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Charlottesville Area Transit *Transit Strategic Plan*

Fiscal Year 2025 – 2034

Chapter 4: Implementation Plan

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Chapter 4: Implementation Plan

This chapter provides the required steps for Charlottesville Area Transit (CAT) to carry out the operations and services described in Chapter 3. Chapter 4 is organized as follows:

- **Section 4.1: Asset Management** describes the policies set forth in the Transit Asset Management plan.
- **Section 4.2: Capital Implementation** provides a detailed implementation plan for meeting the capital needs of the agency.

4.1 Asset Management

CAT participates in the Virginia Group Tier II Transit Asset Management (TAM) Plan. The purpose of the TAM Plan is to aid the Virginia Department of Rail and Public Transportation (DRPT) and the participating Tier II transit agencies in achieving and maintaining a State of Good Repair (SGR) for public transportation assets operated in the Commonwealth of Virginia.

Asset Inventory

CAT must maintain and update its asset inventory data in DRPT’s TransAM system. Specifically, CAT records changes in condition, usage, value, and depreciation for its rolling stock (revenue vehicles), equipment, and facilities.

Fleet

The Federal Transit Administration (FTA) defines useful life benchmark (ULB) as the expected lifecycle of a capital asset for a transit providers’ operating environment. Conversely, DRPT utilizes useful life standards (UL) as the minimum age an asset must be to receive full points for replacement through the MERIT scoring system. The ULB and UL standards for CAT’s vehicle assets are listed in **Table 4-1**. CAT’s policy is to replace vehicles when they reach DRPT’s UL standard and maintain a 20 percent spare ratio for its bus fleet. CAT evaluates buses for mid-life repowering after they reach 250,000 miles to improve vehicle reliability in the second half of its useful life. If repowering is not needed at 250,000 miles, the bus will be reevaluated every subsequent 50,000 miles until there is a need for repowering or engine replacement.

Table 4-1: Useful Life Benchmarks (ULB) and Useful Life Standards (UL) in Years

Asset Class	Useful Life Benchmark (FTA)	Useful Life (DRPT)
BU - Bus	14	12
CU - Cutaway Bus	10	5
AO - Automobile	8	4





Facilities

Facility asset conditions are assessed using the FTA’s Transit Economic Requirements Model (TERM). TERM ratings are based on available industry standard scales for non-vehicle equipment, and they are described in **Table 4-2**. The Tier II TAM Plan does not list the UL standards for facility assets; however, CAT’s policy is to renovate, upgrade, or replace its facilities before they fall below a 3.0 TERM rating.

Table 4-2: FTA TERM Scale

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 be slightly defective or deteriorated, but is overall functional
3	Adequate	Moderately deteriorated or defective; but has not exceeded useful life
2	Marginal	Defective or deteriorated in need of replacement; exceeded useful life
1	Poor	Critically damaged or in need of immediate repair; well past useful life

Target Setting

DRPT sets annual TAM targets based on TransAM data inventories extracted in February of each calendar year. **Table 4-3** and **Table 4-4** show the TAM targets for revenue and service vehicles and equipment, where the target is the percentage of vehicles that have met their useful life ULB.

Table 4-3: Revenue Vehicle Performance Targets for FY 2022

Asset Class	ULB - Years	Target
BU - Bus	14	15%
CU - Cutaway Bus	10	10%

Table 4-4: Service Vehicle and Equipment Targets for FY 2022

Asset Class	ULB - Years	Target
AO - Automobiles (non-revenue)	8	30%

Facility performance targets are listed below in **Table 4-5**, where the target is the percentage of facilities with a condition rating below 3.0 on the FTA’s TERM scale.

