

CHAPTER 4

Implementation Plan

FY 2022 - FY 2031



(Page Intentionally Left Blank)



Contents

4. Implementation Plan	4-1
4.1. <i>Asset Management</i>	4-1
4.1.1. Fleet Policies	4-1
4.1.2. Facilities.....	4-2
4.1.3. Non-Facility Assets Policies	4-3
4.1.4. Technology and ITS Policies (Verify with Technology)	4-3
4.2. <i>Capital Implementation Plan</i>	4-4
4.2.1. Background	4-4
4.2.2. Revenue Fleet.....	4-4
4.2.3. Non-Revenue Fleet.....	4-5
4.2.4. Operations and Maintenance Facilities.....	4-5
4.2.5. Passenger Facilities, Infrastructure, and Amenities	4-6
4.2.6. Technology and ITS	4-7
4.2.7. Light Rail Infrastructure.....	4-8

Tables

Table 4-1: Useful Life by Asset Type	4-2
Table 4-2: Number of Planned Replacement, Expansion and Repowers by Year	4-5
Table 4-3: Paratransit Replacement Schedule.....	4-5
Table 4-4: Non-Revenue Fleet Replacement Needs	4-5

Figures

Figure 4-1: Average Bus Age	4-4
-----------------------------------	-----

(Page Intentionally Left Blank)

4. Implementation Plan

4.1. Asset Management

HRT is a Tier 1 agency in the Commonwealth and has developed its own Transit Asset Management (TAM) Plan. Adopted in August 2018, it is based on the HRT's asset inventory and condition assessments through May 2018. The TAM Plan's overarching purpose is to guide HRT in maintaining its assets in a state of good repair as well as developing a timeline and process for replacing those assets that are past their useful lifespans. The elements of the TAM plan are established by the Federal Transit Administration. The TAM Plan must include an asset inventory, a condition assessment of each of those assets, an analytic decision process or tools to prioritize and estimate capital needs, TAM and state of good repair policies, an implementation plan, a list of activities that occur in each year of the plan's horizon timeline, a list of resources required to carry out the TAM plan, and a description of how the TAM plan will be monitored and updated over time.¹ HRT's TAM plan will be reviewed and updated at least every four years to ensure that the asset inventory is accurate and that an attainable asset replacement schedule is being implemented.

According to the 2018 TAM Plan, HRT has over 5,600 individual assets valued at approximately \$800 million. An asset is defined as being a revenue vehicle, a non-revenue vehicle or a support vehicle worth \$50,000 in acquisition value; a facility or facility component including integral facility equipment worth more than \$10,000; or bus, light rail, and/or ferry passenger amenities.

HRT is in the process of implementing a new agency-wide Enterprise Asset Management (EAM) system (Trapeze EAM).

4.1.1. Fleet Policies

HRT's revenue fleet includes buses, light rail vehicles, ferries, and paratransit vehicles. HRT uses the Transit Economic Requirements Model (TERM) to assess the condition of non-facility assets such as revenue fleet vehicles. Through this process, each asset is assigned a numerical value from five (representing an asset in excellent or near new condition) to one (representing an asset that is past the end of its useful life and in need of prioritized replacement or repair). An asset receiving a score of 2.5 or less is considered to be past the end of its useful life.²

Revenue Fleet

As outlined in the agency's Fleet Plan from the FY 2021 Capital Improvement Plan, HRT aims to replace its 29-foot buses after 12 years of service and larger buses after 14 years of service. Due to the lead time associated with procurement, this means HRT needs to initiate procurement at 10 or 12 years respectively. The agency conducts mid-life repowers after six to seven years of service to improve vehicle reliability in the second half of its useful life. HRT updates its fleet plan each year as part of the agency's Capital Improvement Plan (CIP), which includes a replacement and rehabilitation schedule. This plan will lower the average age of the revenue fleet over time, prolong the life of its vehicle assets, and improve service reliability. HRT targets a 20 percent spare ratio for its fleet.

HRT strives to achieve an optimum fleet mix based on ridership and the required number of vehicles and vehicle size for each route and regularly reassessed needs based on changes to service and demand. HRT assesses the appropriate vehicle size by route by determining the number of seats that are available on each route and the number of passengers that utilize them. The vehicle size is determined by percentage of seats to passengers.

