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Implementation Plan

4. Implementation Plan

The implementation plan details the capital improvements needed to support the operations and services described in **Chapter 3**. Capital investments in vehicles, facilities, passenger amenities, and technology will be needed as existing assets reach the end of their useful life cycle and new services are implemented. This TSP covers capital expenditures through fiscal year (FY) 2033 (with FY 2023 included as a baseline) associated with existing and planned service improvements. While this chapter summarizes when capital expenditures will be necessary, **Chapter 5** identifies projected costs and financial resources.

4.1 Asset Management

Fairfax County is a Tier 1 agency as defined by the Federal Transit Administration (FTA) due to the number of vehicles it operates for fixed-route service, and therefore has developed its own Transit Asset Management (TAM) plan for revenue vehicles, non-revenue vehicles, facilities, and other equipment. The FCDOT TAM plan describes and establishes the approach to managing its Fairfax Connector capital assets in compliance with the FTA's Transit Asset Management Final Rule (49 Code of Federal Regulations (CFR) 625 and 630). The latest TAM plan was completed in 2020 which is based on FCDOT's asset inventory and condition assessments through December 2019. FCDOT used the FTA's TERM Lite program as the analysis tool to forecast capital needs based on an asset inventory, capital replacement costs, useful life benchmarks, and asset lifecycle strategies.

FCDOT has committed to an Asset Management Policy consisting of the five principles illustrated in **Figure 4-1**. The policy statement is for all transit services that it provides or supports to ensure strategic management and investment decision making throughout the lifecycle of its transit assets.

FIGURE 4-1: ASSET MANAGEMENT POLICY PRINCIPLES



Source: FCDOT Transit Asset Management Plan, April 2020.



4.1.1 Vehicle Fleet Policies

Fairfax Connector's fleet is summarized in **Appendix A**. Fairfax County's asset management policy for its transit vehicle fleet is designed to ensure the safe and reliable operation of Connector. Despite being operated by the service provider, the revenue vehicles are the property of FCDOT, and the service provider is required to adhere to the agency's performance standards and practices. FCDOT requires its service provider to use a management system, FleetFocus, for storing and managing fleet data. This maintenance management software is used to maintain up-to-date information on all buses, including maintenance activities, work orders, mileage, and safety inspections.

Fairfax Connector's capital budget covers the procurement, maintenance, replacement, and disposal costs associated with revenue vehicles, which are triggered by mileage and age per original equipment manufacturer (OEM) advisories and warranties. The revenue vehicle fleet follows a 15-year bus replacement cycle, with the expectation that vehicles will reach their full useful life. When a vehicle reaches the end of its useful life, the operating service provider is responsible for the close-out process and must provide FCDOT with permits, licenses, and relevant documents. Maintenance and inspection records are backed up, and the county manages the disposal sale of the assets once processed by its service provider.

FCDOT's vehicle maintenance strategies rely on OEM maintenance standards, and midlife repower schedules are implemented to replace engines and transmissions, reducing maintenance costs. Preventative maintenance is performed based on mileage and time intervals, with the service provider reporting these actions back to FCDOT.

Non-revenue vehicles follow similar practices, relying on the manufacturer's useful life estimation. The useful life is 10 years for supervisory vehicles and is 15 years for service trucks; the useful life for other specialized service equipment follows the OEM standard life expectancy. The service provider has the exclusive responsibility of assignment and control of these vehicles. Preventative maintenance inspections are conducted at 5,000-mile intervals, and service vehicles are required to complete a preventative maintenance inspection checklist at 48,000 miles. Vehicle replacement is triggered by both useful life and asset mileage. Disposal procedures for non-revenue vehicles are similar to revenue vehicles.

Fairfax Connector has a goal of transitioning its entire fleet to zero-emission vehicles by 2035, and it will begin the transition with a pilot program. The first phase includes piloting eight battery-electric buses out of the West Ox division, and phase two of the pilot will see an addition of four battery electric buses operated out of the Huntington division. For TSP planning purposes, battery electric buses are the assumed buses for projecting future capital costs starting in FY 2027, but no specific bus technology has been selected. At the time of this TSP, transition plans were developing, and additional details will be included in future annual updates.

4.1.2 Facility Policies

FCDOT operates the Fairfax Connector service out of three major facilities: Reston-Herndon, West Ox, and Huntington. In addition, FCDOT manages several passenger and parking facilities. Fairfax Connector's facilities are summarized in **Appendix A**. Historically, facility maintenance has been largely corrective and reactive, but FCDOT is developing a facilities management manual to



promote more proactive investment in preventive maintenance and inspections. FCDOT conducts monthly usage inspections on park and rides and parking garage facilities. The service operator is responsible for completing its own operational inspections on the maintenance facilities.

