

**DRAFT:**

GRTC Transit System  
Regional Public Transportation Plan  
Fiscal Year 2022

DRAFT: May 14, 2021

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## Introduction

In the Spring of 2020, the Virginia General Assembly passed House Bill 1541 which created the Central Virginia Transportation Authority (CVTA) and enacted dedicated sales and fuel taxes to support transportation improvements within the Greater Richmond Region (Planning District 15). The legislation includes a provision that 15% of the new revenues for the CVTA should go toward public transportation through GRTC. The legislation directs GRTC to develop a plan, in collaboration with the Richmond Regional Transportation Planning Organization (RRTPO), for regional public transportation within Planning District 15.

The GRTC shall create a separate, special fund in which all revenues received pursuant to subdivision D 2 shall be deposited. The GRTC shall develop a plan for regional public transportation within Planning District 15 in collaboration with the Richmond Regional Transportation Planning Organization in conformance with the guidelines required by [§33.2-286](#). The GRTC shall annually provide to the Authority sufficient documentation, as required by the Authority, showing that the revenues distributed under subdivision D 2 were applied in accordance with Authority approval and the guidelines required by [§33.2-286](#).”

GRTC intends that this Richmond Regional Public Transportation Plan be the inaugural plan to document how the new CVTA regional funds will be used to fund public transit services in the region in coordination with local, state, federal, and other funding sources to provide an expanded and improved transit network for the region. Given the relatively short time frame from the creation of CVTA and the need for this plan to determine the use of transit funds, GRTC expects that this inaugural plan will be a first step toward a longer process of regional transit planning.

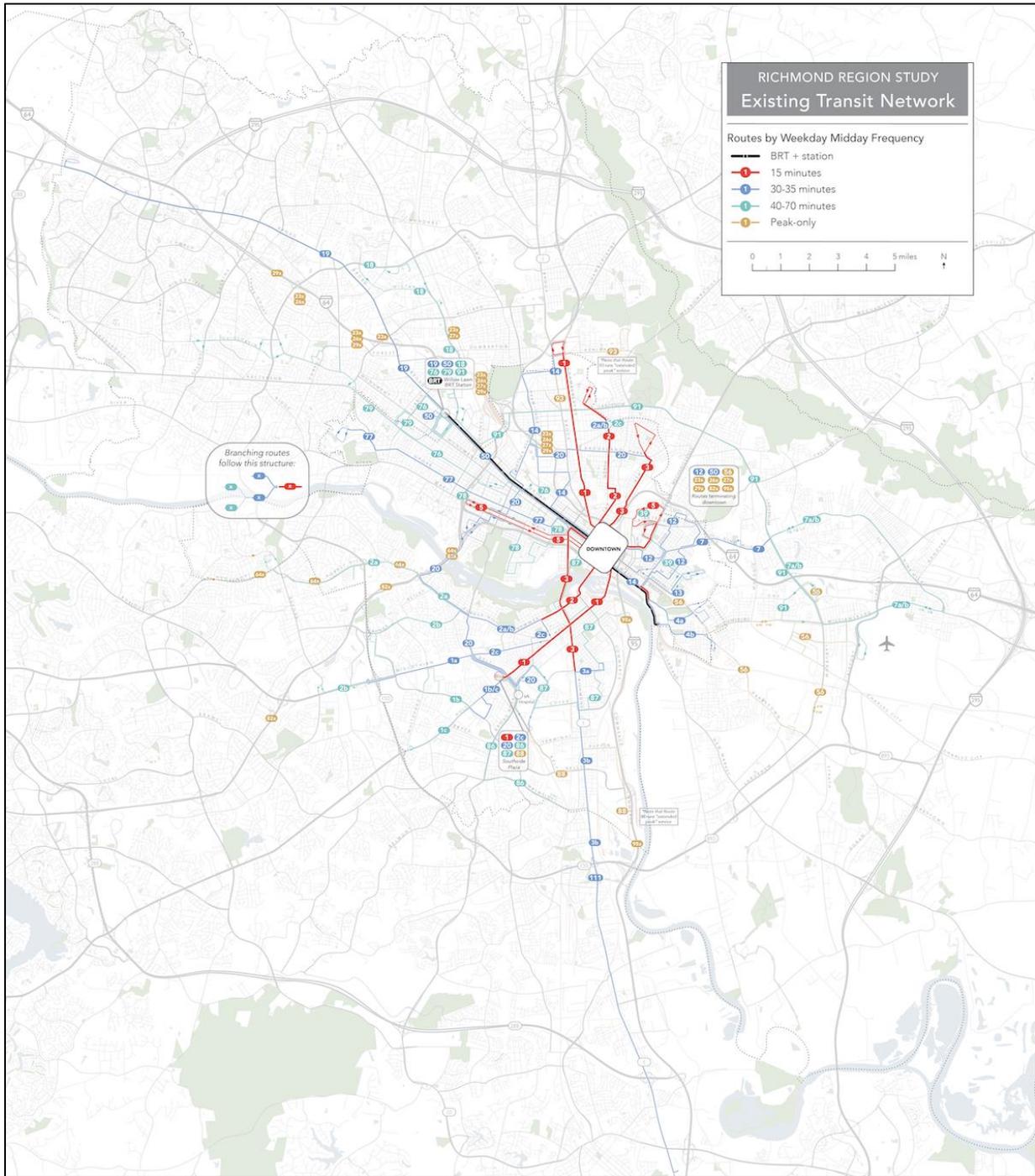
GRTC has led the development of this plan in close coordination with staff from around the region. The RRTPO Public Transportation Working Group, an ad hoc group of staff representing the City of Richmond, Chesterfield County, Hanover County, and Henrico County, has been deeply involved in development of this plan. Also, this plan has been guided by previous planning work that has preceded it, including the Greater RVA Transit Vision Plan (Phase 1 and Phase 2), the GRTC Transit Development Plan, and the Richmond Transit Network Plan. Throughout the process, consultants from Michael Baker International and Jarrett Walker + Associates have supported GRTC and its regional partners through financial analysis, network design, service planning, and policy guidance.

## Existing Transit Network

The existing network features a core network of five high-frequency routes – the Pulse, and Routes 1, 2, 3, and 5. These routes all run through downtown Richmond along relatively direct corridors near many jobs, residents, and destinations. Ten 30-minute routes and six hourly routes augment the network and provide transit service to a larger geographic area. The high-frequency network runs from 5am-7pm on weekdays and 6am-7pm on Saturdays. Only the Pulse runs every 15 minutes on Sundays.

Most service is in the City of Richmond and Henrico, with a few routes serving Chesterfield County. Downtown, Willow Lawn, and Southside Plaza are key transfer points in the network, served by many routes and where passengers can make connections from one route to another. Several peak-only routes operate from Henrico and Chesterfield to downtown Richmond, though many have seen reduced schedules and reduce ridership during the Covid-19 pandemic.

Figure 1: Existing (Pre-Covid) Transit Network



The existing transit network reflects historic patterns of transit funding where most funding for transit service has come from the City, with increasing contributions from Henrico County in recent years. In the past, service has only been provided to local jurisdictions who have made local contributions for service. Yet the network also reflects the built form, and the highest frequency of service tends to follow patterns of land use that lead to high ridership relative to cost.

## Density

When thinking about where transit might find many riders, a critical question is **“How many residents or useful destinations can be easily reached from each transit stop?”** Activity density, as shown in the map below, tells us how many people or jobs are in different parts of the region, and therefore how many people or jobs would be near transit, if that area were served.

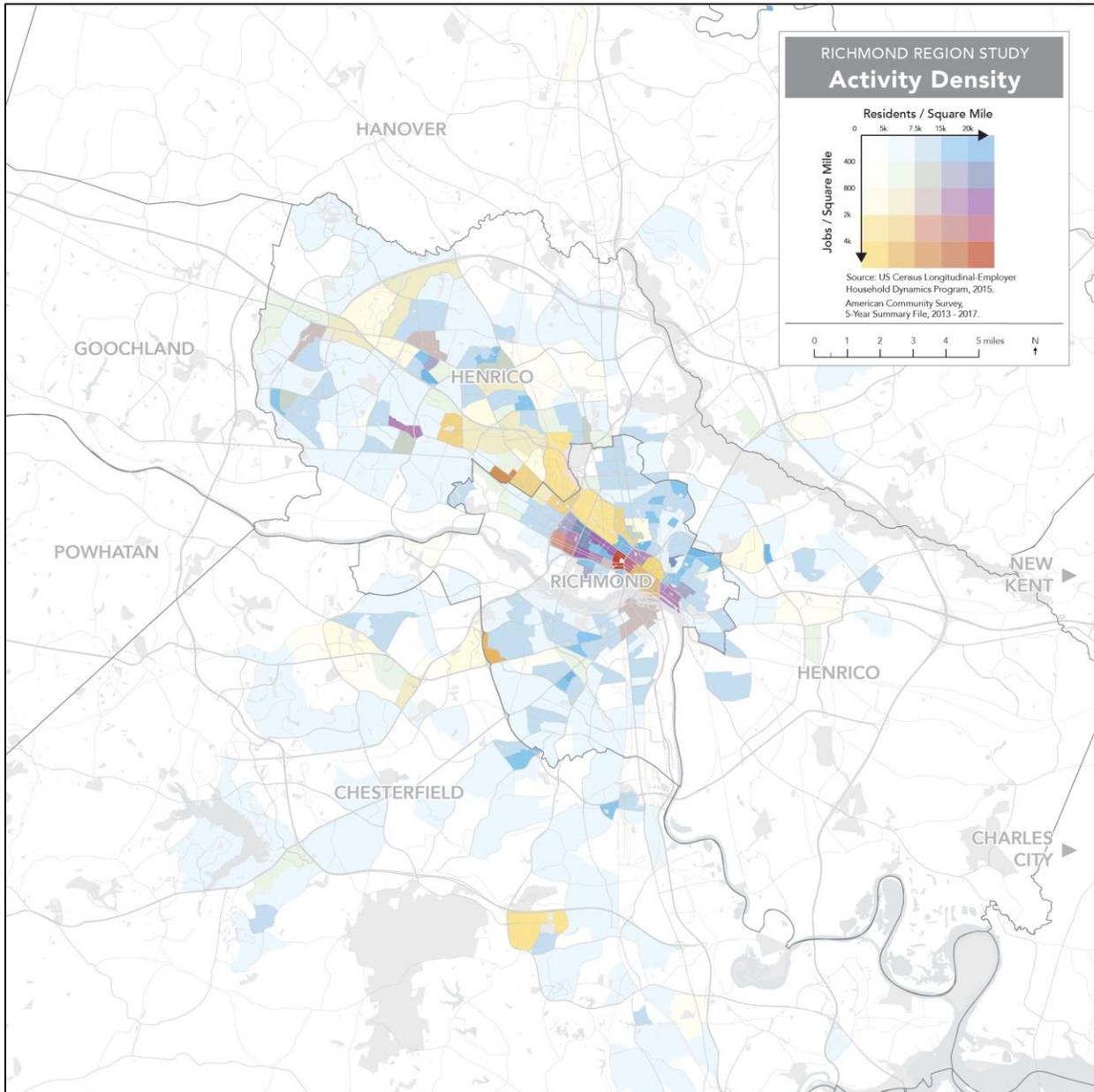
Places with more residential density are shown in increasingly darker shades of blue; areas of high employment density, in brighter shades of yellow. The areas shown with increasing shades of red are places where there are high densities of both jobs and residents, and where there is likely to be a strong market for travel for most or all of the day. The densest parts of the region are within the City of Richmond, particularly near downtown, around VCU, Shockoe Bottom, and Manchester. Outer parts of the region with relatively dense concentrations of jobs include the Regency area, West Broad Street corridor, and Henrico Government Center in Henrico, the Midlothian Turnpike Corridor in Chesterfield, and the Chesterfield Government Center. There are pockets of high residential density in many areas across the Northside and East End of Richmond, along Staples Mill Road, Mayland Drive, and Quiocassin Road in Henrico, and in Wilkinson Terrace and along Meadowdale Boulevard in Chesterfield.

In addition to high density, the mix of uses along a corridor affects how much ridership transit can achieve, relative to cost. This is because an area with a mix of housing, retail, services, and jobs tends to generate more even demand for transit in both directions, throughout the day. Transit serving purely residential neighborhoods tends to be used in mostly one direction and mostly during rush hours—as residents leave in the morning and return in the evening. Transit serving residential-only areas tends to have higher costs per rider because:

- If ridership is only high during the morning and evening rush hours, the transit agency must run mostly empty buses during the rest of the day or must pay drivers to take split-shifts, which are less desirable because they require working both early mornings and evenings each day with a long mid-day break.
- If ridership is only high in one direction during each peak, then the transit agency must run mostly empty buses back in the other direction. The service may not even be advertised as two-way, but the operating costs are always two-way.
- Transit agencies who run lots of peak-only service must also buy and maintain extra buses for those few busy hours of peak service each day.

Buses serving a mix of jobs and residents can be full in both directions, leading to lower costs per-rider. If mixed-use areas include jobs from a diversity of sectors such as healthcare, education, and retail- all extending beyond the typical 8-5 office schedule, transit also tends to see stronger all-day, two-way demand.

Figure 2: Activity Density in the Richmond Region



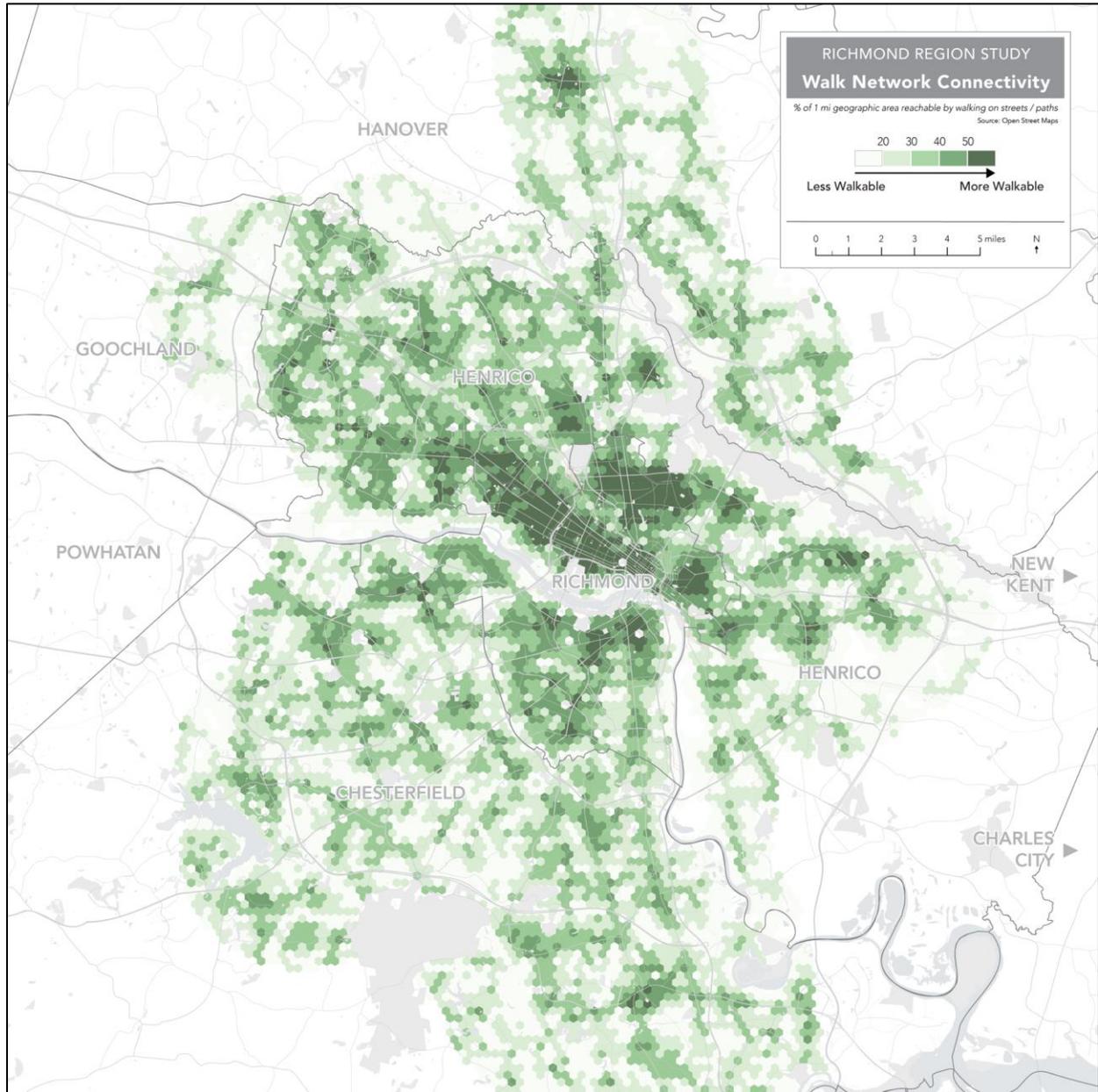
### Walkability

In almost all cases, transit trips begin and end by walking. Therefore, the ability to walk to transit is very important. As mentioned above, the more jobs and residents there are near a stop, the stronger the likely transit market. However, the size of the market is also limited by the street pattern, since that determines how much of the area around a stop is truly within a short walking distance.