HRT aims to replace the paratransit vehicles it directly owns after four years of service or 100,000 miles.

HRT's light rail and ferry boat fleet have useful lives beyond the timeframe of the TSP. Starting in FY 2022, HRT will initiate its mid-life overhauls of light rail trains. The overhaul process will be spread over seven years to ensure HRT has a suitable light rail fleet availability. Ferries also undergo major overhauls during their life, however HRT

¹ 49 CFR 625.25 Parts C and D.

² While asset conditions are integers, condition assessments can be combined to yield fractional, weighted average values.

recently purchased two new ferry vessels, so the ferries are not in need of major overhauls during the timeframe of this TSP.

Non-Revenue Fleet

HRT's Fleet Plan from the FY 2021 Capital Improvement Plan uses a useful life benchmark for non-revenue fleet vehicles of between 85,000 and 110,000 miles depending on vehicle type. The agency has several vehicles beyond their useful life and the Capital Implementation Plan outlines a schedule for replacing non-revenue vehicles over the next ten years. In replacing non-revenue vehicles, HRT prioritizes replacing any vehicles critical for service delivery such as vehicles for field supervisors and bus maintenance.

4.1.2. Facilities

HRT has developed a Facility Asset Management Plan and maintains a set of Facilities Maintenance Policies and Procedures for achieving a state of good repair on its facility assets. The mission of Facility Maintenance is to "Affect a high-quality agency-wide infrastructure that is safe, functional, attractive, clean, sustainable, and sensitive the needs of [HRT's] customers". These policies outline procedures for:

- Reporting and managing facility maintenance work orders
- Centralizing and coordinating the acquisition of all furniture and the modification of HRT facilities
- Conducting required preventative maintenance in accordance with manufacturers recommendations and other regulatory requirements on facility assets.

Since 2016 the agency has been conducting annual condition assessments on all HRT facility assets. The primary purpose of this assessment is to identify existing and expected asset deficiencies that need to be addressed and funded, notably over the next 10 years. For longer-term needs, HRT relies on its TERM Lite database to forecast facility investment needs over a 20-year timeframe.

HRT's Facilities Asset Management Plan identifies a specific target service life, rehabilitation policy, and maintenance policy for each major facility type and their components. The rehabilitation and replacement of facility assets is regularly assessed based on observed physical asset conditions. The useful life of major asset types are outlined in **Table 4-1**. The Facility Asset Management Plan provides additional detail by asset type and component, including maintenance schedules.

Table 4-1: Useful Life by Asset Type

Asset Type	Useful Life
Buildings/ Renovation	10-50 years
Bus shelters & Signs	5-20 years
Shop & garage equipment	10-30 years
Security Equipment/Surveillances Equipment	3-10 years
Furniture & fixtures	3-7 years
Computer equipment	3-5 years
Money room equipment	10 years
Radio/Communication Equipment	3-8 Years
Ferry Docks	20-40 Years
Bridges	10-75 Years

Administrative and Operating Facilities

HRT owns seven operations and maintenance facilities, one administration facility, and two operator restrooms.³ Of these facilities, only one maintenance facility, the Virginia Beach Trolley Base (Parks Avenue facility), had a

³ In addition to these facilities, HRT leases one facility.

condition assessment score of two or less, indicating the facility is due for refurbishment or replacement. HRT utilizes its TERM Lite database to identify future facility maintenance needs. To determine future needs, the agency looks at both existing condition as well as building useful life.

HRT's Facility Asset Management Plan details the useful life of facility assets. HRT's useful life benchmarks for buildings is between 40 and 50 years, however many individual components within the interior and exterior of buildings have shorter useful lives. Major rehabilitation projects for buildings should be planned every 10 to 15 years to ensure fixtures, flooring, walls, ceilings, and mechanical systems are in a state of good repair.

Passenger Facilities, Infrastructure, and Amenities Policies

HRT's TAM Plan lists three park and ride lots, four transit centers, four ferry docks, eleven light rail stations, and five light rail bridges in the asset inventory, along with individual passenger amenity bus stops. All of these facilities have a current condition rating of three or better (as of May 2020).