Table 4-5: Facilities Performance Targets for FY 2022

Asset Class	TERM	Target
Administration Facilities	< 3	10%
Parking Facilities	< 3	10%



Investment Prioritization

The TAM Plan also informs how assets are prioritized. Revenue vehicle assets receive the highest priority, followed by facility needs, and then service vehicles and equipment. Within each of these categories, assets are tiered based on their age beyond the ULB or TERM rating. The prioritization tiers for vehicles and equipment are shown in **Table 4-6**, and the prioritization tiers for facilities are shown in **Table 4-7**.

Table 4-6: Vehicle and Equipment Prioritization Tiers

Prioritization Tiers	Age Beyond ULB
Tier 1	Over 6 years beyond ULB
Tier 2	3 to 6 years beyond ULB
Tier 3	1 to 2 years beyond YLB

Table 4-7: Facility Prioritization Tiers

Prioritization Tiers	TERM Ratings
Tier 1	1
Tier 2	2
Tier 3	3

Technology and Intelligent Transportation Systems

The Tier II TAM Plan does not include an inventory of technology and intelligent transportation systems (ITS) assets. Furthermore, the plan does not specify the process for updating technology and ITS assets such as Computer-Aided Dispatch/Automatic Vehicle Location (CAD/AVL) systems, automatic passenger counters (APCs), scheduling software, and data processing hardware or software. It may be necessary for CAT to replace these assets every four to six years due to new requirements, outdated technology, or lost vendor support. One potential opportunity for enhanced technology is for the AVL systems for CAT, University Transit Service (UTS), and Jaunt to be compatible with a unified passenger information system.

Funding for technological upgrades can be achieved through Minor Enhancement (MIN) grants available under DRPT’s MERIT Capital Assistance Program. These grants apply to projects or programs that add new technology with a cost of less than \$2 million.

4.2 Capital Improvement Plan

The Capital Improvement Plan (CIP) provides an outline for CAT to meet its capital needs over the next ten years. The CIP determines the need for replacing and expanding assets such as revenue vehicles, non-revenue vehicles, and facilities. Fleet replacement is based on the asset’s DRPT useful life standard, and fleet expansion is directly related to the service improvements described in Chapter 3. Additionally, CAT plans to transition to a fully zero-emission fleet by 2040. The CIP describes the zero-emission bus pilot programs and the accompanying infrastructure improvements to support a zero-emissions fleet. Funding avenues are detailed for asset replacement, expansion, and transition to zero-emissions.

