Report

CONNECTING THE RICHMOND REGION: FROM EAST-WEST TO NORTH-SOUTH

Planning for Inclusion and Growth along a North-South Bus Rapid Transit Corridor

JANUARY 2022

GREATER WASHINGTON PARTNERSHIP
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CONTENTS

INTRODUCTION

The purpose of this study is to spur conversation and provide preliminary analysis for a possible North-South Bus Rapid Transit (BRT) line to complement the Richmond region's existing East-West BRT line, "The Pulse." The study seeks to draw key lessons from the East-West Pulse that will be critical to consider as a North-South line is advanced. This study highlights the ways the Richmond metropolitan area needs to prioritize inclusive growth and housing affordability alongside its transit network.

The Capital Region—from Baltimore to Richmond—has extraordinary diversity, tremendous assets, and immense potential. Our region encompasses world-class universities and research institutions, leading growth industries, the federal government, and a rich diversity of people and cultures. As the third-largest regional economy in the U.S. and the seventh largest in the world, the Capital Region has the talent, jobs, transportation, and innovation ecosystem to prosper.

Despite these assets, the Capital Region lags other large regions nationwide when it comes to average growth rates and racial inclusion in areas such as educational attainment, employment, business ownership, financial wealth creation, health outcomes, affordable housing, and transportation access.[1] These disparities are deeply embedded in our economy and have been perpetuated by historic patterns of land use and transportation infrastructure that have deepened inequities. The Richmond Metropolitan Statistical Area (MSA) has its own well-documented history of inequity. Today, 16% of Black residents in the Richmond MSA live below the poverty level compared to only 6.3% of white residents, while the Center on Society and Health at Virginia Commonwealth University (VCU) found that residents of low-income Black communities in the East End of Richmond have a life expectancy that is 20 years shorter on average than white residents in wealthy West End neighborhoods.[2]

We believe our region's future success hinges on its ability to grow equitably and inclusively. The data clearly indicates that more inclusive economies create a better economic future for everyone, helping to harness local potential, build resiliency, reduce health disparities and attract talent and investment. Inclusive growth should be at the forefront of business decisions for every company and jurisdiction across the Capital Region.

With input from community, public, and private sector stakeholders, technical assistance from our board member company Ernst & Young LLP (EY), and a local project team including ChamberRVA, the Virginia Department of Rail and Public Transportation (DRPT), the Greater Richmond Transit Company (GRTC), PlanRVA, and the Richmond Association of Realtors, the Greater Washington Partnership (the Partnership) has undertaken this study to draw lessons from the Pulse, the first Bus-Rapid Transit (BRT) line in the Richmond MSA, and examine potential corridors where a future North-South rapid bus route may operate.

To maximize the benefits from public investment in a North-South BRT, this report recommends that the

three jurisdictions of the City of Richmond, Chesterfield County, and Henrico County, in partnership with the Commonwealth of Virginia, consider the following strategic priorities along major regional corridors:

1. Continue growing transit service and investing in multimodal transportation infrastructure;
2. Support affordable housing and business development; and
3. Encourage transit-supportive land-uses.

This report does not recommend a preferred North-South corridor alignment, as the locally preferred corridor will be studied and selected by GRTC. However, the report does discuss the benefits and challenges of three corridor options south of the James River. Successful implementation of these recommendations will require robust community engagement and outreach as well as the development of context-sensitive policies for each jurisdiction, but through these priorities, the region can sustainably grow its tax base, create a more equitable transportation system, reduce health disparities, and build a more inclusive economy.

LETTER FROM THE PROJECT TEAM

We believe a North-South Bus Rapid Transit (BRT) route has the potential to weave together communities that have been disconnected for too long. Transit played a fundamental role in the history and shaping of the Richmond region, and we believe expanding high-quality transit is an essential component of making sure we can create more opportunities for all our residents in the 21st century. The project team members understand this economic and social imperative and came together through this study process to help drive at solutions.

This region is still growing, learning, and evolving. The creation of the Pulse BRT on the Broad Street corridor and the redesigned bus network in 2018 were huge steps forward for the Richmond region's transportation system, but we are not done. The Pulse BRT project took eight years from inception to completion. It is time to start laying the groundwork for our next big steps so we can speed up building a more diverse and inclusive region that is easier to navigate.

Over the past year, the COVID pandemic and the racial justice reckoning underscored the interconnectivity of our systems, from public health to transportation. Transit opens doors to jobs and opportunities, especially for those who don't have a car. The likelihood that you have a car is related to the money in your bank account which is often related to the color of your skin. Without a car, this region is extremely challenging to navigate, especially to employment centers in Henrico and Chesterfield Counties. Regional mobility should not be reserved only for those who can drive. By not investing in an expanded transit network, we leave too many of our fellow neighbors behind. Working together, we can build a connected region that serves us all.

We came together to work on this report to ideate on what a North-South BRT could look like and how it would impact the region. Throughout the process, we learned that improving transit is not enough; what we build and how we build around transit is just as important. Transit unlocks doors and encourages investment. The region must start planning now for how to maximize the benefits of transit and the private investment it unlocks so we can create more inclusive communities where everyone has a chance to thrive. This is just the beginning.

This report provides recommendations for our elected officials on how to prioritize inclusive growth along a future North-South BRT corridor. As GRTC conducts a study in 2022 to determine the preferred North-South alignment, we stand ready to partner with our local, state, and federal leaders to accelerate the BRT investment and related investments in land use, sidewalks, bus stops, and affordable housing needed to create a more inclusive, better-connected Richmond region.

John Easter, Senior Vice President of Government & Community Affairs, ChamberRVA

Jennifer DeBruhl, Chief of Public Transportation, DRPT

Tiffany Dubinsky, Statewide Transit Planning Manager, DRPT

Nitya Batra, Assistant Manager, Strategy & Transactions, EY

Tim Melrose, Managing Director, Strategy & Transactions, EY

John Hillegass, Manager of Regional Mobility & Infrastructure, Greater Washington Partnership

Julie Timm, CEO, GRTC

Adrienne Torres, Chief Development Officer, GRTC

Barrett Hardiman, Principal, Hardiman Advisors

Barbara Jacocks, Principal Planner, PlanRVA

Laura Lafayette, CEO, Richmond Association of Realtors

EXECUTIVE SUMMARY

Richmond, Chesterfield, and Henrico – the most populous jurisdictions in the Richmond metropolitan area – are already planning for a more transit-oriented future. This report builds upon their work by offering a regional strategy to expand the award-winning Pulse bus rapid transit network collaboratively and to proactively create a more inclusive, vibrant, and healthy region.

Investing in public transportation drives economic and social growth by providing more sustainable and more inclusive connections to job opportunities and to each other.

Between the launch of the world's first trolley line in 1888 and the dismantling of the streetcar system in 1949, the City of Richmond's population grew from 80,000 to 230,000 residents. [3] That growth was only possible because of the vibrant communities that grew along the streetcar lines. In the second half of the 20th century, the region's population growth followed new car-oriented transportation investments to the suburbs, where new communities flourished in Chesterfield and Henrico Counties.

Communities that grew along streetcar lines were designed to be walkable to nearby job and commercial opportunities, whereas communities built further afield were often only accessible by car. As jobs followed residents to the suburbs in the latter half of the 20th century, families without a car, and even families with only one car, had access to increasingly limited opportunities. While the automobile unlocked unprecedented opportunities for growth, it also generated equally significant challenges, including roadway congestion, vehicle exhaust and pollution, greenhouse gases, roadway fatalities, urban sprawl, and deepening racial and economic segregation. Today, more than 25,000 households across the City of Richmond, Chesterfield, and Henrico counties do not own a vehicle.[4]

RICHMOND AREA POPULATION GROWTH

	1950	1990	2020	Growth 1950-2020
City of Richmond	230,310	203,056	226,610	**-1.6%**
Chesterfield County	40,400	211,670	365,548	**905%**
Henrico County	57,340	218,238	334,389	**583%**

GEOGRAPHIC SCOPE OF THE STUDY INCLUDES ONE NORTHERN CORRIDOR AND THREE POTENTIAL SOUTHERN CORRIDORS

In 2018, the region took a massive step toward creating a more transit-oriented region. On June 24, the Greater Richmond Transit Company (GRTC) launched the redesigned bus network, expanded bus service in Henrico County, and opened the Pulse line, the first Bus Rapid Transit (BRT) line in the region. The Greater Washington Partnership detailed the success of the Pulse and region's bus network redesign in 2019 and found that the new system increased ridership by 17% year over year—bucking national trends of declining transit ridership prior to the COVID-19 pandemic.[5]

With the Pulse, the region created a central spine of frequent, reliable, high-quality transit service to accompany the new bus network, whose utility was tested during the COVID pandemic. While bus ridership on the WMATA system plummeted to 20% of pre-COVID levels at the start of the pandemic, GRTC ridership only briefly dropped below 50% and quickly rebounded to 75% of pre-COVID levels.[6] As of summer 2021, ridership on many local routes was back to or exceeding pre-pandemic levels.[7] The redesigned GRTC network and Pulse BRT were essential to maintaining regional mobility and economic activity throughout the pandemic, especially for essential workers who did not have the ability to work from home.

Investing in more high-quality and reliable frequent bus service will allow the Richmond metropolitan area to restore connections within the city and provide better access for county residents to opportunities downtown and vice versa. Unlike highways or streetcars, the bus does not require huge capital expenditures for construction projects. While dedicated bus lanes and other amenities certainly improve the quality of service, more frequent service is often the first and best way to improve transit access.

The region's transit vision plan and respective comprehensive plans already call for strategies to increase affordable housing and improve transit service:

- **The Richmond 300 Master Plan,** adopted in 2020, includes key goals to align future land use and transportation and advance a non-car network to provide universal transportation access.[8]
- **Chesterfield County's Comprehensive Plan** encourages, "a range of multimodal transportation options," to link communities and connect businesses to labor and customers.[9]
- **Henrico County's Vision 2026 Plan** calls for a safe and efficient transportation system that minimizes traffic congestion, supports alternative modes of travel, and coordinates land use and transportation

plans.[10] The current Comprehensive Plan update (HenricoNext) is expected to expand the County's support for transit-oriented development and transit expansion.

The region has already accomplished a herculean task by securing a dedicated funding source for transportation investments. In 2020, the Virginia General Assembly created the Central Virginia Transportation Authority (CVTA) to collect and distribute new funds for priority transportation investments in the Richmond area.

This report was designed to build upon previous work, including the Greater RVA Transit Vision Plan's Near-Term Strategic Analysis, by examining the socio-economic changes and potential benefits that could result from the expansion of the regional BRT network. Working with GRTC, the Virginia Department of Rail and Public Transportation (DRPT), Plan RVA, ChamberRVA, and the Richmond Association of Realtors, an advisory committee of regional stakeholders, along with technical support from EY, this report uses the goals of the Pulse Corridor Plan to summarize and assess data on the early impacts from the East-West Pulse Corridor and expected impacts along a preferred North-South Pulse BRT alignment.

STANDING ON THE SHOULDERS OF GIANTS: A NON-EXHAUSTIVE LIST OF REGIONAL PRECEDENTS AND TOD-RELATED REPORTS

- ConnectRVA 2045 (Draft 2021)
- RVA Recovery: Equity and Wealth Building Investment Agenda (2021)
- 2020 IDA Study: Richmond, VA (2021)
- Richmond 300 Master Plan (2020)
- Greater RVA Transit Vision Plan: Near-Term Strategy Technical Analysis (2020)
- Richmond Regional Housing Framework (2020)
- Richmond Market Value Analysis (2020)
- Richmond's Transit Revolution: GRTC Ridership and Accessibility Analysis (2019)
- Greater RVA Transit Vision Plan (2017)
- The Pulse Corridor Plan (2017)
- Housing the Richmond Region (2015)
- Broad Street Rapid Transit Study (2014)

KEY FINDINGS

1

The East-West Pulse BRT increased access and mobility, population growth, and development activity along the Broad and Main Streets corridor.

2

The East-West Pulse BRT and new housing development nearby may have helped reduce the pace of demographic changes along the Broad and Main Streets corridor compared to the wider region.

3

Of potential North-South BRT corridors, Route 1 North has the most nearby residents and jobs, which are important indicators of transit-readiness.

4

Of potential North-South corridors, Route 1 South has the lowest median household income, which is an indicator of transit-dependence and vulnerability to gentrification and displacement.

5

Residential and job densities, sidewalk infrastructure, and existing transit service decrease significantly as you travel farther from the downtown core.

6

In the past decade, the share of Black residents across the potential corridors has shrunk but has grown in Chesterfield and Henrico counties as a whole.