HRT's Facility Asset Management Plan and Passenger Amenities Policy outlines procedures for the installation, maintenance and replacement of passenger facilities and amenities. Maintenance procedures and useful life benchmarks for components of transit centers mirrors that of HRT's operations and administrative facilities. Passenger facilities such as light rail stations and bus transfer stations are subject to different useful life benchmarks based on the assets that exist at specific locations. For example, light rail stations have a benchmark of 40-50 years for major components like platforms, elevators, and stair towers. Other station components such as shelter and benches require more frequent replacement depending on asset.

HRT determines the appropriate level of investment in passenger amenities based on a location's daily boardings, service type (e.g. fixed-guideway) and the number of routes serviced. Transit stops with greater than 25 boardings a day are candidates for enhanced amenities such as benches and trash cans. Bus shelters are prioritized for locations with 40 or more boardings a day. Transfer centers are locations with between five and nine connecting routes and are often located off of the public right of way and are candidates for restrooms, landscaping, lighting, and signage in addition to bus stop amenities like shelters and seating. Transit centers are implemented only at locations with ten or more connecting routes and may feature fully enclosed spaces with indoor seating, air conditioning, passenger information areas, and restrooms, among other features.

HRT has alternate standards for bus stops within the RTS network (757 Express). To maximize the potential ridership of the RTS, flexibility in the level of amenities is allowed. RTS Stops may include freestanding benches, shelters, and/or bicycle racks regardless of the level of anticipated ridership. RTS stations should be located on HRT property, or on property otherwise controlled by HRT and/or in partnership with municipal governments but may be placed on private property with the consent and agreement of the property owner.

4.1.3. Non-Facility Assets Policies

HRT plans to refurbish and replace non-facility assets based on the useful life of these assets as well as their condition. Non-facility assets are defined in the TAM Plan as those assets that were not included in the onsite facility inspections conducted during the development of the TAM Plan. These include facilities-related equipment, storage yard, guideway, structures, and communications, electrification, and revenue collection systems. The results show that 80 percent of HRT's non-facility assets are in adequate or better condition (by replacement value), with vehicle assets comprising the majority of non-facility assets in less than adequate condition based on age in relation to useful life.

4.1.4. Technology and ITS Policies (Verify with Technology)

HRT aims to replace its ITS and technology assets when they are no longer supported by the vendor, they come to the end of their useful life, and/or the technology no longer integrates with other related systems. HRT's most recent TAM Plan does not include a full inventory of technology assets. Compared to other asset classes like vehicles and facilities, technology assets need more frequent replacement. Technology obsolescence, changing requirements, lack of vendor support, and wear and tear all impact the frequency of replacement. Much of the hardware and software HRT relies on requires replacement every four to six years.

4.2. Capital Implementation Plan

4.2.1. Background

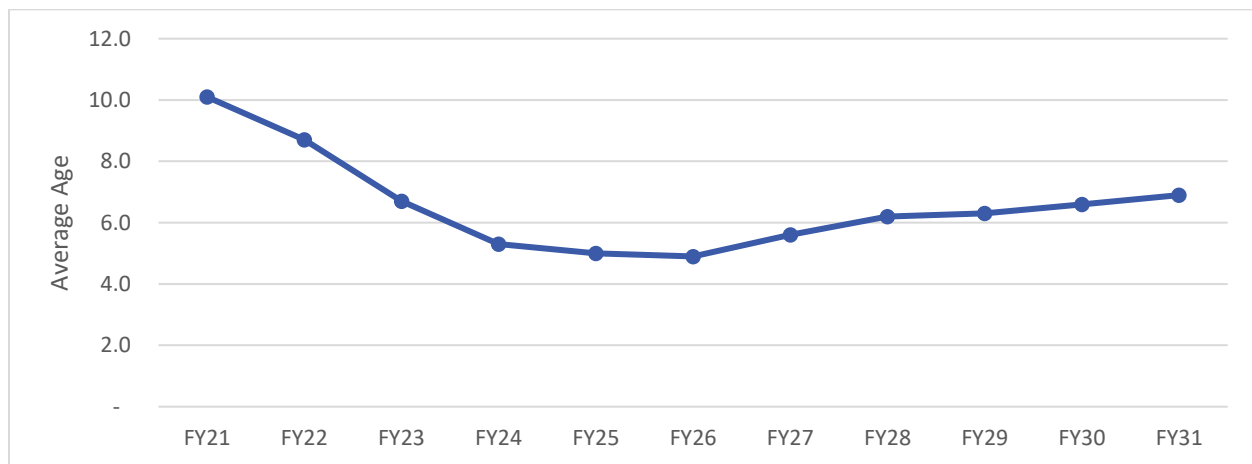
From buses and buildings to technology and transit centers, HRT relies on a wide range of capital assets to support daily operations. To help plan for and prioritize capital needs, every year the agency prepares a ten-year Capital Improvement Plan (CIP). The most recent CIP covers the years FY 2021 to FY 2031 and was adopted by the TDCHR in December 2020. The CIP is fiscally constrained and developed collaboratively across the agency's departments. Capital needs are prioritized based on metrics falling into four criteria: service delivery, operational efficiency, state of good repair, and risk reduction. The current adopted CIP was developed in close coordination with the TSP and reflects the needs associated with **Chapter 3's** service recommendations.

