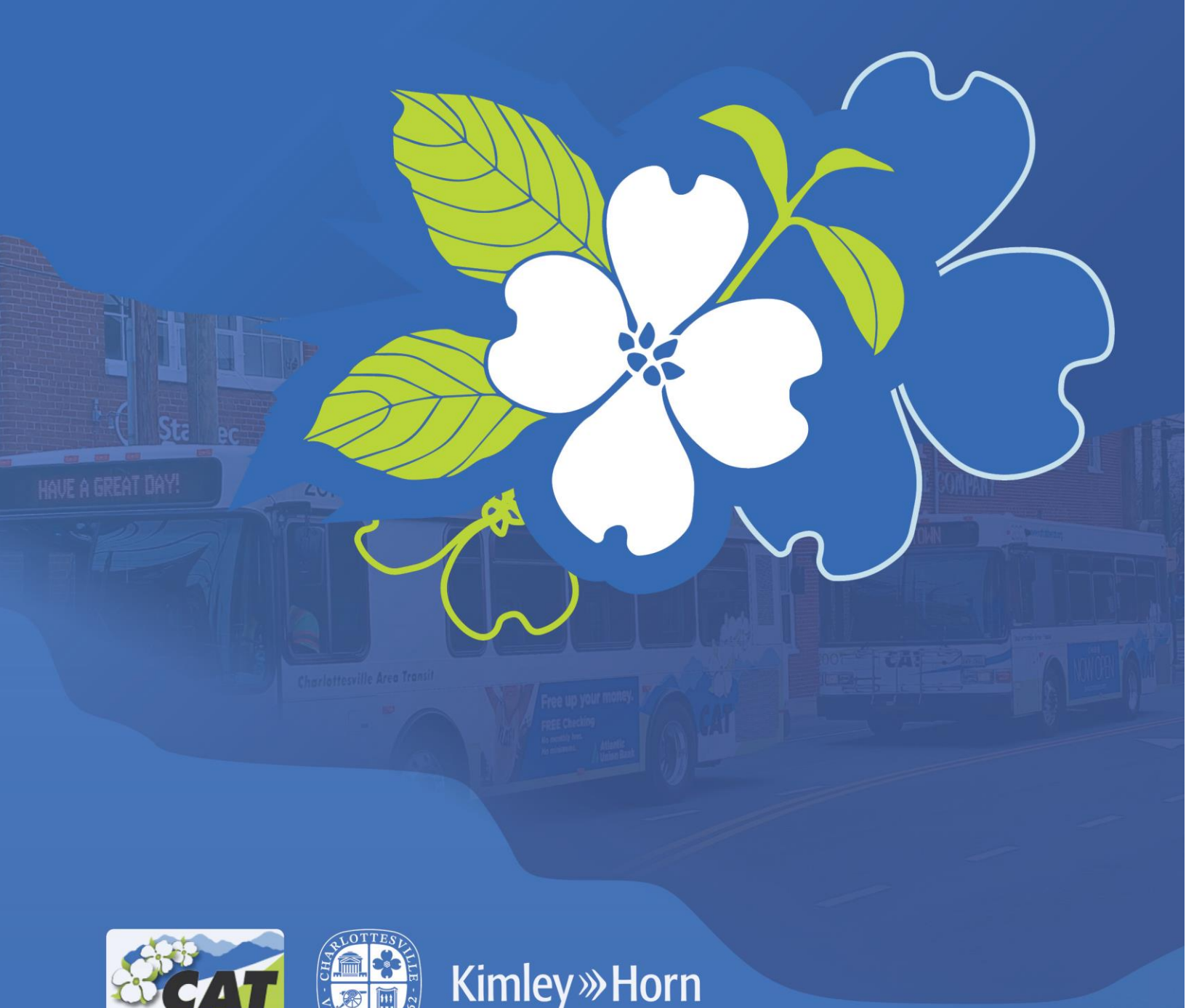

Charlottesville Area Transit
Transit Strategic Plan

Full Document

DRAFT | May 2024

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Charlottesville Area Transit
Transit Strategic Plan

Chapter 1: System Overview and Strategic Vision

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Chapter 1: System Overview and Strategic Vision

System Overview

Charlottesville Area Transit (CAT) is a locally owned and controlled fixed-route bus transit system serving the City of Charlottesville and Albemarle County, Virginia. Located along the Rivanna River in Central Virginia, Charlottesville is approximately 99 miles southwest of Washington, D.C. and approximately 72 miles northwest of Richmond. Charlottesville has a land area of approximately 10 square miles and an estimated population of 46,553 people (2020, U.S. Census Bureau). The city is the seat of government of Albemarle County and is also home to the University of Virginia (UVA).

CAT provides local bus service within Charlottesville and parts of Albemarle County. The City of Charlottesville manages, operates, and maintains the transit system through CAT. CAT is funded by the governments of the City of Charlottesville and Albemarle County, the Virginia Department of Rail and Public Transportation (DRPT), and UVA.

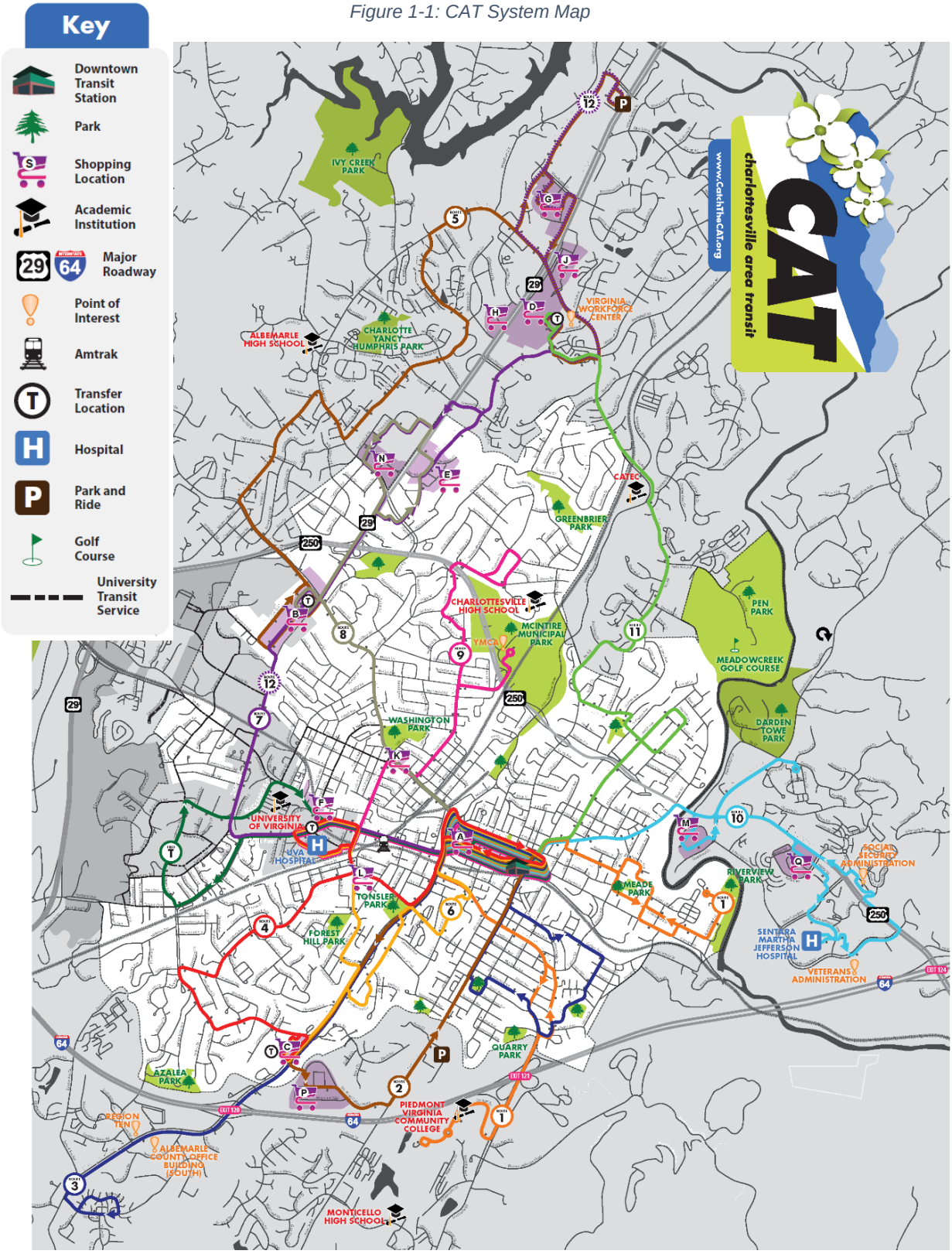
The following sub-section describes existing CAT services and regional transportation services. Additional details about services provided and the areas served can be found in **Appendix A**.

1.1 Services Provided and Areas Served

Existing Fixed-Route Services

CAT operates fixed-route local bus service in the City of Charlottesville and parts of Albemarle County (**Figure 1-1**). CAT currently operates 13 routes, including a trolley that operates between downtown Charlottesville and UVA. CAT has been operating on an Extended Lifeline Service schedule since September 2021, with all routes operating Monday to Saturday between approximately 6:00 AM and 10:30 PM with 30-minute or 60-minute frequency. **Table 1-1** lists CAT's fixed-route service by route.

Figure 1-1: CAT System Map



Source: Charlottesville Area Transit

Table 1-1: Existing CAT Service

Route Name	Jurisdiction(s) Served	Operation Days	Span	Frequency
Route 1 *Piedmont Virginia Community College and Woolen Mills*	City of Charlottesville and Albemarle County	Monday – Saturday	6:00 AM – 10:30 PM	60 minutes
Route 2A/2B *5th Street Station*	City of Charlottesville and Albemarle County	Monday – Saturday	6:30 AM – 10:30 PM	30 minutes
Route 3/3E *Southwood and Belmont*	City of Charlottesville and Albemarle County	Monday – Saturday	6:00 AM – 10:30 PM	60 minutes
Route 4 *Cherry Avenue and Harrison Road*	City of Charlottesville	Monday – Saturday	6:00 AM – 10:30 PM	30 minutes (peak) 60 minutes (off-peak)
Route 5 *Commonwealth Drive*	City of Charlottesville and Albemarle County	Monday – Saturday	6:30 AM – 10:30 PM	30 minutes
Route 6 *Ridge Street and Prospect Avenue*	City of Charlottesville	Monday – Saturday	6:30 AM – 10:30 PM	60 minutes
Route 7 *Emmet Street and Seminole Trail*	City of Charlottesville and Albemarle County	Monday – Saturday	6:30 AM – 10:30 PM	30 minutes
Route 8 *Preston Avenue and Emmet Street*	City of Charlottesville and Albemarle County	Monday – Saturday	6:30 AM – 6:30 PM	60 minutes
Route 9 *Health Department and YMCA*	City of Charlottesville	Monday – Saturday	7:00 AM – 10:30 PM	30 minutes (peak) 60 minutes (off-peak)
Route 10 *Pantops*	City of Charlottesville and Albemarle County	Monday – Saturday	6:30 AM – 10:30 PM	60 minutes
Route 11 *Locust Avenue and Rio Road*	City of Charlottesville and Albemarle County	Monday – Saturday	6:00 AM – 10:30 PM	60 minutes
Route 12 *Seminole Trail*	City of Charlottesville and Albemarle County	Sunday*	7:45 AM – 5:45PM	60 minutes
Free Trolley *W Main Street & UVA*	City of Charlottesville	Monday – Saturday	6:30 AM – 10:00 PM	25 minutes

**Sunday service is not currently running due to CAT operating on an Extended Lifeline Service schedule.*
Source: Charlottesville Area Transit

Jaunt Paratransit Service

Jaunt provides curb-to-curb demand-response service in Charlottesville and the counties of Buckingham, Fluvanna, Louisa, Nelson, and rural Albemarle. Reservations must be made at least one day and up to seven days in advance. Jaunt also provides door-to-door paratransit service to people with disabilities who are unable to use the local fixed-route system through a sub-recipient arrangement with CAT, the City of Charlottesville, and Albemarle County. Passengers may use the service to travel to destinations within a three-quarter-mile radius of CAT's fixed-route service.

While Jaunt provides service in the CAT service area, this Transit Strategic Plan does not provide specific recommendations for Jaunt service.

1.2 Current/Recent Initiatives

This section documents major current and recent initiatives of CAT and its regional partners, including service changes; capital improvement programs; and other initiatives, plans, and studies that help achieve goals and objectives outlined in the TSP.

Charlottesville Area Transit Initiatives

2021 System Optimization Plan

In June of 2021, CAT conducted a System Optimization Plan (SOP), intended to be implemented in 2022. The objectives of the SOP included improving frequency and span on major routes, expanding coverage to high-activity areas, and restoring pre-COVID service levels (**Figure 1-2**). Due to staff shortages, the proposed changes were put on hold. In 2022, CAT introduced a phased approach for the plan. The implementation of these phases will be dependent on available staff and funding. Specific improvements in each phase include:

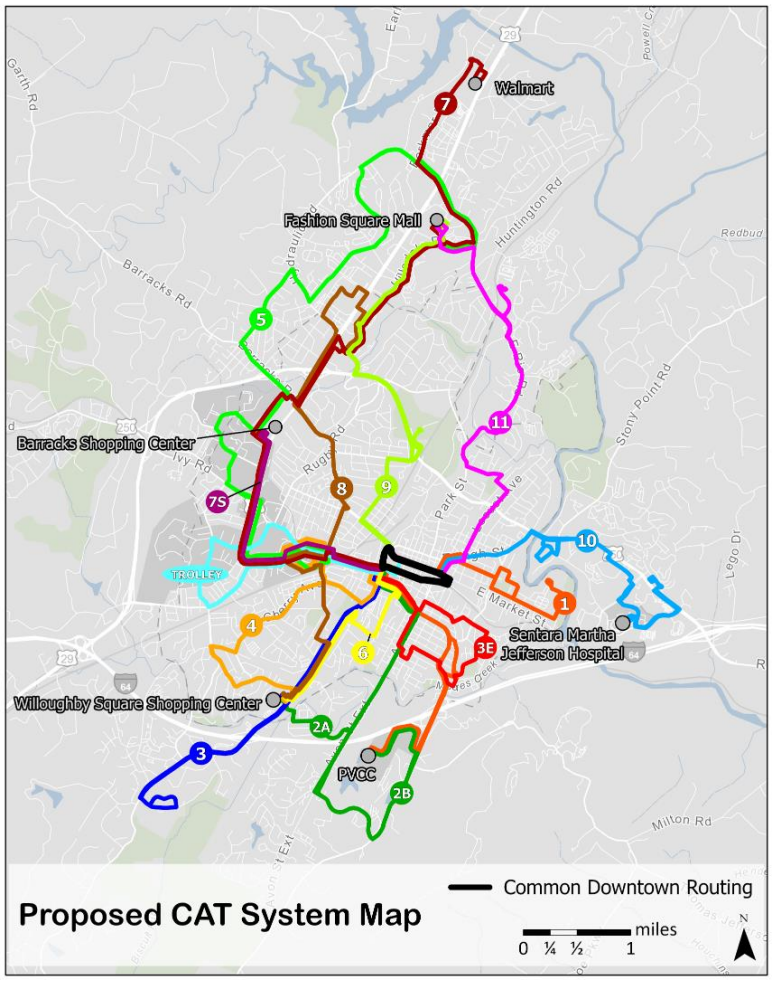
Phase 1

- Implement the SOP's Routes 2A and 2B recommendations, which will replace the current Route 2. This route change allows for two-direction service along Avon Street Extended and the CAT operating facility.
- Modify Route 11's alignment to serve the Center at Belvedere.
- Improve Route 6 weekday service frequencies to 30 minutes, serving Crescent Hall and the neighborhood south of Elliott Avenue.
- Restore Sunday service on Route 2A, the Trolley, and Route 12.

Phase 2

- Extend Route 7 to Walmart and eliminate the current mid-route split that serves Seminole Square. In the Barracks Road shopping center area, the alignment will be modified to operate along Millmont Street.
- Introduce Sunday service on Route 7.
- Eliminate Route 12. The introduction of Sunday service on Route 7 allows for the elimination of this route.
- Extend Route 5 to the UVA Hospital campus. In the Barracks Road shopping center area, the alignment will be modified to operate along Millmont Street.

Figure 1-2: System Optimization Plan Proposed Network Improvements



Source: Charlottesville Area Transit

Phase 3

- Introduce Saturday service on Route 1.
- Expand Sunday span of service on route pattern 2A (7:30AM to 10:30PM)
- Break Route 3 into two routes and improve frequencies to 30 minutes on weekdays and Saturdays, with the addition of 60-minute Sunday service (7:30AM to 10:30PM). Interline Route 3E with Route 9.
- Operate Route 4 at 30-minute all-day frequencies. Route currently has 30-minute frequencies in the AM period only. Interline Route 4 with Route 6.
- Eliminate the segment of Route 6 that goes to UVA Hospital, as that service was replaced with Route 8 service changes. Interline Route 6 with Route 4.
- Supplement Route 7/7S peak period service between downtown and Barracks Road shopping center. Expand Sunday span of service (7:30AM to 10:30PM)
- Modify orientation of Route 8 from downtown to Willoughby Shopping Center to provide south Charlottesville residents with one-seat ride to U.S. 29.
- Modify north end of Route 9's alignment to Fashion Square Mall and eliminate service deviation to UVA Hospital. Operate at 60-minute frequencies.
- Streamline Route 10's alignment east of the Rivanna River. Operate at 30-minute frequency on weekdays. Add Sunday service from 7:30AM to 10:30PM.
- Improve weekday and Saturday Trolley service frequencies to 15 minutes and modify Sunday frequencies to 30 minutes to better facilitate timed transfers.

Phase 3 Plus

- All Phase 3 routes operating at 30-minute or better frequencies on weekdays from 6:00AM to 6:00PM and on weekends from 9:00AM to 6:00PM.

Fare-Free Service

Starting in 2020, CAT began operating fare-free service in response to the COVID-19 pandemic. In 2021, CAT received a $1,066,620 grant from the Commonwealth Transportation Board under DRPT's Transit Ridership Incentive Program (TRIP). This grant under the TRIP program will allow CAT to maintain fare-free service until June 30, 2026.

Microtransit Pilot

In 2022, Albemarle County, the City of Charlottesville, and CAT were awarded a grant to implement microtransit as a one-year pilot project. Launched in 2023, the microtransit service—branded as MicroCAT—operates under CAT's jurisdiction and utilizes smaller vehicles to provide on-demand rides in two service areas. MicroCAT serves the Pantops area and U.S. 29, operating from 6:30 AM to 9:00 PM on Monday through Saturday.

Alternative-Fueled Buses Feasibility Study and Zero-Emissions Transition Plan

Starting in 2022, CAT began evaluating how the transit system may be able to support the City of Charlottesville's carbon emissions reduction goals of 45 percent by 2030 and carbon neutrality by 2050. The study will inform the feasibility of transitioning the CAT fleet to alternative-fueled (i.e., non-diesel and non-gasoline) vehicles. The study is also exploring technical feasibility and includes an evaluation of the current CAT maintenance facility for retrofit and upgrade to accommodate additional vehicles and alternative fuels infrastructure.

Regional Partner Initiatives

Regional Transit Partnership

A regional partnership between the Charlottesville-Albemarle Metropolitan Planning Organization (CA-MPO), the City of Charlottesville, Albemarle County, Jaunt, and the Thomas Jefferson Planning District Commission (TJPDC) was established in 2017. The purpose of this partnership is to improve communication between the area's transit providers and stakeholders by providing a formal means to facilitate transit planning discussions, exchange information, and provide recommendations to decision-makers on transit-related matters. As part of this process, the regional partnership has led the development of the Regional Transit Vision Plan and the Regional Transit Governance Study, both of which are listed below.

Regional Transit Vision Plan

In 2022, TJPDC developed the Regional Transit Vision Plan. The purpose of the Regional Transit Vision Plan was to evaluate current transit service levels in the City of Charlottesville and the Counties of Albemarle, Greene, Louisa, Fluvanna, Buckingham, and Nelson. The plan provides a long-term vision for transit in the region that prioritizes equity, multimodality, and efficiency.

The Regional Transit Vision Plan included the development of two Vision Networks that serve as guides for the implementation of new and expanded transit service across the region.

- The Unconstrained Vision Network shows a future transit network where the Vision Statement and Goals of the Vision Plan are fully implemented, without considering any financial constraints.
- The Constrained Vision Network shows a future transit network that implements the Vision Statement and Goals of the Vision Plan within the constraints of a potential regional transit funding measure.

Regional Transit Governance Study

The Regional Transit Governance Study is a supporting effort of the Regional Transit Vision Plan. It consists of a Steering Committee that is responsible for identifying dedicated funding sources for the transit services identified in the Regional Transit Vision Plan and developing a governance structure for regional transit planning. The Regional Transit Governance Study began in September 2022 and was adopted by the Thomas Jefferson Planning District Commission in January 2024.

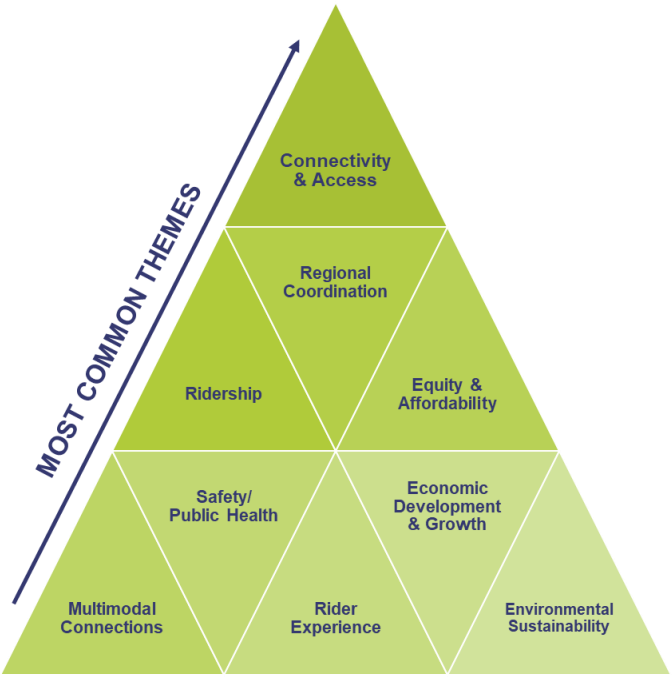
Strategic Vision

In 2018, the City of Charlottesville adopted the CAT Transit Development Plan (TDP), which served as a guide for the agency regarding the ongoing and future operations of transit service in Charlottesville. In 2022, TJPDC completed its Regional Transit Vision Plan that identified short-term, long-term, and extended long-term actions to support the regional community's vision for high-quality transit. The 2018 CAT TDP and the 2022 TJPDC Transit Vision Plan served as the basis for the development of goals and objectives for this TSP. This section documents the process followed to incorporate the goals and objectives from these previous guiding plans using a policy diagnostic process to incorporate multiple sources of input.

1.3 Goals and Objectives

The goals and objectives presented in this TSP were initially derived from the 2018 CAT TDP, with refinements and modernizations being incorporated based on the themes emphasized across the 2022 TJPDC Transit Vision Plan and other local and regional plans. The policy diagnostic process described below identified common goals and objective themes between transit, local, and regional plans. The results of the theme diagnostic are shown in **Figure 1-3** with the most common themes at the top of the figure. The existing transit-specific plan goals were evaluated to identify potential refinements or gaps in the existing goals. The policy diagnostic also informed the development of SMART (Specific, Measurable, Agreed, Realistic, and Time-bound) objective statements.

Figure 1-3: Policy Diagnostic Common Goal and Objective Themes



Policy Diagnostic Process

The first step of the policy diagnostic process was to gather local and regional transit plans for agencies and jurisdictions in the region. The following plans and documents were gathered and reviewed to better understand local and regional goals and objectives that relate to transit:

Transit-Specific Plans

- Charlottesville Area Transit Development Plan (2018)
- Thomas Jefferson Planning District Commission Regional Transit Vision (2022)

Other City and County Plans

- City of Charlottesville Climate Action Plan (2022)
- City of Charlottesville Comprehensive Plan (2021)
- Albemarle County Transportation Policies (2019)
- Albemarle County Comprehensive Plan (2015)

The next step in the process was to review the identified plans and document the goals and objectives contained in each. Goals from the 2018 TDP and the 2022 Regional Transit Vision Plan—the two guiding transit-specific documents for this process—are listed below:

CAT Transit Development Plan (2018) Goals:

- Monitor and adjust service to improve efficiency, customer convenience, and system reliability/safety
- Strengthen/pursue regional partnerships to improve access to existing services and plan future enhancements
- Continue the use of innovation and technology to enhance the customer experience and encourage a favorable perception of transit
- Be a good steward of financial resources and demonstrate accountability

Regional Transit Vision Plan (2022) Goals:

- Enhance: Provide high quality and high frequency transit options in the busiest parts of the region
- Expand: Expand the region's transit service to more neighborhoods, towns, and places and increase basic transit connectivity
- Connect: Promote efficient and attractive multimodal connectivity for seamless regional travel
- Collaborate: Improve internal and external communication with the transit agencies and with local governments to increase transit supportive land use decisions
- Improve Equity: Improve transit access for people with low household incomes, limited physical mobility, or lack of access to automobiles
- Grow Equitably: Create a strong linkage between transit and compact, walkable, robust transit-supportive and equitable land use with safe access/egress conditions
- Support: Enhance the region's economy and economic well-being of its residents by improving access to employment opportunities and community services
- Sustainability: Minimize the environmental impact of the region's transportation system

Following this step, the identified goals were assessed for thematic similarities. Inclusive of findings from the overall policy diagnostic process, the following observations were identified as potential opportunities for refinement and enhancements to the existing TDP goals:

- Balancing preservation of existing service while evaluating actions that optimize, modernize, and expand service
- Emphasizing safety, equity, ease of use, and accessibility for customers
- Aligning growth with future land use, economics, and development to ensure preparedness
- Placing greater emphasis on workforce and emerging technologies
- Incorporating financial elements into objectives or other policies, rather than overall goals

With the above themes and observations, the fourth and final step of the process was to refine existing goals and objectives, including input from the public and stakeholders. **Figure 1-4** lists the six goals for this TSP. The goals, objectives, and metrics for the CAT Transit Strategic Plan are listed in the following sections.

Figure 1-4: CAT Transit Strategic Plan Goal Areas

Goal #1: Quality of Service and Connectivity

Objective	Metrics
Provide transit service that is safe, reliable, and efficient.	• Total population within ¼-mile of a CAT bus stop • Total number of jobs within ¼-mile of a CAT bus stop • Percentage of regional activity centers served by a CAT bus route • Percentage of population with access to 30-minute or better service • On-time performance • Number of night and weekend service hours • Percentage of service hours/miles by route category • State of Good Repair backlog as a percentage of overall budget • Number of miles between service road calls • Percentage of fleet exceeding lifespan (years/miles) • Number of missed trips due to operational failures • Operating expense growth (non-fuel) • Operating expense per revenue hour/revenue mile • Number of service hours affected by disruptions
Align service frequency, span, geographic coverage, and service models (i.e., fixed-route, microtransit, bus rapid transit) with transit propensity and community needs.	
Optimize and preserve the infrastructure (i.e., vehicles, stops and stations, facilities) of the existing transit system.	
Contain operating costs by monitoring and adjusting system performance according to service guidelines.	

Goal #2: Safety

Objective	Metrics
Identify and upgrade bus stops in need of enhanced access, quality, comfort, and safety.	• Percentage of bus stops with amenities that meet or exceed service standards • Percentage of bus stops with amenities that meet or exceed service standards in high transit propensity areas • Number of bus stop access/amenity improvements near schools, parks, medical facilities, and other key destinations • Number of non-ADA compliant infrastructure within ¼ mile of bus stops
Provide a safe and comfortable transit environment by monitoring safety and implementing security measures.	• Number of incidents/accidents per 100,000 boardings • Total number of preventable customer/operator injuries • Average number of monthly systemwide NTD Reportable Crimes • Total number of systemwide NTD Reportable Crimes
Implement safety measures to protect transit operators.	• Number of incidents/accidents involving transit operators per 100,000 boardings • Total number of preventable transit operator injuries

Goal #3: Equity and Opportunity

Objective	Metrics
Prioritize transit service to populations with the greatest need.	• Percentage of minority population with access to 30-minute or better service • Percentage of low-income population with access to 30-minute or better service • Percentage of population with disabilities with access to 30-minute or better service
Improve transit access to key destinations, improve directness of routes, and reduce necessity for transfers.	• Ridership to key destinations (e.g., employment, healthcare, etc.) • Percent of customers with more than one transfer • Average transit travel time
Value transit operators through continued training, involvement in decision-making processes, and career growth opportunities.	• Number of trainings available to transit operators • Number of staff involved in decision-making discussions • Transit operator retention rate

Goal #4: Customer Experience

Objective	Metrics
Provide comfortable and efficient transit service to include a focus on cleanliness and efficient customer service.	• Number of valid customer complaints per 100,000 boardings
Develop and improve communication pathways with customers through a variety of mediums (physical media, in-person, and online).	• Uptime of website, smartphone applications • Average call center wait time • Percent of total routes discussed through communication pathways
Ensure that CAT is financially accessible for all by evaluating the sustainability of maintaining fare-free services long-term.	• Transit system ridership
Continue to evaluate available data and emerging technologies to improve the customer experience.	• Transit system ridership • Number of buses/bus stops/facilities with enhanced customer service technology

Goal #5: Regional Coordination

Objective	Metrics
Continue to coordinate with the City of Charlottesville, Albemarle County, and major regional institutions to ensure that transit is integrated into growth planning, land development, and multimodal improvements.	• Number of regional coordination pilot projects per year
Continue to coordinate with public and private regional partners to improve and promote transit in support of regional multimodal connectivity.	• Number of transit discussions with private or public partners • Number of public or private partnerships providing customer benefits
Advance the development of a dedicated regional transit funding source to support local/regional goals for transit and planned improvements.	• Creation of a dedicated regional transit funding source
Integrate transit into the development review processes for developments.	• Number of transit development reviews conducted

Goal #6: Sustainability and Technology

Objective	Metrics
Incentivize transit use and promote the value of transit through strategies such as high quality of service, ease of use, transit-oriented development, and financial incentives.	• Transit system ridership • Local/regional transit mode share
Implement actions from the CAT Fleet Transition Plan.	• Ratio of vehicle miles / total fuel consumption (gallons) • Net tonnage of CO2 and GHG emissions
Continuously evaluate and address the impacts that emerging technologies (i.e., microtransit) may have on the transit network and how they may support local and regional environmental sustainability goals.	• Transit system ridership • Transit service coverage • Average customer wait time

1.4 Service Design Standards

Service design standards are benchmarks against which a system and its routes are developed and evaluated to determine if existing services should be modified. Service design standards function as an input to the planning process and address items such as scheduling and route planning, service reliability, system efficiency, safety and security, customer service, multimodal connectivity, and regulatory compliance. When CAT is considering service changes, these service standards will be considered to the extent possible within funding constraints.

Per CAT's Fiscal Year 2019 – 2028 Transit Development Plan, existing service design standards relating to route design and scheduling are outlined in **Table 1-2**. CAT's service design standards are included below. All service standards are described for fixed route service.

Table 1-2: CAT Service Design Standards

Service Design Standards		
Span of Service	Core Service	6:00 AM – 6:00 PM
	Select Routes	6:00 PM – 11:00 PM (no less than 60 minute headway)
Frequency of Service	Local Routes	30 min. peak, 60 min. off-peak
	Key Routes	20 min. peak, 30 min. off-peak
	Lifeline Routes	Not to exceed 60 min.
Bus Stop Spacing	Local Routes	800 – 1,300 feet
	Key Routes	1,000 – 1,300 feet
	Lifeline Routes	1,000 – 1,300 feet
Route Directness	Deviations from a direct path from end-to-end of the route shall account for no more than one-quarter of the end-to-end travel time of the route.	
Total Route Travel Time	Maximum of 60 min. one-way	
Bus Stop Amenities	Bus stops with more than 50 passengers boarding daily should have a bus shelter within the City of Charlottesville.	
	Bus stops with more than 35 passengers boarding outside the City of Charlottesville should be explored for inclusion of a bus shelter.	
Load Factor	The loading standard should be a maximum average load factor of 1.2 (ratio of total passengers to seated passengers) during the weekday peak periods, and 1.0 at all other time periods.	
Dependability	90% on-time service (0-5 minutes late) – No trips leaving early.	
	Maintain fewer than 6,500 miles between service road calls.	
	Less than five percent missed trips due to operational failures.	

Service Design Standards	
	No more than 15 percent of fleet exceeding the FTA Useful Life Benchmarks (ULB) for its vehicle classification.
Farebox Recovery	Review and modify, if possible, services that exhibit less than 60 percent of average.
	Review and modify, if warranted, services between 60 percent and 80 percent of average.
Productivity (Passengers per Revenue Hour/Mile)	Review and modify, if possible, services that exhibit less than 60 percent of average of route type.
	Review and modify, if warranted, services between 60 percent and 80 percent of average of route type.
Cost Effectiveness (Cost per Revenue Hour/Mile	Review and modify, if possible, services that exhibit less than 60 percent of route type average.
Safety	0.10 or fewer "reportable incidents" per 100,000 miles, as defined by the National Transit Database.
Customer Service	Less than 20 customer complaints per 100,000 trips.
	Maximum reservation wait time less than 30 seconds (ADA) *
Fleet Age (Fixed Route)	No more than 15 percent of fleet in excess of the FTA Useful Life Benchmarks (ULB) for the vehicle classification.

Source: CAT FY 2019 - FY 2028 Transit Development Plan
** ADA Paratransit service is provided by JAUNT on behalf of CAT*

1.5 Performance Standards

CAT has established service evaluation guidelines for regular assessment of the performance of all routes—many of which are also reflected in the above service design standards. The evaluation process is intended to provide clear, consistent information about the performance of individual transit services to aid planners and decision-makers in developing service changes. The intent of the process is to identify very successful services as well as unsuccessful ones, utilize simple evaluation criteria to improve the consistency of use, and define performance thresholds that reflect unique performance aspects of different markets and types of service.

Load Factor

- The loading standard should be a maximum average load factor of 1.2 (ratio of total passengers to seated passengers) during the weekday peak periods, and 1.0 at all other time periods

Source: CAT Title VI Plan 2022-2025

On-Time Performance

- Achieve a 90 percent on-time rate. A route is defined as on-time if it is up to 5 minutes late or 1 minute early

Source: CAT Title VI Plan 2022-2025

Farebox Recovery

- Review and modify, if possible, services that exhibit less than 60 percent of average.
- Review and modify, if warranted, services between 60 percent and 80 percent of average

Source: CAT Transit Development Plan 2019-2028

Productivity (Passengers per Revenue Hour/Mile)

- Review and modify, if possible, services that exhibit less than 60 percent of average of route type
- Review and modify, if warranted, services between 60 percent and 80 percent of average of route type

Source: CAT Transit Development Plan 2019-2028

Cost Effectiveness (Cost per Revenue Hour/Mile)

- Review and modify, if possible, services that exhibit less than 60 percent of route type average

Source: CAT Transit Development Plan 2019-2028

Customer Service

- Less than 20 customer complaints per 100,000 trips
- Maximum reservation wait time less than 30 seconds (ADA)

Source: CAT Transit Development Plan 2019-2028

Fleet Age

- No more than 20 percent of fleet in excess of the FTA Useful Life Benchmarks (ULB) for the vehicle classification

Source: CAT Transit Development Plan 2019-2028

The service evaluation guidelines are applied in CAT's System Optimization Report, which assesses service performance of all regular service. Performance assessment is based on comparison to other members of the same group of routes and routes are grouped by subarea and time period for similarity in operating conditions. Thresholds for "strong" and "below average" performance are determined for each subarea and time-period group, based on average route performance in each group.

Safety

CAT has outlined a set of safety performance targets in their Public Transit Agency Safety Plan (PTASP) in accordance with Federal Transit Administration regulations. In the agency's most recent Transit Safety Plan, a number of measurable safety performance targets were established as a benchmark for the overall safety performance of the agency. The safety performance targets listed in **Table 1-3** serve as benchmarks to evaluate the overall safety performance of the agency.

Table 1-3: CAT Safety Performance Targets

Safety Performance Metric	Target
Fatalities (Total number of reportable fatalities per year)	0
Fatalities (Rate per total vehicle revenue miles by mode)	0
Injuries (Total number of reportable injuries per year)	2
Injuries (Rate per total vehicle revenue miles by mode)	Less than .5 injuries per 100,000 vehicle revenue miles
Safety Events (Total number of safety events per year)	10
Safety Events (Rate per total vehicle revenue miles by mode)	Less than 1 reportable event per 100,000 vehicle revenue miles
Distance Between Major Failures	10,000 miles
Distance Between Minor Failures	3,200 miles

Source: CAT Public Transit Agency Safety Plan

Charlottesville Area Transit
Transit Strategic Plan

Chapter 2: System Performance and Operations Analysis

DRAFT | May 2024

Chapter 2: System Performance and Operations Analysis

The system performance and operations analysis portion of the Transit Strategic Plan (TSP) provides both quantitative and qualitative evaluation of the existing Charlottesville Area Transit (CAT) service and operating environment. Chapter 2 will highlight the following topics related to system performance and operations:

- **System and Service Data** – Introduction to the service area with summary-level statistics, service design standards, survey results, and a summary of stakeholder input.
- **Evaluation of Transit Market Demand and Underserved Areas** – In-depth analysis of various factors that influence the demand for transit, such as land use, jobs, population, and the sociodemographic variables associated with ridership. Transit supply and demand is then analyzed to identify areas with a combination of high activity and needs and low levels of transit service.
- **Performance Evaluation** – Analysis of ridership and performance metrics at the system level, route level, and stop level. An evaluation of peers, route deviations, accessibility, and safety is also included.
- **Operating and Network Efficiency Evaluation** – Evaluation of the service network using efficiency metrics that assess frequency, span, speed, and reliability of the transit system.
- **Analysis of Opportunities to Collaborate with Other Transit Providers** – Identification of opportunities for CAT to improve connections with nearby transit providers.

Section 2.1 focuses on system and service data. Each subsequent section of Chapter 2 concludes by identifying opportunities for improvement. The service changes that address the opportunities for improvement will be provided in **Chapter 3: Planned Improvements and Modifications.**

2.1 System and Service Data

The system and service data section provides high-level service statistics, results from the summer 2023 public survey (conducted as part of the TSP effort), and takeaways from discussions with key stakeholders.

Unless otherwise noted, data in this section is primarily sourced from the National Transit Database (NTD). NTD data provided is from Fiscal Year 2022, which was the latest available data at the time of the analysis.

2.1.1 Existing System Service Statistics

CAT serves the city of Charlottesville and runs service into adjoining areas of Albemarle County. As shown in **Table 2-1**, CAT has a service area of 38 square miles with a population of 85,755, equating to a population density of 2,257 people per square mile[1]. **Section 2.2** contains a detailed analysis of the city of Charlottesville and surrounding areas' population trends.

[1] NTD, 2022. Charlottesville Area Transit Annual Agency Profile. Accessed at 30036 2021 Agency Profile (dot.gov)

Table 2-1: System Characteristics

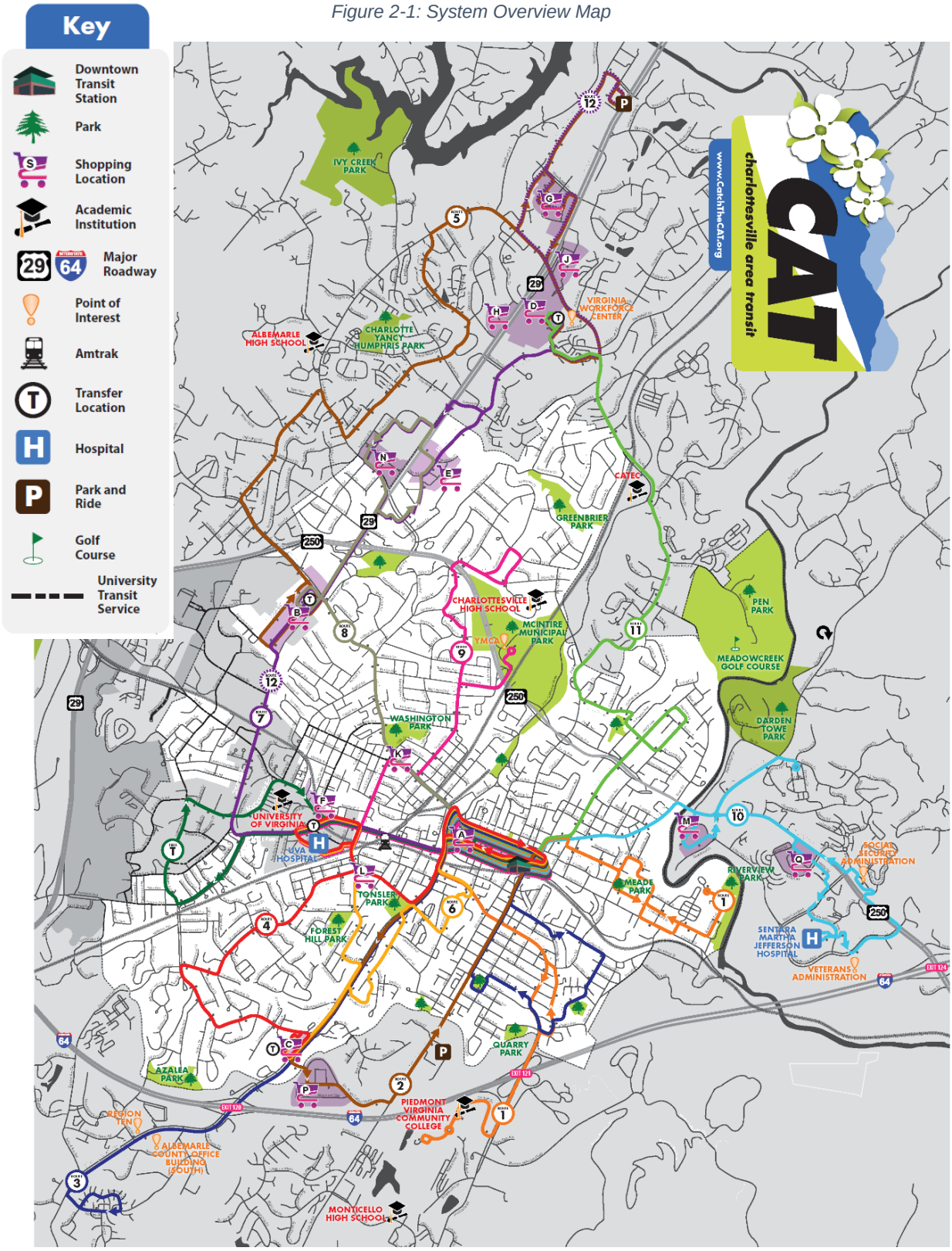
Category	System Total	Source
Service Area (Square Miles)	38	NTD (2022)
Population	85,755	NTD (2022)
Density (People per Square Mile)	2,257	NTD (2022)
Operating Costs	$9,836,029	NTD (2022)
Ridership	1,156,514	CAT (2022)
Revenue Hours	84,873	CAT (2022)
Revenue Miles	841,185	CAT (2022)
Vehicles Operating in Peak Service	19	CAT (2023)
Vehicles Available for Peak Service	36	CAT (2023)
Trips per Day	277 (Monday – Friday), 273 (Saturday)	CAT (2023)
Days Operated	Monday – Saturday	CAT (2023)
Daily Route Miles	2,703 (Monday – Friday), 2,660 (Saturday)	CAT (2023)

CAT currently operates six days a week, Monday through Saturday. Sunday service operated prior to the COVID-19 pandemic but has not yet been reinstated due to subsequent shortages of operations staff and maintenance parts. CAT has a total of 12 active routes of varying frequencies, with headways ranging from 25 minutes to 60 minutes. **Table 2-2** shows service levels and performance for each CAT route. **Figure 2-1** provides a map of all CAT routes.

Table 2-2: Route Characteristics

Route	Ridership (FY 2022)	Average Headway	Revenue Hours	Revenue Miles	Passengers per Hour	Passengers per Mile
1 PVCC/Riverside	29,864	60 min	4,225	44,708	7.1	0.7
2 5th St Station	58,188	30 min	4,966	100,121	11.7	0.6
3 Southwood/Belmont	85,662	60 min	5,148	48,847	16.6	1.8
4 UVA Health/Willoughby	60,579	52 min	5,664	59,460	10.7	1.0
5 BRSC/FSQ/Walmart	187,018	30 min	14,976	170,773	12.5	1.1
6 UVA Health/Willoughby	58,682	60 min	4,992	43,475	11.8	1.3
7 BRSC/UVA Health/ FSQ	319,806	30 min	14,976	83,238	21.4	3.8
8 BRSC/Stonefield	70,640	60 min	3,744	33,674	18.9	2.1
9 UVA Health/YMCA/ CHS	18,356	43 min	6,396	37,634	2.9	0.5
10 Pantops/Martha Jeff	55,556	60 min	4,992	44,409	11.1	1.3
11 Locust Grove/FSQ	50,999	60 min	4,940	111,865	10.3	0.5
Trolley	161,164	25 min	9,854	62,981	16.4	2.6

Figure 2-1: System Overview Map



CAT operating revenues and expenses for Fiscal Years 2022 and 2023 are shown in **Table 2-3**.

Table 2-3: Operating Revenues and Expenses

Operating Budget	FY22	FY23
Operating Expenses		
Operations	$6,238,135	$6,392,247
Maintenance	$2,477,241	$2,782,762
General Administration	$2,811,708	$2,130,303
TOTAL	**$11,597,085**	**$11,305,312**
Service Generated Operating Revenues		
Passenger Fares[2]	$0	$0
UVA Service	$80,040	$82,440
Advertising	$50,000	$25,000
TOTAL	**$130,040**	**$107,440**
Governmental Operating Revenues		
Commonwealth of Virginia Aid	$3,032,584	$2,729,126
Federal Aid	$1,897,979	$2,867,365
Albemarle County Subsidy	$1,000,000	$1,000,000
City of Charlottesville Subsidy	$2,513,651	$2,513,651
Grants	$3,022,831	$2,087,730
TOTAL	**$11,467,045**	**$11,197,872**

Source: CAT (2023)

[2] CAT suspended fare payments in response to the COVID-19 pandemic. CAT then received a TRIP Zero and Reduced Fare grant from DRPT to maintain fare free service. The grant values CAT's farebox revenue at $627,423 per year with DRPT funding 80% of the listed cost in FY23. However, no fares were directly collected in FY23.

2.1.2 Existing Service Design Standards

Route Design and Schedule Standards

Per CAT's Fiscal Year 2019 – FY 2028 Transit Development Plan, existing service design standards relating to route design and scheduling are outlined in **Table 2-4**.

Table 2-4: CAT Service Design Standards

Service Standards		
Span of Service	Core Service	6:00 AM – 6:00 PM
	Select Routes	6:00 PM – 11:00 PM (no less than 60 minute headway)
Frequency of Service	Local Routes	30 min. peak, 60 min. off-peak
	Key Routes	20 min. peak, 30 min. off-peak
	Lifeline Routes	Not to exceed 60 min.
Bus Stop Spacing	Local Routes	800 – 1,300 feet
	Key Routes	1,000 – 1,300 feet
	Lifeline Routes	1,000 – 1,300 feet
Route Directness	Deviations from a direct path from end-to-end of the route shall account for no more than one-quarter of the end-to-end travel time of the route.	
Total Route Travel Time	Maximum of 60 min. one-way	
Bus Stop Amenities	Bus stops with more than 50 passengers boarding daily should have a bus shelter within the City of Charlottesville.	
	Bus stops with more than 35 passengers boarding outside the City of Charlottesville should be explored for inclusion of a bus shelter.	
Load Factor	The loading standard should be a maximum average load factor of 1.2 (ratio of total passengers to seated passengers) during the weekday peak periods, and 1.0 at all other time periods.	
Dependability	90% on-time service (0-5 minutes late) – No trips leaving early.	
	Maintain fewer than 6,500 miles between service road calls.	
	Less than five percent missed trips due to operational failures.	
	No more than 15 percent of fleet exceeding the FTA Useful Life Benchmarks (ULB) for its vehicle classification.	
Farebox Recovery	Review and modify, if possible, services that exhibit less than 60 percent of average.	
	Review and modify, if warranted, services between 60 percent and 80 percent of average.	

Service Standards	
Productivity (Passengers per Revenue Hour/Mile)	Review and modify, if possible, services that exhibit less than 60 percent of average of route type.
	Review and modify, if warranted, services between 60 percent and 80 percent of average of route type.
Cost Effectiveness (Cost per Revenue Hour/Mile	Review and modify, if possible, services that exhibit less than 60 percent of route type average.
Safety	0.10 or fewer "reportable incidents" per 100,000 miles, as defined by the National Transit Database.
Customer Service	Less than 20 customer complaints per 100,000 trips.
	Maximum reservation wait time less than 30 seconds (ADA) *
Fleet Age (Fixed Route)	No more than 15 percent of fleet in excess of the FTA Useful Life Benchmarks (ULB) for the vehicle classification.

