-based strategy shall be used.

b. The test-based strategy excludes an employee from returning to work until negative results of an FDA Emergency Use Authorized COVID-19 molecular assay for detection of SARS-CoV-2 RNA from at least two consecutive respiratory specimens collected ≥24 hours apart (total of two negative specimens).

i. If a known to be infected with SARS-CoV-2 asymptomatic employee refuses to be tested, employer compliance with §16VAC25-220-40.B.2.a, time-based strategy, will be considered in compliance with this standard. Nothing in this standard shall be construed to prohibit an employer from requiring a known to be infected with SARS-CoV-2 asymptomatic employee to be tested in accordance with §16VAC25-220-40.B.2.b.

ii. For purposes of this section, COVID-19 testing is considered a “medical examination” under §40.1-28 of the Code of Virginia. The employer shall not require the employee to pay for the cost of COVID-19 testing for return to work determinations.

C. Unless otherwise provided in this standard, employers shall ensure that employees observe physical distancing while on the job and during paid breaks on the employer's property, including policies and procedures that:

1. Use verbal announcements, signage, or visual cues to promote physical distancing;

2. Decrease worksite density by limiting non-employee access to the place of employment or restrict access to only certain workplace areas to reduce the risk of exposure.

3. An employer's compliance with occupancy limits contained in any applicable Virginia executive order or order of public health emergency will constitute compliance with the requirements in this paragraph.

D. Access to common areas, breakrooms, or lunchrooms shall be closed or controlled.

1. If the nature of an employer's work or the work area does not allow employees to consume meals in the employee's workspace while observing physical distancing, an employer may designate, reconfigure, and alternate usage of spaces where employees congregate, including lunch and break rooms, locker rooms, time clocks, etc., with controlled access, provided the following conditions are met:

a. At the entrance(s) of the designated common area or room the employer shall clearly post the policy limiting the occupancy of the space, and requirements for physical distancing, hand washing/hand sanitizing, and cleaning and disinfecting of shared surfaces.

b. The employer shall limit occupancy of the designated common area or room so that occupants can maintain physical distancing from each other. The employer shall enforce the occupancy limit.

c. Employees shall be required to clean and disinfect the immediate area in which they were located prior to leaving, or the employer may provide for cleaning and disinfecting of the common area or room at regular intervals throughout the day, and between shifts of employees using the same common area or room (i.e., where an employee or groups of employees have a designated lunch period and the common area or room can be cleaned in between occupancies).

d. Hand washing facilities, and hand sanitizer where feasible, are available to employees. Hand sanitizers required for use to protect against SARS-CoV-2 are flammable and use and storage in hot environments can result in a hazard.

E. When multiple employees are occupying a vehicle for work purposes, the employer shall ensure compliance with respiratory protection and personal protective equipment standards applicable to its industry.

F. Employers shall also ensure compliance with mandatory requirements of any applicable Virginia executive order or order of public health emergency.

G. Where the nature of an employee's work or the work area does not allow them to observe physical distancing requirements, employers shall ensure compliance with respiratory protection and personal protective equipment standards applicable to its industry.

H. Nothing in this section shall require the use of a respirator, surgical/medical procedure mask, or face covering by any employee for whom doing so would be contrary to their health or safety because of a medical condition; however, nothing in this standard shall negate an employer's obligations to comply with personal protective equipment and respiratory protection standards applicable to its industry.

I. Requests to the Department for religious waivers from the required use of respirators, surgical/medical procedure masks, or face coverings will be handled in accordance with the requirements of applicable federal and state law, standards, regulations and the U.S. and Virginia Constitutions, after Department consultation with the Office of the Attorney General.

J. Sanitation and Disinfecting.

1. In addition to the requirements contained in this standard, employers shall comply with the VOSH sanitation standard applicable to its industry.

2. Employees that interact with customers, the general public, contractors, and other persons, shall be provided with and immediately use supplies to clean and disinfectant surfaces contacted during the interaction where there is the potential for exposure to the SARS-CoV-2 virus by themselves or other employees.

3. In addition to the requirements contained in this standard, employers shall comply with the VOSH hazard communication standard applicable to its industry for cleaning and disinfecting materials and hand sanitizers.

4. Areas in the place of employment where known or suspected to be infected with the SARS-CoV-2 virus employees or other persons accessed or worked shall be cleaned and disinfected prior to allowing other employees access to the areas. Where feasible, a period of 24 hours will be observed prior to cleaning and disinfecting. This requirement shall not apply if the area(s) in question have been unoccupied for seven or more days.

5. All common spaces, including bathrooms, frequently touched surfaces and doors shall at a minimum be cleaned and disinfected at the end of each shift. All shared tools, equipment, workspaces, and vehicles shall be cleaned and disinfected prior to transfer from one employee to another.

6. Employers shall ensure that cleaning and disinfecting products are readily available to employees to accomplish the required cleaning and disinfecting. In addition, employers shall ensure use of only disinfecting chemicals and products indicated in the Environmental Protection Agency (EPA) List N for use against SARS-CoV-2.

7. Employers shall ensure that the manufacturer's instructions for use of all disinfecting chemicals and products are complied with (e.g., concentration, application method, contact time, PPE, etc.).

8. Employees shall have easy, frequent access, and permission to use soap and water, and hand sanitizer where feasible, for the duration of work. Employees assigned to a work station where job tasks require frequent interaction inside six feet with other persons shall be provided with hand sanitizer where feasible at their work station. Mobile crews shall be provided with hand sanitizer where feasible for the duration of work at a work site and shall have transportation immediately available to nearby toilet facilities and handwashing facilities which meet the requirements of VOSH laws, standards and regulations dealing with sanitation. Hand sanitizers required for use to protect against SARS-CoV-2 are flammable, and use and storage in hot environments can result in a hazard.

9. It is recognized that various hazards or job tasks at the same place of employment can be designated as “very high”, “high, “medium”, or “lower” as presenting potential exposure risk for purposes of application of the requirements of this standard. In situations other than emergencies, the employer shall ensure that protective measures are put in place to prevent cross-contamination.

K. Unless otherwise provided in this standard, when engineering, work practice, and administrative controls are not feasible or do not provide sufficient protection, employers shall provide personal protective equipment to their employees and ensure its proper use in accordance with VOSH laws, standards, and regulations applicable to personal protective equipment, including respiratory protection equipment.

§16VAC25-220-50. Requirements for hazards or job tasks classified at “very high” or “high” exposure risk.

The following requirements for employers with hazards or job tasks classified as “very high” or “high” exposure risk apply in addition to requirements contained in §§16VAC25-220-40, -70, and -80.

A. Engineering Controls.

1. Ensure appropriate air-handling systems:

a. Are installed and maintained in accordance with manufacturer’s instructions in healthcare facilities and other places of employment treating, caring for, or housing persons with known or suspected to be infected with the SARS-CoV-2 virus, and

b. Comply with minimum American National Standards Institute (ANSI)/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standards 62.1 and 62.2 (ASHRAE 2019a, 2019b), which include requirements for outdoor air ventilation in most residential and nonresidential spaces, and ANSI/ASHRAE/ASHE Standard 170 (ASHRAE 2017a) covers both outdoor and total air ventilation in healthcare facilities. Based on risk assessments or owner project requirements, designers of new and existing facilities can go beyond the minimum requirements of these standards.

2. For employers not covered by §16VAC25-220-50.A.1, ensure that air-handling systems where installed are appropriate to address the SARS-CoV-2 virus and COVID-19 disease related hazards and job tasks that occur at the workplace:
    a. Are maintained in accordance with the manufacturer's instructions; and
    b. Comply with §16VAC25-220-50.A.1.b.

3. Hospitalized patients with known or suspected to be infected with the SARS-CoV-2 virus shall, where feasible and available, be placed in an airborne infection isolation room (AIIR).

4. Use AIIR rooms when available for performing aerosol-generating procedures on patients with known or suspected to be infected with the SARS-CoV-2 virus.

5. For postmortem activities, employers shall use autopsy suites or other similar isolation facilities when performing aerosol-generating procedures on the bodies of known or suspected to be infected with the SARS-CoV-2 virus persons at the time of their death.

6. Use special precautions associated with Biosafety Level 3 (BSL-3), as defined by the U.S. Department of Health and Human Services Publication No. (CDC) 21-1112 "Biosafety in Microbiological and Biomedical Laboratories" (Dec. 2009), which is hereby incorporated by reference, when handling specimens from known or suspected to be infected with the SARS-CoV-2 virus patients or persons.

7. To the extent feasible, employers shall install physical barriers, (e.g., clear plastic sneeze guards, etc.), where such barriers will aid in mitigating the spread of SARS-CoV-2 and COVID-19 virus transmission.

B. Administrative and Work Practice Controls.

1. Prior to the commencement of each work shift, prescreening or surveying shall be required to verify each covered employee does not have signs or symptoms of COVID-19.

2. If working in a healthcare facility, follow existing guidelines and facility standards of practice for identifying and isolating infected persons and for protecting employees.

3. Limit non-employee access to the place of employment or restrict access to only certain workplace areas to reduce the risk of exposure. An employer's compliance with occupancy limits contained in any applicable Virginia executive order or order of public health emergency will constitute compliance with the requirements of this paragraph.

4. Post signs requesting patients and family members to immediately report symptoms of respiratory illness on arrival at the healthcare facility and use disposable face coverings.

5. Offer enhanced medical monitoring of employees during COVID-19 outbreaks.

6. Provide all employees with job-specific education and training on preventing transmission of COVID-19, including initial and routine/refresher training in accordance with §16VAC25-220-80.

