

GRTC Transit Strategic Plan

FY 2025 - FY 2034

June 17, 2024

Introduction

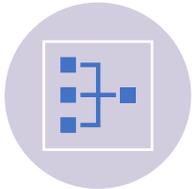
The Greater Richmond Transit Company (GRTC)'s first Transit Strategic Plan (TSP) will help GRTC determine the future direction of transit service across the greater Richmond region. This plan will meet the requirements established by Virginia's Department of Rail and Public Transportation (DRPT). The purpose of the TSP is to:



Develop GRTC's first Transit Strategic Plan (TSP) as required by the Virginia Department of Rail and Public Transportation.



Undertake a thorough review and assessment of GRTC's transit services and the setting in which they operate.

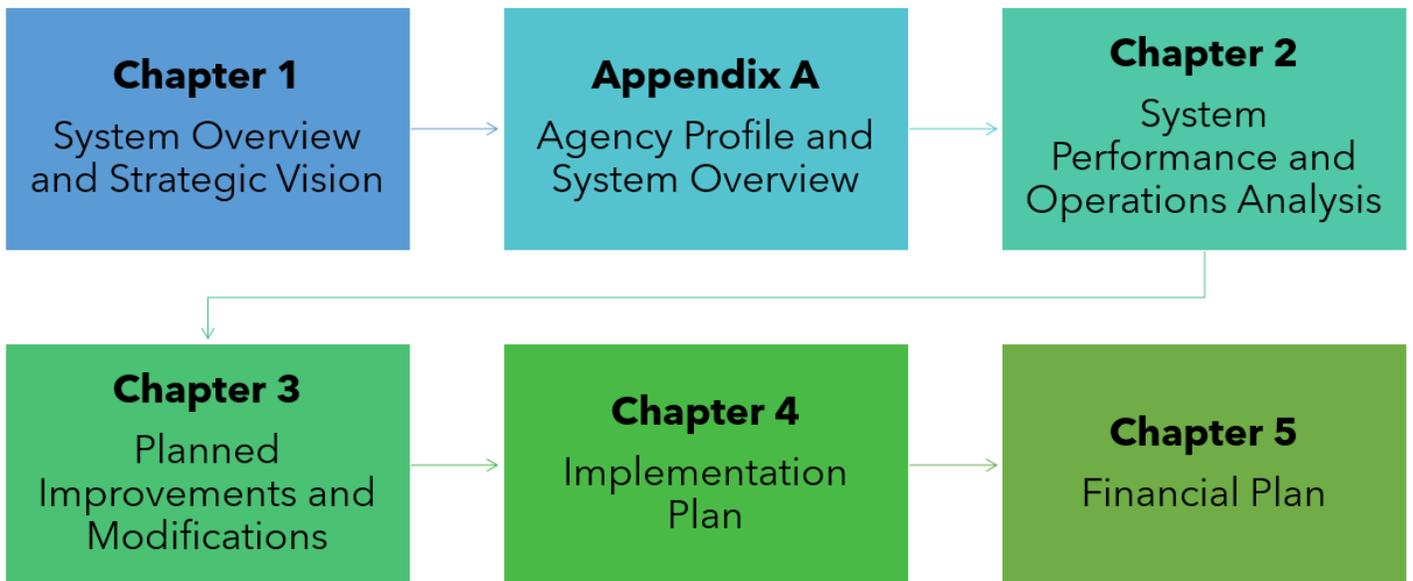


Develop service and capital recommendations that will help achieve agency goals and objectives moving forward.



Set the stage for continued success and improved transit access throughout the region across the 10-year planning horizon.

TSP Overview



Public, Stakeholder, and Staff Engagement

Outreach to the public, stakeholders, and staff informed the TSP planning process. The engagement was aligned with specific stages of TSP development to ensure that the feedback obtained was incorporated at key times. The first two phases of engagement sought feedback from stakeholders, operations and administrative staff at GRTC, and the public; the first phase focused on gathering input about transit needs and priorities while receiving input on the draft service recommendations was the purpose of the second phase. The third phase will be an educational/promotional campaign for these audiences.

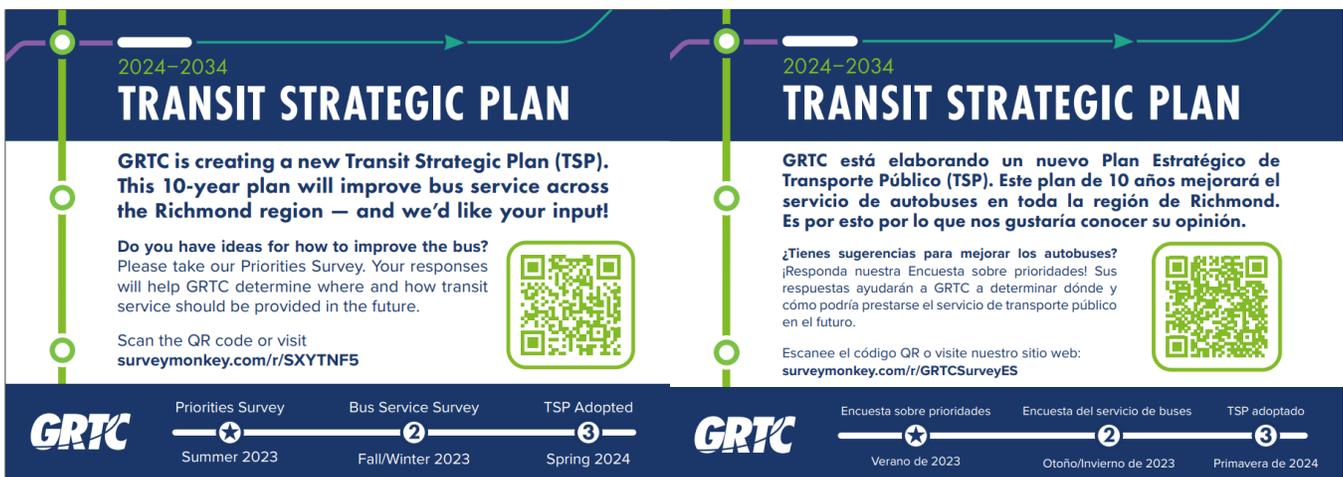
PUBLIC ENGAGEMENT OVERVIEW

To capture the public’s priorities, the project team staged and promoted two online surveys. The first survey, opened in Summer 2023, gauged rider priorities for reimagined service, along with current travel patterns, trip experiences, perception of microtransit, and demographics. The second survey, opened in Fall 2023, asked respondents to review the draft visionary network of route recommendations and share their feedback.

POP-UP EVENTS

To promote the surveys, the project team engaged the community directly through six pop-up events in areas with heavy foot traffic (three events for each survey). Staff informed the public about the project, distributed postcards (printed front and back in English and Spanish) with a link and QR code to take the survey (Figure 1 shows the first survey’s postcard), and assisted people with completing the survey on-location using tablets.

Figure 1: Postcard Distributed at First Round of Pop-Up Events (Front and Back)



ONLINE PROMOTION

The survey was promoted through GRTC’s Facebook, X (formerly Twitter), and Instagram social media channels. Post impressions were increased by the shares on social media pages of community partners, including DRPT, university and advocacy accounts, as well as local government representatives.

During the second phase of engagement, the [TSP hub website](https://grtc-tsp-hub.arcgis.com/)¹ was developed to share the draft visionary network of route recommendations. It included detailed information about each route recommendation, interactive maps, and downloadable resources.

¹ <https://grtc-tsp-hub.arcgis.com/>

STAKEHOLDER ENGAGEMENT OVERVIEW

The project team sought insight from community partners and stakeholders to provide feedback on service priorities. The project team invited over 50 people to join the Stakeholder Advisory Group (SAG), consisting of representatives from local governments, organizations, and institutions (**Table 1**). The stakeholders were invited to several project meetings to review project information and engagement opportunities for the people and communities they represent.

Table 1: Stakeholder Advisory Group Invitees

Brightpoint Community College	First Baptist Church	Richmond Redevelopment & Housing Authority
Bon Secours	Virginia General Assembly Member	DRPT
Caritas	GRTC Board Member	RideFinders
ChamberRVA	Henrico County	RVA Economic Development
Chesterfield County	Homeward	RVA Rapid Transit
City of Richmond	Reynolds Community College	Sports Backers
Dominion Energy	Richmond Hill	VCU
First African Baptist	Richmond Region Tourism	Virginia Chamber
First Baptist	PlanRVA	Visit Richmond

OPERATOR ENGAGEMENT OVERVIEW

In July 2023, the project team conducted three group interviews at GRTC Headquarters. Seventeen employees participated in the interviews, including both full-time and part-time bus operators, as well as key personnel such as the Transportation Administrative Manager and the Assistant Chief of Operations. Operators were provided an information sheet summarizing the TSP project, timeline, and contact information. The interviews followed a structured plan that comprised a combination of open-ended and tradeoff questions, allowing the participants to speak openly about their experiences with the current system and provide their recommendations for the TSP. Operators were also invited to complete both rounds of the online surveys.

GRTC Transit Strategic Plan

Chapter 1: System Overview and Strategic Vision

June 17, 2024

Contents

1.1. System Overview	1-1
1.1.1. Services Provided And Areas Served.....	1-1
Fixed Route.....	1-1
Demand Response	1-1
Ridefinders.....	1-1
Ride Home	1-2
Vanpool.....	1-2
System Map	1-2
1.1.2. Current/Recent Initiatives	1-4
1.2. Strategic Vision.....	1-5
1.2.1. Vision, Mission, Core Values, Objectives, And Initiatives.....	1-5
Agency Strategic Vision	1-5
Objectives And Initiatives	1-5
Tradeoffs In The Provision Of Transit Service	1-7
Strategies For Improving Service For Disadvantaged Populations	1-10
1.2.2. Service Design Standards	1-10
Route Types	1-10
Definitions.....	1-12
Service Design Standards	1-13
1.2.3. Performance Standards.....	1-18
System-Wide Performance Standards.....	1-18
Route-Level Performance Standards	1-19

Figures

Figure 1-1: GRTC System Map.....	1-3
Figure 1-2: GRTC Agency Perspectives and Objectives.....	1-6
Figure 1-3: Coverage and Frequency Tradeoff.....	1-7
Figure 1-4: Temporal Priority - Peak Tradeoff.....	1-8
Figure 1-5: Temporal Priority - Frequency and Span Tradeoff.....	1-9
Figure 1-6: Service Area Focus Tradeoff.....	1-9
Figure 1-7: GRTC Service Design Standards Summary.....	1-13

Tables

Table 1-1: Summary of Current and Recent Initiatives.....	1-4
Table 1-2: GRTC Route Types.....	1-11
Table 1-3: Service Area Types.....	1-12
Table 1-4: Minimum Service Headway by Route Type, Day of Week, and Service Period.....	1-14
Table 1-5: Minimum Span of Service by Route Type and Day of Week.....	1-14
Table 1-6: Bus Stop Spacing Standards by Service Area Type.....	1-15
Table 1-7: Transit Access/Availability Standard.....	1-15
Table 1-8: New Service Design Measures.....	1-15
Table 1-9: System-Wide Ridership Standards.....	1-18
Table 1-10: Transfer Performance Standard for Fixed-Route Service.....	1-19
Table 1-11: Safety Performance Standards and KPI Goals for Fixed-Route Service.....	1-19
Table 1-12: Ridership Standards by Route Type for Fixed-Route Service.....	1-19
Table 1-13: Passenger per Vehicle Revenue Hour Standard for Microtransit by Microtransit Zone Type ..	1-20
Table 1-14: Operating Cost Performance Standard for Fixed-Route Service by Route Type.....	1-20
Table 1-15: Subsidy per Trip Performance Standard for Microtransit by Microtransit Zone Type.....	1-20
Table 1-16: Speed Standards by Service Area Type for Fixed-Route Service.....	1-20
Table 1-17: On-Time Performance Standard for Fixed-Route Service by Service Period and Route Type.	1-21
Table 1-18: On-Time Performance Standards for Microtransit by Microtransit Zone Type.....	1-21
Table 1-19: Maximum Load Factor Standards by Route Type and Service Period.....	1-22

1.1. System Overview

The Greater Richmond Transit Company (GRTC) has provided public transportation services in the region of Richmond, Virginia for over 150 years. Today, GRTC's bus rapid transit (BRT), fixed-route bus, and demand response services cover 367 square miles in the City of Richmond, Henrico County, Chesterfield County, the City of Petersburg, Town of Ashland, Powhatan County, and Hanover County serving over 700,000 residents. Across its services, GRTC operates over 253 vehicles to provide more than 8.5 million passenger trips annually, connecting people to opportunities throughout the region with safe, reliable, sustainable, and equitable transportation.

This chapter outlines the services provided by GRTC and the agency's strategic vision, illustrating where GRTC stands today and the guiding principles that will shape the future of its services. Full details about GRTC's services, structure, and operations, including information on its transit fleet, technologies, fare structures, and other policies, are included in **Appendix A**.

1.1.1. Services Provided and Areas Served

GRTC serves the City of Richmond, Henrico County, and parts of the City of Petersburg and Chesterfield County. Transportation services offered include fixed-route bus transit, demand response paratransit, and commuter services including transportation demand management (TDM), guaranteed ride home, and vanpool programs.

FIXED ROUTE

GRTC's weekday service runs between 4:45 a.m. and 1:51 a.m. Local routes operate on headways between 15 minutes and 90 minutes throughout the day. GRTC operates 32 local fixed routes in total. Every route offers weekday service. On Saturdays, 27 of the routes provide service, while 25 routes provide service on Sundays. In addition to its local fixed-route service, GRTC also operates four express routes with weekday service.

The Pulse is GRTC's high-capacity BRT line that provides service to many local destinations between the City of Richmond and Henrico County. The service began operation in 2018, spanning a 7.6-mile corridor with more than three miles of dedicated right-of-way.

DEMAND RESPONSE

GRTC operates paratransit service through its CARE and CARE Plus programs. CARE program is an Americans with Disabilities Act (ADA) paratransit service that operates within $\frac{3}{4}$ of a mile beyond GRTC's local routes in the City of Richmond, Henrico County, and Chesterfield County. CARE operates seven days a week, although hours vary depending on the span of fixed-route services in different parts of the service area. The CARE Plus program offers additional service beyond $\frac{3}{4}$ of a mile of GRTC's fixed routes, as well as to travel destinations located in Henrico County on days when GRTC service to Henrico County is not operating. CARE On-Demand enables paratransit-eligible riders to book instant, non-shared CARE and CARE Plus rides for a premium.

RIDEFINDERS

RideFinders, a division of GRTC, is the regional non-profit ridesharing and transportation demand management (TDM) agency that works to move more commuters in fewer vehicles throughout the Central Virginia region to improve air quality and increase the efficiency of the region's transportation network. For

over 40 years, RideFinders has connected residents and businesses throughout central Virginia with transit, active transportation, telework, carpooling, and vanpooling services. RideFinders' mission is to "foster increased efficiency of the transportation system by influencing travel behavior by mode, time, frequency, trip length, or route. As a result of implementing our mission we expect to reduce traffic congestion, conserve energy, improve air quality and reduce transportation-related expenditures of individuals, employers and governments." This mission translates to the TDM agency's commitment to provide cost-effective commuter services solutions, sustainability resources, and campaigns all while improving air quality.

RIDE HOME

The Commute!VA Ride Home Reward Pilot program offers an emergency ride home to commuters that have used vanpool, carpool, or transit five times in the last 30 days. The program is offered in partnership with the Virginia Department of Rail and Public Transportation. For riders who aren't eligible for the Commute!VA Ride Home Reward Pilot program, RideFinders Emergency Ride Home Program can reimburse the rider for any taxi, rideshare, rental car, or train in case they miss their usual vanpool, carpool, or transit trip.

VANPOOL

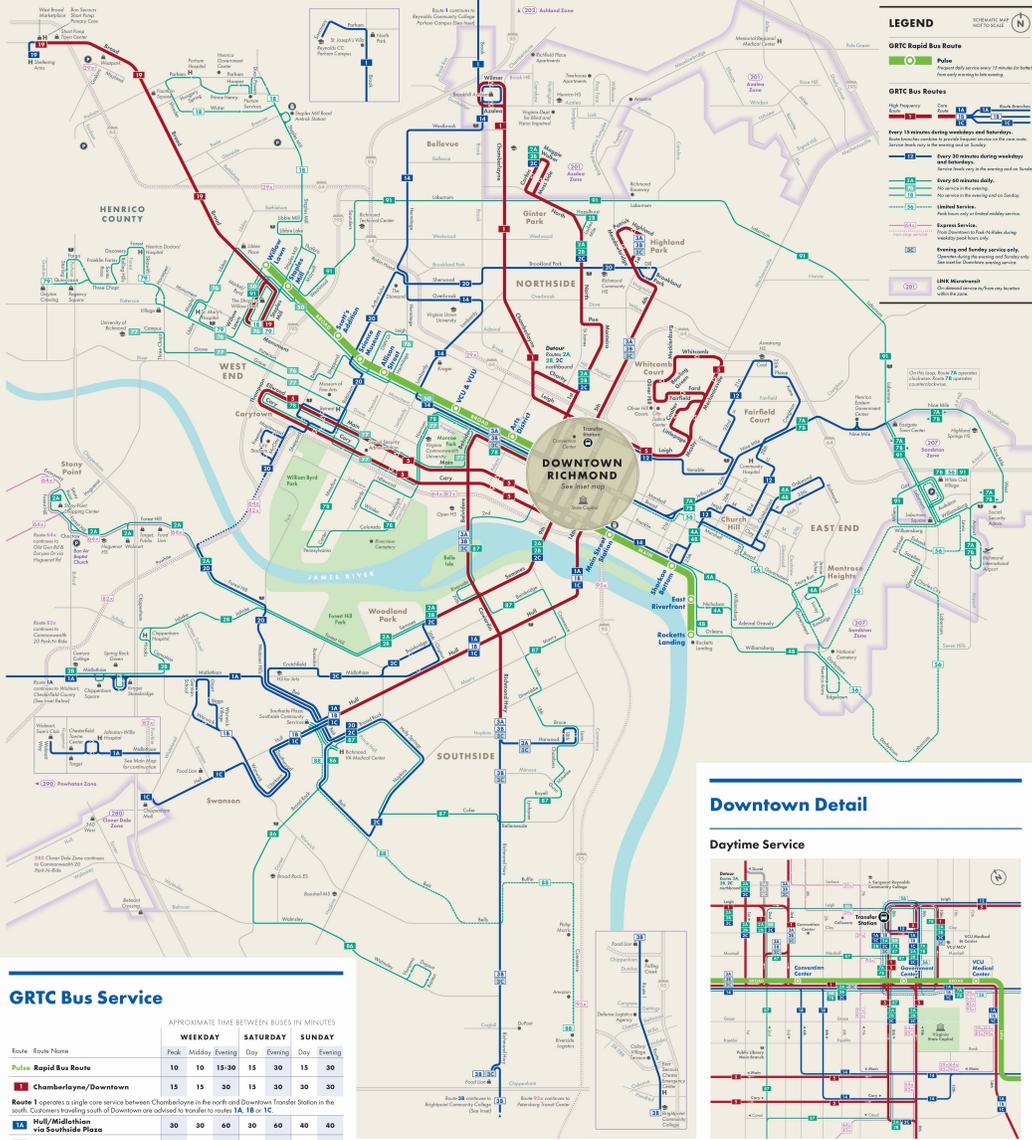
GRTC operates a vanpool service through RideFinders that matches employees, especially those that commute 25 miles or more, to rented vans. Each van can hold up to 15 commuters. The monthly fare for vanpool varies depending on the group's size and the length of the commute.

SYSTEM MAP

GRTC's system map is displayed in **Figure 1-1** (current as of the development of the TSP). The current map can also be viewed online at <http://ridegrtc.com/planning-your-trip/system-map/>.

Figure 1-1: GRTC System Map

System Map

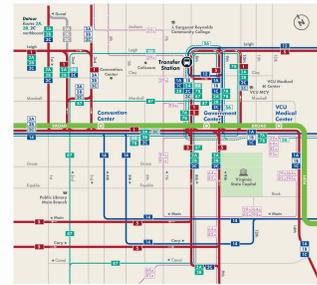


GRTC Bus Service

Route	Route Name	APPROXIMATE TIME BETWEEN BUSES IN MINUTES						
		Week	Midday	Evening	Day	Evening	Sunday	
Pulse Rapid Bus Routes		10	10	15-30	15	30	15	30
11	Chamberlayne/Downtown	15	15	30	15	30	15	30
14	Hull/Midlothian via Southside Plaza	30	30	60	30	60	40	40
15	Hull/Warwick via Southside Plaza	30	30	--	30	--	--	--
16	Hull/Elkhardt via Southside Plaza	30	30	60	30	60	40	40
17A	North Ave/Forest Hill	60	60	60	60	60	60	60
17B	North Ave/Jahnke/Midlothian	60	60	60	60	60	60	60
17C	North Ave/Midlothian/Bell Blvd	60	60	60	60	60	60	60
18A	Highland/U.S. 1/Harwood	30	30	--	30	--	--	--
18B	Highland/U.S. 1/Brightpoint	30	30	--	30	--	--	--
18C	Highland/Harwood/U.S. 1	--	--	30	--	30-60	30	30
19A	Oakwood/Montrose	60	60	60	60	60	60	60
19B	Oakwood/Darkestown	60	60	60	60	60	60	60
19C	Cary/Main/Whitcomb	15	15	30	15	30-60	30	30-60
20A	Nine Mile/Airport	60	60	60	60	60	60	60
20B	Nine Mile/Laburnum/Airport	60	60	60	60	60	60	60
21	Church Hill	30	30	30	30	30	30	30
22	Hemitage/East Main	30	30	30	30	30	30	30
23	Henrico Government Center	40	40	--	--	--	--	--
24	West Broad Street	15	15	15	15	15	30	30
25	Orbital	30	30	30	60	60	60	60
26	Broad Street	40	40	--	40	--	40	--

Downtown Detail

Daytime Service



Evening Service

Routes 3C and 14 serve the Downtown Transfer Station in the evening and Sunday only. Routes 1, 1A, 1C, 2A, 2B, 2C, 5, 7A, 7B, 12, 7B, and 87 serve the Downtown Transfer Station throughout the day.



Service to Area Hospitals

GRTC serves multiple hospitals throughout the region. Refer to the table (right) to find a bus to take you to the nearest hospital.

Bon Secours Richmond Community Hospital	7A, 7B, 12
Claytonville Hospital	2B
Henrico Doctors' Hospital	79
Jackson-Willie Hospital	1A
Parham Hospital	1B
Rainforest Doctors' Hospital	5, 20, 77, 78
Richmond VA Medical Center	2C, 20, 86, 87
Shallcross Arms	19
St. Mary's Hospital	76, 79
VCU Medical Center	Pulse BRT & other routes (See Downtown Detail)

804.358.GRTC(4782)
ridegrtc.com



For full passenger information, please scan the QR code to visit our website ridegrtc.com

CONNECT WITH US ON SOCIAL!



CONNECTING
THE RICHMOND REGION

1.1.2. Current/Recent Initiatives

Table 1-1 summarizes GRTC’s ongoing and recent initiatives which impact the provision of transit services. Additional details can be found in **Appendix A**.

Table 1-1: Summary of Current and Recent Initiatives

Initiative	Summary
West Broad Street BRT Corridor Analysis	PlanRVA, with the support of GRTC, conducted a BRT corridor study of West Broad Street which involved public input, economic analysis, environmental analysis, and recommendations for BRT stops along the corridor.
Malvern Avenue Pulse Infill Station	Construction will begin for the Malvern Avenue Pulse station in 2025 between the Scott’s Addition and Staples Mill stations.
North-South BRT Corridor Study	GRTC is currently studying the feasibility of adding a BRT route that runs north to south and connects to the existing GRTC Pulse route.
Essential Transit Infrastructure Plan	The Essential Transit Infrastructure Plan was published in 2022, outlining GRTC’s plan to provide essential transit infrastructure (such as landing pads, benches, shelters, and trash cans) to more stops in the system.
Richmond Region Microtransit Pilot Program and Microtransit Implementation Plan	GRTC studied the feasibility of operating a demand-response microtransit pilot program and identified zones that are suitable for operation. The implementation plan that is underway will detail the implementation of five pilot zones.
New Downtown Transfer Station	GRTC is partnering with the City of Richmond’s Office of Equitable Transit and Mobility to build a new transfer station at the corner of 8 th Street and Leigh Street in downtown Richmond to accommodate 17 routes in 12 bus bays.
East End Transfer Hub Site Selection	GRTC is in the process of searching for a new neighborhood transfer station for the eastern part of its system, which will better promote access for riders and provide more amenities.
Regional Public Transportation Plan	This plan specifies how GRTC will spend the funds raised by the Central Virginia Transportation Authority (CVTA) for each fiscal year, updated annually.
Zero-Emission Vehicle Fleet Transition Plan	GRTC is currently developing a plan to transition its fleet from a diesel and compressed natural gas (CNG) fleet to a zero-emission fleet.

1.2. Strategic Vision

This section serves as the foundation of the TSP by establishing the overall mission and vision for transit services adopted by GRTC, as well as its objectives, initiatives, core values, service standards, and performance standards. These form a framework of principles for planning GRTC's services and initiatives, monitoring transit performance, and tracking the achievement of goals.

1.2.1. Vision, Mission, Core Values, Objectives, and Initiatives

AGENCY STRATEGIC VISION

In Spring 2023, GRTC's Senior Leadership, Directors, and Manager level staff held a strategic visioning session to reflect on the agency's past and determine the agency's future. After learning about GRTC's 50-year history, the conversation transitioned to GRTC's future, where, in keeping with GRTC's more streamlined and strategic approach, a newly revamped GRTC logo was revealed, in addition to a new GRTC 50th Anniversary logo. As conversations continued, staff discussed future projects, including, but not limited to, Richmond Region Microtransit, North-South BRT Corridor Study, and the new Downtown Transfer Station. Building off the momentum of future projects, staff was tasked to draft a new Mission, Vision, and Core Values.

MISSION

Connecting people to opportunities by providing safe, reliable, sustainable, and equitable transportation.

VISION

The transportation system that seamlessly connects the vibrant Richmond region.

CORE VALUES

- Adaptability
- Innovation
- Integrity
- Reliability
- Respect
- Safety
- Teamwork
- Trust

OBJECTIVES AND INITIATIVES

Following the Spring 2023 exercise of drafting a new Mission, Vision, and Core Values, staff was introduced to GRTC's proposed organizational structure, then staff participated in a SWOT (strengths, weaknesses, opportunities, and threats) exercise. Finally, staff discussed the new agency objectives and developed initiatives to accompany those objectives.

GRTC's objectives establish long-term purpose toward which an endeavor is directed while initiatives provide additional details, or targets for how the goal will be achieved. Objectives and initiatives are revisited on an annual basis, and historically have a strong emphasis on the implementation and status of projects to advance outcomes.

GRTC’s agency objectives are shown in **Figure 1-2**. The nineteen objectives are grouped into four “perspectives” as they relate to the agency’s customers, finances, processes, and employees.

Figure 1-2: GRTC Agency Perspectives and Objectives

CUSTOMERS	Improve Public Image
	Improve Quality of Life
	Improve Customer Experience
	Improve Communications Cultivate Diversity, Equity, & Inclusion
FINANCES	Manage Strong Cashflow Position
	Maintain Strategic Planning Focus Expand Revenue Sources
	Maintain Fiscal Stewardship
PROCESSES	Improve Effectiveness
	Improve Efficiency
	Improve Sustainability Improve Communications
	Enhance Safety Enhance Internal Quality Control Improve State of Good Repair
EMPLOYEES	Improve Retention & Recruitment
	Improve Quality of Life Improve Employee Experience Encourage Intellectual Curiosity
	Improve Communications Cultivate Diversity, Equity, & Inclusion Improve Professional Development

Each of the objectives are associated with initiatives, which specify the activities GRTC is pursuing in order to achieve its objectives. GRTC’s current initiatives are outlined by perspective below.

CUSTOMERS

- Improve Public Image
- Improve Quality of Life
- Improve Customer Experience
- Improve Communications

FINANCES

- Manage Strong Cashflow Position
- Expand Revenue Sources
- Maintain Strategic Planning Focus
- Maintain Fiscal Stewardship

PROCESSES

- Improve Efficiency
- Improve Sustainability
- Enhance Safety
- Improve State of Good Repair

EMPLOYEES

- Improve Retention and Recruitment
- Encourage Intellectual Curiosity
- Improve Employee Experience
- Improve Quality of Life

- Cultivate Diversity, Equity, and Inclusion
- Improve Communications
- Improve Professional Development

TRADEOFFS IN THE PROVISION OF TRANSIT SERVICE

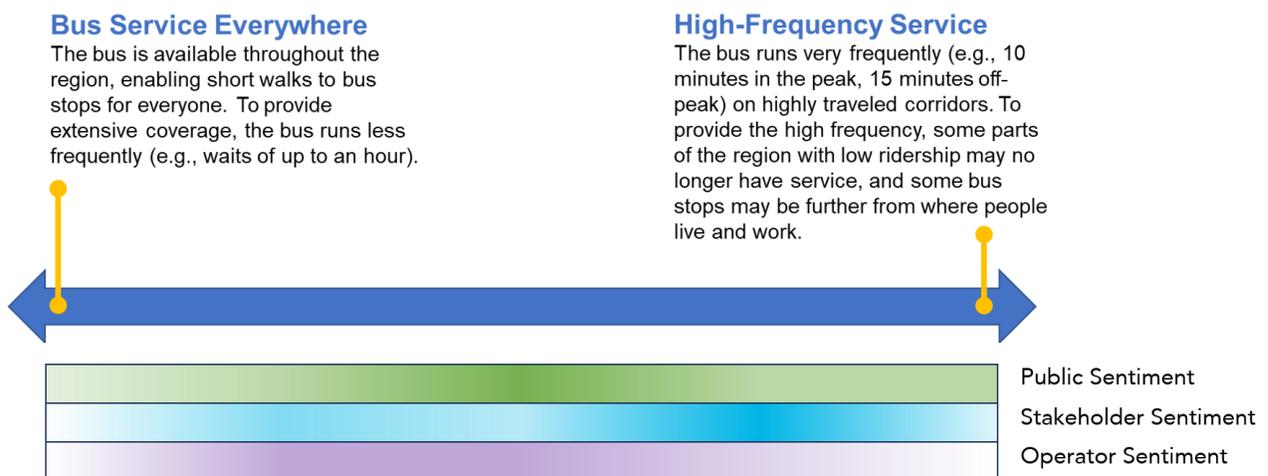
As part of the process of developing the TSP, key GRTC stakeholders and the public were asked about their priorities when it comes to tradeoffs in the provision of transit service. Each of these tradeoffs are presented below, with summaries of the findings from the feedback from the following groups:

- GRTC Executive Leadership
- GRTC Development Committee
- TSP Stakeholder Advisory Group Meeting, held on June 16, 2023
- Group Employee Interviews, held on July 11, 2023
- Public Priorities Survey, open from June 26-July 14, 2023

COVERAGE AND FREQUENCY TRADEOFF FINDINGS

Figure 1-3 displays audience sentiment regarding the coverage and frequency tradeoff. The darker colors indicate the majority opinions among each group. Sentiments for this tradeoff were varied, with survey respondents, stakeholders, and bus operators acknowledging the positive impacts of both expanding coverage and prioritizing high-frequency options. Stakeholders and riders tended to advocate for higher frequency, stating that current low-frequency service and inconsistency of service were primary reasons for not choosing to ride more regularly. Overall, all audiences emphasized the importance of improving service reliability, so riders can complete rides and transfers with confidence. Stakeholders and bus operators expressed concerns that expanding the service area may further reduce frequency and ridership on existing routes, with operators noting that both existing and new routes would need to serve a minimum threshold of riders to justify service. Multiple survey respondents expressed interest in Pulse service, urging for both increased frequency and expanded coverage of this service. Survey respondents expressed interest in increased Pulse service hours, including weekend and late-night service, along with service extension to new communities, including the development of a North-South corridor and westward expansion.

Figure 1-3: Coverage and Frequency Tradeoff

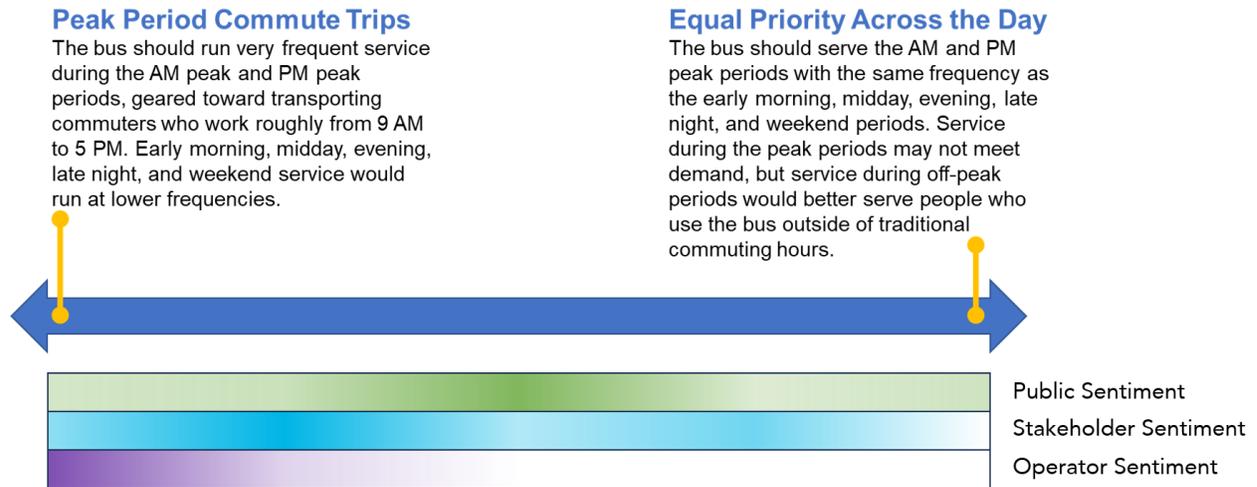


TEMPORAL PRIORITY - PEAK TRADEOFF FINDINGS

Figure 1-4 displays audience sentiment regarding the peak and off-peak tradeoff. The darker colors indicate the majority opinions among each group. While survey respondents were evenly split between

peak period commute trips and equal priority of trips across the day, stakeholder and bus operator sentiment skewed towards stronger support of peak period commute trips. Survey respondents, stakeholders, and bus operators supporting peak service expressed that serving peak ridership is the optimal use of the system’s limited resources. However, all audiences expressed that riders across the system have varying travel needs, often not confirming with traditional “peak period” travel times. Operators noted that ridership needs vary by route, and that peak period travel should be considered on a per-route basis.

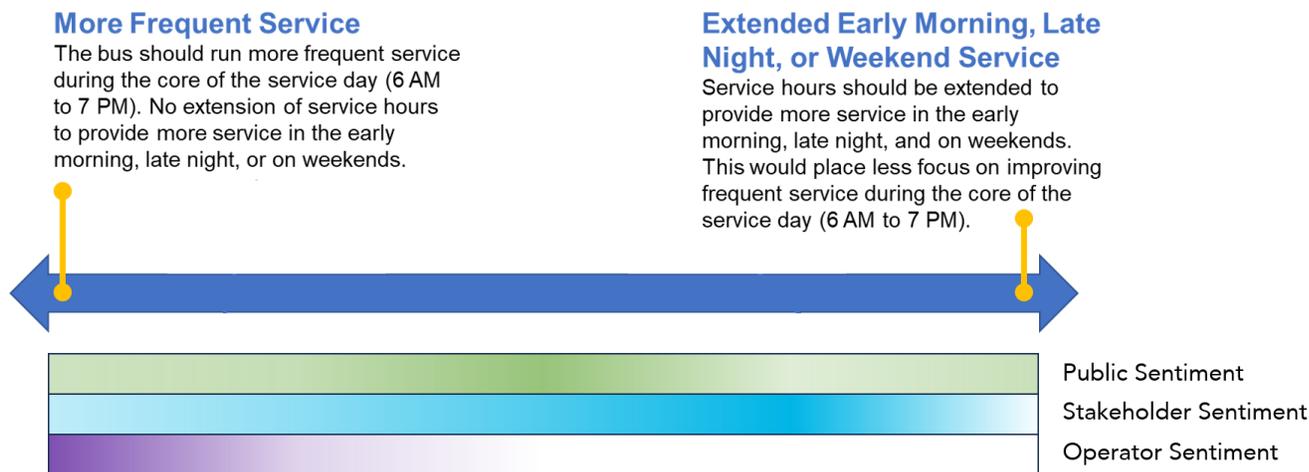
Figure 1-4: Temporal Priority - Peak Tradeoff



TEMPORAL PRIORITY - FREQUENCY AND SPAN TRADEOFF FINDINGS

Figure 1-5 displays audience sentiment regarding the frequency and span tradeoff. The darker colors indicate the majority opinions among each group. Survey respondents were split between more frequent service and extended service in the early morning, late night, or weekends, with a slight inclination towards more frequent service. Stakeholders expressed a slight preference for extended service, while operators strongly supported more frequent service. Operators are moderately supportive of early morning service, but less supportive of late-night service, citing safety concerns and lower ridership at night. However, both stakeholders and survey respondents emphasized the importance of preserving late-night service for low-income populations and commuters with non-traditional work hours. While there is a demand for more frequent service at all operating hours, survey respondents and stakeholders emphasized the need to provide services for riders who rely on early morning, late night, and weekend services.

Figure 1-5: Temporal Priority - Frequency and Span Tradeoff



SERVICE AREA FOCUS TRADEOFF FINDINGS

Figure 1-6 displays audience sentiment regarding whether to focus service improvements on the existing service area or to new service areas. The darker colors indicate the majority opinions among each group. Survey respondents were divided between enhancing service in the existing service area and expanding the service area, with a slight preference towards expanding service area. Bus operators expressed a strong preference for prioritizing areas already served, emphasizing the need to address scheduling and staffing concerns on the current routes before considering expansion to rural and suburban areas. Survey respondents, stakeholders, and bus operators expressed support for first restoring service to pre-pandemic levels before pursuing any expansions. Survey respondents mentioned that riders would be more eager to use the existing service if the overall experience was improved, including station cleanliness and amenities, pedestrian infrastructure improvements, and traffic signal priority for bus routes. Stakeholders and survey respondents noted that students would benefit from increased access to the system, and universities and colleges should be considered as key areas to be served, given the active interest of students in using public transportation.

Figure 1-6: Service Area Focus Tradeoff



STRATEGIES FOR IMPROVING SERVICE FOR DISADVANTAGED POPULATIONS

GRTC has several initiatives that aim to improve service for disadvantaged populations:

- **Improving access to public transportation:** GRTC's Essential Transit Infrastructure (ETI) Plan analyzed where landing pads, benches, shelters, trash cans, and other ETI elements should be added to provide comfort, convenience, accessibility, safety, and dignity to riders, and laid out an implementation plan.
- **Increasing service in disadvantaged communities:** GRTC's Title VI Program has identified ways that service enhancements could improve and provide more equitable service to disadvantaged communities. The Title VI Program recommended examining ways to improve route headways for those routes classified as minority and LEP (Limited English Proficiency) routes, as well as to improve the directness of minority routes. This TSP's service planning will consider these recommendations and evaluate what types of improvements would be most effective.
- **Reducing single-occupancy vehicle travel and air pollution near high-volume corridors:** GRTC's efforts to continually provide more high-frequency service along high-volume corridors will help lead to further transit use and reduced emissions, benefitting communities who live on and near these corridors. GRTC is currently studying opportunities to expand the current Pulse route further west and to add a new north-south BRT route.
- **Offering zero fares for all:** No one has to pay to use GRTC services, which opens mobility opportunities for many people who may otherwise have trouble affording transportation.
- **Providing language access services to people with limited English proficiency (LEP):**
 - GRTC has a safe harbor protocol for written documents that identifies vital written documents which must be translated into all safe harbor languages (Spanish and Vietnamese) and made accessible to the public on GRTC's website.
 - Customer Service staff are trained in using a telephone translation service and how to identify common languages and phrases.
 - Staff develop and implement LEP guidelines for specific projects or activities as needed, including accounting for language needs in major project outreach budgets.
 - GRTC's Marketing & Communications Department provides directed outreach to Spanish- and Vietnamese-speaking LEP people through regular contact with local outreach organizations and by attending local outreach events.

1.2.2. Service Design Standards

GRTC maintains a set of service design standards which guide the planning of all changes to existing services as well as the design of new transit services. These standards ensure that bus routes and other services are a responsible and intentional use of GRTC's resources, providing services that are proportionate to demand, equitably distributed, effective as a part of the transit network, and useful to riders as a safe and convenient transportation option. The service design standards include guidelines for levels of service, bus stop spacing, transit availability, design of new transit services, and the distribution of essential transit infrastructure.

ROUTE TYPES

Most of the service design standards are organized by route types presented in **Table 1-2**. Categorizing routes groups similar routes with together; with this guidance, services can be designed to fulfill different functions effectively and they can be evaluated against similar routes for meaningful performance analysis.

Table 1-2: GRTC Route Types

Route Type	Description	Density Criteria <i>1/4-mile walking distance around stops</i>	Directness Criteria <i>Ratio of one-way average route length to straight-line distance between termini</i>
BRT	<ul style="list-style-type: none"> • High frequency. • Dedicated lanes. • Limited stops, referred to as stations. • Primarily focused on high ridership goals. 	<p>> 40 jobs + population per acre (High density areas, which in Richmond needs to start at 40 jobs + population per acre)</p>	1.2
Arterial	<ul style="list-style-type: none"> • Activity centers are serviced along these routes and termini are major activity centers. • Travel more than 50 percent of their route on major corridor/thoroughfare. • May be designed as “route families” with trunk and branch style design. <ul style="list-style-type: none"> ○ Trunk segments may primarily serve ridership goals and branch segments may primarily serve coverage goals. ○ Trunk segments should effectively follow Arterial service design standards while branch segments may follow standards for Arterial, Community Radial, or Circulator/Feeder/Connector routes based on route design and transit demand. 	<p>20-40 jobs + population per acre (Medium-high density areas)</p>	1.7
Community Radial	<ul style="list-style-type: none"> • Travel through neighborhoods for most of service, connecting neighborhoods to main corridors. • May have portions that serve ridership goals, but most segments serve coverage goals. 	<p>15-30 jobs + population per acre (Medium density areas)</p>	2.5
Circulator/ Feeder/ Connector	<ul style="list-style-type: none"> • Connect outlying sections of the service area to each other. • Have a stop at an activity center at one or both termini, with connection to an Arterial route. • Some of these routes or portions of these routes may serve ridership goals but most serve coverage goals. 	<p>5-20 jobs + population per acre (Medium-low density areas)</p>	2.2

Route Type	Description	Density Criteria <i>1/4-mile walking distance around stops</i>	Directness Criteria <i>Ratio of one-way average route length to straight-line distance between termini</i>
Express	<ul style="list-style-type: none"> Limited stops. Run on freeways and along key commuting corridors, primarily operating only during peaks. May be ridership-oriented or coverage-oriented depending on their markets and design. 	40-100 jobs + population per acre (Density can be very high if the only stops are in population & employment centers. They can also be lower if they are at park and rides.)	1.3
Microtransit	<ul style="list-style-type: none"> A technology-enabled, on-demand public transportation service, using specialized vehicles, such as vans or shuttle buses that operate in specified zones. 	< 10 jobs + population per acre	N/A

DEFINITIONS

SERVICE PERIODS

GRTC defines service periods that shape what service operates during different times of the day. The time periods are defined as follows:

- **Early:** 4:00 am-5:59 am
- **AM Peak:** 6:00 am-8:59 am
- **Midday:** 9:00 am-3:59 pm
- **PM Peak:** 4:00 pm-6:59 pm
- **Evening:** 7:00 pm-9:59 pm
- **Late Night:** 10:00 pm-3:59 am

SERVICE AREA TYPE

Service area types are used for the bus stop spacing and speed standards. contains the definitions of the service area types based on the density of population and jobs.

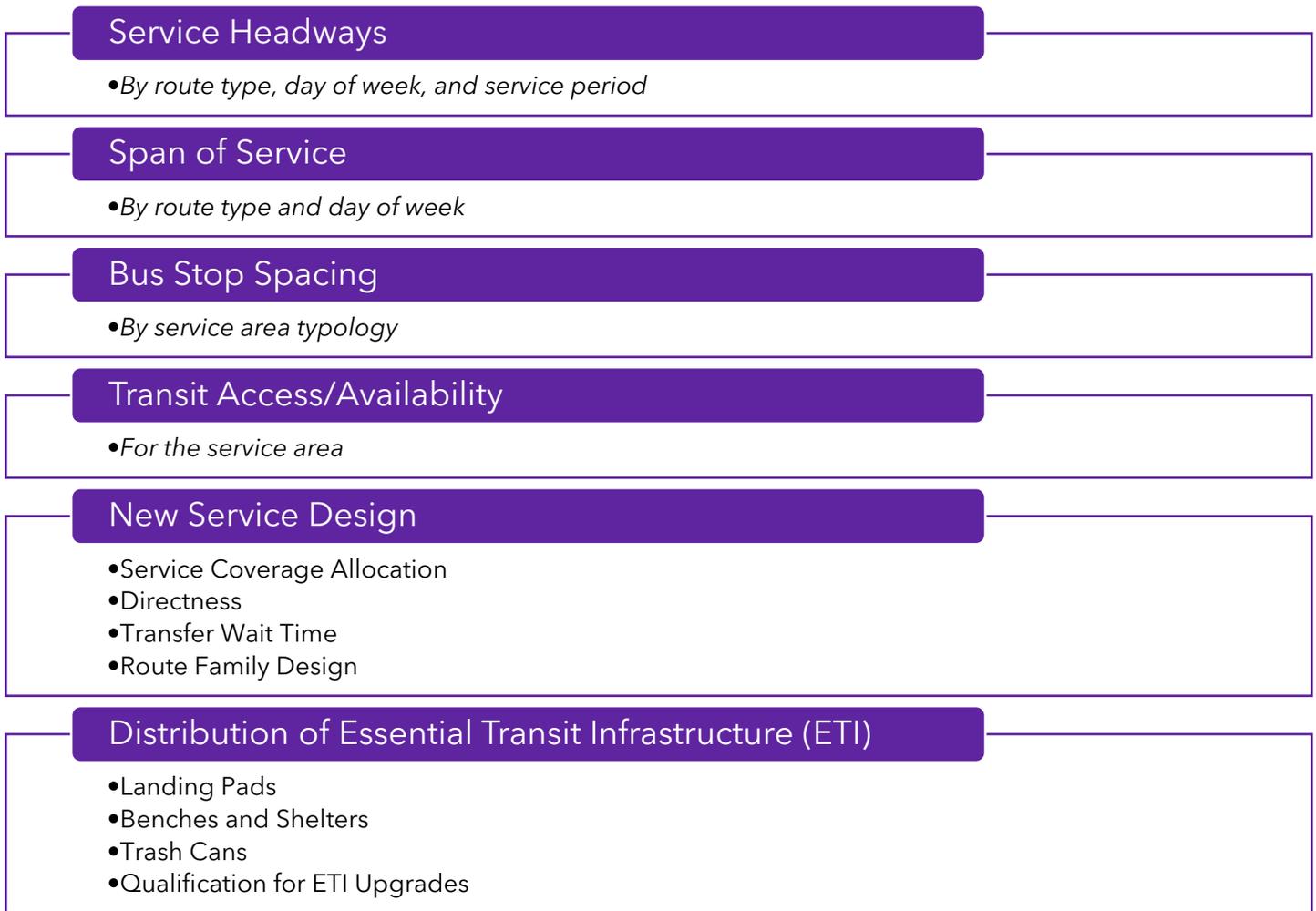
Table 1-3: Service Area Types

Service Area Type Name	Population + Jobs per Acre
Core	70 or more
Urban	33.75-70
Suburban	2.13-33.74
Rural	2.12 or less

SERVICE DESIGN STANDARDS

Service design standards are critical planning tools to evaluate the effectiveness of existing services and to assure impartiality in service modification decisions. GRTC's standards reflect a focus on creating a logical, efficient, and integrated route system, with additional emphasis on customer convenience and fiscal responsibility. **Figure 1-7** summarizes GRTC's service design standards.

Figure 1-7: GRTC Service Design Standards Summary



SERVICE HEADWAYS

Service headways are a measure of how frequently a bus operates during a specific service period. More frequent service is most attractive to potential ridership, but also more expensive to operate. Headways should be directly related to both the size of the ridership market and travel patterns, which the route types help to delineate. **Table 1-4** contains minimum service headway by route type, day of week, and service period. There are no defined headways for Express routes because they operate trips based on when demand warrants connecting the origins and destinations. Microtransit does not operate with headways.

Table 1-4: Minimum Service Headway by Route Type, Day of Week, and Service Period

Route Type	Weekday			Saturday			Sunday		
	Peak	Midday	Late Night	Peak	Midday	Late Night	Peak	Midday	Late Night
BRT	10	10	15	10	10	15	15	15	15
Arterial	15	15	30	15	15	30	30	30	30
Community Radial	30	30	60	30	30	60	60	60	60
Circulator/Feeder/Connector	60	60	60	60	60	60	60	60	60
Express	Demand Driven								
Microtransit	On Demand								

SPAN OF SERVICE

Span of service is the period during which a route operates on a given day. Weekend service may not be necessary on all routes, and demand may dictate starting later and ending sooner. Route types help to delineate the different spans needed for different types of routes. The end of service typically refers to the departure time of the last scheduled trip for that route; therefore, vehicles would remain in service beyond that time until they complete the trip and return to the garage. **Table 1-5** contains the minimum span of service by route type and day of week. There are no defined spans for Express routes because they operate trips based on when demand warrants connecting the origins and destinations. Express routes operate on weekdays only with no service on weekends.

Table 1-5: Minimum Span of Service by Route Type and Day of Week

Route Type	Weekday			Saturday			Sunday		
	Start of Service	End of Service	Hours	Start of Service	End of Service	Hours	Start of Service	End of Service	Hours
BRT	5:30 am	1:00 am	19.5	6:00 am	1:00 am	19	6:00 am	1:00 am	19
Arterial	5:30 am	1:00 am	19.5	6:00 am	1:00 am	19	6:00 am	1:00 am	19
Community Radial	5:30 am	10:00 pm	16.5	6:00 am	10:00 pm	16	6:00 am	10:00 pm	16
Circulator/Feeder/Connector	5:30 am	7:00 pm	13.5	7:00 am	7:00 pm	12	7:00 am	7:00 pm	12
Express	Demand Driven			No Service					
Microtransit	6:30 am	7:00 pm	11.5	6:30 am	7:00 pm	11.5	6:30 am	7:00 pm	11.5

BUS STOP SPACING

Stop spacing standards help to distribute stops at a reasonable distance from each other, balancing the need to serve passengers with regular and easily accessible stops with the need to be efficient in the provision of stops. More stops can also negatively impact the speed of the service. The bus stop spacing standards in **Table 1-6** are organized by service area type, which is preferable to defining spacing by route type, because a route can travel through different area types and have different needs for stop spacing based on the changing surrounding land uses.

Table 1-6: Bus Stop Spacing Standards by Service Area Type

Service Area Type	Distance Between Stops (Feet)	Stops per Mile
Core	900-1,200	5
Urban	600-1,200	4-5
Suburban	600-2,500	Varies*
Rural	600-2,500	Varies*

* In suburban and rural areas, the predominant factor affecting stop spacing and location is the ability to find safe locations for accessing stops from the street and by crossing the street. Stop spacing can be closer in these areas while not reducing average bus speeds because the lower density of activity typically means that most stops will not have riders waiting during every trip.

TRANSIT ACCESS/AVAILABILITY

Transit access/availability is a general measure of the distribution of routes within the service area relative to the population, measured by the percent of the population who has access to existing transit routes. In the most recent Title VI Program (March 2023), 57 percent of the households within GRTC’s service area could access a local route with a 1/4 mile walk or less. GRTC has not previously set a standard for transit access/availability. The new standard is shown in **Table 1-7**.

Table 1-7: Transit Access/Availability Standard

Standard Name	Metric	Transit Access/Availability Standard
Transit Access/Availability	Percentage of households within GRTC service area with access to a local route with ¼ mile walk or less	55%

NEW SERVICE DESIGN

GRTC uses the guidelines in **Table 1-8** when determining the route design of new services.

Table 1-8: New Service Design Measures

New Service Design Measure	Description	Metric	Target
Service Coverage Allocation	The distribution of revenue service hours system-wide, as based upon balancing: 1) High-frequency routes in areas with densities large enough to support such transit 2) Lower frequency routes in areas that serve communities with a need for transit	1) Percent of revenue hours allocated toward frequent routes 2) Percent of revenue hours allocated to less frequent routes.	1) 70% 2) 30%

New Service Design Measure	Description	Metric	Target
Directness	Unless for compelling reasons (e.g., large trip generator) and due to prevailing land use patterns/street grid, routes should minimize deviation from the most direct alignment between endpoints.	1) Terminal distance in excess of straight-line mileage. 2) Maximum percentage of passengers requiring a transfer.	1) 70% or 1.7 2) 50%
Transfer Wait Time	Routes should be designed to make timed transfers to and from major connecting services with minimum delay to the overall trip.	1) Maximum peak hour wait time 2) Maximum off-peak hour wait time	1) 5-10 min 2) 30 min
Route Family Design	Routes which are designed to work with other routes in a “route family” should be designed to adequately meet varying demand across the “trunk” and “branches” of the route family routes.	1) Trunk: overlap on segments with significant transit demand 2) Branches: warrant fixed-route service but not as high a level of service as the trunk	1) Trunk portion of routes should collectively follow guidelines for Arterial routes 2) Branch portion of routes should follow guidelines for Arterial, Community Radial, or Circulator/Feeder/Connector routes based on route design and transit demand.

DISTRIBUTION OF ESSENTIAL TRANSIT INFRASTRUCTURE (ETI)

GRTC’s Essential Transit Infrastructure Plan adopted by GRTC’s Board of Directors in August 2022 details the plans and policies related to bus stop shelters, benches, landing pads, and trash cans. Highlights from that plan are included below.

LANDING PADS

“Landing pad” refers to the paved level surface at bus stops, ideally connected to a sidewalk, that provides a safe and stable location for riders to await, board and alight the bus. Landing pads must be at least eight feet (perpendicular to the curb) by five feet (parallel to the curb) to be compliant with federal ADA regulations.

GRTC’s policy, wherever space allows, is to install larger landing pads (eight feet perpendicular to the curb by twenty-six feet parallel to the curb) to allow riders to utilize either the front or rear doors via landing pads.

Bus stops with no or insufficient landing pads fall into two broad categories: stops which require minimal site preparation before a landing pad can be installed and stops which will require major site reconstruction before a landing pad can be installed.

GRTC’s policy for the first category is twofold: Firstly, GRTC will retrofit any stop that receives a new bench, trash can or shelter with a full landing pad simultaneous with the ETI installation. Secondly, GRTC

anticipates doing several landing pad improvement efforts over the next five years, which will install or upgrade landing pads at multiple stops in batches.

GRTC's approach for the second category of stops is to apply (either as an agency or in cooperation with regional partners) for grant funding for larger accessibility projects. These projects will include landing pads but will be more holistic site improvement projects.

BENCHES AND SHELTERS

Benches are helpful essential infrastructure that aid in providing comfort and convenience for transit riders waiting for their bus, particularly for those who may have difficulty walking or standing. The standard bench installed by GRTC at bus stops is an all-weather, 6-foot steel bench powder-coated in tavern green. An optional third armrest can be installed at benches upon request by City or County Transportation Appointee(s) (CTAs).

Where space is available, and with jurisdictional approval, benches are always paired with trash cans. GRTC is retroactively placing trash cans at stops that previously had only a bench installed.

Many of the local stops which qualify for seating lack sufficient space to install a full-size bench. GRTC plans to launch a pilot program to gauge the efficacy of installing pole-attached seating (such as Simme-Seats or similar seating solutions) at stops with limited right-of-way.

Bus stop shelters provide protection from the elements for riders waiting for their bus; shelters are especially beneficial to riders of routes with long headways where riders must wait the longest between buses.

GRTC currently installs various iterations of the Brasco Eclipse (or equivalent) bus shelter throughout the service area. Eclipse shelters have powder coated steel frames and roofing, clear tempered glass walls, solar lighting, and various information display options. All shelters include either a bench or a lean rail as well as clear space for a wheelchair or mobility device. Additionally, the Eclipse design can be ordered with three full glass walls (to offer maximum protection from weather or the elements) or with partial or no side walls (for installation at stops with limited right-of-way).

GRTC's initial goal is for 75 percent of stops to have shelter or seating by 2027. To meet this goal, GRTC will need to install 160 shelters and 225 benches over five years.

TRASH CANS

Standard trash cans are placed by GRTC at bus stops in the City of Richmond and Chesterfield County. They are 36-gallon tavern green steel receptacles with a plastic liner and a removable rain bonnet. Henrico County Department of Public Works (DPW) currently installs 36-gallon HDPE trash cans with rain bonnets at bus stops within its jurisdiction.

Trash cans are not present at every stop. They may be stand-alone or paired with other essential infrastructure.

QUALIFICATION FOR ETI UPGRADES

GRTC has refined a scoring system which considers both usage and equity to qualify stops for ETI placement over the next five years. Stops which qualify for ETI based on the rubric will be further evaluated for site suitability. Proposed ETI placement requires approval from both GRTC staff and the jurisdictions before installation.

The rubric considers two numbers for each stop: a Ridership and an Equity Score.

- The Ridership Score is equal to the Average Daily Boardings (ADB) of each stop. ADBs are calculated annually by GRTC and represent the average number of riders who board the stop every day. ADBs range from 0 to over 500.
- The Equity Score is a number between 0 and 40. It is calculated by assigning points to each stop based on use, route type, and socioeconomic factors.

Stops receive points based on:

- Number of routes serviced
- Maximum headway
- Headway/Routes ratio
- Adjacency to medical facilities, schools, libraries, or community centers
- Location within a census block group that has a minority, low-income, or LEP (Limited English Proficiency) population higher than the GRTC service area average

The rubric evaluates the numbers in tandem and determines if a stop is eligible for a shelter or bench.

Note: All stops that qualify for a shelter or bench also qualify for a trash can. (Trash can installations require additional approval from City or County DPW, as cans must be added to DPW pickup routes.)

1.2.3. Performance Standards

Similar to service design standards, performance standards allow GRTC to monitor the success of individual transit services and plan changes to improve efficiency, convenience, safety, and equity, at both the systemwide level and for specific fixed routes. GRTC sets performance standards for ridership, transfers, safety, cost efficiency, speed, on-time performance, passenger load, and equitable access.

SYSTEM-WIDE PERFORMANCE STANDARDS

RIDERSHIP

GRTC measures ridership against three standards that can help the agency to design and operate fixed-route bus service more efficiently. GRTC has developed standards for local (BRT, Arterial, Community Radial, Circulator/Feeder/Connector) and Express bus service, shown in **Table 1-9**.

Table 1-9: System-Wide Ridership Standards

Route Type	Passenger Per Revenue Hour Target	Passengers Per Revenue Mile Target	Passengers (Boardings) Per Trip Target
All Local Routes (BRT, Arterial, Community Radial, Circulator/Feeder/Connector)	12	1.25	15
Express	18	0.70	10

TRANSFERS

GRTC strives to provide riders with direct and efficient service by minimizing the number of transfers. Routes should be designed to serve origin-destination pairs with the highest demand, thereby minimizing the number of transfers required. GRTC monitors the performance of the system by examining how many transfer passengers there are systemwide, with the target shown in **Table 1-10**.

Table 1-10: Transfer Performance Standard for Fixed-Route Service

Transfer Performance Standard	KPI Goal
Percent of Transfer Passengers Systemwide	15%

SAFETY

GRTC monitors the safety performance standards for fixed-route service shown in **Table 1-11**.

Table 1-11: Safety Performance Standards and KPI Goals for Fixed-Route Service

Safety Performance Standard	KPI Goal
Miles Between Road Calls	5,200 miles
Fixed-Route Traffic Accidents (Preventable)	9 per month
Fixed-Route Traffic Accidents (Non-Preventable)	Prior year average per month
Fixed-Route Passenger Accidents (Preventable)	3 per month
Fixed-Route Passenger Accidents (Non-Preventable)	Prior year average per month
Total Days Lost on Workers Compensation	9 days lost per month
Total Days on Light Duty	27 light duty days per month

ROUTE-LEVEL PERFORMANCE STANDARDS

RIDERSHIP

FIXED-ROUTE

Ridership by route is measured by the average number of passengers for each hour of revenue service provided, each revenue mile of service provided, and per trip. These measures are industry-wide standards to assess overall performance and route efficiency. The ridership standards by route type for fixed-route service are shown in **Table 1-12**.

Table 1-12: Ridership Standards by Route Type for Fixed-Route Service

Route Type	Passenger Per Revenue Hour Standard	Passengers Per Revenue Mile Standard	Passengers (Boardings) Per Trip Standard
BRT	30	3.5	30
Arterial	15	1.3	20
Community Radial	8	0.7	10
Circulator/Feeder/Connector	10	0.7	5
Express	18	0.7	10

MICROTRANSIT

GRTC aims to maintain high performance in passengers per vehicle revenue hour for microtransit in order to use resources efficiently. **Table 1-13** contains the microtransit subsidy per trip performance standards.

Table 1-13: Passenger per Vehicle Revenue Hour Standard for Microtransit by Microtransit Zone Type

Microtransit Zone Type	Passenger per Vehicle Revenue Hour Performance Standard
Urban / Suburban	Serve at least 3.5 passengers per vehicle revenue hour
Rural	Serve at least 2.5 passengers per vehicle revenue hour

COST EFFICIENCY

FIXED-ROUTE

GRTC monitors operating costs for each fixed-route service to ensure the efficient use of resources at the route level. **Table 1-14** shows the systemwide performance standard for operating cost per passenger. Bus routes which exceed the standard for their route type may require service changes to improve efficiency by aiming to increase ridership, reduce costs, or both. Routes which underperform and do not meet their standards may be discontinued to reallocate resources to more efficient services.

Table 1-14: Operating Cost Performance Standard for Fixed-Route Service by Route Type

Route Type	Operating Cost per Passenger Target
BRT	\$3.00
Arterial	\$8.00
Community Radial	\$12.00
Circulator/Feeder/ Connector	\$12.00
Express	\$15.00

MICROTRANSIT

GRTC aims to maintain a reasonable subsidy per trip for microtransit. **Table 1-15** contains the microtransit subsidy per trip performance standards.

Table 1-15: Subsidy per Trip Performance Standard for Microtransit by Microtransit Zone Type

Microtransit Zone Type	Subsidy per Trip Performance Target
Urban / Suburban	Subsidy per trip of less than \$16
Rural	Subsidy per trip of less than \$22

SPEED

FIXED-ROUTE

This performance standard captures GRTC's intent to maximize average speed for the bus and minimize travel time for passengers while maintaining access to service. **Table 1-16** contains the speed standards by service area type for fixed-route service.

Table 1-16: Speed Standards by Service Area Type for Fixed-Route Service

Service Area Type	Target Route Speed (mph)
Core	10-13
Urban	13-15
Suburban / Rural	12-18

MICROTRANSIT

Currently there are no speed standards for microtransit service, but the on-time performance standards for microtransit are related (see **Microtransit On-Time Performance**).

ON-TIME PERFORMANCE

FIXED-ROUTE

On-time performance is a measure of fixed-route runs completed within an acceptable window based upon the published schedule. For this window, GRTC considers a fixed-route bus to be on time if it arrives between one minute early and five minutes late. **Table 1-17** contains the on-time performance standards for fixed-route service by service period and route type.

Table 1-17: On-Time Performance Standard for Fixed-Route Service by Service Period and Route Type

Time of Day	Percent On-Time Target		
	Arterial, Community Radial, Circulator/Feeder/Connector	Express	BRT
Peak	80%	80%	90%
Midday	80%	N/A	90%
Late Night	85%	N/A	90%

MICROTRANSIT

On-time performance for microtransit is measured differently than it is for fixed-route service because there is no set schedule or time points. It is still a measure of reliability, but it is measured as wait time for trips to begin after requesting a ride. **Table 1-18** contains the on-time performance standards for microtransit zones by zone type.

Table 1-18: On-Time Performance Standards for Microtransit by Microtransit Zone Type

Microtransit Zone Type	On-Time Performance Target
Urban / Suburban	At least 80 percent of trips have a wait time of 20 minutes or fewer.
Rural*	At least 80 percent of trips have a wait time of 60 minutes or fewer.
* If zones require a 24-hour advance scheduling, the service standard for rural zones could be amended to the following: at least 80 percent of trips pick up passengers within +/- 15 minutes of the scheduled pick-up time.	

LOAD

FIXED-ROUTE

Load is a measure of the number of passengers on a vehicle at a given time. The maximum load factor target is the standard for the passengers per seat at a given time. This measures the efficiency of service—higher loads represent an efficient use of service but loads that exceed the targets can indicate overcrowding conditions that may warrant service changes to accommodate more passengers. **Table 1-19** contains the maximum load factor targets by route type and service period.

Table 1-19: Maximum Load Factor Standards by Route Type and Service Period

Route Type	Maximum Load Factor Target (Passengers per Seat)	
	Peak	Midday
BRT	1.2	1.2
Arterial, Community Radial, Circulator/Feeder/Connector	1.2	1.0
Express	1.0	1.0

MICROTRANSIT

There is no load standard identified for microtransit, as the load cannot exceed the number of seats in the vehicle.

EQUITABLE ACCESS

FIXED-ROUTE

Percentage of non-white, low-income, and senior populations using a fixed route is the same or higher compared to the proportion of these populations in the service area around that route (1/4-mile buffer around all stops).

MICROTRANSIT

Percentage of non-white, low-income, and senior populations using a microtransit service in a zone is the same or higher compared to the proportion of these populations in the zone.¹

¹ Note that if this information is not collected through the microtransit booking app when accounts are created, the contracted operator will need to conduct a customer survey to collect this data. GRTC can include this requirement in its request for proposals to operate the service.

GRTC Transit Strategic Plan

Chapter 2: System Performance and Operations Analysis

June 17, 2024

Contents

2.1. System and Service Data	2-1
2.1.1. Fixed-Route Bus Service	2-1
Level of Service	2-1
Operating Statistics	2-5
Operating Costs	2-6
Annual Ridership	2-7
2.1.2. Bus Rapid Transit Service	2-9
Level of Service	2-9
Operating Statistics	2-10
Operating Costs	2-10
Annual Ridership	2-10
2.1.3. Paratransit Service	2-10
Level of Service	2-10
Operating Statistics	2-11
Operating Costs	2-11
Annual Ridership	2-11
2.1.4. Route Design and Schedule Standards	2-11
Route Design	2-12
Schedule Standards	2-13
2.1.5. Survey Results	2-14
2.1.6. Support for Transit	2-18
Comprehensive Planning	2-18
Stakeholder Advisory Group	2-19
2.2. Evaluation of Transit Market Demand and Underserved Areas	2-20
2.2.1. Transit Demand and Underserved Area Evaluation	2-20
Transit Propensity	2-20
Population and Employment Trends	2-29
Travel Flow Analysis	2-32
2.2.2. Transit Demand and Underserved Area Opportunities for Improvement	2-40
Population and Employment Trends	2-40
Travel Flows	2-40
2.3. Performance Evaluation	2-42
2.3.1. Performance Evaluation	2-42
Route Performance Evaluation	2-42
Trend Analysis	2-48
2.3.2. Performance Based Opportunities for Improvement	2-56
Ridership Opportunities for Improvement	2-56
Cost-Efficiency Opportunities for Improvement	2-58

	Important Considerations for Potential Service Adjustments.....	2-59
2.4.	Operating and Network Efficiency Evaluation	2-60
2.4.1.	Efficiency Evaluation	2-60
	Level of Service	2-60
	Ridership and Maximum Passenger Load.....	2-62
	Speed and On-Time Performance	2-76
	Demand Response Efficiency	2-80
2.4.2.	Efficiency Based Opportunities for Improvement.....	2-81
2.5.	Analysis of Opportunities to Collaborate with Other Agencies and Stakeholders	2-83
2.5.1.	Collaboration Analysis.....	2-83
	Other Transportation Service Providers.....	2-83
	Richmond Regional Transportation Planning Organization	2-83
	Central Virginia Transportation Authority (CVTA).....	2-84
	TSP Stakeholder Advisory Group.....	2-84
2.5.2.	Collaboration Based Opportunities for Improvement	2-85

Figures

Figure 2-1: Fixed-Route Bus Operating Costs (in millions), FY 2022	2-7
Figure 2-2: Frequency of GRTC Use	2-15
Figure 2-3: Impact of Free Fares on Frequency of Riding GRTC (Among Previous Riders).....	2-17
Figure 2-2: Transit-Oriented Population Origins Propensity	2-22
Figure 2-3: Commuter Origins Propensity	2-24
Figure 2-4: Employment Destinations Propensity.....	2-26
Figure 2-5: Activity Destinations Propensity	2-28
Figure 2-6: Existing Population and Employment Density	2-30
Figure 2-7: Future Population and Employment Growth (2017-2045).....	2-31
Figure 2-8: All-Day Trip Origins.....	2-33
Figure 2-9: All-Day Trip Destinations	2-34
Figure 2-10: All-Day Travel Flows.....	2-35
Figure 2-11: Peak Period Trip Origins	2-37
Figure 2-12: Peak Period Trip Destinations.....	2-38
Figure 2-13: Peak Period Travel Flows	2-39
Figure 2-14: Passengers per Revenue Hour by Route, FY 2022	2-43
Figure 2-15: Passengers per Revenue Mile by Route, FY 2022	2-44
Figure 2-16: Passengers per One-Way Trip by Route, FY 2022	2-45
Figure 2-17: Operating Cost per Passenger by Route, FY 2022	2-46
Figure 2-18: Operating Cost Per Revenue Hour, FY 2022	2-47
Figure 2-19: Vehicle Revenue Miles by Mode (FY 2019-FY 2021)	2-49
Figure 2-20: Vehicle Revenue Hours by Mode (FY 2019-FY 2021)	2-50
Figure 2-21: Vehicles Operated at Maximum Service (FY 2019-FY 2021)	2-51
Figure 2-22: Total Ridership by Mode (FY 2019-FY 2021).....	2-52
Figure 2-23: Passengers per Revenue Hour (FY 2019-FY 2021)	2-53
Figure 2-24: Passengers per Revenue Mile (FY 2019-FY 2021).....	2-53
Figure 2-25: Operating Cost by Mode (FY 2019-FY 2021)	2-54
Figure 2-26: Operating Cost per Passenger Trip (FY 2019-FY 2021).....	2-55
Figure 2-27: Fare Revenue by Mode (FY 2019-FY 2021)	2-55
Figure 2-28: Farebox Recovery Ratio (FY 2019-FY 2021).....	2-56
Figure 2-29: Fixed-Route Bus and BRT Level of Service	2-61
Figure 2-30: Weekday Ridership Activity Heat Map	2-67
Figure 2-31: Saturday Ridership Activity Heat Map	2-68
Figure 2-32: Sunday Ridership Activity Heat Map.....	2-69
Figure 2-33: Fixed-Route Bus On-Time Performance, July 2022-March 2023	2-80

Tables

Table 2-1: Fixed-Route Bus Weekday Level of Service.....	2-2
Table 2-2: Fixed-Route Bus Saturday Level of Service.....	2-3

Table 2-3: Fixed-Route Bus Sunday Level of Service2-4

Table 2-4: Fixed-Route Bus Operating Statistics, FY 20222-5

Table 2-5: Fixed-Route Bus Annual Ridership, FY 20222-8

Table 2-6: Pulse BRT Level of Service2-9

Table 2-7: CARE and CARE Plus Level of Service for City of Richmond Residents 2-11

Table 2-8: CARE and CARE Plus Service for Henrico County Residents 2-11

Table 2-9: CARE and CARE Plus Level of Service for Chesterfield County Residents 2-11

Table 2-10: New Service Design Measures..... 2-12

Table 2-11: Minimum Service Headway by Route Type, Day of Week, and Service Period 2-13

Table 2-12: Minimum Span of Service by Route Type and Day of Week 2-14

Table 2-13: Distribution of Weekday Ridership by Time Period 2-15

Table 2-14: Distribution of Rider Transfers as a Percentage of Total Monthly Trips 2-16

Table 2-13: Agreement Levels on Safety, Convenience, and Overall Satisfaction with GRTC 2-17

Table 2-14: Transit Propensity Indices..... 2-21

Table 2-15: Transit-Oriented Population Origins Index Weights 2-21

Table 2-16: Commuter Origins Index Weights..... 2-23

Table 2-17: Employment Destinations Index Weights..... 2-25

Table 2-18: Activity Destinations Index Weights 2-27

Table 2-19: Greater Richmond Travel Activity by Time Period..... 2-36

Table 2-20: Safety Performance Indicators, FY 2019-FY 2022..... 2-48

Table 2-21: Population and Jobs within ¼-mile Walking Distance to Fixed-Route Transit..... 2-48

Table 2-22: Service Area Characteristics (FY 2019-FY 2021)..... 2-49

Table 2-23: Vehicle Revenue Miles by Mode (FY 2019-FY 2021)..... 2-50

Table 2-24: Vehicle Revenue Hours by Mode (2019-2021) 2-51

Table 2-25: Total Ridership by Mode (FY 2019-FY 2021)..... 2-52

Table 2-26: Operating Cost by Mode (FY 2019-FY 2021)..... 2-54

Table 2-27: Operating Subsidy per Passenger (FY 2019-FY 2021)..... 2-56

Table 2-28: Ridership Opportunities for Improvement 2-58

Table 2-29: Cost-Efficiency Opportunities for Improvement..... 2-58

Table 2-30: Average Weekday Boardings by Service Period 2-62

Table 2-31: Average Saturday Boardings by Service Period 2-63

Table 2-32: Average Sunday Boardings by Service Period..... 2-64

Table 2-33: Weekday Maximum Passenger Load by Service Period 2-70

Table 2-34: Saturday Maximum Passenger Load by Service Period 2-72

Table 2-35: Sunday Maximum Passenger Load by Service Period 2-74

Table 2-36: Fixed-Route Bus Average Weekday Travel Speeds 2-76

Table 2-37: Paratransit On-Time Performance and Missed Trips, FY 2022..... 2-81

Table 2-38: Weekday Maximum Load Factor Opportunities for Improvement 2-82

Table 2-39: GRTC TSP Stakeholder Advisory Group - Invitees..... 2-85

2.1. System and Service Data

The system performance and operations analysis in this chapter provides an evaluation of GRTC's transit services as they operate today. This analysis includes an overview of the operating characteristics and performance of individual GRTC routes and services across key metrics for ridership, finances, efficiency, and reliability, as well as an evaluation of the current and future demand for transit in the Greater Richmond region relative to population, employment, and travel patterns. These metrics and analyses were used to identify opportunities for improving GRTC's services and shaped the planned improvements detailed in **Chapter 3**.

This section provides high-level operational data for GRTC's fixed-route bus, bus rapid transit (BRT), and paratransit services. Level of service and operating statistics describe the quantity of service available, while operating costs and ridership data demonstrate the expense and utilization of each service.

2.1.1. Fixed-Route Bus Service

The following section details GRTC's fixed-route services, including information for level of service, operating statistics, operating costs, and ridership. In 2021, GRTC began operating under reduced service conditions due to a shortage of bus operators. Over time, operating conditions have improved and GRTC has nearly completed restoring all routes to full levels of service.

LEVEL OF SERVICE

Fixed-route weekday service runs between 4:45 am and 1:51 am, operating on headways between 15 minutes and 60 minutes throughout the day. The time periods are defined as follows:

- **Early:** 4:00 am-5:59 am
- **AM Peak:** 6:00 am-8:59 am
- **Midday:** 9:00 am-3:59 pm
- **PM Peak:** 4:00 pm-6:59 pm
- **Evening:** 7:00 pm-9:59 pm
- **Late Night:** 10:00 pm-3:59 am

GRTC has 36 local and express fixed routes, all of which operate on weekdays. On Saturdays, 27 of the routes provide service, while 25 routes provide service on Sundays. Express service is provided on weekdays by Routes 29x, 64x, 82x, and 95x. **Table 2-1** summarizes the weekday levels of service for local and express routes, while **Table 2-2** and **Table 2-3** display service for Saturday and Sunday, respectively. Each table summarizes the span of service, the headway for each time period, and total daily one-way trips for each route as of January 2023. Route 1 is the only standalone high-frequency local route, with headways of 15 minutes from the early morning until the PM peak period on weekdays and Saturdays. Combinations of routes also function to provide high-frequency service to riders, such as Routes 1A/B/C along Hull Street Road, Routes 2A/B/C along Semmes Avenue and North Avenue, and Routes 3A/B along US Highway 1 (Richmond Hwy in the City of Richmond and Route 1 in Chesterfield County). For routes which operate only one or two trips during a time period, the number of trips is shown in place of the headway in the table (e.g., Route 18 completes two trips during the weekday evening period).

Table 2-1: Fixed-Route Bus Weekday Level of Service

Route	Weekday Span	Headway (minutes)						Daily One-Way Trips
		Early	AM Peak	Midday	PM Peak	Evening	Late Night	
1	4:45 am-11:57 pm	15	15	15	15	30	30	66
1A	5:15 am-11:59 pm	2 trips	30	30	30	60	60	32
1B	5:35 am-7:19 pm	1 trip	31	30	30	-	-	26
1C	6:00 am-12:18 am	-	30	30	30	54	60	31
2A	5:00 am-1:08 am	2 trips	60	60	60	60	60	20
2B	5:30 am-12:54 am	2 trips	60	60	60	60	60	19
2C	5:05 am-1:51 am	30	30	30	30	60	60	34
3A	5:00 am-7:20 pm	30	30	30	30	-	-	28
3B	5:11 am-8:04 pm	30	30	30	30	-	-	28
3C	7:00 pm-1:28 am	-	-	-	-	30	60	9
4A	6:00 am-11:23 pm	-	60	60	60	60	60	18
4B	5:25 am-11:49 pm	2 trips	60	60	60	60	60	19
5	4:55 am-12:50 am	30	30	30	30	30	30	39
7A	5:45 am-11:40 pm	2 trips	60	60	60	60	2 trips	18
7B	5:11 am-11:08 pm	1 trip	60	60	60	60	2 trips	18
12	5:00 am-12:20 am	30	30	30	30	31	32	38
14	5:05 am-12:55 am	30	30	30	30	33	32	38
18	6:30 am-7:57 pm	-	61	61	60	2 trips	-	13
19	6:00 am-11:53 pm	-	30	30	30	30	30	35
20	4:40 am-11:20 pm	30	30	54	30	54	2 trips	27
29x	6:25 am-8:56 am; 4:05 pm-6:10 pm	-	34	-	28	-	-	8
50	5:10 am-11:37 pm	40	40	40	40	40	40	28
56	6:00 am-8:45 am; 1:30 pm-4:24 pm	-	82	88	-	-	-	4
64x	6:10 am-8:12 am; 3:50 pm-5:55 pm	-	80	1 trip	2 trips	-	-	4
76	5:25 am-6:44 pm	2 trips	45	45	45	-	-	18
77	5:40 am-7:42 pm	1 trip	60	60	60	1 trip	-	14
78	5:05 am-11:04 pm	2 trips	60	60	60	60	2 trips	18
79	6:00 am-7:37 pm	-	45	46	45	-	-	18

Route	Weekday Span	Headway (minutes)						Daily One-Way Trips
		Early	AM Peak	Midday	PM Peak	Evening	Late Night	
82x	6:30 am-7:57 am; 4:05 pm-5:57 pm	-	45	-	35	-	-	4
86	5:05 am-11:29 pm	2 trips	60	60	60	60	60	19
87	5:30 am-12:22 am	2 trips	60	60	61	60	60	19
88	5:30 am-9:19 am; 2:30 pm-7:20 pm; 10:30 pm-11:12 pm	2 trips	60	55	60	-	2 trips	10
91	6:25 am-11:25 pm	-	60	60	60	60	2 trips	17
93 ¹	6:00 am-10:57 am; 2:00 pm-7:59 pm	-	60	60	60	2 trips	-	11
95x	5:30 am-7:50 am; 4:00 pm-6:20 pm	1 trip	30	-	30	-	-	4

Table 2-2: Fixed-Route Bus Saturday Level of Service

Route	Saturday Span	Headway (minutes)						Daily One-Way Trips
		Early	AM Peak	Midday	PM Peak	Evening	Late Night	
1	6:15 am-11:57 pm	-	15	15	15	30	30	61
1A	6:15 am-11:59 pm	-	30	30	30	60	60	31
1B	6:40 am-7:19 pm	-	30	30	30	-	-	24
1C	6:00 am-12:18 am	-	30	30	30	54	60	31
2A	5:59 am-12:10 am	1 trip	60	60	60	60	60	18
2B	6:19 am-12:52 am	-	60	60	60	60	60	18
2C	5:45 am-12:41 am	2 trips	30	30	34	60	60	31
3A	6:00 am-7:15 pm	-	30	30	30	-	-	26
3B	6:13 am-8:04 pm	-	30	30	30	-	-	26
3C	7:00 pm-12:28 am	-	-	-	-	30	60	8
4A	6:00 am-11:23 pm	-	60	60	60	60	60	18
4B	5:25 am-11:49 pm	2 trips	60	60	60	60	60	19
5	5:30 am-11:49 pm	2 trips	30	30	30	30	28	36
7A	7:00 am-11:50 pm	-	60	60	60	60	60	17
7B	7:26 am-11:11 pm	-	60	60	60	60	1 trip	16

¹ Route 93 was eliminated in January 2024 and replaced with the Azalea LINK microtransit zone.

Route	Saturday Span	Headway (minutes)						Daily One-Way Trips
		Early	AM Peak	Midday	PM Peak	Evening	Late Night	
12	5:50 am-12:24 am	1 trip	30	30	30	30	30	37
14	5:40 am-12:55 am	1 trip	30	30	30	30	30	37
19	6:00 am-12:11 am	-	30	31	30	30	30	35
20	5:40 am-10:29 pm	1 trip	30	50	30	54	-	25
50	6:00 am-11:10 pm		40	40	39	40	40	26
76	7:05 am-7:42 pm	-	60	61	60	1 trip	-	13
77	7:00 am-7:05 pm	-	60	61	60	-	-	12
78	7:05 am-7:33 pm	-	60	60	60	1 trip	-	13
86	7:05 am-11:26 pm	-	60	60	60	60	60	17
87	7:30 am-7:33 pm	-	60	60	60	-	-	12
88	6:00 am-8:48 am; 3:54 pm-7:18 pm	-	60	1 trip	60	-	-	7
91	7:00 am-10:55 pm	-	58	60	60	60	1 trip	16

Table 2-3: Fixed-Route Bus Sunday Level of Service

Route	Sunday Span	Headway (minutes)						Daily One-Way Trips
		Early	AM Peak	Midday	PM Peak	Evening	Late Night	
1	6:00 am-11:54 pm	-	30	30	30	30	30	36
1A	6:30 am-11:42 pm	-	45	45	45	45	45	23
1C	6:05 am-11:48 pm	-	45	45	45	45	45	23
2A	6:15 am-12:35 am	-	60	60	60	60	60	18
2B	6:05 am-12:51 am	-	60	60	60	60	60	18
2C	6:15 am-12:58 am	-	60	60	60	60	60	18
3C	6:00 am-12:25 am	-	30	30	30	30	60	34
4A	6:00 am-11:22 pm	-	60	60	60	60	60	18
4B	5:25 am-11:49 pm	2 trips	60	60	60	60	60	19
5	5:44 am-11:51 pm	1 trip	30	30	30	30	39	34
7A	10:00 am-10:55 pm	-	-	60	60	60	2 trips	13
7B	10:26 am-10:23 pm	-	-	60	60	60	-	12
12	5:55 am-12:32 am	1 trip	30	30	30	30	30	37
14	5:40 am-11:55 pm	1 trip	30	30	30	60	60	31
19	10:00 am-11:12 pm	-	-	30	30	31	30	25

Route	Sunday Span	Headway (minutes)						Daily One-Way Trips
		Early	AM Peak	Midday	PM Peak	Evening	Late Night	
20	6:00 am-10:50 pm	-	60	60	60	60	1 trip	17
50	6:00 am-11:10 pm	-	40	40	39	40	40	26
76	7:05 am-7:42 pm	-	60	61	60	1 trip	-	13
77	7:00 am-7:05 pm	-	60	61	60	-	-	12
78	7:03 am-7:30 pm	-	60	60	60	1 trip	-	13
86	7:05 am-11:25 pm	-	60	60	60	60	60	17
87	7:30 am-7:34 pm	-	60	60	60	-	-	12
91	10:00 am-10:55 pm	-	-	60	60	60	2 trips	13

OPERATING STATISTICS

Table 2-4 summarizes the peak vehicle need, route length, vehicle revenue miles, and vehicle revenue hours for fixed bus routes in FY 2022. Route 2C had the highest peak vehicle need at 11 vehicles. Route 3B had over 295,000 vehicle revenue miles, the most of any route, while Route 1A had the most vehicle revenue hours, with nearly 25,000. The longest route was Route 95x, which runs almost 25 miles to connect Richmond and Petersburg. In total, GRTC operated over 4.7 million revenue miles and 439,000 revenue hours on local fixed routes in FY 2022.

Table 2-4: Fixed-Route Bus Operating Statistics, FY 2022

Route	Peak Vehicle Need	Route Length: Average One-Way Trip (Miles)	Annual Revenue Miles	Annual Revenue Hours
1	5	5.5	35,685	3,747
1A	4	8.1	242,616	24,962
1B	4	7.7	101,786	9,534
1C	4	7.8	155,516	15,105
2A	10	14.3	195,621	15,477
2B	10	14.3	188,933	20,337
2C	11	11.8	236,987	23,917
3A	9	7.8	119,210	11,213
3B	10	18.5	295,900	21,976
3C	5	13.7	133,060	11,944
4A	1	2.8	42,172	3,910
4B	1	2.7	44,905	4,018
5	3	6.2	212,412	24,773
7A	4	11.1	145,015	12,293

Route	Peak Vehicle Need	Route Length: Average One-Way Trip (Miles)	Annual Revenue Miles	Annual Revenue Hours
7B	3	11.7	152,520	11,539
12	7	6.5	159,677	18,702
13	1	2.1	51,832	6,294
14	7	8.3	216,278	23,906
18	2	6.8	48,258	3,484
19	4	11.5	264,558	20,733
20	4	11.9	242,702	20,351
29x	3	13.1	37,210	1,521
50	4	4.8	92,007	12,831
56	1	9.7	20,488	1,542
64x	1	10.8	15,627	964
76	4	6.3	74,069	7,052
77	2	6.5	73,394	6,666
78	4	5.9	82,966	9,144
79	4	8.7	79,203	6,870
82x	2	18.9	22,260	748
86	1	4.9	62,247	5,812
87	4	11.0	133,119	11,654
88	2	6.5	51,916	3,893
91	4	13.0	151,213	11,633
93	1	5.6	30,474	2,793
95x	2	24.8	51,819	1,694
Total	138	-	4,712,937	439,720

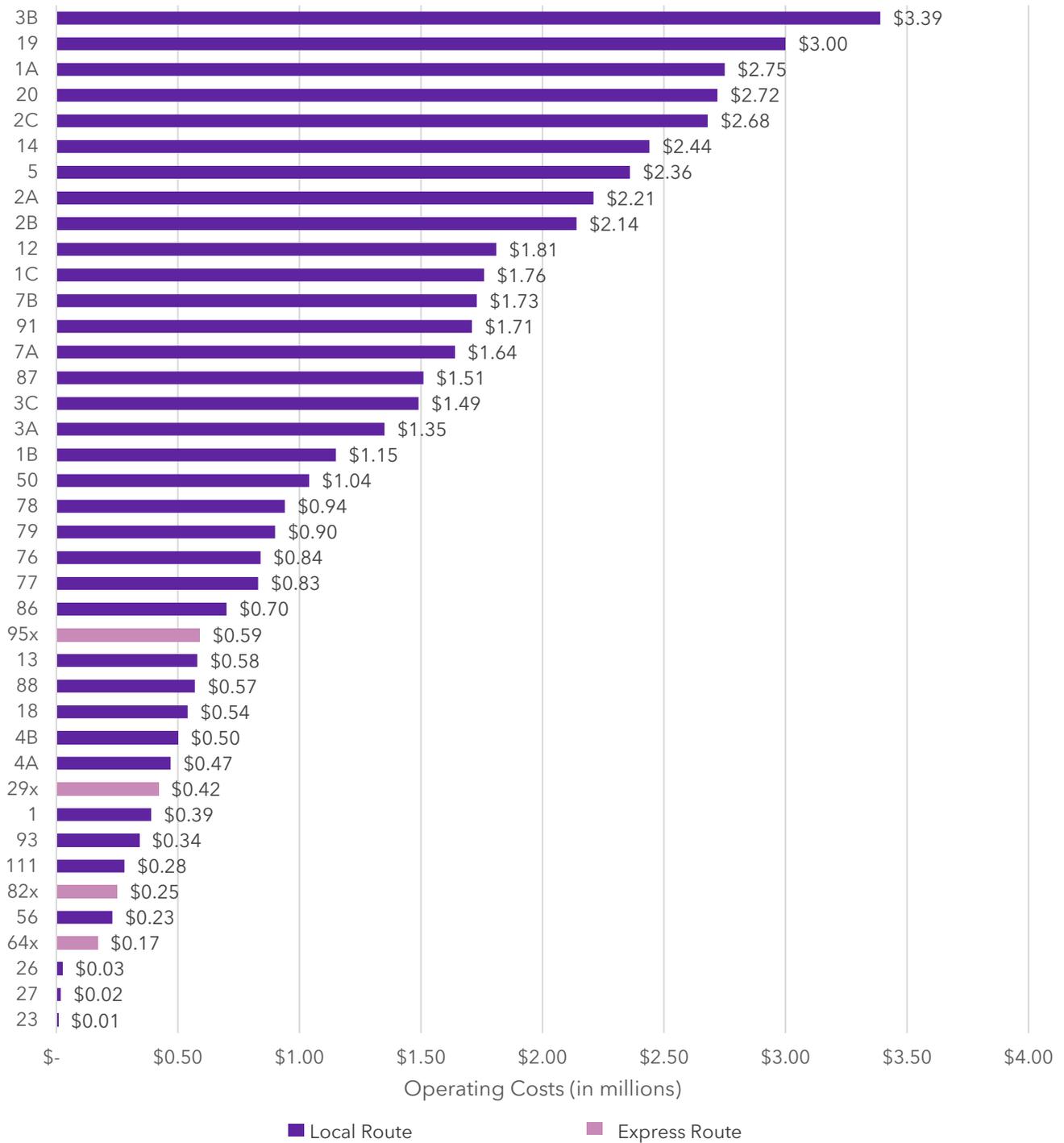
OPERATING COSTS

The annual operating cost for fixed-route bus services was \$48,672,963 in FY 2022.² **Figure 2-1** visualizes annual operating costs for each route. Route 3B had the highest cost, at over \$3.39 million, followed by Route 19, which also cost over \$3 million. Seven routes cost between \$2 million and \$3 million, ten routes cost between \$1 million and \$2 million, and the remaining 17 routes cost less than \$1 million. The lowest-cost routes included express Routes 64x and 82x, as well as limited-service Routes 56 and 93³.

² FY 2022 operating costs include costs for Routes 23x, 26x, 27x, and 111, which were discontinued in September 2021.

³ Route 93 was eliminated in January 2024 and replaced with the Azalea LINK microtransit zone.

Figure 2-1: Fixed-Route Bus Operating Costs (in millions), FY 2022



ANNUAL RIDERSHIP

In FY 2022, GRTC’s local and express fixed bus routes served a total of 6,581,318 passenger trips. By route type, the annual ridership was:

- **FY 2022 Local Fixed Route Passenger Trips: 6,502,841**
- **FY 2022 Express Fixed Route Passenger Trips: 78,477**

Table 2-5 shows total annual ridership and the system rank by route. Route 1A had the highest ridership, with 739,862 riders, which accounted for 11 percent of local and express route ridership. Route 5 had the second highest ridership with 583,300 riders, followed by Route 1C with 404,109 riders; combined, these two routes account for 15 percent of GRTC’s local and express route ridership. Ridership patterns for Routes 1/A/B/C have shifted since FY 2022: in January 2023, the routes were restructured such that Route 1 service was expanded from Sundays to every day of the week and Routes 1A/B/C were truncated to provide service south of Downtown Richmond only, resulting in increased ridership on Route 1 and reduced ridership on Routes 1A/B/C.

Table 2-5: Fixed-Route Bus Annual Ridership, FY 2022

Route	Annual Ridership	System Rank
Local Routes		
1A	739,862	1
5	583,300	2
1C	404,409	3
3B	377,587	4
12	372,342	5
2C	340,768	6
19	335,941	7
14	309,586	8
2B	288,768	9
3A	275,555	10
2A	262,582	11
1B	258,287	12
7A	235,114	13
20	225,277	14
7B	215,564	15
91	179,292	16
3C	170,545	17
50	158,976	18
78	136,889	19
1	120,302	20
87	99,088	21
13	75,373	22
4B	74,530	23
79	50,695	24
4A	49,908	25

Route	Annual Ridership	System Rank
77	38,771	26
76	34,244	27
18	33,529	28
29x	29,788	29
88	22,959	30
93	17,421	31
64x	16,422	32
82x	16,414	33
56	14,745	34
95x	13,309	35
82	634	36

2.1.2. Bus Rapid Transit Service

GRTC Pulse is a high-capacity bus rapid transit (BRT) line that provides service to many local destinations within Richmond City and Henrico County. Pulse began operations in 2018, spanning a 7.6-mile corridor with more than three miles of dedicated right of way in curbside and center-running bus-only lanes.

LEVEL OF SERVICE

Table 2-6 displays Pulse’s level of service for each day of the week as of January 2023. On weekdays, Pulse operates from 5:00 am to 1:37 am, with buses arriving every 10 minutes during peak periods and every 15 to 20 minutes in off-peak periods. Pulse makes more one-way trips on weekdays than any other fixed-route service. On weekends, Pulse operates from 5:55 am to 1:35 am with headways between 15 and 30 minutes. Though headways are longer than weekday service, Pulse still makes the second highest number of one-way trips on the weekends (53 trips), which ranks behind Route 1 on Saturdays (61 trips).

Table 2-6: Pulse BRT Level of Service

Day of the Week	Span	Headway (Minutes)						Daily One-Way Trips
		Early	AM Peak	Midday	PM Peak	Evening	Late Night	
Weekday	5:00 am-1:37 am	10	10	14	10	15	20	94
Saturday	5:55 am-1:35 am	1 trip	15	27	15	30	30	53
Sunday	5:55 am-1:35 am	1 trip	15	27	15	30	30	53

OPERATING STATISTICS

GRTC Pulse has a peak vehicle need of nine vehicles. The average length of a one-way trip is 7.1 miles. Annual revenue miles for Pulse totaled 418,328 in FY 2022, while the route operated for 44,713 revenue hours.

OPERATING COSTS

For FY 2022, the total cost to operate Pulse was \$4,732,659. Pulse was the most expensive fixed route service, as a result of having the highest levels of service of any of GRTC's services.

ANNUAL RIDERSHIP

Pulse's ridership for FY 2022 was 1,576,119 riders. This route carried more passengers than the local route with the highest level of ridership, Route 1A, which had 739,862 passengers over the same time period.

2.1.3. Paratransit Service

Paratransit services are offered through the CARE and CARE Plus programs, which provide public transportation access to individuals with disabilities who may not reasonably be able to use fixed-route bus services. The CARE paratransit program is an Americans with Disabilities Act (ADA) paratransit service that operates within $\frac{3}{4}$ -mile of all fixed-route bus stops in the City of Richmond and in Henrico and Chesterfield counties. The CARE Plus program is an additional service for destinations beyond $\frac{3}{4}$ -mile of fixed routes and for service in Henrico County on days when fixed-route service to Henrico County does not operate. CARE customers may also choose to pay a fee for CARE On-Demand, which offers same-day, non-stop, private rides within the paratransit service area. The paratransit fleet consists of 88 vans equipped with wheelchair lifts and eight sedans. With the exception of CARE On-Demand, paratransit service is currently zero-fare, with a study under way to evaluate the impacts of implementing zero-fare service for paratransit riders through June 2025.

LEVEL OF SERVICE

The operating hours for CARE and CARE Plus vary based on the day of the week and the rider's jurisdiction of residence. As shown in **Table 2-7**, CARE service operates from 5:00 am to 1:00 am and CARE Plus runs from 6:00 am to 8:00 pm for City of Richmond residents. Additionally, CARE service operates from 6:00 am to 8:00 pm for City of Richmond residents making trips to Henrico County. **Table 2-8** shows the operating hours for Henrico County residents using CARE and CARE Plus, both of which provide service from 6:00 am to 11:00 pm seven days per week. **Table 2-9** displays CARE and CARE Plus operating hours for residents of Chesterfield County, where both services operate from 5:00 am to 7:30 pm Monday through Friday and from 8:00 am to 7:00 pm on Saturdays. There is no paratransit service in Chesterfield County on Sundays.

Table 2-7: CARE and CARE Plus Level of Service for City of Richmond Residents

Service	Span	Operating Days
CARE	5:00 am-1:00 am 6:00 am-8:00 pm (if traveling in Henrico County)	7 Days per Week
CARE Plus	6:00 am-8:00 pm	7 Days per Week

Table 2-8: CARE and CARE Plus Service for Henrico County Residents

Service	Span	Days of the Week
CARE	6:00 am-11:00 pm	7 Days per Week
CARE Plus	6:00 am-11:00 pm	7 Days per Week

Table 2-9: CARE and CARE Plus Level of Service for Chesterfield County Residents

Service	Span	Days of the Week
CARE and CARE Plus	5:00 am-7:30 pm	Monday-Friday
	8:00 am-7:00 pm	Saturday

OPERATING STATISTICS

CARE and CARE Plus operate 40 vehicles at maximum service. In FY 2022, there were 2,296,429 vehicle revenue miles and 127,530 vehicle revenue hours of paratransit service, making up 31 percent of all fixed-route and demand response revenue miles and 21 percent of all fixed-route and demand response revenue hours operated by GRTC.

OPERATING COSTS

For FY 2022, the total operating cost for paratransit services was \$7,702,484.

ANNUAL RIDERSHIP

Total paratransit ridership for FY 2022 was 254,892 passengers.

2.1.4. Route Design and Schedule Standards

Standards help ensure an objective approach to service provision and modification. GRTC's service design standards are fully detailed in **Chapter 1, Section 1.2.2.**, and include standards related to route design as well as schedule and performance standards. Briefly, route design and schedule standards are repeated below.

ROUTE DESIGN

GRTC uses the guidelines in **Table 2-10** when determining the route design of new services.

Table 2-10: New Service Design Measures

New Service Design Measure	Description	Metric	Standard
Service Coverage Allocation	<p>The distribution of revenue service hours system-wide, as based upon balancing:</p> <ol style="list-style-type: none"> 1) High-frequency routes in areas with densities large enough to support such transit. 2) Lower frequency routes in areas that serve communities with a need for transit. 	<ol style="list-style-type: none"> 1) Percent of revenue hours allocated toward frequent routes. 2) Percent of revenue hours allocated to less frequent routes. 	<ol style="list-style-type: none"> 1) 70% 2) 30%
Directness	<p>Unless for compelling reasons (e.g., large trip generator) and due to prevailing land use patterns/street grid, routes should minimize deviation from the most direct alignment between endpoints.</p>	<ol style="list-style-type: none"> 1) Terminal distance in excess of straight-line mileage. 2) Maximum percentage of passengers requiring a transfer. 	<ol style="list-style-type: none"> 1) 70% or 1.7 2) 50%
Transfer Wait Time	<p>Routes should be designed to make timed transfers to and from major connecting services with minimum delay to the overall trip.</p>	<ol style="list-style-type: none"> 1) Maximum peak hour wait time. 2) Maximum off-peak hour wait time. 	<ol style="list-style-type: none"> 1) 5-10 min 2) 30 min
Route Family Design	<p>Routes which are designed to work with other routes in a "route family" should be designed to adequately meet varying demand across the "trunk" and "branches" of the route family routes.</p>	<ol style="list-style-type: none"> 1) Trunk: overlap on segments with significant transit demand. 2) Branches: warrant fixed-route service but not as high a level of service as the trunk. 	<ol style="list-style-type: none"> 1) Trunk portion of routes should collectively follow guidelines for Arterial routes. 2) Branch portion of routes should follow guidelines for Arterial, Community Radial, or Circulator/Feeder/Connector routes based on route design and transit demand.

SCHEDULE STANDARDS

SERVICE HEADWAYS

Service headways are a measure of how frequently a bus operates during a specific service period. More frequent service is most attractive to potential ridership, but also more expensive to operate. Headways should be directly related to both the size of the ridership market and travel patterns, which the route types help to delineate. **Table 2-11** contains minimum service headway by route type, day of week, and service period. There are no defined headways for Express routes; the number of trips should be adjusted to meet demand between a route’s origins and destinations. Microtransit does not operate with headways.