The availability of funding through the Hampton Roads Regional Transit Fund (HHRTF) will allow HRT to invest in a range of capital improvements associated with service expansion, including new vehicles, passenger facilities, operating facilities, and technology. Most of the projects unrelated to Chapter 3's service recommendations are still indirectly needed to serve service expansion as they are necessary for maintaining HRT's assets in a state of good repair.

4.2.2. Revenue Fleet

HRT's revenue fleet has an average age of 10.1 years in FY2021, shown in **Figure 4-1**. The agency is currently in the midst of a major bus fleet overhaul and expects its average fleet age to decline substantially over the next four years.

Figure 4-1: Average Bus Age



HRT plans to replace 211 buses, conduct mid-life repowers on an additional 149⁴, and expand the fleet by 48 buses (**Table 4-2**). A large portion of HRT's fleet is over eight years old today, and the agency will need to replace the majority of its buses over the next four years. By FY 2025, HRT anticipates its replacement needs will decline, leading to a gradual increase in average fleet age. The agency is working to spread out its fleet replacements to better distribute vehicle retirements and replacements.

Over the next five years, HRT will undergo the largest fleet expansion in more than a decade. The agency plans to procure 48 additional buses to implement new HHRTF funded services and meet spare-ratio requirements. These additional vehicles are needed to realize the service recommendations outlined in **Chapter 3**. The agency will need to build a new operating base in Virginia Beach to replace its Parks Avenue facility in order to accommodate the expanded fleet.

⁴ Includes repowering of proposed expansion vehicles in the 10-year timeframe.

Table 4-2: Number of Planned Replacement, Expansion and Repowers by Year

	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31
Replace	55	34	25	22	6	10	19	14	15	11
Expansion	24	12	12	-	-	-	-	-	-	-
Repower (Existing Fleet)	15	30	1	2	3	36	17	-	-	-
Repower (Expansion Fleet)	-	-	-	-	-	-	-	24	12	12

In addition to buses, HRT will need to procure 129⁵ replacement and six expansion paratransit vehicles over the next ten years (**Table 4--3**). These replacements are intended to keep the fleet in a state of good repair while the six expansion vehicles support additional paratransit service requirements related to the implementation of 757 Express service.

Table 4--3: Paratransit Replacement Schedule

	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31
Replacement	-	17	20	13	15	10	17	20	13	15
Expansion	6					6*				

*replacement of previously procured expansion vehicles.

4.2.3. Non-Revenue Fleet

HRT's non-revenue fleet consists of the support vehicles necessary for keeping the transit system running. HRT has a diverse fleet of non-revenue vehicles, including passenger cars, pick-up trucks, vans, flat-bed trucks, and special purpose medium and heavy-duty vehicles. HRT expects to replace 117 non-revenue vehicles in the next ten years, with over a third of those needs falling in FY 2022; in addition to vehicle replacement, implementation of the HRRTF-funded service expansion outlined in **Chapter 3** will require 23 additional vehicles (**Table 4-4**). HRT's expansion vehicles are expected to need replacement by FY2030.

Table 4-4: Non-Revenue Fleet Replacement Needs

	FY22	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31
Non-Revenue Replacements	48	9	1	1	4	0	10	15	13	11
Non-Revenue Expansion	23								23*	

*replacement of previously procured expansion vehicles.