7. To the extent feasible, ensure that psychological and behavioral support is available to address employee stress at no cost to the employee.

8. In health care settings, provide alcohol-based hand sanitizers containing at least 60% ethanol or 70% isopropanol[1] to employees at fixed work sites, and to emergency responders and other personnel for decontamination in the field when working away from fixed work sites.

9. Provide face coverings to suspected to be infected with SARS-CoV-2 virus non-employees to contain respiratory secretions until they are able to leave the site (i.e., for medical evaluation/care or to return home).

10. Where feasible:

    a. Implement flexible worksites (e.g., telework);

    b. Implement flexible work hours (e.g., staggered shifts);

    c. Increase physical distancing between employees at the worksite to six feet;

    d. Increase physical distancing between employees and other persons to six feet;

    e. Implement flexible meeting and travel options (e.g., use telephone or video conferencing instead of in person meetings; postpone non-essential travel or events; etc.);

[1] https://www.cdc.gov/coronavirus/2019-ncov/hcp/hand-hygiene.html

f. Deliver services remotely (e.g. phone, video, internet, etc.);

g. Deliver products through curbside pick-up;

C. Personal Protective Equipment (PPE).

1. Employers covered by this section and not otherwise covered by the VOSH Standards for General Industry (Part 1910), shall comply with the following requirements for a SARS-CoV-2 virus and COVID-19 disease hazard assessment, and personal protective equipment selection:

a. The employer shall assess the workplace to determine if SARS-CoV-2 virus or COVID-19 disease hazards or job tasks are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE). The employer shall provide for employee and employee representative involvement in the assessment process. If such hazards or job tasks are present, or likely to be present, the employer shall:

i. Except as otherwise required in the standard, select, and have each affected employee use the types of PPE that will protect the affected employee from the SARS-CoV-2 virus or COVID-19 disease hazards identified in the hazard assessment;

ii. Communicate selection decisions to each affected employee; and,

iii. Select PPE that properly fits each affected employee.

2. The employer shall verify that the required SARS-CoV-2 virus and COVID-19 disease workplace hazard assessment has been performed through a written certification that identifies the workplace evaluated; the person certifying that the evaluation has been performed; the date(s) of the hazard assessment; and the document as a certification of hazard assessment.

3. Unless specifically addressed by an industry specific standard applicable to the employer and providing for PPE protections to employees from the SARS-COV-2 virus or COVID-19 disease (e.g., Parts 1926, 1928, 1915, 1917, or 1918), the requirements of §§1910.132 (General requirements) and 1910.134 (Respiratory protection) shall apply to all employers for that purpose.

4. The employer shall implement a respiratory protection program in accordance with §1910.134 (b) through (d) (except (d)(1)(iii)), and (f) through (m), which covers each employee required to use a respirator.

5. Unless contraindicated by a hazard assessment and equipment selection requirements in §16VAC25-220-50.C.1 above, employees classified as "very high" or "high" exposure risk shall be provided with and wear gloves, a gown, a face shield or goggles, and a respirator when in contact with or inside six feet of patients or other persons known to be, or suspected of being, infected with SARS-CoV-2. Where indicated by the hazard assessment and equipment selection requirements in §16VAC25-220-50.C, such employees shall also be provided with and wear a surgical/medical procedure mask. Gowns shall be large enough to cover the areas requiring protection.

D. Employee training shall be provided in accordance with the requirements of §16VAC25-220-80 of this standard.

§16VAC25-220-60. Requirements for hazards or job tasks classified at "medium" exposure risk.

The following requirements for employers with hazards or job tasks classified as "medium" exposure risk apply in addition to requirements contained in §§16VAC25-220-40, -70, and -80.

A. Engineering Controls.

1. Ensure that air-handling systems where installed are appropriate to address the SARS-CoV-2 virus and COVID-19 disease related hazards and job tasks that occur at the workplace:

a. Are maintained in accordance with the manufacturer's instructions, and

b. Comply with minimum American National Standards Institute (ANSI)/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standards 62.1 and 62.2 (ASHRAE 2019a, 2019b), which include requirements for outdoor air ventilation in most residential and nonresidential spaces, and ANSI/ASHRAE/ASHE Standard 170 (ASHRAE 2017a) covers both outdoor and total air ventilation in

healthcare facilities. Based on risk assessments or owner project requirements, designers of new and existing facilities can go beyond the minimum requirements of these standards.

B. Administrative and Work Practice Controls.

1. To the extent feasible, employers shall implement the following administrative and work practice controls:

a. Prior to the commencement of each work shift, prescreening or surveying shall be required to verify each covered employee does not have signs or symptoms of COVID-19;

b. Provide face coverings to suspected to be infected with SARS-C0V-2 non-employees to contain respiratory secretions until they are able to leave the site (i.e., for medical evaluation/care or to return home);

c. Implement flexible worksites (e.g., telework);

d. Implement flexible work hours (e.g., staggered shifts);

e. Increase physical distancing between employees at the worksite to six feet;

f. Increase physical distancing between employees and other persons, including customers to six feet (e.g., drive-through physical barriers) where such barriers will aid in mitigating the spread of SARS-CoV-2 virus transmission, etc.;

g. To the extent feasible, employers shall install physical barriers (e.g., such as clear plastic sneeze guards, etc.), where such barriers will aid in mitigating the spread of SARS-CoV-2 virus transmission.

h. Implement flexible meeting and travel options (e.g., using telephone or video conferencing instead of in person meetings; postponing non-essential travel or events; etc.);

i. Deliver services remotely (e.g. phone, video, internet, etc.);

j. Deliver products through curbside pick-up or delivery;

k. Require employers to provide and employees to wear face coverings who, because of job tasks cannot feasibly practice physical distancing from another employee or other person, if the hazard assessment has determined that personal

protective equipment, such as respirators or surgical/medical procedure masks, was not required for the job task.

l. Require employers to provide and employees in customer facing jobs to wear face coverings.

C. Personal Protective Equipment.

1. Employers covered by this section and not otherwise covered by the VOSH Standards for General Industry (Part 1910), shall comply with the following requirements for a SARS-CoV-2 virus and COVID-19 disease related hazard assessment, and personal protective equipment selection:

a. The employer shall assess the workplace to determine if SARS-CoV-2 or COVID-19 hazards or job tasks are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE). The employer shall provide for employee and employee representative involvement in the assessment process. If such hazards or job tasks are present, or likely to be present, the employer shall:

i. Except as otherwise required in the standard, select, and have each affected employee use, the types of PPE that will protect the affected employee from the SARS-CoV-2 virus or COVID-19 disease hazards identified in the hazard assessment;

ii. Communicate selection decisions to each affected employee; and

iii. Select PPE that properly fits each affected employee.

2. The employer shall verify that the required SARS-CoV-2 virus and COVID-19 disease workplace hazard assessment has been performed through a written certification that identifies the workplace evaluated; the person certifying that the evaluation has been performed; the date(s) of the hazard assessment; and the document as a certification of hazard assessment.

3. Unless specifically addressed by an industry specific standard applicable to the employer and providing for PPE protections to employees from the SARS-COV-2 virus or COVID-19 disease (e.g., Parts 1926, 1928, 1915, 1917, or 1918), the requirements of

§§1910.132 (General requirements) and 1910.134 (Respiratory protection) shall apply to all employers for that purpose.

4. PPE ensembles for employees in the "medium" exposure risk category will vary by work task, the results of the employer's hazard assessment, and the types of exposures employees have on the job.

§16VAC25-220-70. Infectious disease preparedness and response plan.

A. Employers with hazards or job tasks classified as:

1. "Very high," and "high," shall develop and implement a written Infectious Disease Preparedness and Response Plan;

2. "Medium" with eleven (11) or more employees shall develop and implement a written Infectious Disease Preparedness and Response Plan.

B. The plan and training requirements tied to the plan shall only apply to those employees classified as "very high," "high," and "medium" covered by this section.

C. Employers shall designate a person to be responsible for implementing their Plan. The Plan shall:

1. Identify the name(s) or titles(s) of the person(s) responsible for administering the Plan. This person shall be knowledgeable in infection control principles and practices as they apply to the facility, service or operation.

2. Provide for employee involvement in development and implementation of the plan.

3. Consider and address the level(s) of SARS-CoV-2 virus and COVID-19 disease risk associated with various places of employment, the hazards employees are exposed to and job tasks employees perform at those sites. Such considerations shall include:

a. Where, how, and to what sources of the SARS-CoV-2 virus or COVID-19 disease might employees be exposed at work, including:

i. The general public, customers, other employees, patients, and other persons;

ii. Known or suspected to be infected with the SARS-CoV-2 virus persons or those at particularly high risk of COVID-19 infection (e.g., local, state, national, and international travelers who have visited locations with ongoing COVID-19 community transmission, healthcare employees who have had unprotected

exposures to known or suspected to be infected with SARS-CoV-2 virus persons); and

iii. Situations where employees work more than one job with different employers and encounter hazards or engage in job tasks that present a "very high," "high," or "medium" level of exposure risk.

b. To the extent permitted by law, including HIPAA, employees' individual risk factors (e.g., people of any age with the following conditions are at increased risk of severe illness from COVID-19: chronic kidney disease; COPD (chronic obstructive pulmonary disease); immunocompromised state (weakened immune system) from solid organ transplant; obesity (body mass index [BMI] of 40 or higher); serious heart conditions, such as heart failure, coronary artery disease, or cardiomyopathies; sickle cell disease; type 2 diabetes mellitus) (e.g., people with the following conditions might be at an increased risk for severe illness from COVID-19: asthma (moderate-to-severe); cerebrovascular disease (affects blood vessels and blood supply to the brain); cystic fibrosis; hypertension or high blood pressure; immunocompromised state (weakened immune system) from blood or bone marrow transplant, immune deficiencies, HIV, use of corticosteroids, or use of other immune weakening medicines; neurologic conditions, such as dementia; liver disease; pregnancy; pulmonary fibrosis (having damaged or scarred lung tissues); smoking, thalassemia (a type of blood disorder); type 1 diabetes mellitus; etc.).

c. Engineering, administrative, work practice, and personal protective equipment controls necessary to address those risks.