Table 2-11: Minimum Service Headway by Route Type, Day of Week, and Service Period

Route Type	Weekday			Saturday			Sunday		
	Peak	Midday	Late Night	Peak	Midday	Late Night	Peak	Midday	Late Night
BRT	10	10	15	10	10	15	15	15	15
Arterial	15	15	30	15	15	30	30	30	30
Community Radial	30	30	60	30	30	60	60	60	60
Circulator/Feeder/Connector	60	60	60	60	60	60	60	60	60
Express	Demand Driven								
Microtransit	N/A								

SPAN OF SERVICE

Span of service is the period during which a route operates on a given day. Weekend service may not be necessary on all routes, and demand may dictate starting later and ending sooner. Route types help to delineate the different spans needed for different types of routes. The end of service typically refers to the departure time of the last scheduled trip for that route; therefore, vehicles would remain in service beyond that time until they complete the trip and return to the garage. **Table 2-12** contains the minimum span of service by route type and day of week. There are no defined spans for Express routes because they operate trips based on when demand warrants connecting the origins and destinations. Express routes operate on weekdays only with no service on weekends.

Table 2-12: Minimum Span of Service by Route Type and Day of Week

Route Type	Weekday			Saturday			Sunday		
	Start of Service	End of Service	Hours	Start of Service	End of Service	Hours	Start of Service	End of Service	Hours
BRT	5:30 am	1:00 am	19.5	6:00 am	1:00 am	19	6:00 am	1:00 am	19
Arterial	5:30 am	1:00 am	19.5	6:00 am	1:00 am	19	6:00 am	1:00 am	19
Community Radial	5:30 am	10:00 pm	16.5	6:00 am	10:00 pm	16	6:00 am	10:00 pm	16
Circulator/Feeder/Connector	5:30 am	7:00 pm	13.5	7:00 am	7:00 pm	12	7:00 am	7:00 pm	12
Express	Demand Driven			No Service					
Microtransit	6:30 am	7:00 pm	11.5	6:30 am	7:00 pm	11.5	6:30 am	7:00 pm	11.5

2.1.5. Survey Results

GRTC conducted an origin-destination survey of its fixed-route services in the spring of 2023. The purpose of the survey was to gather information about riders’ travel behavior and key travel information, like origins, destinations, trip purpose, routes traveled, modes of transportation, and demographic information. Interviews were conducted with GRTC riders during their trips on transit vehicles. Over 3,800 responses were captured.

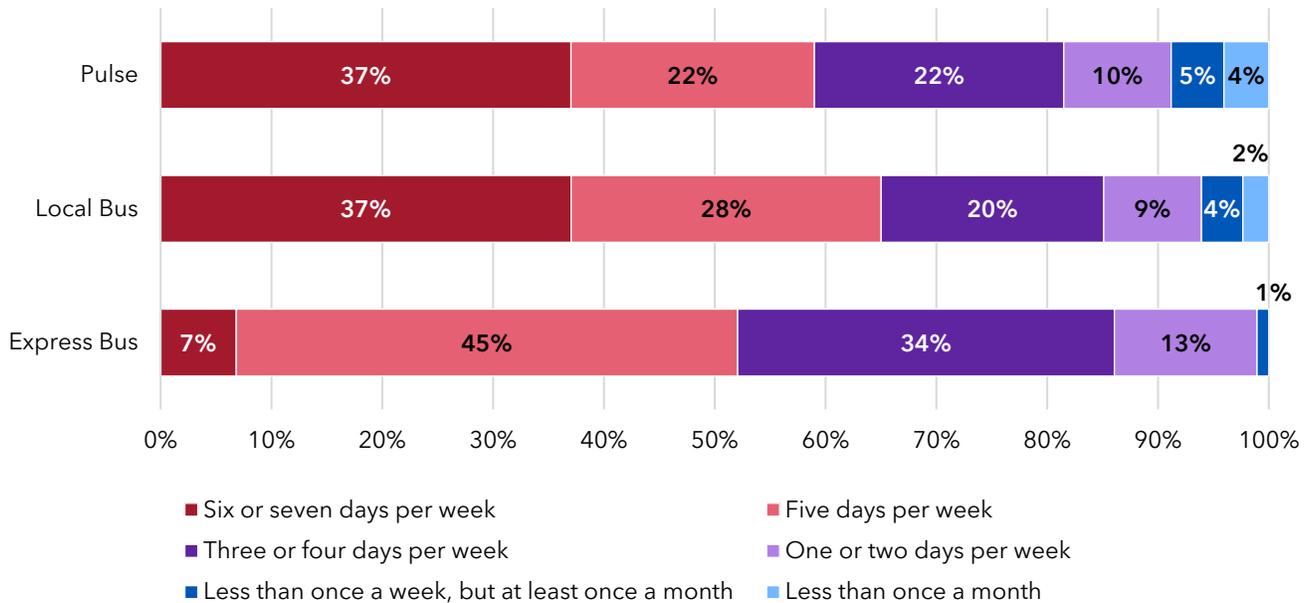
RIDER CHARACTERISTICS

The survey enabled GRTC to gain greater insight into the demographic makeup of its ridership. Express bus riders are the oldest cohort of riders, followed by local bus riders, and then Pulse riders. Express bus riders are considerably more likely to be female while Pulse and local bus riders are more likely to be male. Express bus riders had the highest percentage of “white alone” users at 49 percent. Local bus service predominantly caters to the “non-white single race and non-Hispanic/Latino” demographic, totaling 77 percent. Pulse service exhibits a more balanced distribution. One percent of Express bus riders report having an education level of less than high school, compared to eight percent and four percent for the local bus and Pulse services, respectively. Express bus riders (17 percent) and Pulse riders (15 percent) are more likely to speak a language other than English at home compared to local bus riders (eight percent). Express bus riders are mainly employed full time (90 percent), whereas there is a greater mix of employment statuses for local bus and Pulse riders. Express bus riders are far more likely to have access to a car or motorcycle and to have a valid driver’s license compared to local bus and Pulse riders; 85 percent of local bus riders do not have vehicle access and 53 percent lack a driver’s license. Sixty percent of local bus riders earn less than \$30k, compared to 39 percent of Pulse riders and 14 percent of express bus riders.

Nearly all GRTC riders are smartphone users, with over 92 percent of all riders having access to a smartphone. **Figure 2-2** shows how often riders reported using GRTC’s services during a typical week. Pulse has the highest share of infrequent riders who use GRTC less than once a week (nine percent), whereas six percent of local bus riders and one percent among express bus riders are infrequent riders. This highlights Pulse’s appeal to intermittent or infrequent riders, whose use may be related to recreational trips. Overall satisfaction scores with GRTC are high. Pulse service earned the highest score for convenience. The area

with the most travel activity is ZIP code 23223 (East End, Oakwood, Church Hill). This area generates 107,000 trips monthly.

Figure 2-2: Frequency of GRTC Use



TRIP CHARACTERISTICS

On weekdays, the most popular travel time is during the midday period, between 9:00 am-4:00 pm (**Table 2-13**). Midday travel accounts for 46 percent of weekday rides, followed by the AM peak period, 6:00 am-9:00 am, at 18 percent. Home-based-other trips account for more than 40 percent of trips during the midday, PM peak, and evening periods, demonstrating the importance of planning for other kinds of trips besides work commute trips during these periods. GRTC is critical for riders’ mobility. Eighteen percent of local bus riders would forego their travel if GRTC service was unavailable. 13 percent of Pulse users and six percent of express bus riders answered similarly. GRTC may be the only viable form of transportation for this group of riders.

Table 2-13: Distribution of Weekday Ridership by Time Period

Time Period	Percent of Monthly Trips
Early (5:00 am-6:00 am)	3%
AM Peak (6:00 am-9:00 am)	18%
Midday (9:00 am-4:00 pm)	46%
PM Peak (4:00 pm-7:00 pm)	16%
Evening (7:00 pm-10:00 pm)	13%
Late Night (10:00 pm-5:00 am)	4%

TRAVEL PATTERNS

Intra-zone trips account for the highest volume of trips within the 23223 ZIP code. Six other intra-zone pairs

are included within the top 25 ZIP codes. Several ZIP codes repeatedly feature in the top pairs, notably ZIP codes 23219, 23223, 23224, and 23220. These results suggest that they are major hubs or frequently accessed areas. Trips requiring transfers were most common for the same ZIP code pairs with the greatest overall travel volumes. This includes shorter trips from north and east of Downtown Richmond, as well as longer trips along Broad Street and US Route 1 into central Richmond.

ACCESS AND EGRESS

While walking remains the most dominant access mode across all three services, driving is notably higher for express bus users compared to local bus and Pulse riders. Express bus riders are more likely than local bus and Pulse riders to ride with someone or use a rideshare service to reach their final destination.

TRANSFERS

As shown in **Table 2-14**, over two thirds of trips do not involve transfers while a quarter of trips require one transfer. Five percent of trips involve two transfers, while small percentages of trips involve three or more transfers. The highest transfer pair is between Route 19 and Pulse, which generates over 20,000 monthly transfer trips; the next highest pairings are in the 5,000-6,000 range. Routes which recur within the top 25 transfer pairs include Pulse and Routes 19, 12, 1, 3B, 1A, and 1C.

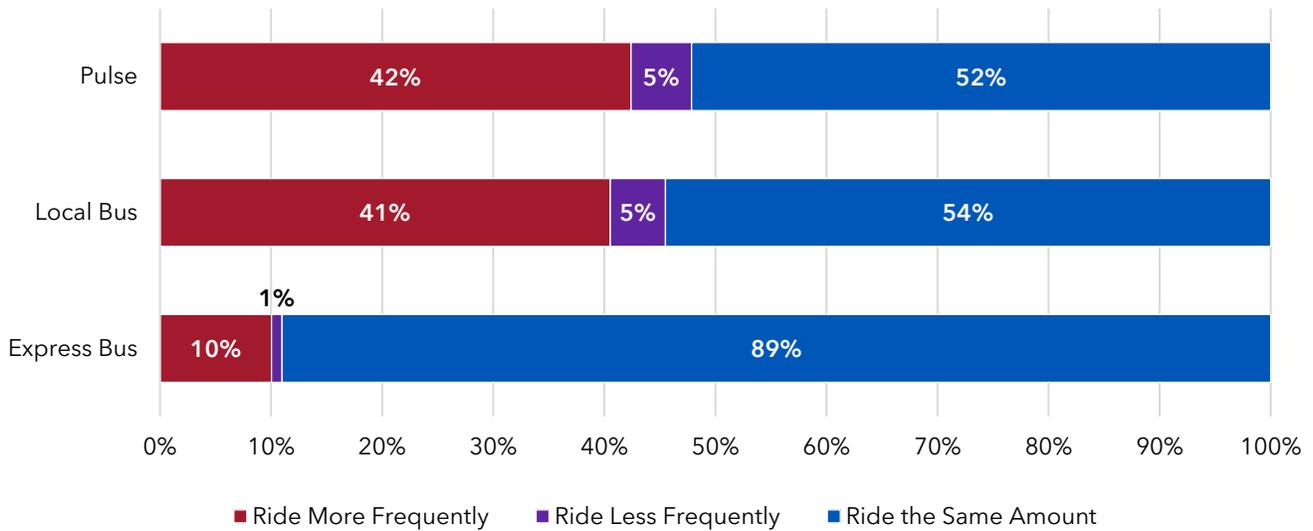
Table 2-14: Distribution of Rider Transfers as a Percentage of Total Monthly Trips

Transfers	Percent of Total Trips
0	68.8%
1	25.6%
2	5.3%
3	0.3%
≥4	0.04%

FARE INFORMATION

Local bus riders are more likely to have used GRTC prior to the fare-free service (75 percent) compared to 68 percent of express bus riders and 59 percent of Pulse riders. Roughly half of the new riders across all bus types attributed the fare-free policy for starting their GRTC journey, showcasing the appeal of zero-fare service. **Figure 2-3** shows how free fares had a notable impact on Pulse and local bus riders' travel choices; 41 and 42 percent of riders, respectively, indicated using GRTC services riding more frequently today than before. Only ten percent of express bus riders ride more frequently due to free fares.

Figure 2-3: Impact of Free Fares on Frequency of Riding GRTC (Among Previous Riders)



RIDER SATISFACTION

Overall satisfaction scores with GRTC were high (**Table 2-15**), with the three modes averaging close to six on a scale of zero to seven (seven being most satisfied). However, the express bus—perhaps due to heightened user expectations or a more commuter-centric audience—lagged slightly behind the other modes in all categories, yielding a mean score of 5.86. Pulse service excelled in catering to riders’ needs, registering the highest score across the board, a 6.26 for convenience. However, Pulse registered the lowest safety perception among the three modes at 5.67.

Table 2-15: Agreement Levels on Safety, Convenience, and Overall Satisfaction with GRTC

	Express Bus	Local Bus	Pulse
You feel safe on buses and at bus stops	5.93	5.82	5.67
GRTC is convenient for your needs	5.91	6.14	6.26
You are satisfied with GRTC overall	5.76	6.08	6.03
Average Satisfaction (0-7)	5.86	6.02	5.99

2.1.6. Support for Transit

COMPREHENSIVE PLANNING

Transit has been identified as a priority in the comprehensive plans for jurisdictions within the greater Richmond area. Highlights from the comprehensive plans of the jurisdictions currently served by GRTC fixed-route service are shown in the following sections.

RICHMOND 300: A GUIDE FOR GROWTH

City of Richmond Master Plan (September 29, 2020)

- Land use typologies in the plan describe how transit can be incorporated appropriately into the different typologies.
- The plan's goals and objectives related to transit include:
 - Increase the number of residents and jobs at Nodes and along enhanced transit corridors in a land development pattern that prioritizes multimodal transportation options.
 - Enhance walking, biking, and transit infrastructure to provide universal access to all users, prioritizing low-income areas and areas within the high-injury street network.
 - Increase transit service to serve existing and new riders so that 75 percent of residents live within a half mile of a transit line with service that comes every 15 minutes by 2040.
 - Increase the number of employers implementing Transportation Demand Management (TDM) strategies to shift individuals from single-occupancy vehicles to biking, walking, and transit for daily tasks.
 - Increase the number of mixed-income communities along enhanced transit corridors.
 - Encourage more housing types throughout the city and greater density along enhanced transit corridors and at Nodes by amending the Zoning Ordinance.
 - Transform Richmond Redevelopment and Housing Authority (RRHA) public housing properties into well-designed, walkable, mixed-use, mixed-income, transit-adjacent communities.
- A series of benchmarks will be used to monitor the City's progress, some of which relate to transit, such as population and jobs within close proximity of transit and transit mode share.
- Survey respondents indicated that transit users are a priority at the curb. "The top users that should be prioritized at the curb are pedestrians (86 percent), bicycles (74 percent), and transit (55 percent)."
- Specific transit improvements are identified, including:
 - Increase frequency and hours of GRTC's Route 5 along Cary and Main Streets.
 - With community input, develop a preferred alignment for a North-South BRT line through Manchester, either along Cowardin or along Hull Street, and then traveling down Midlothian Turnpike, Hull Street, or US 1.
 - Develop the Fall Line Trail and provide enhanced transit along Route 1.
 - Once enough demand exists, expand transit service to reach Stony Point Fashion Park.
- A map of Enhanced Transit Routes depicts "transit corridors envisioned to have high-frequency service (ideally every 10 minutes, but likely 15 minutes) and longer service hours (ideally 24/7, but likely less). The Future Land Use Map shows a mix of residential, employment, and commercial uses along these Enhanced Transit Routes to accommodate a higher number of future riders (residents, visitors, and employees) within close proximity of the Enhanced Transit Route."

HENRICO COUNTY VISION 2026

Henrico County Comprehensive Plan (August 11, 2009)

- A transportation objective reads: “Encourage developments which include facilities to accommodate the pedestrian and bicyclist as well as transit.”
- The plan encourages incorporation of transit access into mixed-use, office/service/industrial, retail/commercial, and civic areas.
- There is a policy to “Continue to monitor citizen satisfaction with GRTC service and ensure a bus system that provides adequate service to the residents of the county.”

MOVING FORWARD: THE COMPREHENSIVE PLAN FOR CHESTERFIELD COUNTY

Chesterfield County Comprehensive Plan (May 22, 2019)

- The land use plan map “supports higher density mixed use activity centers that could be linked by transit as they develop in the future.”
- A guideline for transit reads: “Support long-term transit accommodations where appropriate in accordance with the Greater RVA Transit Vision Plan which was approved by the MPO of which the county is a member. Complete the short-term step of conducting a public transportation feasibility study to identify corridors and types of service that are viable options for transit in the nearer term.”

PTB2040

City of Petersburg Comprehensive Plan

- Guiding principles for the comprehensive plan include: “Increase the mobility of the public through public transportation and regional cooperation” and “Improve community health and reduce traffic congestion through walking and biking infrastructure and transit improvements.”
- One policy goal is to “Provide efficient, frequent, reliable transit service to employment centers.”

STAKEHOLDER ADVISORY GROUP

During the first Stakeholder Advisory Committee⁴ meeting for the TSP, held on June 16, 2023, the attendees were asked during an open discussion, “How is the broader community supportive of transit?” Stakeholders mentioned the increased interest in microtransit in the region, the positive impact zero-fare service has had on the community, and support from broader government partners. They indicated that zero-fare service has had a positive impact on shifting perceptions of transit in the region and has put money back into the pockets of low-income residents who are struggling in current economic conditions. More detailed comments included:

- Zero-fare service has had a significant impact on the community and provides an incentive for people to use transportation besides their cars. Ridership is higher than it's ever been, and people are understanding how important zero-fare service is, as the cost of living has skyrocketed and the majority of people using transportation are making \$25,000 and under. This is a backdoor to boost wages in a positive manner in the community.
- Interest in microtransit pilots to see how impactful they will be in getting transit services to more outer jurisdictions. Microtransit could be a solution for more suburban areas.
- Interest in zero emission buses.

⁴ The project team invited over 50 people to join the Stakeholder Advisory Group (SAG), consisting of representatives from local governments, organizations, and institutions. **Table 2-41** contains the list of SAG invitees.

2.2. Evaluation of Transit Market Demand and Underserved Areas

This section evaluates the Greater Richmond area as a market for transit service in order to compare the demand for transit to the level of transit service provided by GRTC throughout the region. By analyzing demographic and employment characteristics, areas of future growth, and travel patterns, opportunities for improving transit services were identified for places within and outside of GRTC's current service area.

2.2.1. Transit Demand and Underserved Area Evaluation

TRANSIT PROPENSITY

Some areas are more well-suited to transit services than others, due to the prevalence or lack of residents and jobs that generate demand for transit. Demographic data, including the age, income, race, car ownership status, disability status, and job status of residents, as well as economic data, such as employment counts and job types, can be analyzed to determine where transit demand is likely to be highest. This transit propensity analysis combines the data into a set of indices to evaluate the market for transit within the Richmond region.

TRANSIT PROPENSITY INDICES

The transit propensity analysis is broken into four sub-analyses, each of which focuses on specific demographic and employment statistics that are positively correlated with transit demand:

- Transit-Oriented Population Origins Index
- Commuter Origins Index
- Employment Destinations Index
- Activity Destinations Index

The four transit propensity indices, their inputs, and the areas with the highest propensity within each index are described in **Table 2-16**. The first two indices analyze population and demographic data from the US Census 2016-2020 American Community Survey (ACS) five-year estimates to identify areas that are known as trip producers, such as residential neighborhoods. The remaining two indices focus on areas that are trip attractors, such as workplaces, shopping areas, recreation areas, and places offering healthcare, education, social assistance, and government services. The Employment Destinations and Activity Destinations indices use data from the US Census 2019 Longitudinal Employer-Household Dynamics (LEHD) survey, which estimates the number and type of jobs in an area. For each index, the input demographic and employment statistics are weighted based on their relative effect on transit demand within the Greater Richmond region.

Table 2-16: Transit Propensity Indices

Trip End Type	Transit Propensity Index	Demographic and Employment Statistics Used	Areas with Highest Propensity
Trip Generators	Transit-Oriented Population Origins	Population, race/ethnicity, households, age, income, car ownership, disability status	Central Richmond, Areas along Chippenham Parkway and Chesterfield County boundary
	Commuter Origins	Labor force, employed persons, commuters	Central Richmond, Areas along US 33 and Broad Street in Henrico County
Trip Attractors	Employment Destinations	Employees	Central Richmond, Areas along US 250 in Goochland County and Henrico County, Areas along Midlothian Turnpike in Chesterfield County
	Activity Destinations	Jobs in restaurant and retail, recreation, healthcare and social assistance, education, and government	Central Richmond, Areas along Broad Street in Henrico County, Areas along Midlothian Turnpike in Chesterfield County

TRANSIT-ORIENTED POPULATION ORIGINS INDEX

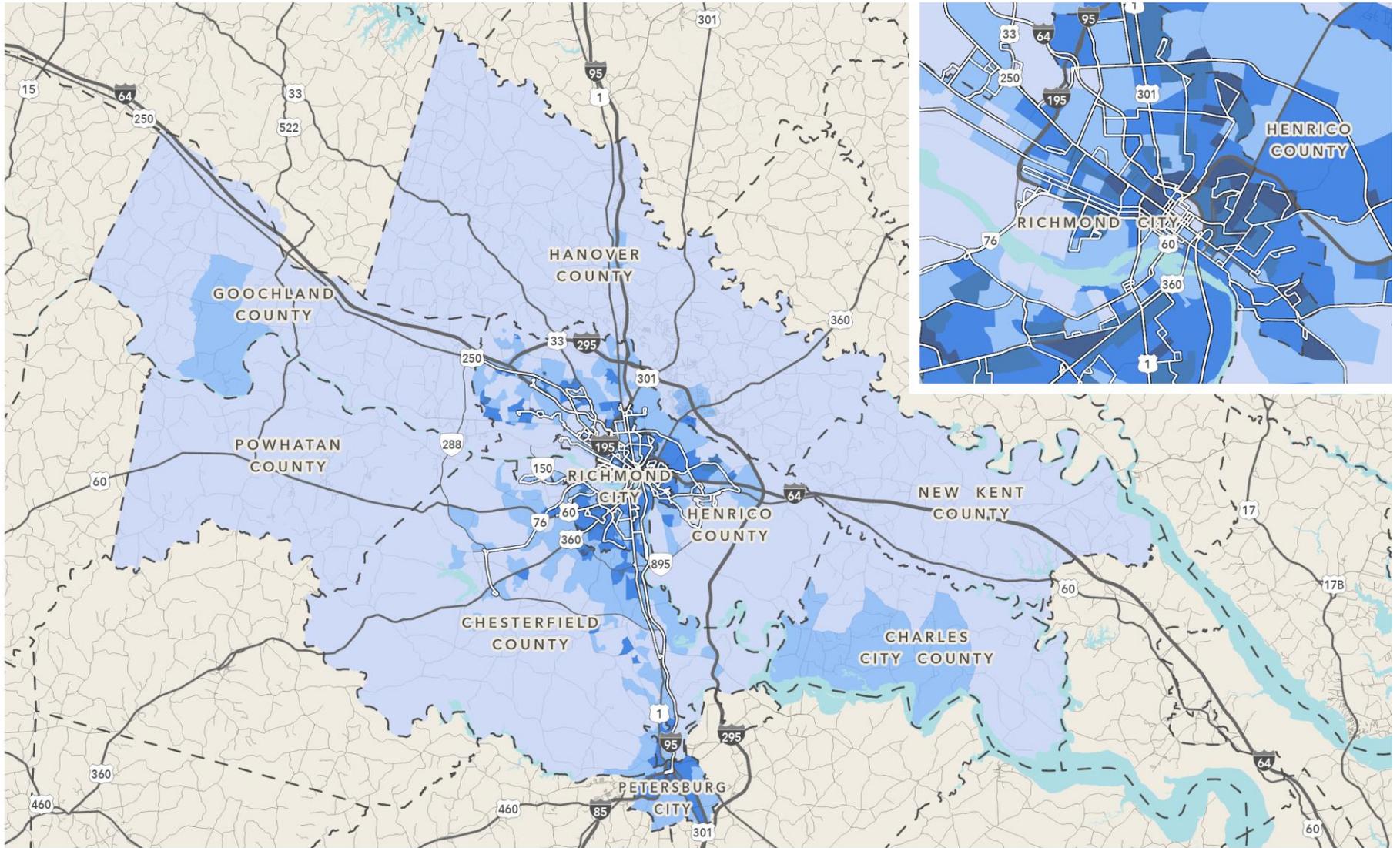
The purpose of the Transit-Oriented Population Origins index is to identify areas with a high density of people who are likely to take public transit. Transit-Oriented Population Origins propensity is calculated by weighting five demographic characteristics: population (including race and ethnicity), age, income, vehicle ownership, and disability status. Once each Census block group is scored based on these characteristics, the scores are weighted and combined. **Table 2-17** details the weighting for each characteristic.

Table 2-17: Transit-Oriented Population Origins Index Weights

Category	Weight
Population (General/Minority)	30
Age (Youth/Senior)	10
Income (Low)	20
Vehicle Ownership (Zero/One Car)	30
Disability Status (Yes)	10

Transit-Oriented Population Origins propensity is visualized in **Figure 2-4**. Central Richmond contains several high and moderate high-propensity areas, indicating that residents in this part of the GRTC service area are most likely to take public transit. High and moderate-high propensity areas are located in select areas to the north and northwest of Central Richmond, along Mechanicsville Turnpike (US 301) and I-195, and along Chippenham Parkway (Route 150) near the border of Chesterfield County. Areas on the periphery of Central Richmond in Henrico County scored as having moderate propensity. The rest of the study area outside of the denser urban cores have either low moderate or low propensity.

Figure 2-4: Transit-Oriented Population Origins Propensity



Transit-Oriented Population Origins Propensity

 High	 Moderate	 Low	 Jurisdiction Boundary	 Fixed Bus Routes
 Moderate High	 Low Moderate			

0 2½ 5 10 Miles 

Source: US Census American Community Survey 5-year Estimates, 2016-2020

COMMUTER ORIGINS INDEX

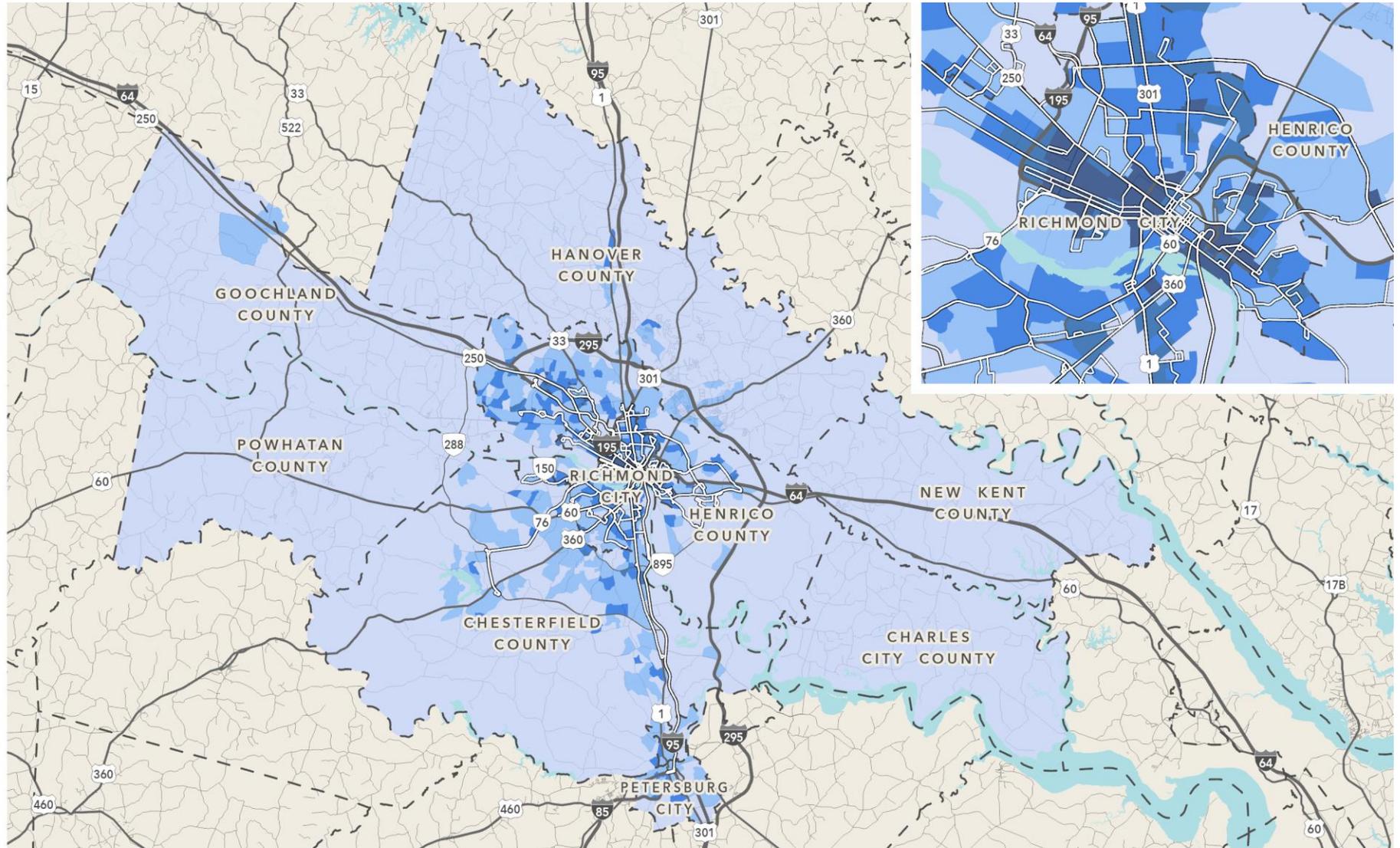
The Commuter Origins propensity index analyzes where peak-period commuters live. The index is designed to identify commuter populations and assess the degree to which existing services meet commuter transit demand. **Table 2-18** shows the values used to weight labor force and commute mode statistics in order to create a propensity score.

Table 2-18: Commuter Origins Index Weights

Category	Weight
Labor Force	90
Commute Mode	10

Figure 2-5 visualizes Commuter Origins propensity in the region. Propensity is highest in Central Richmond and adjacent residential areas, including the Northside, East End, and Southside. Moderate Commuter Origins propensity zones are found throughout the suburban neighborhoods that surround Richmond in Henrico and Chesterfield counties, with higher concentrations of commuters in the northwest inside I-295 and to the south inside Route 288 and along Route 1 (US 1). The outer communities in the study area largely scored as low moderate or low, including Hanover County, New Kent County, Powhatan County, and most of southern Chesterfield County.

Figure 2-5: Commuter Origins Propensity



Commuter Origins Propensity



Source: US Census American Community Survey 5-year Estimates, 2016-2020

EMPLOYMENT DESTINATIONS INDEX

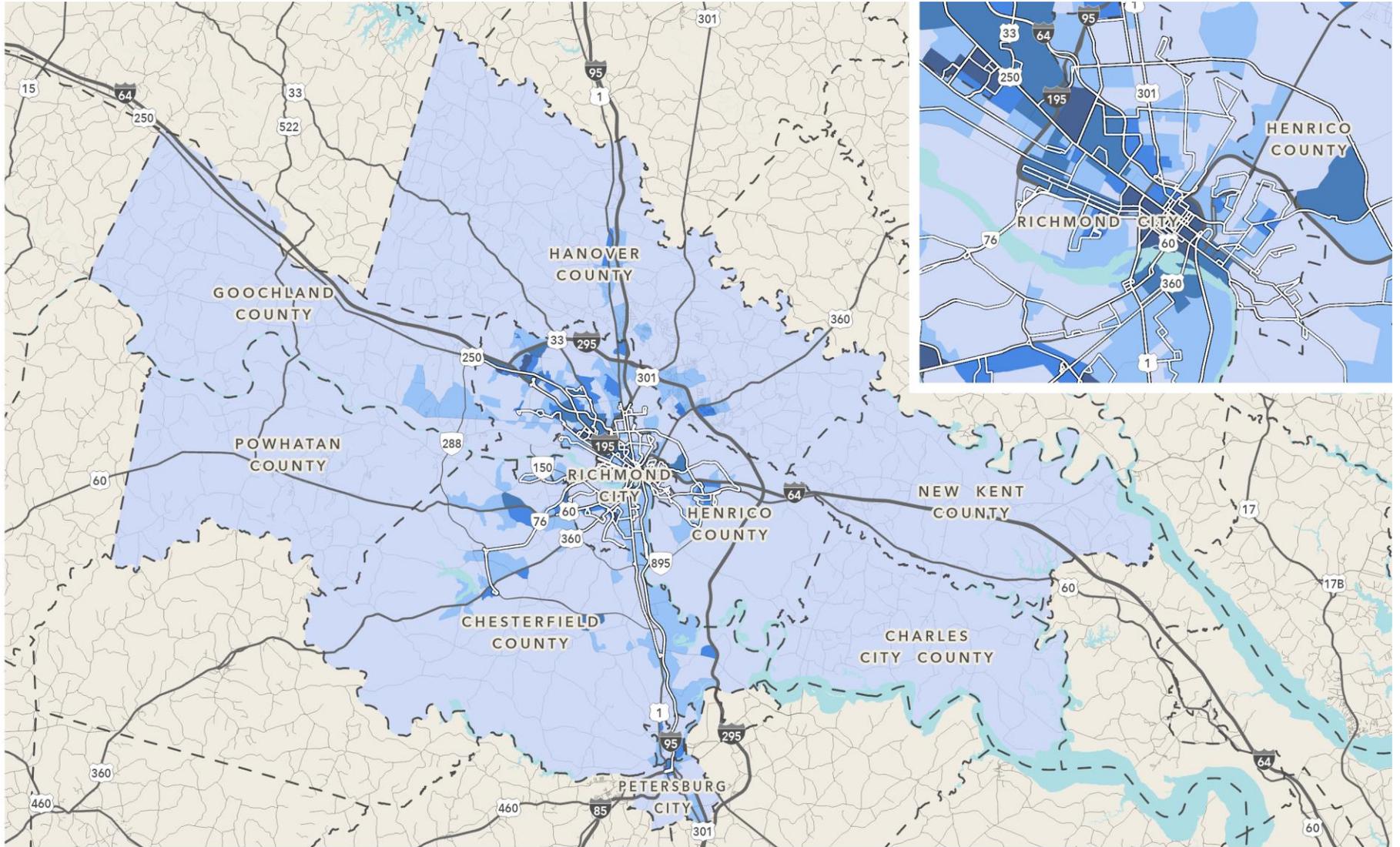
Employment Destinations propensity measures the density of jobs to identify areas that are likely to be destinations for commuters. This index utilizes data from the Longitudinal Employer-Household Dynamic (LEHD) survey, which identifies primary job locations for public and private sector employment. As shown in **Table 2-19**, the only input to this index is employment.

Table 2-19: Employment Destinations Index Weights

Category	Weight
Employment (All Jobs)	100

Employment Destinations propensity is depicted in **Figure 2-6**. Propensity scores are high and moderate high in Central Richmond and to the northwest along Broad Street (US 250) from the West End to Short Pump in Henrico County, as well. Other clusters of high Employment Destinations propensity are present at medical centers in South Richmond and Chesterfield County, including the VA Hospital, Chippenham Hospital, and Johnston-Willis Hospital. Moderate propensity was located in low-density job centers in Mechanicsville and Ashland in Hanover County, near Richmond International Airport in Henrico County, and at shopping centers and the civic center in Chesterfield County. The remainder of the study area was categorized as having low or moderate low propensity.

Figure 2-6: Employment Destinations Propensity



Employment Destinations Propensity

High	Moderate	Low	Jurisdiction Boundary	Fixed Bus Routes
Moderate High	Low Moderate			

0 2½ 5 10 Miles

Source: US Census Longitudinal Employer-Household Dynamics 2019

ACTIVITY DESTINATIONS INDEX

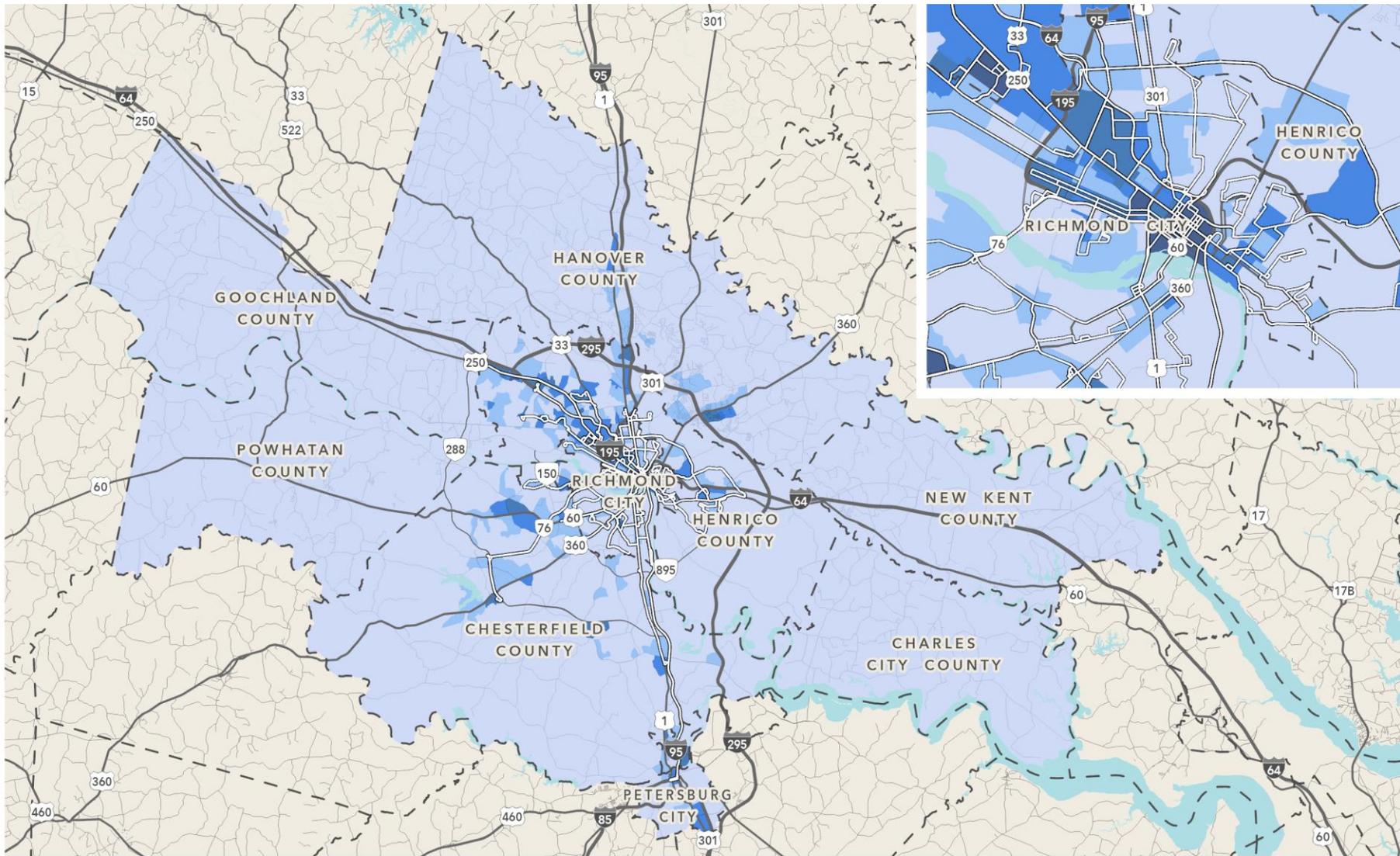
The Activity Destinations index identifies destinations for travel outside of traditional 9:00 am to 5:00 pm work commutes, including travel for leisure, shopping, education, healthcare, and government and social services. The index uses the concentration of specific employment types in an area to determine the propensity for travel to those locations, either for work or non-work purposes. **Table 2-20** shows the weighting of education, government, healthcare/social assistance, recreation, and retail/restaurant employment used to create the index.

Table 2-20: Activity Destinations Index Weights

Category	Weight
Education	25
Government	10
Healthcare/Social Assistance	35
Recreation	10
Retail/Restaurant	25

Figure 2-7 shows the distribution of Activity Destinations propensity throughout the region. Activity Destinations propensity scored low throughout the majority of the study area, including all of Goochland, Powhatan, New Kent, and Charles City Counties. There are only a handful of high and moderate high propensity areas concentrated in Central Richmond, the area northwest of Richmond near I-195 and Broad Street (US 250), where there are large retail stores and a hospital, as well as in select isolated pockets of the study area. There are some moderate propensity areas concentrated in Central Richmond and to the northwest near Staples Mill Road (US 33) and I-64, as well as scattered throughout parts of Chesterfield County, Henrico County, and Hanover County.

Figure 2-7: Activity Destinations Propensity



Activity Destinations Propensity

 High	 Moderate	 Low	 Jurisdiction Boundary	 Fixed Bus Routes
 Moderate High	 Low Moderate			

0 2½ 5 10 Miles 

Source: US Census Longitudinal Employer-Household Dynamics 2019

POPULATION AND EMPLOYMENT TRENDS

Within urban contexts, the demand for transit correlates strongly with population and employment density. In areas where people and jobs are highly concentrated, such as dense residential areas and large employment centers, transit demand is typically highest, often high enough to support high-capacity transit services. Areas with moderate to low density also generate transit demand, although they require lower levels of service. This section identifies areas within the Greater Richmond region which have high and low population and employment density, as well as areas projected to grow in the next two decades, indicating a future increase in transit demand.

POPULATION AND EMPLOYMENT DENSITY

Figure 2-8 shows the existing population and employment density in the Greater Richmond region, based on US Census ACS five-year and LEHD surveys. The two-color scale indicates areas with high population density (purple), high job density (red), or both (red and purple combined). Downtown Richmond contains the greatest density overall, including some areas that are dominated by employment and some areas with both high population and employment. Moderate to high population density is present throughout the City of Richmond, as well as in northern Henrico County west of I-95. Other areas with moderate population density include Chesterfield County inside of Route 288, near Swift Creek Reservoir, and south along US 1, as well as central Henrico County, Highland Springs, and Mechanicsville and Atlee in Hanover County. Outside of central Richmond, jobs are concentrated to the northwest along I-64 and Broad Street (US 250), as well as in clusters near major corridors in Hanover, Henrico, and Chesterfield counties. On the edges of the region, low population and job density is prevalent throughout Goochland, Powhatan, New Kent, and Charles City Counties.

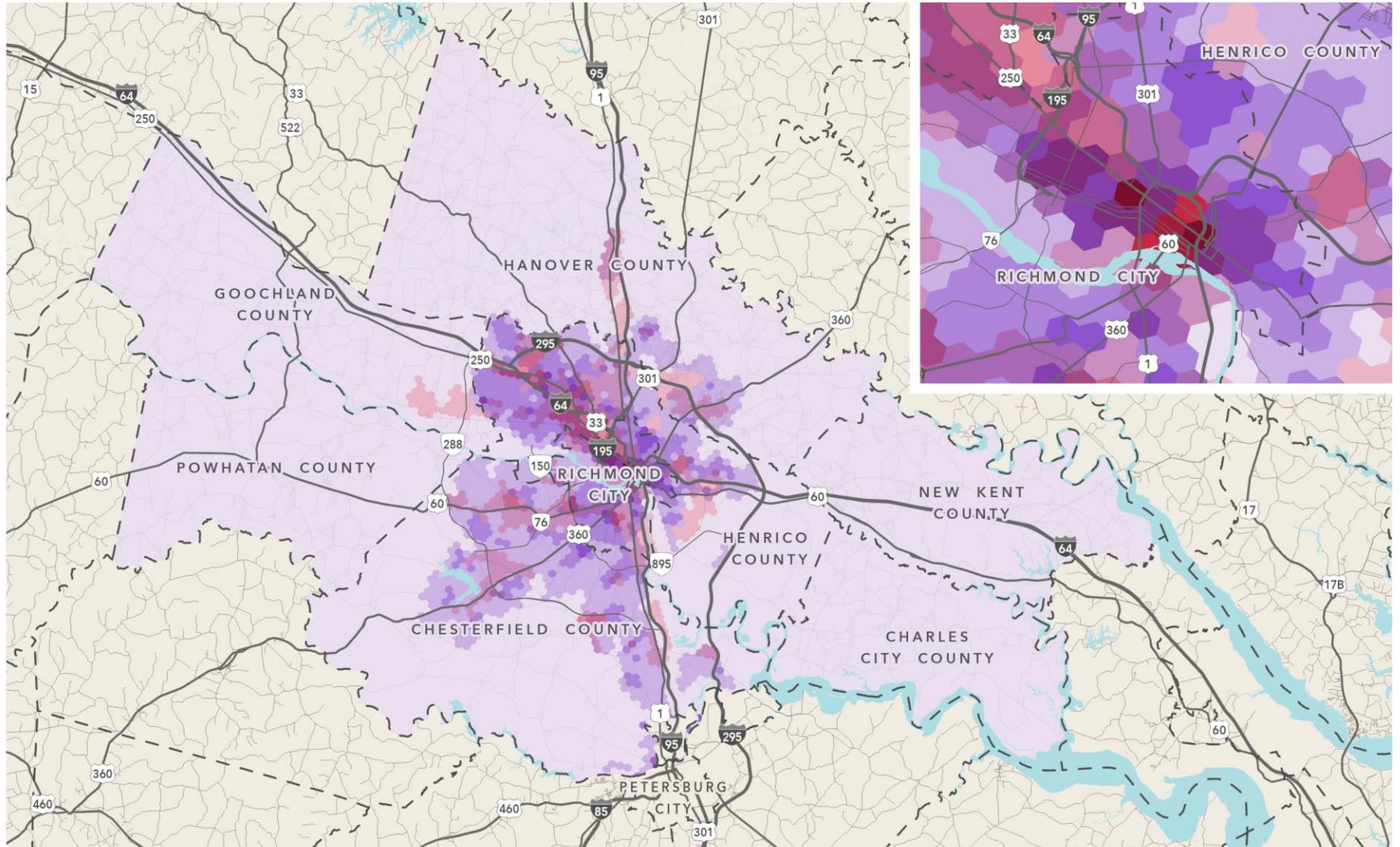
FUTURE GROWTH IN THE REGION

Many parts of the region are projected to grow in population and employment over the next two decades. Overall, the region is projected to gain over 320,000 residents and over 66,000 jobs by 2045, according to estimates from PlanRVA.⁵

Figure 2-9 shows the percent increase in population and employment density between existing conditions and 2045. Some areas which currently have high density are projected to continue growing, such as downtown Richmond, but the areas with the highest rates of expected growth are currently low-density. The highest rate of population growth is forecasted in Hanover and Goochland Counties immediately outside the northwest boundaries of Henrico County. Moderate population growth rates are also expected in low-density areas throughout New Kent County and southern Henrico County, as well as in parts of Powhatan County and outer Chesterfield County. New employment in the region is also projected to be found outside of current job centers, such as at Richmond International Airport in Henrico County, along the James River in Chesterfield County, and in Hanover and Doswell in Hanover County.

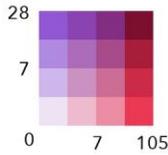
⁵ Population increases were measured from 2017 to 2045 and employment increases were measured from 2019 to 2045.

Figure 2-8: Existing Population and Employment Density



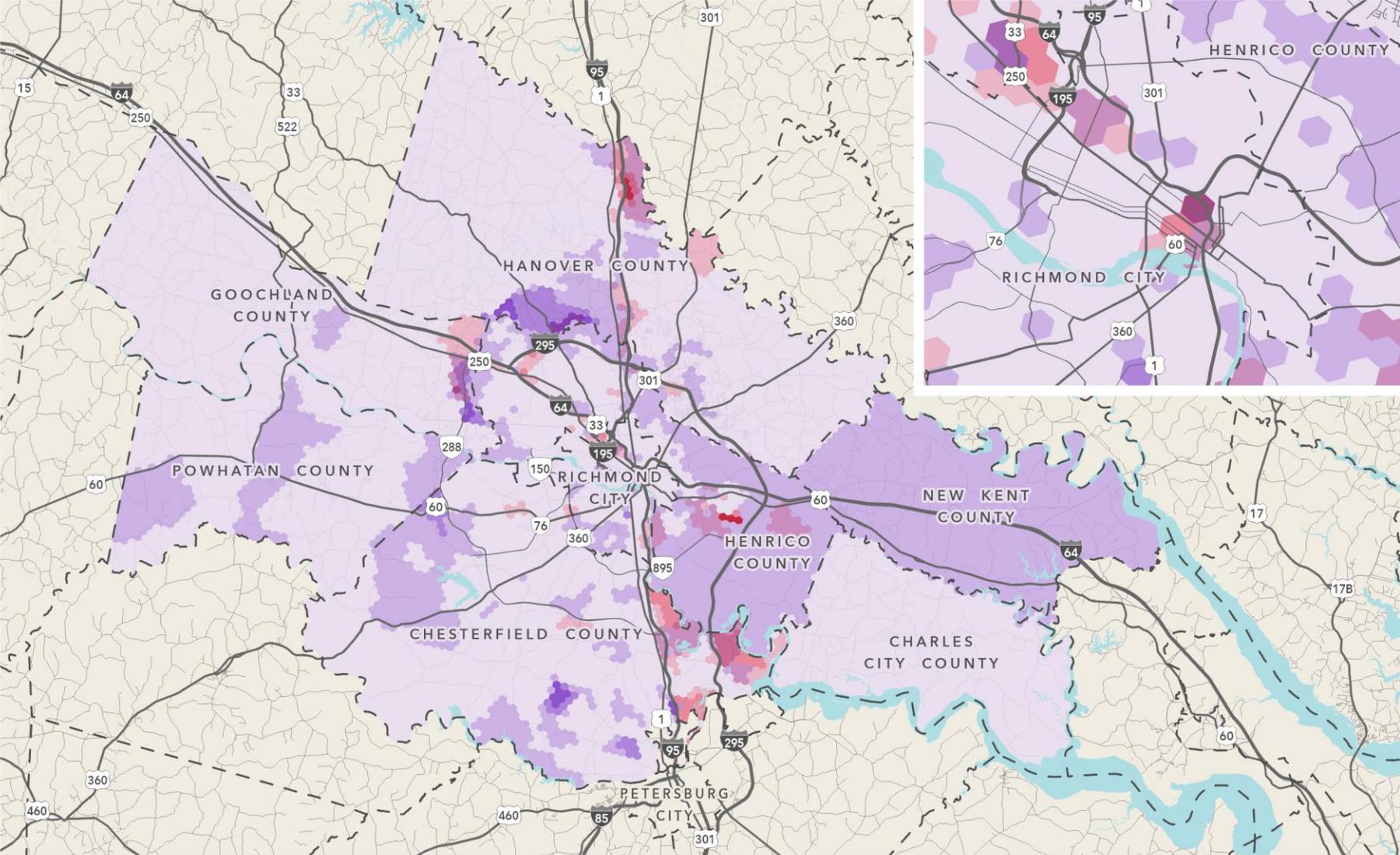
Population and Employment Density

- Population/acre
- Jurisdiction Boundary
- Jobs/acre



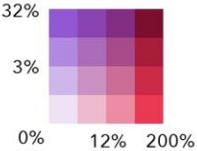
Sources: US Census American Community Survey (ACS) 5-year estimates 2016-2020, Longitudinal Employer-Household Dynamics 2019

Figure 2-9: Future Population and Employment Growth (2017-2045)



Population and Employment Percent Growth

- Population
- Jobs
- Jurisdiction Boundary



Source: PlanRVA Population and Employment Projections 2017-2045, US Census Longitudinal Employer-Household Dynamics 2019

TRAVEL FLOW ANALYSIS

The market for transit includes all travel within the region, including trips made with transit as well as non-transit modes, such as a personal vehicle, bicycle, or by walking. GRTC's fixed route and demand response services must meet the demand for transit by enabling travelers to get from their origins to their desired destinations quickly, efficiently, and comfortably. By analyzing the prevailing travel patterns within and outside of the service area, GRTC's services can be improved or expanded to provide more efficient connections between existing riders' origins and destinations as well as capture additional demand for travel which is currently not possible on public transportation.

This section analyzes all daily trips and peak-period travel patterns in the Greater Richmond area. The travel flows analysis includes the origin-destination pairs of all trips for a typical weekday in March 2023, based on data from Replica's synthetic travel model. The Replica model combines data from a variety of sources, including demographic data, traffic counts, transit ridership, and location-based services data, to generate a synthetic model of trips made throughout the Mid-Atlantic region. The travel zones used in this analysis were composed of Census tracts and, in high-density areas where Census tracts are smaller, groups of Census tracts.

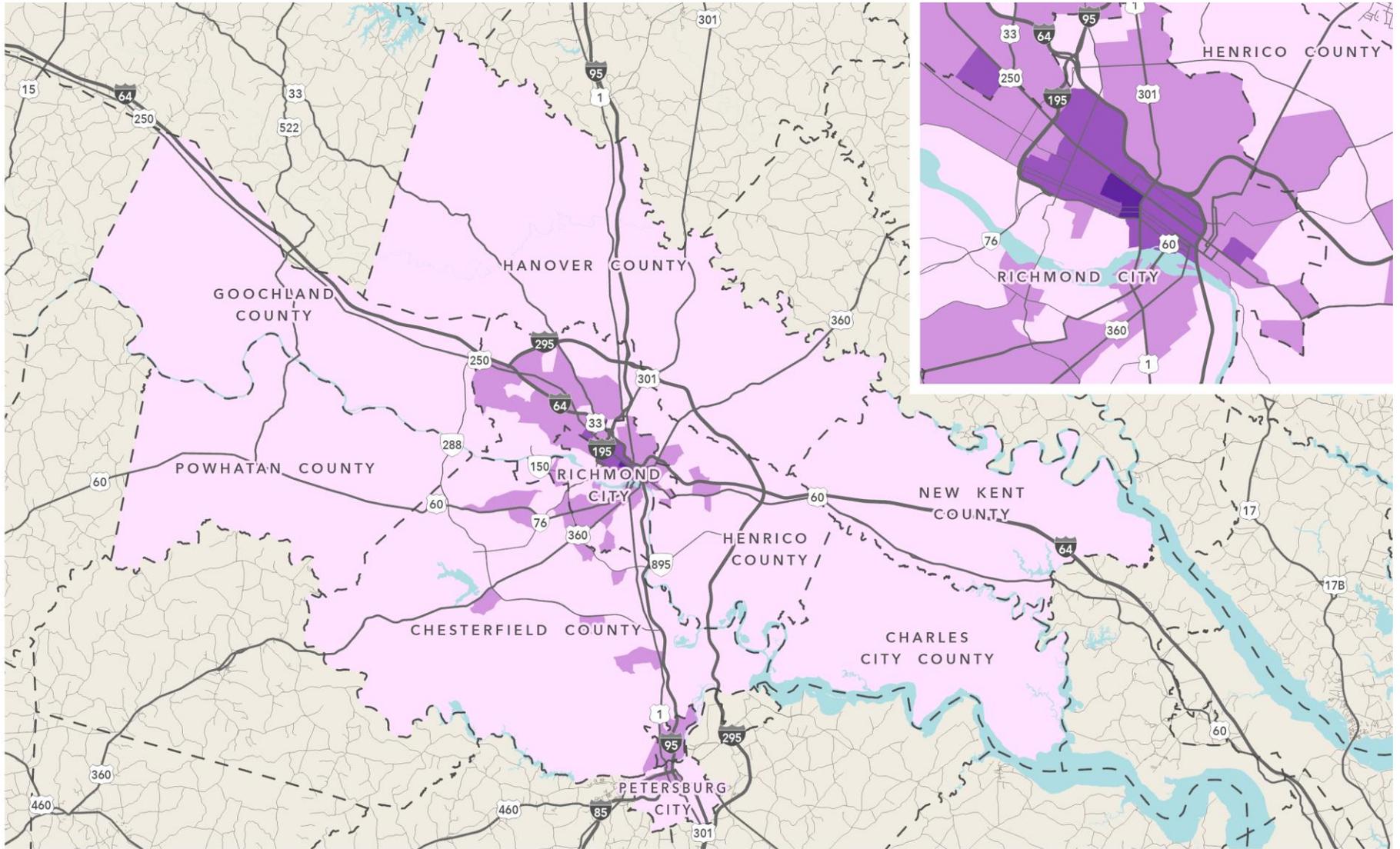
ALL-DAY TRAVEL

Figures 2-10 through 2-12 display travel patterns for trips that start at any time of day. The purpose of all-day trips may include travel for work, leisure, healthcare, education, shopping, social services, or other reasons. By evaluating all-day travel patterns, transit services can be improved to better meet the needs of all types of travel.

Figure 2-10 and **Figure 2-11** visualize the density of trip origins and destinations in each Census tract on a typical weekday. In general, GRTC's fixed-route service area covers all areas with the highest trip densities, which are in downtown Richmond, the East End, and the West End including Virginia Commonwealth University (VCU), the Fan, the Museum District, and Willow Lawn. Moderate density of trip origins and destinations is also found throughout the service area, although some places with moderate trip density do not have fixed-route bus service. These areas include northwest Henrico County in Lakeside and Laurel between US 1 and Staples Mill Road (US 33), Innsbrook north of Broad Street (US 250), and western Tuckahoe and Tuckahoe Village; and Chesterfield County in Midlothian along Midlothian Turnpike (US 60), residential areas south of Chippenham Parkway (Route 150) at Belmont Road and Hopkins Road, and the Chesterfield civic center. The remainder of the region has a low density of trip ends, indicating that travel volumes are likely insufficient to support fixed-route transit services.

Figure 2-12 shows origin-destination flows for all-day travel throughout Greater Richmond. Overall, travel within zones is much higher than travel between zones. Reflective of the density of trip ends, the majority of travel occurred between the urban and suburban areas of Richmond City, Henrico County, and Chesterfield County. Many of the high-volume origin-destination pairs do not have fixed-route transit connections, including travel between the northwestern suburbs inside I-295 in Henrico County, travel in the Mechanicsville area in Hanover County, and travel between the Chesterfield County suburbs of Bon Air, Midlothian, Manchester, Woodlake, and Rockwood. Some moderate flows traverse longer distances, particularly between Richmond and the Henrico and Chesterfield suburbs. Outside of the region's core, almost all trips remain within each zone, such that there are no significant flows between counties.

Figure 2-10: All-Day Trip Origins



Daily Trip Origins per Acre

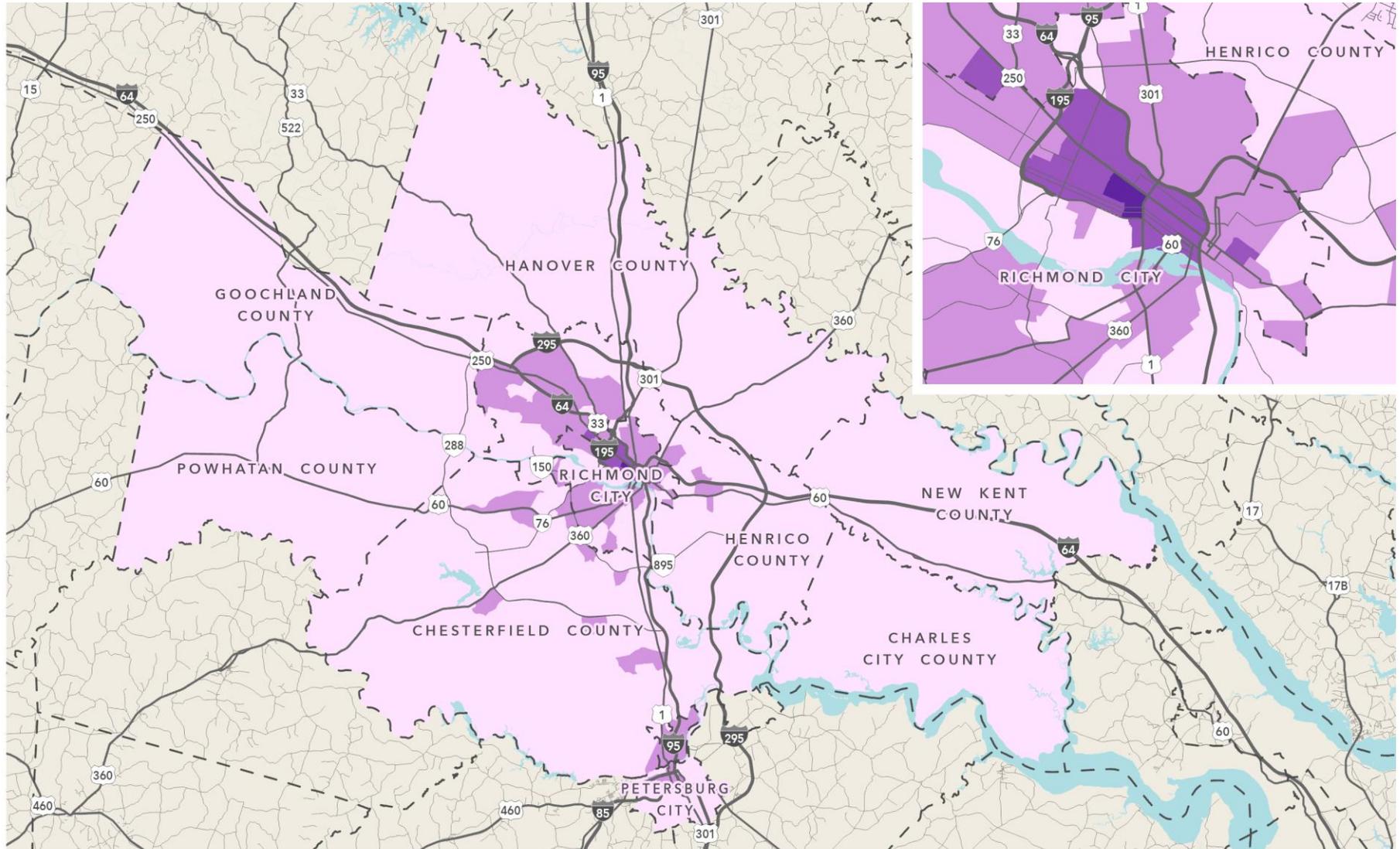


--- Jurisdiction Boundary



Source: Replica Origin-Destination Trips, March 2023 Typical Weekday

Figure 2-11: All-Day Trip Destinations



Daily Trip Destinations per Acre

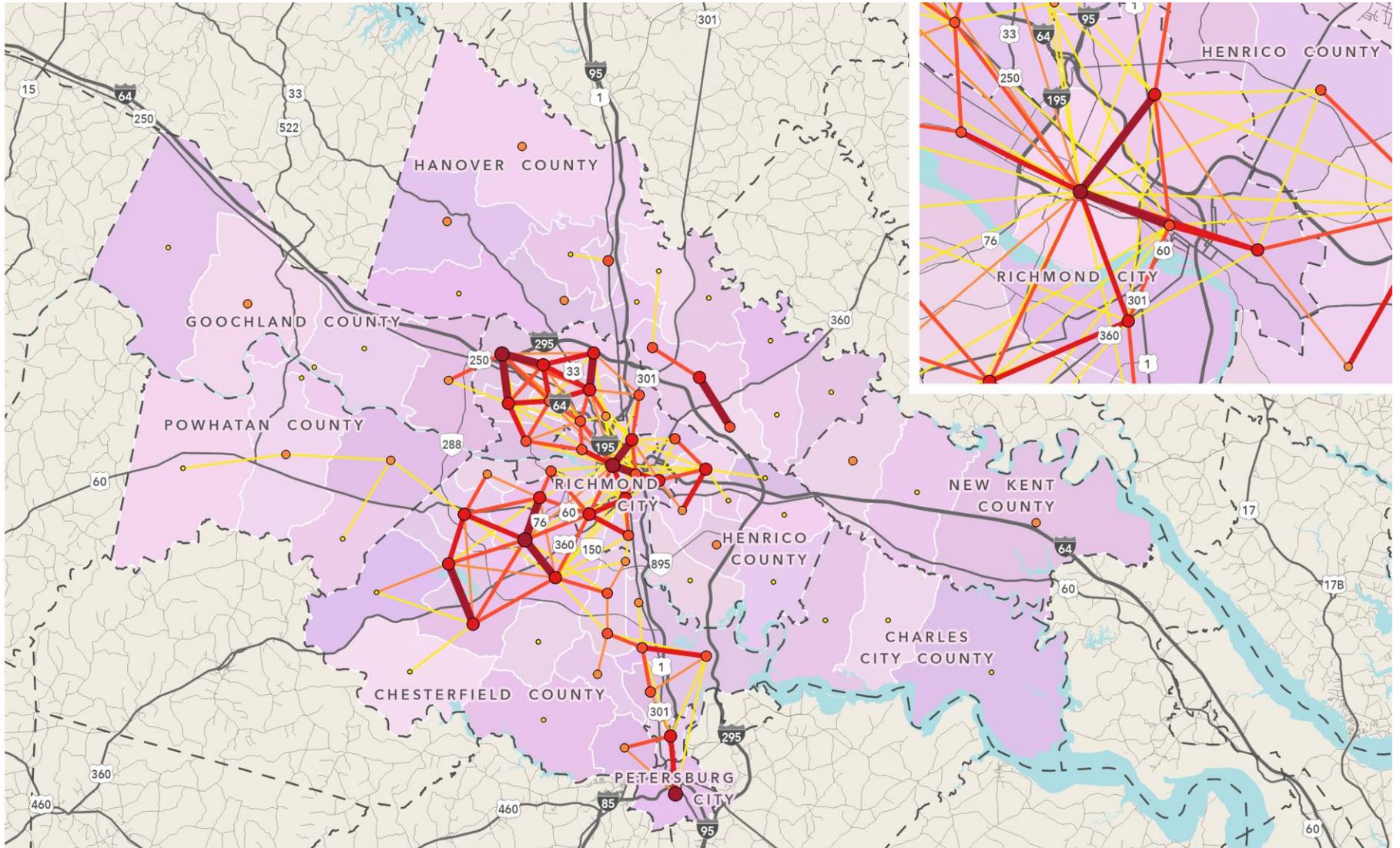


--- Jurisdiction Boundary



Source: Replica Origin-Destination Trips, March 2023 Typical Weekday

Figure 2-12: All-Day Travel Flows

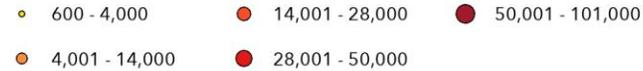


All Day Travel Flows

Inter-Zone Trips



Intra-Zone Trips



--- Jurisdictions

■ Zones



Source: Replica Origin-Destination Trips, March 2023 Typical Weekday

PEAK PERIOD TRAVEL

As shown in **Table 2-21**, travel in the morning and afternoon peak periods forms a significant part of trips made throughout the Greater Richmond region, with over 38 percent of all trips occurring between 6:00 am-8:59 am and 4:00 pm-6:59 pm. The afternoon peak has approximately 318,000 trips per hour, the highest hourly activity of any time period. Figures 2-13 through 2-15 display travel patterns for trips that take place during the morning and afternoon peak periods. An analysis of peak period travel patterns can help identify opportunities to improve service by adjusting peak headways and expanding peak service in areas that experience a surge in travel demand.

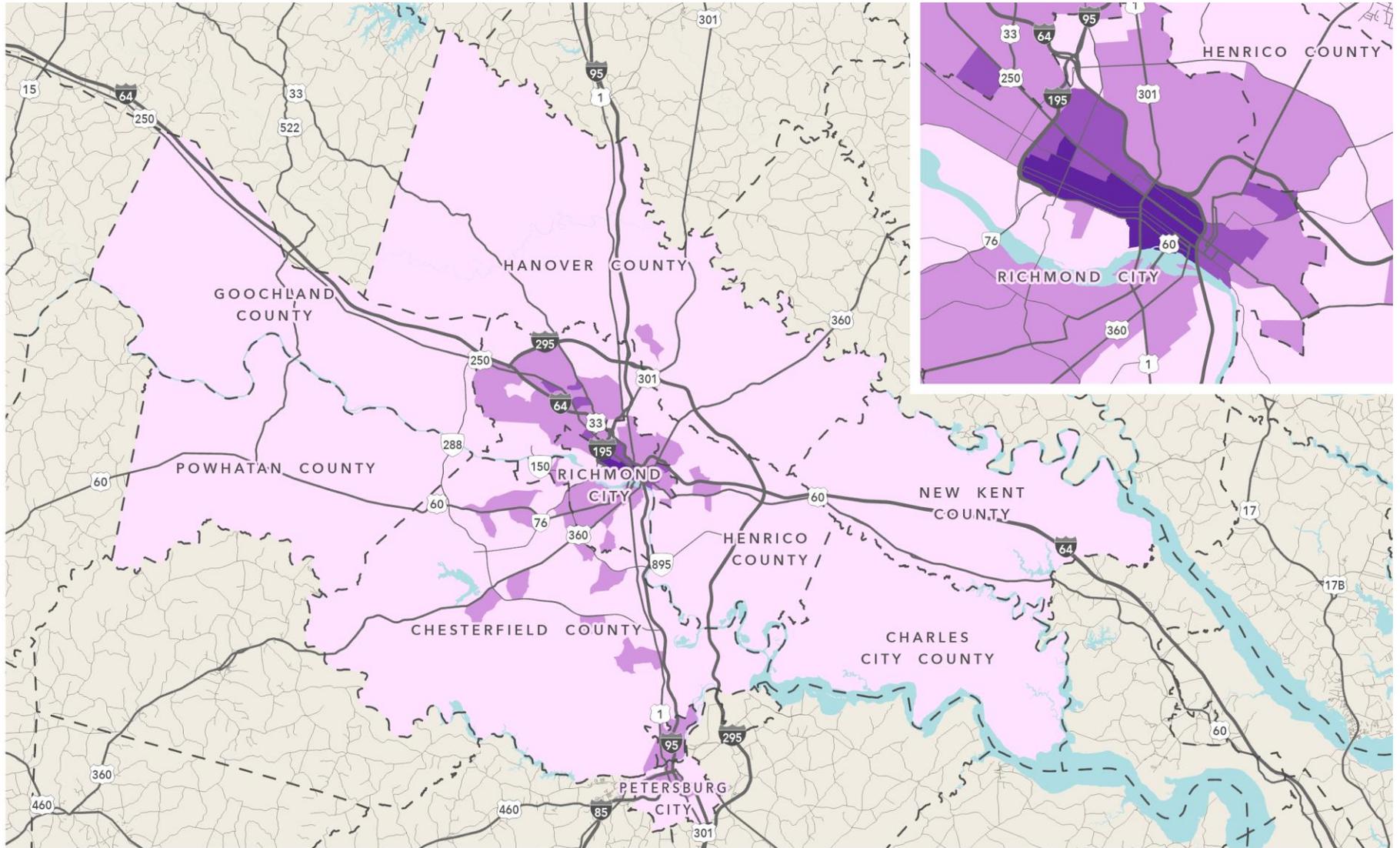
Table 2-21: Greater Richmond Travel Activity by Time Period

Metric	Early (4:00 am- 5:59am)	AM Peak (6:00 am- 8:59 am)	Midday (9:00 am- 3:59 pm)	PM Peak (4:00 pm- 6:59 pm)	Evening (7:00 pm- 9:59 pm)	Late Night (10:00 pm- 3:59 am)
Percent of Daily Trips	2%	16%	39%	22%	19%	2%
Average Trips per Hour	48,000	237,000	238,000	318,000	204,000	16,000

Figure 2-13 and **Figure 2-14** show the density of trip origins and destinations during the peak periods. Relative to all-day travel, trip density is more distributed across downtown Richmond, VCU, the Fan, and the Museum District. Almost all areas with moderately high trip density during the peak period are covered by high-frequency fixed-route services, including the East End, Willow Lawn, and the Pulse corridor between those areas. The employment cluster at Chesterfield Towne Center and Johnston-Willis Hospital is the only area in the region with moderately high peak-period travel activity that has no access to fixed-route bus services. Otherwise, moderate trip density is present in the same areas as for all-day travel, with the addition of Mechanicsville and Atlee in Hanover County, as well as the US 1 corridor in northern Henrico County.

Figure 2-15 displays the origin-destination flows for peak-period trips throughout the region. In general, peak period travel patterns are similar to all-day travel patterns, with the highest flows in central Richmond, northwestern Henrico County, and northern and central Chesterfield County. During the peak period, express bus routes connect these areas to downtown Richmond, but no service is offered between the suburbs.

Figure 2-13: Peak Period Trip Origins



Peak Period Trip Origins per Acre

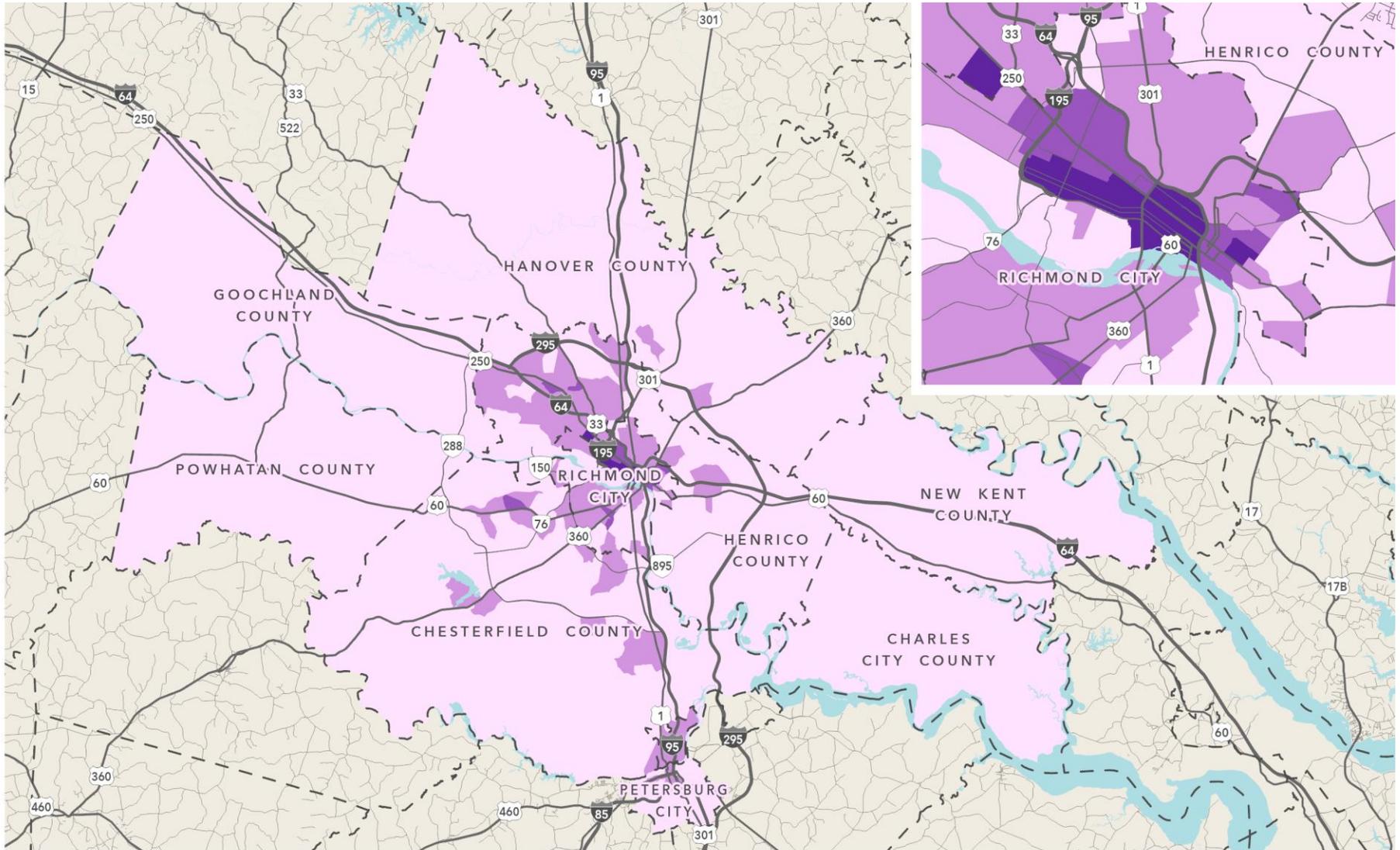


--- Jurisdiction Boundary

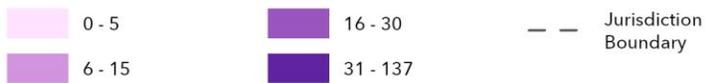


Source: Replica Origin-Destination Trips, March 2023 Typical Weekday

Figure 2-14: Peak Period Trip Destinations

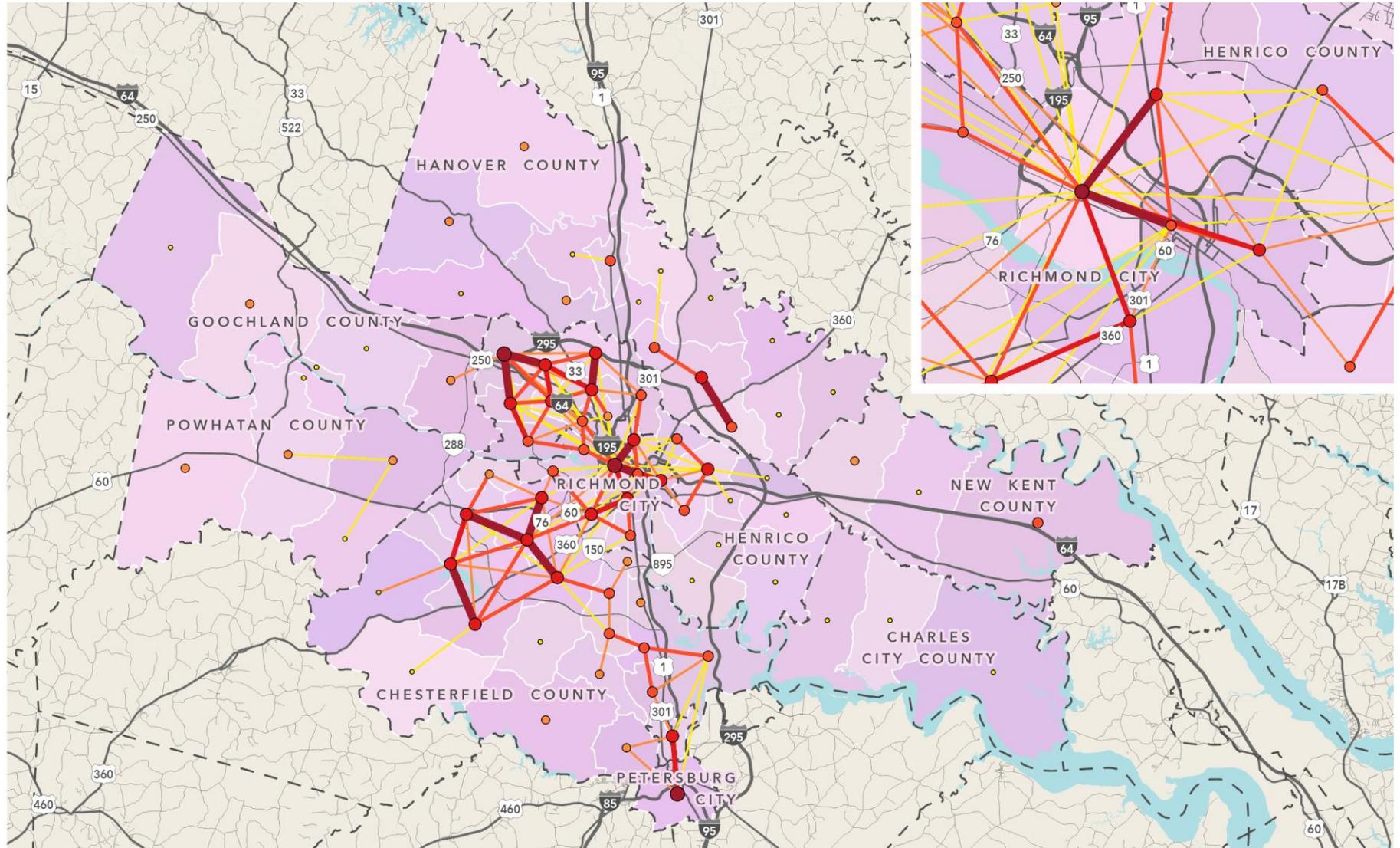


Peak Period Trip Destinations per Acre



Source: Replica Origin-Destination Trips, March 2023 Typical Weekday

Figure 2-15: Peak Period Travel Flows

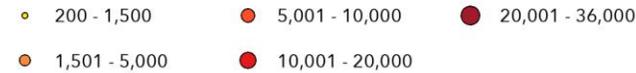


Peak Period Travel Flows

Inter-Zone Trips



Intra-Zone Trips



Jurisdictions

Zones



Source: Replica Origin-Destination Trips, March 2023 Typical Weekday

2.2.2. Transit Demand and Underserved Area Opportunities for Improvement

POPULATION AND EMPLOYMENT TRENDS

The analysis of population density and relative population growth identified potential opportunities for improving GRTC service and could provide insight into future service needs as Greater Richmond grows.

CURRENT DENSITY

The densest employment and population areas are closest to the core of Richmond, with the most pronounced employment density in Downtown. This area is currently served by the core of GRTC's fixed-route bus and BRT network.

Several higher employment density pockets outside of Richmond may present opportunities for additional fixed-route transit coverage, including:

- Areas with moderate employment density currently unserved in northwest Henrico County, largely along Cox Road in Innsbrook.
- Areas with moderate employment density currently unserved surrounding Chesterfield County's government services agencies in the community of Chesterfield.

Several higher population density areas outside of Richmond may present opportunities for additional fixed-route transit coverage, including:

- Housing clusters with high population density currently unserved near Chippenham Parkway and Belmont Road.
- Apartment complexes with high population density in Tuckahoe Village West.

While several other suburbs of Richmond have moderate population density, transit propensity in these areas may not necessarily justify fixed-route transit service.

PROJECTED GROWTH

Analysis of Greater Richmond's projected growth rates through 2045 suggest possible areas for transit service improvement, including:

- Areas immediately south of Richmond International Airport that show a high rate of employment growth just out of reach of Routes 7A, 7B, 56, and 91.
- Areas on the edge of the northwest Henrico County border in Goochland and Hanover counties that show high rates of growth outside GRTC's current service area.
- Areas along the James River in southeast Chesterfield County with high rates of employment growth outside the GRTC service area.

TRAVEL FLOWS

Analysis of travel flows identified several opportunities for additional service in the study area, potentially serving both peak and all-day destinations.

ALL-DAY TRIP ORIGIN AND DESTINATION DENSITY

The current GRTC service area covers all areas with the most significant trip origin and destination density, including downtown Richmond, the East End, the West End, the Fan, the Museum/Arts District, and Willow Lawn. Areas with moderate density (greater than 15 trips per acre) not currently served by transit include:

- Lakeside and Laurel, between US 1 (Brook Road) and Staples Mill Road.
- Innsbrook, north of Broad Street.
- Western Tuckahoe/Tuckahoe Village.
- Midlothian, along Midlothian Turnpike west of Powhite Parkway.
- Residential area west of Belmont Road & Chippenham Parkway in Chesterfield County.
- Residential area southeast of Hopkins Road and Chippenham Parkway in Chesterfield County.
- Chesterfield County's government services agencies in the community of Chesterfield.

ALL-DAY TRAVEL FLOWS

While much of the areas with higher all-day travel flows in Richmond are in areas currently served by GRTC, several inter-suburban flows may provide opportunities for service between destinations in Greater Richmond's suburban counties, between:

- Mechanicsville and Atlee in Hanover County.
- Swift Creek/Woodlake, Bon Air, Manchester, and Rockwood in central and northern Chesterfield County.

Moderately significant travel flows span longer distances, including between Richmond and suburbs in Chesterfield and Henrico Counties. These all-day travel flows may be more resource-intensive to address than higher flows over shorter distances.

PEAK PERIOD ORIGIN AND DESTINATION DENSITY

While largely similar to all-day trip density, peak period trip density is less concentrated on VCU, with trip termini spread out between Downtown Richmond and West End. Most areas with moderately high trip density (greater than 15 trips per acre) are covered by current transit service.

In addition to the areas already flagged as moderately dense for all-day trips with no transit service, the following areas with moderate peak period trip density (greater than 5 trips per acre) and no service include:

- Atlee and Mechanicsville in Hanover County.
- Shopping destinations along US 1, between Parham Road and the former Virginia Center Commons Mall.

PEAK PERIOD TRAVEL FLOWS

Peak period travel flows show similar patterns to all-day travel flows, though peak period flows appear to be more concentrated between the following areas with minimal or no service:

- Richmond and northern Henrico County.
- Richmond and central and northern Chesterfield County (partially served by limited-stop Route 82x).
- Mechanicsville and Atlee in Hanover County.

As with all-day flows, currently unserved moderate peak-period flows stretch over longer spans between Richmond and suburbs to the north and northwest.

2.3. Performance Evaluation

This section measures the performance of individual transit services provided by GRTC, including fixed-bus routes, BRT, demand response, and vanpool. By comparing performance between routes, between services, and across years, opportunities for improvement were identified for specific aspects of GRTC's transportation services.

2.3.1. Performance Evaluation

The performance evaluation includes a route-level analysis of metrics on ridership, cost, and safety, along with a trend analysis of GRTC's operations and efficiency over a three-year period.

ROUTE PERFORMANCE EVALUATION

The following charts display and discuss the efficiency of all routes operated by GRTC in FY 2022. Routes that were discontinued mid-year were excluded from the analysis. The route performance metrics were organized into four categories: ridership performance, cost efficiency, safety, and system accessibility.

RIDERSHIP PERFORMANCE

Figure 2-16 shows the average passengers per vehicle revenue hour for all fixed bus routes in FY 2022. GRTC Pulse had the highest performance, exceeding 35 passengers per revenue hour, followed by other high-frequency routes and route families including Routes 1, 1A/B/C, 3A/B, and 5. Express routes 82x, 29x, and 64x were in the top half of routes, while route 95x had fewer passengers per revenue hour. The lowest performing routes were 76 and 77, which both operate in Richmond's West End. Across all routes, there was an average of 11.56 passengers per vehicle revenue hour.

Figure 2-16: Passengers per Revenue Hour by Route, FY 2022

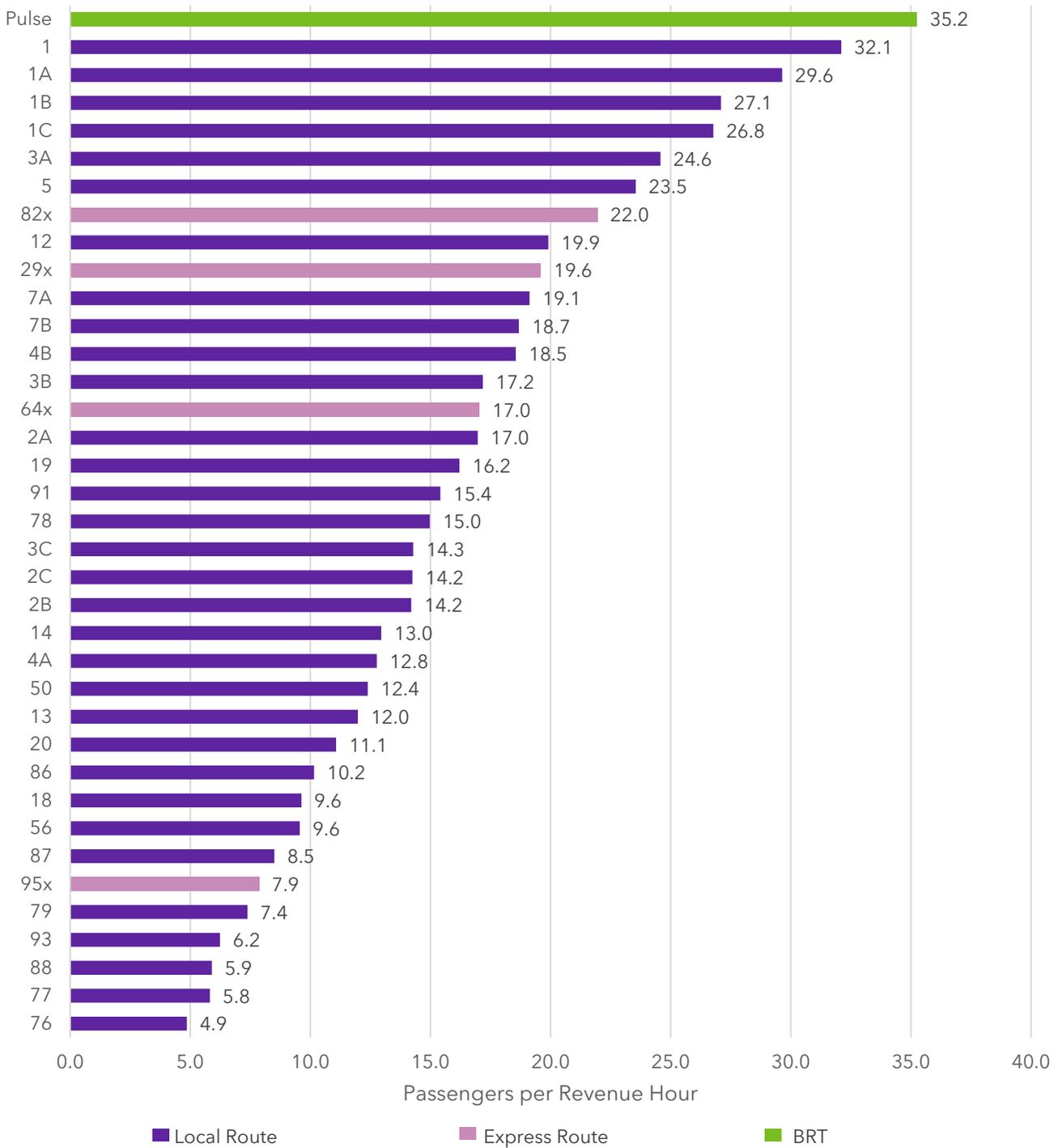


Figure 2-17 shows the average passengers per vehicle revenue mile by route for FY 2022. The Pulse carried the most passengers per mile at 3.77, which was more than twice the systemwide average of 1.45 passengers per revenue mile. Nineteen local routes and all of the express routes carried fewer passengers than the systemwide average. Routes 1, 1A, and 5 were the highest-performing local routes, while routes 76, 88, and the express Route 95x were the lowest performing routes. Similar to passengers per revenue hour, higher frequency routes generally had the highest passengers per revenue mile.

Figure 2-17: Passengers per Revenue Mile by Route, FY 2022

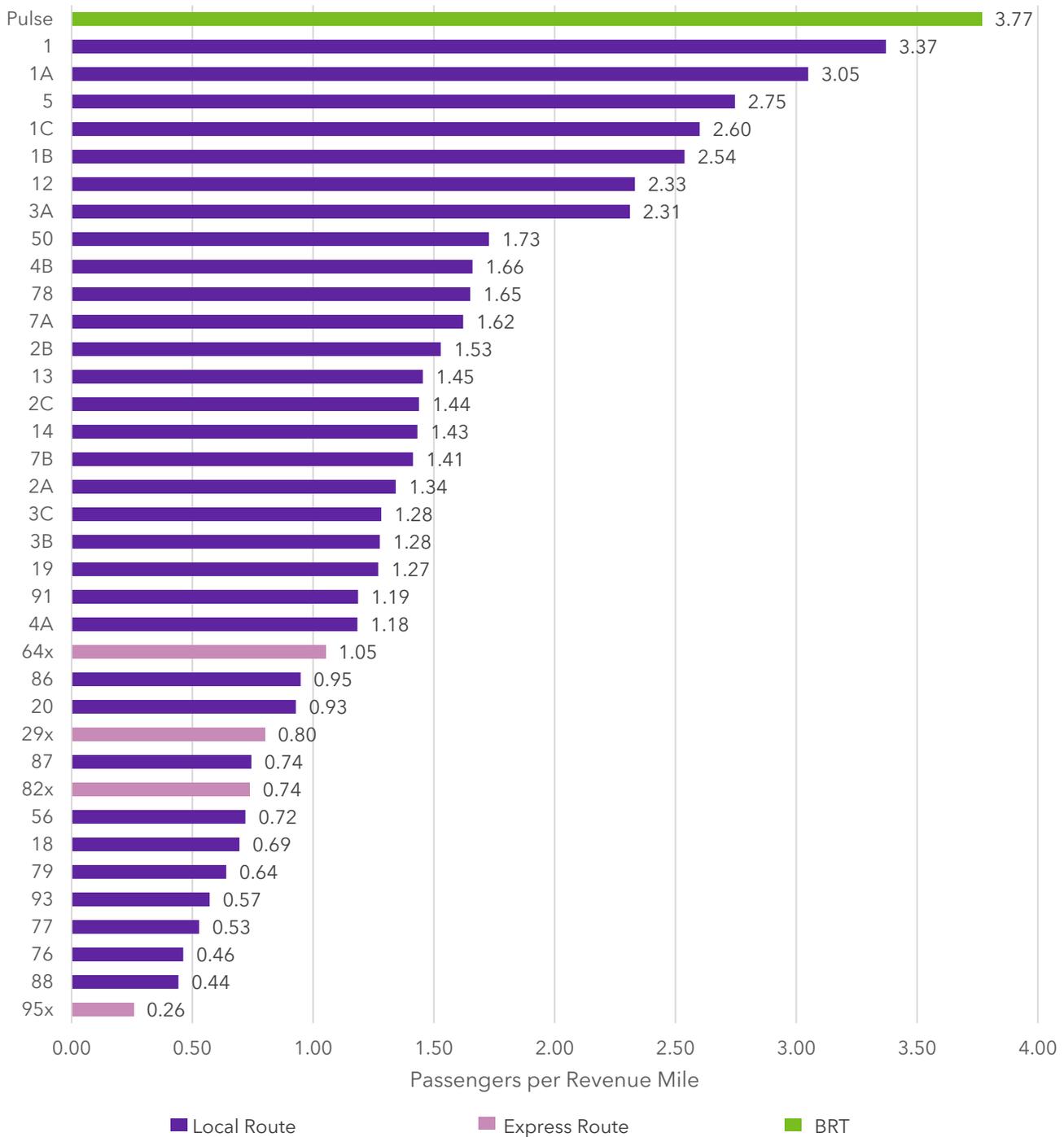
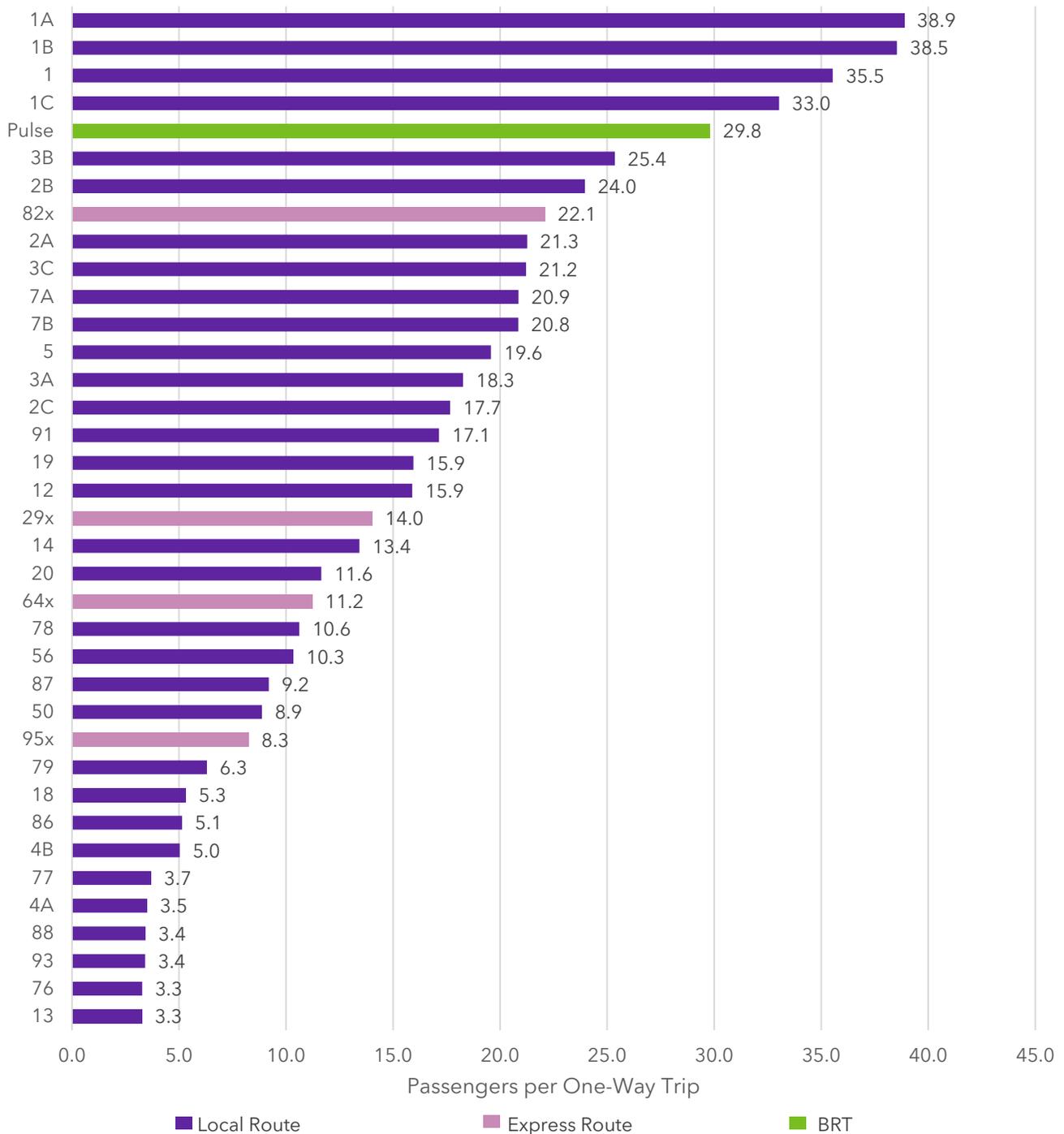


Figure 2-18 displays the average number of passengers each route served per one-way trip during FY 2022. The average number of passengers per trip for all fixed routes was 15.6. Route 1A carried the most with nearly 39 passengers per trip, followed by Routes 1, 1B, and 1C as the next three highest-performing routes. Collectively, the Route 1A/B/C family had the highest number of daily trips and the highest ridership, resulting in high operational efficiency. The Pulse carried 29.8 passengers per trip on average, which made it the fifth-highest performing route. Express Routes 29x, 64x, and 95x performed below the

systemwide average, while Route 13 ranked the lowest at 3.3 passengers per trip.⁶ Other low-performing routes include 4A and 4B in the East End, as well as 88 and 93⁷, which have limited levels of service.

Figure 2-18: Passengers per One-Way Trip by Route, FY 2022



COST EFFICIENCY

Figure 2-19 displays the operating cost per passenger by route for FY 2022. The systemwide average was \$11.32 per passenger. The Pulse cost \$3.00 per passenger, which was the lowest cost out of all fixed routes.

⁶ Route 13 was discontinued in May 2023 and replaced by Routes 4A and 4B.

⁷ Route 93 was eliminated in January 2024 and replaced with the Azalea LINK microtransit zone.

Other cost-efficient routes include higher-frequency Routes 1A/B/C, 3A/B, and 5. Express Route 95x was by far the most expensive per passenger, costing \$44.34 per passenger. Most routes with a high cost per passenger had limited levels of service, such as Routes 56, 76, 77, 79, and 88.