4.2.4. Operations and Maintenance Facilities

Funded Investments

HRT has identified funding in the constrained CIP for four operating and maintenance facility projects over the next 10 years. The replacement and relocation of the Parks Avenue operating division is the only project tied to the TSP recommendations in **Chapter 3** but would still be a priority for HRT even without any service expansion due to the deficiencies of the existing Parks Avenue facility. All the projects, with the exception of the Norfolk Tide Facility Foundation Repairs, will be initiated in the next two years.

- **Hampton Facility Renovation:** HRT is undertaking the final phase of renovations at its 3400 Victoria Boulevard facility in Hampton. These renovations are upgrading the administrative and maintenance spaces. The project is fully funded in FY 2021.
- **Parks Avenue Replacement and Relocation:** Relocate and replace Virginia Beach's Parks Avenue operating base. This project is critical to meet both existing operating and Regional Transit System (RTS) needs. The existing facility has several deficiencies: it is past its useful life, lacks space for additional vehicles, cannot

⁵ Includes replacing the six expansion paratransit vehicles at the end of their useful life.

accommodate most bus maintenance functions, and lacks the facilities to operate outside the peak summer season. A new facility will allow for all-year operations and be large enough to accommodate maintenance work locally. This project will cover land acquisition, planning, design, and construction. The schedule and programming of funds targets delivery in time to serve RTS Group C service contingent on site availability/suitable development conditions and HRT will adapt the capital investment strategy based on actual conditions. Project to be initiated in FY 2021, with a target completion data of FY 2024.

- **18th Street Building 1 and 2 Rehab:** Project would complete state-of-good-repair investments at HRT's 18th Street Building 1 and 2 administrative facilities. Investments include reconfiguration of space, updated technology, new furniture, and creation of a dedicated space for customer service at dispatch. Project is programmed in FY 2022.
- **Gate Replacement:** Replace non-functioning gates at HRT operating facilities (programmed for FY 2023).
- **Norfolk Tide Facility (NTF) Foundation Repair:** The foundation at the NTF is suffering from ground subsistence. HRT anticipates it will need to repair the foundation over the next six years. Funding for repair work is programmed in FY 2024.

4.2.5. Passenger Facilities, Infrastructure, and Amenities

The implementation of the 757 Express service will necessitate the replacement or renovation of several transfer centers across the HRT service area. The agency plans to use HRRTF funds to replace/relocate three transfer centers. HRT plans to more than double the number of stops in the system with bus shelters and implement upgraded bus amenities on 757 Express corridors. Finally, HRT has programmed funds for state-of-good repair renovations at several transit centers.

- **Newport News and Hampton Transit Center:** These two facilities are the main hubs for transit service on HRT's Northside. Proposed investments at these facilities will complete ongoing exterior work and renovate the interior spaces of each facility. Funding is programmed for these facilities in FY 2022 and FY 2024.
- **Robert Hall Transfer Center Replacement:** This project would replace the on-street Robert Hall Transfer with a new off-street facility that will function as a hub for bus service in Chesapeake. Funding is assigned to this project in FY 2021 and FY 2022. Project tied to the implementation of HRRTF funded 757 Express service.
- **Evelyn T. Butts Transfer Center:** Evelyn T. Butts is one of HRT's busiest transfer locations, however the current on-street facility is poorly located and has limited passenger amenities. The agency has assigned funding in FY 2021 to begin planning for its replacement, with full construction funding programmed in FY 2022. Project tied to the implementation of HRRTF funded 757 Express service.
- **Net Center Replacement:** HRT is in the process of replacing its transfer location at the Net Center in Hampton to a new on-street location. Work is programmed for FY 2021 and FY 2022. Project tied to the implementation of HRRTF funded 757 Express service.
- **Bus Stop Amenity Program:** This project would program funds between FY 2021 and FY 2025 for new shelters and other bus stop passenger amenities. Project tied to the implementation of HRRTF funded 757 Express service.
- **HRT Paving Program:** HRT expects to program money in FY 2022 to repair paved surfaces with a condition rating of 3 or worse at agency-owned bus loops and transit centers.
- **Wards Corner Transfer Center Restroom and Paving Renovation:** HRT plans to make state-of-good repair investments to the Wards Corner Transfer Center's restroom and paved surfaces. HRT expects to program funds for this work in FY 2024.
- **Victory Crossing Upgrades:** HRT expects to program funding for state-of-good repair investments to the Victory Crossing Transfer Center in FY 2024.