4.1.3 Technology and ITS Policies

While FCDOT's TAM plan does not include a full inventory of technology assets, FCDOT strives to replace intelligent transportation system (ITS) and technology assets when they reach the end of their useful life or when the technology is no longer supported by the vendor. Technology assets require more frequent replacements compared to other asset classes like vehicles and facilities. FTA useful life standards range from four to ten years depending on the hardware or software.



4.2 Capital Implementation Plan

The implementation plan will be used to meet Fairfax County's capital needs to both maintain its state of good repair in accordance with its asset management policies and execute the planned service improvements of the TSP. Implementation of the planned improvements and modifications in **Chapter 3** will consist of capital investment in the following areas:

- Vehicles
- Passenger Facilities
- Operating and Maintenance Facilities
- Tools and Equipment
- Technology
- Major Capital Projects

Figure 4-2 shows the magnitude of capital needs for each year. The largest areas of need include major capital projects (namely, the Richmond Highway BRT and electric bus infrastructure needs), vehicles, and technology. Details on costs and assumptions are included in the Financial Plan in **Chapter 5**. **Table 4-1** shows projected annual quantities of vehicle needs and schedules for other facility, equipment, and capital projects. The following sections contain brief descriptions of key projects or initiatives in each area.

FIGURE 4-2: CAPITAL IMPLEMENTATION PLAN SUMMARY

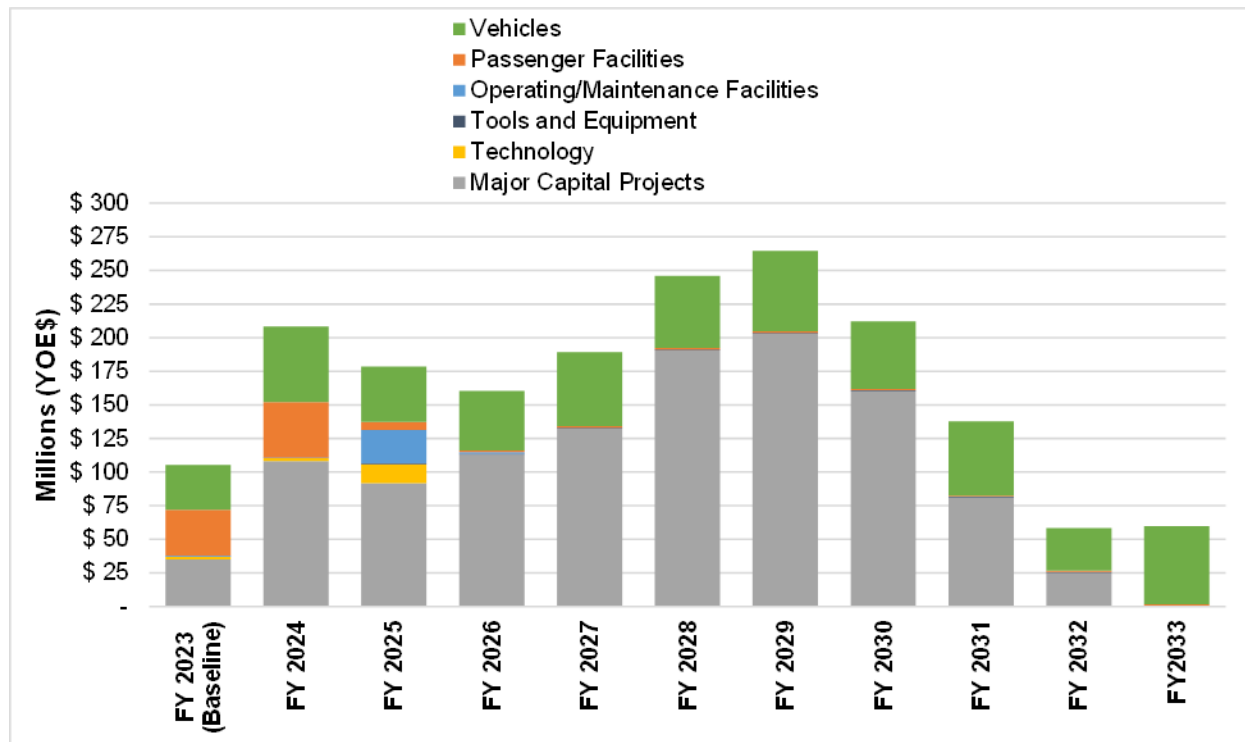




TABLE 4-1: CAPITAL IMPLEMENTATION PLAN

Planned Capital Implementation Activity

Baseline

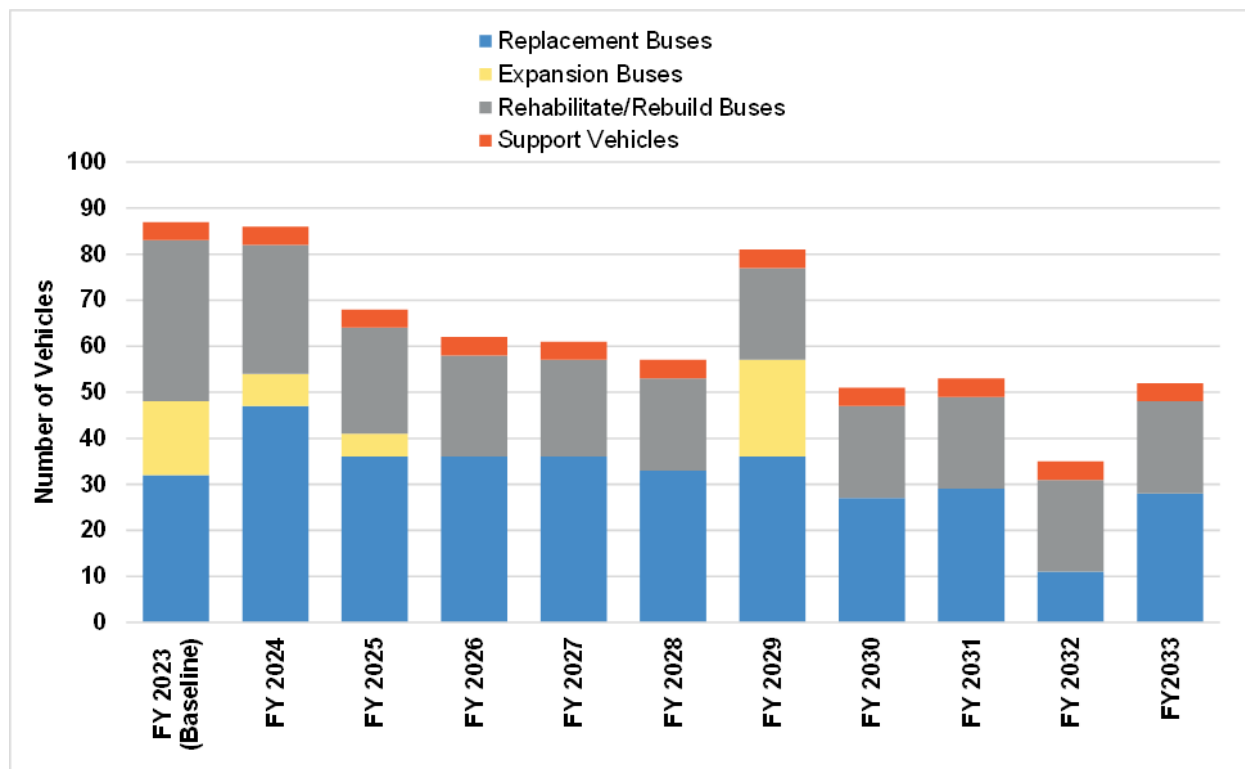
Transit Strategic Plan Capital Implementation	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033
Vehicles:											
Replacement Buses (Diesel)	28	43									
Replacement Buses (Hybrid)			36	36							