Figure 2-19: Operating Cost per Passenger by Route, FY 2022

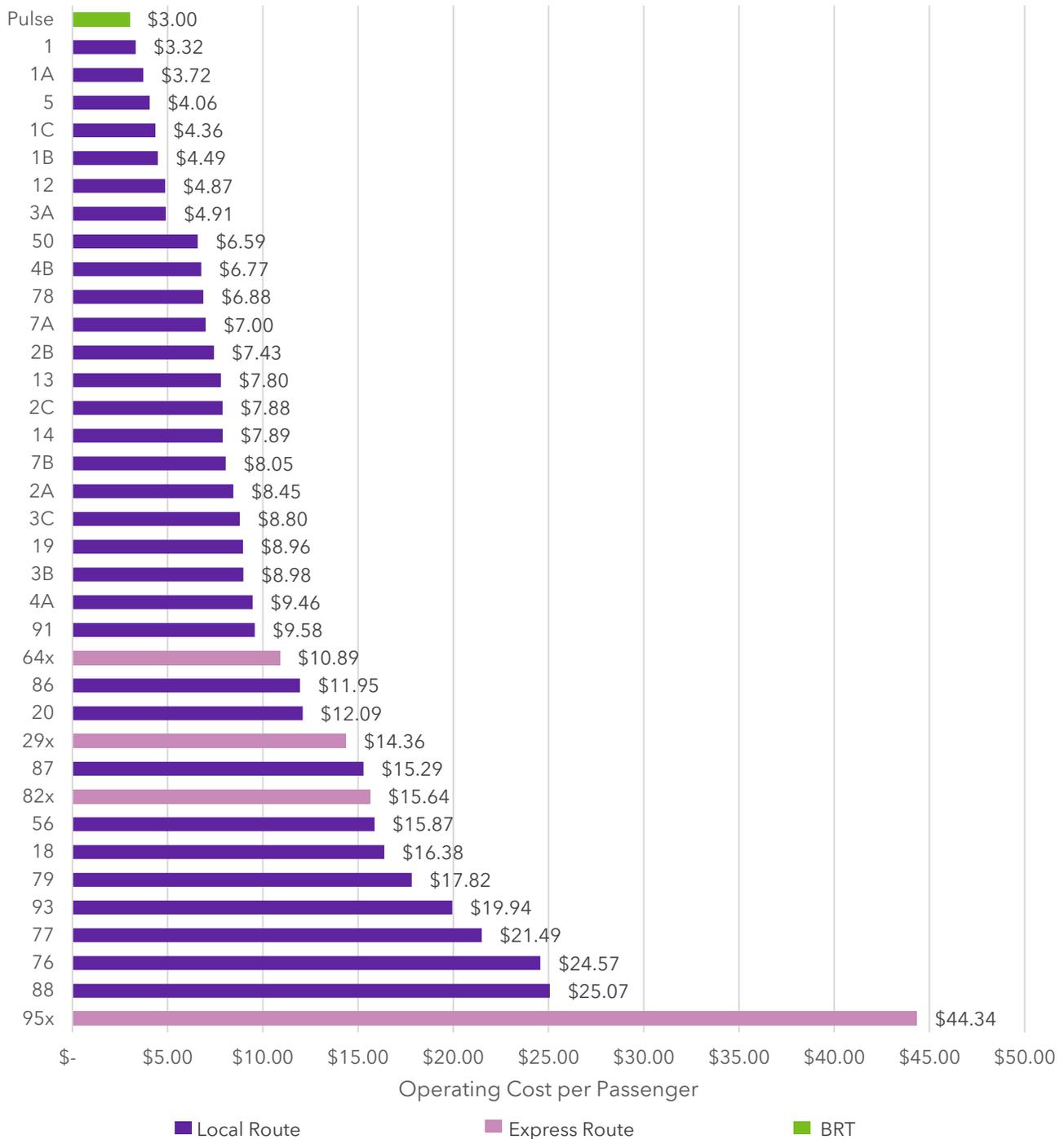
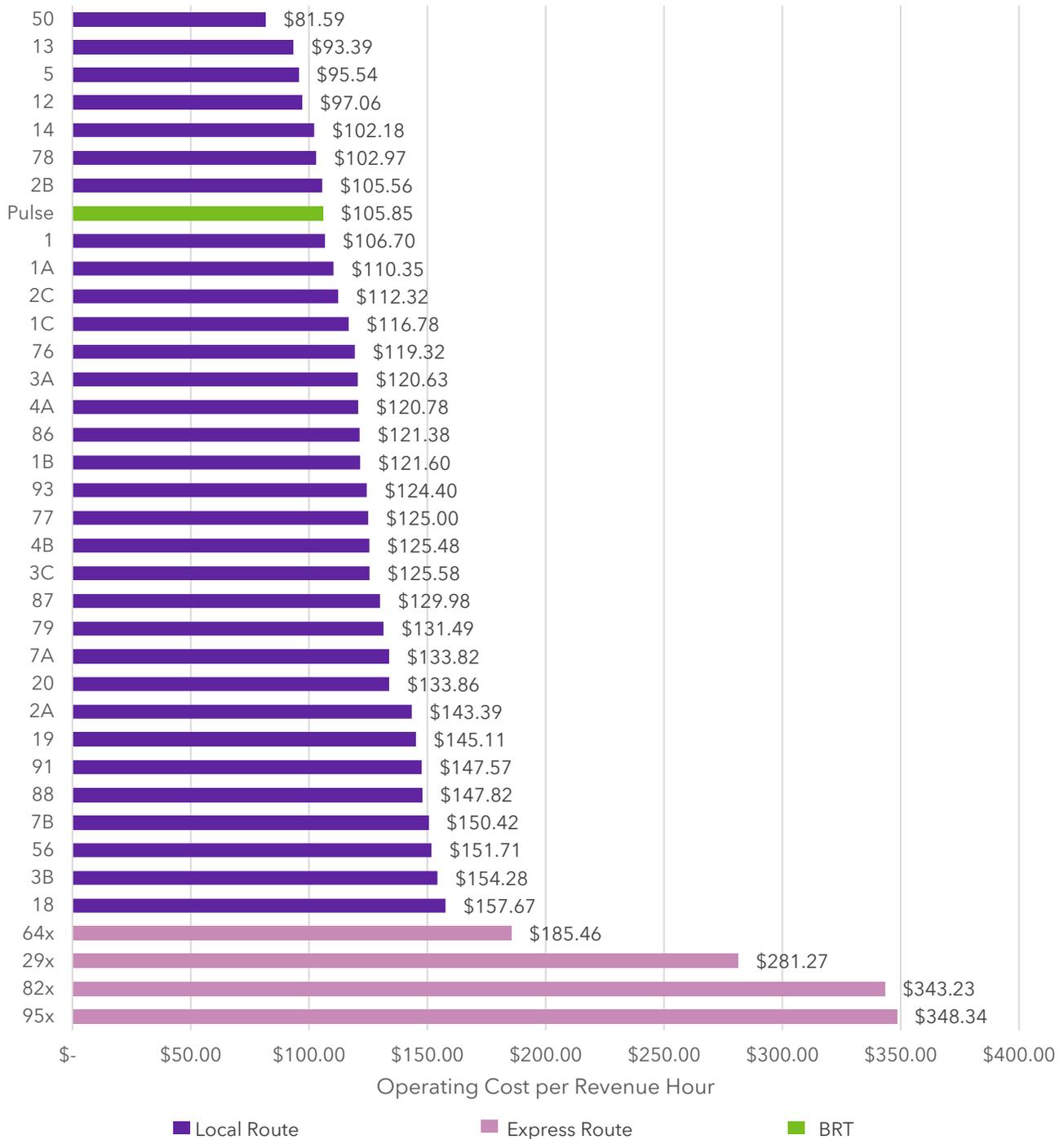


Figure 2-20 displays the operating cost per vehicle revenue hour by route for FY 2022. The systemwide average was \$141.08. The cheapest route in the system was Route 50, which cost \$81.59 per revenue hour. The Pulse was cheaper than the systemwide average, costing \$105.85 per revenue hour. Fixed-route operating costs are calculated according to revenue miles, resulting in cost per revenue hour rankings that often reflect the average travel speed of each route. Some routes with a low cost per revenue hour were the

slowest routes in the system, such as routes 5, 12, 14, and 50. The four express routes, which operate at high speeds, were the most expensive routes in the system, ranging from \$185.46 per revenue hour for Route 64x to \$348.34 per revenue hour for Route 95x.

Figure 2-20: Operating Cost Per Revenue Hour, FY 2022



SAFETY

In addition to route performance, GRTC tracks the frequency and nature of safety incidents that occur during service or otherwise involving GRTC vehicles, facilities, or staff. **Table 2-22** shows the number of

vehicle collisions, passenger injuries, and staff injuries each year from FY 2019 to FY 2022. Over time, the number of safety incidents has fluctuated relative to the amount of service provided each year. All three indicators reached a minimum in FY 2021, before increasing in FY 2022 to levels slightly higher than in FY 2019. In addition to collisions and injuries, GRTC also experienced one pedestrian fatality in FY 2019 and one third-party fatality in FY 2020.

Table 2-22: Safety Performance Indicators, FY 2019-FY 2022

Safety Performance Indicator	FY 2019	FY 2020	FY 2021	FY 2022
Vehicle Collisions	367	314	305	384
Passenger Injuries	137	92	75	149
Staff Injuries	41	41	37	47

SYSTEM ACCESSIBILITY

As of May 2023, the fixed-route bus system included over 1,600 bus stops across all 36 routes. **Table 2-23** summarizes access to transit by the number of residents and jobs within ¼-mile walking distance of fixed-route bus stops. Over 243,000 residents and nearly 211,000 jobs throughout the City of Richmond, Henrico County, and Chesterfield County have access to fixed-route transit, or 26 percent of residents and 41 percent of jobs within the three-jurisdiction area. Minority and low-income residents have enhanced access to transit relative to the population as a whole, with 34 percent of minority residents and 42 percent of low-income households located within ¼-mile walking distance of a bus stop.

Table 2-23: Population and Jobs within ¼-mile Walking Distance to Fixed-Route Transit

	Total (Richmond City, Henrico County, Chesterfield County)	Number Within ¼-mile Walking Distance of Fixed-Route Bus Stops	Percent of Total
Total Population	907,809	243,151	26%
Minority Population	428,520	145,578	34%
Low-Income Households	95,502	40,123	42%
Total Jobs	511,231	210,956	41%

TREND ANALYSIS

This section describes the changes in GRTC’s service between the fiscal years 2019 and 2021. In order to identify trends and areas for improvement, this analysis evaluates changes in the service area, the amount of service provided by each mode, the ridership for each mode, and the costs and revenues of each mode. With the exception of the service area characteristics, each metric separately analyzes the four modes of service: fixed-route bus, vanpool, demand response (paratransit), and bus rapid transit (BRT).

SERVICE AREA CHARACTERISTICS

Table 2-24 shows the changes in size and population of the GRTC service area from FY 2019 to FY 2021. Due to the discontinuation of express routes 23x, 26x, 27x, and 28x, the area covered by GRTC service shrank from 227 to 185 square miles. However, the population covered by the system increased by ten percent in FY 2020 and held steady in FY 2021. Combined, these changes resulted in steady increases in population density from 1,980 people per square mile in FY 2019 to 2,661 in FY 2021.

Table 2-24: Service Area Characteristics (FY 2019-FY 2021)

Service Area Characteristic	FY 2019	FY 2020	FY 2021
Area (sq. mi.)	227	216	185
Percent change from previous year	-	-5%	-14%
Population	449,572	492,914	492,198
Percent change from previous year	-	10%	-0.15%
Population Density (per sq. mi.)	1,980	2,282	2,661
Percent change from previous year	-	15%	17%

OPERATIONAL STATISTICS

Figure 2-21 and **Table 2-25** show vehicle revenue miles by mode from FY 2019 to FY 2021. In FY 2019, vanpool had the most revenue miles at nearly 4.5 million miles. However, vanpool service decreased in FY 2020 and FY 2021, while fixed-route bus service remained relatively constant and became the highest mode in revenue miles. Decreases in vanpool service were likely caused by reduced demand from commuters during the COVID-19 pandemic. BRT revenue miles also remained constant relative to fixed-route revenue miles, with roughly one-tenth as many revenue miles as fixed-route bus service. Demand response revenue miles decreased by more than 300,000 from FY 2019 to FY 2021. Systemwide revenue miles have decreased significantly since FY 2019, primarily due to the decrease in vanpool service.

Figure 2-21: Vehicle Revenue Miles by Mode (FY 2019-FY 2021)

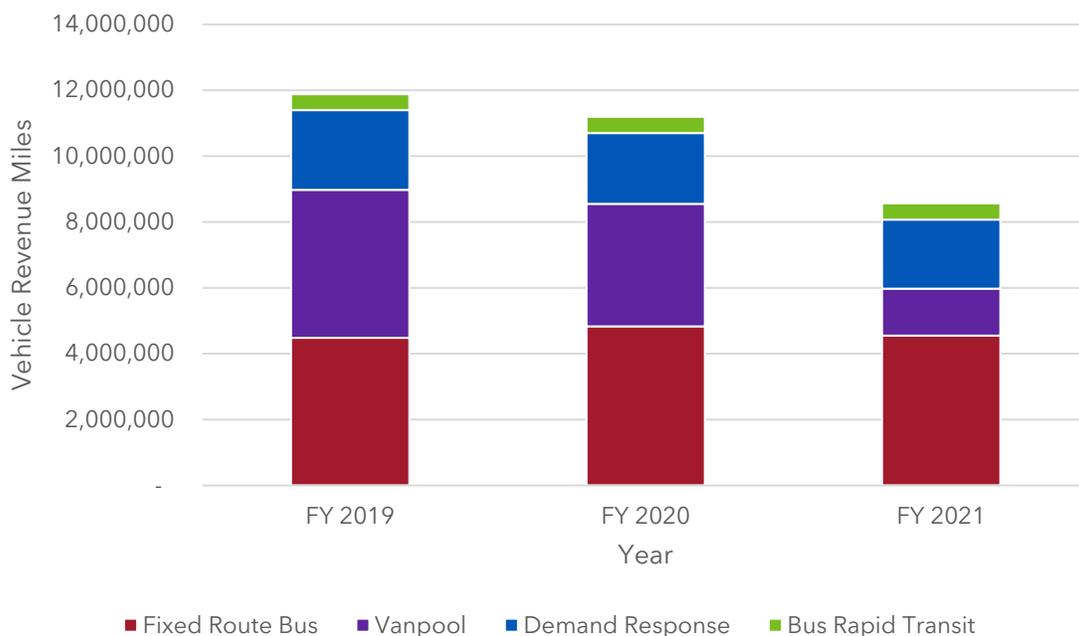


Table 2-25: Vehicle Revenue Miles by Mode (FY 2019-FY 2021)

Mode	FY 2019	FY 2020	FY 2021
Fixed Route Bus	4,484,063	4,829,418	4,550,673
Percent change from previous year	-	8%	-6%
Bus Rapid Transit	482,653	493,643	494,791
Percent change from previous year	-	2%	0.2%
Vanpool	4,490,742	3,719,414	1,426,102
Percent change from previous year	-	-17%	-62%
Demand Response	2,421,548	2,150,874	2,095,057
Percent change from previous year	-	-11%	-3%
Total	11,879,006	11,193,349	8,566,623
Percent change from previous year	-	-6%	-23%

Figure 2-22 and **Table 2-26** describe the vehicle revenue hours by mode from FY 2019 to FY 2021. Similar to revenue miles, the systemwide revenue hours have significantly decreased since FY 2019 due to decreases in vanpool service. However, vanpool represented a smaller proportion of revenue hours than the fixed-route bus and demand response modes compared to in the revenue mile analysis. Revenue hours for fixed-route bus and BRT increased by 8.0 percent and 2.4 percent in FY 2020, respectively, then decreased slightly in FY 2021. Demand response revenue hours decreased from FY 2019 to FY 2021, matching its trend for revenue miles.

Figure 2-22: Vehicle Revenue Hours by Mode (FY 2019-FY 2021)

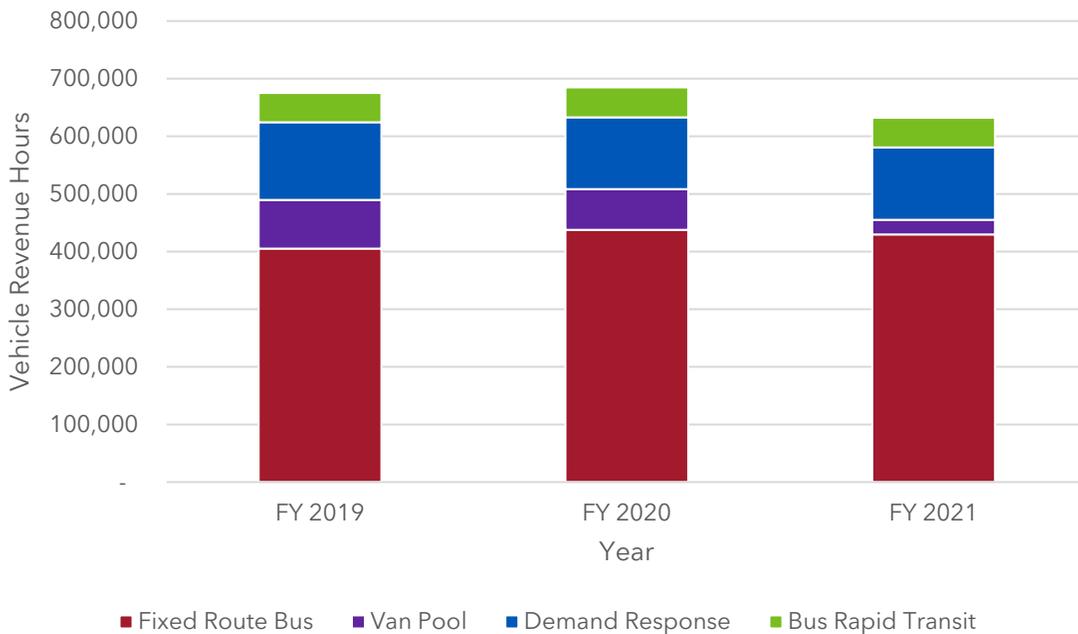
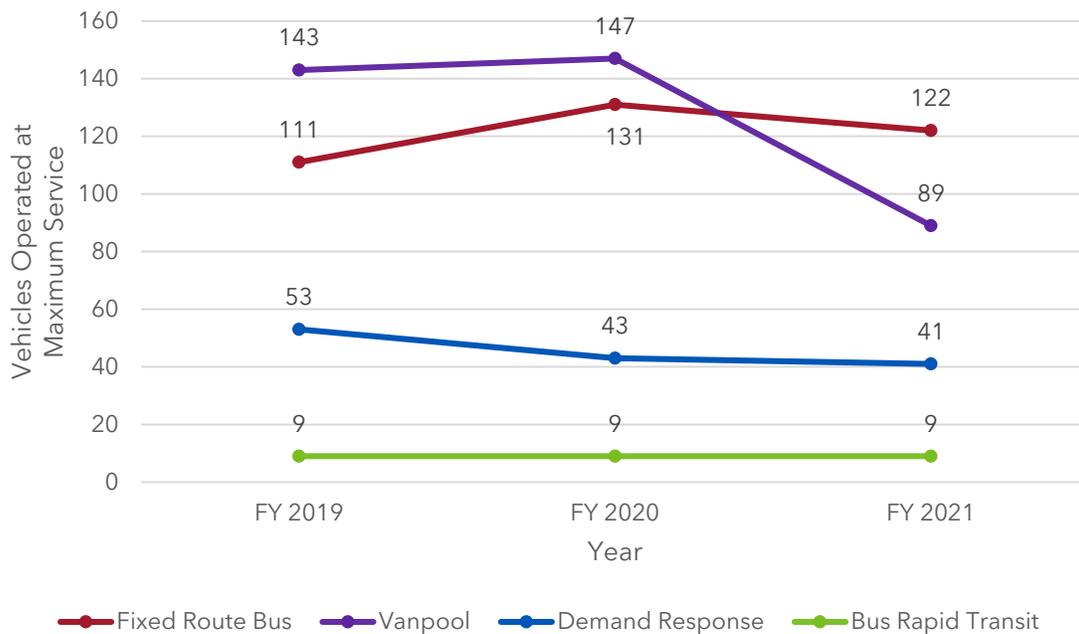


Table 2-26: Vehicle Revenue Hours by Mode (2019-2021)

Mode	FY 2019	FY 2020	FY 2021
Fixed Route Bus	405,179	437,651	429,733
Percent change from previous year	-	8.0%	-1.8%
Bus Rapid Transit	50,732	51,971	51,418
Percent change from previous year	-	2.4%	-1.1%
Vanpool	84,557	70,771	25,543
Percent change from previous year	-	-16.3%	-63.9%
Demand Response	134,778	124,436	125,385
Percent change from previous year	-	-7.7%	0.8%
Total	675,246	684,829	632,079
Percent change from previous year	-	1.4%	-7.7%

Figure 2-23 shows the vehicles operated at maximum service (VOMS) by mode during the three-year period. Vanpool and fixed-route bus VOMS peaked in FY 2020 before falling in FY 2021. Vanpool experienced the sharpest decline in FY 2021, reflecting the decreases in revenue miles and revenue hours for that mode, all of which reflect changes in commuting and teleworking patterns due to COVID-19. VOMS for demand response also decreased along with its reduced revenue miles and revenue hours. The peak vehicle usage for BRT remained the same in all three years, at nine vehicles. Systemwide, VOMS increased by 14 vehicles in FY 2020 and decreased by 59 vehicles in FY 2021.

Figure 2-23: Vehicles Operated at Maximum Service (FY 2019-FY 2021)



RIDERSHIP

Figure 2-24 and **Table 2-27** show the total number of passengers served annually by each service mode. Systemwide ridership increased by over 30 percent from FY 2019 to a peak of 10.9 million passengers in FY

2020 and subsequently fell below FY 2019 levels to 7.8 million passengers in FY 2021 as a result of the COVID-19 pandemic. The increase in FY 2020 came entirely from fixed-route bus service, which experienced a 27 percent increase in ridership due to improved service and the elimination of passenger fares in March 2020, while all other modes experienced a decrease in ridership. Vanpool ridership decreased the most over the three-year period, falling by over two-thirds from FY 2019 to FY 2021.

Figure 2-24: Total Ridership by Mode (FY 2019-FY 2021)

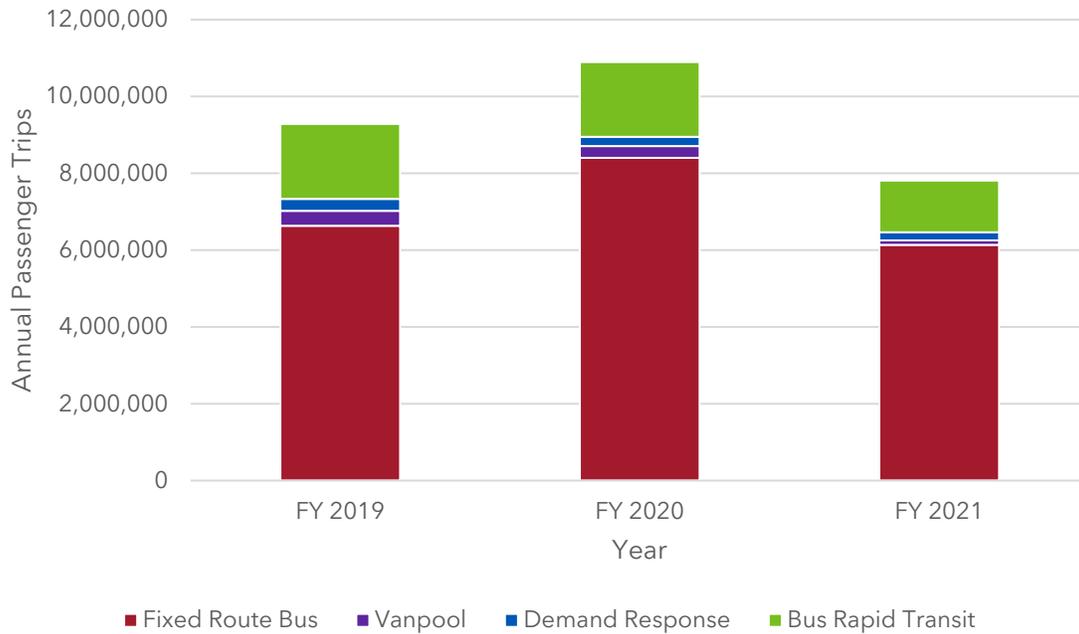


Table 2-27: Total Ridership by Mode (FY 2019-FY 2021)

Total Ridership	FY 2019	FY 2020	FY 2021
Vanpool	387,207	306,012	117,134
Percent change from previous year	-	-21%	-62%
Bus Rapid Transit	1,951,376	1,947,297	1,345,781
Percent change from previous year	-	-0.2%	-31%
Fixed Route Bus	6,635,010	8,402,371	6,136,309
Percent change from previous year	-	27%	-27%
Demand Response	309,927	238,249	211,297
Percent change from previous year	-	-23%	-11%
Total	9,283,520	10,893,929	7,810,297
Percent change from previous year	-	17%	-28%

Figures 2-24 and 2-25 display the average annual passengers served per vehicle revenue hour and average annual passengers served per vehicle revenue mile by mode, respectively. In both measures, the higher-capacity modes (fixed-route bus and bus rapid transit) carried more passengers per revenue hour and revenue mile than vanpool and demand response. However, the more efficient modes experienced larger fluctuations than demand response and vanpool services, with fixed-route bus increasing significantly in FY

2020 before falling in FY 2021 and BRT falling slightly in FY 2020 before decreasing significantly in FY 2021. These productivity decreases reflect the ridership impact of COVID-19, which caused an overall reduction in travel in Greater Richmond and nationwide. Vanpool efficiency remained around 4.5 passengers per revenue hour and 0.08 passengers per revenue mile each year, while demand response held at approximately 1.9 passengers per revenue hour and 0.11 passengers per revenue mile in the three-year period. By their nature, vanpool and demand response levels of service tend to remain proportional to demand in spite of changes such as the pandemic-related ridership decreases in FY 2021.

Figure 2-25: Passengers per Revenue Hour (FY 2019-FY 2021)

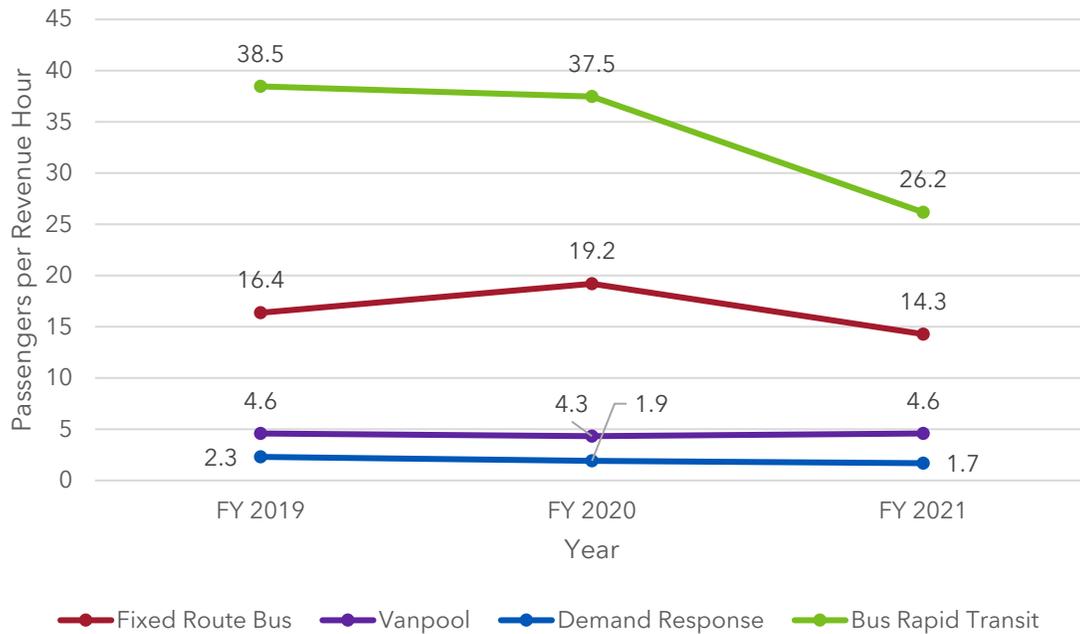
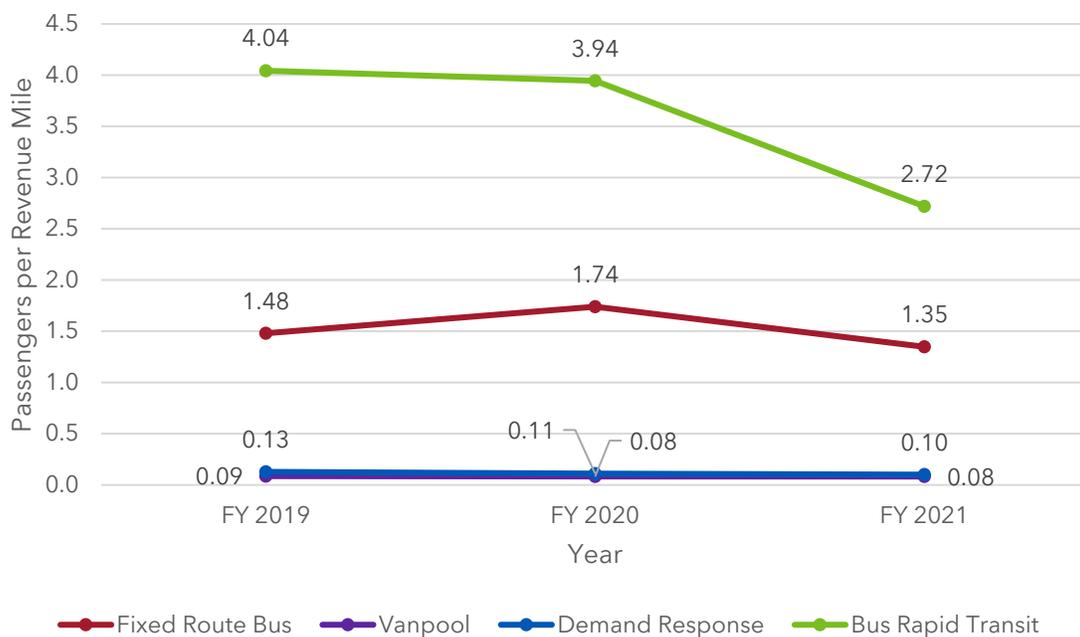


Figure 2-26: Passengers per Revenue Mile (FY 2019-FY 2021)



REVENUE AND COST

Figure 2-27 and **Table 2-28** show the total annual operating cost for each service mode. The systemwide operating cost for GRTC steadily increased from \$54.5 million in FY 2019 to \$58.4 million in FY 2021, despite the reduction in revenue hours and revenue miles. The total operating cost is largest for fixed-route bus service, followed by demand response, BRT, and vanpool.

Figure 2-27: Operating Cost by Mode (FY 2019-FY 2021)

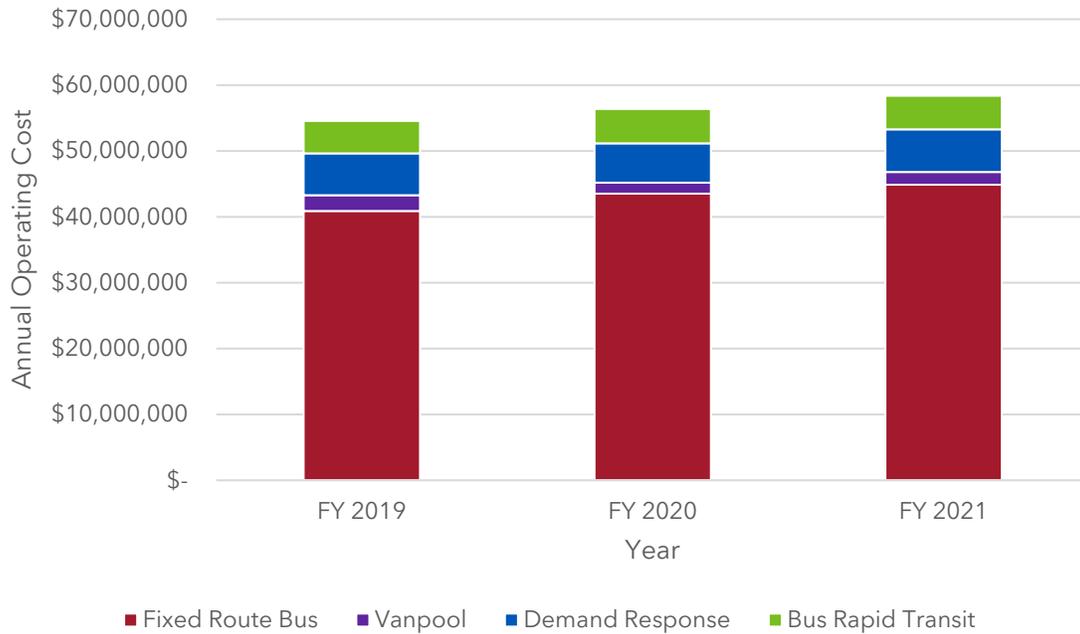
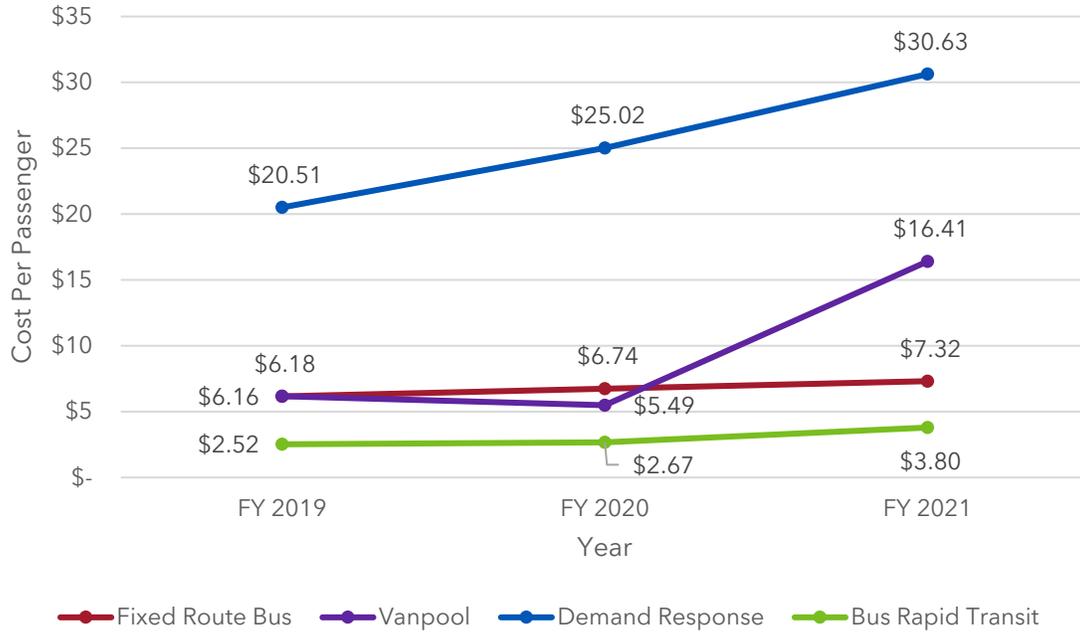


Table 2-28: Operating Cost by Mode (FY 2019-FY 2021)

Total Operating Cost	FY 2019	FY 2020	FY 2021
Vanpool	\$2,391,130	\$1,680,102	\$1,921,768
Bus Rapid Transit	\$4,924,055	\$5,206,479	\$5,107,888
Fixed Route Bus	\$40,887,936	\$43,523,351	\$44,889,232
Demand Response	\$6,355,789	\$5,961,289	\$6,471,348
Total	\$54,558,910	\$56,371,221	\$58,390,236

Figure 2-28 shows the average annual operating cost per passenger by mode. An examination of the cost per passenger shows that modes that are designed to move large numbers of people, like bus rapid transit and fixed-route service, had lower costs per passenger and didn't experience much change during the study period. However, the operating cost per passenger increased notably for vanpool and demand response service. Demand response cost per passenger increased by approximately 50 percent from FY 2019 to FY 2021 and the vanpool cost per passenger almost tripled between FY 2020 and FY 2021, likely due to decreases in ridership caused by COVID-19 on both modes. Overall, demand response is the most expensive mode by cost per passenger, due to the nature of its curb-to-curb service for individual passengers.

Figure 2-28: Operating Cost per Passenger Trip (FY 2019-FY 2021)



Figures 2-28 and 2-29 show the annual fare revenue and the farebox recovery ratio for each service mode from FY 2019 to FY 2021. Farebox recovery ratio represents the percentage of operating costs that are not covered by fare revenue. In FY 2019 and FY 2020, vanpool was the only transit mode for which revenues exceeded the operating costs. The other modes collected fare revenues at or below 16 percent of their operating costs in FY 2019, decreasing to 13 percent and below in FY 2020. Passenger fares were eliminated for fixed-route bus, BRT, and demand response services in FY 2021, leaving vanpool as the only mode to generate any significant revenue from passengers in FY 2021.

Figure 2-29: Fare Revenue by Mode (FY 2019-FY 2021)

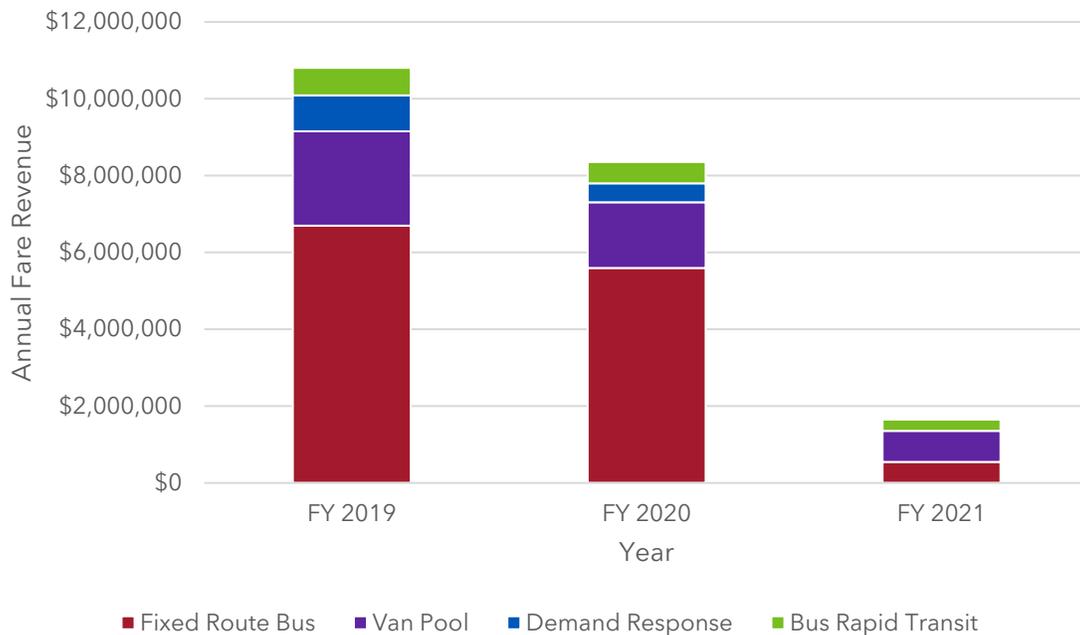


Figure 2-30: Farebox Recovery Ratio (FY 2019-FY 2021)

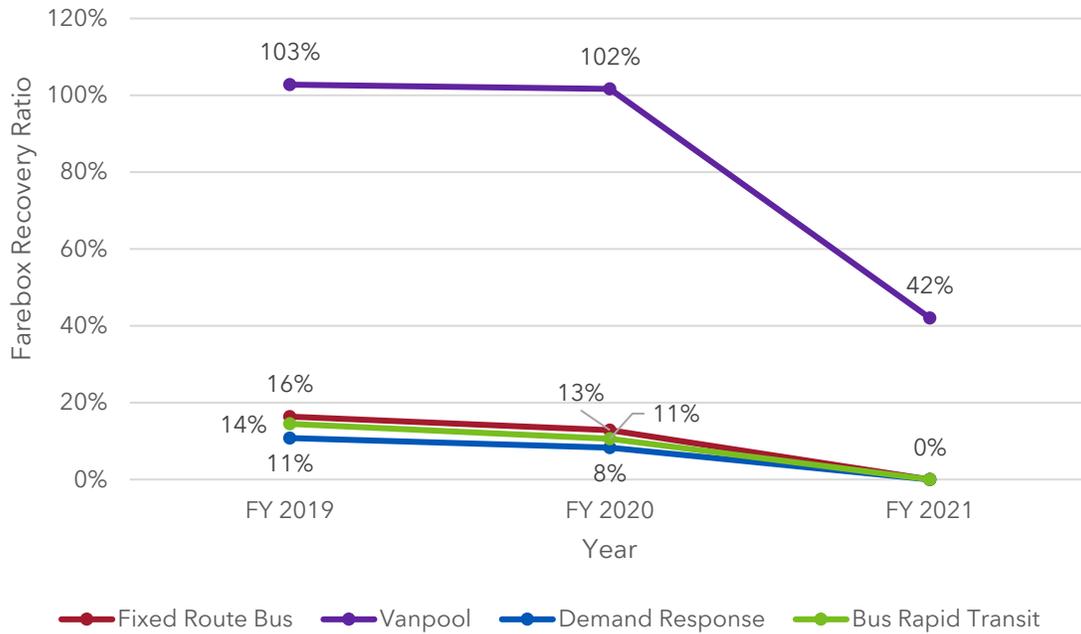


Table 2-29 displays the operating subsidy per passenger, which is the cost of each passenger trip that is not covered by fare revenues. There was no subsidy for vanpool services in FY 2019 and FY 2020, until ridership declined in FY 2021 and the subsidy rose to \$9.51 per passenger trip, higher than BRT and fixed-route bus. The BRT subsidy per passenger rose slightly from \$2.16 in FY 2019 to \$2.39 in FY 2020, then increased by more than a dollar after fares were eliminated in FY 2021. Similarly, fixed-route bus and demand response subsidy per passenger increased significantly with the elimination of passenger fares.

Table 2-29: Operating Subsidy per Passenger (FY 2019-FY 2021)

Operating Subsidy Per Passenger	FY 2019	FY 2020	FY 2021
Vanpool	\$0.00	\$0.00	\$9.51
Bus Rapid Transit	\$2.16	\$2.39	\$3.80
Fixed Route Bus	\$5.15	\$4.51	\$7.32
Demand Response	\$18.29	\$22.94	\$30.63

2.3.2. Performance Based Opportunities for Improvement

The following section uses data from **Section 2.3.1**, particularly the route performance data, to identify routes that could be improved to meet applicable performance standards.

RIDERSHIP OPPORTUNITIES FOR IMPROVEMENT

GRTC measures ridership performance by three metrics: passengers per revenue hour, passengers per revenue mile, and passengers per one-way trip. Standards are set by route type.

ROUTES WITH LOWER RIDERSHIP PERFORMANCE

Table 2-30 contains the standards by route type and routes not meeting their standards.

Routes that run through western Richmond/Western Henrico County (e.g., Routes 18, 76, 77, and 79) tended to be lower ridership performers. These routes also have more limited service in terms of lower levels of evening service or longer headways during the day, similar to Routes 56, 87, and 88. These routes should be examined for potential service reduction, discontinuation, or optimization to include route shortening or adding short turns.

A handful of Arterial routes did not meet their ridership standards; some of these are trunk-and-branch style routes while others are standalone routes. For trunk-and-branch style routes with low performance (Routes 2B, 2C, 3A, 3B, and 3C), ridership by segment can be examined to better understand whether lower performance is occurring on segments of the trunk or branch portions of the routes; adjusting service headways or span to better match demand could potentially improve ridership. Other Arterial routes not meeting their ridership standards included Routes 5, 14, 19, and 50. While all the Arterial routes listed here did not meet their standards, these routes tended to have higher levels of ridership compared to other routes in the system and were still performing relatively well. The Arterial standards are set higher in order to encourage higher productivity on routes with higher levels of service. In addition to examining the levels of service, route design (directness and deviations) can be evaluated.

Express Route 95x was consistently a low ridership performer and should be evaluated for whether service can be adjusted to better optimize ridership.

Routes which fell short of their standards across two or three of the ridership measures, which may warrant extra attention for consideration of improvements, include:

- **Arterial:** Routes 2C, 3C, 14, 19, 50
- **Community Radial:** Routes 76, 77, 79
- **Circulator/Feeder/Connector:** Routes 18, 88
- **Express:** Route 95x

The Pulse was just below its passengers per one-way trip standard (by 0.2) and does not warrant attention for ridership improvement at this time.

Table 2-30: Ridership Opportunities for Improvement

Route Type	Passengers per Revenue Hour		Passengers per Revenue Mile		Passengers per One-Way Trip	
	Standard	Routes Below Standard	Standard	Routes Below Standard	Standard	Routes Below Standard
BRT	30	-	3.5	-	30	Pulse
Arterial	15	2B, 2C, 3C, 14, 50	1.3	3B, 3C, 19	20	2C, 3A, 5, 14, 19, 50
Community Radial	8	76, 77, 79	0.7	56, 76, 77, 79	10	76, 77, 79, 87
Circulator/Feeder/Connector	10	18, 88	0.7	18, 88	5	4A, 13, 88
Express	18	64x, 95x	0.7	95x	10	95x

ROUTES WITH HIGHER RIDERSHIP PERFORMANCE

Routes with higher performance on ridership metrics can be considered for service expansion. This could include introducing larger vehicles (as fleet capacity warrants) to handle higher passenger loads, or if overcrowding occurs during specific time frames and originates from a specific place (such as a major employment center), supplemental service in the form of additional trips to or from the specific trip generator can reduce crowding. The highest performing routes included GRTC Pulse and Routes 1/A/B/C.

COST-EFFICIENCY OPPORTUNITIES FOR IMPROVEMENT

GRTC measures the cost efficiency of routes through an analysis of the operating cost per passenger by route. Standards are set by route type. The systemwide average for FY 2022 was \$6.46 per passenger.

ROUTES WITH HIGHER OPERATING COST PER PASSENGER

Table 2-31 contains the standards by route type and routes not meeting their standards.

Table 2-31: Cost-Efficiency Opportunities for Improvement

Route Type	Passengers per Revenue Hour	
	Standard	Routes Below Standard
BRT	\$3.00	-
Arterial	\$8.00	2A, 3B, 3C, 7B, 19
Community Radial	\$12.00	20, 56, 76, 77, 79, 87
Circulator/Feeder/Connector	\$12.00	18, 88
Express	\$15.00	82x, 95x

The most expensive route to operate in the GRTC system was express Route 95x (\$44.34 operating cost per passenger). Along with Route 82x (\$15.64), these two express routes did not meet the Express standard of \$15.00. Express route trips should be examined to see if any trip timings can be adjusted to optimize ridership, or eliminated if ridership is too low.

Besides the express routes, other routes with higher costs per passenger have limited levels of service (e.g., longer headways during the day and/or no evening service), such as Routes 18, 56, 76, 77, 79, and 88. These routes tended to have lower levels of ridership per revenue hour which drives up the cost of operation per passenger. These routes should be evaluated for potential service reduction, discontinuation, or optimization to improve performance. Routes could potentially be shortened, realigned, or have short turns added. Routes 20 and 87 have higher levels of service compared to the more limited routes listed above, yet also had higher costs of operation per passenger and lower ridership performance and could be examined in similar ways to the other lower performing routes. All of these routes were not meeting their standards by their route type.

A handful of Arterial routes were not meeting their standard: Routes 2A, 3B, 3C, 7B, and 19. As these routes are meant to carry higher numbers of riders and perform more efficiently within the system, they should be examined for potential service optimization to improve efficiency.

ROUTES WITH LOWER OPERATING COST PER PASSENGER

Routes with lower operating cost per passenger can be considered for service expansion. These routes operate efficiently for cost and ridership, and could have their days of service, hours of operation, or coverage expanded based on analysis. The highest performing routes include GRTC Pulse and Routes 1/A/B/C, 3A, 5, and 12.

IMPORTANT CONSIDERATIONS FOR POTENTIAL SERVICE ADJUSTMENTS

When considering service reduction, discontinuation, or optimization, it is crucial to preserve mobility needs for as many passengers as possible and protect transportation for disadvantaged populations. When reducing service, it is important to prioritize preserving total service coverage, preserving span of service, preserving days of service, and preserving frequency. The first reductions should be to decrease service frequency during low-demand parts of the day and in the off-peak direction. Proposed service reductions must be evaluated for their effects on minority residents, low-income individuals, people with disabilities, and other protected groups. These groups must not be disproportionately negatively affected by service changes.

2.4. Operating and Network Efficiency Evaluation

This section analyzes the operating characteristics of all GRTC transit services in order to evaluate the efficiency of delivered transportation services. Operating efficiency is defined as utilizing limited resources to provide the highest levels of service, serve the most passengers, and ensure reliability of both fixed-route and demand response services. By analyzing the characteristics of each service, this evaluation highlights opportunities for improved efficiencies to both individual routes as well as the overall GRTC transit network.

2.4.1. Efficiency Evaluation

The efficiency of GRTC transit services were evaluated across operating characteristics including level of service, ridership and passenger load, and speed and reliability.

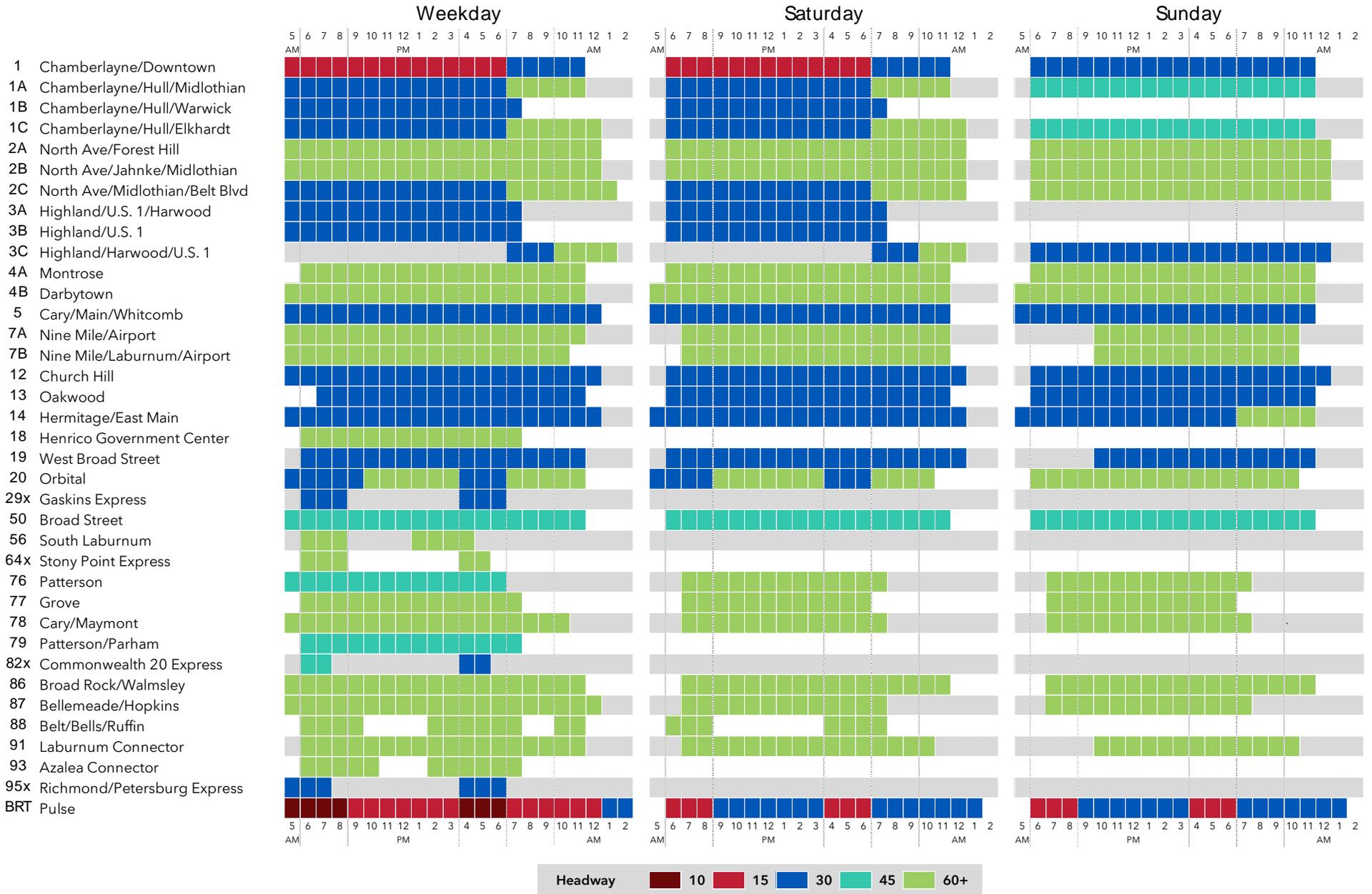
LEVEL OF SERVICE

Figure 2-31 visualizes the level of service for fixed-route services on weekdays, Saturdays, and Sundays as of January 2023. Each cell in the grid depicts one hour of service during the day. The colors that fill each cell indicate the approximate headways for each route during a given hour of the day. For example, the weekday headway for Route 1 during the 5:00 am hour is 15 minutes. Blank cells indicate that a route does not operate during that time. Vertical dashed lines delineate the service periods within each day.

On weekdays, GRTC operates 37 fixed bus routes (including GRTC Pulse), all of which offer peak-period service. The routes with the longest spans operate between 5:00 am and 2:00 am. Headways remain constant throughout the day for most routes, except for Route 20 and Pulse, which have better headways during the morning and afternoon peak periods. Routes 29x, 56, 64x, 82x, and 95x are express routes which only operate during peak times, with headways between 30 and 60 minutes. Only Route 1 and Pulse provide frequent service of 15-minute headways or better; however, some routes work in combination to provide high-frequency service along shared segments. For instance, Routes 3A and 3B combine to provide 15-minute effective headways along much of their alignments, despite having 30-minute headways individually. A similar service pattern is in place for Routes 1A, 1B, and 1C, as well as Routes 2A, 2B, and 2C.

Fewer routes operate on weekends, and those that do tend to have shorter spans and longer headways compared to weekday service. Most routes begin around 6:00 am and end around 11:00 pm on weekends, except for Pulse, which operates until 1:00 am. Routes which do not provide any weekend service are Routes 18, 56, 79, 93, and the four express routes, while routes 1B, 3A, 3B, and 88 do not provide service on Sundays only.

Figure 2-31: Fixed-Route Bus and BRT Level of Service



RIDERSHIP AND MAXIMUM PASSENGER LOAD

When compared to levels of service, the ridership and maximum passenger load patterns on a bus route can be used to evaluate operational efficiencies. A balance between high ridership per trip and minimal overcrowding is important for achieving transit service that serves many passengers with the available resources while avoiding delays and unsafe conditions. The data presented in this section represent September 2022 service.⁸

RIDERSHIP BY PERIOD

Table 2-32 shows the average weekday boardings by service period for each fixed bus route. Darker colored cells represent higher ridership. The midday period is the longest, from 9:00 am to 4:00 pm, and had the highest ridership for most routes. On many routes, the evening period from 7:00 pm to 10:00 pm had similar or greater ridership than the peak periods, which are also three hours long each. Generally, the highest ridership routes had longer spans and better headways (30 minutes or better), such as Routes 1A, 1C, 2C, 3A, 3B, 5, 12, 14, 19, and Pulse. Some routes with relatively high ridership despite hourly headways included Routes 2A, 2B, 7A, and 7B.

Table 2-32: Average Weekday Boardings by Service Period

Route	Average Weekday Boardings						Total
	Early	AM Peak	Midday	PM Peak	Evening	Late Night	
1	70	409	1,271	566	218	86	2,620
1A	36	230	601	236	116	37	1,257
1B	12	163	473	157	-	-	806
1C	-	185	536	271	110	37	1,139
2A	25	119	367	164	92	42	810
2B	42	151	421	150	122	46	932
2C	56	200	612	224	71	38	1,201
3A	56	227	564	223	-	-	1,070
3B	79	281	779	327	-	-	1,466
3C	-	-	-	-	248	79	327
4A	-	25	80	45	26	13	187
4B	8	44	95	44	28	9	228
5	57	297	793	335	172	71	1,725
7A	27	122	421	155	93	17	835
7B	26	128	389	160	84	15	801
12	44	222	641	250	100	52	1,307
13	-	41	107	49	30	9	237
14	23	158	475	188	106	30	981

⁸ Ridership data for Routes 1, 1A, 1B, and 1C represent February 2023 service, in order to reflect service changes which occurred in January 2023.

Route	Average Weekday Boardings						Total
	Early	AM Peak	Midday	PM Peak	Evening	Late Night	
18	-	28	78	38	6	-	151
19	-	168	566	255	131	33	1,154
20	19	102	232	135	50	5	543
29x	-	76	-	74	-	-	151
50	29	92	335	105	56	15	632
56	-	32	25	-	-	-	57
64x	-	32	14	20	-	-	66
76	4	30	82	22	-	-	139
77	3	43	88	43	-	-	177
78	17	62	176	68	31	8	362
79	-	44	109	41	-	-	194
82x	-	40	-	37	-	-	77
86	5	31	100	44	23	7	210
87	13	67	152	60	32	11	335
88	12	26	18	17	-	6	80
91	-	127	309	152	71	16	675
93	-	28	29	22	4	-	83
95x	3	24	-	24	-	-	51
Pulse	124	955	2,371	1,110	478	192	5,230

Table 2-33 shows the average daily boardings by service period for Saturday. Routes which do not operate on Saturdays are not included in the table. Similar to weekdays, midday ridership was the highest and evening ridership was similar to or greater than AM and PM peak ridership. On average, route-level Saturday ridership was two-thirds of weekday daily ridership. Route 88 showed the greatest proportional drop in boardings from weekdays to Saturdays, with only 35 percent of weekday ridership, while Route 19 maintained the greatest proportion at 85 percent of weekday ridership. The same routes ranked highest among Saturday boardings as on weekdays: 1A, 1C, 2C, 3A, 3B, 5, 12, 14, 19, and Pulse.

Table 2-33: Average Saturday Boardings by Service Period

Route	Average Saturday Boardings						Total
	Early	AM Peak	Midday	PM Peak	Evening	Late Night	
1	-	206	1,288	426	153	51	2,124
1A	-	149	485	131	70	42	877
1B	-	99	285	108	-	-	491
1C	-	104	420	138	75	37	773
2A	5	76	306	119	77	48	631

Route	Average Saturday Boardings						Total
	Early	AM Peak	Midday	PM Peak	Evening	Late Night	
2B	-	82	305	105	83	34	608
2C	24	103	423	145	70	27	792
3A	-	145	403	155	-	-	703
3B	-	184	638	230	-	-	1,052
3C	-	-	-	-	203	58	261
4A	-	16	76	36	17	7	151
4B	2	23	83	28	16	7	160
5	15	130	573	270	157	60	1,205
7A	-	49	331	151	93	32	656
7B	-	54	296	119	70	5	544
12	10	132	473	183	95	40	933
13	-	26	78	40	20	5	169
14	3	90	407	141	83	42	767
19	-	110	525	210	112	27	985
20	3	74	209	114	54	-	454
50	-	67	271	108	60	19	524
76	-	11	45	11	2	-	69
77	-	8	60	32	2	-	102
78	-	21	107	57	7	-	193
86	-	13	77	30	20	6	145
87	-	25	120	40	-	-	185
88	-	11	4	13	-	-	28
91	-	68	262	99	62	11	501
Pulse	14	472	1,386	656	293	160	2,981

The average daily boardings by service period for Sundays are shown in **Table 2-34**. Routes which do not operate on Sundays are not included in the table. Many routes exhibited similar ridership throughout the service periods to their patterns on other days of the week, but with approximately half as many boardings as on weekdays. Route 3C had higher Sunday ridership than on weekdays–this correlates with the service pattern in which Route 3C replaces Routes 3A and 3B on Sundays.

Table 2-34: Average Sunday Boardings by Service Period

Route	Average Sunday Boardings						Total
	Early	AM Peak	Midday	PM Peak	Evening	Late Night	
1	-	179	671	342	204	73	1,468

Route	Average Sunday Boardings						Total
	Early	AM Peak	Midday	PM Peak	Evening	Late Night	
1A	-	177	486	191	112	50	1,016
1C	-	92	285	106	70	10	562
2A	-	77	268	100	60	26	530
2B	-	79	268	97	76	30	549
2C	-	56	236	91	59	23	464
3C	-	209	703	273	173	42	1,399
4A	-	13	50	25	16	7	111
4B	1	17	54	19	18	6	116
5	2	95	450	217	145	37	946
7A	-	-	229	108	70	19	427
7B	-	-	239	89	53	-	381
12	9	89	343	156	88	35	720
13	-	26	80	32	20	9	166
14	4	83	309	117	52	14	580
19	-	-	391	144	83	15	634
20	-	41	144	51	29	3	268
50	-	52	194	64	44	15	369
76	-	9	35	10	2	-	55
77	-	7	46	25	1	-	79
78	-	15	90	37	2	-	144
86	-	9	57	25	15	6	113
87	-	20	89	33	-	-	142
91	-	-	184	83	48	12	326
Pulse	7	363	1,010	551	245	107	2,283

RIDERSHIP ACTIVITY

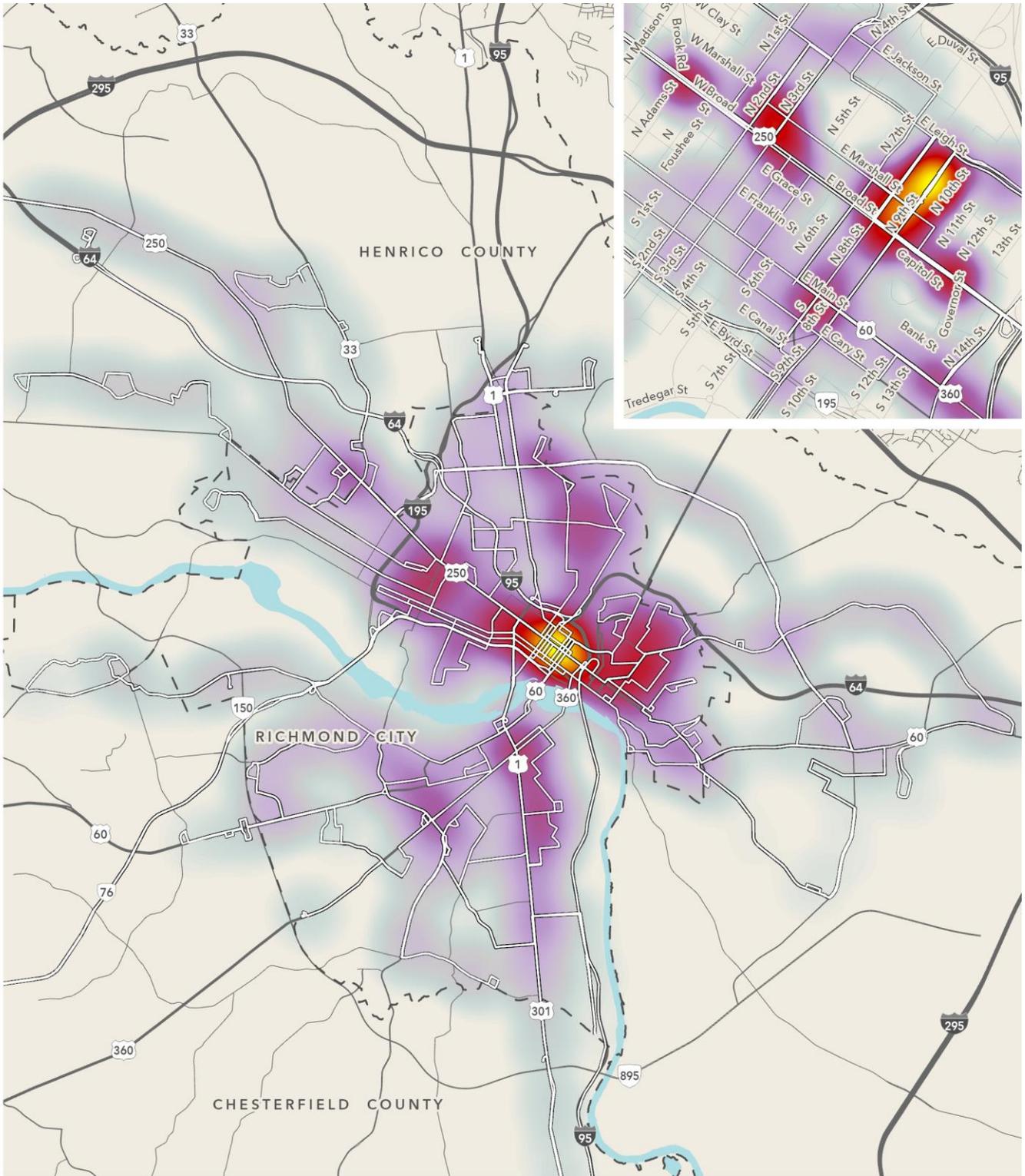
The geographic distribution of transit boardings often correlates with transit demand, as well as the provided levels of service for fixed transit routes. **Figures 2-32, 2-33, and 2-34** show the spread of average daily ridership activity throughout the GRTC service area for weekdays, Saturdays, and Sundays, respectively.⁹ Each map, as well as the downtown Richmond inset on each map, uses a separate scale to highlight areas of high ridership activity. For example, the yellow color represents 6,200 average daily boardings on the weekday map, while representing 970 average daily boardings on the Saturday map and 940 average daily boardings on the Sunday map.

⁹ Ridership activity was visualized using a logarithmic scale to reduce the visual impact of the many boardings in downtown Richmond, enabling the identification of concentrated ridership activity in other parts of the service area.

On every day of the week, the Temporary Transfer Plaza and adjacent bus stops in downtown Richmond generated the greatest number of boardings. Overall, the relative concentration of boardings throughout the service area was similar on every day of the week. On weekdays, ridership activity was spread across all routes, while weekend ridership was more concentrated in areas and corridors with weekend service. Downtown ridership activity stood out the most on Saturdays relative to the rest of the service area, along with ridership in the residential areas in central Richmond including the East End, Highland Park, and the West End. On Sundays, ridership activity was less pronounced in downtown Richmond and relatively higher on Route 1 and in Richmond's Southside.

Many areas had high ridership every day of the week. Within Richmond, these areas included Church Hill and the East End, the West End inside of I-195, neighborhoods north of Downtown, and Manchester on the Southside. In Henrico County, moderate to low ridership activity was concentrated along major corridors with bus service, including Broad Street (US 250), Staples Mill Road (US 33), Laburnum Avenue, Nine Mile Road, and Williamsburg Road (US 60). Low ridership activity was also present along Route 1 (US 1) in Chesterfield County.

Figure 2-32: Weekday Ridership Activity Heat Map

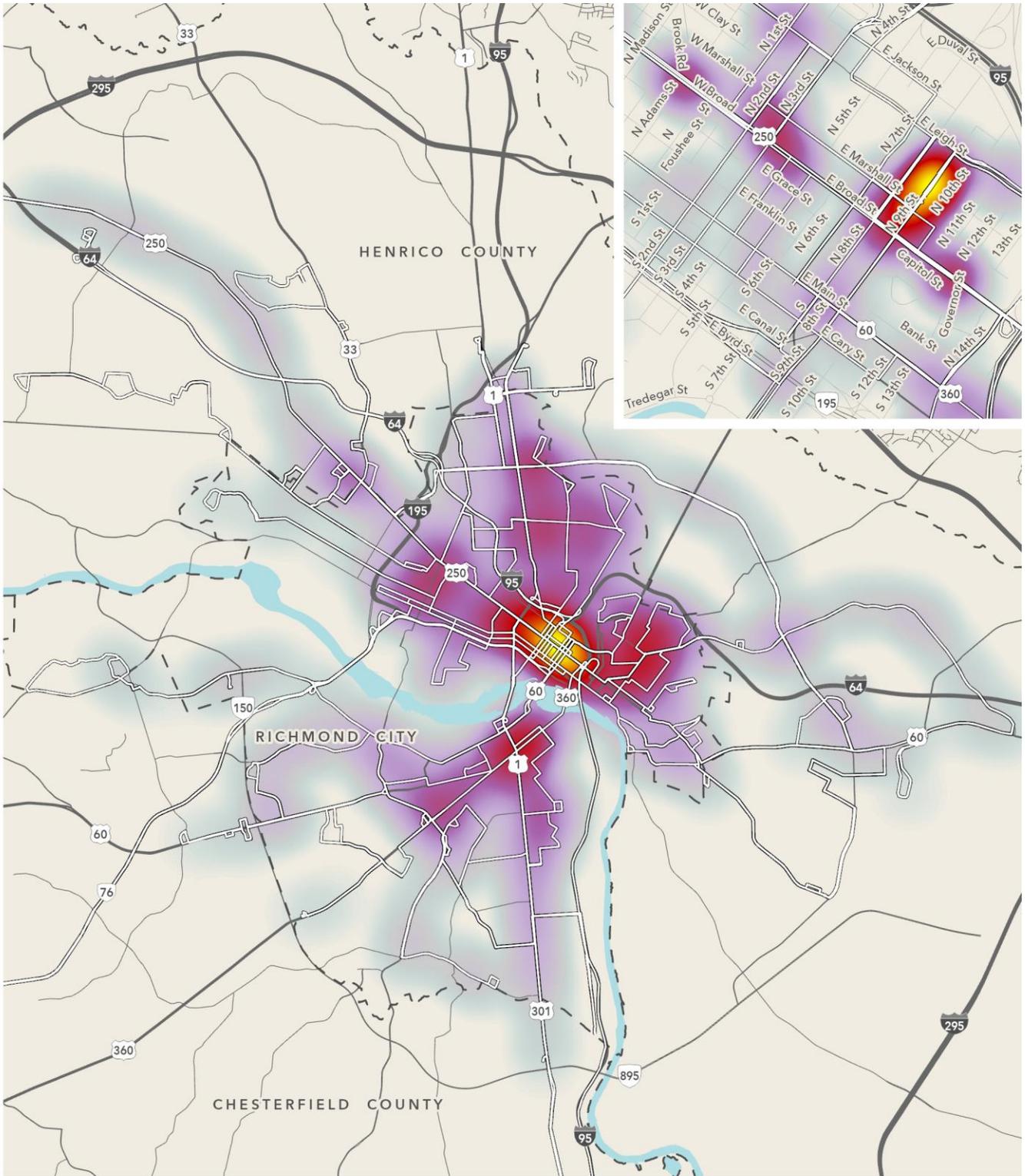


Weekday Ridership Activity



Source: September 2022 and February 2023 Ridership

Figure 2-34: Sunday Ridership Activity Heat Map



Sunday Ridership Activity



Source: September 2022 and February 2023 Ridership

MAXIMUM PASSENGER LOAD BY PERIOD

The passenger load represents the number of passengers on a transit vehicle between stops. Most of the time, the passenger load remains below the seated capacity of the bus, but certain route segments and times of day with high demand can result in passenger load values that exceed seated capacity, causing passengers to stand on board. Maximum load values above seated capacity can be a positive indicator of operational efficiency, since buses are utilized to their greatest capacity. However, full buses can result in delays during boarding and alighting, reducing reliability, as well as inconvenience for passengers who must wait for the next bus. In addition, overcrowded conditions can be inaccessible for passengers who are unable to stand, unsafe for social distancing, and generally uncomfortable for all passengers.

The maximum passenger load by service period for weekdays in February 2023 is shown for each route-direction in **Table 2-35**. Darker red cells represent higher load values and purple cells in the daily maximum passenger load column indicate values that exceed the maximum seated capacity of vehicles on that route. The maximum seated capacity varies by route, depending on the size of the vehicles used; for example, some express routes use buses with 57 seats, while most local routes use buses with 38 seats. On most routes, the daily maximum passenger load occurred during the midday or PM peak period. Due to peak period travel patterns, the maximum load for a route often occurred in the AM peak in one direction and in the PM peak in the other direction. The routes which exceeded their maximum seated capacity tended to have the highest ridership and levels of service, such as routes 1/A/B/C, 2A/B/C, 3B, 5, 7A/B, 12, 19, 50, and Pulse.

Table 2-35: Weekday Maximum Passenger Load by Service Period

Route	Direction	Weekday Maximum Passenger Load						Daily Maximum Passenger Load	Maximum Seated Capacity
		Early	AM Peak	Midday	PM Peak	Evening	Late Night		
1	North	9	30	46	46	33	24	46	38
1	South	30	47	41	42	35	17	47	38
1A	North	22	30	41	34	31	10	41	38
1A	South	-	28	38	38	34	24	38	38
1B	North	21	40	34	30	-	-	40	38
1B	South	-	28	37	36	-	-	37	38
1C	North	-	26	31	49	21	9	49	38
1C	South	-	28	41	38	38	20	41	38
2A	North	8	21	36	35	24	11	36	38
2A	South	19	25	40	27	18	16	40	38
2B	North	18	24	39	39	28	23	39	38
2B	South	17	32	31	36	22	12	36	38
2C	North	14	17	35	43	22	13	43	38
2C	South	19	31	35	32	16	14	35	38
3A	North	28	32	33	29	-	-	33	38
3A	South	17	25	35	35	-	-	35	38
3B	North	21	37	37	38	-	-	38	38

Route	Direction	Weekday Maximum Passenger Load						Daily Maximum Passenger Load	Maximum Seated Capacity
		Early	AM Peak	Midday	PM Peak	Evening	Late Night		
3B	South	26	28	39	59	-	-	59	38
3C	North	-	-	-	-	23	21	23	38
3C	South	-	-	-	-	34	25	34	38
4A	East	-	13	17	20	16	15	20	38
4A	West	-	13	12	12	7	7	13	38
4B	East	5	10	16	21	16	10	21	38
4B	West	12	23	22	13	8	6	23	38
5	East	18	39	39	43	30	18	43	38
5	West	13	37	41	41	16	15	41	38
7A	East	12	24	39	39	26	19	39	38
7A	West	15	25	32	27	21	14	32	38
7B	East	-	38	41	44	28	21	44	38
7B	West	34	32	36	25	20	11	36	38
12	East	10	29	38	48	27	19	48	38
12	West	24	34	42	26	19	13	42	38
13	East	-	16	14	19	11	11	19	23
13	West	-	10	13	12	12	7	13	23
14	East	7	18	30	30	18	13	30	38
14	West	10	24	25	29	15	15	29	38
18	East	-	14	18	15	9	-	18	32
18	West	-	13	15	15	9	-	15	32
19	East	-	25	43	38	28	17	43	38
19	West	-	31	35	45	26	17	45	38
20	North	6	15	19	19	18	-	19	38
20	South	8	23	22	20	14	10	23	38
29x	East	-	34	-	11	-	-	34	57
29x	West	-	6	-	56	-	-	56	57
50	East	8	19	34	40	17	30	40	38
50	West	15	31	30	20	15	5	31	38
56	East	-	17	7	-	-	-	17	37
56	West	-	12	12	-	-	-	12	37
64x	North	-	27	-	6	-	-	27	38
64x	South	-	7	17	25	-	-	25	38
76	East	3	6	12	9	-	-	12	38
76	West	4	8	11	6	-	-	11	38

Route	Direction	Weekday Maximum Passenger Load						Daily Maximum Passenger Load	Maximum Seated Capacity
		Early	AM Peak	Midday	PM Peak	Evening	Late Night		
77	East	-	9	16	23	9	-	23	37
77	West	5	16	22	14	-	-	22	37
78	East	10	17	20	16	15	9	20	38
78	West	5	15	20	20	11	6	20	38
79	East	-	10	20	13	-	-	20	37
79	West	-	15	16	17	-	-	17	37
82x	North	-	28	-	-	-	-	28	57
82x	South	-	5	-	30	-	-	30	57
86	North	8	19	18	12	10	10	19	38
86	South	2	10	19	25	14	10	25	38
87	North	12	24	23	26	18	11	26	38
87	South	8	24	20	19	16	12	24	38
88	North	11	12	12	7	-	7	12	32
88	South	14	11	6	11	-	11	14	32
91	East	-	23	34	42	33	17	42	38
91	West	-	31	27	31	19	11	31	38
93	North	-	7	10	14	6	-	14	32
93	South	-	10	10	10	4	-	10	32
95x	North	-	21	-	22	-	-	22	57
95x	South	6	6	-	25	-	-	25	57
Pulse	East	17	52	59	54	43	19	59	38
Pulse	West	31	58	61	57	44	22	61	35

Table 2-36 shows the maximum passenger load by service period on Saturdays in February 2023. Overall, maximum passenger loads on Saturdays were lower than on weekdays, and fewer routes exceeded their maximum seated capacity. Saturday passenger loads are less peak-oriented than weekdays, resulting in the daily maximum load occurring during the midday on many routes. The only routes which exceed seated capacity on Saturdays are Routes 1, 1A, 5, and Pulse.

Table 2-36: Saturday Maximum Passenger Load by Service Period

Route	Direction	Saturday Maximum Passenger Load						Daily Maximum Passenger Load	Maximum Seated Capacity
		Early	AM Peak	Midday	PM Peak	Evening	Late Night		
1	North	-	21	48	35	18	20	48	38
1	South	-	27	42	37	26	11	42	38

Route	Direction	Saturday Maximum Passenger Load						Daily Maximum Passenger Load	Maximum Seated Capacity
		Early	AM Peak	Midday	PM Peak	Evening	Late Night		
1A	North	-	47	25	23	13	7	47	38
1A	South	-	20	37	16	18	16	37	38
1B	North	-	26	22	20	-	-	26	38
1B	South	-	15	35	16	-	-	35	38
1C	North	-	19	24	16	16	12	24	38
1C	South	-	16	22	22	26	14	26	38
2A	North	3	12	29	25	12	12	29	38
2A	South	-	12	25	22	17	7	25	38
2B	North	-	16	17	20	12	6	20	38
2B	South	-	19	19	28	17	6	28	38
2C	North	4	12	20	22	10	8	22	38
2C	South	10	10	27	19	11	12	27	38
3A	North	-	34	19	16	-	-	34	38
3A	South	-	16	25	18	-	-	25	38
3B	North	-	18	20	15	-	-	20	38
3B	South	-	15	35	28	-	-	35	38
3C	North	-	-	-	-	17	13	17	38
3C	South	-	-	-	-	19	19	19	38
4A	East	-	11	19	11	12	8	19	37
4A	West	-	8	12	6	8	5	12	37
4B	East	2	11	13	14	15	7	15	37
4B	West	2	9	15	7	8	7	15	37
5	East	9	12	24	43	19	15	43	38
5	West	4	20	41	18	15	8	41	38
7A	East	-	12	28	18	20	13	28	35
7A	West	-	13	30	19	15	13	30	35
7B	East	-	15	30	20	11	-	30	38
7B	West	-	33	26	18	12	6	33	38
12	East	-	15	27	25	13	18	27	38
12	West	11	17	31	16	15	6	31	38
13	East	-	13	10	10	6	7	13	23
13	West	-	9	10	8	6	5	10	23
14	East	-	9	24	21	12	11	24	38
14	West	3	12	21	15	11	15	21	38
19	East	-	13	35	28	19	12	35	38

Route	Direction	Saturday Maximum Passenger Load						Daily Maximum Passenger Load	Maximum Seated Capacity
		Early	AM Peak	Midday	PM Peak	Evening	Late Night		
19	West	-	21	35	35	16	11	35	38
20	North	6	8	22	14	13	-	22	32
20	South	-	12	13	10	13	-	13	32
50	East	-	9	24	20	16	11	24	38
50	West	-	14	22	16	12	7	22	38
76	East	-	5	9	6	-	-	9	32
76	West	-	3	10	6	5	-	10	32
77	East	-	7	12	12	-	-	12	32
77	West	-	5	14	18	-	-	18	32
78	East	-	10	17	18	7	-	18	37
78	West	-	11	14	13	-	-	14	37
86	North	-	6	15	8	14	6	15	37
86	South	-	8	12	11	10	7	12	37
87	North	-	13	16	16	-	-	16	37
87	South	-	11	18	9	-	-	18	37
88	North	-	3	4	5	-	-	5	32
88	South	-	6	-	5	-	-	6	32
91	East	-	8	24	19	12	8	24	38
91	West	-	18	26	16	10	-	26	38
Pulse	East	-	22	54	47	35	24	54	35
Pulse	West	6	48	61	37	22	14	61	35

Table 2-37 displays the maximum passenger load by service period on Sundays in February 2023 for each route-direction. Passenger load values are slightly lower than Saturdays, with only Routes 1, 1A, and Pulse exceeding their maximum seated capacity. Similar to Saturdays, the daily maximum passenger load often occurs during the midday period on Sundays.

Table 2-37: Sunday Maximum Passenger Load by Service Period

Route	Direction	Sunday Maximum Passenger Load						Daily Maximum Passenger Load	Maximum Seated Capacity
		Early	AM Peak	Midday	PM Peak	Evening	Late Night		
1	North	-	19	33	38	24	17	38	38
1	South	-	35	32	43	22	16	43	38
1A	North	-	31	62	26	17	15	62	38
1A	South	-	37	33	27	21	16	37	38

Route	Direction	Sunday Maximum Passenger Load						Daily Maximum Passenger Load	Maximum Seated Capacity
		Early	AM Peak	Midday	PM Peak	Evening	Late Night		
1C	North	-	20	23	14	15	3	23	38
1C	South	-	24	29	17	16	7	29	38
2A	North	-	12	20	14	11	4	20	38
2A	South	-	10	30	17	11	11	30	38
2B	North	-	14	22	22	13	10	22	38
2B	South	-	17	25	16	12	10	25	38
2C	North	-	7	18	19	16	6	19	38
2C	South	-	10	36	15	12	5	36	38
3C	North	-	22	22	17	11	6	22	38
3C	South	-	21	26	22	16	11	26	38
4A	East	-	4	11	11	10	8	11	20
4A	West	-	5	8	10	8	5	10	20
4B	East	1	6	9	9	11	6	11	20
4B	West	3	12	10	12	11	7	12	20
5	East	-	8	20	24	24	17	24	38
5	West	5	15	20	16	13	5	20	38
7A	East	-	-	21	30	19	13	30	38
7A	West	-	-	24	23	18	8	24	38
7B	East	-	-	31	21	14	-	31	38
7B	West	-	-	21	16	12	-	21	38
12	East	-	10	23	18	14	8	23	38
12	West	12	14	26	19	10	11	26	38
13	East	-	6	10	10	10	9	10	23
13	West	-	8	7	8	6	6	8	23
14	East	-	9	21	16	13	8	21	38
14	West	3	17	21	19	10	8	21	38
19	East	-	-	27	23	18	10	27	38
19	West	-	-	35	20	10	9	35	38
20	North	-	10	12	9	7	-	12	37
20	South	-	9	14	13	8	4	14	37
50	East	-	9	25	15	11	6	25	38
50	West	-	12	25	16	13	7	25	38
76	East	-	2	7	13	-	-	13	32
76	West	-	2	5	6	4	-	6	32
77	East	-	7	12	16	-	-	16	23

Route	Direction	Sunday Maximum Passenger Load						Daily Maximum Passenger Load	Maximum Seated Capacity
		Early	AM Peak	Midday	PM Peak	Evening	Late Night		
77	West	-	7	9	10	-	-	10	23
78	East	-	7	14	12	6	-	14	38
78	West	-	8	16	12	-	-	16	38
86	North	-	6	15	10	4	5	15	38
86	South	-	6	12	10	10	5	12	38
87	North	-	11	14	15	-	-	15	38
87	South	-	12	16	6	-	-	16	37
91	East	-	-	28	18	18	8	28	38
91	West	-	-	17	17	13	11	17	38
Pulse	East	-	19	38	43	26	27	43	35
Pulse	West	8	42	53	34	22	16	53	35

SPEED AND ON-TIME PERFORMANCE

Reliability of fixed-route services can be measured according to the average travel speed and on-time performance of each bus route. Higher speeds often lead to increased operational efficiency, while high on-time performance indicates schedule adherence which can result in improved network efficiency, fewer delays, and enhanced customer experience.

SPEEDS

Table 2-38 details the average weekday scheduled and actual speeds for each fixed bus and BRT route by direction and time of the day. The average speed includes both in-motion and stopped events, such as when a bus waits at a bus stop or traffic signal. For most routes, the actual speed varies from the scheduled speed by a small proportion in various times of the day. Typically, midday and PM peak period speeds are lower than other times of day, due to increased passenger activity and road congestion. Additionally, differing traffic conditions, route lengths, turning movements, or stop placements can cause some routes to be faster in one direction than the other.

The fastest route for scheduled and actual speeds was Route 95x, which provides express service on I-95 between Richmond and Petersburg, while the slowest route for scheduled and actual speeds was Route 14. Other routes with low speeds included Routes 5, 12, 50, and 76, all of which serve western Richmond. However, the majority of routes recorded higher actual speeds than scheduled. The only routes which had an overall average actual speed lower than scheduled were Routes 1, 2A, 64x, and 76.

Table 2-38: Fixed-Route Bus Average Weekday Travel Speeds

Route	Direction	Scheduled Speed (miles per hour)						Actual Speed (miles per hour)					
		AM Early	AM Peak	Midday	PM Peak	Evening	Late Night	Early	AM Peak	Midday	PM Peak	Evening	Late Night
1	North	12.3	12.3	12.3	12.3	12.3	-	18.7	16.3	18.9	14.2	16.0	-

Route	Direction	Scheduled Speed (miles per hour)						Actual Speed (miles per hour)					
		AM Early	AM Peak	Midday	PM Peak	Evening	Late Night	Early	AM Peak	Midday	PM Peak	Evening	Late Night
1	South	13.1	13.1	13.1	13.1	13.1	-	12.8	12.4	12.3	12.3	13.6	-
1A	North	11.3	11.3	11.3	11.3	11.3	-	11.3	11.3	11.7	12.1	12.9	-
1A	South	-	12.0	12.0	12.0	12.0	-	-	13.7	13.2	12.8	14.6	-
1B	North	11.2	11.2	11.2	11.3	11.3	-	13.8	12.9	12.4	12.4	13.8	-
1B	South	-	11.7	11.7	11.7	11.7	-	-	14.5	15.2	13.8	14.8	-
1C	North	-	12.1	12.1	12.1	12.1	-	-	19.9	14.0	12.8	15.0	-
1C	South	-	12.7	12.7	12.7	12.7	-	-	15.7	15.3	13.5	15.2	-
2A	North	15.7	15.7	14.4	14.4	14.2	14.2	15.7	15.1	13.8	14.4	13.9	13.1
2A	South	14.7	14.7	14.0	14.0	14.5	14.7	14.1	14.2	14.5	13.5	15.3	15.4
2B	North	12.8	12.8	11.8	11.8	11.5	-	12.5	12.6	11.9	12.0	12.5	-
2B	South	12.2	12.2	11.3	11.3	11.6	-	12.4	13.2	12.2	12.6	15.4	-
2C	North	13.2	13.2	12.1	12.1	12.5	12.5	13.0	12.5	12.3	11.8	11.8	11.2
2C	South	12.4	12.4	12.1	12.1	12.0	-	12.3	13.0	12.9	13.0	13.4	-
3A	North	12.4	12.4	12.1	12.1	12.1	-	13.9	13.4	13.0	13.0	13.8	-
3A	South	13.6	13.6	12.8	12.8	12.8	-	12.8	13.9	13.4	12.7	13.5	-
3B	North	15.4	15.4	15.4	15.4	15.4	-	16.3	16.2	16.2	16.5	17.4	-
3B	South	15.2	15.2	14.8	14.4	14.4	-	16.8	15.3	14.9	14.7	15.6	-
3C	North	-	-	-	-	12.9	12.9	-	-	-	-	13.8	13.3
3C	South	-	-	-	-	13.5	13.6	-	-	-	-	14.1	15.1
4A	East	-	15.1	15.1	15.1	15.1	-	-	18.3	17.9	15.2	16.8	-
4A	West	-	14.2	14.2	14.2	14.2	-	-	18.8	19.3	18.5	20.5	-
4B	East	14.5	14.5	14.5	14.5	14.5	-	16.2	15.2	15.1	14.0	15.8	-
4B	West	13.8	13.8	13.8	13.8	13.8	-	16.0	14.4	16.1	16.8	17.2	-
5	East	11.7	11.7	11.7	11.7	10.1	-	13.5	11.8	11.6	11.1	10.4	-
5	West	11.1	11.1	11.1	11.1	9.7	9.4	12.5	10.7	10.3	16.4	9.8	9.4
7A	East	14.1	14.1	14.1	14.1	14.1	-	18.5	17.5	17.3	17.0	17.9	-
7A	West	12.8	12.8	12.8	12.8	12.8	-	12.5	14.5	14.2	14.2	16.2	-
7B	East	-	14.5	14.5	14.5	14.5	-	-	17.5	16.1	14.3	17.3	-
7B	West	13.6	13.6	13.6	13.6	13.6	-	15.3	16.2	16.9	15.4	16.4	-
12	East	10.2	10.2	10.2	10.2	10.6	-	22.6	11.1	16.4	10.9	11.2	-
12	West	10.3	10.3	10.3	10.3	11.2	-	18.5	11.5	12.0	11.7	15.9	-
13	East	-	13.4	13.4	13.4	13.4	-	-	15.1	13.8	13.3	14.4	-
13	West	-	12.8	12.8	12.8	12.8	-	-	14.1	19.8	15.9	15.0	-

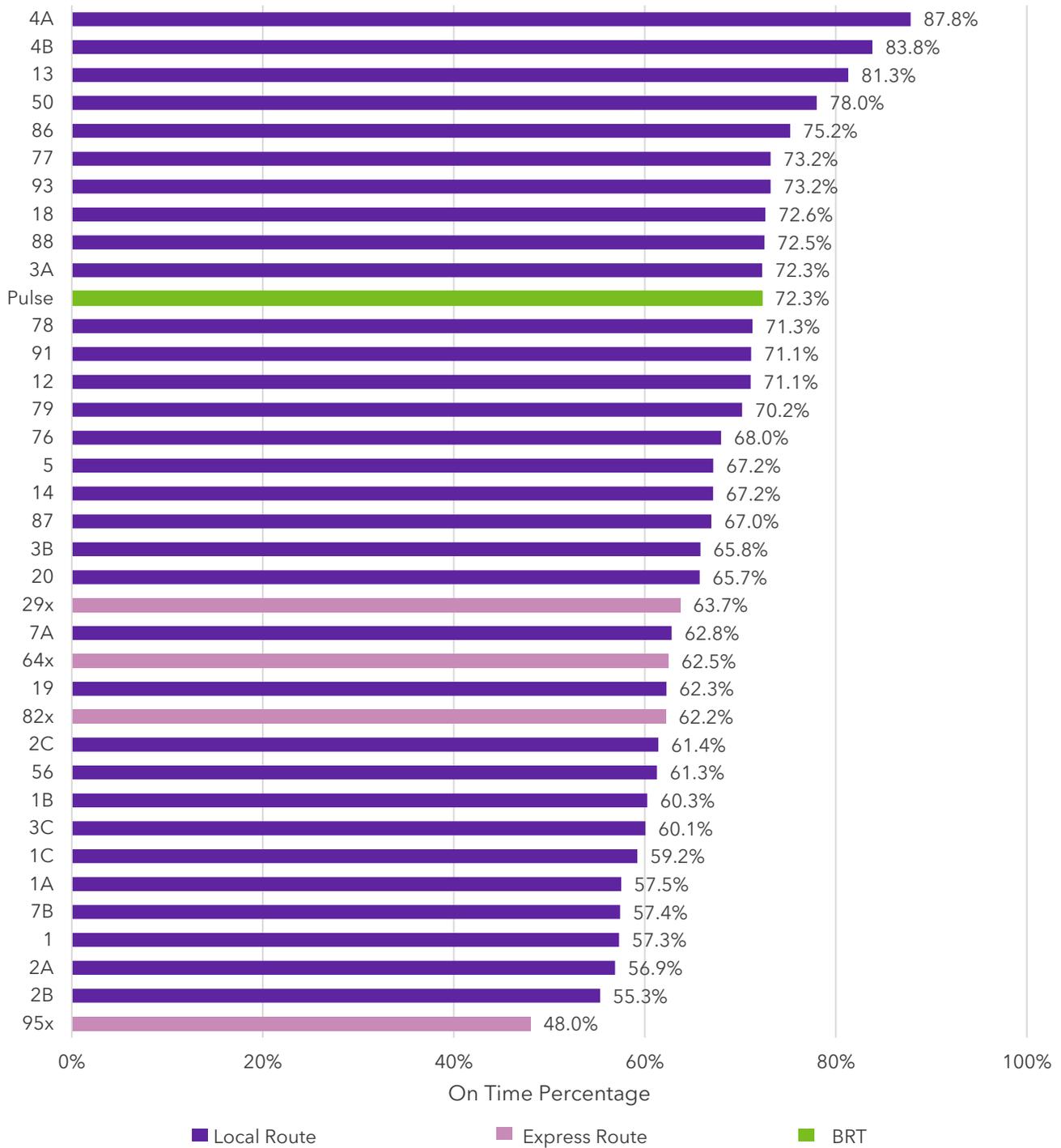
Route	Direction	Scheduled Speed (miles per hour)						Actual Speed (miles per hour)					
		AM Early	AM Peak	Midday	PM Peak	Evening	Late Night	Early	AM Peak	Midday	PM Peak	Evening	Late Night
14	East	11.3	10.9	10.9	10.7	10.5	10.6	13.0	12.2	11.5	10.8	11.0	11.4
14	West	11.5	11.1	11.1	11.1	10.4	-	12.7	11.4	11.7	11.0	10.5	-
18	East	-	15.1	15.0	14.2	14.9	-	-	16.7	16.8	15.8	16.7	-
18	West	-	13.5	13.5	13.5	13.5	-	-	16.1	16.0	14.0	15.2	-
19	East	-	15.9	15.9	14.6	16.5	-	-	18.3	16.6	15.3	18.0	-
19	West	-	16.2	16.2	14.9	16.9	-	-	15.7	14.1	14.2	19.4	-
20	North	14.3	14.3	14.3	14.3	14.4	-	15.1	15.8	14.8	14.7	16.9	-
20	South	15.3	15.3	15.3	15.3	15.3	-	15.5	15.0	15.2	15.2	17.3	-
29x	East	-	30.2	-	27.6	-	-	-	31.2	-	32.9	-	-
29x	West	-	14.9	-	23.6	-	-	-	16.3	-	23.5	-	-
50	East	11.9	11.9	11.9	11.9	11.9	-	14.5	14.8	13.0	11.6	14.4	-
50	West	11.2	10.8	10.1	10.1	11.1	-	12.2	11.2	10.4	9.9	12.9	-
56	East	-	17.9	10.8	-	-	-	-	16.6	13.8	-	-	-
56	West	-	12.1	17.4	-	-	-	-	17.4	18.9	-	-	-
64x	North	-	24.1	-	22.5	-	-	-	17.6	-	18.0	-	-
64x	South	-	11.1	17.0	17.0	-	-	-	19.0	-	18.9	-	-
76	East	11.8	11.1	11.8	11.1	11.1	-	9.9	10.7	12.0	12.1	10.3	-
76	West	14.6	13.6	13.6	13.6	13.2	-	14.8	11.8	15.1	10.8	9.9	-
77	East	-	12.2	12.2	12.2	12.2	-	-	14.5	13.5	11.8	10.3	-
77	West	13.3	12.4	12.4	12.4	-	-	14.9	14.7	14.5	14.9	-	-
78	East	14.3	11.9	11.9	11.9	15.7	-	15.3	13.5	13.1	11.6	16.3	-
78	West	13.1	11.8	11.8	11.8	13.9	-	15.0	12.6	11.9	11.1	13.0	-
79	East	-	14.1	14.1	14.1	14.1	-	-	15.7	15.2	15.3	15.0	-
79	West	-	14.1	14.1	14.1	14.1	-	-	14.8	15.9	15.4	15.9	-
82x	North	-	35.8	-	-	-	-	-	31.4	-	-	-	-
82x	South	-	-	-	29.0	-	-	-	-	-	31.0	-	-
86	North	13.2	13.2	13.2	13.2	13.2	-	13.2	16.4	17.1	15.3	17.8	-
86	South	14.5	14.5	14.5	14.5	14.5	-	16.4	18.3	17.3	15.8	18.6	-
87	North	12.7	12.7	12.7	12.7	14.1	-	17.4	14.3	14.4	14.5	15.3	-
87	South	12.1	12.1	12.1	12.1	13.2	-	14.0	14.2	14.0	14.2	15.7	-
88	North	16.5	16.5	19.8	16.5	18.1	-	19.9	22.3	22.2	19.4	18.4	-
88	South	17.4	17.4	17.4	16.7	18.2	-	14.9	25.1	18.4	17.9	18.7	-
91	East	-	14.8	14.8	14.8	14.8	-	-	14.9	15.0	15.1	15.2	-

Route	Direction	Scheduled Speed (miles per hour)						Actual Speed (miles per hour)					
		AM Early	AM Peak	Midday	PM Peak	Evening	Late Night	Early	AM Peak	Midday	PM Peak	Evening	Late Night
91	West	-	15.1	15.1	15.1	15.1	-	-	16.0	17.7	15.7	15.8	-
93	North	-	11.8	12.0	12.2	12.2	-	-	14.4	14.2	12.7	13.5	-
93	South	-	11.8	10.4	9.0	9.0	-	-	13.0	15.5	17.5	16.2	-
95x	North	-	34.5	-	21.5	-	-	-	31.6	-	19.8	-	-
95x	South	38.3	38.3	-	36.8	-	-	45.0	44.0	-	40.9	-	-
Pulse	East	11.2	11.2	11.2	11.2	11.2	11.2	12.8	11.3	11.8	10.4	11.5	11.6
Pulse	West	12.0	12.0	12.0	12.0	12.0	12.0	11.2	11.4	11.1	10.9	11.0	11.0

ON-TIME PERFORMANCE

GRTC defines an “on-time” bus arrival as occurring no more than one minute before and five minutes after the scheduled arrival time at a stop. **Figure 2-35** shows the average on-time performance by route from July 2022 to March 2023. Route 4A had the highest on-time performance at nearly 88 percent, whereas Route 95x had the lowest at 48 percent. Three routes, 4A, 4B, and 13, exceeded the on-time performance target of 80 percent. The nine top-performing routes do not travel within downtown Richmond, with the exception of Route 50. Overall, the on-time performance of longer routes was lower, such as 1A, 1B, 1C, 2A, 2B, and 3C. Express routes tended to rank lower as well, all falling in the lower half of routes. The on-time performance for Pulse was within the top third of routes, at 72 percent.

Figure 2-35: Fixed-Route Bus On-Time Performance, July 2022-March 2023



DEMAND RESPONSE EFFICIENCY

By nature, demand response services are usually less efficient than fixed-route transit services. Some demand response services provide transportation to one passenger at a time from origin to destination, whereas others aim to increase efficiency by maximizing the number of passengers on board, linking trips, and optimizing routing. Paratransit services like CARE and CARE Plus often prioritize rider comfort,

directness, and low wait times over operational efficiency by providing rides for one or two passengers at a time. In the case of GRTC’s demand response services, opportunities for increasing efficiency must be balanced with other aspects of the passenger experience.

RIDERSHIP

In FY 2022, CARE and CARE Plus provided 254,892 unlinked passenger trips and averaged 0.11 passengers per revenue mile and 2.0 passengers per revenue hour. Paratransit was less operationally efficient than all fixed bus routes, due to its curb-to-curb service, which requires more time and fewer passengers on the vehicle at a time. Most often, there was only one passenger on each paratransit vehicle. Total paratransit passenger miles for the year were 2,593,251 miles, which was only 13 percent higher than the annual vehicle revenue miles. Consequently, less than one in eight miles was traveled by paratransit vehicles with more than one passenger on board. The average passenger trip length was 10.2 miles, more than double the average trip length on fixed-route services.

RELIABILITY

CARE and CARE Plus reliability for FY 2022 was evaluated through on-time performance and the rate of missed trips. **Table 2-39** shows the on-time percentage, number of missed trips, and percentage of missed trips for FY 2022 (July 2021-June 2022). Prior to March 2022, on-time performance exceeded 80 percent, putting demand response service among GRTC’s most on-time services. Missed trips were also a rare occurrence, with six or fewer missed trips per month. After March 2022, reliability declined slightly to result in on-time percentage of 73 to 76 percent, and missed trips rose to 39 to 54 per month. However, the rate of missed trips was well below one percent of all paratransit trips for all of FY 2022.

Table 2-39: Paratransit On-Time Performance and Missed Trips, FY 2022

Metric	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
On-Time Percentage	89%	87%	82%	82%	82%	84%	82%	81%	75%	73%	73%	76%
Missed Trips	1	6	5	3	1	2	2	3	4	39	54	41
Missed Trips Percentage	0.01%	0.03%	0.03%	0.02%	0.01%	0.01%	0.01%	0.02%	0.02%	0.22%	0.31%	0.24%

2.4.2. Efficiency Based Opportunities for Improvement

LEVEL OF SERVICE OPPORTUNITIES FOR IMPROVEMENT

GRTC’s level of service standards for headways and span are critical planning tools to evaluate the effectiveness of existing service and to assure impartiality in service modification decisions. GRTC’s standards reflect a focus on creating a logical, efficient, and integrated route system, with additional emphasis on customer convenience and fiscal responsibility. A number of routes do not meet the headway and span standards that are set for their route types. The service planning process as part of this TSP’s development evaluated current routes’ levels of service against their standards and provided recommendations on service expansions where warranted (see Chapter 3).

MAXIMUM PASSENGER LOAD OPPORTUNITIES FOR IMPROVEMENT

Maximum load is an important performance measure to evaluate passenger comfort and safety as well as to monitor how efficiently resources are spread between routes and different times of the day. **Table 2-40**

contains the maximum load standards by route type and time of day and routes not meeting their standards. The routes which exceeded their maximum load standards have the higher levels of service and ridership: Routes 1, 1A, 1C, 2A, 2B, 3B, 5, 7A, 7B, 12, 19, and GRTC Pulse. Routes with high loads can be evaluated for potentially improving headways to offer more service and reduce crowding.