7

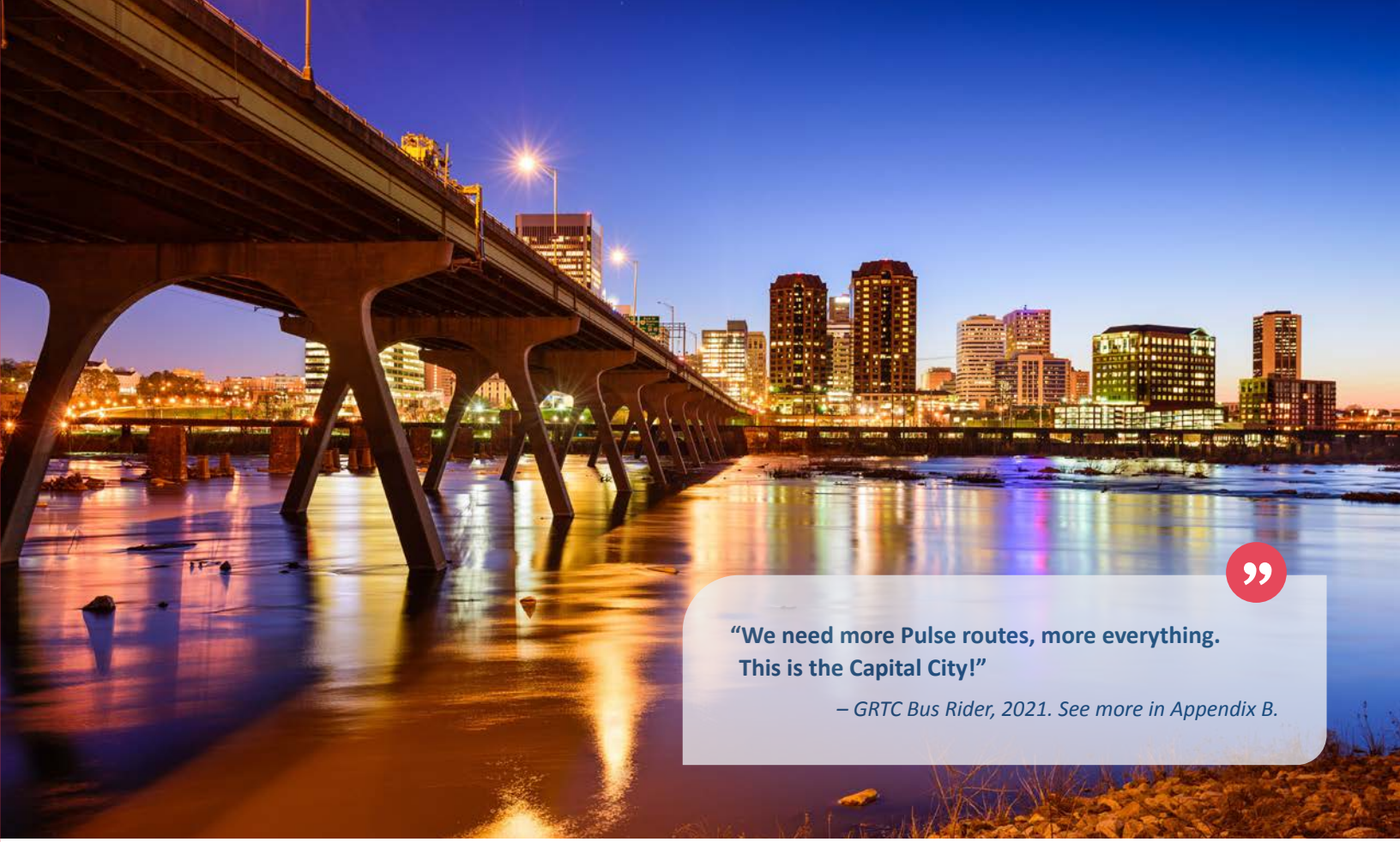
In the past decade, the share of Hispanic residents has grown along all of the corridors studied in this report.

8

Much of the potential corridors are below recommended densities or activity levels to warrant BRT-sized investments in the near-term but do warrant more frequent bus service.

9

Construction of a North-South BRT along the length of the preferred corridor could generate between $83 - $96 million in gross economic output and $34 - $39 million in total labor income for the region.



> **"We need more Pulse routes, more everything. This is the Capital City!"**
>
> *– GRTC Bus Rider, 2021. See more in Appendix B.*

RECOMMENDATIONS

To maximize the benefits from public investment in a North-South BRT, the three jurisdictions should consider the following strategic priorities to support inclusive growth along the preferred alignment:

1. Enhance Transit Service and Build Transit-Supportive Multimodal Transportation Infrastructure

2. Preserve and Expand Affordable Housing and Commercial Business Space

3. Encourage Transit-Supportive Land Uses and Development along the corridors to benefit existing residents and businesses and allow more residents and business to locate near high-quality transit options

In 2022, the region should come together to actively support and engage in the GRTC's North-South BRT alignment study to select a preferred corridor and begin to proactively plan for inclusive growth.

TRANSIT & INCLUSIVE GROWTH

Equitable Transit-Oriented Development (eTOD) must ensure that development serves and is shaped by today's riders, existing residents, and businesses.

As GRTC looks to expand the Richmond region's BRT network, nearby communities stand to experience significant economic development, which can lead to gentrification and displacement if low-income households and businesses do not have opportunities to remain in the community.

Bus Rapid Transit (BRT)

BRT is a form of transit that combines the speed and reliability of rail with the flexibility of buses.[11] The Institute for Transportation and Development Policy identifies five essential features of BRT:[12]

1. Dedicated right-of-way or bus-only lanes, which ensure fast travel
2. Busway alignment, a center of roadway or bus-only corridor, which shields buses from busy curbsides where cars park, stand, or turn
3. Off-board fare collection, so that passengers avoid delaying the bus by paying on board
4. Intersection treatments, which prohibit traffic from turning across the bus lane
5. Platform-level boarding, which encourages efficient boarding and accessibility for wheelchairs, disabled people, strollers, and more

The Pulse in Richmond is a BRT system. While standard bus systems are the least expensive in terms of capital construction, operating in mixed traffic limits their speed, causing poor performance in traffic congestion.[13] BRT construction is more affordable compared to rail systems and can even offer higher capacity and speeds compared to light rail transit (LRT).[14] BRT combines some of the strongest benefits of various transportation modes, including buses' low capital cost and light and heavy rail's high quality of service.

Equitable and Inclusive Economic Development

New transit investments generate direct economic activity through construction and operations. Traditionally, transit investments also generate indirect economic activity through increased property values and improvements to residents' mobility and access to jobs. However, new investment in a community may exacerbate inequality if low-income residents and locally-owned small businesses are displaced because of

rising prices.[15] Equitable Transit-Oriented Development (eTOD) is a development strategy to create and preserve affordable and inclusive communities around transit.[16] The COVID-19 pandemic demonstrated just how much our economy relies on residents who use transit, especially essential workers who ensure that services such as health care, grocery stores, and delivery services can function without interruption.[17] Successful implementation of eTOD recognizes the value that essential workers provide to the larger economy by seeking to preserve and expand access to housing and jobs near transit.[18]

Gentrification & Displacement

Gentrification is typically defined by housing and commercial market changes, economic changes, and demographic changes that alter a neighborhood's character.[19] Gentrification is most commonly associated with lower-income neighborhoods that experienced disinvestment from the public and private sectors, but which have recently become more desirable to higher-income households and higher profit businesses.[20] As a neighborhood attracts investment, housing and commercial real estate prices grow, and high-income residents and businesses often outbid low-income residents.[21] If residents oppose the construction of new housing in growing markets such as Richmond, that can further limit the supply and increase overall housing costs, adding to the threat of displacement.

Displacement occurs when a household is forced to move from their home, despite the home still meeting all conditions of residential occupancy.[22] If a neighborhood can no longer serve a household's basic needs, residents may voluntarily choose to leave, creating voluntary displacement. When residents are displaced from high-opportunity neighborhoods, where opportunities are expanding (e.g., new jobs, grocery stores, etc.) and home values are rising, displacement means lost wealth. Displacement hurts the larger community by increasing distances between low-wage workers' homes and jobs, upending social networks, and exacerbating housing instability's impacts on health, education, and employment outcomes.[23]

Equitable Transit-Oriented Development (eTOD) must ensure that development serves and is shaped by those who most stand to benefit, today's riders, existing residents, and businesses.

Proactive Planning for Inclusion

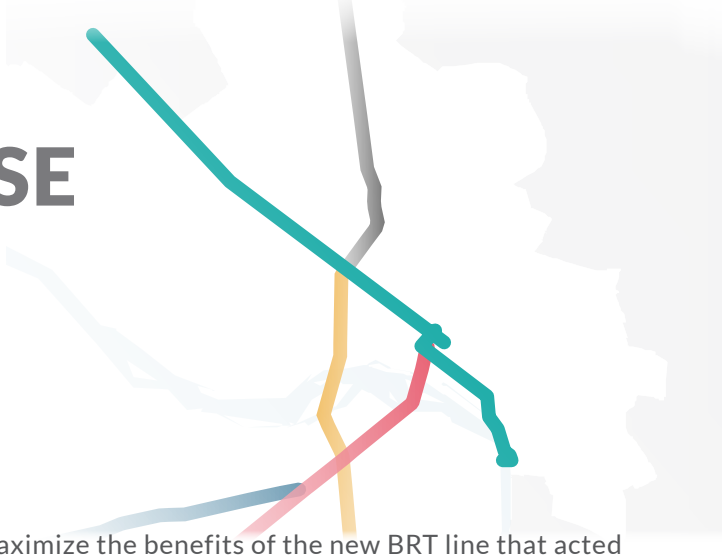
With any investment, there are risks of unintended consequences. The potential risks of transit investment, namely displacement and gentrification, are well-documented. However, proactive planning for inclusion around transit can mitigate those risks and create stronger more inclusive communities. The recommendations in this report focus on three key areas to ensure transit investments generate more inclusive growth:

1. **Transit and Multimodal Transportation Infrastructure:** Every bus trip starts and ends beyond the bus. Riders should be able to safely arrive and depart bus stops using sidewalks and wait for their bus at well-lit, safe, and comfortable bus shelters.
2. **Affordable Housing and Commercial Business Space:** The majority of GRTC bus riders live in households that earn less than $50,000 per year.[24] If low-income households and disadvantaged businesses cannot remain or locate near high-quality transit, the service is not useful to its primary customer base.
3. **Transit-Supportive Land Uses:** Transit is more useful when more residents, businesses, and destinations are located near transit stations and stops. Increasing the diversity and density of land uses along transit corridors allows jurisdictions to increase their tax base, maximize returns on transit investment, and concentrate services in a smaller geographic footprint.

The recommendations outlined at the end of this report offer a strategic path forward for the region, especially the primary responsible actors with implementation authority, including the local jurisdictions, the Commonwealth of Virginia, and GRTC. However, the development and implementation of a truly equitable TOD strategy must be accompanied by robust community engagement and outreach in the impacted communities. Working together, the Richmond region's three most populous jurisdictions can create a proactive strategy to maximize the benefits and potential for inclusive growth alongside a regional rapid transit network.