Source: CAT FY 2019 - FY 2028 Transit Development Plan
** ADA Paratransit service is provided by JAUNT on behalf of CAT*

2.1.3 Public Survey Results

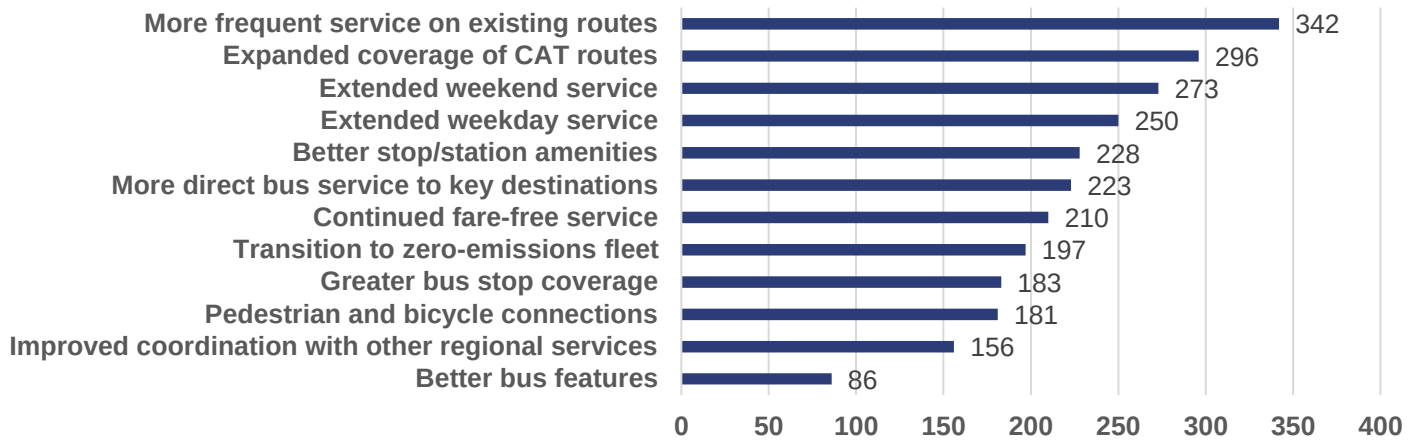
As part of the first round of public engagement for the TSP, an online public survey was conducted to guide the TSP process and inform the development of recommendations. The survey had two main sections that focused on priorities for use of transit. The survey was made available in English and Spanish and a link to the survey was published on CAT's website as well as on public engagement materials distributed at in-person engagement events. The survey was open for four weeks between July 1 and July 31, 2023 and collected a total of 523 responses.

Results from the survey were used to discern general trends, but the results were not given significant weight for determining service changes, nor were they used to serve as official data sources. The number of responses the survey received—523 responses—is not enough to be considered statistically significant for the city or region. A response-weighting formula was not developed for this survey; therefore, the survey results are only representative of the population that responded, and not of the Charlottesville region.

Priorities for Improvement

Figure 2-2 shows survey respondents' top priorities for CAT service. Respondents were asked to select their top five priorities out of the 12 shown. Improving the frequency on existing routes was the top response. Other notable priorities include expanding coverage of CAT routes, extending weekend service, extending weekday service, and better bus stop amenities.

Figure 2-2: Priorities of Survey Respondents



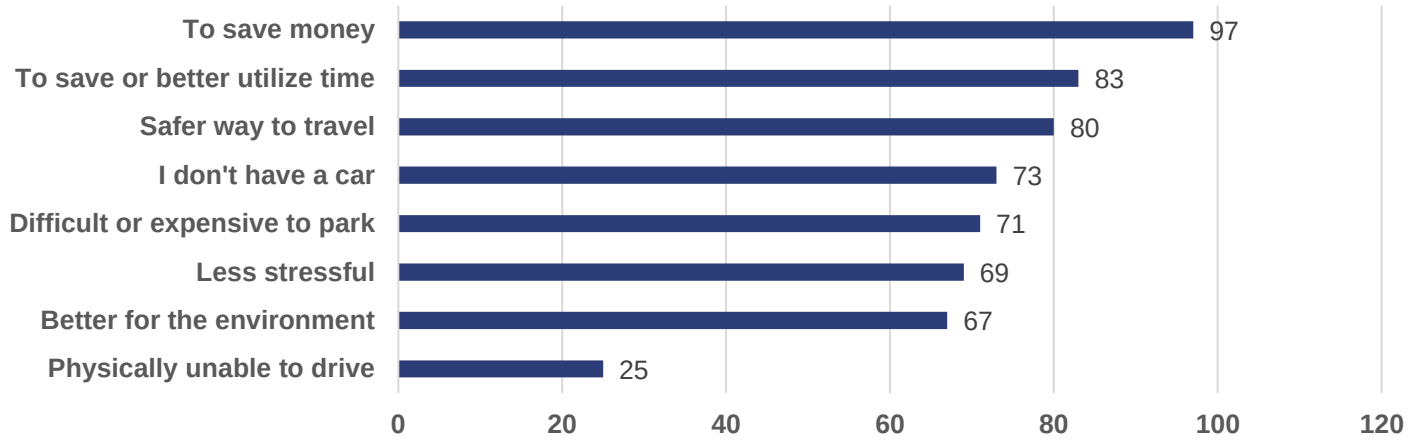
Survey respondents that identified as current transit riders were also asked to identify what changes could encourage them to use the bus more often, with answers largely matching the above priorities for improvement. Key responses to this question include the following:

- *"I would like to see extended day and weekend services, increased frequency, and continued fare-free service."*
- *"I would love to see the bus provide Sunday service on Route 5 and Route 8."*
- *"I wish there was more service closer to UVA campus; this would help me get to work."*
- *"More frequent service. If I miss the #3 on 5th St. it is an hour before the next one comes."*
- *"Sunday service would be great, and better shelters from sun and rain."*

Reasons for Riding

Respondents were asked the reasons why they ride the bus, with **Figure 2-3** showing the frequency of responses. The most common response was "To save money." Other popular responses were "To save or better utilize time," "It is a safer way to travel," and "I don't have a car."

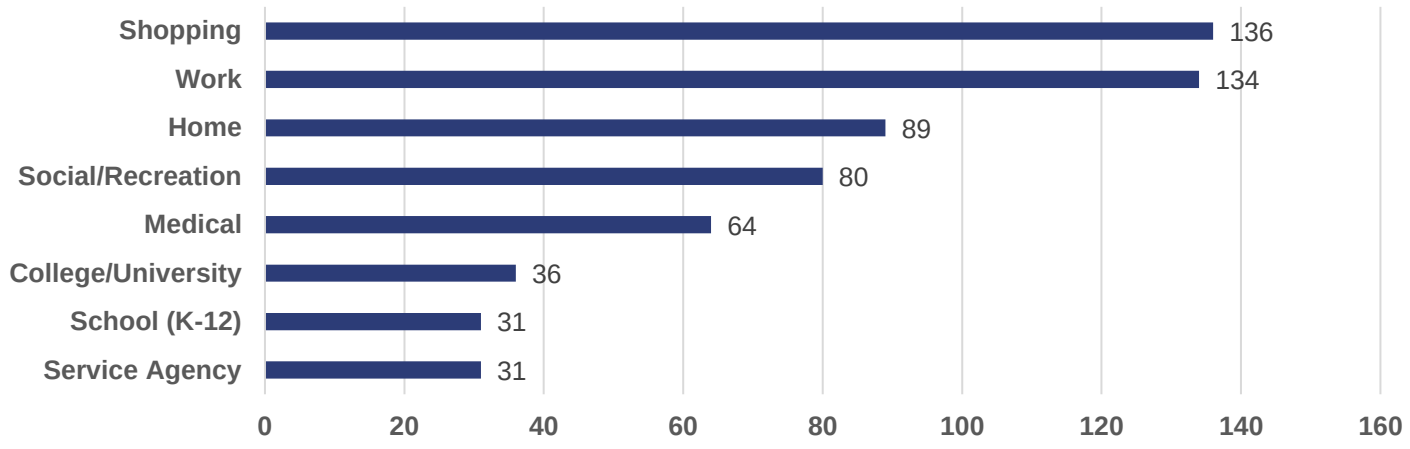
Figure 2-3: Reasons for Riding the Bus



Purpose and Destination of Transit Trips

Respondents were asked what the purpose/destination of their bus trips were, with **Figure 2-4** showing the frequency of responses. The most common response was "Shopping," closely followed by "Work." "Home," "Social/Recreation," and "Medical" were other common selections.

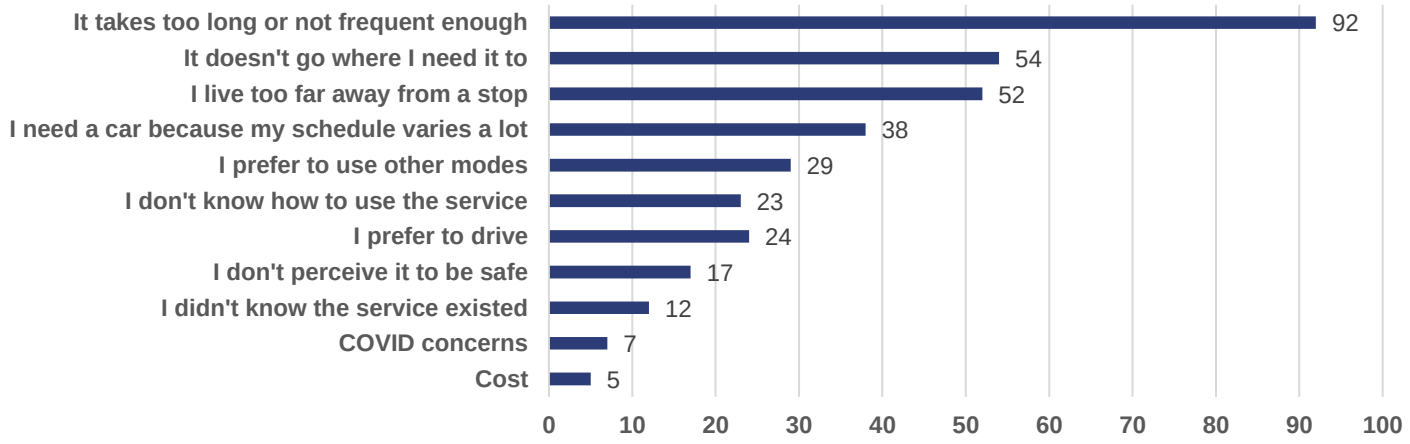
Figure 2-4: Trip Purpose/Destination



Reasons for Not Riding

Survey respondents that identified as non-transit riders were asked the reasons why they do not currently ride the bus, with **Figure 2-5** showing the frequency of responses. The most common response was "It takes too long or is not frequent enough." Other popular responses were "It doesn't go where I need it to," "I live too far away from a stop," and "I need a car because my schedule varies a lot."

Figure 2-5: Reasons for Not Riding the Bus



Survey respondents that identified as non-transit riders were also asked what could be improved to attract them to ride the bus. The most common responses included increasing frequency/making service faster, serving new destinations and areas across the region, extending hours of operation, better information, and reducing the need for transfers. Key responses to this question include the following:

- *"Connections between neighborhoods and popular destinations (downtown mall, shopping areas, more public information on making connections). I honestly do not know the system but would use it if I knew how to use it."*
- *"I commute into Cville and I'd ride it all the time if there was a better regional transit authority with buses that started in outlying counties and connected with Cville busses. If I could put my bike on the bus I would seriously never drive into Cville again."*
- *"Reduce needs for transfers – I attend Charlottesville High School and the area is only serviced by one route, which takes me a mile to get to. Other stops require a transfer, making the 30-minute walk much easier."*
- *"A better app would be helpful! To see buses in real time, report issues, even show bus capacity would be nice!"*
- *"Frequency increased to at least 30 minutes on all routes. Sunday service."*
- *"I am planning to start riding the bus in the fall, but I'm discouraged at how long it will take me to get to my destination, despite start and end points being in the city and not too far from each other. I'm going to do it anyway! But hope we can continue to build out public transit – plus I know lots of people rely on it more than me!"*

Demographics

Survey respondents that chose to respond to the optional demographic questions reported the following demographic characteristics:

- 15 percent of survey respondents indicated that they are students
- Gender identity of survey respondents was near-evenly split (30 percent male, 37 percent female)
- 16 percent of respondents indicated an age 60 or older; 41 percent indicated an age between 20 and 39
- 19 percent of respondents reported an annual household income of under $30,000, and 45 percent of respondents reported an annual household income of $30,000 or higher
- 10 percent of respondents reported having zero vehicles at their household, and 34 percent of respondents reported having one vehicle at their household

2.1.4 Support for Transit

A series of stakeholder workshops was also held during the TSP development process to better understand the use of and support for transit in the community and identify unmet needs. Several key qualitative themes emerged from the perspectives and perceptions shared during these stakeholder workshops. Key takeaways are listed below.

- Support for transit is strong among Charlottesville area elected officials, members of the public, and institutions; and stakeholders are supportive of CAT's future growth and success
- There are many strengths of the system today, including zero-fare service, routes that serve most key destinations, a strong pedestrian and bicycle network that allows access to transit, and coordinated transfers between routes and other modes of transportation
- Zero-fare service has helped many people in the Charlottesville area access jobs, services, and opportunities – especially low-income individuals
- Public transit is critical to meeting the goals of the region, especially goals focused on quality of life, economic development, climate, traffic safety, livability, affordability, and equity
- When presented with the types of decisions on tradeoffs that CAT must make when providing services, stakeholders expressed:
    - A strong preference for providing more frequent service to a limited geographic area (83 percent) versus covering a greater geographic area with lower frequency service (17 percent)
    - A strong preference for walking a greater distance to a bus stop for more frequent service (90 percent) versus walking a shorter distance to a bus stop but waiting longer for less frequent service (10 percent)

- A moderate preference for proving frequent service during the peak hours (64 percent) versus less frequent service all day long (36 percent)

2.2 Evaluation of Transit Market Demand and Underserved Areas

This section provides an overview of the market for transit riders in the city of Charlottesville and urbanized portions of Albemarle County. This evaluation includes study of demographic, socioeconomic, residential, and employment data to indicate where transit service may be most effective or needed, as well as helping to show future areas where service may be necessary and/or successful.

2.2.1 Transit Demand and Underserved Area Evaluation

The demand for transit is influenced by a variety of factors, such as land use, development patterns, population and employment density, the prevalence of disadvantaged populations, and the associated costs of various modes of transportation. Of these factors, population and employment density are the most important in determining the underlying demand for transit. This is because the reach of transit is generally limited to walking distance to/from a bus stop (typically, 0.25 miles) and therefore relies on higher numbers of people and jobs in high concentration.

This section presents land use, employment, population, and demographic data to reveal opportunities both inside and outside of the existing CAT service area. Locations with high concentrations of variables that influence transit demand are highlighted.

Land Use, Employment, Population, and Demographics

This section explores several of the most influential factors in determining transit demand; including land use and development patterns, employment, population, and sociodemographic characteristics (including minority, older adults, low-income, those with limited English proficiency, persons with disability, and zero-car populations).

Land Use

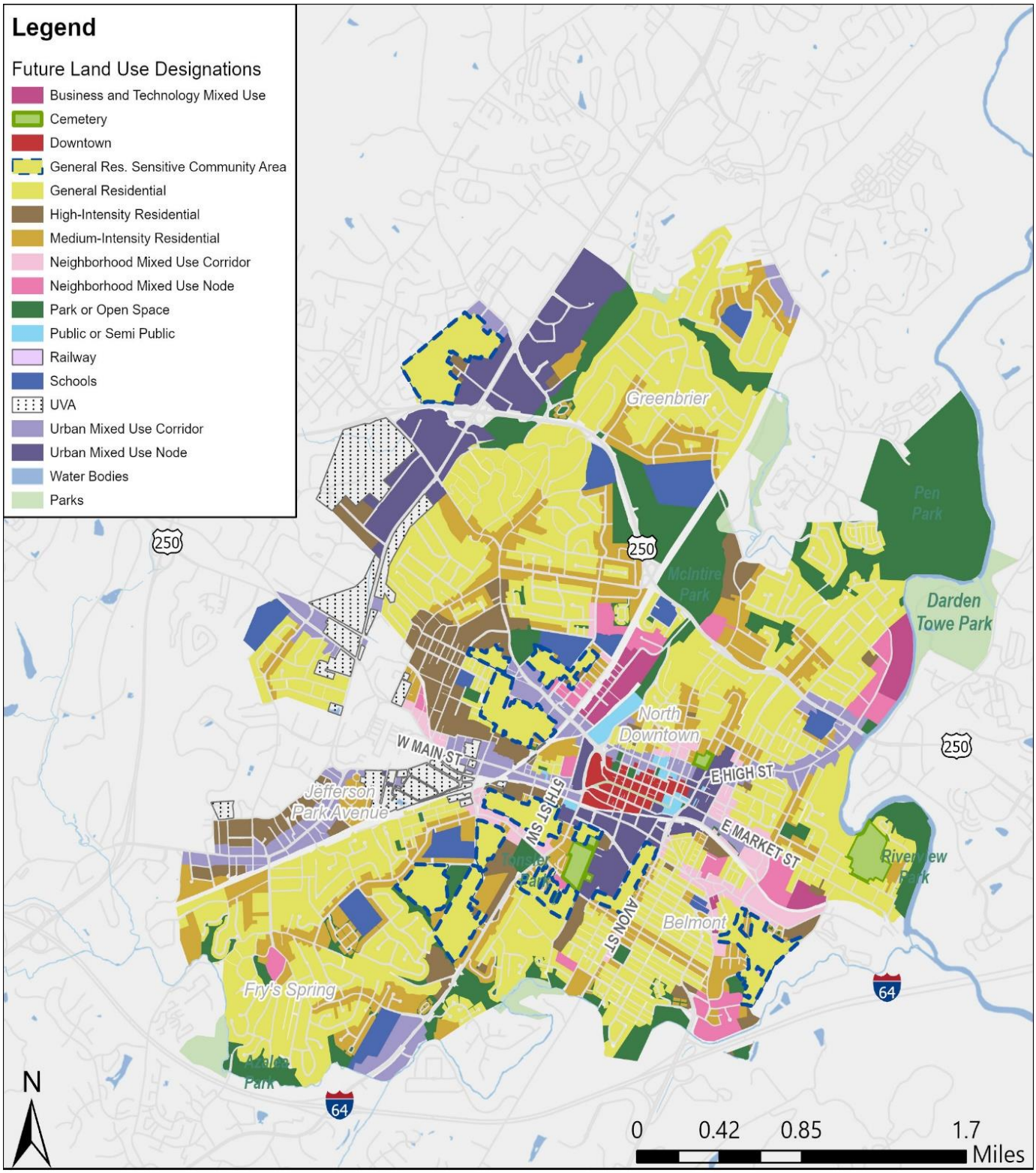
Land use is inextricably linked with the long-term success of transit networks. However, in many cases, the institutional powers with authority over land use do not control the local transit systems, and vice versa. In cities such as Charlottesville, where the transit system is managed directly by the City government, a single entity has the authority to shape both the transit network and future land use to accommodate future growth, maximizing the benefits that result from transit-supportive land use and coordinated service.

Charlotteville's future land use map shown in **Figure 2-6**, adopted as part of the City's 2021 Comprehensive Plan, features an emphasis on mixed-use development over single-use zoning. This is reflective of the City's objectives relating to future land use, which include:

- Increase opportunities for development near community amenities such as shopping, employment centers, and transit.
- Explore the development potential of vacant or underutilized properties.
- Increase access to transit, as well as walking and biking infrastructure, to help achieve the City's climate goals and connect the community to jobs and amenities.
- Foster walkable, bikeable, and transit-accessible neighborhoods.
- Support the development of 'under-utilized' grayfield sites along community corridors.
- Provide opportunities to develop a variety of housing options near employment and community services.
- Encourage compact block and street networks and a built environment that facilitates walking, biking, and bus riding.

This focus on mixed-use development and increased access to transit will allow more residents to live where they work and play, reducing their dependence on personal vehicles and granting them more mobility options such as walking, biking, and transit for their daily trips. Additionally, the emphasis on infill development and redevelopment promotes transit usage by incentivizing transit-supportive development and building where transit already exists, rather than on the periphery where transit service must be extended to new developments. This allows the City to maximize its public services by concentrating new development in established areas with quality transit.

Figure 2-6: Future Land Use Map for City of Charlottesville



Employment Density and Growth

Employment is one of the strongest factors in predicting demand for transit because places of employment generate work trips. This section displays and describes employment throughout the CAT service area using employment totals and employment density.

Existing Employment

Traditionally, employment has been a key factor influencing transit ridership, as these trips tend to happen on a regular and consistent basis. While changes in employment location and labor market trends remain in flux because of the COVID-19 pandemic, traditional employment centers remain substantial generators of transit ridership.

Total jobs and density of jobs in Charlottesville and Albemarle County are shown in **Table 2-5**. The top ten employers in Charlottesville and Albemarle County are outlined in **Table 2-6**.

Table 2-5: Total Employment and Density

	CAT Service Area	City of Charlottesville	Albemarle County
Acreage	9,846.7	6,560.0	461,100.8
Jobs	98,108	46,554	112,396
Density (Jobs per Acre)	10.0	7.1	0.2

Source: Longitudinal Housing and Employment Dynamics (LEHD) 2020 block-level data

Table 2-6: Top Employers in Charlottesville and Albemarle County

Rank	City of Charlottesville	Albemarle County
1	University of Virginia/Blue Ridge Hospital	University of Virginia/Blue Ridge Hospital
2	County of Albemarle	Sentara Healthcare
3	UVA Health Services Foundation	U.S. Department of Defense
4	City of Charlottesville	County of Albemarle
5	Charlottesville City School Board	Crutchfield Corporation
6	Servicelink Management Com Inc	Walmart
7	Morrison Crothall Support	Piedmont Virginia Community College
8	ADP Totalsource Co XXIII Inc	Northrop Grumman Corporation
9	Assoc for Investment Management	RMC Events
10	Labormax Staffing	Atlantic Coast Athletic Club

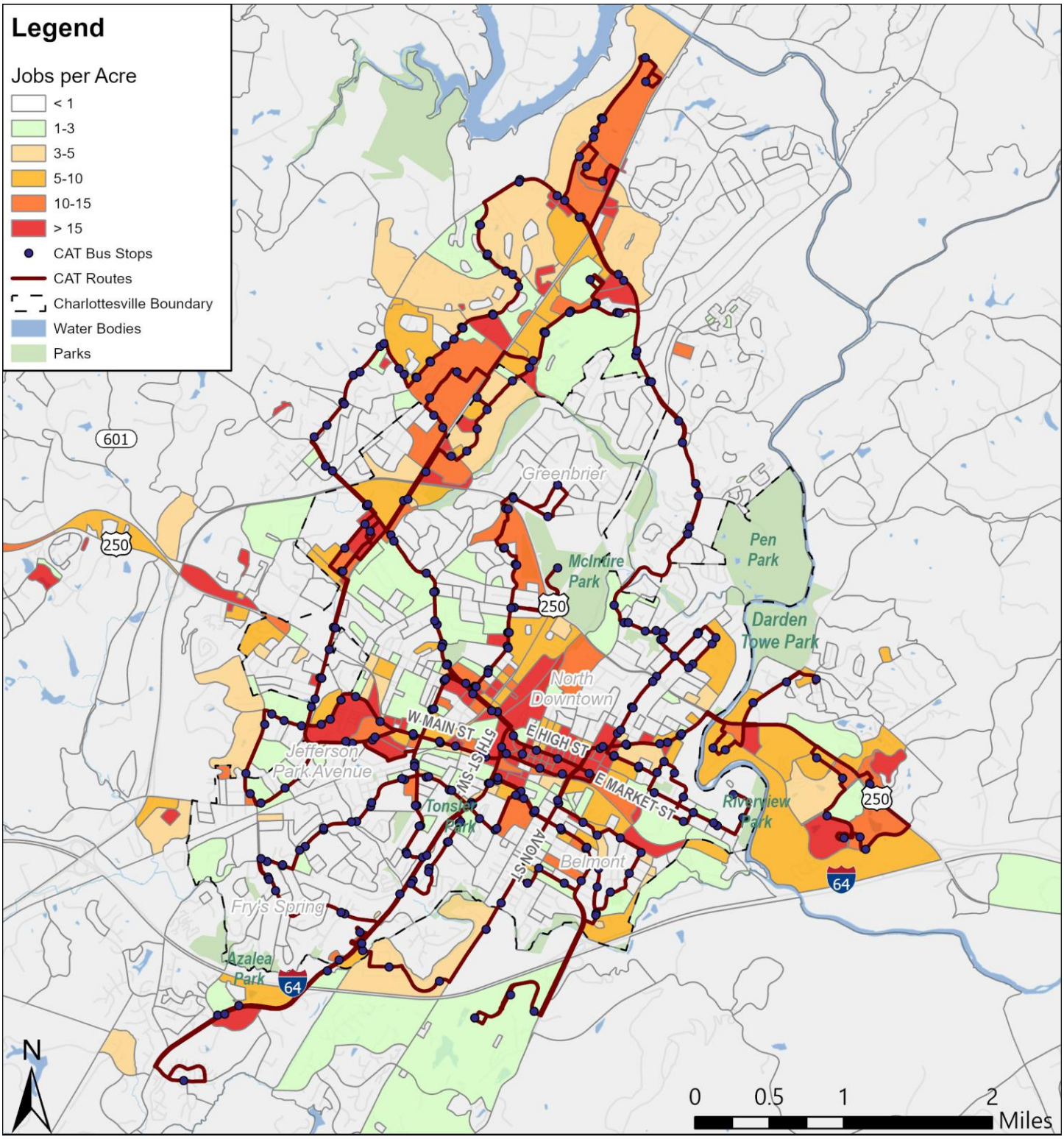
Source: Virginia Employment Commission Economic Information & Analytics Division

A map showing the area's employment density based on 2020 block-level Longitudinal Housing and Employment Dynamics (LEHD) data is provided in **Figure 2-7**.

Much of the employment within the City of Charlottesville is located in the city center, particularly along the West Main Street corridor linking Downtown with the University of Virginia grounds and UVA Hospital complex. The distribution of employment centers in the CAT service area is highly concentrated in a few key areas:

- Downtown Charlottesville
- Pantops
- US-29 Corridor
- University of Virginia & UVA Hospital
- US-250/Ivy Road Corridor

Figure 2-7: Existing Employment Density Map for CAT Service Area



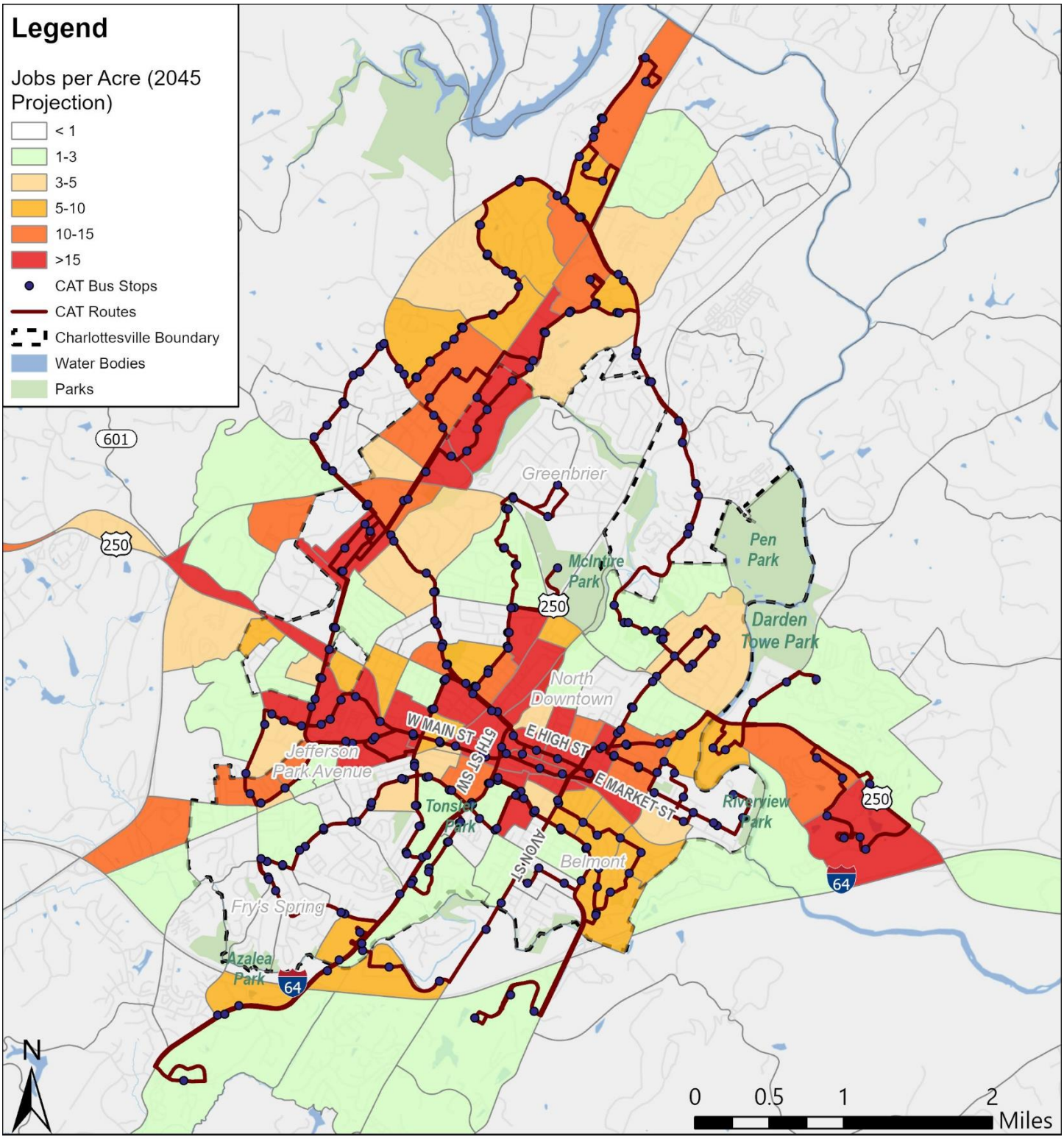
2020 Longitudinal Employment Housing Dynamic (LEHD) Block-Level Data

Employment Growth

Echoing the goals of mixed-use and infill development laid out in the city's Comprehensive Plan, projected employment data for 2045 shows significant concentration of employment in central Charlottesville. Significant job centers also remain on the outskirts of the city, including Pantops, the US-29 corridor to the north, UVA, and the US-250 corridor to the west.

A map showing the area's 2045 projected employment density based on traffic analysis zone-level data from the Charlottesville-Albemarle Regional Travel Model is provided in **Figure 2-8**. Some of the concentration of jobs projected for 2045 could be due to the higher-level data used in the projection (done at the traffic analysis zone-level rather than at the block-level). Still, it appears that there will be an intensification of job density within Charlottesville's core, which would be congruent with the City's goals aimed at advancing mixed-use and infill development within the city center.

Figure 2-8: Projected 2045 Employment Density Map for CAT Service Area



Traffic Analysis Zone data from Charlottesville/Albemarle Regional Travel Model

Population Density and Growth

When determining the optimal location to provide transit service, it is critical to consider current and future population density. Fixed-route public transit operates most efficiently when it serves high-density centers of population and employment, ideally within a quarter- to a half-mile walking distance. This allows transit riders to access a variety of destinations and complete trips for many different purposes, including (but not limited to) work, shopping, school, leisure, and social activities. In this way, population density is important for fixed-route transit because it allows a single stop to serve a variety of population needs within a quarter-mile.

Existing Population

According to the *Transit Cooperative Research Program (TCRP) Transit Capacity and Quality of Service Manual, 2nd Edition*, a population density of 3 households/acre (about 6 people per acre) or 4 jobs/acre are sufficient to support an hourly fixed-route transit service. While areas with lower densities may not support regular fixed-route service, they can still be served effectively by demand-responsive service.

As shown in **Table 2-7**, the CAT service area (defined as the area within a quarter mile of a CAT bus stop) has a population density of 6.6 persons per acre, compared to the City of Charlottesville (7.1) or Albemarle County (0.2). A population density of 6.6 persons per acre shows that the region overall features the necessary density to support transit service.

Table 2-7: Population Total and Density

	CAT Service Area	City of Charlottesville	Albemarle County
Acreage	9,846.7	6,560.0	461,100.8
Population	65,386	46,554	112,396
Density (Population per Acre)	6.6	7.1	0.2

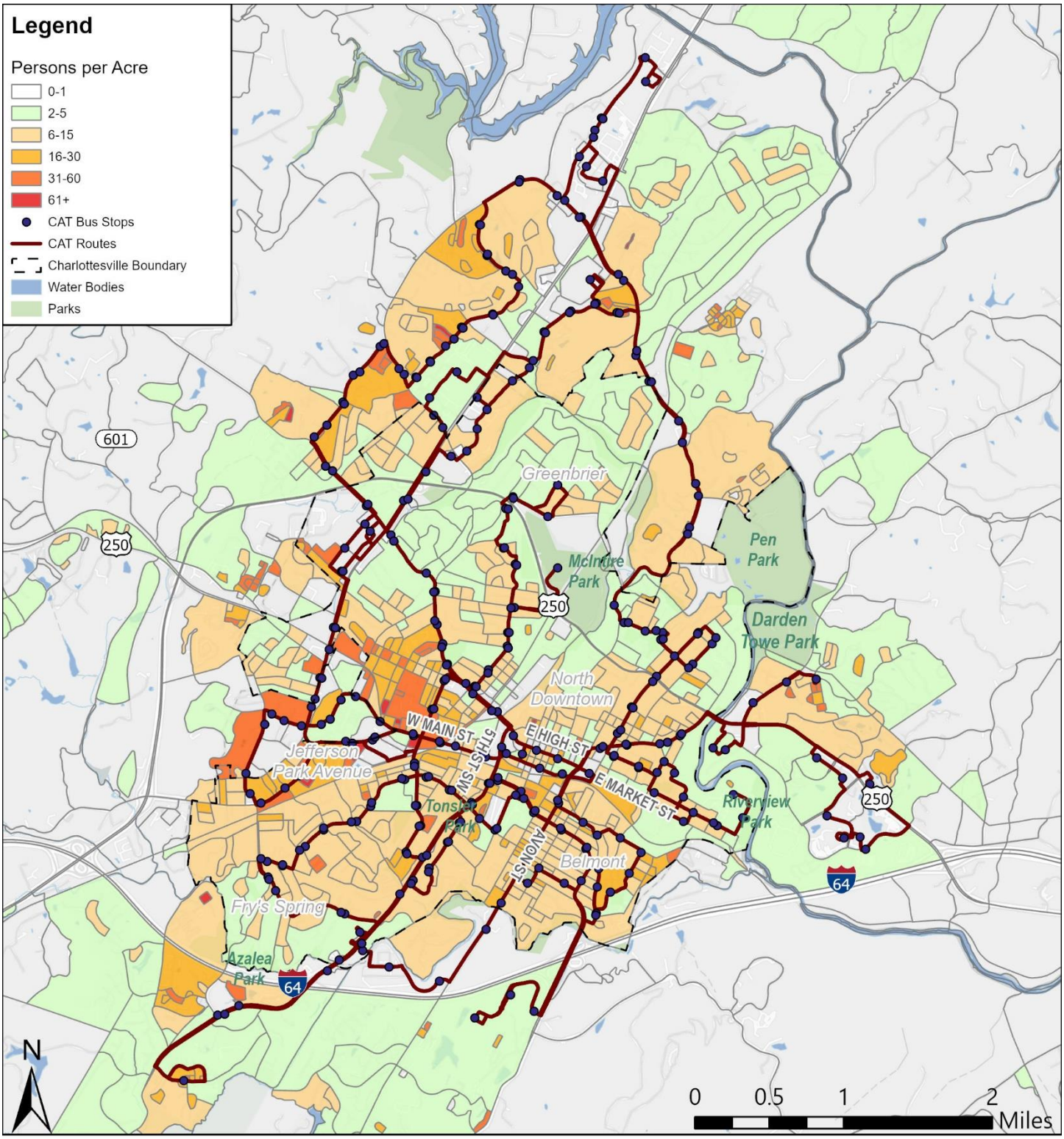
Source: US Census (2020)

Figure 2-9 shows the existing 2020 census-block level population density for the CAT service area. Areas in gray or green depict low densities (fewer than 6 persons per acre), yellow depicts moderate densities (6-30 persons per acre), while orange and red depict high densities (greater than 30 persons per acre).

Locations with the highest population densities include:

- Areas surrounding the University of Virginia grounds, including the Jefferson Park Avenue and Venable neighborhoods, served by routes 7, 8, 9, and the Trolley
- Neighborhoods south of Downtown and UVA, including Belmont, Ridge Street, Fifeville, Johnson Village, and Fry's Spring, served by routes 1, 2, 3, 4, and 6
- The US-29 corridor north of the City, particularly housing complexes between US-29 and Hydraulic Road, served by route 5
- Housing complexes south of the city off Old Lynchburg Road, served by route 3
- Pantops, north of US-250, served by route 10

Figure 2-9: Existing Population Density within the CAT Service Area



2020 Decennial Census Block-Level Data

Population Growth

According to the Charlottesville-Albemarle Regional Travel Model, the City of Charlottesville is projected to gain around 10,200 new residents between 2020 and 2045, an increase of nearly 22 percent (**Table 2-8**). During the same period, Albemarle County is expected to gain about 14,000 residents, a 12 percent increase. The city's higher growth rate is a positive for building transit-supportive density, as it will allow CAT service to ultimately serve more people more efficiently without necessarily needing to increase service or extend routes to new areas. In fact, assuming the service area remains unchanged, its population is projected to increase by 21%. This also represents a reversal of previous trends, as shown in **Table 2-9**, wherein Albemarle County had a higher growth rate than the City, indicating that in the future more development and population growth will be concentrated within the City of Charlottesville.

Table 2-8: Projected 2045 Total Population and Density

	CAT Service Area	City of Charlottesville	Albemarle County
Acreage	9,846.7	6,560.0	461,100.8
2020 Population	65,386	46,554	112,396
2020 Density (Population per Acre)	6.6	7.1	0.2
2045 Projected Population	79,397	56,770	126,358
2045 Projected Density	11.1	8.7	0.3
% Change (2020-2045)	21.4%	21.9%	12.4%

Source: Charlottesville-Albemarle Regional Travel Model

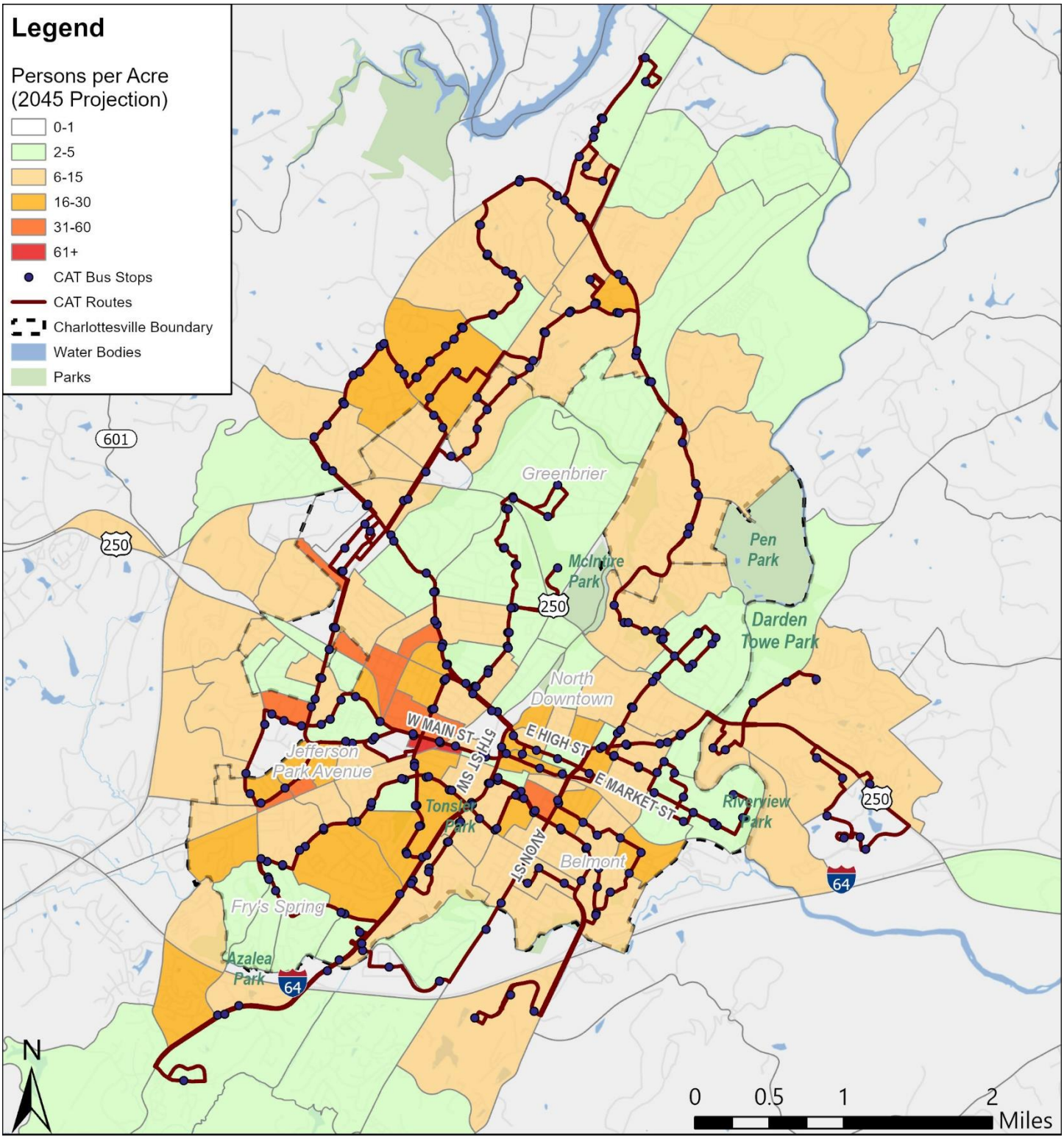
Table 2-9: Historical Population Trends for Charlottesville and Albemarle County

Year	City of Charlottesville		Albemarle County	
	Population	% Change	Population	% Change
1960	29,427	-	30,969	-
1970	38,880	32.1%	37,780	22.0%
1980	39,916	2.7%	55,783	47.7%
1990	40,341	1.1%	68,040	22.0%
2000	40,099	-0.6%	79,236	16.5%
2010	43,475	8.4%	98,970	24.9%
2020	46,553	7.1%	112,395	13.6%

Source: US Census

Figure 2-10 shows the projected 2045 traffic analysis zone-level population density for the CAT service area. This data was obtained from the Charlottesville-Albemarle Regional Travel Model maintained by the Virginia Department of Transportation. Areas shaded gray or green depict low densities (fewer than 6 persons per acre), yellow depicts moderate densities (6-30 persons per acre), while orange and red depict high densities (greater than 30 persons per acre).

Figure 2-10: Projected 2045 Population Density Map for CAT Service Area



Traffic Analysis Zone data from Charlottesville/Albemarle Regional Travel Model

Demographics

The following sections contain an analysis of demographics (e.g., the location and prevalence of population groups including minority groups, older adults, low-income earners, those with limited English proficiency, and persons with disabilities) and discussion of how these groups affect transit demand and/or the propensity to utilize public transit services.

Minority Groups

Title VI of the Civil Rights Act of 1964 requires that CAT ensures equitable service provision. Thus, transit service must be delivered such that it does not exclude minority populations. These populations make up about 35% of the City of Charlottesville's population as of 2020 and are present throughout the service area. **Table 2-10** shows the total minority population and density in the city of Charlottesville and Albemarle County.

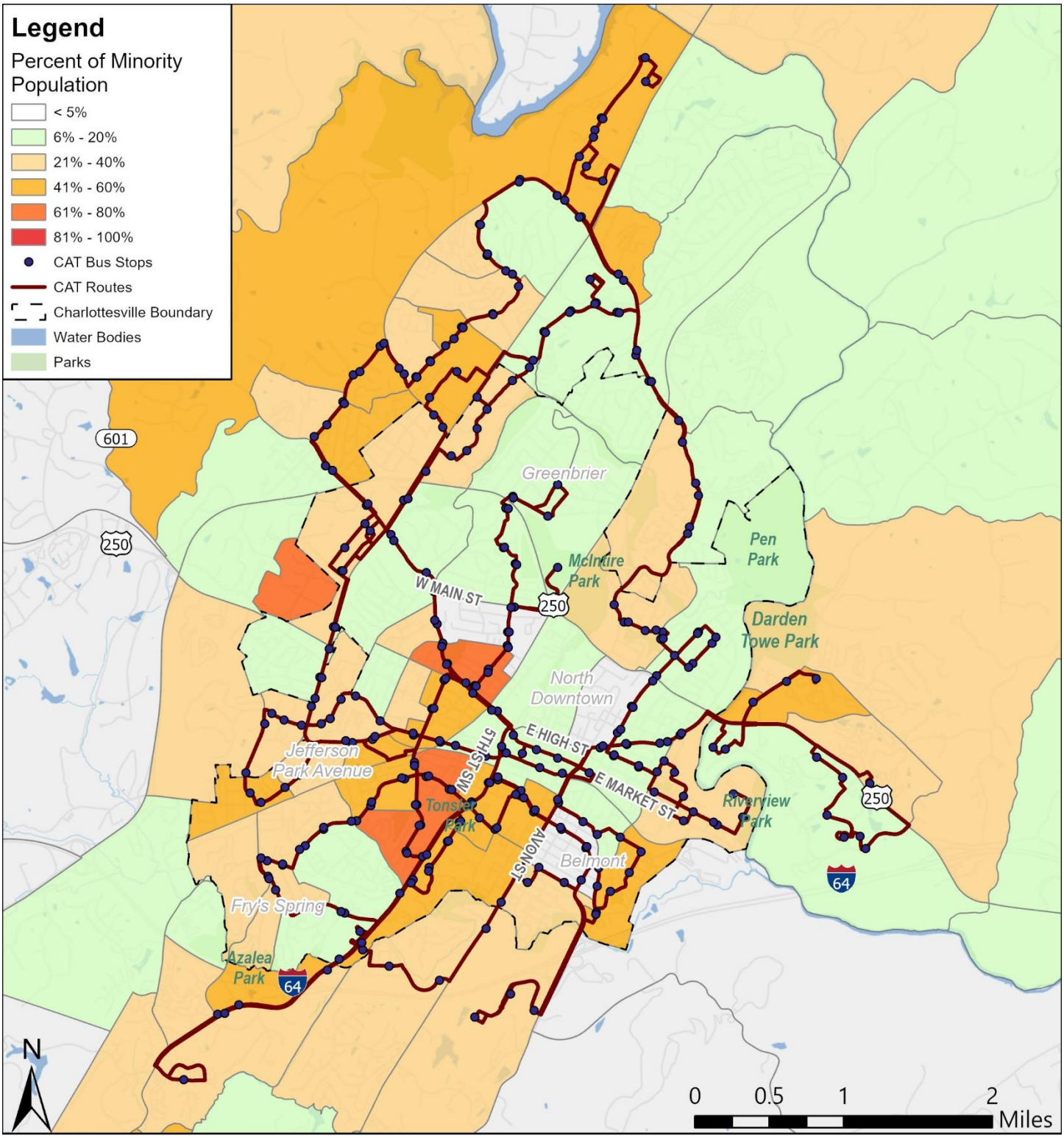
Table 2-10: Minority Population Total and Density

	CAT Service Area	City of Charlottesville	Albemarle County
Acreage	9,846.7	6,560.0	461,100.8
Minority Population	20,506	14,125	22,364
Density (Population per Acre)	2.1	2.2	0.0

Source: US Census

A map showing the distribution of minority population is provided in **Figure 2-11**. Notable concentrations are located in areas south and west of downtown Charlottesville, including the Fifeville, Rose Hill, 10th & Page, Ridge Street, and Jefferson Park Avenue neighborhoods; as well as along the US-29 corridor.

Figure 2-11: Percentage of Minority Population within the CAT Service Area



2021 American Community Survey (ACS) Block Group-Level Data

Population Aged Under 18

Since most of the population under 18 are not of driving age, they tend to be reliant on other modes of transportation for their mobility, including transit. **Table 2-11** shows the total and density of the population under the age of 18 in the city of Charlottesville and Albemarle County.