Table 2-40: Weekday Maximum Load Factor Opportunities for Improvement

Route Type	Peak Period Analysis		Midday Analysis	
	Maximum Load Factor Standard (Pax per Seat)	Routes Not Meeting Standard	Maximum Load Factor Standard (Pax per Seat)	Routes Not Meeting Standard
BRT	1.2	Pulse	1.2	Pulse
Arterial	1.2	1, 1C, 3B	1.0	1, 1A, 1C, 2A, 2B, 3B, 5, 7A, 7B, 19
Community Radial	1.2	12	1.0	12
Circulator/Feeder/Connector	1.2	-	1.0	-
Express	1.0	-	1.0	-

ON-TIME PERFORMANCE OPPORTUNITIES FOR IMPROVEMENT

Maintaining high on-time performance (OTP) is important for ensuring a reliable mode of travel for passengers. Standards for on-time performance are set by route type and by time of day. On-time performance data available summarized at the route level and not by time of day. For this analysis, the peak period OTP standards are used to evaluate route performance. As outlined in **Chapter 1, Section 1.2.3**, the peak period OTP standards for each route type are:

- **BRT:** 90 percent
- **Arterial, Community Radial, Circulator/Feeder/Connector:** 80 percent
- **Express:** 80 percent

All but three of GRTC's routes fell short of their OTP standards. The routes currently meeting their standards are Routes 4A, 4B, and 13. With so few routes meeting their standards, all GRTC routes and their schedules should be evaluated to determine whether departure times from timepoints may be inaccurate based on observed runtimes; if so, schedules can be updated to better reflect reality. This strategy should be pursued when a route has enough runtime, but the scheduled arrival and departure times from timepoints do not accurately reflect reality. In addition, adding to or subtracting from scheduled runtime may be necessary during some, or all time periods to better reflect observed runtimes if there is not enough time built in to complete a trip. Route speed should be examined as well as route design to determine whether further efficiencies can be made to improve reliability.

2.5. Analysis of Opportunities to Collaborate with Other Agencies and Stakeholders

2.5.1. Collaboration Analysis

This section describes opportunities to further coordinate and collaborate with other transit providers operating services in the vicinity, and regional and State transportation planning partners.

OTHER TRANSPORTATION SERVICE PROVIDERS

The following are other transportation service providers who operate in the vicinity of GRTC. More details about these providers are available in **Appendix A, Section A.10**.

- **RideFinders:** Division of GRTC that matches commuters for shared rides, including carpools and vanpool services.
- **Access Chesterfield:** Van program providing service to low-income, disabled, and elderly residents.
- **Petersburg Area Transit (PAT):** Transit provider operating service in and around Petersburg, including connections to GRTC's express Route 95x.
- **Virginia Commonwealth University (VCU) shuttle buses (RamRide):** Shuttle services between VCU and the university's satellite parking facilities, with connections to GRTC fixed-route services.
- **University of Richmond Shuttle Buses:** Shuttle services for students and guests, with connections to GRTC fixed-route services.
- **Amtrak:** Intercity regional rail.
- **Intercity bus:** Public (Virginia Breeze) and private transportation companies (such as Greyhound, Megabus, etc.) with service to cities throughout Virginia and nearby states.
- **Micromobility:** E-scooter sharing provided throughout the City of Richmond through mobility companies Bird, Lime, and Spin.

RICHMOND REGIONAL TRANSPORTATION PLANNING ORGANIZATION

The Richmond Regional Transportation Planning Organization (RRTPO or TPO), a part of the Richmond Regional Planning District Commission (PlanRVA), provides regional coordination on transportation efforts. Member jurisdictions include the localities currently served by GRTC and others in the Greater Richmond area. The TPO Policy Board adopts plans and policies which set the direction for transportation investment and priorities in the region. The TPO's Technical Advisory Committee (TAC) reviews presentations and proposals that are shared with the Policy Board and provides staff-level expertise.

The TPO developed the Greater RVA Transit Vision Plan, which was guided by a regional steering committee consisting of representatives from the Virginia Department of Rail & Public Transportation (DRPT), GRTC, RideFinders, City of Richmond, Chesterfield County, Henrico County, Hanover County, Town of Ashland, RRTPO Community Transportation Advisory Committee (CTAC), and RRTPO staff.

The TPO also has a Public Transportation Work Group, where member jurisdictions can collaborate. Recent topics of discussion at the work group meetings have included:

- **GRTC’s Richmond Region Microtransit Study.** Members reviewed the candidate zones and discussed their readiness for implementation. Members were also involved with coordinating meetings with their jurisdictions to determine priority zones.
- **Financing expanded GRTC service.** Members discussed fair way to split costs for service expansion.
- **Central Virginia Transportation Authority (CVTA).** Members discussed origins, governance, funding, and distribution of transit services among jurisdictions.

CENTRAL VIRGINIA TRANSPORTATION AUTHORITY (CVTA)

The creation of the Central Virginia Transportation Authority (CVTA) by the 2020 General Assembly and the RRTPO has established new funds for priority transportation investments for 15 jurisdictions in the Greater Richmond region. The two main sources of revenue are a regional sales and use tax (0.7 percent) and a wholesale gas and diesel tax (7.6 cents and 7.7 cents). The CVTA meets regularly and has the following subcommittees: Finance Committee, Technical Advisory Committee, Regional Priorities Subcommittee, Transit Service Governance Subcommittee, Nominating Committee, Personnel Committee, and Fall Line Working Group.

CVTA funds are allocated three ways: 15 percent to GRTC, 50 percent split proportionally to each participating locality, and 35 percent for regional projects. Most funds received by GRTC will be allocated to support the regional routes in the current system, however, GRTC is planning to allocate \$10 million for expansion of the network based on regional priorities. This expansion would represent a 20 percent growth for the system.

As required by the CVTA legislation, GRTC develops a Regional Public Transportation Plan in coordination with the RRTPO identifying how GRTC plans to spend its share of CVTA funds.

Joint annual meetings are held between CVTA, the PlanRVA Commission, and the RRTPO. During the June 2023 meeting, participants discussed the importance of regional cooperation, the commendable level of commitment to regional cooperation, and recent important accomplishments from the boards.

TSP STAKEHOLDER ADVISORY GROUP

This TSP effort has brought together stakeholders as part of the Stakeholder Advisory Group. The group met twice throughout the TSP process to provide input. Members of the SAG provided important insight and were crucial community partners who shared project information and engagement opportunities with the people and communities they represent. Meetings were interactive and provided information in an easy-to-follow way using visualizations and interactive tools. Stakeholders were also provided with sample social media posts, sample newsletter text, and other materials to share with the people they serve. The groups invited to join the Stakeholder Advisory Group are included in **Table 2-41**.

Table 2-41: GRTC TSP Stakeholder Advisory Group - Invitees

RGRTC TSP Stakeholder Advisory Group - Invitees		
Brightpoint Community College	First Baptist Church	Richmond Redevelopment & Housing Authority
Bon Secours	Virginia General Assembly Member	DRPT
Caritas	GRTC Board Member	RideFinders
ChamberRVA	Henrico County	RVA Economic Development
Chesterfield County	Homeward	RVA Rapid Transit
City of Richmond	Reynolds Community College	Sports Backers
Dominion Energy	Richmond Hill	VCU
First African Baptist	Richmond Region Tourism	Virginia Chamber
First Baptist	PlanRVA	Visit Richmond

2.5.2. Collaboration Based Opportunities for Improvement

The following coordination and collaboration activities provide opportunities for GRTC to improve efficiency in the provision of transit service.

- CVTA provides built-in regional coordination through existing funding and meeting structures.
- Microtransit implementation is currently being coordinated with jurisdictions across the region, including an ongoing study for expanded microtransit implementation in the City of Richmond, Henrico County, Chesterfield County, and surrounding rural counties. In addition to the existing zones, the TSP includes recommended zones prioritized for near- and mid-term implementation, while allowing for the incorporation of additional zones in future TSP updates (GRTC reviews and updates the TSP on an annual basis).
- Fare-free service can be supported by further collaboration and coordination, by jointly identifying funding sources such as corporate sponsorships.
- Data sharing can reduce duplication of work; agencies can support one another by sharing analyses conducted for reports which did not necessarily become public facing.

GRTC Transit Strategic Plan

Chapter 3: Planned Improvements and Modifications

June 17, 2024

Contents

3.1. Planned Service Improvements	3-1
3.1.1. Improvements by Route.....	3-3
Methodology.....	3-3
Route Profiles.....	3-4
3.1.2. Ridership Estimation.....	3-145
Methodology.....	3-145
Ridership Estimates	3-145
3.2. Prioritization of Planned Service Improvements	3-148
3.2.1. Prioritization	3-148
3.2.2. Inclusion in Other Plans.....	3-150
3.3. Service Development	3-152
3.3.1. Operational Needs	3-152
3.3.2. Equity Evaluation	3-157
Methodology.....	3-157
Findings.....	3-157
3.3.3. Title VI Program Review.....	3-162
3.3.4. Factors Impacting Service Development.....	3-162

Figures

Figure 3-1: Planned FY 2034 Fixed-Route Network.....3-2

Tables

Table 3-1: FY 2034 Estimated Fixed-Route Ridership 3-146
Table 3-2: Prioritization of Planned Service Improvements 3-148
Table 3-3: Transit Projects in Constrained LRTP 3-151
Table 3-4: Service Expansion and Reduction by Fiscal Year..... 3-152
Table 3-5: Equity Evaluation..... 3-158

3.1. Planned Service Improvements

Chapter 3 outlines planned services improvements in response to GRTC’s service design standards described in Chapter 1 and opportunities for improvement identified in Chapter 2 of this TSP. Planned improvements within the ten years of the plan, through FY 2034, are financially constrained and phased over the ten-year horizon. Additional improvements beyond the constrained ten years are also included in the “out years” of the plan, to be implemented in a future timeframe (and are considered unfunded/unconstrained). In addition to route-by-route explanations of planned improvements, this chapter also addresses impacts to equity, operational needs, and capital planning brought on by changes in bus service. Factors impacting implementation are expounded at the end of this chapter.

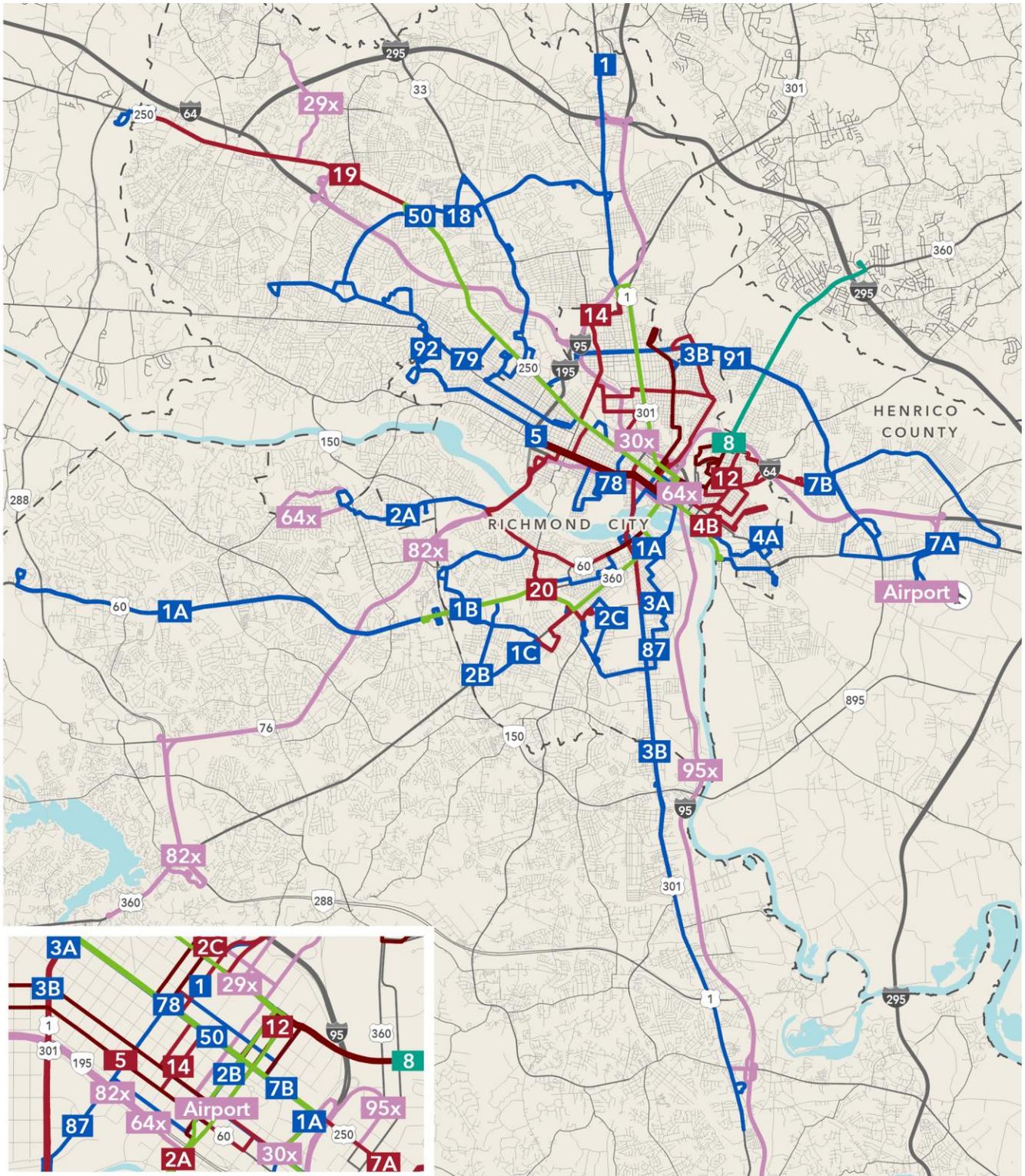
The planned service improvements in this section are designed to improve efficiency and performance to make GRTC bus service more efficient, reliable, and attractive to current and potential bus customers. In addition to outlining customer-facing changes to service like span and frequency, GRTC estimated changes to revenue miles, revenue hours, and peak vehicle need to provide context for the resources required by each route’s improvements.

By FY 2034, the planned service improvements will expand GRTC’s transit services significant relative to today:

- 80 percent increase in annual revenue hours.
- 9.2 percent increase in service area (defined as ¼-mile from fixed routes or express route stops, and microtransit zones).
- 9.7 percent increase in paratransit coverage area (defined as ¾-mile from fixed routes or express stops).
- 39 percent estimated increase in annual ridership.

Figure 3-1 shows the planned fixed-route bus network for FY 2034. GRTC will have a robust frequent transit network, anchored by two Bus Rapid Transit (BRT) lines and encompassing the majority of bus service within the City of Richmond, including Routes 5, 12, 14, 19, 20, and route families 1A/B/C, 2A/B/C, 3A/B, 4A/B, and 7A/B. All other routes will have peak headways of 30 minutes or better, except for the new Route 8 and the express routes. Fixed-route service will expand to new areas in Hanover, Henrico, and Chesterfield Counties, capturing additional riders, serving more destinations, and increasing transit accessibility across the region. This network of routes will offer numerous connections to GRTC’s emerging system of microtransit zones across the City of Richmond and in Chesterfield, Hanover, Henrico, and Powhatan Counties.

Figure 3-1: Planned FY 2034 Fixed-Route Network



Planned FY 2034 Fixed-Route Network



3.1.1. Improvements by Route

METHODOLOGY

Improvements to fixed routes and the implementation of microtransit zones were planned in accordance with GRTC's vision and mission, aiming to provide a well-integrated, reliable, and equitable transportation option for accessing destinations throughout the region. The specific goals of increasing levels of service, expanding transit service to new areas, and improving reliability, as established by outreach to GRTC riders, stakeholders, and staff, guided the analysis and development of the planned service changes.

The starting point for the planning process was GRTC's previous and ongoing transit plans, most prominently the 2018 Transit Development Plan, the precursor to this TSP, which recommended specific level of service and alignment changes to the existing fixed routes at the time, as well as the North-South Bus Rapid Transit Study and the Richmond Region Micro-Transit Study. Other existing proposals were also incorporated, such as the western extension of Pulse to Parham Road. In evaluating these proposals, findings from the performance and operations analysis in **Chapter 2** were used to identify areas that should be served by additional service and routes that should be modified to increase efficiency, improve reliability, capture more demand, or serve new destinations. Recommended changes that are still relevant to today's routes and meet GRTC's current goals for service expansion were included in this TSP. Plans which will have a major impact on the transit network, such as expanded BRT services, also served as the basis for any changes to routes that intersect the proposed corridors.

In addition to refining individual proposals, improvements by route were evaluated at the scale of the entire transit system. The planned improvements build upon an expanded core network of frequent routes that provide the highest levels of service in the areas with the highest demand for transit and the greatest density of destinations. Opportunities for increasing the frequency and span of other routes which connect to the core network were identified as well, in order to improve connectivity between routes and enhance accessibility and convenience throughout the system. Areas which exhibited a need for transit despite lower levels of demand were evaluated for lower levels of fixed-route service or microtransit service. Between all of GRTC's services, the planned improvements were also ensured to serve current and future key destinations across the region, such as the Diamond District, VCCS, Short Pump Town Center, and Chesterfield Towne Center.

Finally, all planned improvements were evaluated against the service standards established in **Chapter 1** and feedback from the public, stakeholders, and GRTC staff. For each route, the planned levels of service were increased to meet the minimum span of service and frequency by time period according to its route classification. While the majority of planned changes were met with support during the TSP outreach process, feedback that warranted revisions to the plan was incorporated into the final set of improvements by route.

The majority of planned improvements fall within the constrained ten-year plan from FY 2025 to FY 2034. However, additional improvements are included in this plan to highlight changes that may be made in the "Out Year" phase, which represents an unspecified implementation year in FY 2035 or later. Some of these changes may be a lower priority than the constrained improvements, while others, such as further expansion of the BRT network, may be a high priority but require additional study before cost estimates and implementation years can be specified. In future TSP updates, the unconstrained changes may be reconsidered for implementation within the ten years of the plan.

ROUTE PROFILES

The route profiles contain:

- A map showing the route, other related routes, eliminated sections of the route (if applicable), and other relevant transportation information.
- A description of planned service changes and their justification.
- The route's service classification, existing origin and destination, and planned origin and destination (for microtransit zones, instead of origin/destination information, a description of the service area is included).
- Routes that have been adjusted to address a particular opportunity for improvement identified in Chapter 2 display one or more of the following icons in their profile:



Transit Demand and Underserved Areas: Opportunities for improvement as identified in the analysis in Section 2.2.2 regarding transit demand and transit propensity.



Performance-Based Opportunities for Improvement: Opportunities for improvement as described in the analysis in Section 2.3.2 regarding existing performance of routes on measures such as passengers per revenue hour.



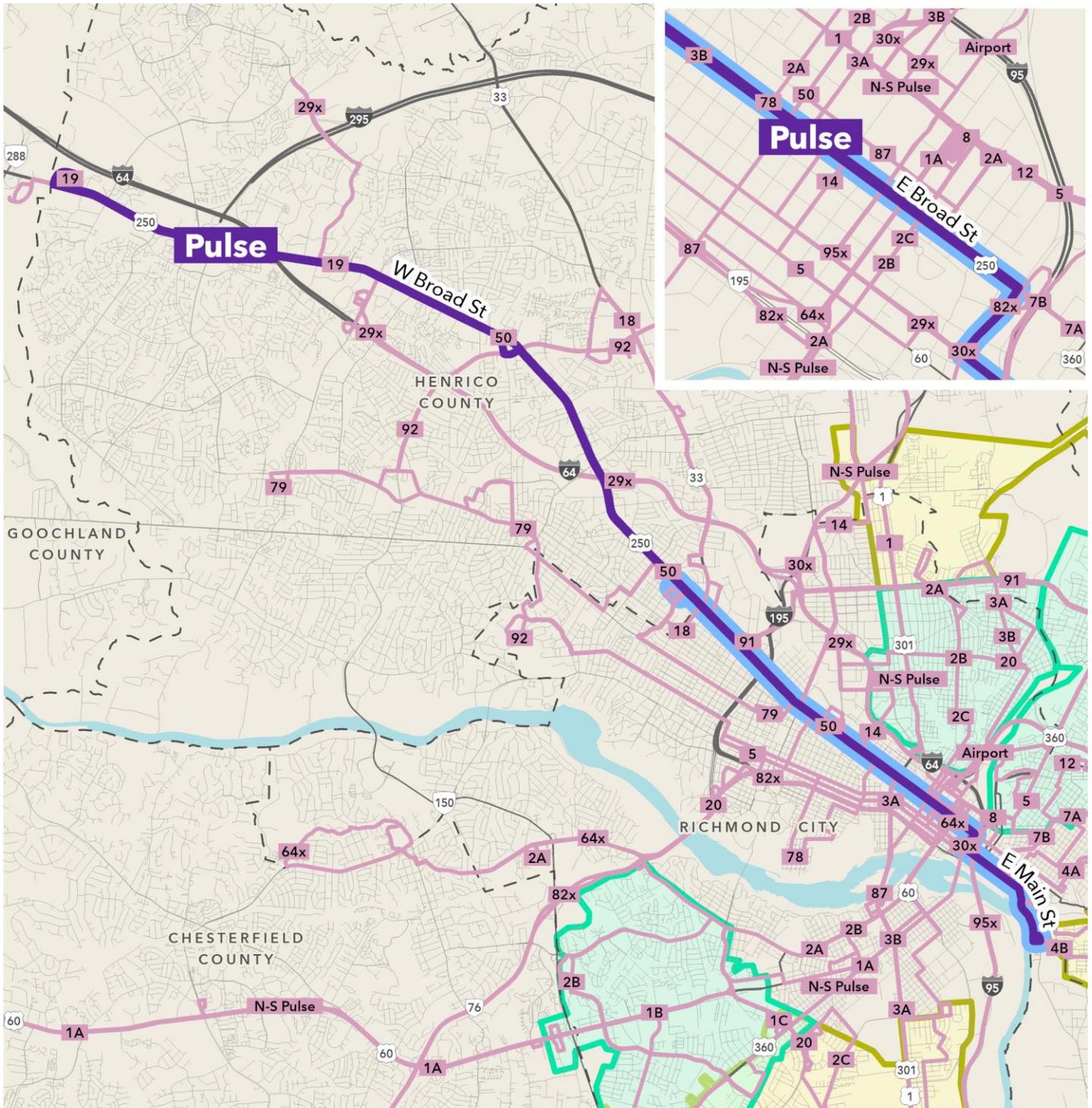
Efficiency-Based Opportunities for Improvement: Opportunities for improvement as described in the analysis in Section 2.4.2 regarding existing efficiency measures of routes such as on-time performance.



Service Design Standards: Improvements to meet standards and goals as described in Section 2.1.4.

- Fixed-route levels of service: For fixed-route services, a table comparing level of service—span and headway—between the existing service and service targets for the route. On weekdays and weekends, the periods shown are:
 - Early - 4:00 a.m. - 5:59 a.m.
 - AM Peak - 6:00 a.m. - 8:59 a.m.
 - Midday - 9:00 a.m. - 3:59 p.m.
 - PM Peak - 4:00 p.m. - 6:59 p.m.
 - Evening - 7:00 p.m. - 9:59 p.m.
 - Late Night - 10:00 p.m. - 3:59 a.m.
- Microtransit level of service: For microtransit routes, the days of the week and times that service is operational are shown in the table.
- Existing level of service in the table represents the level of service funded by GRTC.
- A space for any special notes that apply to the route.
- A table displaying the phased implementation over the ten-year period of route alignment changes, span of service changes, and frequency of service changes. Planned changes which do not fall within the constrained ten years are described in the “Out Years” row of this table.

Pulse BRT



Planned Pulse BRT

- Planned Alignment
- Existing Alignment
- Planned Routes
- Planned LINK Microtransit
- City of Richmond Microtransit
- Jurisdiction Boundary



Pulse BRT

PLANNED CHANGES

The Pulse will be extended west on Broad Street from Willow Lawn to Parham Road, with two new stations. In the future, the Pulse will be extended beyond Parham Road to Short Pump (West Broad Marketplace). Improve Saturday peak and midday headways to 10 minutes. Improve late-night service on weekdays, Saturdays, and Sundays to 15 minutes.

JUSTIFICATION

- Pulse is a very high performing service which will continue to thrive on the major Broad Street corridor in the highly populated northwest of Henrico County.
- Level of service improvements will return Pulse frequencies to historic levels and also exceed them to achieve GRTC's service standards for Bus Rapid Transit.

Service Classification

Bus Rapid Transit

Existing Origin / Destination

Willow Lawn / Rocketts Landing

Planned Origin / Destination

West Broad Marketplace / Rocketts Landing



LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	5:00 a.m. - 1:37 a.m.	5:00 a.m. - 1:37 a.m.
Saturday	5:55 a.m. - 1:35 a.m.	5:55 a.m. - 1:35 a.m.
Sunday	5:55 a.m. - 1:35 a.m.	5:55 a.m. - 1:35 a.m.

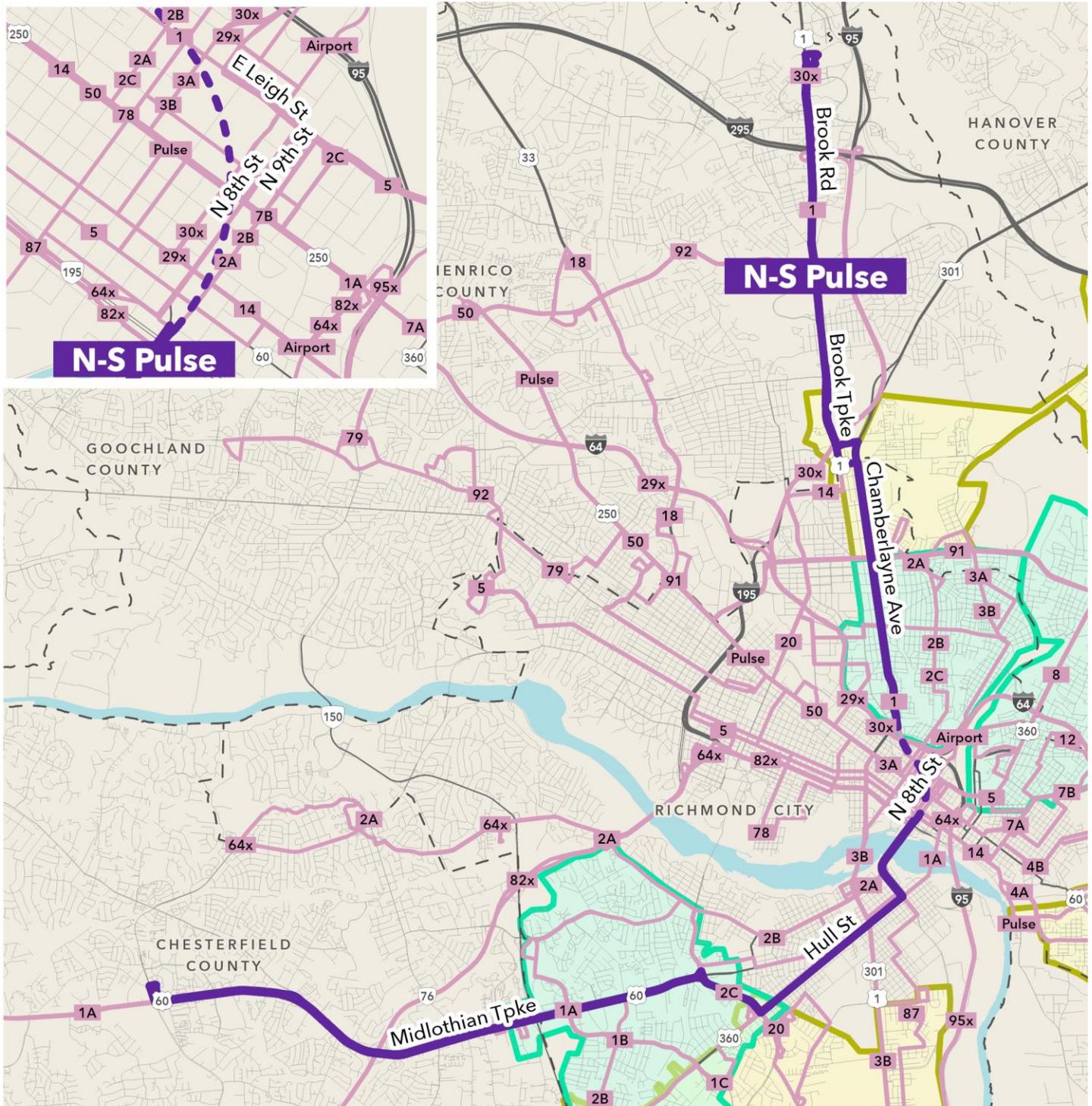
HEADWAY	Existing			Planned		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Early	10	-	-	10	-	-
AM Peak	10	15	15	10	10	15
Midday	10	15	15	10	10	15
PM Peak	10	15	15	10	10	15
Evening	15	15	15	15	15	15
Late Night	30	30	30	15	15	15

Pulse BRT

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	No changes.			
FY 2026	Improve Saturday headways to 10 minutes during the peak and midday periods.		✓	
FY 2027	Extend Pulse west to terminate at Broad Street and Parham Road. Improve late night headways to 15 minutes every day of the week.			✓
FY 2028	No changes.			
FY 2029	No changes.			
FY 2030	No changes.			
FY 2031	No changes.			
FY 2032	No changes.			
FY 2033	No changes.			
FY 2034	No changes.			
Out Years	Extend Pulse west to terminate at Short Pump.	✓		

North-South BRT



Planned North-South BRT

- Planned Alignment
- Planned LINK Microtransit
- Jurisdiction Boundary
- Planned Routes
- City of Richmond Microtransit



North-South BRT

PLANNED CHANGES

Introduce Bus Rapid Transit service from Virginia Center Commons along Brook Road and Chamberlayne Avenue to Downtown Richmond, across the Manchester Bridge and along Hull Street and Midlothian Turnpike to Chesterfield Towne Center. Routes 1 and 1A will remain on those corridors at reduced frequencies, while North-South BRT service will replace Routes 1B and 1C along Hull Street. Implement high-frequency service seven days per week according to BRT service standards.

JUSTIFICATION

- Following the success of Pulse, a new BRT line would provide north-south connections in Richmond.
- The corridors have high-performing existing routes which operate with frequent headways, demonstrating sufficient demand for transit.
- North-South BRT will replace the combined high-frequency service of Routes 1A/B/C.
- The exact alignment in Downtown Richmond is subject to change; regardless, it will provide connections to almost all of GRTC's fixed bus routes.

Service Classification

Bus Rapid Transit

Existing Origin / Destination

N/A

Planned Origin / Destination

VCCS / Chesterfield Towne Center



Notes

The alignment downtown is yet to be determined (as shown by a dashed line on the map).

LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	-	5:00 a.m. - 1:00 a.m.
Saturday	-	6:00 a.m. - 1:00 a.m.
Sunday	-	6:00 a.m. - 1:00 a.m.

HEADWAY	Existing			Planned		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Early	-	-	-	15	-	-
AM Peak	-	-	-	10	10	10
Midday	-	-	-	10	10	10
PM Peak	-	-	-	10	10	10
Evening	-	-	-	15	15	15
Late Night	-	-	-	15	15	15

North-South BRT

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	Service not yet implemented.			
FY 2026	Service not yet implemented.			
FY 2027	Service not yet implemented.			
FY 2028	Service not yet implemented.			
FY 2029	Implement North-South BRT service from Stonebridge Plaza to Azalea Avenue from 5:00 a.m. to 1:00 a.m. on weekdays and 6:00 a.m. to 1:00 a.m. on weekends. Frequencies will be every 10 minutes during the peak and midday periods, with 15-minute headways at all other times.		✓	✓
FY 2030	No changes.			
FY 2031	No changes.			
FY 2032	No changes.			
FY 2033	No changes.			
FY 2034	No changes.			
Out Years	Extend North-South BRT to operate from Chesterfield Towne Center to VCCS.	✓		

1 Chamberlayne/Downtown

PLANNED CHANGES

Extend Route 1 north on Brook Road to Reynolds Community College and the Virginia Center Commons (VCCS) site. Prior to implementation of the North-South BRT, Route 1 will operate with a short turn with existing headways between downtown and Azalea Avenue; north of Azalea Avenue it will operate every 30 minutes during the daytime and every 60 minutes in the evening and late night. After implementation of North-South BRT, the short turn will be eliminated, and Route 1 will operate with 30-minute headways on the full length of the route during all periods. North-South BRT will offer high-frequency service along Chamberlayne Avenue, while Route 1 will provide underlying local service. Improve span to end at 1:00 a.m. every day of the week.

JUSTIFICATION

- Route 1 will extend GRTC’s service area northward along US 1, capturing demand along the major corridor and acting as a feeder service to the North-South BRT. Route 1 will also connect to new Routes 92 and 30x.
- Development at VCCS will generate additional demand.
- Late night span should be extended to 1:00 a.m. to meet Arterial standards.

Service Classification

Arterial

Existing Origin / Destination

Downtown / Chamberlayne

Planned Origin / Destination

Downtown / VCCS



LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	4:39 a.m. - 11:55 p.m.	4:39 a.m. - 1:00 a.m.
Saturday	6:15 a.m. - 11:57 p.m.	6:15 a.m. - 1:00 a.m.
Sunday	6:00 a.m. - 11:54 p.m.	6:00 a.m. - 1:00 a.m.

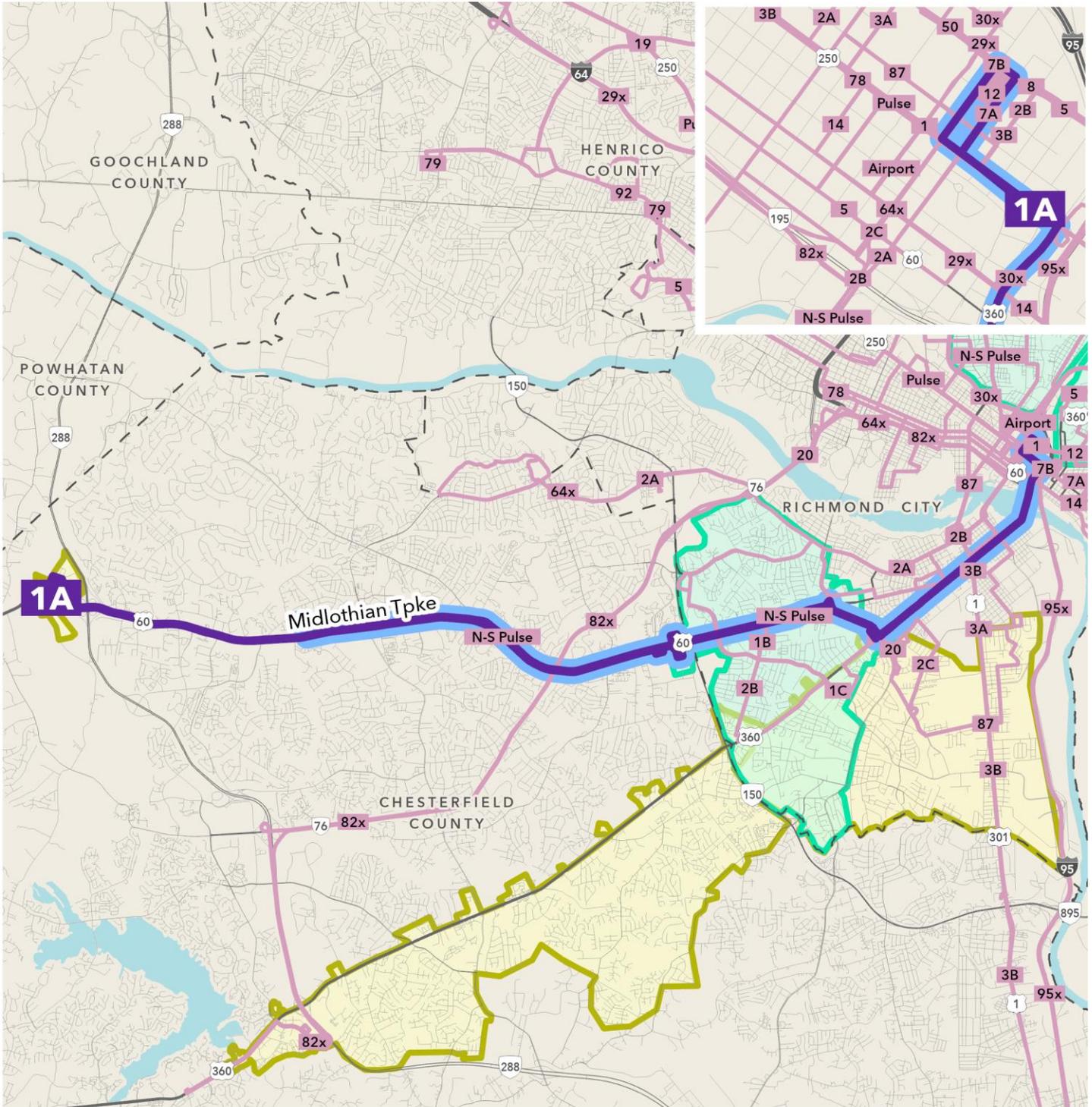
HEADWAY	Existing			Planned		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Early	15	-	-	30	-	-
AM Peak	15	15	30	30	30	30
Midday	15	15	30	30	30	30
PM Peak	15	15	30	30	30	30
Evening	30	30	30	30	30	30
Late Night	30	30	30	30	30	30

1 Chamberlayne/Downtown

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	In May 2024, Route 1 will be extended to J. Sargent Reynolds Community College. In September 2024, extend Route 1 again to VCCS. Maintain a short turn at Azalea Avenue, with service on the extension every 30 minutes on weekdays and Saturdays in the early, peak, and midday periods, and 60 minutes at all other times. Maintain existing headways on the short turn.			
FY 2026	No changes.			
FY 2027	No changes.			
FY 2028	No changes.			
FY 2029	Change headways to 30 minutes in all periods in conjunction with the implementation of the North-South BRT. The short turn will be eliminated so that all trips will operate between the Downtown Transfer Station and VCCS. Improve span to end at 1:00 a.m. every day of the week.	✓	✓	✓
FY 2030	No changes.			
FY 2031	No changes.			
FY 2032	No changes.			
FY 2033	No changes.			
FY 2034	No changes.			
Out Years	No changes.			

1A Hull/Midlothian via Southside Plaza



Planned Route 1A

- Planned Alignment
- Existing Alignment
- Planned Routes
- Planned LINK Microtransit
- City of Richmond Microtransit
- Jurisdiction Boundary



1A Hull/Midlothian via Southside Plaza

PLANNED CHANGES

Extend Route 1A west on Midlothian Turnpike to Westchester Commons, replacing Route 2B's current alignment on Midlothian Turnpike and providing new service west of Centura College. Route 1A will connect with the Powhatan microtransit zone at Westchester Commons. Improve Sunday headways to 30 minutes from 6:30 a.m. to 10:00 p.m.

JUSTIFICATION

- Driven by residential density and commercial developments, demand along Midlothian Turnpike warrants fixed-route transit service.
- Prior to implementation of the North-South BRT, Route 1A will operate every 30 minutes, combining with Routes 1B and 1C to provide high-frequency service along Hull Street north of the Southside Plaza.
- After North-South BRT implementation, Route 1A will serve as the single underlying local service to the BRT line on the Southside. As such, 30-minute headways will be needed throughout most of the day.
- Future performance on this route west of Stonebridge Plaza could be used to evaluate further extensions of North-South BRT on Midlothian Turnpike.

Service Classification

Arterial

Existing Origin / Destination

Downtown / Walmart Way

Planned Origin / Destination

Downtown / Westchester Commons



LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	5:15 a.m. - 11:59 p.m.	5:15 a.m. - 11:59 p.m.
Saturday	6:15 a.m. - 11:59 p.m.	6:15 a.m. - 11:59 p.m.
Sunday	6:30 a.m. - 11:42 p.m.	6:30 a.m. - 11:42 p.m.

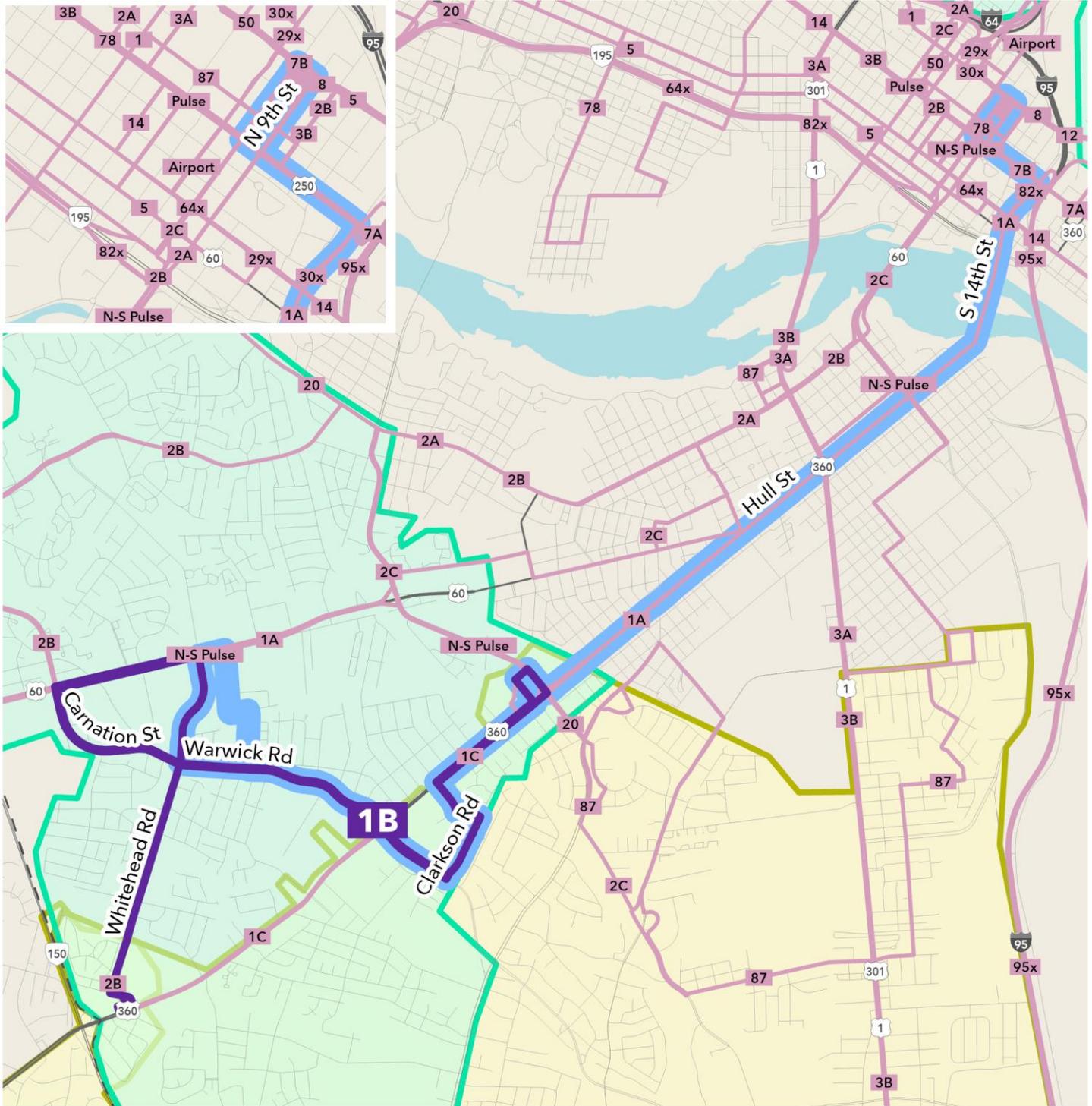
HEADWAY	Existing			Planned		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Early	30	30	-	30	-	-
AM Peak	30	30	40	30	30	30
Midday	30	30	40	30	30	30
PM Peak	30	30	40	30	30	30
Evening	60	60	40	30	30	60
Late Night	60	60	40	60	60	60

1A Hull/Midlothian via Southside Plaza

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	No changes.			✓
FY 2026	No changes.			
FY 2027	No changes.			
FY 2028	No changes.			
FY 2029	Extend Route 1A west on Midlothian Turnpike to Westchester Commons. Route 1A will serve as an underlying local service to the North-South BRT between Downtown Richmond and Stonebridge Plaza. Improve headways to 30 minutes on weekday and Saturday evenings. On Sundays, improve headways to 30 minutes in the peak and midday periods. Change Sunday evening and late-night headways to 60 minutes.	✓	✓	
FY 2030	No changes.			
FY 2031	No changes.			
FY 2032	No changes.			
FY 2033	No changes.			
FY 2034	No changes.			
Out Years	No changes.			

1B Hull/Warwick



Planned Route 1B

- Planned Alignment
- Existing Alignment
- Planned Routes
- Planned LINK Microtransit
- City of Richmond Microtransit
- Jurisdiction Boundary



1B Hull/Warwick

PLANNED CHANGES

Following implementation of the North-South BRT, eliminate Route 1B service north of Southside Plaza. Route 1A and the North-South BRT will continue to provide local and high-frequency service along Hull Street and 14th Street. South of Southside Plaza, realign Route 1B to serve German School Road, Midlothian Turnpike, Carnation Street, and Whitehead Road in both directions, terminating at Chippenham Mall. Improve Weekday and Saturday span to end at 10:00 p.m. with hourly service after 7:00 p.m. Improve Saturday service to begin at 6:00 a.m. Introduce Sunday service from 6:00 a.m. to 10:00 p.m., operating every half hour in the peak and midday, and hourly in evening. Reclassify Route 1B as Community Radial.

JUSTIFICATION

- North-South BRT will replace most of Route 1B's service north of the Southside Plaza. Route 1A will continue to provide local service between the Southside Plaza and Downtown Richmond across the 14th Street Bridge.
- Route 1B will connect to North-South BRT at Southside Plaza, and to Routes 2B and 1C and the Clover Dale and Broad Rock microtransit zones at Chippenham Mall.
- Riders from stops on Warwick Village Drive can walk less than one-quarter mile to Warwick Road.
- Longer spans and new Sunday service are needed to achieve Community Radial service standards.

Service Classification

Community Radial

Existing Origin / Destination

Downtown Transfer Station / Warwick Village

Planned Origin / Destination

Southside Plaza / Chippenham Mall



LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	5:40 a.m. - 7:20 p.m.	5:40 a.m. - 10:00 p.m.
Saturday	6:40 a.m. - 7:19 p.m.	6:00 a.m. - 10:00 p.m.
Sunday	-	6:00 a.m. - 10:00 p.m.

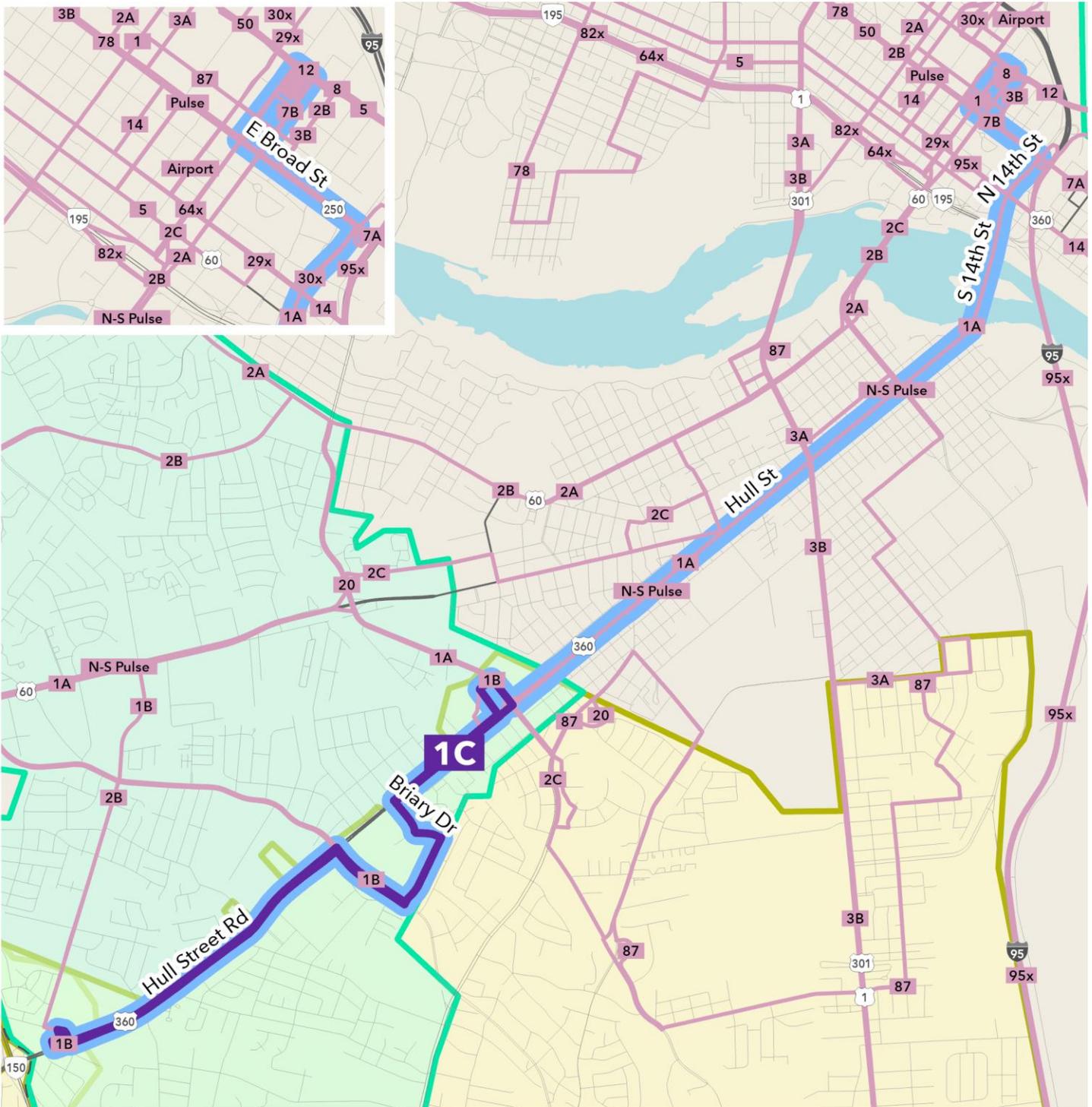
HEADWAY	Existing			Planned		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Early	30	-	-	30	-	-
AM Peak	30	30	-	30	30	30
Midday	30	30	-	30	30	30
PM Peak	30	30	-	30	30	30
Evening	-	-	-	60	60	60
Late Night	-	-	-	-	-	-

1B Hull/Warwick

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	No changes.			
FY 2026	No changes.			
FY 2027	No changes.			
FY 2028	No changes.			
FY 2029	Truncate Route 1B service north of Southside Plaza in conjunction with implementation of the North-South BRT. South of Southside Plaza, realign to serve German School Road, Midlothian Turnpike, Carnation Street, and Whitehead Road in both directions, terminating at Chippenham Mall. Improve weekday and Saturday span to end at 10:00 p.m. with hourly service after 7:00 p.m. Improve Saturday span to begin at 6:00 a.m. Introduce Sunday service from 6:00 a.m. to 10:00 p.m., operating every half hour in the peak and midday with hourly service in the evening.	✓	✓	✓
FY 2030	No changes.			
FY 2031	No changes.			
FY 2032	No changes.			
FY 2033	No changes.			
FY 2034	No changes.			
Out Years	No changes.			

1C Hull/Elkhardt



Planned Route 1C

- Planned Alignment
- Existing Alignment
- Planned Routes
- Planned LINK Microtransit
- City of Richmond Microtransit
- Jurisdiction Boundary



1C Hull/Elkhardt

PLANNED CHANGES

Following implementation of the North-South BRT, eliminate Route 1C service north of Southside Plaza. Route 1A and the North-South BRT will continue to provide local and high-frequency service along Hull Street and 14th Street. Maintain Route 1C's alignment from Southside Plaza to Chippenham Mall, where it will connect to Routes 1B, 2B, and the Clover Dale microtransit zone. Improve Sunday headways to 30 minutes from 6:30 a.m. to 7:00 p.m.

JUSTIFICATION

- North-South BRT will replace most of Route 1C's service north of the Southside Plaza. Route 1A will continue to provide local service between the Southside Plaza and Downtown Richmond across the 14th Street Bridge.
- Route 1C will connect to North-South BRT at Southside Plaza, and to Routes 2B and 1B and the Clover Dale and Broad Rock microtransit zones at Chippenham Mall.
- Sunday frequencies increased to meet Community Radial standards.

Service Classification

Community Radial

Existing Origin / Destination

Downtown Transfer Station /
Chippenham Mall

Planned Origin / Destination

Southside Plaza / Chippenham Mall



LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	5:12 a.m. - 12:18 a.m.	5:12 a.m. - 12:18 a.m.
Saturday	6:00 a.m. - 12:18 a.m.	6:00 a.m. - 12:18 a.m.
Sunday	6:00 a.m. - 11:48 a.m.	6:00 a.m. - 11:48 a.m.

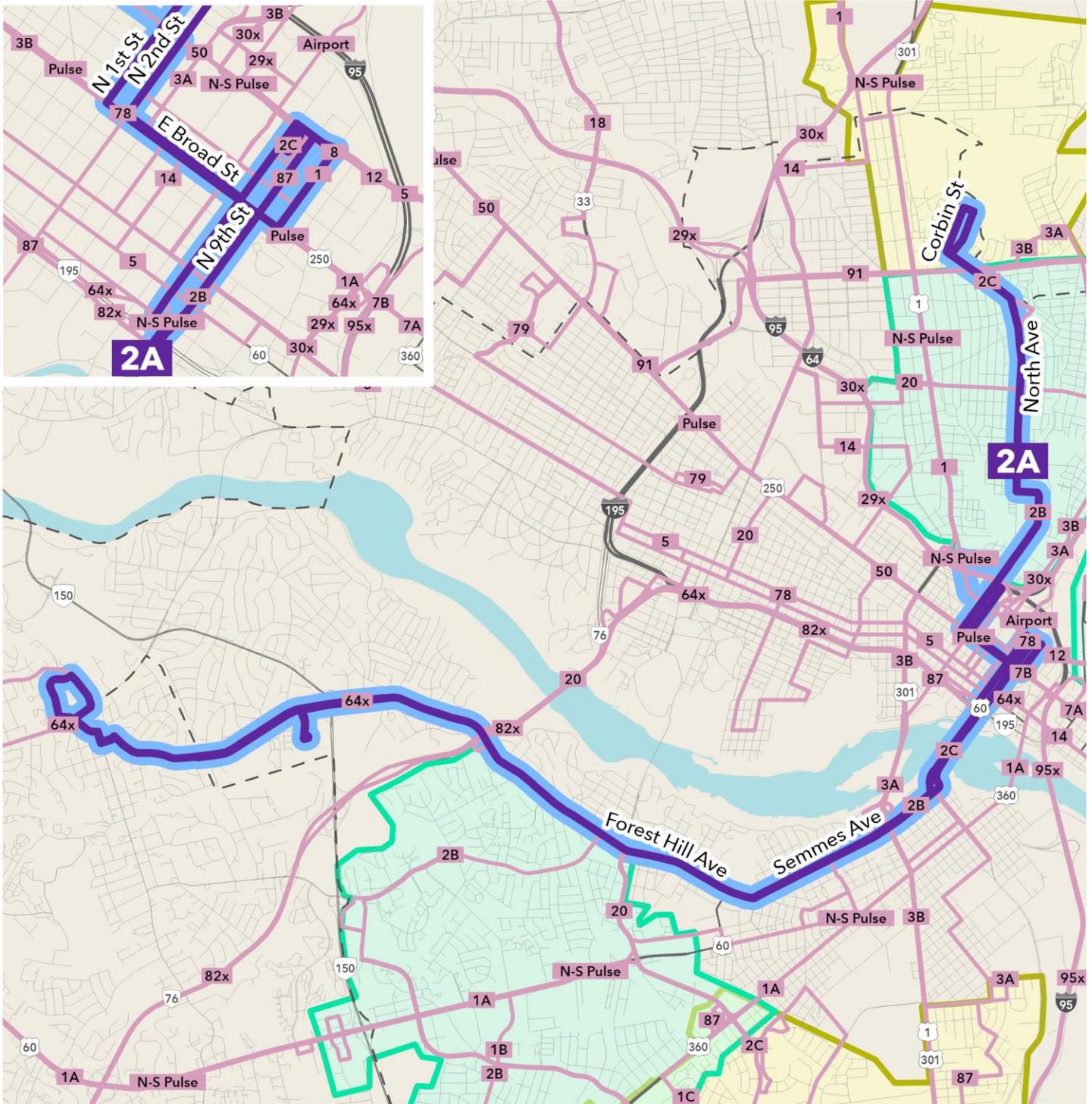
HEADWAY	Existing			Planned		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Early	30	-	-	30	-	-
AM Peak	30	30	45	30	30	30
Midday	30	30	45	30	30	30
PM Peak	30	30	45	30	30	30
Evening	60	60	45	60	60	60
Late Night	60	60	45	60	60	60

1C Hull/Elkhardt

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	No changes.			✓
FY 2026	No changes.			
FY 2027	No changes.			
FY 2028	No changes.			
FY 2029	Truncate Route 1C service north of Southside Plaza in conjunction with implementation of the North-South BRT. Improve Sunday headways to 30 minutes during the peak and midday periods, with hourly service in the evening and late night.	✓	✓	
FY 2030	No changes.			
FY 2031	No changes.			
FY 2032	No changes.			
FY 2033	No changes.			
FY 2034	No changes.			
Out Years	No changes.			

2A North Ave/Forest Hill



Planned Route 2A

- Planned Alignment
- Existing Alignment
- Planned Routes
- Planned LINK Microtransit
- City of Richmond Microtransit
- Jurisdiction Boundary



2A North Ave/Forest Hill

PLANNED CHANGES

Improve Weekday and Saturday headways to 30 minutes during the peak and midday periods; combined with Route 2B, this will provide 15-minute service on Semmes Road and Forest Hill Avenue east of Jahnke Road. North of Semmes Avenue and West 26th Street, Routes 2A, 2B, and 2C will offer a combined headway of 10 minutes. Improve span to end at 1:00 a.m.

JUSTIFICATION

- Route 2A is a well-performing route on key corridors that warrant more service, justifying increased levels of service.
- Headway improvements will result in 15-minute combined headways with 2B on Forest Hill Avenue east of Jahnke Avenue and 10-minute headways on the 2A/B/C shared corridor.
- Route 2A will connect to the Washington Park-Azalea Avenue microtransit zone at its northern terminus.
- Span improvements will meet Arterial service standards.

Service Classification

Arterial

Existing Origin / Destination

Moss Side / Stony Point Medical Center

Planned Origin / Destination

Moss Side / Stony Point Medical Center



Notes

The northbound detour along Leigh Street, Chamberlayne Avenue, and Charity Street will be eliminated when road work on the 1st Street Bridge is complete.

LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	5:00 a.m. - 12:06 a.m.	5:00 a.m. - 1:00 a.m.
Saturday	6:00 a.m. - 11:58 p.m.	6:00 a.m. - 1:00 a.m.
Sunday	6:15 a.m. - 12:35 a.m.	6:15 a.m. - 1:00 a.m.

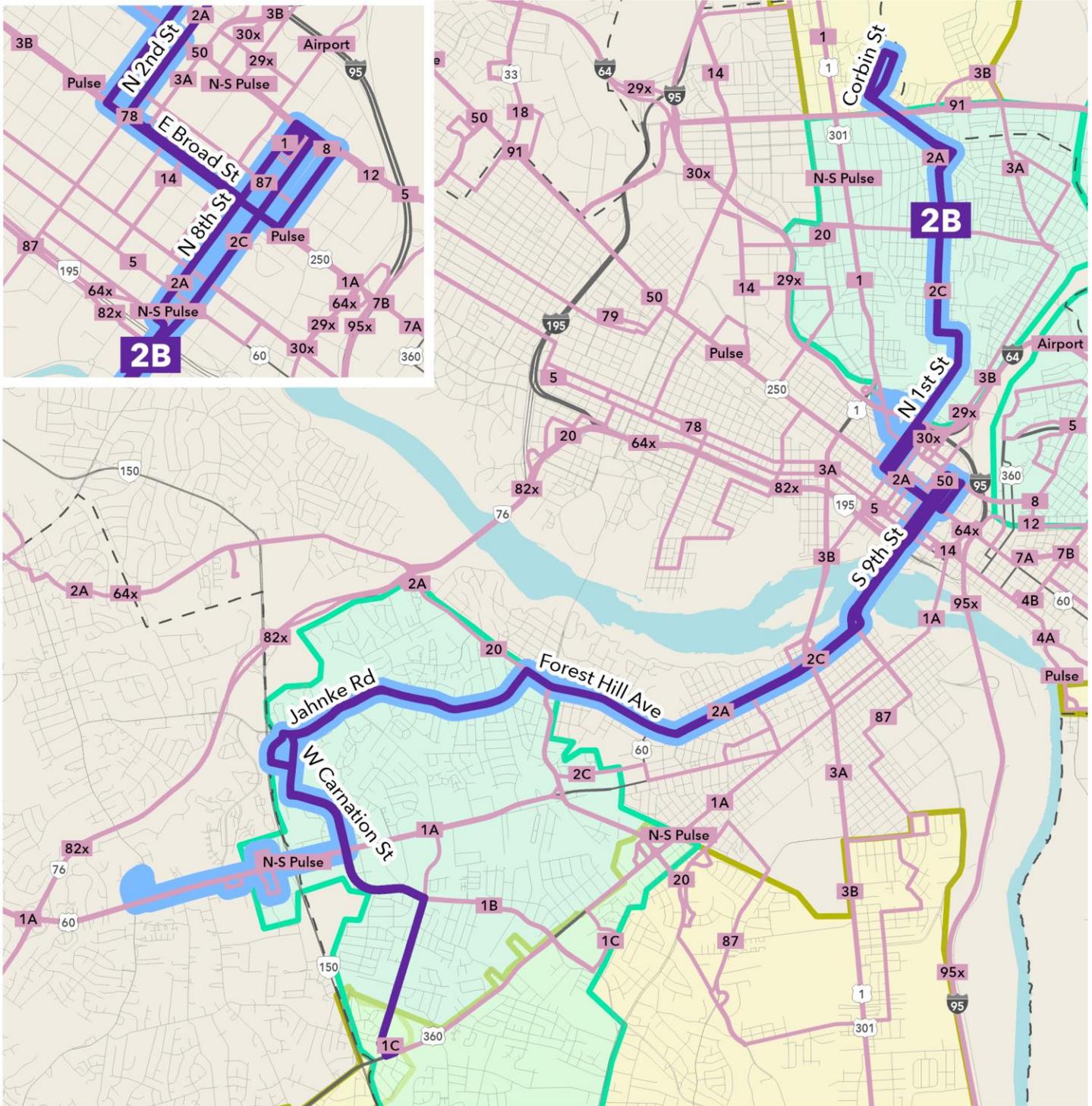
HEADWAY	Existing			Planned		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Early	60	-	-	30	-	-
AM Peak	60	60	60	30	30	60
Midday	60	60	60	30	30	60
PM Peak	60	60	60	30	30	60
Evening	60	60	60	60	60	60
Late Night	60	60	60	60	60	60

2A North Ave/Forest Hill

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	No changes.	✓		
FY 2026	No changes.			
FY 2027	No changes.			
FY 2028	No changes.			
FY 2029	No changes.			
FY 2030	Improve weekday headways to 30 minutes in the early, peak, and midday periods.			
FY 2031	No changes.			
FY 2032	No changes.			
FY 2033	Improve span to end at 1:00 a.m. every day and improve Saturday headways to 30 minutes in the peak and midday periods.		✓	✓
FY 2034	No changes.			
Out Years	No changes.			

2B North Ave/Jahnke/Elkhardt



Planned Route 2B

- Planned Alignment
- Existing Alignment
- Planned Routes
- Planned LINK Microtransit
- City of Richmond Microtransit
- Jurisdiction Boundary



2B North Ave/Jahnke/Elkhardt

PLANNED CHANGES

Realign Route 2B south of the intersection of Carnation Street and Midlothian Turnpike to travel south on Carnation Street and Whitehead Road, terminating at Chippenham Mall, where it will connect to Routes 1B, 1C, and the Clover Dale microtransit zone. Service along Midlothian Turnpike from Carnation Street to Centura College will be provided by the North-South BRT and Route 1A (Route 2B will not be realigned until the North-South BRT begins service). Improve Weekday and Saturday headways to 30 minutes during the peak and midday periods, resulting in a combined 15-minute headway from Routes 2A and 2B on Semmes Road and Forest Hill Avenue east of Jahnke Road. North of Semmes Avenue and West 26th Street, Routes 2A, 2B, and 2C will offer a combined headway of 10 minutes. Improve Weekday span to end at 1:00 a.m. and Saturday span to 6:00 a.m. to 1:00 a.m.

JUSTIFICATION

- Route 2B is a well-performing route on key corridors that warrant more service, justifying increased levels of service.
- Route 1A and North-South BRT will provide local and high-frequency service on Midlothian Turnpike, allowing Route 2B to provide new connections north from Chippenham Mall and Elkhardt.
- Span improvements will meet Arterial service standards.

Service Classification

Arterial

Existing Origin / Destination

Moss Side / Chippenham Square

Planned Origin / Destination

Moss Side / Chippenham Mall



Notes

The northbound detour along Leigh Street, Chamberlayne Avenue, and Charity Street will be eliminated when road work on the 1st Street Bridge is complete.

LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	5:30 a.m. - 12:46 a.m.	5:30 a.m. - 1:00 a.m.
Saturday	6:24 a.m. - 12:42 a.m.	6:00 a.m. - 1:00 a.m.
Sunday	6:05 a.m. - 12:52 a.m.	6:05 a.m. - 1:00 a.m.

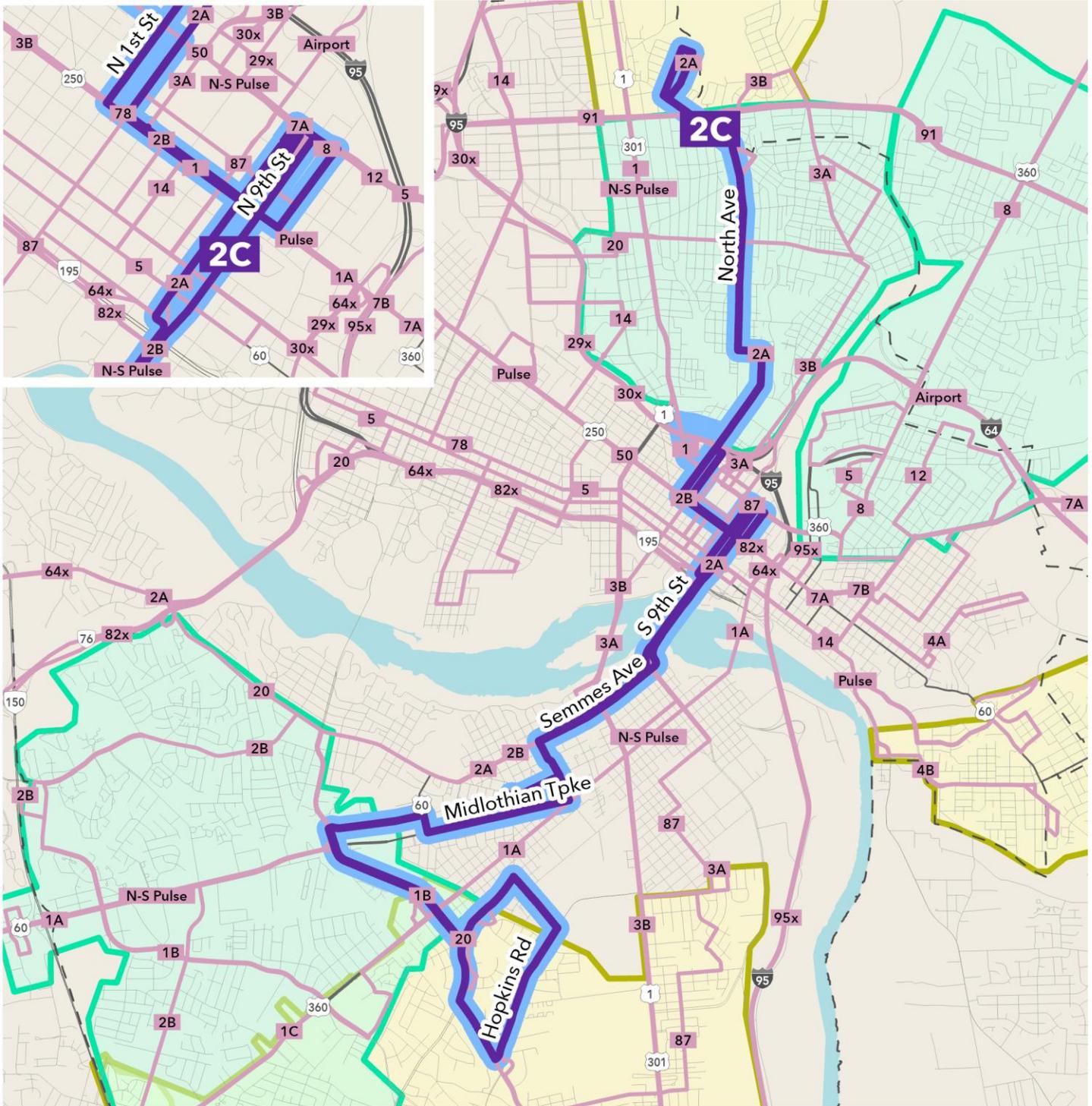
HEADWAY	Existing			Planned		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Early	60	-	-	30	-	-
AM Peak	60	60	60	30	30	60
Midday	60	60	60	30	30	60
PM Peak	60	60	60	30	30	60
Evening	60	60	60	60	60	60
Late Night	60	60	60	60	60	60

2B North Ave/Jahnke/Elkhardt

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	No changes.			
FY 2026	No changes.			
FY 2027	No changes.			
FY 2028	No changes.			
FY 2029	Realign Route 2B away from Midlothian Turnpike to travel along Carnation Street and Whitehead Road, terminating at Chippenham Mall.	✓		
FY 2030	Improve weekday headways to 30 minutes in the early, peak, and midday periods.			
FY 2031	No changes.			
FY 2032	No changes.			
FY 2033	Improve span to begin at 6:00 a.m. on Saturdays and end at 1:00 a.m. every day. Improve Saturday headways to 30 minutes in the peak and midday periods.		✓	✓
FY 2034	No changes.			
Out Years	No changes.			

2C North Ave/Midlothian/Belt Blvd



Planned Route 2C

- Planned Alignment
- Planned Routes
- Planned LINK Microtransit
- City of Richmond Microtransit
- Jurisdiction Boundary



2C North Ave/Midlothian/Belt Blvd

PLANNED CHANGES

Improve Saturday span to end at 1:00 a.m. North of Semmes Avenue and West 26th Street, Routes 2A/B/C will offer a combined headway of 10 minutes.

JUSTIFICATION

- Route 2C provides a faster one-seat ride than Route 87 from the VA Medical Center to Downtown Richmond. Route 2C is also the only route from the 2A/B/C family to offer connections at the Southside Plaza.
- Saturday span improvements match the Sunday span and meet Arterial service standards.

Service Classification

Arterial

Existing Origin / Destination

Moss Side / Circle Shopping Center

Planned Origin / Destination

Moss Side / VA Hospital



Notes

The northbound detour along Leigh Street, Chamberlayne Avenue, and Charity Street will be eliminated when road work on the 1st Street Bridge is complete.

LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	5:05 a.m. - 1:51 a.m.	5:05 a.m. - 1:51 a.m.
Saturday	5:45 a.m. - 12:40 a.m.	5:45 a.m. - 1:00 a.m.
Sunday	6:15 a.m. - 1:00 a.m.	6:15 a.m. - 1:00 a.m.

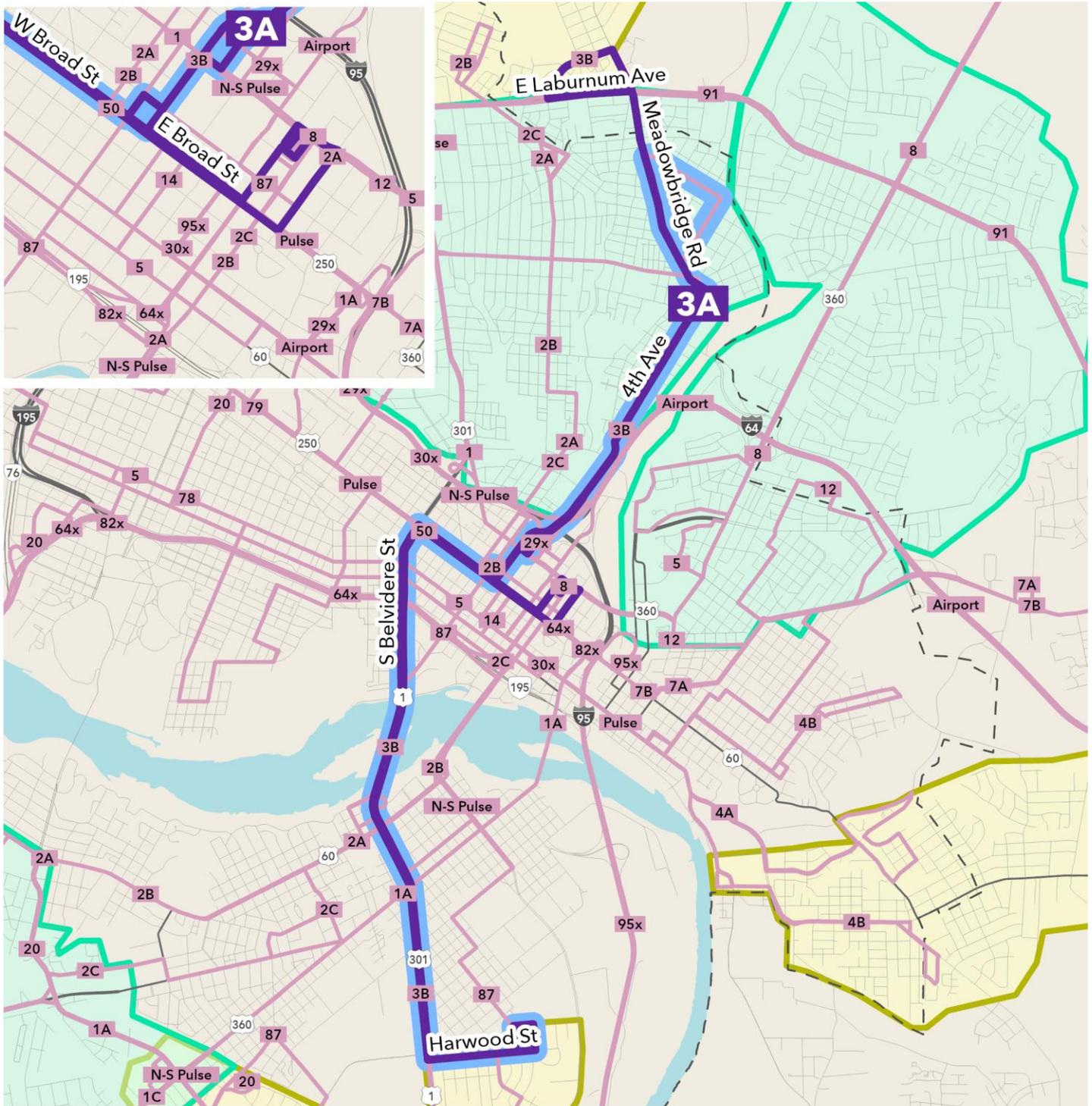
HEADWAY	Existing			Planned		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Early	30	-	-	30	-	-
AM Peak	30	30	60	30	30	60
Midday	30	30	60	30	30	60
PM Peak	30	30	60	30	30	60
Evening	60	60	60	60	60	60
Late Night	60	60	60	60	60	60

2C North Ave/Midlothian/Belt Blvd

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	No changes.	✓	✓	
FY 2026	No changes.			
FY 2027	No changes.			
FY 2028	No changes.			
FY 2029	No changes.			
FY 2030	No changes.			
FY 2031	No changes.			
FY 2032	No changes.			
FY 2033	Improve Saturday span to end at 1:00 a.m.			✓
FY 2034	No changes.			
Out Years	No changes.			

3A Highland Park/US 1/Harwood



Planned Route 3A

- Planned Alignment
- Existing Alignment
- Planned Routes
- Planned LINK Microtransit
- City of Richmond Microtransit
- Jurisdiction Boundary



3A Highland Park/US 1/Harwood

PLANNED CHANGES

Extend Route 3A north on Meadowbridge Road to Laburnum Avenue, terminating on Pilots Lane at Orinoco Avenue. In the northbound direction, Route 3A will serve Meadowbridge Road instead of 1st Avenue and Highland Street. On Weekdays and Saturdays, introduce service every 30 minutes in the evening and hourly in the late night on Route 3A with a deviation to the Downtown Transfer Station, replacing Route 3C. Introduce Sunday service on Route 3A. On Sundays, Route 3A will serve the Downtown Transfer Station all day, with 30-minute headways during the peak, midday, and evening periods and 60-minute headways in the late-night period. Every day of the week, Route 3A and 3B will each operate 30-minute headways during the daytime, resulting in a combined 15-minute headway on their shared segments. Late nights will maintain hourly service on Harwood Street for Route 3A and hourly service on Richmond Highway for Route 3B, providing an effective 30-minute headway on their shared segments.

Service Classification

Arterial

Existing Origin / Destination

Highland Park / Lone & Harwood

Planned Origin / Destination

Laburnum / Lone & Harwood



JUSTIFICATION

- Route 3A will provide connections to Route 91 and the Azalea microtransit zone every 30 minutes.
- With 30-minute evening and Sunday headways, Routes 3A/B will replace 3C with higher nighttime and Sunday frequencies without overserving Richmond Highway.
- Span improvements cover Route 3C's levels of service and meet Arterial service standards.

LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	5:00 a.m. - 7:20 a.m.	5:00 a.m. - 1:28 a.m.
Saturday	6:00 a.m. - 7:15 p.m.	6:00 a.m. - 1:00 a.m.
Sunday	-	6:00 a.m. - 1:00 a.m.

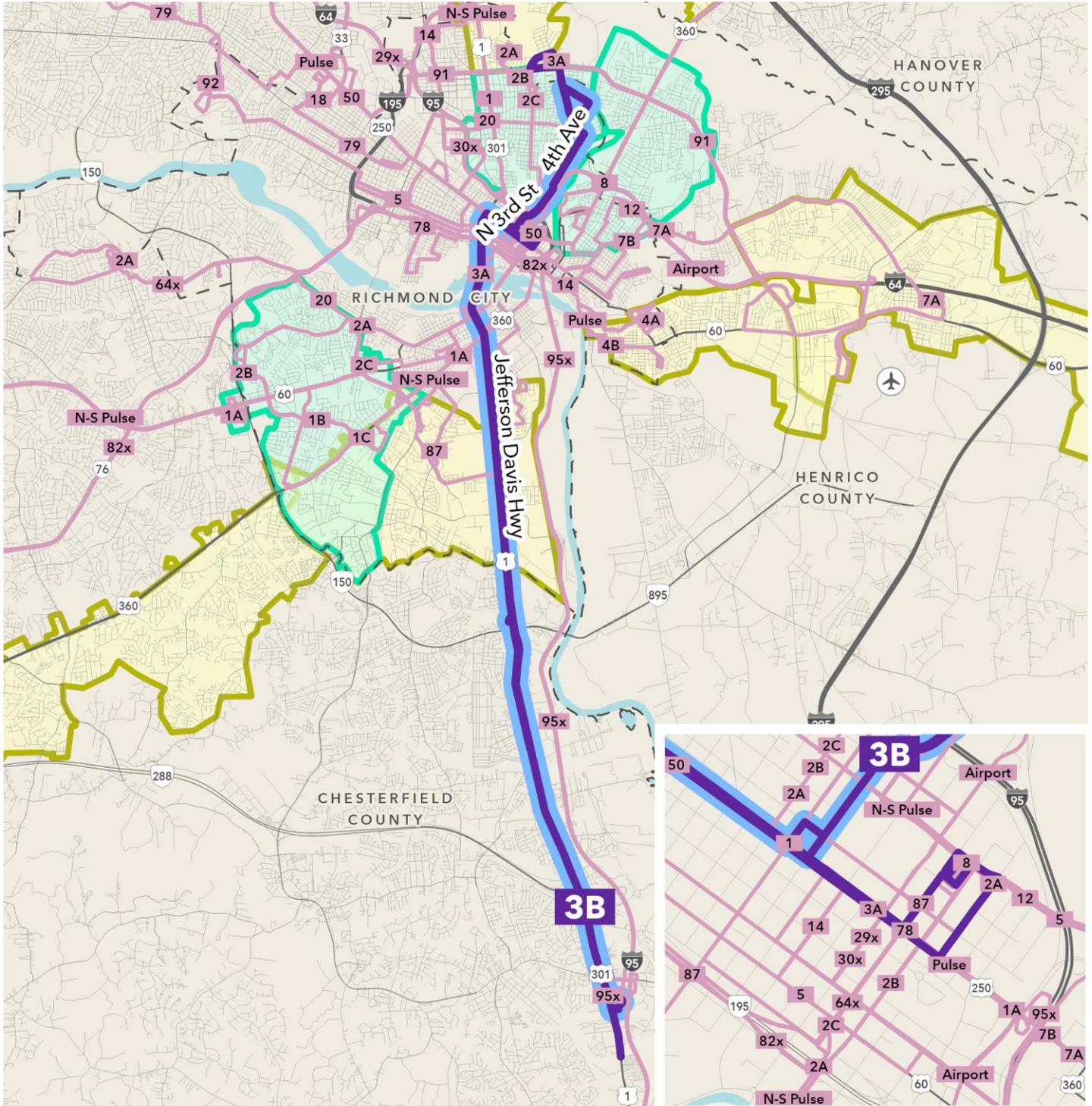
HEADWAY	Existing			Planned		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Early	30	-	-	30	-	-
AM Peak	30	30	-	30	30	30
Midday	30	30	-	30	30	30
PM Peak	30	30	-	30	30	30
Evening	-	-	-	30	30	30
Late Night	-	-	-	60	60	60

3A Highland Park/US 1/Harwood

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	No changes.			
FY 2026	No changes.			
FY 2027	No changes.			
FY 2028	No changes.			
FY 2029	No changes.			
FY 2030	No changes.			
FY 2031	Extend Route 3A north on Meadowbridge Road to Laburnum Avenue, terminating on Pilots Lane at Orinoco Avenue. On weekdays and Saturdays, replace Route 3C by introducing evening and late-night service with a deviation to the Downtown Transfer Station, operating every 30 minutes in the evening and hourly in the late night. On Sundays, introduce service all day, including a deviation to the Downtown Transfer Station, with 30-minute headways during the peak, midday, and evening periods and 60-minute headways in the late-night period.	✓	✓	✓
FY 2032	No changes.			
FY 2033	No changes.			
FY 2034	No changes.			
Out Years	No changes.			

3B Highland Park/US 1/Colbrook



Planned Route 3B

- Planned Alignment
- Existing Alignment
- Planned Routes
- Planned LINK Microtransit
- City of Richmond Microtransit
- Jurisdiction Boundary



3B Highland Park/US 1/Colbrook

PLANNED CHANGES

Extend Route 3B on Richmond Highway south from Brightpoint Community College to Colbrook Road and north on Meadowbridge Road to Laburnum Avenue, terminating on Pilots Lane at Orinoco Avenue. In the northbound direction, Route 3B will serve Meadowbridge Road instead of 1st Avenue and Highland Street. On weekdays and Saturdays, replace Route 3C by introducing evening and late-night service with a deviation to the Downtown Transfer Station, operating every 30 minutes in the evening and hourly in the late night. On Sundays, introduce service all day, including a deviation to the Downtown Transfer Station, with 30-minute headways during the peak, midday, and evening periods and 60-minute headways in the late-night period. After 10:00 p.m. every day, the southern terminus for Route 3B will be Food Lion on Richmond Highway near Chippenham Highway. Seven days a week, Route 3A and 3B will each operate 30-minute headways during the daytime and hourly during the late night, resulting in a combined 15-minute daytime headway and a combined 30-minute late-night headway.

Service Classification

Arterial

Existing Origin / Destination

Highland Park / Brightpoint Community College

Planned Origin / Destination

Laburnum / Colbrook



JUSTIFICATION

- Route 3B will serve the new development at Colbrook Road.
- With 30-minute evening and Sunday headways, Routes 3A/B will replace 3C with higher nighttime and Sunday frequencies without overserving Richmond Highway.
- Span improvements cover Route 3C's levels of service and meet Arterial service standards.

LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	5:11 a.m. - 8:04 p.m.	5:11 a.m. - 1:28 a.m.
Saturday	6:13 a.m. - 8:04 p.m.	6:13 a.m. - 1:00 a.m.
Sunday	-	6:00 a.m. - 1:00 a.m.

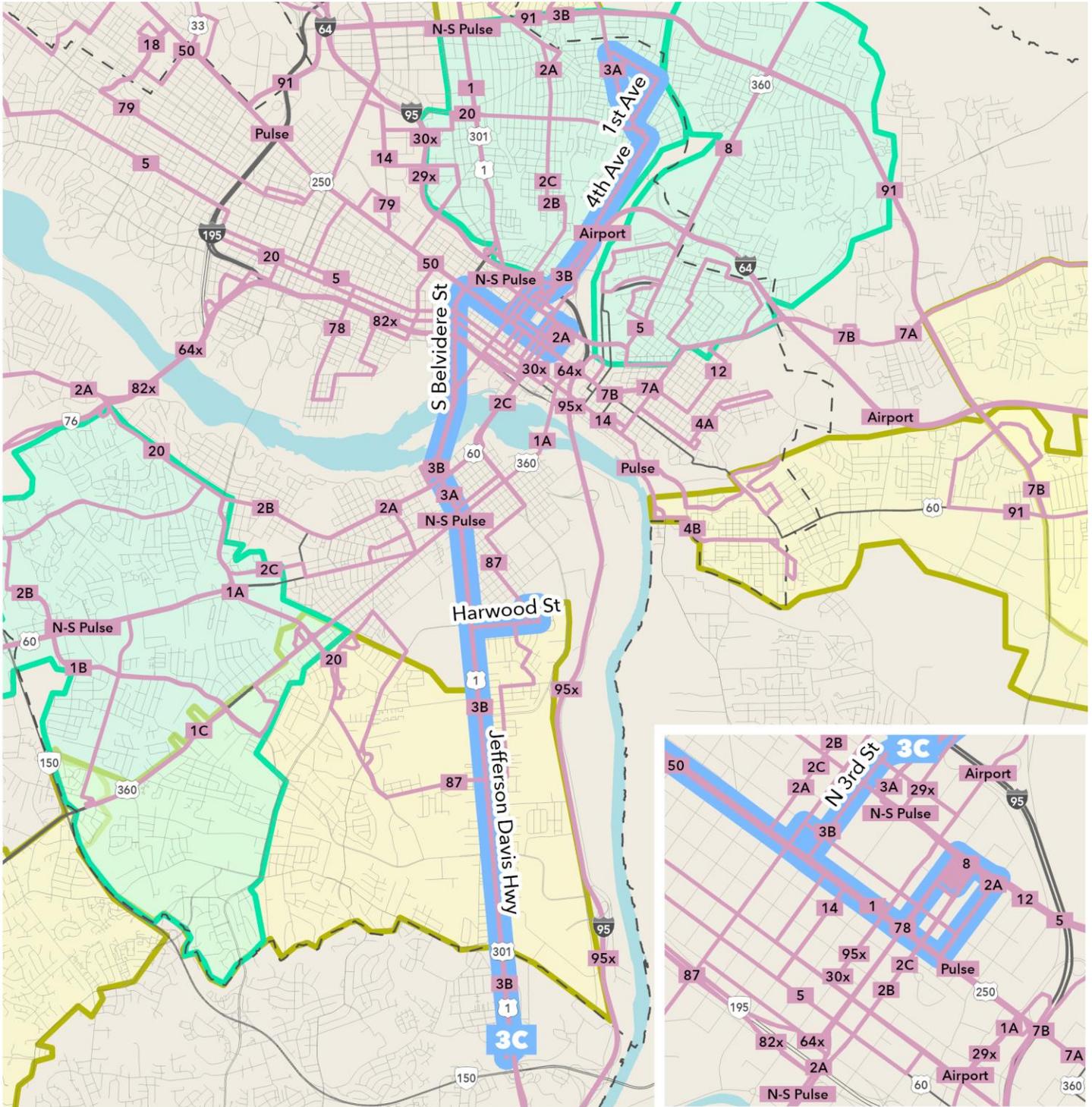
HEADWAY	Existing			Planned		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Early	30	-	-	30	-	-
AM Peak	30	30	-	30	30	30
Midday	30	30	-	30	30	30
PM Peak	30	30	-	30	30	30
Evening	-	-	-	30	30	30
Late Night	-	-	-	60	60	60

3B Highland Park/US 1/Colbrook

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	No changes.			
FY 2026	Extend Route 3B on Richmond Highway south from Brightpoint Community College to Colbrook Road.			
FY 2027	No changes.			
FY 2028	No changes.			
FY 2029	No changes.			
FY 2030	No changes.			
FY 2031	On weekdays and Saturdays, replace Route 3C by introducing evening and late-night service with a deviation to the Downtown Transfer Station, operating every 30 minutes in the evening and hourly in the late night. On Sundays, introduce service all day, including a deviation to the Downtown Transfer Station, with 30-minute headways during the peak, midday, and evening periods and 60-minute headways in the late-night period. After 10:00 p.m. every day, the southern terminus for Route 3B will be Food Lion on Richmond Highway near Chippenham Highway.		✓	✓
FY 2032	No changes.			
FY 2033	No changes.			
FY 2034	Extend Route 3B north on Meadowbridge Road to Laburnum Avenue, terminating on Pilots Lane at Orinoco Avenue.	✓		
Out Years	No changes.			

3C Highland Park/Harwood/US 1



Planned Route 3C

- Existing Alignment
- Planned LINK Microtransit
- Jurisdiction Boundary
- Planned Routes
- City of Richmond Microtransit



3C Highland Park/Harwood/US 1

PLANNED CHANGES

Route 3C will be eliminated to allow for increased levels of service on its alignment provided by Routes 3A and 3B in the evenings and on Sundays.

JUSTIFICATION

- Improving evening, late night, and Sunday headways to 30 minutes on Route 3C would overserve Richmond Highway south of Harwood Avenue. Instead, operating Routes 3A and 3B hourly will result in 30-minute headways on their shared segments.
- Service to the Downtown Transfer Station will be maintained by Routes 3A/B at night and on Sundays.

Service Classification

Eliminated

Existing Origin / Destination

Highland Park / Food Lion

Planned Origin / Destination

N/A



LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	7:00 p.m. - 1:28 a.m.	-
Saturday	7:00 p.m. - 12:26 a.m.	-
Sunday	6:00 a.m. - 12:26 a.m.	-

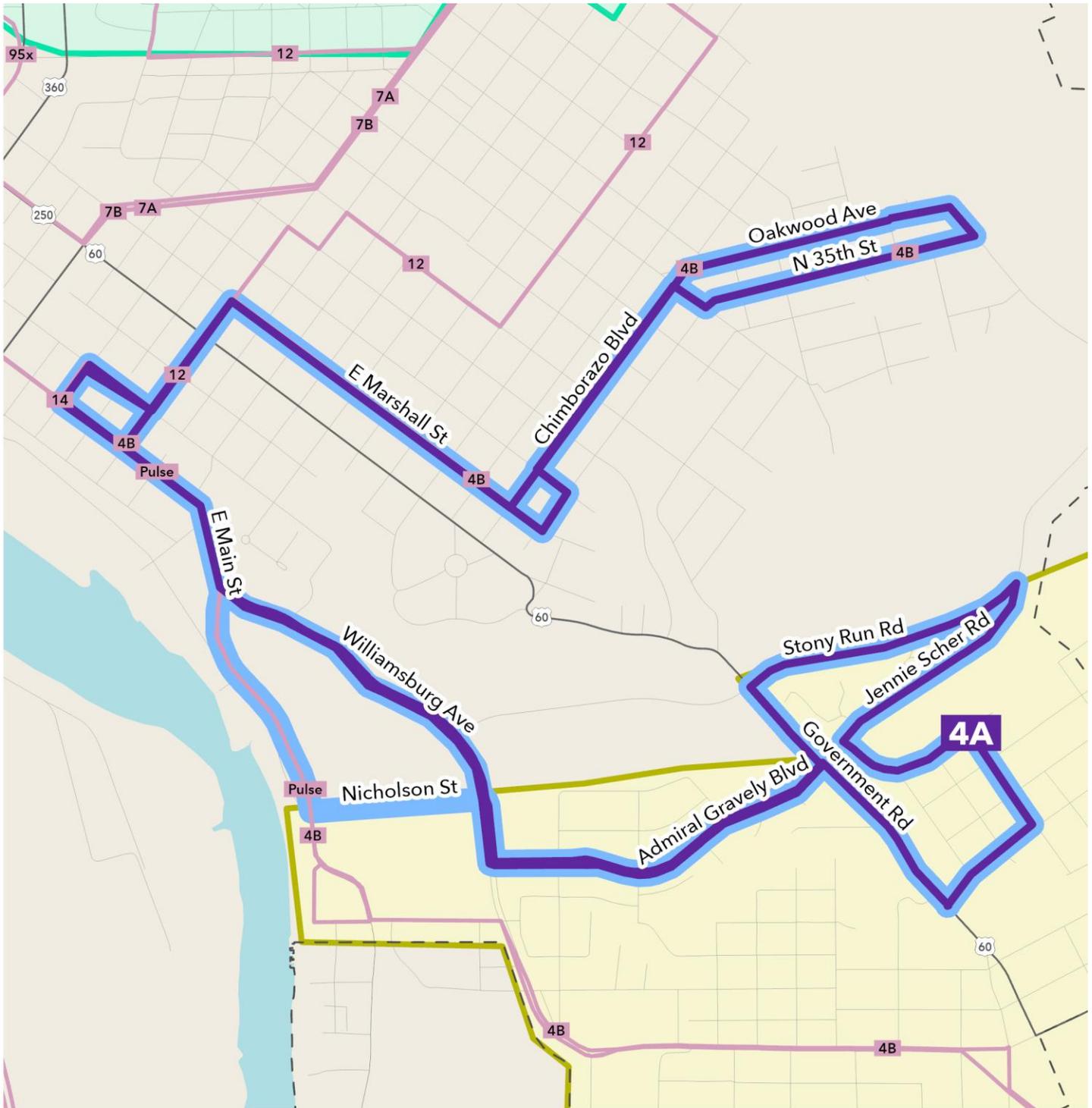
HEADWAY	Existing			Planned		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Early	-	-	-	-	-	-
AM Peak	-	-	30	-	-	-
Midday	-	-	30	-	-	-
PM Peak	-	-	30	-	-	-
Evening	30	30	30	-	-	-
Late Night	60	60	60	-	-	-

3C Highland Park/Harwood/US 1

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	No changes.			
FY 2026	No changes.			
FY 2027	No changes.			
FY 2028	No changes.			
FY 2029	No changes.			
FY 2030	No changes.			
FY 2031	Eliminate Route 3C, with its service fully covered by the extended spans on Routes 3A and 3B.	✓	✓	✓
FY 2032	-			
FY 2033	-			
FY 2034	-			
Out Years	-			

4A Oakwood/Montrose



Planned Route 4A

- Planned Alignment
- Existing Alignment

- Planned Routes
- Planned LINK Microtransit

- City of Richmond Microtransit
- Jurisdiction Boundary



4A Oakwood / Montrose

PLANNED CHANGES

Improve weekday and Saturday headways to 30 minutes from 5:30 a.m. to 7:00 p.m. Headway improvements on Routes 4A and 4B will result in a 15-minute combined frequency along their shared segments on 25th Street, Marshall Street, Chimborazo Boulevard, Oakwood Avenue, and 35th Street.

JUSTIFICATION

- Headways on Route 4A must be improved to 30 minutes to restore previous levels of service and meet Community Radial service standards.
- The high density of transit users in Montrose justifies increased frequencies to that neighborhood.

Service Classification

Community Radial

Existing Origin / Destination

Oakwood / Rawlings & Government

Planned Origin / Destination

Oakwood / Rawlings & Government



LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	5:30 a.m. - 11:53 p.m.	5:30 a.m. - 11:53 p.m.
Saturday	5:30 a.m. - 11:53 p.m.	5:30 a.m. - 11:53 p.m.
Sunday	6:00 a.m. - 11:53 p.m.	6:00 a.m. - 11:53 p.m.

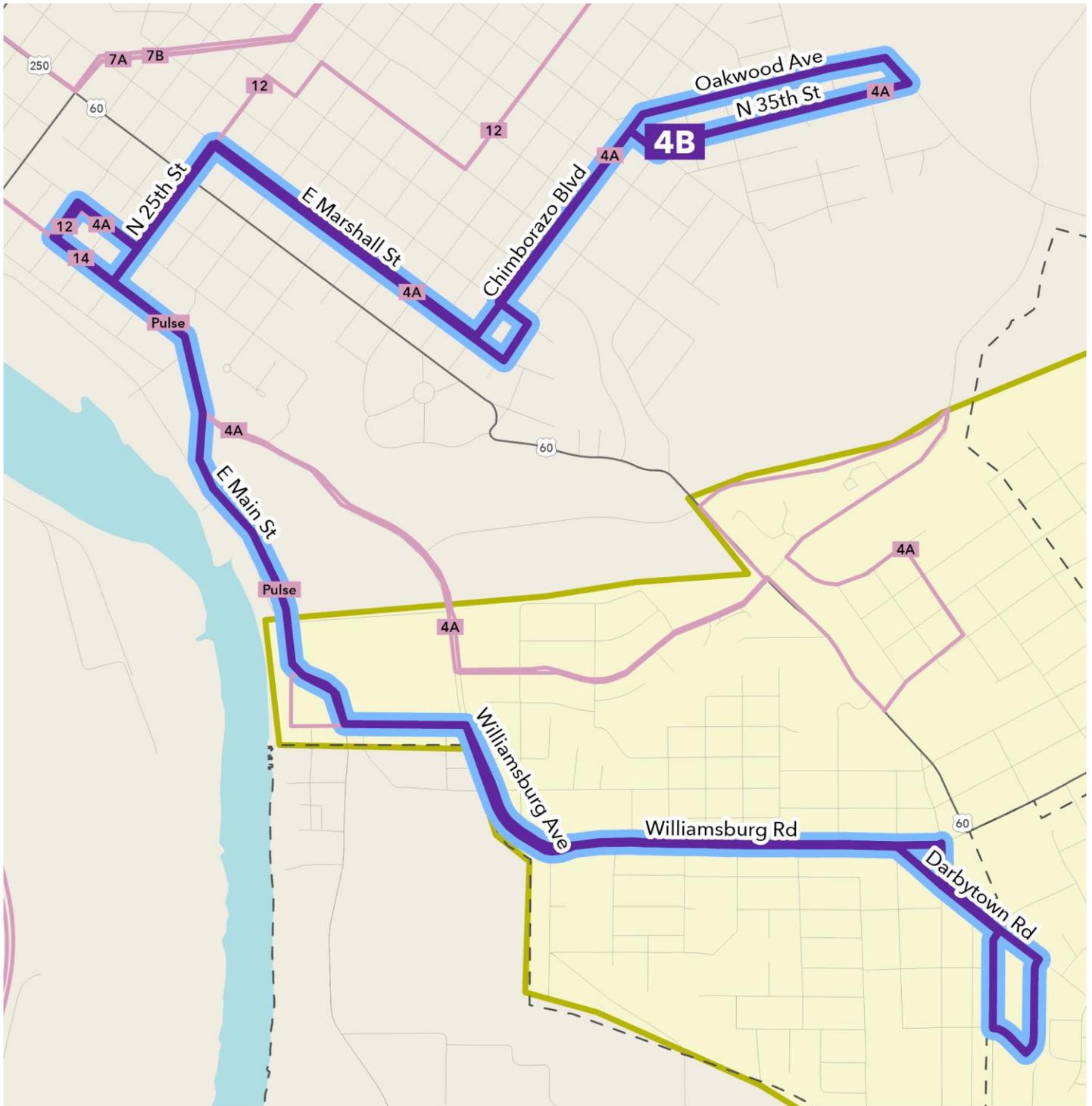
HEADWAY	Existing			Planned		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Early	60	60	-	30	30	-
AM Peak	60	60	60	30	30	60
Midday	60	60	60	30	30	60
PM Peak	60	60	60	30	30	60
Evening	60	60	60	60	60	60
Late Night	60	60	60	60	60	60

4A Oakwood / Montrose

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	No changes.	✓		✓
FY 2026	No changes.			
FY 2027	No changes.			
FY 2028	No changes.			
FY 2029	No changes.			
FY 2030	No changes.			
FY 2031	No changes.			
FY 2032	Improve weekday and Saturday headways to 30 minutes during the early, peak, and midday periods.		✓	
FY 2033	No changes.			
FY 2034	No changes.			
Out Years	No changes.			

4B Oakwood/Darbytown



Planned Route 4B

- Planned Alignment
- Existing Alignment
- Planned Routes
- Planned LINK Microtransit
- Jurisdiction Boundary



4B Oakwood/Darbytown

PLANNED CHANGES

Improve weekday and Saturday headways to 30 minutes from 5:30 a.m. to 7:00 p.m. Headway improvements on Routes 4A and 4B will result in a 15-minute combined frequency along their shared segments on 25th Street, Marshall Street, Chimborazo Boulevard, Oakwood Avenue, and 35th Street.

JUSTIFICATION

- Headways on Route 4B will be improved to 30 minutes to meet Community Radial service standards and maintain effective 30-minute peak period frequencies between Main Street and Oakwood.
- The high density of transit users in Fulton Hill justifies increased frequencies to that neighborhood.