> **"I think the Pulse has made it better. It gets me all the way across town. It runs better. Every 15 minutes is really good."**
>
> *– GRTC Bus Rider, 2021. See more in Appendix B.*

THE EAST-WEST PULSE BRT CORRIDOR

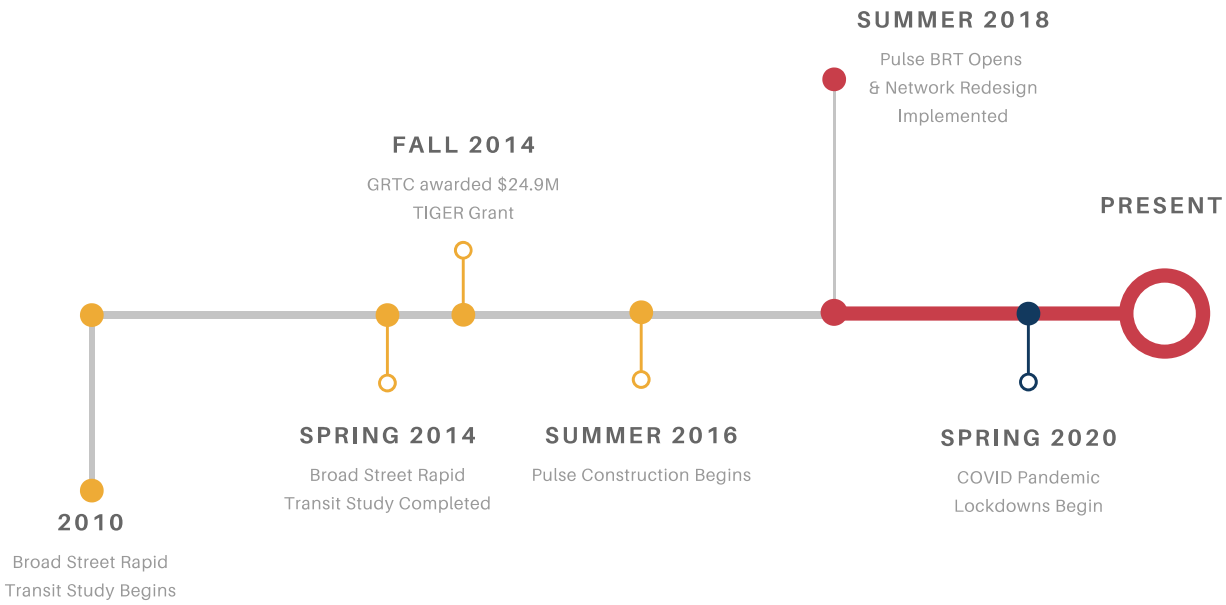


History of the Pulse Project

GRTC launched the redesigned bus network, expanded service in Henrico County, and opened the Pulse line in June 2018. Planning for the Pulse started in 2010 with the Broad Street Corridor Rapid Transit Study which concluded in Spring 2014.[25] Shortly thereafter, DRPT, the City of Richmond, and Henrico County successfully applied for a federal Transportation Investment Generating Economic Recovery (TIGER) grant, securing $24.9M from the U.S. Department of Transportation. Construction of the Pulse started in summer 2016. Meanwhile, GRTC was also conducting a bus network redesign process to examine all bus routes and maximize the benefits of the new BRT line that acted as the spine of the transit system. The redesigned bus network, expanded bus service in Henrico County, and the East-West Pulse BRT, the first in the region, were implemented on June 24, 2018.

To prepare for the coming Pulse, PlanRVA and the City of Richmond adopted the Pulse Corridor Plan in July 2017, and readopted the plan as part of the Richmond 300 Master Plan, recommending that development along two of the most significant corridors in the city be (1) compact & mixed, (2) connected, and (3) thriving &

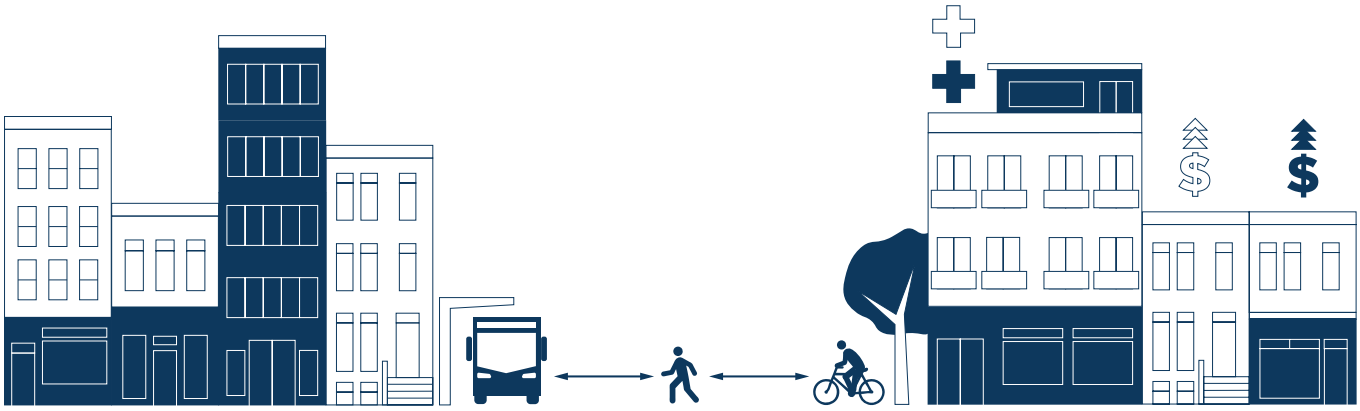
GRTC EAST-WEST PULSE PROJECT HISTORY



LIMITATIONS

Analysis of the Pulse BRT was limited by the short duration of Pulse service (opened in 2018) and a global pandemic that had unprecedented impacts on every aspect of life, complicating data analysis. Nonetheless, the study team conducted interviews with GRTC bus riders and local business owners, hosted discussions with the study's Advisory Committee, and performed data analysis to assess the impacts of the Pulse BRT. While the impacts of the COVID-19 pandemic are still ongoing and long-term changes to the way we live and work are still taking shape, the pandemic also demonstrated the essential nature of transit and its role in keeping our lives and our economies moving. The need for more reliable and more sustainable options and the desire to more easily connect to each other will live on long beyond the pandemic.

PULSE PROJECT PLAN GOALS



COMPACT AND MIXED
Development around Pulse stations has a rich mix of uses and is compact, sustainable, and high-quality.

CONNECTED
Pedestrians and cyclists access homes, jobs, entertainment, everyday needs, and transit in a safe, pleasant, and interesting public realm.

THRIVING & EQUITABLE
New development includes housing for all income levels and new jobs. Increased development in the corridor supports Pulse ridership and generates over $1 billion in additional assessed value over the next 20 years.

Source: Pulse Corridor Plan, 2017

Only three years since the launch of the East-West Pulse, the Broad and Main Streets Corridor is already showing signs of success against the Pulse Corridor Plan's three main goals.

Lessons from the East-West Pulse BRT Corridor

While the long-term impacts of the Pulse BRT are still playing out, the list below summarizes some of the lessons learned from available data and from the project team's conversations with stakeholders, GRTC riders, and businesses owners along the Pulse corridor.

1. Population grew faster around the East-West Pulse corridor than the region overall.
2. Property values grew faster around the East-West Pulse corridor than the region overall.
3. Transit-Supportive Zoning can help unlock the full potential for increased development.
4. The pace of demographic change was slower along the Pulse corridor compared to the wider region.
5. Early preservation and expansion of affordable housing alongside transit investment is key.
6. Transit construction and route changes are disruptive to existing residents.
7. By and large, the Pulse is viewed positively by existing riders, but riders want more frequent service across the GRTC system.
8. Some business owners do not feel the East-West Pulse BRT attracts enough "choice riders" or potential customers, which may have been exacerbated by the pandemic.

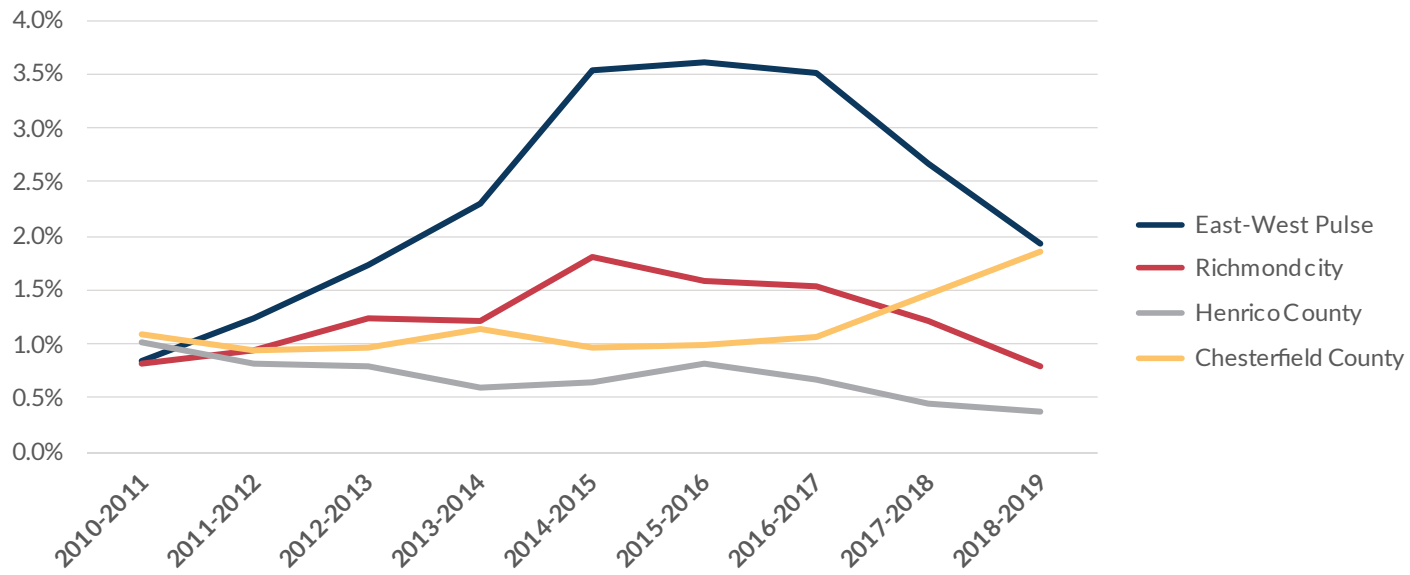
The following sections detail the study's findings on the impact of the East-West Pulse BRT according to the original goals set forth in the Pulse Corridor Plan.

PLAN GOAL 1:

COMPACT & MIXED

The population within a half mile of the East-West Pulse BRT corridor grew 6.4% between 2017 and 2020, while the City of Richmond grew 2.8% and Henrico County's population only grew 1.3% over the same period.[26] Growth was even stronger downtown along Broad Street, between Belvidere and 14th Streets, growing 8.3% over the same period. As shown below, the annual rate of population growth was actually strongest during planning and construction, but the corridor has continued to grow after the opening of the Pulse. The construction of the Pulse helped attract more residents to the corridor, growing denser and more compact. The Pulse also improved access to half of the city's jobs which are located downtown and two-thirds of the city's jobs which are located along the East-West Pulse BRT corridor.[27]

RATE OF POPULATION GROWTH WITHIN A HALF MILE OF THE EAST-WEST PULSE CORRIDOR COMPARED TO THE RICHMOND REGION

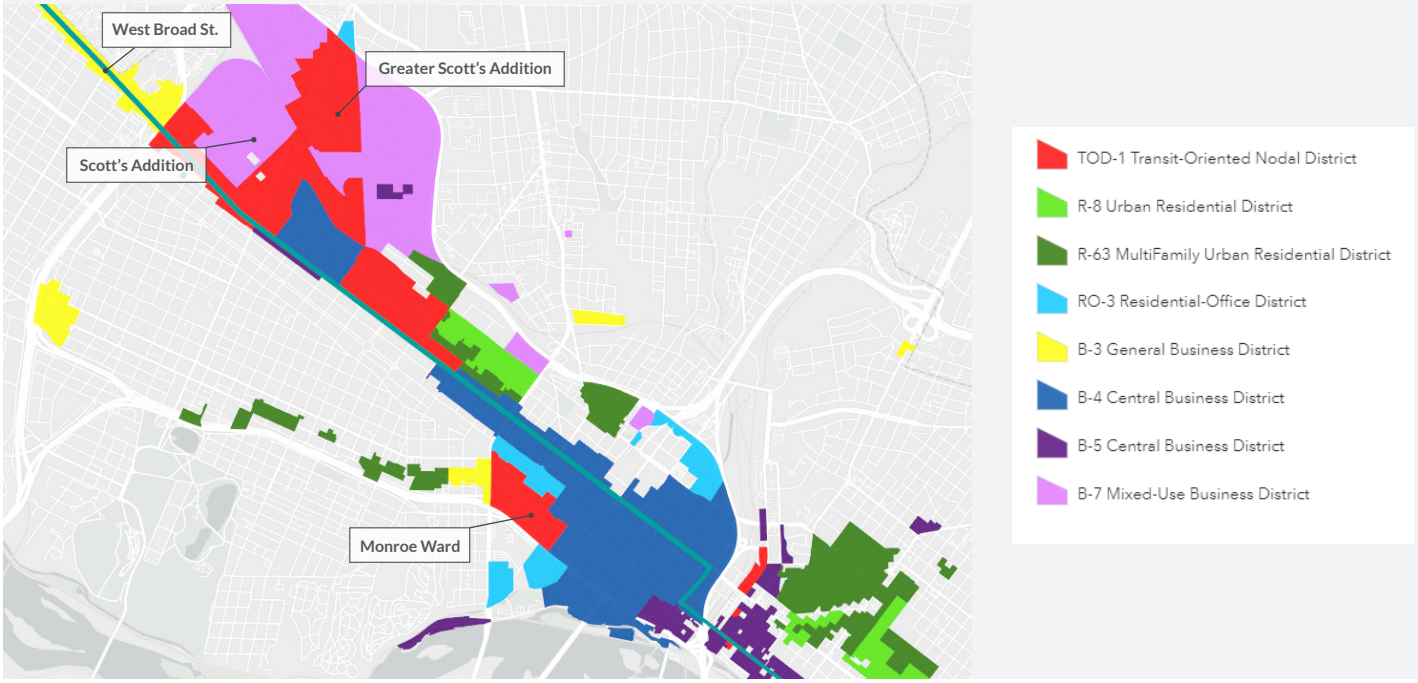


Partnership analysis using ESRI ArcGIS (2020

Richmond supported the goal of a more compact and mixed use Broad Street by undertaking area-wide rezonings of Scott's Addition, Monroe Ward, Greater Scott's Addition, and most recently West Broad Street. A growing majority of the Pulse corridor today allows for compact and mixed-use development in the zoning code.