- **Reon Drive Transfer Center Upgrades:** HRT plans to program funds to renovate the Reon Drive Transfer Center in FY 2024.
- **Silverleaf Transfer Center Upgrades:** HRT plans to program funds to renovate the Silverleaf Transfer Center in FY 2027.

In addition to transfer center projects, HRT plans to continue applying for Federal Transportation Alternatives Program (TAP) funding to support investment in bus stop amenities and ADA access. Finally, HRT has several capital projects related to the maintenance of Tide Light Rail right-of-way and stations. These projects are scheduled to be funded and completed based on asset condition and recommended useful life.

4.2.6. Technology and ITS

HRT has several IT investments planned, including upgrades to passenger-facing and back-end technology. Most of these investments are needed independent of the TSP recommendations but would be critical in supporting the implementation of new services. Most of the major IT investments are slated to occur over the next three years. Mid- and long-term investments are focused on upgrading and replacing existing software and hardware systems as they reach the end of their useful life. The only investments directly tied to the implementation of HRRTF-funded service is the implementation of a range of passenger-facing and backend investments to support expanded service, including the procurement of passenger information displays for key transfer locations on the 757 Express network.

- HRT has programmed in FY 2022 funding for a range of technology projects that will maintain aging systems, improve cyber-security at the agency, and support the roll-out of 757 Express service:
 - Passenger and backend technologies to support the implementation of 757 Express services
 - Client Technology System state of good repair investments
 - Upgrade of HASTUS scheduling software
 - Initiate replacement of HRT's Human Resources Management Software (HRMS)
 - Replace rail and bus ticket vending machines at the end of their useful life
 - Replace aging onboard Wi-Fi equipment
 - Procure additional modules for HRT's Financial Services Software
 - Invest in Cloud Platform Security
 - Fund capital activities tied to HRT's Tri-Annual IT Risk Assessment
 - Implement ICS Cyber Security upgrades to address existing vulnerabilities
 - Conduct an EAM technology asset inventory
 - Replace onboard cameras on HRT's buses and trains
 - Replace security cameras at HRT facilities
 - Replace agencies aging internal digital signage system
 - Initiate a large technology hardware refresh
 - Upgrade aging bus CAD/AVL equipment
 - Upgrade the agency's enterprise access control systems that secure HRT facilities
 - Procure a federally-mandated Safety Management System.
- HRT has several technology investments planned after FY 2023, including:
 - Agency innovations initiative to support adoption of new technologies (FY 2023-FY 2025)
 - Upgrade audio monitoring system (FY 2023)
 - Procure passenger information displays on light rail (FY 2023)
 - Initiate a Technology Planning Project to improve project management and project planning (FY 2023-FY 2025)
 - Ongoing client technology systems upgrades (FY 2023-FY 2031)
 - Ongoing large technology infrastructure upgrades (FY 2023-FY 2031)
 - Replacement of onboard Wi-Fi Equipment on a three-year cycle

- Replacement of bus and light rail passenger information displays on a four-year cycle
- Upgrade Enterprise Asset Management (EAM) system (FY 2025)
- Replace TVM PIN pads (FY 2026).

4.2.7. Light Rail Infrastructure

HRT has planned investments for the Tide Light Rail in each of the next 10 years. These investments will maintain light rail in a state of good repair. None of these investments are tied to TSP recommendation in **Chapter 3**.

Planned investments include:

- Ongoing annual state-of-good-repair investments for Light Rail right-of-way and vehicles.
- Initiate mid-life overhaul of LRT trains starting in FY 2023.
- Upgrade LRT radio systems (programmed in FY 2022).
- LRT station renovations (programmed in FY 2026) and repaving of state park and rides (FY 2028).
- Replacement of agency SCADA hardware and software (programmed in FY 2022 with maintenance investments planned for FY 2027, FY 2029, FY 2030, and FY 2031).
- Replacement of the operating control center's uninterruptable power source system (programmed in FY 2022)
- State-of-good repair maintenance to the Smith Creek Bridge (programmed in FY 2023).