4. Consider contingency plans for situations that may arise as a result of outbreaks, such as:

a. Increased rates of employee absenteeism;

b. The need for physical distancing, staggered work shifts, downsizing operations, delivering services remotely, and other exposure-reducing workplace control measures such as elimination/substitution, engineering controls, administrative and

work practice controls, and personal protective equipment, e.g., respirators, surgical/medical procedure masks, etc.

c. Options for conducting essential operations with a reduced workforce, including cross-training employees across different jobs in order to continue operations or deliver surge services; and

d. Interrupted supply chains or delayed deliveries.

5. Identify basic infection prevention measures to be implemented:

a. Promote frequent and thorough hand washing, including by providing employees, customers, visitors, the general public, and other persons to the place of employment with a place to wash their hands. If soap and running water are not immediately available, provide hand sanitizers.

b. Maintain regular housekeeping practices, including routine cleaning and disinfecting of surfaces, equipment, and other elements of the work environment.

c. Establish policies and procedures for managing and educating visitors to the place of employment.

6. Provide for the prompt identification and isolation of known or suspected to be infected with the SARS-CoV-2 virus employees away from work, including procedures for employees to report when they are experiencing symptoms of COVID-19.

7. Address infectious disease preparedness and response with outside businesses, including, but not limited to, subcontractors that enter the place of employment, businesses that provide or contract or temporary employees to the employer, as well as other persons accessing the place of employment to comply with the requirements of this standard and the employer's plan.

8. Identify the mandatory and non-mandatory recommendations in any CDC guidelines or Commonwealth of Virginia guidance documents the employer is complying with, if any, in lieu of a provision of this standard, as provided for in §§16VAC25-220-10.G.1 and -10.G.2.

9. Ensure compliance with mandatory requirements of any applicable Virginia executive order or order of public health emergency related to the SARS-CoV-2 virus or COVID-19 disease.

§16VAC25-220-80. Training.

A. Employers with hazards or job tasks classified at “very high”, “high” or "medium" exposure risk at a place of employment shall provide training to all employee(s) working at the place of employment regardless of employee risk classification on the hazards and characteristics of the SARS-CoV-2 virus and COVID-19 disease. The program shall enable each employee to recognize the hazards of the SARS-CoV-2 virus and signs and symptoms of COVID-19 disease and shall train each employee in the procedures to be followed in order to minimize these hazards.

B. The training required under paragraph A shall include:

1. The requirements of this standard;

2. The mandatory and non-mandatory recommendations in any CDC guidelines or State of Virginia guidance documents the employer is complying with, if any, in lieu of a provision of this standard as provided for in section §§16VAC25-220-10.G.1 and -10.G.2.

3. The characteristics and methods of transmission of the SARS-CoV-2 virus;

4. The signs and symptoms of the COVID-19 disease;

5. Risk factors of severe COVID-19 illness with underlying health conditions;

6. Awareness of the ability of pre-symptomatic and asymptomatic COVID-19 persons to transmit the SARS-CoV-2 virus;

7. Safe and healthy work practices, including but not limited to, physical distancing, disinfection procedures, disinfecting frequency, ventilation, noncontact methods of greeting, etc.;

8. PPE:

a. When PPE is required;

b. What PPE is required;

c. How to properly don, doff, adjust, and wear PPE;

d. The limitations of PPE;

e. The proper care, maintenance, useful life, and disposal of PPE; and

f. Heat-related illness prevention including the signs and symptoms of heat-related illness;

9. The anti-discrimination provisions of this standard in §16VAC25-220-90; and

10. The employer's Infectious Disease Preparedness and Response Plan, where applicable.

C. Employers covered by §16VAC25-220-50 of this standard shall verify compliance with §16VAC25-220-80.A by preparing a written certification record for those employees exposed to hazards or job tasks classified at "very high," "high," or "medium" exposure risk levels. The written certification record shall contain the name or other unique identifier of the employee trained, the trained employee's physical or electronic signature, the date(s) of the training, and the name of the person who conducted the training, or for computer-based training, the name of the person or entity that prepared the training materials. If the employer relies on training conducted by another employer or completed prior to the effective date of this standard, the certification record shall indicate the date the employer determined the prior training was adequate rather than the date of actual training.

D. The latest training certification shall be maintained.

E. "Retraining." When the employer has reason to believe that any affected employee who has already been trained does not have the understanding and skill required by §16VAC25-220-80.A, the employer shall retrain each such employee. Circumstances where retraining is required include, but are not limited to, situations where:

1. Changes in the workplace, SARS-CoV-2 virus or COVID-19 disease hazards exposed to, or job tasks performed render previous training obsolete;

2. Changes are made to the employer's Infectious Disease Preparedness and Response Plan; or

3. Inadequacies in an affected employee's knowledge or use of workplace control measures indicate that the employee has not retained the requisite understanding or skill.

F. Employers with hazards or job tasks classified at “lower” risk shall provide written or oral information to employees exposed to such hazards or engaged in such job tasks on the hazards and characteristics of SARS-COV-2 and the symptoms of COVID-19 and measures to minimize exposure. The Department of Labor and Industry shall develop an information sheet containing information on the items listed in section G, which an employer may utilize to comply with this paragraph.

G. The information required under paragraph F. shall include at a minimum:

1. The requirements of this standard;
2. The characteristics and methods of transmission of the SARS-CoV-2 virus;
3. The symptoms of the COVID-19 disease;
4. The ability of pre-symptomatic and asymptomatic COVID-19 persons to transmit the SARS-CoV-2 virus;
5. Safe and healthy work practices and control measures, including but not limited to, physical distancing, sanitation and disinfection practices; and
6. The anti-discrimination provisions of this standard in §16VAC25-220-90.

§16VAC25-220-90. Discrimination against an employee for exercising rights under this standard is prohibited.

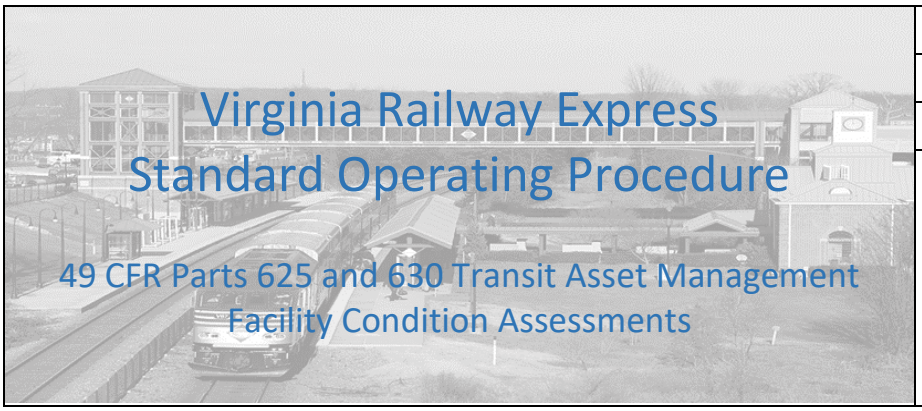
A. No person shall discharge or in any way discriminate against an employee because the employee has exercised rights under the safety and health provisions of this standard Title 40.1 of the Code of Virginia, and implementing regulations under §16VAC25-60-110 for themselves or others.

B. No person shall discharge or in any way discriminate against an employee who voluntarily provides and wears their own personal protective equipment, including but not limited to a respirator, face shield, or gloves, or face covering if such equipment is not provided by the employer, provided that the PPE does not create a greater hazard to the employee, or create a serious hazard for other employees.

C. No person shall discharge or in any way discriminate against an employee who raises a reasonable concern about infection control related to the SARS-CoV-2 virus and COVID-19

disease to the employer, the employer's agent, other employees, a government agency, or to the public such as through print, online, social, or any other media

D. Nothing in this standard shall limit an employee from refusing to do work or enter a location they feel is unsafe. See §16VAC25-60-110 for requirements concerning discharge or discipline of an employee who has refused to complete an assigned task because of a reasonable fear of injury or death.