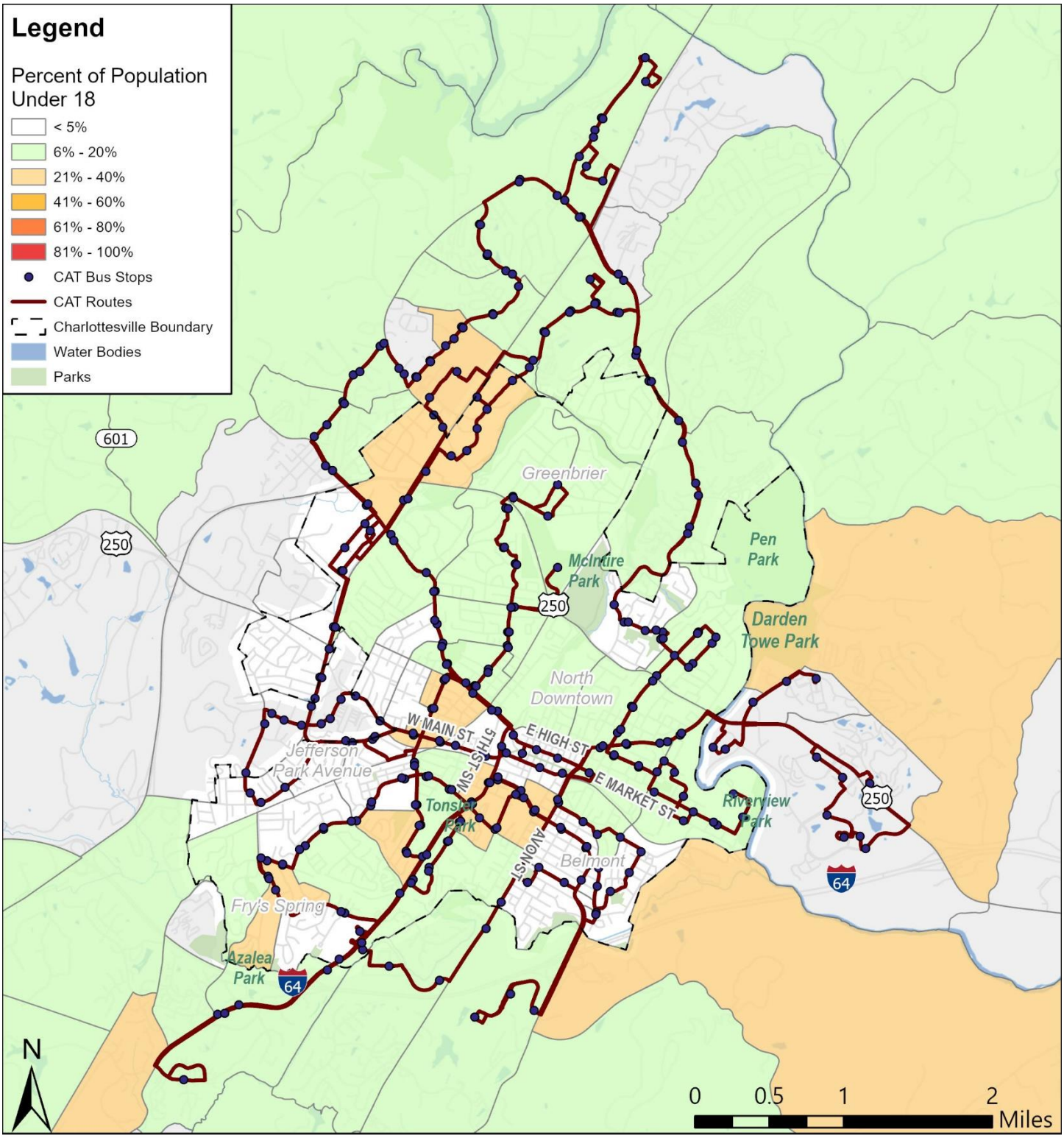
Table 2-11: Population Under 18 Total and Density

	CAT Service Area	City of Charlottesville	Albemarle County
Acreage	9,846.7	6,560.0	461,100.8
Population under 18	17,212	11,888	23,628
Density (Population per Acre)	1.7	1.8	0.1

Source: US Census

A map showing the distribution of population aged under 18 is provided in **Figure 2-12**. The population aged under 18 is dispersed throughout the service area, though concentrations exist in neighborhoods including Fifeville, Ridge Street, 10th & Page, and The Meadows; as well as along the US-29 corridor and on the eastern periphery of the CAT service area.

Figure 2-12: Percentage of Population Aged Under 18 Map for CAT Service Area



2021 American Community Survey Block Group-Level Data

Population Aged 65 and Older

Seniors are a population that may be more inclined to use transit for their essential trips including shopping, socializing, and healthcare. This may be a result of high costs of vehicle ownership, or they may have other constraints on their mobility such as a loss of the ability to drive. **Table 2-12** shows the total and density of the population aged 65 and older in the city of Charlottesville and Albemarle County.

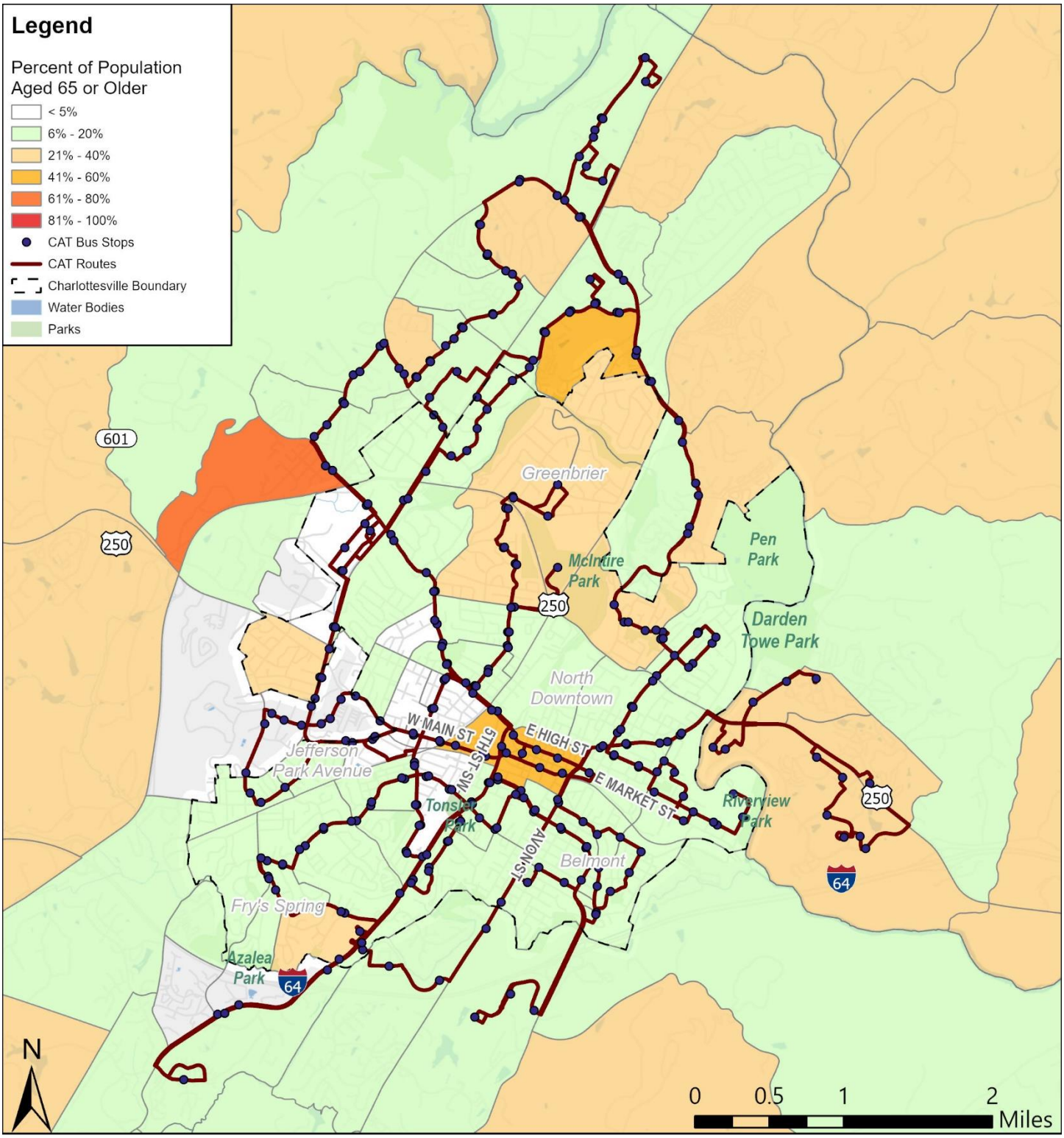
Table 2-12: Population 65 and Older Total and Density

	CAT Service Area	City of Charlottesville	Albemarle County
Acreage	9,846.7	6,560.0	461,100.8
Population 65 and Older	8,319	5,585	20,855
Density (Population per Acre)	0.8	0.9	0.0

Source: US Census

A map showing the distribution of population aged 65 and older is provided in **Figure 2-13**. Seniors are dispersed throughout the region but have high concentrations in the Branchlands and the Barracks areas north and west of the City of Charlottesville. Within the City, there are concentrations Downtown; in Starr Hill, Lewis Mountain, and Greenbrier; as well as parts of Fry's Spring, Barracks/Rugby, and Locust Grove.

Figure 2-13: Percentage of Population Aged 65 or Older Map for CAT Service Area



2021 American Community Survey Block Group-Level Data

Low-Income Households

Households with low incomes, defined for this study as those having an income of $30,000 or less for a family of four based on federal poverty guidelines, tend to be more reliant on transit for their mobility because of the high costs of automobile ownership. **Table 2-13** shows the total and density of the low-income population in the city of Charlottesville and Albemarle County.

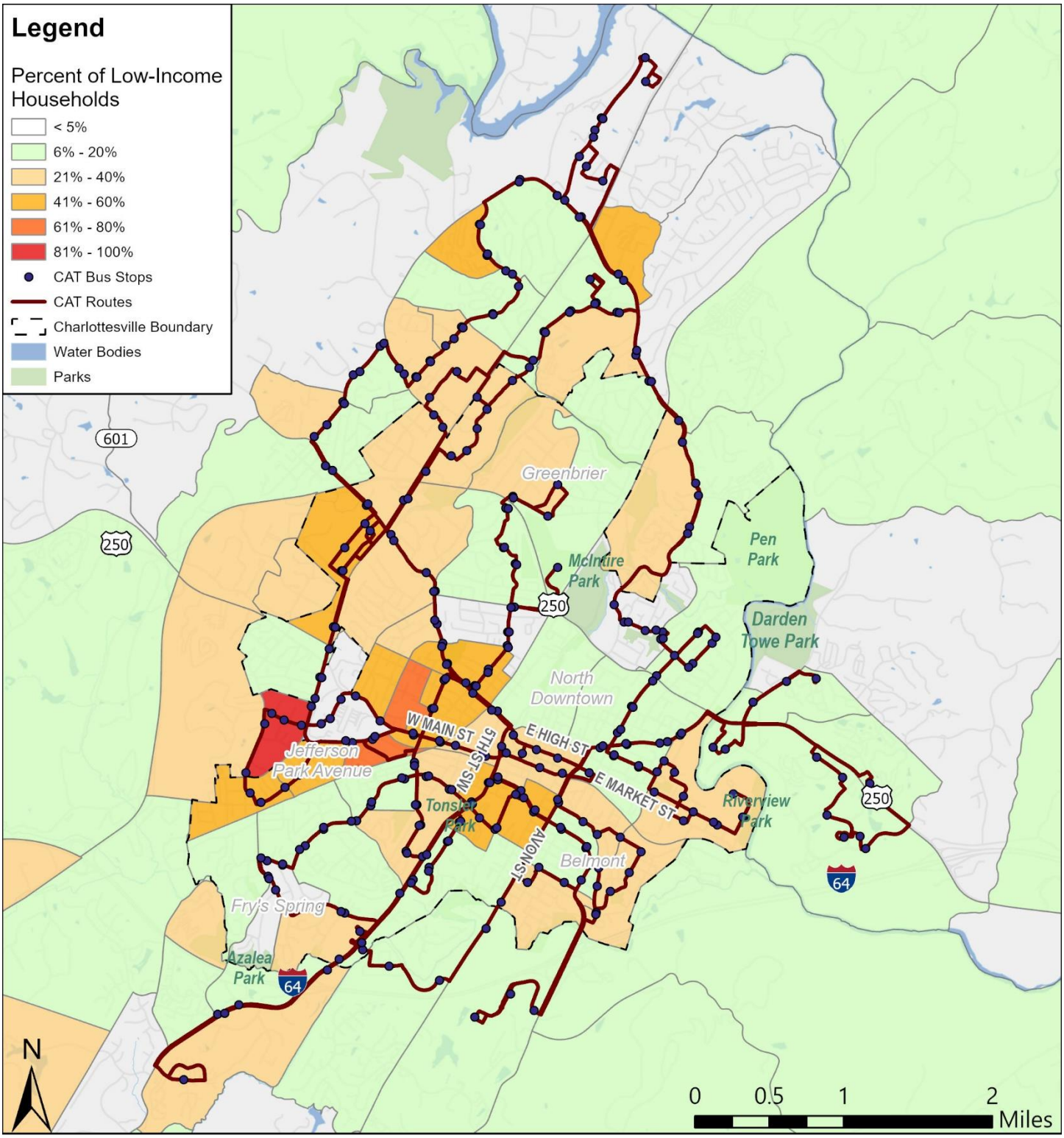
Table 2-13: Low-Income Households Total and Density

	CAT Service Area	City of Charlottesville	Albemarle County
Acreage	9,846.7	6,560.0	461,100.8
Low-Income Households	6,425	5,080	5,978
Density (Households per Acre)	0.7	0.8	0.0

Source: US Census

A map showing the distribution of low-income households is provided in **Figure 2-14**. There are high concentrations of low-income households in western Charlottesville near the University of Virginia grounds, possibly due to the high student population in those neighborhoods, which include Venable, Jefferson Park Avenue, 10th & Page, Ridge Street, and Barracks Road.

Figure 2-14: Distribution of Low-Income Households for CAT Service Area



2021 American Community Survey (ACS) Block Group-Level Data

Zero-Vehicle Households

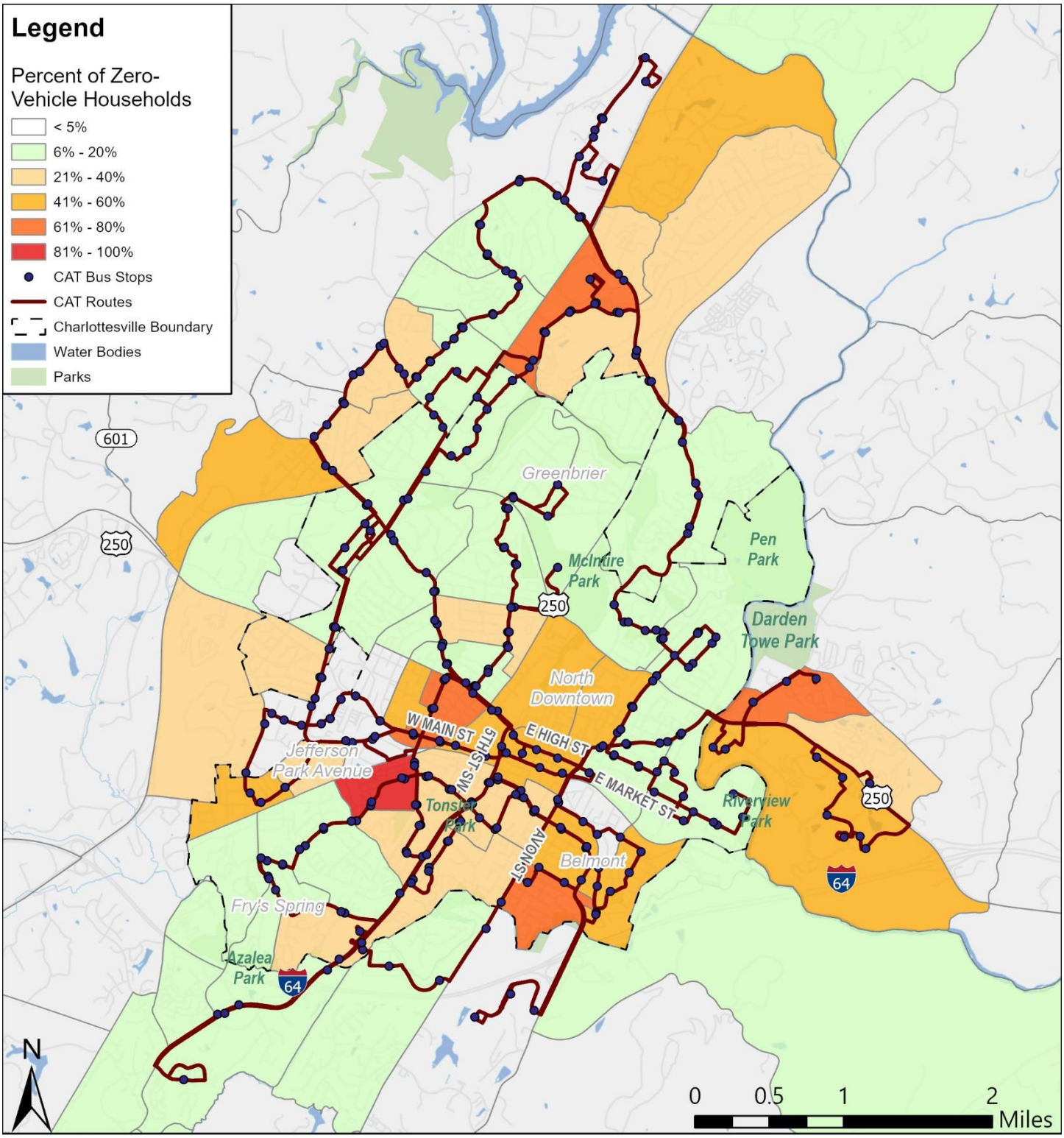
Households without access to personal vehicles are more likely to rely on transit as a primary mobility option. **Table 2-14** shows the total and density of zero-vehicle households in the city of Charlottesville and Albemarle County.

Table 2-14: Zero-Vehicle Households Total and Density

	CAT Service Area	City of Charlottesville	Albemarle County
Acreage	9,846.7	6,560.0	461,100.8
Zero-Vehicle Households	8,171	10,419	5,637
Density (Households per Acre)	0.8	1.6	0.0

A map showing the distribution of zero-vehicle households is provided in **Figure 2-15**. Areas with the highest concentrations of zero-vehicle households include Fifeville, Belmont, 10th & Page, Pantops, Downtown, Belmont, and the US-29 corridor.

Figure 2-15: Distribution of Zero-Car Households for CAT Service Area



2021 American Community Survey (ACS) Block Group-Level Data

Persons with Disabilities

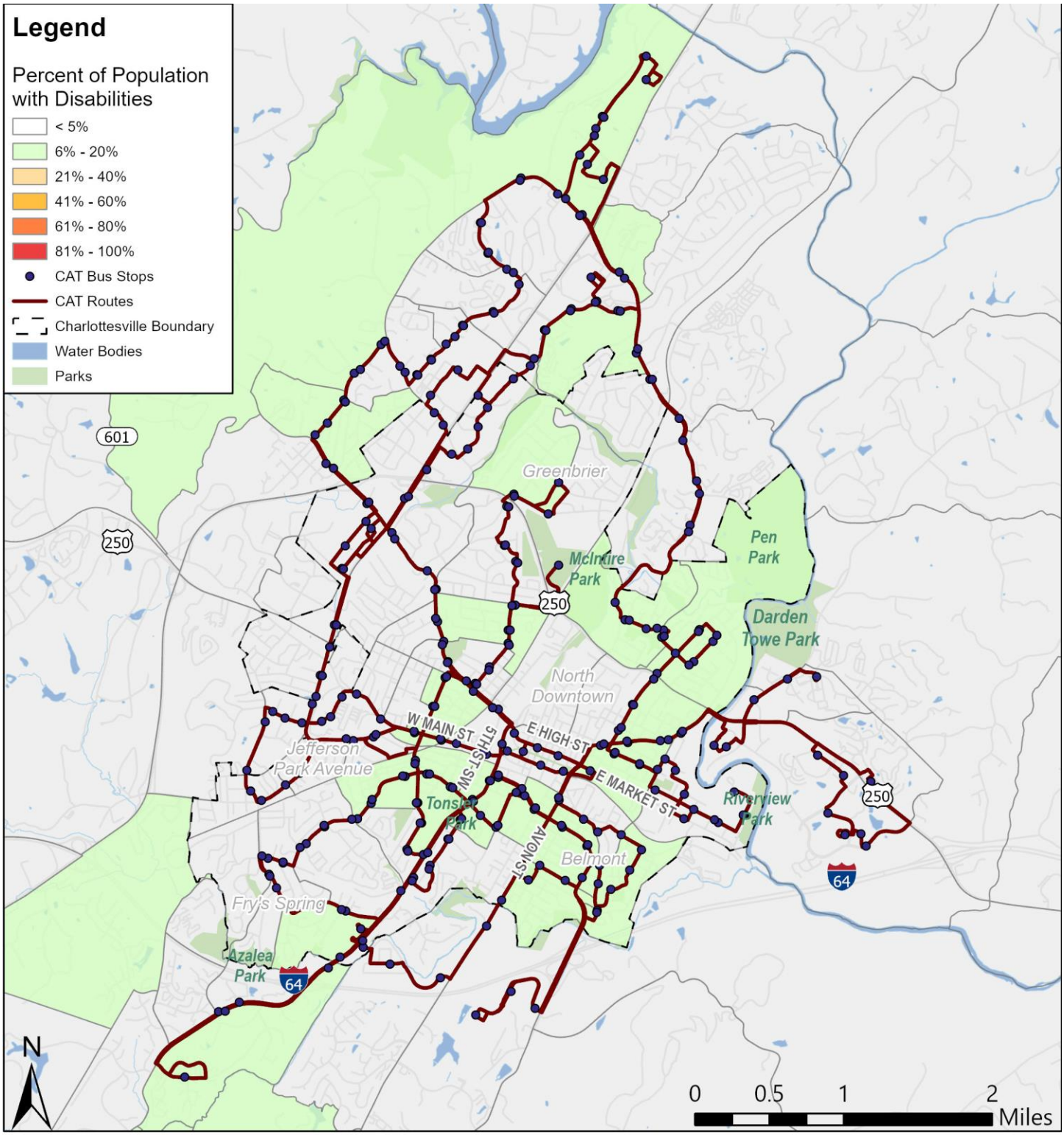
Persons with disabilities tend to rely more heavily on public transportation, either because of physical difficulties accessing other modes or because of the high costs of owning and operating a personal vehicle. **Table 2-15** shows the total and density of the population of persons with disabilities in the city of Charlottesville and Albemarle County.

Table 2-15: Population with Disabilities Total and Density

	CAT Service Area	City of Charlottesville	Albemarle County
Acreage	9,846.7	6,560.0	461,100.8
Population with Disabilities	2,635	1,994	3,805
Density (Households per Acre)	0.3	0.3	0.0

A map showing the distribution of persons with disabilities is provided in **Figure 2-16**. Within the service area, the highest concentrations of persons with disabilities are in Fifeville, Belmont, and Branchlands.

Figure 2-16: Distribution of Population with Disabilities for CAT Service Area



2021 American Community Survey (ACS) Block Group-Level Data

Population with Limited English Proficiency

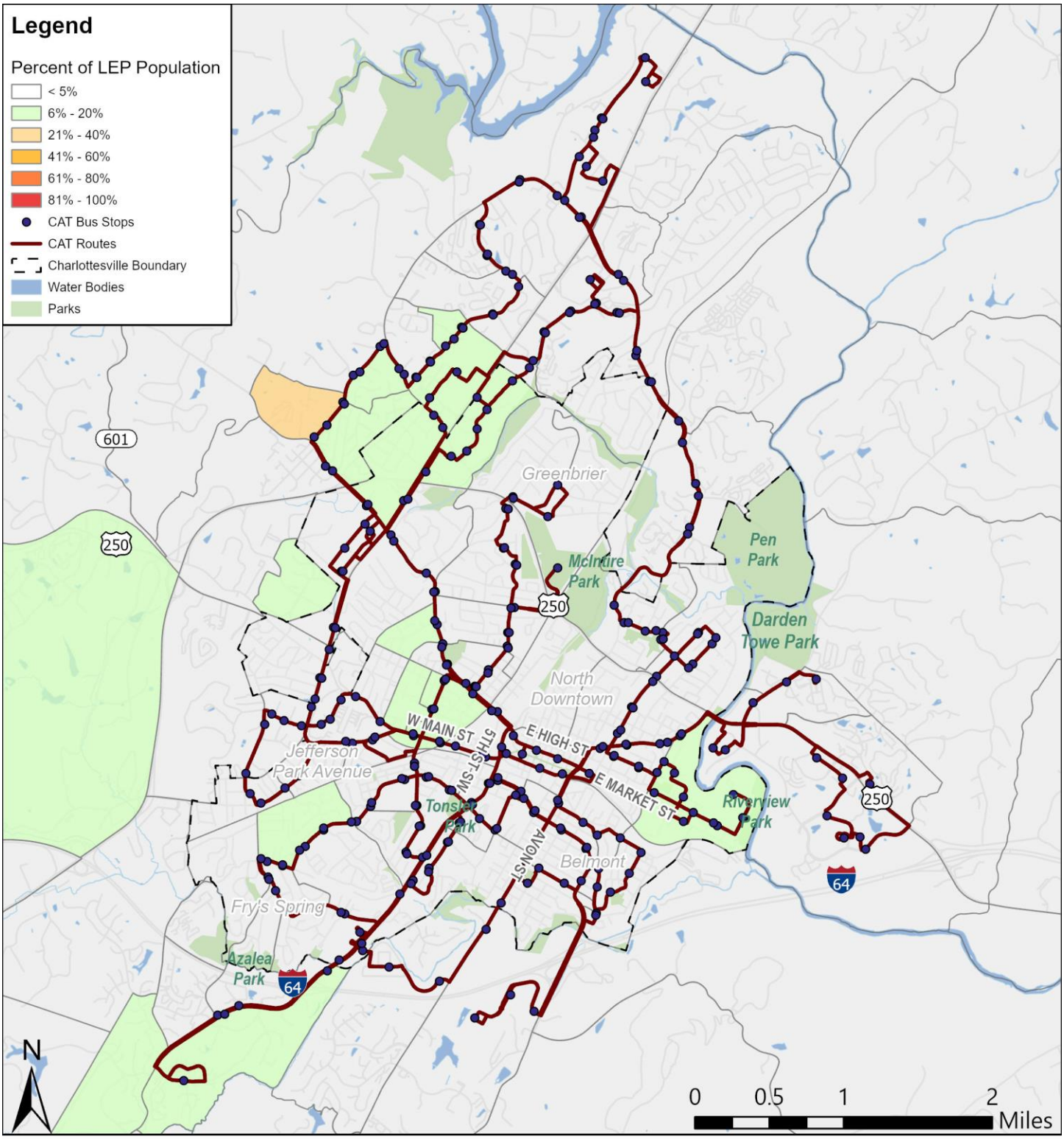
In ensuring equity of service provision and full compliance with Title VI, populations with limited English proficiency (LEP) must also be considered. **Table 2-16** shows the total and density of the LEP population in the city of Charlottesville and Albemarle County.

Table 2-16: Limited English Proficiency Population Total and Density

	CAT Service Area	City of Charlottesville	Albemarle County
Acreage	9,846.7	6,560.0	461,100.8
LEP Population	2,239	941	1,965
Density (Households per Acre)	0.2	0.1	0.0

A map showing the distribution of LEP population is provided in **Figure 2-17**. Within the service area, the highest concentrations of LEP population are in the Barracks and Southwood areas of Albemarle County.

Figure 2-17: Distribution of Limited English Proficiency (LEP) Population within the CAT Service Area



2021 American Community Survey (ACS) Block Group-Level Data

Opportunities to Expand Service to Underserved Areas

This section analyzes opportunities to expand service to underserved areas. To identify locations and times that are underserved, transit service is evaluated against the demand for transit. This is done by comparing demand with the availability and frequency of the existing transit service. The analysis identifies areas with an imbalance between CAT transit services and the community's unmet need.

The framework for evaluating transit supply and demand can be summarized into three steps:

1. Evaluate transit demand using demand metrics (activity density and transit propensity density)
2. Assess transit supply using service data (transit supply)
3. Compare transit supply and demand metrics (Activity density and transit propensity density) to locate areas of imbalance (low supply and high demand)

Places with low transit supply and high demand may represent opportunities for increasing or expanding service. Conversely, areas with low transit demand and high supply may represent opportunities for reducing or eliminating service.

Transit Potential

Higher densities of residents and/or jobs in an area correlate with higher transit ridership. Because most trips start or end at home, and work trips compose a large portion of overall travel, higher concentrations of potential origin and destination points within a given area make it more likely to support transit service.

By combining the population and employment densities present in each traffic analysis zone (TAZ), the area's transit potential can be evaluated to determine new areas where fixed route transit may be viable, or potentially where it is currently operating despite a lack of supportive density. Though employment and population density are not the sole factors influencing where transit should operate, they are good indicators of where service is most viable. Transit potential is described using the categories outlined in **Table 2-17**.

Table 2-17: Transit Potential Thresholds

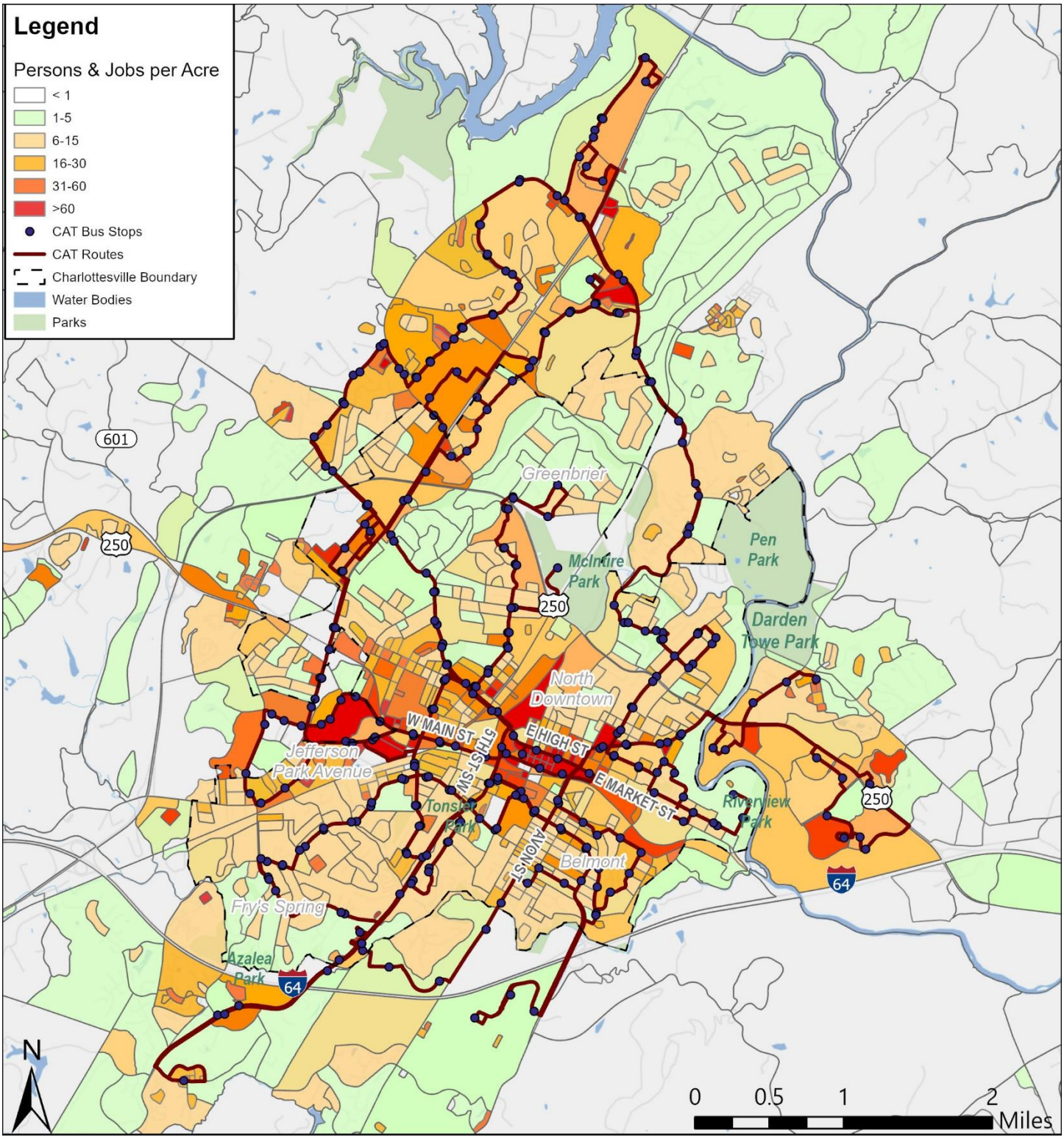
Category	People and Jobs per Acre
Negligible	<1
Low	1-5
Low-Moderate	6-15
Moderate	16-30
Moderate-High	31-60
High	>60

Source: TCRP Transit Capacity and Quality of Service Manual, 2nd Edition

Using data from the 2020 Census, population densities were calculated at the block level. Job densities were also calculated at the block level using Longitudinal Employer-Household Dynamics (LEHD) data from the Census Bureau. These two factors were then added together to calculate the overall job + population density for each Census block in Charlottesville and Albemarle County to determine each block's transit potential.

A map showing the region's transit potential is included in **Figure 2-18**. Areas with the highest transit potential include the downtown core, University of Virginia grounds, Pantops, and the US-29 corridor. With a notable exception of the Greenbrier neighborhood, most of the City of Charlottesville features job and population densities that can support regular transit service.

Figure 2-18: Transit Potential for the CAT Service Area



2020 Decennial Census/Longitudinal Employment Housing Dynamics (LEHD) Block-Level Data

Transit Propensity

A transit propensity index uses population, employment, and demographic characteristics to determine the variability and location of areas with high demand and need for transit service. The consideration of demographic statistics is critical, as certain subgroups tend to use and rely on transit more than others. For example, a neighborhood with many zero-car households will likely to be more transit-supportive than one where most households own one or more cars.

This transit propensity index was developed using the 2021 U.S. Census American Community Survey (ACS) block group-level data. Each block group was ranked based on demographic or employment characteristics (such as total population or total jobs). Each block group was then assigned a score for each characteristic based on its rank. Scores were weighted equally for each characteristic and combined to create a propensity score for each block group.

For this study, it is assumed that those living in areas with higher total population, as well as higher concentrations of seniors, youth, low-income households, zero-vehicle households, and disabled persons will have a greater propensity to use transit over other mobility options.

Table 2-18 outlines the top 10 block groups within the CAT service area for transit propensity.

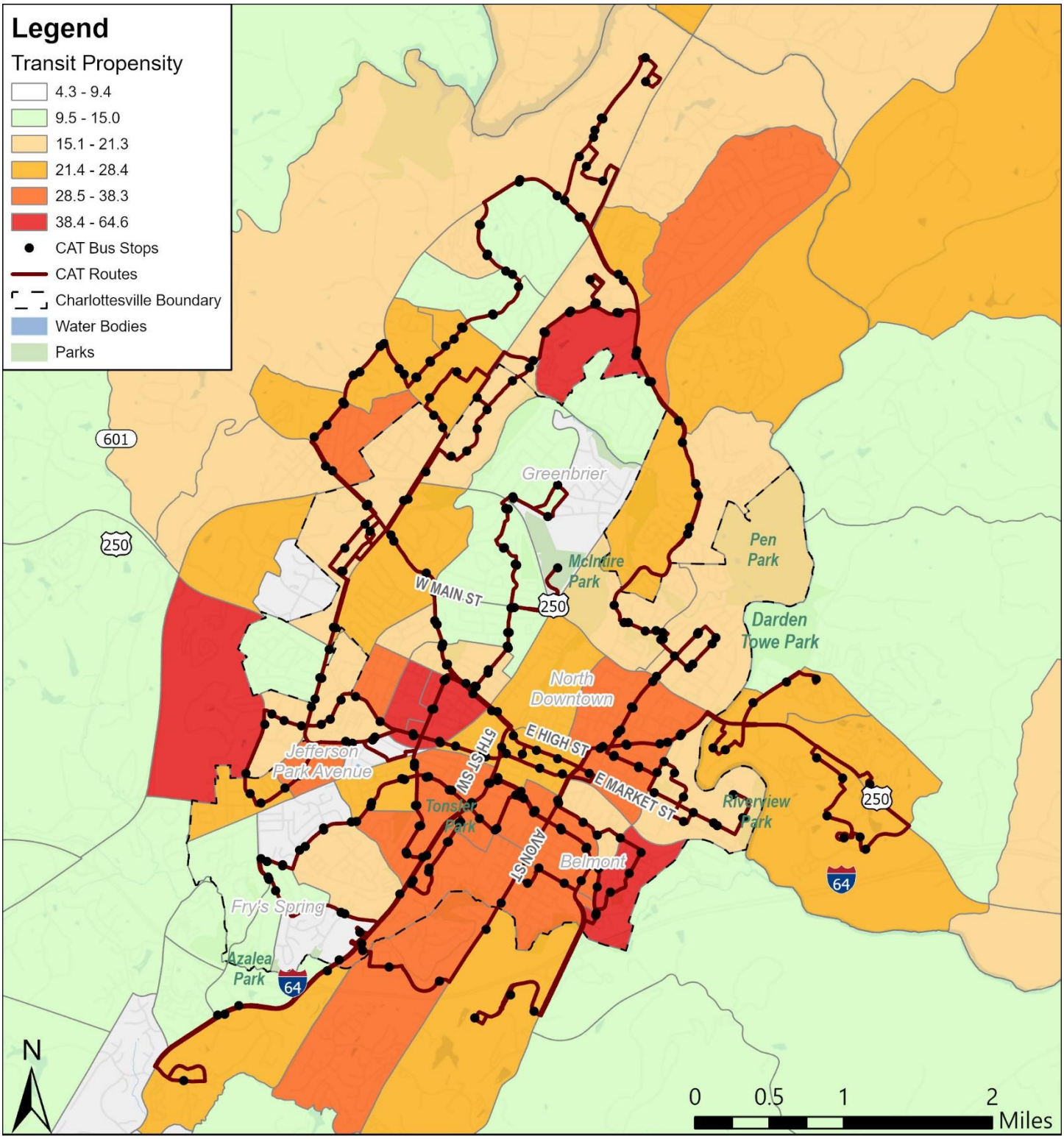
Table 2-18: Block Groups with High Transit Propensity

Rank	Census Tract	Block Group	Area	Propensity Score	Key Factors
1	106.03	1	Branchlands	64.6	• Seniors • Persons w/Disabilities
2	2.02	2	Venable (Southeast)	55.2	• Low-Income Households • Zero-Vehicle Households
3	109.04	2	UVA West Grounds	53.0	• Youth • Total Population
4	4.02	3	Belmont (East)	46.7	• Low-Income Households • Zero-Vehicle Households
5	2.02	1	10th & Page	45.6	• Zero-Vehicle Households • Low-Income Population • Persons w/ Disabilities
6	6	2	Jefferson Park Avenue (Central)	38.3	• Low-Income Households • Zero-Vehicle Households
7	4.01	1	Ridge Street (North) / Belmont (West) / North Downtown (South) / Fifeville (East)	37.4	• Zero-Vehicle Households • Low-Income Households
8	5.01	1	Fifeville (Central)	36.2	• Persons w/Disabilities • Low-Income Households • Zero-Vehicle Households
9	4.01	2	Ridge Street (Central/South)	34.6	• Zero-Vehicle Households • Total Population
10	2.02	3	Venable (South)	34.6	• Zero-Vehicle Households

A map showing the transit propensity scores by Census block group is shown in **Figure 2-19**. Overall, transit propensity is highest in Charlottesville's core. This includes downtown as well as areas surrounding the University of Virginia grounds. Neighborhoods east and south of downtown including Martha Jefferson, Belmont, Ridge Street, and Fifeville score highly as well.

Transit propensity is high in the city's core because these neighborhoods tend to have higher population densities, as well as higher rates of low-income households and households without access to vehicles. Several of the highest-scoring block groups also have high rates of youth population, seniors, or persons with disabilities. These factors make the core a good location for transit service, as it will serve populations that are more likely to use it.

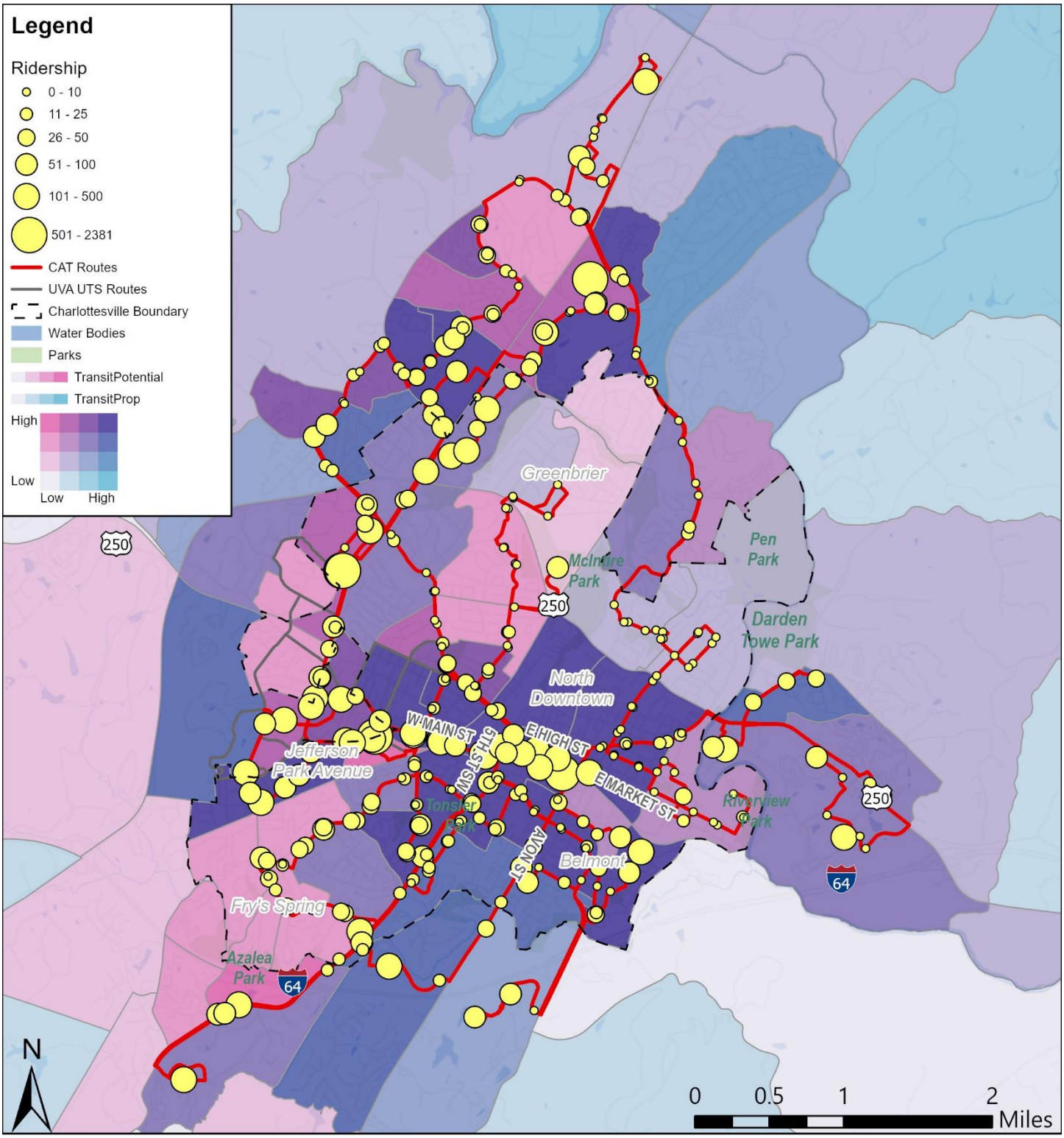
Figure 2-19: Transit Propensity Map for CAT Service Area



2021 American Community Survey (ACS) Block Group-Level Data

Figure 2-20 shows existing transit demand conditions for the CAT service area. This map was created by overlaying the service area with both the Transit Potential and Transit Propensity scores to show where the population and job density exists to support transit, show where populations who are more inclined to use transit are situated, and highlight areas where the two overlap. Pink shading indicates transit potential, with darker shades denoting higher potential, while blue shading indicates transit propensity. Purple shading highlights areas of both significant potential and propensity.

Figure 2-20: Transit Demand Map for CAT Service Area



2021 American Community Survey/2020 Longitudinal Employment Housing Dynamics Block Group-Level Data

2.2.2 Transit Demand and Underserved Area Opportunities for Improvement

While CAT provides adequate transit service coverage for most of the Charlottesville area, a few areas of potential unmet demand exist, including:

North Downtown

- This area has high potential and high propensity due to its central location. However, since all routes run east-west through downtown, this area lacks adequate coverage relative to its demand and location. The central location of this neighborhood leads it to have higher walk and bike mode splits which may dampen potential ridership numbers.

Venable

- This area has some of the highest population density in Charlottesville but doesn't have CAT service through the core of the neighborhood. Venable is currently served by UVA's University Transit Service (UTS), the university's transit system for staff, faculty, and students. The 14th Street NW corridor is a potential high-demand area to be considered for future service, but future services should account for the different and unique needs for transit service among students and staff compared to the general public.

UVA Grounds along Ivy Street

- This area has high potential and high propensity due to its high student population. There is an opportunity here to coordinate with UVA's University Transit Service to improve service in the area.

Routes 3 & 8

- Routes 3 and 8 currently operate with a 60-minute frequency. However, they rank among the highest-performing routes in terms of passengers per hour and passengers per mile. This indicates that they may be good candidates for increased frequency as a strategy to boost ridership.

There are also areas that have potentially more service than the demand warrants:

Greenbrier

- This area has low potential, low propensity, and low ridership because it is primarily a neighborhood of single-family homes that lack the necessary density to support frequent transit service.

2.3 Performance Evaluation

This section assesses the existing performance of CAT transit service against the performance standards identified in Chapter 1. The performance evaluation assesses CAT service at the system, route, and stop level to understand where the system could improve. This analysis informs opportunities for service improvements, presented immediately following this section.

2.3.1 Performance Evaluation

CAT's service performance was evaluated based on ridership, cost efficiency, safety, and system accessibility metrics. A peer comparison yields additional insight into how Charlottesville is performing relative to other agencies with similar composition. The results of this evaluation are discussed in the following sections.

System Evaluation

CAT's ridership, cost, and service data were collected from NTD for the five-year period from 2017 to 2021. **Table 2-19** summarizes the operating measures for all routes. The operating measures were then used to calculate systemwide performance measures, shown in **Table 2-20**.

Findings from the five-year retrospective are discussed below:

- Operating expenses continue to grow year-over-year, with an overall 24% increase from 2017 to 2021. This can be attributed to a 21.3% increase in operator pay during that period, as well as the addition of 10 additional operators to facilitate the expansion of service.
- Passenger trips have declined every year. This trend started before, but was significantly accelerated by, the COVID-19 pandemic. The number of trips annually has declined nearly 72% between 2017 and 2021.
- In response to the pandemic and a shortage of operators, CAT has been operating a reduced level of service since April 2020, which has reduced the number of revenue hours and miles operated.