The map in Figure 3 shows the areas where walking to a potential bus stop would be easier because the streets are well-connected. This is not the only factor affecting how easy it is to walk to a bus stop. A lack of sidewalks and safe crossings of major streets can also mean that fewer people and jobs are within a short walk of transit because people may have to walk further and less directly to cross the

street to reach a bus stop. In general, though, where street connectivity is high, other walkability factors also tend to be better.

Figure 3: Walk Network Connectivity in the Richmond Region

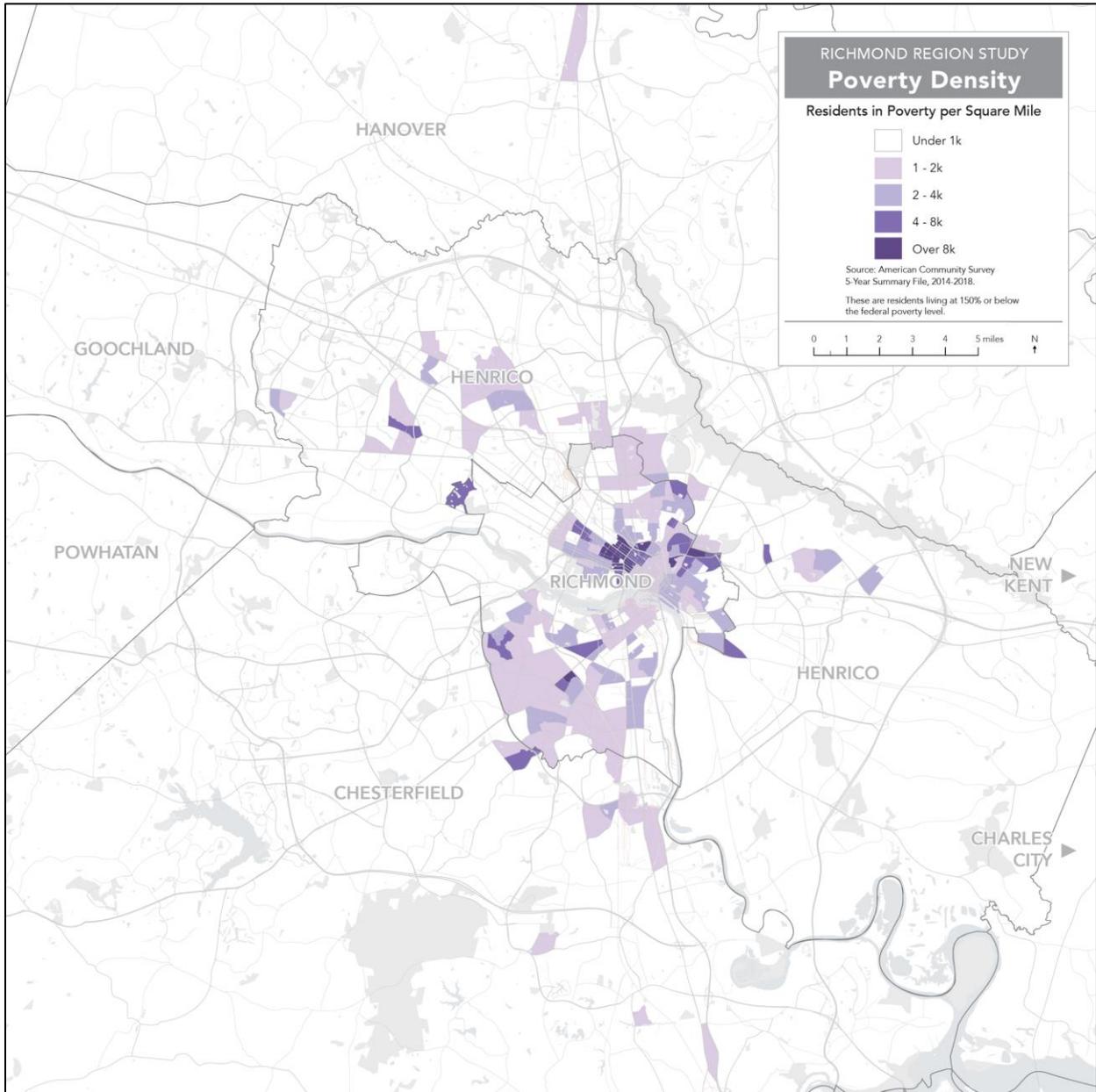


### *Low-Income Residents*

Transit is often tasked with providing affordable transportation for low-income people. Federal laws also protect people with low incomes from disparate transportation impacts, which can lead agencies to provide transit service in places where poverty is high even if it does not maximize ridership relative to cost. In some built environments, serving low-income people can achieve high ridership relative to cost. Transit can be an attractive option for lower-income people due to its low price and low barrier to entry so in medium to high density areas, with walkable street networks, service to low-income people can be

a powerful ridership generator. Figure 4 shows the pattern of high concentrations of people in poverty across the region.

Figure 4: Density of People in Poverty in the Richmond Region



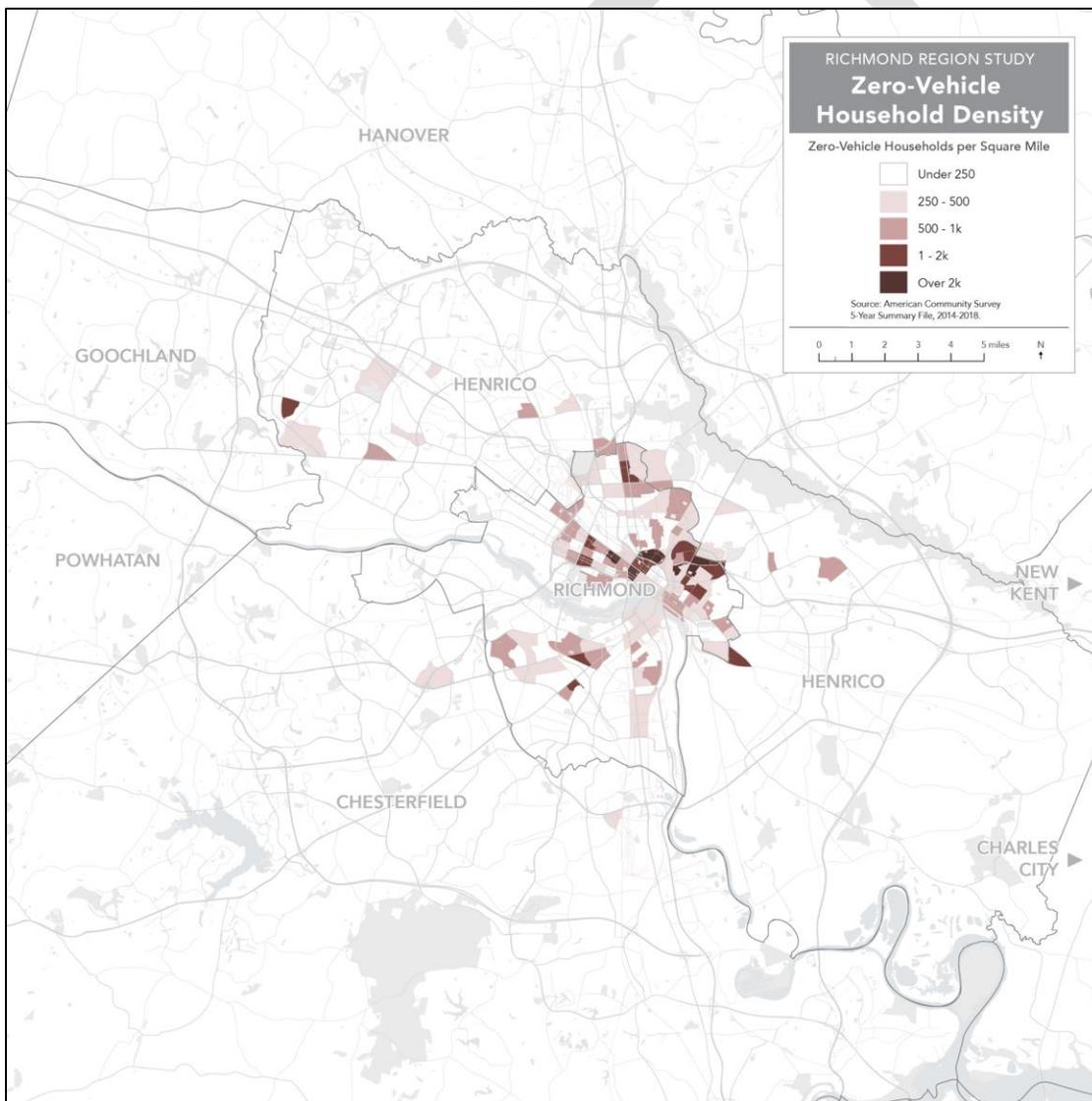
However, an area with low-income residents doesn't necessarily get high transit ridership just because it served by a transit route. If transit isn't actually useful for the type of trips people need to make, in a reasonable amount of time, even lower-income residents will not use it. Most people can find other travel options, even if those other options, such as taking out a high-interest loan for a used car, cause them financial distress.

### Households without Vehicles

Not everybody has ready access to a personal automobile, and people who have less or no access will need to use other modes when they need to travel. This might include walking, cycling, getting a ride from a friend or family member, or, if it is available when they need to travel, and useful for their trip, transit. If transit does not present a realistic travel option, then people without cars will find other ways of reaching the places they need to go. People in households without vehicles are not necessarily “transit-dependent” but do have a greater inclination toward transit use because they don’t have a car in their driveway, always ready to go.

As shown in the map in Figure 5, most people without cars in the region live in the City of Richmond. A few pockets with large concentrations of people without cars are in Henrico County, mostly near the boundary with the City. The area along Ridgefield Parkway in Henrico with a high concentration of households without cars is due to multiple senior housing complexes in one area.

Figure 5: Zero-Vehicle Households in the Richmond Region



## Existing Network Performance

When evaluating transit routes, agencies don't simply look at total ridership – they look at ridership relative to cost or “productivity.” Productivity is the number of people who boarded buses, divided by the number of hours buses were on the road. The scatterplot below shows individual routes from GRTC’s transit network, plotted according to their weekday frequency and their productivity. Routes at the far-left side are peak only or limited trip services.

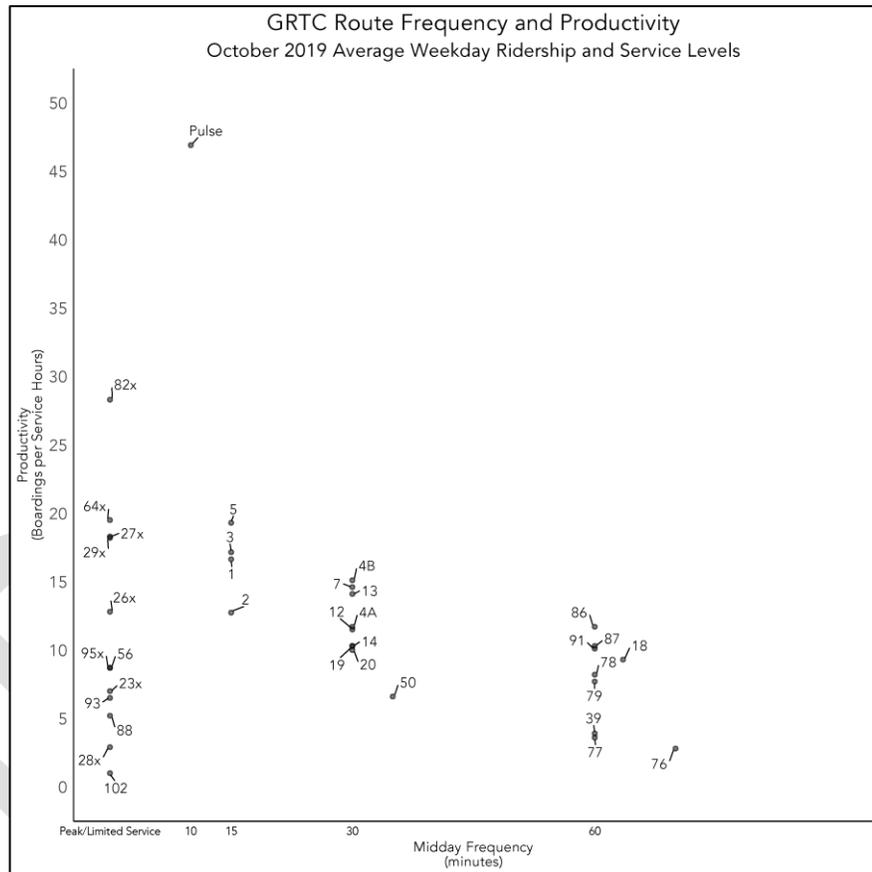
The most productive routes are the Pulse, 5, 1, and 3. These three are frequent routes that come at least every 15 minutes most of the day and serve relatively dense, linear corridors with a mix of jobs, residents, and other destinations. On these routes, more than 17 people board the bus each hour.

The least productive routes with all-day service are the 76 and 77 which see about 5 boardings per service hour. These routes are hourly and serve less dense and relatively affluent parts of the City of Richmond. Route 39 also has low productivity, despite serving a much

lower-income part of the City, but it is also duplicating many other routes that run at higher frequency, and therefore is less likely to be useful for most trips, compared to the alternatives.