Service Classification

Community Radial

Existing Origin / Destination

Oakwood / Henrico Arms Place

Planned Origin / Destination

Oakwood / Henrico Arms Place



LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	5:30 a.m. - 11:20 p.m.	5:30 a.m. - 11:20 p.m.
Saturday	5:30 a.m. - 11:20 p.m.	5:30 a.m. - 11:20 p.m.
Sunday	5:30 a.m. - 11:20 p.m.	5:30 a.m. - 11:20 p.m.

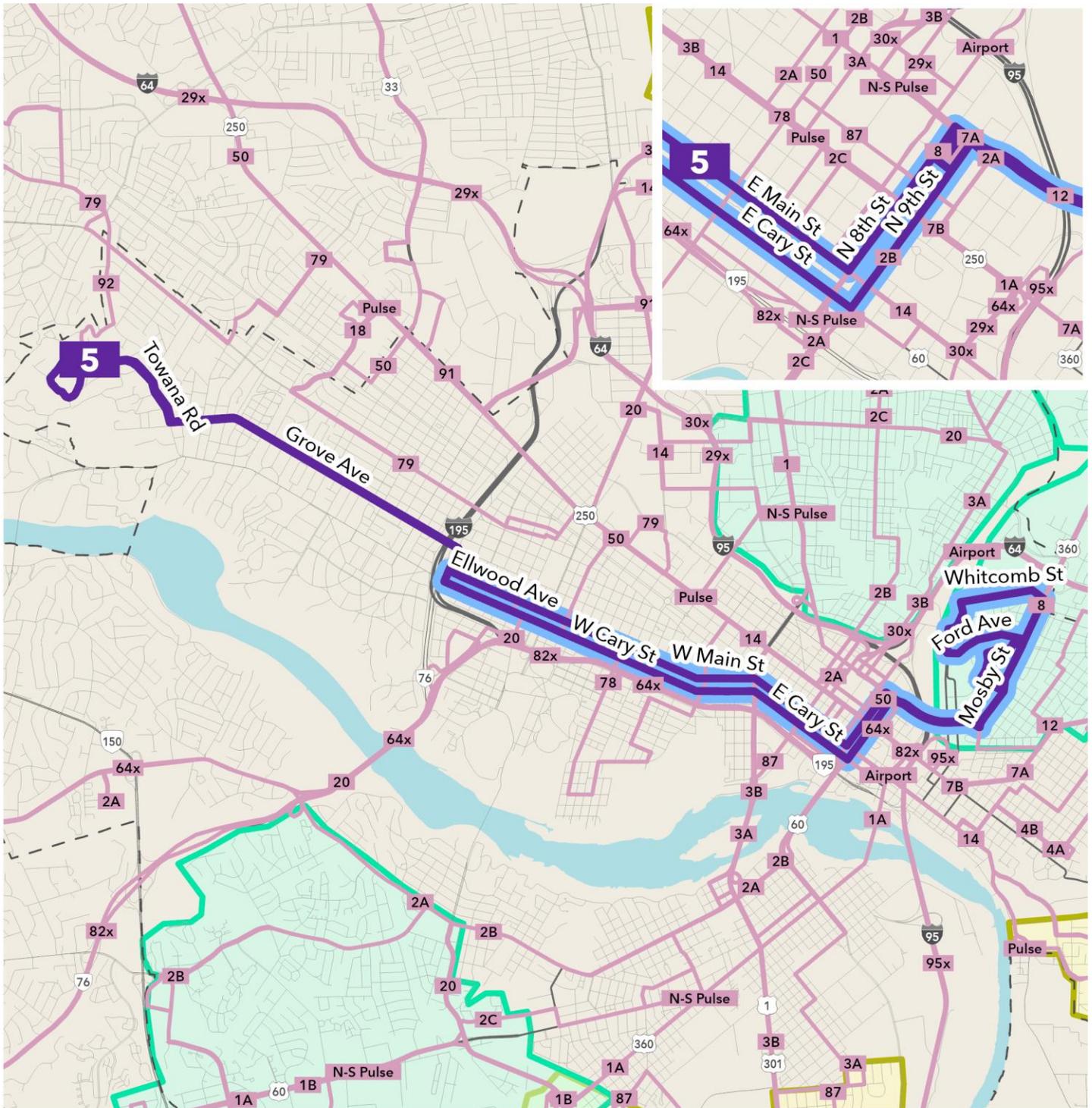
HEADWAY	Existing			Planned		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Early	60	60	60	30	30	60
AM Peak	60	60	60	30	30	60
Midday	60	60	60	30	30	60
PM Peak	60	60	60	30	30	60
Evening	60	60	60	60	60	60
Late Night	60	60	60	60	60	60

4B Oakwood/Darbytown

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	No changes.	✓		✓
FY 2026	No changes.			
FY 2027	No changes.			
FY 2028	No changes.			
FY 2029	No changes.			
FY 2030	No changes.			
FY 2031	No changes.			
FY 2032	Improve weekday and Saturday headways to 30 minutes during the early, peak, and midday periods.		✓	
FY 2033	No changes.			
FY 2034	No changes.			
Out Years	No changes.			

5 Grove/Cary/Main/Whitcomb



Planned Route 5

- Planned Alignment
- Planned Routes
- City of Richmond Microtransit
- Planned LINK Microtransit
- Jurisdiction Boundary



5 Grove/Cary/Main/Whitcomb

PLANNED CHANGES

Extend Route 5 west to the University of Richmond to cover most of the eliminated Route 77 (stops on Grove Avenue east of Thompson Street will not have service but will be located within approximately one-quarter mile of Routes 5 and 79). Route 5 will operate with a short turn at Thompson Street, serving Thompson and points east every 10 minutes during the weekday peak periods, every 15 minutes at other times before 10:00 p.m. every day, and every 30 minutes after 10:00 p.m. every day. Improve late night service to end at 1:00 a.m. every day. Some trips will continue on Grove Avenue to the University of Richmond from 5:40 a.m. to 10:00 p.m. on weekdays and 6:00 a.m. to 10:00 p.m. on weekends, providing service every half hour on weekdays and Saturdays until the evening peak and then operating hourly. On Sundays, service to the University of Richmond will be hourly.

JUSTIFICATION

- Route 5 is a very high performing route and serves major corridors with high transit demand, justifying 10-minute peak headways on weekdays.
- Adding Route 77 to Route 5 will provide a one-seat ride from downtown to the University of Richmond and provide additional new connections.
- East of Robinson Avenue, Route 77's alignment will be fully covered by other routes. By combining with Route 5, Route 77 will offer the same connections as its existing alignment while reducing redundancy and improving efficiency.
- Span improvements meet Arterial standards on the short turn; span and headway improvements will meet Community Radial standards for the long pattern to the University of Richmond.

Service Classification

Arterial

Existing Origin / Destination

Carytown / Whitcomb

Planned Origin / Destination

University of Richmond / Carytown / Whitcomb



Notes

This route has a planned short turn. Slashes in the headways table are used to indicate the short turn frequencies before the slash and the full route's frequencies after the slash.

LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	4:55 a.m. - 12:31 a.m.	4:55 a.m. - 1:00 a.m.
Saturday	5:35 a.m. - 11:51 p.m.	5:35 a.m. - 1:00 a.m.
Sunday	5:47 a.m. - 11:55 p.m.	5:47 a.m. - 1:00 a.m.

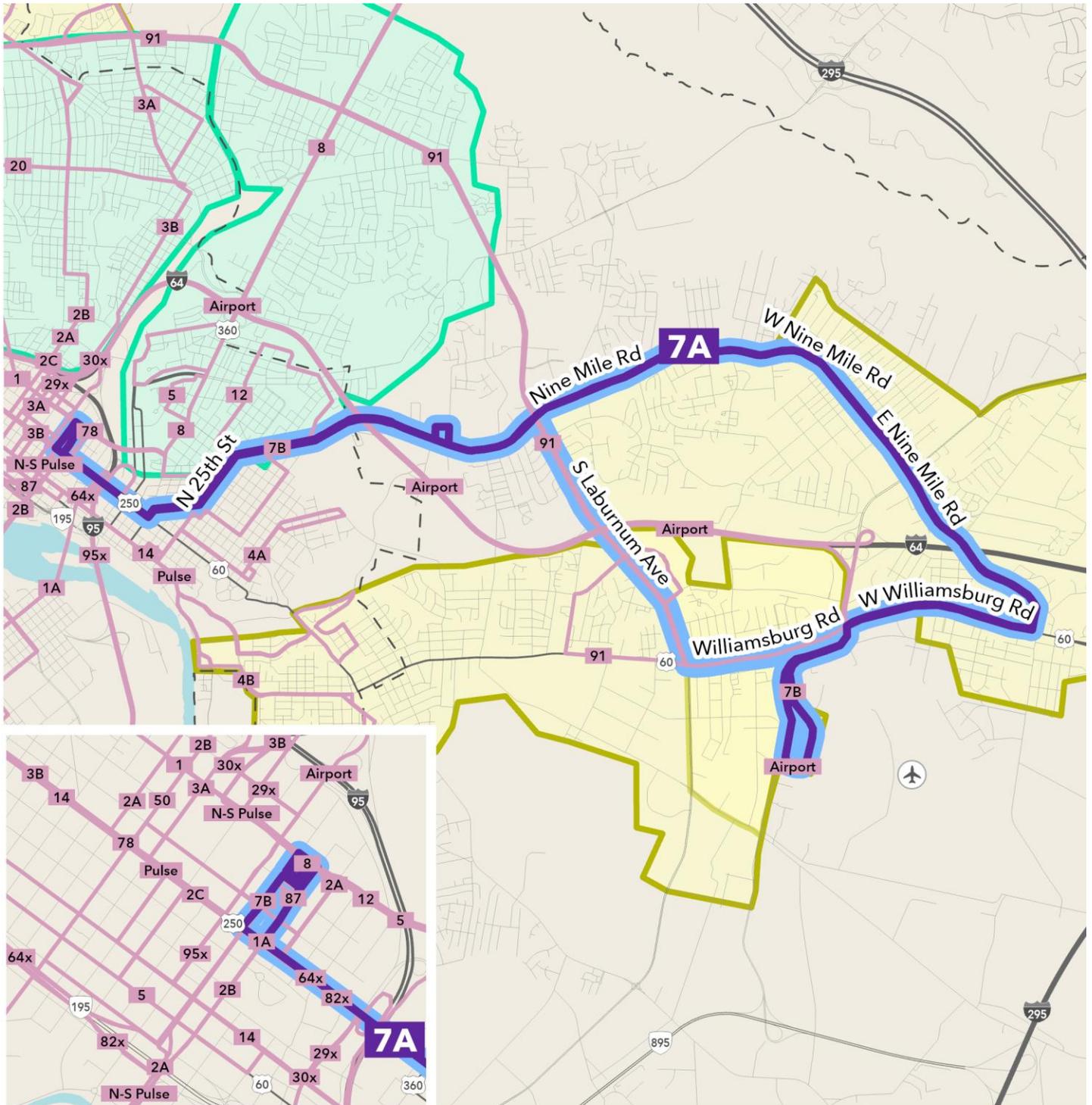
HEADWAY	Existing			Planned		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Early	15	15	30	15 / 30	15 / -	15 / -
AM Peak	15	15	30	10 / 30	15 / 30	15 / 60
Midday	15	15	30	15 / 30	15 / 30	15 / 60
PM Peak	15	15	30	10 / 30	15 / 30	15 / 60
Evening	30	30	30	15 / 60	15 / 60	15 / 60
Late Night	30	30	40	30 / -	30 / -	30 / -

5 Grove/Cary/Main/Whitcomb

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	No changes.			
FY 2026	Extend Route 5 on Grove Avenue and Three Chopt Road to the University of Richmond, replacing Route 77. Introduce a short turn at Thompson Street. Service to the University of Richmond will operate on the same span and headways as Route 77, but with weekday headways improved to 30 minutes all day.	✓		
FY 2027	No changes.			
FY 2028	Improve Route 5's span on the short turn to end at 1:00 a.m. every day of the week.			
FY 2029	No changes.			
FY 2030	No changes.			
FY 2031	On the short turn, improve weekday peak headways to 10 minutes. Introduce weekday evening service on the long pattern, operating hourly from 7:00 p.m. to 10:00 p.m.			
FY 2032	No changes.			
FY 2033	On the short turn, improve headways to 15 minutes during the weekday and Saturday evening periods.			
FY 2034	Improve headways on the long pattern to 30 minutes during the Saturday peak, midday, and evening periods. Improve Sunday headways on the short turn to 15 minutes in the early, peak, midday, and evening periods and 30 minutes during the late night. Improve weekend span on the long pattern to 6:00 a.m. to 10:00 p.m.		✓	✓
Out Years	No changes.			

7A Nine Mile/Airport



Planned Route 7A

- Planned Alignment
- Existing Alignment
- Planned Routes
- Planned LINK Microtransit
- City of Richmond Microtransit
- Jurisdiction Boundary



7A Nine Mile/Airport

PLANNED CHANGES

Realign the westbound alignment to match the eastbound alignment, such that Route 7A operates along Nine Mile Road east of Laburnum Avenue in both directions, providing a consistent connection to the Sandston-East Henrico microtransit zone. Improve headways to 30 minutes on weekdays and Saturdays during the peak and midday periods. Improve weekday span to end at 1:00 a.m. and weekend span to 6:00 a.m. to 1:00 a.m.

JUSTIFICATION

- Route 7A will offer a twice-hourly connection to the Sandston-East Henrico microtransit zone.
- Swapping the westbound alignments of 7A and 7B does not change riders' options but improves clarity by better distinguishing the two routes and creating two bidirectional routes instead of two one-way loops.
- Headway improvements meet Arterial standards along the portion of the route which overlaps with Route 7B. Span improvements meet Arterial standards along the full length of the route.
- Route 30x will provide express service from Downtown Richmond to the airport, while Routes 7A/B provide a local connection at a higher frequency and at night.

Service Classification

Arterial

Existing Origin / Destination

Downtown Transfer Station /
Richmond Airport

Planned Origin / Destination

Downtown Transfer Station /
Richmond Airport



LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	5:45 a.m. - 11:40 p.m.	5:45 a.m. - 1:00 a.m.
Saturday	7:00 a.m. - 11:50 p.m.	6:00 a.m. - 1:00 a.m.
Sunday	7:00 a.m. - 11:50 p.m.	6:00 a.m. - 1:00 a.m.

HEADWAY	Existing			Planned		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Early	60	-	-	60	-	-
AM Peak	60	60	60	30	30	60
Midday	60	60	60	30	30	60
PM Peak	60	60	60	30	30	60
Evening	60	60	60	60	60	60
Late Night	60	60	60	60	60	60

7A Nine Mile/Airport

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	Realign the westbound alignment to match the eastbound alignment, such that Route 7A operates along Nine Mile Road east of Laburnum Avenue in both directions. Improve weekday peak and midday headways to 30 minutes.	✓		
FY 2026	No changes.			
FY 2027	No changes.			
FY 2028	No changes.			
FY 2029	No changes.			
FY 2030	No changes.			
FY 2031	No changes.			
FY 2032	No changes.			
FY 2033	Improve weekday span to end at 1:00 a.m. and weekend span to 6:00 a.m. to 1:00 a.m.			✓
FY 2034	Improve Saturday headways to 30 minutes during the peak and midday periods.		✓	
Out Years	No changes.			

7B Nine Mile/Laburnum/Airport

PLANNED CHANGES

Realign the westbound alignment to match the eastbound alignment, such that Route 7B operates along Laburnum Avenue and Williamsburg Road in both directions, providing a more direct route to Richmond International Airport. Improve headways to 30 minutes on Weekdays and Saturdays during the peak and midday periods. Improve weekday span to end at 1:00 a.m. and weekend span to 6:00 a.m. to 1:00 a.m.

JUSTIFICATION

- Increased frequencies will improve service from downtown to the airport and provide combined 15-minute headways with Route 7A on Nine Mile Road.
- Swapping the westbound alignments of 7A and 7B does not change riders' options but improves clarity by better distinguishing the two routes and creating two bidirectional routes instead of two one-way loops.
- Headway improvements meet Arterial standards along the portion of the route which overlaps with Route 7A. Span improvements meet Arterial standards along the full length of the route.
- Route 30x will provide express service from Downtown Richmond to the airport, while Routes 7A/B provide a local connection at a higher frequency and at night.

Service Classification

Arterial

Existing Origin / Destination

Downtown Transfer Station /
Richmond Airport

Planned Origin / Destination

Downtown Transfer Station /
Richmond Airport



LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	5:11 a.m. - 11:08 p.m.	5:11 a.m. - 1:00 a.m.
Saturday	7:26 a.m. - 11:19 p.m.	6:00 a.m. - 1:00 a.m.
Sunday	7:26 a.m. - 11:20 p.m.	6:00 a.m. - 1:00 a.m.

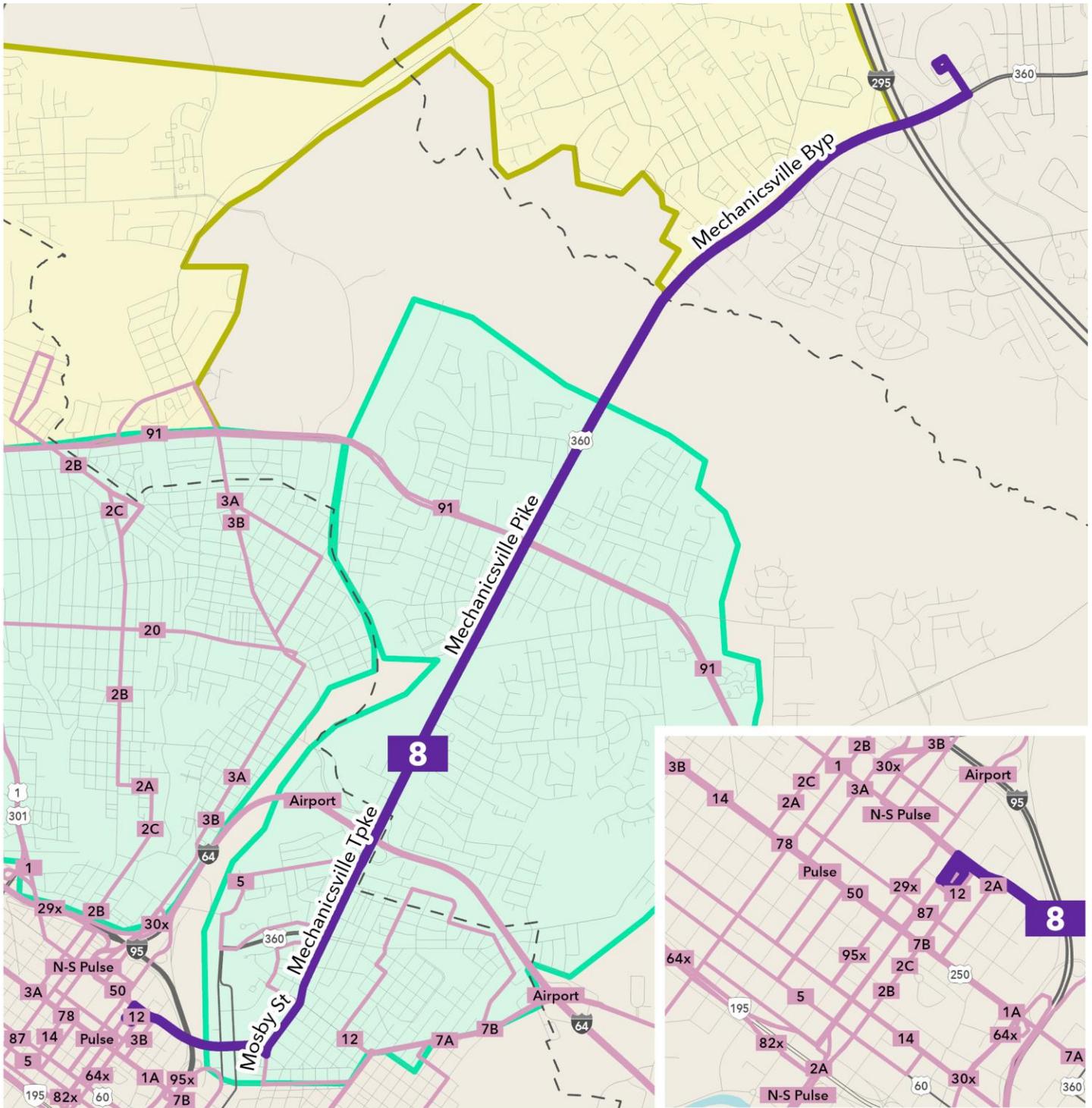
HEADWAY	Existing			Planned		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Early	60	-	-	60	-	-
AM Peak	60	60	60	30	30	60
Midday	60	60	60	30	30	60
PM Peak	60	60	60	30	30	60
Evening	60	60	60	60	60	60
Late Night	60	60	60	60	60	60

7B Nine Mile/Laburnum/Airport

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	Realign the westbound alignment to match the eastbound alignment, such that Route 7B operates along Laburnum Avenue and Williamsburg Road in both directions, providing a more direct route to Richmond International Airport. Improve weekday peak and midday headways to 30 minutes.	✓		
FY 2026	No changes.			
FY 2027	No changes.			
FY 2028	No changes.			
FY 2029	No changes.			
FY 2030	No changes.			
FY 2031	No changes.			
FY 2032	No changes.			
FY 2033	Improve weekday span to end at 1:00 a.m. and weekend span to 6:00 a.m. to 1:00 a.m.			✓
FY 2034	Improve Saturday headways to 30 minutes during peak and midday periods.		✓	
Out Years	No changes.			

8 Downtown/Mechanicsville



Planned Route 8

- Planned Alignment
- Planned LINK Microtransit
- Jurisdiction Boundary
- City of Richmond Microtransit
- Planned Routes



8 Downtown/Mechanicsville

PLANNED CHANGES

Introduce new service operating from the Downtown Transfer Station to Mechanicsville. Route 8 will travel on the Leigh Street Viaduct, then north along Mosby Street and Mechanicsville Turnpike to terminate at Bell Creek Road. Route 8 will operate seven days a week on an hourly schedule. On Weekdays it will operate from 5:30 a.m. to 7:00 p.m. and on weekends it will operate from 7:00 a.m. to 7:00 p.m.

JUSTIFICATION

- A new fixed bus route along Mechanicsville Pike will fill a geographic gap in the GRTC network, capturing new riders along a major regional corridor connecting Henrico and Hanover counties.
- This route will introduce fixed-route GRTC service to Hanover County, allowing existing and new riders to access essential shopping destinations.
- Route 8 will offer connections to Route 91 at Laburnum Avenue, Routes 5 and 12 in the East End, as well as all the routes available at the Downtown Transfer Station.
- This route will connect to the Azalea microtransit zone, enabling riders in that zone to access additional destinations in Henrico County and Mechanicsville.
- Implementation of this route meets Circulator/Feeder/Connector standards.

Service Classification

Circulator / Feeder / Connector

Existing Origin / Destination

N/A

Planned Origin / Destination

Downtown Transfer Station / Bell Creek Road



LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	-	5:30 a.m. – 7:00 p.m.
Saturday	-	7:00 a.m. – 7:00 p.m.
Sunday	-	7:00 a.m. – 7:00 p.m.

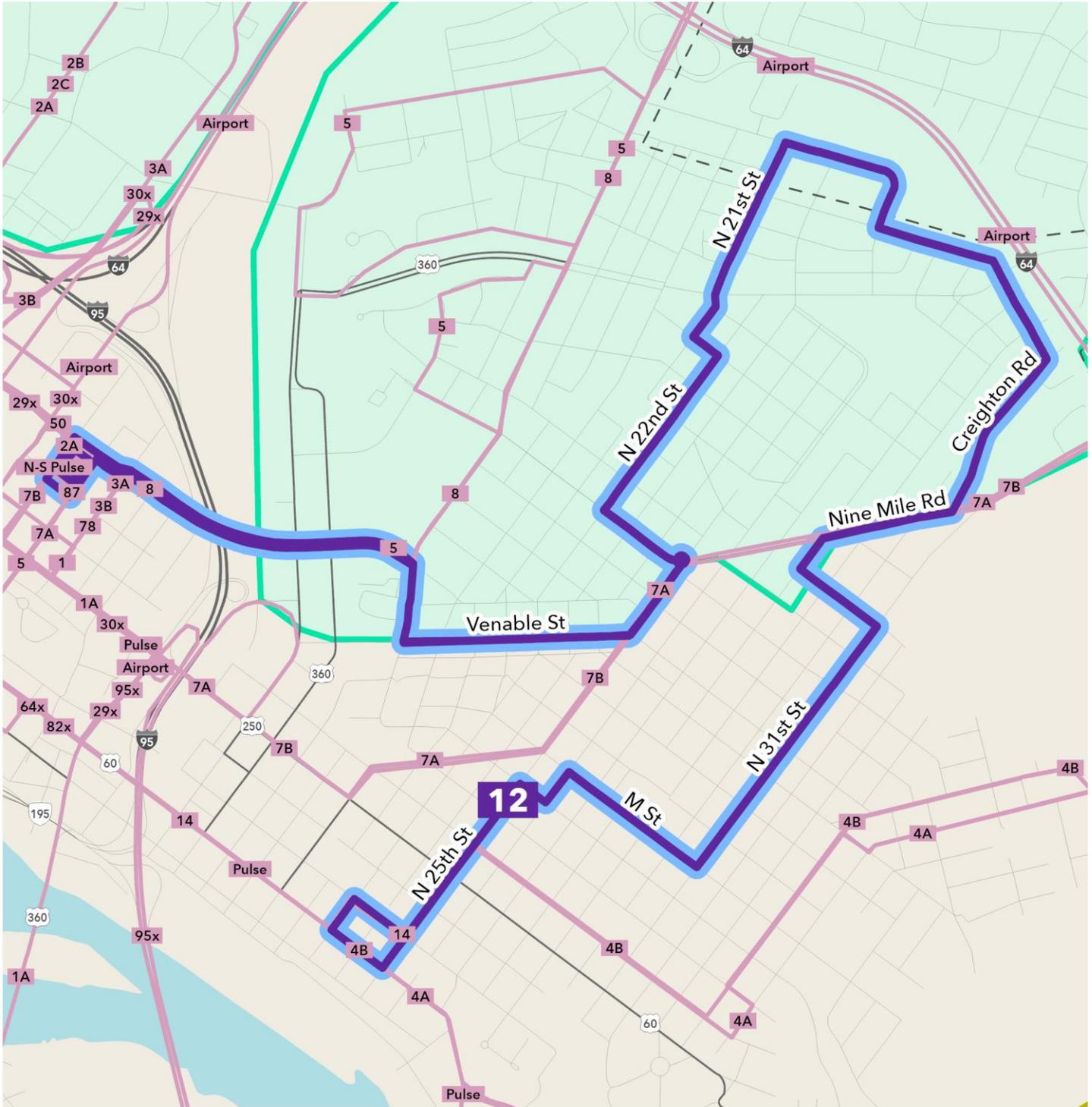
HEADWAY	Existing			Planned		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Early	-	-	-	60	-	-
AM Peak	-	-	-	60	60	60
Midday	-	-	-	60	60	60
PM Peak	-	-	-	60	60	60
Evening	-	-	-	-	-	-
Late Night	-	-	-	-	-	-

8 Downtown/Mechanicsville

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	Service not yet implemented.			
FY 2026	Service not yet implemented.			
FY 2027	Service not yet implemented.			
FY 2028	Service not yet implemented.			
FY 2029	Service not yet implemented.			
FY 2030	Service not yet implemented.			
FY 2031	Service not yet implemented.			
FY 2032	Service not yet implemented.			
FY 2033	Implement Route 8 from the Downtown Transfer Station along Mechanicsville Turnpike to Bell Creek Road in Mechanicsville, operating hourly from 5:30 a.m. to 7:00 p.m. on weekdays and 7:00 a.m. to 7:00 p.m. on weekends.	✓	✓	✓
FY 2034	No changes.			
Out Years	No changes.			

12 Church Hill



Planned Route 12

- Planned Alignment
- Existing Alignment
- Planned Routes
- City of Richmond Microtransit
- Jurisdiction Boundary



12 Church Hill

PLANNED CHANGES

Improve headways to 15 minutes from 6:00 p.m. to 10:00 p.m. seven days per week. Improve span to end at 1:00 a.m. every day of the week. No alignment changes.

JUSTIFICATION

- There is sufficient demand for frequent service on Route 12 every day of the week. However, Saturday and Sunday headway improvements could be implemented as a lower priority than weekday improvements.
- High levels of service are warranted due to high density and ridership, despite exceeding Community Radial standards.

Service Classification

Community Radial

Existing Origin / Destination

Downtown Transfer Station / 23rd & Franklin

Planned Origin / Destination

Downtown Transfer Station / 23rd & Franklin



LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	5:05 a.m. - 12:25 a.m.	5:05 a.m. - 1:00 a.m.
Saturday	5:50 a.m. - 12:24 a.m.	5:50 a.m. - 1:00 a.m.
Sunday	5:55 a.m. - 12:32 a.m.	5:55 a.m. - 1:00 a.m.

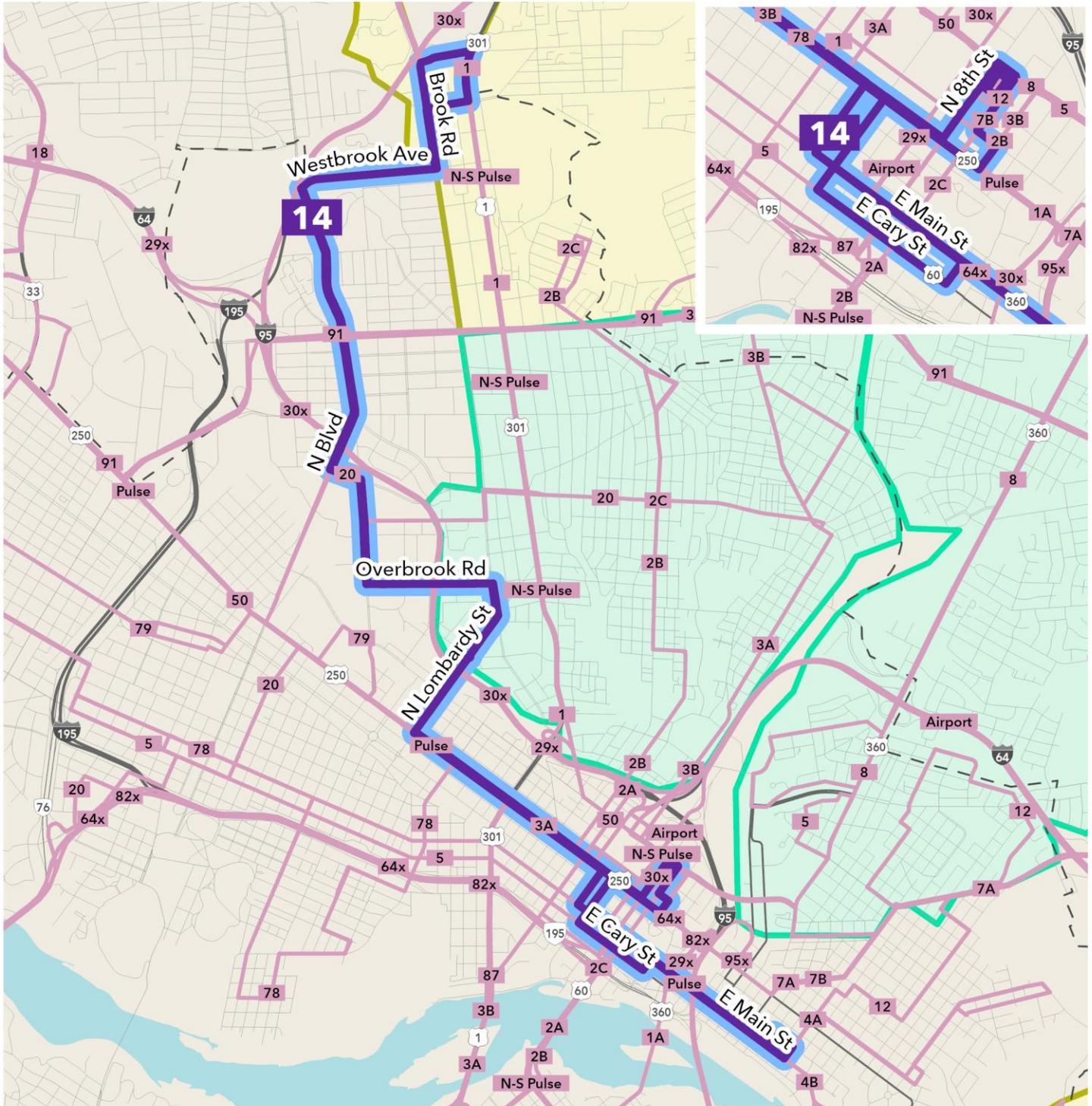
HEADWAY	Existing			Planned		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Early	30	30	30	30	30	30
AM Peak	30	30	30	15	15	15
Midday	30	30	30	15	15	15
PM Peak	30	30	30	15	15	15
Evening	30	30	30	15	15	15
Late Night	30	30	30	30	30	30

12 Church Hill

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	No changes.	✓		
FY 2026	Improve span to end at 1:00 a.m. every day of the week. Improve weekday peak headways to 15 minutes.			✓
FY 2027	No changes.			
FY 2028	No changes.			
FY 2029	No changes.			
FY 2030	No changes.			
FY 2031	No changes.			
FY 2032	Improve weekday midday headways to 15 minutes.			
FY 2033	Improve headways to 15 minutes during the weekday evening and Saturday peak, midday, and evening periods.			
FY 2034	Improve Sunday headways to 15 minutes during peak, midday, and evening periods.		✓	
Out Years	No changes.			

14 Hermitage/East Main



Planned Route 14

- Planned Alignment
- Existing Alignment
- Planned Routes
- Planned LINK Microtransit
- City of Richmond Microtransit
- Jurisdiction Boundary



14 Hermitage/East Main

PLANNED CHANGES

Improve Weekday and Saturday peak and midday headways to 15 minutes. Improve span to end at 1:00 a.m. every day.

JUSTIFICATION

- Frequency and span improvements are needed for Route 14 to achieve Arterial service standards.
- Future planned development of the Diamond District will warrant increased transit service between Hermitage Road and Downtown Richmond.

Service Classification

Arterial

Existing Origin / Destination

Azalea / 23rd & Franklin

Planned Origin / Destination

Azalea / 23rd & Franklin



Notes

Existing and planned service provides a connection to the Downtown Transfer Station only after 7:00 p.m. on weekdays and Saturdays and all day on Sundays.

LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	5:05 a.m. - 12:55 a.m.	5:05 a.m. - 1:00 a.m.
Saturday	5:40 a.m. - 12:56 a.m.	5:40 a.m. - 1:00 a.m.
Sunday	5:40 a.m. - 11:58 p.m.	5:40 a.m. - 1:00 a.m.

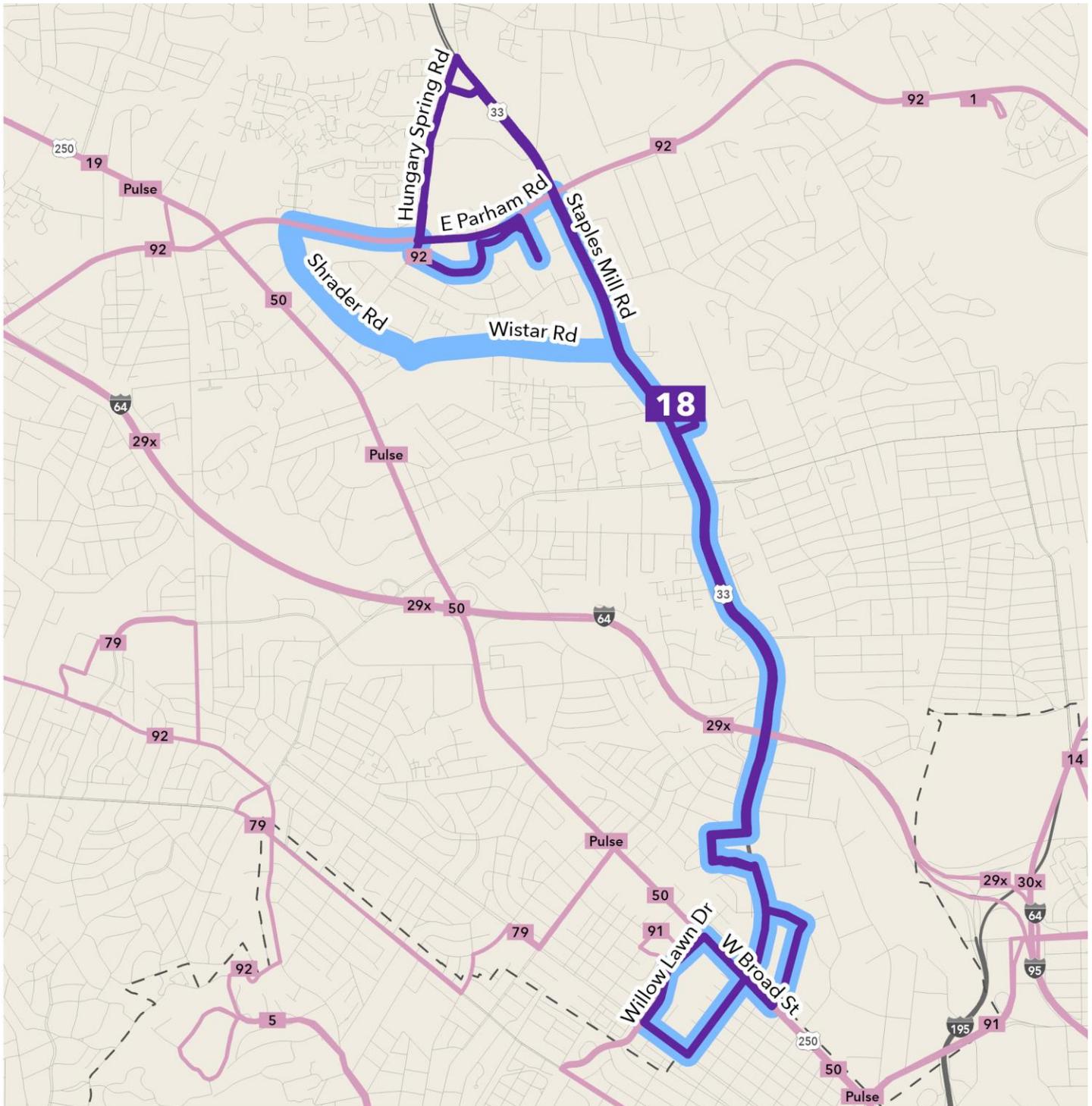
HEADWAY	Existing			Planned		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Early	30	30	30	30	30	30
AM Peak	30	30	30	15	15	30
Midday	30	30	30	15	15	30
PM Peak	30	30	30	15	15	30
Evening	30	30	60	30	30	60
Late Night	30	30	60	30	30	60

14 Hermitage/East Main

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	No changes.	✓		
FY 2026	No changes.			
FY 2027	No changes.			
FY 2028	No changes.			
FY 2029	No changes.			
FY 2030	No changes.			
FY 2031	Improve weekday peak headways to 15 minutes. Improve span to end at 1:00 a.m. every day of the week.			✓
FY 2032	No changes.			
FY 2033	No changes.			
FY 2034	Improve headways to 15 minutes during the weekday midday and Saturday peak and midday periods.		✓	
Out Years	No changes.			

18 Henrico Government Center



Planned Route 18

-  Planned Alignment
-  Existing Alignment
-  Planned Routes
-  Jurisdiction Boundary



18 Henrico Government Center

PLANNED CHANGES

Realign Route 18 to travel from Staples Mill Road and Parham Road north on Staples Mill Road to Staples Mill Marketplace, then south on Hungary Spring Road and on Parham Road to terminate at Henrico Government Center. Eliminate service on Shrader Road and Wistar Road due to low ridership, instead offering bidirectional service on all segments. Improve existing service to operate every 30 minutes from 5:00 a.m. to 11:00 p.m. seven days per week.

JUSTIFICATION

- There is higher transit demand in the neighborhood northwest of Parham Road and Hungary Spring Road than on Shrader and Wistar Roads. Additionally, extending service to Staples Mill Marketplace will provide access to a grocery store.
- These changes will provide a local bus connection from the Staples Mill Amtrak Station to Pulse seven days per week.
- Half-hour frequencies are needed to enable reliable connections to Amtrak, especially when trains are delayed. The planned hours of operation will capture riders from all but one of the 20 daily trains.
- Route 92 will connect with Route 18 to provide east-west service from Staples Mill Road to Brook Road, Broad Street, and other points west.

Service Classification

Circulator / Feeder / Connector

Existing Origin / Destination

Henrico Government Center / Willow Lawn

Planned Origin / Destination

Henrico Government Center / Willow Lawn



Notes

GRTC will monitor the Libbie Mill and Westwood developments as they progress and consider whether Route 18 or another service should be changed or added.

LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	6:30 a.m. - 7:35 p.m.	5:00 a.m. - 11:00 p.m.
Saturday	-	5:00 a.m. - 11:00 p.m.
Sunday	-	5:00 a.m. - 11:00 p.m.

HEADWAY	Existing			Planned		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Early	-	-	-	30	30	30
AM Peak	40	-	-	30	30	30
Midday	40	-	-	30	30	30
PM Peak	40	-	-	30	30	30
Evening	40	-	-	30	30	30
Late Night	-	-	-	30	30	30

18 Henrico Government Center

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	No changes.			
FY 2026	No changes.			
FY 2027	No changes.			
FY 2028	Realign Route 18 to travel from Staples Mill Road and Parham Road north on Staples Mill Road to Staples Mill Marketplace, then south on Hungary Spring Road and on Parham Road to terminate at Henrico Government Center. On weekdays, improve headways to 30 minutes throughout the day.	✓		
FY 2029	No changes.			
FY 2030	No changes.			
FY 2031	Introduce hourly weekend service on Route 18 from 8:00 a.m. to 6:00 p.m. On weekdays, improve the span to 5:00 a.m. to 11:00 p.m.			
FY 2032	No changes.			
FY 2033	No changes.			
FY 2034	On Saturdays and Sundays, improve span to 5:00 a.m. to 11:00 p.m. and improve headways to 30 minutes all day.		✓	✓
Out Years	No changes.			

19 West Broad Street



Planned Route 19

-  Planned Alignment
-  Planned Routes
-  Existing Alignment
-  Jurisdiction Boundary



19 West Broad Street

PLANNED CHANGES

Move Route 19's eastern terminus to Broad Street and Parham Road to maintain its connection with the western terminus of the Pulse. Improve Sunday peak and midday headways to 15 minutes on the short turn and 30 minutes between West Broad Marketplace and Sheltering Arms. Improve weekday span to 5:30 a.m. to 1:00 a.m. and Sunday span to 6:00 a.m. to 12:11 a.m.

JUSTIFICATION

- Demand in northwest Henrico County warrants increased Sunday frequencies along the major Broad Street corridor.
- Headway and span improvements on the short turn meet Arterial service standards and provide a frequent connection to Pulse from northwest Henrico County.

Service Classification

Arterial

Existing Origin / Destination

Sheltering Arms / West Broad Marketplace / Willow Lawn

Planned Origin / Destination

Sheltering Arms / West Broad Marketplace / Broad & Parham



Notes

This route operates with an existing short turn at West Broad Marketplace. Slashes in the headways table are used to indicate the short turn frequencies before the slash and the full route's frequencies after the slash.

LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	6:00 a.m. - 11:53 p.m.	5:30 a.m. - 1:00 a.m.
Saturday	6:00 a.m. - 12:11 a.m.	6:00 a.m. - 12:11 a.m.
Sunday	10:00 a.m. - 11:12 p.m.	6:00 a.m. - 12:11 a.m.

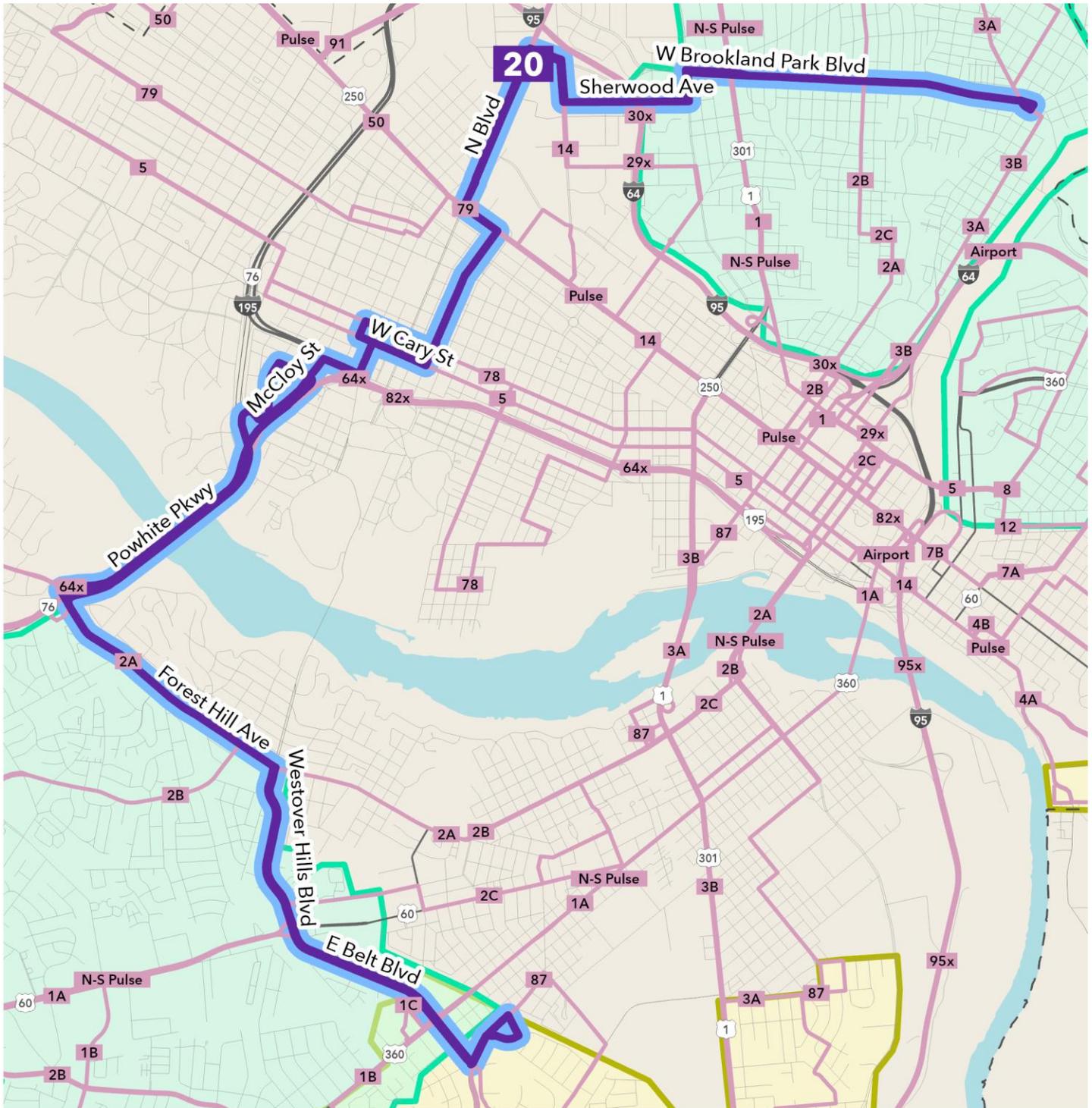
HEADWAY	Existing			Planned		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Early	-	-	-	15 / 30	-	-
AM Peak	15 / 30	15 / 30	-	15 / 30	15 / 30	15 / 30
Midday	15 / 30	15 / 30	30 / 60	15 / 30	15 / 30	15 / 30
PM Peak	15 / 30	15 / 30	30 / 60	15 / 30	15 / 30	15 / 30
Evening	15 / 30	15 / 30	30 / 60	15 / 30	15 / 30	30 / 60
Late Night	15 / 30	15 / 30	30 / 60	15 / 30	15 / 30	30 / 60

19 West Broad Street

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	No changes.			
FY 2026	Improve Sunday span to start at 6:00 a.m.			
FY 2027	Move Route 19's eastern terminus to Broad Street and Parham Road to maintain its connection with the western terminus of the Pulse.	✓		
FY 2028	No changes.			
FY 2029	No changes.			
FY 2030	No changes.			
FY 2031	No changes.			
FY 2032	No changes.			
FY 2033	Improve weekday span to 5:30 a.m. to 1:00 a.m. and Sunday span to end at 12:11 a.m.			✓
FY 2034	Improve Sunday headways to 15 minutes during the peak and midday periods. Like weekdays and Saturdays, maintain the service pattern of alternating every other trip between Broad Street Marketplace and Sheltering Arms, so that each will have service every 30 minutes.		✓	
Out Years	No changes.			

20 Orbital



Planned Route 20

- Planned Alignment
- Existing Alignment
- Planned Routes
- Planned LINK Microtransit
- City of Richmond Microtransit
- Jurisdiction Boundary



20 Orbital

PLANNED CHANGES

Improve weekday and Saturday peak and midday headways to 15 minutes and Sunday peak and midday headways to 30 minutes. Saturday evening headways will improve to 30 minutes.

JUSTIFICATION

- Frequent headways on Route 20 will increase the value of this circumferential route within the transit network, offering better connections to many other frequent fixed routes.
- Route 20 will either meet or exceed level of service standards for the Community Radial classification in all periods.

Service Classification

Community Radial

Existing Origin / Destination

Highland Park / Broad Rock

Planned Origin / Destination

Highland Park / Broad Rock



LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	4:40 a.m. - 11:20 p.m.	4:40 a.m. - 11:20 p.m.
Saturday	6:00 a.m. - 10:50 p.m.	6:00 a.m. - 10:50 p.m.
Sunday	6:00 a.m. - 10:50 p.m.	6:00 a.m. - 10:50 p.m.

HEADWAY	Existing			Planned		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Early	30	-	-	30	-	-
AM Peak	30	60	60	15	15	30
Midday	30	60	60	15	15	30
PM Peak	30	60	60	15	15	30
Evening	30	60	60	30	30	60
Late Night	30	60	60	30	60	60

20 Orbital

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	No changes.	✓		✓
FY 2026	No changes.			
FY 2027	No changes.			
FY 2028	Improve headways to 15 minutes during the weekday peak and midday periods and 30 minutes during the Saturday peak, midday, and evening periods and Sunday peak and midday periods.			
FY 2029	No changes.			
FY 2030	No changes.			
FY 2031	Improve headways to 15 minutes during the Saturday peak and midday periods.		✓	
FY 2032	No changes.			
FY 2033	No changes.			
FY 2034	No changes.			
Out Years	No changes.			

29x Gaskins Express

PLANNED CHANGES

Extend Route 29x on Broad Street, Cox Road, and Nuckols Road to serve the Innsbrook employment center along Cox Road and the planned Park and Ride lot near Twin Hickory Road and Nuckols Road.

JUSTIFICATION

- High job density on Cox Road and high population growth north of I-295 (near Twin Hickory and Nuckols) indicate demand to and from Richmond that could be captured by express service.
- The extension of Route 29x could be phased, by first extending select trips to Cox Road, then extending select trips to Twin Hickory. Eventually, all trips can serve Twin Hickory, depending on ridership demand at each stop on the route.

Service Classification

Express

Existing Origin / Destination

Twin Hickory / Downtown

Planned Origin / Destination

Twin Hickory / Downtown



LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	6:25 a.m. – 8:56 a.m.; 4:05 p.m. – 6:10 p.m.	6:25 a.m. – 8:56 a.m.; 4:05 p.m. – 6:10 p.m.
Saturday	-	-
Sunday	-	-

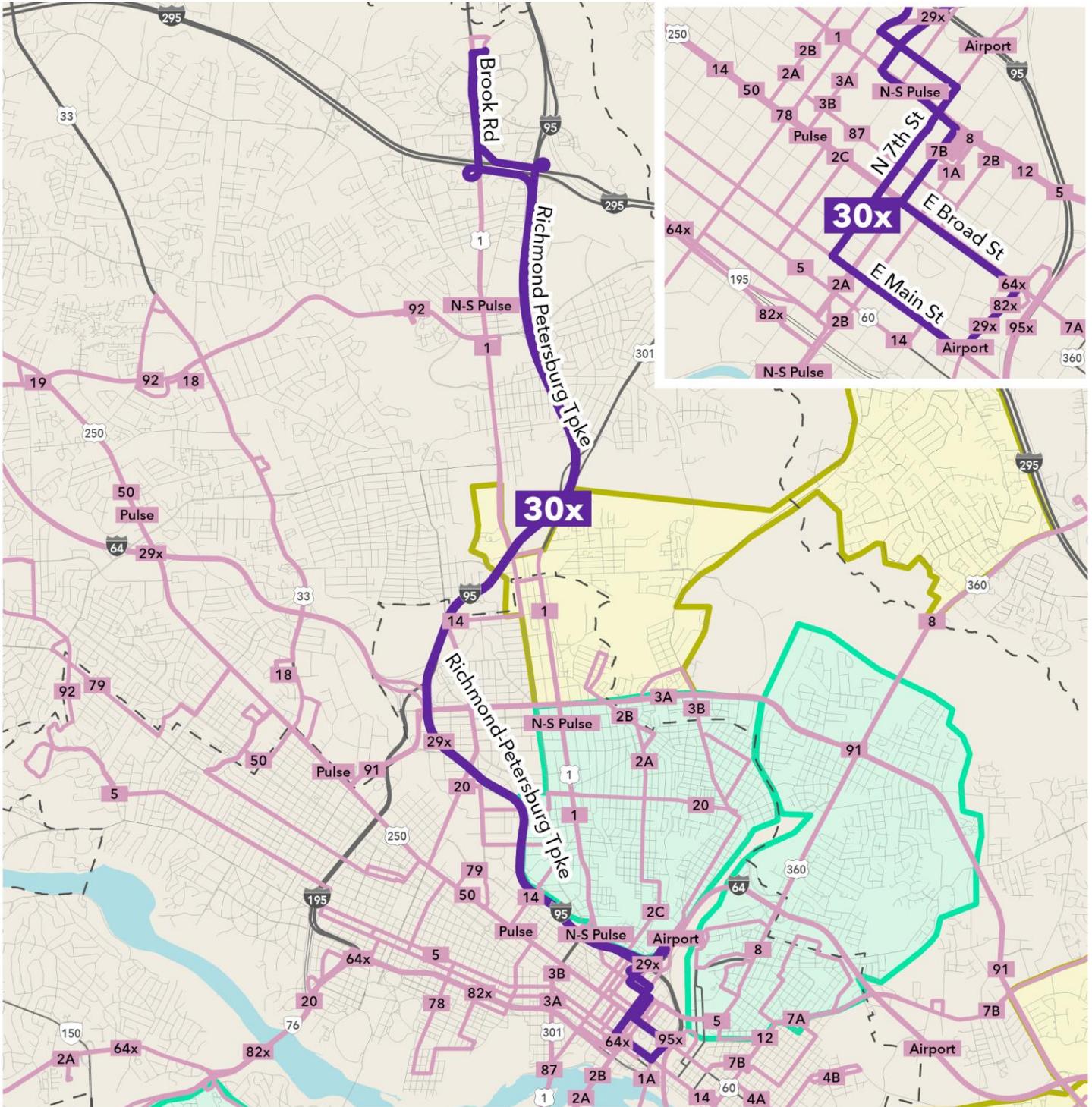
Trips	Existing		Planned	
	Inbound	Outbound	Inbound	Outbound
Early	-	-	-	-
AM Peak	5	2	5	2
Midday	-	-	-	-
PM Peak	3	5	3	5
Evening	-	-	-	-
Late Night	-	-	-	-

29x Gaskins Express

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	No changes.		✓	✓
FY 2026	No changes.			
FY 2027	No changes.			
FY 2028	No changes.			
FY 2029	No changes.			
FY 2030	No changes.			
FY 2031	No changes.			
FY 2032	No changes.			
FY 2033	Extend Route 29x on Broad Street, Cox Road, and Nuckols Road to serve the Innsbrook employment center along Cox Road and the planned Park and Ride lot near Twin Hickory Road and Nuckols Road.	✓		
FY 2034	No changes.			
Out Years	No changes.			

30x VCCS Express



Planned Route 30x

- Planned Alignment
- Planned LINK Microtransit
- Jurisdiction Boundary
- City of Richmond Microtransit
- Planned Routes



30x VCCS Express

PLANNED CHANGES

Introduce express service from VCCS to Downtown Richmond, serving the same loop of stops downtown as the other express routes. Route 30x will operate two peak-direction trips and one reverse-peak trip during each peak period.

JUSTIFICATION

- Development at the Virginia Center Commons site and other future growth on US 1 will generate additional demand to Richmond.
- Route 30x will offer a faster, more direct service than Route 1, which will provide local bus service from the Virginia Center Commons site to Downtown Richmond.
- The northern extension of Route 1 to the Virginia Center Commons site may help evaluate demand and determine levels of service for Route 30x.
- Reverse-peak trips are primarily an operational consequence of running two peak-direction trips, although they could capture some ridership demand.

Service Classification

Express

Existing Origin / Destination

N/A

Planned Origin / Destination

VCCS / Downtown



LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	-	6:00 a.m. – 8:00 a.m.; 4:00 p.m. – 6:00 p.m.
Saturday	-	-
Sunday	-	-

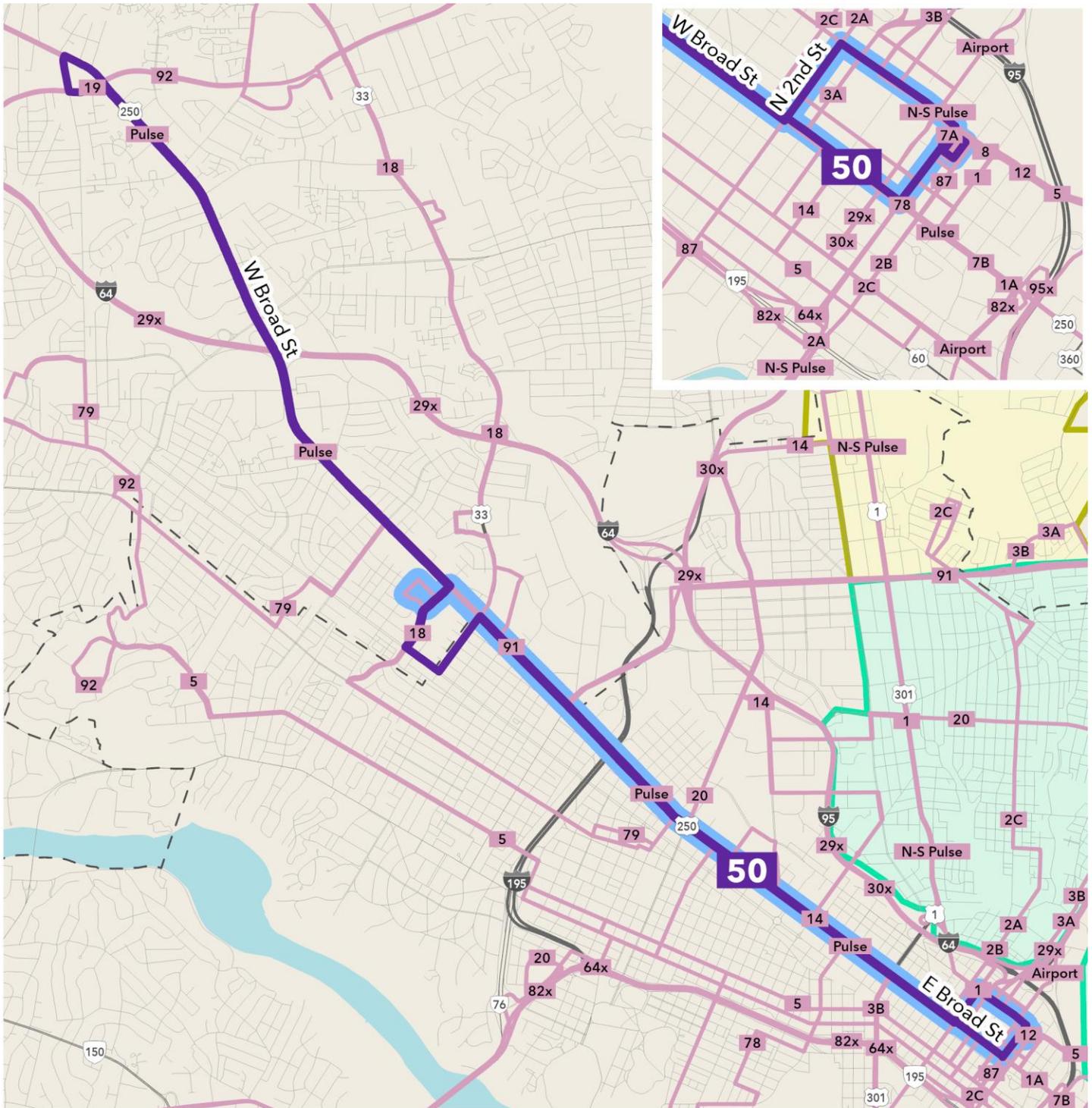
Trips	Existing		Planned	
	Inbound	Outbound	Inbound	Outbound
Early	-	-	-	-
AM Peak	-	-	2	1
Midday	-	-	-	-
PM Peak	-	-	1	2
Evening	-	-	-	-
Late Night	-	-	-	-

30x VCCS Express

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	Service not yet implemented.			
FY 2026	Service not yet implemented.			
FY 2027	Service not yet implemented.			
FY 2028	Service not yet implemented.			
FY 2029	Service not yet implemented.			
FY 2030	Service not yet implemented.			
FY 2031	Service not yet implemented.			
FY 2032	Implement Route 30x express service from Downtown Richmond to VCCS, with two peak direction trips and one reverse peak trip in each peak period on weekdays.	✓	✓	✓
FY 2033	No changes.			
FY 2034	No changes.			
Out Years	No changes.			

50 Broad Street



Planned Route 50

- Planned Alignment
- Existing Alignment
- Planned Routes
- Planned LINK Microtransit
- City of Richmond Microtransit
- Jurisdiction Boundary



50 Broad Street

PLANNED CHANGES

Extend Route 50 west on Broad Street to Parham Road, continuing to provide underlying local service to the Pulse. Realign the route to deviate along Staples Mill Road, Monument Avenue, and Willow Lawn Drive to serve the Willow Lawn shopping center. Improve headways to 30 minutes during all periods. Extend span to end at 12:00 a.m. seven days per week.

JUSTIFICATION

- Headway improvements will further supplement Pulse service, which is set to face increasing capacity issues with its western extension.
- 30-minute headways on Route 50 allow for a more customer-friendly clockface schedule.
- Route 50 does not need to meet Arterial service standards on its own, because it is an underlying service to Pulse. Span will be improved to meet Community Radial standards at a minimum.

Service Classification

Arterial

Existing Origin / Destination

Willow Lawn / Downtown

Planned Origin / Destination

Broad & Parham / Downtown



LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	5:05 a.m. - 7:33 p.m.	5:05 a.m. - 12:00 a.m.
Saturday	5:55 a.m. - 7:45 p.m.	5:55 a.m. - 12:00 a.m.
Sunday	6:00 a.m. - 6:50 p.m.	6:00 a.m. - 12:00 a.m.

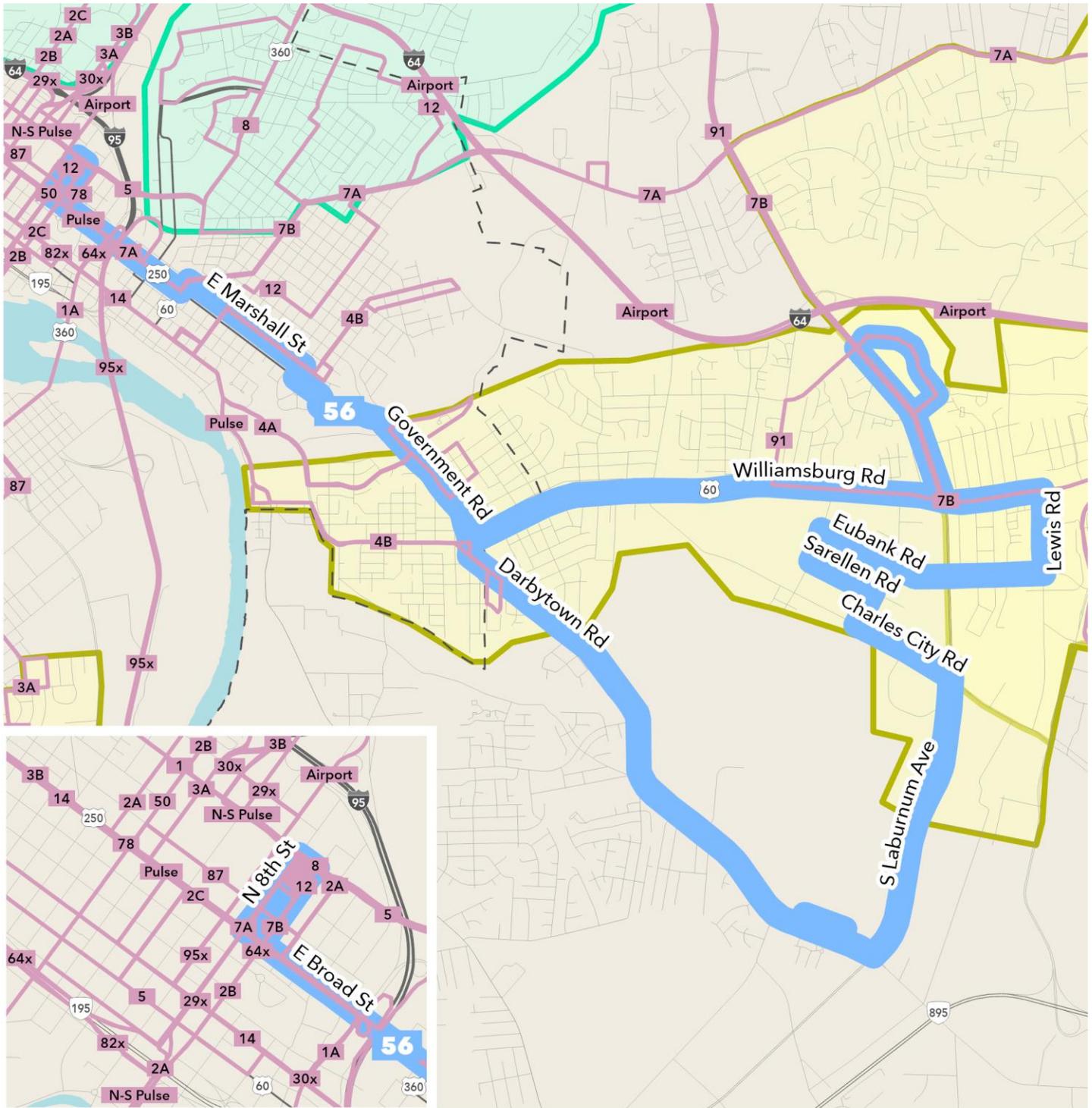
HEADWAY	Existing			Planned		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Early	40	-	-	30	-	-
AM Peak	40	40	40	30	30	30
Midday	40	40	40	30	30	30
PM Peak	40	40	40	30	30	30
Evening	-	-	-	30	30	30
Late Night	-	-	-	30	30	30

50 Broad Street

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	No changes.			
FY 2026	Improve span to end at 12:00 a.m. every day of the week. Improve headways to 30 minutes in all periods.		✓	✓
FY 2027	Extend Route 50 west on Broad Street to Parham Road, continuing to provide underlying local service to the Pulse. Realign the route to deviate along Staples Mill Road, Monument Avenue, and Willow Lawn Drive to serve the Willow Lawn shopping center.	✓		
FY 2028	No changes.			
FY 2029	No changes.			
FY 2030	No changes.			
FY 2031	No changes.			
FY 2032	No changes.			
FY 2033	No changes.			
FY 2034	No changes.			
Out Years	No changes.			

56 South Laburnum



Planned Route 56

-  Existing Alignment
-  Planned Routes
-  Planned LINK Microtransit
-  City of Richmond Microtransit
-  Jurisdiction Boundary



56 South Laburnum

PLANNED CHANGES

Replace Route 56 with the Montrose-White Oak Village microtransit zone, which would operate south of I-64 along Williamsburg Road and South Laburnum Avenue, encompassing Montrose, White Oak Village, Virginia Heights, Richmond International Airport, and the Fulton Hill neighborhood of Richmond. The level of density and transit demand in this area is well-suited to microtransit service, which will efficiently meet the needs of transit-dependent riders and shift-oriented commuters.

JUSTIFICATION

- Route 56 has moderately low ridership performance and does not justify increased levels of service.
- However, Route 56 provides important coverage and is well designed to provide employment-oriented service on a shift-based schedule.

Service Classification

Eliminated

Existing Origin / Destination

South Laburnum / Downtown

Planned Origin / Destination

N/A



LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	6:00 a.m. – 8:45 a.m.; 1:30 p.m. – 4:24 p.m.	-
Saturday	-	-
Sunday	-	-

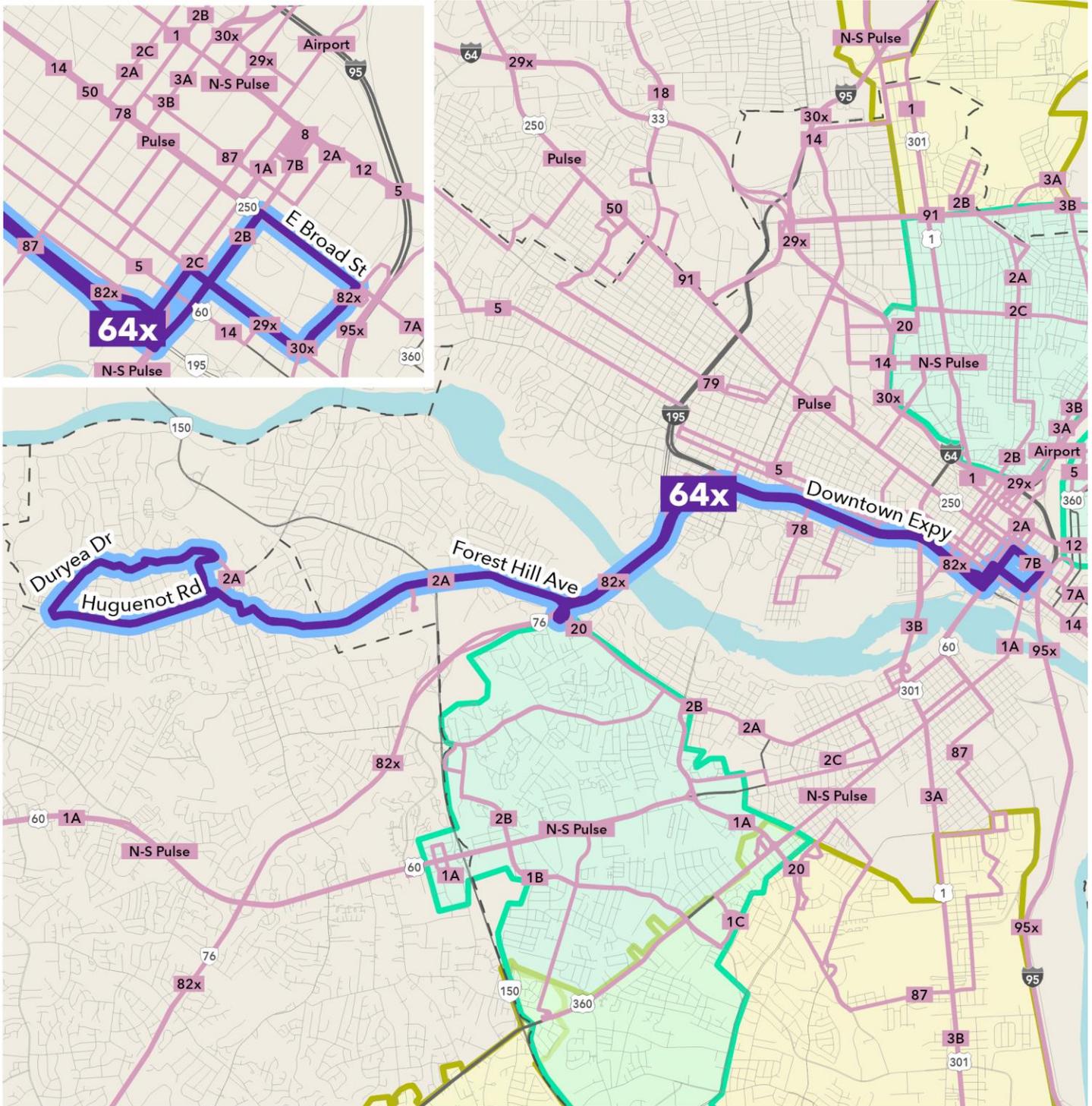
HEADWAY	Existing			Planned		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Early	-	-	-	-	-	-
AM Peak	80	-	-	-	-	-
Midday	90	-	-	-	-	-
PM Peak	-	-	-	-	-	-
Evening	-	-	-	-	-	-
Late Night	-	-	-	-	-	-

56 South Laburnum

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	No changes.			
FY 2026	Route 56 will be eliminated in conjunction with the implementation of the Montrose-White Oak Village microtransit zone.	✓	✓	✓
FY 2027	-			
FY 2028	-			
FY 2029	-			
FY 2030	-			
FY 2031	-			
FY 2032	-			
FY 2033	-			
FY 2034	-			
Out Years	-			

64x Stony Point Express



Planned Route 64x

- Planned Alignment
- Existing Alignment
- Planned Routes
- Planned LINK Microtransit
- City of Richmond Microtransit
- Jurisdiction Boundary



64x Stony Point Express

PLANNED CHANGES

No proposed changes to Route 64x.

JUSTIFICATION

- Route 64x meets the Express standard for passengers per trip but has plenty of capacity for additional ridership.
- Ridership demand and performance do not justify increasing levels of service on Route 64x.

Service Classification

Express

Existing Origin / Destination

Stony Point / Downtown

Planned Origin / Destination

Stony Point / Downtown



LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	6:10 a.m. – 8:12 a.m.; 3:50 p.m. – 5:55 p.m.	6:10 a.m. – 8:12 a.m.; 3:50 p.m. – 5:55 p.m.
Saturday	-	-
Sunday	-	-

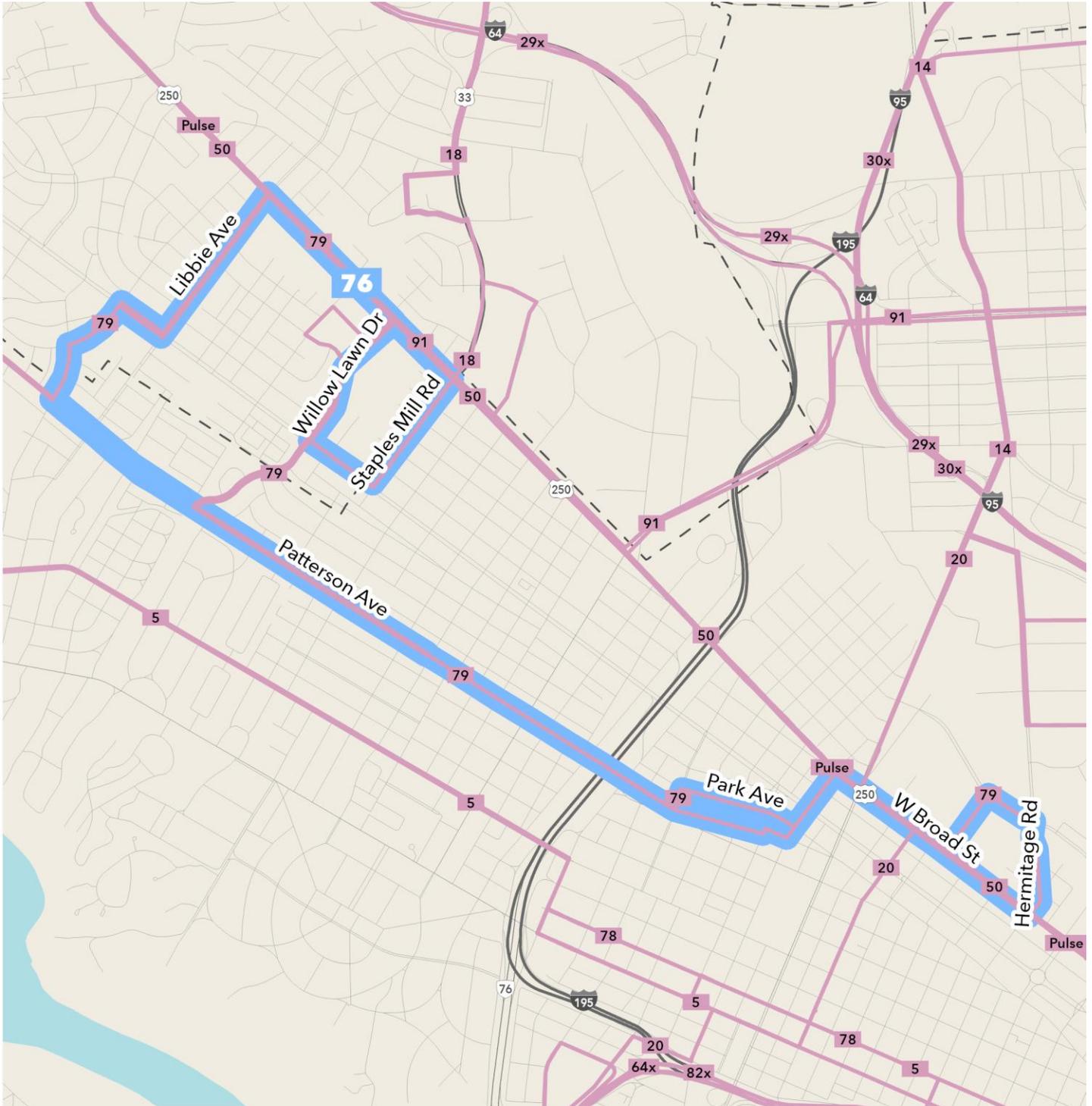
Trips	Existing		Planned	
	Inbound	Outbound	Inbound	Outbound
Early	-	-	-	-
AM Peak	2	1	2	1
Midday	-	-	-	-
PM Peak	1	2	1	2
Evening	-	-	-	-
Late Night	-	-	-	-

64x Stony Point Express

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	No changes.	✓	✓	✓
FY 2026	No changes.			
FY 2027	No changes.			
FY 2028	No changes.			
FY 2029	No changes.			
FY 2030	No changes.			
FY 2031	No changes.			
FY 2032	No changes.			
FY 2033	No changes.			
FY 2034	No changes.			
Out Years	No changes.			

76 Patterson



Planned Route 76

-  Existing Alignment
-  Planned Routes
-  Jurisdiction Boundary



76 Patterson

PLANNED CHANGES

Route 76 will be eliminated due to low demand and poor ridership performance. Route 79 will provide service along Libbie Avenue and Patterson Avenue east of Willow Lawn Drive and will provide coverage for Route 76's terminus at DMV Drive. Route 50 and the Pulse will continue to provide service between Willow Lawn and the Science Museum.

JUSTIFICATION

- Route 76 has the lowest ridership performance among GRTC's fixed bus routes, indicating that its resources could be repurposed to provide more efficient services.
- Most of Route 76's alignment will continue to have service. The realigned Route 79 will cover the same segments without duplicating any other transit connections, enabling riders along Patterson Avenue to access Willow Lawn, St. Mary's Hospital, and destinations along Broad Street.
- After the Pulse terminus is moved west to Parham, Willow Lawn can be less of a focus point for terminating services.

Service Classification

Eliminated

Existing Origin / Destination

Willow Lawn / DMV Drive

Planned Origin / Destination

N/A



LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	5:25 a.m. - 6:44 p.m.	-
Saturday	7:05 a.m. - 7:42 p.m.	-
Sunday	7:05 a.m. - 7:42 p.m.	-

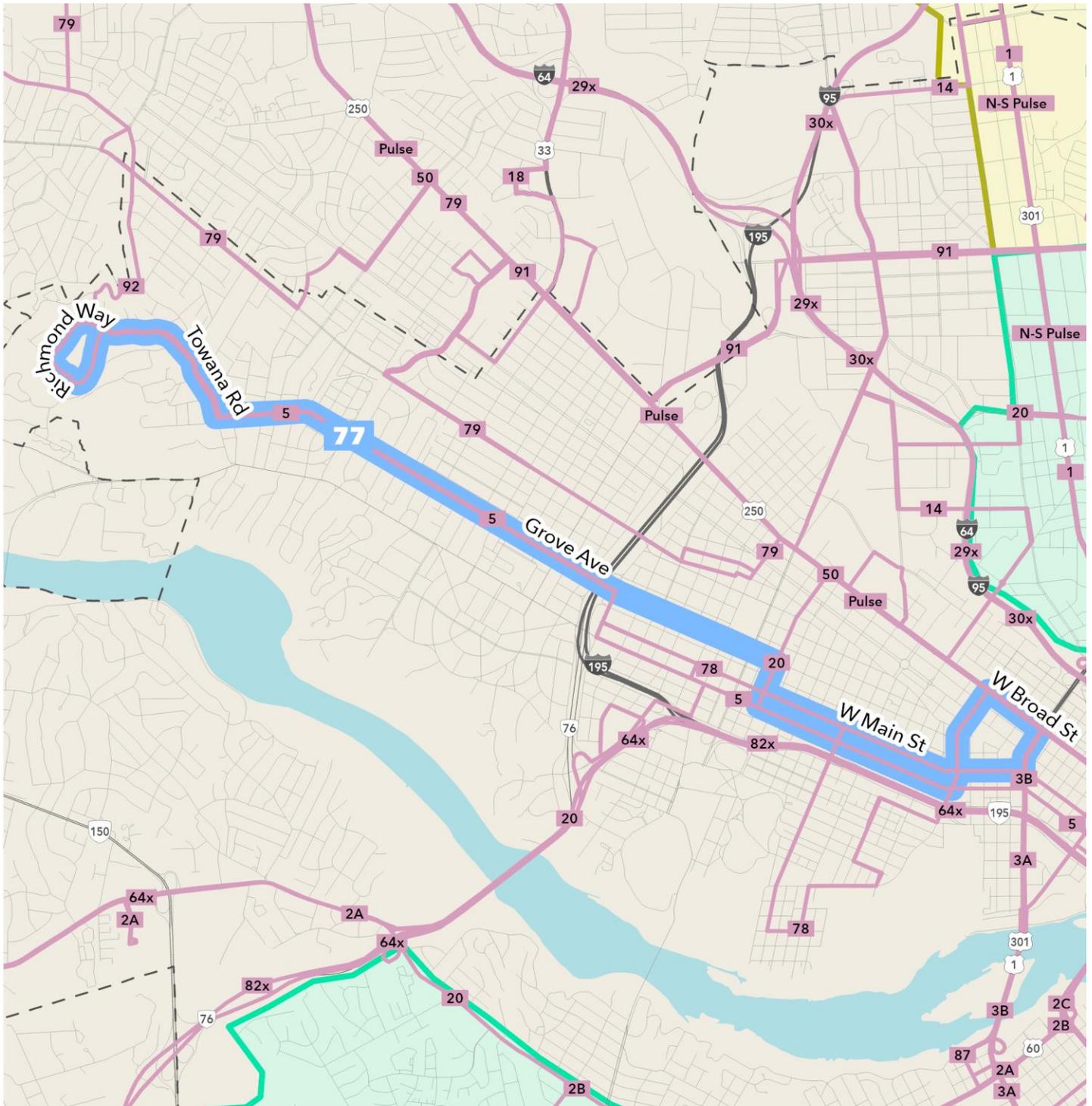
HEADWAY	Existing			Planned		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Early	-	-	-	-	-	-
AM Peak	45	60	60	-	-	-
Midday	45	60	60	-	-	-
PM Peak	45	60	60	-	-	-
Evening	-	-	-	-	-	-
Late Night	-	-	-	-	-	-

76 Patterson

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	No changes.			
FY 2026	No changes.			
FY 2027	Route 76 will be eliminated, with its service covered by the realigned Route 79.	✓	✓	✓
FY 2028	-			
FY 2029	-			
FY 2030	-			
FY 2031	-			
FY 2032	-			
FY 2033	-			
FY 2034	-			
Out Years	-			

77 Grove



Planned Route 77

- Existing Alignment
- Planned LINK Microtransit
- Jurisdiction Boundary
- Planned Routes
- City of Richmond Microtransit



77 Grove

PLANNED CHANGES

Route 77 will be eliminated while Route 5 will be extended to provide service along the old Route 77 alignment to the University of Richmond. A few stops on Grove Avenue east of Thompson Street will be eliminated which are all within approximately ¼-mile of Routes 5 and 79. The Route 5 extension will also have improved span and headways compared to what Route 77 offers today: weekday and weekend peak and midday headways to 30 minutes, span to begin at 6:00 a.m. on weekends, and hourly evening service until 10:00 p.m. every day.

JUSTIFICATION

- Adding Route 77's service to Route 5 will maintain connection to Cary and Main Streets while offering additional connections by enabling riders to have a one-seat ride downtown.
- By combining with Route 5, service along the old Route 77 alignment will offer the same connections as its existing alignment (except a few stops lost on Grove Avenue) while reducing redundancy and improving efficiency.

Service Classification

Eliminated

Existing Origin / Destination

Univ. of Richmond / Main & Laurel

Planned Origin / Destination

N/A



LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	5:40 a.m. - 6:56 p.m.	-
Saturday	7:00 a.m. - 7:05 p.m.	-
Sunday	7:00 a.m. - 7:05 p.m.	-

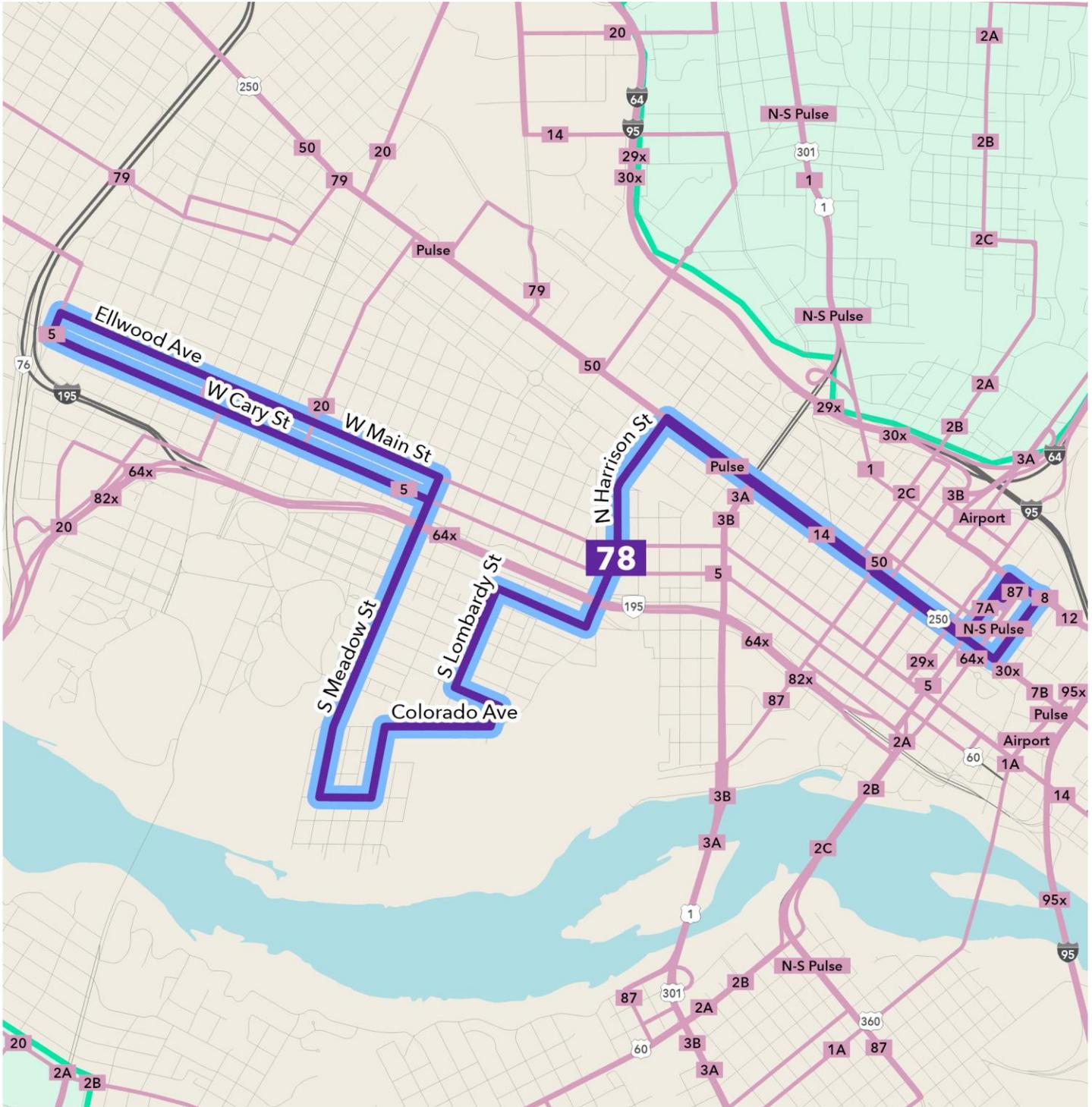
HEADWAY	Existing			Planned		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Early	45	-	-	-	-	-
AM Peak	45	60	60	-	-	-
Midday	45	60	60	-	-	-
PM Peak	45	60	60	-	-	-
Evening	-	-	-	-	-	-
Late Night	-	-	-	-	-	-

77 Grove

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	No changes.			
FY 2026	Route 77 will be eliminated, with its service covered by the realigned Route 5.	✓	✓	✓
FY 2027	-			
FY 2028	-			
FY 2029	-			
FY 2030	-			
FY 2031	-			
FY 2032	-			
FY 2033	-			
FY 2034	-			
Out Years	-			

78 Cary / Maymont



Planned Route 78

- Planned Alignment
- Existing Alignment
- Planned Routes
- City of Richmond Microtransit
- Jurisdiction Boundary



78 Cary / Maymont

PLANNED CHANGES

Improve weekday and Saturday peak and midday headways to 30 minutes. Improve weekend span to 6:00 a.m. to 10:00 p.m.

JUSTIFICATION

- Route 78 performs well on its current alignment and could support increased frequencies as well as evening service on weekends.
- Span and headway improvements meet Community Radial standards.

Service Classification

Community Radial

Existing Origin / Destination

Carytown / Downtown

Planned Origin / Destination

Carytown / Downtown



LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	5:20 a.m. - 11:11 p.m.	5:20 a.m. - 11:11 p.m.
Saturday	7:05 a.m. - 7:33 p.m.	6:00 a.m. - 10:00 p.m.
Sunday	7:03 a.m. - 7:33 p.m.	6:00 a.m. - 10:00 p.m.

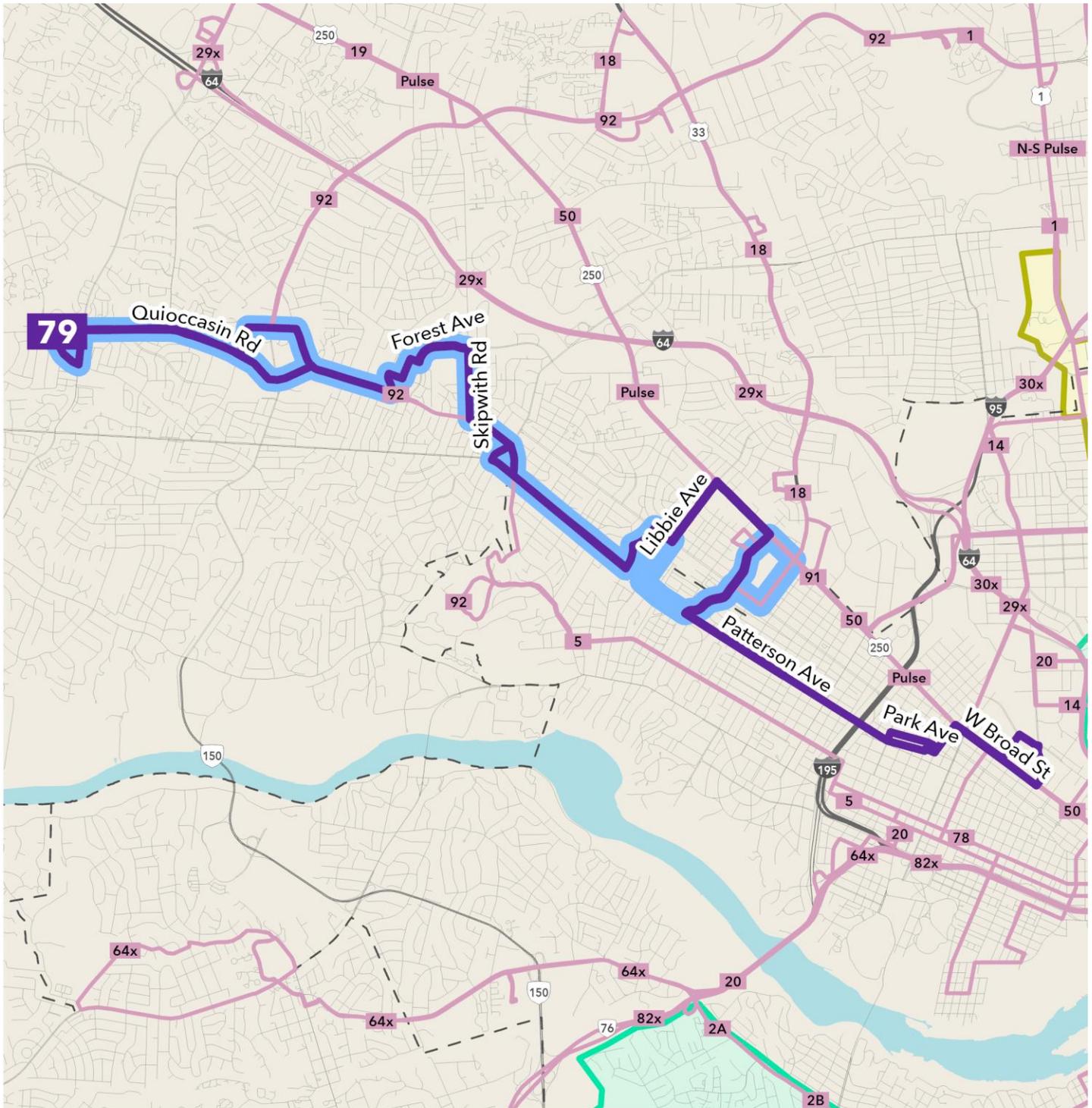
HEADWAY	Existing			Planned		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Early	45	-	-	30	-	-
AM Peak	45	60	60	30	30	60
Midday	45	60	60	30	30	60
PM Peak	45	60	60	30	30	60
Evening	45	60	60	30	60	60
Late Night	45	-	-	60	-	-

78 Cary / Maymont

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	No changes.	✓		
FY 2026	Improve weekday headways to 30 minutes in the early, peak, midday, and evening periods. Change weekday late night headways to 60 minutes.			
FY 2027	No changes.			
FY 2028	No changes.			
FY 2029	No changes.			
FY 2030	No changes.			
FY 2031	No changes.			
FY 2032	No changes.			
FY 2033	Improve Saturday headways to 30 minutes during the peak and midday periods. Improve weekend span to operate from 6:00 a.m. to 10:00 p.m.		✓	✓
FY 2034	No changes.			
Out Years	No changes.			

79 Patterson / Parham



Planned Route 79

 Planned Alignment
 Existing Alignment

 Planned Routes
 Planned LINK Microtransit

 City of Richmond Microtransit
 Jurisdiction Boundary



79 Patterson / Parham

PLANNED CHANGES

Realign Route 79 east of St. Mary’s Hospital to cover the eliminated Route 76, including its alignment along Libbie Avenue, Broad Street, Willow Lawn Drive, Park Avenue, Shepherd Street, Hermitage Road, Leigh Street, and its terminus on DMV Drive. Improve weekday span from 6:30 a.m. to 10:00 p.m. Introduce Saturday and Sunday service from 6:00 a.m. to 10:00 p.m. Improve headways to 30 minutes from the early period to evening period on weekdays, with hourly late-night service. Saturday service will operate every 30 minutes during the peak and midday periods, with hourly service after 7:00 p.m. Sunday service will operate hourly all day.

JUSTIFICATION

- Route 79 will replace most of Route 76, consolidating resources from both routes to provide a direct connection from Gayton Crossing into central Richmond while maintaining access to shopping and transit connections at Willow Lawn.
- Ridership demand warrants continued transit service along Quioccasin Road and at Henrico Doctors’ Hospital.
- Span and headway improvements will meet Community Radial service standards.

Service Classification

Community Radial

Existing Origin / Destination

Gayton Crossing / Willow Lawn

Planned Origin / Destination

Gayton Crossing / DMV Drive



LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	6:00 a.m. - 7:37 p.m.	5:30 a.m. - 10:00 p.m.
Saturday	-	6:00 a.m. - 10:00 p.m.
Sunday	-	6:00 a.m. - 10:00 p.m.

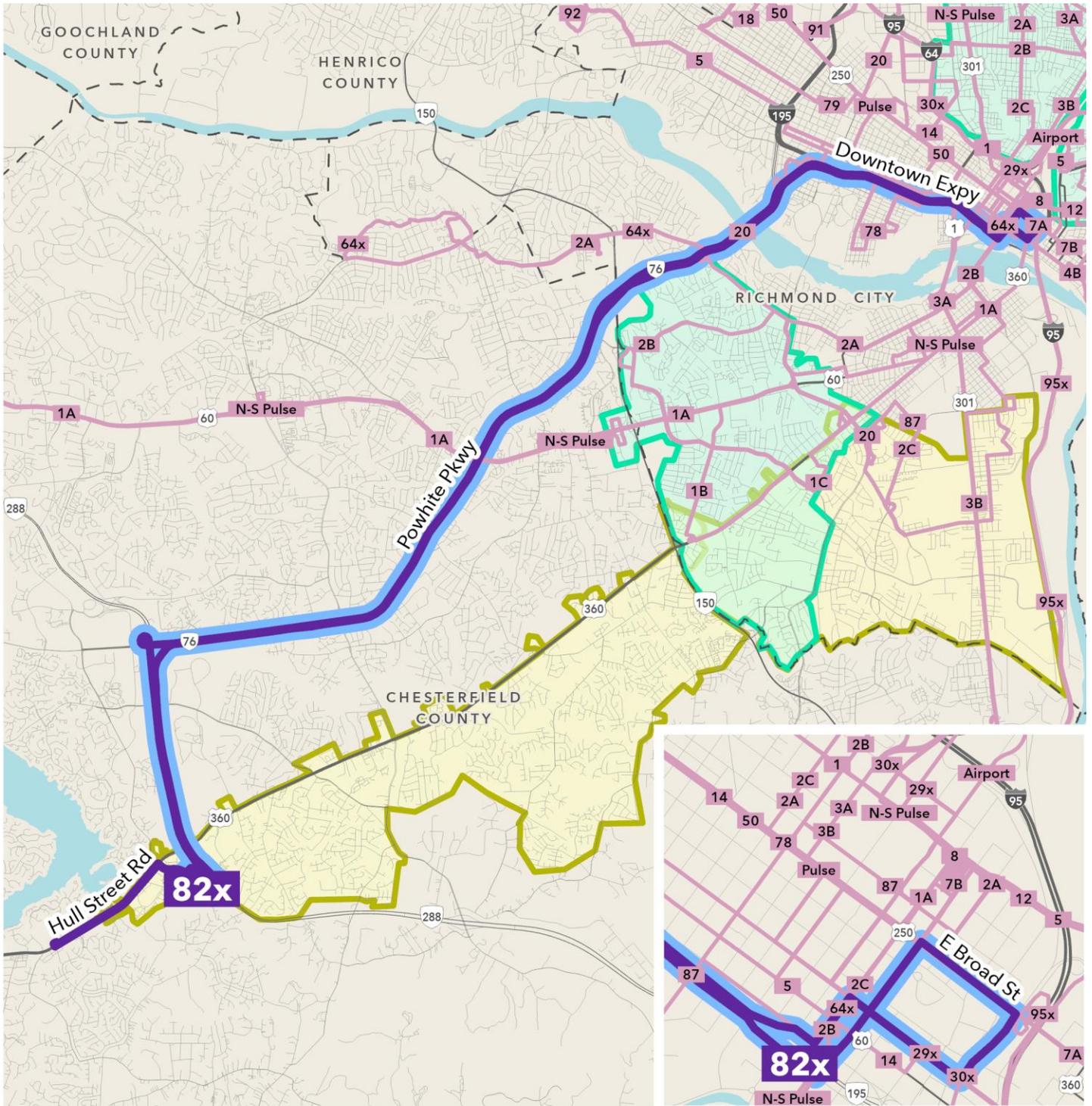
HEADWAY	Existing			Planned		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Early	-	-	-	30	-	-
AM Peak	45	-	-	30	30	60
Midday	45	-	-	30	30	60
PM Peak	45	-	-	30	30	60
Evening	45	-	-	60	60	60
Late Night	-	-	-	-	-	-

79 Patterson / Parham

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	No changes.			
FY 2026	No changes.			
FY 2027	Realign Route 79 west of St. Mary's Hospital to cover the eliminated Route 76. Improve weekday span to begin at 5:30 a.m. Introduce hourly Saturday and Sunday service from 7:05 a.m. to 7:42 p.m.	✓		
FY 2028	No changes.			
FY 2029	No changes.			
FY 2030	No changes.			
FY 2031	No changes.			
FY 2032	No changes.			
FY 2033	Improve weekday span to end at 10:00 pm and weekend span to 6:00 a.m. to 10:00 p.m.			✓
FY 2034	Improve weekday and Saturday headways to 30 minutes in the early, peak, and midday periods. Change the weekday evening headway to 60 minutes.		✓	
Out Years	No changes.			