Table 2-19: Operating Measures Five-Year Trend

Operational Measure	2017	2018	2019	2020	2021	2022
Operating Expenses	$7,421,700	$7,915,506	$8,435,078	$8,264,887	$9,211,327	$9,836,029
Fare Revenues	$457,391	$667,346	$598,735	$538,024	$266,800	$80,040
Annual Unlinked Trips	2,189,612	2,052,376	1,871,952	1,323,176	617,010	1,156,514
Annual Vehicle Revenue Miles	1,005,147	962,803	976,417	912,447	730,629	712,242
Annual Vehicle Revenue Hours	97,665	103,824	108,033	99,096	74,987	74,479

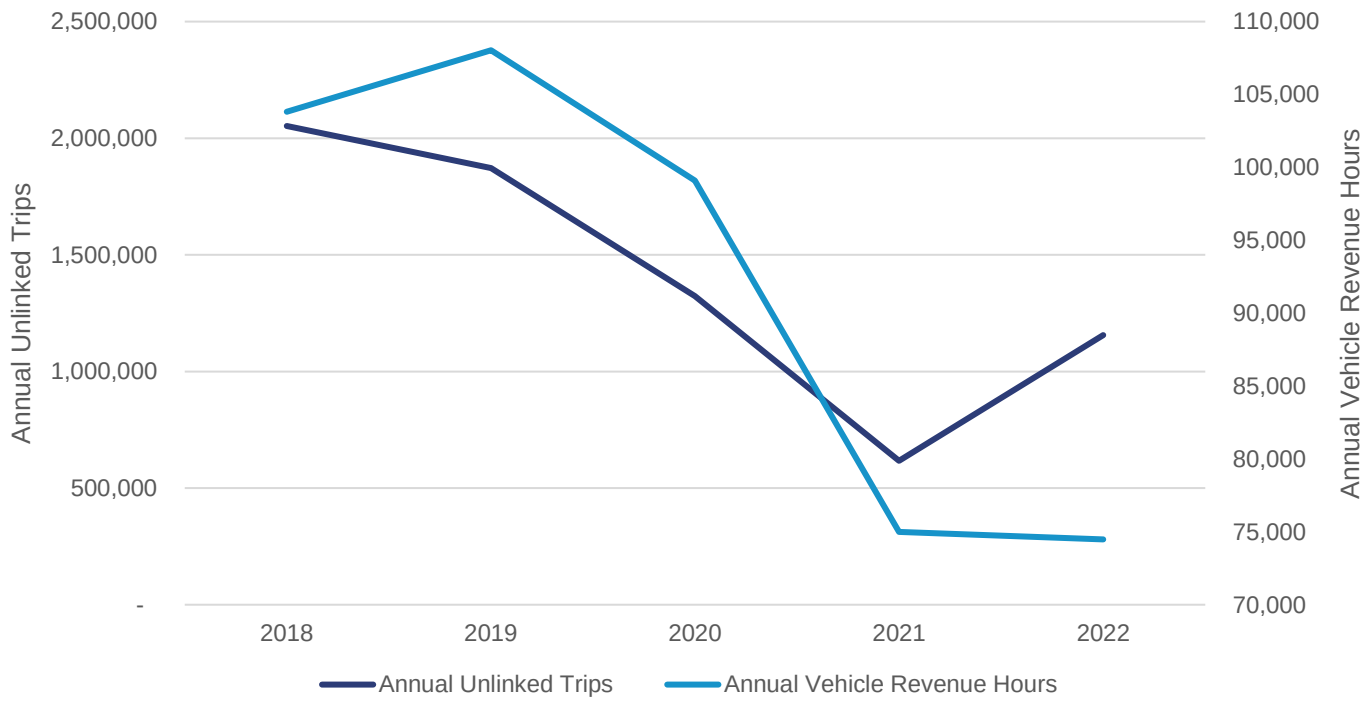
Source: National Transit Database (NTD)

Table 2-20: Performance Measures Five-Year Trend

Performance Measure	2017	2018	2019	2020	2021	2022
Operating Expenses per Passenger Trip	$3.39	$3.86	$4.51	$6.25	$14.93	$8.50
Operating Expenses per Vehicle Revenue Mile	$7.38	$8.22	$8.64	$9.06	$12.61	$13.81
Operating Expenses per Vehicle Revenue Hour	$75.99	$76.24	$78.08	$83.40	$122.84	$132.06
Passenger Trips per Vehicle Revenue Mile	2.2	2.1	1.9	1.5	0.8	1.6
Passenger Trips per Vehicle Revenue Hour	22.4	19.8	17.3	13.4	8.2	15.5
Farebox Recovery Ratio	6.2%	8.4%	7.1%	6.5%	2.9%	0.8%

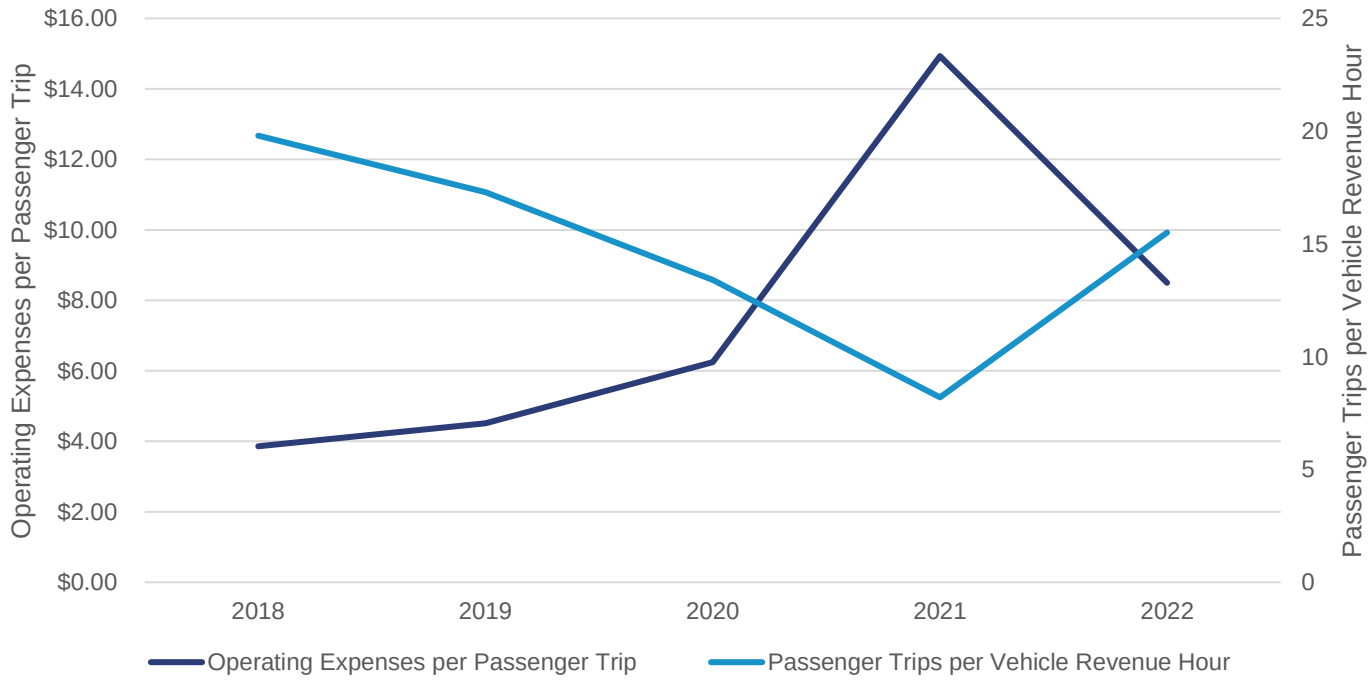
Source: National Transit Database (NTD)

Figure 2-21: Passenger Trips and Revenue Hours Five-Year Trend



Source: National Transit Database (NTD)

Figure 2-22: Operating Expenses per Passenger Trip & Passenger Trips per Revenue Hour Five-Year Trend



Source: National Transit Database (NTD)

Peer Comparison

A peer comparison was conducted to understand the efficiency and effectiveness of CAT service with respect to similar agencies across the country. The peer comparison provides a quantitative comparison between agencies with similar profiles to highlight opportunities to improve Charlottesville's transit service and identify challenges in the region. To identify transit agency peers, the selection process involved data from the National Transit Database and a review of local transit development plans. Peers ultimately selected possess several, but not always all, of the following selection criteria:

Similar city characteristics:

- Urban area population is between 50,000-150,000
- System serves a college or multiple colleges with total undergraduate enrollment between 20,000-30,000 students

Similar services provided:

- Vehicle revenue miles between 600,000–1,000,000 (2022)
- Vehicle revenue hours between 60,000–100,000 (2022)
- Provides fixed-route service or fixed-route deviated service

Similar agency makeup:

- Total facilities between one and five
- Only Virginia agencies

The results of the peer comparison are included in **Table 2-21**. Takeaways from the peer analysis are below:

- CAT's operating expenses are the highest per passenger trip, per revenue mile, and per revenue hour of all agencies examined.
- CAT's ridership compares favorably to its peer agencies with the highest rate of passenger trips per revenue mile and an above-average rate of passenger trips per revenue hour.

Table 2-21: Operating Expense and Passenger-Based Peer Comparison

Performance Measure	CAT	Peer Average	Blacksburg Transit	Williamsburg Area Transit Authority	Harrisonburg Transit	Greater Lynchburg Transit Company
Operating Expenses per Passenger Trip	$8.50	**$7.31**	$3.05	$8.34	$4.36	$13.49
Operating Expenses per Vehicle Revenue Mile	$13.81	**$7.67**	$9.49	$5.96	$7.87	$7.36
Operating Expenses per Vehicle Revenue Hour	$132.02	**$94.47**	$99.55	$92.93	$79.55	$105.83
Passenger Trips per Vehicle Revenue Mile	1.62	**1.51**	3.11	0.71	1.8	0.42
Passenger Trips per Vehicle Revenue Hour	15.53	**17.01**	32.63	11.14	18.25	6.01

Source: 2022 National Transit Database (NTD)

Route Evaluation

Operating Statistics

Route level performance was evaluated to understand productivity at a more detailed level. CAT's operating statistics and ridership data were reviewed, and performance metrics were calculated for every route in operation.

Operating statistics by route are shown in **Table 2-22**, highlighting the routes that require the most resources in terms of daily revenue hours and revenue miles.

Table 2-22: Service Performance by Route

Route	Daily Revenue Hours		Daily Revenue Miles	
	Total	Rank	Total	Rank
Route 1	16:15	8	171.9	7
Route 2	15:55	11	320.9	3
Route 3	16:30	6	156.6	8
Route 4	18:35	5	195.5	6
Route 5	48:00	1	547.4	1
Route 6	16:00	9	139.3	10
Route 7	48:00	1	266.8	4
Route 8	12:00	12	107.9	12
Route 9	21:30	4	120.6	11
Route 10	16:00	9	142.3	9
Route 11	16:30	6	332.3	2
Trolley	31:35	3	201.9	5

Service Productivity

Service productivity by route is shown in **Table 2-23**. Metrics where routes perform below the systemwide averages (13.4 riders per revenue hour or 1.56 riders per revenue mile) are highlighted in orange.

The routes with the highest productivity are Route 7, the Trolley, and Route 8. These routes connect downtown Charlottesville with two of the region's largest job centers—the University of Virginia and the US-29 corridor.

Table 2-23: Service Productivity by Route

Route	Daily Passengers	Riders/Revenue Hour	Riders/Revenue Mile
Route 1	117	7.2	0.68
Route 2	197	12.4	0.61
Route 3	276	16.8	1.77
Route 4	225	12.1	1.15
Route 5	459	9.6	0.84
Route 6	214	13.4	1.54
Route 7	1,022	21.3	3.83
Route 8	235	19.6	2.18
Route 9	73	3.4	0.60
Route 10	184	11.5	1.30
Route 11	168	10.2	0.50
Trolley	755	23.9	3.74

Financial Performance

Table 2-24 shows the financial performance for each route in terms of operating cost and cost per rider. Routes with costs above the system averages ($11.88 per rider) are highlighted in orange.

Key findings are described below.

- The least efficient routes in terms of cost per passenger are Route 9 ($36.18), Route 1 ($17.06) and Route 5 ($12.85). Only two routes have a cost per passenger in excess of $15.00, indicating that the system overall is performing relatively well.
- The most efficient routes in terms of cost per passenger are the Trolley ($5.14), Route 7 ($5.77), and Route 8 ($6.27).

Table 2-24: Financial Performance by Route

Route	Daily Operating Cost	Cost per Rider
Route 1	$1,996.15	$17.06
Route 2	$1,955.20	$9.92
Route 3	$2,026.86	$7.34
Route 4	$2,282.78	$10.15
Route 5	$5,896.32	$12.85
Route 6	$1,965.44	$9.18
Route 7	$5,896.32	$5.77
Route 8	$1,474.08	$6.27
Route 9	$2,641.06	$36.18
Route 10	$1,965.44	$10.68
Route 11	$2,026.86	$12.06
Trolley	$3,879.70	$5.14

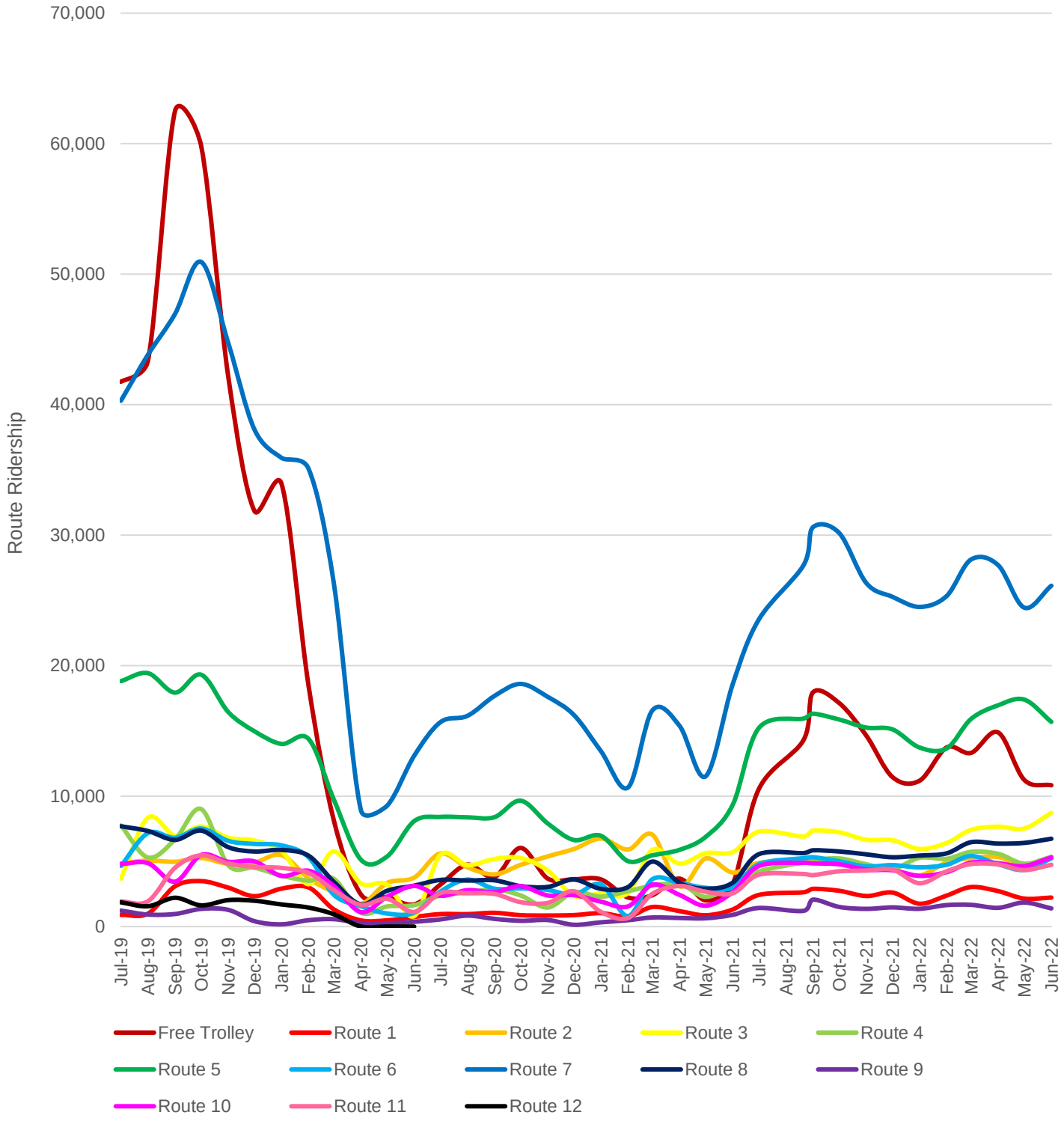
Monthly Ridership

CAT maintains monthly ridership data records for every route in the system. To understand how each route has performed relative to the system over time, ridership data from July 2019 through June 2022 is displayed in **Figure 2-23**.

The sample period captures pre-pandemic ridership levels, the fluctuations over the course of the pandemic, and pandemic recovery. Key trends are identified below:

- Ridership decreased to its lowest point in April 2020, where it was only 15.9 percent of the ridership observed in October 2019. However, most months have seen an increase in ridership since.
- Although ridership has seen significant rebounds, CAT has not fully recovered to pre-pandemic levels. May 2022 ridership was 67 percent of May 2019 levels, and June 2022 ridership was 77 percent of June 2019. Service has been modified over the course of the pandemic, which has likely influenced ridership levels.
- Several routes have increased in ridership totals since before the pandemic (September 2019 compared to September 2021). Routes with the greatest increases in ridership are Route 9 (114 percent), 10 (41 percent), and 3 (6 percent).
- Routes that have seen large ridership losses over the three-year study period include the Trolley (71 percent), Route 7 (35 percent), Route 4 (24 percent), and Route 6 (22 percent). These ridership losses can likely be attributed to changes in frequency between pre- and post-COVID-19 service, as many CAT routes are now operating with less frequency.

Figure 2-23: Monthly Ridership by Route



Source: CAT

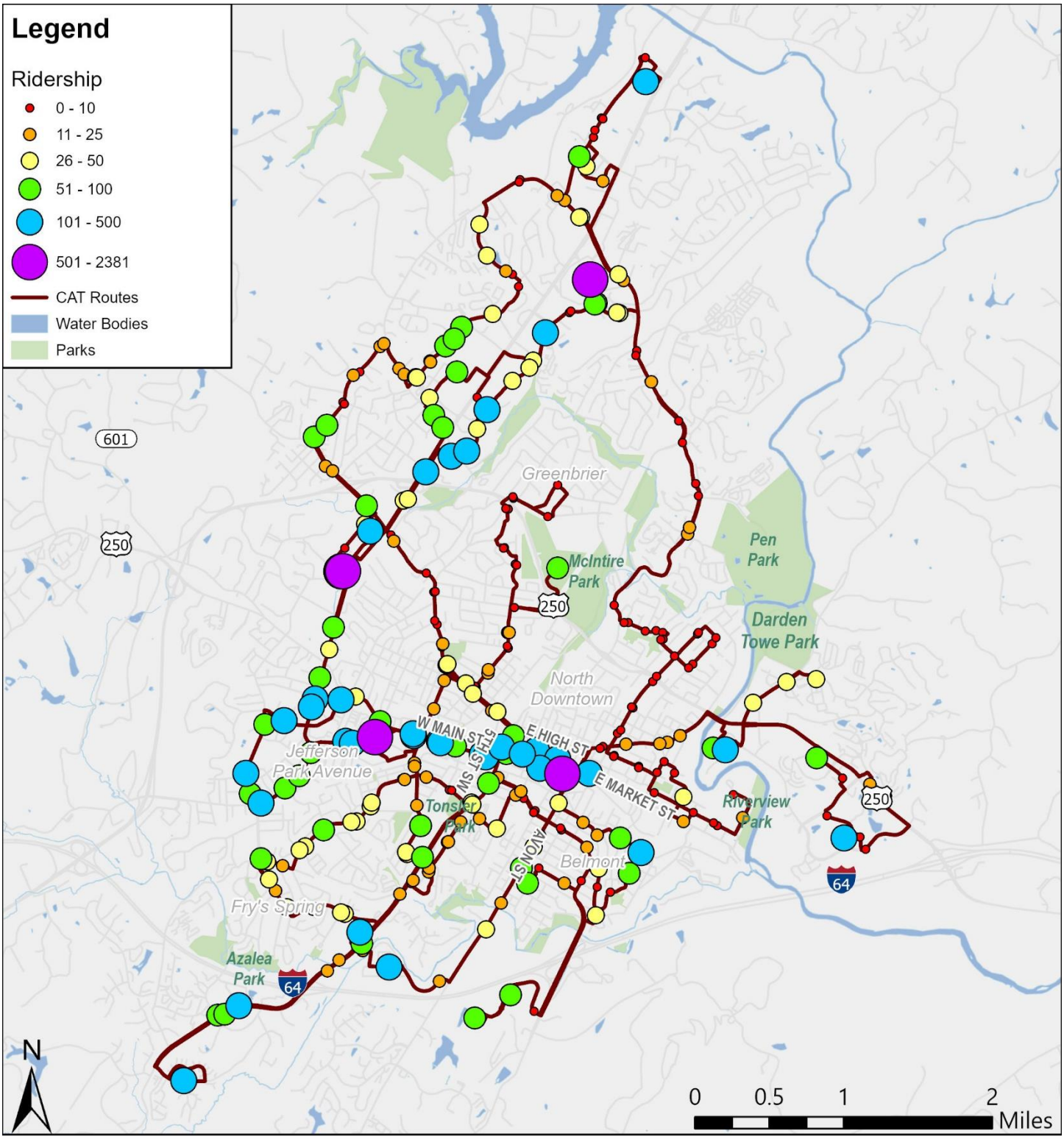
Bus Stop-Level Evaluation

Stop-level ridership data was used to visualize ridership levels across all CAT routes. Ridership maps help pinpoint productive segments of systems to better understand where passengers are boarding and alighting vehicles.

Figure 2-24 shows average weekday boardings and alightings within the CAT service area. Observations include:

- The highest ridership stop—with 2,381 average daily boardings and alightings—is the Downtown Transit Station. This emphasizes the importance of transfers between routes.
- Major areas of high ridership activity include:
  - Around the Downtown Mall (1,642 boardings)
  - Jefferson Park Avenue (926 boardings)
  - Barracks Road Shopping Center (847 boardings)
  - West Main Street (673 boardings)
  - Fashion Square Mall, served by routes 5, 7, & 11 (394 daily boardings)
- The lowest ridership areas include:
  - The portion of Route 11 between East High Street and Hillsdale Drive (75 daily boardings at 31 stops)
  - The portion of Route 9 through the Greenbrier neighborhood (97 daily boardings at 20 stops; 1/3 of boardings are at the YMCA)
  - The portion of Route 1 east of Locust Avenue (111 daily boardings at 17 stops)

Figure 2-24: Average Weekday Ridership by Stop



FY2022 CAT Ridership

System Safety

CAT has Safety Performance Targets as a benchmark for the safety performance of the transit system. The targets utilize data collected and provided to the National Transit Database. Thresholds utilize totals as well as rates (total per 100,000 vehicle revenue miles). The CAT Public Transportation Agency Safety Plan (dated May 2022) targets are shown in **Table 2-25**.

Table 2-25: Safety Performance Targets

Target Variable	Metric	Target Value
Fatalities	Total number of reportable fatalities per year	0
	Rate per total vehicle revenue miles by mode	0
Injuries	Total number of reportable injuries per year	2
	Rate per total vehicle revenue miles by mode	Less than .5 injuries per 100,000 vehicle revenue miles
Safety Events	Total number of safety events per year	10
	Rate per total vehicle revenue miles by mode	Less than 1 reportable event per 100,000 vehicle revenue miles
Vehicle Failures	Distance between major failures	10,000 miles
	Distance between minor failures	3,200 miles

The results of reportable events, fatalities, and injuries for the past five years is shown in **Table 2-26** (totals) and **Table 2-27** (rates). CAT is currently meeting its standards for safety.

Table 2-26: Safety Performance Measure Totals

	2018	2019	2020	2021	2022
Reportable Events	2	0	2	0	1
Fatalities	0	0	0	0	0
Injuries	1	0	1	0	1

Table 2-27: Safety Performance Measure Rates

	2018	2019	2020	2021	2022
Reportable Events	0.21	0	0.22	0	0.14
Fatalities	0	0	0	0	0
Injuries	0.10	0	0.11	0	0.14

System Accessibility

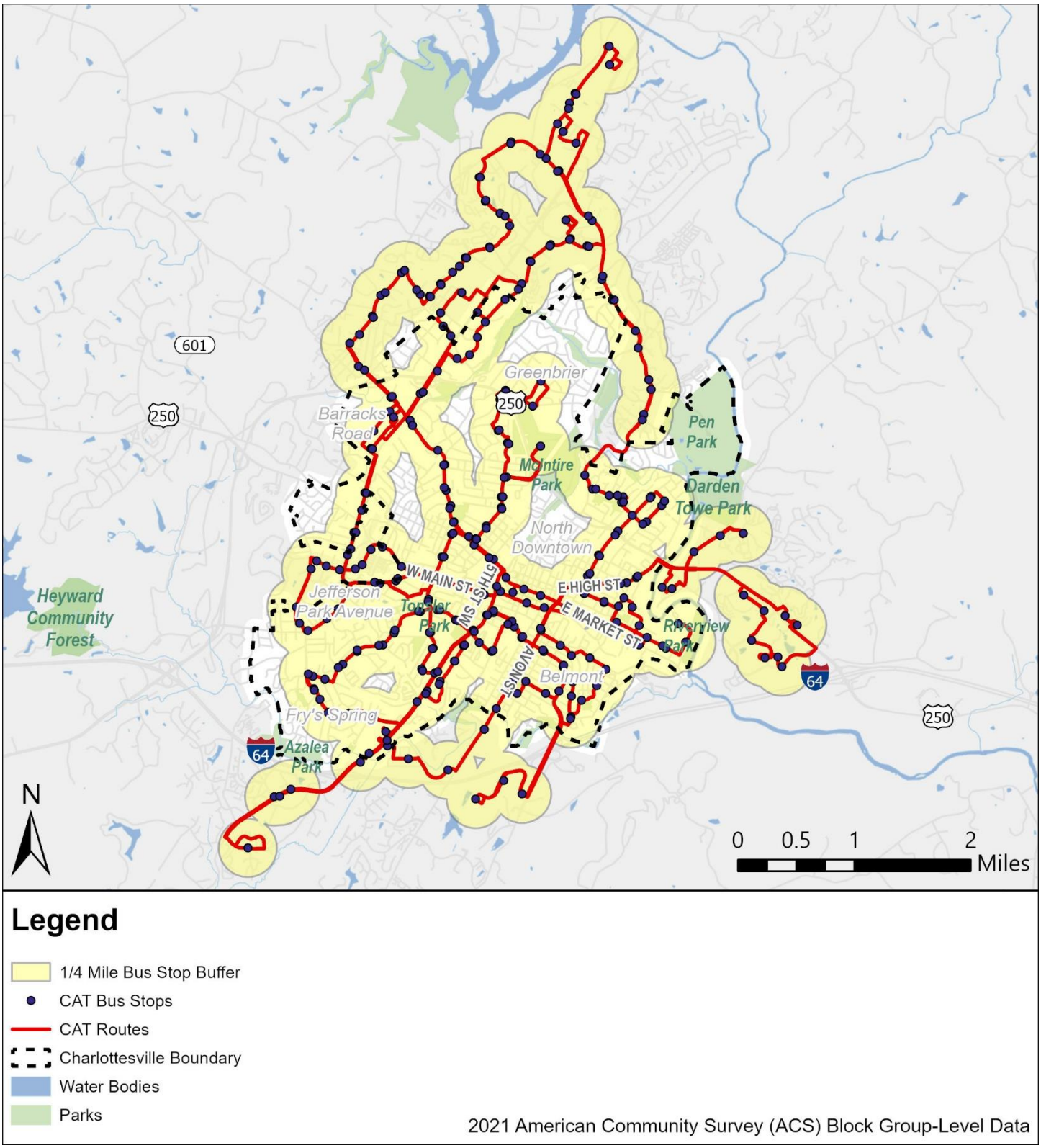
CAT routes serve approximately 65,485 residents within ¼ mile of a bus stop, as outlined in **Table 2-28**, and account for around 75 percent of the population included in the service area reported in the National Transit Database. CAT routes provide access to approximately 65,610 jobs within ¼ mile of a bus stop, or around 58% of all jobs in Charlottesville and Albemarle County.

While most of the City of Charlottesville does have access to transit within ¼ mile, certain areas north of downtown have limited coverage, as do a few areas on the city's periphery to the east and west, as shown in **Figure 2-25**.

Table 2-28: Population and Jobs by Route

Route	Population		Jobs	
	Total	Density (per acre)	Total	Density (per acre)
Route 1	9,084	5.9	16,086	10.4
Route 2	8,923	6.8	12,322	9.3
Route 3	13,928	7.6	16,124	8.8
Route 4	13,576	9.3	28,486	19.6
Route 5	12,944	6.0	11,116	5.1
Route 6	12,838	10.2	28,613	22.7
Route 7	17,396	8.3	42,404	20.3
Route 8	9,111	6.4	19,027	13.3
Route 9	11,672	8.1	30,759	21.3
Route 10	7,033	5.0	18,950	13.5
Route 11	9,748	5.7	15,436	9.1
Trolley	16,702	14.1	34,402	29.0
Network	**65,485**	**6.6**	**65,610**	**6.6**

Figure 2-25: CAT System Coverage



Specific Performance Measurements Identified by State Policy

DRPT allocates funding for transit agency operating assistance through an allocation process pursuant to the Code of Virginia and Commonwealth Transportation Board (CTB) policy. The *DRPT Performance-Based Operating Assistance Allocation Guidance (Fiscal Year 2023 July 1, 2022 – June 30, 2023)* document describes the methodology for allocating state operating assistance. The performance-based operating allocation methodology is based on a combination of an agency's sizing and performance metrics.

Sizing

- Operating cost
- Ridership
- Vehicle revenue hours
- Vehicle revenue miles

For each performance metric, three years of historical data plus the most recent year of data is used to calculate performance trends of each agency and statewide.

Performance Adjustments

- Operating cost per passenger
- Operating cost per vehicle revenue hour
- Operating cost per vehicle revenue mile
- Passengers per vehicle revenue hour
- Passengers per vehicle revenue mile

2.3.2 Performance-Based Opportunities for Improvement

Performance measures were evaluated at the route level to determine opportunities for improvement.

Passengers per Revenue Hour

CAT's service standard is as follows:

- Review and modify, if possible, services that exhibit less than 60 percent of average of route type.
- Review and modify, if warranted, services between 60 percent and 80 percent of average of route type.

Because CAT operates only 12 routes, routes were evaluated on a systemwide basis rather than by route type. While routes have differing characteristics and performance, the overall sample is not large enough to make meaningful comparisons based on the classifications of Key (3 routes), Local (8 routes) and Lifeline (1 route).

The system average passengers per revenue hour is 13.44, setting a 60 percent threshold at 8.06 and an 80 percent threshold at 10.75. Routes not meeting these thresholds are outlined in **Table 2-29**.

Table 2-29: Passengers per Revenue Hour Opportunities for Improvement by Route

Route	Route Type	Passengers per Revenue Hour	Percent of System Average
Route 9	Local	3.39	25.2%
Route 1	Local	7.21	53.6%
Route 5	Local	9.56	71.1%
Route 11	Lifeline	10.16	75.6%

Passengers per Revenue Mile

CAT's service standard is as follows:

- Review and modify, if possible, services that exhibit less than 60 percent of average of route type.
- Review and modify, if warranted, services between 60 percent and 80 percent of average of route type.

Routes were evaluated compared to systemwide rather than route type averages.

The system average passengers per revenue mile is 1.56, setting a 60 percent threshold at 0.94 and an 80 percent threshold at 1.25. Routes not meeting these thresholds are outlined in **Table 2-30**.

Table 2-30: Passengers per Revenue Mile Opportunities for Improvement by Route

Route	Passengers per Revenue Mile	Percent of System Average
Route 11	0.50	32.1%
Route 9	0.60	38.4%
Route 2	0.61	39.1%
Route 1	0.68	43.6%
Route 5	0.84	53.8%
Route 4	1.15	73.7%

Cost per Passenger

CAT's service standard is as follows:

- Review and modify, if possible, services that exhibit less than 60 percent of route type average.

The system average cost per passenger is $11.88, setting a 60% threshold at $19.01. Only one route does not meet this threshold: Route 9 ($36.18).

2.4 Operating and Network Efficiency Evaluation

2.4.1 Efficiency Evaluation

Frequency

Most CAT routes operate on 30-minute (Routes 2, 5, & 7) or 60-minute (Routes 1, 3, 6, 8, 10, & 11) headways, though a few operate with exceptions, as outlined in **Table 2-30**. Routes 4 and 9 operate every 30 minutes during morning hours and every 60 minutes later, while the Trolley operates every 25 minutes.

Service previously operated on a more frequent basis, until service reductions were implemented in response to the COVID-19 pandemic in 2020.

Table 2-30: Span of Service and Frequency by Route

Route	Service Start	Service End	Frequency
1	6:15 AM	10:27 PM	60 min
2	6:35 AM	10:30 PM	30 min
3	6:00 AM	10:27 PM	60 min
4	6:25 AM	10:27 PM	30 min until 8:30 AM, 60 min afterward
5	6:30 AM	10:30 PM	30 min
6	6:30 AM	10:27 PM	60 min
7	6:20 AM	10:35 PM	30 min
8	6:30 AM	6:27 PM	60 min
9	7:00 AM	10:27 PM	30 min until 10:30 AM, 60 min afterward
10	6:30 AM	10:27 PM	60 min
11	6:00 AM	10:27 PM	60 min
Trolley	6:40 AM	10:30 PM	25 min

Span

CAT's regular weekday service begins at 6 AM and ends by 10:30 PM. **Figure 2-26** shows how both ridership and transit trips are aligned over the weekday span of service, with a steady increase throughout the day before decreasing in the late afternoon and evening. Unlike some systems, CAT does not have very pronounced morning and afternoon peak periods but has relatively steady ridership throughout the day. On Saturdays, ridership steadily increases until a peak during the 3 PM hour, before declining steadily for the rest of the service day (**Figure 2-27**). Service does not operate on Sundays.

Figure 2-26: Weekday Ridership and Transit Trips by Hour

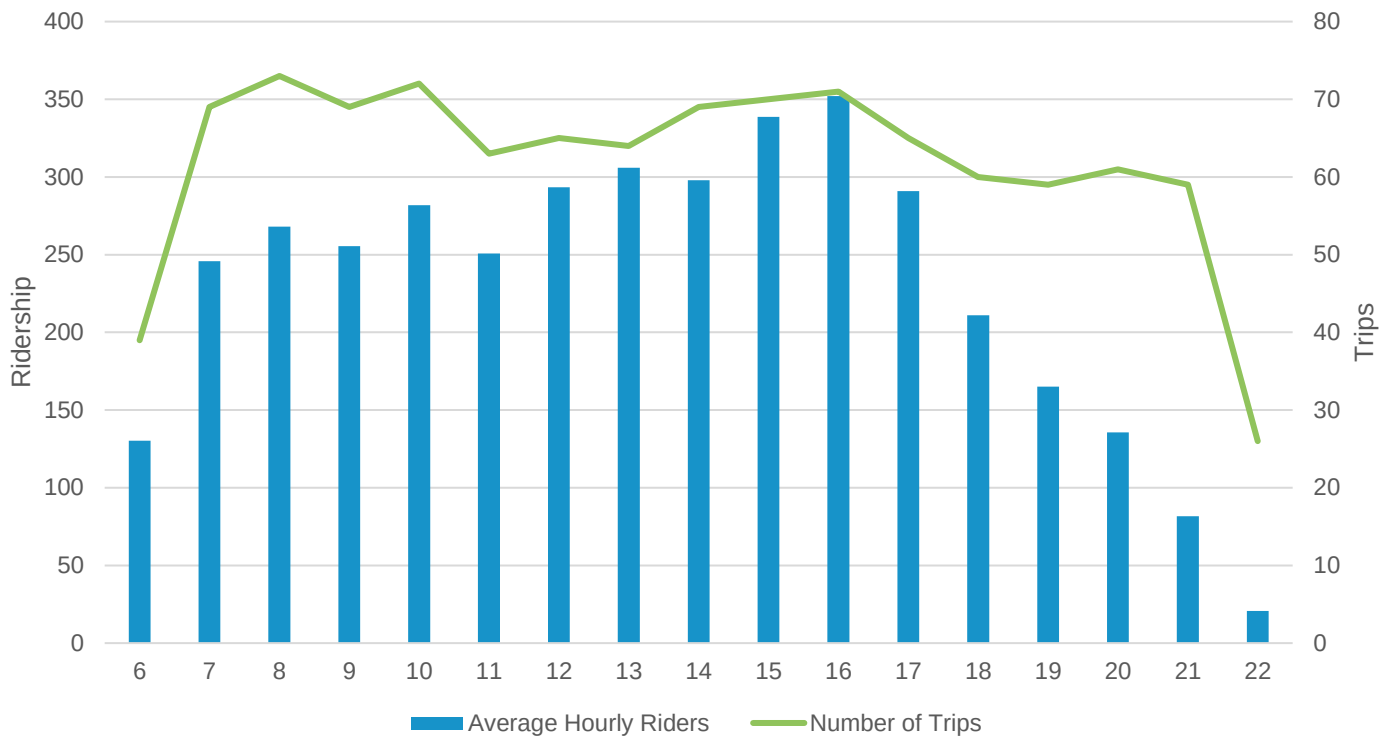


Figure 2-27: Saturday Ridership and Transit Trips per Hour

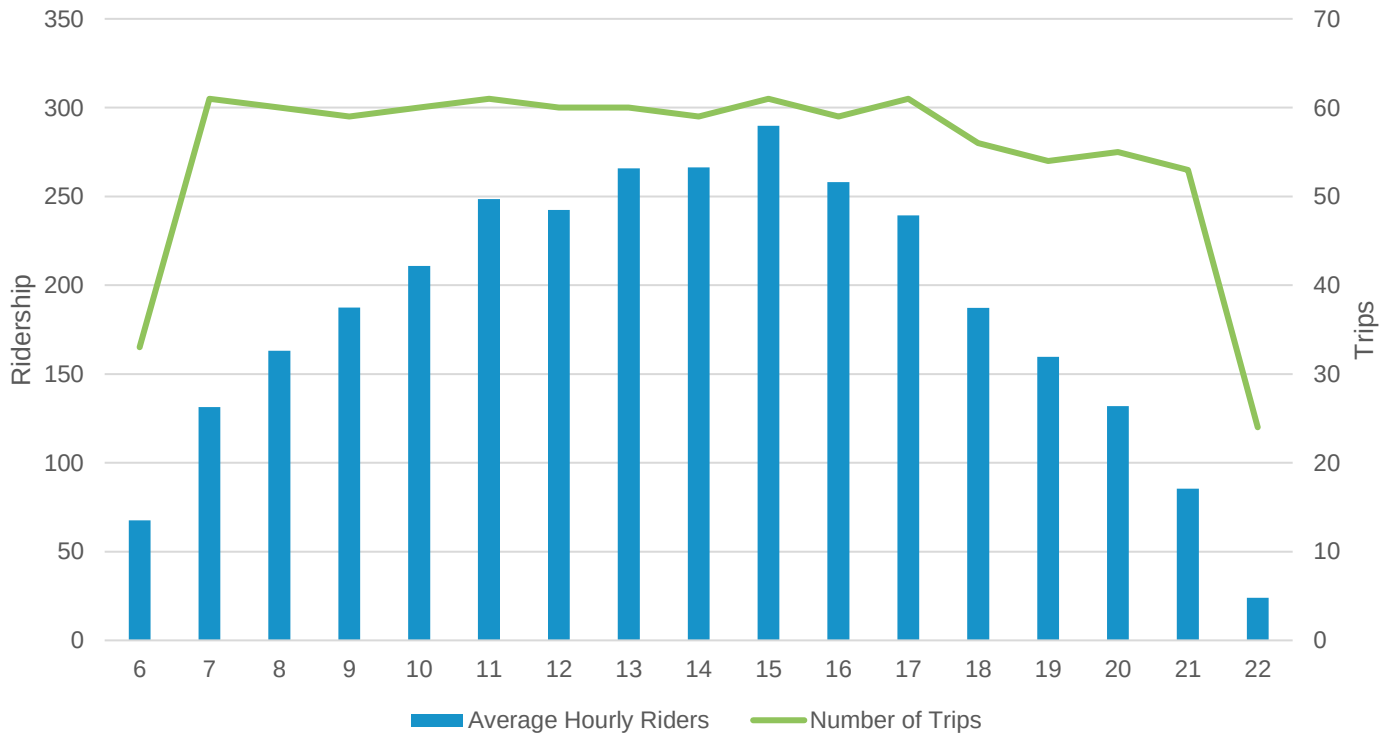


Figure 2-28: Weekday Ridership per Route by Time of Day

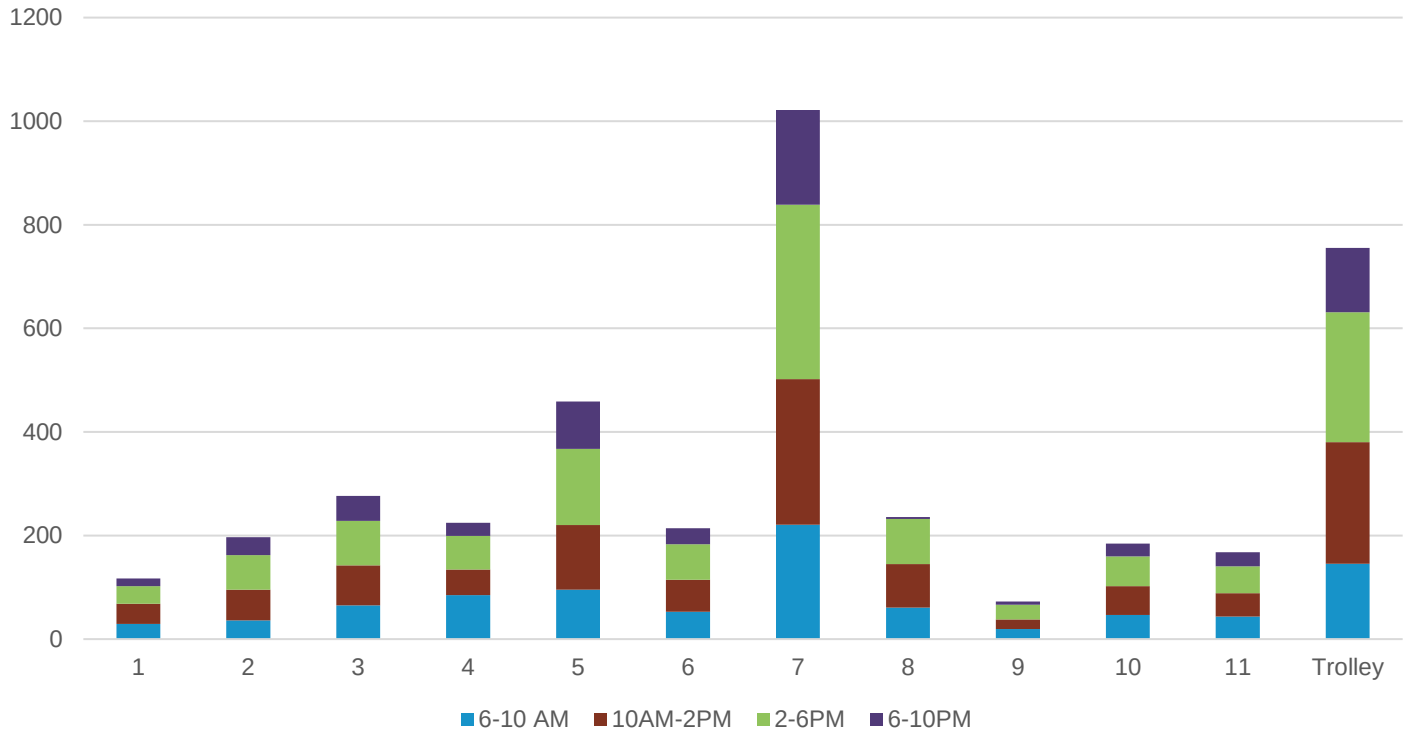
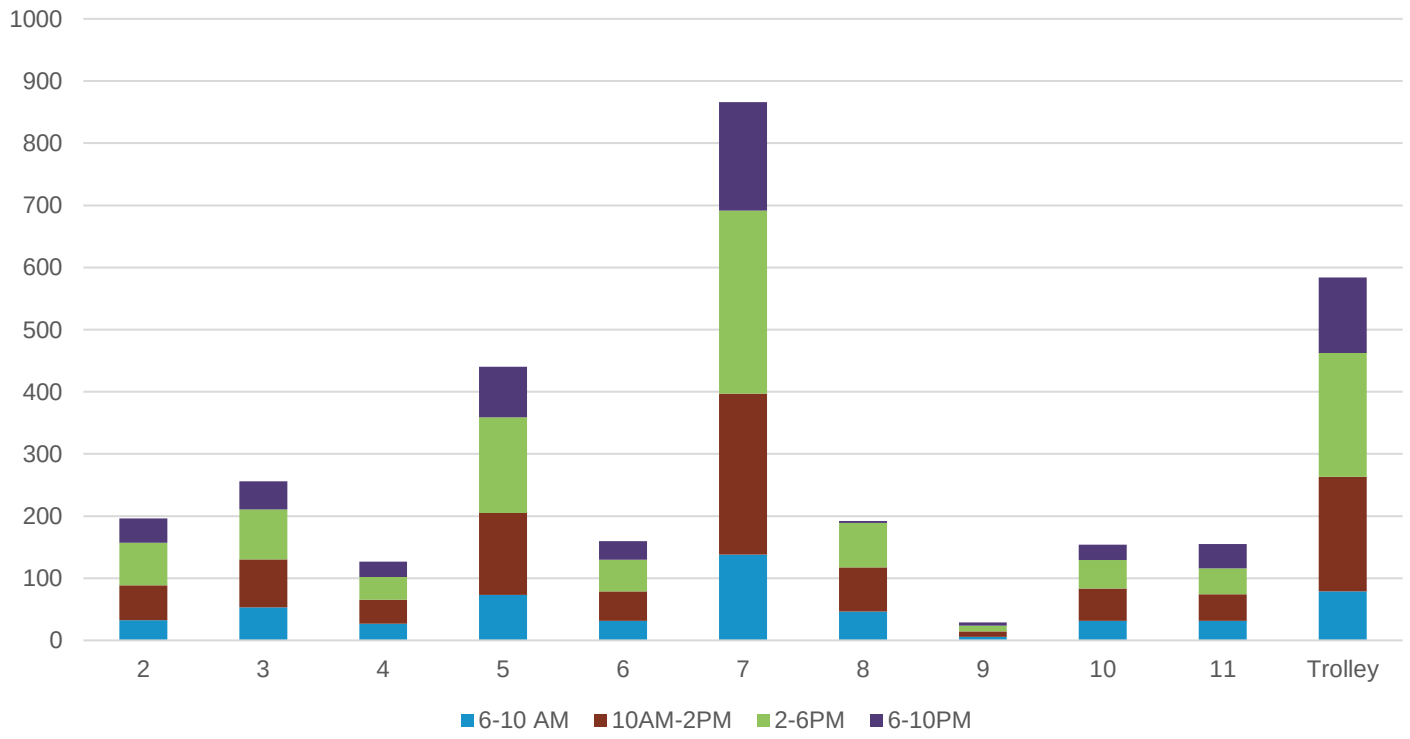


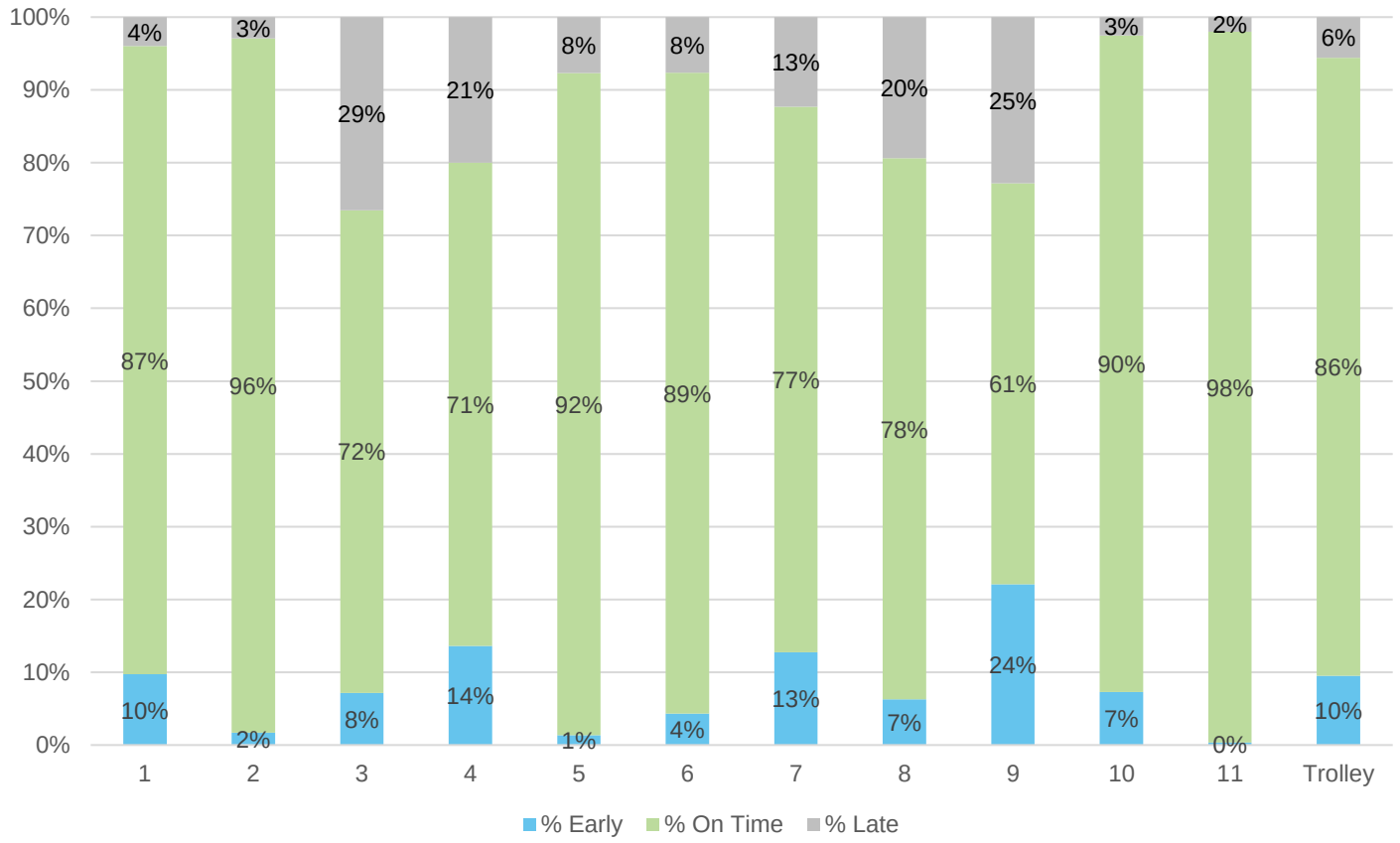
Figure 2-29: Saturday Ridership per Route by Time of Day



Reliability

Reliability, as measured by on-time performance (OTP), is a key indicator of service quality. At CAT, a vehicle is considered to be "on-time" if it departs a timepoint between 0 and 5 minutes after the scheduled time, with no trips leaving early. **Figure 2-30** shows on-time performance by route for FY 2023. CAT's service standard sets a threshold of 90% on-time service.