VRE SOP#: TAM-001
Date: 10/05/2020
Appendix A

APPENDIX B: VRE FACILITY CONDITION ASSESSMENT FORMS

(Provided as a separate electronic attachment to this document)

	Facility Condition Assessments	Overall Facility Rating	
	Inspection Date:		
	Inspector(s) Name(s):		
	Facility Type:		
	Facility Name:		
	Address/Location:		

Component (Substructure)		Component Rating =				
Sub-Component Category	**Sub-Component**	**Sub-Component Rating**				
		1	**2**	**3**	**4**	**5**
Basement	Materials					
	Slab					
Foundations	Columns - Concrete					
	Concrete - Cast-in-Place (CIP)					
	Concrete - Precast					
	Footings					
	Other Structural Components					
	Pier Caps					
	Pilings					
	Walls					

Assessment Tasks / Notes

Inspect foundations including walls, columns, pilings, concrete precast, and other structural components for signs of decay

Inspect basement including non-foundation and structural components such as facing materials

	Facility Condition Assessments	Overall Facility Rating	
	Inspection Date:		
	Inspector(s) Name(s):		
	Facility Type:		
	Facility Name:		
	Address/Location:		

Component (Shell)		Component Rating =				
Sub-Component Category	**Sub-Component**	**Sub-Component Rating**				
		1	**2**	**3**	**4**	**5**
Exterior	Aluminum Windscreens					
	Bricks					
	Canopies					
	Concrete Masonry Units					
	Doors (Garage)					
	Doors (Shell)					
	Finishes (all paint and masonry)					
	Grout					
	Louvers					
	Windows					
Roof	Chimney Surrounds					
	Downspouts					
	Eaves					
	Gutters					
	Roof Surfaces					
	Skylights					
Shell Appurtenances	Balconies					
	Elevated Walkways - Concrete					
	Elevated Walkways - Roof Surfaces					
	Elevated Walkways - Structural Steel					
	Fire Escapes					
Superstructure / Structural Frame	Base Plates - Structural Steel					
	Beams - Structural Steel					
	Columns - Structural Steel					
	Columns - Wood					
	Concrete - Cast-in-Place (CIP) - Shell					
	Concrete - Precast - Shell					
	Joint Sealants					
	Truss - Wood					
	Vinyl Insulation Blanket					
	Wall Panels - Metal					
	Walls (Shell)					

Assessment Tasks / Notes
Inspect superstructure/structural frame, including columns, pillars, beams, trusses, base plates, concrete masonry units, cast-in-place, precast, bricks, grout, and walls.
Inspect building envelope including façade, curtain wall system, glazing system, vinyl insulation blankets, exterior sealants, exterior balconies, canopies, doors, louvers, walkways, parapets, and fire escapes.
Inspect windows, aluminum windscreens, doors, and all finishes (paint and masonry).
Inspect roof, including roof surface (tiles, membrane, shingles, gravel, etc.), gutters, downspouts, eaves, skylights, flashing, chimney surrounds, and sealants, hardware and painted or coated surfaces. Note evidence of ponding, or roof leaks, significant age-and other indicators that repair may be necessary. Note age of roof(s) and whether warranty is still in effect.

	Facility Condition Assessments	Overall Facility Rating	
	Inspection Date:		
	Inspector(s) Name(s):		
	Facility Type:		
	Facility Name:		
	Address/Location:		

Component (Interior)		Component Rating =				
Sub-Component Category	**Sub-Component**	**Sub-Component Rating**				
		1	**2**	**3**	**4**	**5**
Finishes	Casework					
	Ceilings					
	Epoxy Coating					
	Floor Covering					
	Lockers					
	Millwork					
	Paint					
	Shelving					
	Site Furnishings					
	Towel/Waste Combo					
	Wall Covering					
	Walls - Gypsum Wallboard					
	Window Treatments					
Partitions	Fittings (such as signage)					
	Doors (Interior)					
	Walls (Interior)					
Stairs	Handrail / Balusters (Interior)					
	Landings					
	Stairs (Interior)					

Assessment Tasks / Notes
Inspect soundness and finish of drywall, gypsum wallboard, partitions, interior doors, fittings, ceiling tiles, and signage.
Inspect passenger areas including access tunnels, passageways, and platforms.
Inspect stairs and balusters, including fire and access issues.
Inspect interior finishes, including millwork and materials used on walls, floors, and ceilings, such as tile, paint, epoxy and other coatings. Looking for roughness and damage.
Inspect site furnishings, including entrance mats, lockers, shelving, window treatments, and towel/waste combos.

	Facility Condition Assessments	Overall Facility Rating	
	Inspection Date:		
	Inspector(s) Name(s):		
	Facility Type:		
	Facility Name:		
	Address/Location:		

Component (Conveyance)		Component Rating =				
Sub-Component Category	**Sub-Component**	**Sub-Component Rating**				
		1	**2**	**3**	**4**	**5**
Conveyance Systems	Elevators					
	Escalators					
	Exit Ladders / Hatches					
	Lifts (ADA)					

Assessment Tasks / Notes

Inspect condition, function, and code compliance of elevators, escalators, lifts, exit ladders/hatch and any other fixed apparatuses for the movement of goods or people.

Confirm a current state inspection certificate is on file at the facility or VRE's headquarters for applicable conveyance subcomponents.

	Facility Condition Assessments	Overall Facility Rating	
	Inspection Date:		
	Inspector(s) Name(s):		
	Facility Type:		
	Facility Name:		
	Address/Location:		

Component (Plumbing)		Component Rating =				
Sub-Component Category	**Sub-Component**	**Sub-Component Rating**				
		1	**2**	**3**	**4**	**5**
Fixtures	Emergency Rinse Stations					
	Showers					
	Spigots (Indoor)					
	Spigots (Outdoor)					
	Water Fountains					
Sanitary Waste	Service Sinks					
	Toilet Compartments					
	Toilets / Lavatories					
Water Distribution	Murdock Hydrants					
	Piping					
	Water Heaters					

Assessment Tasks / Notes

Inspect fixtures and pipes for water distribution, water heaters, sanitary waste systems, and Murdock hydrants for damage or leaks including any drainage.

	Facility Condition Assessments	Overall Facility Rating	
	Inspection Date:		
	Inspector(s) Name(s):		
	Facility Type:		
	Facility Name:		
	Address/Location:		

Component (HVAC)		Component Rating =				
Sub-Component Category	**Sub-Component**	**Sub-Component Rating**				
		1	**2**	**3**	**4**	**5**
HVAC Systems	AC Units					
	Chimneys					
	Ducts					
	Energy Supplies					
	Heat Generation & Distribution Systems					
	Registers					

Assessment Tasks / Notes

Note apparent or reported age of the equipment, past material component replacements/upgrades, and the apparent level of maintenance exercised. If heating equipment is shut down or not operational at the time of the walk-through survey, provide an opinion of the condition to the extent observed.

Confirm records for a routine inspection by HVAC specialist

	Facility Condition Assessments	Overall Facility Rating	
	Inspection Date:		
	Inspector(s) Name(s):		
	Facility Type:		
	Facility Name:		
	Address/Location:		

Component (Fire Protection)		Component Rating =				
Sub-Component Category	**Sub-Component**	**Sub-Component Rating**				
		1	**2**	**3**	**4**	**5**
Fire Protection Systems	Fire Extinguisher Cabinets					
	Fire Hydrants					
	Smoke Detectors					
	Sprinklers					
	Standpipes					

Assessment Tasks / Notes

Inspect sprinklers, standpipes, hydrants, fire alarms, emergency lighting, smoke evacuation, stairwell pressurization, and any other specialized components relating to overall protection system and compliance.

	Facility Condition Assessments	Overall Facility Rating	
	Inspection Date:		
	Inspector(s) Name(s):		
	Facility Type:		
	Facility Name:		
	Address/Location:		

Component (Electrical)		Component Rating =				
Sub-Component Category	**Sub-Component**	**Sub-Component Rating**				
		1	**2**	**3**	**4**	**5**
Communications & Security	Call Boxes / Telephones					
	Communications Cabinet					
	Public Address - Speakers					
	Public Address - Variable Message Signs					
	Security Cameras					
Electrical Service & Distribution	Conduits					
	Disconnect Switches					
	Electrical Panels					
	Generators					
	Wayside Power					
Lighting & Branch Wiring (Interior and Exterior)	Lighting - Building (Exterior)					
	Lighting - Building (Interior)					
	Lighting - Canopy					
	Lighting - Emergency					
	Lighting - Pole (Maintenance Yard)					
	Lighting - Pole (Parking Lots)					
	Lighting - Pole (Platforms)					
	Lighting - Site					
Other electrical system-	Emergency Exits					

Assessment Tasks / Notes
Examine other electrical system-related pieces such as lightning protection, generators, emergency lighting, and components related to electrical service and distribution such as conduit, boxes, solar panels and mountings for any damage wire chaffing or loose or corroded connections. Evaluate overall performance of the system.
Confirm routine operation (monthly) of emergency generator (for a minimum ½ hour), if applicable.

	Facility Condition Assessments	Overall Facility Rating	
	Inspection Date:		
	Inspector(s) Name(s):		
	Facility Type:		
	Facility Name:		
	Address/Location:		

Component (Equipment)		Component Rating =				
Sub-Component Category	**Sub-Component**	**Sub-Component Rating**				
		1	**2**	**3**	**4**	**5**
Equipment related to the function of the facility	Compressed Air					
	Crane Lifts					
	Drip Pans					
	Drop table					
	Maintenance service equipment					
	Vehicle service equipment					
	Wheel truing equipment					

Assessment Tasks / Notes

Inspect equipment (major pieces of equipment integral to the function of the facility), noting age, condition, and functional deficiencies.

	Facility Condition Assessments	Overall Facility Rating	
	Inspection Date:		
	Inspector(s) Name(s):		
	Facility Type:		
	Facility Name:		
	Address/Location:		

Component (Fare Collection Equipment)		Component Rating =				
Sub-Component Category	**Sub-Component**	**Sub-Component Rating**				
		1	**2**	**3**	**4**	**5**
Fare Collection Systems	Ticket Machines					
	Turnstiles					
	Any other major equipment requiring capital request for replacement					
Assessment Tasks / Notes						
Inspect fare collection system(s) and any associated components, noting age, condition, and functional deficiencies.						