> **"Sometimes you have to wait an hour for other buses, but the Pulse is like every 10 to 15 minutes."**
>
> *– GRTC Bus Rider, 2021. See more in Appendix B.*

SELECTION OF ZONES ALLOWING COMPACT AND MIXED USE DEVELOPMENT ALONG THE EAST-WEST PULSE CORRIDOR



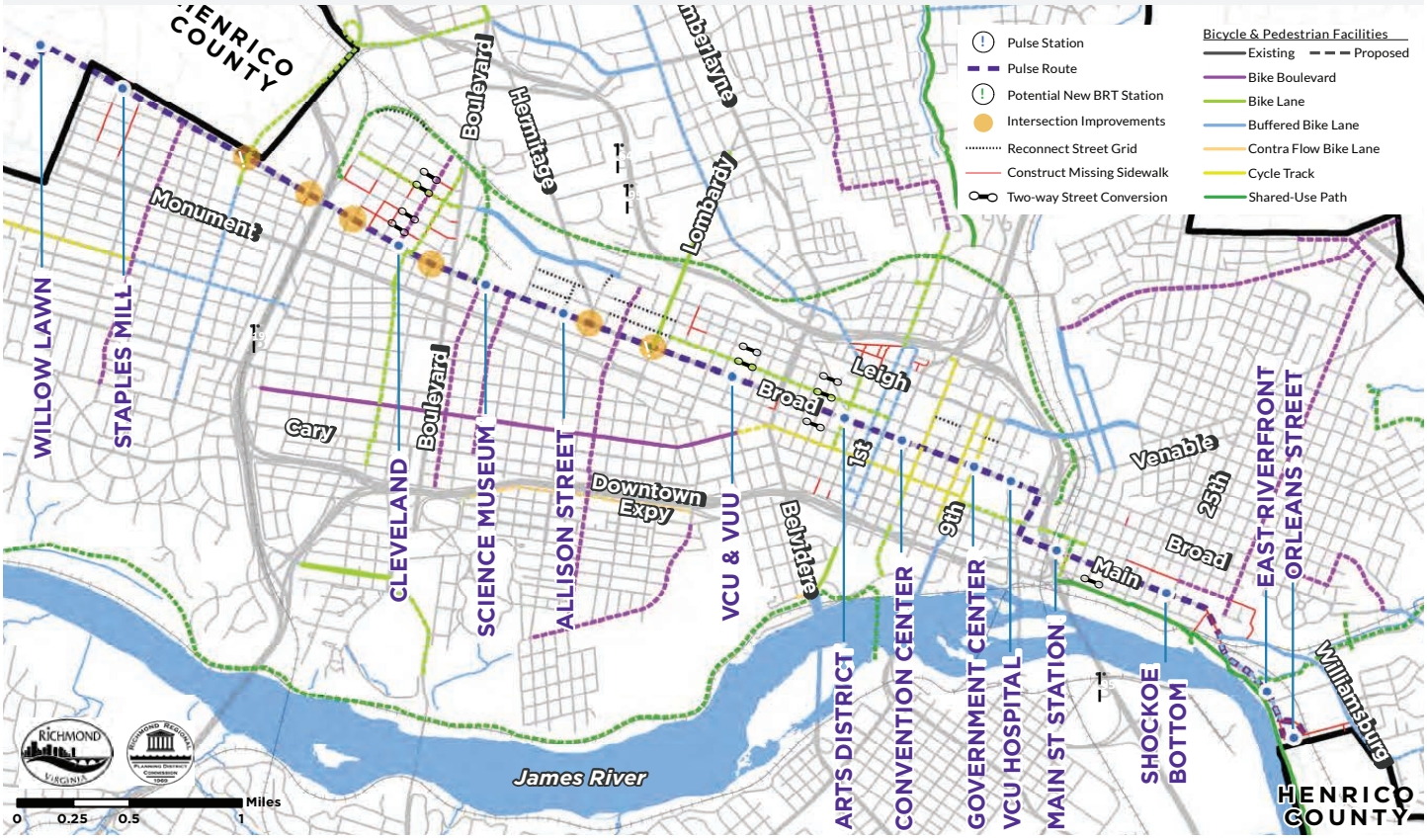
Source: City of Richmond Zoning Map, Partnership Analysis using ESRI ArcGIS

PLAN GOAL 2:

CONNECTED

High-quality transit is only one piece of the puzzle to ensure access and connectivity to, from, and through a community. High quality sidewalks, bus shelters and amenities, and connections to the rest of the multimodal transportation network are just as important.

CONNECTED RECOMMENDATIONS FROM THE PULSE CORRIDOR PLAN



Source: Pulse Corridor Plan

Pedestrian accessibility along the Pulse corridor, especially via sidewalks, was central to the Pulse Corridor Plan. Gaps in the sidewalk network were mapped around every station and the plan recommend specific sidewalk improvements, bikeways, and roadway connections to complete the grid.

The existing street grid, proximity to transit, and mix of employment sectors means the East-West Pulse Corridor scores high on the National Walkability Index earning marks of "Above Average Walkable" or "Most Walkable" throughout the corridor.[28] Adequate sidewalk infrastructure ensures residents can access the bus stops that can take them to the 140,000 jobs accessible within 45 minutes on transit from downtown Richmond.[29]

The Partnership's Ridership and Accessibility Analysis found that the average City of Richmond resident could access 2,000 more jobs using transit and the average Henrico County resident could access nearly 800 more jobs after the Pulse opened.[30] New riders were also attracted to the Pulse line, with an additional 1.1 million trips taken along the Broad Street corridor in 2019. [31] Simply put, the Pulse connected more residents to where they wanted to go more easily.

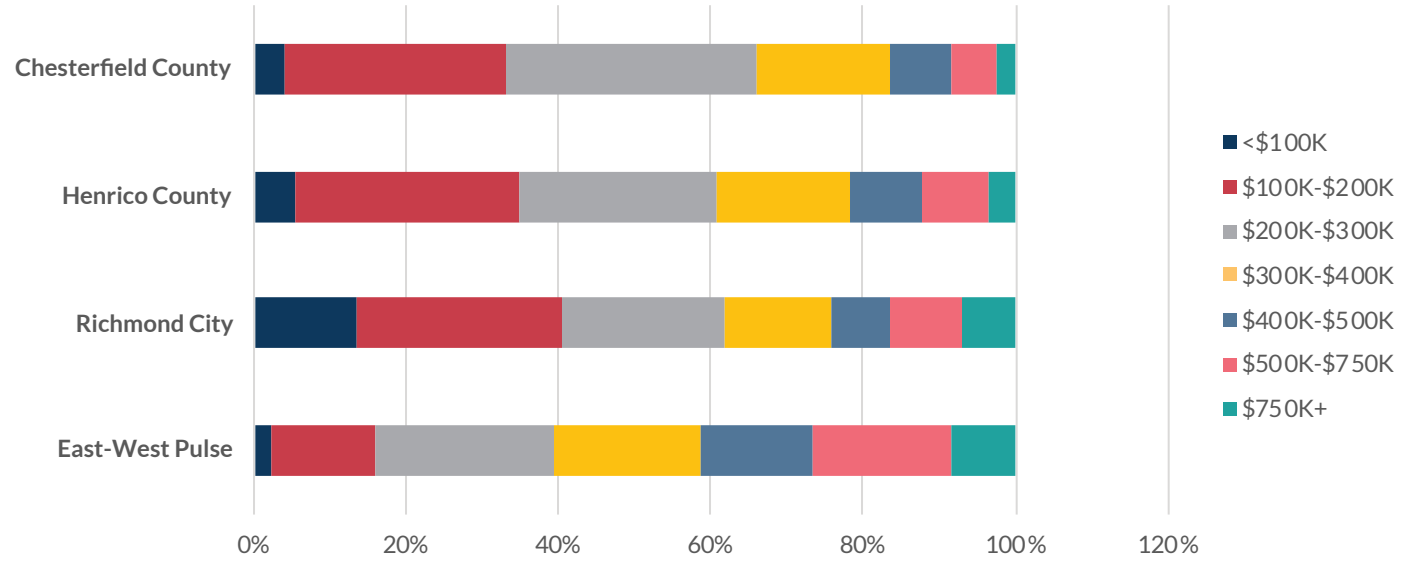
PLAN GOAL 3:

THRIVING & EQUITABLE

Transit helps communities thrive by expanding access and mobility for all residents. When a community thrives, property values tend to increase. While the Pulse Corridor Plan had a goal to increase property valuations by $1 billion over twenty years, it also called for more housing options for all income levels and new jobs along the corridor to capitalize especially on underutilized commercial land.

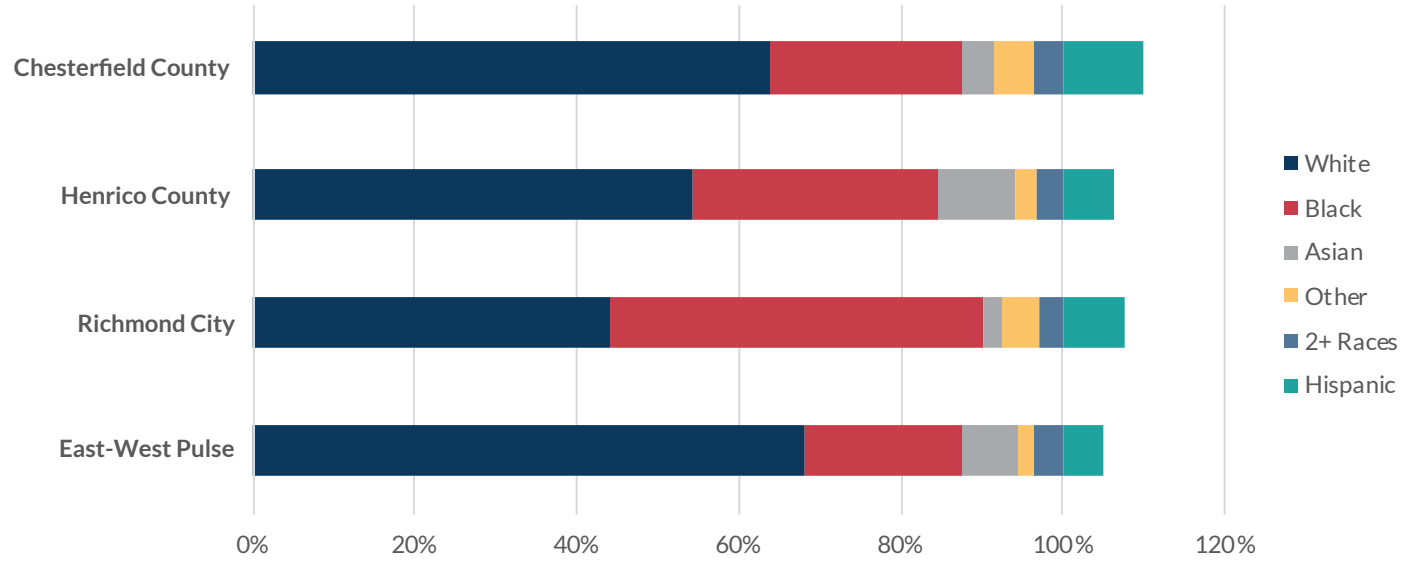
Running through the urban core and some of the highest valued property in the Richmond region, the corridor has a smaller share of naturally-occurring affordable housing, or homes worth less than $300,000. The preservation and addition of affordable housing units near the Pulse corridor should be a top priority for the City of Richmond and Henrico County to ensure that low-income households, who are mostly likely to rely on transit, can continue to reap the benefits of the Pulse.