82x Commonwealth 20 Express



Planned Route 82x

- Planned Alignment
- Existing Alignment

- Planned Routes

- Planned LINK Microtransit

- City of Richmond Microtransit

- Jurisdiction Boundary



82x Commonwealth 20 Express

PLANNED CHANGES

Extend Route 82x to the Chesterfield Career and Technical Center Park and Ride, offering an additional stop to meet high demand for this service. Introduce one reverse peak trip in the AM Peak period and one reverse trip in the PM Peak period.

JUSTIFICATION

- Route 82x has the highest ridership performance of the express routes, with over 22 average passengers per trip.
- Despite high ridership levels, passenger load data does not indicate that additional capacity is needed on this route in the peak direction.
- Reverse-peak trips will offer peak-period service to the Chesterfield Career and Technical Center from Richmond.

Service Classification

Express

Existing Origin / Destination

Commonwealth Center / Downtown

Planned Origin / Destination

Chesterfield Career & Technical Center / Downtown



LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	6:30 a.m. – 7:57 a.m.; 4:05 p.m. – 5:57 p.m.	6:30 a.m. – 7:57 a.m.; 4:05 p.m. – 5:57 p.m.
Saturday	-	-
Sunday	-	-

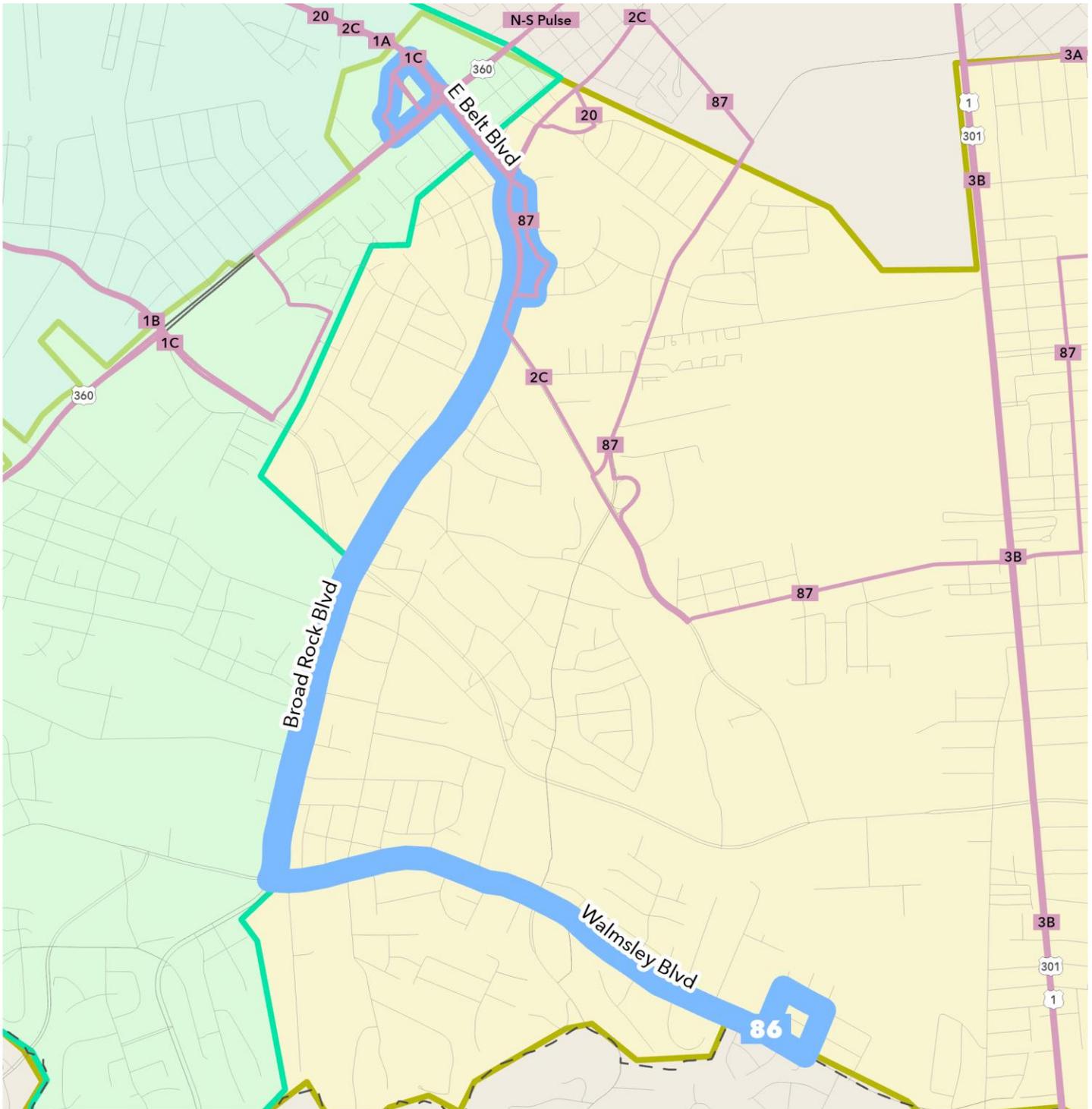
Trips	Existing		Planned	
	Inbound	Outbound	Inbound	Outbound
Early	-	-	-	-
AM Peak	2	-	2	1
Midday	-	-	-	-
PM Peak	-	3	1	3
Evening	-	-	-	-
Late Night	-	-	-	-

82x Commonwealth 20 Express

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	No changes.			
FY 2026	Extend Route 82x to the Chesterfield Career and Technical Center Park and Ride, offering an additional stop to meet high demand for this service. Introduce one reverse peak trip in the AM Peak period and one reverse trip in the PM Peak period.	✓	✓	✓
FY 2027	No changes.			
FY 2028	No changes.			
FY 2029	No changes.			
FY 2030	No changes.			
FY 2031	No changes.			
FY 2032	No changes.			
FY 2033	No changes.			
FY 2034	No changes.			
Out Years	No changes.			

86 Broad Rock / Walmsley



Planned Route 86

- Existing Alignment
- Planned Routes

- Planned LINK Microtransit
- City of Richmond Microtransit
- Jurisdiction Boundary



86 Broad Rock / Walmsley

PLANNED CHANGES

Due to limited transit demand in the area and low performance on the routes, Routes 86 and 88 will be replaced by microtransit service via the Broad Rock-Cherry Gardens-Richmond Highway zone.

JUSTIFICATION

- Low fixed-route ridership, low density, and the presence of transit-dependent riders makes this area a good candidate for microtransit.
- A single microtransit zone could replace both Routes 86 and 88. Alternatively, a nearby proposed zone (in Chesterfield County immediately south of this area, not shown on the map) could be expanded to cover these routes.

Service Classification

Eliminated

Existing Origin / Destination

Southside Plaza / Walmsley

Planned Origin / Destination

N/A



LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	5:05 a.m. - 11:29 p.m.	-
Saturday	7:05 a.m. - 11:26 p.m.	-
Sunday	7:05 a.m. - 11:25 p.m.	-

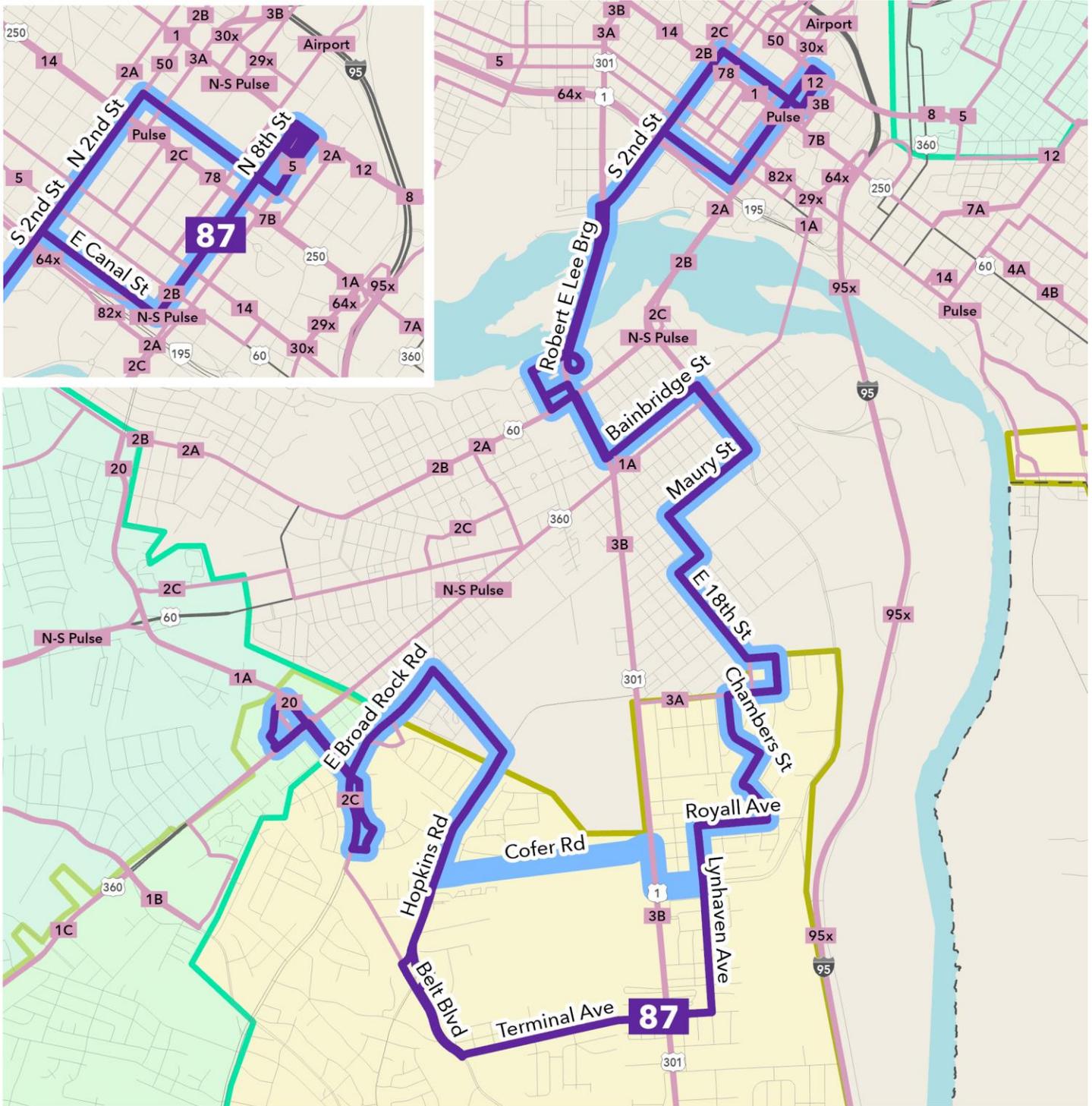
HEADWAY	Existing			Planned		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Early	-	-	-	-	-	-
AM Peak	60	60	60	-	-	-
Midday	60	60	60	-	-	-
PM Peak	60	60	60	-	-	-
Evening	60	60	60	-	-	-
Late Night	60	60	60	-	-	-

86 Broad Rock / Walmsley

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	No changes.			
FY 2026	Route 86 will be eliminated in conjunction with implementation of the Broad Rock-Cherry Gardens-Richmond Highway microtransit zone.	✓	✓	✓
FY 2027	-			
FY 2028	-			
FY 2029	-			
FY 2030	-			
FY 2031	-			
FY 2032	-			
FY 2033	-			
FY 2034	-			
Out Years	-			

87 Bellemeade / Hopkins



Planned Route 87

- Planned Alignment
- Existing Alignment
- Planned Routes
- Planned LINK Microtransit
- City of Richmond Microtransit
- Jurisdiction Boundary



87 Bellemeade / Hopkins

PLANNED CHANGES

Realign Route 87 to serve Terminal Avenue and Belt Boulevard between Hopkins Road and Lynnhaven Avenue, eliminating the segments on Cofer Road, Richmond Highway, and Bellemeade Road. Improve weekday and Saturday peak and midday headways to 30 minutes. Improve weekend span to 6:00 a.m. to 10:00 p.m.

JUSTIFICATION

- Route 87 would cover eliminated segments of 2C and 88 on Hopkins Road and Belt Boulevard.
- The neighborhood along Lynnhaven Avenue south of Bellemeade Road has potential for transit demand. Cofer Road has few stops with low ridership, while the proposed alignment could potentially serve Hickory Hill Community Center at the intersection of Belt Boulevard and Terminal Avenue.
- Span and headway improvements meet Community Radial service standards.

Service Classification

Community Radial

Existing Origin / Destination

Southside Plaza / Downtown

Planned Origin / Destination

Southside Plaza / Downtown



LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	5:25 a.m. - 12:20 a.m.	5:25 a.m. - 12:20 a.m.
Saturday	7:30 a.m. - 7:33 p.m.	6:00 a.m. - 10:00 p.m.
Sunday	7:30 a.m. - 7:34 p.m.	6:00 a.m. - 10:00 p.m.

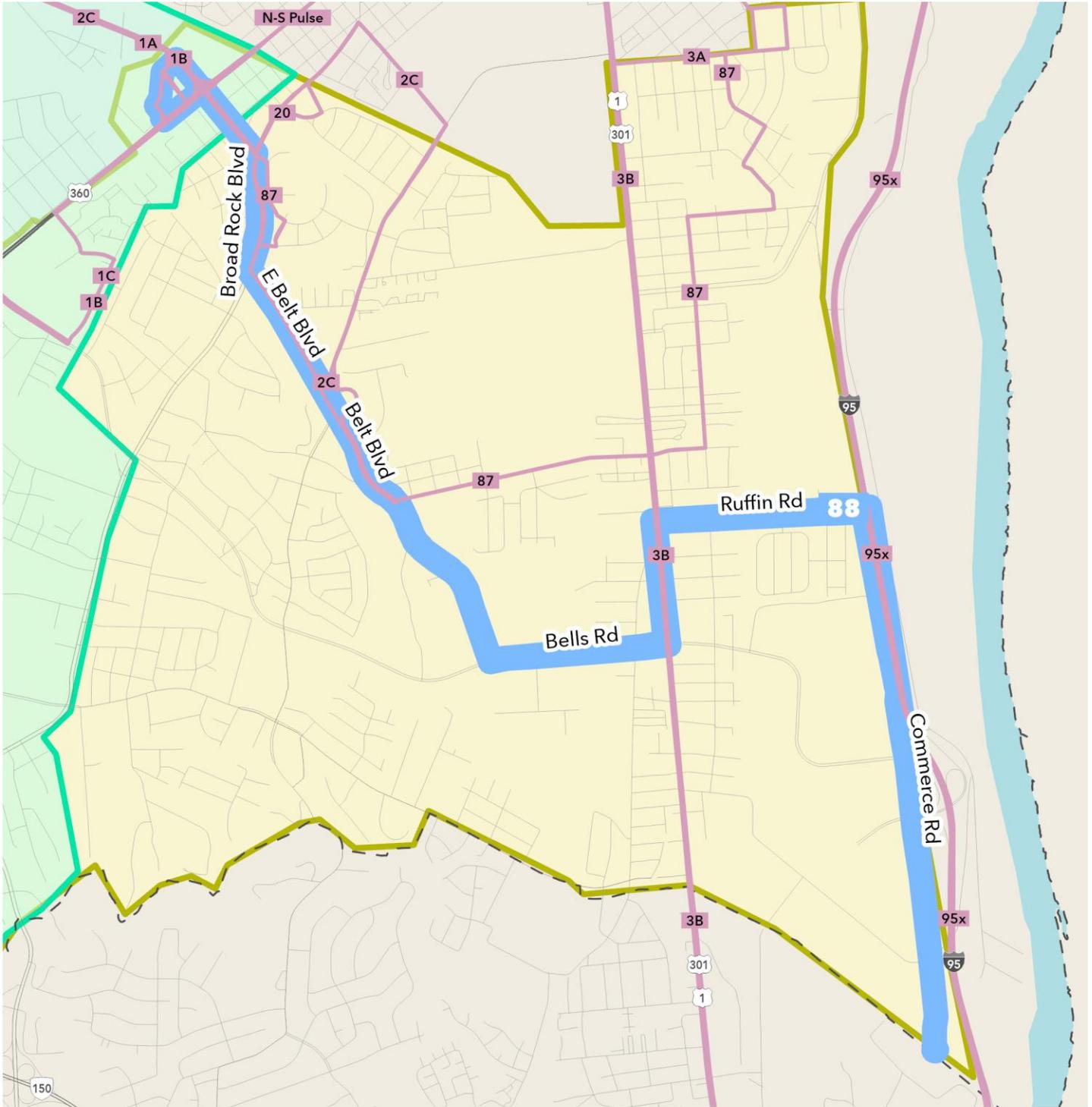
HEADWAY	Existing			Planned		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Early	60	-	-	30	-	-
AM Peak	60	60	60	30	30	60
Midday	60	60	60	30	30	60
PM Peak	60	60	60	30	30	60
Evening	60	60	60	60	60	60
Late Night	60	-	-	60	-	-

87 Bellemeade / Hopkins

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	No changes.			
FY 2026	Realign Route 87 to operate on Belt Boulevard and Terminal Avenue between Hopkins Road and Lynnhaven Avenue. Improve weekend span to operate from 6:00 a.m. to 10:00 p.m. On weekdays, improve headways to 30 minutes during the peak periods.	✓		✓
FY 2027	No changes.			
FY 2028	No changes.			
FY 2029	No changes.			
FY 2030	No changes.			
FY 2031	No changes.			
FY 2032	No changes.			
FY 2033	No changes.			
FY 2034	Improve headways to 30 minutes during the weekday early and midday and Saturday peak and midday periods.		✓	
Out Years	No changes.			

88 Belt / Bells / Ruffin



Planned Route 88

- Existing Alignment
- Planned Routes
- Planned LINK Microtransit
- City of Richmond Microtransit
- Jurisdiction Boundary



88 Belt / Bells / Ruffin

PLANNED CHANGES

Due to limited transit demand and low performance, Routes 86 and 88 will be replaced by microtransit service via the Broad Rock-Cherry Gardens-Richmond Highway zone.

JUSTIFICATION

- Very low fixed-route ridership, low density, and limited but consistent shift-oriented demand makes this area a good candidate for microtransit.
- A single microtransit zone could replace both Routes 86 and 88. Alternatively, a nearby proposed zone (in Chesterfield County immediately south of this area, not shown on the map) could be expanded to cover these routes.

Service Classification

Eliminated

Existing Origin / Destination

Southside Plaza / Commerce Road

Planned Origin / Destination

N/A



LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	5:30 a.m. – 9:19 a.m.; 2:30 p.m. – 11:12 p.m.	-
Saturday	6:00 a.m. – 8:48 a.m.; 3:54 p.m. – 7:18 p.m.	-
Sunday	-	-

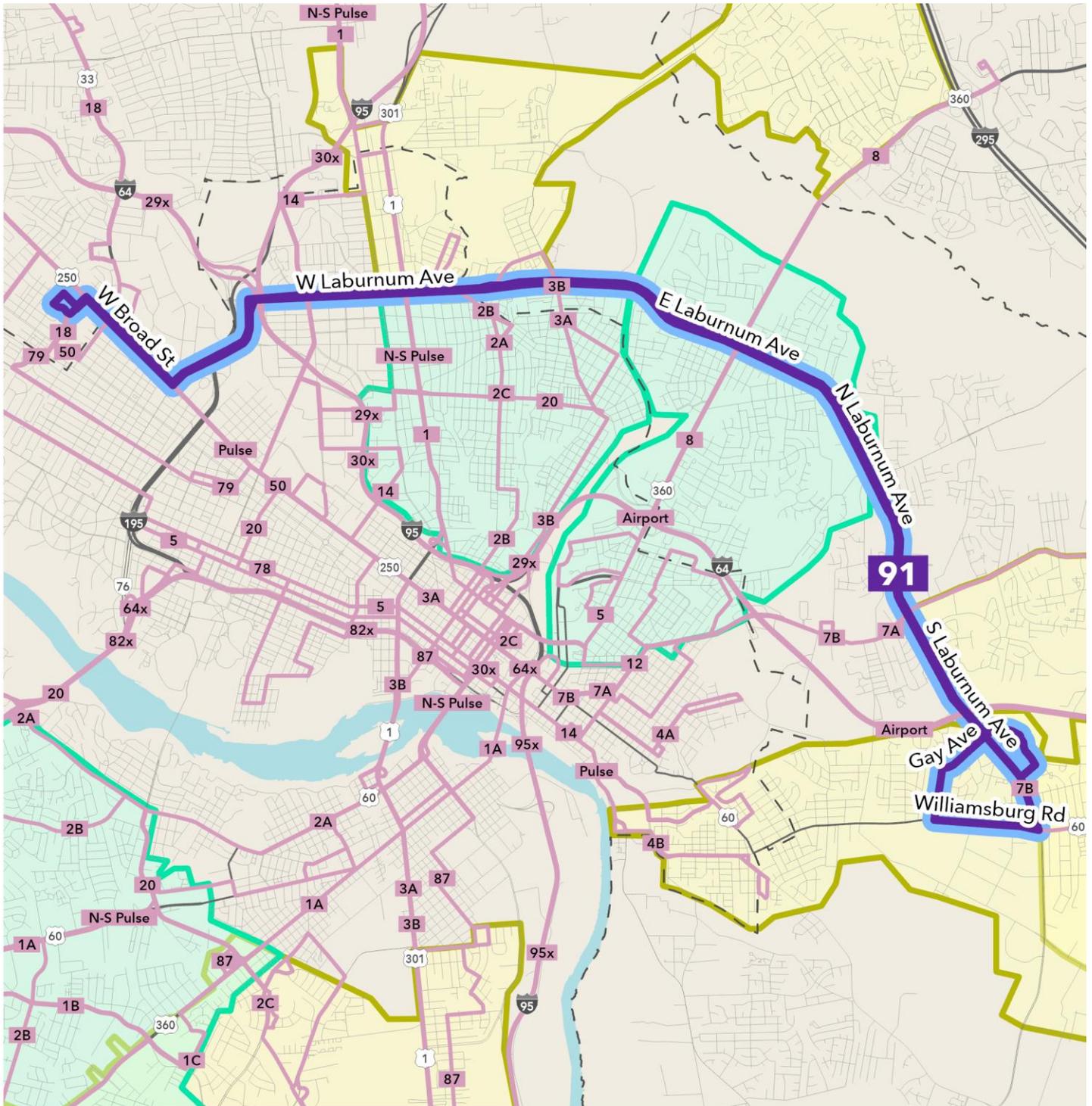
HEADWAY	Existing			Planned		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Early	-	-	-	-	-	-
AM Peak	60	60	-	-	-	-
Midday	60	60	-	-	-	-
PM Peak	60	60	-	-	-	-
Evening	-	-	-	-	-	-
Late Night	-	-	-	-	-	-

88 Belt / Bells / Ruffin

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	No changes.			
FY 2026	Route 88 will be eliminated in conjunction with implementation of the Broad Rock-Cherry Gardens-Richmond Highway microtransit zone.	✓	✓	✓
FY 2027	-			
FY 2028	-			
FY 2029	-			
FY 2030	-			
FY 2031	-			
FY 2032	-			
FY 2033	-			
FY 2034	-			
Out Years	-			

91 Laburnum Connector



Planned Route 91

- Planned Alignment
- Existing Alignment
- Planned Routes
- Planned LINK Microtransit
- City of Richmond Microtransit
- Jurisdiction Boundary



91 Laburnum Connector

PLANNED CHANGES

Improve weekday and Saturday headways to 30 minutes until 7:00 p.m. Improve weekday span to start at 5:30 a.m. and weekend span to start at 6:00 a.m. Reclassify Route 91 as a Community Radial route due to high ridership performance and higher planned levels of service. No alignment changes.

JUSTIFICATION

- Increased frequencies improve Route 91's value as an orbital route, offering better connections to many frequent fixed routes.
- Earlier service in the mornings matches the span of most other routes and meets Community Radial service standards.

Service Classification

Community Radial

Existing Origin / Destination

Willow Lawn / White Oak Village

Planned Origin / Destination

Willow Lawn / White Oak Village



LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	6:00 a.m. - 11:25 p.m.	5:30 a.m. - 11:25 p.m.
Saturday	7:00 a.m. - 10:55 p.m.	6:00 a.m. - 10:55 p.m.
Sunday	10:00 a.m. - 10:55 p.m.	6:00 a.m. - 10:55 p.m.

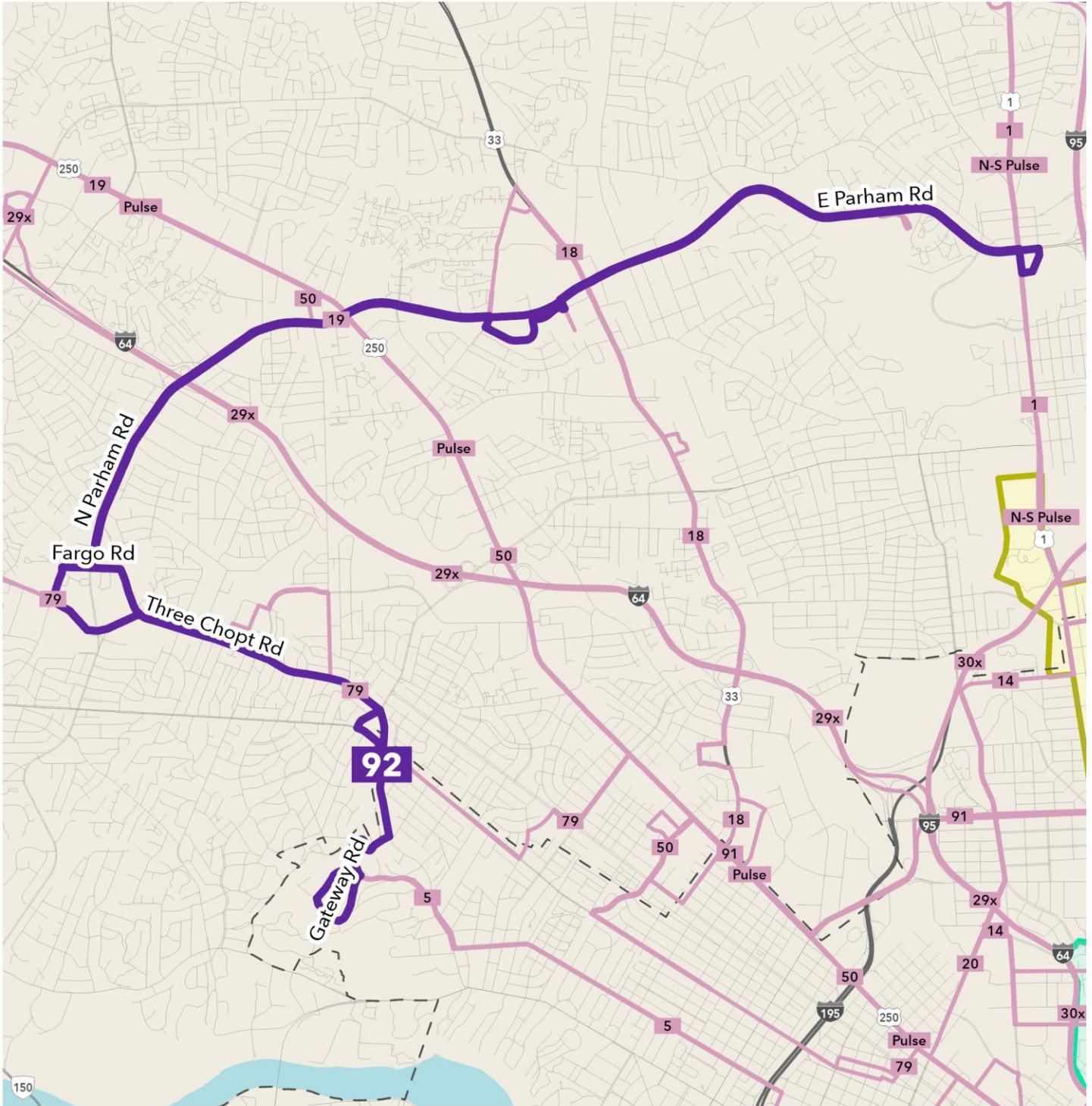
HEADWAY	Existing			Planned		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Early	-	-	-	30	-	-
AM Peak	30	60	-	30	30	60
Midday	60	60	60	30	30	60
PM Peak	30	60	60	30	30	60
Evening	60	60	60	60	60	60
Late Night	60	60	60	60	60	60

91 Laburnum Connector

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	No changes.	✓		
FY 2026	No changes.			
FY 2027	No changes.			
FY 2028	No changes.			
FY 2029	No changes.			
FY 2030	No changes.			
FY 2031	No changes.			
FY 2032	Improve weekday span to start at 5:30 a.m. and weekend span to start at 6:00 a.m. Improve weekday headways to 30 minutes during the early and midday periods.			✓
FY 2033	No changes.			
FY 2034	Improve Saturday headways to 30 minutes during the peak and midday periods.		✓	
Out Years	No changes.			

92 Parham / Three Chopt



Planned Route 92

- Planned Alignment
- Planned LINK Microtransit
- Jurisdiction Boundary
- Planned Routes
- City of Richmond Microtransit



92 Parham / Three Chopt

PLANNED CHANGES

Introduce Route 92 from the University of Richmond to Brook Road and Parham Road. The new route will share Route 79's alignment at Regency Shopping Mall and on Three Chopt Road from Patterson Avenue to Parham Road. On Parham Road, Route 92 will provide east-west connections between Regency Shopping Mall, the western terminus of Broad Street Pulse, Reynolds Community College, and Route 1 on Brook Road. Route 92 will connect to Routes 1, 5, 19, 50, 79, and the Pulse. The route will operate from 5:30 a.m. to 10:00 p.m. on weekdays and 6:00 a.m. to 10:00 p.m. on weekends, with 30-minute headways during the peak and midday periods on weekdays and Saturdays and 60-minute headways at other times.

JUSTIFICATION

- Route 92 offers a crosstown connection between Pulse and Routes 1, 5, 18, 50, and 79.
- Route 92 provides east-west connections along Parham Road, a major east-west corridor in northwest Henrico County with key destinations such as serving Reynolds Community College, Henrico Government Center, and Regency Mall.
- Service from the University of Richmond will offer a new transit connection to points north, capturing unmet travel demand.

Service Classification

Community Radial

Existing Origin / Destination

N/A

Planned Origin / Destination

Univ. of Richmond / Northpark



LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	-	5:30 a.m. - 10:00 p.m.
Saturday	-	6:00 a.m. - 10:00 p.m.
Sunday	-	6:00 a.m. - 10:00 p.m.

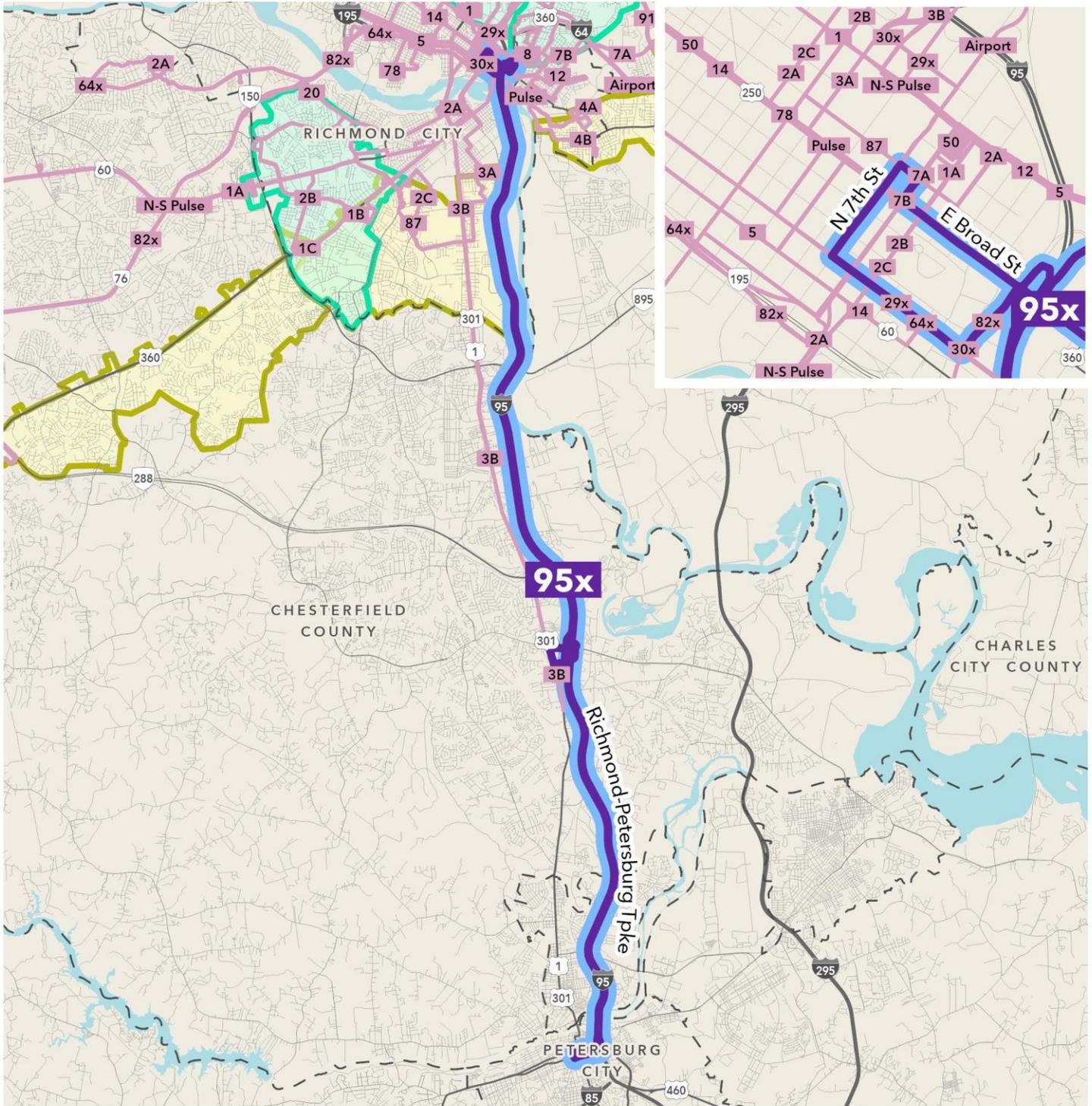
HEADWAY	Existing			Planned		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Early	-	-	-	30	-	-
AM Peak	-	-	-	30	30	60
Midday	-	-	-	30	30	60
PM Peak	-	-	-	30	30	60
Evening	-	-	-	60	60	60
Late Night	-	-	-	-	-	-

92 Parham / Three Chopt

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	Service not yet implemented.			
FY 2026	Service not yet implemented.			
FY 2027	Introduce Route 92 from 5:30 a.m. to 10:00 p.m. on weekdays with 30-minute headways until 7:00 p.m. and 60-minute headways after 7:00 p.m.	✓		
FY 2028	Introduce hourly weekend service from 6:00 a.m. to 10:00 p.m.			✓
FY 2029	No changes.			
FY 2030	No changes.			
FY 2031	Improve Saturday headways to 30 minutes during the peak and midday periods.		✓	
FY 2032	No changes.			
FY 2033	No changes.			
FY 2034	No changes.			
Out Years	No changes.			

95x Petersburg Express



Planned Route 95x

- Planned Alignment
- Existing Alignment
- Planned Routes
- Planned LINK Microtransit
- City of Richmond Microtransit
- Jurisdiction Boundary



95x Petersburg Express

PLANNED CHANGES

Realign Route 95x to include a stop at Brightpoint Community College. In both directions, the route will exit I-95 at Hundred Road, travel south on US 1 to Brightpoint Community College, and return to I-95 using the same roads in reverse.

JUSTIFICATION

- Route 95x has the lowest performance of GRTC's express routes, with the fewest riders per trip, highest cost per passenger trip, and worst on-time performance due to traffic conditions on I-95.
- Additional demand at Brightpoint Community College could improve the ridership performance in the route, in both peak and reverse peak directions.

Service Classification

Express

Existing Origin / Destination

Petersburg / Downtown Richmond

Planned Origin / Destination

Petersburg / Downtown Richmond



LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	5:30 a.m. – 7:50 a.m.; 4:00 p.m. – 6:20 p.m.	5:30 a.m. – 7:50 a.m.; 4:00 p.m. – 6:20 p.m.
Saturday	-	-
Sunday	-	-

Trips	Existing		Planned	
	Inbound	Outbound	Inbound	Outbound
Early	-	1	-	1
AM Peak	2	1	2	1
Midday	-	-	-	-
PM Peak	2	2	2	2
Evening	-	-	-	-
Late Night	-	-	-	-

95x Petersburg Express

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	No changes.		✓	✓
FY 2026	No changes.			
FY 2027	No changes.			
FY 2028	Realign Route 95x to add a stop at Brightpoint Community College in both directions.	✓		
FY 2029	No changes.			
FY 2030	No changes.			
FY 2031	No changes.			
FY 2032	No changes.			
FY 2033	No changes.			
FY 2034	No changes.			
Out Years	No changes.			

Airport Express

PLANNED CHANGES

Introduce express service from Downtown Richmond to Richmond International Airport, operating along I-64 between 7th Street and Airport Drive. The route will operate from 5:00 a.m. to 10:00 p.m. seven days per week, with 30-minute headways before 7:00 p.m. and hourly after.

JUSTIFICATION

- The majority of air departures and arrivals at RIC Airport occur between 6:00 a.m. and 7:00 p.m. Flight activity is high on both weekdays and weekends.
- This service will supplement Routes 7A and 7B, which will provide a connection between Downtown Richmond and the airport every 15 minutes from 6:00 a.m. to 7:00 p.m. on weekdays and Saturdays and every 30 minutes until 1:00 a.m. nightly.
- This route will provide a faster option to the airport, connecting to 16 local fixed bus routes, four express routes, and both BRT lines in Downtown Richmond.

Service Classification

Express

Existing Origin / Destination

N/A

Planned Origin / Destination

Downtown / Airport



LEVEL OF SERVICE

SPAN	Existing	Planned
Weekday	-	5:00 a.m. - 10:00 p.m.
Saturday	-	5:00 a.m. - 10:00 p.m.
Sunday	-	5:00 a.m. - 10:00 p.m.

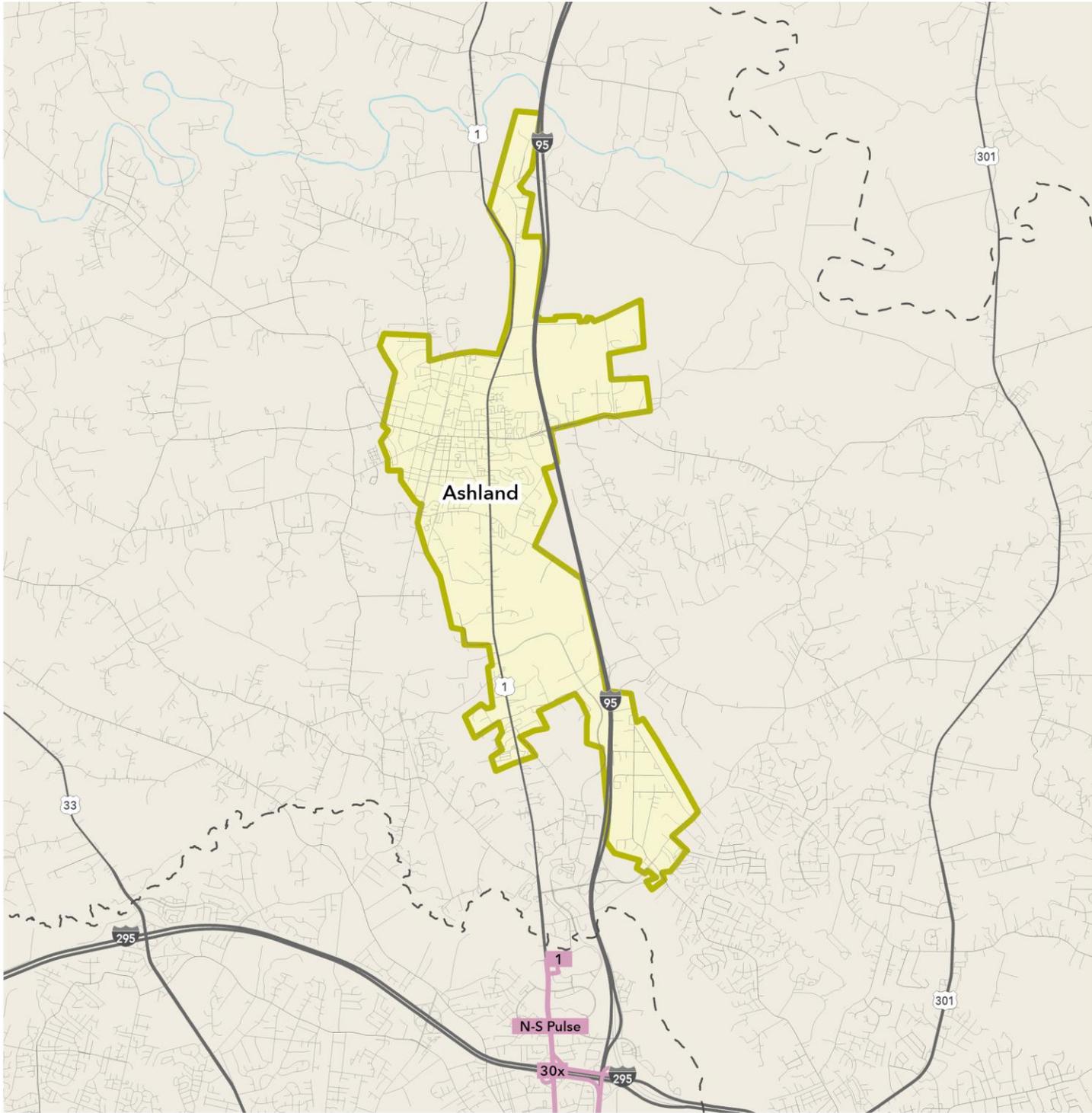
HEADWAY	Existing			Planned		
	Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
Early	-	-	-	30	30	30
AM Peak	-	-	-	30	30	30
Midday	-	-	-	30	30	30
PM Peak	-	-	-	30	30	30
Evening	-	-	-	60	60	60
Late Night	-	-	-	-	-	-

Airport Express

CHANGES BY YEAR

Fiscal Year	Description	Alignment	Headway	Span
FY 2025	Service not yet implemented.			
FY 2026	Service not yet implemented.			
FY 2027	Service not yet implemented.			
FY 2028	Service not yet implemented.			
FY 2029	Service not yet implemented.			
FY 2030	Service not yet implemented.			
FY 2031	Service not yet implemented.			
FY 2032	Introduce the Airport Express service, operating from 5:00 a.m. to 10:00 p.m. every day of the week with half-hour headways in the early, peak, and midday periods and hourly headways in the evenings.	✓	✓	✓
FY 2033	No changes.			
FY 2034	No changes.			
Out Years	No changes.			

Ashland Zone



Planned Ashland Microtransit Zone

-  Planned LINK Microtransit
-  Planned Routes
-  City of Richmond Microtransit
-  Jurisdiction Boundary



Ashland Zone

PLANNED CHANGES

The Ashland zone was implemented in Spring 2024. The Ashland microtransit zone provides circulation between destinations in central Ashland and a large part of the surrounding area along US Route 1 and I-95. This TSP does not include any plans for service changes but in a future year to be determined, the zone will extend south to VCCS.

JUSTIFICATION

- The northernmost section of the zone will serve a new distribution warehouse that is expected to create many jobs for the region.
- To the south, the zone will serve the Hanover County Municipal Airport and the commercial areas to the west of it. Industrial and commercial areas east of U.S. 1 and south of Ashcake Road will benefit from new service, especially for shift workers that do not have access to a vehicle.



Service Classification

LINK Microtransit

Service Area

Central Ashland, U.S. Route 1, I-95

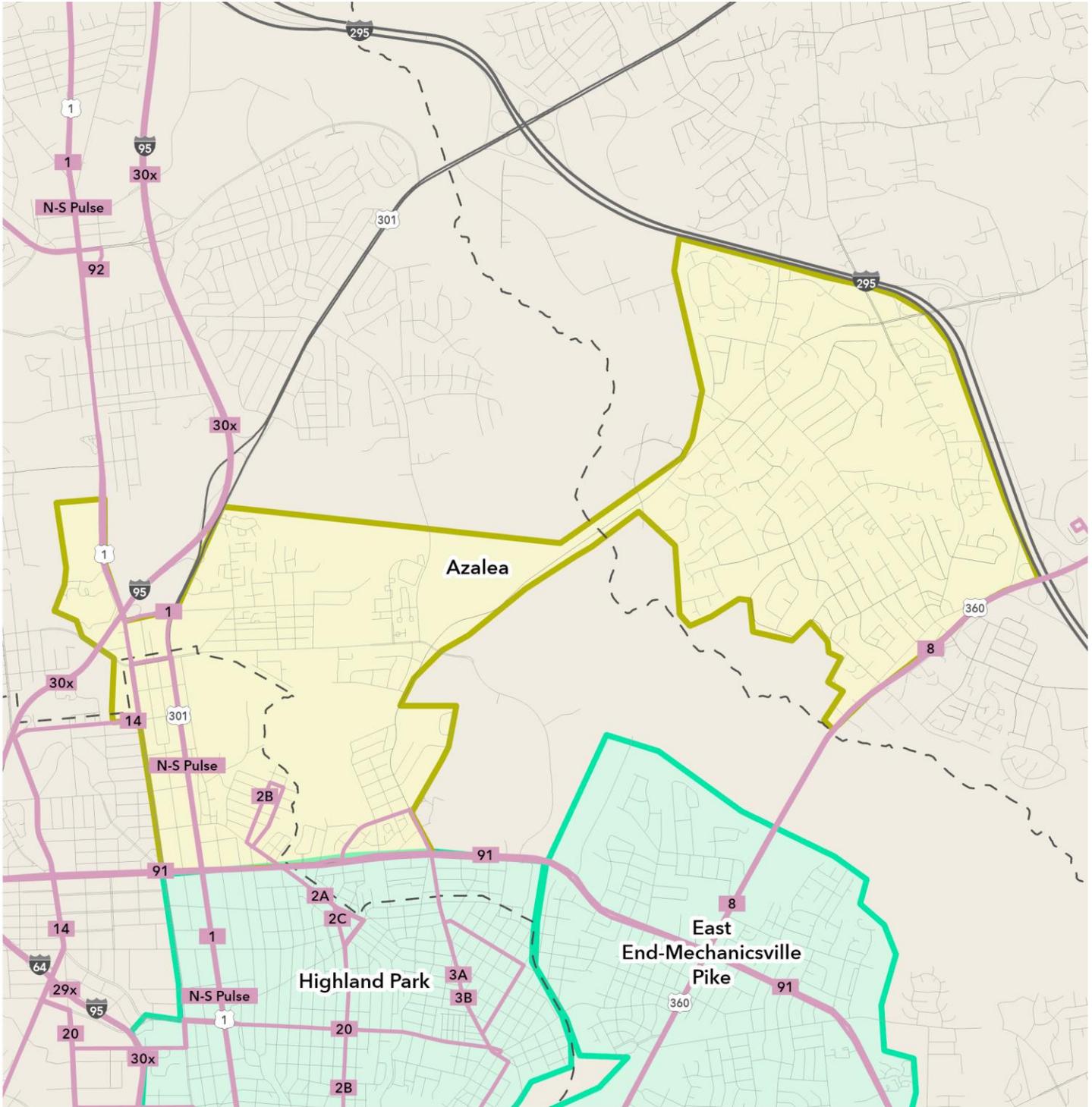
HOURS OF SERVICE

DAY OF WEEK	Existing	Planned
Weekday	6:00 a.m. – 11:00 p.m.	6:00 a.m. – 11:00 p.m.
Saturday	6:00 a.m. – 11:00 p.m.	6:00 a.m. – 11:00 p.m.
Sunday	-	-

IMPLEMENTATION TIMELINE

Fiscal Year	Description	Zone Implementation	Hours of Service
FY 2025	As of FY 2025, the Ashland zone has been fully implemented. In a future year to be determined, the zone will extend to VCCS.	✓	✓

Azalea Zone



Planned Azalea Microtransit Zone

- Planned LINK Microtransit
- City of Richmond Microtransit
- Planned Routes
- Jurisdiction Boundary



Azalea Zone

PLANNED CHANGES

The Azalea zone was implemented in Fall 2023 and there are currently no planned service changes. The Azalea zone serves as a replacement for former Route 93, providing new and improved mobility options for the Azalea area including Washington Park and Mechanicsville via Meadowbridge Road.

JUSTIFICATION

- Route 93 provided infrequent, circuitous, and low-performing service to essential services within this area. This microtransit zone improves transit options by offering direct, on-demand service between a greater number and variety of destinations throughout the area.
- The Azalea Zone will offer connections to planned Routes 1, 2A/B/C, 3A/B, 8, 14, 91, and the North-South BRT.

Service Classification

LINK Microtransit

Service Area

Azalea area including Washington Park and Mechanicsville via Meadowbridge Road



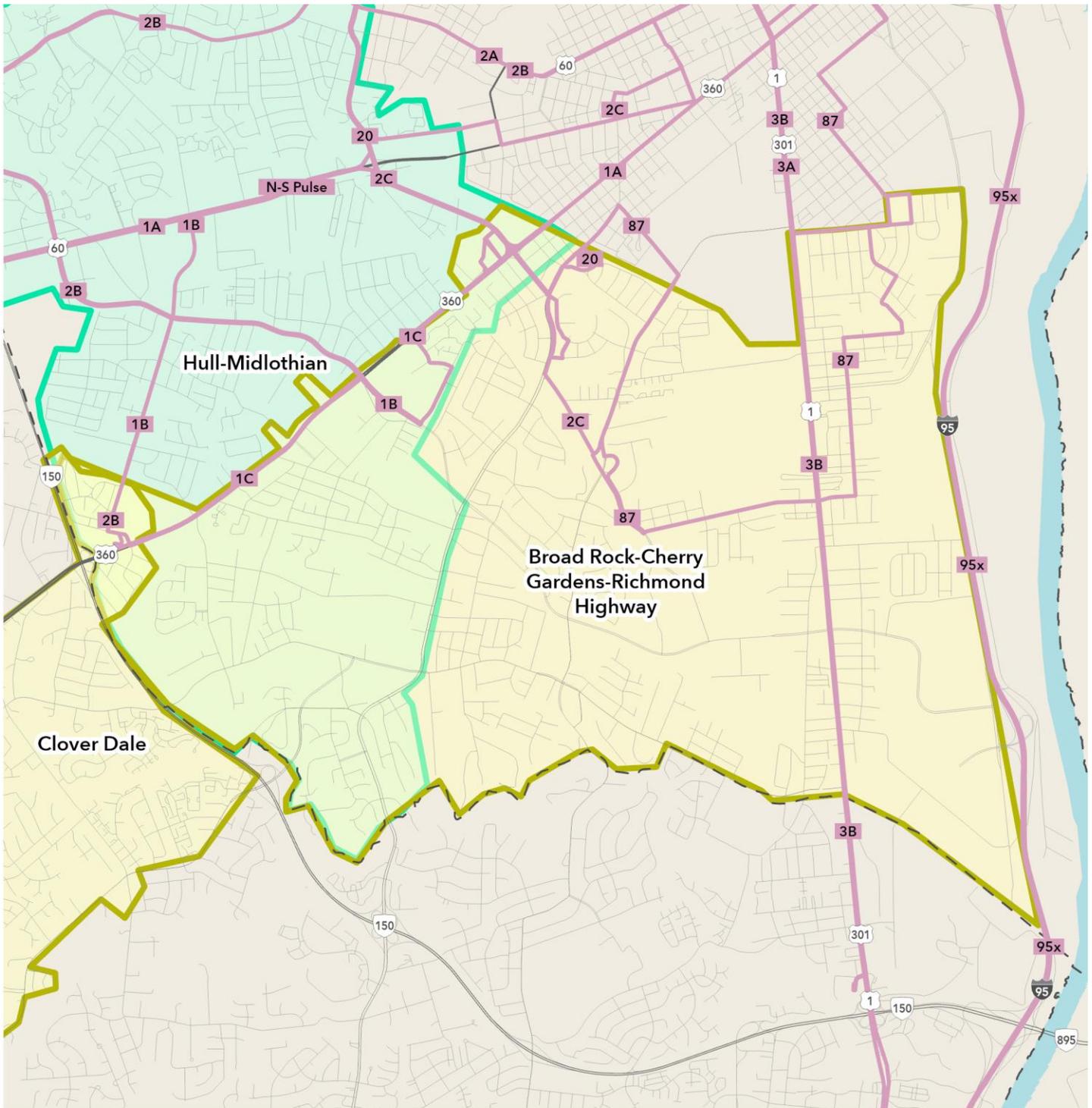
HOURS OF SERVICE

DAY OF WEEK	Existing	Planned
Weekday	5:00 a.m. – 8:00 p.m.	5:00 a.m. – 8:00 p.m.
Saturday	-	-
Sunday	-	-

IMPLEMENTATION TIMELINE

Fiscal Year	Description	Zone Implementation	Hours of Service
FY 2025	As of FY 2025, the Azalea zone has been fully implemented and there are no plans for future changes.	✓	✓

Broad Rock-Cherry Gardens-Richmond Highway Zone



Planned Broad Rock-Cherry Gardens-Richmond Highway Microtransit Zone

- Planned LINK Microtransit
- Planned Routes
- City of Richmond Microtransit
- Jurisdiction Boundary



Broad Rock-Cherry Gardens-Richmond Highway Zone

PLANNED CHANGES

This new microtransit zone would be implemented in conjunction with eliminating Routes 86 and 88 to maintain coverage. It would connect the existing Clover Dale microtransit zone, other GRTC fixed-route services, Richmond’s Southside neighborhoods, and the Richmond Highway corridor.

JUSTIFICATION

- The area has a relatively high concentration of low-income and disabled residents.
- This zone would provide increased coverage and offer opportunities for transfer to more frequent service, such as at Southside Plaza or along Richmond Highway.
- This zone will offer connections to planned Routes 1A/B/C, 2B/C, 3A/B, 20, 87, and the North-South BRT.

Service Classification

LINK Microtransit

Service Area

Bounded by I-95 on the east, Broad Rock on the north, Hull Street on the west, and the City of Richmond boundary on the south



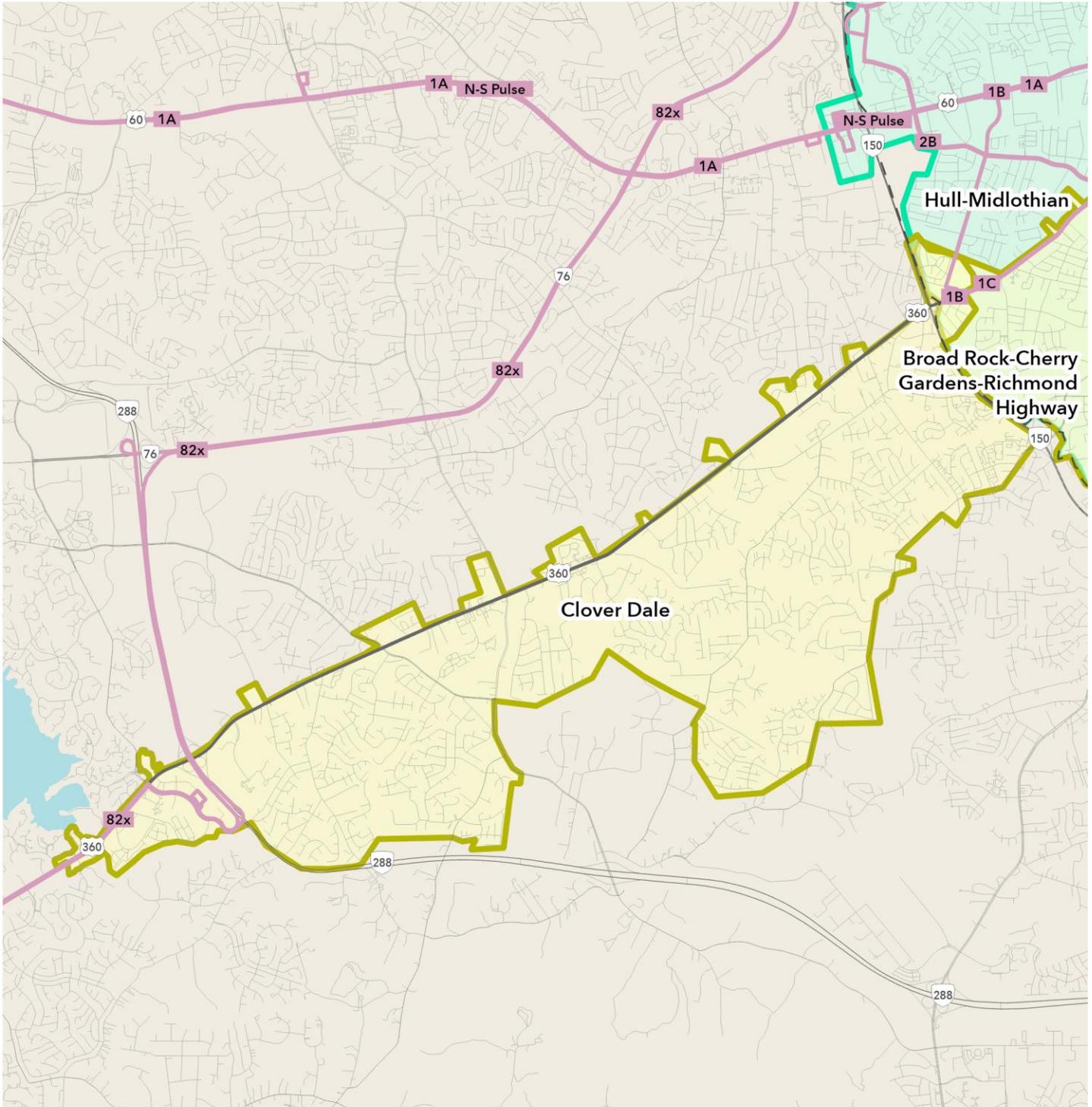
HOURS OF SERVICE

DAY OF WEEK	Existing	Planned
Weekday	-	5:00 a.m. – 11:00 p.m.
Saturday	-	7:00 a.m. – 11:00 p.m.
Sunday	-	7:00 a.m. – 11:00 p.m.

IMPLEMENTATION TIMELINE

Fiscal Year	Description	Zone Implementation	Hours of Service
FY 2026	Implement the Broad Rock-Cherry Gardens-Richmond Highway microtransit zone in conjunction with the elimination of Routes 86 and 88. No further changes are planned for this zone after FY 2026.	✓	✓

Clover Dale Zone



Planned Clover Dale Microtransit Zone

- Planned LINK Microtransit
- Planned Routes
- City of Richmond Microtransit
- Jurisdiction Boundary



Clover Dale Zone

PLANNED CHANGES

The Clover Dale zone was implemented in Spring 2024 and there are currently no planned service changes. Service operates along Hull Street Road (U.S. Route 360), as well as areas to the south of Route 360. At its southern border, the zone serves destinations along Belmont Road, including the Food Lion at Belmont Road and Turner Road.

JUSTIFICATION

- The zone improves internal circulation in a large area of Chesterfield County along Route 360 and provides connections to GRTC Route 1C along Hull Street and GRTC Route 82x along Commonwealth Center Parkway. In the future, the zone will also connect to other fixed routes that have planned changes, including Routes 1B and 2B.
- To the east, the zone serves multifamily housing units and commercial zones along Hull Street and Chippenham Parkway. The zone also serves multifamily housing units, grocery stores and retailers, and an assisted living facility west of Highway 288 along Hull Street. The new service extends to grocery stores, retailers, and important facilities, such as post offices and libraires, immediately north of Hull Street.

Service Classification

LINK Microtransit

Service Area

Along and south of Hull Street Road between Chippenham Mall and Bayside Lane



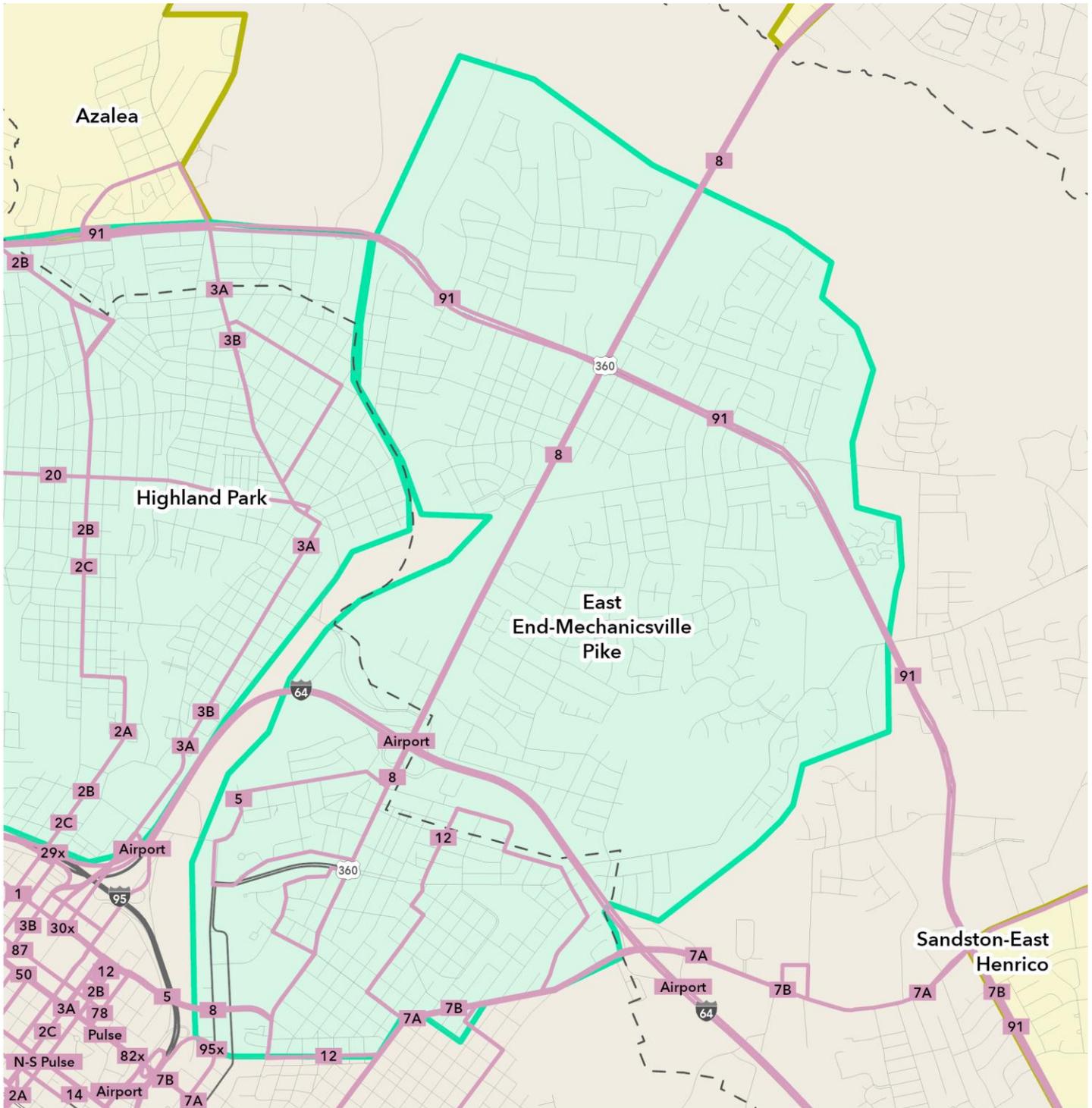
HOURS OF SERVICE

DAY OF WEEK	Existing	Planned
Weekday	6:00 a.m. – 8:00 p.m.	6:00 a.m. – 8:00 p.m.
Saturday	-	-
Sunday	-	-

IMPLEMENTATION TIMELINE

Fiscal Year	Description	Zone Implementation	Hours of Service
FY 2025	As of FY 2025, the Clover Dale zone has been fully implemented and there are no plans for future changes.	✓	✓

East End-Mechanicsville Pike Zone



Planned East End-Mechanicsville Pike Microtransit Zone

- Planned LINK Microtransit
- City of Richmond Microtransit
- Planned Routes
- Jurisdiction Boundary



East End-Mechanicsville Pike Zone

PLANNED CHANGES

The East End-Mechanicsville Pike zone would provide access within those neighborhoods and between the City of Richmond and Henrico County.

JUSTIFICATION

- This new zone would expand access to grocery stores, community centers, and other destinations for residents living in Richmond’s East End.
- Connections will be available to the new Route 8 offering service between Downtown Richmond and Mechanicsville, the radial Route 91 along Laburnum Avenue, and local routes 5, 7A/B, and 12 in the East End.

Service Classification

LINK Microtransit

Service Area

East End north of Nine Mile Road and East Highland Park



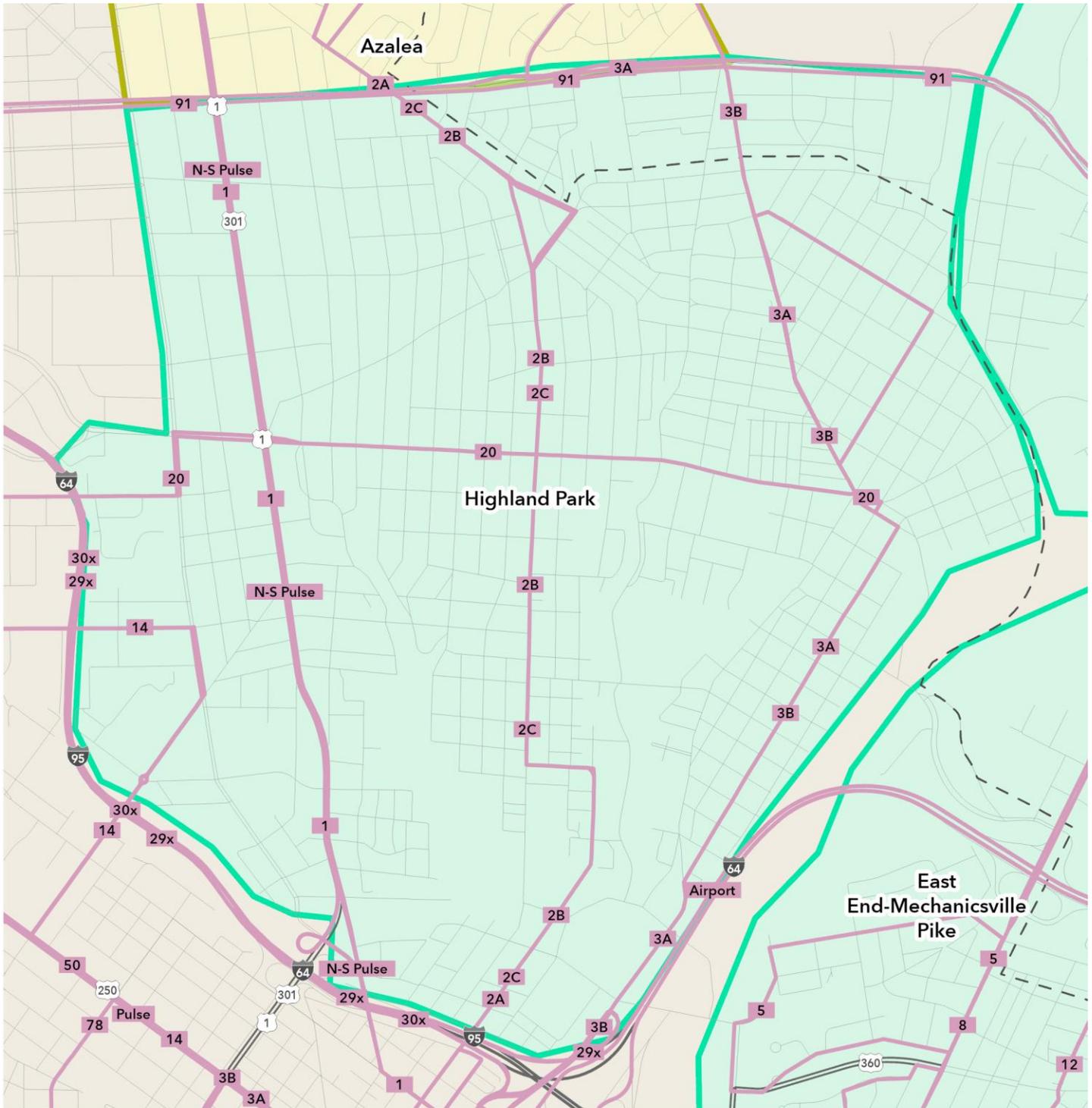
HOURS OF SERVICE

DAY OF WEEK	Existing	Planned
Weekday	-	5:00 a.m. - 12:00 a.m.
Saturday	-	6:00 a.m. - 11:00 p.m.
Sunday	-	6:00 a.m. - 11:00 p.m.

IMPLEMENTATION TIMELINE

Fiscal Year	Description	Zone Implementation	Hours of Service
Out Years	The East End-Mechanicsville Pike zone would be implemented in the “out years” of the TSP, meaning it has no set year for implementation within the ten years of the TSP.	✓	✓

Highland Park Zone



Planned Highland Park Microtransit Zone

- Planned LINK Microtransit
- City of Richmond Microtransit
- Planned Routes
- Jurisdiction Boundary



Highland Park Zone

PLANNED CHANGES

The Highland Park zone would provide service south of the Azalea zone, complementing the North-South BRT and Route 1 along the Chamberlayne corridor; Routes 2A, 2B, and 2C along the North Avenue corridor; Routes 3A and 3B along the Meadowbridge and 4th Street corridors; and provide connections between the fixed routes.

JUSTIFICATION

- This zone serves neighborhoods that have relatively higher densities of zero-vehicle households and transit commuters.
- The Highland Park zone will offer connections to Routes 1, 2A/B/C, 3A/B, 14, 20, 91, and the North-South BRT.

Service Classification

LINK Microtransit

Service Area

Approximately bounded by Laburnum Avenue to the north, the Richmond/Henrico border to the east, I-64 to the south and west, and Brook Road to the west



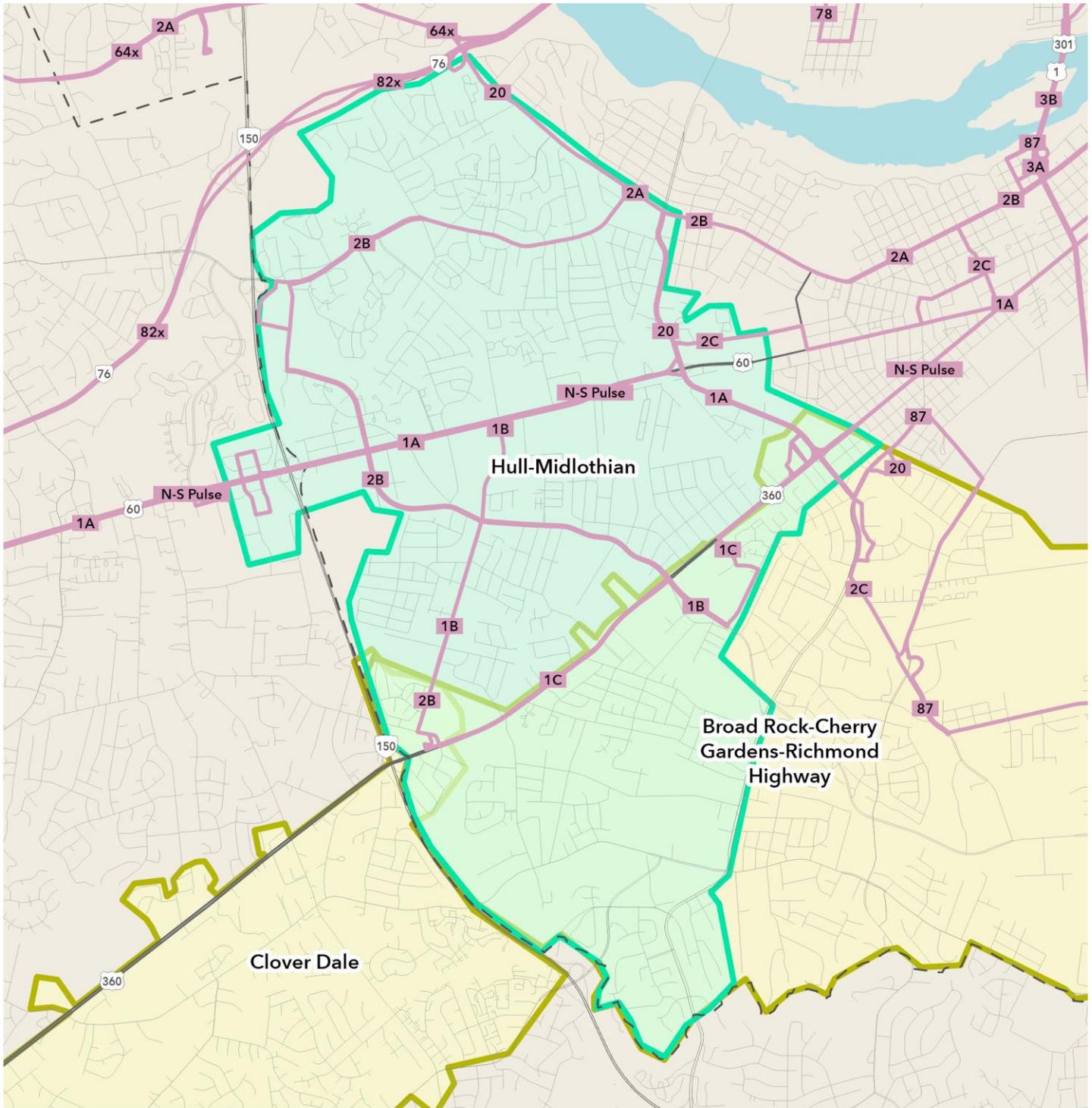
HOURS OF SERVICE

DAY OF WEEK	Existing	Planned
Weekday	-	5:00 a.m. - 12:00 a.m.
Saturday	-	6:00 a.m. - 11:00 p.m.
Sunday	-	6:00 a.m. - 11:00 p.m.

IMPLEMENTATION TIMELINE

Fiscal Year	Description	Zone Implementation	Hours of Service
Out Years	The Highland Park zone would be implemented in the "out years" of the TSP, meaning it has no set year for implementation within the ten years of the TSP.	✓	✓

Hull-Midlothian Zone



Planned Hull-Midlothian Microtransit Zone

- █ Planned LINK Microtransit
- █ City of Richmond Microtransit
- Planned Routes
- Jurisdiction Boundary



Hull-Midlothian Zone

PLANNED CHANGES

The Hull-Midlothian zone would connect Richmond’s southwestern neighborhoods to two other microtransit zones and almost all of GRTC’s fixed-route service on the Southside.

JUSTIFICATION

- This zone would further enable crosstown trips above what the fixed-route crosstown services provide on the Southside, allowing expanded and more flexible access for riders in the area.
- The zone would connect two heavily traveled corridors on the Southside, which will both gain increased fixed-route service over the course of the TSP: Midlothian Turnpike and Hull Street Road.
- The Hull-Midlothian Zone will offer connections to planned Routes 1A/B/C, 2A/B/C, 20, 87, and the North-South BRT.

Service Classification

LINK Microtransit

Service Area

South Richmond approximately between Forest Hill Avenue, Westover Hills Boulevard, Belt Boulevard, Broad Rock Boulevard, and the Chesterfield County boundary



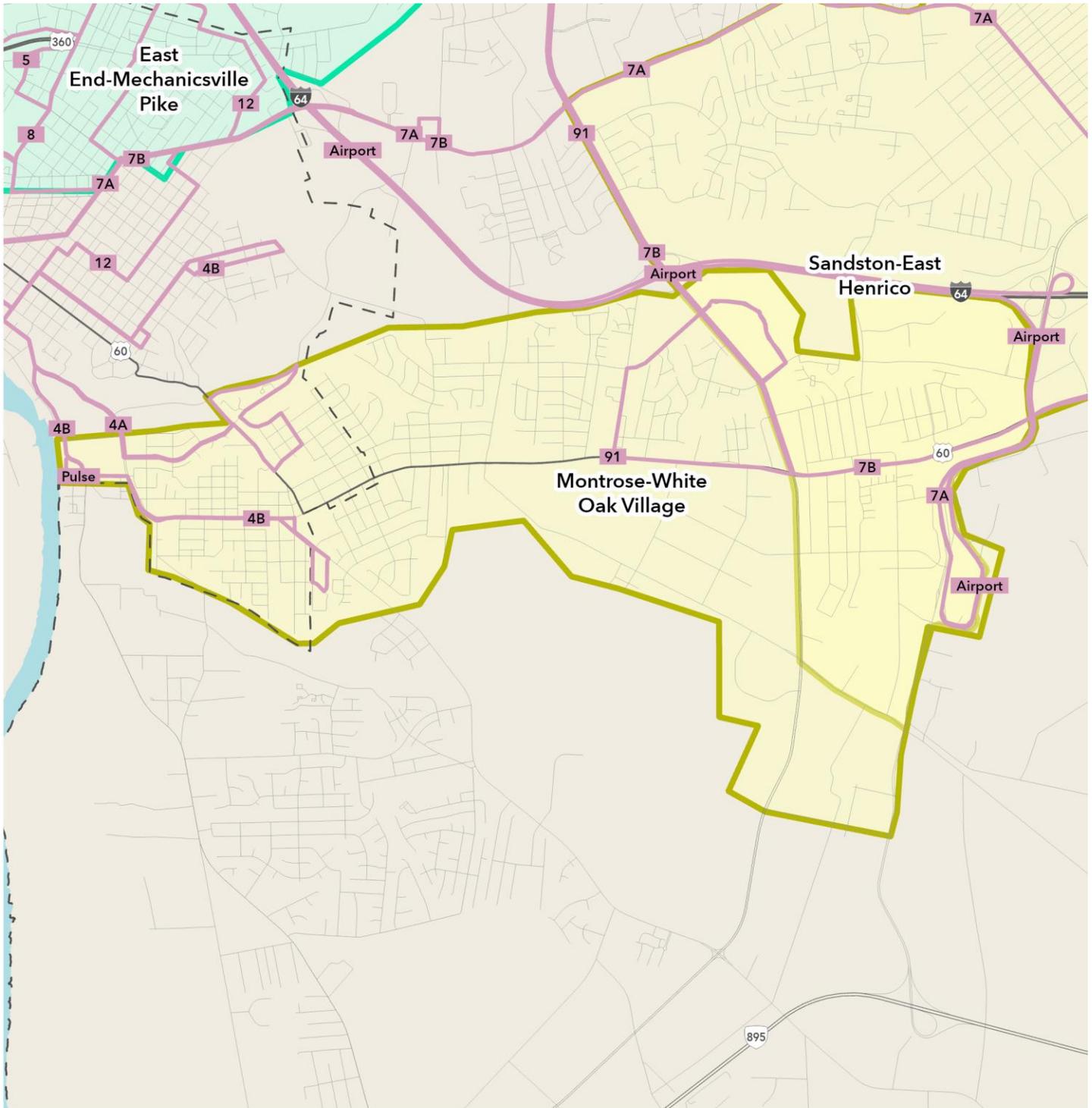
HOURS OF SERVICE

DAY OF WEEK	Existing	Planned
Weekday	-	5:00 a.m. – 11:00 p.m.
Saturday	-	6:00 a.m. – 11:00 p.m.
Sunday	-	6:00 a.m. – 11:00 p.m.

IMPLEMENTATION TIMELINE

Fiscal Year	Description	Zone Implementation	Hours of Service
Out Years	The Hull-Midlothian zone would be implemented in the “out years” of the TSP, meaning it has no set year for implementation within the ten years of the TSP.	✓	✓

Montrose-White Oak Village Zone



Planned Montrose-White Oak Village Microtransit Zone

-  Planned LINK Microtransit
-  Planned Routes
-  City of Richmond Microtransit
-  Jurisdiction Boundary



Montrose-White Oak Village Zone

PLANNED CHANGES

The Montrose-White Oak Village zone will connect Montrose with nearby shopping destinations at White Oak Village. It will provide replacement service when Route 56 is eliminated to maintain coverage.

JUSTIFICATION

- The level of transit demand in this area is well-suited to microtransit service, which will efficiently meet the needs of transit-dependent riders and shift-oriented commuters.
- The zone will offer first/last-mile connection to the Pulse service at Rocketts Landing and connect East End residents to industrial jobs near Richmond International Airport.
- Other transit connections include planned routes 4A/B, 7A/B, 91, Airport Express, and Broad Street Pulse.

Service Classification

LINK Microtransit

Service Area

South of I-64 along Williamsburg Road and South Laburnum Avenue, encompassing Montrose, White Oak Village, Virginia Heights, Richmond International Airport, and Fulton Hill



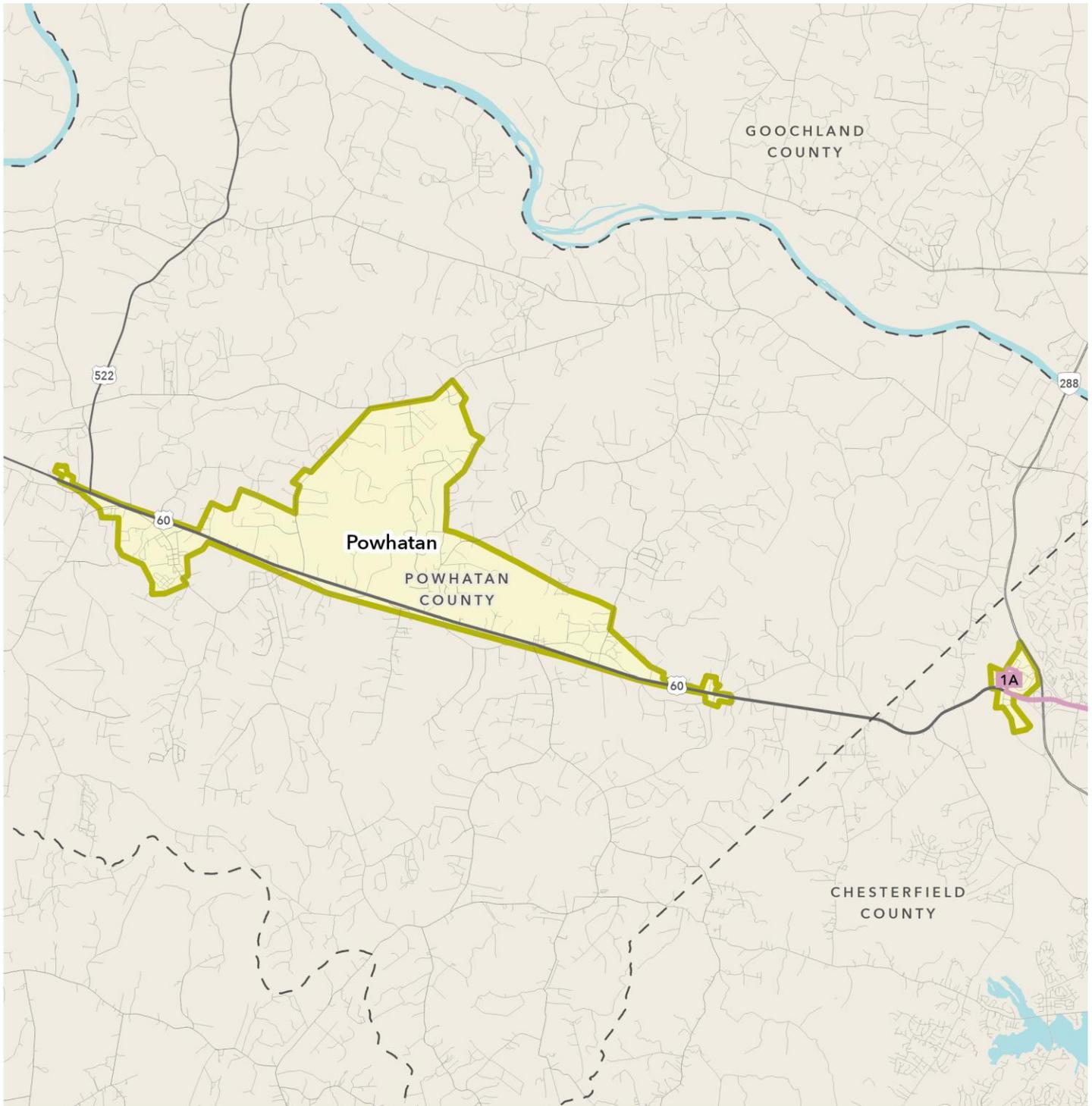
HOURS OF SERVICE

DAY OF WEEK	Existing	Planned
Weekday	-	6:00 a.m. - 10:00 p.m.
Saturday	-	6:00 a.m. - 10:00 p.m.
Sunday	-	6:00 a.m. - 10:00 p.m.

IMPLEMENTATION TIMELINE

Fiscal Year	Description	Zone Implementation	Hours of Service
FY 2026	Implement the Montrose-White Oak Village microtransit zone in conjunction with the elimination of Route 56. No further changes are planned for this zone after FY 2026.	✓	✓

Powhatan Zone



Planned Powhatan Microtransit Zone

-  Planned LINK Microtransit
-  Planned Routes
-  City of Richmond Microtransit
-  Jurisdiction Boundary



Powhatan Zone

PLANNED CHANGES

The Powhatan zone was implemented in Spring 2024 and there are currently no planned service changes. The zone serves destinations along U.S. Route 60 and includes an out-zone connection to and from the Westchester Commons Shopping Center.

JUSTIFICATION

- The Powhatan Zone brings GRTC service to an entirely new county, providing reliable on-demand connections within Powhatan and to Westchester Center Commons in Chesterfield County.
- The out-zone connection ensures Powhatan residents can access the Bon Secours Westchester medical facility at Midlothian Turnpike and Watkins Center Parkway and provides connection to the rest of the GRTC system through planned Route 1A.

Service Classification

LINK Microtransit

Service Area

Along U.S. Route 60 in Powhatan County; out-zone connection to Westchester Commons Shopping Center



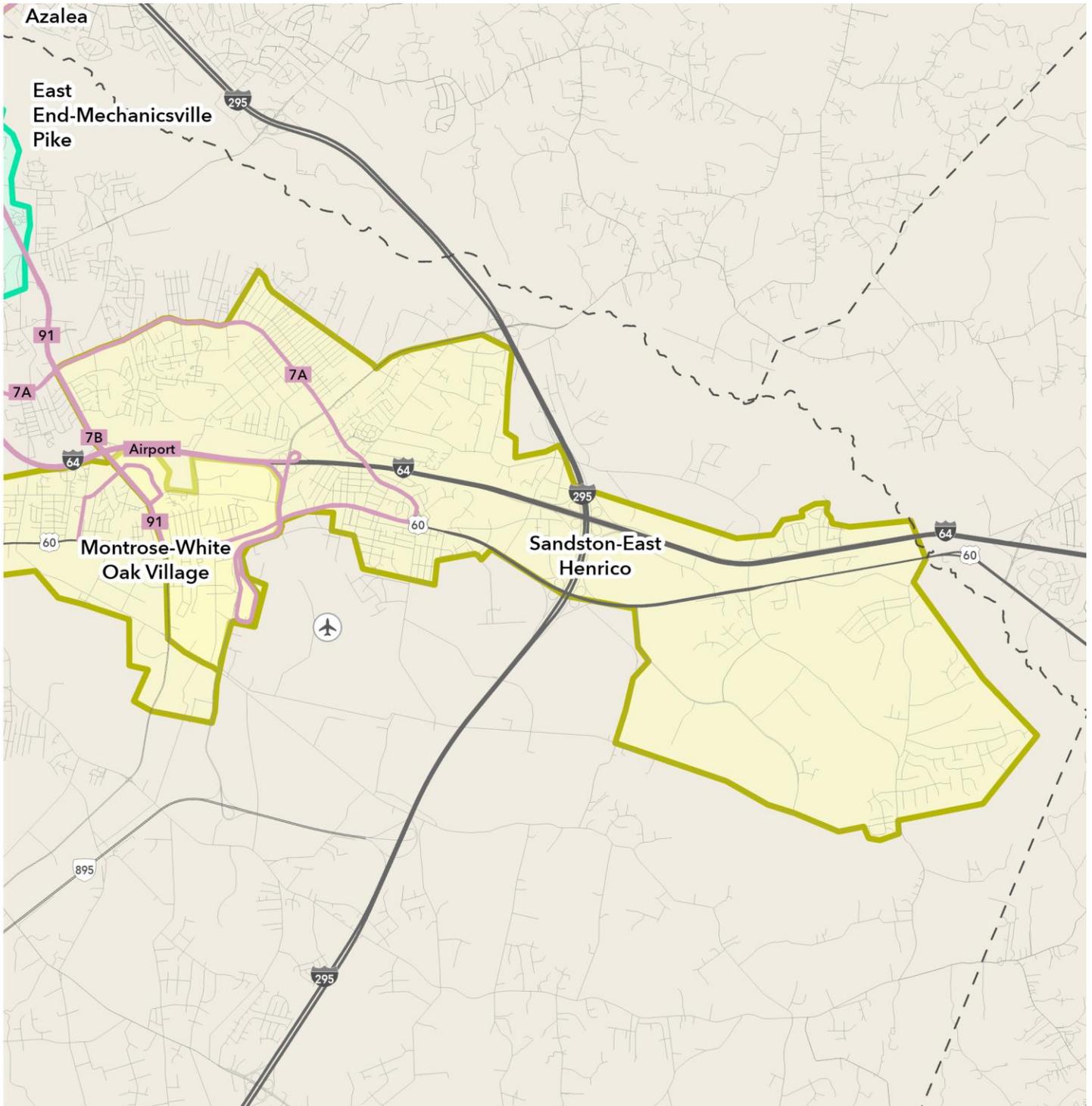
HOURS OF SERVICE

DAY OF WEEK	Existing	Planned
Weekday	6:00 a.m. - 7:00 p.m.	6:00 a.m. - 7:00 p.m.
Saturday	-	-
Sunday	-	-

IMPLEMENTATION TIMELINE

Fiscal Year	Description	Zone Implementation	Hours of Service
FY 2025	As of FY 2025, the Powhatan zone has been fully implemented and there are no plans for future changes.	✓	✓

Sandston-East Henrico Zone



Planned Sandston-East Henrico Microtransit Zone

-  Planned LINK Microtransit
-  Planned Routes
-  City of Richmond Microtransit
-  Jurisdiction Boundary



Sandston-East Henrico Zone

PLANNED CHANGES

The Sandston-Elko zone will be implemented in Summer 2024 and there are currently no future changes planned for service. It will serve destinations in eastern Henrico County, connecting the eastern edge of Sandston with destinations across I-295 and along I-64, U.S. 60, and Elko Road.

JUSTIFICATION

- The microtransit zone will provide new transit connections to industrial sites and warehouses along Elko Road and Technology Boulevard, and numerous grocery stores in and around Sandston.
- The Sandston-Elko zone will offer connections to planned Routes 7A/B, 91, and the Airport Express.

Service Classification

LINK Microtransit

Service Area

Eastern edge of Sandston, along I-64, U.S. 60, and Elko Road to county border



Notes

GRTC will examine connecting this zone to fixed-route service in the East End of the City of Richmond.

HOURS OF SERVICE

DAY OF WEEK	Existing	Planned
Weekday	-	5:00 a.m. - 8:00 p.m.
Saturday	-	-
Sunday	-	-

IMPLEMENTATION TIMELINE

Fiscal Year	Description	Zone Implementation	Hours of Service
FY 2025	As of FY 2025, the Sandston-Elko zone will have been fully implemented and there are no plans for future changes.	✓	✓

3.1.2. Ridership Estimation

METHODOLOGY

Future-year ridership was estimated for GRTC's fixed routes by forecasting the ridership impact for every service change between the existing and FY 2034 services. Three types of service changes were defined, with a separate estimation method for each: alignment changes, span changes, and headway changes. The impacts of these changes were estimated in order, starting with stop-level ridership adjustments caused by alignment changes, followed by the application of ridership demand elasticities for span and headway changes. This methodology does not account for forecasted increases in population and employment in the Greater Richmond region over the next decade.

First, the ridership impacts of alignment changes were estimated at the stop level. In order to reflect the stops newly served or no longer served by a route due to realignment, boardings were added or subtracted from each route's baseline ridership according to the following:

- Boardings at stops eliminated from a route were subtracted from the route's average daily ridership.
- When a stop is added to a route, boardings from other route(s) at that stop are partially assigned to the added route:
 - For a route that is replacing another route at that stop, the boardings from the removed route are added to the replacement route's average daily ridership.
 - For stops served by multiple routes, the boardings from all existing routes at that stop were combined and then split proportionally between the proposed routes according to the number of proposed daily trips (i.e., the number of proposed daily trips on each route divided by the total number of proposed daily trips across all routes at that stop).
- Finally, some proposed route alignments provide service along street segments that do not have existing GRTC service. For those segments, the number of new bus stops was estimated using approximately 1,000-foot spacing in each direction and ridership for those stops was estimated using the average baseline boardings per stop for the route (in the case of new routes, the average boardings per stop from a similar existing route were used¹).

Ridership impacts of the two types of level of service changes, span and headway, were estimated using ridership demand elasticities. These elasticities represent the change in transit demand, or ridership, caused by a change in level of service. The span elasticity value is positive since an increase in span of service affects an increase in demand. In contrast, the headway elasticity value is negative since an increase in headway (lower frequency) results in decreased demand.

RIDERSHIP ESTIMATES

Table 3-1 shows the estimated daily ridership by day of the week based on the planned service improvements as described in the route sheets in Section 3.1. Based on the improvements to fixed-route service, annual ridership is projected to exceed 13 million passenger trips in FY 2034, a 39 percent increase over FY 2023. By FY 2034, the daily weekday ridership is projected to increase by 39 percent. On weekends, systemwide ridership in FY 2034 is projected to be 35 percent higher on Saturday and 52 percent higher on Sunday.

¹ Existing average stop-level ridership on Route 91 was used to estimate ridership at new stops on Routes 8 and 91. The existing average boardings per stop on Pulse was used to estimate boardings per stop on the North-South BRT. For new express Routes 30x and Airport Express, ridership estimates were calculated at the trip level by using the existing average boardings per trip on Routes 29x and 82x, respectively.

Table 3-1: FY 2034 Estimated Fixed-Route Ridership

Route	Existing Average Daily Boardings (Sept. 2023)			Estimated Average Daily Boardings (FY 2034)			Percent Growth		
	Wkdy	Sat	Sun	Wkdy	Sat	Sun	Wkdy	Sat	Sun
1	2,273	1,737	1,257	2,479	1,902	1,235	9%	10%	-2% ²
1A	2,629	2,135	275	1,927	1,579	702	-27% ³	-26% ³	155% ⁴
1B	1,018	759	-	399	280	71	-61% ⁵	-63% ⁵	N/A
1C	1,465	1,147	202	345	230	172	-76% ⁵	-80% ⁵	-15% ⁵
2A	810	631	530	1,210	929	741	49%	47%	40%
2B	932	608	549	1,354	886	746	45%	46%	36%
2C	1,201	792	464	1,100	756	420	-8% ⁶	-5% ⁶	-10% ⁶
3A	1,070	703	-	1,311	946	559	23%	35%	N/A
3B	1,466	1,052	-	1,621	1,204	654	11%	15%	N/A
3C	327	261	1,399	-	-	-	Route Eliminated		
4A	187	151	111	382	302	245	104%	100%	121%
4B	228	160	116	458	335	268	101%	110%	131%
5	1,725	1,205	946	2,347	1,661	1,321	36%	38%	40%
7A	835	656	427	1,343	940	570	61%	43%	34%
7B	801	544	381	1,469	1,090	726	83% ⁷	100% ⁷	91% ⁷
8	-	-	-	159	113	80	New Route		
12	1,307	933	720	2,351	1,650	1,365	80%	77%	90%
14	981	767	580	1,593	1,245	759	62%	62%	31%
18	151	-	-	493	202	138	227%	N/A	N/A
19	1,154	985	634	460	401	244	-60% ⁸	-59% ⁸	-61% ⁸
20	543	454	268	771	621	377	42%	37%	41%
29x	151	-	-	162	-	-	7%	-	-
30x	-	-	-	65	-	-	New Route		
50	632	524	369	1,048	783	535	66% ⁹	49%	45%
56	57	-	-	-	-	-	Route Eliminated		
64x	66	-	-	66	-	-	0%	-	-
76	139	69	55	-	-	-	Route Eliminated		
77	177	102	79	-	-	-	Route Eliminated		
78	362	193	144	696	424	255	92%	120%	77%

² Route 1 ridership is estimated to decrease slightly on Sundays due to competition with the North-South BRT.

³ Route 1A ridership is estimated to decrease on weekdays and Saturdays due to competition with the North-South BRT, which will offer high-quality frequent service along a portion of the same corridor as Route 1A.

⁴ Route 1A ridership is estimated to more than double on Sundays due to low existing ridership and an extended alignment along Midlothian Turnpike.

⁵ Ridership on Routes 1B and 1C is estimated to decrease due to truncated alignments at the Southside Plaza.

⁶ Route 2C ridership is estimated to decrease slightly due to frequency increases on Routes 2A and 2B.

⁷ Route 7B ridership is estimated to increase significantly due to headway improvements and replacing Route 7A's westbound service on Laburnum Avenue.

⁸ Route 19 ridership is estimated to decrease due to moving its eastern terminus from Willow Lawn to Parham Road.

⁹ Route 50 ridership is estimated to increase due to extending its western terminus from Willow Lawn to Parham Road.

Route	Existing Average Daily Boardings (Sept. 2023)			Estimated Average Daily Boardings (FY 2034)			Percent Growth		
	Wkdy	Sat	Sun	Wkdy	Sat	Sun	Wkdy	Sat	Sun
79	194	-	-	631	314	223	226% ¹⁰	N/A	N/A
82x	77	-	-	108	-	-	40%	-	-
86	210	145	113	-	-	-	Route Eliminated		
87	335	185	142	835	518	346	149%	180%	144%
88	80	28	-	-	-	-	Route Eliminated		
91	675	501	326	934	672	453	38%	34%	39%
92	-	-	-	387	259	170	New Route		
95x	51	-	-	57	-	-	13%	-	-
Pulse	5,230	2,981	2,283	5,623	3,303	2,490	8%	11%	9%
N-S BRT	-	-	-	6,339	3,613	2,767	New Route		
Airport	-	-	-	478	334	226	New Route		

¹⁰ Route 79 ridership is estimated to increase due to extending its alignment to replace Route 76.

3.2. Prioritization of Planned Service Improvements

3.2.1. Prioritization

Guidelines for the TSP require the assignment of a timeframe with estimated capital costs and operating costs for each planned change to transit service. The three timeframes for this TSP are as follows:

- Short-term: FY 2025 - FY 2027
- Mid-term: FY 2028 - FY 2031
- Long-term: FY 2032 - FY 2034

The prioritization process built upon GRTC's FY 2024 planned service, and balanced annual service increases with manageable increases in operating and capital costs. Service changes would be implemented incrementally, and not all changes will be implemented by the end of the plan in FY 2034, allowing for some service changes to be completed in future years (those changes in the "Out Years" are considered outside of the financially constrained plan).

Table 3-2 visualizes the prioritization of planned service improvements for GRTC for the years covering this TSP. The table is broken out into four time periods: short-term, mid-term, long-term, and out years. The table details important information for the phasing of improvements year by year, including service improvements, routes impacted by system changes, and additional revenue miles, revenue hours, and revenue vehicles needed to operate the service. The operational impact of microtransit zones is included in revenue hours estimates only; GRTC has not projected revenue miles for the zones and the vehicles required are a different type of vehicle.