Figure 2-30: On-Time Performance by Route



Route 9 has the lowest on-time performance in the CAT system (61 percent), followed by Route 4 (71 percent), Route 3 (72 percent), and Route 7 (77 percent).

Only four routes meet or exceed the service standard of 90 percent on-time: Route 11 (98 percent), Route 2 (96 percent), Route 5 (92 percent), and Route 10 (90 percent).

Particularly significant is the prevalence of early performance (including nearly a quarter of timepoints on Route 9). While there are many factors out of a transit provider's control that can contribute to late performance, early performance can be mitigated through operator action—bus operators can pull over at a safe location and momentarily wait to get back on schedule. By controlling early performance, service reliability and the customer experience can be improved. Operators are not solely responsible for controlling on-time performance, however. Over time, route schedules can be modified to bring expected service more in line with the actual service delivered.

2.4.2 Efficiency Based Opportunities for Improvement

The results of the efficiency analysis indicate that there are several potential opportunities to improve the transit network:

- Developing a focus on on-time performance is one potential opportunity to improve the reliability of CAT service and make it more predictable for customers. While OTP is subject to external factors and is thus not fully controllable, some aspects (particularly early performance) can be improved through CAT intervention. Detailed analysis can determine specific times of day or segments of routes that present problem areas. It can also identify operators with low performance, presenting opportunities for management to address early/late performance on an individual level.
- CAT has not operated any service on Sundays since the start of the COVID-19 pandemic. The reintroduction of Sunday service was commonly cited by riders, non-riders, and stakeholders as one of the things they would most like to see changed about the system.

2.5 Analysis of Opportunities to Collaborate with Other Agencies and Stakeholders

Coordination among transit agencies and other transportation providers can yield greater efficiencies for both agencies and passengers without additional costs. It is in the best interests of all involved agencies when services are well coordinated and work together. This section identifies each of the operators in the area before discussing the opportunities to improve collaboration with the goal of improving mobility in the area.

2.5.1 Collaboration Analysis

Local Institutions

University of Virginia

CAT has existing partnerships with the University of Virginia. Before service went fare-free for all customers in 2020, an arrangement allowed UVA-affiliated persons to ride CAT buses for free with their UVA ID.

CAT services the UVA grounds via Route 7 and the Free Trolley route.

UVA also operates the University Transit Service (UTS) to facilitate transportation around its grounds. There are potentially opportunities for CAT and UTS to collaborate to improve service.

Transit Providers

An inventory of other transit providers that operate within the CAT service area was conducted to identify potential for collaboration.

Jaunt

Jaunt is a publicly-owned private transportation company that serves the greater Charlottesville area including the City of Charlottesville, Albemarle County, Louisa County, Fluvanna County, Greene County, Buckingham County, and Nelson County. Jaunt provides ADA/paratransit service, demand response service, and commuter service. Jaunt and CAT already have a service partnership as Jaunt is contracted by CAT to provide ADA paratransit service.

Jaunt ADA/Demand Response Service

The demand-response service has two different forms of operation: link service and circulator service. Circulator service operates intra-jurisdictionally, transporting passengers anywhere within their County of origin. The circulator service operates continuously, often between the hours of 8:00 AM and 4:00 PM.

The link services are akin to commuter services which transport riders from the outer counties into Charlottesville and urban areas of Albemarle County, overlapping with CAT's service area. The link services

have a morning pick-up period within the outer County and run service into Charlottesville, and a return pick-up period in the afternoon where patrons are transported back to their County of origin. The link service run classes are not operated continuously, with an approximately six- to ten-hour break between morning and afternoon service.

Both the circulator and link services are “curb-to-curb” meaning passengers will be picked up and dropped off at the addresses specified upon the order of the ride.

Table 2-31: Jaunt Services

Service	Area	Days	Departure	Return
ADA Service	Charlottesville, Urban Albemarle County	Monday – Friday; Saturday	6:15 am – 11:00 pm; 7:15 am – 10:00 pm	
20 North Link	Albemarle County, Charlottesville	Monday – Friday	7:30 am – 8:30 am	3:00 pm – 3:30 pm
29 North Link	Albemarle County, Charlottesville	Monday – Friday	6:22 am – 8:13 am	4:23 pm – 6:16 pm
Albemarle Demand Response	Albemarle County, Charlottesville	Monday – Friday	10:00 am – 2:00pm	
Crozet Link	Albemarle County, Charlottesville	Monday – Friday	8:00 am – 2:00 pm	9:00 am – 5:00 pm
Crozet Circulator	Albemarle County	Monday – Friday	8:00 am – 4:00 pm	
Earlysville Link	Albemarle County, Charlottesville	Monday – Friday	6:00 am – 9:00 am	3:00 pm – 3:30 pm
Esmont – Scottsville Link	Albemarle County, Charlottesville	Monday – Friday	6:15 am – 10:00 am	12:00 pm – 4:30 pm
Keswick Link	Albemarle County, Charlottesville	Monday – Friday	8:00 am – 8:30 am	3:00 pm – 3:30 pm
Fluvanna Midday Link	Fluvanna County, Urban Albemarle County, Charlottesville	Tuesday, Thursday	7:30 am – 9:30 am	1:45 pm – 2:45 pm
Fluvanna Workday Link	Fluvanna County, Urban Albemarle County, Charlottesville	Monday – Friday	6:00 am – 6:35 am	4:15 pm – 4:30 pm
Fluvanna Circulator	Fluvanna County	Monday, Wednesday, Friday	8:30 am – 4:00 pm	
Greene Link	Greene County, Urban Albemarle County, Charlottesville	Monday – Friday	6:30 am – 12:00 pm	8:30 am – 6:00 pm
Greene Circulator	Greene County	Monday – Friday; Saturday	7:00 am – 9:00 pm; 9:00 am – 4:00 pm	
Louisa Link	Louisa County, Urban Albemarle County, Charlottesville	Monday, Wednesday, Friday	7:30 am – 9:00 am	2:45 pm – 3:30 pm
Louisa Circulator	Louisa County	Monday – Friday	6:00 am – 5:00 pm	
Nelson Midday Link	Nelson County, Urban Albemarle County, Charlottesville	Monday, Friday	8:00 am – 9:30 am	2:30 pm – 3:30 pm
Lovingston Circulator	Nelson County	Monday, Tuesday	8:00 am – 4:00 pm	

Jaunt Connect

Connect provides fixed-route commuter service to the University of Virginia (UVA) and downtown Charlottesville from Crozet, Route 29 to the north, Buckingham County, and Nelson County. Connect operates like a fixed-route bus service and does not require a reservation to ride. Connect has four fixed route services:

- Crozet Connect
- 29 North Connect
- Buckingham Connect
- Lovingston Connect

Connect is a commuter service, so routes are not continually operated throughout the day. The fixed route services are operated during morning and evening peak hours, typically 5:30 AM to 9:00 AM in the mornings and 3:30 PM to 7:00 PM in the evenings.

Afton Express

Afton Express is a commuter route by BRITE Bus which runs between Staunton, VA and Charlottesville with stops in Fishersville and Waynesboro.

Intercity Services

Amtrak

Amtrak is the national passenger rail service offering multiple routes across the country. Amtrak operates three routes through Charlottesville: *Northeast Regional* (Boston to Roanoke), *Crescent* (New York City to New Orleans), and *Cardinal* (New York City to Chicago). All Amtrak routes serve Charlottesville Union Station, which is currently served by CAT routes 7, 9, and the Trolley route.

Intercity Bus Services

Charlottesville hosts several private intercity bus services which provide connections to small and large urban areas throughout the United States such as Washington, DC; New York, NY; and Charlotte, NC. The most notable services are:

Virginia Breeze

Virginia Breeze provides intercity bus service throughout Virginia. The service is funded by the Virginia Department of Rail and Public Transportation and operated by Megabus. The City of Charlottesville is served by the Piedmont Express Line which runs North-South service between Washington, DC and Danville, VA. The Piedmont Express stops along Alderman Road at the Gooch/Dillard student housing complex. CAT's Trolley route serves this area of Alderman Road for possible connections to the Virginia Breeze.

Greyhound/Flixbus

Greyhound and Flixbus are two nationwide intercity bus services which merged in 2021. Greyhound and Flixbus have two stop locations within Charlottesville: Flixbus and Greyhound can both be found at Charlottesville Union Station, and Flixbus can also be accessed near UVA at the intersection of University Ave and Newcomb Road North. Charlottesville Union Station is currently served by CAT routes 7, 9, and the Trolley route; while the UVA stop can be accessed from the Trolley line.

2.5.2 Collaboration Based Opportunities for Improvement

There are several potential collaboration efforts that could serve to improve, expand, and enhance transit service and overall mobility in the greater Charlottesville region. Opportunities for improvement include:

Microtransit

- 29 North Zone will cover the area of the Jaunt Connect route.

Regional Coordination

- Regional fare system (if zero-fare service is not anticipated to continue long-term). CAT currently has grant funding to extend zero-fare service through 2026.
- Regional coordination of stop amenities at transfer points between providers, local jurisdictions, and VDOT
- Regional coordination of transit service between CAT, Jaunt, and UVA
- Completion and implementation of the ongoing Regional Transit Governance Study

Charlottesville Area Transit
Transit Strategic Plan

Chapter 3: Planned Improvements and Modifications

DRAFT | May 2024

Chapter 3: Planned Improvements and Modifications

This chapter identifies and prioritizes service and capital improvements for Charlottesville Area Transit's (CAT) transit network. It begins with a discussion of operational considerations, costs and constraints, ridership, and existing and future needs. Chapter 3 is organized as follows:

- **Section 3.1: Planned Service Improvements** describes specific service change recommendations for each route.
- **Section 3.2: Prioritization of Planned Service Improvements** outlines the anticipated timeframe and associated costs of each project, classified as short-term, mid-term, or long-term.
- **Section 3.3: Service Development** summarizes service hours and miles; evaluates policies and planning actions required for each project's implementation.
- **Section 3.4: Additional Recommendations** outlines other studies and initiatives that should be considered in the strategic planning process.

The intention of this chapter is to identify all expected service improvement projects for CAT over the next ten years. All projects are financially constrained and are therefore reasonably achievable over the Transit Strategic Plan (TSP) timeframe based on expected funding and available grant programs. As with any planning effort, the degree of uncertainty for implementation increases over time. Although all projects outlined here have been examined and prioritized, the execution of each project may change due to evolving circumstances and other forces outside of CAT's control. The service plan will be updated regularly during the annual TSP update process.

Identified improvements are based on:

- Existing route performance
- Trend and gap analysis presented in Chapter 2
- Existing local and regional plans for CAT service
- Workshops with CAT staff and operators
- Input received from the public, including community survey results
- Input received from stakeholder workshop meetings

Several existing plans and studies provided the foundation for the service needs included in this chapter. These plans include the 2021 CAT System Optimization Plan, the 2022 Albemarle County Transit Expansion Study, and the 2022 Regional Transit Vision Plan.

3.1 Planned Service Improvements

This section presents specific route improvements based on the needs identified in Chapter 2 and discussions with CAT staff. Each project begins with a description of service changes followed by details on how the project fulfills the need of the transit system. Operating statistics, as well as estimates for ridership are included for each project. Projects are prioritized and shown by timeline in later sections of the chapter.

Each project in this section is financially constrained, meaning that funding for the project has already been secured or could reasonably be secured in the future. However, a project being included in this section does not guarantee that it will be implemented. Financial conditions are likely to evolve over time, and projects may ultimately change or be eliminated.

The service described in this plan represents the best estimates at the time of recommendation development and is subject to change due to funding availability, concurrent planning efforts, and changing demand. Updates to implementation and potential service destinations will be made during the annual updates to the TSP by CAT.

The planned service improvements that follow are presented as route profile sheets, which contain:

- A description of the service changes.
- The justifications for the service changes, including:
  - Findings from the performance and opportunities analysis completed in Chapter 2.
  - For each of the justifications, highlighted cells in a table provide a quick reference to the types of justifications included for each route:
    - **Meets Identified Demand**: The planned improvement is responsive in meeting identified demand for transit based on travel patterns and/or demographic analysis documented in Chapter 2. Examples included improving service in areas with high transit demand (that currently have some level of service) and/or introducing new service to areas with high transit demand (that do not currently have service)
    - **Performance Improvement Opportunity**: The planned improvement presents an opportunity to improve system performance based on the opportunities documented in Chapter 2. Examples include increases in riders per hour or per-trip boardings.
    - **Efficiency Improvement Opportunity**: The planned improvement presents an opportunity to improve system efficiency based on the opportunities documented in Chapter 2. Examples include improvements to on-time performance and/or maximum vehicle load.
    - **Alignment with Service Standards**: The planned improvement is in alignment with service design standards and goals documented in Chapter 1.
- A table showing the route's service classification.
- A table showing the origins and destinations.
- A table comparing level of service—span and headway—between the existing service and the service targets for the route. This table excludes unconstrained changes.
- A table showing the implementation horizons of changes and the impact on annual hours, miles, and ridership.
- A place for any special notes that apply to the route.
- A map showing the route and added or eliminated sections of the route (if applicable).

Route 1

Piedmont Virginia Community College and Woolen Mills

Service Classification
Local

Origins and Destinations Served		
	Existing	**Proposed**
To / From	PVCC/Riverview	PVCC/Riverview

Level of Service			
Span			
	Existing	**Proposed**	
Weekday	6:00 AM – 10:30 PM	6:30 AM – 10:30 PM	
Saturday	6:00 AM – 10:30 PM	6:30 AM – 10:30 PM	
Sunday	-	6:30 AM – 10:30 PM	
Headways			
		Existing	**Proposed**
Weekday	Peak	60 min	30 min
	Off-Peak	60 min	30 min
Saturday	All-Day	60 min	30 min
Sunday	All-Day	-	30 min

Service Changes

- Increase weekday frequency to every 30 minutes and set weekday span to match the service standard of 6:30 AM to 10:30 PM
- Add Sunday service with 60-minute frequencies. Set weekend span to match the service standard of 6:30 AM to 10:30 PM
- Increase weekend frequency to every 30 minutes

☐ Meets Identified Demand	☑ **Performance Improvement Opportunity**	☐ Efficiency Improvement Opportunity	☑ **Alignment with Service Standards**

Justification

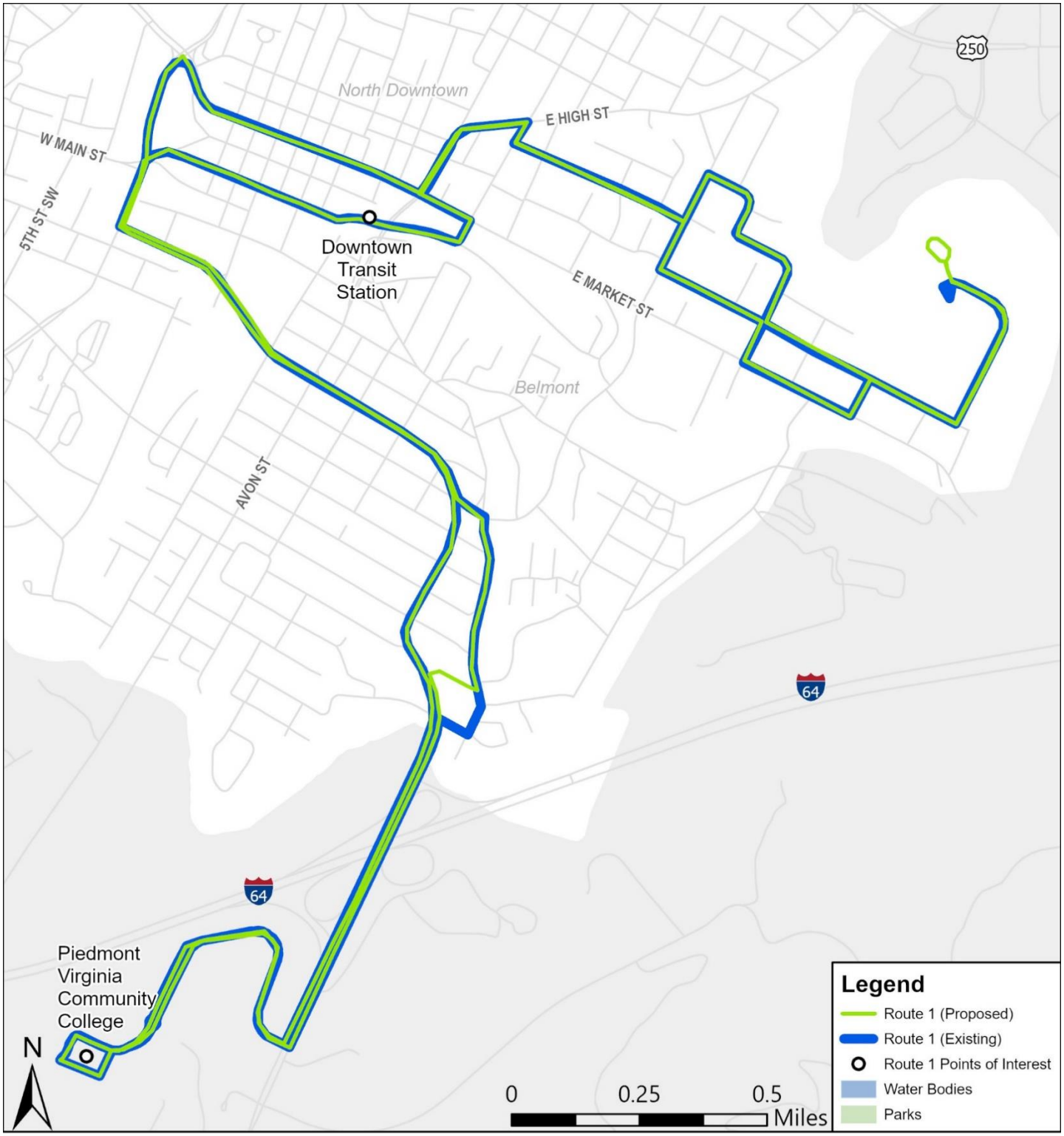
- Route 1 currently does not offer Sunday service. The addition of Sunday service will improve mobility for residents of the Woolen Mills, Martha Jefferson, and Belmont neighborhoods.
- Route 1 currently has the second-lowest riders per revenue hour of all routes in the system. It is possible that the lack of Sunday service detracts from the general usability of Route 1, as residents who might be inclined to ride transit opt for other modes (such as driving) due to the lack of service on Sunday. The implementation of Sunday service will make Route 1 more appealing and useful to existing and potential future riders.

Service Change Phasing				
Horizon	**Improvement**	**Estimated Change from Existing (Annual)**		
		Revenue Hours	**Revenue Miles**	**Ridership**
Mid-Term	Increase weekday frequency to every 30 minutes and set weekday span to match the service standard of 6:30 AM to 10:30 PM.	3,636	38,757	17,711
Long-Term	Add Sunday service with 60-minute frequencies. Set weekend span to match the service standard of 6:30 AM to 10:30 PM.	1,465	21,926	9,291
Unconstrained	Increase weekend frequency to every 30 minutes.	1,379	20,637	8,603

NOTE: Unconstrained improvements are not reflected in Level of Service table above or map below.

Route 1

Piedmont Virginia Community College and Woolen Mill



Route 2A

5th Street Station

Service Classification
Key

Origins and Destinations Served		
	Existing	**Proposed**
To / From	Downtown/ Willoughby Square	Downtown/ Willoughby Square

Level of Service			
Span			
	Existing	**Proposed**	
Weekday	6:30 AM – 10:30 PM	6:00 AM – 12:00 AM	
Saturday	6:30 AM – 10:30 PM	6:30 AM – 10:30 PM	
Sunday	-	6:30 AM – 10:30 PM	
Headways			
		Existing	**Proposed**
Weekday	Peak	30 min	30 min
	Off-Peak	30 min	30 min
Saturday	All-Day	30 min	60 min
Sunday	All-Day	-	60 min

Notes
Route 2B's service changes are outlined separately

Service Changes

- Split Route 2 into two patterns. Route 2A will have bidirectional service on Avon Street to Willoughby Square Shopping Center.
- Add Sunday service with 60-minute frequencies from 6:30 AM to 10:30 PM
- Increase weekday frequency to every 30 minutes
- Increase weekday span to 6:00 AM to 12:00 AM
- Extend weekend frequency to every 30 minutes and span to 6:00 AM to 12:00 AM

☑ **Meets Identified Demand**	☑ **Performance Improvement Opportunity**	☐ Efficiency Improvement Opportunity	☑ **Alignment with Service Standards**

Justification

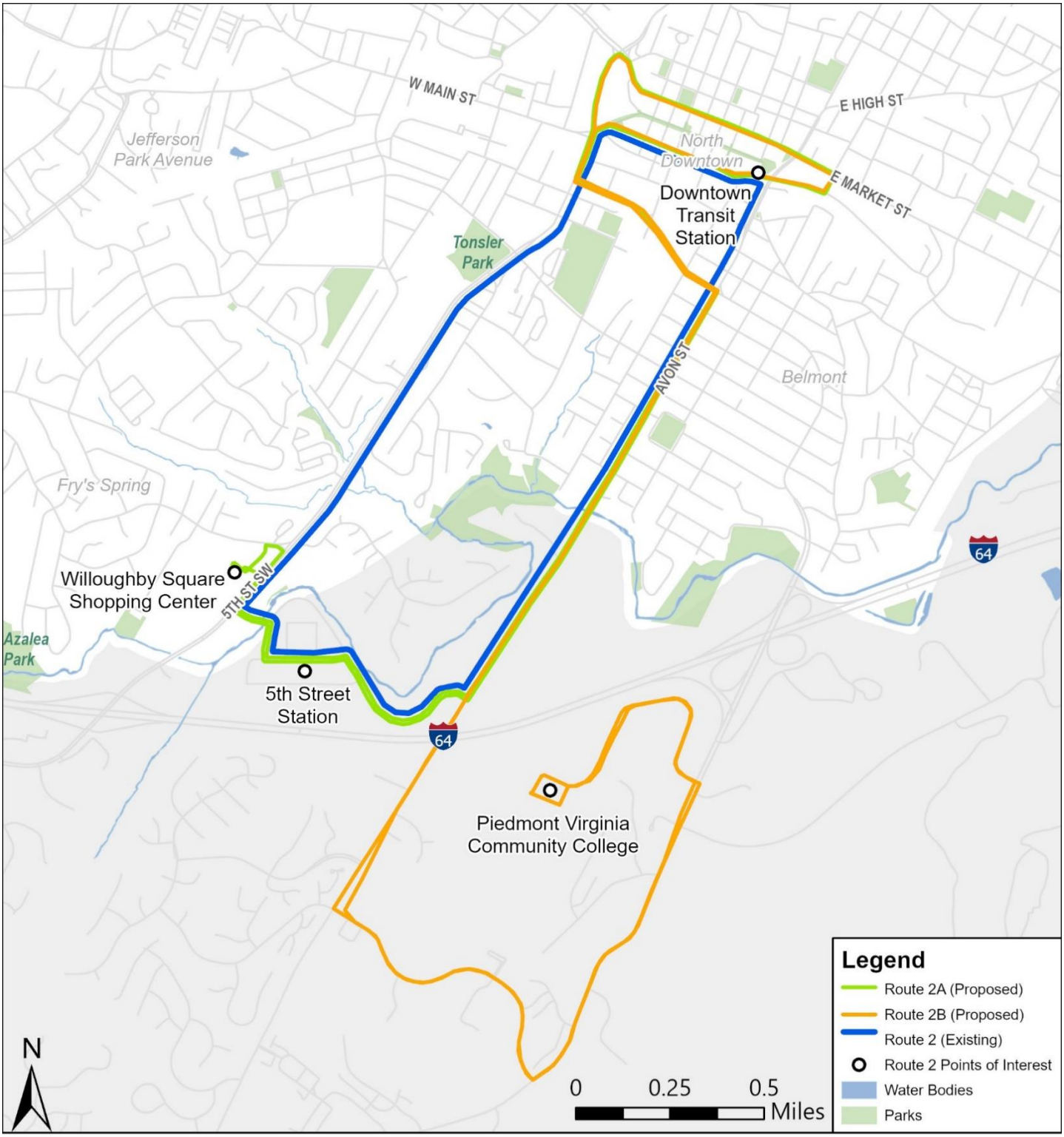
- Route 2 currently operates on a one-way loop—outbound on 5th Street SW and inbound on Avon Street. This configuration risks being confusing for riders who may not understand the service or inconvenient to those who may wish to travel in the opposite direction.
- The proposed Route 2A will be easier for riders to understand and allow for travel in both directions.

Service Change Phasing				
Horizon	**Improvement**	**Estimated Change from Existing (Annual)**		
		Revenue Hours	**Revenue Miles**	**Ridership**
Short-Term	Split Route 2 into two patterns. Route 2A will have bidirectional service on Avon Street to Willoughby Square Shopping Center.	(1,069)	(10,822)	(6,078)
Mid-Term	Add Sunday service with 60-minute frequencies 6:30 AM to 10:30 PM.	467	7,129	10,408
Long-Term	Increase weekday frequency to every 30 minutes.	2,992	31,109	27,188
Long-Term	Increase weekday span to 6:00 AM to 12:00 AM.	748	7,778	
Unconstrained	Extend weekend frequency to every 30 minutes and span to 6:00 AM to 12:00 AM.	1,357	16,774	24,136

NOTE: Unconstrained improvements are not reflected in Level of Service table above or map below.

Route 2A

5th Street Station



Route 2B

Piedmont Virginia Community College

Service Classification
Key/Local/Lifeline

Origins and Destinations Served		
	Existing	**Proposed**
To/From	-	Downtown/ PVCC

Level of Service			
Span			
	Existing	**Proposed**	
Weekday	-	6:00 AM – 12:00 AM	
Saturday	-	6:30 AM – 10:30 PM	
Sunday	-	6:30 AM – 10:30 PM	
Headways			
		Existing	**Proposed**
Weekday	Peak	-	30 min
	Off-Peak	-	30 min
Saturday	All-Day	-	60 min
Sunday	All-Day	-	60 min

Notes
This is new service.

Service Changes

- Split Route 2 into two patterns. Route 2B will have bidirectional service on Avon Street to Piedmont Virginia Community College with 60-minute frequencies
- Add Sunday service with 60-minute frequencies
- Improve weekday frequency to every 30 minutes
- Increase weekday span to 6:00 AM to 12:00 AM
- Increase weekend frequencies to 30 minutes and span to 6:00 AM to 12:00 AM

☑ **Meets Identified Demand**	☑ **Performance Improvement Opportunity**	☐ Efficiency Improvement Opportunity	☑ **Alignment with Service Standards**

Justification

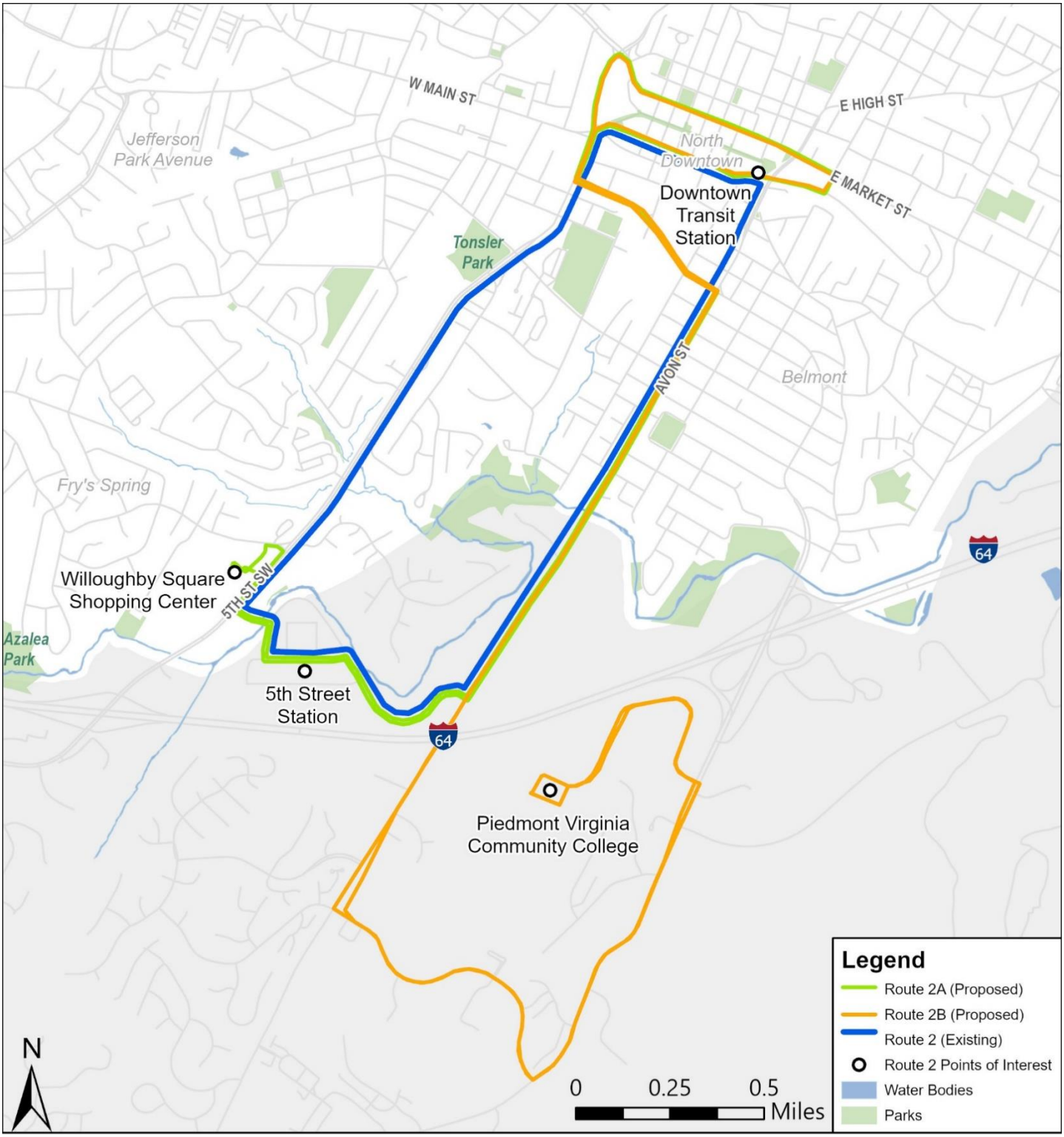
- Route 2 currently operates on a counter-clockwise loop—outbound on 5th Street SW and inbound on Avon Street. This configuration is potentially confusing and inconvenient for riders, who may not understand the looping nature of the service, or who may wish to travel in the opposite direction than the route operates.
- Route 2B will extend new service southward along Mill Creek Drive and to Monticello High School along the way to PVCC.

Service Change Phasing				
Horizon	**Improvement**	**Estimated Change from Existing (Annual)**		
		Revenue Hours	**Revenue Miles**	**Ridership**
Short-Term	Split Route 2 into two patterns. Route 2B will have bidirectional service on Avon Street to Piedmont Virginia Community College with 60-minute frequencies.	6,061	62,886	43,040
Mid-Term	Add Sunday service with 60-minute frequencies from 6:30 AM to 10:30 PM.	835	11,157	8,890
Long-Term	Increase weekday frequency to every 30 minutes.	4,760	48,686	17,639
Long-Term	Increase weekday span to 6:00 AM to 12:00 AM	1,190	12,171	
Unconstrained	Increase weekend frequencies to 30 minutes and span to 6:00 AM to 12:00 AM.	2,164	26,252	23,230

NOTE: Unconstrained improvements are not reflected in Level of Service table above or map below.

Route 2B

Piedmont Virginia Community College



Route 3

Southwood and Belmont

Service Classification
Local

Origins and Destinations Served		
	Existing	**Proposed**
To / From	Downtown/ Southwood	Downtown/ Southwood

Level of Service			
Span			
	Existing	**Proposed**	
Weekday	6:00 AM – 10:30 AM	6:30 AM – 10:30 PM	
Saturday	6:00 AM – 10:30 AM	6:30 AM – 10:30 PM	
Sunday	-	6:30 AM – 10:30 PM	
Headways			
		Existing	**Proposed**
Weekday	Peak	60 min	30 min
	Off-Peak	60 min	30 min
Saturday	All-Day	60 min	30 min
Sunday	All-Day	-	30 min

Notes
Route 3E's service changes are outlined separately.

Service Changes

- Split Route 3 into two patterns (Route 3 and Route 3E), with Route 3 operating directly between Downtown and Southwood with 30-minute weekday frequencies and 60-minute weekend frequencies from 6:30 AM to 10:30 PM
- Increase weekend frequencies to every 30 minutes
- Increase span every day to 6:00 AM to 12:00 AM

☑ **Meets Identified Demand**	☑ **Performance Improvement Opportunity**	☐ Efficiency Improvement Opportunity	☑ **Alignment with Service Standards**

Justification

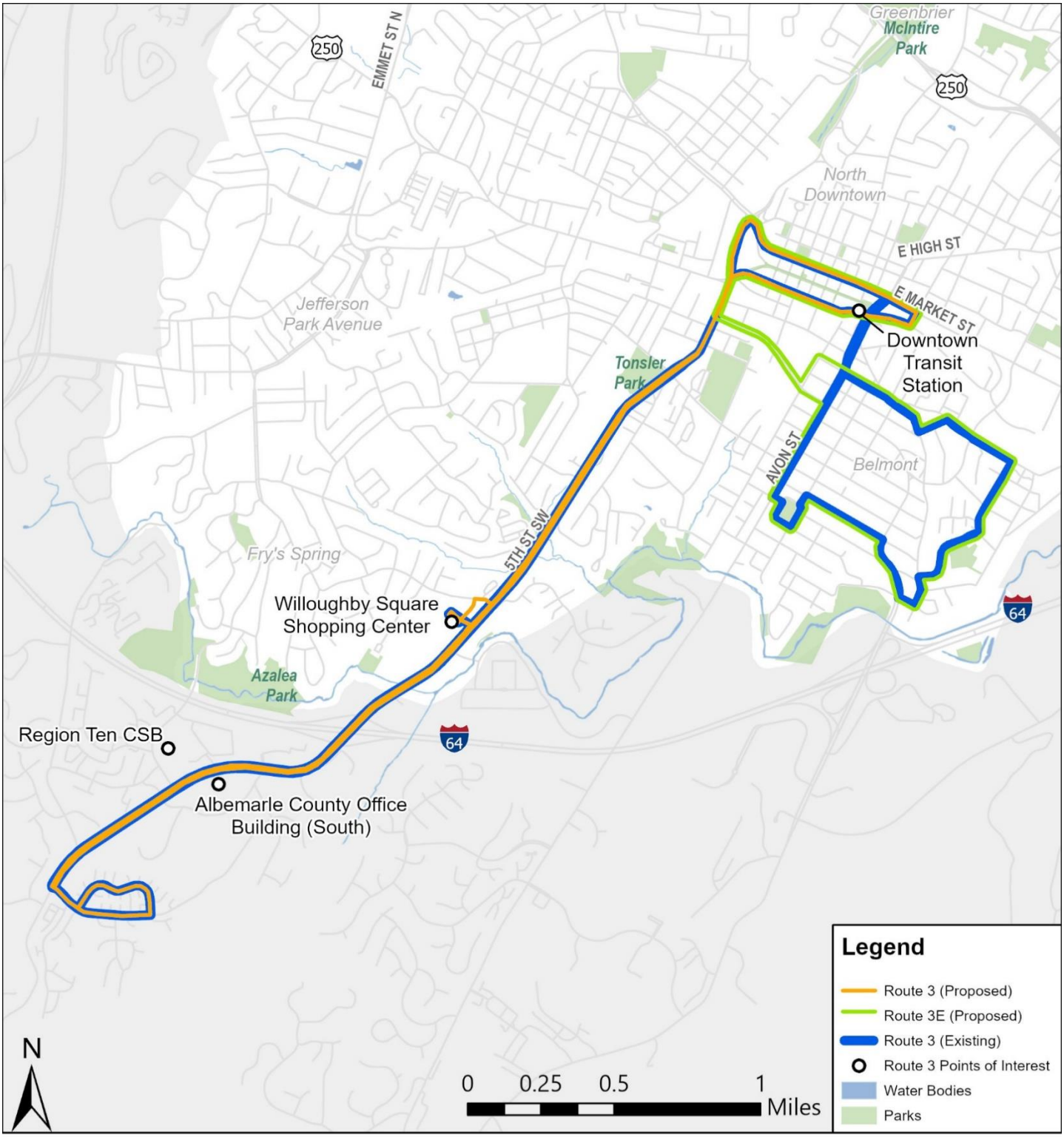
- This change will result in a quicker, more direct trip for riders along the 5th Street corridor looking to travel to or make connections downtown.
- Schedule changes are required to meet service standards.

Service Change Phasing				
Horizon	**Improvement**	**Estimated Change from Existing (Annual)**		
		Revenue Hours	**Revenue Miles**	**Ridership**
Mid-Term	Split Route 3 into two patterns (Route 3 and Route 3E), with Route 3 operating directly between Downtown and Southwood with 30-minute weekday frequencies and 60-minute weekend frequencies from 6:30 AM to 10:30 PM.	2,649	33,761	(2,258)
Long-Term	Increase weekend frequencies to every 30 minutes.	1,229	16,611	15,751
Unconstrained	Extend span every day to 6:00 AM to 12:00 AM	1,090	13,779	17,347

NOTE: Unconstrained improvements are not reflected in Level of Service table above or map below.

Route 3

Southwood and Belmont



Route 3E

Belmont

Service Classification
Key/Local/Lifeline

Origins and Destinations Served		
	Existing	**Proposed**
To / From	-	Downtown/PVCC

Level of Service			
Span			
	Existing	**Proposed**	
Weekday	-	6:30 AM – 10:30 PM	
Saturday	-	6:30 AM – 10:30 PM	
Sunday	-	6:30 AM – 10:30 PM	
Headways			
		Existing	**Proposed**
Weekday	Peak	-	60 min
	Off-Peak	-	60 min
Saturday	All-Day	-	60 min
Sunday	All-Day	-	60 min

Notes
This is new service.

Service Changes

- Split Route 3 into two patterns (Route 3 and Route 3E), with Route 3E operating directly between Downtown and Belmont with 60-minute frequencies Monday to Saturday from 6:30 AM to 10:30 PM
- Add Sunday service with 60-minute frequencies from 6:30 AM to 10:30 PM
- Increase frequencies to every 30 minutes every day

☑ **Meets Identified Demand**	☑ **Performance Improvement Opportunity**	☐ Efficiency Improvement Opportunity	☑ **Alignment with Service Standards**

Justification

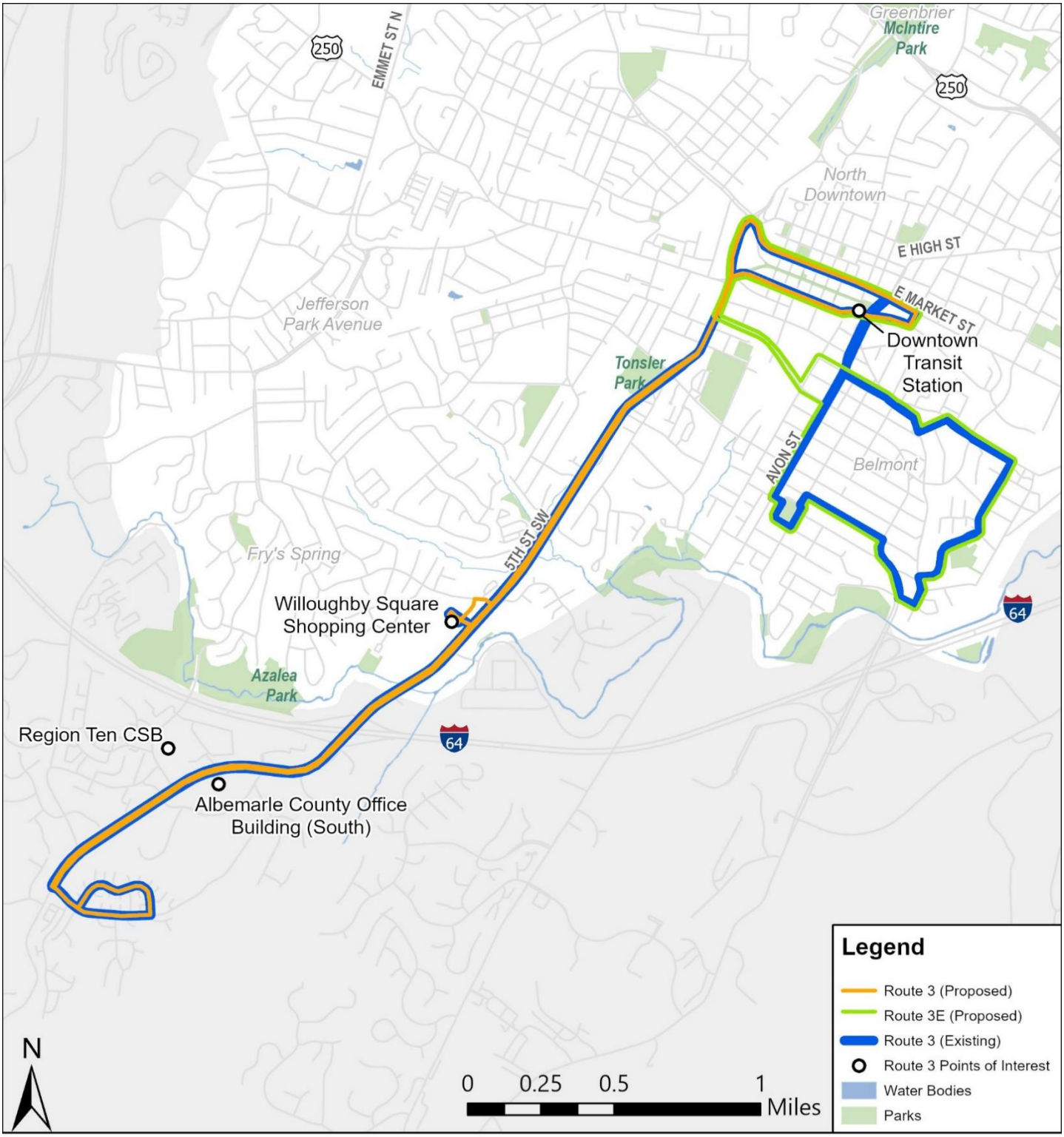
- This change will result in quicker, more direct trips for riders in Belmont looking to travel to or make connections Downtown.
- Schedule changes are required to meet service standards.

Service Change Phasing				
Horizon	**Improvement**	**Estimated Change from Existing (Annual)**		
		Revenue Hours	**Revenue Miles**	**Ridership**
Mid-Term	Split Route 3 into two patterns (Route 3 and Route 3E), with Route 3E operating directly between Downtown and Belmont with 60-minute frequencies Monday to Saturday from 6:30 AM to 10:30 PM.	2,294	29,413	45,979
Long-Term	Add Sunday service with 60-minute frequencies from 6:30 AM to 10:30 PM.	342	5,218	6,287
Unconstrained	Increase frequencies to every 30 minutes every day.	2,482	32,594	29,599

NOTE: Unconstrained improvements are not reflected in Level of Service table above or map below.

Route 3E

Belmont



Route 4

Cherry Avenue and Harrison Road

Service Classification
Local

Origins and Destinations Served		
	Existing	**Proposed**
To / From	Downtown/ Willoughby	Downtown/ Willoughby

Level of Service			
Span			
	Existing	**Proposed**	
Weekday	6:30 AM – 10:30 PM	6:00 AM – 12:00 AM	
Saturday	6:30 AM – 10:30 PM	6:00 AM – 12:00 AM	
Sunday	-	6:30 AM – 10:30 PM	
Headways			
		Existing	**Proposed**
Weekday	Peak	30 min	30 min
	Off-Peak	60 min	30 min
Saturday	All-Day	60 min	30 min
Sunday	All-Day	-	-

Service Changes

- Extend 30-minute frequencies from peak-only to all-day on weekdays.
- Improve Saturday frequencies to 30 minutes.
- Increase weekday and Saturday span to 6:00 AM to 12:00 AM.
- Add Sunday service with 30-minute frequencies and 6:00 AM to 12:00 AM span.

☐ Meets Identified Demand	☑ **Performance Improvement Opportunity**	☐ Efficiency Improvement Opportunity	☑ **Alignment with Service Standards**

Justification

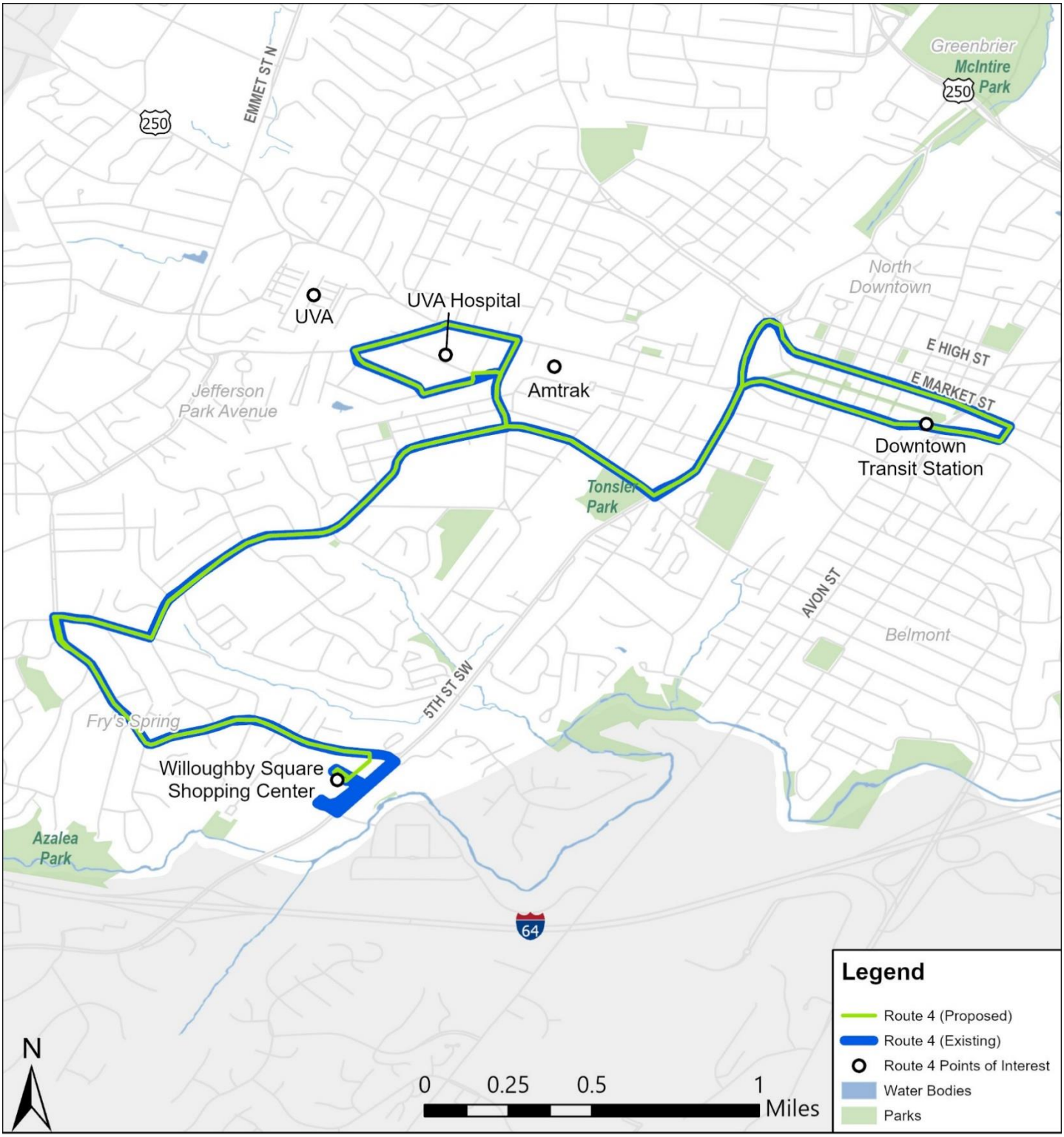
- Increasing Route 4's frequency to operate every 30 minutes all day will provide more consistent and reliable service, which will help address Route 4's on-time performance. Route 4 currently has the second lowest on-time performance in CAT system.
- Schedule changes required to meet service standards.

Service Change Phasing				
Horizon	**Improvement**	**Estimated Change from Existing (Annual)**		
		Revenue Hours	**Revenue Miles**	**Ridership**
Mid-Term	Extend 30-minute frequencies from peak-only to all-day on weekdays.	3,536	41,581	28,864
Long-Term	Improve Saturday frequencies to 30 minutes.	905	10,542	15,146
Long-Term	Increase weekday and Saturday span to 6:00 AM to 12:00 AM.	1,219	13,982	
Unconstrained	Add Sunday service with 30-minute frequencies and 6:00 AM to 12:00 AM span.	1,526	22,945	23,866

NOTE: Unconstrained improvements are not reflected in Level of Service table above or map below.