Replacement Buses (Electric)	4	4			36	33	36	27	29	11	28
Expansion Buses funded by I-66 ITB toll revenue		6	5								
Expansion Buses funded by I-66 OTB toll revenue	8										
Expansion Buses funded by I-395 toll revenue		1									
Expansion Buses VDOT I-495 ALB		8									
Richmond Highway BRT Buses							21				
Revenue Vehicle – Rehabilitate/Rebuild Buses	35	28	23	22	21	20	20	20	20	20	20
Support Vehicles	5	1	4	4	4	4	4	4	4	4	4
Third-Party Project Management											
Passenger Facilities:											
Springfield CBC Commuter Parking Garage											
Tysons West Park Transit Center Renovation											
Monument Drive Commuter Parking Garage											
Bus Stop Improvement Program											
Operating and Maintenance Facilities:											
Huntington Bay Repair Renovations											
West Ox Fire Alarm System Replacement											
West Ox Buyout											
Tools and Equipment:											
Tools and Equipment											
Technology:											
Intelligent Transportation Systems											
SmarTrip Program Updates											
Major Capital Projects:											
Richmond Highway BRT											
Electric Bus Infrastructure Needs											



4.2.1 Vehicles

Over the years of the TSP, it will be necessary to rehabilitate or replace existing vehicles to maintain a state of good repair and acquire expansion vehicles to meet planned service levels (see **Figure 4-3**). In the short-term, vehicle investments will be for replacement diesel buses and expansion buses grant-funded through the Express Lanes for I-395 and I-66 Inside the Beltway (ITB) and Outside the Beltway (OTB). It is assumed that in the mid-term, vehicle purchases will transition to electric for all purchases in FY 2027 and beyond. The implementation plan also includes the annual acquisition of approximately 4 support vehicles and 20 to 30 annual bus midlife repower and rehabilitations. The annual replacement or overhaul for zero-emission buses has not been determined at this time but is likely different from assumptions for internal combustion engines.