HOME VALUE DISTRIBUTION



Partnership analysis using ESRI ArcGIS (2020)

RACE & ETHNICITY ALONG PULSE COMPARED TO JURISDICTIONS



Partnership analysis using ESRI ArcGIS (2020)

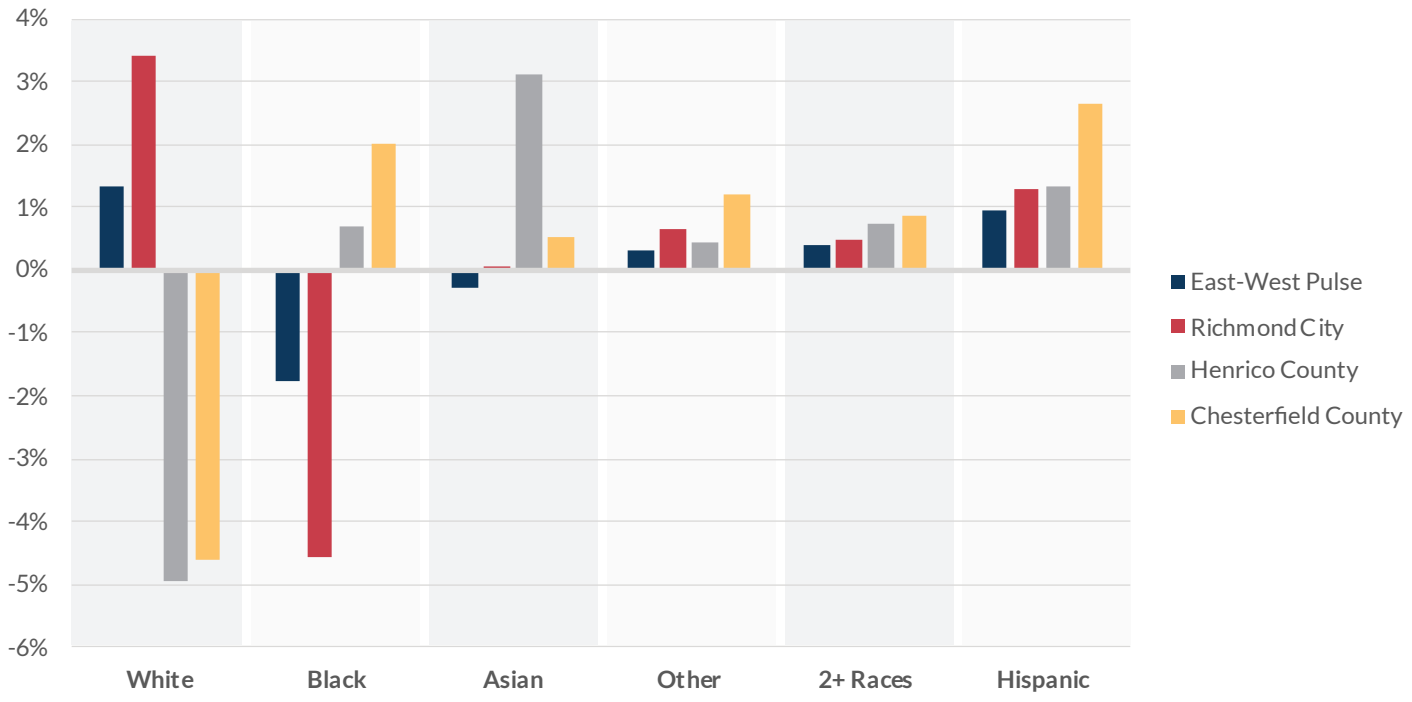
Three-quarters of GRTC bus riders live in households that earn less than $50,000 per year and almost two-thirds of riders are Black.[32] However, the median household income was higher along the Pulse, $53,000 in 2019, compared to $47,000 for the City of Richmond as a whole.[33] Similarly, within a half mile of the Pulse, there are more white residents and fewer Black and Hispanic residents than the surrounding region.

Between 2014 and 2019, the Low Income Housing Tax Credit program helped build more than 875 affordable housing units within a half-mile of the East-West Pulse Corridor in the City of Richmond.

"There's nothing really hard about the Pulse. With the regular routes, there's a lot of things I would change."

– GRTC Bus Rider, 2021. See more in Appendix B.

CHANGE IN RACE AND ETHNICITY FROM 2010 TO 2020



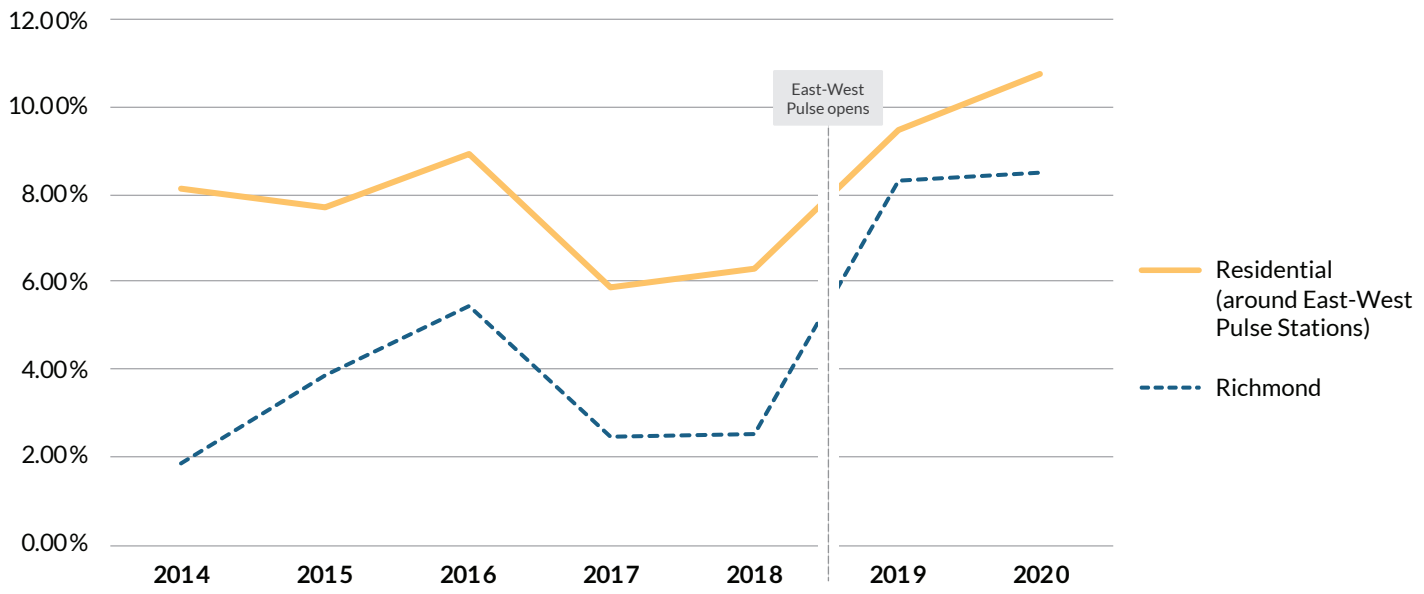
Partnership analysis using ESRI ArcGIS (2020)

That represents a quarter of the growth in households along the corridor over the same period.[34] Between 2010 and 2020, the share of Black residents along the East-West Pulse Corridor actually shrank less than the City of Richmond as a whole. Additional research is needed to understand the relationship between the Pulse, affordable housing development, and new market-rate development activity along the corridor and how the jurisdictions can proactively reduce the pace of demographic change by allowing more housing options for residents of all incomes to live near the corridor. To meet the plan's goals around thriving and equitable communities, the City of Richmond and Henrico County should continue efforts to incent the preservation and construction of affordable housing options along the East-West Pulse Corridor and study what policy interventions can help maintain demographic and economic diversity over time, such as strengthening voluntary incentives for

dedicated affordable housing and creating a pathway for developer contributions into Affordable Housing Trust Fund(s).

In terms of property values, properties near Pulse Stations did increase in value faster than regional averages. In Scott's Addition, for example, residential property values grew more than 20% in 2016, the year the Pulse began construction, and again in 2019, the year after the launch of the Pulse.[35] Across the corridor, residential property values within a quarter mile of Pulse stations increased faster than the City of Richmond as a whole, throughout the planning, construction, and early operations of the Pulse. Given that transit investment can increase private property values, the jurisdictions should explore tools to capture some of the value generated by the public investment, such as Tax Increment Financing, that can be reinvested in public infrastructure such as sidewalks, street trees, lighting, parks, schools, etc.