Route 4

Cherry Avenue and Harrison Road



Route 5

Commonwealth Drive

Service Classification
Local

Origins and Destinations Served		
	Existing	**Proposed**
To / From	Barracks Road/ Walmart	Fashion Square Mall/UVA Hospital

Level of Service			
Span			
	Existing	**Proposed**	
Weekday	6:30 AM – 10:30 PM	6:00 AM – 12:00 AM	
Saturday	6:30 AM – 10:30 PM	6:00 AM – 12:00 AM	
Sunday	-	6:00 AM – 12:00 AM	
Headways			
		Existing	**Proposed**
Weekday	Peak	30 min	30 min
	Off-Peak	30 min	30 min
Saturday	All-Day	30 min	30 min
Sunday	All-Day	-	60 min

Service Changes

- Realign Route 5 by ending the route at Fashion Square Mall to the north (eliminating service to Walmart) and extending the route to serve UVA Hospital to the south
- Add Sunday service with 60-minute frequencies from 6:30 AM to 10:30 PM
- Improve span every day to 6:00 AM to 12:00 AM.

☐ Meets Identified Demand	☑ **Performance Improvement Opportunity**	☐ Efficiency Improvement Opportunity	☑ **Alignment with Service Standards**

Justification

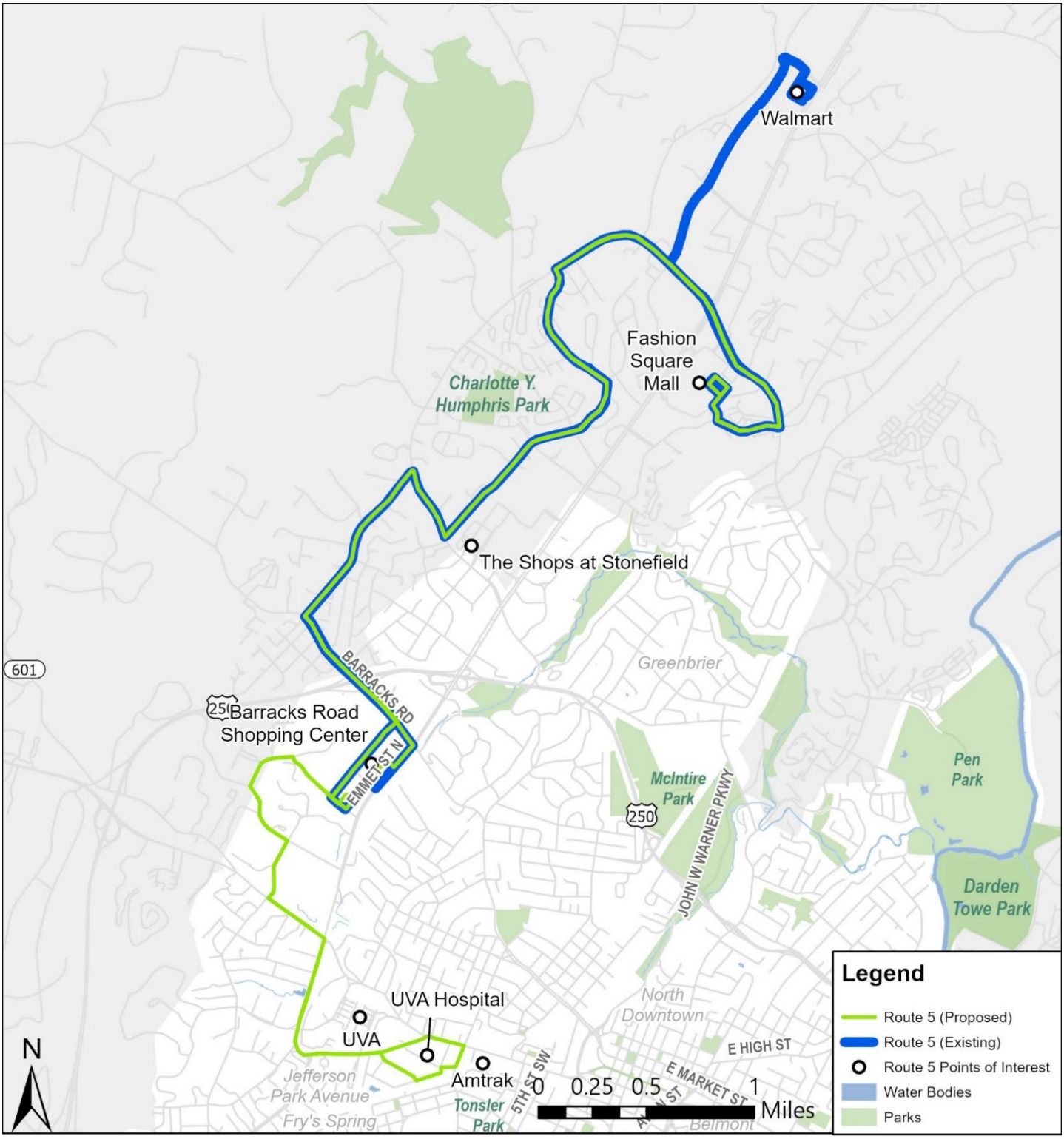
- The current route structure effectively has dual termini at Fashion Square Mall and Walmart. This creates long deviations for all riders that are not traveling between these two destinations, increases travel times, and makes transit a less attractive option. This change to Route 5 will create a faster, more direct connection between the mall and downtown. Extending the route to UVA Hospital creates a one-seat ride along a north-south corridor with high proportions of jobs and population.
- Schedule changes are required to meet service standards.

Service Change Phasing				
Horizon	**Improvement**	**Estimated Change from Existing (Annual)**		
		Revenue Hours	**Revenue Miles**	**Ridership**
Mid-Term	Realign Route 5 by ending the route at Fashion Square Mall to the north (eliminating service to Walmart) and extending the route to serve UVA Hospital to the south.	(2,134)	(21,947)	43,509
Long-Term	Add Sunday service with 60-minute frequencies from 6:30 AM to 10:30 PM.	1,060	15,886	35,202
Long-Term	Increase span every day to 6:00 AM to 12:00 AM.	3,178	33,472	

NOTE: Unconstrained improvements are not reflected in Level of Service table above or map below.

Route 5

Commonwealth Drive



Route 6

Willoughby Square

Service Classification
Local

Origins and Destinations Served		
	Existing	**Proposed**
To / From	Downtown/ Willoughby Square/ UVA Hospital	Downtown/ Willoughby Square

Level of Service			
Span			
	Existing		**Proposed**
Weekday	6:30 AM – 10:30 PM		6:30 AM – 10:30 PM
Saturday	6:30 AM – 10:30 PM		6:30 AM – 10:30 PM
Sunday	-		-
Headways			
		Existing	**Proposed**
Weekday	Peak	60 mins	30 mins
	Off-Peak	60 mins	30 mins
Saturday	All-Day	60 mins	30 mins
Sunday	All-Day	-	-

Service Changes

- Increase weekday frequency to every 30 minutes
- Realign Route 6 to operate via 1st Street South directly to/from Willoughby Square Shopping Center, eliminating service to UVA Hospital
- Increase Saturday frequency to every 30 minutes.
- Add Sunday service with 30-minute frequencies from 6:30 AM to 10:30 PM
- Increase span every day to 6:00 AM to 12:00 AM.

☐ Meets Identified Demand	☑ **Performance Improvement Opportunity**	☐ Efficiency Improvement Opportunity	☑ **Alignment with Service Standards**

Justification

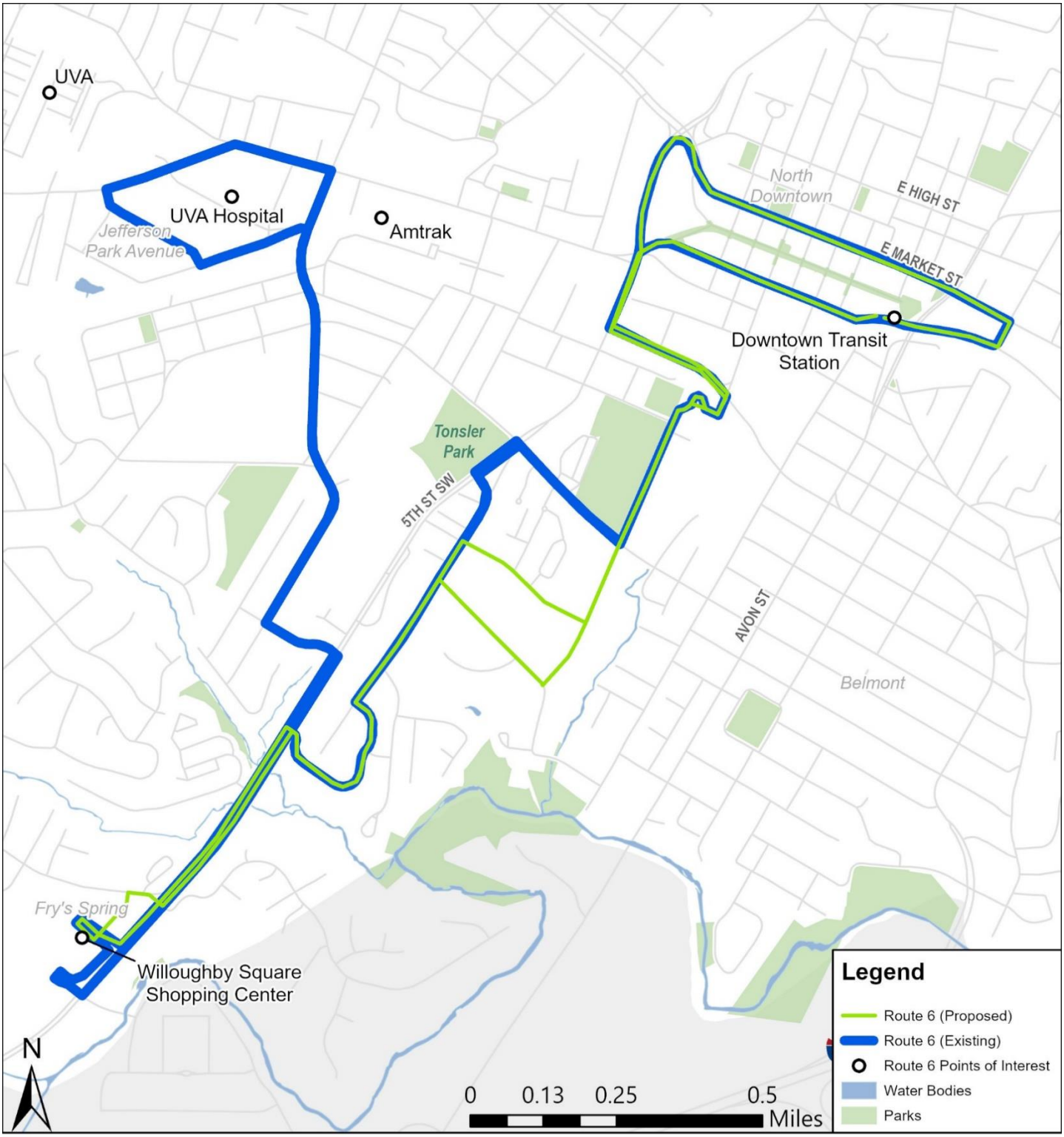
- The current route structure effectively has dual termini at UVA Hospital and Willoughby Square. This creates long deviations for all riders that are not traveling between these two destinations, increasing travel times and making transit a less attractive option. This change to Route 6's structure will create a faster, more direct connection between the Willoughby Square and downtown.
- Schedule changes required to meet service standards.

Service Change Phasing				
Horizon	**Improvement**	**Estimated Change from Existing (Annual)**		
		Revenue Hours	**Revenue Miles**	**Ridership**
Short-Term	Increase weekday frequency to every 30 minutes.	3,914	45,609	21,005
Short-Term	Realign Route 6 to operate via 1st Street South directly to/from Willoughby Square Shopping Center, eliminating service to UVA Hospital.	(3,142)	(35,295)	(21,139)
Short-Term	Increase Saturday frequency to every 30 minutes.	577	6,287	
Unconstrained	Add Sunday service with 30-minute frequencies from 6:30 AM to 10:30 PM.	816	12,204	25,593
Unconstrained	Increase span every day to 6:00 AM to 12:00 AM.	864	9,817	

NOTE: Unconstrained improvements are not reflected in Level of Service table above or map below.

Route 6

Willoughby Square



Route 7

Emmet Street and Seminole Trail

Service Classification
Key

Origins and Destinations Served		
	Existing	**Proposed**
To / From	Downtown/Fashion Square Mall	Downtown/Walmart

Level of Service			
Span			
	Existing		**Proposed**
Weekday	6:30 AM – 10:30 PM		6:30 AM – 10:30 PM
Saturday	6:30 AM – 10:30 PM		6:30 AM – 10:30 PM
Sunday	-		6:30 AM – 10:30 PM
Headways			
	Existing		**Proposed**
Weekday	Peak	30	15
	Off-Peak	30	30
Saturday	All-Day	30	30
Sunday	All-Day	-	30

Notes
This route is proposed to operate with a cutback. Frequencies in Level of Service table may not represent the frequencies along the entire route.

Service Changes

- Extend Route 7 to Walmart to the north and realign to serve Seminole Square Shopping Center in both directions. Service to The Shops at Stonefield would be cut (but still served by Route 8). Near Barracks Road Shopping Center, adjust the route slightly to operate along Millmont Street.
- Add Sunday service with 30-minute frequencies from 6:30 AM to 10:30 PM
- Add service between Downtown and Barracks Road Shopping Center only (cutback) during weekday peak periods (7:00 AM to 9:00 AM and 3:30 PM to 5:00 PM) for 15-minute frequency on this segment
- Extend route to North Fork Research Park via Airport
- Improve span every day to 6:00 AM to 12:00 AM

☑ **Meets Identified Demand**	☑ **Performance Improvement Opportunity**	☐ Efficiency Improvement Opportunity	☑ **Alignment with Service Standards**

Justification

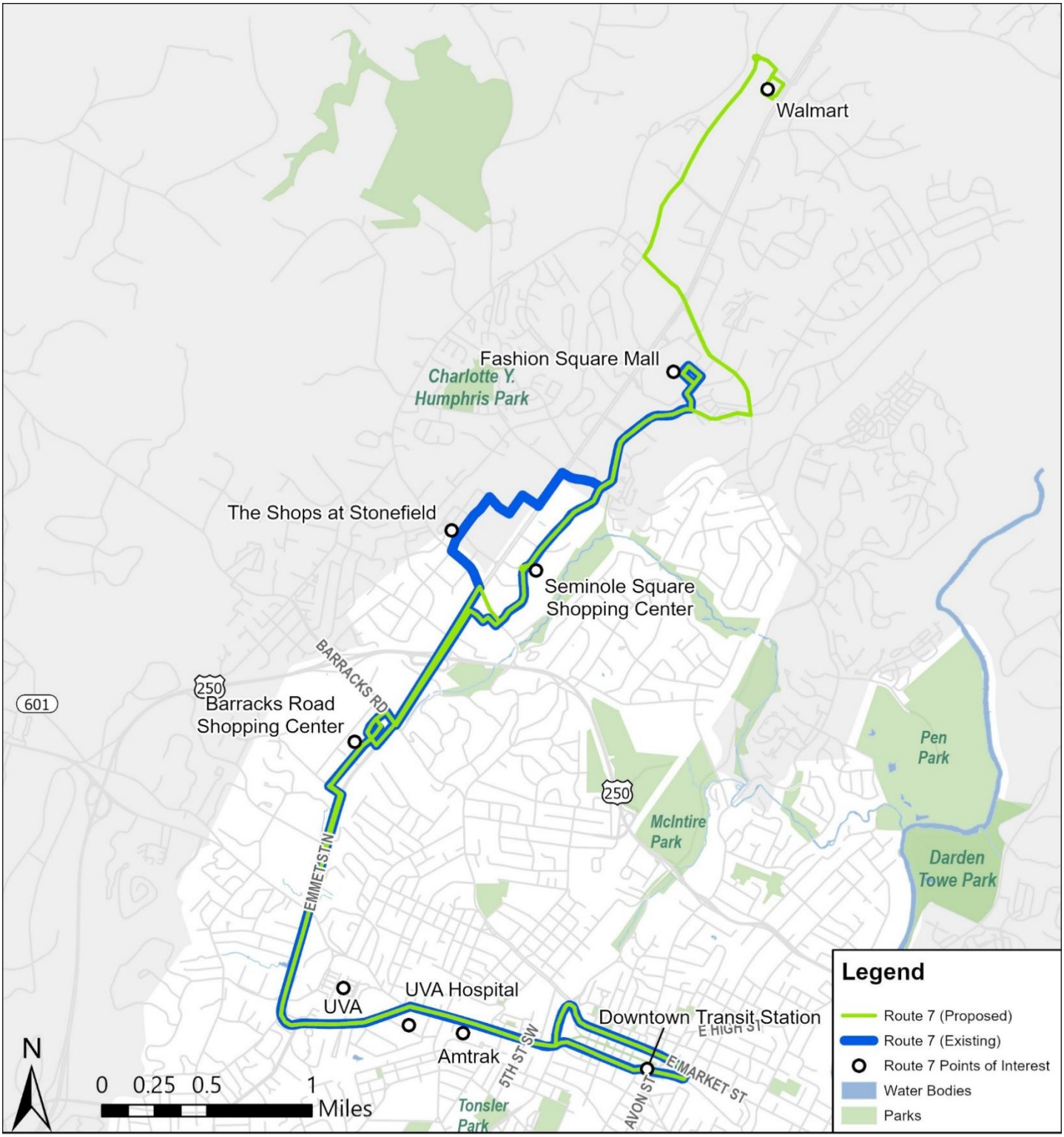
- Bidirectional service to Seminole Square is needed to avoid unnecessarily long trips for riders and to simplify the rider experience
- Demand for service to North Fork Research Park was identified in Chapter 2
- Schedule changes are required to meet service standards

Service Change Phasing				
Horizon	**Improvement**	**Estimated Change from Existing (Annual)**		
		Revenue Hours	**Revenue Miles**	**Ridership**
Mid-Term	Extend Route 7 to Walmart to the north and realign to serve Seminole Square Shopping Center in both directions. Service to The Shops at Stonefield would be cut (but still served by Route 8). Near Barracks Road Shopping Center, adjust the route slightly to operate along Millmont Street	5,926	63,284	195,858
Mid-Term	Add Sunday service with 30-minute frequencies from 6:30 AM to 10:30 PM	2,450	36,357	
Mid-Term	Add service between Downtown and Barracks Road Shopping Center only (cutback) during weekday peak periods (7:00 AM to 9:00 AM and 3:30 PM to 5:00 PM) for 15-minute increased frequency on this segment	983	10,204	
Unconstrained	Extend service to North Fork Research Park via Airport	13,435	164,792	11,940
Unconstrained	Increase span every day to 6:00 AM to 12:00 AM	4,418	47,973	

NOTE: Unconstrained improvements are not reflected in Level of Service table above or map below.

Route 7

Emmet Street and Seminole Trail



Route 8

Preston Avenue and Emmet Street

Service Classification
Local

Origins and Destinations Served		
	Existing	**Proposed**
To / From	Downtown/Shops at Stonefield	Willoughby Square/ Shops at Stonefield

Level of Service			
Span			
	Existing	**Proposed**	
Weekday	6:30 AM – 6:30 PM	6:30 AM – 10:30 PM	
Saturday	6:30 AM – 6:30 PM	6:30 AM – 10:30 PM	
Sunday	-	-	
Headways			
		Existing	**Proposed**
Weekday	Peak	60	30
	Off-Peak	60	30
Saturday	All-Day	60	30
Sunday	All-Day	-	-

Service Changes

- Modify/extend route to end at Willoughby Shopping Center (via UVA Hospital), eliminating service to Downtown
- Increase weekday and Saturday span to 6:30 AM to 10:30 PM
- Increase frequency to every 30 minutes on weekdays and Saturday
- Add Sunday service with 30-minute frequencies

Meets Identified Demand	**Performance Improvement Opportunity**	Efficiency Improvement Opportunity	**Alignment with Service Standards**

Justification

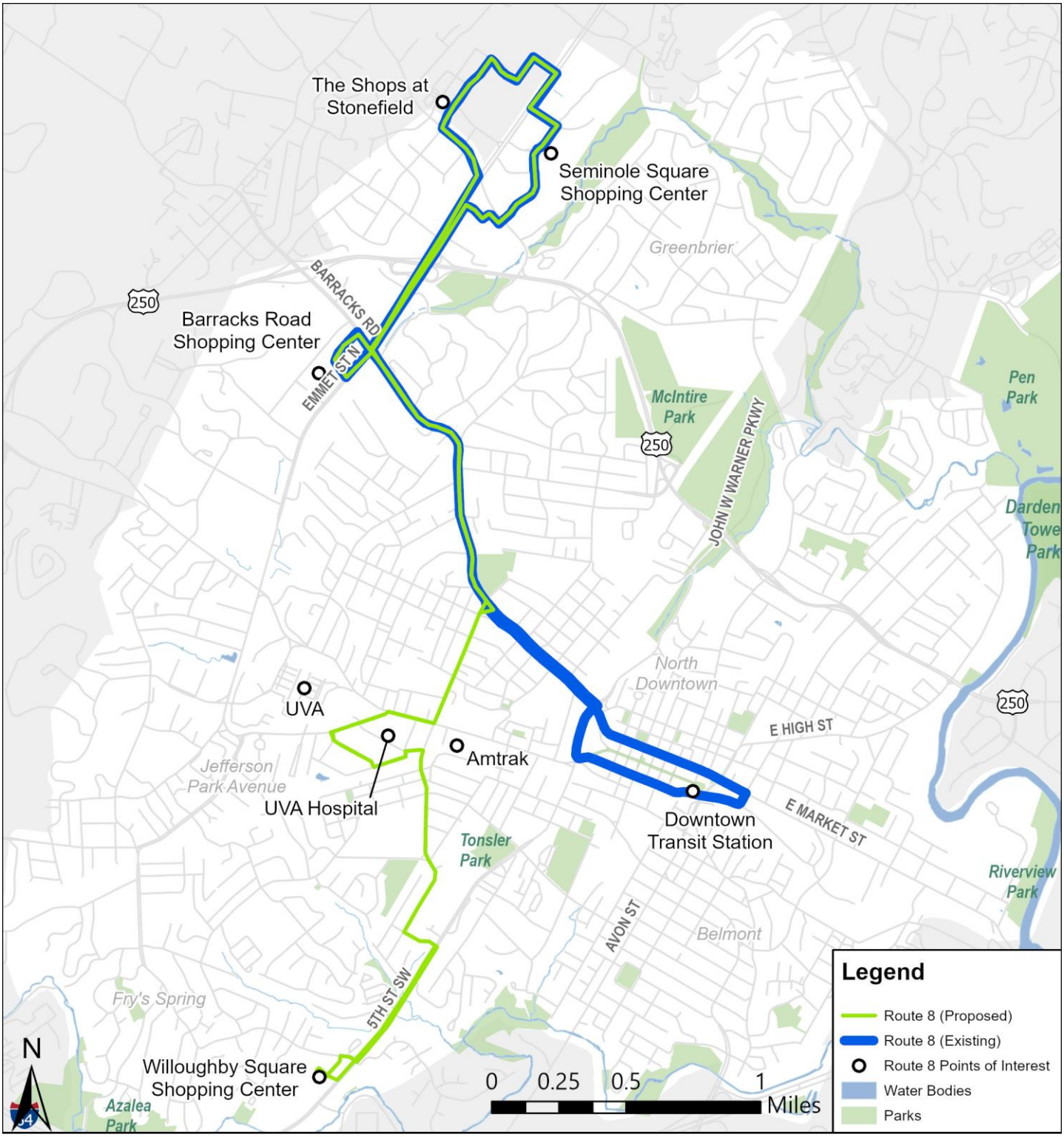
- Realignment from downtown to Willoughby Shopping Center will provide south Charlottesville residents with one-seat ride access to the US 29 corridor.
- Schedule changes required to meet service standards.

Service Change Phasing				
Horizon	**Improvement**	**Estimated Change from Existing (Annual)**		
		Revenue Hours	**Revenue Miles**	**Ridership**
Mid-Term	Modify/extend route to end at Willoughby Shopping Center (via UVA Hospital), eliminating service to Downtown	1,302	12,667	28,942
Mid-Term	Increase weekday and Saturday span to 6:30 AM to 10:30 PM	1,917	19,220	
Long-Term	Increase frequency to every 30 minutes on weekdays and Saturday	6,531	61,505	38,280
Unconstrained	Implement Sunday service with 30-minute frequencies	1,512	22,506	28,052

NOTE: Unconstrained improvements are not reflected in Level of Service table above or map below.

Route 8

Preston Avenue and Emmet Street



Route 9

Health Department and YMCA

Service Classification
Local

Origins and Destinations Served		
	Existing	**Proposed**
To/From	Downtown/ Charlottesville High School	Downtown/Fashion Square Mall

Level of Service			
Span			
	Existing	**Proposed**	
Weekday	7:00 AM – 10:30 PM	6:30 AM – 10:30 PM	
Saturday	7:00 AM – 10:30 PM	6:30 AM – 10:30 PM	
Sunday	-	6:30 AM – 10:30 PM	
Headways			
		Existing	**Proposed**
Weekday	Peak	30 mins	30 mins
	Off-Peak	60 mins	60 mins
Saturday	All-Day	30 mins	30 mins
Sunday	All-Day	-	60 mins

Notes
Existing Weekday frequency reverts to every 60 minutes after 5:00 PM.

Service Changes

- Extend weekday 30-minute frequencies to run until 7:00 PM (currently running until 5:00 PM)
- Realign route to eliminate service to UVA Hospital and extend service to Fashion Square Mall
- Add Sunday service with 60-minute frequencies
- Increase frequency to every 30 minutes every day

☑ **Meets Identified Demand**	☐ Performance Improvement Opportunity	☐ Efficiency Improvement Opportunity	☑ **Alignment with Service Standards**

Justification

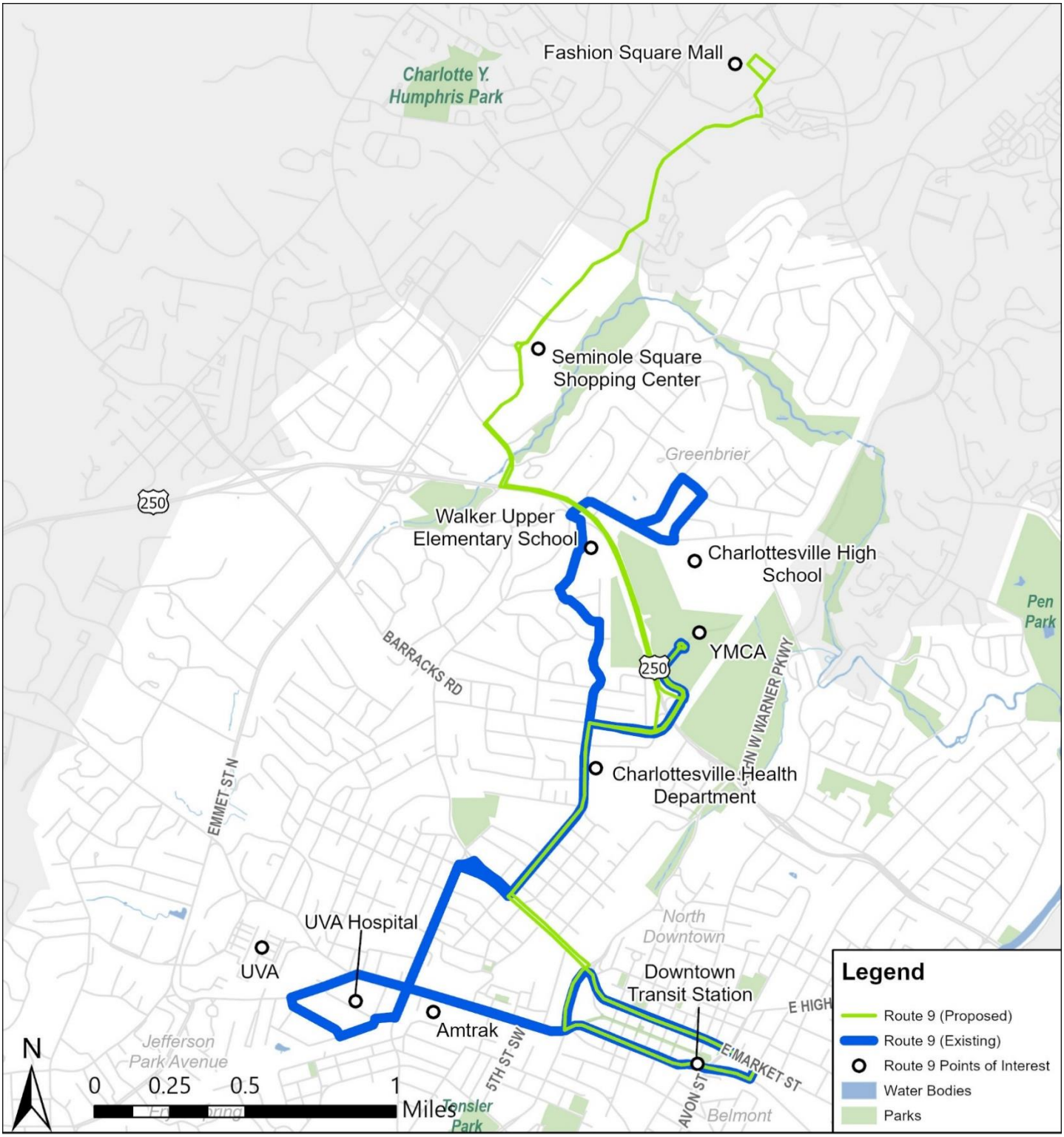
- CAT has received requests to extend 30-minute service to accommodate after school activities at Charlottesville High School
- Realigning the route to run from Downtown to Fashion Square Mall will provide more direct service from Downtown to the eastern portion of the US 29 corridor
- Schedule changes are required to meet service standards

Service Change Phasing				
Horizon	**Improvement**	**Estimated Change from Existing (Annual)**		
		Revenue Hours	**Revenue Miles**	**Ridership**
Short-Term	Extend weekday 30-minute frequencies to run until 7:00 PM (currently running until 5:00 PM).	527	**4,932**	3,385
Mid-Term	Realign route to eliminate service to UVA Hospital and extend service to Fashion Square Mall.	4,007	63,919	6,031
Long-Term	Add Sunday service with 60-minute frequencies.	1,075	15,971	4,360
Unconstrained	Increase frequency to every 30 minutes every day.	3,944	52,241	7,514

NOTE: Unconstrained improvements are not reflected in Level of Service table above or map below.

Route 9

Health Department and YMCA



Route 10
Pantops

Service Classification
Local

Origins and Destinations Served		
	Existing	**Proposed**
To / From	Downtown/Sentara	Downtown/Sentara

Level of Service			
Span			
	Existing	**Proposed**	
Weekday	6:30 AM – 10:30 PM	6:30 AM – 10:30 PM	
Saturday	6:30 AM – 10:30 PM	6:30 AM – 10:30 PM	
Sunday	-	6:30 AM – 10:30 PM	
Headways			
		Existing	**Proposed**
Weekday	Peak	60 mins	30 mins
	Off-Peak	60 mins	30 mins
Saturday	All-Day	60 mins	30 mins
Sunday	All-Day	-	30 mins

Service Changes

- Realign Route 10 to remove the one-way loop through Pantops, replacing it with bi-directional service and eliminating service to Stony Point Road/Avemore Apartments
- Increase frequency to every 30 minutes on weekdays and Saturday
- Add Sunday service with 30-minute frequencies
- Increase span to 6:00 AM to 12:00 AM every day

☑ **Meets Identified Demand**	☐ Performance Improvement Opportunity	☐ Efficiency Improvement Opportunity	☑ **Alignment with Service Standards**

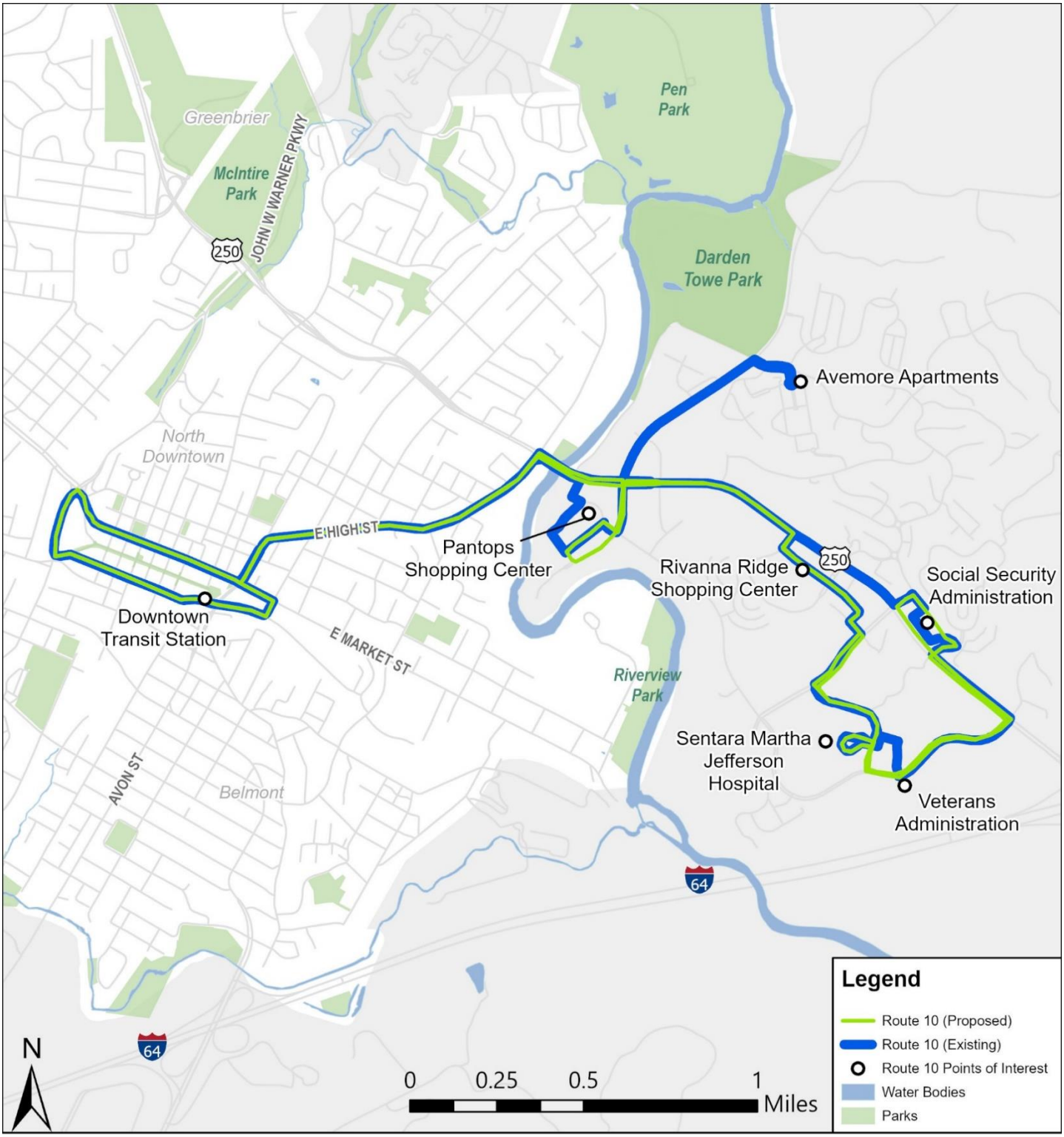
Justification

- Currently, service through Pantops operates on a one-way, counterclockwise loop. To make the route more convenient and easier for riders to understand, the loop will be replaced with bi-directional service. These changes will allow riders greater mobility and choice about how and when to travel.
- Schedule changes required to meet service standards.

Service Change Phasing				
Horizon	**Improvement**	**Estimated Change from Existing (Annual)**		
		Revenue Hours	**Revenue Miles**	**Ridership**
Mid-Term	Realign Route 10 to remove the one-way loop through Pantops, replacing it with bi-directional service and eliminating service to Stony Point Road/Avemore Apartments.	992	5,588	(2,379)
Long-Term	Increase frequency to every 30 minutes on weekdays and Saturday.	5,472	57,587	33,126
Long-Term	Add Sunday service with 30-minute frequencies	1,331	19,834	
Unconstrained	Increase span to 6:00 AM to 12:00 AM every day	1,546	15,954	14,164

NOTE: Unconstrained improvements are not reflected in Level of Service table above or map below.

Route 10
Pantops



Route 11

Locust Avenue and Rio Road

Service Classification
Lifeline

Origins and Destinations Served		
	Existing	**Proposed**
To / From	Downtown/Fashion Square Mall	Downtown/Fashion Square Mall

Level of Service			
Span			
	Existing	**Proposed**	
Weekday	6:00 AM – 10:30 PM	6:30 AM – 10:30 PM	
Saturday	6:00 AM – 10:30 PM	6:30 AM – 10:30 PM	
Sunday	-	6:30 AM – 10:30 PM	
Headways			
		Existing	**Proposed**
Weekday	Peak	60 mins	30 mins
	Off-Peak	60 mins	30 mins
Saturday	All-Day	60 mins	30 mins
Sunday	All-Day	-	60 mins

Service Changes

- Add service to the Center at Belvedere (northbound towards Fashion Square Mall only) and eliminate service to Locust Avenue, Peartree Lane, and St Clair Avenue
- Increase frequency to every 30 minutes on weekdays and Saturday
- Increase Saturday span to 6:30 AM to 10:30 PM
- Add Sunday service with 60-minute frequencies

☑ **Meets Identified Demand**	☑ **Performance Improvement Opportunity**	☐ Efficiency Improvement Opportunity	☑ **Alignment with Service Standards**

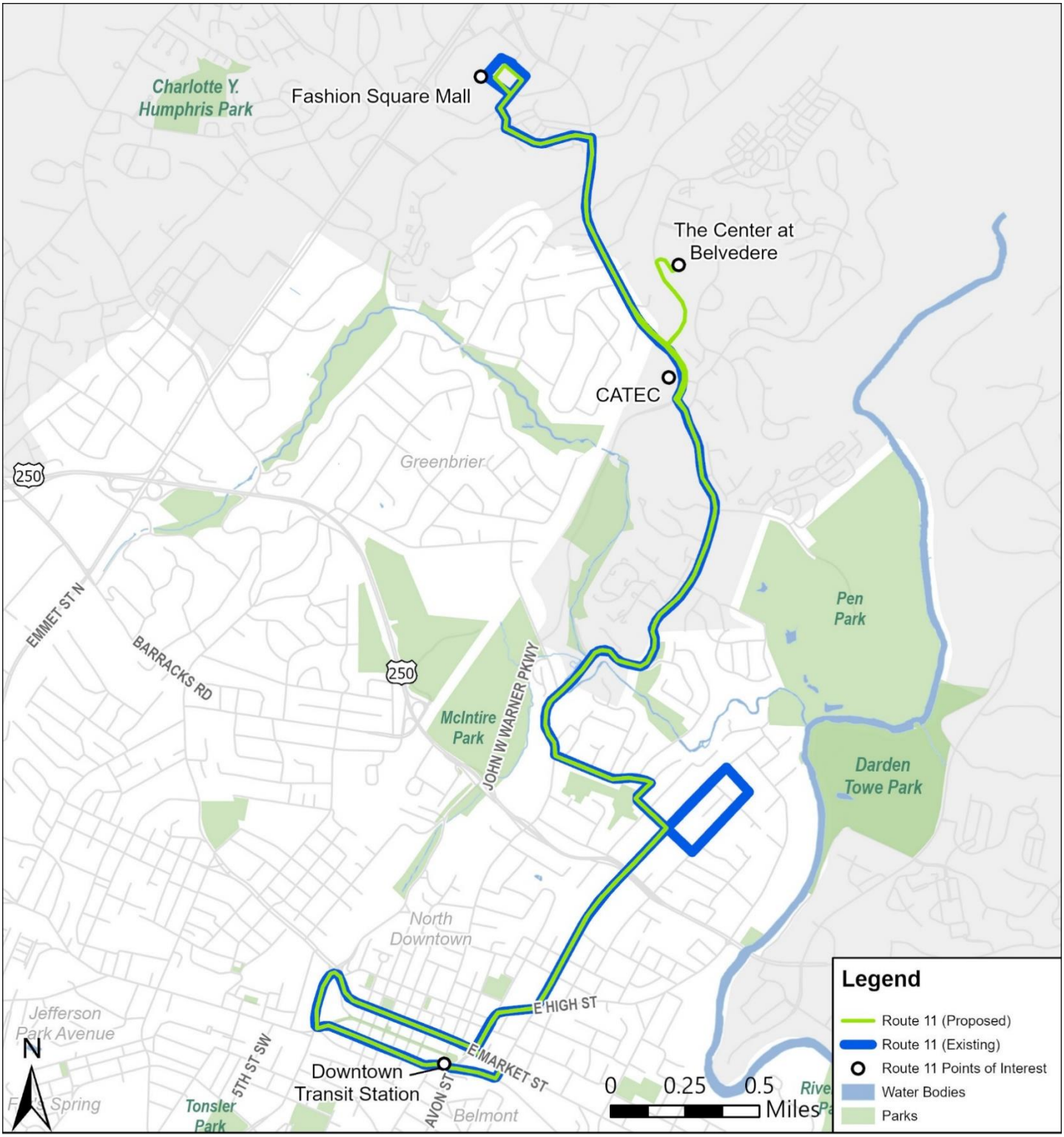
Justification

- This service change will fulfill longstanding rider requests for CAT service to the Center at Belvedere
- Schedule changes are required to meet service standards

Service Change Phasing				
Horizon	**Improvement**	**Estimated Change from Existing (Annual)**		
		Revenue Hours	**Revenue Miles**	**Ridership**
Short-Term	Add service to the Center at Belvedere (northbound towards Fashion Square Mall only) and eliminate service to Locust Avenue, Peartree Lane, and St Clair Avenue	(337)	(3,876)	41
Mid-Term	Increase frequency to every 30 minutes on weekdays and Saturday.	4,076	50,389	21,060
Long-Term	Increase Saturday span to 6:30 AM to 10:30 PM.	249	3,001	13,626
Long-Term	Add Sunday service with 60-minute frequencies.	748	11,146	

Route 11

Locust Avenue and Rio Road



Free Trolley

W Main Street & UVA

Service Classification
Key

Origins and Destinations Served		
	Existing	**Proposed**
To / From	Downtown/UVA	Downtown/UVA

Level of Service			
Span			
	Existing	**Proposed**	
Weekday	6:30 AM – 10:30 PM	6:30 AM – 10:30 PM	
Saturday	6:30 AM – 10:30 PM	6:30 AM – 10:30 PM	
Sunday	-	6:30 AM – 10:30 PM	
Headways			
		Existing	**Proposed**
Weekday	Peak	25	15
	Off-Peak	25	15
Saturday	All-Day	25	30
Sunday	All-Day	-	30

Service Changes

- Increase weekday frequency to every 15 minutes
- Add Sunday service with 30-minute frequencies
- Increase weekday frequency to every 10 minutes and weekend frequency to every 15 minutes
- Increase span to 6:00 AM to 12:00 AM on weekdays and Saturday

☑ **Meets Identified Demand**	☑ **Performance Improvement Opportunity**	☐ Efficiency Improvement Opportunity	☑ **Alignment with Service Standards**

Justification

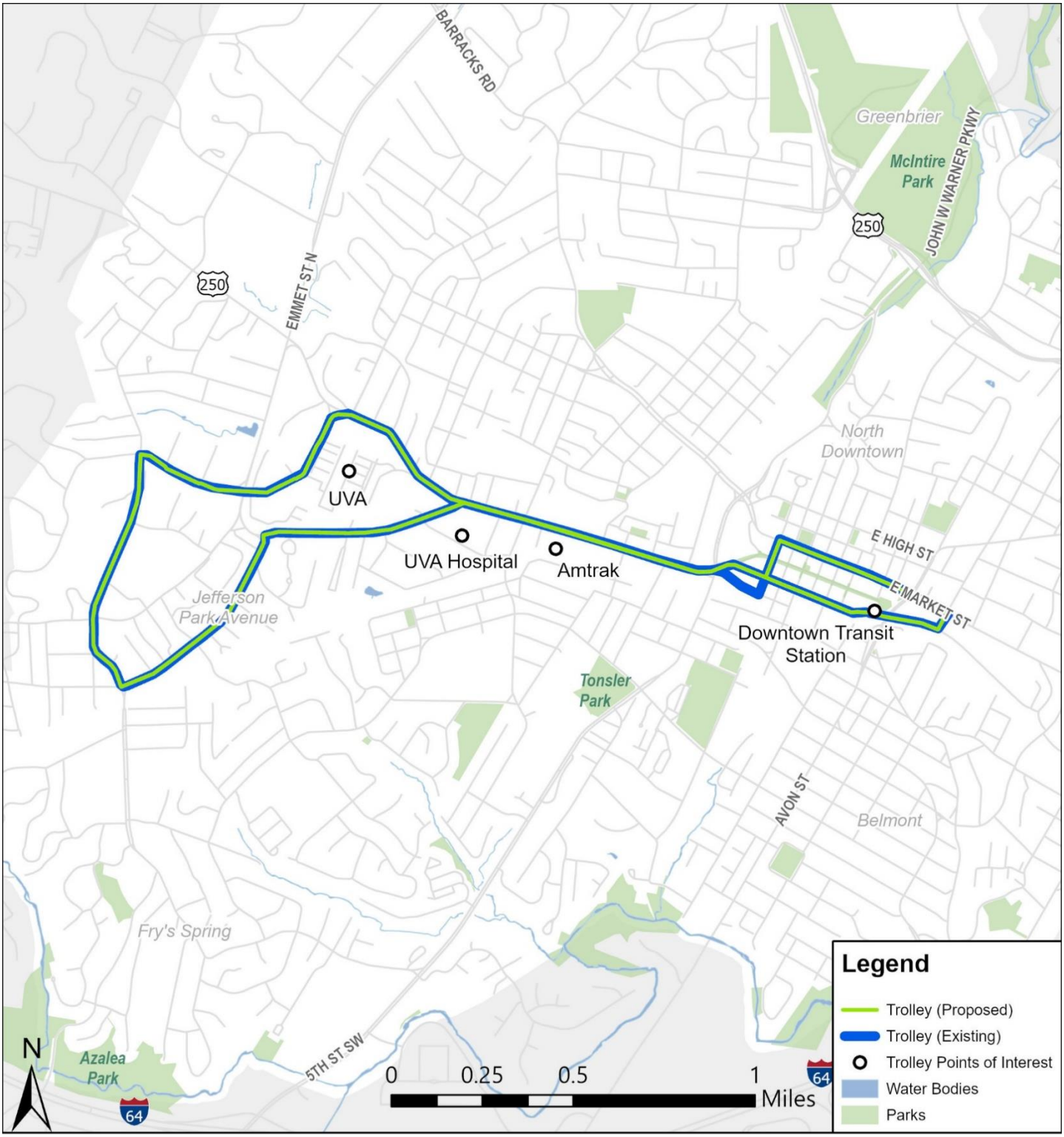
- Increasing frequencies to 15- and 30-minute intervals will better facilitate timed transfers with other routes.
- The Free Trolley route has the highest riders per revenue hour identified in Chapter 2, demonstrating strong demand. This change will provide additional service to service potential latent demand.
- Schedule changes are required to meet service standards.

Service Change Phasing				
Horizon	**Improvement**	**Estimated Change from Existing (Annual)**		
		Revenue Hours	**Revenue Miles**	**Ridership**
Mid-Term	Increase weekday frequency to every 15 minutes.	5,737	40,749	87,753
Mid-Term	Add Sunday service with 30-minute frequencies.	497	9,114	
Unconstrained	Increase weekday frequency to every 10 minutes and weekend frequency to every 15 minutes	8,971	69,129	189,772
Unconstrained	Increase span to 6:00 AM to 12:00 AM on weekdays and Saturday	3,092	23,319	

NOTE: Unconstrained improvements are not reflected in Level of Service table above or map below.

Free Trolley

W Main Street & UVA



MicroCAT

On-Demand Microtransit Service

Service Classification
Key/Local/Lifeline

Origins and Destinations Served		
	Existing	**Proposed**
To / From	None	Various

Level of Service			
Span			
		Existing	**Proposed**
Weekday		-	6:30 AM – 9:00 PM
Saturday		-	6:30 AM – 9:00 PM
Sunday		-	-
Headways			
		Existing	**Proposed**
Weekday	Peak	-	N/A
	Off-Peak	-	N/A
Saturday	All-Day	-	N/A
Sunday	All-Day	-	N/A

Notes
Following a successful pilot period to test the effectiveness of microtransit service in Albemarle County's initial two zones, CAT will investigate potential expansion of microtransit into other areas of Albemarle and within the City of Charlottesville, with a specific focus on serving lower-income residents.