Table 3-2: Prioritization of Planned Service Improvements

Time Frame	Year	Key Service Improvements	Routes/Zones Impacted	Approximate Change in Revenue Hours	Approximate Change in Revenue Miles	Additional Peak Vehicle Need
Short-Term	FY 2025	Route 1 extension to VCCS, frequent peak service on 7A and 7B	1, 7A, 7B	84,400	265,600	4
	FY 2026	Alignment changes, improved headways and spans, eliminated routes, and introduction of microtransit zones	3B, 5, 12, 19, 50, 56, 77, 78, 82x, 86, 87, 88, Pulse, Broad Rock Zone, White Oak-Montrose Zone	21,600	160,700	3
	FY 2027	Pulse extension to Parham and related realignments, Route 92 implementation	19, 50, 76, 79, 92, Pulse	37,200	386,800	6
	Short-Term Total				143,100 additional revenue hours	813,100 additional revenue miles

Time Frame	Year	Key Service Improvements	Routes/Zones Impacted	Approximate Change in Revenue Hours	Approximate Change in Revenue Miles	Additional Peak Vehicle Need
Mid-Term	FY 2028	Alignment changes, headway and span improvements	5, 18, 20, 92, 95x	24,600	309,500	5
	FY 2029	Introduction of North-South BRT and related realignments	1, 1A, 1B, 1C, 2B, North-South BRT	85,000	847,100	11
	FY 2030	Headway improvements	2A, 2B	34,000	328,700	5
	FY 2031	Span and headway improvements, increasing service on Routes 3A and 3B to replace Route 3C	3A, 3B, 3C, 5, 14, 18, 20, 92	30,500	336,400	4
	Mid-Term Total				174,000 additional revenue hours	1,821,700 additional revenue miles
Long-Term	FY 2032	Headway improvements and introduction of express routes	4A, 4B, 12, 30x, 91, Airport Express	32,600	425,400	6
	FY 2033	Headway and span improvements, Route 8 introduction	2A, 2B, 2C, 5, 7A, 7B, 8, 12, 19, 29x, 78, 79,	31,100	331,500	2
	FY 2034	Headway and span improvements, alignment changes	3B, 5, 7A, 7B, 12, 14, 18, 19, 79, 87, 91	31,800	402,100	1
	Long-Term Total				95,500 additional revenue hours	1,159,000 additional revenue miles
Out Years (not funded within the financially constrained TSP)		Extensions of North-South and Pulse BRT, introduction of microtransit zones	North-South BRT, Pulse BRT, East End-Mechanicsville Zone, Highland Park Zone, Hull-Midlothian Zone	128,800 additional revenue hours	1,342,600 additional revenue miles	21 additional vehicles

3.2.2. Inclusion in Other Plans

Connect RVA 2045, the long-range transportation plan (LRTP) for the Richmond region developed by the RRTPO and Plan RVA, details transit projects that are within the constrained element of the plan. GRTC submits expansion projects for inclusion into the LRTP. **Table 3-3** lists the transit projects already included in the LRTP and their connection to planned improvements in the TSP. GRTC will develop a plan for submitting future expansion projects for inclusion in the LRTP, for large expansion projects that are not yet included in the LRTP.

Table 3-3: Transit Projects in Constrained LRTP

Projects in Constrained LRTP	Connection to TSP
LRTP Time Band 1 (FY 2022 - FY 2027)	
23 rd Street & Franklin Street Neighborhood Transfer Center	Improving the transfer experience at 23 rd and Franklin will enhance the rider experience on Routes 4A, 4B, 12, and 14, which are all planned to have headway improvements.
Downtown Transfer Center	Establishing a permanent Downtown Transfer Center (DTC) will enhance the rider experience on almost all of GRTC's routes. With many routes planned to have increased service through extended spans and more frequent service, improving the customer experience at the DTC will positively impact many riders daily.
LRTP Time Band 2 (FY 2028 - FY 2033)	
BRT from Downtown Richmond to Ashland along US-1	The TSP includes the North-South BRT project which will connect Downtown Richmond to VCCS along US-1 but the TSP does not include BRT service in Hanover County or Ashland. However, the planned Ashland microtransit zone has a future opportunity to expand transit service along US-1 between VCCS and Ashland.
High-frequency service from downtown Richmond to Stonebridge and new service from Stonebridge to Chesterfield Town Center along US- 60 (Midlothian Turnpike)	The TSP includes the North-South BRT project which will connect Downtown Richmond to Stonebridge Plaza and Chesterfield Towne Center along US-60, plus the planned extension of Route 1A which will extend along Midlothian Turnpike to Chesterfield Town Center and Westchester Commons.
High-frequency service from Willow Lawn to Short Pump along US-250 (Broad Street)	The TSP includes plans for the Pulse BRT to be extended to Short Pump (West Broad Marketplace) along Broad Street.
Southside Transfer Center	Improving the transfer experience at the Southside Transfer Center will enhance the rider experience on almost all of GRTC's routes south of the river. This transfer location will become even more significant when the North-South BRT begins service.
LRTP Time Band 3 (FY 2034 - FY 2039)	
High-frequency service from downtown Richmond via Cary St/Main St and Patterson Ave (VA-6) and Three Chopt Rd to Regency Mall and extension to Gayton Crossing	The TSP does not include high-frequency service in the exact manner described in the LRTP, but it does include improvements on Route 79, which serves Patterson Avenue and Three Chopt Road from Willow Lawn to Regency Mall and Gayton Crossing. Route 79 will be extended farther east along Patterson Avenue toward downtown Richmond with improved 30-minute headways and new weekend service.
LRTP Time Band 4 (FY 2040 - FY 2045)	
High-frequency service from downtown Richmond to Richmond International Airport via US-60 (Williamsburg Rd)	The TSP includes planned changes on Routes 7A and 7B to provide higher frequency service than today from downtown Richmond to the airport, but only partially using US-60, because higher ridership is more likely using the existing alignments along Nine Mile Road. The TSP also includes the planned Airport Express between downtown Richmond and the airport using I-64.

3.3. Service Development

3.3.1. Operational Needs

Table 3-4 details the operational changes and needs by year and by route for implementing the service changes from the route profiles. Changes to revenue hours and revenue miles are displayed and represent changes in those metrics from that route in the previous year. Additional peak vehicles needed by route are also included in this table. Revenue hours, revenue miles, or vehicle needs in parentheses represent a reduction. Since service changes do not align with the fiscal calendar, the estimated revenue hours for each route are prorated in the year of implementation, representing the portion of the fiscal year in which the route will operate with the described changes. As a result, each year has a row for “Other Routes” which summarizes the increases or decreases in revenue hours and revenue miles caused by no longer prorating the changes that occurred in the previous fiscal year.

Table 3-4: Service Expansion and Reduction by Fiscal Year

Year	Route/Zone	Description of Changes	Approximate Change in Revenue Hours	Approximate Change in Revenue Miles	Additional Peak Vehicle Need
FY 2025	Route 1	Alignment change	7,800	141,000	2
	Route 7A	Alignment change, weekday headway improvements	5,700	84,400	1
	Route 7B	Alignment change, weekday headway improvements	3,200	40,200	1
	Other Routes	Prorated hours and miles from previous year's service changes	67,400	232,000	-
FY 2026	Route 3B	Alignment change	1,600	17,800	-
	Route 5	Alignment change	4,600	44,500	5
	Route 12	Weekday and weekend span improvements, weekday headway improvements	1,400	34,700	-
	Route 19	Sunday span improvement	900	9,500	-
	Route 50	Weekday and weekend span improvements, weekday and weekend headway improvements	3,300	51,400	1
	Route 56	Eliminated	(1,200)	(15,700)	(1)
	Route 77	Eliminated	(6,500)	(63,100)	(2)
	Route 78	Weekday headway improvements	3,600	29,400	1
FY 2027	Route 82x	Alignment change, added trips	500	11,700	-

Year	Route/Zone	Description of Changes	Approximate Change in Revenue Hours	Approximate Change in Revenue Miles	Additional Peak Vehicle Need
	Route 3B	Eliminated	(5,200)	(53,400)	(1)
	Route 87	Alignment change, weekend span improvement, weekday headway improvements	3,000	55,400	2
	Route 88	Eliminated	(2,300)	(31,200)	(2)
	Pulse BRT	Saturday headway improvements	1,400	16,600	-
	Broad Rock Zone	Introduce microtransit service	8,300	N/A	N/A
	White Oak-Montrose Zone	Introduce microtransit service	4,800	N/A	N/A
	Other Routes	Prorated hours and miles from previous year's service changes	3,300	53,100	-
FY 2027	Route 19	Alignment change	(15,600)	(178,300)	(3)
	Route 50	Alignment change	11,800	118,500	2
	Route 76	Eliminated	(6,900)	(62,200)	(4)
	Route 79	Alignment change, weekday and weekend span improvements	4,800	61,700	1
	Route 92	Introduce service	10,500	154,600	4
	Pulse BRT	Alignment change, weekday and weekend headway improvements	30,000	286,400	6
	Other Routes	Prorated hours and miles from previous year's service changes	2,700	6,100	-
FY 2028	Route 5	Weekday and weekend span improvements	600	5,000	-
	Route 18	Alignment change, weekday headway improvements	2,800	28,000	1
	Route 20	Weekday and weekend headway improvements	11,400	161,900	4
	Route 92	Introduce weekend service	5,100	67,900	-
	Route 95x	Alignment change	100	4,600	-
	Other Routes	Prorated hours and miles from previous year's service changes	4,500	42,100	-

Year	Route/Zone	Description of Changes	Approximate Change in Revenue Hours	Approximate Change in Revenue Miles	Additional Peak Vehicle Need
FY 2029	Route 1	Weekday and weekend span improvements, weekday and weekend headway changes	(3,800)	(31,200)	(2)
	Route 1A	Alignment change, weekday and weekend headway improvements	10,000	112,700	1
	Route 1B	Alignment change, weekday and Saturday span improvements, introduce Sunday service	(1,500)	12,000	(2)
	Route 1C	Alignment change, Sunday headway improvements	(7,800)	(78,700)	(2)
	Route 2B	Alignment change	(300)	(2,800)	-
	North-South BRT	Introduce service	84,900	787,800	16
	Other Routes	Prorated hours and miles from previous year's service changes	3,600	47,300	-
FY 2030	Route 2A	Weekday headway improvements	9,200	84,700	2
	Route 2B	Weekday headway improvements	8,400	83,400	3
	Other Routes	Prorated hours and miles from previous year's service changes	16,300	160,600	-
FY 2031	Route 3A	Alignment change, weekday and Saturday span improvements, introduce Sunday service	6,900	94,900	-
	Route 3B	Alignment change, weekday and Saturday span improvements, introduce Sunday service	11,800	149,200	-
	Route 3C	Eliminated	(9,600)	(111,500)	-
	Route 5	Weekday headway improvements, introduce weekend service on long pattern	5,100	38,200	3
	Route 14	Weekday and weekend span improvements, weekday headway improvements	4,600	43,700	1
	Route 18	Weekday span improvements, introduce weekend service	5,000	46,000	-
	Route 20	Saturday headway improvements	1,900	27,800	-
	Route 92	Saturday headway improvements	1,200	14,400	-
Other Routes	Prorated hours and miles from previous year's service changes	3,500	33,700	-	

Year	Route/Zone	Description of Changes	Approximate Change in Revenue Hours	Approximate Change in Revenue Miles	Additional Peak Vehicle Need
FY 2032	Route 4A	Weekday and Saturday headway improvements	3,400	33,400	1
	Route 4B	Weekday and Saturday headway improvements	3,400	32,800	1
	Route 12	Weekday headway improvements	4,400	35,600	-
	Route 30x	Introduce service	800	15,700	1
	Route 91	Weekday and weekend span improvements, weekday headway improvements	3,600	49,800	-
	Airport Express	Introduce service	11,600	197,600	3
	Other Routes	Prorated hours and miles from previous year's service changes	5,400	60,500	-
FY 2033	Route 2A	Weekday and weekend span improvements, Saturday headway improvements	2,000	24,900	-
	Route 2B	Saturday span and headway improvements	1,600	19,900	-
	Route 2C	Saturday span improvements	-	(3,300)	-
	Route 5	Weekday and Saturday headway improvements	2,300	20,000	-
	Route 7A	Weekday and weekend span improvements	1,000	12,100	-
	Route 7B	Weekday and weekend span improvements	1,400	14,000	-
	Route 8	Introduce service	7,900	58,100	2
	Route 12	Weekday and Saturday headway improvements	4,900	39,800	-
	Route 19	Weekday and Sunday span improvements	1,500	22,100	-
	Route 29x	Alignment change	900	21,500	-
	Route 78	Weekend span improvements, Saturday headway improvements	1,000	12,000	-
	Route 79	Weekday and weekend span improvements	2,100	24,500	-
	Other Routes	Prorated hours and miles from previous year's service changes	4,600	65,900	-

Year	Route/Zone	Description of Changes	Approximate Change in Revenue Hours	Approximate Change in Revenue Miles	Additional Peak Vehicle Need
FY 2034	Route 3B	Alignment change	1,100	20,400	-
	Route 5	Weekend span and headway improvements	3,300	35,100	-
	Route 7A	Saturday headway improvements	1,400	17,100	-
	Route 7B	Saturday headway improvements	900	14,800	-
	Route 12	Sunday headway improvements	2,400	25,600	-
	Route 14	Weekday and Saturday headway improvements	6,200	68,400	-
	Route 18	Weekend span and headway improvements	3,200	37,500	-
	Route 19	Sunday headway improvements	1,600	23,800	-
	Route 79	Weekday and Saturday headway improvements	3,700	61,100	1
	Route 87	Weekday and Saturday headway improvements	4,400	56,500	-
	Route 91	Saturday headway improvements	1,200	15,200	-
	Other Routes	Prorated hours and miles from previous year's service changes	2,700	26,600	-
Out Years	North-South BRT	Alignment change	51,800	775,500	13
	Pulse BRT	Alignment change	33,500	497,100	8
	East End-Mechanicsville Pike Zone	Introduce microtransit service	16,000	N/A	N/A
	Highland Park Zone	Introduce microtransit service	6,700	N/A	N/A
	Hull-Midlothian Zone	Introduce microtransit service	15,500	N/A	N/A
		Other Routes	Prorated hours and miles from previous year's service changes	5,200	70,000

3.3.2. Equity Evaluation

METHODOLOGY

A high-level equity evaluation was conducted to assess whether the planned improvements may potentially cause any Title VI concerns. It is important to note that this evaluation is not a Title VI Service Equity Analysis—it is merely a high-level evaluation to identify any potential future Title VI concerns.

GRTC's Title VI Program includes the agency's Major Service Change policy which is used to determine whether a service change is significant enough to warrant an in-depth analysis of whether the service change being implemented is equitable or not. This policy was used as a guide for developing the methodology used for the high-level equity analysis. The Major Service Change policy states that service changes which rise to the level of a Major Service Change are:

- **Change in number of trips:** 25 percent change in number of scheduled one-way trips on the weekday, Saturday, or Sunday schedule.
- **Change in service span:** 25 percent change in number of hours between the beginning and the end of the weekday, Saturday, or Sunday schedule, in either direction.
- **Re-directing a route:** Rerouting at least 25 percent of a route's path onto a different street or road, measured in single-direction route miles.
- **Change in total miles serviced by the route:** 25 percent change in total miles on a route's path.
- **Shortlining or longlining:** 25 percent change in number of scheduled one-way trips ending at a route's terminal points.
- **Eliminating route:** Eliminating one or more routes.

FINDINGS

Fixed-route service changes were evaluated for whether they would qualify as Major Service Changes between current service and FY 2034. Routes with service changes which qualify are included in **Table 3-5** along with their associated service changes and the Major Service Change type. Routes are also identified by whether they have minority, low income, or limited English proficiency designation from the Title VI Program.

Most of the major service changes are improvements to service—and most of those improvements are on routes that have a minority, low income, or limited English proficiency designation. There are additions to service on routes that are not designated as such and therefore may potentially have Title VI issues in the future (Routes 14, 29x, and 82x, highlighted in the table with **red bold text**). Additionally, some new routes do not yet have minority, low income, or limited English proficiency designations, so their potential to cause any Title VI concerns are unknown at this time (Routes 8, 30x, 92, Airport Express, and North-South BRT, highlighted in the table with **green bold text**). The new microtransit zones may also have potential to cause Title VI concerns and should be evaluated according to the method that GRTC determines for zone-based Title VI service equity analyses in the future.

Routes highlighted in **purple bold text** are the few which have reductions in service between now and FY 2034. In all cases for the routes with minority, low income, or limited English proficiency designation, the notes column explains that service in those areas are still being covered by replacement services, whether through changing an existing route (as is the case for the loss of Route 3C and realignment of Routes 1C and 19) or adding new service (as is the case for the rest of the impacted routes: Routes 1, 56, 86, and 88). Routes 76 and 77 are being eliminated but are not designated as minority, low income, or limited English proficient, so they are less likely to be cause for Title VI concern—but they are still mostly covered with realigned routes.

Table 3-5: Equity Evaluation

Route	Minority, Low-Income, or Limited English Proficiency Route Designation	Major Service Changes (MSC) Between Current Service and FY 2034		Notes
		Service Change	MSC Type	
1	Minority, Low Income	Headways changed to 30 minutes	Change in number of trips (67 trips on weekdays to 41 trips)	Route 1's existing alignment will continue to have frequent service via the North-South BRT.
		Route alignment extended	Change in miles serviced (11 miles to 26 miles)	
1A	Minority, Low Income	Route alignment extended	Change in miles serviced (28 miles to 37 miles)	
1C	Minority, Low Income, LEP	Route alignment shortened	Change in miles serviced (16 miles to 7 miles)	Route 1C's alignment between Downtown Richmond and the Southside Plaza will continue to have local service on Route 1A and frequent service on the North-South BRT.
2A	Minority, Low Income	Headways improved to 30 minutes	Change in number of trips (19 trips on weekdays to 34 trips)	
2B	Minority, Low Income	Headways improved to 30 minutes	Change in number of trips (19 trips on weekdays to 33 trips)	
3A	Minority, Low Income	Span extended	Change in number of trips (29 trips on weekdays to 37 trips)	
			Change in service span (14 hours on weekdays to 20 hours)	
		Route alignment extended	Change in miles serviced (16 miles to 20 miles)	
3B	Minority, Low Income	Span extended	Change in number of trips (30 trips on weekdays to 40 trips)	
			Change in service span (15 hours on weekdays to 23 hours)	
3C	Minority, Low Income	Route eliminated	Route eliminated	Route 3C service will be covered by alignment and span changes to Routes 3A and 3B.
4A	Minority, Low Income	Headways improved to 30 minutes	Change in number of trips (18 trips on weekdays to 32 trips)	

Route	Minority, Low-Income, or Limited English Proficiency Route Designation	Major Service Changes (MSC) Between Current Service and FY 2034		Notes
		Service Change	MSC Type	
4B	Minority, Low Income	Headways improved to 30 minutes	Change in number of trips (18 trips on weekdays to 31 trips)	
5	Minority, Low Income	Headways improved to 10 minutes on short turn	Change in number of trips (67 trips on weekdays to 85 trips)	
		Route alignment extended	Change in miles serviced (13 miles to 21 miles)	
7A	Minority, Low Income	Headways improved to 30 minutes and span extended	Change in number of trips (18 trips on weekdays to 32 trips)	
7B	Minority, Low Income	Headways improved to 30 minutes and span extended	Change in number of trips (18 trips on weekdays to 33 trips)	
		Route alignment re-directed	Re-directed alignment (6.3 miles re-directed of 23.5 miles)	Route 7A will fully cover the realigned section of Route 7B, and vice versa.
8	-	New service implemented	New route	Because this is a new route, it does not currently have Minority/Low Income/LEP designation. Title VI analysis will need to be completed to ensure that service is not disproportionately benefitting non-minority and/or non-low-income areas.
12	Minority, Low Income	Headways improved to 15 minutes	Change in number of trips (39 trips on weekdays to 72 trips)	
14	None	Headways improved to 15 minutes	Change in number of trips (40 trips on weekdays to 66 trips)	Improvements of service disproportionately benefitting non-minority and/or non-low-income areas can become Title VI concerns.

Route	Minority, Low-Income, or Limited English Proficiency Route Designation	Major Service Changes (MSC) Between Current Service and FY 2034		Notes
		Service Change	MSC Type	
18	Minority, Low Income, LEP	Headways improved to 30 minutes	Change in number of trips (20 trips on weekdays to 36 trips)	
		Span extended	Change in service span (13 hours on weekdays to 18 hours)	
19	LEP	Route alignment shortened	Change in miles serviced (25 miles to 16 miles)	Pulse and Route 50 will be extended to cover the eliminated portion of Route 19 with frequent and local service.
20	Minority, Low Income	Headways improved to 15 minutes	Change in number of trips (37 trips on weekdays to 63 trips)	
29x	None	Route alignment extended	Change in miles serviced (13 miles to 18 miles)	Improvements of service disproportionately benefitting non-minority and/or non-low-income areas can become Title VI concerns.
30x	-	New service implemented	New route	Because this is a new route, it does not currently have Minority/Low Income/LEP designation. Title VI analysis will need to be completed to ensure that service is not disproportionately benefitting non-minority and/or non-low-income areas.
50	Low Income	Headways improved to 30 minutes	Change in number of trips (22 trips on weekdays to 38 trips)	
		Span extended	Change in service span (14 hours on weekdays to 19 hours)	
		Route alignment extended	Change in miles serviced (10 miles to 20 miles)	
56	Minority	Route eliminated	Route eliminated	Route 56 will be replaced with the Montrose-White Oak Village microtransit zone.
76	None	Route eliminated	Route eliminated	Route 76's service will be mostly covered by the planned extension of Route 79.
77	None	Route eliminated	Route eliminated	Route 77's service will be fully covered by the planned extension on Route 5.

Route	Minority, Low-Income, or Limited English Proficiency Route Designation	Major Service Changes (MSC) Between Current Service and FY 2034		Notes
		Service Change	MSC Type	
78	Minority, Low Income	Headways improved to 30 minutes and span extended	Change in number of trips (24 trips on weekdays to 35 trips)	
79	LEP	Headways improved to 30 minutes	Change in number of trips (18 trips on weekdays to 30 trips)	
		Route alignment realigned	Change in miles (17 miles to 25 miles)	
82x	None	Additional trips added	Change in number of trips (7 trips on weekdays to 10 trips)	Improvements of service disproportionately benefitting non-minority and/or non-low-income areas can become Title VI concerns.
		Additional trips added	Change in service span (4 hours on weekdays to 7 hours)	
86	Minority, Low Income, LEP	Route eliminated	Route eliminated	Routes 86 and 88 will be replaced by microtransit service via the Broad Rock-Cherry Gardens-Richmond Highway zone.
87	Minority, Low Income, LEP	Headways improved to 30 minutes	Change in number of trips (19 trips on weekdays to 33 trips)	
88	Minority, Low Income, LEP	Route eliminated	Route eliminated	Routes 86 and 88 will be replaced by microtransit service via the Broad Rock-Cherry Gardens-Richmond Highway zone.
91	Minority, Low Income	Headways improved to 30 minutes and span extended	Change in number of trips (23 trips on weekdays to 31 trips)	
92	-	New service implemented	New route	Because these are new routes, they do not currently have Minority/Low Income/LEP designation. Title VI analysis will need to be completed to ensure that service is not disproportionately benefitting non-minority and/or non-low-income areas.
Airport Express	-	New service implemented	New route	
North-South BRT	-	New service implemented	New route	
Pulse BRT	Low Income	Route alignment extended	Change in miles serviced (14 miles to 22 miles)	

3.3.3. Title VI Program Review

As of this TSP, the Federal Transit Administration has found no issues that would require GRTC to implement service changes in response to Title VI deficiencies.

3.3.4. Factors Impacting Service Development

Factors that could impact service development include current or anticipated policy, planning, funding, operational, or capital needs or issues. **Chapter 4** describes many of these items in detail, including the backlog in state-of-good-repair needs, the current and anticipated future shortage of operators and maintenance workers, fleet replacement needs and plans for transitioning to zero-emissions buses, and the need for higher capacity for vehicle storage.

The creation of the Central Virginia Transportation Authority (CVTA) by the 2020 General Assembly has established new funds for priority transportation investments in the Richmond region. The two main sources of revenue are regional sales and use tax (0.7 percent) and wholesale gas and diesel tax (7.6 cents and 7.7 cents). The CVTA funds are allocated three ways: 15 percent to GRTC, 50 percent to each participating locality proportionally, and 35 percent for regional projects. GRTC uses the funds to support regional routes and expansion projects. GRTC develops the Regional Public Transportation Plan which identifies how GRTC plans to spend the CVTA funds. Priorities include the return of transit services to pre-pandemic levels, maintenance of operations and capital investments, the advancement of planning studies in the region, and the preparation of innovative initiatives.

The location and extent of future commercial and residential development may impact how route improvements are implemented – routes may need to have their planned alignments or implementation timelines altered to ensure service is suited to the demand. GRTC will monitor the development of sites at VCCS, the Diamond District, and Libbie Mill, and adjust plans as needed in future TSP updates.

Finally, as GRTC's microtransit service is fairly new, monitoring the performance of the zones will inform future planning efforts and future TSPs may reflect changes to microtransit plans.

GRTC Transit Strategic Plan

Chapter 4: Implementation Plan

June 17, 2024

Contents

4.1.	Asset Management	4-1
4.1.1.	Transit Asset Management (TAM)	4-1
	TAM Policy and Responsibilities.....	4-1
	Capital Assets.....	4-3
4.2.	Capital Implementation Plan	4-12
4.2.1.	Existing Capital Program	4-12
	Existing Investment Prioritization.....	4-12
4.2.2.	Proposed Service Operations	4-13
4.3.	Five-Year Capital Plan	4-17
4.4.	GRTC Vehicle Inventory	4-20

Figures

Figure 4-1: Capital Assets by Replacement Costs (GRTC Capital Asset Inventory)	4-4
Figure 4-2: Essential Transit Infrastructure Plan Qualification Rubric for Aspirational Scenario	4-10
Figure 4-3: Constrained Investment Expenditures by Mode (in millions)	4-13
Figure 4-4: Peak Vehicle Needs with Proposed Service Changes	4-15

Tables

Table 4-1: GRTC Asset Condition Assessment Policy	4-2
Table 4-2: GRTC Assets and Replacement Costs (GRTC Capital Asset Inventory)	4-3
Table 4-3: GRTC Vehicle ULB by Type	4-5
Table 4-4: GRTC Fleet Inventory by Mode, Category, and Type	4-5
Table 4-5: GRTC Fleet Baseline Vehicle Replacement Schedule and Year of Expenditure (in Millions)	4-6
Table 4-6: Revenue Vehicle Fleet Replacement Schedule	4-7
Table 4-7: Non-Revenue Vehicle Fleet Replacement Schedule	4-7
Table 4-8: GRTC Facility Asset Quantity and Costs, by Category and Element	4-8
Table 4-9: Administrative/Maintenance Facilities Condition Assessment Scores (2022)	4-9
Table 4-10: Essential Transit Infrastructure Scenarios (2022)	4-9
Table 4-11: Passenger / Parking Facility Condition Assessment Score	4-10
Table 4-12: SGR Backlog Costs by Category	4-12
Table 4-13: Unconstrained Capital Needs by Category, FY 2024-FY 2034 (in millions)	4-12
Table 4-14: Constrained 10-Year Capital Needs by Category, FY 2024-FY 2034 (in million)	4-13
Table 4-15: Proposed Service Changes and Peak Vehicle Resource Needs	4-14
Table 4-16: Fleet Replacement and Expansion Needs	4-15
Table 4-17: Existing Staff Vacancies by Department (July 2023)	4-16
Table 4-18: Existing GRTC Vehicle Storage Capacity	4-16
Table 4-19: Fiver Year Capital Plan (in millions)	4-17
Table 4-20: GRTC Vehicle Inventory	4-20

4.1. Asset Management

Chapter 4 assesses the condition and lifecycle of GRTC’s assets, as well as capital needs and expenses, for both existing service and the proposed service in the TSP. The first section explains GRTC’s transit asset management process, policy, responsibilities, and provides details on GRTC’s capital assets. The second section describes the agency’s capital planning program and capital needs to implement the service expansions in the TSP. Two appendices to this chapter list GRTC’s five-year capital plan and vehicle inventory.

4.1.1. Transit Asset Management (TAM)

GRTC is a Tier I bus operator and therefore required to comply with the Federal Transit Administration’s (FTA) Moving Ahead for Progress in the 21st Century (MAP 21) Transit Asset Management (TAM) regulations. The FTA defines TAM as a strategic and systematic process of operating, maintaining, and improving public transportation capital assets effectively through the lifecycle of such assets.

GRTC is committed to reviewing and updating their TAM Plan every four years, with amendments for any significant changes to assets, service, or funding between update years. GRTC’s TAM Plan was last updated in 2022. The TAM Plan reviews the agency assets and their State of Good Repair (SGR) needs, provides an update on the status of asset management activities, and develops guidance for future efforts. The TAM Plan addresses the following elements, required by the FTA:

- Capital Asset Inventory
- Condition Assessment
- Decision Support Tools
- Investment Prioritization
- TAM and SGR Policy
- Implementation Strategy
- List of Key Annual Activities
- Identification of Resources
- Evaluation Plan

TAM POLICY AND RESPONSIBILITIES

GRTC has established a TAM policy which is closely aligned with the agency’s overall strategic direction. The policy is driven by the agency’s overarching vision, mission, and core values. All departments are expected to support the TAM policy with senior executives and additional representatives as needed. See **Chapter 1, Section 1.2.1** for the agency vision, mission, and core values.

To continue and catalyze efforts to improve the TAM program, the agency established a **TAM Action Committee** to monitor progress, provide guidance, and allocate resources. Additionally, the TAM Action Committee reviews annual SGR performance measures and targets for reporting to the National Transit Database (NTD) including condition assessment and inventory updates. Each department at GRTC (including representatives from Facilities, Maintenance, Planning and Scheduling, Transportation, Human Resources, Safety, Procurement, and Finance) participates in the TAM Action Committee. The Chief Development Officer (CDO) and Director of Planning and Scheduling are responsible for overseeing the TAM program implementation and activities, including the coordination of the TAM Action Committee.

GRTC has an established **Capital Programming Committee** composed of the Chief Financial and Administrative Officer (CFAO), Chief Development Officer (CDO), Grants Administrator, and Capital

Improvement Manager. This committee develops the annual operating and capital budgets. The committee ensures alignment with the Capital Plan, agency needs, and SGR performance targets.

CONDITION ASSESSMENT

Condition assessment is required for any asset where the agency has direct capital responsibility, meaning the asset is owned by GRTC, is maintained by GRTC, or is currently or expected to be included in a capital project within the TAM Plan horizon year. Facilities and equipment are assessed every four years to determine state of good repair and capital investment needs. Vehicles are not assessed in the same way—instead, vehicle replacement and rehabilitation needs are determined annually by the age and mileage of the vehicles. To reduce the load of inspecting all facilities once every four years, facilities are grouped together into manageable amounts and a different group is inspected annually in order to meet each facility's four-year inspection cycle. An outline of condition assessment policies is shown in **Table 4-1**.

Table 4-1: GRTC Asset Condition Assessment Policy

Asset	Eligibility	Assessment Cycle	Responsible Party
Facilities	Direct capital responsibility and >50% of activities are in support of transit or >50% of vehicles are GRTC owned	Every four years	Facilities Maintenance Manager
Facilities Equipment	Valued between \$10k-50k	Included in four-year facility assessment	
	Valued greater than \$50k	Assessed separately every four years	
Vehicles	GRTC owned and maintained	Age and mileage updated and assessed annually	Director of Maintenance

TRANSIT ECONOMIC REQUIREMENTS MODEL (TERM) LITE

GRTC uses the Transit Economic Requirements Model (TERM) Lite, FTA's decision-support tool, to aggregate and estimate unconstrained SGR needs. The needs are based on GRTC's asset inventory and lifecycle plans. The inventory and needs were calibrated by GRTC staff to reflect current procurement arrangements, including bundling ITS and fleet needs, and current funding arrangements were used to analyze changes to the SGR backlog over time (i.e., a 10-year period).

Along with reinvestment needs, TERM Lite also supports the determination of what assets receive reinvestment under constrained funding to determine what assets enter/leave the SGR backlog based on funding allocation. This analysis is redone each year during the 10-year period of analysis. Assets are considered to be in a state of good repair (SGR) if they receive a three or higher on FTA's TERM scale, described in **Figure 4-1**.

Figure 4-1: TERM Lite Asset Condition Scores (FTA)



CAPITAL ASSETS

The FTA defines a capital asset as any facility or equipment with a useful life of at least one year, which is eligible for capital assistance. GRTC owns and maintains 740 capital assets with a total replacement cost of \$235.85 million in 2023 dollars (Table 4-2¹, Figure 4-1). These assets are included because they fall within one of the following minimum requirements for a capital asset:

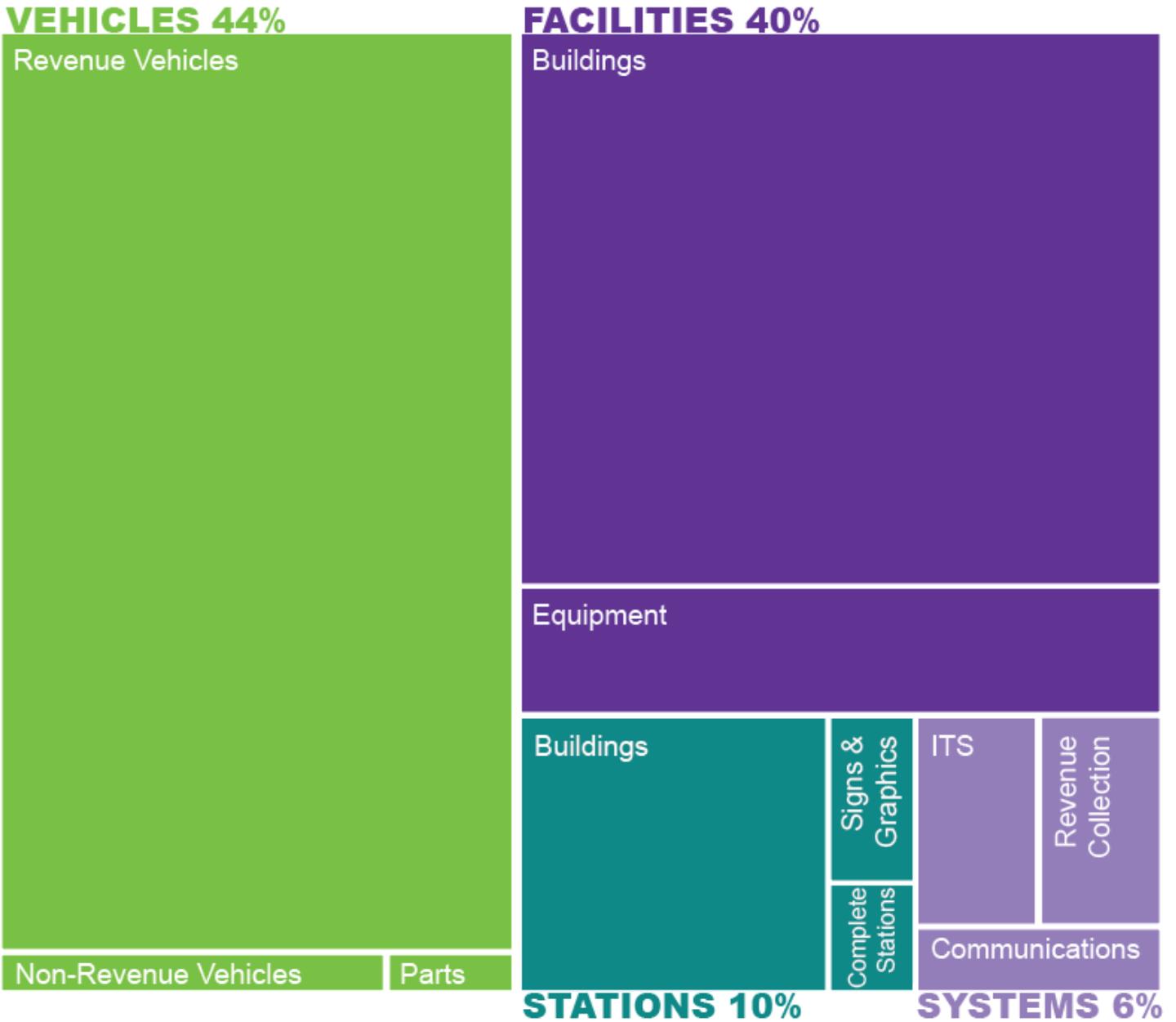
- A revenue vehicle
- A non-revenue or support vehicle
- Worth at least \$50,000 in acquisition value
- A component of a facility
- A piece of facility equipment worth at least \$10,000 that is integral to the function of the facility
- A component of a bus stop or transit center

Table 4-2: GRTC Assets and Replacement Costs (GRTC Capital Asset Inventory)

Category	Sub-Category	Units	Total Cost
Facilities	Buildings	21	\$79,162,920
	Equipment	168	\$17,629,131
Stations	Access	3	\$33,125
	Building	55	\$19,142,243
	Complete Station	44	\$1,752,942
	Platform	1	\$8,093
	Signage & Graphics	57	\$3,021,685
Systems	Communications	50	\$3,167,682
	ITS	8	\$6,002,098
	Revenue Collection	20	\$5,364,511
Vehicles	Equipment/Parts	16	\$863,591
	Non-Revenue Vehicles	19	\$2,578,471
	Revenue Vehicles	245	\$99,007,615
Total		744	\$237,734,107

¹ In 2023 dollars

Figure 4-1: Capital Assets by Replacement Costs (GRTC Capital Asset Inventory)



VEHICLES

GRTC maintains a fleet of 245 revenue vehicles with complementary demand response service through the CARE program. The current GRTC fixed-route system requires 147 revenue vehicles in peak service (98 fixed-route service vehicles, nine Pulse BRT vehicles, and 40 CARE vehicles). GRTC administers vanpool and a transit demand management (TDM) program through RideFinders, a service provided through contractors that both manage and operate associated assets. Vehicles for vanpool and TDM are leased by GRTC.

GRTC bases vehicle useful life benchmark (ULB) assumptions, outlined in **Table 4-3**, on the realistic replacement cycles for vehicles. The fleet ULB is distinct from the minimum useful life definitions used in the FTA’s grant programs which were used as the baseline. The ULB considers the physical environment, the make and model performance, and expected maintenance regimen.

Table 4-3: GRTC Vehicle ULB by Type

Vehicle Type	Vehicle Sub-Type	GRTC ULB in Years
Revenue	BRT Vehicle - CNG	14
	30 ft Bus - CNG	14
	40 ft Bus - CNG	14
	40 ft Bus - Diesel	14
	Heavy Duty Van	6
	Light Duty Van	6
Non-Revenue	Automobiles	6
	Trucks	8
	Specialized Vehicles	10

Revenue vehicles are the largest share of capital assets, comprising 42 percent of all agency assets. The current fleet is summarized by mode in **Table 4-4**. GRTC had a previous goal of a fully compressed natural gas (CNG) fleet, however 13 diesel vehicles remain in the GRTC fleet.

Table 4-4: GRTC Fleet Inventory by Mode, Category, and Type

Service	Category	Type	Units
Demand Response	Revenue Vehicles	Heavy-Duty Van	88
Motor Bus	Revenue Vehicles	Bus - CNG	144
	Revenue Vehicles	Bus - Diesel	13
System	Non-Revenue Vehicles	Other	2
	Non-Revenue Vehicles	Car	9
	Non-Revenue Vehicles	Special	1
	Non-Revenue Vehicles	Truck	7
Total			264

GRTC makes fleet rehabilitation and replacement decisions based on the age of the vehicle and annual inspections. **Table 4-5** outlines a replacement schedule for the existing fleet, based only on vehicles meeting the useful life benchmark in years, and is shown by replacement year, not procurement year. On-board ITS equipment (AVL, APC, etc.) are included in the revenue vehicle records and replacement costs, rather than being included in Systems or ITS costs. Replacement needs are not evenly distributed across all 10 years and do not include expansion vehicle needs.

Table 4-5: GRTC Fleet Baseline Vehicle Replacement Schedule and Year of Expenditure (in Millions)

	SGR Back-Log	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034
Revenue Vehicles												
Units at ULB	84	16	17	57	0	0	15	38	0	0	0	15
% at ULB	36%	7%	7%	25%	-	-	6%	16%	-	-	-	6%
Replacement Costs	\$21.4	\$3.6	\$8.7	\$28.8	-	-	\$10.5	\$26.5	-	-	-	\$12.4
Non-Revenue Vehicles												
Units at ULB	26	3	2	0	0	0	0	0	0	0	0	0
% at ULB	84%	10%	6%	-	-	-	-	-	-	-	-	84%
Replacement Costs	\$1.4	\$0.1	\$0.1	-	-	-	-	-	-	-	-	\$0.0
Total												
Units at ULB	110	19	19	57	0	0	15	38	0	0	0	15
% at ULB	42%	7%	7%	22%	-	-	6%	14%	-	-	-	6%
Replacement Costs	\$22.8	\$3.7	\$8.8	\$28.8	-	-	\$10.5	\$26.5	-	-	-	\$12.4

ZERO-EMISSION BUS TRANSITION PLAN

The GRTC Zero-Emissions Bus (ZEB) Transition Plan was finalized in 2024 to support the agency's grant applications for FTA's Bus and Bus Facilities, and Low or No Emission Vehicles programs. The plan also supports the Richmond RVAgreen Climate Action Strategy, and the agency's goal of prioritizing dependable transit services and environmental sustainability. The plan includes a service and market analysis and a performance evaluation of electric bus routes. The key findings from these analyses are as follows:

- GRTC could achieve a full Battery-Electric Bus (BEB) conversion of their fleet by 2050, assuming battery technology improves during that time.
- Challenges will arise as a result of the transition and are outlined in the ZEB Transition Plan. They include but are not limited to creating infrastructure for ZEBs, the logistics of managing a mixed fleet during and possibly after transitioning, modifying schedules to be more compatible with BEBs, training the workforce for new technology, and the high cost associated with transitioning to ZEBs.
- To meet a 100 percent BEB conversion, at least 139 BEB buses will need to be purchased, accounting for a 20 percent spare ratio (at no increase in fleet size). This assumes a diesel fired heater and that energy density of batteries will improve. Some longer service blocks may need to be rescheduled depending on how much battery energy density improves.
- Depending on how battery technology improves, a replacement could be completed before 2050. However, several challenges become much easier as the schedule lengthens. For example, as battery capacity increases overtime, the ZEB replacement buses needed to complete service will become more compatible with the current number of buses utilized. Also, with increased battery capacity, the schedule can be run similarly to the current block schedule. This is because all blocks will be complete without the need to create new blocks or utilize in-route charging.
- The current schedule is 100 percent completable with existing Fuel Cell Electric Bus (FCEB) technology. Therefore, converting to a FCEB fleet with a 1:1 replacement would be possible within a 12-year period from a service perspective.

Pilot Program

GRTC intends to implement a pilot program of BEBs which will aid the agency in mitigating risks in transitioning to a zero-emission fleet. The current recommendations for the pilot program include purchasing five 45-foot over-the-road coaches and five plug-style charging dispensers. The routes intended for this pilot are the express routes (29x, 64x, 82x, and 95x).

FLEET PROCUREMENT

GRTC has received funding to purchase 12 new 60-foot articulated buses to address vehicle capacity needs along select routes, including the Pulse. These vehicles will replace vehicles in the system as they come up for replacement at the end of their useful life. The existing fleet replacement schedule for revenue and non-revenue vehicles is outlined in **Table 4-6** and **Table 4-7**, respectively.

The ZEB Transition Plan assumes that existing buses will be replaced with Battery-Electric Bus (BEB) where possible, or a hybrid or diesel bus where energy capacity would not allow a direct replacement with a BEB. This replacement policy would continue until the entire fleet was converted to zero-emissions buses, expected by 2041. This plan does not account for any expansion or reduction of service.

Table 4-6: Revenue Vehicle Fleet Replacement Schedule

Vehicle Size	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034
29 FT	-	-	1	-	-	-	1	-	-	-	-	-
35 FT	-	-	-	-	5	-	4	-	-	-	-	-
40 FT	16	-	-	29	8	-	22	17	-	-	15	-
45 FT	3	-	5	-	-	-	-	-	-	-	-	-
60 FT	-	-	8	-	-	-	-	-	-	-	-	-
Paratransit Van	-	30	43	15	13	36	30	15	28	-	-	15
Total Vehicles	19	30	66	44	26	36	66	32	28	-	15	15

Table 4-7: Non-Revenue Vehicle Fleet Replacement Schedule

Vehicle Type	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034
CARGO	1	-	-	-	-	-	-	-	-	-	-	-
DUMP	-	-	-	-	-	1	-	-	-	-	-	-
PICKUP	1	-	2	2	1	-	-	-	-	-	-	-
SEDAN	-	-	-	1	3	-	-	-	-	-	-	-
SUV	2	1	1	-	3	2	1	-	-	-	-	-
TOW	-	-	1	-	-	-	-	-	-	-	-	-
TRANSIT	-	1	-	-	-	-	-	-	-	-	-	-
VAN	2	1	2	1	1	-	-	-	-	-	-	-
Total Vehicles	6	3	6	4	8	3	1	-	-	-	-	-

FACILITIES

GRTC currently has one maintenance facility, one administration building, two vehicle storage lots, and a CNG facility. All other facilities maintained or owned by GRTC are passenger stations or parking lots. The total replacement cost for these facilities is approximately \$96.8 million, more than half of which is associated with the maintenance facility. The breakdown of assets and associated replacement costs in 2023 dollars are shown in **Table 4-8**².

Table 4-8: GRTC Facility Asset Quantity and Costs, by Category and Element

Category	Element	Units	Total Cost
Buildings	Other	9	\$10,664,791
	Administration	1	\$14,167,224
	Electrical Building Components	1	\$49,299
	Fencing Building Components	6	\$285,467
	Generators Building Components	1	\$23,345
	HVAC Components Building Components	1	\$92,350
	Other Building Components	4	\$18,984
	Maintenance	3	\$53,692,636
	Bus Maintenance	2	\$168,823
Equipment	Other	1	\$18,411
	Furniture	3	\$1,139,499
	CNG Refueling Station	1	\$6,928,326
	Lifts - Fixed	2	\$82,935
	Lifts - Portable	1	\$14,012
	Miscellaneous Equipment	15	\$177,450
	Scrubber, Sprayer	2	\$30,103
	Other MIS/IT/Network Systems	1	\$12,025
	Computers/Hardware	77	\$2,902,189
	Software	91	\$6,324,182
Total		222	\$96,792,051

The 2022 assessed conditions of the four major facilities are outlined in **Table 4-9**. One facility, at 325 E Belt Boulevard, has a condition score lower than three—this facility was purchased by GRTC in 2017 to store buses and amenities with 91 vehicle parking spaces. GRTC entered a joint venture project with the City of Richmond to retrofit the maintenance facility to house a two-vehicle capacity CNG fueling station.

² In 2023 dollars.

Table 4-9: Administrative/Maintenance Facilities Condition Assessment Scores (2022)

Administrative/Maintenance Facility	Condition Assessment Score
Maintenance	4
Administrative	4
325 E Belt Blvd	2
CNG Facility	4

BUS STOPS / STATIONS

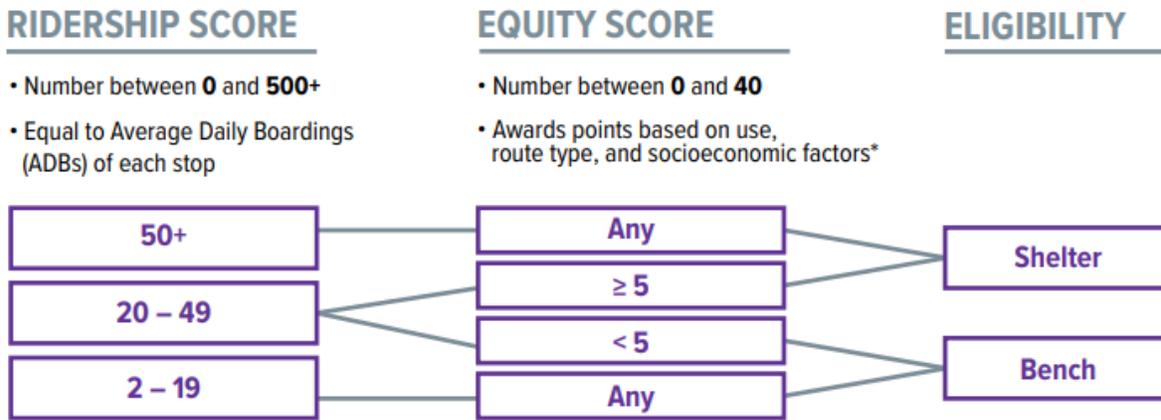
As of 2022, there are 1,605 active local bus stops in the GRTC service area, 26 percent of which have either a bench or a shelter, and less than 50 percent of which have ADA-compliant landing pads. As part of the **2022 Essential Transit Infrastructure Plan**, the agency has committed to maintaining a bench or a shelter at 75 percent of its bus stops by 2027. The agency has been awarded over \$5 million to begin the work for this effort starting in FY 2024. It is estimated to cost \$28.6 million to reach the aspirational 75 percent goal. The agency has investigated the costs of two additional scenarios (attainable and moderate) that would decrease the investment goal from 75 to 50 percent. The attainable scenario would include benches and shelters at 50 percent of stops and cost \$11 million. The moderate scenario builds upon the attainable plan and includes holistic site improvements for an additional \$3.5 million (**Table 4-10**).

Table 4-10: Essential Transit Infrastructure Scenarios (2022)

Bus Stop Amenity	Existing	Attainable & Moderate (Change from Existing)	Aspirational (Change from Existing)
Shelter	81	241 (+160)	241 (+160)
Bench	334	563 (+229)	965 (+631)
Neither	1,190	805 (-385)	403 (-787)
% of Stops	26%	50%	75%
Costs	-	\$11M-14.5M	\$28.6M

Bus stops included in each scenario to receive a bench or shelter are selected based on the Ridership Score and the Equity Score. The Ridership Score is equal to the Average Daily Boardings (ADB) of each stop. ADBs are calculated annually by GRTC and represent the average number of riders who board at the stop every day. ADBs range from 0 to over 500. The Equity Score is a number between 0 and 40 and is calculated by assigning points to each stop based on use, route type, and socioeconomic factors. The bus stop scoring and prioritization processes are further outlined in **Figure 4-2**.

Figure 4-2: Essential Transit Infrastructure Plan Qualification Rubric for Aspirational Scenario



In 2018, the agency added bus rapid transit (BRT) service, GRTC Pulse, with 26 level-boarding stations and bus-only lanes. These assets are owned by the City of Richmond, Henrico County, and VDOT. However, GRTC retains capital responsibility for Pulse stations and the vehicles which provide the service. The condition assessment for these stations is outlined in **Table 4-11**. None of these facilities have a score below 3.0.

Table 4-11: Passenger / Parking Facility Condition Assessment Score

Passenger/Parking Facility	Condition Assessment Score	Rounded Score
Willow Lawn Pulse Station - EB/WB	4.0	4
Staples Mill Pulse Station - EB	3.83	4
Staples Mill Pulse Station - WB	4.00	4
Scott's Addition Pulse Station - EB	4.00	4
Scott's Addition Pulse Station - WB	4.00	4
Science Museum Pulse Station - EB	4.00	4
Science Museum Pulse Station - WB	4.00	4
Allison Street Pulse Station - EB	4.00	4
Allison Street Pulse Station - WB	4.00	4
VCU & VUU Pulse Station - EB	4.00	4
VCU & VUU Pulse Station - WB	4.00	4
Arts District Pulse Station - EB	4.00	4
Arts District Pulse Station - WB	4.00	4
Convention Center Pulse Station - EB	3.80	4
Convention Center Pulse Station - WB	3.80	4
Government Center Pulse Station - EB	N/A	N/A
Government Center Pulse Station - WB	3.80	4
VCU Medical Center Pulse Station - EB	4.00	4
VCU Medical Center Pulse Station - WB	3.80	4
Main Street Station Pulse Station - EB	3.80	4

Passenger/Parking Facility	Condition Assessment Score	Rounded Score
Main Street Station Pulse Station - WB	3.80	4
Shockoe Bottom Pulse Station - EB	3.80	4
Shockoe Bottom Pulse Station - WB	3.80	4
East Riverfront Pulse Station - EB	4.00	4
East Riverfront Pulse Station - WB	4.00	4
Rocketts Landing Pulse Station - EB/WB	4.00	4

SYSTEMS

GRTC handles scheduling and dispatch with a Computer Aided Dispatch/Automatic Vehicle Locator (CAD/AVL) technology and HASTUS software. All fixed-route vehicles are fitted with on-board cameras, Clever Automatic Passenger Counters (APC), and CAD/AVL hardware. Additionally, specialized transit vehicles are also fitted with on-board cameras. GRTC has reported ridership numbers for fixed-route bus service with APC since 2016; prior to that, GRTC used GFI farebox data. Revenue miles calculations are based on scheduled miles obtained from the HASTUS scheduling software as a primary source and the CAD/AVL system data as a secondary source for comparison and calibration. Data from all systems are reviewed frequently by planning, scheduling, and operations staff.

4.2. Capital Implementation Plan

4.2.1. Existing Capital Program

EXISTING INVESTMENT PRIORITIZATION

GRTC uses the Transit Economic Requirements Model (TERM) Lite, FTA’s decision-support tool, to aggregate and estimate unconstrained SGR needs. The needs are based on GRTC’s asset inventory and lifecycle plans and are calibrated by GRTC staff to reflect current procurement arrangements, including bundling ITS and fleet needs. Current funding arrangements were used to analyze changes to the SGR backlog over time.

SGR BACKLOG

GRTC’s current SGR backlog is estimated to be \$16.08 million in 2023 dollars. That means that if the agency were to replace all assets that exceed their useful life and to address all outstanding rehabilitation activities it would cost approximately \$16.08 million in 2023 dollars. The breakdown of GRTC’s SGR backlog is shown in **Table 4-12**³ in millions of dollars. Facilities make up the largest portion of the backlog at 34 percent. Stations make up the second largest group at 30 percent of the backlog followed by vehicles making up 27 percent.

Table 4-12: SGR Backlog Costs by Category

Category	Backlog (in Millions)	Percentage
Facilities	\$5.44	34%
Stations	\$4.86	30%
Systems	\$1.38	9%
Vehicles	\$4.40	27%
Total	\$16.08	100%

UNCONSTRAINED 10-YEAR PLAN

To assess the agency’s unconstrained SGR needs, TERM Lite was run, assuming no funding constraint and three percent cost inflation annually. The unconstrained needs identified in **Table 4-13** are estimated to maintain full SGR for existing assets only; this does not cover any planned enhancements or expansions of service. These needs peak in FY 2028 and FY 2032, mostly due to facilities maintenance.

Table 4-13: Unconstrained Capital Needs by Category, FY 2024-FY 2034 (in millions)

Category	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034
Facilities	\$0.22	\$0.28	\$0.81	\$9.18	\$1.30	\$0.23	\$7.57	\$1.56	\$9.29	\$1.38	\$1.03
Stations	\$0.47	\$0.01	\$0.01	\$4.12	\$0.68	\$0.81	\$0.62	\$0.05	\$7.60	\$0.68	\$0.87
Systems	\$0.74	\$0.57	\$0.26	\$2.50	\$1.05	\$4.19	\$1.90	\$1.10	\$2.26	\$1.34	\$2.66
Vehicles	\$10.64	\$8.96	\$4.43	\$2.31	\$27.10	\$6.07	\$8.71	\$21.40	\$16.84	\$2.76	\$3.38
Total	\$12.07	\$9.82	\$5.51	\$18.11	\$30.13	\$11.30	\$18.80	\$24.11	\$35.99	\$6.16	\$7.94

³ In 2023 dollars

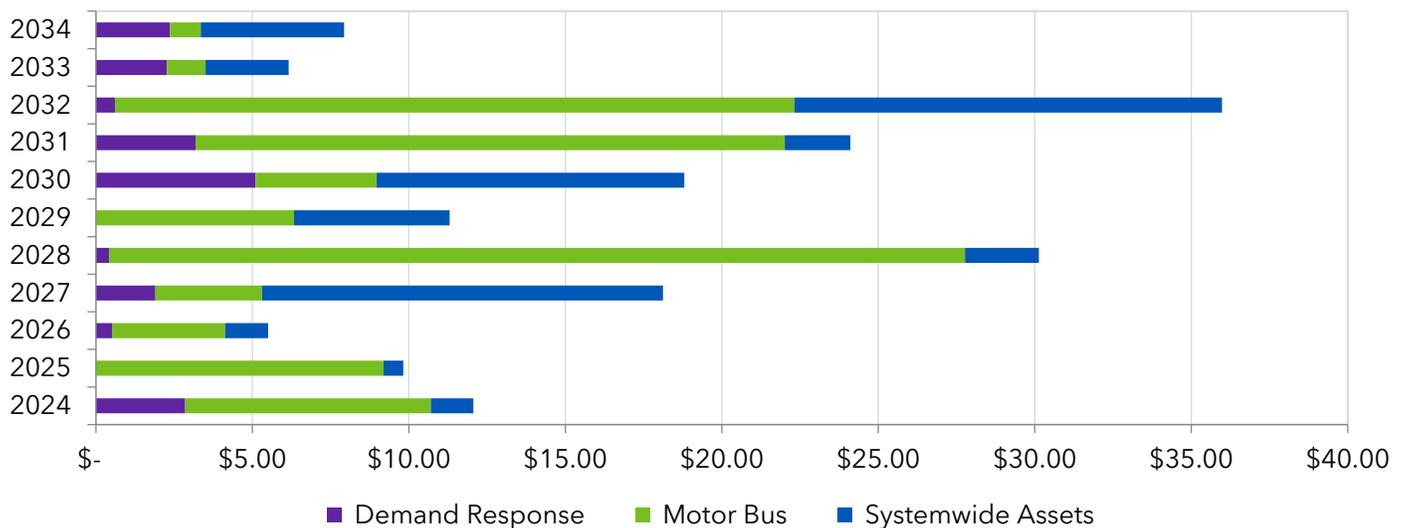
CONSTRAINED 10-YEAR PLAN

GRTC does not expect to receive the level of capital funding required to meet the total reinvestment needs each year. Therefore, TERM Lite was also run in for the 2022 TAM Plan using constrained funding with a three percent cost inflation annually. Specifically, the constrained analysis assumes that over the next 10 years GRTC will receive the annual average level of reinvestment funds based on the FY 2021-FY 2026 Capital Plan (\$18 million per year, based on SGR project funding and committed project funding that goes towards SGR projects). This plan, shown in **Table 4-14**, assumes that leftover funds from FY 2025, FY 2026, and FY 2029 are used in subsequent years when needs peak. The breakdown of costs by mode and year is shown in **Figure 4-3**.

Table 4-14: Constrained 10-Year Capital Needs by Category, FY 2024-FY 2034 (in million)

Category	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034
Facilities	\$3.96	\$1.59	\$0.22	\$0.84	\$7.07	\$3.06	\$7.65	\$0.38	\$2.65	\$6.18	\$3.55
Stations	\$2.11	\$0.47	\$0.03	\$2.31	\$0.84	\$2.50	\$0.66	\$0.08	\$3.34	\$2.31	\$3.62
Systems	\$1.23	\$1.07	\$0.16	\$2.44	\$0.68	\$4.40	\$2.12	\$1.09	\$2.29	\$0.80	\$0.84
Vehicles	\$10.70	\$8.96	\$4.43	\$2.31	\$26.73	\$6.37	\$7.55	\$22.68	\$16.84	\$2.76	\$2.94
Total	\$18.00	\$12.09	\$4.84	\$7.90	\$35.32	\$16.33	\$17.98	\$24.23	\$25.12	\$12.05	\$10.95

Figure 4-3: Constrained Investment Expenditures by Mode (in millions)



4.2.2. Proposed Service Operations

This section outlines the considerations needed to successfully implement the service changes proposed in this TSP. These considerations include facility and operational capacity and additional capital needs. The proposed changes will eliminate six routes, reduce service on five routes and reinvest those resources into five new routes and increased service on 24 routes. By FY 2034, GRTC will be operating an additional 47 peak vehicles and over more than three million additional revenue miles (**Table 4-15**).

Table 4-15: Proposed Service Changes and Peak Vehicle Resource Needs

Route	Peak Vehicles (Change)	Year (FY)
1	7 (+2)	2025
1	5 (-2)	2029
1A	7 (+1)	2029
1B	2 (-2)	2029
1C	2 (-2)	2029
2A	12 (+2)	2030
2B	13 (+3)	2030
2C	11 (No Change)	-
3A	9 (No Change)	-
3B	10 (No Change)	-
3C	(-5)	2024
4A	2 (+1)	2032
4B	2 (+1)	2032
5	8 (+5)	2026
5	11 (+4)	2031
7A	5 (+1)	2025
7B	4 (+1)	2025
12	7 (No Change)	-
14	8 (+1)	2031
18	3 (+1)	2028
19	5 (-3)	2027
20	8 (+4)	2028
29x	4 (No Change)	-
30x	1 (+1)	2032
50	5 (+1)	2026
50	6 (+1)	2034
56	0 (-1)	2026
64x	1 (No Change)	-
76	0 (-4)	2027
77	0 (-2)	2026
78	5 (+1)	2026
79	5 (+1)	2027
79	2 (No Change)	2034

Route	Peak Vehicles (Change)	Year (FY)
82x	2 (No Change)	-
86	0 (-1)	2026
87	6 (+2)	2026
88	0 (-2)	2026
91	4 (No Change)	-
92	4 (+4)	2027
95x	2 (No Change)	-
Pulse	15 (+6)	2027
N-S Pulse	16 (+16)	2029
RIC Express	3 (+3)	2032
Total	204 (+47)	2024-2034

Figure 4-4 shows the peak vehicle needs from FY 2024 to FY 2034, including the additional vehicles needed to implement the proposed service changes. The schedule of rehabilitation, replacement, and expansion of vehicles in each year is shown in **Table 4-16** and includes all revenue vehicles for both fixed route and paratransit. FY 2025 and FY 2029 have the greatest burden for replacing vehicles beyond their useful life. Furthermore, 11 buses need to be purchased in FY 2029 to expand service per the recommended service plan. Overall, 47 additional vehicles are needed to expand service from FY 2025 to FY 2034.

Figure 4-4: Peak Vehicle Needs with Proposed Service Changes

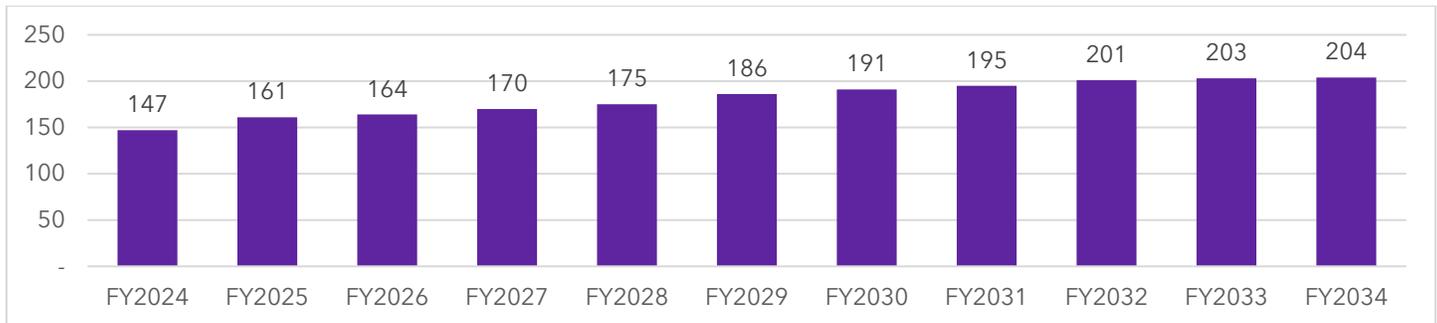


Table 4-16: Fleet Replacement and Expansion Needs

Vehicle Size	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034
Replacement	30	66	44	26	36	66	32	28	-	15	15
Expansion	-	4	3	6	5	11	5	4	6	2	1
Total	30	70	47	32	41	77	37	32	6	17	16

OPERATIONAL CAPACITY

GRTC had 63 staff vacancies as of July 2023 (**Table 4-17**). Most of these vacancies are in the Transportation department which is budgeted for 45 additional operators and supervisors. This follows a national operator

shortage which is impacting most transit agencies. Operator shortages seriously constrain the amount of service that an agency can provide. In addition, the nine vacancies seen in the Maintenance department can further constrain the amount of service that is able to leave the lot each day. GRTC implemented a \$2.00 wage increase to incentivize operator retention at the cost of \$2.05 million in FY 2023.

Table 4-17: Existing Staff Vacancies by Department (July 2023)

Department	Budgeted Staff	Existing Staff	Vacancies
Transportation	362	317	45
Maintenance	64	64	0
Facility Maintenance	8	8	0
Administration	90	72	18
Total	524	461	63

GRTC provided approximately 5.2 million revenue miles of service in FY 2023 with an average of 245 full-time operators and supervisors. This makes the rate of service operations 21,230 revenue miles per full time employee (FTE). Currently, the agency employs around 11 operators to one supervisor. Using these rates as a baseline for future growth, GRTC would need 413 FTEs in Transportation to fully operate the proposed service changes. This is an increase of 100 employees from the existing 313.

FACILITY CAPACITY

GRTC is currently at capacity for vehicle storage, constraining future expansion of services. The existing vehicle storage capacity is outlined in **Table 4-18** by facility and vehicle type. GRTC is working on a Facility Master Plan which includes plans to expand vehicle storage at 301 E Belt Blvd. The plan proposes adding an additional 72 spaces for 60-foot, 40-foot, and specialty transit vehicles. This would bring GRTC’s capacity up to 462. With the completion of the site changes to GRTC headquarters, the agency will have enough capacity to fully realize the proposed service changes.

Table 4-18: Existing GRTC Vehicle Storage Capacity

Facility	Vehicle Storage Capacity		
	Sedan/Van/Cutaway	Motorbus	Total
Paratransit Lot	0	75	75
325 E Belt Blvd	91	0	91
301 E Belt Blvd (Headquarters)	80	139	219
Total Vehicle Storage Capacity	171	214	385

4.3. Five-Year Capital Plan

Table 4-19: Fiver Year Capital Plan (in millions)

Asset / Project	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
Access Security Gates	\$0.25	\$0.00	\$0.00	\$0.00	\$0.00
ADA Facilities Assessment	\$0.09	\$0.00	\$0.00	\$0.00	\$0.00
ADP Hardware Admin	\$0.08	\$0.00	\$0.00	\$0.00	\$0.00
Backup CNG Fueling	\$2.40	\$0.00	\$0.00	\$0.00	\$0.00
Bus Hardware	\$0.13	\$0.00	\$0.00	\$0.00	\$0.00
Bus Replacement	\$14.30	\$22.01	\$9.90	\$0.00	\$27.50
Replacement of Amenities	\$0.30	\$0.00	\$0.98	\$0.18	\$0.19
Bus Stop Solar Lights	\$0.05	\$0.05	\$0.06	\$0.06	\$0.06
Bus Tracker Signs at BRT stations Upgrade Project (LCD, Live messages)	\$1.56	\$0.00	\$0.00	\$0.00	\$0.00
Bus wash upgrades phase 2	\$0.30	\$0.00	\$0.00	\$0.00	\$0.00
CARE Vehicle Connectivity Enhancement - Modem Upgrade	\$0.17	\$0.00	\$0.00	\$0.00	\$0.00
Clever Insights - Clever RC+ Software Upgrade	\$0.05	\$0.06	\$0.06	\$0.07	\$0.07
Meeting/Conference Room Hardware Refresh	\$0.08	\$0.00	\$0.00	\$0.00	\$0.00
Cyber Security Improvement (Artic Wolf)	\$0.20	\$0.00	\$0.00	\$0.00	\$0.00
Destination Sign Retrofit Project	\$0.20	\$0.15	\$0.15	\$0.00	\$0.00
Decommission Underground Diesel Storage Tank	\$0.03	\$0.00	\$0.00	\$0.00	\$0.00
Downtown Transfer Station NEPA/30%	\$3.00	\$0.00	\$0.00	\$0.00	\$0.00
Gym	\$0.08	\$0.00	\$0.00	\$0.00	\$0.00
Exterior Lighting	\$0.15	\$0.00	\$0.00	\$0.00	\$0.00
Fixed Route Vehicle Replacement	\$4.80	\$0.00	\$0.00	\$0.00	\$0.00
Fleet Storage NEPA/PE Development	\$0.30	\$0.00	\$0.00	\$0.00	\$0.00
Install ETI	\$2.89	\$4.02	\$4.12	\$3.76	\$3.94
LED light Interior Upgrades	\$0.39	\$0.00	\$0.00	\$0.00	\$0.00
Annual IT software maintenance contracts (Service)	\$0.83	\$0.83	\$0.83	\$0.83	\$0.83
Motor and Component Door Replacement	\$0.20	\$0.00	\$0.00	\$0.00	\$0.00
Microtransit Vehicles (12)	\$2.28	\$0.00	\$0.00	\$0.00	\$0.00
Microtransit Pilot - DEMO	\$2.84	\$0.00	\$0.00	\$0.00	\$0.00
Minor Facility Improvements	\$0.50	\$0.00	\$0.00	\$0.00	\$0.00

Asset / Project	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
Interior Painting Phase 2	\$0.30	\$0.00	\$0.00	\$0.00	\$0.00
Paratransit Operations Analysis	\$0.15	\$0.00	\$0.00	\$0.00	\$0.00
Reinforcing Paratransit Pavement	\$2.00	\$0.00	\$0.00	\$0.00	\$0.00
Paratransit Vehicles Replacement	\$5.70	\$3.00	\$2.56	\$7.22	\$6.12
Public Announcement System	\$0.10	\$0.00	\$0.00	\$0.00	\$0.00
Route 1 Extension Pilot - DEMO	\$4.39	\$0.00	\$0.00	\$0.00	\$0.00
Shop Equipment	\$0.30	\$0.18	\$0.08	\$0.05	\$0.14
Support Vehicles	\$0.78	\$0.63	\$0.30	\$0.22	\$0.22
Hard Phone Update (Teams Compatibility)	\$0.12	\$0.00	\$0.00	\$0.00	\$0.00
Travel Training	\$0.09	\$0.00	\$0.00	\$0.00	\$0.00
Zero Fare - TRIP	\$3.56	\$0.00	\$0.00	\$0.00	\$0.00
Video Camera System Replacement/Retrofit	\$0.72	\$0.00	\$0.00	\$0.00	\$0.00
New Water Fountains	\$0.06	\$0.00	\$0.00	\$0.00	\$0.00
Western Pulse Extension - Phase II Study (NEPA/30% Design)	\$1.40	\$0.00	\$0.00	\$0.00	\$0.00
Workforce Dev - Gov	\$0.04	\$0.00	\$0.00	\$0.00	\$0.00
Workforce Dev - Marketing	\$0.04	\$0.00	\$0.00	\$0.00	\$0.00
Workforce Dev - Planning/Scheduling	\$0.08	\$0.00	\$0.00	\$0.00	\$0.00
Workforce Dev - Fin	\$0.04	\$0.00	\$0.00	\$0.00	\$0.00
Bus Bay for Articulated Buses	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Camera and DVR Repair and replacement	\$0.00	\$0.04	\$0.05	\$0.05	\$0.06
Destination Sign Repair and Replace	\$0.00	\$0.04	\$0.05	\$0.05	\$0.06
Carpet Replacement	\$0.00	\$0.00	\$0.50	\$0.00	\$0.00
Chiller Replacement	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Clever Repair & replacement	\$0.00	\$0.06	\$0.07	\$0.07	\$0.08
Concrete Pad for Equipment Storage Shed	\$0.00	\$2.50	\$0.00	\$0.00	\$0.00
Elevator Interior Upgrade	\$0.00	\$0.05	\$0.00	\$0.00	\$0.00
Employee and Fleet Parking Decks	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
ePaper Sign Deployment - GRTC Stop Enhancement	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Generator	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
West End Park-n-Ride Land Acquisition and AE Development	\$0.00	\$4.50	\$4.00	\$0.00	\$0.00
301 E. Belt Blvd. Renovations	\$0.00	\$0.00	\$0.50	\$0.00	\$0.50

Asset / Project	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
Permanent Downtown Transfer Center Construction	\$0.00	\$0.00	\$35.00	\$0.00	\$0.00
Plumbing Fixture Replacement	\$0.00	\$0.00	\$0.25	\$0.00	\$0.00
Replace Vinyl Floors	\$0.00	\$0.30	\$0.30	\$0.30	\$0.00
Revenue Fleet Pre/Post Trip Enhancement Implementation utilizing In-vehicle Tablets	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Shop Battery Charging Station	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Tire Changing Bay Extension	\$0.00	\$0.01	\$0.01	\$0.01	\$0.01
Western Pulse (BRT) Extension - Engineering and Design	\$0.00	\$4.68	\$0.00	\$0.00	\$0.00
Western Pulse (BRT) Extension - Construction	\$0.00	\$0.00	\$78.00	\$0.00	\$0.00
N/S BRT Engineering	\$0.00	\$0.00	\$0.00	\$18.00	\$0.00
N/S BRT Construction Phase I	\$0.00	\$0.00	\$0.00	\$300.00	\$0.00
N/S BRT Construction Phase II NEPA, 0-30%,	\$0.00	\$0.00	\$0.00	\$4.00	\$0.00
N/S BRT Phase II Engineering	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Upgrade APC	\$0.00	\$0.62	\$0.00	\$0.00	\$0.00
Preteckt Technology Pilot (Maintenance)	\$0.00	\$0.10	\$0.00	\$0.00	\$0.00
Clever Devices Warning System	\$0.00	\$0.05	\$0.00	\$0.00	\$0.00
IT Hardware PC Refresh	\$0.00	\$0.00	\$0.00	\$0.20	\$0.00
Annual IT software maintenance contracts (Admin)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
RTA Migration to Cloud	\$0.00	\$0.00	\$0.02	\$0.02	\$0.02
Hybrid Cloud Computer - Disaster Recovery	\$0.00	\$0.04	\$0.04	\$0.04	\$0.04
Network hardware and Station UPS maintenance replacement	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
SmartYard (Phase II) Paratransit and Microtransit	\$0.00	\$0.30	\$0.00	\$0.00	\$0.00
23rd and Franklin Pedestrian Improvements	\$0.00	\$0.30	\$0.00	\$0.00	\$0.00
325 E Belt Blvd Development Engineering	\$0.00	\$0.00	\$0.00	\$0.00	\$3.00
325 E Belt Blvd Development Construction	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Northside Transfer Center - Maintenance Facility Study	\$0.00	\$0.20	\$0.00	\$0.00	\$0.00
Northside Transfer Center - Land Acquisition	\$0.00	\$0.00	\$2.00	\$0.00	\$0.00
Northside Transfer Center - Engineering and Design	\$0.00	\$0.00	\$0.00	\$3.00	\$0.00
Northside Transfer Center - Construction	\$0.00	\$0.00	\$0.00	\$0.00	\$6.00

4.4. GRTC Vehicle Inventory

Table 4-20: GRTC Vehicle Inventory

Bus #	Group	Year	Age	Size	Model	Fuel
901	Retired (replaced with 2024 vehicle)	2010	14	40 FOOT	LOW FLOOR	DIESEL
902	Retired (replaced with 2024 vehicle)	2010	14	40 FOOT	LOW FLOOR	DIESEL
903	Retired (replaced with 2024 vehicle)	2010	14	40 FOOT	LOW FLOOR	DIESEL
904	Retired (replaced with 2024 vehicle)	2010	14	40 FOOT	LOW FLOOR	DIESEL
905	Retired (replaced with 2024 vehicle)	2010	14	40 FOOT	LOW FLOOR	DIESEL
906	Retired (replaced with 2024 vehicle)	2010	14	40 FOOT	LOW FLOOR	DIESEL
907	Retired (replaced with 2024 vehicle)	2010	14	40 FOOT	LOW FLOOR	DIESEL
908	Retired (replaced with 2024 vehicle)	2010	14	40 FOOT	LOW FLOOR	DIESEL
909	Retired (replaced with 2024 vehicle)	2010	14	40 FOOT	LOW FLOOR	DIESEL
910	Retired (replaced with 2024 vehicle)	2010	14	40 FOOT	LOW FLOOR	DIESEL
911	Retired (replaced with 2024 vehicle)	2010	14	40 FOOT	LOW FLOOR	DIESEL
912	Retired (replaced with 2024 vehicle)	2010	14	40 FOOT	LOW FLOOR	DIESEL
913	Retired (replaced with 2024 vehicle)	2010	14	40 FOOT	LOW FLOOR	DIESEL
305	Retired	2010	14	40 FOOT	LOW FLOOR	DIESEL

Bus #	Group	Year	Age	Size	Model	Fuel
	(replaced with 2024 vehicle)					
311	Retired (replaced with 2024 vehicle)	2010	14	40 FOOT	LOW FLOOR	DIESEL
317	Retired (replaced with 2024 vehicle)	2010	14	40 FOOT	LOW FLOOR	DIESEL
1501	Retired (replaced with 2024 vehicle)	2010	14	40 FOOT	LOW FLOOR	DIESEL
1502	Retired (replaced with 2024 vehicle)	2010	14	40 FOOT	LOW FLOOR	DIESEL
1503	Retired (replaced with 2024 vehicle)	2010	14	40 FOOT	LOW FLOOR	DIESEL
1504	Revenue Fleet	2010	14	45 FOOT	COACH	DIESEL
1505	Revenue Fleet	2010	14	45 FOOT	COACH	DIESEL
1506	Revenue Fleet	2010	14	45 FOOT	COACH	DIESEL
1507	Revenue Fleet	2010	14	45 FOOT	COACH	DIESEL
1508	Revenue Fleet	2010	14	45 FOOT	COACH	DIESEL
401	Training Vehicle	2012	12	40 FOOT	LOW FLOOR	DIESEL
402	Training Vehicle	2012	12	40 FOOT	LOW FLOOR	DIESEL
403	Training Vehicle	2012	12	40 FOOT	LOW FLOOR	DIESEL
404	Training Vehicle	2012	12	40 FOOT	LOW FLOOR	DIESEL
405	Training Vehicle	2012	12	40 FOOT	LOW FLOOR	DIESEL
406	Training Vehicle	2012	12	40 FOOT	LOW FLOOR	DIESEL
407	Training Vehicle	2012	12	40 FOOT	LOW FLOOR	DIESEL
408	Training Vehicle	2012	12	40 FOOT	LOW FLOOR	DIESEL
201	Contingency	2013	11	40 FOOT	LOW FLOOR	CNG
202	Contingency	2013	11	40 FOOT	LOW FLOOR	CNG
203	Contingency	2013	11	40 FOOT	LOW FLOOR	CNG

Bus #	Group	Year	Age	Size	Model	Fuel
204	Contingency	2013	11	40 FOOT	LOW FLOOR	CNG
205	Contingency	2013	11	40 FOOT	LOW FLOOR	CNG
206	Contingency	2013	11	40 FOOT	LOW FLOOR	CNG
207	Contingency	2013	11	40 FOOT	LOW FLOOR	CNG
208	Contingency	2013	11	40 FOOT	LOW FLOOR	CNG
250	Revenue Fleet	2014	10	40 FOOT	LOW FLOOR	CNG
251	Revenue Fleet	2014	10	40 FOOT	LOW FLOOR	CNG
252	Revenue Fleet	2014	10	40 FOOT	LOW FLOOR	CNG
253	Revenue Fleet	2014	10	40 FOOT	LOW FLOOR	CNG
254	Revenue Fleet	2014	10	40 FOOT	LOW FLOOR	CNG
256	Revenue Fleet	2014	10	40 FOOT	LOW FLOOR	CNG
257	Revenue Fleet	2014	10	40 FOOT	LOW FLOOR	CNG
258	Revenue Fleet	2014	10	40 FOOT	LOW FLOOR	CNG
259	Revenue Fleet	2014	10	40 FOOT	LOW FLOOR	CNG
260	Revenue Fleet	2014	10	40 FOOT	LOW FLOOR	CNG
261	Revenue Fleet	2014	10	40 FOOT	LOW FLOOR	CNG
262	Revenue Fleet	2014	10	40 FOOT	LOW FLOOR	CNG
263	Revenue Fleet	2014	10	40 FOOT	LOW FLOOR	CNG
264	Revenue Fleet	2014	10	40 FOOT	LOW FLOOR	CNG
265	Revenue Fleet	2014	10	40 FOOT	LOW FLOOR	CNG
266	Revenue Fleet	2014	10	40 FOOT	LOW FLOOR	CNG
267	Revenue Fleet	2014	10	40 FOOT	LOW FLOOR	CNG
268	Revenue Fleet	2014	10	40 FOOT	LOW FLOOR	CNG
269	Revenue Fleet	2014	10	40 FOOT	LOW FLOOR	CNG
270	Revenue Fleet	2014	10	40 FOOT	LOW FLOOR	CNG
501	Revenue Fleet	2014	10	40 FOOT	LOW FLOOR	CNG
502	Revenue Fleet	2014	10	41 FOOT	LOW FLOOR	CNG
503	Revenue Fleet	2014	10	42 FOOT	LOW FLOOR	CNG
504	Revenue Fleet	2014	10	43 FOOT	LOW FLOOR	CNG
505	Revenue Fleet	2014	10	44 FOOT	LOW FLOOR	CNG
506	Revenue Fleet	2014	10	45 FOOT	LOW FLOOR	CNG
507	Revenue Fleet	2014	10	46 FOOT	LOW FLOOR	CNG
508	Revenue Fleet	2014	10	47 FOOT	LOW FLOOR	CNG
701	Revenue Fleet	2014	10	35 FOOT	LOW FLOOR	CNG

Bus #	Group	Year	Age	Size	Model	Fuel
702	Revenue Fleet	2014	10	35 FOOT	LOW FLOOR	CNG
703	Revenue Fleet	2014	10	35 FOOT	LOW FLOOR	CNG
704	Revenue Fleet	2014	10	35 FOOT	LOW FLOOR	CNG
705	Revenue Fleet	2014	10	35 FOOT	LOW FLOOR	CNG
2001	Revenue Fleet	2017	7	40 FOOT	LOW FLOOR	CNG
2002	Revenue Fleet	2017	7	40 FOOT	LOW FLOOR	CNG
2003	Revenue Fleet	2017	7	40 FOOT	LOW FLOOR	CNG
2005	Revenue Fleet	2017	7	40 FOOT	LOW FLOOR	CNG
2006	Revenue Fleet	2017	7	40 FOOT	LOW FLOOR	CNG
2007	Revenue Fleet	2017	7	40 FOOT	LOW FLOOR	CNG
2008	Revenue Fleet	2017	7	40 FOOT	LOW FLOOR	CNG
2009	Revenue Fleet	2017	7	40 FOOT	LOW FLOOR	CNG
2010	Revenue Fleet	2017	7	40 FOOT	LOW FLOOR	CNG
2011	Revenue Fleet	2017	7	40 FOOT	LOW FLOOR	CNG
2012	Revenue Fleet	2017	7	40 FOOT	LOW FLOOR	CNG
2013	Revenue Fleet	2017	7	40 FOOT	LOW FLOOR	CNG
2014	Revenue Fleet	2017	7	40 FOOT	LOW FLOOR	CNG
2101	Revenue Fleet	2017	7	40 FOOT	LOW FLOOR	CNG
2102	Revenue Fleet	2017	7	40 FOOT	LOW FLOOR	CNG
2103	Revenue Fleet	2017	7	40 FOOT	LOW FLOOR	CNG
2104	Revenue Fleet	2017	7	40 FOOT	LOW FLOOR	CNG
2105	Revenue Fleet	2017	7	40 FOOT	LOW FLOOR	CNG
2106	Revenue Fleet	2017	7	40 FOOT	LOW FLOOR	CNG
2107	Revenue Fleet	2017	7	40 FOOT	LOW FLOOR	CNG
2108	Revenue Fleet	2017	7	40 FOOT	LOW FLOOR	CNG
2109	Revenue Fleet	2017	7	40 FOOT	LOW FLOOR	CNG
2110	Revenue Fleet	2017	7	40 FOOT	LOW FLOOR	CNG
2121	Revenue Fleet	2017	7	35 FOOT	LOW FLOOR	CNG
2122	Revenue Fleet	2017	7	35 FOOT	LOW FLOOR	CNG
2123	Revenue Fleet	2017	7	35 FOOT	LOW FLOOR	CNG
2124	Revenue Fleet	2017	7	35 FOOT	LOW FLOOR	CNG
2201	Revenue Fleet	2018	6	40 FOOT	LOW FLOOR	CNG
2202	Revenue Fleet	2018	6	40 FOOT	LOW FLOOR	CNG
2203	Revenue Fleet	2018	6	40 FOOT	LOW FLOOR	CNG

Bus #	Group	Year	Age	Size	Model	Fuel
2204	Revenue Fleet	2018	6	40 FOOT	LOW FLOOR	CNG
2205	Revenue Fleet	2018	6	40 FOOT	LOW FLOOR	CNG
2206	Revenue Fleet	2018	6	40 FOOT	LOW FLOOR	CNG
2207	Revenue Fleet	2018	6	40 FOOT	LOW FLOOR	CNG
2208	Revenue Fleet	2018	6	40 FOOT	LOW FLOOR	CNG
2209	Revenue Fleet	2018	6	40 FOOT	LOW FLOOR	CNG
2210	Revenue Fleet	2018	6	40 FOOT	LOW FLOOR	CNG
2211	Revenue Fleet	2018	6	40 FOOT	LOW FLOOR	CNG
2212	Revenue Fleet	2018	6	40 FOOT	LOW FLOOR	CNG
2213	Revenue Fleet	2018	6	40 FOOT	LOW FLOOR	CNG
2214	Revenue Fleet	2018	6	40 FOOT	LOW FLOOR	CNG
2215	Revenue Fleet	2018	6	40 FOOT	LOW FLOOR	CNG
2216	Revenue Fleet	2018	6	40 FOOT	LOW FLOOR	CNG
2217	Revenue Fleet	2018	6	40 FOOT	LOW FLOOR	CNG
2231	Revenue Fleet	2018	6	29 FOOT	LOW FLOOR	CNG
2232	Revenue Fleet	2018	6	29 FOOT	LOW FLOOR	CNG
2233	Revenue Fleet	2018	6	29 FOOT	LOW FLOOR	CNG
2234	Revenue Fleet	2018	6	29 FOOT	LOW FLOOR	CNG
2235	Revenue Fleet	2018	6	29 FOOT	LOW FLOOR	CNG
2236	Revenue Fleet	2018	6	29 FOOT	LOW FLOOR	CNG
2300	Revenue Fleet	2021	3	40 FOOT	LOW FLOOR	CNG
2301	Revenue Fleet	2021	3	40 FOOT	LOW FLOOR	CNG
2302	Revenue Fleet	2021	3	40 FOOT	LOW FLOOR	CNG
2303	Revenue Fleet	2021	3	40 FOOT	LOW FLOOR	CNG
2304	Revenue Fleet	2021	3	40 FOOT	LOW FLOOR	CNG
2305	Revenue Fleet	2021	3	40 FOOT	LOW FLOOR	CNG
2306	Revenue Fleet	2021	3	40 FOOT	LOW FLOOR	CNG
2307	Revenue Fleet	2021	3	40 FOOT	LOW FLOOR	CNG
2308	Revenue Fleet	2021	3	40 FOOT	LOW FLOOR	CNG
2309	Revenue Fleet	2021	3	40 FOOT	LOW FLOOR	CNG
2310	Revenue Fleet	2021	3	40 FOOT	LOW FLOOR	CNG
2311	Revenue Fleet	2021	3	40 FOOT	LOW FLOOR	CNG
2312	Revenue Fleet	2021	3	40 FOOT	LOW FLOOR	CNG
2313	Revenue Fleet	2021	3	40 FOOT	LOW FLOOR	CNG

Bus #	Group	Year	Age	Size	Model	Fuel
2315	Revenue Fleet	2022	2	40 FOOT	LOW FLOOR	CNG
2316	Revenue Fleet	2022	2	40 FOOT	LOW FLOOR	CNG
2317	Revenue Fleet	2022	2	40 FOOT	LOW FLOOR	CNG
2318	Revenue Fleet	2022	2	40 FOOT	LOW FLOOR	CNG
2319	Revenue Fleet	2022	2	40 FOOT	LOW FLOOR	CNG
2401	Revenue Fleet	2022	2	29 FOOT	LOW FLOOR	CNG
2402	Revenue Fleet	2022	2	29 FOOT	LOW FLOOR	CNG
2403	Revenue Fleet	2022	2	29 FOOT	LOW FLOOR	CNG
2404	Revenue Fleet	2022	2	29 FOOT	LOW FLOOR	CNG
2405	Revenue Fleet	2022	2	29 FOOT	LOW FLOOR	CNG
2406	Revenue Fleet	2022	2	29 FOOT	LOW FLOOR	CNG
2407	Revenue Fleet	2022	2	29 FOOT	LOW FLOOR	CNG
2408	Revenue Fleet	2022	2	29 FOOT	LOW FLOOR	CNG
2409	Revenue Fleet	2022	2	29 FOOT	LOW FLOOR	CNG
2410	Revenue Fleet	2022	2	29 FOOT	LOW FLOOR	CNG
2320	Revenue Fleet	2024	0	40 FOOT	LOW FLOOR	CNG
2321	Revenue Fleet	2024	0	40 FOOT	LOW FLOOR	CNG
2322	Revenue Fleet	2024	0	40 FOOT	LOW FLOOR	CNG
2323	Revenue Fleet	2024	0	40 FOOT	LOW FLOOR	CNG
2324	Revenue Fleet	2024	0	40 FOOT	LOW FLOOR	CNG
2325	Revenue Fleet	2024	0	40 FOOT	LOW FLOOR	CNG
2326	Revenue Fleet	2024	0	40 FOOT	LOW FLOOR	CNG
2327	Revenue Fleet	2024	0	40 FOOT	LOW FLOOR	CNG
2328	Revenue Fleet	2024	0	40 FOOT	LOW FLOOR	CNG
2329	Revenue Fleet	2024	0	40 FOOT	LOW FLOOR	CNG
2330	Revenue Fleet	2024	0	40 FOOT	LOW FLOOR	CNG
2331	Revenue Fleet	2024	0	40 FOOT	LOW FLOOR	CNG
2332	Revenue Fleet	2024	0	40 FOOT	LOW FLOOR	CNG
2333	Revenue Fleet	2024	0	40 FOOT	LOW FLOOR	CNG
2411	Revenue Fleet	2024	0	35 FOOT	LOW FLOOR	CNG
2412	Revenue Fleet	2024	0	35 FOOT	LOW FLOOR	CNG
2413	Revenue Fleet	2024	0	35 FOOT	LOW FLOOR	CNG
2414	Revenue Fleet	2024	0	35 FOOT	LOW FLOOR	CNG
2415	Revenue Fleet	2024	0	35 FOOT	LOW FLOOR	CNG

GRTC Transit Strategic Plan

Chapter 5: Financial Plan

June 17, 2024

Contents

5.1. Funding Opportunities	5-1
5.1.1. Federal Funding Options.....	5-1
5.1.2. State Funding Options	5-5
5.2. Financial Overview	5-8
5.2.1. Current Service Overview	5-8
5.2.2. Historical Finances	5-8
5.2.3. Projected Finances.....	5-9
5.3. Projected Changes	5-11
5.3.1. Service Changes.....	5-11
New Routes	5-11
Eliminated Routes.....	5-11
Other Service Changes and Operating Implications	5-12
5.3.2. Revenue Changes	5-18
Revenue Sources	5-18
Other Considerations	5-18

Tables

Table 5-1: Potential Federal Funding Opportunities Overview	5-2
Table 5-2: State Funding Opportunities Overview	5-6
Table 5-3: Historical Level of Service	5-8
Table 5-4: Historical Revenues, Expenses, and Net Position	5-8
Table 5-5: GRTC Projected Revenues, Expenses, and Net Balance Sheet.....	5-10
Table 5-6: Planned New Routes by FY 2034	5-11
Table 5-7: Planned Eliminated Routes by FY 2034	5-11
Table 5-8: Change in Peak Vehicle Need (FY 2022–Projected FY 2034)	5-12
Table 5-9: Change in Revenue Hours (FY 2022–Projected FY 2034)	5-13
Table 5-10: Change in Revenue Miles (FY 2022–Projected FY 2034)	5-15
Table 5-11: Change in Operating Costs (USD \$, FY 2022–Projected FY 2034)	5-16

5.1. Funding Opportunities

This section identifies and evaluates funding sources that may be available to support the Greater Richmond Transit Company (GRTC) capital and operations program identified in the TSP, including federal and state funding opportunities. It includes detailed description of each funding opportunity with information about the order of magnitude of available funding, matching requirements, and eligibility criteria.

5.1.1. Federal Funding Options

The Infrastructure Investment and Jobs Act, signed into law in November 2021 as the Bipartisan Infrastructure Law (BIL), provides a large portion of transportation-related formula and discretionary grant assistance that comes from the U.S. federal government. This legislation included a reauthorization of the programs included in the Fixing America's Surface Transportation (FAST) Act along with the creation of several new ones. Overall, the BIL authorizes more funding opportunities to accommodate the country's transition to a more climate-friendly transportation system. Existing and new formula funding and discretionary grant programs are receiving a historic investment of federal funds that will be eligible for a variety of infrastructure projects.

The federal funding options described and evaluated in this section include the following:

- Federal Transit Administration (FTA) Section 5303 and 5304: Metropolitan & Statewide Planning and Non-Metropolitan Transportation Planning Grants
- FTA Section 5307: Urbanized Area Formula Grants
- FTA Section 5309: Capital Investment Grants (CIG) - Small Starts
- FTA Section 5309: Capital Investment Grants (CIG) - New Starts
- FTA Section 5309: Capital Investment Grants (CIG) - Core Capacity
- FTA Section 5339: Bus and Bus Facilities Program, both formula (a) and competitive (b)
- FTA Low or No Emission Vehicle Program - Section 5339 (c)
- FTA Enhanced Mobility of Seniors & Individuals with Disabilities - Section 5310
- Federal Highway Administration (FHWA) Carbon Reduction Program
- FHWA Surface Transportation Block Grant (STBG) Program
- FHWA Congestion Mitigation and Air Quality (CMAQ) Program
- U.S. Department of Transportation (USDOT) Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Program
- USDOT Reconnecting Communities Pilot

Table 5-1 provides a high-level summary of the key characteristics and considerations of each funding source, including the total amounts authorized over the next four federal fiscal years (FFY) by the BIL.

Table 5-1: Potential Federal Funding Opportunities Overview

Funding Program	Program Type	Matching Requirements	Admin. Agency	Eligibility				Total Funding Amount (FFY 2023 - FFY 2026)	Award Ceiling (FFY 2023)
				Planning	Design	Construction	O&M		
Section 5303 and 5304: Metropolitan & Statewide Planning and Non-Metropolitan Transportation Planning	Formula	Federal share is generally limited to 80% of total project costs; may exceed for projects related to transportation planning in lower-density or lower-income portions of metropolitan/rural-adjointing areas	FTA	✓				\$781 M	\$4.6 M for VA
Section 5307: Urbanized Area Formula Grants	Formula	Federal share not to exceed 80% of net project cost for capital expenditures; 85% for acquisition of vehicles; 90% for cost of vehicle-related equipment or facilities; 50% of net project cost of operating assistance	FTA	✓	✓	✓	✓	\$26.8 B	\$17.1 M
Section 5309: Capital Investment Grants (CIG) Small Starts	Discretionary	Federal share may not exceed 80% of project costs	FTA	✓	✓	✓		\$18.4 B	\$150 M
Section 5309: Capital Investment Grants (CIG) New Starts	Discretionary	Federal share may not exceed 80% of project costs	FTA	✓	✓	✓			> \$150 M
Section 5309: Capital Investment Grants (CIG) Core Capacity	Discretionary	Federal share may not exceed 80% of project costs	FTA	✓	✓	✓			None

Funding Program	Program Type	Matching Requirements	Admin. Agency	Eligibility				Total Funding Amount (FFY 2023 - FFY 2026)	Award Ceiling (FFY 2023)
				Planning	Design	Construction	O&M		
Section 5339 (a): Bus and Bus Facilities Formula Funds Grant	Formula	Federal share is generally limited to 80% of total project costs; may exceed for projects related to disabilities	FTA	✓	✓	✓		\$2.6 B	\$1.5 M
Section 5339 (b): Bus and Bus Facilities Discretionary Grant	Discretionary	Federal share is generally limited to 80% of total project costs; may exceed for projects related to disabilities	FTA			✓		\$1.6 B	10% of available funding
Section 5339 (c): Low or No Emission Vehicle Program	Discretionary	Federal share is generally limited to 80% of total project costs; may exceed for projects related to disabilities	FTA			✓		\$4.5 B	Highest award in FFY 23 was \$104 M
Section 5310: Enhanced Mobility of Seniors & Individuals with Disabilities	Formula	Federal share is generally limited to 80% of total project costs; may exceed for projects related to disabilities	FTA	✓	✓	✓	✓	\$1.8 B	\$1.4 M
Carbon Reduction Program	Formula	Typically, 80% federal and 20% non-federal. For interstate projects - 90% federal and 10% non-Federal	FHWA	✓	✓	✓	✓	\$5.2 B	\$2.5 M
Surface Transportation Block Grant (STBG) Program	Discretionary (via Federal Formula)	Typically consistent with maximum federal participation ratio of 80% state and 20% local	FHWA	✓	✓	✓		\$58.1 B	\$20.9 M for Richmond

Funding Program	Program Type	Matching Requirements	Admin. Agency	Eligibility				Total Funding Amount (FFY 2023 - FFY 2026)	Award Ceiling (FFY 2023)
				Planning	Design	Construction	O&M		
Congestion Mitigation and Air Quality (CMAQ) Program	Discretionary (via Federal Formula)	Typically consistent with maximum federal participation ratio of 80% state and 20% local	FHWA	✓	✓			\$10.7 B	\$61 M for VA
Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grants	Discretionary	For urban projects, federal share may not exceed 80% of total project costs; minimum 20% non-federal match	USDOT	✓	✓	✓		\$6.0 B	\$25 M
Reconnecting Communities Pilot	Discretionary	Typically, 80% federal and 20% non-federal.	USDOT	✓	✓	✓		\$805 M	\$2 M (Community Planning); \$5 M (Capital Construction minimum)

5.1.2. State Funding Options

The Commonwealth of Virginia offers programs that can fund GRTC's capital and operational program. Funding opportunities at the state level described and evaluated in this section include the following:

- Virginia Department of Rail & Public Transportation (DRPT) Operating Contributions
- Central Virginia Transportation Authority (CVTA)
- DRPT Making Efficient and Responsible Investments in Transit (MERIT) Program
- DRPT Transit Ridership Incentive Program (TRIP)
- Virginia Department of Transportation (VDOT) Smart Scale Program
- VDOT Alternative Fuel Vehicle (AFV) Grants
- VDOT Transportation Partnership Opportunity Fund (TPOF)

Table 5-2 provides a high-level summary of the key characteristics and considerations of each funding source evaluated in this section.

Table 5-2: State Funding Opportunities Overview

Funding Program	Program Type	Matching Requirements	Admin. Agency	Eligibility				Total Funding Amount (FY 23)	Award Ceiling (FY 23)
				Planning	Design	Construction	O&M		
DRPT Operating Contribution	Formula	N/A	DRPT	✓	✓	✓	✓	\$19.5 M	30% of GRTC operating expenses
CVTA	Formula	N/A	CVTA	✓	✓	✓	✓	\$21.4 M	15% of CVTA revenues
MERIT	Discretionary	Operating: 30% State; Capital projects < \$3 M: up to 68% state; Capital projects > \$3 M = up to 50%	DRPT	✓	✓	✓	✓	N/A	None
TRIP	Discretionary	Funding step-down (state funding decreases and local funding increases over time)	DRPT	✓	✓	✓		N/A	None
Smart Scale Program	Discretionary	Typically consistent with maximum federal participation ratio of 80% state and 20% local	VDOT			✓		N/A	None

Funding Program	Program Type	Matching Requirements	Admin. Agency	Eligibility				Total Funding Amount (FY 23)	Award Ceiling (FY 23)
				Planning	Design	Construction	O&M		
Alternative Fuel Vehicle (AFV) Grants	Discretionary	Typically consistent with maximum federal participation ratio of 80% state and 20% local	Virginia Dept. of Mines, Minerals and Energy/V DOT			✓		N/A	\$10,000
Transportation Partnership Opportunity Fund (TPOF)	Discretionary	High match is preferred	VDOT	✓	✓	✓		Revolving loans of up to (\$30 M) \$3.9 M available in FY23	\$5 M

5.2. Financial Overview

This section provides an overview of GRTC’s financials as well as the agency’s current and projected levels of service.

5.2.1. Current Service Overview

Table 5-3 provides the level of service GRTC has provided over the past five years. The table breaks down the hours and miles of revenue service. GRTC has reduced service since 2019 due to multiple factors including the COVID-19 pandemic as well as a staffing shortage.

Table 5-3: Historical Level of Service

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
Revenue Hours of Service	600,397	675,246	684,829	632,079	593,562
Revenue Miles of Service	11,337,313	11,879,006	11,193,349	8,566,623	8,407,330

5.2.2. Historical Finances

Over the past six years, GRTC has ended each fiscal year with a surplus. As shown in **Table 5-4**¹, the year-end operating balance during these years ranged from \$233,000 to \$2,252,234, including FY 2021 through FY 2023 when ridership revenue dropped by about 75 percent due to the COVID-19 pandemic. During these peak pandemic years, federal and local assistance supported GRTC to help make up the lost ridership revenue. GRTC has been fare free since March 19, 2020, and secured grant funding from DRPT to ensure the fare free policy stays until at least June 30, 2025.