Among the peak-only and limited-service routes, 82x, 64x, 29x, and 27x perform above the systemwide average, while the remaining routes perform below average. The productivity measure will tend to overstate the performance of peak-only services, as the full, additional cost of running only at peak times is not accounted for in the productivity measure.

Figure 6: Productivity and Frequency of Service by Route



## Financial Projections

A key element of this plan is to define the financial projections for the various revenue sources that fund GRTC now and going forward, and define how those funds will be used to support GRTC service and capital needs. The creation of CVTA its new funding stream is significantly changing how GRTC is funded.

At the same time that the new CVTA funding stream is starting, GRTC's finances have been dramatically affected by the Covid-19 pandemic. The pandemic brought reduced ridership, a temporary zero-fare policy to enhance safety, and increased costs for personal protective equipment, additional cleaning and sanitizing, and added labor costs. During the pandemic, the Federal Government has provided significant financial support to help transit agencies as they managed the declines in revenue and increases in costs. This temporary funding has helped GRTC maintain service at near pre-pandemic levels, despite the loss of fare revenue and the increases in costs. All of these recent changes mean that recent financial conditions are not a clear baseline for the future of the agency and that there is a much higher level of uncertainty around the projections of future revenues and costs.

At the planning-level, these forecasts incorporate cost assumptions based upon historical accounting and best practices, however they do not represent a detailed marginal cost allocation to account for trends in full time equivalents (FTEs) for both front line employees and management personnel based upon the various service levels and efficiencies anticipated through expanded service plans. Developing marginal cost allocation models remains a future objective GRTC to further refine service expansion analysis outside this planning process.

The financial baseline was established from National Transit Database (NTD) reporting, GRTC's budgets and GRTC's Transit Development Plan (TDP) through 2026. Financial evaluation for future years accounts for the flow of revenues and contributions by each member jurisdiction.

## Operating and Capital Components to GRTC's Financials

The GRTC Capital Budget is separate from the Operating Budget, with operations and bus services driving the need for capital investment. Operating expenses are continuous and require adequate cash flow which are the top priority of GRTC while capital funds roll over from one year to the next to accumulate enough to pay for the capital outlays. Flexible operating funds can be used for capital whereas most capital funding cannot be used for operational purposes.

GRTC's Operational Budget includes costs for labor and benefits, purchased transportation services, contracted services, facility and fleet maintenance, utilities, materials, and supplies (fuel), liability insurance, and taxes. The FY2021 GRTC Operating Budget supports existing services, but with impacts from the COVID-19 State of Emergency on transit funding and an assessment of CVTA funding timing, no modifications to existing service levels or routes for the remainder of FY2021 are anticipated. Ongoing operating concerns, such as sufficient staffing also remain a consideration for any service expansion initiatives.

According to GRTC, the Capital Budget is limited since an estimated 64 percent of the allocation of Federal Transit Administration Section 5307 funds go towards preventative maintenance which is an allowed method by FTA to capitalize certain operating cost. All preventative maintenance and certain Americans with Disabilities Act (ADA) complementary paratransit costs are considered capital costs which reduce the burden on operations.

The agency has identified \$160 million in priority capital projects from FY 2021 through FY 2026 with state of good repair needs encompassing just over half the total. Two specific highlights include setting aside capital funds for a new downtown transfer center and acquiring articulated buses to improve passenger capacity on the Pulse service.

Budgetary assumptions provide for the use of FTA Section 5307 and FTA Section 5339 to fund GRTC’s capital blueprint with 68 percent of State and four percent of local match. GRTC would also apply for other discretionary grants to fund annual bus replacement and expansions needs in the capital blueprint. CVTA funds would be used to cover 2% of the required local match for transit capital projects.

### *GRTC Operating Revenues*

Looking first at agency revenues, the following table outlines the estimated FY 2022. Fares are assumed to return in FY2022 and projected to grow by 2.5% per year. Other revenues are expected to increase by 3% per year.

*Table 1: Forecasted FY2022 Agency Revenues*

<b>Agency Revenues</b>	<b>FY 2022</b>
Customer Revenue - Bus	\$5,711,120
Pass Program Revenue	\$389,408
Customer Revenue - CARE DAR	\$686,192
Advertising Revenue	\$605,000
Other Revenues	\$713,225
<b>Total Revenue</b>	<b>\$8,104,945</b>

During the Covid-19 pandemic, GRTC has been operating without charging a fare. GRTC is exploring additional revenue sources that would allow the agency to continue this zero-fare policy permanently, but it is not a policy that would be funded from CVTA resources.

Most revenues to support transit service come from other governments: federal, state, local, and now the CVTA. The table below shows the forecast for these operating contributions. The contribution levels for Richmond and Henrico reflect the minimum requirements for local funding levels required under the CVTA legislation (§ 33.2-3712 Continued responsibilities for local transit funding) for FY2022 and the growth estimated beginning in FY2023. Per the legislative requirement, beginning in FY2023 localities must increase their funding at the inflationary level defined by the Consumer Price Index for all Urban Consumers (commonly referred to as CPI-U) or 0%, whichever is higher. Since 2000, the annual CPI-U inflation rate has averaged 2.13% and this value has been used for FY2023. For Chesterfield County, the operating contribution values reflect the expected funding from a preexisting DRPT grant to fund Route 111 along US Route 1 (Richmond Highway). The operating contribution from Petersburg is to support Route 95x.

Table 2: Forecasted FY2022 Operating Contributions

<b>Operating Contributions</b>	<b>FY 2022</b>
Federal	\$8,235,998
State	\$11,906,647
City of Richmond	\$7,533,982
Chesterfield County	\$1,214,241
Henrico County	\$4,161,475
Petersburg	\$200,000
VCU	\$1,656,912
<b>Total Contributions</b>	<b>\$34,909,255</b>

Federal funding levels reflect a continuation of past practice of maximizing the amount of Federal 5307 funding used for operating service through using that funding for ADA and Preventative Maintenance. By doing this, GRTC loses the chance for these 5307 dollars to be matched by other state and local dollars to support the numerous capital priorities and needs the agency has, including expanded and improved shelters and transit centers. With a significant set of capital priorities identified in the recommendations section, in the future GRTC plans to shift some of the currently allocated Federal operating contribution to the capital budget.

State funding levels reflect the estimated state operating assistance per the DRPT funding formula. Funding levels vary from year to year and include performance criteria, such as ridership levels and cost per revenue hour and revenue mile. Therefore, the exact operating funding provided by DRPT may vary. Table 3 summarizes the total revenues and contributions estimated for FY2022.

Table 3: Forecasted Total Income for FY2022

<b>Total Income</b>	<b>FY 2022</b>
Agency Revenues	\$8,104,945
Operating Contributions	\$34,909,255
<b>Total Revenues and Contributions</b>	<b>\$43,014,200</b>

### *GRTC Operating Costs*

In pre-pandemic conditions, GRTC planned to operate about 516,000 service hours (also called revenue hours) for fixed-route transit in the region. A service hour is one bus operating for one hour. Since most costs for transit are related to the labor costs to operate the service, costs tend to rise and fall in relation to the service hours provided. GRTC intends to return to pre-pandemic service levels as demand returns in FY2022.

Operating costs are assumed to increase at a higher rate than revenues. Employee benefits have been an area of relatively high growth in costs in recent years, and are projected to grow by about 9%. General operations and maintenance costs are assumed to grow by 4%, slightly exceeding revenue growth. This helps explain the declining surplus in the forecast as operating costs are forecast to outpace revenues over the next several years.

Furthering this approach to build a conservative baseline for financial analysis, the historical trend analysis (up to five years prior to 2019) includes using the larger of either historical trends or the expense escalation rate guidelines from the Virginia’s Department of Rail and Public Transportation (DRPT). The table below shows the estimated costs for GRTC assuming a return to pre-pandemic service levels. The result of these conservative estimates is that costs are assumed to increase by 4.9% per year, even if service levels remain flat.

Table 4: Operating Expense Estimates for FY2022

<b>Operating Expenses by Department</b>	<b>FY 2022</b>
Operations	\$23,502,166
Maintenance	\$12,356,924
Communications & Marketing	\$1,878,148
Planning & Scheduling	\$903,786
Insurance and Safety	\$3,702,391
Information Technology	\$1,782,629
Administrative	\$3,124,547
Benefits	\$13,807,763
Operating Taxes	\$2,154,010
<b>Total Operating Expenses</b>	<b>\$63,212,364</b>

The table above describes costs by department, but an important distinction for the public and decision-makers is to distinguish between three key buckets of services that GRTC provides:

- General public fixed-route services: The regular bus service that GRTC provides on 43 fixed routes like the Pulse, local routes like 1A, 1B, 1C, 19, and express routes like 29x, 64x, 82x. These services account for about 88% of GRTC expenses.
- Required Paratransit Service: The Americans with Disability Act (ADA) requires all operators of fixed route transit service to provide complementary origin-to-destination paratransit service within ¼ mile of fixed route transit stops. GRTC provides this service through its CARE program and historically these services have represented about 9% of GRTC’s costs.
- Discretionary Paratransit Service: Both Henrico County and the City of Richmond have previously funded paratransit service beyond the minimum ADA requirement of ¼ mile around fixed route transit stops and at times of the day and days of the week beyond the ADA minimum requirements. GRTC brands this service as CARE Plus. A paratransit trip will be designated as a CARE Plus trip if the origin or destination location is more than ¼ of a mile from GRTC’s fixed route bus line, or if travel is desired to a destination in Henrico County on a day or time when GRTC’s fixed route buses are not running in Henrico County. Historically, CARE Plus services have represented about 3% of GRTC’s costs and 92% of CARE Plus trips are to or from destinations in Henrico County.

As shown in the Table 5, under the FY2022 projections of revenues and contributions minus expenses, there would be a deficit of approximately \$20.2 million in FY2022. Therefore, CVTA funding is essential for maintaining the existing regional transit network.

Table 5: Estimated Revenues and Contributions minus Costs with Pre-Pandemic Service Levels

<b>Expenses Compared to Revenues and Contributions</b>	<b>FY 2022</b>
Total Revenues and Contributions	\$43,014,200
Total Operating Expenses	\$63,212,364
<b>Operating Deficit</b>	<b>\$(20,198,164)</b>

In addition to the operating budget, GRTC has a significant capital program for FY2022 that will invest in vehicles, equipment, and studies to improve operations, plan for the future, and enhance the state of good repair of the agency. Additional detail on the capital program is provided later in this report.

Table 6: GRTC Capital Program and Funding Sources

<b>FY2022 Capital Program</b>	<b>FY 2022</b>
Total Capital Expenses	\$30,866,040
Federal Capital Grants	\$11,204,972
State Capital Grants	\$18,255,370
Local Capital Match	\$698,099
<b>Capital Deficit</b>	<b>\$(698,099)</b>

In addition to system operating and capital costs, GRTC expects to fund two key studies in FY2022 to support regional transit planning efforts: the FY2023 Regional Public Transportation Plan and a Regional Study of Potential On-Demand Services. Both studies are expected to cost \$200,000. Approximately \$20.3 million is expected to be generated in FY2021 from CVTA revenue that are dedicated to GRTC and out of these funds, \$200,000 has already been spent to develop the FY2022 Regional Public Transportation Plan. That leaves \$20.1 million remaining from FY2021 CVTA funds to support GRTC's operating and capital plans. The table below summarizes the funding needs for GRTC and the FY2021 CVTA funds available. Based on these projections, a total of approximately \$21.3 million is needed to fund all transit needs in FY2022 and after using all FY2021 CVTA funds a deficit of approximately \$1.2 million would remain. GRTC intends to use unallocated Federal Covid-19 relief funding to cover the last of the funding gap.

Table 7: Total Funding Needs and CVTA Funding

	<b>FY 2022</b>
Total Operating Deficit	\$20,198,164
Total Capital Deficit	\$698,099
FY2023 Regional Public Transportation Plan	\$200,000
Regional On-Demand Service Study	\$200,000
<b>Total Funding Needs</b>	<b>\$21,296,263</b>
FY2021 CVTA Funding Available	\$20,100,000
<b>Remaining Deficit</b>	<b>\$(1,196,263)</b>

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## Recommended Funding Priorities for CVTA Transit Funds

In FY2021, the CVTA funding dedicated to GRTC is expected to be \$20.3 million and in FY2022 it is expected to be \$28.08 million. Based on the public feedback, coordination with the TPO Public Transportation Working Group, and with individual jurisdictions, GRTC recommends the following priorities for investment of the CVTA Transit Funds for FY2022.

1. Maintain Existing Fixed Route and Paratransit Services: Allocate FY2021 CVTA funds and sufficient Federal CARES Act funding to cover the \$20.2 million operating deficit for FY2022.
2. Fund key capital needs: Allocate \$698,099 of FY2021 CVTA funds for matching federal and state grants.
3. Fund a Regional Study of Potential On-Demand Services: Allocate \$200,000 of FY2021 CVTA funds.
4. FY2023 Regional Public Transportation Plan to continue the prioritization of possible service expansions for the regional transit network with targeted investments in new fixed route services: Allocate \$200,000 of FY2021 CVTA funds to support continued regional transit planning. See Appendix A for a summary of the prioritization efforts conducted during the development of the FY2022 Regional Public Transportation Plan.

The above recommendations are described in more detail in the sections that follow. The total of these recommended allocations would spend all remaining \$20.1 million in FY2021 CVTA funds dedicated to transit. GRTC recommends placing the FY2022 CVTA funding, expected to be \$28.08 million, into a reserve for use on priorities identified in the future. The following section outlines the specific dollar amounts of CVTA funding recommended for each of these priorities.

### Maintain Existing Fixed Route and Paratransit Services

The top priority for investment of CVTA funds is to ensure continuation of existing fixed route services and accompanying paratransit services required by the ADA. The table below outlines the expected service hours in FY2022 that would be operated within each jurisdiction if no changes were made to the pre-pandemic transit network in the region. The dollars assigned are based on an estimated \$108.24 per revenue hour of service in FY2022.

The service hours applicable to each jurisdiction is based on the historic agreements about which routes are funded by each jurisdiction. For example, historically all of the costs for Route 19 have been borne by Henrico, all the costs of Routes 1A, 1B, and 1C have been borne by Richmond, and all of the costs for Route 82x have been borne by Chesterfield. Table 8 shows the breakdown of revenue hours, estimated fixed route costs, the subsidy from Federal, State, and other Agency resources, and the remaining costs attributable to fixed route services. Based on the financial projections outlined above, about 54% of fixed route costs could be covered by Federal, State, and other agency generated resources. Note that the numbers below exclude the costs associated with Route 95X which is funded by the City of Petersburg.

Table 8: Fixed Route Costs by Jurisdiction in FY2022

Jurisdiction	Revenue Hours	Fixed Route Costs	Fed/State/Agency Revenue Subsidy (54%)	Remaining Fixed Route Costs
Richmond	417,007	\$45,137,703	\$24,353,176	\$20,784,527
Henrico	85,323	\$9,235,534	\$4,982,854	\$4,252,680
Chesterfield	9,734	\$1,053,643	\$568,473	\$485,170
<b>Total</b>	<b>512,064</b>	<b>\$55,426,880</b>	<b>\$29,904,502</b>	<b>\$25,522,378</b>

Table 9 shows the addition of CARE and CARE Plus costs to the remaining fixed route costs. CARE costs have been distributed based on the estimated population and jobs within the ¼ mile service area around all local routes in the network.