Service Changes

- Implement microtransit service in the Pantops zone on weekdays and Saturday from 6:30 AM to 9:00 PM
- Implement microtransit service in the US 29 North zone on weekdays and Saturday from 6:30 AM to 9:00 PM

☑ **Meets Identified Demand**	☐ Performance Improvement Opportunity	☐ Efficiency Improvement Opportunity	☐ Alignment with Service Standards

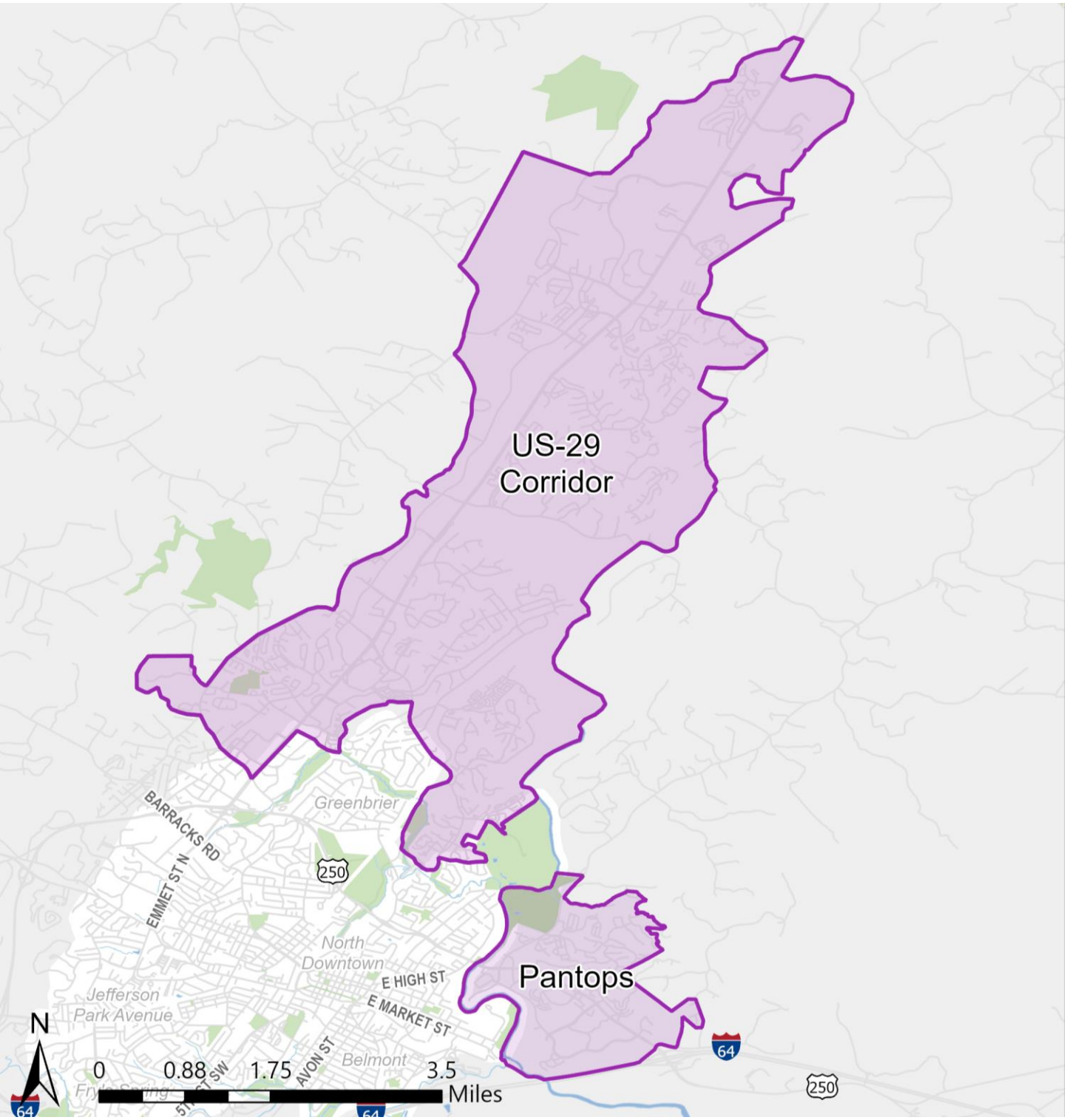
Justification

- The Pantops area is a key cultural and tourism destination with low density that makes it difficult to serve effectively with traditional fixed-route transit.
- The US 29 North area is a fast-growing, destination-rich area that is ripe for transit expansion; however, it too has a lower density that makes effective fixed-route transit service difficult to implement.
- Creating transit connections in these areas with MicroCAT service will improve access to jobs and opportunities in these two economically important parts of the region.

Service Change Phasing				
Horizon	**Improvement**	**Estimated Change from Existing (Annual)**		
		Revenue Hours	**Revenue Miles**	**Ridership**
Short-Term	Implement microtransit service in the Pantops zone on weekdays and Saturday from 6:30 AM to 9:00 PM.	4,250	Estimate Unavailable	TBD
Short-Term	Implement microtransit service in the US 29 North zone on weekdays and Saturday from 6:30 AM to 9:00 PM.	13,000	Estimate Unavailable	TBD

MicroCAT

On-Demand Microtransit Service



3.2 Prioritization of Planned Service Improvements

The proposed projects outlined in **Section 3.1** are prioritized into a service plan based on several factors including cost, implementation feasibility, and needs fulfillment. In placing projects into the ten-year TSP timeframe, CAT has outlined its priorities for how to approach future funding opportunities.

Table 3-1 shows each project's implementation horizon, costs, and funding strategy. It must be noted, however, that these plans are accurate as of the development of the TSP but are subject to change as funding availability and service needs may change.

Each project is assigned to an implementation timeframe as shown below. Projects that do not fit within the constrained funding, but that may be implemented if funding is identified during the ten-year horizon, are labeled as unconstrained. Any constrained projects not currently included in the Constrained Long-Range Plan (CLRP) will be added upon City Council adoption of the TSP so that they can be included in the STIP and SYIP.

- **Short-Term** (FY 2025 to FY 2028)
- **Medium-Term** (FY 2029 to FY 2032)
- **Long-Term** (FY 2033 to FY 2035)

Table 3-1: Summary of Prioritized Service Improvements

Timeframe	Project Description	Incremental Annual O&M Cost	Incremental Capital Cost
Short	Route 2 Realignment	$651,139	$2,476,119
Short	Route 6 Weekday Frequency Improvements	$510,528	$1,238,060
Short	Route 9 Weekday Frequency Improvements	$68,689	N/A
Short	Route 11 Realignment	$(43,957)	N/A
Short	MicroCAT Pantops and 29 North Implementation	$1,755,000[1]	N/A
Short	Route 6 Realignment	$(461,269)	N/A
Short	Route 6 Saturday Frequency Improvements	$84,708	N/A
	TOTAL Short-Term	**$2,564,838**	**$3,714,179**
Medium	Route 1 Weekday Frequency Improvements	$533,792	$2,786,894
Medium	Route 2A Sunday Service	$68,559	N/A
Medium	Route 2B Sunday Service	$122,584	N/A
Medium	Route 3 Reconfiguration	$725,669	$2,786,894

[1] Source: DRPT TRIP grant

Timeframe	Project Description	Incremental Annual O&M Cost	Incremental Capital Cost
Medium	Route 4 Weekday Frequency Improvements	$519,111	N/A
Medium	Route 5 Realignment	$(313,287)	N/A
Medium	Route 7 Realignment	$869,981	$2,786,894
Medium	Route 7 Sunday Service	$359,678	N/A
Medium	Route 7 Supplemental Service	$144,312	$2,786,894
Medium	Route 8 Realignment	$191,143	$1,393,447
Medium	Route 8 Service Span Improvements	$281,430	N/A
Medium	Route 9 Realignment	$588,257	$2,786,894
Medium	Route 10 realignment	$145,633	$1,393,447
Medium	Route 11 Weekday Frequency Improvements	$598,387	$1,393,447
Medium	Trolley Weekday Frequency Improvements	$842,234	$2,786,894
Medium	Trolley Sunday service	$79,729	N/A
	TOTAL Medium-Term	**$5,757,212**	**$20,901,705**
Long	Route 1 Weekend Service	$235,016	N/A
Long	Route 2A Weekday Frequency Improvements	$479,978	$1,522,657
Long	Route 2A Weekday Service Span Improvements	$119,994	N/A
Long	Route 2B Weekday Frequency Improvements	$763,601	$1,522,657
Long	Route 2B Weekday Service Span Improvements	$190,900	N/A
Long	Route 3 Weekend Frequency Improvements	$197,157	N/A
Long	Route 3E Sunday Service	$54,864	N/A
Long	Route 4 Saturday Frequency Improvements	$145,181	N/A
Long	Route 4 Service Span Improvements	$195,553	N/A
Long	Route 5 Sunday Service	$170,046	N/A

Timeframe	Project Description	Incremental Annual O&M Cost	Incremental Capital Cost
Long	Route 5 Service Span Improvements	$509,816	N/A
Long	Route 8 Frequency Improvements	$1,047,706	$1,522,657
Long	Route 9 Sunday Service	$172,452	N/A
Long	Route 10 Frequency Improvements	$877,821	$1,522,657
Long	Route 10 Sunday Service	$213,520	N/A
Long	Route 11 Sunday service	$39,945	N/A
Long	Route 11 Saturday service span improvements	$119,994	N/A
	TOTAL Long-Term	**$5,533,544**	**$6,090,628**

Unconstrained service improvements are listed in **Table 3-2** below. It should be noted that these unconstrained service recommendations do not include all of the unconstrained service recommendations from the Regional Transit Vision Plan. Some of the proposed recommendations in that plan do not fit with the existing route structure, the route network associated with the improvements proposed within the constrained improvements table above, or with the constrained improvements recommended within the Regional Transit Vision Plan itself.

Table 3-2: Unconstrained Service Improvements

Timeframe	Project Description	Incremental O&M Cost
Unconstrained	Route 1 Weekend Frequency Improvements	$241,733
Unconstrained	Route 2A Weekend Frequency Improvements	$237,876
Unconstrained	Route 2B Weekend Frequency Improvements	$379,340
Unconstrained	Route 3 Service Span Improvements	$191,072
Unconstrained	Route 3E Frequency Improvements	$435,084
Unconstrained	Route 4 Sunday Service	$267,501
Unconstrained	Route 6 Sunday Service	$143,041
Unconstrained	Route 6 Service Span Improvements	$151,456
Unconstrained	Route 7 Extension	$2,355,098

Timeframe	Project Description	Incremental O&M Cost
Unconstrained	Route 7 Service Span Improvements	$774,457
Unconstrained	Route 8 Sunday Service	$265,047
Unconstrained	Route 9 Frequency Improvements	$691,366
Unconstrained	Route 10 Service Span Improvements	$271,007
Unconstrained	Trolley Frequency Improvements	$1,572,578
Unconstrained	Trolley Service Span Improvements	$542,014
	TOTAL Unconstrained	**$8,518,670**

3.3 Capital Projects Supporting TSP Implementation

ZEV Transition

Although CAT has not yet determined the technology mix of future revenue vehicle purchases, CAT's Facility Design and Zero-Emissions Vehicles Feasibility Study is in the process of establishing this information. For purposes of this analysis, capital costs were assumed to include the purchase of zero-emissions vehicles (ZEVs), but not their associated facilities infrastructure. The feasibility study will identify necessary facilities improvements related to ZEV implementation.

Downtown Vehicle Capacity

Capacity at the Downtown Transit Station is limited by the number of bus bays. Long-term investments in a new downtown transfer location or significant restructuring of operations so that layovers occur off-site will be required to fully implement TSP service recommendations. Potential short-term options to address this issue include:

- Stagger route departure times to minimize the number of vehicles servicing the Downtown Transit Station at any given time. This will not be a long-term solution given increased frequencies proposed over time.
- Restructure operations so that layovers no longer take place at the Downtown Transit Station. Routes could lay over only at the non-Downtown end of the line and serve the Downtown Transit Station as a stop along the Downtown loop before heading back outbound. This could create on-time performance issues due to the lack of recovery time after inbound trips and limits operators' access to restroom facilities during their layovers.
- Conduct a study to examine potential options for addressing bus capacity constraints. If a new site was identified, CAT would need to pursue funding for design and construction.

3.4 Service Development

Table 3-3 details the high-level operational impacts of the proposed projects by phase.

Table 3-3: Operational Impacts

Timeframe	Projects	Annual Service Hours Change	Annual Service Miles Change	Anticipated Annual Ridership Change
Short-Term	• Route 2 Realignment • Route 6 Weekday Frequency Improvements • Route 6 Realignment • Route 6 Saturday Frequency Improvements • Route 9 Weekday Frequency Improvements • Route 11 Realignment • MicroCAT Pantops and 29 North Implementation[2]	23,781	98,729	40,254
Mid-Term	• Route 1 Weekday Frequency Improvements • Route 2A Sunday Service • Route 2B Sunday Service • Route 3 Reconfiguration • Route 4 Weekday Frequency Improvements • Route 5 Realignment • Route 7 Realignment • Route 7 Sunday Service • Route 7 Supplemental Service • Route 8 Realignment • Route 8 Service Span Improvements • Route 9 Realignment • Route 10 realignment • Route 11 Weekday Frequency Improvements • Trolley Weekday Frequency Improvements • Trolley Sunday service	39,170	422,334	490,368
Long-Term	• Route 1 Weekend Service • Route 2A Weekday Frequency Improvements • Route 2A Weekday Service Span Improvements • Route 2B Weekday Frequency Improvements • Route 2B Weekday Service Span Improvements	34,494	386,425	215,896

[2] Estimated annual service hours change include MicroCAT, however, estimated annual service miles change does not.

Timeframe	Projects	Annual Service Hours Change	Annual Service Miles Change	Anticipated Annual Ridership Change
Long-Term (cont.)	• Route 3 Weekend Frequency Improvements • Route 3E Sunday Service • Route 4 Saturday Frequency Improvements • Route 4 Service Span Improvements • Route 5 Sunday Service • Route 5 Service Span Improvements • Route 8 Frequency Improvements • Route 9 Sunday Service • Route 10 Frequency Improvements • Route 10 Sunday Service • Route 11 Sunday service • Route 11 Saturday service span improvements			
Unconstrained	• Route 1 Weekend Frequency Improvements • Route 2A Weekend Frequency Improvements • Route 2B Weekend Frequency Improvements • Route 3 Service Span Improvements • Route 3E Frequency Improvements • Route 4 Sunday Service • Route 6 Sunday Service • Route 6 Service Span Improvements • Route 7 Extension • Route 7 Service Span Improvements • Route 8 Sunday Service • Route 9 Frequency Improvements • Route 10 Service Span Improvements • Trolley Frequency Improvements • Trolley Service Span Improvements	48,596	550,916	403,816

Title VI

As a recipient of federal funds, CAT must adhere to Title VI of the Civil Rights Act of 1964 and its associated executive orders, which collectively prohibit discrimination in the provision of transit service based on race, color, national origin, and income. Major service changes such as those outlined in the TSP must be evaluated to determine whether they have a disparate or disproportionate impact on minority and low-income populations.

Although this analysis should be done for each service change in advance of its implementation, a broad review of potential impacts was completed as part of the TSP. American Community Survey data within Remix was used to assess the percentages of the population that are minority or below the poverty line within the network catchment area. The results of this analysis are shown in **Table 3-4**. The percentage of the population does not significantly change, but the percentage of the population served by transit that are classified as a minority increases by 7%. This indicates that the future network would improve geographic accessibility for minority populations.

Table 3-4: Title VI Analysis

	% Minority	% Poverty
Existing Network	37%	20%
Long-Term Network	44%	20%

Additional analysis will be required at the time of implementation to better understand Title VI impacts and identify potential mitigation strategies, if warranted.

3.5 Additional Recommendations

To fully realize the goals and objectives set forth in Chapter 1 and to better implement the planned service improvements described in this chapter, several policy recommendations should be considered for implementation over the ten-year span of this TSP. Some of these policy recommendations can be implemented unilaterally by CAT, while others require regional coordination to execute.

Customer Experience

CAT's success is dependent upon providing a consistently excellent customer experience. To that end, CAT should pursue the following changes to enhance the customer experience:

- Improve bus stop signs by adding route names, numbers, and directions
- Expand hours of operation for Downtown Transit Station
- Continue expanding bus stop amenities, including identifying additional locations for deployment of bus shelters

Fare Policy

CAT's zero-fare operations are funded in part by a Transit Ridership Incentive Program (TRIP) grant provided by the Virginia Department of Rail and Public Transportation (DRPT) that expires in 2026. CAT should explore future funding opportunities to sustain fare-free operations.

Intermodal Transfer Opportunities

CAT should work with large regional employers such as the University of Virginia (UVA) to assess commuting demand, to market existing park and ride locations, and to identify potential new locations for park and ride facilities. This will help leverage CAT's investments in transit service to serve a broader spectrum of the community.

On-Time Performance

On-time performance (OTP) is a key driver of customer satisfaction. When implementing TSP service adjustments, CAT should look for opportunities to adjust route schedules to add additional time and remove excess time where necessary. The agency should also cultivate a focus on OTP monitoring to identify and eliminate problem areas through schedule adjustments or by addressing operator behavior. These recommendations will require addressing underlying software issues that currently cause OTP to be calculated inaccurately.

Regional Coordination

Numerous opportunities exist for enhanced regional coordination among CAT, JAUNT, Albemarle County, and UVA's University Transit Service (UTS). Albemarle County is conducting a study[3] that has identified the cost allocation methodology that CAT uses as something that should be addressed at a regional level. Once completed, this study could form the foundation for revaluating CAT's capital funding mix, as well as a reevaluation of more general funding considerations for the agency. CAT should also explore opportunities to collaborate and coordinate service with Jaunt and UTS in accordance with the findings of the Regional Governance Study that is currently underway.

Microtransit Expansion Studies

MicroCAT on-demand microtransit service began operating in two zones in Fall 2023 as a pilot project. Once permanent service is established and has been in operation for a sufficient amount of time, additional planning work should be completed to assess the potential for expansion. While Albemarle County has existing planning work to build from, in the form of the 2022 Albemarle County Transit Expansion Study, CAT will need to work with the City to determine the potential for microtransit services.

Regional Transit Vision Plan (Unconstrained)

Along with identifying opportunities to incorporate route improvements from the unconstrained recommendations of the Regional Transit Vision Plan, CAT should explore opportunities to expand and formalize transfer opportunities outside of Downtown to improve network connectivity and better serve the diffuse urban form of Charlottesville. Potential future locations for transfer hubs include Barracks Road Shopping Center, 5th Street Station, Fashion Square Mall, and Willoughby Square Shopping Center.

CAT should also begin identifying opportunities to study enhancing transit service in the US 29/Emmett Street/West Main Street corridor through improvements to capacity, frequency, and reliability.

[3] (Texas A&M Transportation Institute, 2023)

Charlottesville Area Transit
Transit Strategic Plan

Chapter 4: Implementation Plan

DRAFT | May 2024

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.

4.1.1 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

4.1.2 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%

4.1.3 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

4.1.4 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 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.

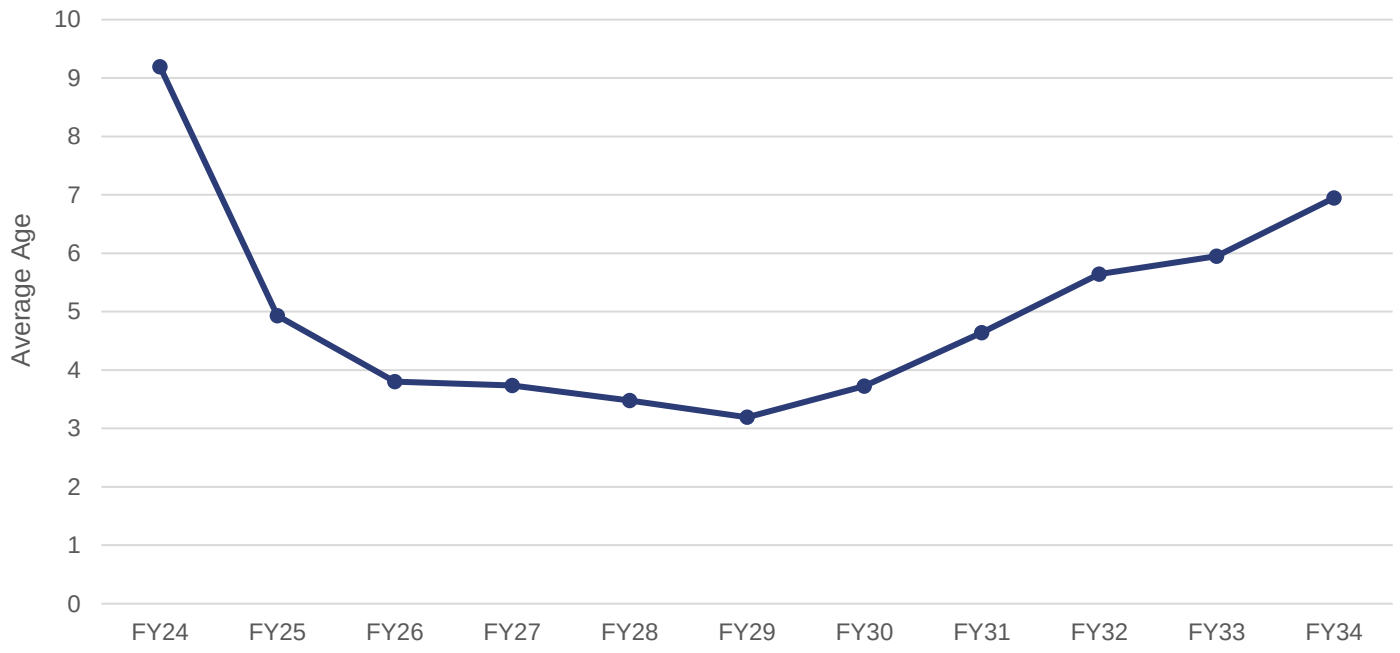
4.2 Capital Improvement Plan

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.

4.2.1 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**

4.2.2 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	-	-	-	-	-

4.2.3 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.

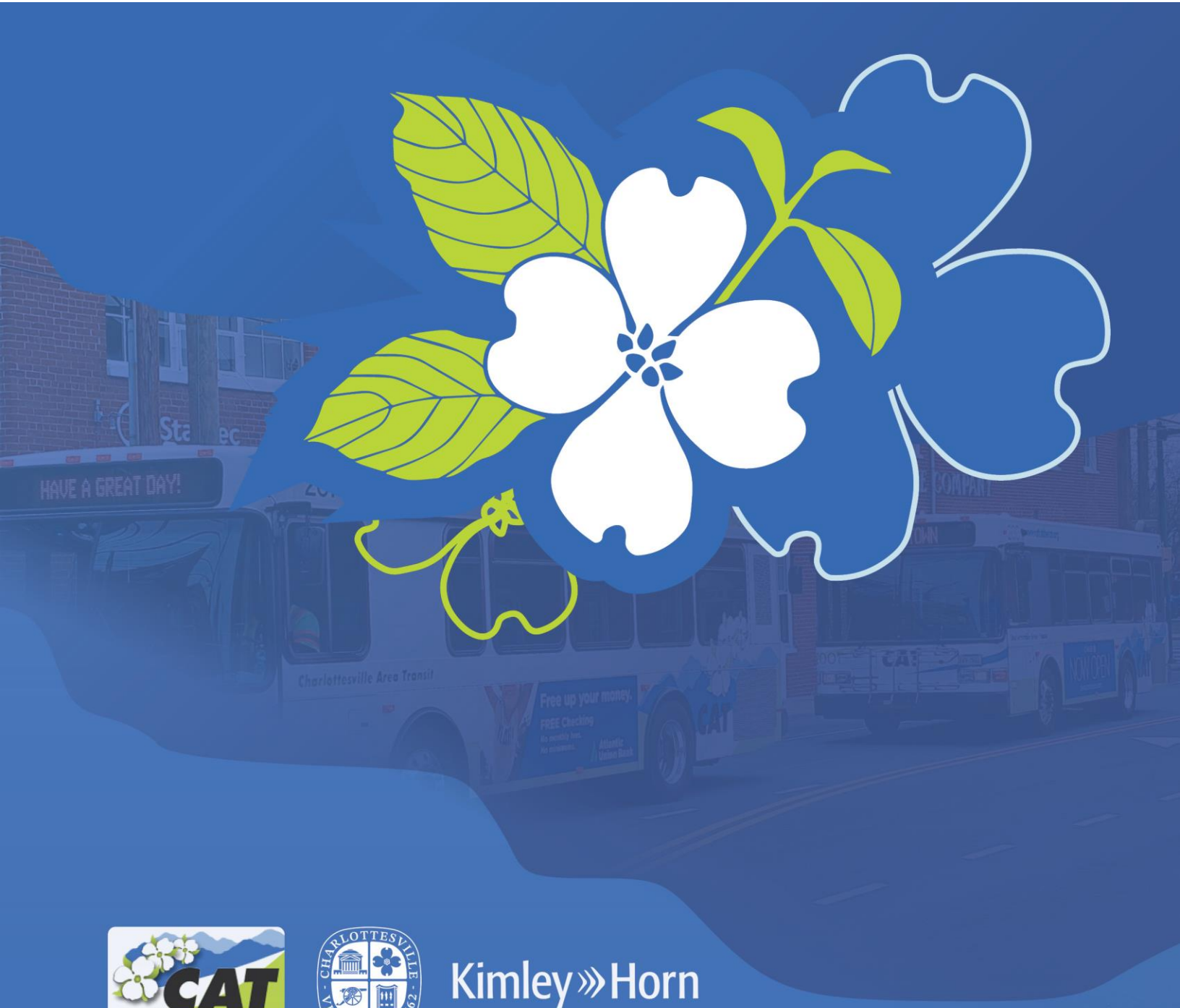
Over the next ten years, infrastructure and utility improvements will be necessary to supplement on-site battery electric vehicle charging and hydrogen fueling. Conceptual design is underway for these upgrades, but there is not sufficient information to program the timing or costs of these improvements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

4.2.4 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.



Charlottesville Area Transit
Transit Strategic Plan

Chapter 5: Financial Plan

DRAFT | May 2024

Chapter 5: Financial Plan

Chapter 5 of the Transit Strategic Plan presents the financial plan and provides projections of the anticipated expenditures and revenues over the ten-year TSP timeframe. This chapter is organized into two sections:

- **Section 5.1 Operating and Maintenance Costs and Funding Sources** discusses the projected operating and maintenance costs and funding sources,
- **Section 5.2 Capital Costs and Funding Sources** discusses the costs of vehicle purchases and facility improvements.

5.1 Operating and Maintenance Costs and Funding Sources

5.1.1 Revenue Assumptions

The values presented in each section are based on data provided by CAT and the City of Charlottesville. Projections for future years are calculated using a combination of forecasts provided by CAT staff, CAT's FY 2025 projected budget, the FY 2024 DRPT Six Year Improvement Program (SYIP), and standard escalation rates. As with any projection, it is important to note that the uncertainty increases through time; therefore, values and figures are subject to change over time. All costs in this chapter have been inflated to year of expenditure dollars (YOE$), accounting for the minimum three percent annual factor specified in the DRPT TSP Guidelines. For a retrospective look into CAT's annual costs and funding sources, refer to **Appendix A**.

CAT is still determining whether to continue fare-free service as of the publishing of this document. As a result, CAT's projected revenues were calculated under two scenarios: a scenario where CAT maintains fare-free service past the conclusion of the DRPT TRIP grant and a scenario where CAT reintroduces fares. This was done for both the baseline scenario and the service change scenario.

CAT generates operating and maintenance revenue that is grouped into six categories: farebox revenue, contract service, advertising and other revenue, federal funding, state funding, local funding, and other income. Future years beyond the already budgeted FY 2024 are based on the following assumptions.

5.1.1.1 Farebox Revenue

Starting in 2020, CAT began operating fare-free service in response to the COVID-19 pandemic. In 2021, CAT received a $1,066,620 grant from the Commonwealth Transportation Board under DRPT's Transit Ridership Incentive Program (TRIP) which allows CAT to maintain fare-free service until June 30, 2026.

CAT is still determining whether to continue fare free service as of the publishing of this document. As a result, CAT's projected revenues were calculated under two scenarios: a scenario where CAT maintains fare-free service past the conclusion of the DRPT TRIP grant and a scenario where CAT reintroduces fares. This was done for both the baseline scenario and the service change scenario.

For the fare-free scenario, no farebox revenue was assumed for the duration of the ten-year TSP timeframe. This assumption was used for both the baseline and service change scenarios.

For the scenario where fares are reintroduced, fares are assumed to begin in FY 2027 upon the conclusion of the DRPT TRIP grant. Projected farebox revenues were calculated based on ridership and FY 2019's farebox recovery. FY 2019 was chosen as it was the last full fiscal year before the COVID-19 pandemic; farebox revenue for FY 2019 was $553,400 for 1,871,952 annual unlinked trips (UPT). For the baseline scenario, FY 2027 was assumed to have 90 percent of FY 2019's UPT as transit ridership is still slowly recovering from the COVID-19 pandemic, thus FY 2027's farebox revenue was also assumed to be 90 percent of FY 2019's

farebox revenue ($539,000). Farebox revenues were escalated by 1.5 percent each year to account for further ridership recovery and potential increases to CAT's previous fare structure.

For the service change scenario, the base level of ridership was also assumed to be 90 percent of FY 2019's ridership. The level of ridership is then expected to increase based on the ridership projections for the service changes outlined in Chapter 3. **Table 5-1** shows the total projected ridership and changes in ridership for the distinct TSP timeframes.

Table 5-1: Projected Ridership for Each TSP Timeframe

	Total Annual Ridership	Ridership Change
Base (90% of FY 2019's Ridership)	1,684,757	-
Short-Term	1,725,011	40,254
Mid-Term	2,215,379	490,368
Long-Term	2,431,275	215,896

Source: CAT TSP Chapter 3

To calculate the increase in farebox revenue expected with the projected increase in CAT's ridership, CAT's FY 2019 farebox revenue per trip of 32 cents was applied to projected ridership in each year to obtain the projected farebox revenue. The 32 cents per trip was also escalated by 1.5 percent each year from FY 2027 to account for further ridership recovery and potential increases to CAT's previous fare structure.

5.1.1.2 UVA - Trolley Service

The University of Virginia (UVA) pays annually for CAT's Free Trolley route, and their annual contribution in FY 2025 is projected to be $88,750. For the baseline scenario, UVA's payment is expected to remain at the FY 2025 level with it being escalated by 3 percent year over year to account for inflation. For the service change scenario, UVA is projected to increase their payment due to service improvements. The Free Trolley route will receive frequency improvements and Sunday service as part of the TSP's mid-term improvements which will raise UVA's annual contribution by approximately $43,000 (FY 2030$) beginning in FY 2030, the planned year for the improvements' implementation. UVA's contribution increase was calculated using UVA's percent contribution percentage from FY 2024 and applied to the estimate increase in the Free Trolley route's operating expenses. UVA's contribution was also escalated by 3 percent annually for the service change scenario.

5.1.1.3 Advertising and Other

CAT's revenues from advertising have steadily decreased since the COVID-19 pandemic. In FY 2019, the last full year before the pandemic, advertising revenues were $186,382, but CAT's adopted FY 2024 budget only estimates $25,000 from advertising. Advertising revenues are expected to stay low in the short-term and then make a gradual rebound as Charlottesville and CAT recover from pandemic-related impacts. For projection purposes, advertising revenues will remain at $25,000 over the short-term TSP period (FY 2025–FY 2027). Advertising revenues are projected to increase consistently over the four-year mid-term period (FY 2028–FY 2031) from the base level of $25,000 to the pre-pandemic level of $186,382.

Advertising revenues will then increase by the 3 percent escalation rate from FY 2031 through FY 2034. The advertising and other revenue assumptions remain the same between the baseline and service change scenarios.

5.1.1.4 Federal Funding

Federal operations assistance funding for CAT comes from two sources: FTA Section 5307 and Coronavirus Aid, Relief, and Economic Security (CARES) Act (2020) funding. FTA Section 5307 funding for CAT is proportioned through DRPT as CAT is classified as a small, urbanized area. DRPT then proportions their federal allotment of 5307 grant money between small, urbanized transit agencies based on their respective operating expenses. CAT's projected FTA Section 5307 for their FY 2025 budget is $3,879,00, approximately 25 percent of total O&M costs for FY 2025. FTA 5307 operating funding is assumed to consistent and remain at 25 percent of total O&M costs for FY 2026 – FY 2034 for both the baseline and service changes scenarios.

CAT received a significant influx of federal funding during the COVID-19 pandemic and the following years due to the public transit allocations in the CARES Act. The additional federal funding from CARES was allocated through the 5307 apportionments. The last of the funds CAT received from CARES are projected to be spent by FY 2026 with FY 2025 and FY 2026 budgeted to receive approximately $973,000 and $608,000 in CARES funding. FY 2027 through FY 2034 will receive no CARES funding, thus federal funding for FY 2027 – FY 2029 will fall below FY2025's level of funding. Overall, federal operations funding is expected to increase by $3,871,000 over the TSP timeframe.

5.1.1.5 State/DRPT Funding

CAT's state funding is comprised of both DRPT Operating Assistance funding and DRPT TRIP Grant revenue. The FY 2025 DRPT operating funding is from the FY 2025 CAT proposed budget. FY 2026 – FY 2034 DRPT Operating Assistance funding is based on the change of total Operating Assistance funding estimated in the DRPT FY 2024 SYIP shown in **Table 5-2**. For the baseline scenario, FY 2026 – FY 2029 DRPT Operating Assistance funding is anticipated to change at the same rate of total state funding. For FY 2030 – FY 2034, DRPT Operating Assistance funding is expected to increase at 2.0 percent.

Table 5-2: Annual Change in DRPT Operating Funding Estimates

Year	Percent Change from Previous Year
FY 2025 to FY 2026	2.0%
FY 2026 to FY 2027	2.1%
FY 2027 to FY 2028	1.9%
FY 2028 to FY 2029	1.6%

Source: DRPT FY 2024 SYIP

The projected state operating assistance funds in the FY 2025 proposed budget provides a basis to project CAT's future state funding, but the exact allocation from the state will vary year to year. This is due to the Virginia General Assembly, passing a statute in 2018 requiring transit grant funding be based on performance (Section 33.2-1526.1 of the Code of Virginia). Performance-based allocation of state transit operating funding, which began in FY 2020, accounts for both the size of the agency and three years of performance trends. Sizing metrics are used to correlate funding allocations with the size of the agency and include operating cost (50 percent), ridership (30 percent), revenue vehicle hours (10 percent), and revenue vehicle miles (10

percent). The sizing allocation is then adjusted based on a comparison of the performance trends of the agency to the statewide trends for five performance metrics:

- Passengers per Revenue Vehicle Hour
- Passengers per Revenue Vehicle Mile
- Operating Cost per Revenue Vehicle Hour
- Operating Cost per Revenue Vehicle Mile
- Operating Cost per Passenger

As the allocation of performance-based funding is dependent on CAT's performance relative to the performance of all transit agencies statewide, reliably projecting state funding allocation is difficult. As a result, the analysis presented in this chapter for the baseline scenario assumes that the state funding received by CAT is proportional to the statewide operations funding increases projected in the FY 2024 SYIP.

For the service change scenario, the DRPT Operating Assistance was calculated using DRPT's MERIT allocation formula. CAT's anticipated increases in ridership, revenue miles, revenue hours, and operating costs for each TSP timeframe (short-term, mid-term, and long-term) were put into the formula. As previously stated, the DRPT Operating Assistance is based on a performance-based allocation, so the future performance of Virginia's other transit agencies needs to be calculated. Future performance was calculated using each agency's FY 2022 input variables and escalated them by the assumptions listed in **Table 5-3**.

Table 5-3: Escalation Assumptions for DRPT's MERIT Inputs

Input	Annual Assumption
Ridership	1.5% increase
Revenue Miles	3% increase
Revenue Hours	3% increase
Operating Cost	3% increase
Operating Cost Sizing	2021's Split

Ridership is a major variable in the DRPT MERIT allocation formula, and it is predicted that the reintroduction of fares will decrease ridership. The DRPT MERIT allocation formula was rerun for the fare reintroduction scenario but with CAT's predicted ridership being reduced by 10 percent beginning in FY 2027. The reduced ridership resulted in CAT receiving 5 percent less operating assistance. This 5 percent reduction was applied to the DRPT Operating Assistance allocations for fare reintroduction scenario for both the baseline and service change scenarios.

CAT also receives state operating assistance through their TRIP Zero and Reduced Fare grant which provides state funds to help CAT run fare-free service. The grant began in FY 2023 and spans four years with the level of state assistance decreasing each year: state funding covered 80 percent of the costs in year one (FY2023), followed by 60 percent in year two (FY 2024), 30 percent in year three (FY 2025), and CAT is expected to completely pay for the fare-free service in year four (FY 2026). TRIP funding for FY 2025 is budgeted at $188,277. CAT cannot reapply for the zero and reduced fare TRIP grant, so no TRIP funding is expected for FY 2026 through FY 2034. However, CAT is still eligible to apply for other TRIP grants such the TRIP Regional Connectivity grant.

5.1.1.6 City of Charlottesville Funding

Local funding projections are estimated annually for inclusion in the City of Charlottesville's operating budget produced by the City Manager and City staff, then approved by the Charlottesville City Council. Localities in Virginia are required by law to maintain a balanced budget; therefore, local funding for operations for all years was assumed to cover the remaining balance of costs after all other revenue sources are applied. This remaining cost was split with Albemarle County based on a prorated percentage of the revenue hours operated between the City of Charlottesville and Albemarle County. The baseline scenario has Charlottesville providing 64.6 percent of the remaining revenue, while Charlottesville's contribution split varies in the service change scenario for each timeframe, displayed in **Table 5-4**.

5.1.1.7 Albemarle County Funding

Albemarle County pays for transit service for ten of CAT's routes, and the revenue from contracted service is budgeted at approximately $1,859,000 for FY 2025. Albemarle County's contribution is determined based on the prorated number of revenue hours CAT operates within Albemarle County. Under CAT's current service conditions, Albemarle County is responsible for 35.4 percent of CAT's revenue hours. For the baseline scenario, Albemarle County is assumed to pay 35.4 percent of the remaining balance of costs after all other revenue sources are applied; the City of Charlottesville is expected to pay the other 64.6 percent.

The same assumptions were applied to the service change scenario, but the percentage Albemarle County owed changed based on the TSP's proposed improvements and how the improvements affected the split in revenue between Albemarle County and the City of Charlottesville. **Table 5-4** displays the prorated percentage Albemarle County is assumed to owe for each timeframe in the TSP.

Table 5-4: Albemarle County and City of Charlottesville Contribution Percentage Splits by TSP Timeframe

Timeframe	Prorated Percentage	
	Albemarle County	Charlottesville
Baseline	35.4%	64.6%
Short-Term	34.6%	65.4%
Mid-Term	33.6%	66.4%
Long-Term	35.9%	64.1%

Source: CAT's Department of Finances

The costs for both the baseline and service change scenarios are projected to increases at a 3 percent escalation rate for each year of the ten-year TSP timeframe.

5.1.2 Ten-Year Financial Plan Scenarios

Two ten-year financial plan scenarios were developed: a baseline scenario and a service change scenario. The baseline scenario assumes no service changes are implemented during the TSP timeframe but the service change scenario assumes the service changes discussed in Chapter 3 are implemented. CAT's revenue hours were held constant for the baseline scenario, while the service change scenario has CAT's revenue hours increasing based on the planned service improvements and their proposed year of implementation. Projected operating expenses reflect an assumed 3 percent escalation rate each year, as well as additional operating expenses associated with any increased service.

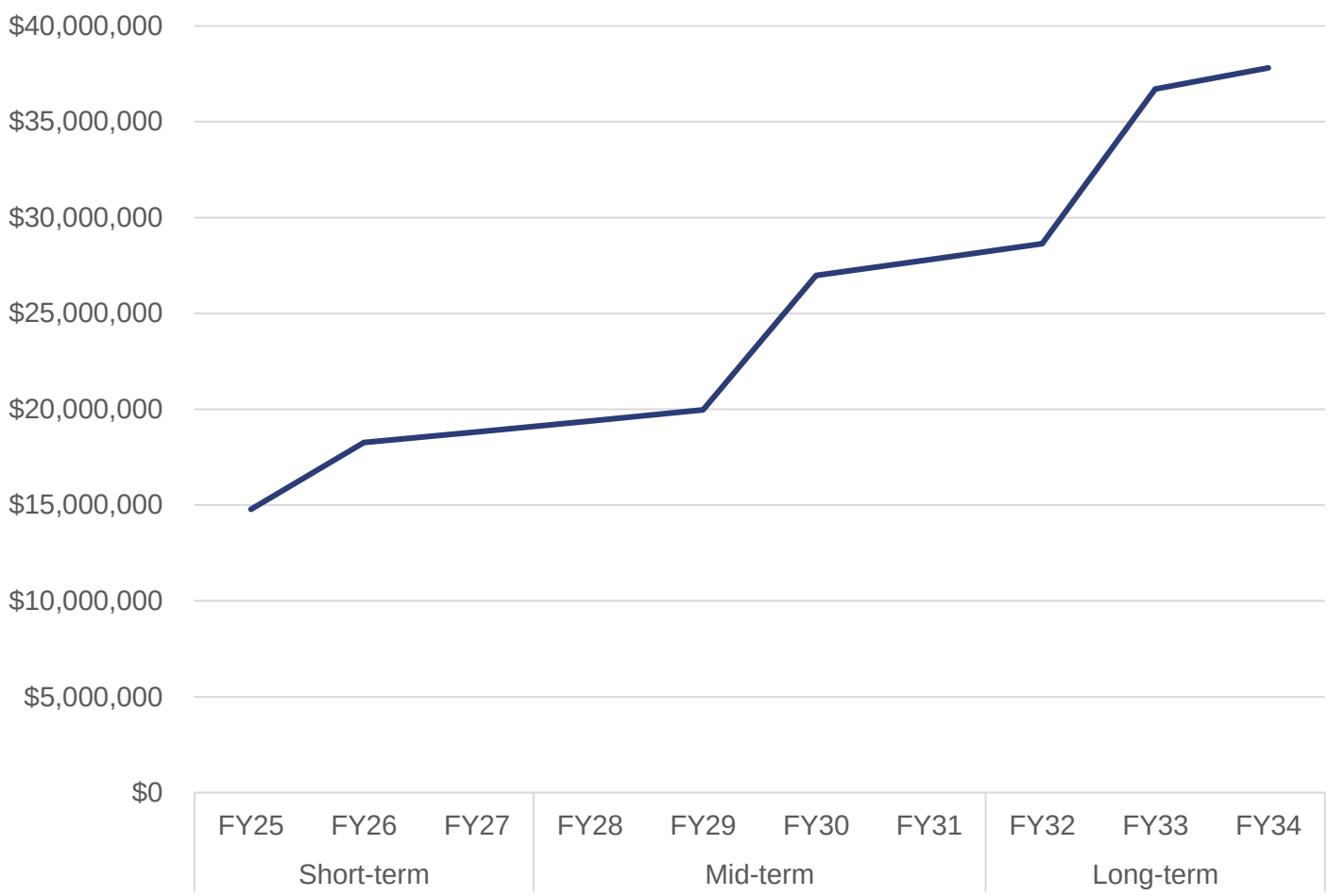
5.1.2.1 Baseline Scenario

Table 5-5 shows the baseline operations scenario. Operating costs are projected to increase by $5,206,000 over the ten-year TSP timeframe due to inflation. The end of the CARES funding will significantly decrease the amount of federal operations assistance CAT receives. Assuming consistent levels of Section 5307 funding, CAT's federal funding will remain at a similar level over ten years, with a dip during the mid-term when CARES funding expires. This stagnation in federal funding will result in a gap requiring a need to increase local funding. The reintroduction of fares could help to offset some of the decrease in federal funding, but a reintroduction of fares could decrease CAT's ridership which could in turn negatively affect CAT's allocation for the state's operating assistance.

5.1.2.2 Service Change Scenario

The service change scenario, shown in **Table 5-6**, has higher operating costs due to the expansion of service from the proposed improvements detailed in Chapter 3 of the Transit Strategic Plan. **Figure 5-1** shows the annual costs of the proposed improvements included in Chapter 3 for implementation over the TSP timeframe.

Figure 5-1: CAT's Annual Operating Expenses Over Ten-Year Transit Strategic Plan Timeframe



Source: CAT Transit Strategic Plan Chapter 3

CAT will need to secure additional funding to implement the proposed service improvements. As CAT's service grows, CAT will become eligible for increased state funding due the increase in their service and agency size. However, if additional funding is not procured, Charlottesville's annual contribution would have to increase by $10,777,000 by FY 2034 to maintain a balanced budget; the amount of additional local funding needed would decrease to $9,942,000 if fares were reintroduced.

Table 5-7 compares the total revenue hours and operating costs of the baseline and service change scenarios. The proposed service improvements increase CAT's total revenue hours by 97,445 (131 percent) to 171,924 revenue hours. This also causes CAT's operating expenses to more than double with CAT's operating costs increasing by $22,452,000 to $36,801,000.

Table 5-5: Projected CAT Operation Costs and Revenues Under the Baseline Scenario ($1000s, YOE$)

	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
Revenue Hours	74,479	74,479	74,479	74,479	74,479	74,479	74,479	74,479	74,479	74,479
Total Operating Cost	$14,349	$14,614	$15,052	$15,504	$15,969	$16,448	$16,941	$17,449	$17,972	$18,511
Expected Operating Revenue Sources										
Fare Free										
Farebox	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
UVA	$88	$90	$93	$96	$99	$102	$105	$108	$111	$114
Advertising	$25	$25	$25	$65	$106	$146	$186	$192	$198	$204
Federal	$4,852	$4,695	$3,920	$4,038	$4,159	$4,283	$4,412	$4,544	$4,681	$4,821
State	$3,113	$2,984	$3,046	$3,104	$3,154	$3,217	$3,281	$3,347	$3,414	$3,482
Albemarle	$1,859	$2,630	$3,043	$3,132	$3,227	$3,322	$3,421	$3,535	$3,653	$3,775
Charlottesville	$3,790	$4,799	$5,553	$5,715	$5,889	$6,063	$6,242	$6,451	$6,665	$6,888
Reintroduction of Fares										
Farebox	$0	$0	$539	$547	$555	$563	$572	$581	$589	$598
UVA	$88	$90	$93	$96	$99	$102	$105	$108	$111	$114
Advertising	$25	$25	$25	$65	$106	$146	$186	$192	$198	$204
Federal	$4,852	$4,695	$3,920	$4,038	$4,159	$4,283	$4,412	$4,544	$4,681	$4,821
State	$3,113	$2,984	$2,894	$2,949	$2,996	$3,056	$3,117	$3,179	$3,243	$3,308
Albemarle	$1,859	$2,630	$2,906	$2,993	$3,087	$3,180	$3,276	$3,389	$3,505	$3,625
Charlottesville	$3,790	$4,799	$5,303	$5,462	$5,632	$5,803	$5,979	$6,184	$6,395	$6,614

1. Revenue hours remain constant under baseline scenario.
2. Total operating costs are based on CAT's FY 2025 proposed budget. Future year operating costs are escalated 3 percent annually.
3. All costs are based on the year of expenditure in $1,000s.

Table 5-6: Projected CAT Operation Costs and Revenues Under the Service Change Scenario ($1,000s, YOE)

	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
Rev Hours	74,479	98,260	98,260	98,260	98,260	137,430	137,430	137,430	171,924	171,924
Total Operating Cost	$14,349	$17,421	$17,944	$18,482	$19,037	$26,282	$27,070	$27,883	$35,729	$36,801
Expected Operating Revenue Sources										
Fare Free										
Farebox	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
UVA	$88	$90	$93	$96	$99	$145	$149	$153	$158	$163
Advertising	$25	$25	$25	$65	$106	$146	$186	$192	$198	$204
Federal	$4,852	$4,599	$4,111	$4,235	$4,361	$6,099	$6,282	$6,470	$8,469	$8,723
State	$3,113	$3,369	$3,437	$3,506	$3,577	$4,777	$4,872	$4,970	$5,880	$5,997
Albemarle	$1,859	$3,231	$3,556	$3,661	$3,769	$5,230	$5,391	$5,570	$7,274	$7,513
Charlottesville	$3,790	$6,107	$6,722	$6,919	$7,124	$10,036	$10,346	$10,689	$13,476	$13,918
Reintroduction of Fares										
Farebox	$0	$0	$558	$567	$575	$741	$752	$763	$859	$872
UVA	$88	$90	$93	$96	$99	$145	$149	$153	$158	$163
Advertising	$25	$25	$25	$65	$106	$146	$186	$192	$198	$204
Federal	$4,852	$4,963	$4,486	$4,621	$4,759	$6,570	$6,768	$6,971	$8,932	$9,200
State	$3,113	$3,201	$3,265	$3,331	$3,398	$4,538	$4,628	$4,722	$5,586	$5,697
Albemarle	$1,859	$3,163	$3,295	$3,394	$3,497	$4,752	$4,901	$5,067	$7,178	$7,419
Charlottesville	$3,790	$5,979	$6,228	$6,415	$6,610	$9,390	$9,686	$10,014	$12,817	$13,246

1. Revenue hours remain constant under baseline scenario.
2. Total operating costs are based on CAT's FY 2024 budget with increases in operating costs sourced from Chapter 3 of the Transit Strategic Plan. Future year operating costs are escalated 3 percent annually.
3. All costs are based on the year of expenditure in $1,000s.