Table 5-4: Historical Revenues, Expenses, and Net Position

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Fares and Directly Generated	10,736,720	12,456,266	8,725,016	2,877,243	3,061,456	2,927,066
Federal Assistance	26,456,253	11,095,836	12,261,777	30,390,764	16,023,336	7,740,503
State Funds	32,127,411	19,015,072	12,751,346	12,790,280	29,285,904	34,583,185
Local Funds	28,682,811	26,391,304	26,334,666	14,498,963	31,676,067	35,633,452
Total Funds	98,003,195	68,958,478	60,072,805	60,557,250	80,046,763	80,884,205
Operating Expenses	(50,453,119)	(54,558,910)	(56,371,221)	(58,390,236)	(61,957,179)	(64,464,404)
Capital Expenses	(47,236,416)	(13,525,004)	(2,983,759)	(1,864,560)	(17,856,226)	(14,167,567)

¹ Sources: USD \$, National Transit Database and GRTC FY 2023 Budget.

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
Total Expenses	(97,689,535)	(68,083,914)	(59,354,980)	(60,254,796)	(79,813,405)	(78,631,971)
Net Balance	313,660	874,564	717,825	302,454	233,358	2,252,234

5.3.1. Projected Finances

Table 5-5 provides a cash flow analysis for a ten-year projection, reflecting all service changes outlined in **Chapter 3** and summarized in the following section. The analysis was derived from internal GRTC projections based on current funding agreements, following the DRPT requirement to include at least a three percent yearly inflation rate. Funding from local municipalities will continue to be the largest source of income for GRTC. In FY 2024, GRTC projects that approximately 37 percent of funds will come from local contributions. The largest local contributor is the Central Virginia Transportation Authority (CVTA). GRTC projects that 39 percent of revenue sources will be derived from state funds, while 20 percent of funding will come from federal sources, and 2.5 percent of funding will come from fares.

Operating expenses are projected to nearly double from FY 2024 to FY 2034, due to a 3.6 percent annual increase in the existing service’s baseline operating expenses, combined with over \$44 million in service expansion by FY2034. While federal and state sources will continue to fund a large portion of GRTC’s operating expenses, local sources are projected to increase funding significantly over the next ten years to fund the majority of service expansion. The planned improvements will be funded through use of CVTA funds, increased investment by local jurisdictions to generate a proportional match for CVTA investments, financial reserves from GRTC and CVTA, and other local sources including partnerships with local institutions and sponsorships to offset the lack of passenger fares. Fares and directly generated revenues are projected to remain around \$2 million per year, as GRTC plans to continue offering fare-free service.

GRTC projects spending \$769 million on capital projects over the next ten years. In GRTC’s Capital Improvement Plan (CIP), the agency has outlined capital projects including the North-South Bus Rapid Transit (BRT), Western Pulse BRT Extension, and a Permanent Downtown Transfer Center—these projects are estimated to cost \$413 million. GRTC plans to support these projects with federal, state, and local funds. GRTC projects 68 percent of project expenditures will be sourced from state funds while four percent will be sourced from local funds and 28 percent will be sourced from federal funds. Funding sources outlined in **Section 5.1** could help support the operating needs and capital projects.

Table 5-5: GRTC Projected Revenues, Expenses, and Net Balance Sheet

	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034
Fares and Directly Generated	2,838,000	1,650,000	1,806,000	1,831,000	1,856,000	1,906,000	1,931,000	1,956,000	2,006,000	2,006,000	2,006,000
Federal Assistance	22,768,000	29,425,000	32,346,000	59,345,000	107,753,000	27,147,000	30,476,000	19,893,000	20,322,000	20,763,000	21,218,000
State Funds	43,344,000	64,890,000	54,814,000	120,216,000	255,823,000	59,889,000	67,791,000	41,903,000	42,753,000	43,628,000	44,528,000
Local Funds	40,192,000	54,972,000	53,588,000	63,098,000	83,312,000	82,085,000	88,675,000	93,077,000	99,494,000	106,058,000	112,959,000
Total Funds	109,142,000	150,937,000	142,554,000	244,490,000	448,744,000	171,027,000	188,873,000	156,829,000	164,575,000	172,455,000	180,711,000
Baseline Operating Expenses	(81,912,000)	(84,975,000)	(87,960,000)	(91,062,000)	(94,287,000)	(97,639,000)	(101,125,000)	(104,749,000)	(108,519,000)	(112,440,000)	(116,502,000)
Expansion Operating Expenses	-	(7,627,000)	(9,890,000)	(13,622,000)	(16,338,000)	(24,550,000)	(28,465,000)	(32,080,000)	(36,056,000)	(40,015,000)	(44,209,000)
Capital Expenses	(27,230,000)	(58,335,000)	(44,704,000)	(139,806,000)	(338,119,000)	(48,838,000)	(59,283,000)	(20,000,000)	(20,000,000)	(20,000,000)	(20,000,000)
Total Expenses	(109,142,000)	(150,937,000)	(142,554,000)	(244,490,000)	(448,744,000)	(171,027,000)	(188,873,000)	(156,829,000)	(164,575,000)	(172,455,000)	(180,711,000)
Net Balance	-										

5.3. Projected Changes

This section details projected service changes as GRTC looks to expand and update existing routes and the financial implications of those updates.

5.3.1. Service Changes

NEW ROUTES

GRTC aims to establish three new routes and eliminate six others as part of its service expansion. **Table 5-6** describes the peak vehicle needs, estimated revenue hours, and estimated revenue miles for the new routes by FY 2034. The new routes (consisting of two express routes, one BRT line, one Community Radial route, and one Circulator/Feeder/Connector route) will require 26 vehicles during the peak period, 143,889 revenue hours, and 1,333,000 revenue miles.

Table 5-6: Planned New Routes by FY 2034

Route	Classification	Peak Vehicle Need	Revenue Hours	Revenue Miles
North-South BRT	BRT	16	101,898	916,100
8	Circulator/Feeder/Connector	2	9,515	58,100
30x	Express	1	960	18,900
92	Community Radial	4	17,620	236,900
Airport Express	Express	3	13,896	103,000
Total		26	143,889	1,333,000

ELIMINATED ROUTES

Table 5-7 details the six routes planned for elimination by FY 2034. The elimination of these routes will free up 15 vehicles, 38,535 revenue hours, and 436,858 revenue miles to reallocate throughout the system.

Table 5-7: Planned Eliminated Routes by FY 2034

Route	Classification	Peak Vehicles to Reallocate	Revenue Hours	Revenue Miles
3C	Arterial	5	11,944	133,060
56	Circulator/Feeder/Connector	1	1,469	42,172
76	Community Radial	4	8,265	74,069
77	Community Radial	2	7,785	73,394
86	Circulator/Feeder/Connector	1	6,294	62,247
88	Circulator/Feeder/Connector	2	2,778	51,916
Total		15	38,535	436,858

OTHER SERVICE CHANGES AND OPERATING IMPLICATIONS

Chapter 3 of the TSP details other service changes that are planned by FY 2034, including route realignments and changes in levels of service (span and headway). The subsequent tables in this section provide detailed operational need information for the implementation of all planned service changes by FY 2034:

- **Table 5-8** shows an increase of 48 vehicles needed for peak operations with the planned service changes.
- **Table 5-9** shows that revenue hours are projected to increase by 426,580.
- **Table 5-10** shows that revenue miles are projected to increase by 3,263,336.
- **Table 5-11** shows that fixed route operating costs are projected to increase by \$81,021,300.

GRTC is aware that increased service will require more funds for operations. As the labor market continues to be tight, GRTC is mindful of rates for drivers as the transit company aims to be competitive to attract new and maintain current employees. As such, GRTC agreed to a pay increase for bus drivers in 2023, increasing the hourly rate by 40 percent and making GRTC one of the highest paying agencies in the region for CDL drivers. The new starting pay for a bus operator is \$24.91/hour.

Table 5-8: Change in Peak Vehicle Need (FY 2022–Projected FY 2034)

Route	Classification	Peak Vehicle Need (FY 2022)	Peak Vehicle Need (Projected FY 2034)	Net Change
Pulse	BRT	9	15	6
North-South BRT	BRT	0	16	16
1	Arterial	5	5	0
1A	Arterial	4	7	3
1B	Arterial	4	2	-2
1C	Arterial	4	2	-2
2A	Arterial	10	12	2
2B	Arterial	10	13	3
2C	Arterial	11	11	0
3A	Arterial	9	9	0
3B	Arterial	10	6	-4
3C	Arterial	5	0	-5
4A	Circulator/Feeder/Connector	1	2	1
4B	Circulator/Feeder/Connector	1	2	1
5	Arterial	3	11	8
7A	Arterial	4	5	1
7B	Arterial	3	4	1
8	Circulator/Feeder/Connector	0	2	2

Route	Classification	Peak Vehicle Need (FY 2022)	Peak Vehicle Need (Projected FY 2034)	Net Change
12	Community Radial	7	7	0
14	Arterial	7	8	1
18	Circulator/Feeder/Connector	2	3	1
19	Arterial	4	5	1
20	Community Radial	4	8	4
29x	Express	3	5	2
30x	Express	0	1	1
50	Arterial	4	7	3
56	Community Radial	1	0	-1
64x	Express	1	1	0
76	Community Radial	4	0	-4
77	Community Radial	2	0	-2
78	Community Radial	4	5	1
79	Community Radial	4	6	2
82x	Express	2	5	3
86	Circulator/Feeder/Connector	1	0	-1
87	Community Radial	4	6	2
88	Circulator/Feeder/Connector	2	0	-2
91	Circulator/Feeder/Connector	4	4	0
92	Community Radial	0	4	4
93	Circulator/Feeder/Connector	1	0	-1
95x	Express	2	2	0
Airport Express	Express	0	3	3
Total		156	204	48

Table 5-9: Change in Revenue Hours (FY 2022–Projected FY 2034)

Route	Classification	Revenue Hours (FY 2022)	Revenue Hours (Projected FY 2034)	Net Change
Pulse	BRT	44,713	90,991	46,278
North-South BRT	BRT	0	101,898	101,898
1	Arterial	3,747	31,945	28,198
1A	Arterial	24,962	42,944	17,982

Route	Classification	Revenue Hours (FY 2022)	Revenue Hours (Projected FY 2034)	Net Change
1B	Arterial	9,534	10,753	1,219
1C	Arterial	15,105	7,608	-7,497
2A	Arterial	15,477	29,113	13,636
2B	Arterial	20,337	32,940	12,603
2C	Arterial	23,917	26,332	2,415
3A	Arterial	11,213	20,878	9,665
3B	Arterial	21,976	42,311	20,335
3C	Arterial	11,944	0	-11,944
4A	Circulator/Feeder/Connector	3,910	0	-3,910
4B	Circulator/Feeder/Connector	4,018	10,613	6,595
5	Arterial	24,773	52,104	27,331
7A	Arterial	12,293	21,952	9,659
7B	Arterial	11,539	18,260	6,721
8	Circulator/Feeder/Connector	0	9,515	9,515
12	Community Radial	18,702	34,212	15,510
14	Arterial	23,906	39,846	15,940
18	Circulator/Feeder/Connector	3,484	19,710	16,226
19	Arterial	20,733	30,701	9,968
20	Community Radial	20,351	37,226	16,875
29x	Express	1,521	3,145	1,624
30x	Express	0	960	960
50	Arterial	12,831	27,747	14,916
56	Community Radial	1,542	0	-1,542
64x	Express	964	1,070	106
76	Community Radial	7,052	0	-7,052
77	Community Radial	6,666	0	-6,666
78	Community Radial	9,144	16,408	7,264
79	Community Radial	6,870	19,222	12,352
82x	Express	748	1,609	861
86	Circulator/Feeder/Connector	5,812	0	-5,812
87	Community Radial	11,654	21,400	9,746
88	Circulator/Feeder/Connector	3,893	0	-3,893

Route	Classification	Revenue Hours (FY 2022)	Revenue Hours (Projected FY 2034)	Net Change
91	Circulator/Feeder/Connector	11,633	21,061	9,428
92	Community Radial	0	17,620	17,620
93	Circulator/Feeder/Connector	2,793	0	-2,793
95x	Express	1,694	2,041	347
Airport Express	Express	0	13,896	13,896
Total		431,451	858,031	426,580

Table 5-10: Change in Revenue Miles (FY 2022–Projected FY 2034)

Route	Classification	Revenue Miles (FY 2022)	Revenue Miles (Projected FY 2034)	Net Change
Pulse	BRT	418,328	704,728	286,400
North-South BRT	BRT	0	787,800	787,800
1	Arterial	35,685	176,685	141,000
1A	Arterial	242,616	355,316	112,700
1B	Arterial	101,786	113,786	12,000
1C	Arterial	155,516	76,816	-78,700
2A	Arterial	195,621	305,221	109,600
2B	Arterial	188,933	292,233	103,300
2C	Arterial	236,987	233,687	-3,300
3A	Arterial	119,210	214,110	94,900
3B	Arterial	295,900	483,300	187,400
3C	Arterial	133,060	21,560	-111,500
4A	Circulator/Feeder/Connector	42,172	75,572	33,400
4B	Circulator/Feeder/Connector	44,905	77,705	32,800
5	Arterial	212,412	355,212	142,800
7A	Arterial	145,015	258,615	113,600
7B	Arterial	152,520	221,520	69,000
8	Circulator/Feeder/Connector	0	58,100	58,100
12	Community Radial	159,677	295,377	135,700
14	Arterial	216,278	328,378	112,100
18	Circulator/Feeder/Connector	48,258	159,758	111,500

Route	Classification	Revenue Miles (FY 2022)	Revenue Miles (Projected FY 2034)	Net Change
19	Arterial	264,558	141,658	-122,900
20	Community Radial	242,702	432,402	189,700
29x	Express	37,210	58,710	21,500
30x	Express	0	15,700	15,700
50	Arterial	92,007	261,907	169,900
56	Community Radial	20,488	4,788	-15,700
64x	Express	15,627	16,300	673
76	Community Radial	74,069	0	-74,069
77	Community Radial	73,394	0	-73,394
78	Community Radial	82,966	124,366	41,400
79	Community Radial	79,203	226,503	147,300
82x	Express	22,260	33,960	11,700
86	Circulator/Feeder/Connector	62,247	8,847	-53,400
87	Community Radial	133,119	245,019	111,900
88	Circulator/Feeder/Connector	51,916	20,716	-31,200
91	Circulator/Feeder/Connector	151,213	216,213	65,000
92	Community Radial	0	236,900	236,900
93	Circulator/Feeder/Connector	30,474	0	-30,474
95x	Express	51,819	56,419	4,600
Airport Express	Express	0	197,600	197,600
Total		4,630,151	7,893,487	3,263,336

Table 5-11: Change in Operating Costs (USD \$, FY 2022–Projected FY 2034)

Route	Classification	Operating Cost (FY 2022)	Operating Cost (Projected FY 2034)	Net Change
Pulse	BRT	5,307,900	13,931,300	8,623,400
North-South BRT	BRT	0	15,601,200	15,601,200
1	Arterial	444,800	4,891,000	4,446,200
1A	Arterial	2,963,300	6,575,000	3,611,700
1B	Arterial	1,131,800	1,646,400	514,600
1C	Arterial	1,793,100	1,164,800	(628,300)

Route	Classification	Operating Cost (FY 2022)	Operating Cost (Projected FY 2034)	Net Change
2A	Arterial	1,837,300	4,457,400	2,620,100
2B	Arterial	2,414,200	5,043,300	2,629,100
2C	Arterial	2,839,200	4,031,600	1,192,400
3A	Arterial	1,331,100	3,196,600	1,865,500
3B	Arterial	2,608,800	6,478,100	3,869,300
3C	Arterial	1,417,900	0	(1,417,900)
4A	Circulator/Feeder/Connector	464,200	1,651,100	1,186,900
4B	Circulator/Feeder/Connector	477,000	1,624,900	1,147,900
5	Arterial	2,940,800	7,892,000	4,951,200
7A	Arterial	1,459,300	3,325,200	1,865,900
7B	Arterial	1,369,800	2,777,800	1,408,000
8	Circulator/Feeder/Connector	0	1,456,800	1,456,800
12	Community Radial	2,220,100	5,189,800	2,969,700
14	Arterial	2,837,900	5,911,900	3,074,000
18	Circulator/Feeder/Connector	413,600	2,919,600	2,506,000
19	Arterial	2,461,200	4,661,500	2,200,300
20	Community Radial	2,415,900	5,699,500	3,283,600
29x	Express	180,600	481,500	300,900
30x	Express	0	147,000	147,000
50	Arterial	1,523,200	4,248,200	2,725,000
56	Community Radial	183,100	0	(183,100)
64x	Express	114,400	163,800	49,400
76	Community Radial	837,100	0	(837,100)
77	Community Radial	791,300	0	(791,300)
78	Community Radial	1,085,500	2,512,200	1,426,700
79	Community Radial	815,500	2,843,800	2,028,300
82x	Express	88,800	246,300	157,500
86	Circulator/Feeder/Connector	689,900	0	(689,900)
87	Community Radial	1,383,500	3,143,100	1,759,600
88	Circulator/Feeder/Connector	462,100	0	(462,100)
91	Circulator/Feeder/Connector	1,381,000	3,188,700	1,807,700
92	Community Radial	0	2,697,700	2,697,700

Route	Classification	Operating Cost (FY 2022)	Operating Cost (Projected FY 2034)	Net Change
93	Circulator/Feeder/Connector	331,600	0	(331,600)
95x	Express	201,100	312,500	111,400
Airport Express	Express	0	2,127,600	2,127,600
Total		\$51,217,900	132,239,200	81,021,300

5.3.2. Revenue Changes

REVENUE SOURCES

Federal, state, and local funds are expected to be the main contributors to GRTC’s revenue during the proposed service expansion. GRTC has identified several federal programs administered by the FTA, FHWA, and USDOT that may be used to support the agency’s operating expenses. At the state level, GRTC will look to DRPT, CVTA, and VDOT among other entities to secure the necessary funding. A more detailed analysis of potential funding sources can be found in **Table 5-1** and **Table 5-2**.

Should federal, state, and local funds fail to materialize, GRTC will consider other sources such as corporate sponsorships to supplement operating expenses. In 2018, GRTC established a naming rights agreement with Bon Secours Richmond Health System and VCU Health System. The agreement gives the partners joint sponsorship rights of GRTC Pulse and allows \$6.4 million in revenue over 15 years to GRTC. GRTC believes establishing relationships with corporate sponsors can provide support for its operating expenses, especially those associated with service expansion.

OTHER CONSIDERATIONS

FARE-FREE SERVICE

Currently, GRTC is operating all fixed routes and paratransit rides for free. GRTC secured grant funding from DRPT which ensured the fare free policy until June 30, 2025. More grant funds would need to be secured to keep the policy intact although the agency does not anticipate re-introducing fares to fund new operating expenses associated with the service expansion.

AGREEMENT WITH VIRGINIA COMMONWEALTH UNIVERSITY

GRTC has an agreement with Virginia Commonwealth University (VCU) to provide unlimited service for its students and employees. Due to the agency’s fare-free policy, there are no regional agreements with other transit agencies at this time.

FINANCIAL RESERVES

GRTC has reserves that are used for multiple activities including operations. In planning for future service expansion, GRTC has created a reserve designated to support the increased service. This reserve can be used for any shortfalls that may appear.

GRTC Transit Strategic Plan

Appendix A: Agency Profile and System Overview

June 17, 2024

Contents

A.1.	History	A-1
A.2.	Governance	A-2
A.2.1.	Type of Governance	A-2
A.2.2.	Governing Body	A-2
A.2.3.	Current Members and Terms	A-2
A.2.4.	Advisory Committees	A-3
A.3.	Organizational Structure	A-5
A.3.1.	Organizational Charts	A-5
A.3.2.	Contracted Transportation Services	A-8
A.3.3.	Labor Unions Representing Agency Employees	A-8
A.4.	Services Provided and Areas Served	A-9
A.4.1.	Areas Served	A-9
A.4.2.	Peak Vehicle Requirements for Service Types	A-9
A.4.3.	Services Provided with Funding and/or Oversight Partnerships	A-9
A.4.4.	Infrastructure Used to Access the Transit System	A-9
A.4.5.	Transit Service and ADA Compliance	A-10
A.4.6.	Bus Stop and Shelter Placement Guidelines	A-11
A.4.7.	Travel Training Programs	A-12
A.4.8.	Additional Transportation Services Impacting Transit and Connections	A-12
A.4.9.	Recent Public Outreach	A-12
A.5.	Fare Structures, Payments, and Purchasing	A-13
A.5.1.	GRTC Zero Fare	A-13
A.5.2.	Single Fare	A-13
A.5.3.	Discounted or Multi-Ride Fares/Passes	A-13
A.5.4.	Changes in Fares Since Previous TDP and Reasoning	A-14
A.5.5.	Transfer Agreements	A-14
A.5.6.	Customer Payment Methods and Fare Media Purchase Locations	A-14
A.6.	Transit Asset Management - Existing Fleet and Facilities	A-15
A.6.1.	Facilities and Fleet	A-15
A.6.2.	Maintenance, Storage, And Parking Facilities	A-15
A.6.3.	Guideways	A-16
A.6.4.	Fueling and Electric Charging Stations	A-18
A.6.5.	Electrification and Zero-Emissions Plans	A-18
A.7.	Transit Security Program	A-19
A.7.1.	System Security and Emergency Preparedness Plans	A-19
A.7.2.	Fare Inspection	A-19
A.7.3.	Security Features on Vehicles	A-20
A.7.4.	Security Features at Transit Stations and Facilities	A-20
A.7.5.	Security Training Programs and Drills/Exercises	A-20
A.7.6.	Public Awareness Programs and Campaigns	A-21
A.8.	Intelligent Transportation Systems (ITS) Programs	A-22

A.8.1.	Computer Aided Dispatch (CAD) and Automatic Vehicle Locator (AVL) Systems ...	A-22
A.8.2.	Automatic Vehicle Monitoring (AVM).....	A-22
A.8.3.	Automatic Passenger Counters (APC).....	A-22
A.8.4.	Traffic Signal Priority (TSP) System.....	A-22
A.8.5.	On-Board Cameras	A-22
A.8.6.	Trip Planner.....	A-23
A.8.7.	Scheduling and Run Cutting Software.....	A-23
A.8.8.	Maintenance, Operations, and Yard Management Systems	A-23
A.8.9.	Information Displays.....	A-23
A.8.10.	Real-Time Arrival and Mobile Information	A-24
A.9.	Data Collection and Ridership/Revenue Reporting Method	A-25
A.9.1.	Electronic Registering Fareboxes.....	A-25
A.9.2.	Automatic Passenger Counters (APC) Calibration/Validation Status.....	A-25
A.9.3.	Manual Count Including Free Fares	A-25
A.9.4.	Scheduling Software.....	A-25
A.9.5.	Accounting/Payroll Systems	A-26
A.9.6.	Mobile Data Terminals (MTD) for Demand Response Services	A-26
A.9.7.	Automatic Vehicle Locator (AVL) System	A-26
A.9.8.	Odometer Readings or Driver Logs for Mileage and Hours.....	A-26
A.9.9.	Operating Expense and Revenue Data	A-27
A.9.10.	Webgrants Performance Data Submission	A-27
A.9.11.	National Transit Database (NTD) Submission Practices	A-27
A.9.12.	Agency Accountability and Financial Audit	A-27
A.10.	Coordination with Other Transportation Service Providers	A-29
A.11.	Current Initiatives.....	A-31
A.11.1.	West Broad St BRT Corridor Analysis.....	A-31
A.11.2.	Malvern Avenue Pulse Infill Station.....	A-31
A.11.3.	North-South BRT Corridor Study	A-31
A.11.4.	Essential Transit Infrastructure Plan	A-31
A.11.5.	Richmond Region Micro-transit Pilot Program and Micro-transit Implementation Plan	A-31
A.11.6.	New Downtown Transfer Station.....	A-32
A.11.7.	East End Transfer Hub Site Selection	A-32
A.11.8.	Regional Public Transportation Plan	A-32
A.11.9.	Zero-Emission Vehicle Fleet Transition Plan	A-32

Figures

Figure A-1: GRTC History Timeline	A-1
Figure A-2: GRTC Executive Leadership Organizational Chart	A-5
Figure A-3: GRTC Chief of Staff Organizational Chart.....	A-6
Figure A-4: GRTC Finance and Administration Organizational Chart	A-6
Figure A-5: GRTC Operations Organizational Chart.....	A-7
Figure A-6: GRTC Development Organizational Chart	A-8
Figure A-7: GRTC Pass and CARE Ticket Vendor Locations 2019.....	A-14
Figure A-8: GRTC Guideways	A-17
Figure A-9: Vehicular Left-Turns Permitted on Median-Running Dedicated Guideway.....	A-18

Tables

Table A-1: Peak Vehicle Need, FY 2022	A-9
Table A-2: Bus Stop Spacing Standards by Service Area Type	A-11
Table A-3: GRTC Facilities	A-16
Table A-4: Coordination with Other Transportation Service Providers	A-29

A.1. History

Greater Richmond Transit Company (GRTC) has operated continuously since its founding as the Richmond Railway Company in 1860, apart from a service suspension during the Civil War. GRTC was the first public transit agency to use electric streetcars across its system. Starting in the 1930s, the streetcars began to be replaced by buses, with the last electric trolley to run on Richmond streets in December 1949. At that point, the former “trolley barn” at Robinson and Cary became a bus-only depot. In 1973, the Greater Richmond Transit Company was created as a new public service company after it was purchased from private ownership. The GRTC system of today remains primarily focused on the City of Richmond, however in 1989 it became jointly owned by the City and Chesterfield County and today also provides service to Henrico County and Petersburg. **Figure A-1** contains a timeline of GRTC’s history in more detail.

Figure A-1: GRTC History Timeline

1860 →	Richmond Railway Co. Organized
1888 →	Start of Electric Streetcar Operation
1925 →	Purchased by Virginia Electric and Power Co.
1945 →	Purchased by Virginia Transit Company
1949 →	Buses replace electric trolleys. Ten streetcars make their last run.
1962 →	Controlling interest gained by American Transportation Enterprises
1973 →	Incorporated as Greater Richmond Transit Company
1989 →	Chesterfield County purchases one-half interest
1997-98 →	CARE (Paratransit) and C-VAN (Employment) contracted service starts
2000 →	Rebranded as GRTC Transit System
2004 →	C-VAN service brought in-house
2007 →	CARE service brought in-house
2010 →	New facility at 301 East Belt Boulevard
2011 →	CARE service contracted to Keolis
2012 →	First CNG Vehicles added to CARE fleet; New CARE contract w/ MV Transportation
2014 →	David Green, new GRTC CEO; Temporary Transfer Plaza Opens
2015 →	New fare pass program
2016 →	Approval of Pulse BRT Project
2017 →	First Transit awarded paratransit services contract
2018 →	Broad St Pulse service begins
2020 →	GRTC goes zero-fare
2021 →	Early/late-night pilot on-demand service begins
2023 →	50 th anniversary and rebranded as GRTC
2023 →	Downtown Transfer Station opens to replace the Temporary Transfer Plaza

Since last TDP

A.2. Governance

A.2.1. Type of Governance

The Old Dominion Transit Management Company does business as Greater Richmond Transit Company and has two shareholders that own 50 percent of the company: the City of Richmond and Chesterfield County. GRTC shares do not hold any monetary value but indicate joint ownership of the agency. In 2022, Henrico County joined the board as a stakeholder member.

A.2.2. Governing Body

In 2022, GRTC's Board of Directors underwent a transformation, expanding from its original composition of six citizen-appointed members to nine members, thanks to the inclusion of Henrico County. Simultaneously, this change also opened the door for elected officials to join the Board of Directors. The City of Richmond, Chesterfield County, and Henrico County each have three members who serve on the Board. Each locality uses its own City Council or Board of Supervisors to elect the members to one-year terms.

A.2.3. Current Members and Terms

GRTC's Board members, their positions, and their terms are listed below:

J.E. Lincoln Saunders (Richmond), Director

Serving on the Board since April 2022, representing the City of Richmond shareholders, and bringing a wealth of knowledge in governmental operations, having served as the Chief Administration Officer for the City of Richmond since 2020. *Term expiring October 2024.*

Hon. Andreas Addison (Richmond), Vice Chair

Serving on the Board since October 2022, representing the City of Richmond shareholders, and bringing expertise in public engagement, enhancing government accountability, collaboration, and transparency. The Honorable Andreas Addison has served as the representative for the 1st District on the Richmond City Council since 2016. *Term expiring October 2024.*

Hon. Ellen Robertson (Richmond), Director

Serving on the Board since October 2022, representing the City of Richmond shareholders, and bringing expertise in community development. The Honorable Ellen Robertson has served as the representative for the 1st District on the Richmond City Council since 2003. *Term expiring October 2024.*

Hon. Jim Ingle (Chesterfield), Director

Serving on the Board since April 2022, representing Chesterfield County, and bringing expertise in project management and construction. The Honorable Jim Ingle has served as the representative for the Bermuda District on the Chesterfield Board of Supervisors since 2020. *Term expiring October 2024.*

Barbara K. Smith (Chesterfield), Secretary/Treasurer

Serving on the Board since October 2022, representing Chesterfield County, and bringing expertise in transportation; serving as the Director of Transportation for Chesterfield County. *Term expiring October 2024.*

Dave Anderson (Chesterfield), Director

Serving on the Board since October 2022, representing Chesterfield County shareholders and bringing expertise in planning and development services; serving as an instrumental part of Timmons Group's land development practice. *Term expiring October 2024.*

Todd Eure (Henrico), Director

Serving on the Board since April 2022, representing Henrico County shareholders and bringing expertise in transportation planning; serving as the assistant director of transportation and development for Henrico County. *Term expiring October 2024.*

Hon. Tyrone Nelson (Henrico), Board Chair

Serving on the Board since April 2022, representing Henrico County shareholders, and bringing expertise in community involvement and coalition building, having served as Senior Pastor of Sixth Mount Zion Baptist church for almost 20 years. The Honorable Tyrone Nelson has served as the Varina Magisterial District representative on the Henrico Board of Supervisors since 2011. *Term expiring October 2024.*

Hon. Daniel Schmitt (Henrico), Director

Serving on the Board since April 2022, representing Henrico County shareholders, and bringing expertise in finances and business management as a business owner who employs thousands in central Virginia. The Honorable Daniel Schmitt has served as the Brookland Magisterial District representative on the Henrico Board of Supervisors since 2018. *Term expiring October 2024.*

A.2.4. Advisory Committees

GRTC's Board has created committees which help to facilitate monthly Board meetings. Each committee has five members from the Board of Directors, and a non-voting senior staff liaison who assists with technical support. A quorum is met when two directors are present. Committees nominate and elect a Committee Chair that is responsible for the committee's agenda and communicating with the staff liaison. The Committee Chair reports the Committee's discussions and recommendations to the Board of Directors. The list of committees, their members, and their purpose follows below.

Finance Committee

The Finance Committee is responsible for advising the Board of Directors on all financial matters and overseeing financial activities undertaken by the Board. Finance Committee members include:

- Hon. Tyrone Nelson (Henrico)
- Hon. Daniel Schmitt (Henrico) - Vice Chair
- Hon. Jim Ingle (Chesterfield) - Chair
- Lincoln Saunders (Richmond)
- Hon. Andreas Addison (Richmond)

Operations Committee

The Operations Committee is responsible for reviewing systemwide transit operations and key operational performance metrics. Operations Committee members include:

- Barbara Smith (Chesterfield)
- Hon. Ellen Robertson (Richmond) - Chair
- Todd Eure (Henrico)
- Hon. Daniel Schmitt (Henrico)
- Dave Anderson (Chesterfield) - Vice Chair

Development Committee

The Development Committee provides performance updates to the Board on key system performance metrics and recommends all major service changes and infrastructure prioritization, selection, and programming matters. Development Committee members include:

- Hon. Andreas Addison (Richmond) - Vice Chair
- Barbara Smith (Chesterfield) - Chair
- Dave Anderson (Chesterfield)
- Todd Eure (Henrico)
- Hon. Ellen Robertson (Richmond)

A.3. Organizational Structure

A.3.1. Organizational Charts

GRTC has four main organizational teams: Executive Leadership, Finance and Administration, Operations, and Development (**Figure A-2**). The Executive Leadership team is led by the Chief Executive Officer, Sheryl Adams. The Chief of Staff, Chief Financial & Administrative Officer, Chief Operating Officer, Chief Development Officer, and the Executive Admin all report to the Chief Executive Officer. The Chief of Staff oversees Business/Public Involvement, Special Projects, Comms and Marketing, and Equitable, Innovative, and Legislative Policy (**Figure A-3**).

Figure A-2: GRTC Executive Leadership Organizational Chart

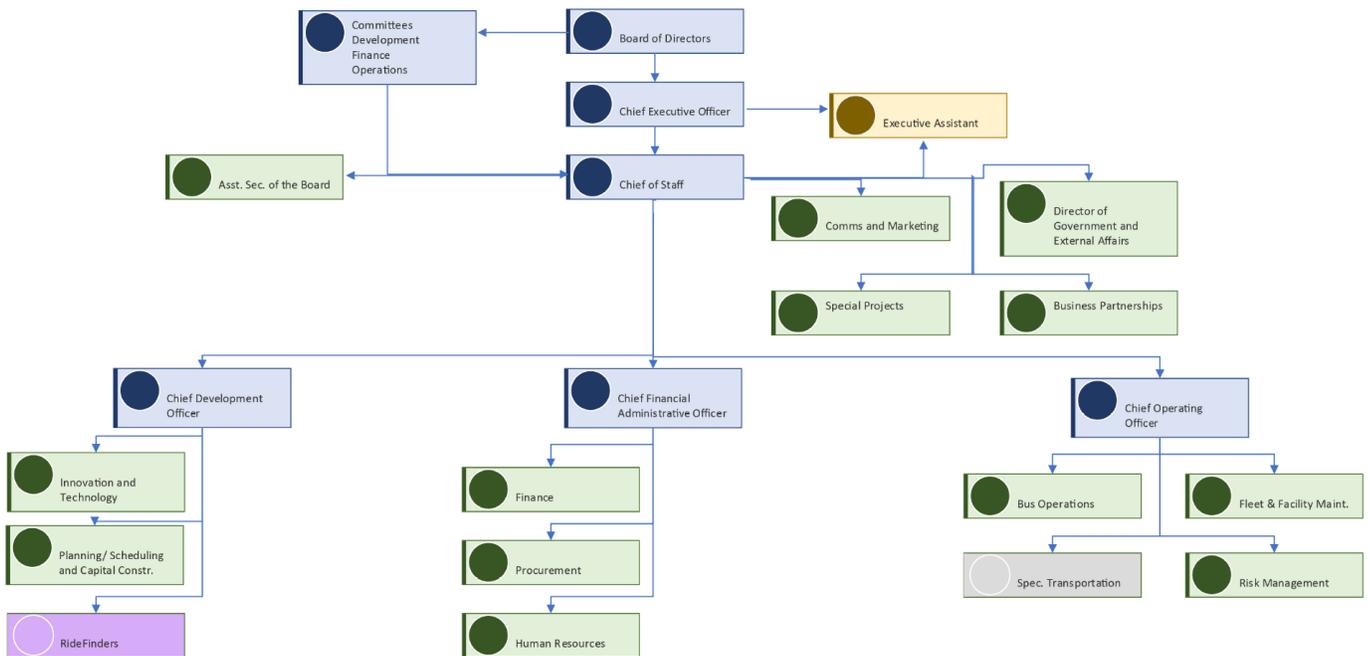
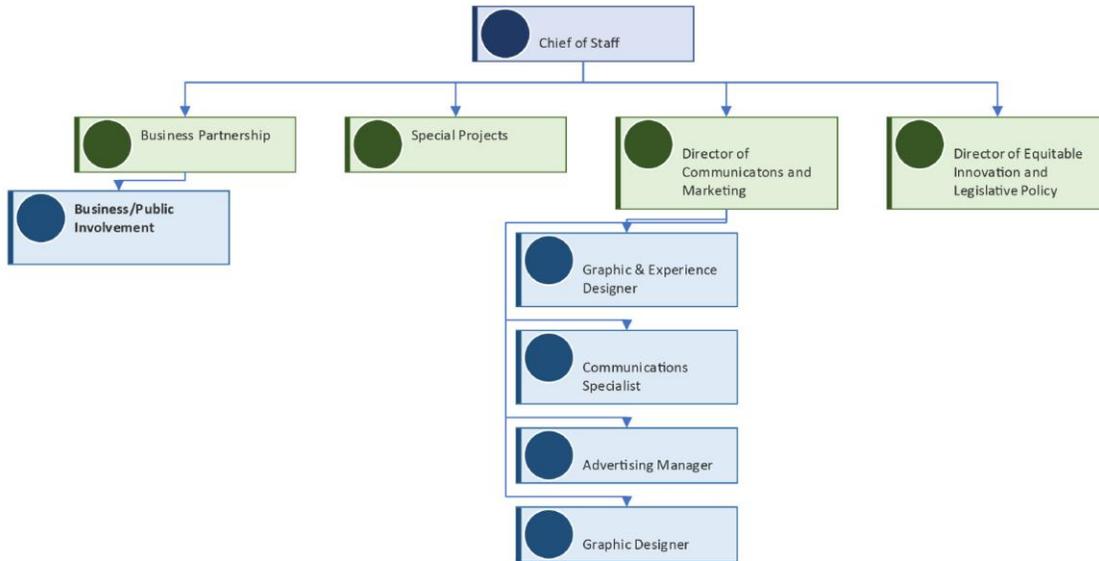
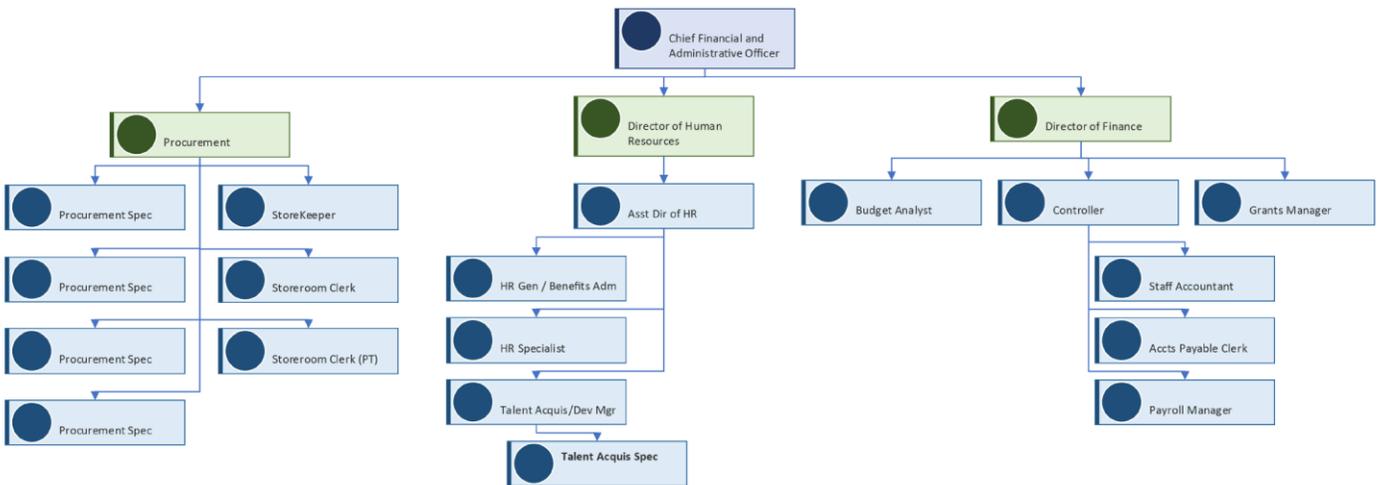


Figure A-3: GRTC Chief of Staff Organizational Chart



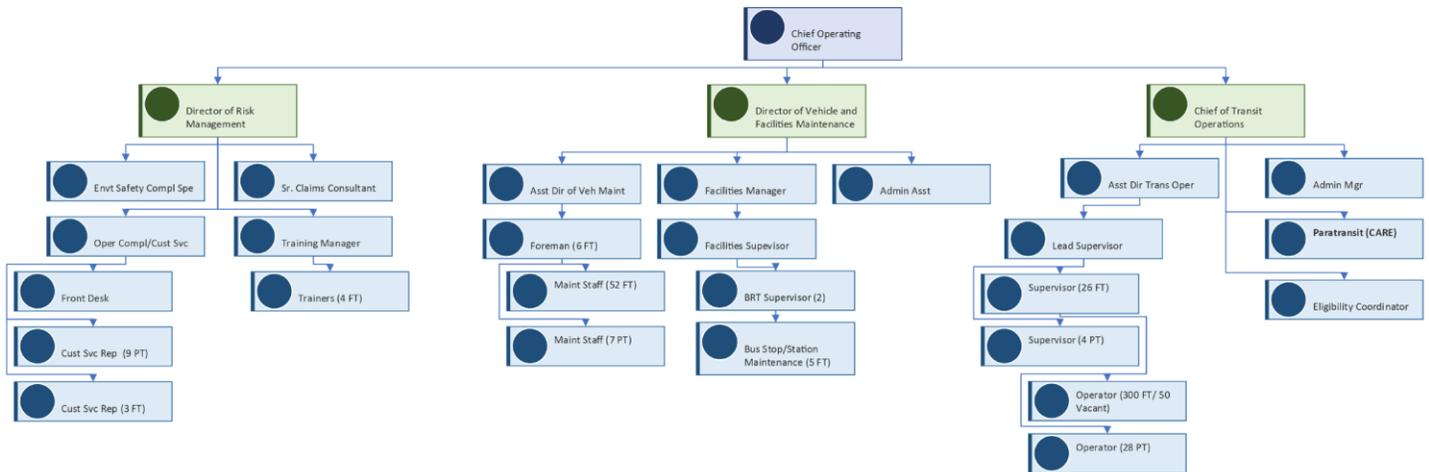
The Chief Financial & Administrative Officer leads the Finance and Administration team (**Figure A-4**), which is comprised of three main teams: Finance, Procurement, and Human Resources. Reporting into the Finance team are the Grants Manager, the Controller, and the Budget Analyst. The Staff Accountant, Accounts Payable Clerk, and Payroll Manager report to the Controller. Within the Procurement organization, staff report to the head of Procurement. Finally, the Human Resources team is led by the Director of Human Resources under whom the Assistant Director of HR serves.

Figure A-4: GRTC Finance and Administration Organizational Chart



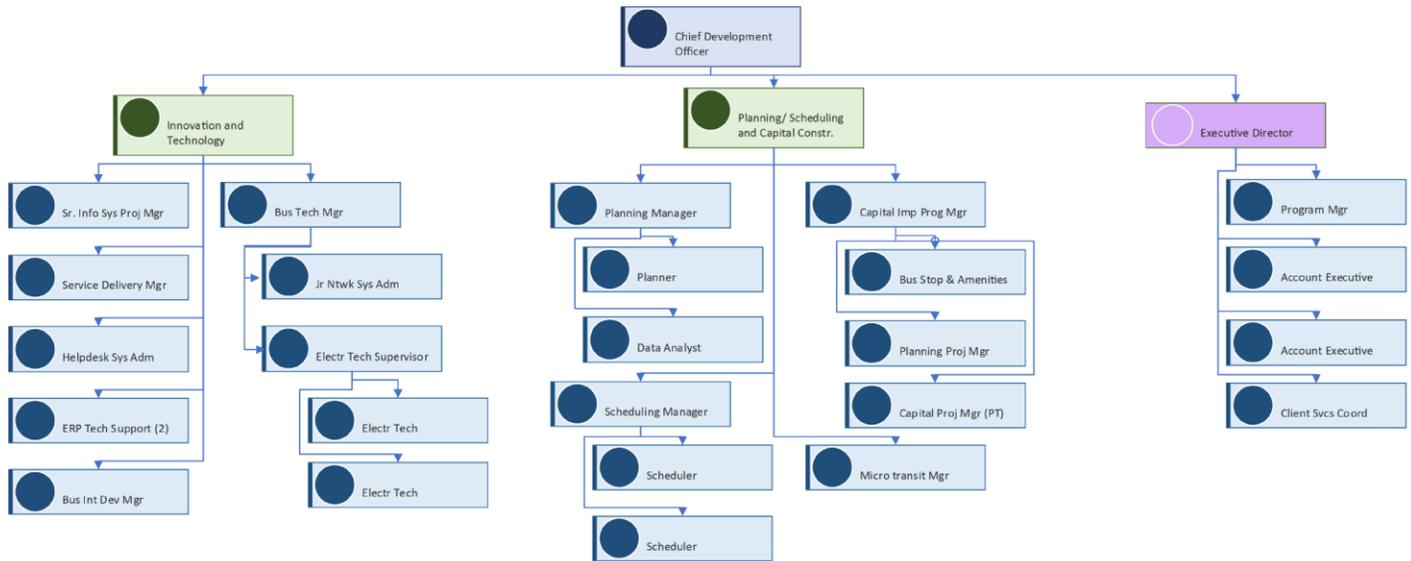
The Operations team (**Figure A-5**) is led by the Chief Operating Officer. The three departments that report to the Chief Operating Officer are Risk Management, Vehicle and Facilities Maintenance, and Transit Operations. For the Risk Management team, the head of Safety Compliance, the Senior Claims Consultant, the head of Operations Compliance, and the head of Operator Training each report to the head of the department. Reporting to the Head of Maintenance are the Assistant Maintenance Director, Maintenance Administration, and the Facilities Manager. Within the Transit Operations team, the Chief of Transit Operation oversees the Assistant Director of Transit Operations, the Administrative Manager, Paratransit, and the Eligibility Coordinator.

Figure A-5: GRTC Operations Organizational Chart



The Chief Development Officer leads the Development team (**Figure A-6**). Reporting to the Chief Development Officer are the head of Planning/Scheduling and Capital Construction, the head of Ride Finders, and the head of Innovation and Technology. The Capital Programs Manager, Scheduling Manager, Planning Manager, and Microtransit Manager report to the head of Planning/Scheduling.

Figure A-6: GRTC Development Organizational Chart



A.3.2. Contracted Transportation Services

GRTC has several contracted transportation services, where the agency utilizes an outside firm to provide service. GRTC has a contract with National Express to run its CARE and CARE Plus services. The contract is effective from October 2022 for five years and includes two one-year options. For its CARE On-Demand service, GRTC has a month-to-month contract with UZURV. GRTC is currently in the request-for-proposal (RFP) stage for bidding out this contract.

A.3.3. Labor Unions Representing Agency Employees

There is a labor agreement between Amalgamated Transit Union Local 1220 and Old Dominion Transit Management Company. The agreement is effective from October 1, 2023, to September 30, 2026.

A.4. Services Provided and Areas Served

A.4.1. Areas Served

The Greater Richmond Transit Company (GRTC) serves the City of Richmond, Henrico County, and parts of Petersburg and Chesterfield County.

A.4.2. Peak Vehicle Requirements for Service Types

Table A-1 summarizes GRTC’s peak vehicle need by service type.

Table A-1: Peak Vehicle Need, FY 2022

Service Type	Peak Vehicle Need
Fixed-Route Bus	98
BRT	9
CARE and CARE Plus	40
Total	147

A.4.3. Services Provided with Funding and/or Oversight Partnerships

GRTC was awarded \$8 million in state grant funding through the Virginia Department of Rail and Public Transportation’s (DRPT) Fare Free Transit Incentive Ridership Program (TRIP) program to study the impact of offering zero-fare rides. The study began in July 2022 and will continue through June 2025. Funding is awarded through a step-down funding model by the state (80/60/30) with a required local match. Local funding is matched through partnerships with VCU and the City of Richmond. GRTC plans to obtain additional partnership support to sustain the program once the DRPT grant funding ends. The GRTC board has approved zero-fare service through June 30, 2024, with plans to reevaluate the zero-fare model annually.

In December 2022 GRTC was awarded over \$4 million in funding from TRIP to fund a microtransit pilot program. The pilot program will last three years and create three microtransit zones for riders in Chesterfield County and Henrico County. Two other microtransit zones, in Powhatan and Ashland, are funded through a demonstration grant from DRPT for one year and are subsidized with COVID-19 relief funding from the American Resue Plan Act (ARPA) of 2021. Microtransit service will help connect riders to GRTC’s fixed-route services.

A.4.4. Infrastructure Used to Access the Transit System

ESSENTIAL TRANSIT INFRASTRUCTURE

GRTC’s Essential Transit Infrastructure (ETI) Plan details the infrastructure placed at system stops, such as benches, trash receptacles, and shelters, among others. The ETI Plan is intended to improve riders’

experience with the transportation system by facilitating accessibility, comfort, convenience, safety, and providing dignity.

Landing pads are leveled surfaces located at bus stops that provide a location for riders to wait for the bus. GRTC's policy is to install larger landing pads when feasible. Trash cans are another example of ETI for the GRTC system but are not provided at every stop. Seating options provided include benches and lean rails. GRTC stops may also include ad walls and map cases to display information about the system. A GRTC stop can also include an eclipse shelter with an optional LED solar lighting kit.

GRTC has 1,609 stops that are in active use, spanning its 216 square mile service area. ETI conditions vary across the system's stops. Presently, 26 percent of stops have a bench or shelter but less than 50 percent have ADA compliant landing pads. GRTC has numerous goals to improve its ETI. Its two initial goals are to have a shelter or seating present at 75 percent of stops by 2027, and coordinate with jurisdictions to improve ADA compliance at bus stops. Between 2022 and 2027, GRTC aims to install 160 bus shelters, and between 225 and 627 benches based on several potential funding scenarios. GRTC plans to improve landing pads as it simultaneously improves ETI at stops.

ACCESSING PULSE STATIONS

There are two types of Pulse stations: curbside and in the middle of the road at signalized intersections. Nine of the stations are located on the curbside, five are median. There are eastbound and westbound platforms at every station, except at each end of the line where only one platform is needed. The stations generally look the same and have the same amenities: benches and lean rails; shelter from the elements; emergency call boxes; bike parking; real-time arrival signage and announcements; informational signage; and accessibility for individuals with disabilities and bicycles. Each station has a tall totem with the name of the location and the direction of travel.

To access a curbside station, riders follow the sidewalk up the ramp onto the station platform. Some stations are walk-through stations on the sidewalk, where general pedestrians will pass-through, while other stations are on wider sidewalks, permitting pedestrian flow either through or behind the station. To access a median station, riders push the pedestrian button and wait for the pedestrian crossing signal and then can cross from the curb into the median. Half-way through the crossing, riders enter the protected pedestrian ramp onto the station platform.

GRTC advises riders not to access a median platform by crossing lanes of traffic without the right-of-way or jumping the railing or walking down the median. GRTC also advises people to not ride bicycles onto or through a station. Bus-only curb lanes are shared with bikes.

BIKE ACCESS TO GRTC SERVICES

GRTC provides instructions for riders to use bus bike racks on the GRTC website.¹ Regular buses have room for two bikes and the Pulse buses have room for three bikes. GRTC also provides bike parking at Pulse stations, with other bike parking available at and near various stops around the region.

A.4.5. Transit Service and ADA Compliance

GRTC employs Americans with Disabilities Act (ADA) compliant origin-destination service through its CARE (Community Assisted Ride Enterprise) service. GRTC's paratransit fleet is comprised of 88 vans and eight sedans. The agency has a contract with National Express Transit, and its sub-contractor, UZURV, to operate

¹ <http://ridegrtc.com/need-help/how-to-use-bike-racks/>

paratransit services with GRTC’s vans. CARE and CARE Plus provide service to persons with disabilities that may not be able to utilize fixed-route services. GRTC provides curb-to-curb service and helps passengers who require assistance beyond the curb. Riders who are 80 years old and older can apply for an ADA paratransit ID card. A CARE ID card allows riders to utilize fixed-route service free of charge. However, GRTC fixed-routes are currently zero-fare for all riders.

GRTC’s fixed-route vehicles are equipped with wheelchair lifts and bus operators are trained to provide assistance to individuals with disabilities. CARE rides can be scheduled through the GRTC site and mobile application, by phone call, voicemail, email, and fax.

GRTC’s CARE service operates from 5:00 am to 1:00 am for Richmond residents, from 6:00 am to 8:00 pm for Richmond residents traveling to Henrico County, and from 6:00 am to 11:00 pm for Henrico County residents. CARE operates within ¾ of a mile from GRTC’s fixed-route bus routes. CARE Plus operates from 6:00 am to 8:00 pm for Richmond residents, and from 6:00 am to 11:00 pm for Henrico County residents. The CARE Plus service operates beyond ¾ of a mile from GRTC routes or if the trip destination is located in Henrico County when fixed-route service is not running.

GRTC also offers its CARE On-Demand service in partnership with UZURV. CARE On-Demand allows riders who qualify for CARE rides to book a same-day, direct, non-stop trip. Riders must schedule their trip at least two hours in advance. Trips that are booked further in advance can offer riders greater trip flexibility. Rides can be booked as far in advance as 30 to 90 days. Riders must present their CARE ID when booking trips and riding.

A.4.6. Bus Stop and Shelter Placement Guidelines

Stop spacing standards help to distribute stops at a reasonable distance from each other, balancing the need to serve passengers with regular and easily accessible stops with the need to be efficient in the provision of stops. More stops can also negatively impact the speed of the service. The bus stop spacing standards in **Table A-2** are organized by service area type, which is preferable to defining spacing by route type, because a route can travel through different area types and have different needs for stop spacing based on the changing surrounding land uses.

Table A-2: Bus Stop Spacing Standards by Service Area Type

Service Area Type	Distance Between Stops (Feet)	Stops per Mile
Core	900-1,200	5
Urban	600-1,200	4-5
Suburban	600-2,500	Varies*
Rural	600-2,500	Varies*

* In suburban and rural areas, the predominant factor affecting stop spacing and location is the ability to find safe locations for accessing stops from the street and by crossing the street. Stop spacing can be closer in these areas while not reducing average bus speeds because the lower density of activity typically means that most stops will not have riders waiting during every trip.

See **Section A.4.4: Infrastructure Used to Access the Transit System** for information about GRTC’s Essential Transit Infrastructure Plan which describes GRTC’s plan for adding landing pads, shelters, benches, and trash cans to stops.

A.4.7. Travel Training Programs

GRTC provides several travel training programs to follow GRTC's bus routes for customers aged 15 and older. Travel trainings for GRTC focus on teaching riders how to utilize public transit services safely and independently. GRTC's travel training programs are free.

GRTC offers the following travel training programs: Basic Bus Orientation, Personal Mobility Device Familiarization, and One-on-One training. More information is available on GRTC's website.²

A.4.8. Additional Transportation Services Impacting Transit and Connections

To better connect commuters to their jobs, GRTC operates its vanpool service through RideFinders. The vanpool service matches commuters traveling 25 miles or more with rented vans for their commute. Each van can transport up to 15 passengers. Monthly fares vary depending on the size of the commuting group and the distance to their destination.

The Virginia Department of Rail and Public Transportation (DRPT) operates a pilot program called Commute!VA Ride Home Reward, which provides emergency rides home for commuters that have used carpool, transit, or vanpool five times within the last 30 days.

Riders that are not eligible for the Commute!VA Ride Home Reward program can participate in the RideFinders Emergency Ride Home program, which reimburses riders for any rental car, rideshare, taxi, or train ride instead of their typical bikeshare, carpool, transit, or vanpool service.

Additionally, Virginia Commonwealth University (VCU) operates its own transportation system called in Richmond called RamRide, which shuttles students around the VCU campus.

A.4.9. Recent Public Outreach

ROUTE 1A OUTREACH AND EXTENSION

GRTC's marketing team devised marketing plans to educate the public on the planned route extension along Midlothian Turnpike. Marketing efforts included producing an educational commercial that aired for two months on local broadcast stations. Direct mailers were sent to residents along the route. A "Meet The Bus" event at Chesterfield Towne Center was held where GRTC team members spoke with residents of the county and passed out marketing materials.

LINK MICROTRANSIT

GRTC launched four of its five proposed on-demand microtransit zones: Azalea, Clover Dale, Ashland, and Powhatan. The GRTC marketing team worked closely with each county to establish a working relationship, sharing marketing materials with each county. Outreach efforts were conducted in each of the zones to drive engagement with the public. Each zone's engagement efforts also included branded microtransit vehicles that increase public awareness. Outreach efforts are still ongoing currently. A targeted campaign was launched with help from Charles Ryan Associate firm to reengage members of the public living in the microtransit zones.

² <http://ridegrtc.com/services/travel-training-program/>

A.5. Fare Structures, Payments, and Purchasing

A.5.1. GRTC Zero Fare

GRTC stopped collecting fares on March 19, 2020, in response to the COVID-19 pandemic. No fares are being collected at this time. CARE On-Demand is currently the only GRTC service that collects fares in order to provide its direct, non-stop, door-to-door paratransit service through UZURV, the service's mobility provider. Rides for CARE On-Demand can be booked within two hours of the pickup time.

A.5.2. Single Fare

GRTC stopped collecting fares on March 19, 2020, in response to the COVID-19 pandemic. No fares are being collected at this time, except for the CARE On-Demand service.

The following one-ride fares were in place before GRTC became zero-fare:

- Local routes and PULSE service: \$1.50
- Henrico Express routes: \$2.00
- Petersburg Extended Express routes: \$3.50
- Extended Express Chesterfield 82: \$6.00.

A.5.3. Discounted or Multi-Ride Fares/Passes

GRTC stopped collecting fares on March 19, 2020, in response to the COVID-19 pandemic. No fares are being collected at this time, with the exception of CARE On-Demand.

The following passes and reduced fares were in place before GRTC became zero-fare:

- One-Day Passes
 - Local Routes and PULSE: \$3.50
 - Express Henrico routes: \$4.50
 - Petersburg Extended Express routes: \$7.00
 - The Extended Express Chesterfield 82 does not offer a one-day pass.
- Seven-Day Passes
 - Local Routes and PULSE costs: \$17.50
 - Express Henrico routes: \$22.50
 - Petersburg Extended Express: \$35.00
 - Extended Express Chesterfield 82: \$65.00.
- Thirty-Day Passes
 - Local Routes and Pulse: \$60.00
 - Express Henrico routes: \$80.00
 - The Petersburg Extended Express and the Extended Express Chesterfield 82 routes do not offer thirty-day passes.
- Free or reduced fares (depending on the service type) were available to seniors, people with disabilities, Medicare recipients, and minors.

A.5.4. Changes in Fares Since Previous TDP and Reasoning

GRTC stopped collecting fares on March 19, 2020, in response to the COVID-19 pandemic. No fares are being collected at this time, with the exception of the CARE On-Demand service.

A.5.5. Transfer Agreements

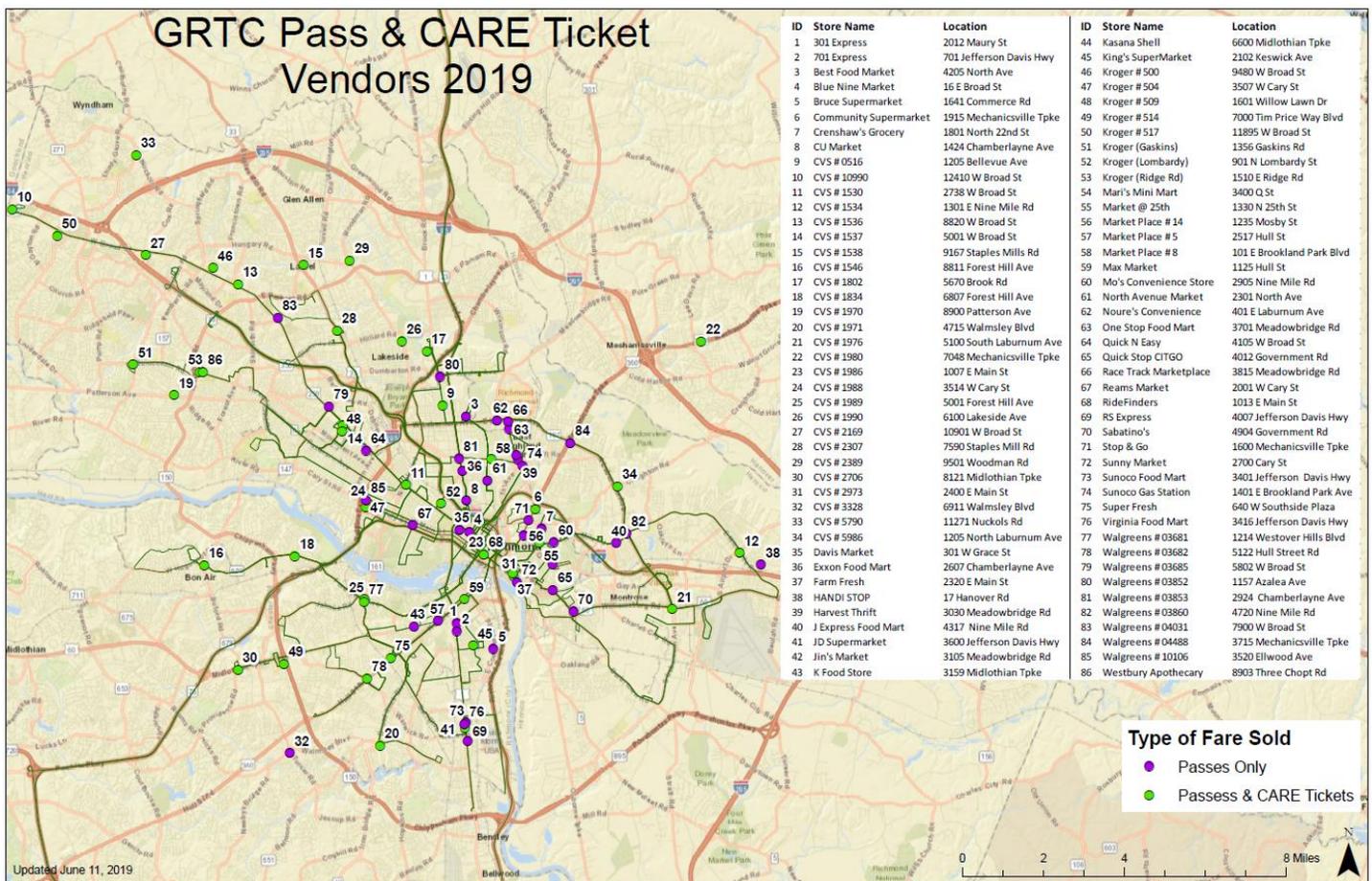
GRTC does not have any transfer agreements with other transit systems.

A.5.6. Customer Payment Methods and Fare Media Purchase Locations

GRTC stopped collecting fares on March 19, 2020, in response to the COVID-19 pandemic. No fares are being collected at this time, except for the CARE On-Demand service. CARE On-Demand accepts credit and debit cards for payment but does not accept CARE tickets or cash.

Before zero-fare service, GRTC fare media could be purchased at 86 locations in the greater Richmond area. Some locations exclusively sold GRTC passes, while others sold both GRTC passes and CARE tickets. **Figure A-7** shows all locations where fare media were available for purchase:

Figure A-7: GRTC Pass and CARE Ticket Vendor Locations 2019



A.6. Transit Asset Management - Existing Fleet and Facilities

A.6.1. Facilities and Fleet

Per GRTC's 2021 TAM Plan, the agency has 820 capital assets, which fall under one or more of the following categories:

- A revenue vehicle
- A non-revenue or support vehicle
- Worth \$50,000 or more in acquisition value
- A component of a facility
- A piece of facility equipment worth \$10,000 or more or that is integral to the function of the facility or considered mission critical
- A component of a bus stop or transit center.

Though fleet quantities may change throughout the course of a year due to retirement or receipt of new vehicles, GRTC's revenue fleet totals 44 percent of GRTC's capital assets, and is comprised of 157 buses, 88 vans and cutaways, and eight sedans. The revenue fleet is the largest asset class for GRTC. The second largest asset class is GRTC's facilities and equipment, totaling 39 percent of the agency's assets. The remaining 15 percent of GRTC's capital assets are made up by stations (nine percent) and systems (six percent).

To determine facility conditions, GRTC assesses its facilities at least once every four years, using a scale of 1-Poor to 5-Excellent. Facility assets are considered to be in a State of Good Repair (SGR) if they earn a score of 3 or higher. GRTC assigns a vehicle condition by comparing its age to its Useful Life Benchmark (ULB). GRTC uses FTA's definition of ULB to assign vehicle conditions.

Using FTA's Transit Economic Requirements Model (TERM) Lite tool, GRTC calculates its facility and vehicle replacement needs over the next 10 years. Needs are determined by GRTC's asset inventory and lifecycle plans.

A.6.2. Maintenance, Storage, And Parking Facilities

GRTC operates and maintains administrative, maintenance, vehicle storage, and passenger/parking facilities. GRTC defines facilities as individual buildings, unless they are smaller than 100 square feet, like a security shack, restroom, or storage shelter. The facilities are listed in **Table A-3**.

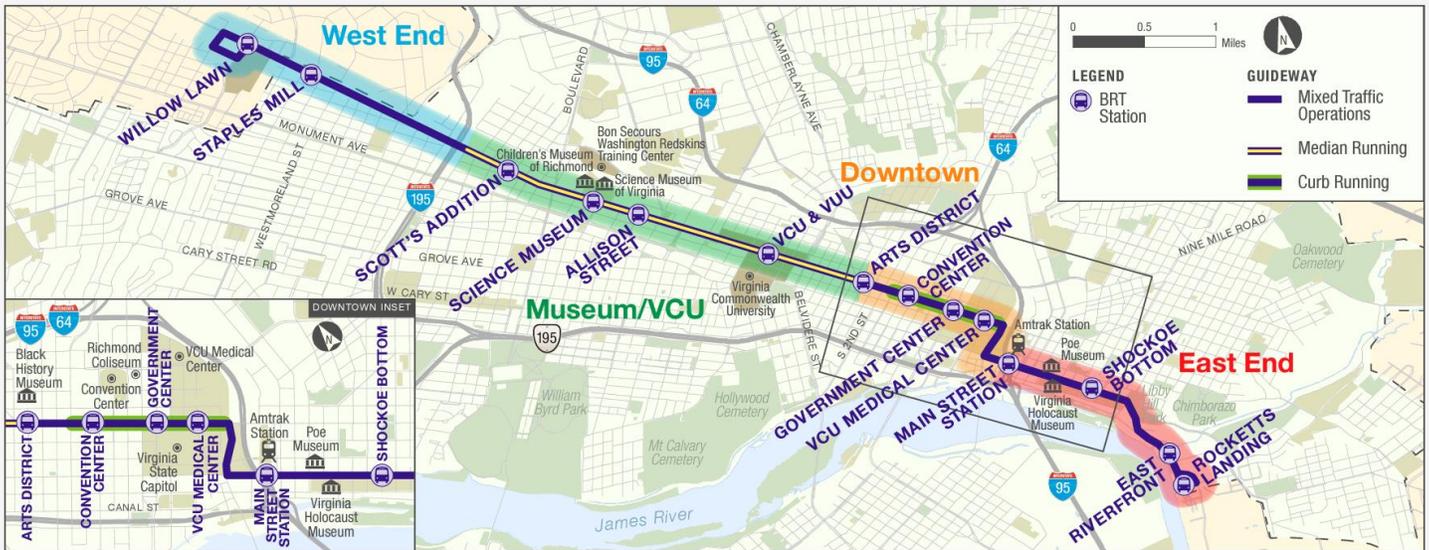
Table A-3: GRTC Facilities

Facility Type	Facility Name
Administrative/Maintenance Facilities	Admin Facility
	CNG Facility
	Maintenance Facility
Vehicle Storage	Church Annex
Passenger/Parking Facilities	Allison Street Pulse Station - EB
	Alliston Street Pulse Station - WB
	Convention Center Pulse Station - EB
	Convention Center Pulse Station - WB
	East Riverfront Pulse Station - EB
	East Riverfront Pulse Station - WB
	Government Center Pulse Station - EB
	Government Center Pulse Station - WB
	Main Street Station Pulse Station - EB
	Main Street Station Pulse Station - WB
	Rockett’s Landing Pulse Station - EB/WB
	Science Museum Pulse Station - EB
	Scott’s Addition Pulse Station - EB
	Scott’s Addition Pulse Station - WB
	Shockoe Bottom Pulse Station - EB
	Shockoe Bottom Pulse Station - WB
	Staples Mill Pulse Station - EB
	Staples Mill Pulse Station - WB
	VCU Medical Pulse Station Center - EB
	VCU Medical Center Pulse Station - WB
Willow Lawn - EB/WB	

A.6.3. Guideways

GRTC operates service on two different spans of dedicated guideway (**Figure A-8**). Between Thompson Street and Foushee Street (green on the map), the Pulse travels in dedicated lanes in the median. Running the bus in the center of the roadway helps minimize conflicts (i.e., reduces crash rates) with vehicles turning to/from side streets and private entrances, in addition to allowing parallel parking in this dense part of Broad Street. Dedicated lanes are also viewed as a traffic calming tool, allowing vehicles to adhere to the speed limit. In the downtown section of the corridor, from 4th Street to 14th Street (orange on the map), the Pulse and local buses operate in a dedicated lane along the curb. This improved bus lane functions like a shoulder-running bus lane and reduces conflicts between buses, general traffic, and pedestrians, increasing safety for all users.

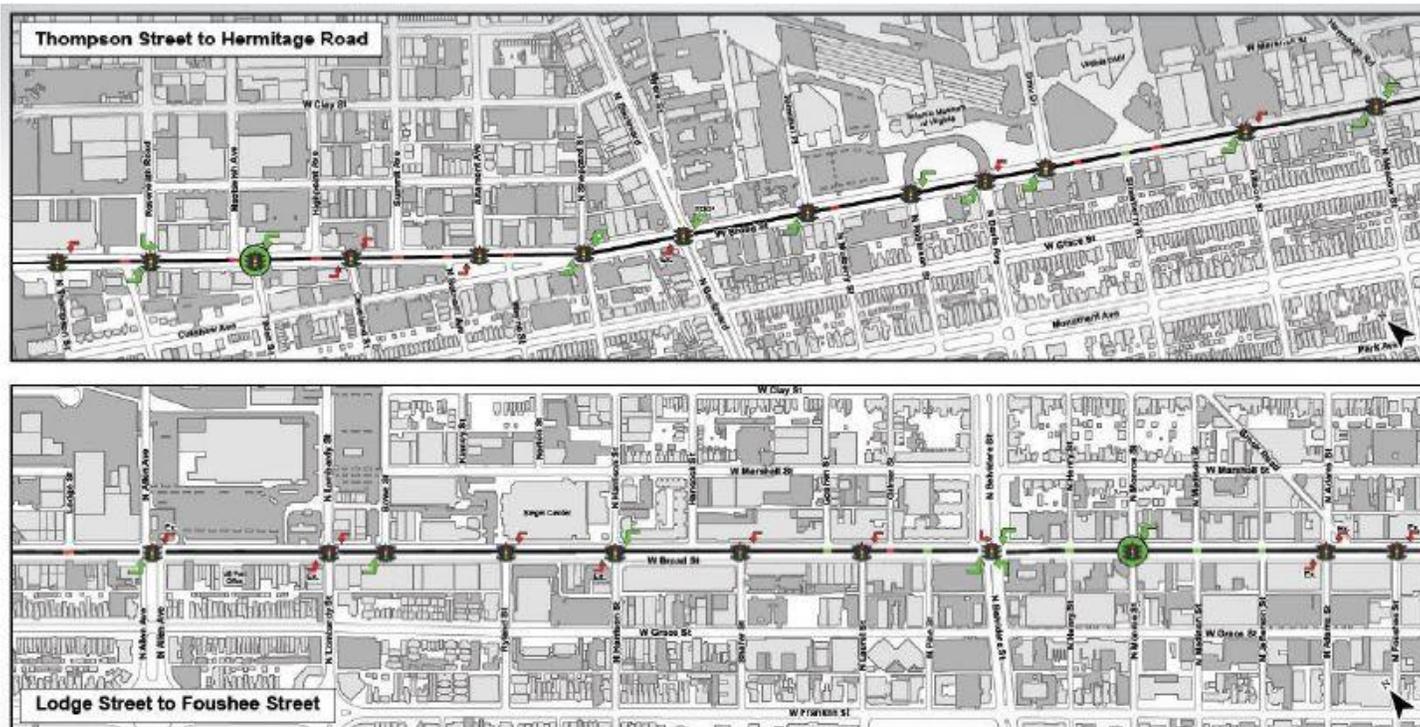
Figure A-8: GRTC Guideways



At appropriate median-running intersections, general traffic is allowed to enter the dedicated left turn lanes to turn, which increases safety by removing turning vehicles from the general traffic flow (**Figure A-9**). These permitted turns are:

- Eastbound left turn at Roseneath Road
- Westbound left turn at Tilden Street
- Eastbound and westbound left turns at Sheppard Street
- Westbound left turn at Boulevard (time-of-day restricted)
- Eastbound left turn at Terminal Place
- Westbound left turn at Robinson Street
- Eastbound left turn at Davis Avenue
- Eastbound left turn at DMV Drive
- Eastbound left turn at Allison Street
- Eastbound and westbound left turns at Hermitage Road/Meadow Street
- Eastbound left turn at Allen Avenue
- Eastbound left turn at Bowe Street
- Westbound left turn at Harrison Street
- Eastbound and westbound left turns at Belvidere Street
- Westbound left turn at Monroe Street

Figure A-9: Vehicular Left-Turns Permitted on Median-Running Dedicated Guideway



A.6.4. Fueling and Electric Charging Stations

GRTC began using compressed natural gas (CNG) vehicles in 2012. The agency has continued to transition its fleet from using diesel vehicles to CNG vehicles. As of 2017, about 54 percent of the fleet of revenue vehicles was comprised of CNG vehicles. The full transition from diesel vehicles to CNG vehicles is expected to be completed by 2025. GRTC opened its own CNG fueling station in 2014 which can fuel two vehicles at a time.

A.6.5. Electrification and Zero-Emissions Plans

GRTC is in the process of transitioning its fleet to zero-emission vehicles. GRTC began the process of developing its comprehensive Zero-Emission Vehicle Fleet Transition Plan in December 2022. The scope of the project is to develop an achievable comprehensive transition plan without the early retirement of existing and future-purchase internal combustion vehicles.

The project began with a needs assessment to gather information about current GRTC operations and future expansion plans. The next phase will be a technology evaluation which will predict the energy consumption per mile during every season and determine which routes could be delivered with the current capacity of zero-emission vehicles. The final phase will be an implementation plan which will include details on bus acquisition, facility improvements, cost estimates, and operator training.

A.7. Transit Security Program

A.7.1. System Security and Emergency Preparedness Plans

GRTC has an Emergency Response Plan (ERP) that is only to be implemented when a large number of people are facing actual or imminent danger. The purpose of the ERP is to deal with emergencies caused by natural or manmade hazards, protect the agency's facilities, and ensure a successful transition from normal operations to emergency operations and back to normal operations. GRTC's ERP utilizes a consistent format to categorize disaster types and responses.

The plan classifies emergencies in three types: natural (i.e., a natural disaster), accidental (e.g., a fire), and societal (e.g., civil disturbances). Geographically, emergencies are categorized as either a GRTC internal emergency, a community emergency, or a city, state or national emergency. The plan defines three levels of emergency severity: minor, major, and disaster. Finally, the need to evacuate is determined in three levels: Level I is a non-life-threatening event (e.g., a severe storm); Level II requires a partial evacuation (e.g., an evacuation from a building); and Level III requires an immediate evacuation due to a life-threatening event. In the event of an emergency, the appropriate emergency services, such as ambulance, police, fire department, or city personnel, will arrive to respond to the situation.

The Chief of Transit is the Emergency Response Coordinator (ERC) and is responsible for determining the type of emergency, the appropriate emergency response to follow, and when an emergency has ceased. The ERC directs the Emergency Response Team's operations and coordinates with other emergency services. The Director of Risk Management assumes the role of ERC if the Chief of Transit is not available. The Emergency Communication Coordinator represents the agency as the public relations manager in the event of an emergency. The emergency response team includes the following members who will work in close contact with the ERC:

- CEO
- COO
- Department Heads
- Supervisors
- Foremen
- City of Richmond Emergency Response Center
- City of Richmond Police Department
- City of Richmond Fire Department.

The ERP includes specific guidelines for several emergency situations, including fires, earthquakes, tornadoes, civil disturbances, criminal and violent behavior, acts of terrorism, hazardous materials, utility failures, gas leaks, and infectious disease outbreaks. The plan also provides instructions for communicating with the media and the public about emergencies. Finally, the plan lists individuals, their emergency response roles, and their contact information.

A.7.2. Fare Inspection

GRTC stopped collecting fares on March 19, 2020, in response to the COVID-19 pandemic. No fares are being collected at this time.

A.7.3. Security Features on Vehicles

All GRTC revenue vehicles are equipped with cameras for video surveillance and global positioning systems (GPS) monitor the location of all GRTC buses at all times. These technologies have aided GRTC's ability to collect crucial evidence during investigations. GPS helps identify perpetrators, validate incidents and worker's compensation claims, and aid law enforcement in their investigations. It also contributes to employee safety by monitoring premises even when no one is on site.

GRTC also has live feed video on its revenue vehicles. Live video is highly effective in aiding real-time investigations and monitoring the area, so supervision can make immediate adjustments to support the overall safety and security of the equipment, employees, passengers, and public. All service revenue vehicles are equipped with an audio monitoring system that records calls between bus operators and dispatchers, which also aids in investigations of safety or security incidents onboard GRTC's vehicles. Each vehicle has security features to enable the driver or operator to contact dispatch for emergency situations.

A.7.4. Security Features at Transit Stations and Facilities

GRTC has controlled access gates at facilities to discourage security incidents. GRTC facilities are also equipped with surveillance cameras. Visitors to GRTC facilities must sign in at the switchboard, where they are provided with a GRTC Visitor Pass. The person visiting a GRTC employee must be accompanied by the employee while on the premises. GRTC enhanced security at its headquarters by incorporating access controls to the 2nd and 3rd floor elevators, as well as the Finance department and Information Systems department. Access to these areas is restricted to authorized personnel. Security cameras and card readers were installed for the back annex lot in 2017.

A.7.5. Security Training Programs and Drills/Exercises

GRTC continually analyzes its training programs by reviewing job descriptions; identifying positions which have direct responsibility to determining when training is needed; determining which safety management systems (SMS) roles, responsibilities, and processes are missing from job descriptions; and updating job descriptions to reflect these processes. GRTC's training programs include the following:

- New Hire Bus Operator Training for GRTC
- New Hire Bus Operator Training for National Express Transit
- Bus Operator Refresher Training
- Operations Supervisors and Dispatcher Training
- Maintenance Training
- SMS Orientation
- Safety Risk Management Orientation for Subject Matter Experts and the Safety Committee
- Safety Performance Monitoring Orientation
- Conflict Management and De-Escalation Training
- Active Shooter Response Training
- Communication of Safety and Safety Performance Information
- Training Documentation
- Training Monitoring.

A.7.6. Public Awareness Programs and Campaigns

GRTC highlights safety initiatives on its website,³ including:

- **New Hire Training:** New operators are trained for six to eight weeks. This includes two weeks of classroom training and four to six weeks behind the wheel training with trainers and experienced operators.
- **Refresher Training:** Provided to every bus operator a minimum of every two years.
- **Retraining:** Required when an operator is involved in a preventable accident.
- **Electronic Simulator:** Mimics actual driving and road conditions in a wide variety of circumstances and weather. It is used for both new operator training and the refresher training class.
- **Safety Ride Along:** Regularly conducted by supervisors and trainers. The supervisor/trainer conducts the road observation and determines if remedial training is needed.
- **Safety Messages and Slogans:** Displayed throughout GRTC Headquarters, on the Electronic Communications System (ECS) electronic monitors throughout the company, as well as the GRTC intranet.
- **Quarterly Safety Meetings:** Mandatory for all operators. Safety issues are identified to discuss at each meeting. Guest speakers are invited to speak at the meetings.
- **Annual Safety Awards:** Operators who have not had a preventable accident during the calendar year from January 1 through December 31 qualify to receive the safety award. An operator may not have missed more than 30 days of work during the calendar year.
- **Driving Standards Policy:** Established in 2010. All Commercial Drivers License (CDL) licensed employees' Department of Motor Vehicles (DMV) records are randomly checked. All employees who drive a company vehicle are required to report all motor vehicle violations received whether driving a personal automobile or while driving a GRTC vehicle within three business days of receiving the violation.
- **Safety and Health Committee:** Comprised of operators and management and meets monthly. The purpose of the committee is to create and maintain a safe work environment for fellow employees. The committee is responsible for hazard reduction and hazard resolution. All unsafe conditions are reported through the committee and the committee determines or recommends remedial/corrective action.

³ <http://ridegrtc.com/news-initiatives/safety/>

A.8. Intelligent Transportation Systems (ITS) Programs

A.8.1. Computer Aided Dispatch (CAD) and Automatic Vehicle Locator (AVL) Systems

COMPUTER AIDED DISPATCH (CAD)

GRTC employs Computer Aided Dispatch (CAD) communication to all buses. This has been a successful effort, utilizing a combination of limited bandwidth phone lines and high-speed cellular modem communication.

AUTOMATIC VEHICLE LOCATING (AVL)

Automatic Vehicle Locating (AVL) has been deployed to various levels within GRTC to monitor the location of all vehicles. The product has been installed in the Transportation and Customer Service departments and shows vehicle location in real time.

A.8.2. Automatic Vehicle Monitoring (AVM)

GRTC employs an Automatic Vehicle Monitoring (AVM) system on fixed-route buses. This technology gives the Maintenance Department critical faults on major components on the bus to be proactive in maintaining the current fleet. This information allows Maintenance to repair buses before they break down, which increases customer service and decreases costs on road calls.

A.8.3. Automatic Passenger Counters (APC)

GRTC utilizes an Automatic Passenger Counter (APC) system to count passengers. This technology gives statistically sound data to the Planning and Scheduling Department. Planning uses this information in analyzing route performance in relation to customer use. Scheduling uses the same data to analyze on-time performance for each route/run they develop.

A.8.4. Traffic Signal Priority (TSP) System

GRTC uses a traffic signal priority (TSP) system as part of operations for the Pulse. GRTC, Henrico County, VDOT, and the City of Richmond share ownership of transit signal priority signal equipment. GRTC is responsible for Pulse stations and the vehicles used for the service.

A.8.5. On-Board Cameras

All GRTC revenue vehicles are equipped with security cameras.

A.8.6. Trip Planner

GRTC offers a Trip Planner through Google Maps' trip planning feature. The Trip Planner enables transit riders to select their origin, destination, and desired arrival time. The Trip Planner will plan the rider's journey with the input parameters. Riders customize their trip through additional features offered through Google Maps, such as "Best Route" or "Less Walking".

A.8.7. Scheduling and Run Cutting Software

GRTC uses a Computer Aided Dispatch/Automatic Vehicle Locator (CAD/AVL) system that connects to its scheduling and dispatch software, HASTUS. Fixed-route revenue miles are based on the scheduled miles produced by HASTUS.

GRTC contracts paratransit service, currently through Via. Via uses proprietary software for paratransit scheduling.

CLEVER REPORTS SOFTWARE PACKAGE

Clever Reports is a reporting system for the overall Clever Devices system. It ties all the Clever databases together and allows GRTC to analyze many different types of data that the Clever system captures from fixed-route service operation.

CLEVER WORKS SERVER

The Clever Works Server allows GRTC's Planning and Scheduling Department to manage the booking process in-house rather than contracting these services with Clever Devices.

A.8.8. Maintenance, Operations, and Yard Management Systems

The Maintenance Department uses Fleet Watch software to store information and schedule activities relevant to fleet maintenance. This enables the department to effectively track its fleet, vehicle ages, and their repair and replacement schedules in one system.

GRTC is currently implementing and documenting Clever Devices SmartYard System, a yard management system, to allow Operations to effectively track the fleet in the bus depot for location, assignment, and security.

A.8.9. Information Displays

The Pulse stations have real-time arrival information displays. Additionally, In March 2023 GRTC awarded Connectpoint a contract for digital sign products that will be displayed throughout the system. Connectpoint's signs provide riders with real-time transit information. Products to be installed will include Connectpoint's Digital Bus Stop Displays, which are solar-powered and come in several standard sizes, as well as the Falcon, an ADA Text-to-Speech device.

A.8.10. Real-Time Arrival and Mobile Information

GRTC provides up-to-date real-time arrival information through its On The Go! mobile app and through a new partnership with Transit App software. The app uses predictive technology and estimated arrival times for each stop. Information is provided for routes, stop locations, special offers, and service updates. Mobile app users can assign favorites to their profile to easily track routes and stops. Riders can also use the Plan A Trip function to determine the best way to make their trip by inputting origin and destination information. The app can also be accessed in Spanish.

GRTC provides real-time alerts and information through the mobile apps, social media via Twitter, and BusTime system via website. GRTC utilizes the Clever Devices BusTime software to communicate with passengers in real time. Using GPS technology and scheduling data, BusTime calculates the real-time arrival time of buses for specific stops and routes shared with passengers through mobile apps and website tracking applications.

Mobile apps used by the various modes of GRTC include:

- Fixed Route: GRTC App, Transit App, Bus Tracker (GRTC Website)
- Paratransit: Via mobile application (GRTC branded)
- Microtransit: Via mobile application (GRTC branded)

The GRTC Transit Mobile Application is the official mobile application and provides real-time arrival information for transportation services. The mobile application allows transit customers to check bus location, plan trips, and when required allow riders to pay for bus fares. The mobile application provides greater convenience to riders by offering a secure smartphone solution for boarding the bus.

Riders can also enroll in GRTC's Track by Text service. By texting "GRTC" and the bus stop number, the Track by Text service will reply to riders with an estimated time for the next bus arrival. Riders can find their bus stop number on all GRTC bus stop signs.

A.9. Data Collection and Ridership/Revenue Reporting Method

A.9.1. Electronic Registering Fareboxes

When GRTC was collecting fares before the pandemic, the agency used fareboxes as a source for ridership reporting. Since 2016, GRTC has used an Automatic Passenger Counter (APC) for ridership reporting. Using an APC system is beneficial because fares have become less correlated with boardings due to the introduction of GRTC's unlimited fare pass. However, GRTC stopped collecting fares on March 19, 2020, in response to the COVID-19 pandemic. No fares are being collected at this time.

A.9.2. Automatic Passenger Counters (APC) Calibration/Validation Status

GRTC utilizes an Automatic Passenger Counter (APC) system to count passengers. APC's collect ridership data at the stop level for boardings and alightings at the front and back doors. APC data is uploaded at the end of every trip. This technology gives statistically sound data to the Planning and Scheduling Department. Planning uses this information to analyze route performance in relation to customer use. Scheduling uses the same data to analyze on-time performance for each route/run they develop.

GRTC conducts ride check sampling for NTD reporting. GRTC is required to conduct a minimum of 250 one-way ride checks. The agency completed 422 samples in 2016. At the end of the year, GRTC can back-fill routes if data shows there was an invalid sample for a route during a specific schedule type by using valid APC data. APC equipment is tested regularly, and the Planning Department reviews data discards to determine if a vehicle has hardware issues.

Ridecheck Plus conducts data cleaning by using various APC settings to adjust or discard suspicious data. In FY 2022, Ridecheck Plus activated 32 of 60 APC settings to discard data, resulting in 8.1 percent of raw data. GRTC also conducts checker surveys to validate APC data by manually counting passengers on different vehicles and routes.

A.9.3. Manual Count Including Free Fares

GRTC completes manual counts of passengers by conducting on-board surveys of riders and reviewing video surveillance. In FY 2022, GRTC completed 87 checker surveys on its fixed-route buses and 21 surveys on its BRT buses using a combination of manual counts and video surveillance. The results of all surveys were valid. For fixed-route buses, the checker observed a 4.8 percent difference in unlinked passenger trips compared to the APC, and a 4.6 percent difference in passenger miles traveled. For BRT buses, the checker observed a 4.6 percent count difference for unlinked passenger trips compared to the APC, and a 1.9 percent difference in passenger miles traveled compared to the APC.

A.9.4. Scheduling Software

GRTC uses HASTUS for scheduling and dispatching. HASTUS' scheduled miles for fixed routes are used for reporting GRTC's revenue miles.

A.9.5. Accounting/Payroll Systems

GRTC utilizes several specialized software systems including ADP Workforce Now for recruiting and benefits RTA for inventory and vendor management in conjunction with Microsoft Dynamics Great Plains 2018 Enterprise Resource Planning software for its general ledger, financial management and reporting, vendor management, human resources, and payroll processes. These systems manage the collection, verification, storage, and reporting of data and facilitate the processing of transactions such as invoicing customers, collecting and recording cash from grants and operating contributions, paying vendors, and paying employees. The information contained within these systems enables GRTC to prepare annual budgets, Annual Comprehensive Financial Reports, grant applications, as well as reports for various internal, local, state, and federal stakeholders.

A.9.6. Mobile Data Terminals (MTD) for Demand Response Services

Via, GRTC's software provider for microtransit, uses tablets as mobile data terminals (MDTs). These tablets do not receive prebuilt schedules before they enter into service, rather, they receive trips based on the immediate demand of riders. Once a trip request is received, the tablet provides operators with turn-by-turn directions to the pick-up and drop-off locations. While the tablet is in operation, it collects and stores latitudes and longitudes of pick-up locations, passenger counts, addresses, arrival and drop-off times, estimated times, and more. This information is then transmitted back to Via's database for storage, reporting, and analysis. GRTC has access to this data through Via's Operational Center or VOC. GRTC can conduct analyses, build KPIs, and review the overall health of the services provided to the community through the VOC.

UZURV's independently contracted drivers do not utilize MDTs. However, they are required to use UZURV's proprietary software via the UZURV Driver App they can access from their cell carrier's app store. The app acts as an MDT, with all the information being relayed to the mobility platform. It sends trips to drivers, tracks location via GPS every 30 seconds or 300 feet, and provides directions, trip routing, and completion information. GRTC can access the data for relevant trip management and reporting. In the event of an outage, trip information is cached in the app. There is also a calendar plugin that allows drivers to easily add their upcoming ride schedule to the local calendar on their iPhone or Android device. If for any reason they cannot access their trips, they can contact operations to obtain a schedule.

A.9.7. Automatic Vehicle Locator (AVL) System

Automatic Vehicle Locating (AVL) has been deployed to various levels within GRTC to monitor the location of all vehicles. The product has been installed in the Transportation and Customer Service departments and shows vehicle location in real time.

A.9.8. Odometer Readings or Driver Logs for Mileage and Hours

GRTC's maintenance team diligently records each vehicle's mileage every morning before being deployed for service. The monthly mileage data is carefully reported to the GRTC Board of Directors. This information is submitted to the National Transit Database (NTD) annually for comprehensive record-keeping, ensuring a thorough and accurate record of operations.

GTRC generates the scheduled miles and hours from the scheduling software, HASTUS. Dispatch accounts for miles and hours associated with missed trips and logs them in the Clever CAD reporting system and they are deducted to calculate revenue hours and miles.

A.9.9. Operating Expense and Revenue Data

GTRC develops its operating budget from baseline projections generated from its operating revenues and expenses. GTRC generates operating revenue from a number of sources, including advertising, charter and special services, fares, Federal and State operating assistance funds, general fund contributions from Richmond and other local sources, and purchased service contracts. Operating expenses are made up of administration and operations costs, including equipment and maintenance, general administration and taxes, insurance and safety, planning, purchased service and Vanpool, and scheduling and marketing.

A.9.10. WebGrants Performance Data Submission

GTRC's on-line grant administration (OLGA) performance data is submitted monthly through the olga.drpt.virginia.gov website. Data submission is due before the end of the month preceding the reporting month. GTRC is responsible for inputting unlinked passenger trips (UPT), vehicle revenue miles (VRM), and vehicle revenue hours (VRH) for the following services:

- ADA Complementary Paratransit
- Bus Rapid Transit
- Public Transportation Fixed-Route, Route Deviation, and Demand-Response Bus Service
- Van Pool Services Operated.

GTRC's CEO/Board certifies adherence to the standards and accuracy of data submitted to WebGrants by monitoring data roll ups daily for accuracy. Reviews are conducted internally for monthly meetings, and standard operating procedures are in place for pulling data and reporting.

A.9.11. National Transit Database (NTD) Submission Practices

GTRC submits monthly and annual reports to the National Transit Database (NTD) for Motor Bus - Directly Operated (MBDO), Rapid Bus - Directly Operated (RBDO), Demand-Response - Purchased Transportation (DR-PT), and Van Pool - Purchased Transportation (VPPT) through the Via Transit Aware Management System (TrAMS) website. APC certification is submitted through DRPT every three years.

A.9.12. Agency Accountability and Financial Audit

GTRC contracted Brown, Edwards, & Company, LLP, a certified public accounting firm, to certify the data which is sent to the NTD. Brown, Edwards, & Company reconciles financial data in several forms, including the following:

- Sources of Funds - Funds Expended & Funds Earned (Form F-10)
- Uses of Capital (Form F-20)
- Operating Expenses (Form F-30) - Overall
- Operating Expenses (Form F-30) - DR PT
- Operating Expenses (Form F-30) - MB DO
- Operating Expenses (Form F-30) - RB DO
- Operating Expenses (Form F-30) - MB PT
- Operating Expenses (Form F-30) - VP PT

- Operating Expenses Summary (Form F-40)
- Financial Statement (Form F-60)
- Federal Funding Allocation Statistics (Forms FFA-10)

Brown, Edwards, & Company conducts the audit in accordance with the standards established by the American Institute of Certified Public Accountants (AICPA). The firm submits a written report to GRTC upon completion of the audit, detailing the procedures conducting and findings.

A.10. Coordination with Other Transportation Service Providers

Table A-4 documents other transportation service providers who operate in the vicinity of and coordinate with GRTC.

Table A-4: Coordination with Other Transportation Service Providers

About the Transportation Service Provider	Existing Coordination Activity
RideFinders	
Division of GRTC that matches commuters for shared rides, including carpools and van services.	RideFinders provides commuters with information about how to use and access GRTC service. Their Commuter Choice program helps employers set up tax-free transportation benefits for employees which can be used for transit. RideFinders also offers the Emergency Ride Home program which provides taxi or rental car service to get home in the event of an emergency for registered commuters who take transit, vanpool, bike, or carpool to work at least three days a week.
Chesterfield County Mobility Services	
Van program coordinated and funded by Chesterfield County providing service to low-income, disabled, and elderly residents. County residents can travel to medical or employment destination to destinations both inside and outside of the county. Non-medical or non-employment trips are limited to within the county.	<p>Eligible Chesterfield County residents who wish to travel into Richmond for reasons other than medical or employment needs can use Mobility Access to transfer to GRTC service. The transfer location is chosen based on proximity to Chesterfield County and the person's residence. Transfer locations between Mobility Services and GRTC are:</p> <ul style="list-style-type: none"> • US Highway 1A on Midlothian Turnpike at Spring Rock Green or Kroger. • US Highway 1C on Hull Street Rd at Chippenham Mall. • Route 2B on Midlothian Turnpike at Centura College, Chippenham Square, or Kroger. • Routes 3B or 3C on US Highway 1 at Food Lion (Chippenham and US Highway 1) • Route 64x at Old Gun & Duryea Drive or Forest Hill and Huguenot Road. • Route 82x at Commonwealth 20 Park-N-Ride • Route 95x at Petersburg Transit Center Park-N-Ride
Petersburg Area Transit (PAT)	
Transit provider operating service in and around Petersburg. Predominantly operates in the Petersburg, Colonial Heights, and Hopewell areas and extends to the Ettrick and Virginia State University area.	GRTC and PAT riders can transfer between the systems at the Petersburg Multimodal Passenger Station (GRTC express Route 95x). PAT service is currently fare-free, providing easy and free connections for all riders between the two systems.

About the Transportation Service Provider	Existing Coordination Activity
Virginia Commonwealth University (VCU) Shuttle Buses	
Shuttle services between VCU and the university's satellite parking facilities, with connections to GRTC fixed-route services.	VCU's shuttle bus services connect with GRTC at numerous locations. GRTC routes with connections include Routes 1, 1A, 1B, 1C, 2A, 2B, 2C, 5, 7A, 7B, 12, 29x, 56, 95x, and the Pulse.
University of Richmond (UR) Shuttle Buses	
University of Richmond shuttle services for students and guests, with connections to GRTC fixed-route services.	The UR Daily Connector route connects to Willow Lawn, providing transfers to GRTC Routes 18, 19, 50, 76, 79, 91, and the Pulse. In the evenings the Daily Connector serves Carytown where connections can be made to GRTC Route 77.
Amtrak	
Access to Amtrak intercity rail at two stations in Richmond: Main Street Station and Staples Mill Road Station.	Riders can connect to Route 14 and the Pulse from Main Street Station. Riders can connect to Route 18 from the Staples Mill Road Station.
Intercity bus	
Public (Virginia Breeze) and private transportation companies (such as Greyhound, Megabus, etc.) with service to cities throughout Virginia and nearby states.	DRPT's Virginia Breeze service is available at Main Street station. Greyhound and Flixbus service are available at the Greyhound Richmond Bus Station, with connection to GRTC Route 20. Megabus stops at Main Street Station with connections to GRTC Route 14 and the Pulse.
Micromobility	
E-scooter sharing available throughout the City of Richmond through mobility companies Bird, Lime, and Spin.	E-scooter companies are permitted by the City of Richmond to operate. Riders may ride them anywhere in the city and park them anywhere, including at or near bus stops (although they are instructed not to block bus stops, curb cuts, driveways, and more).

A.11. Current Initiatives

A.11.1. West Broad St BRT Corridor Analysis

GRTC conducted a BRT corridor study of West Broad Street which involved public input, economic analysis, environmental analysis, and recommendations for BRT stops along the corridor. The resulting plan recommends stop locations along Broad Street and includes headways of 10 minutes during peak periods and 15 minutes during off-peak periods as well as an extension further west of the Pulse.

A.11.2. Malvern Avenue Pulse Infill Station

In 2025, construction is scheduled to begin on the Malvern Avenue station, a Pulse BRT station between the existing Scott's Addition and Staples Mill Stations. The new station will serve hundreds of new apartment buildings.

A.11.3. North-South BRT Corridor Study

This study, which began in early 2023, explores the feasibility of a second BRT line that runs from the north to the south of Richmond, and connects to stops on the current east-west Pulse route. The study has identified three potential BRT corridors on the southside of Richmond and one corridor on the northside. GRTC is in the process of moving the plan forward to select a final alignment.

A.11.4. Essential Transit Infrastructure Plan

This document, published in August 2022, outlines implementation goals and strategies for providing Essential Transit Infrastructure (ETI) at all stops in the system. Examples of ETI include seating, trash cans, ADA-compliant landing pads, and bus shelters. Other ETI options include displays for advertisements and maps and solar-powered lighting at locations that receive sufficient sunlight. The plan also calls for the removal or replacement of outdated bus shelters.

A.11.5. Richmond Region Micro-transit Pilot Program and Micro-transit Implementation Plan

The first study identified locations in the region where micro-transit is a feasible service. Micro-transit, for this project, is defined as a technology-enabled, on-demand transportation service. The first phase included an analysis of existing conditions within the region. The team analyzed the likelihood of transit use by residents and the need for transit services. The team also analyzed gaps in the service area that are not well served by existing fixed-route service. The report also outlines the common benefits and challenges of implementing micro-transit. While micro-transit could increase ridership, widen the coverage of transit, and offer a pleasant user experience, it also has the potential to compete with fixed-route service, introduce issues with vehicle accessibility, and create barriers for riders who are less comfortable with technology. The report also includes a review of micro-transit services in peer agencies. The report identifies potential locations for a pilot program and input from operators.

Five zones were identified as ready for micro-transit as early as Fall 2023. The implementation plan refined the five pilot zones to prepare them for launch.

A.11.6. New Downtown Transfer Station

The Richmond Office of Equitable Transit and Mobility is working with GRTC to build a new Downtown Transfer station on the corner of 8th and Leigh Streets. The completed structure will be able to accommodate up to 12 buses at once for more efficient arrivals and departures. Seventeen routes will be realigned to serve the new transfer station.

A.11.7. East End Transfer Hub Site Selection

The goal of this project is to find a new location for the transfer station currently located on the corner of 23rd and Franklin. The project began in early 2023 and is currently in progress.

This hub currently serves four routes. The hub as it currently exists has a variety of issues that make the location unsuitable for transit. For example, slopes in excess of 10 percent make the hub not accessible to all users. The lack of amenities and crowding during busy times also cause issues for riders and operators.

The first task will be to identify and evaluate possible locations for a new site. This includes early stakeholder engagement, a preliminary environmental review, and an evaluation of feasibility for bus operations. Once the top candidates are selected, the team will prepare cost estimates and graphical renderings for the top three locations. The community engagement plan will include virtual public meetings, work sessions, a public survey, and field interviews.

A.11.8. Regional Public Transportation Plan

The regional public transportation plan is a guide that identifies how GRTC plans to spend funds raised by the Central Virginia Transportation Authority (CVTA). Priorities include the return of transit services to pre-pandemic levels, maintenance of operations and capital investments, the advancement of planning studies in the region, and the preparation of innovative initiatives.

A.11.9. Zero-Emission Vehicle Fleet Transition Plan

GRTC began the process of developing its comprehensive Zero-Emission Vehicle Fleet Transition Plan in December 2022. The scope of the project is to develop an achievable comprehensive transition plan without the early retirement of existing and future-purchase internal combustion vehicles.

The project began with a needs assessment to gather information about current GRTC operations and future expansion plans. The next phase will be a technology evaluation which will predict the energy consumption per mile during every season and determine which routes could be delivered with the current capacity of zero-emission vehicles. The final phase will be an implementation plan which will include details on bus acquisition, facility improvements, cost estimates, and operator training.