Table 9: FY2022 Remaining Fixed Route Costs and CARE and CARE Plus Costs

Jurisdiction	Remaining Fixed Route Costs	Estimated CARE Costs	CARE PLUS Costs	Total Remaining Costs by Jurisdiction
Richmond	\$20,784,527	\$2,725,313	\$124,172	\$23,634,012
Henrico	\$4,252,680	\$2,340,054	\$1,456,137	\$8,048,871
Chesterfield	\$485,170	\$939,808		\$1,424,979
<b>Total</b>	<b>\$25,522,378</b>	<b>\$6,005,175</b>	<b>\$1,580,309</b>	<b>\$33,107,862</b>

Table 10 shows the total remaining costs (fixed route, CARE, and CARE Plus) by jurisdiction and the anticipated local contribution from each jurisdiction. The deficit column shows the funding shortfall by jurisdiction and in total.

Table 10: FY2022 Summary of Remaining Operating Costs by Jurisdiction, Local Funding, and Remaining Deficit

Jurisdiction	Total Remaining Operating Costs by Jurisdiction	Local Operating Funding	Deficit
Richmond	\$23,634,012	\$7,533,982	\$(16,100,030)
Henrico	\$8,048,871	\$4,161,475	\$(3,887,396)
Chesterfield	\$1,424,979	\$1,214,241	\$(210,737)
<b>Total</b>	<b>\$33,107,862</b>	<b>\$12,909,698</b>	<b>\$(20,198,164)</b>
<i>*Local operating funding represents the total local allocation minus the portion devoted to the capital budget.</i>			

To ensure a continuation of existing service, the deficit will be covered with CVTA funds with any remaining balance covered by unallocated Federal Covid-19 relief funding.

## Capital Investment Priorities

GRTC has several capital investment priorities, most of which are largely funded through Federal and State sources, but that require a local match of 4% or 10%. To support the required local match for these capital priorities, GRTC is recommending that CVTA funding be used to cover half of the required local match for capital improvements. The table below outlines the capital items funded with DRPT grants and the portion anticipated to be funded by CVTA.

Table 11: FY2022 DRPT Funded Capital Program

Project	Total Cost	Federal	State	CVTA	Local
New Vehicles 29 Fixed Route and 1 BRT	\$17,711,000	\$4,959,080	\$12,043,480	\$354,220	\$354,220
Transfer Plaza A&E	\$2,743,940	\$2,195,152	\$439,030	\$54,879	\$54,879
Paratransit Vans (20 out of 35)	\$2,320,000	\$649,600	\$1,577,600	\$46,400	\$46,400
Extend BRT platforms - A&E and Construct	\$1,500,000	\$420,000	\$1,020,000	\$30,000	\$30,000
Safety - Repair shop floors	\$200,000	\$160,000	-	\$20,000	\$20,000
SoGR - Facility (Roof Repair)	\$75,000	\$60,000	-	\$7,500	\$7,500
SoGR - IT/Facility (BAS System)	\$62,000	\$17,360	\$42,160	\$1,240	\$1,240
SoGR - IT (Care Vehicle Tablets)	\$80,000	\$22,400	\$54,400	\$1,600	\$1,600
SoGR - IT maintenance (Admin)	\$200,000	\$160,000		\$20,000	\$20,000
SoGR - IT maintenance (Svc)	\$800,000	\$221,340	\$537,540	\$15,810	\$15,810
SoGR - IT Misc. Replacements	\$31,000	\$24,800	-	\$3,100	\$3,100
SoGR - Maintenance (Bus Wash Upgrade)	\$162,000	\$45,360	\$110,160	\$3,240	\$3,240
SoGR - Maintenance (Parallelogram)	\$170,000	\$47,600	\$115,600	\$3,400	\$3,400
SoGR - Maintenance (Exhaust System/Tank Pumps)	\$170,000	\$47,600	\$115,600	\$3,400	\$3,400
SoGR - Maintenance (Gas Pumps/Ceiling heaters/Forklift)	\$170,000	\$47,600	\$115,600	\$3,400	\$3,400
SoGR - Fleet (Non-revenue)	\$115,000	\$32,200	\$78,200	\$2,300	\$2,300
Service Improv - Shelter	\$506,100	\$404,880	-	\$50,610	\$50,610
Bus Improv - IT (Genfare Keypad)	\$150,000	\$42,000	\$102,000	\$3,000	\$3,000
Bus Improv - IT (WiFi for FR buses)	\$300,000	\$84,000	\$204,000	\$6,000	\$6,000
Study - Church Lot (Study, Demo, Plan)	\$1,300,000	\$598,000	\$650,000	\$26,000	\$26,000
Study - Facility Admin/Maintenance Strategic Plan	\$430,000	\$197,800	\$215,000	\$8,600	\$8,600
Study - Planning (Next BRT Study)	\$1,030,000	\$473,800	\$515,000	\$20,600	\$20,600
Study - Planning (FR - Dedicated Lane Study)	\$230,000	\$105,800	\$115,000	\$4,600	\$4,600
Study - Planning (BRT - Dedicated Lane Study)	\$230,000	\$105,800	\$115,000	\$4,600	\$4,600
Study - Planning (Neighborhood Transfer Study)	\$180,000	\$82,800	\$90,000	\$3,600	\$3,600
<b>Total FY2022 Project Cost</b>	<b>\$11,204,972</b>	<b>\$18,255,370</b>	<b>\$698,099</b>	<b>\$698,099</b>	<b>\$11,204,972</b>

SoGR = State of Good Repair Investment

For local partners, capital contributions are determined based on revenue miles of service in each jurisdiction, which yields a split of 74.4% for Richmond, 22.6% for Henrico, and 3% for Chesterfield for most capital items. Costs for studies are split among the jurisdictions that they include. The contribution to each capital project by jurisdiction is summarized in the table below.

Table 12: Local Match for Capital Program by Jurisdiction

<b>Project</b>	<b>Richmond</b>	<b>Henrico</b>	<b>Chesterfield</b>
29 Fixed Route + 1 BRT (30 out of 54)	\$263,540	\$80,054	\$10,627
Transfer Plaza A&E	\$54,879		
Paratransit Vans (20 out of 35)	\$34,522	\$10,486	\$1,392
Extend BRT platforms - A&E and Construct	\$27,000	\$3,000	
Safety - Repair shop floors	\$2,976	\$904	\$120
SoGR - Facility (Roof Repair)	\$1,116	\$339	\$45
SoGR - IT/Facility (BAS System)	\$923	\$280	\$37
SoGR - IT (Care Vehicle Tablets)	\$1,190	\$362	\$48
SoGR - IT maintenance (Admin)	\$14,880	\$4,520	\$600
SoGR - IT maintenance (Svc)	\$11,904	\$3,616	\$480
SoGR - IT Misc. Replacements	\$461	\$140	\$19
SoGR - Maintenance (Bus Wash Upgrade)	\$2,411	\$732	\$97
SoGR - Maintenance (Parallelogram)	\$2,530	\$768	\$102
SoGR - Maintenance (Exhaust System/ Tank Pumps)	\$2,530	\$768	\$102
SoGR - Maintenance (Gas Pumps/Ceiling heaters/Forklift)	\$2,530	\$768	\$102
SoGR - Fleet (Non-revenue)	\$1,711	\$520	\$69
Service Improv - Shelter	\$7,790	\$2,032	\$300
Bus Improv - IT (Genfare Keypad)	\$2,232	\$678	\$90
Bus Improv - IT (WiFi for FR buses)	\$4,464	\$1,356	\$180
Study - Church Lot (Study, Demo, Plan)	\$19,344	\$5,876	\$780
Study - Facility Admin/Maint Strategic Plan	\$6,398	\$1,944	\$258
Study - Planning (Next BRT Study)	\$10,300	\$10,300	
Study - Planning (FR - Dedicated Lane Study)	\$4,600		
Study - Planning (BRT - Dedicated Lane Study)	\$4,140	\$460	
Study - Planning (Neighborhood Transfer Study)	\$3,600		
<b>Total FY2022 Project Cost</b>	<b>\$487,969</b>	<b>\$129,904</b>	<b>\$15,448</b>

The studies identified above are critical for maintaining existing service and for development of long-term improvements in the regional transit network.

- Church Lot (Study, Demo, Plan): In 2016 GRTC acquired the parcel at 325 East Belt Boulevard, the property adjacent to GRTC Headquarters. The purchase was made with the intention of securing the property for future expansion of the headquarters parking lot and/or future expansion of administrative office space. GRTC is proposing to complete Phase 1 of this project in FY22 which is Environmental Assessment, remediation plan, remediation, and demolition. The

current condition of the property poses a potential public safety and public health risk to both GRTC staff and the surrounding community.

- Facility Admin/Maintenance Strategic Plan: This project is to be done in parallel with the remediation and demo of the church lot and is referred to as Phase II. Phase II is for assessment of the current facility and administration buildings in conjunction with the Transit Asset Management Plan to identify needs and develop a strategic plan for the use of the current buildings, including recommended conceptual designs for growth, and use and conceptual design for the church property.
- Next BRT Study: The scope of this project is to complete a feasibility study for the next BRT corridors. The two corridors in consideration are West Broad Street between Willow Lawn and Short Pump and Chamberlayne Avenue/Hull Street Road. Each of these corridors will require careful study to estimate ridership, identify station locations, identify necessary pedestrian access improvements, designate bus only dedicated lanes, analyze traffic flow issues, and create efficient schedules that connect effectively with the existing system.
- Dedicated Lane Study: GRTC's overall system-wide on-time performance (OTP) is 68.9%. To meet the agency's OTP target of 80%, GRTC is working to improve OTP through a variety of methods including schedule adjustments and active management. Traffic related delays will continue to limit the ability of the system to fully realize this 80% OTP target. To alleviate the issue of traffic related delays and improve system reliability, GRTC will study the extension of bus only dedicated lanes through select road segments system wide. This study will identify which road segments within the system would yield the greatest impact to OTP if converted to fully dedicated bus only lanes. The study should also consider traffic flow and parking impacts, pedestrian safety and access, and transit signal priority.
- BRT - Dedicated Lane Study: The Pulse BRT line on Broad Street currently has less than 50% dedicated lanes. For the Pulse to be categorized as a BRT for FTA standards and be eligible for additional capital funds through 5337 more than 50% of the length of the corridor would need to have dedicated lanes. The State of Good Repair Grants Program (49 U.S.C. 5337) provides capital assistance for maintenance, replacement, and rehabilitation projects of high-intensity fixed guideway and bus systems to help transit agencies maintain assets in a state of good repair. An additional 0.6 miles of dedicated lanes would be needed to meet the 50% threshold. This study will identify which segments of the route would be feasible to convert to peak or all-day dedicated bus only lanes. The study should also consider traffic flow and parking impacts, pedestrian safety and access, and transit signal priority. This increase in dedicated lanes will also help improve on-time performance.
- Neighborhood Transfer Study: GRTC has identified a minimum of five locations in the system that operate as highly frequented connection points for riders. GRTC is requesting the study of these locations for infrastructure and signage improvements that would create an improved waiting environment for riders, as well layover points for operators. In Phase 1 of this project, GRTC will analyze the current use of the bus stop at 23<sup>rd</sup> and Street and Franklin Street as a major transfer point of five routes and identify other possible curb locations that could better serve as a transfer point. The feasibility of other sites should include the sidewalk near the Pulse station on Main Street at 24<sup>th</sup> Street. This study will include a layout and conceptual design.

## Study of On-Demand and Other Mobility Services

Prior to the creation of CVTA, there was no regional funding source for transit, and limited conversations with rural jurisdictions about what, if any role, GRTC could play in mobility services. As this initial Regional Public Transportation Plan has been developed, some rural jurisdictions have expressed interest in exploring what transit approaches might be possible in more rural parts of the region, but there has been insufficient time to fully study those possibilities. Therefore, GRTC recommends that in FY2022, \$200,000 in CVTA funding be dedicated to a regional study of potential on-demand or other mobility services within the region, with an emphasis on rural jurisdictions. If the study results identify demand for a pilot to be implemented in FY2022, GRTC proposes to use federal Covid relief dollars to fund the pilot.

## Regional Public Transportation Plan FY2023

Since the new CVTA funding stream may provide enough funding to support expansion of service in the next few years, GRTC embarked on a community conversation to explore the priority for funding expansions of service as part of this FY2022 Regional Public Transportation Plan. That process is summarized in Appendix A. The results of that process developed a list of possible improvements but did not conclusively define a set of priorities for expanded services or a definitive timeline for implementation. Therefore, GRTC will revisit the identified improvements as part of the plan development for FY2023 with the goal of developing a set of prioritized service improvements and expansions and a timeline for implementation. For FY2022, GRTC recommends that \$200,000 in CVTA funding be dedicated to the FY2023 Regional Transportation Plan to define the CVTA funding priorities for FY2023 and service expansion and improvement priorities.

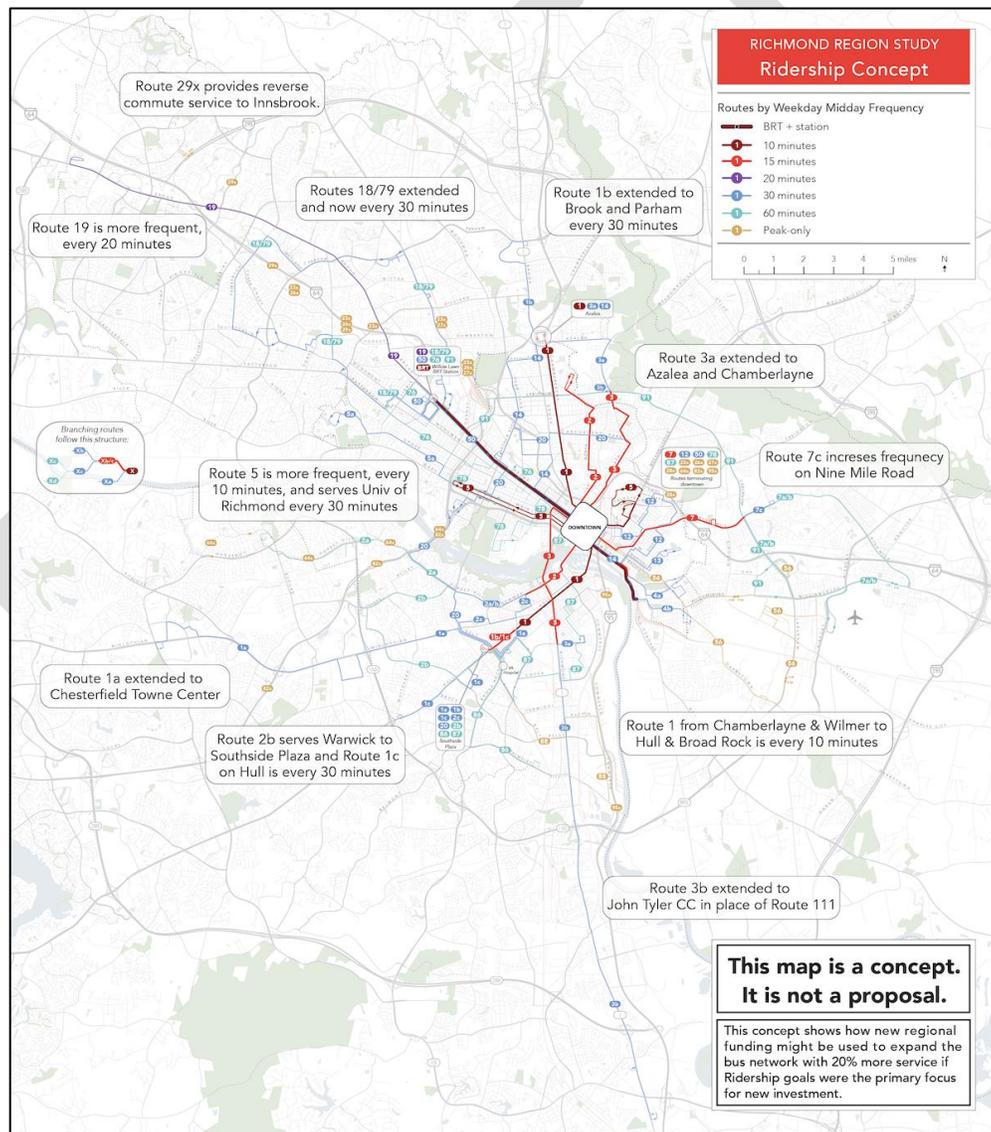
**Appendix A:**  
**Assessment of Service Expansion and  
Improvement Concepts and Options**

## Fixed Route Service Expansion Possibilities

Since the new CVTA funding stream may provide enough funding to support expansion of service in the next few years, GRTC embarked on a community conversation to explore the priority for funding expansions of service. Building off the work completed in the Greater Transit Vision Plan Phases 1 and 2 and the GRTC Transit Development Plan, staff from GRTC and the consultant team, in collaboration with representatives from the TPO Public Transportation Working Group, developed two transit network concepts that showed different ways of expanding transit in the region that emphasized different goals.