FIGURE 4-3: VEHICLE IMPLEMENTATION



4.2.2 Passenger Facilities

The TSP recommendations do not require any new investments in passenger facilities, infrastructure, and amenities beyond what is already identified in Fairfax County's Capital Improvement Program (CIP). Funding has been allocated toward three critical passenger facilities projects in the CIP, and beyond this Fairfax County maintains a continuous bus stop improvement. The following passenger facility projects are expected to be completed:

- Bus Stop Improvement Program:** This program has an annual budget to make bus stop improvements, including bus shelters, boarding and alighting areas, connections from stops to nearby sidewalks, and sidewalks improvements.



- **Monument Drive Commuter Parking Garage:** The Monument Drive Commuter Parking Garage and Transit Center is a new parking garage with a minimum of 820 parking spaces and will include a transit center of bus bays, kiss-and-ride facility, bicycle storage, restroom facility, and Connector store. Construction is anticipated to be completed by the end of 2023.
- **Springfield CBC Commuter Parking Garage:** The Springfield CBC Commuter Parking Garage is a new parking garage to accommodate approximately 1,000 commuter parking spaces and provide a bus transit location on the ground level. Construction is estimated to be completed by the end of 2023.
- **Tysons West*Park Transit Center Renovation:** This project will construct a new one-story, five-bay bus transit facility and adjacent fire station on a 4.2-acre parcel that is currently used for West*Park Transit Center. Construction is estimated to be completed in 2026.

4.2.3 Operating and Maintenance Facilities

Fairfax Connector currently operates out of three facilities throughout Fairfax County. The Huntington and Reston divisions are owned solely by Fairfax Connector while the West Ox division is shared with WMATA. Fairfax Connector has plans to lease space from WMATA's Cinder Bed Road facility for the articulated buses that will be acquired for the Richmond Highway BRT. None of Fairfax Connector's three facilities has the capacity or ability to store articulated buses. The capital implementation plan also includes projects for renovating maintenance bays at the Huntington facility and completing the West Ox fire alarm system replacement. Additionally, Fairfax County plans to buy out the Metrobus portions of the shared West Ox facility from WMATA in FY 2025.

Fairfax Connector's zero-emission bus transition plan will require renovating its operating and maintenance facilities to accommodate electric buses. The equipment and renovations needed will depend on whether Connector chooses to operate battery electric buses, hydrogen fuel cell buses, or a mix of the two. All newly acquired buses are assumed to be fully electric starting in FY 2027.

4.2.4 Tools, Equipment, and Technology

The capital implementation plan includes the annual replacement of tools and equipment to support operations and maintenance activities. As Connector made large investments in on-board ITS in recent years, technology needs for the years ahead primarily consist of fare collection technology upgrades. WMATA, in coordination with regional partners, has initiated a Metrobus Farebox Replacement Project that will also include the replacement of bus fareboxes for other regional bus operators such as Connector. The new bus fareboxes will allow customers to continue to pay in the same ways with improved reliability and a separate SmarTrip card reader outside of the farebox. FCDOT has opted to undergo a multi-year replacement of its fareboxes anticipated to be complete in FY 2025 to align with the transition plans of WMATA and other regional partners.



4.2.5 Major Capital Projects

The capital implementation plan includes the following multi-year capital project over the course of the TSP:

- **Richmond Highway BRT:** FCDOT plans to build and implement a 7.4-mile BRT system along US Route 1/Richmond Highway from the Huntington Metrorail Station to Fort Belvoir. The capital expenditures include the construction of dedicated lanes, BRT stations, and new medians, as well as improvements to the streetscape, and bicycle and pedestrian facilities. The BRT is expected to be operational by 2030.
- **Electric Bus Infrastructure Needs:** As previously referenced in Vehicles and Operating and Maintenance Facilities.

Capital investment will also be needed in the future to support the Route 7 BRT between Spring Hill Metrorail station and the Mark Center in Alexandria. At the time of the TSP, NVTC was developing its Phase IV Mobility Analysis Study, and implementation of the BRT project was not fully funded. Fairfax County will continue to coordinate with NVTC and other regional stakeholders on future phases of this project.