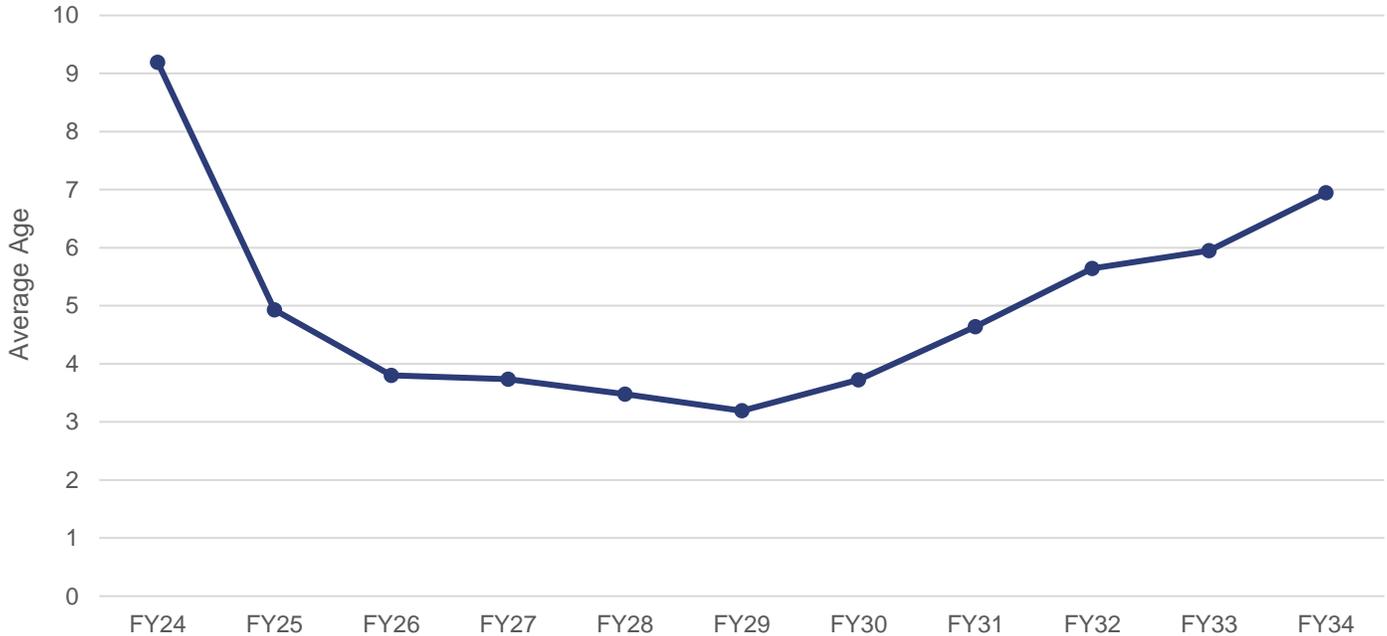




Revenue Fleet

CAT’s revenue fleet has a current average age of 11.64 years, as shown in **Figure 4-1**. CAT will need to replace most of its revenue fleet over the next few years as 26 of the 47 vehicles will exceed their UL in Fiscal Year 2024 (FY 2024), and 12 vehicles will exceed their ULB. The average age of the fleet will drastically decrease in FY 2025 as many of the aging buses are scheduled for replacement. Additional replacement and expansion buses are scheduled for implementation over the next ten years.

Figure 4-1: Average Bus Age



CAT’s revenue fleet consists of 38 buses and nine cutaways. As shown in **Table 4-8**, CAT will need to replace 45 revenue fleet vehicles, and potentially repower 53 total vehicles, over the course of the ten-year CIP. Replacement and expansion vehicles in the CAT Five Year Capital Budget (FY22–FY26) are scheduled for implementation two years after procurement. The remaining vehicles are scheduled for replacement after they reach their useful life standard. Buses are evaluated for mid-life repowering after they reach 250,000 miles and reevaluated every 50,000 miles afterwards. Repowers are estimated six years after the bus is put into service in **Table 4-8** since 250,000 miles is halfway through the bus’s useful life.

None of CAT’s revenue vehicles are more than three years beyond their useful life benchmark. DRPT considers vehicles more than six years beyond their ULB Tier 1 investment prioritization, and vehicles three to six years beyond their ULB are considered Tier 2. CAT owns 12 revenue vehicles that will be one to two years beyond their ULB in FY 2024, placing them in Tier 3 for investment prioritization. Over 25 percent of the buses will have met or exceeded their ULB in FY 2024, missing the DRPT FY202 revenue vehicle performance target of 15 percent. Funding sources for replacement revenue fleet vehicles include MERIT SGR grants and federal capital formula funding.

The fleet expansion schedule includes service improvements described in Chapter 3. Short-term fleet expansion will be implemented in FY 2026, medium-term fleet expansion will be implemented in FY 2030, and long-term fleet expansion will be implemented in FY 2033. Additionally, per CAT’s Zero-Emission Bus (ZEB)





Feasibility Study, four total battery electric buses will be piloted beginning in 2025 and 2026, and three hydrogen fuel cell buses will be piloted beginning in 2028. Zero-emission pilot buses are categorized as expansion fleet in **Table 4-8**.

Starting in FY 2027, CAT is no longer expected to purchase diesel buses. ZEBs will be solely implemented for replacement and expansion revenue vehicles beginning in FY 2029. The results of the ZEB Feasibility Study will determine the type of zero-emission bus CAT adopts in the future, and CAT will be on track to an entirely zero-emission fleet by 2040. The state funding source for revenue fleet expansion includes MERIT grants, and CAT will identify federal funding from existing programs or discretionary programs.