	Facility Condition Assessments	Overall Facility Rating	
	Inspection Date:		
	Inspector(s) Name(s):		
	Facility Type:		
	Facility Name:		
	Address/Location:		

Component (Site)		Component Rating =				
Sub-Component Category	**Sub-Component**	**Sub-Component Rating**				
		1	**2**	**3**	**4**	**5**
Pedestrian Areas	Benches					
	Bicycle Racks					
	Bug Zappers					
	Platform Boxes (VRE)					
	Recycling Bins					
	Signage - Platform					
	Signage - Station					
	Smoker's Poles					
	Tactile Surfaces					
	Trash Receptacles					
Roadways / Driveways / Parking Lots	Asphalt					
	Bollards					
	Curbs					
	Pavement Striping					
	Signage - Other					
	Signage - Parking					
Site Development	Access Tunnels					
	At-Grade Crossings					
	Bridge Decking					
	Fences					
	Gates					
	Handrail / Balusters (Site)					
	Passageways					
	Pedestrian Bridge					
	Platforms					
	Ramps					
	Retaining Walls					
	Sidewalks					
	Stairs (Site)					
Site Utilities	Culverts					
	Ditches					
	Drainage - General					
	Grates					
	Inlets					
	Manholes					
	Trench Drains					

Assessment Tasks / Notes
Inspect roadways/driveways and associated signage, markings, and equipment. Look for cracking or settling of the concrete or asphalt.
Inspect parking lots and associated signage, markings, and equipment. Look for cracking or settling of the concrete or asphalt.
Inspect pedestrian areas and associated signage, markings, and equipment. Inspect the curbing and ramps for cracking, settling, holes, uneven surfaces and trip hazards. Pay special attention to wheelchair ramp areas and other ADA / access considerations.
Inspect site development subcomponents, including fences, walls, and miscellaneous structures. Look for corrosion, structural integrity and condition of paint.
Inspect landscaping and site utilities. Look for signs of drainage problems such as flooded areas, eroded soil and water damage to the asphalt and clogged storm drain inlets.
Inspect irrigation systems, if installed. Look for signs of leaks, such as sagging areas in grass and/or pooling water. Look for dead spots in the grass indicating lack of water possibly caused by a mechanical failure.
Inspect passenger huts and benches for corrosion, paint condition, glass condition and damage.

Virginia Railway Express
Standard Operating Procedure

49 CFR Parts 625 and 630 Transit Asset Management
Vehicle Condition Assessments

VRE SOP#: TAM-002
Date: 8/1/2018
1 of 6

Rev	Date	Descriptions	Approvals	
Draft	3/9/17		Issued By:	
Final	4/21/17		Approved By:	
Rev 1	2/1/2018	Updated Vehicle List & Synchronized format	Approved By:	
Rev 2	8/1/2018	Updated Vehicle List & Synchronized format	Approved By:	

Subject:

Vehicle Condition Assessments

Purpose:

This Standard Operating Procedure (SOP) and corresponding forms prescribe the approach and methodology for performing vehicle condition assessments.

Related Documents:

Federal Register, Volume 81, No. 143
- 49 CFR Parts 625 and 630
- National Transit Database: Transit Asset Management; Final Rule; Notices
- National Transit Database: Capital Asset Reporting; Transit Asset Management; Proposed Guidebooks

VRE Task 8 – Quantitative Methodologies for Conducting Vehicle Condition Assessments Technical Memorandum (latest revision)
VRE Task 11 – Performance Targets for Capital Assets Technical Memorandum (latest revision)

Drawings Required:

None

Equipment Affected:

All revenue service rolling stock primarily located at VRE's Crossroads and Broad Run Maintenance and Storage Facility (MASF).

Vehicle(s) Affected:

Asset Class	Manufacturer	Model	Asset Name	Quantity	Vehicle Numbers
Commuter Rail Locomotives	Motive Power Industries (MPT)	MP36PH-3C	Locomotive	20	V50 – V69
Commuter Rail Cab Cars	Nippon Sharyo	Gallery IV Cab Car (with toilet)	Cab Car - T	21	V710 – V730
Commuter Rail Trailer Cars	Nippon Sharyo	Gallery IV Trailer Car (with toilet)	Passenger Car - T	49	V800 – V848
	Nippon Sharyo	Gallery IV Trailer Car	Passenger Car	30	V850 – V879

General Condition Assessment Methodology:

Vehicle condition assessments are entirely dependent on age-based criteria. The condition of the vehicle, assuming proper maintenance and overhaul activities are performed on schedule, is determined by whether or not the vehicle has exceeded its useful life as defined by the technical specification for that vehicle.

The underlying assumption in this interpretation of age-based condition assessments is that the maintenance and overhaul procedures are closely monitored by maintenance crews, contracted engineering support, and VRE personnel.

The final condition assessment is determined by calculating the difference between the in-service date of the vehicle and the current date and ensuring that the difference has not exceeded the useful life. As a formula:

Exceed ULB if: "$\boldsymbol{Remaining\ Years\ of\ Useful\ Life}$" ≤ 0

$$\text{"}\boldsymbol{Remaining\ Years\ of\ Useful\ Life}\text{"} = [ULB\ (years)] - [Service\ Life\ (in\ years, from\ date\ in\ service)]$$

The data for calculating the age of the equipment can be referenced below to assist in performing an assessment on a specific vehicle in question.

Vehicle Condition Assessment Data:

Number	Asset Name	Date in Service	Useful Life (Years)	Useful Life Benchmark Date
V50	Locomotive	8/2/2010	20	8/2/2030
V51	Locomotive	1/11/2011	20	1/11/2031
V52	Locomotive	2/8/2011	20	2/8/2031
V53	Locomotive	2/14/2011	20	2/14/2031
V54	Locomotive	2/28/2011	20	2/28/2031
V55	Locomotive	3/21/2011	20	3/21/2031
V56	Locomotive	4/18/2011	20	4/18/2031
V57	Locomotive	4/11/2011	20	4/11/2031
V58	Locomotive	4/11/2011	20	4/11/2031
V59	Locomotive	5/31/2011	20	5/31/2031
V60	Locomotive	5/16/2011	20	5/16/2031
V61	Locomotive	5/31/2011	20	5/31/2031
V62	Locomotive	6/13/2011	20	6/13/2031
V63	Locomotive	7/11/2011	20	7/11/2031
V64	Locomotive	7/18/2011	20	7/18/2031
V65	Locomotive	8/4/2011	20	8/4/2031
V66	Locomotive	8/8/2011	20	8/8/2031
V67	Locomotive	9/28/2011	20	9/28/2031
V68	Locomotive	9/20/2011	20	9/20/2031
V69	Locomotive	10/10/2011	20	10/10/2031
V710	Cab Car - T	2/5/2007	30	2/5/2037
V711	Cab Car - T	2/13/2007	30	2/13/2037
V712	Cab Car - T	1/26/2007	30	1/26/2037
V713	Cab Car - T	1/25/2007	30	1/25/2037

Number	Asset Name	Date in Service	Useful Life (Years)	Useful Life Benchmark Date
V714	Cab Car - T	1/19/2007	30	1/19/2037
V715	Cab Car - T	1/19/2007	30	1/19/2037
V716	Cab Car - T	3/5/2007	30	3/5/2037
V717	Cab Car - T	3/5/2007	30	3/5/2037
V718	Cab Car - T	2/20/2007	30	2/20/2037
V719	Cab Car - T	2/20/2007	30	2/20/2037
V720	Cab Car - T	3/5/2007	30	3/5/2037
V721	Cab Car - T	1/2/2008	30	1/2/2038
V722	Cab Car - T	2/4/2008	30	2/4/2038
V723	Cab Car - T	2/26/2008	30	2/26/2038
V724	Cab Car - T	4/3/2008	30	4/3/2038
V725	Cab Car - T	4/22/2008	30	4/22/2038
V726	Cab Car - T	5/29/2008	30	5/29/2038
V727	Cab Car - T	9/2/2008	30	9/2/2038
V728	Cab Car - T	6/24/2008	30	6/24/2038
V729	Cab Car - T	8/28/2008	30	8/28/2038
V730	Cab Car - T	9/26/2008	30	9/26/2038
V800	Passenger Car - T	12/19/2007	30	12/19/2037
V801	Passenger Car - T	12/19/2007	30	12/19/2037
V802	Passenger Car - T	2/4/2008	30	2/4/2038
V803	Passenger Car - T	2/4/2008	30	2/4/2038
V804	Passenger Car - T	2/26/2008	30	2/26/2038
V805	Passenger Car - T	2/26/2008	30	2/26/2038
V806	Passenger Car - T	3/26/2008	30	3/26/2038
V807	Passenger Car - T	3/28/2008	30	3/28/2038
V808	Passenger Car - T	4/22/2008	30	4/22/2038
V809	Passenger Car - T	4/22/2008	30	4/22/2038
V810	Passenger Car - T	5/21/2008	30	5/21/2038
V811	Passenger Car - T	5/21/2008	30	5/21/2038
V812	Passenger Car - T	6/24/2008	30	6/24/2038
V813	Passenger Car - T	6/24/2008	30	6/24/2038
V814	Passenger Car - T	7/24/2008	30	7/24/2038