One of those goals is ridership, or providing frequent service to dense, busy places to encourage more people to ride. Concentrating service will encourage greater use but is costly so frequent service can't be spread across as many places. The map below shows a transit concept for the Richmond region that prioritizes 100% of additional service toward higher ridership goals.

Figure 7: Ridership Concept for Expanded Service



Key changes and service extensions in this concept include:

- Increasing the frequency of service to every 10 minutes on Route 5 and on Route 1 from Chamberlayne and Azalea to Hull and Broad Rock.
- Increasing the frequency of service to every 15 minutes on Route 7 from Nine Mile and Laburnum to Downtown.
- Increasing the frequency of service to every 20 minutes on Route 19 from Short Pump to Willow Lawn.
- Increasing the frequency of service on Routes 18 and 79 to every 30 minutes and connecting the two routes together into a west end loop.
- Extending 30-minute service along Midlothian Turnpike in Chesterfield, along Brook Road in Henrico, and along Meadowbridge Rd/Richmond-Henrico Turnpike in Henrico.

The Ridership Concept would achieve the following outcomes:

- 15,000 more residents and 20,000 more jobs would be within a quarter mile of some transit service.
- 3% more people in poverty and 5% more minority residents would be within a quarter mile of some transit service.
- Many more people and jobs would be near frequent service: 41,000 more residents and 41,000 more jobs would be near service that arrives every 10 minutes all day.
- With many more routes being every 10 or 15 minutes, the Ridership Concept substantially increases jobs reachable in 45 minutes. The average resident could reach 16% more jobs, the average minority resident could reach 17% more jobs, and the average resident in poverty could reach 14% more jobs in 45 minutes.

A separate and competing goal for transit is that of coverage, or providing service to as many places as possible. Yet spreading bus routes to more places means that service is not very frequent and therefore waits are long. The map below shows a transit concept for the Richmond region that invests about 70% of additional resources in higher ridership service and about 30% toward coverage service.

Key changes and service extensions in this concept include:

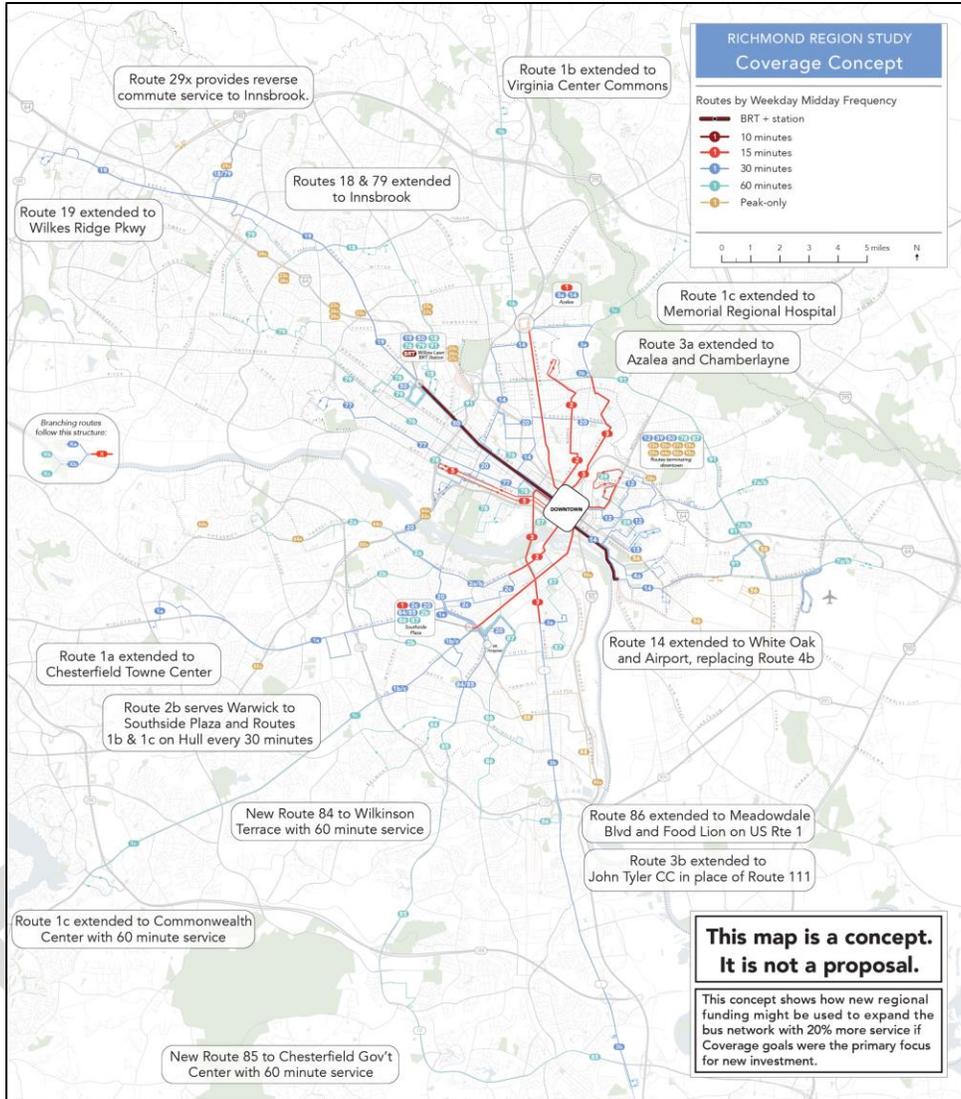
- Extending 30-minute service along Midlothian Turnpike in Chesterfield, along Williamsburg Road in Henrico, along Meadowbridge Rd/Richmond-Henrico Turnpike in Henrico.
- Extending 60-minute service along key corridors like Brook Rd in Henrico, Hull Street and Iron Bridge Road in Chesterfield.
- New or extended services to Innsbrook, Wilkinson Terrace, Memorial Regional Hospital in Hanover, and along Meadowdale Boulevard in Chesterfield.

The Coverage Concept would achieve the following outcomes:

- 55,000 more residents and 40,000 more jobs would be within a quarter mile of some transit service.
- 13% more people in poverty and 21% more minority residents would be within a quarter mile of some transit service.
- There would be no change in people or jobs near frequent transit (service that comes every 10 or 15 minutes).
- With no increase in frequency, the Coverage Concept does not substantially increase jobs reachable in 45 minutes for the average resident. The average resident could reach 4% more

jobs, the average minority resident could reach 6% more jobs, and the average resident in poverty could reach 4% more jobs in 45 minutes.

Figure 8: Coverage Concept for Expanded Service



The general public and key stakeholders were invited to respond to the concepts in February and March 2021. GRTC published information about the concepts on its website and opened a web survey to ask people which concept they preferred beginning on February 18. GRTC held a virtual meeting for key stakeholders on February 23 to explain the concepts and allow key community leaders to ask questions about the concepts and the process. On March 4, GRTC held a virtual meeting for the general public where more than 30 attendees learned about the concepts and could ask questions about them. GRTC also circulated information about the concepts via its social media accounts, a press release, and surveyed riders at the downtown temporary transfer plaza. The survey closed on March 12 after having received 419 responses.

A plurality of respondents (45%) preferred the Ridership Concept, but a sizeable minority of respondents (36%) preferred the Coverage Concept and 19% of respondents indicated that they preferred a network halfway between the two concepts. Among existing bus riders, the preference for the Ridership Concept was higher than for the Coverage Concept. Some key subgroups, though, differed in their preferences: minority and lower income respondents preferred the Coverage Concept more so than the Ridership Concept.

Based on these responses from the public and conversations with jurisdiction staff, the TPO Working Group developed an initial set of recommended network improvements that balanced the goals of Ridership and Coverage at 85% Ridership and 15% Coverage. The Board of Directors for GRTC endorsed this balance between Ridership Goals and Coverage Goals in a policy resolution it adopted at a Special Board Meeting held on March 22, 2021.

While GRTC would like to expand service as quickly as possible, some of these expansion possibilities will require further study and coordination with local partners. Furthermore, it is not possible for GRTC to expand so quickly, as some critical logistical constraint limit the ability of GRTC to expand service. Hiring and keeping enough operators to run the existing system has been a challenge in recent years for GRTC, as it has been for many agencies. This challenge has been exacerbated during the Covid-19 pandemic. The most recent labor agreement between GRTC and ATU Local 1220 will increase pay for operators by 12.5% over three years, which should help with recruitment and retention of operators. In addition, GRTC is expanding its advertising and marketing programs to recruit new operators.

With these constraints, GRTC is therefore recommending the following service expansions as high priorities for implementation in the next few years:

- Extending Route 19 to Wilkes Ridge Parkway in Goochland County
- Extending Route 1a to Chesterfield Towne Center
- Incorporating Route 111 into Route 3b
- Extending Route 3a to Azalea Avenue and Chamberlayne Avenue
- Extend Route 1c to Brook Road and Parham Road
- Extend Route 86 to Meadowdale Boulevard

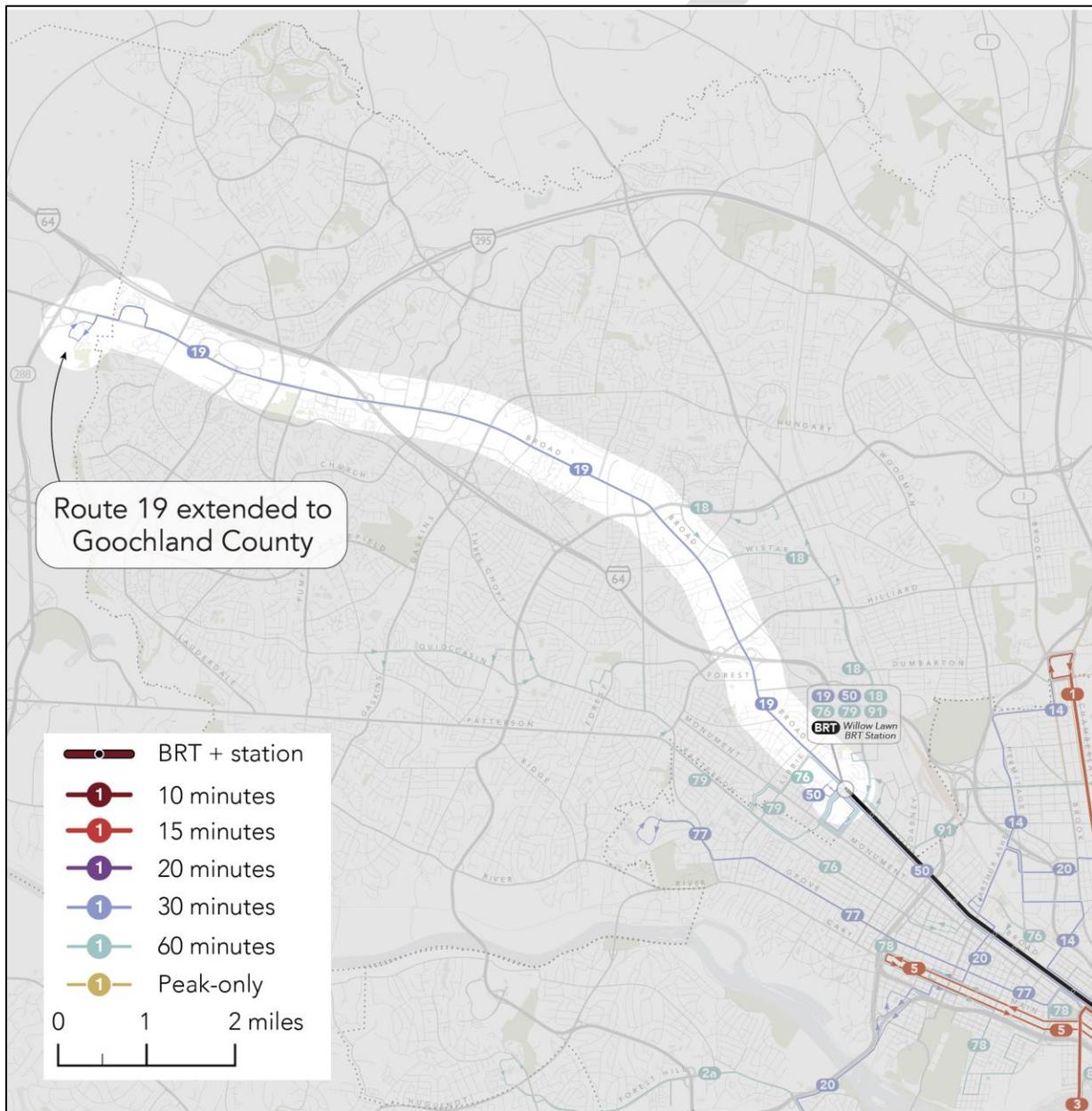
Also described below are additional possible service expansions for future fiscal years for consideration by local and regional partners. For estimating costs of these extensions, a revenue hour costing approach has been used and the fully allocated cost of \$107.77 per revenue hour is assumed for FY2022. In some instances, there is no additional cost assumed because an extension or service change does not incur additional revenue hours.

### Route 19 Extension to Gochland

Today Route 19 runs along West Broad Street from Willow Lawn to West Broad Marketplace just west of Short Pump Town Center. This service expansion would extend Route 19 to Wilkes Ridge Parkway in Gochland County to serve the Sheltering Arms Institute and destinations near the Broad Street/288 Interchange. The map below shows the extended route.

Currently there is sufficient layover time in the schedule to extend this route with no change in the total revenue hours to operate this route and therefore this extension would not incur additional costs.