Table 4-8: Revenue Vehicle Implementation Schedule by Year

	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
Replacement	8	8	5	5	5	9	2	1	-	2	-
Expansion	4	4	8	-	3	-	5	-	-	5	-
Repower (Existing Fleet)	-	-	1	-	-	6	6	7	5	4	5
Repower (Expansion Fleet)	-	-	-	-	-	-	4	4	8	-	3
Total Fleet Size	51	55	63	63	66	66	71	71	71	76	76

Non-Revenue Fleet

CAT's non-revenue fleet includes nine automobiles, which have an average age of seven years in FY 2024. Eight non-revenue vehicles will pass their UL in FY 2024, and four non-revenue vehicles will pass their ULB. 44 percent of the non-revenue vehicle fleet will have met or exceeded their ULB in FY 2024, missing the DRPT FY 2022 non-revenue vehicle performance target of 30 percent. As shown in **Table 4-9**, 18 non-revenue fleet vehicles will be replaced over the next ten years. Funding sources for replacement non-revenue fleet vehicles include MERIT SGR grants and federal capital formula funding. CAT will purchase two expansion vehicles in FY 2028, and two additional vehicles in FY 2029.

Table 4-9: Non-Revenue Fleet Implementation Schedule by Year

	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
Replacement	-	8	1	-	-	8	1	-	-	-	-
Expansion	-	-	-	-	2	2	-	-	-	-	-



Facilities

CAT owns and maintains one parking facility and two administration facilities. The parking facility includes the park and ride lot on Avon Street. The administration facilities include the Main Administration, Maintenance and Operations Facility on Avon Street and the Downtown Transit Station on East Water Street. None of the facilities have a rating below 3.0 on the TERM scale and are not in immediate need of repair.

Upgrades to the Main Administration, Maintenance and Operations Facility are scheduled in FYs 2025 and 2026 through Minor Enhancement and Major Expansion capital funding. CAT will be expanding the facility to store more vehicles as part of the service expansion plans, as well as building additional training and office space. Furthermore, CAT will be updating Automatic Data Processing hardware in FYs 2025, 2027, and 2029 through SGR capital funding.

Over the next ten years, infrastructure and utility improvements will be necessary to supplement on-site battery electric vehicle charging and hydrogen fueling. Conceptual design is underway for these upgrades, but there is not sufficient information to program the timing or costs of these improvements at the time of Transit Strategic Plan adoption.

The Downtown Transit Center may require additional improvements or studies to expand bus capacity and implement Chapter 3 service recommendations. If a new site was identified for transfers, CAT would need to pursue funding for design and construction.

Transition to Zero-Emissions

Federal climate change mitigation goals outlined in the FTA and Federal Highway Administration (FHWA) Planning Emphasis Areas include reducing greenhouse gases to 50-52 percent below 2005 levels by 2030, and net-zero emissions by 2050. Accordingly, Charlottesville's climate goals are to achieve a 45 percent reduction in greenhouse gases by 2030 and carbon neutrality by 2050. CAT's goal is to exclusively purchase zero-emission replacement and expansion buses starting in 2029, and transition to a fully zero-emission fleet by 2040.

CAT's Facility Design and Zero-Emissions Vehicles Feasibility Study is exploring zero-emission fleet options such as hydrogen fuel cell and battery electric buses. CAT will pilot two battery electric buses beginning in 2025, two additional battery electric buses beginning in 2026, and three hydrogen fuel cell buses beginning in 2028. Charging and hydrogen fueling for these buses will take place at the current Main Administration, Maintenance and Operations Facility, however, significant infrastructure improvements and utility upgrades must occur. The results of the pilot project and determination of future fleet makeup will impact future updates to the TSP.