GROWTH IN PROPERTY VALUES WITHIN ¼ MILE OF PULSE STATIONS



Source: City of Richmond Parcel Assessment Data

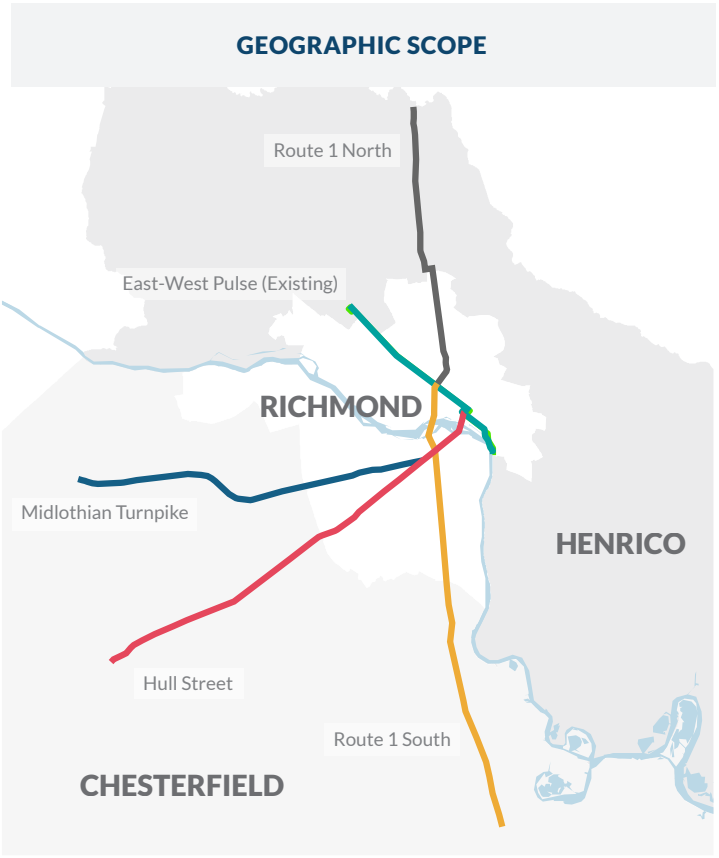
NORTH-SOUTH CORRIDOR PROFILES

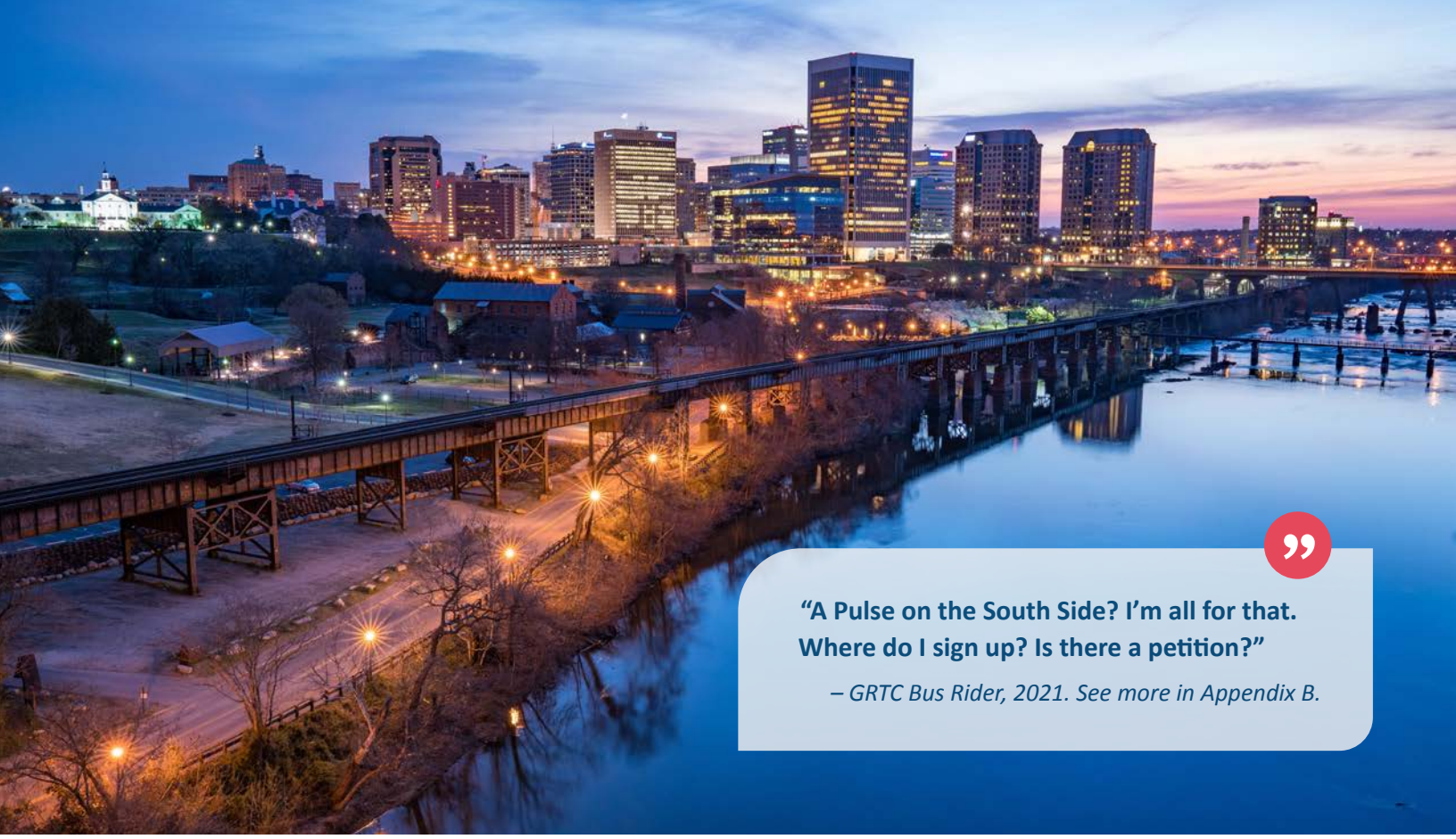
In 2021, the Virginia Department of Rail and Public Transportation (DRPT) awarded GRTC a grant to conduct a North-South BRT alignment study. Just as the Broad Street Rapid Transit Study laid the groundwork for the Pulse BRT project, GRTC's study will look at potential corridors, alignments, termini, and assess the overall need for a North-South BRT.

While this report examines three potential candidates for the southern alignment of the North-South BRT (Midlothian Turnpike, Hull Street, and Route 1 South) and one for for the northern alignment, GRTC's official study may recommend alternate alignments and corridors altogether. The goal of this analysis is to help the Richmond region prepare to have more informed discussions about the potential benefits and challenges of a North-South BRT corridor by exploring three primary indicators of transit-readiness:

1. Existing density and land use
2. Existing transportation infrastructure
3. Socio-economic characteristics

These indicators of transit-readiness directly relate to the Pulse Corridor Plan's goals of (1) Compact & Mixed-Use Development, (2) Connected Infrastructure, and (3) Thriving & Equitable Communities.





> **"A Pulse on the South Side? I'm all for that. Where do I sign up? Is there a petition?"**
>
> *– GRTC Bus Rider, 2021. See more in Appendix B.*

Existing Density and Land Use

Transit is more useful and efficient the more people, businesses, jobs, and destinations are located nearby. While the huge costs to build a subway system are justified in a densely populated area such as Manhattan, a subway in rural farmland would clearly not make a strong return on its investment. The Greater RVA Transit Vision Plan outlined recommended densities to justify various types of transit investment and service.[36]

Each of the potential North-South corridors have thousands of nearby jobs and residents, all of whom deserve access to higher-quality, more frequent transit.

For the Broad and Main Streets Corridor, densities within a half-mile of the existing East-West Pulse BRT average to more than 26,000 jobs and residents per square mile.[37] Downtown, between Belvidere and 14th Streets, the average density near Broad Street exceeds 65,000 jobs and residents per square mile.

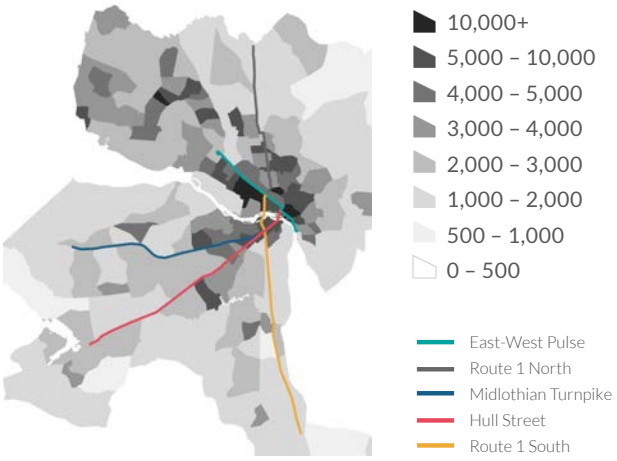
Across the North-South corridor options, no corridor averages more than 12,000 jobs and residents per square mile, but there are stretches and pockets of density along each corridor. In the urban core, both Hull Street and Route 1 South have densities above 22,000 while the Route 1 North corridor averages more than 20,000 all the way from downtown to the city-county line.[38] Beyond the city, densities drop significantly, except Midlothian Turnpike in Chesterfield County has the highest job density with 4,400 nearby jobs per square mile.[39]

RECOMMENDED DENSITIES PER TRANSIT MODE

Type of Service	Jobs or Residents per Sq. Mile
Bus Rapid Transit / Light Rail Transit	21,600 to 44,800
Express Bus Service	8,800 to 21,600
Fixed Route Bus Service	4,250 to 8,800
Demand Response Service	<4,250

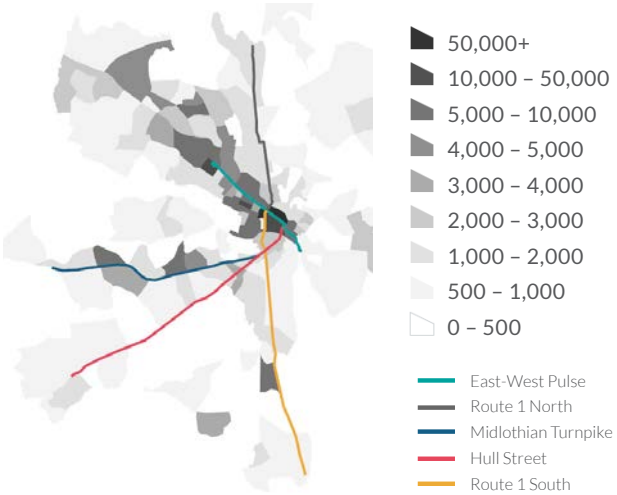
Source: Greater RVA Transit Vision Plan

RICHMOND AREA POPULATION DENSITY
(per square mile)



Partnership analysis using ESRI ArcGIS (2020)

RICHMOND AREA JOB DENSITY
(per square mile)



Partnership analysis using ESRI ArcGIS (2020)

Outside of the downtown core, the existing conditions justify more express and frequent bus service, but not BRT based on today's densities. Phasing a North-South BRT project would allow time for the City and Counties to encourage more development along the preferred corridor, making a smarter use of limited resources. Project phasing might include a first stage of BRT investment on the inner corridor while expanding frequent, 15-minute bus service along the entire length of the preferred corridor. Meanwhile, the jurisdictions can start preparing for future BRT expansion by enabling transit-supportive zoning and densities along the preferred alignment, learning from each other what zoning regulations are most conductive to encouraging mixed-use, transit-oriented communities.

DENSITY ALONG POTENTIAL CORRIDORS
(County-Only)

Corridors	Combined Jobs & Residents per Square Mile
Route 1 North	4,000
Midlothian Turnpike	6,300
Hull Street	2,800
Route 1 South	3,300

Project phasing might include a first stage of BRT investment on the inner corridor while expanding frequent, 15-minute bus service along the entire length of the preferred corridor

> **"I've had several job offers that I would have been able to take if the bus just went a little further down Midlothian to where the mall is. I would have been in a lot better shape right now."**
>
> *– GRTC Bus Rider, 2021. See more in Appendix B.*

Existing Transportation Infrastructure

GRTC is the primary provider of public transit service in the Richmond region and is tasked with operating, maintaining, and improving the transit system. On portions of Route 1 and Hull Street, GRTC already runs frequent bus service, every 15-minutes on weekdays (see Appendix D), just without the benefits of dedicated bus lanes or other amenities associated with a BRT system.

Despite the COVID-19 pandemic reducing economic activity and transit ridership across the country, thousands of residents continued to rely on GRTC service, including the routes that run along portions of the potential BRT corridors.

Additionally, improved bus stop amenities can improve the transit experience for existing riders and attracts new ones. Only 20% of GRTC bus stops today have benches and only about 5% have shelters.[40] Improving bus stop amenities and pedestrian lighting along these corridors, especially along the preferred North-South BRT alignment, should be a top near-term priority for GRTC and all three jurisdictions.

RIDERSHIP ON ROUTES THAT RUN ON POTENTIAL CORRIDORS

Corridor	Avg. Weekday Ridership May 2021
Broad Street (All Routes)	20,755
East West Pulse	3,776
Route 1 North	4,195
Midlothian Turnpike	4,144
Hull Street	4,195
Route 1 South	1,367

Source: GRTC Ridership data

To safely access bus stops, riders need sidewalks. The map on page 30 shows a cross-section of the City of Richmond

EXAMPLE OF SIDEWALK INFRASTRUCTURE NEAR MIDLOTHIAN, HULL, AND ROUTE 1 SOUTH

PlanRVA Regional Sidewalks GIS Layer

where Midlothian Turnpike intersects Hull Street and Hull Street intersects Route 1 South. Sidewalks are shown in light blue. While the sidewalk network is close to fully built out in many neighborhoods close to downtown Richmond, there are still gaps to address. Even many of the existing sidewalks are too narrow and lack buffers between moving vehicles which creates an uncomfortable, and potentially unsafe, pedestrian experience. As one travels further from downtown, sidewalks become rarer, impeding safe pedestrian access to and from transit and depressing ridership. Encouragingly, the City of Richmond embarked on a plan to repair and repave eight miles of sidewalk over the next year to reduce its backlog of sidewalk maintenance.[41]

Socio-Economic Characteristics

The Pulse BRT created a strong spine for the GRTC transit network, connecting residents to and from Richmond's many downtown amenities and anchor institutions. The Pulse was built along the densest corridor in the region with the highest bus ridership, but critics have argued that the alignment should have been selected more according to need, or transit dependence citing that two-thirds of residents near Broad Street are white and less than one-fifth were Black, while almost two-thirds of GRTC ridership identified as Black.[42] A North-South BRT can prioritize access more heavily for transit dependent populations. By connecting communities across the James River and I-95 to downtown, a North-South BRT would expand access for the region's most historically disinvested communities to the East-West Pulse and all of the jobs and opportunities it currently serves.

Race and income are two of the primary indicators of transit-dependence. The good news is that any North-South corridor will improve access and mobility for a range of transit-dependent communities. Each potential

corridor, especially Route 1 South, pass through several communities where the median household income is below $50,000.[43] A North-South BRT can increase access to opportunities for these households especially if the project is paired with investments to expand housing affordability.

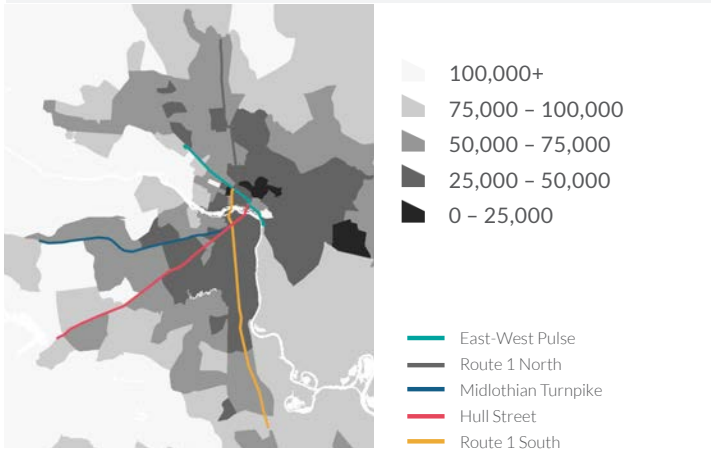
In terms of race and ethnicity, the three southern corridors serve similar shares of majority Black communities and residents. While Route 1 North would serve several majority Black communities, the alignment passes to the west of many Black communities along Mechanicsville Turnpike. GRTC should work with the City of Richmond and Henrico County to identify transit enhancements between Northeast Richmond and East Highland Park to the final preferred North-South BRT alignment.