Figure 9: Map of the extended Route 19

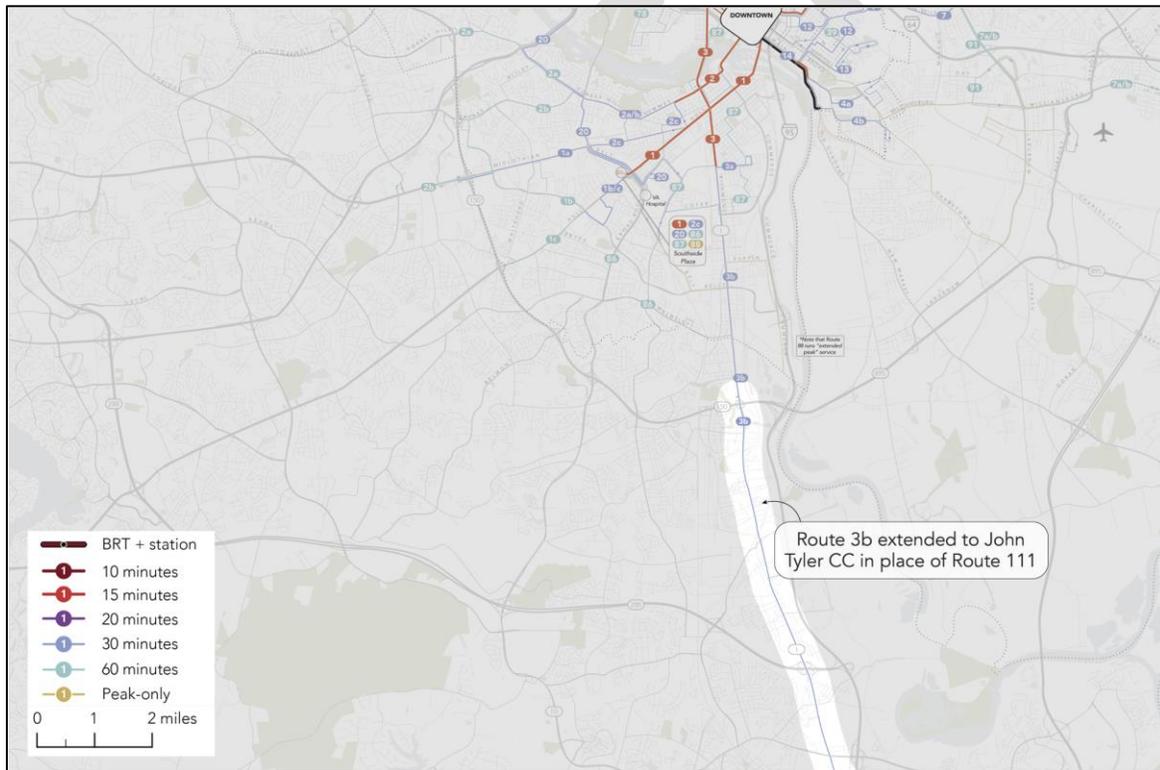


### *Incorporate Route 111 into Route 3b*

Today Route 111 operates from the Food Lion near Richmond Highway and Chippenham Parkway to John Tyler Community College. Route 3b operates from the Food Lion north into the City of Richmond, to VCU, downtown, and north into Highland Park. If a rider wishes to go from John Tyler to downtown, or anywhere north of the Food Lion, a transfer is required. By merging Route 111 into Route 3b, riders will be able to go farther with fewer transfers and get to their destinations more quickly.

This change will not require additional revenue hours or costs. Route 3b does not run evenings or Sundays, just as Route 111 does not. Route 3c operates evenings and weekends along all of Route 3b, but Route 3c would not be extended to operate along this extension when implemented. With additional funding, GRTC would recommend extending Route 3c to serve this portion of Richmond Highway in the future.

Figure 10: Map of Route 3b incorporating Route 111



### Extend Route 1a to Chesterfield Towne Center

A high priority from previous studies is to extend service to Chesterfield Towne Center along Midlothian Turnpike. This is achieved by extending Route 1a to provide service every 30 minutes from downtown Richmond through Southside Plaza to Midlothian Turnpike and Mall Drive. This extension would provide all-day and all-week transit service to the highest concentration jobs in Chesterfield County.

Concurrent with the extension of Route 1a, Routes 2a, 1b, and 1c would change to make the most efficient use of resources in this part of the region. The map below shows how all routes in this area would change. Route 2b would be shifted to serve Warwick Road to Southside Plaza, providing a direct connection between Southside Plaza and Chippenham Hospital. Route 1b would be terminated and the resources used to turn Route 1c to every 30 minutes, increasing the frequency of service on Hull Street south of Warwick Road.

Figure 11: Map of Proposed Route 1a Extension

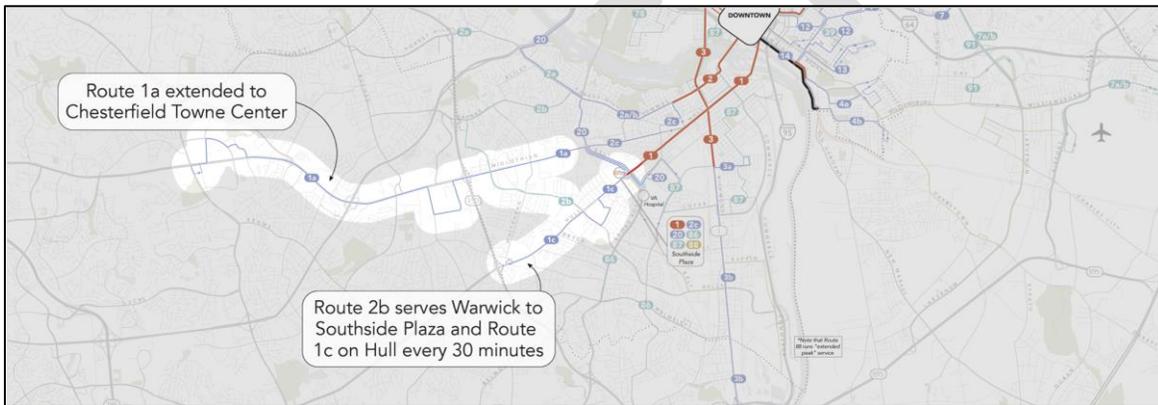


Table 13: Estimated Revenue Hours and Costs for Route 1a Extension

Service Change	Revenue Hours			Cost (FY2022 Dollars)
	Existing	Proposed	Net Difference	
Route 1A Extension to Chesterfield Towne Center with changes to Routes 2B and 1C	57,597	72,704	15,107	\$1,571,883

With an additional 15,107 revenue hours needed to provide this service, at \$104.05 per revenue hour, the cost for this recommended expansion is \$1,571,883 at FY2022 costs. Future year cost would likely be higher.

### Extend Route 3a

A key transit market in Henrico County is serving the areas along Meadowbridge Road and Richmond-Henrico Turnpike, an area with many apartments that is only a short distance north of Highland Park, where Route 3 ends today. Extending Route 3a with 30-minute service as shown in Figure 12 would connect this area more directly to downtown and the rest of the transit network and would connect this area and Highland Park to grocery stores at Chamberlayne and Azalea. This would also provide better service to the Department for the Blind and Vision Impaired on Azalea Avenue. This extension would include extending Route 3c for evening and Sunday service.

In combination with this extension, Route 93 would likely be converted to an on-demand service zone covering a few difficult to access apartments in the vicinity of Chamberlayne and Azalea. The change to Route 93 is not expected to have significant cost impacts.

Figure 12: Map of Route 3a Extension

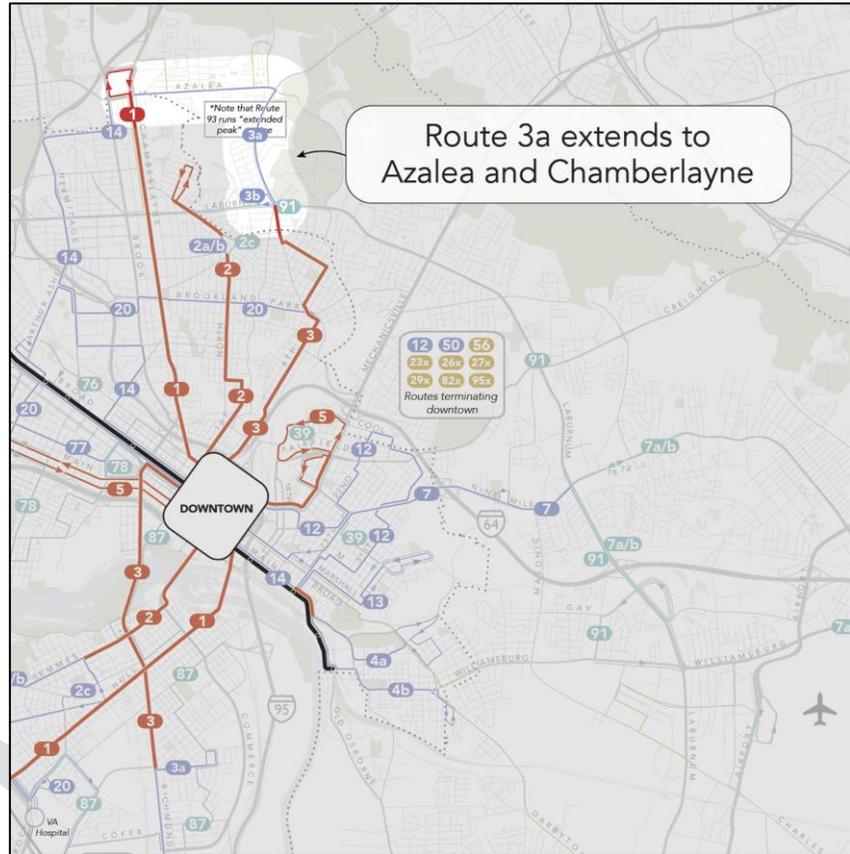


Table 14: Estimated Revenue Hours and Costs for Route 3a Extension

Service Change	Revenue Hours			Cost (FY2022 Dollars)
	Existing	Proposed	Net Difference	
Route 3A Extension	45,302	57,348	12,046	\$1,253,386

### Extend Route 86 to Meadowdale

In Chesterfield County there is a sizeable concentration of people in poverty along Meadowdale Boulevard and people in this area would likely benefit significantly from access to transit service. Extending Route 86 south to Meadowdale Boulevard and then east to the Food Lion on Richmond Highway would provide transit connections to grocery stores, other shopping destinations, the VA Hospital, and would provide connections to Route 3b at the Food Lion and multiple routes at Southside Plaza. This extension would also provide easier access to grocery stores and other shopping destinations for people in South Richmond who currently have limited access to fresh food.

Figure 13: Map of Route 86 Extension

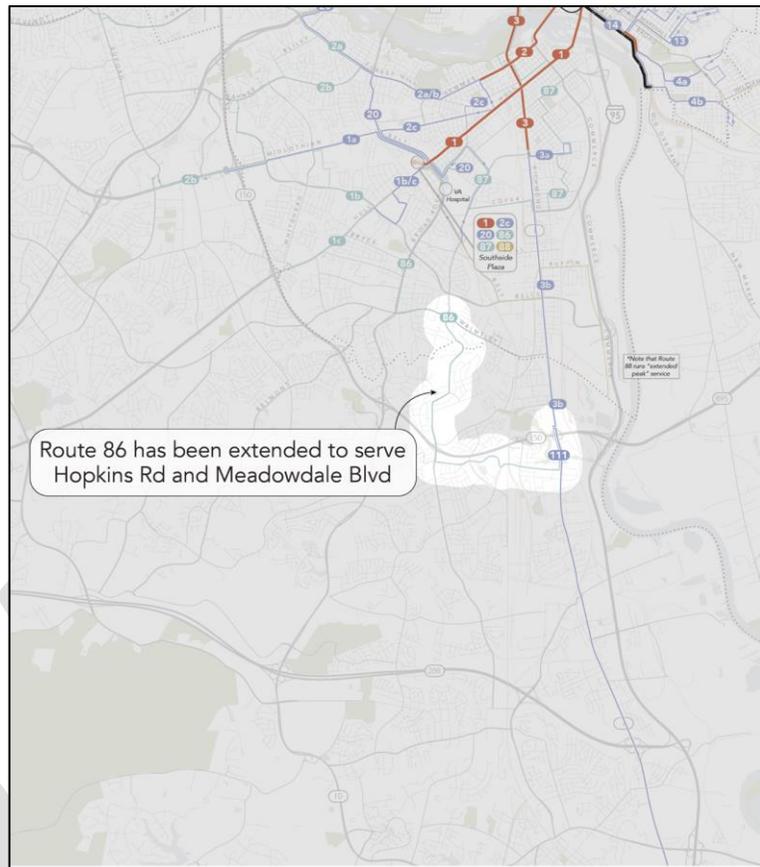


Table 15: Estimated Revenue Hours and Costs for Route 86 Extension

Service Change	Revenue Hours			Cost (FY2022 Dollars)
	Existing	Proposed	Net Difference	
Route 86 Extension	5,532	11,244	5,712	\$594,334

### Extend Route 1c to Brook and Parham

Another key market for transit in Henrico County is the Brook Road corridor north of Azalea Avenue. Extending Route 1c with 30-minute service along this corridor would reach apartments, major employers along Villa Park Drive, St. Joseph’s Villa, and the Wal-Mart shopping center at Parham Road. This extension would connect all these areas to downtown Richmond and provide easy access to these destinations from the Chamberlayne Avenue corridor and to and from other destinations with connections at Chamberlayne and Azalea.

Figure 14: Map of Route 1c Extension

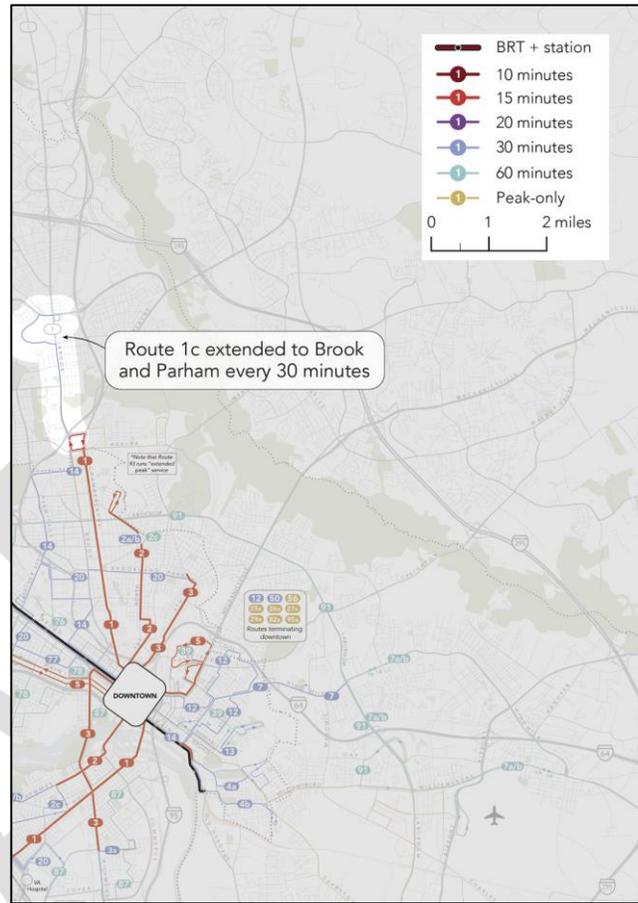


Table 16: Estimated Revenue Hours and Costs for Route 1c Extension

Service Change	Revenue Hours			Cost (FY2022 Dollars)
	Existing	Proposed	Net Difference	
Route 1C Extension	0	11,611	11,611	\$1,208,125

### New Route 84 in South Richmond and Chesterfield

The Wilkinson Terrace area of Chesterfield County has a high concentration of poverty in apartments along Belmont and Turner Roads. A new Route 84 from Southside Plaza to this area would provide basic transit access to this community and connect it with the rest of the transit network.