Number	Asset Name	Date in Service	Useful Life (Years)	Useful Life Benchmark Date
V815	Passenger Car - T	7/24/2008	30	7/24/2038
V816	Passenger Car - T	8/28/2008	30	8/28/2038
V817	Passenger Car - T	8/28/2008	30	8/28/2038
V818	Passenger Car - T	9/26/2008	30	9/26/2038
V819	Passenger Car - T	9/26/2008	30	9/26/2038
V820	Passenger Car - T	7/22/2014	30	7/22/2044
V821	Passenger Car - T	7/17/2014	30	7/17/2044
V822	Passenger Car - T	7/16/2014	30	7/16/2044
V823	Passenger Car - T	7/21/2014	30	7/21/2044
V824	Passenger Car - T	9/22/2014	30	9/22/2044
V825	Passenger Car - T	9/22/2014	30	9/22/2044
V826	Passenger Car - T	9/22/2014	30	9/22/2044
V827	Passenger Car - T	9/22/2014	30	9/22/2044
V828	Passenger Car - T	3/30/2016	30	3/30/2046
V829	Passenger Car - T	3/30/2016	30	3/30/2046
V830	Passenger Car - T	3/30/2016	30	3/30/2046
V831	Passenger Car - T	3/30/2016	30	3/30/2046
V832	Passenger Car - T	4/18/2016	30	4/18/2046
V833	Passenger Car - T	3/30/2016	30	3/30/2046
V834	Passenger Car - T	4/18/2016	30	4/18/2046
V835	Passenger Car - T	6/21/2017	30	6/21/2047
V836	Passenger Car - T	6/21/2017	30	6/21/2047
V837	Passenger Car - T	6/16/2017	30	6/16/2047
V838	Passenger Car - T	6/16/2017	30	6/16/2047
V839	Passenger Car - T	6/15/2017	30	6/15/2047
V840	Passenger Car - T	10/30/2017	30	10/30/2047
V841	Passenger Car - T	11/6/2017	30	11/6/2047
V842	Passenger Car - T	11/3/2017	30	11/3/2047
V843	Passenger Car - T	11/3/2017	30	11/3/2047
V844	Passenger Car - T	11/6/2017	30	11/6/2047
V845	Passenger Car - T	11/14/2017	30	11/14/2047
V846	Passenger Car - T	11/14/2017	30	11/14/2047

Number	Asset Name	Date in Service	Useful Life (Years)	Useful Life Benchmark Date
V847	Passenger Car - T	11/14/2017	30	11/14/2047
V848	Passenger Car - T	11/14/2017	30	11/14/2047
V850	Passenger Car	12/29/2007	30	12/29/2037
V851	Passenger Car	12/29/2007	30	12/29/2037
V852	Passenger Car	2/4/2008	30	2/4/2038
V853	Passenger Car	2/4/2008	30	2/4/2038
V854	Passenger Car	2/26/2008	30	2/26/2038
V855	Passenger Car	2/26/2008	30	2/26/2038
V856	Passenger Car	3/26/2008	30	3/26/2038
V857	Passenger Car	3/28/2008	30	3/28/2038
V858	Passenger Car	4/22/2008	30	4/22/2038
V859	Passenger Car	4/22/2008	30	4/22/2038
V860	Passenger Car	5/21/2008	30	5/21/2038
V861	Passenger Car	5/21/2008	30	5/21/2038
V862	Passenger Car	6/24/2008	30	6/24/2038
V863	Passenger Car	6/24/2008	30	6/24/2038
V864	Passenger Car	7/24/2008	30	7/24/2038
V865	Passenger Car	7/24/2008	30	7/24/2038
V866	Passenger Car	8/28/2008	30	8/28/2038
V867	Passenger Car	8/28/2008	30	8/28/2038
V868	Passenger Car	9/26/2008	30	9/26/2038
V869	Passenger Car	9/26/2008	30	9/26/2038
V870	Passenger Car	2/2/2010	30	2/2/2040
V871	Passenger Car	2/2/2010	30	2/2/2040
V872	Passenger Car	2/2/2010	30	2/2/2040
V873	Passenger Car	4/8/2010	30	4/8/2040
V874	Passenger Car	6/30/2010	30	6/30/2040
V875	Passenger Car	2/1/2010	30	2/1/2040
V876	Passenger Car	2/1/2010	30	2/1/2040
V877	Passenger Car	2/1/2010	30	2/1/2040
V878	Passenger Car	2/1/2010	30	2/1/2040
V879	Passenger Car	2/1/2010	30	2/1/2040

Virginia Railway Express
Standard Operating Procedure

49 CFR Parts 625 and 630 Transit Asset Management
Equipment Condition Assessments

Rev	Date	Descriptions	Approvals	
Draft	3/9/17		Issued By:	
Final	4/21/17		Approved By:	
Rev 1	2/1/2018	Synchronized format	Approved By:	
Rev 2	8/20/2018	Update Equipment and Synchronize format	Approved By:	

Subject:

Equipment Condition Assessments

Purpose:

This Standard Operating Procedure (SOP) and corresponding forms prescribe the approach and methodology for performing equipment condition assessments.

Related Documents:

Federal Register, Volume 81, No. 143
- 49 CFR Parts 625 and 630
- National Transit Database: Transit Asset Management; Final Rule; Notices
- National Transit Database: Capital Asset Reporting; Transit Asset Management; Proposed Guidebooks

VRE Task 8 – Quantitative Methodologies for Conducting Vehicle Condition Assessments Technical Memorandum (latest revision)
VRE Task 11 – Performance Targets for Capital Assets Technical Memorandum (latest revision)

Drawings Required:

None

Equipment Affected:

All non-revenue service vehicles, maintenance equipment and tooling located at VRE headquarters in Alexandria and the Crossroads and Broad Run train yards.

Equipment	Location	Equipment Type
2016 Ford Van (Transit Van)	Alexandria Headquarters	Non-Revenue Service Vehicle
2015 Ford F-250	Alexandria Headquarters	Non-Revenue Service Vehicle
2017 Ford F-150	Alexandria Headquarters	Non-Revenue Service Vehicle
2018 Ford Transit Connect Wagon	Alexandria Headquarters	Non-Revenue Service Vehicle
2018 Ford Explorer	Alexandria Headquarters	Non-Revenue Service Vehicle
Forklift – Nisson 100	Crossroads S&I	Maintenance Tooling
Forklift – Hyster H60XM 6,000lb	Crossroads S&I	Maintenance Tooling
Forklift – Hyster H60XM 6,000lb	Crossroads Warehouse	Maintenance Tooling
Forklift – Caterpillar GP45K1 10,000lb	Broad Run S&I	Maintenance Tooling
Taylor Dunn Cart 1 – T48-48	Crossroads MASF	Maintenance Tooling
Taylor Dunn Cart 2 – T48-48	Crossroads MASF	Maintenance Tooling
Taylor Dunn Cart 1 – T48-48	Broad Run MASF	Maintenance Tooling
Taylor Dunn Cart 2 – T48-48	Broad Run MASF	Maintenance Tooling
2007 Crown RD5200 Standup Forklift	Crossroads Warehouse	Maintenance Tooling
Small Scissor Lift	Broad Run MASF	Maintenance Tooling
Genie GS-3268RT Scissor Lift	Crossroads MASF	Maintenance Tooling
Sanding Cart	Broad Run MASF	Maintenance Tooling
Sanding Cart	Crossroads MASF	Maintenance Tooling
Macton 50 Ton Loco Lifts (quantity 4)	Crossroads MASF	Maintenance Tooling
Macton 50 Ton Loco Lifts (quantity 4)	Broad Run MASF	Maintenance Tooling
Whiting 20 Ton Car Lifts (quantity 4)	Crossroads MASF	Maintenance Tooling
Whiting 20 Ton Car Lifts (quantity 4)	Broad Run MASF	Maintenance Tooling
DeShazo TR-SG-DM 10 Ton Crane	Crossroads MASF	Maintenance Tooling
DeShazo TR-SG-DM 10 Ton Crane	Broad Run MASF	Maintenance Tooling

General Condition Assessment Methodology:

Equipment condition assessments are entirely dependent on age-based criteria. The condition of the piece of equipment, assuming proper maintenance and overhaul activities are performed on schedule as appropriate, is determined by whether or not the piece of equipment has exceeded its useful life as defined by the useful life data for that piece of equipment. Useful life data was collected by obtaining manufacturer recommended useful life information or using an expected useful life determined by VRE themselves.

The underlying assumption in this interpretation of age-based condition assessments is that the maintenance and overhaul procedures are closely monitored by maintenance crews, contracted engineering support, and VRE personnel.

The final condition assessment of a piece of equipment is determined by calculating the difference between the in-service date of the piece of equipment and the current date and ensuring that the difference has not exceeded the useful life. As a formula:

$$\textit{Exceed ULB if: } \text{"}\boldsymbol{Remaining\ Years\ of\ Useful\ Life}\text{"} \leq 0$$

$$\text{"}\boldsymbol{Remaining\ Years\ of\ Useful\ Life}\text{"} = [ULB\ (years)] - [Service\ Life\ (in\ years, from\ date\ in\ service)]$$

The data for calculating the age of the equipment can be referenced below to assist in performing an assessment on a specific item in question.