Table 5-7: Projected Operating and Maintenance Costs for Service Additions ($1,000s, YOE$)

	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
Existing System										
Revenue Hours	74,479	74,479	74,479	74,479	74,479	74,479	74,479	74,479	74,479	74,479
Existing Operating Cost	$14,779	$15,223	$15,680	$16,150	$16,634	$17,133	$17,647	$18,177	$18,722	$19,284
Service Additions										
Additional Revenue Hours		23,781				39,170			34,494	
Additional Operating Costs		$3,072				$7,245			$7,846	
Cumulative Additional Operating Costs		$1,186	$2,721	$2,803	$2,887	$9,648	$9,937	$10,235	$17,552	$18,078
Totals										
Total Revenue Hours	74,479	98,260	98,260	98,260	98,260	137,430	137,430	137,430	171,924	171,924
Total Operating Costs	$14,349	$17,421	$17,944	$18,482	$19,037	$26,282	$27,070	$27,883	$35,729	$36,801

1. Costs are stated in year of expenditure dollars, with the assumed annual escalation rate of 3 percent.
2. Operational changes include only changes that incur additional operating costs.
3. All costs in $1,000s.

5.2 Capital Costs and Funding Sources

The anticipated capital costs presented in this section are driven by the implementation plan presented in Chapter 4 and are grouped into vehicle purchase costs, facility costs, and other capital costs. Chapter 4 should be referenced for additional information regarding the planning of these capital purchases.

5.2.1 Vehicle Purchase Costs and Funding Sources

CAT's vehicle replacement schedule discussed in Chapter 4 shows the anticipated new vehicle needs for each year in the TSP timeframe and ranges from one (FY 2030) to 15 vehicles (FY 2029). The anticipated vehicle costs by year are shown in **Table 5-8**. CAT will spend an average of $5,577,000 annually over the ten-year TSP timeframe. FY 2027 will incur the highest capital cost for vehicle purchases, as $9,957,000 is expected for the purchases of the expansion, replacement, and support vehicles.

The capital funding for vehicle purchases will be split between federal, state, and local sources. CAT's replacement bus purchases will be placed in the State of Good Repair category for DRPT's Making Efficient and Responsible Investments in Transit (MERIT) capital assistance funding, and each years' expansion purchases will be placed in the Minor Enhancements category. For these two categories, total capital funding for these purchases is divvied between the three funding sources with 28 percent of funding coming from federal, 68 percent from state, and 4 percent from local. No single year in the TSP timeframe is planned for a purchase of more than five expansion vehicles, so all expansion vehicle purchases are classified under the Minor Enhancement category.

Table 5-8: Financial Plan for Funding Vehicle Purchases ($1000s, YOE$)

Vehicle Classification [1]	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
35-ft Diesel		$1,212								
30-ft Diesel	$2,088									
BOC Diesel		$137								
Trolley Diesel		$1,885								
BEB	$1,854									
FCEB		$2,864								
ZEB[2]			$9,957	$7,977	$1,114		$8,717	$1,283	$7,926	$8,164
Support Vehicles	$247	$32			$278	$36				
Total Vehicle Costs[3]	**$4,266**	**$5,993**	**$9,957**	**$7,977**	**$1,452**	**$36**	**$8,717**	**$1,283**	**$7,926**	**$8,164**
Anticipated Funding Source										
Federal	$1,264	$876	$2,788	$2,234	$484	$20	$2,441	$359	$2,219	$2,286
State	$3,069	$2,308	$6,771	$5,424	$1,176	$49	$5,928	$872	$5,390	$5,552
Local	$181	$1,557	$398	$319	$69	$3	$349	$51	$317	$327

Source: Vehicle costs identified in Chapter 4 of the Transit Strategic Plan

[1] Vehicle purchases assume 28% funding through FTA (Section 5339 program), 68% from State, and the remaining 4% from local.
[2] As of the publishing of this document, CAT is undergoing a zero-emission transition feasibility study which will decide how CAT will transition to zero-emission vehicles. As a zero-emission bus technology has not yet been selected by CAT and CAT plans to begin purchasing only alternative fueled vehicles starting in FY 2029, zero-emission bus (ZEB) was used as a stand-in, and the ZEB is based on the average price between a BEB and an FCEB.
[3] All costs assume a 3% escalation rate.

5.2.2 Facility Improvement and Other Capital Costs and Funding Sources

In addition to vehicle costs, CAT has capital needs to improve facilities, passenger amenities, and technology over the course of the Transit Strategic Plan life cycle. **Table 5-9** shows the anticipated capital cost by category and by year, as well as anticipated revenue from federal, state, and local funding sources. The greatest local funding need occurs in FY 2026, where a need of $1,755,000 in local funding is estimated, primarily due to the 8 percent local match expected for rehabilitation of the administrative and maintenance buildings. The next greatest local funding need occurs the following year, FY 2027, as the rehab of the administrative and maintenance facilities needs three years to complete.

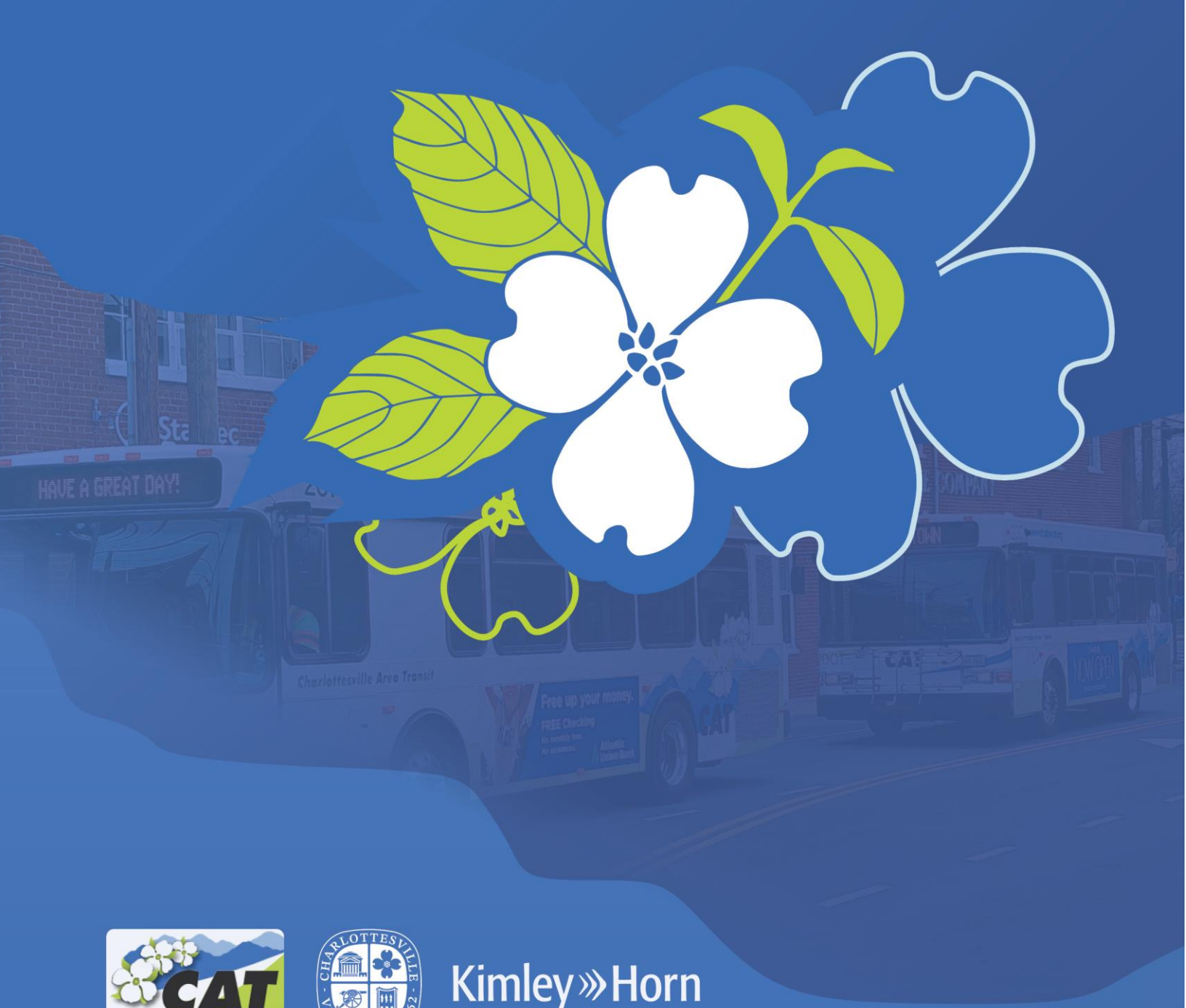
As with vehicle purchase costs, the facility improvements and other capital costs are accounted for by a combination of federal, state, and local dollars. Additionally, the funding for these capital costs is expected to remain at a split of 28 percent federal, 68 percent state, and 4 percent local for State of Good Repair and Minor Enhancement MERIT projects, with state funding tied to project prioritization scores for all improvements. The rehabilitation of the administrative and maintenance facilities, planned for FY 2025 and FY 2026, is classified as a Major Enhancement project under MERIT. For this project, federal funds being utilized do not include the State controlled FTA Section 5339 funding, so the split in capital funding is expected to be 28 percent federal, 50 percent state, and 22 percent local.

Additionally, **Table 5-9** is split into two sections: Battery electric buses (BEB) and fuel cell electric buses (FCEB). As previously mentioned, CAT has not yet decided upon a zero-emission transition strategy and the zero-emission bus technologies it plans to transition to. As the two zero-emission technologies require very different infrastructural needs, the capital costs associated with purchasing the required infrastructure differ significantly between BEBs and FCEBs. FY 2025 through FY 2028 in **Table 5-9** is the same between the two scenarios as CAT plans on piloting both BEB and FCEBs buses; the capital costs associated with BEBs and FCEBs in FY 2025–FY 2028 reflects the necessary capital costs to fuel and maintain the pilot buses. FY 2029 and beyond shows the capital requirements exclusive to a 100 percent transition to either BEBs or FCEBs.

Table 5-9: Financial Plan for Funding Facility Improvements and other Capital Costs ($1000s, YOE$)

	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
Anticipated Costs[4]										
Facilities[5]										
Rehab/Renovation of Maintenance Facility	$250	$11,594	$11,867							
Rehab/Renovation of Admin Building	$250	$10,219	$2,245							
Rehab/Renovation of Maintenance Facility (28% Fed)	$350									
BEB Charger Purchase and Installation[6] [7]	$125	$67			*$144*	*$185*	*$76*	*$39*	*$239*	*$41*
FCEB Fueling Station[5] [8]				$1,582		*$13,194*				
Purchase Shop Equipment				$67	$69				$67	$69
Passenger Amenities										
Passenger Shelters and Amenities				$200	$200				$230	$230
Technology										
ADP Hardware	$51					$59				
Total (BEB)	**$901**	**$21,879**	**$14,112**	**$3,698**	**$413**	**$244**	**$76**	**$39**	**$536**	**$340**
Total (FCEB)	**$901**	**$21,879**	**$14,112**	**$1,849**	**$269**	**$13,253**	**$0**	**$0**	**$297**	**$299**
Anticipated Funding Source[9] [10] [11]										
BEB										
Federal	$342	$10,053	$6,492	$1,035	$116	$68	$21	$11	$150	$95
State	$523	$10,952	$7,056	$2,515	$281	$166	$52	$27	$364	$231
Local	$36	$875	$564	$148	$17	$10	$3	$2	$21	$14
FCEB										
Federal	$342	$10,053	$6,492	$1,035	$116	$3,763			$83	$84
State	$523	$10,952	$7,056	$2,515	$281	$6,763			$202	$203
Local	$36	$875	$564	$148	$17	$2,912			$12	$12

[4] All costs assume a 3% escalation rate.
[5] Non-BEB and FCEB costs are sourced from DRPT's FY 2024 SYIP.
[6] BEB and FCEB capital costs are sourced from AFLEET.
[7] FY 2025 BEB charger costs include the cost of a transformer in addition to materials and labor, while future costs only assume the cost of materials and labor. Costs are based on a DC fast 50kW charger.
[8] The FCEB fueling station cost for FY28 assumes the costs for constructing a fueling station for three FCEBs. The FY30 FCEB fueling station cost assumes the cost for completing the constructing of the fueling station for CAT's eventual 67 bus fleet.
[9] Costs above $3,000 assume 28% federal, 50% state, and 22% local funding, not including the maintenance and admin facilities rehab.
[10] Costs under $3,000 and non-rehab of the maintenance and admin facilities assume 28% funding through federal, 68% funding from State, and the remaining 4% funding from local.
[11] Costs above $3,000 for the maintenance and admin facilities rehab assume 46% funding through federal, 50% funding from State, and the remaining 4% funding from local.



Charlottesville Area Transit
Transit Strategic Plan

Appendix A: Agency Profile and System Overview

DRAFT | May 2024

Appendix A: Agency Profile and System Overview

A.1 History

In 1975 the City of Charlottesville created the Charlottesville Transit Service (CTS) as a division of the Department of Public Works following a private transit company ceasing operations. CTS began service using six buses purchased from the private operator. The stated goal of CTS in 1975 was to provide bus service within five blocks of every City residence. Initially, all routes ran on one-hour headways.

In 1978, Albemarle County contracted with the City to begin a route serving locations along US Route 29 to the north of the City. This agreement represented the first major geographic expansion of CTS and the first cooperative effort between the City and the County for fixed route transit service.

In 1985, the City's Transit Division assumed responsibility for the operation of school bus transportation in addition to CTS.

In 1999, the agency initiated a free shuttle route (using green-painted trolley-style buses) connecting downtown with the University of Virginia (UVA). In 2006, in response to the City of Charlottesville and Albemarle County having adopted resolutions expressing a commitment to establish a Regional Transit Authority (RTA) for the greater Charlottesville area, the first Transit Development Plan (TDP) was prepared for CTS. The plan followed a route study that was conducted in the previous year that analyzed ridership patterns and undertook an evaluation of existing route structures.

The TDP included findings that traffic congestion had resulted in unreliable service and that service duplication and redundancies existed between CTS and UVA's student bus system, often serving common locations and trip markets. The TDP recommended strategies for improved existing routes, both day and night, and improved service expansion alternatives.

In 2007, the University Transit Service (UTS) and CTS entered into an open ridership agreement that allows UVA students, faculty, and staff to ride CTS for free by showing a valid UVA ID card. The Downtown Transit Station also opened next to the former Chesapeake and Ohio railroad depot as part of the East End Downtown Mall Improvement Project.

In 2009, the General Assembly passed legislation to allow for the creation of a transit authority between Albemarle and Charlottesville. The legislation, however, did not approve a requested voter referendum on a sales tax to fund it. Without a dedicated funding source, the progress toward a RTA stalled.

In 2010, CTS was re-branded as Charlottesville Area Transit (CAT), with a new dogwood and mountain logo. The City also built a new Transit Operations Center for CAT on six acres of land purchased just south of the city.

In 2011, a second TDP was prepared for CAT, extending through FY 2017. The TDP conclusion reached from the service analysis was that conversion of the CAT transit system to a trunk and feeder system was not yet feasible. Also, should the system continue to grow into Albemarle County, it would be appropriate to create satellite transfer facilities, with the introduction of community circulators and crosstown routes that do not go to the Downtown Transit Station (DTS). Following completion of this TDP, the City Council elected to conduct additional route analysis.

Additional route analysis and new service recommendations were completed in 2013. As a response, in 2014 CAT underwent a major realignment to make bus routes more direct and to establish a new regional hub at the

UVA Hospital in addition to the existing Downtown Transit Station facility. The intent was to increase route reliability and efficiency.

Ridership peaked in FY 2013 at 2.6 million passengers, following steady increases since 1996. Recent ridership estimates (FY 2016) report 2.4 million annual passengers.

In September 2017, the Albemarle Board of Supervisors and the Charlottesville City Council agreed to enter into a formal partnership to help advise on improvements to bus service throughout the region.

In 2024, CAT provides bus service to the greater Charlottesville area on 12 routes within the city, to certain areas of Albemarle County, and to the UVA grounds. CAT buses operate seven days a week.[1] The newest expansions include a new route to a retail complex, 5th Street Station, and route adjustments to serve a new Piedmont Family YMCA facility. The Thomas Jefferson Planning District Commission (TJPDC) recently concluded a study of the operations of CAT, JAUNT and the UTS to explore how they might work together more efficiently.

A.2 Governance

CAT is owned and operated by the City of Charlottesville and housed under the City's Transit Department, which also operates Charlottesville Pupil Transportation serving Charlottesville City schools. Decisions regarding CAT service are ultimately made by the City Council, which acts as CAT's governing board. The Charlottesville City Council consists of five members who are elected on an at-large, non-partisan basis for staggered four-year terms. The City Council elects the Mayor and Vice Mayor, and appoints the City Manager.

The Charlottesville Area Transit (CAT) Advisory Board is also appointed by City Council. The Board is charged with recommending policies to the City Council regarding the services to be provided and the appropriate procedure for implementing CAT service and operating plans. The CAT Advisory Board annually recommends a public transportation budget for the succeeding fiscal year in accordance with the City's annual budget process. Any service planning changes must be advanced by the Board and brought before City Council at least sixty (60) days prior to the proposed date of implementation. The service plans provide information on anticipated costs, ridership, routing, schedules, personnel needs, and budget amendments that may be required. The CAT Advisory Board may also make recommendations on other revenue sources such as grants, fares, and advertising policies.

The day-to-day CAT operations are administered through the Transit Director who reports to the Assistant City Manager.

A.3 Organizational Structure

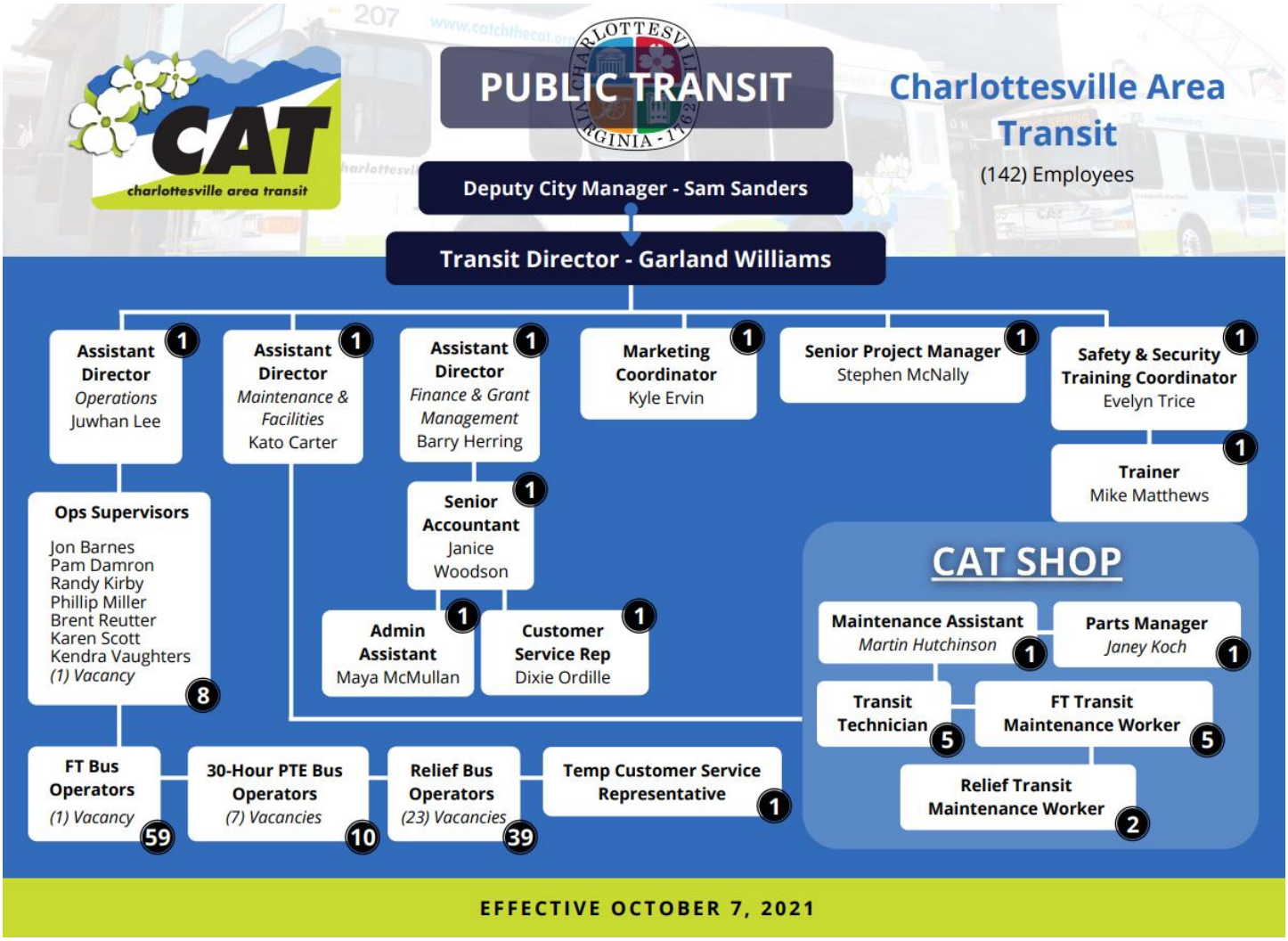
Total CAT employment consists of 106 employees, representing an almost 13 percent increase since 2013. There are 11 administrative positions, with three vacancies currently existing for an Assistant Operations Manager – Maintenance, Safety/Training Coordinator, and Transit Dispatcher/Scheduler. CAT has backfilled positions to meet needs while these vacancies are being filled. CAT's organizational chart is shown in **Figure A-1**.

[1] CAT has been operating on an Extended Lifeline Service schedule since September 2021, with all routes operating Monday to Saturday between approximately 6:00 AM and 10:30 PM with 30-minute or 60-minute frequency.

There are a total of 85 vehicle operators, including 41 full-time and 44 part-time. Operators provide both CAT service and operate the Charlottesville School District buses with separate runs for school types (elementary, middle, and high school), special needs, and afterschool activities. All CAT employees are City employees.

To address shortages of operators, the Growing Opportunity (GO) Driver Program was established as a five-week training program that prepares City residents for a career as a bus driver with CAT, UTS, and JAUNT. The program is entirely free for eligible participants. After successful completion of this program, graduates will initially be considered for relief transit operator positions and will be next in line as full-time openings become available with CAT.

Figure A-1: CAT Organizational Chart



A.4 Services Provided and Areas Served

CAT operates fixed-route local bus service in the City of Charlottesville and parts of Albemarle County (**Figure A-2**). CAT currently operates 12 routes, including a trolley that operates between downtown Charlottesville and UVA. CAT has been operating on an Extended Lifeline Service schedule since September 2021, with all routes

operating Monday to Saturday between approximately 6:00 AM and 10:30 PM with 30-minute or 60-minute frequency. **Table A-1** lists days of operation, span of service, service frequency, and peak vehicle requirements by route. Details on each route and areas served are also included below.

Figure A-2: CAT System Map

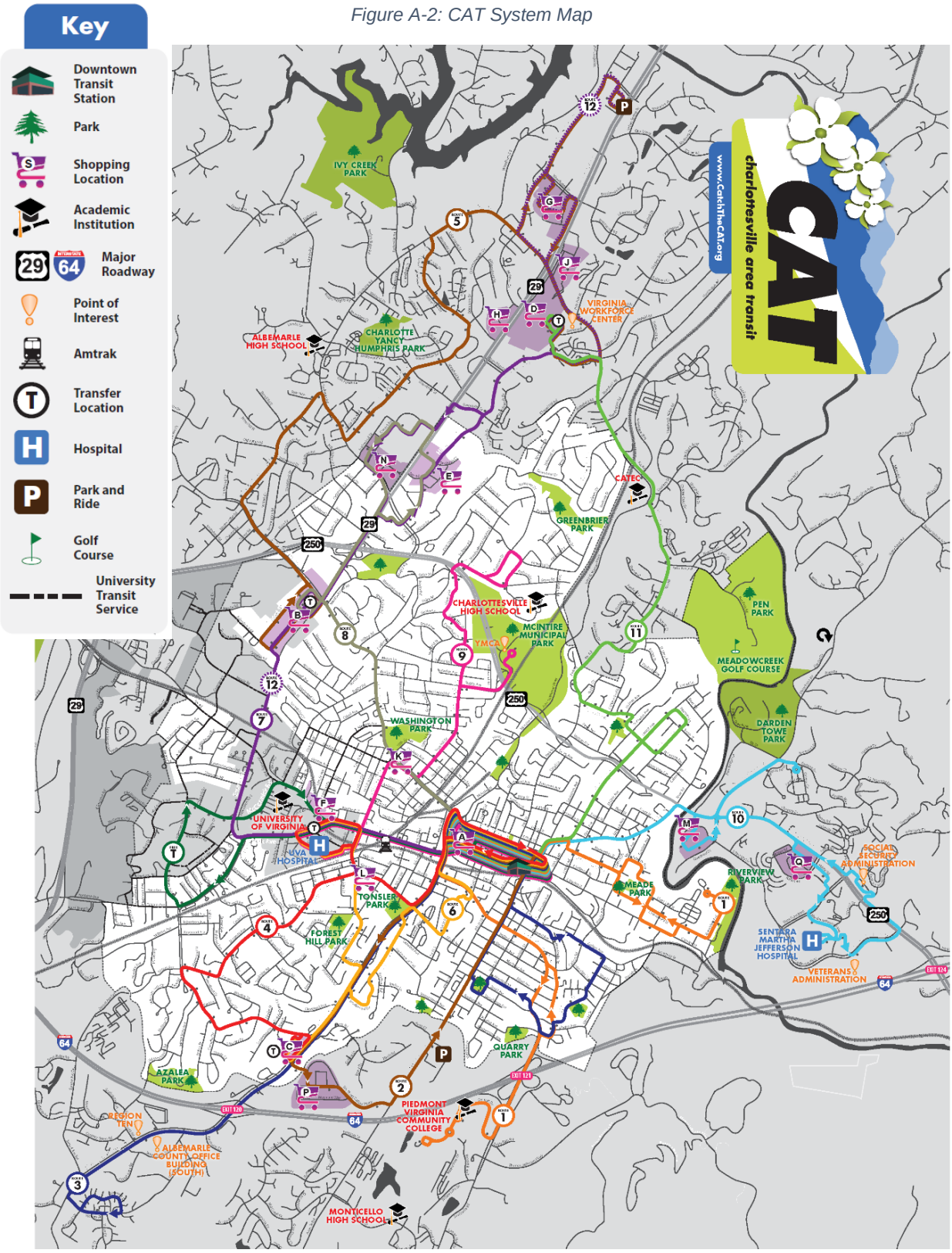


Table A-1: CAT Route Operational Details

Route	Description	Days of Operation	Span	Frequency	Peak Vehicles
1	PVCC & Woolen Mills	Monday – Friday	6:15 am – 9:00 pm	60 Minutes	1
2	5th Street Station	Monday - Saturday	6:35 am – 9:00 pm	30 Minutes	1
3	Southwood & Belmont	Monday – Saturday	6:00 am – 9:00 pm	60 Minutes	1
4	Cherry Avenue & Harris Road	Monday – Saturday	6:25 am – 8:55 pm	60 Minutes	1
5	Commonwealth Drive	Monday – Saturday	6:30 am – 9:00 pm	30 Minutes	3
6	Ridge Street & Prospect Avenue	Monday – Saturday	6:30 am – 8:50 pm	60 Minutes	1
7	Emmet Street & Seminole Trail	Monday – Saturday	6:20 am – 9:15 pm	30 Minutes	3
8	Preston Avenue & Emmet Street	Monday – Saturday	6:30 am – 6:30 pm	60 Minutes	1
9	The Health Department & YMCA	Monday – Saturday	7:00 am – 9:00 pm	60 Minutes	1
10	Pantops	Monday – Saturday	6:30 am – 9:00 pm	60 Minutes	1
11	Locust Avenue & Rio Road	Monday – Saturday	6:00 am – 9:00 pm (Monday – Friday) 6:00 am – 6:30 pm (Saturday)	60 Minutes	1
Trolley	West Main Street & UVA	Monday – Saturday	6:35 am – 9:07 pm	25 Minutes	2

Route 1: PVCC & Woolen Mills

This route operates between Piedmont Virginia Community College (PVCC) and Riverview Park via downtown Charlottesville. The route connects with the Woolen Mills area via East Market Street, and PVCC via Monticello Avenue. This route operates at 60-minute frequencies.

Route 2: 5th Street Station

Route 2 operates from downtown Charlottesville in a rectangular alignment around the Belmont Park neighborhood, the 5th street Station via Avon Street, the Willoughby Square Shopping Center, and the Tonsler Park neighborhood, via 5th St SW. Free parking is provided at the Park & Ride on Avon Street Extended. Frequencies are 30-minutes Monday through Saturday, from 6:35 a.m. to 11:45 p.m. and on Sunday from 7:35 a.m. to 5:45 p.m.

Route 3: Southwood & Belmont

Route 3 operates between downtown and the Albemarle County Office Building southwest of the city via Ridge and 5th Streets, and the Belmont and Belmont Park neighborhoods south of downtown via Monticello, Hinton and Alvavista Avenues. This route operates at 30-minute frequencies Monday through Friday, and on 30-to-60-minute frequencies on Saturday, depending on the time of day. This route does not operate on Sundays.

Route 4: Cherry Avenue & Harris Road

This route serves downtown Charlottesville, Tonsler Park neighborhood and Willoughby Square Shopping Center via Cherry Avenue and Harris Road. Route 4 operates at 23-minute frequencies Monday through Friday, 6:36 a.m. through 6:37 p.m. and during peak periods on Saturday. Route 4 operates on 60 minute frequencies after 6:37 p.m. Monday through Friday and during off-peak hours. This route does not operate on Sundays.

Route 5: Commonwealth Drive

Route 5 is the only route that does not interact with the Downtown Transit Station. This route operates Monday through Saturday at 30-minute frequencies between Barracks Road Shopping Center and Walmart and Sam's Club to the north. The Greenbrier Drive and Four Seasons areas, Fashion Square Mall, and the Rio Hill and Albemarle Square Shopping Centers are all served by Route 5. Route 5 is fully funded by Albemarle County and is one of ten routes that have late operating hours. Although this route does not operate on Sundays, Route 12 provides service to most areas serviced by Route 5.

Route 6: Ridge Street & Prospect Avenue

Route 6 operates between downtown Charlottesville and the Ridge Street/Jordan Hills Park area, 5th Street Station, Willoughby Square Shopping Center, and UVA Hospital. The route operates from 6:30 a.m. to 12:00 a.m. Monday through Saturday. Frequencies are every 60 minutes.

Route 7: Emmet Street & Seminole Trail

Route 7 operates between the Downtown Transit Station and Fashion Square Mall via West Main Street and US 29 (Emmet Street North/Seminole Trail). UVA, Barracks Road Shopping Center and Seminole Square Shopping Center are all served by Route 7. This route operates at frequent (20-minute) service until the evening period when frequency is reduced to 30 minutes, Monday through Saturday. Route 7 does not operate on Sundays; however, Route 12 provides service to these areas instead. Route 7 is one of nine routes that have late operating hours.

Route 8: Preston Avenue & Emmet Street

This route operates between downtown Charlottesville, and Barracks Road and Seminole Square Shopping Centers via Preston Avenue, Barracks Road and US 29 (Emmet Street North/Seminole Trail). Frequencies are every 30 minutes during peak periods and 60 minutes otherwise, Monday through Friday. Frequencies are every 60 minutes on Saturdays and there is no service on Sundays.

Route 9: The Health Department & YMCA

Route 9 serves downtown Charlottesville, UVA Hospital, Washington Park neighborhood, the Health Department, the YMCA and McIntire Park, and Charlottesville High School. Service is offered at hourly frequencies Monday through Saturday from 6:00 a.m. to 11:00 p.m., and at hourly frequencies from 11:20 a.m. to 5:40 p.m. on Sundays.

Route 10: Pantops

This route operates between downtown and the Richmond Road corridor area via High Street. The Pantops Shopping Center is served by this route as is Santara Martha Jefferson Hospital. Frequencies are hourly Monday through Saturday from 6:30 a.m. to 11:27 p.m. This route does not operate on Sundays. Albemarle County contributes funding to this route.

Route 11: Locust Avenue & Rio Road

This route operates from downtown Charlottesville north on Locust Avenue and Rio Road, near McIntire and Pen Parks, CATEC, and Fashion Square Mall. This route is serviced every 60 minutes from 6:00 a.m. to 9:27 p.m. Monday through Friday, and 6:00 a.m. to 6:27 p.m. on Saturday. This route does not operate on Sundays.

Route 12: Seminole Trail

This route provides dedicated Sunday service to areas typically serviced by Routes 5 and 7. The route operates from downtown Charlottesville to UVA Hospital via W Main Street, to UVA Campus, and north on US 29 (Emmet Street North/Seminole Trail) to Barracks Road Shopping Center, Seminole Square Shopping Center, Fashion Square Mall, Albermarle Shopping Center, and Rio Hill Shopping Center. Service is provided every 60 minutes from 7:45 a.m. to 5:45 p.m. on Sundays. This route was suspended in response to the COVID-19 pandemic, and, as of FY 2024, has not been brought back into service.

Free Tolley: West Main Street & UVA

The UVA Free Trolley or “Free T” operates between downtown Charlottesville and the UVA campus. This route operates at frequent (15-minute) service and is fare-free for all riders. The Free Trolley features the highest-frequency and highest ridership of any route in the CAT system. The route is also partially funded by the University of Virginia. The UVA Free Trolley is one of four routes that operate on Sunday and one of nine routes that have late operating hours.

A.5 Fare Structures, Payment, and Purchasing

Starting in 2020, CAT suspended fares and began operating fare-free service in response to the COVID-19 pandemic. In 2021, CAT received a $1,066,620 grant from the Commonwealth Transportation Board under DRPT’s Transit Ridership Incentive Program (TRIP). This grant under the TRIP program will allow CAT to maintain fare-free service until June 30, 2026. As of the publishing of this document, CAT has not made a decision of whether to continue fare free service beyond the conclusion of the TRIP grant.

Previously, CAT buses accepted cash fares and smart card passes. Multi-day passes were programmed on smart cards and could be purchased at the Downtown Transit Station. Base fare for a one-way trip was 75 cents; reduced base fares was 35 cents. Day passes were available for $1.50 while monthly passes cost $20.00. Reduced rates for these passes were 75 cents and $10.00, respectively. Reduced fares were eligible for those aged 65 and older, youth under 12, persons with disabilities and holders of Medicare cards.

The following groups were able to ride fare free before the system-wide suspension in fares:

- Youth 12 and under (no ID required)
- Youth 13 to 17 upon presenting a valid Youth Smart Card
- City employees upon presenting a valid City ID
- American Disability Act (ADA) certified
- individuals upon presenting a valid CAT ID
- University of Virginia students, faculty and staff upon presenting a valid University ID card

A.6 Transit Asset Management – Existing Fleet and Facilities

Fleet

As of 2023, CAT owns and operates a 51-vehicle revenue fleet (**Table A-1**). CAT’s fleet is comprised of a variety of vehicle types and fuels. CAT currently operates four main types of vehicles: 35’ transit buses, 29’ transit buses, 26’ body-on-chassis cutaways, and 35’ trolley replicas. CAT’s revenue vehicles use a mix of fuel

systems including diesel, gasoline, and hybrid diesel-electric. Over the course of the TSP timeframe, CAT will begin incorporating battery electric buses and hydrogen fuel cell electric buses to their fleet. In addition, CAT will transition their 26' body-on-chassis cutaways to 29' buses.

Table A-1: CAT's Fixed Route Fleet

Make/Model	Vehicle Year	Type	Length	Power	Quantity	Useful Life
Gillig	2008	Low Floor	35'	Diesel	7	12
Gillig	2010	Low Floor	35'	Diesel	4	12
Gillig	2014	Low Floor	35'	Diesel	2	12
Gillig	2015	Low Floor	35'	Diesel	4	12
Gillig	2023	Low Floor	35'	Diesel	5	12
Gillig	2008	Low Floor	29'	Diesel	5	10
Gillig	2010	Low Floor	29'	Hybrid Electric	2	10
Gillig	2011	Low Floor	29'	Hybrid Electric	4	10
Gillig	2012	Low Floor	29'	Hybrid Electric	3	10
Gillig	2014	Low Floor	29'	Hybrid Electric	1	10
Gillig	2023	Low Floor	29'	Hybrid Electric	1	10
GM/Goshen	2013	Body-on-Chassis	26'	Diesel	1	5
GM/Arboc	2016	Body-on-Chassis	26'	Gasoline	1	5
GM/Arboc	2017	Body-on-Chassis	26'	Gasoline	1	5
GM/Arboc	2018	Body-on-Chassis	26'	Gasoline	1	5
ARB-Arboc	2023	Body-on-Chassis	26'	Gasoline	5	5
Gillig	2014	Low Floor Trolley Replica	35'	Diesel	3	12
Gillig	2019	Low Floor Trolley Replica	35'	Diesel	1	12

The Federal Transit Administration (FTA) published a Final Rule for Transit Asset Management in July 2016 requiring FTA grantees to develop asset management plans. Agencies have the option of developing their own transit asset management (TAM) plan. In the Commonwealth of Virginia, CAT is one of the operators opting to use DRPT's statewide TAM plan, which is permitted under the FTA rule. The TAM plan covers public transportation assets including vehicles, facilities, equipment, and other infrastructure. The most recent edition was published in FY 2022 and covers FY 2022 through FY 2025.

Facilities

CAT's Administrative, Maintenance, and Operations

CAT's administration, maintenance and operations base is located at 1545 Avon Street Extended near Interstate 64. The facility includes a vehicle maintenance facility, bus storage and parking, a washing station, a fueling station, and houses the administration and dispatcher's offices. This facility opened in 2010. As with the DTS, the facility is LEED Gold certified. The 27,000-square-foot Charlottesville Area Transit Service Operations Center includes four buildings—one each for administration, vehicle maintenance, vehicle washing, and vehicle servicing. Together, with a parking area for 60 buses, these buildings occupy six acres along one of the city's major entrance corridors.

A.7 Transit Security Program

CAT has a Safety Hazard and Security Plan in place that establishes policies, organization, roles, and responsibilities for incidents, countermeasures, and strategies. The plan also includes a section that addresses periodic assessments and review of the Safety Hazard and Security Plan.

CAT indicated in its last FTA Triennial Review (2015) that it does not expend one percent or more of its Section 5307 Urbanized Area Formula Grant funds for transit security per FTA guidance. CAT indicated that the Charlottesville Police Department monitors CAT's Safety Hazard and Security Protocol for compliance.

CAT's Facilities Maintenance Program, updated in 2012, provides for assurance of proper operation of facility security equipment. CAT's operational facility is secured with cameras, key cards, secure perimeter fencing, and automatic gate openers.

Data from the National Transit Database indicated that CAT had two reportable incidents related to safety and security in 2015.

A.8 Intelligent Transportation Systems (ITS) Programs

CAT has access to Remix, a transit planning platform. The software offers interactive maps that will allow CAT to identify routes, service hours, and stops that best serve the public. Remix provides cost estimates for various inputs, providing instant analysis on proposed transit services. Modifications and assessment of route adjustments and service hours are readily displayed and can be more easily quantified and compared against other operating scenarios. The City secured this software in coordination with JAUNT, who contributed to acquiring the license.

In addition to route planning software, CAT also is employing real-time arrival systems that enhance the customer experience and improve the assessment and reporting of the existing service.

A.9 Data Collection and Ridership/Revenue Reporting Method

Report data for ridership is collected through CAT's Trapeze farebox system. In addition to fare information, the system also captures stop level data to determine bus stop utilization and inform service planning. Verification of ridership counts are done by Operations Supervisors by conducting spot checks, which include riding a route and taking a ridership count, to then be compared against the report data from Trapeze.

The EZFare system from Trapeze transitioned CAT to a new automated fare collection system to reduce fraud as well as decrease the cost of fare collection. Reported improvements included the ability to process 64,000 monthly UVA ID transactions with a 0.006 percent failure rate.

CAT prepares monthly ridership reports of transit operations including ridership, revenue hours, passenger trips per revenue hour, and cost per passenger trip. The reporting further classifies routes as local, key, or

lifeline services. Information is presented to the University, City Council, and the Albemarle County Board of Supervisors.

A.9.1 Fareboxes

CAT installed new fareboxes in 2015. In addition to more pass options and smartcard capabilities, the enhanced fareboxes also enable CAT to determine where people are boarding, at what time, and with what kind of pass. CAT intends to use this capability to report more accurate data to the FTA. The new fareboxes include a feature to allow the driver to keep track of passengers who board with a bicycle and passengers in wheelchairs. This capability enables CAT to monitor demand and determine if they need to install shelters or other amenities at bus stops.

CAT is currently coordinating its Smart Media/AVL capabilities with JAUNT to help with seamless transfers between the two systems and allow for digital payments.

CAT's fareboxes are currently out of service as fare-free service continues. The potential future reintroduction of fares would likely require the purchase of new fareboxes for the entire fleet, as the existing fareboxes will have reached the end of their useful life.

A.9.2 Real Time Arrival Information

CAT has also developed a real-time online map and free mobile application to search for nearby bus stops and real-time arrival predictions. The CAT mobile application was developed in-house by the City of Charlottesville's IT Department and won a 2015 Governor's Technology Award. The application allows riders to locate where their bus is, bookmark favorite bus stops, and discover alternative route options. Notifications for detours and service changes are regularly pushed out. As of 2017, UTS routes have been added to the application for UVA students, faculty, and staff to be able to use one application for both transit systems.

A.10 Coordination with Other Transportation Service Providers

Jaunt

Jaunt provides curb-to-curb demand-response service in Charlottesville and the counties of Buckingham, Fluvanna, Louisa, Nelson, and rural Albemarle. Reservations must be made at least one day, and up to 7 days, in advance. Jaunt also provides door-to-door paratransit service to people with disabilities who are unable to use the local fixed-route system through a sub-recipient arrangement with CAT, the City of Charlottesville, and Albemarle County. Passengers may use the service to travel to destinations within a three-quarter-mile radius of CATs fixed-route service.

CONNECT Commuter Service

CONNECT—a service of Jaunt—provides fixed-route, commuter-oriented service from regional park and ride lots to locations at UVA and downtown Charlottesville in the morning, returning in the evening. Unlike Jaunt's demand-response and paratransit services, reservations are not required to use CONNECT service. CONNECT service includes the following routes:

- **Crozet CONNECT** – Weekday commuter service between east and west Crozet and UVA and Downtown Charlottesville.
- **29 North CONNECT** – Weekday commuter service between the Hollymead area and UVA and Downtown Charlottesville.
- **Buckingham CONNECT** – Commuter service between central Buckingham along Route 20 and UVA, 29 North, Downtown Charlottesville, and Pantops.

- **Lovingston CONNECT** – Weekday commuter service between the Lovingston area along Route 29 and UVA, Downtown Charlottesville, and Belmont.

Though CONNECT provides service in the CAT service area, this TSP does not provide specific recommendations for CONNECT service.

University of Virginia University Transit Service

The UVA's University Transit Service (UTS) is a fare-free bus service for UVA students, faculty, staff, and visitors. UTS provides bus service on six routes, including two UVA Health Commuter Routes (Red Line and the Blue Line) and four Academic Routes (Gold Line, Green Line, Orange Line, and Silver Line). UTS operates these routes at different service levels throughout the year depending on the academic calendar, clinic holidays, university holidays, and event impacts.

Brite Bus – Afton Express

Brite Bus is a public transit service operated by Virginia Regional Transit operating throughout Waynesboro, Stanton, and Augusta County. Brite Bus operates the Afton Express route, a commuter route connecting Stanton, Fishersville, and Waynesboro to multiple stops in downtown Charlottesville and on UVA's campus. The Afton express operates Monday through Friday with four trips during the AM peak period (5:00 am - 9:00am) and five trips during the PM peak period (2:40 PM – 8:50 PM). Connections to the Afton Express can be performed on multiple CAT routes due to the Afton Express overlapping with multiple CAT stops, notably DTS.

Virginia Regional Transit – Foothills Express

Virginia Regional Transit operates the Foothills Express route, a commuter route connecting Culpepper, Madison County, and Greene County to Charlottesville Union Station in downtown Charlottesville. The Foothills Express operates Tuesdays through Thursdays, excluding major holidays, between 7:15 am and 5:45 pm. The Foothills Express runs three inbound and outbound trips a day with two inbound trips towards Charlottesville and one outbound trip towards Culpepper in the morning between 7:15 am and 12:40 pm, and two outbound trips and one inbound trip in the afternoon between 2:20 pm and 5:45 pm. Connections to the Foothills Express can be made from CAT routes 7, 9, and the free trolley.

Amtrak

Amtrak service is provided at Charlottesville Union Station. Charlottesville Union Station is served by Amtrak's Cardinal, Crescent, and Northeast Regional routes. Major destinations along these lines include Atlanta, Baltimore, Boston, Charlotte, Chicago, Indianapolis, New York City, New Orleans, Philadelphia, and Washington, D.C.:

A.11 Current Initiatives

TRIP Zero and Reduced Fare Grant

CAT suspended fare collection in and began operating fare-free service in 2020 in response to the COVID-19 pandemic. In 2021, CAT received a $1,066,620 grant from the Commonwealth Transportation Board under DRPT's Transit Ridership Incentive Program (TRIP). The TRIP grant began in FY 2022 and requires CAT to maintain fare-free service until June 30, 2026.

Microtransit Pilot

In 2022, Albemarle County, the City of Charlottesville, and CAT were awarded a grant to implement microtransit as a one-year pilot project. The service would operate under CAT and utilize three smaller vehicles

to provide on-demand rides in the service area. The service would serve the Pantops area and US Route 29, operating from 6:30 AM to 9:00 PM on Monday through Saturday.

Alternative-Fueled Buses Feasibility Study and Zero-Emissions Transition Plan

Starting in 2022, CAT began evaluating how the transit system may be able to support the City of Charlottesville's carbon emissions reduction goals of 45 percent by 2030 and carbon neutrality by 2050. The study will inform the feasibility of transitioning the CAT fleet to alternative-fueled (i.e., non-diesel and non-gasoline) vehicles. The study is also exploring technical feasibility and includes an evaluation of the current CAT maintenance facility for retrofit and upgrade to accommodate additional vehicles and alternative fuels infrastructure.

A.12 5-Year Financial Retrospective

The following section and tables provide a five-year retrospective of CAT's operating and capital expenses and revenues. **Table A-3** displays operating revenues, **Table A-4** displays capital revenues, and **Table A-5** displays expenditures.

Table A-3: Operating Revenues

	FY20	FY21	FY22	FY23	FY24
Federal Assistance	$2,232,368	$1,891,217	$1,897,979	$2,867,365	$2,867,365
ARRA/CARES/ ARP	-	$1,550,692	$3,022,831	$1,585,791	$1,787,930
State Assistance	$1,933,693	$2,052,025	$3,032,584	$2,729,126	$2,729,126
DRPT – TRIP Program	-	-	-	$501,939	$376,454
Charlottesville	$2,534,651	$2,513,651	$2,513,651	$2,513,651	$2,825,000
Albemarle County	$1,043,199	$516,560	$1,000,000	$1,000,000	$1,300,000
UVA Trolley Service	$77,926	$80,040	$80,040	$82,440	$84,900
UVA Fixed Route Service	$180,906	$186,760	-	-	-
Transit Pass & Farebox	$555,624	$360,624	-	-	-
Total	**$8,744,749**	**$9,247,691**	**$11,597,085**	**$11,305,312**	**$11,995,775**

Source: City of Charlottesville FY 2025 Budget

Table A-4: Capital Revenues

	FY20	FY21	FY22	FY23	FY24
Federal	$7,521	$0	$384,966	$1,855,289	-
State	$1,500	$0	$209,955	$1,256,583	-
Local	$5,100	$0	$109,009	$351,565	-
Total	$14,121	$0	$703,930	$3,480,842	-

Source: CAT National Transit Database Agency Profile

Table A-5: Expenditures

	FY20	FY21	FY22	FY23	FY24
Transit Operations	$5,181,271	$4,694,905	$4,694,905	$3,513,087	$6,671,137
Transit Administration	$597,056	$742,354	$1,200,380	$1,063,182	$1,710,235
Transit Maintenance	$1,687,182	$1,409,322	$2,432,278	$2,570,557	$3,133,625
Transit Marketing	$93,288	$82,496	$107,708	$12,297	$222,226
Safety and Security	$128,561	$175,238	$220,071	$99,361	$258,552
Transit – Capital	$14,212	$99,864	$703,930	$3,480,281	-
Transit System Operations Total	**$8,765,555**	**$9,359,272**	**$11,597,085**	**$11,305,312**	**$11,995,775**
Transit Capital Projects	$1,978,324	$3,225,476	$1,995,993	$5,149,842	$2,290,395
Expenses	**$9,679,803**	**$10,722,327**	**$11,355,264**	**$15,888,607**	**$14,348,992**

Source: City of Charlottesville FY 2025 Budget