If this new route were implemented, then concurrently with this addition Route 86 would likely be shifted to serve Hopkins Road from Walmsley Boulevard to Holly Springs Avenue to Southside Plaza.

Figure 15: Map of New Route 84

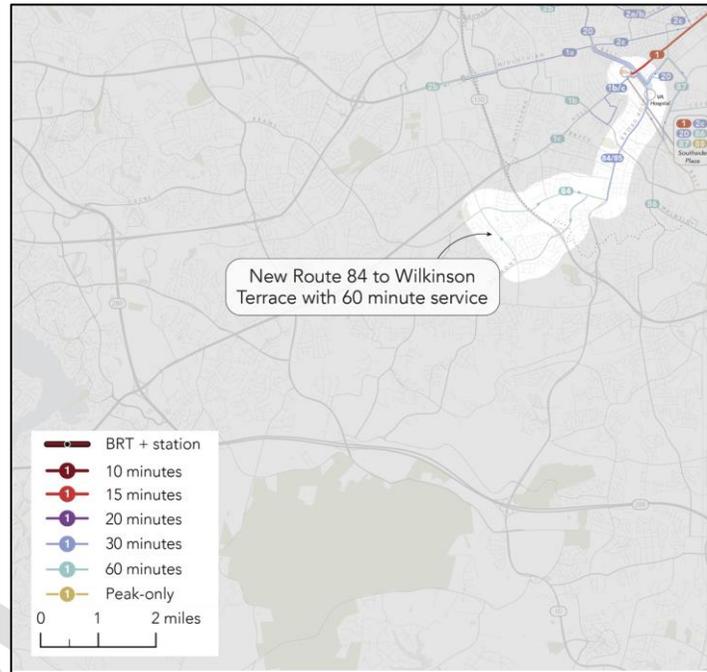


Table 17: Estimate Revenue Hours and Costs for Route 84

Service Change	Revenue Hours			Cost (FY2022 Dollars)
	Existing	Proposed	Net Difference	
New Route 84	0	5,622	5,622	\$584,969

### Route 5 Frequency to 10 Minutes and Consolidate with Route 77

Route 5 is a high productivity route serving major destinations like downtown and VCU as well as dense residential areas like Mosby, Whitcomb, the Fan, and Museum District. Increasing the frequency of this route from every 15 minutes to every 10 minutes would reduce wait times for existing riders, increase access to jobs and opportunity for many across the region, and likely increase ridership on this route.

Merging Route 77 into Route 5, by providing an every 30 minute extension called Route 5a would better connect the University of Richmond with downtown and the rest of the transit network. It would slightly increase the walking distance to transit in parts of the Fan and Museum District but would offset that with higher frequency service.

Figure 16: Map of Route 5 Improvements

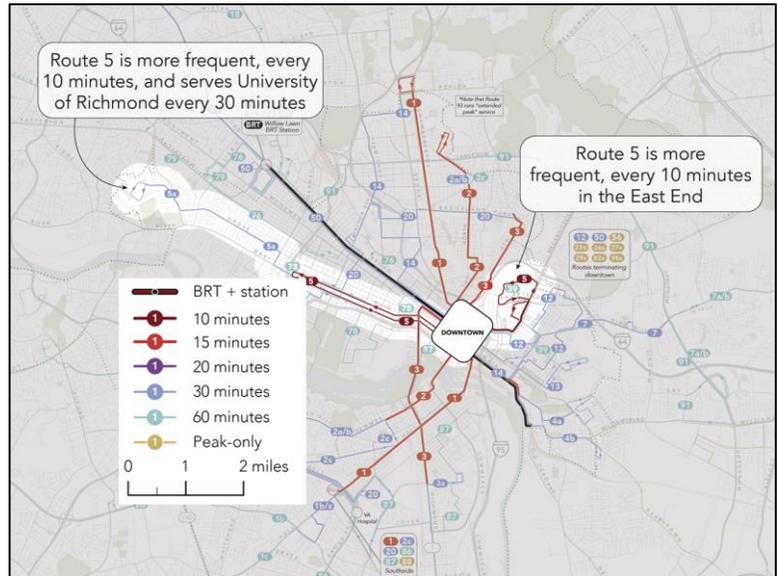


Table 18: Estimate Revenue Hours and Costs for Route 5 Improvements

Service Change	Revenue Hours			Cost (FY2022 Dollars)
	Existing	Proposed	Net Difference	
Route 5 Improvements	44,416	52,159	7,743	\$805,659

### Route 29x Reverse Commute Extension

Route 29x currently provides peak-only service every 15 minutes from the Gaskins Road Park-and-Ride lot to downtown Richmond. Although service is provided in both directions, relatively few people use the route to go out to Henrico in the morning or into Richmond in the afternoon, in part because there is no connection to other routes or destinations in Henrico.

With a small modification, the route could provide more useful reverse commute connections for people traveling from Richmond to Henrico in the mornings and the reverse in the afternoon. By adding a loop that would pass through Innsbrook, Route 29x could serve more trips at a small additional cost. This new routing would mean that in the mornings, trips from downtown Richmond would go out I-64 to I-295, to Nuckols Road, through Innsbrook before reaching the Gaskins Park-and-Ride. In the afternoon, trips from Henrico to downtown Richmond would start at the Park-and-Ride lot, go out Broad to Cox Road, to Nuckols Road to I-295, to I-64 before heading downtown. This pattern would provide connections to Route 19 at the outer end of the route and provide reverse commute connections to Innsbrook Office Park.

Figure 17: Map of Route 29x Extension

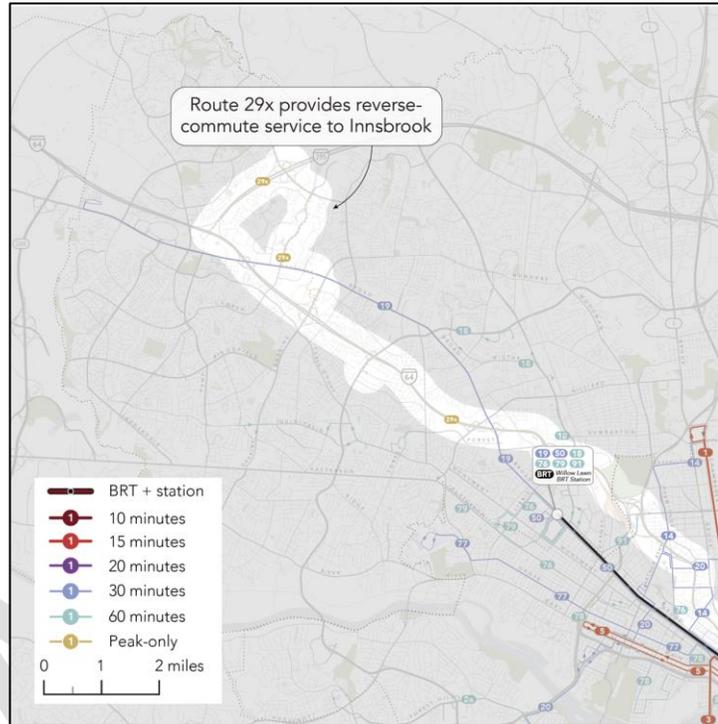


Table 19: Estimate Revenue Hours and Costs for Route 29x Extension

Service Change	Revenue Hours			Cost (FY2022 Dollars)
	Existing	Proposed	Net Difference	
Route 29x Extension	3,243	3,993	750	\$78,038

### New Route 85 to Chesterfield Government Center

In Chesterfield County one of the largest job concentrations outside the Midlothian corridor is the Chesterfield Government Center. The Government Center is also a key destination for many residents of the county to access government services. Therefore, a connection to the Government Center via Iron Bridge Road would be a key coverage priority.

To serve the Government Center and the Iron Bridge Road corridor, a new Route 85 could extend from Southside Plaza to the Government Center with every 60-minute service. With connections at Southside Plaza riders could connect to Route 1a and 86 to reach other parts of Chesterfield County. They could also connect at Southside Plaza

to many other routes to connect to destinations across the region. If both Routes 84 and 85 are implemented, their schedules could be offset to provide service every 30 minutes along Broad Road Boulevard from Southside Plaza to Walmsley Boulevard, significantly reducing wait times for people along this corridor.

Figure 18: Map of New Route 85

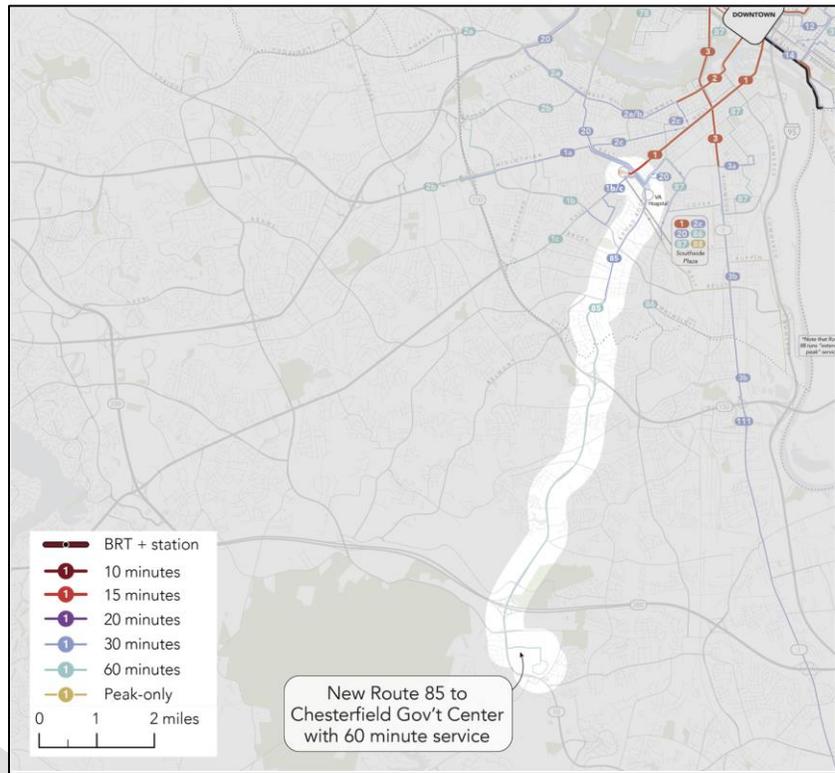


Table 20: Estimate Revenue Hours and Costs for Route 85

Service Change	Revenue Hours			Cost (FY2022 Dollars)
	Existing	Proposed	Net Difference	
New Route 85	-	11,244	11,244	\$1,169,938

### Route 19 to every 20 minutes

Route 19 serves the longest continuous retail and jobs corridors in the region: West Broad Street. Improved frequency of service along this corridor would substantially reduce wait times for existing riders, improve job access for many people across the region, and likely increase ridership along the corridor. It would also be a step toward future BRT extension along West Broad Street.

Figure 19: Map of 20-Minute Frequency on West Broad

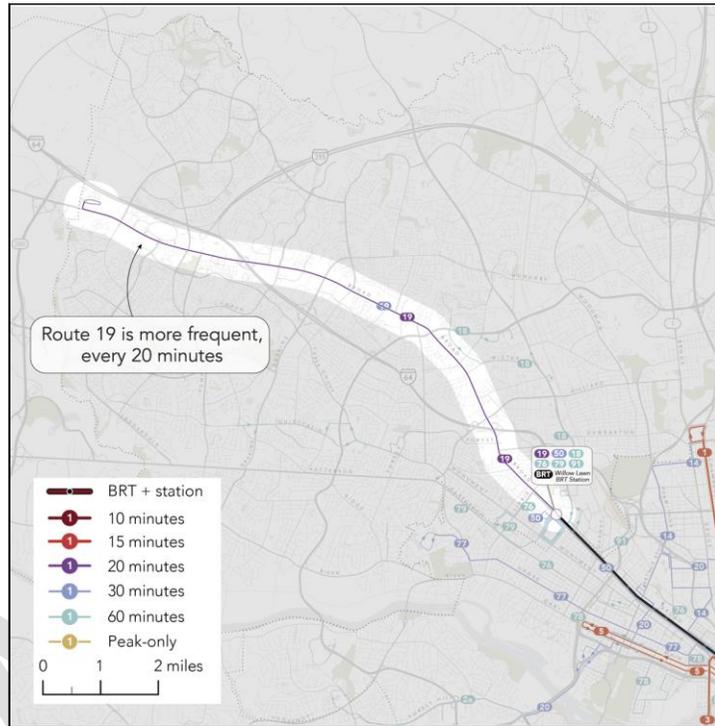


Table 21: Estimate Revenue Hours and Costs for Increasing the Frequency of Route 19

Service Change	Revenue Hours			Cost (FY2022 Dollars)
	Existing	Proposed	Net Difference	
Route 19 Frequency Increase	21,663	32,249	10,586	\$1,101,473

### Increased Frequency on Route 7

Route 7 and its branches achieve relatively high productivity and ridership along the route is relatively high, particularly along its 30-minute trunk from downtown to Laburnum. Increasing the frequency of service along the trunk of the route would substantially reduce wait times for existing riders, improve job access for many people across the region, and likely increase ridership along the corridor. It would improve access to the shopping destinations at Eastgate Shopping Center, improve access to Richmond Community Hospital, and improve connections between the East End and downtown.

The improved frequency on the trunk would be provided by a new Route 7c with 30-minute service from downtown to Laburnum overlaying the existing Routes 7a and 7b. The combination of all three routes would provide every 15-minute service along Nine Mile Road and 25<sup>th</sup> Street to downtown.