Equipment Condition Assessment Data:

Equipment	Location	Date in Service	Useful Life (in years)	ULB Date
Non-Revenue Service Vehicle				
2016 Ford Van (Transit Van)	Alexandria Headquarters	6/8/2015	8	6/8/2023
2015 Ford F-250	Alexandria Headquarters	7/3/2016	8	7/3/2024
2017 Ford F-150	Alexandria Headquarters	8/9/2016	8	8/9/2024
2018 Ford Transit Connect Wagon	Alexandria Headquarters	6/1/2018	8	6/1/2026
2018 Ford Explorer	Alexandria Headquarters	7/1/2018	8	7/1/2026
Maintenance Tooling				
Forklift – Nisson 100	Crossroads S&I	12/31/2006	7	12/31/2013
Forklift – Hyster H60XM 6,000lb	Crossroads S&I	12/31/2006	7	12/31/2013
Forklift – Hyster H60XM 6,000lb	Crossroads Warehouse	12/31/2006	7	12/31/2013
Forklift – Caterpillar GP45K1 10,000lb	Broad Run S&I	12/31/2006	7	12/31/2013
Taylor Dunn Cart 1 – T48-48	Crossroads MASF	12/31/2010	8	12/31/2020
Taylor Dunn Cart 2 – T48-48	Crossroads MASF	12/31/2010	8	12/31/2020
Taylor Dunn Cart 1 – T48-48	Broad Run MASF	12/31/2010	8	12/31/2020
Taylor Dunn Cart 2 – T48-48	Broad Run MASF	12/31/2010	8	12/31/2020
2007 Crown RD5200 Standup Forklift	Crossroads Warehouse	8/15/2014	7	8/15/2021
Small Scissor Lift	Broad Run MASF	12/31/2009	12	12/31/2021
Genie GS-3268RT Scissor Lift	Crossroads MASF	1/4/2010	12	1/4/2022
Sanding Cart	Broad Run MASF	9/30/2014	10	9/30/2024
Sanding Cart	Crossroads MASF	8/30/2016	10	8/30/2026
Macton 50 Ton Loco Lifts (quantity 4)	Crossroads MASF	6/2/2011	20	6/2/2031

Equipment	Location	Date in Service	Useful Life (in years)	ULB Date
Macton 50 Ton Loco Lifts (quantity 4)	Broad Run MASF	6/2/2011	20	6/2/2031
Whiting 20 Ton Car Lifts (quantity 4)	Crossroads MASF	12/31/2006	25	12/31/2031
Whiting 20 Ton Car Lifts (quantity 4)	Broad Run MASF	12/31/2006	25	12/31/2031
DeShazo TR-SG-DM 10 Ton Crane	Crossroads MASF	12/31/2008	40	12/31/2048
DeShazo TR-SG-DM 10 Ton Crane	Broad Run MASF	12/31/2009	40	12/31/2049

Virginia Railway Express
Standard Operating Procedure

49 CFR Parts 625 and 630 Transit Asset Management
Infrastructure Condition Assessments

Rev	Date	Descriptions	Approvals	
Draft	6/20/2017		Issued By:	STV Incorporated
Final	6/29/2017		Approved By:	
Rev 1	8/20/2018	Update terminology	Approved By:	
			Approved By:	

Subject:

Infrastructure (Track, Switches, Derails, Ties, Switch Ties, and Bumper Blocks) Condition Assessments

Purpose:

This Standard Operating Procedure (SOP) and corresponding forms provided in **Appendix A**, prescribe the approach and methodology for performing infrastructure condition assessments.

Related Documents:

Federal Register, Volume 81, No. 143
- 49 CFR Parts 625 and 630
- National Transit Database: Transit Asset Management; Final Rule; Notices
- National Transit Database: Capital Asset Reporting; Transit Asset Management; Proposed Guidebooks

VRE NTD and Asset Management Reporting – Task 11 Performance Targets for Capital Assets Technical Memorandum, (latest revision)

Drawings Required:

Broad Run Yard and Maintenance Facility Map
Broad Run Yard Layout
Crossroads Yard and Maintenance Facility Map
Crossroads Yard Layout
Switch Detail Drawings

Equipment Affected:

Track yard infrastructure (Track, Switches, Derails, Ties, Switch Ties, and Bumper Blocks) located at the Broad Run and Crossroads Maintenance and Storage Facilities (MASF).

Location(s) Affected:

Broad Run MASF
Crossroads MASF

Special Tools and/or Equipment Required:

None

Inspector(s) Qualifications:

These condition assessments are primarily intended to assess the overall physical condition of the VRE owned infrastructure to support capital investment decisions. However, inspectors must also note and report any defects that may constitute a safety concern as these types of defects may require immediate attention.

VRE's policy is to use a third party contractor to perform the condition assessments. The inspectors will be required to be competent persons and have general knowledge on the track infrastructure elements which would be assessed.

Track elements with a portion, or all of their quantity, assigned a rating of 1 may have issues warranting a structural or detailed review. The terms "structural review" and "detailed review" are defined as **review by a person qualified to evaluate the field observed conditions and make a determination of the impacts of the conditions on the performance of the component**. Such reviews may include examination of the field inspection results, as well as any notes or photos of the element from the inspection, review of as-built plans, and/or supplemental analysis as deemed appropriate to evaluate the performance of the track element.

VRE may establish additional guidance to aid the inspector in determining field conditions where structural or other detailed review is warranted, taking into consideration the education, training and experience of their inspection staff.

Contractor Safety:

Inspectors will be expected to familiarize themselves with VRE's operating environment as well as follow VRE's Rules to Live By when conducting work on or about VRE property. All contracted employees will need to follow strict adherence to these rules for their own personal safety and as required for authorization to access the premises.

Inspectors are also required to watch the Safety and Security Orientation video, provided on the VRE website, before arriving for the first day of work.

Pre-Assessment Procedures

An assessment schedule will be established to provide ample time for inspections and to ensure that all reporting timelines are met. Prior to an infrastructure condition assessment, the inspector will gather and review the following information:

- Results of any previous infrastructure condition assessments including records of past defects found and/or corrected;
- This infrastructure condition assessment SOP and all other applicable infrastructure / track inspection and maintenance SOPs;
- Information regarding the age of track infrastructure;
- All other known issues, including adherence to current construction standards;
- Applicable inspection/maintenance records; and
- Supplies needed: Digital camera, infrastructure condition assessment SOP and forms (**Appendix A**).

General Procedures

During the on-site assessment, the inspector will have all pertinent records on hand to be used as references and will observe the condition of all the track yard elements. Each element will require different tasks for proper inspection as outlined in the Standard Operating Procedures – Assessment Tasks section.

All of the track elements are expected to be readily accessible and visible for the inspection. Inspectors will not be required to enter limited access areas such as utility pits. All condition assessments should be observed from an easy point of access location.

As part of the inspection/assessment, the condition of each element will be rated and recorded using the FTA's Transit Economic Requirements Model (TERM) 5 point scale, which can be applied using the track element condition rating descriptions in the table below.

1-Poor	2-Marginal	3-Adequate	4-Good	5-Excellent

Rating	Condition	Description
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 system(s), but is overall functional.
3	Adequate	Moderately deteriorated or defective system(s); but has not exceeded useful life.
2	Marginal	Defective or deteriorated system(s) in need of replacement; exceeded useful life.
1	Poor	Critically damaged system(s) or in need of immediate repair; well past useful life.

Source: FTA Facility Condition Assessment Guidebook

Standard Operating Procedures – Assessment Tasks

Element	Element Assessment Tasks
Track	• The condition of the track will be evaluated based on the different track lanes located within the MASF. • Inspect track for wear, engine burns, and overflow. • Inspect anchoring, spiking, joints, bolts and conduits within each track lane. • Note the condition of any ballast that is substandard.
Switches	• Switches will be evaluated by the switch number which identifies the two lanes which split at the individual track switch. • Inspect switch, switch wedge, and spikes. • Inspect frog, noting welding and spalling.
Derails	• The condition of each derail will be evaluated. • Inspect bolts and components. • Inspect for wear.
Ties	• The condition of the ties will be evaluated based on the different track lanes located within the MASF. • Inspect the condition of the ties, timber, and bumper block, noting any deterioration or splitting.
Switch Ties	• Switch ties will be evaluated by the switch number which identifies the two lanes which split at the track switch. • Inspect the condition of the switch ties and timber, noting any deterioration or splitting.
Bumper Blocks	• The condition of each bumper block will be evaluated. • Inspect and note condition of components. • Inspect for wear.

Overall Condition Rating – All Elements

Upon completion of the infrastructure condition assessments the condition ratings recorded for each of the track elements will be aggregated to provide an overall condition rating for both the Broad Run and Crossroads' MASFs. VRE will use the FTA's Median Value Method to aggregate the assessment condition ratings, as described below.

Step	Description
Step 1	Determine median value of each component. Calculate this by tabulating the component quantity inspected at each condition rating, and use as the overall component rating **the lowest rating achieved by at least half of the component quantity**. For instance, if 60% of a component quantity has a rating of 2, 20% has a rating of 3, and 20% has a rating of 4, then the overall rating would be 2, as over half of the component quantity has a rating of 2 or less. Likewise, if half of the quantity has a rating of 1 and half has a rating of 5, then the overall rating would be 1.
Step 2	Determine median value across components. Calculate this by tabulating the number of components inspected at each condition rating, and use as the overall rating **the lowest rating achieved by at least half of the components.** For instance, if 10 components were inspected and the results were evenly distributed between ratings (2 components with each of the 5 rating values), the overall rating would be 3 as at least half of the ratings would have a value of 3 or less.

Source: FTA Facility Condition Assessment Guidebook

VRE SOP#: TAM-004
Date: 08/20/2018
Appendix A

APPENDIX A: VRE INFRASTRUCTURE CONDITION ASSESSMENT FORMS

	Infrastructure Condition Assessments	Overall MASF Infrastructure Rating	
	Inspection Date:		
	Inspector(s) Name(s):		
	Facility Type:	Maintenance	
	Facility Name:	Broad Run MASF	
	Address/Location:	10637 Piper Lane, Bristow, VA 20136	

Track				Element Rating =	
Element Section	Element Rating				
	1	2	3	4	5
Lead Track					
Track 1					
Track 2					
Track 3					
Track 4					
Track 5					
Track 6					
Track 7					
Track 8					

Assessment Tasks / Notes
The condition of the track will be evaluated based on the different track lanes located within the Yard.
Inspect track for wear, engine burns, and overflow.
Inspect anchoring, spiking, joints, bolts, and conduits within each track lane.
Note the condition of any ballast that is substandard.