> **"It would be awesome for a bus to go to Chesterfield Towne Center because there are good jobs and good opportunities out there."**
>
> *– GRTC Bus Rider, 2021. See more in Appendix B.*

> **"There's a lot of people on Hull in the morning and afternoon rush. If they had a Pulse out here, I think a lot of people would use it."**
>
> *– GRTC Bus Rider, 2021. See more in Appendix B.*

RICHMOND AREA MEDIAN HOUSEHOLD INCOME

(Dollars per year)



Partnership analysis using ESRI ArcGIS (2020)

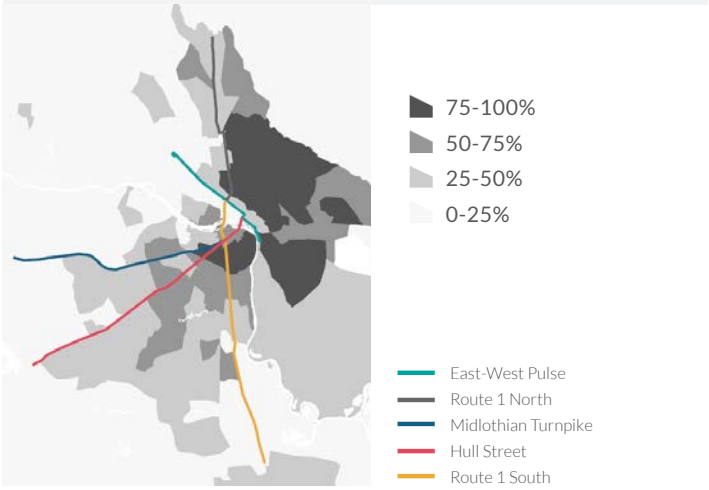
Many of the region's Hispanic communities are also located along the three southern alignments. Across Hull Street and Route 1 South approximately 15% of residents identify as Hispanic or Latinx.

As GRTC prepares for a North-South corridor alignment study, the agency should work closely with the jurisdiction to ensure public engagement reaches Black and Hispanic residents. GRTC should also explore ways for residents to engage who may not have time to participate in traditional public meetings or online webinars, as well as producing all materials in English and Spanish, to ensure as many residents as possible have an opportunity to participate in shaping the future of their community.

Regional Benefits of a North-South BRT

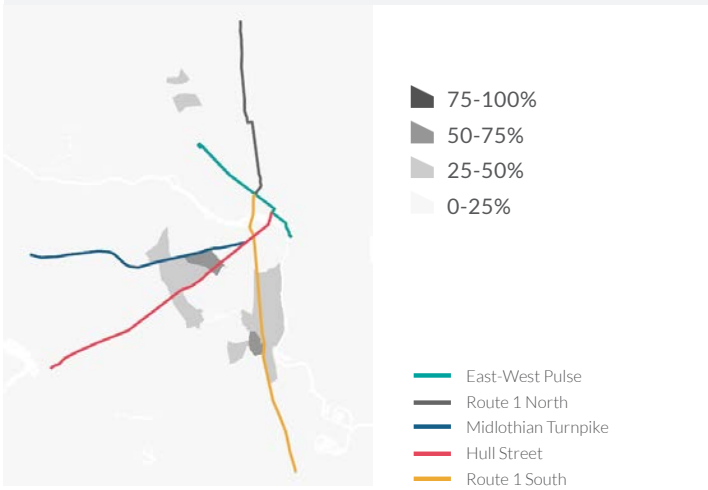
In 2019, the Pulse was awarded the Bronze Standard BRT rating by the Institute for Transportation & Development policy, one of only seven American systems at the time to hold the Bronze rating or better.[44] If the region can come together to advance a North-South BRT, the Richmond Region would elevate its standing as a transit-friendly community, demonstrating its commitment to inclusive growth and sustainable transportation, key drivers for talent and businesses attraction in the 21st century.
Besides improving the lives of thousands of existing GRTC riders, improving access to disinvested communities, and offering more sustainable transportation options for

RICHMOND AREA BLACK POPULATION



Partnership analysis using ESRI ArcGIS (2020)

RICHMOND AREA HISPANIC POPULATION



Partnership analysis using ESRI ArcGIS (2020)

residents, the construction and operations of a North-South BRT will also generate economic benefits for the region.

Economic Benefits

When planning for the East-West Pulse BRT, GRTC estimated that the $53.8 million capital investment had the potential to generate $41.5 million in regional spending and create 406 regional jobs during construction.[45] Depending on the preferred corridor, construction of a North-South BRT could generate between $83 - $96 million in gross economic output and $34 - $39 million in labor income, with an estimated $22 - $25 million of labor income directly related to BRT construction.[46] In total, the project could generate more than 523 new worker years (jobs for one year) for regional residents, including direct, indirect, and induced jobs.[47] Cleveland's Healthline, a five mile Greater Cleveland Regional Transit Authority BRT transitway, established the primary growth corridor for that region and is associated with $10 billion in new investment since the $200 million project opened in 2008.[48]

A BRT system can also reduce travel times for riders because buses are separated from general traffic and stop less frequently. By comparing ridership along the Broad and Main Streets corridor pre- and post-Pulse, the reduced trip times and annual time savings for riders was valued at $2.0 million.[49] The Pulse also attracted new riders to the system, with an additional 1.1 million trips taken along Broad and Main Streets in 2019.[50] A North-South BRT would generate similar benefits for the region, putting more money into the pockets of residents, especially low-income residents, and giving existing riders more time to spend with family, friends, or at work.

Transit-Accessibility Benefits

The mismatch between where housing is located and where jobs are located creates the need to commute longer distances to work. Today, residents in the Richmond region with a car can access, on average, more than 600,000 jobs within 45 minutes.[51] Unfortunately, residents who rely on transit are at a significant

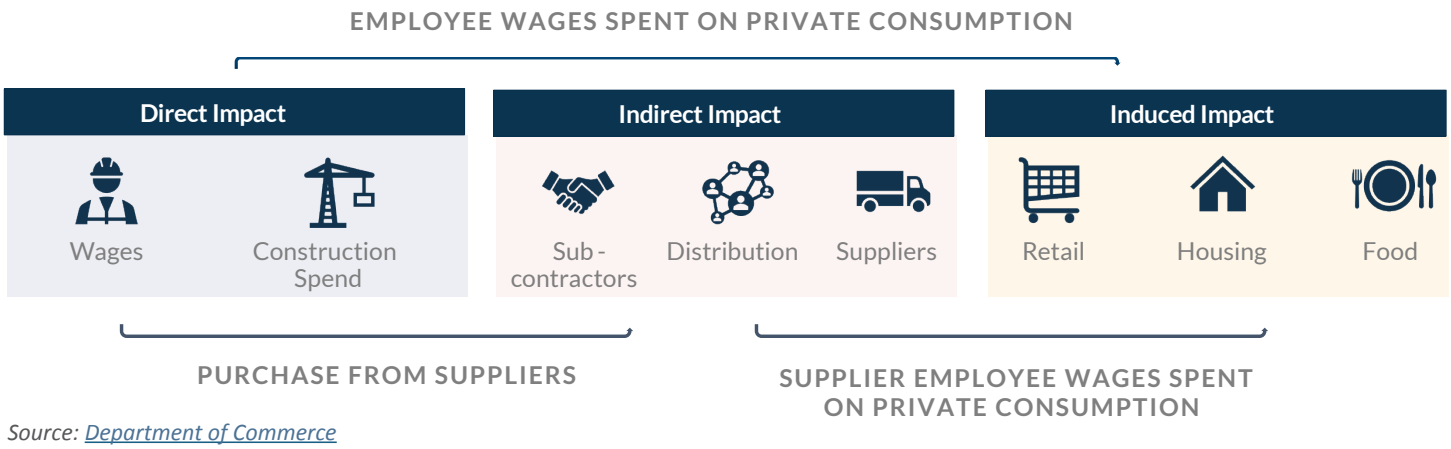
> **"I'd say a Pulse should be considered for all three southern routes."**
>
> *– GRTC Bus Rider, 2021. See more in Appendix B.*

disadvantage. Even along transit-rich Broad Street, residents can access only 1/5 of the jobs via transit in the same time they can via car.[52] On the City's south side, the ratio of transit-to-car job accessibility drops to one-twelfth along the potential corridors. Access in the counties is even worse. On Hull Street in Chesterfield County, for example, the average resident can only access 2,000 jobs within 45 minutes via transit compared to 629,000 jobs for the average resident with a car.[53]

The glaring inequities in transportation access are not just a problem for households without a car. Businesses in the City of Richmond and Chesterfield and Henrico counties cannot access the full, talented, and diverse labor pool, making it harder to attract and retain employees without a car. A North-South BRT would help close the transit-accessibility gap, improving residents' access to jobs and businesses access to employees.

> **"The bus gets me to where I need to go. I don't care if it's late or early. I'll just sit there and wait. This morning, the bus just rode on by me. I waited 30 minutes for the next bus."**
>
> *– GRTC Bus Rider, 2021. See more in Appendix B.*

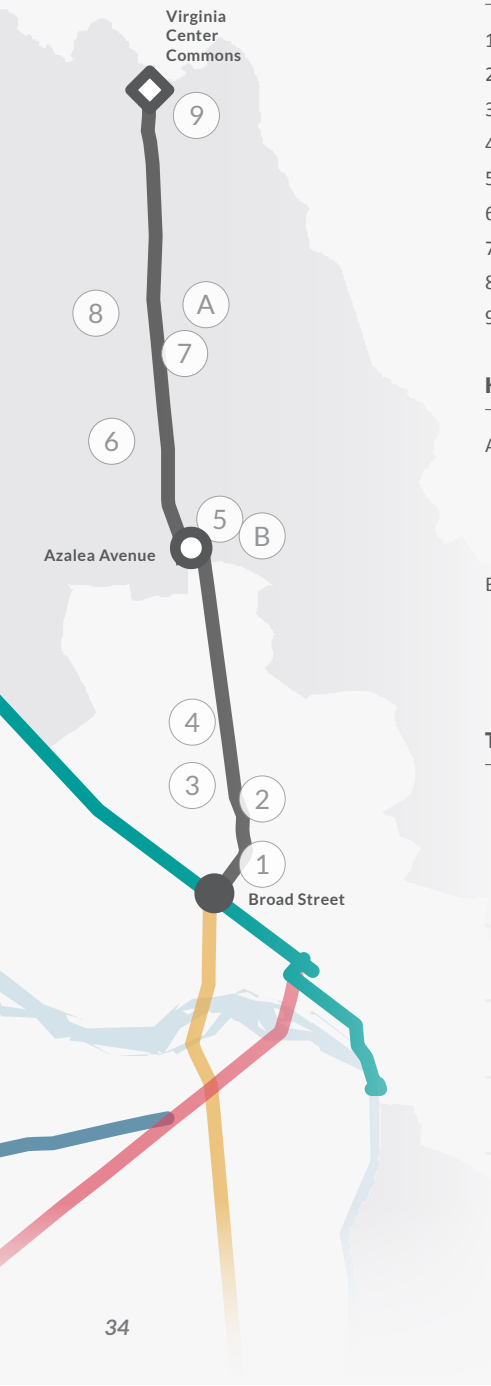
ECONOMIC IMPACT MODEL



Source: Department of Commerce

ROUTE 1 NORTH

The Route 1 North corridor examined in this report runs from Broad Street downtown heading north along Belvidere, Chamberlayne, and eventually Route 1, ending at Virginia Center Commons in Henrico County. Of the potential corridors, Route 1 North has the highest share of senior residents and assisted-living facilities along the corridor, an opportunity to help seniors age-in-place and retain mobility access.