Figure 20: Map of Route 7

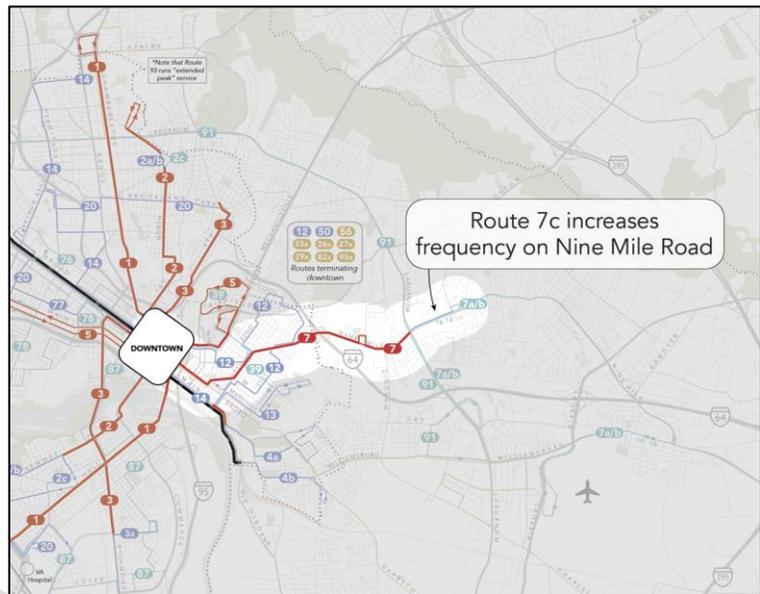


Table 22: Estimate Revenue Hours and Costs for Route 7c

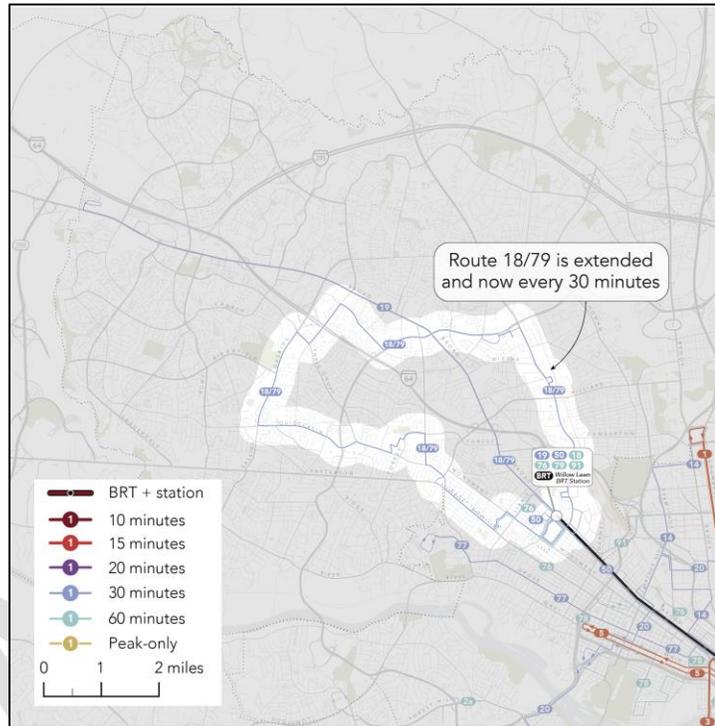
Service Change	Revenue Hours			Cost (FY2022 Dollars)
	Existing	Proposed	Net Difference	
Route 7c (Effective 15 Minute Frequency on Route 7 Trunk)	-	8,560	8,560	\$890,668

### Route 18/79 Improvements

In the West End of Henrico today's Routes 18 and 79 provide key connections to destinations like Henrico Doctor's Hospital, St. Mary's, Regency, Parham Doctor's Hospital, the Staples Mill Amtrak station, and the Henrico Government Center. Currently Route 18 provides service about every 60 minutes and Route 79 provides service about every 45 minutes. Neither route operates on weekends. Given the major destinations that these routes service, the frequency of service provided is quite low, and the lack of weekend service is a lost ridership opportunity.

Simply adding weekend service to the existing routes would provide reliable, all-week transit access for residents and potential riders along these corridors. This is particularly critical for hospital and retail workers, as weekend shifts are quite common for these industries.

Figure 23: Map of Route 18/79



Increasing the frequency of these routes, extending them, and merging them into a West End Loop would significantly improve job access, reduce waiting times for riders, and better connect many destinations in Henrico County. The map in Figure 23 shows this revised route design that would better connect all these key job destinations to the rest of the regional transit network.

Table 23: Estimate Revenue Hours and Costs for Route 18/79 Improvements

Service Change	Revenue Hours			Cost (FY2022 Dollars)
	Existing	Proposed	Net Difference	
Adding weekend service on existing Routes 18 and 79	10,317	20,032	9,715	\$1,010,846
Route 18/79 (30min) weekday only	10,317	30,464	20,147	\$2,096,295
Route 18/79 (30min) all-week	10,317	38,765	28,448	\$2,960,014

### Future Regional Transit Planning

The funding program described for FY2022 for the existing network has been developed to meet the need to maintain existing service and to fit with the local funding minimums identified in § 33.2-3712 of the CVTA enabling legislation. Over the next few years, GRTC recommends shifting to a cost and funding allocation model that more clearly delineates routes that are regional in nature and that could be

funded by regional CVTA dollars from routes that are local in nature and that should be funded primarily from local contributions. Regionally significant routes would be defined based on criteria agreed to by the CVTA and local partners. Those criteria would likely include the following:

- Routes that provide local or rapid service along major regional corridors, or are parallel to major regional corridors, and that connect to major jobs centers and are therefore likely to achieve high ridership relative to cost. Routes that would likely meet these criteria include The Pulse, and local routes 1, 2, 3, 5, among others.
- Peak-only express routes where the origins are relatively dense residential markets and the destination is a very dense job center with relatively high parking costs, and the distance from origin to destination is relatively high so that competitive trip times are possible, and therefore the route is likely to achieve above average productivity.

The process to further refine these criteria and apply a new cost and funding methodology will require additional time, consultation, and coordination with local and regional partners.

## Performance Metrics

Performance metrics are critical planning tools to evaluate the effectiveness of existing service and to assure impartiality in service modification decisions. The following metrics are based on GRTC's Service Standards from its adopted Transit Development Plan. These standards reflect a focus on creating a logical, efficient, and integrated route system, with additional emphasis on customer convenience and fiscal responsibility. Several of the service standards reflect different criteria dependent upon the intensity of service frequency and passenger boardings, as represented by six service category types:

- **BRT** – This is a new category added for the Pulse BRT service to begin in 2018 and any future BRT expansions. The routes in this category have high frequency with dedicated lanes. They have limited stops, referred to as stations. BRT service is primarily focused on high ridership goals.
- **Core Arterial** – The routes in this category are considered GRTC trunk routes. They are a combination of other routes to create frequent service on a corridor. Their entire route runs on a major corridor/thoroughfare. The majority of stops have high population density within .25 miles. Activity centers are serviced along these routes. Examples of Core Arterial routes in the new network include Routes 1, 2, and 3. Core Arterial routes are primarily focused on high ridership goals.
- **Arterial** – The routes in this category travel more than 50% of their route on major corridor/thoroughfare. Terminus stops are major activity centers. Examples of Arterial routes in the new network include the branches of Routes 1, 2, and 3, and Routes 14 and 19. Arterial routes may have portions that primarily serve ridership goals and portions that primarily serve coverage goals.
- **Community Radial** – The routes in this category serve as the neighborhood network. These routes travel through the neighborhoods for the majority of their service, connecting neighborhoods to the main corridors. Examples of Community Radial routes in the new network include Route 12 and 76. Community Radial routes may have portions that serve ridership goals, but most sections of Community Radial routes serve coverage goals.
- **Circulator/Feeder/Connector** – Routes in this category connect outlying sections of the service area to each other. The routes have a stop at an activity center at one or both terminus. This stop additionally allows for connection to an arterial or core arterial route. Examples of Circulator/Feeder/Connector routes in the new network include Route 86 and 88. Some of these routes or portions of these routes may serve ridership goals but most serve coverage goals.

## Speed

The travel speed of a bus route has an impact on its usefulness to riders. It also has an impact on its operating cost: slower service requires more buses to deliver a given frequency or cover a given distance. GRTC’s service investment can achieve higher ridership, and more coverage, if services maintain high average operating speeds.

Travel speeds determine route schedules. When actual speeds become slower than scheduled speeds, reliability will suffer. This is why the standard for Travel Speed and the standard for Reliability must be followed together: otherwise a high travel speed can be achieved at the expense of reliability, or a very reliable schedule can be written for service that is incredibly slow.

Travel speeds are affected by:

- Ridership. Higher ridership can slow down speeds by requiring vehicles to pull over at more stops, and by requiring more time for passengers to board and alight.
- Stop spacing. Closer stop spacing slows speeds, especially on high-ridership lines.
- Fare technologies and policies. The longer it takes for each passenger to pay their fare, the longer a transit vehicle may need to dwell at each stop. Some fare types require less time than others for payment, and GRTC can pursue fare technologies or adopt fare policies that reduce fare payment time.
- Traffic congestion. Regular or unpredictable congestion on roads is completely outside of the control of GRTC but is a major contributor to slow speeds and unreliable speeds. Transit priority measures can speed transit vehicles past congestion.
- Signals. Delay at signals will slow transit, but signals can also be enhanced to give transit priority and reduce signal delay.

*Table 24: Target Speed Standards*

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

## Reliability

Reliability describes the degree to which people feel they can rely on a transit service to arrive and depart when scheduled. Reliability is often measured using the on-time performance of a route. On-time performance is a measure of runs completed within an acceptable window based upon the published schedule. For this window, GRTC considers a bus to be on-time if it arrives between zero minutes early and five minutes late. The standard recognizes the increased sensitivity of making a timed transfer during night operations.

Table 25: Target for On-Time Performance

Time of Day	Percent on Time Target		
	All Local Service	Express Bus	BRT
Day	80%	80%	90%
Night	85%	N/A	90%

## Productivity

Passengers per revenue hour tell us how well a service is attracting ridership relative to the cost of that service. Routes with low productivity are not achieving high ridership, but they may be serving a valuable coverage goal. Therefore, productivity metrics are more important for judging routes that are designed to be getting high ridership relative to cost.

Table 26: Target for Passengers per Revenue Hour

Category	Target
System	18
Express	18
Core	25
Core Arterial	25
Arterial	16
Community Radial	18
Circulator/Feeder/Connector	22

These performance metrics are intended to provide guidance to GRTC and its regional partners in assessing the performance of regionally funded services. They are not a definitive standard for what will and will not be funded or operated. Yet these standards are intended to help GRTC and its regional partners determine criteria for what services can be regionally funded versus what service should be primarily locally funded in future years.

## Timeline for Reporting

As shown below, GRTC tracks many performance factors by route and systemwide on a quarterly basis to assess how well routes and the system is performing. GRTC intends to continue reporting the performance of the above measures, and others, on a quarterly basis, and will provide an annual summary to CVTA by May 1<sup>st</sup> of each year that would cover the prior four quarters. Thus, the annual performance reporting to CVTA would cover the first three quarters of the active fiscal year and the final quarter of the prior fiscal year.

Figure 21: Example of Quarterly Route Level Performance Reporting

Quarter 2 FY 2021 (Oct 1 - Dec 31)										System OTP		66%							
BRT: The routes in this category travel along a major corridor/ thoroughfare and operate at high frequencies and capacities. Terminus stops are major activity centers and route intersections.										Productivity						OTP	% Change		
Category	Jurisdiction	Route Name	Route	Ridership	% Change	Rev Hours	% Change	Rev Miles	% Change	Pass/Hrs	% Change	Pass/Mi	% Change	Total/Pass	% Change	Pass/Trip	% Change	OTP	% Change
BRT	Richmond/Henrico	PULSE	Pulse	331,962	1%	13,175	1%	133,211	7%	125.20	-0.3%	2.49	-5.9%	\$ 3.26	6.3%	17.76	-3.2%	72%	-6%
																		80%	
																		65%	
Arterial: The routes in this category travel more than 50% of their route on major corridor/ thoroughfare. Terminus stops are major activity centers.										Productivity						OTP	% Change		
Category	Jurisdiction	Route Name	Route	Ridership	% Change	Rev Hours	% Change	Rev Miles	% Change	Pass/Hrs	% Change	Pass/Mi	% Change	Total/Pass	% Change	Pass/Trip	% Change	OTP	% Change
Arterial	Richmond	CHAMBERLAYNE/HULL/SOUTHSIDE PLAZA	1	29,553	345%	1,013	421%	9,868	399%	29.18	-14.7%	2.59	-10.9%	\$ 2.71	12.2%	32.26	3.4%	57%	-2%
Arterial	Richmond	CHAMBERLAYNE/HULL/MIDLOTHIAN	1A	170,499	-2%	6,867	-7%	71,825	-6%	24.83	5.4%	2.37	3.8%	\$ 3.42	-3.6%	26.99	-10.6%	60%	-4%
Arterial	Richmond	CHAMBERLAYNE/HULL/WARWICK	1B	57,552	9%	2,499	-3%	25,974	-4%	23.03	12.6%	2.22	13.4%	\$ 3.67	-11.8%	23.19	-2.8%	61%	-2%
Arterial	Richmond	CHAMBERLAYNE/HULL/ELKHARDT	1C	90,405	-3%	3,850	-6%	39,523	-8%	23.48	2.8%	2.29	4.7%	\$ 3.55	-4.4%	23.23	-11.4%	62%	6%
Arterial	Richmond	NORTH AVE/FOREST HILL	2A	68,434	4%	3,989	0%	50,353	0%	17.15	3.5%	1.36	3.7%	\$ 5.98	-3.6%	17.19	-5.8%	63%	-1%
Arterial	Richmond	NORTH AVE/JANINE/MIDLOTHIAN	2B	70,732	3%	5,350	0%	48,781	0%	13.22	3.0%	1.45	2.4%	\$ 5.61	-2.4%	19.00	-4.0%	56%	-5%
Arterial	Richmond	NORTH AVE/MIDLOTHIAN/BELT BLVD	2C	79,651	1%	6,310	0%	66,765	-1%	12.62	0.9%	1.19	2.2%	\$ 6.81	-2.2%	12.62	-5.9%	60%	-3%
Arterial	Richmond	HIGHLAND/JEFF DAVIS/HARWOOD	3A	58,753	-2%	3,072	-3%	31,842	-4%	19.12	1.1%	1.85	2.3%	\$ 4.41	-2.3%	13.18	-3.8%	69%	-2%
Arterial	Richmond	HIGHLAND/ JEFF DAVIS	3B	99,513	9%	4,217	-2%	47,671	0%	23.60	10.4%	2.09	8.8%	\$ 3.89	-8.1%	22.01	6.2%	63%	-8%
Arterial	Richmond	HIGHLAND/ JEFF DAVIS	3C	43,331	-8%	3,240	-1%	37,728	-1%	13.37	-7.8%	1.15	-7.9%	\$ 7.08	8.6%	13.47	-23.4%	59%	3%
Arterial	Richmond	CARY/MAIN/WHITCOMB	5	143,781	2%	8,114	-2%	43,584	-38%	17.72	3.8%	3.30	63.9%	\$ 2.46	-39.0%	11.99	-3.0%	73%	1%
Arterial	Richmond	HERMITAGE/EAST MAIN	1A	66,002	0%	6,684	0%	61,730	2%	9.58	-0.8%	1.07	-2.6%	\$ 7.60	2.7%	8.84	-5.6%	68%	-1%
Arterial	Richmond	BROAD STREET	50	28,187	64%	3,219	10%	27,040	20%	8.66	48.1%	1.04	36.3%	\$ 7.80	-26.6%	8.67	70.0%	72%	-1%
Arterial	Henrico	NINE MILE HENRICO	7A	53,612	1%	3,035	-1%	34,017	0%	17.66	1.8%	1.58	0.8%	\$ 5.16	-0.8%	15.82	-5.4%	64%	-4%
Arterial	Henrico	NINE MILE HENRICO	7B	48,939	0%	2,950	0%	34,918	1%	16.59	-0.3%	1.40	-0.9%	\$ 5.80	0.9%	14.98	-6.5%	60%	-6%
Arterial	Henrico	WEST BROAD STREET	19	72,925	10%	5,400	0%	69,051	-1%	13.50	10.6%	1.77	11.4%	\$ 7.70	-10.3%	11.04	3.1%	59%	6%
Pass (Over 90% In-Hour) Avg										17.73		1.77		\$ 5.23		16.90		78%	
Watch 90% Service Avg										10.64		1.06		\$ 7.32		10.14		70%	
Fail 90% Service Avg										8.87		0.89		\$ 7.84		8.45		55%	