	Infrastructure Condition Assessments	Overall MASF Infrastructure Rating	
	Inspection Date:		
	Inspector(s) Name(s):		
	Facility Type:	Maintenance	
	Facility Name:	Broad Run MASF	
	Address/Location:	10637 Piper Lane, Bristow, VA 20136	

Switches	Element Rating =				
Element Section	**Element Rating**				
	1	**2**	**3**	**4**	**5**
Lead / NS					
8 / 1					
8 / 3					
8 / 4					
8 / 5					
8 / 6					
1 / 2					
6 / 7					

Assessment Tasks / Notes

Switches will be evaluated by the switch number which identifies the two track lanes which split at the individual track switch.

Inspect switch, switch wedge, and spikes.

Inspect frog, note condition of welding and/or any evidence of spalling.

	Infrastructure Condition Assessments	Overall MASF Infrastructure Rating	
	Inspection Date:		
	Inspector(s) Name(s):		
	Facility Type:	Maintenance	
	Facility Name:	Broad Run MASF	
	Address/Location:	10637 Piper Lane, Bristow, VA 20136	

Derails	Element Rating =				
Element Section	**Element Rating**				
	1	**2**	**3**	**4**	**5**
Track 1 west of last switch (mechanical)					
Track 2 west of last switch (mechanical)					
Track 3 west of last switch (mechanical)					
Track 4 west of last switch (mechanical)					
Track 5 west of last switch (mechanical)					
Track 6 west of last switch (mechanical)					
Track 7 west of last switch (mechanical)					
Track 8 west of last switch (mechanical)					
Track 2 - 200 feet east of S&I building (mechanical)					

Assessment Tasks / Notes

The condition of each derail will be evaluated.

Inspect bolts and components.

Inspect for wear.

	Infrastructure Condition Assessments	Overall MASF Infrastructure Rating	
	Inspection Date:		
	Inspector(s) Name(s):		
	Facility Type:	Maintenance	
	Facility Name:	Broad Run MASF	
	Address/Location:	10637 Piper Lane, Bristow, VA 20136	

Ties				Element Rating =	
Element Section	**Element Rating**				
	1	**2**	**3**	**4**	**5**
Lead Track					
Track 1					
Track 2					
Track 3					
Track 4					
Track 5					
Track 6					
Track 7					
Track 8					

Assessment Tasks / Notes

The condition of the ties will be evaluated based on the different track lanes located within the yard.

Inspect the condition of the ties, timber, and bumper block. Noting any deterioration or splitting.

Examine spike pattern, noting any inconsistencies.

	Infrastructure Condition Assessments	Overall MASF Infrastructure Rating	
	Inspection Date:		
	Inspector(s) Name(s):		
	Facility Type:	Maintenance	
	Facility Name:	Broad Run MASF	
	Address/Location:	10637 Piper Lane, Bristow, VA 20136	

Switch Ties	Element Rating =				
Element Section	**Element Rating**				
	1	**2**	**3**	**4**	**5**
8 / 1					
8 / 3					
8 / 4					
8 / 5					
8 / 6					
1 / 2					
6 / 7					

Assessment Tasks / Notes

Switch ties will be evaluated by the switch number which identifies the two lanes which split at the track switch.

Inspect the condition of the switch ties and timber. Noting any deterioration or splitting.

Examine spike pattern, noting any inconsistencies.

	Infrastructure Condition Assessments	Overall MASF Infrastructure Rating	
	Inspection Date:		
	Inspector(s) Name(s):		
	Facility Type:	Maintenance	
	Facility Name:	Broad Run MASF	
	Address/Location:	10637 Piper Lane, Bristow, VA 20136	

Bumper Blocks	Element Rating =				
Element Section	Element Rating				
	1	2	3	4	5
End of Track 1					
End of Track 2					
End of Track 3					
End of Track 4					
End of Track 5					
End of Track 6					
End of Track 7					
End of Track 8					

Assessment Tasks / Notes

The condition of each bumper block will be evaluated.

Inspect and note condition of components.

Inspect for wear.

	Infrastructure Condition Assessments	Overall MASF Infrastructure Rating	
	Inspection Date:		
	Inspector(s) Name(s):		
	Facility Type:	Maintenance	
	Facility Name:	Crossroads MASF	
	Address/Location:	9400 Crossroads Parkway, Fredericksburg, VA 22408	

Track				Element Rating =	
Element Section	Element Rating				
	1	2	3	4	5
Lead Track					
Track 0					
Track 1					
Track 2					
Track 3					
Track 4					
Track 5					
Track 6					
Track 7					
Track 8					

Assessment Tasks / Notes
The condition of the track will be evaluated based on the different track lanes located within the Yard.
Inspect track for wear, engine burns, and overflow.
Inspect anchoring, spiking, joints, bolts, and conduits within each track lane.
Note the condition of any ballast that is substandard.

	Infrastructure Condition Assessments	Overall MASF Infrastructure Rating	
	Inspection Date:		
	Inspector(s) Name(s):		
	Facility Type:	Maintenance	
	Facility Name:	Crossroads MASF	
	Address/Location:	9400 Crossroads Parkway, Fredericksburg, VA 22408	

Switches	Element Rating =				
Element Section	Element Rating				
	1	2	3	4	5
Lead / CSX					
8 / 5					
8 / 7					
7 / 6					
5 / 0					
5 / 2					
5 / 3					
5 / 4					
3 / 2					
2 / 1					
0 / 1					

Assessment Tasks / Notes

Switches will be evaluated by the switch number which identifies the two track lanes which split at the individual track switch.

Inspect switch, switch wedge, and spikes.

Inspect frog, note condition of welding and/or any evidence of spalling.

	Infrastructure Condition Assessments	Overall MASF Infrastructure Rating	
	Inspection Date:		
	Inspector(s) Name(s):		
	Facility Type:	Maintenance	
	Facility Name:	Crossroads MASF	
	Address/Location:	9400 Crossroads Parkway, Fredericksburg, VA 22408	

Derails	Element Rating =				
Element Section	Element Rating				
	1	2	3	4	5
Track 0 north of Vehicle Wash (electronic)					
Track 1 north of switch 1/2 (electronic)					
Track 3 north of switch 3/4 (electronic)					
Track 7 north of switch 7/8 (electronic)					
Track 1 north of S&I facility (mechanical)					
Track 1 south of S&I facility (mechanical)					
Track 2 south of last switch (mechanical)					
Track 3 south of last switch (mechanical)					
Track 4 south of last switch (mechanical)					
Track 5 south of last switch (mechanical)					
Track 6 north of 6/7 switch (mechanical)					
Track 8 south of last switch (mechanical)					

Assessment Tasks / Notes
The condition of each derail will be evaluated.
Inspect bolts and components.
Inspect for wear.

	Infrastructure Condition Assessments	Overall MASF Infrastructure Rating	
	Inspection Date:		
	Inspector(s) Name(s):		
	Facility Type:	Maintenance	
	Facility Name:	Crossroads MASF	
	Address/Location:	9400 Crossroads Parkway, Fredericksburg, VA 22408	

Ties				Element Rating =	
Element Section	Element Rating				
	1	2	3	4	5
Lead Track					
Track 0					
Track 1					
Track 2					
Track 3					
Track 4					
Track 5					
Track 6					
Track 7					
Track 8					

Assessment Tasks / Notes

The condition of the ties will be evaluated based on the different track lanes located within the yard.

Inspect the condition of the ties, timber, and bumper block. Noting any deterioration or splitting.

Examine spike pattern, noting any inconsistencies.

	Infrastructure Condition Assessments	Overall MASF Infrastructure Rating	
	Inspection Date:		
	Inspector(s) Name(s):		
	Facility Type:	Maintenance	
	Facility Name:	Crossroads MASF	
	Address/Location:	9400 Crossroads Parkway, Fredericksburg, VA 22408	

Switch Ties	Element Rating =				
Element Section	Element Rating				
	1	2	3	4	5
Lead / CSX					
8 / 5					
8 / 7					
7 / 6					
5 / 0					
5 / 2					
5 / 3					
5 / 4					
3 / 2					
2 / 1					
0 / 1					

Assessment Tasks / Notes

Switch ties will be evaluated by the switch number which identifies the two lanes which split at the track switch.

Inspect the condition of the switch ties and timber. Noting any deterioration or splitting.

Examine spike pattern, noting any inconsistencies.

	Infrastructure Condition Assessments	Overall MASF Infrastructure Rating	
	Inspection Date:		
	Inspector(s) Name(s):		
	Facility Type:	Maintenance	
	Facility Name:	Crossroads MASF	
	Address/Location:	9400 Crossroads Parkway, Fredericksburg, VA 22408	

Bumper Blocks	Element Rating =				
Element Section	Element Rating				
	1	2	3	4	5
End of Tracks 0/1					
End of Track 2					
End of Track 3					
End of Track 4					
End of Track 5					
End of Track 6					
End of Track 7					
End of Track 8					

Assessment Tasks / Notes

The condition of each bumper block will be evaluated.

Inspect and note condition of components.

Inspect for wear.

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