Key Destinations:

1. Black History Museum of Virginia
2. Chamberlayne Industrial Center
3. Virginia Union University
4. Children's Hospital
5. Brookhill Azalea Shopping Center
6. Lewis Ginter Botanical Garden
7. Northpark Shopping Center
8. Reynolds Community College
9. Virginia Center Commons

Key Development Opportunities:

A. Green City in Henrico County plans for 2,400 residential units, 280k sq. ft retail, 2,00k sq. ft office, and $250M arena near the I-95 and Parham Road interchange

B. Azalea Mall (48 acres)

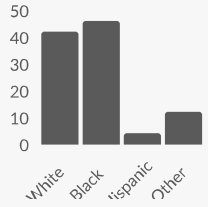
Within a Half Mile of Corridor:

Population Density — 4.1K residents per square mile

Job Density — 7.8K jobs per square mile

Median Household Income — $43,000

Race and Ethnicity



Transit Readiness Indicators Along This Corridor:

	Between **Broad Street** and **Azalea Avenue**	Between **Azalea Avenue** and **Virginia Center Commons**
Density and Land Use	BRT Ready	Low Density
Socio-Economic Characteristics	Diverse & Mixed Income	Diverse & Higher Income
Pedestrian Infrastructure	Above Avg. Walkable	Below Avg. Walkable
Existing Transit	Routes: 1A, 1B, 1C Frequency: 15 mins	Route: None Frequency: N/A

ROUTE 1 SOUTH

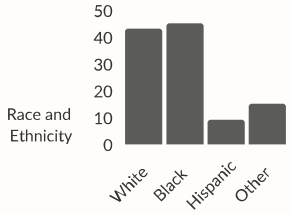
The Route 1 South corridor examined in this report runs from Broad Street downtown along Belvidere Street and south along Route 1, ending at Brightpoint Community College in Chesterfield County. As of Fall 2021, there is direct service along the length of the corridor when Route 111 merged with Route 3B. Route 1 South has the highest share of naturally occurring affordable housing of the four corridors, which underscores the importance of investments to preserve and expand access to affordable housing alongside transit investments.

Within a Half Mile of Corridor:

Population Density: 2.9K residents per square mile

Job Density: 5.9K jobs per square mile

Median Household Income: $37,000

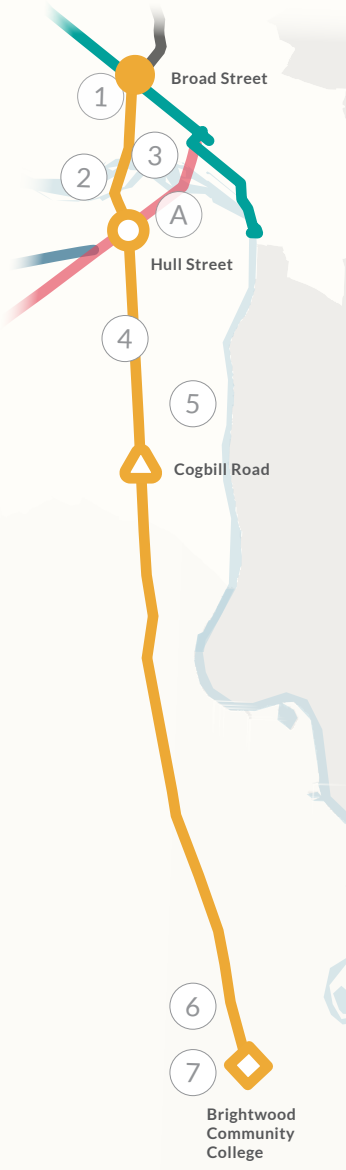


Key Destinations

1. Virginia Commonwealth University
2. Hollywood Cemetery
3. Virginia War Memorial
4. Broad Rock Industrial Park
5. Phillip Morris USA
6. Breckenridge Shopping Center
7. Brightpoint Community College

Key Development Opportunities

A. Proposal for 116-unit income-based apartments at Hull and Commerce



Transit Readiness Indicators Along This Corridor:

	Between **Broad Street** and **Hull Street**	Between **Hull Street** and **Cogbill Road**	Between **Cogbill Road** and **Brightwood Community College**
Density and Land Use	BRT Ready	Medium Density	Low Density
Socio-Economic Characteristics	Diverse & Mixed Income	Majority Black & Lower Income	Diverse & Lower Income
Pedestrian Infrastructure	Above Avg. Walkable	Above Avg. Walkable	Below Avg. Walkable
Existing Transit	Routes: 3A, 3B, 3C Frequency: 15 mins	Routes: 3B, 3C Frequency: 30 mins	Routes: 3B Frequency: 30 mins

HULL STREET

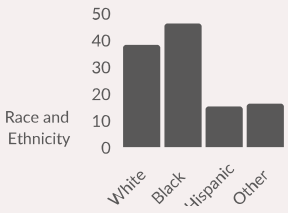
The Hull Street corridor examined in this report runs from Main Street downtown along 14th Street and continues west along Hull Street, ending at Commonwealth Center in Chesterfield County. Like Midlothian Turnpike, almost one-in-ten housing units along Hull Street are vacant and the corridor has several older shopping centers that present opportunities for reinvestment and growth.

Within a Half Mile of Corridor:

3.0K residents per square mile
Population Density

4.2K jobs per square mile
Job Density

$49,000
Median Household Income



Key Destinations

1. Richmond Main Street Station
2. Old Town Manchester
3. Southside Plaza
4. Chippenham Mall Shopping Center
5. 360 West Shopping Center
6. Rockwood Park
7. Genito Crossing
8. Chesterfield Crossing
9. Commonwealth Center

Key Development Opportunities

A. 2,000+ new and planned housing units and planned grocery store in Old Town Manchester
B. Proposal for 116-unit income-based apartments at Hull and Commerce

Transit Readiness Indicators Along This Corridor:

	Between **Main Streeet** and **Midlothian Turnpike**	Between **Midlothian Turnpike** and **Chippenham Parkway**	Between **Chippenham Parkway** and **Commonwealth Center**
Density and Land Use	BRT Ready	Low Density	Low Density
Socio-Economic Characteristics	Diverse & Mixed Income	Majority Black & Mixed Income	Diverse & Higher Income
Pedestrian Infrastructure	Above Avg. Walkable	Above Avg. Walkable	Below Avg. Walkable
Existing Transit	Routes: 1A, 1B, 1C Frequency: 15 mins	Routes: 1C Frequency: 60 mins	Routes: None Frequency: N/A

MIDLOTHIAN TURNPIKE

The Midlothian Turnpike corridor examined in this report runs west along Hull Street from downtown turning onto Midlothian Turnpike until it ends in Midlothian Village in Chesterfield County. Midlothian Turnpike has the highest share of owner-occupied homes of the four corridors, an opportunity for residents to build wealth as property values rise with the transit investment. Additionally, almost one-in-ten housing units are vacant and several shopping centers along the corridor have underutilized parking lots, presenting opportunities for redevelopment, reinvestment, and growth.

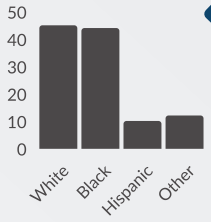
Within a Half Mile of Corridor:

Population Density
2.9K residents
per square mile

Job Density
6.4K jobs
per square mile

Median Household Income
$51,000

Race and Ethnicity



Key Destinations

1. Stonebridge Shopping Center
2. Chippenham Square Shopping Center
3. Midlothian Crossing
4. Stein Mart Festival
5. Pocono Crossing
6. Johnston-Willis Hospital
7. Chesterfield Towne Center
8. Midlothian Village

Key Development Opportunities

A. Spring Rock Green Shopping Center proposal for 1,000 residential units, 90k sq. ft retail, 200k sq. ft office, hotel, and indoor hockey facility

B. Proposal for 144-unit income-based apartments at 700 W. 44th Street

Transit Readiness Indicators Along This Corridor:

	Between **Main Streeet** and **Midlothian Turnpike**	Between **Midlothian Turnpike** and **Chippenham Parkway**	Between **Chippenham Parkway** and **Midlothian Village**
Density and Land Use	BRT Ready	Medium Density	Medium Job Density
Socio-Economic Characteristics	Diverse & Mixed Income	Majority Black & Mixed Income	Diverse & Higher Income
Pedestrian Infrastructure	Above Avg. Walkable	Above Avg. Walkable	Below Avg. Walkable
Existing Transit	Routes: 1A, 1B, 1C Frequency: 15 mins	Routes: 2C transfer to 1A Frequency: 30 mins	Routes: None Frequency: N/A

RECOMMENDATIONS

To maximize the benefits from public investment in a North-South BRT, the Greater Washington Partnership recommends that the three jurisdictions of the City of Richmond, Chesterfield County, and Henrico County, in partnership with the Commonwealth of Virginia and GRTC, should consider the following strategic priorities to implement along the preferred alignment. Successful implementation will require robust community engagement and outreach as well as the development of context-sensitive policies for each jurisdiction.

TRANSIT AND MULTIMODAL TRANSPORTATION INFRASTRUCTURE

1. Enhance Transit Service and Implement a Phased North-South BRT Project
2. Buildout a Safe and Connected Sidewalk Network
3. Upgrade Bus Stops and Shelters
4. Plan for Seamless Downtown Pulse Connectivity and County Transit Expansion
5. Create and Execute a Bus Operator Recruitment & Fleet Expansion Strategy

AFFORDABLE HOUSING AND COMMERCIAL BUSINESS SPACE

1. Create Specific Goals for Affordability and Access to Frequent Transit
2. Leverage Private Funds with Public Money to Create More Affordable Housing Units
3. Expand the Toolkit of Incentives to Develop Mixed-Income Communities
4. Targeted Rental and Property Tax Relief for Low-Income Residents and Seniors
5. Provide Grants and Technical Assistance to Support Existing Small Businesses
6. Explore Zero Fare and Equitable Fare Strategies for GRTC Operations

TRANSIT-SUPPORTIVE LAND USES

1. Concentrate Density Along Potential Corridors
2. Diversify Land Uses Along Potential Corridors
3. Secure Public Benefits with Density Bonuses
4. Plan Transit Stops as Hubs of Activity

Virginia is a **Dillon Rule state,** meaning localities' powers for policymaking, organizing municipal government structure, fiscal decisions, and land use regulatory tools must be explicitly sanctioned by the state. Therefore, the region's state delegation must be included in conversations around inclusive TOD and transit expansion to ensure that the jurisdictions have the appropriate authority and resources for implementation.

TRANSIT AND MULTIMODAL TRANSPORTATION INFRASTRUCTURE

Every transit trip starts and ends beyond the bus. Riders must be able to safely arrive and depart bus stops using sidewalks and wait for their bus at well-lit, safe, and comfortable bus shelters.

1. **Enhance Transit Service and Implement a Phased North-South BRT Project:** Existing densities along the potential North-South corridors may not yet justify a twenty mile BRT from downtown Richmond well into Henrico and Chesterfield Counties. However, more frequent bus service is needed along the corridors, especially for Midlothian Turnpike and Hull Street which lack any transit service on much of the corridor. In the near-term, GRTC should develop a plan to increase bus frequencies or establish bus service along all of the corridors as part of the Regional Public Transportation Plan process. In the medium-term, GRTC should work with the state to identify a North-South BRT alignment for the inner core and bus route extensions and priority projects to improve service, frequency, and reliability for riders to opportunities in the counties. Richmond, Chesterfield, and Henrico have an opportunity to prepare for a full North-South BRT build out by proactively rezoning the preferred corridor in the near-term to increase densities and create a more vibrant, cohesive transit-oriented corridor in the long-term.
2. **Buildout a Safe and Connected Sidewalk Network:** Each jurisdiction would benefit from mapping gaps in the existing sidewalk network within a ½ mile walkshed of the North-South BRT corridors, including outdated or deteriorated sidewalks and isolated subdivisions, which would inform a workplan to build out the sidewalk grid. This effort can be supported by strategic investments made available through the new Central Virginia Transportation Authority, as well as federal formula dollars through the Surface Transportation Block Grant (STBG) program, Transportation Alternatives, and federal competitive grant programs such as RAISE grants. Each jurisdiction could commit to buildout the sidewalk grid within a quarter mile and then a ½ mile of the preferred corridor, incorporating this into their capital improvement plans. Assessment of existing conditions shows that within a half-mile of the Pulse BRT, rated "Above Average Walkable" or "Most Walkable" along the corridor, there are about 15-16 miles of a pedestrian network per square mile and almost 125-130 pedestrian-oriented intersections per square mile.[54] Outside of the city,

ESTIMATES TO BUILD A PEDESTRIAN NETWORK COMPARABLE TO BROAD STREET WITHIN HALF-MILE OF ONE OF THE NORTH-SOUTH BRT CORRIDORS*

Jurisdiction	Miles of Sidewalk	Cost Estimate
City of Richmond	13 - 23	$13M - $23M
Chesterfield County	49 - 70	$49M - $70M
Henrico County	42	$21M

**Miles of sidewalk calculated by difference between the average Broad Street pedestrian network density and the existing corridors pedestrian network density. Assumes $1,00,000 per mile in sidewalk construction costs, including easements, adjustment of utilities, and drainage facilities.*

TRANSIT AND MULTIMODAL TRANSPORTATION INFRASTRUCTURE

the pedestrian network drops to between 8-10 miles and 36-50 pedestrian-oriented intersections per square mile along the corridors, limiting resident's ability to safely access transit. The jurisdictions should encourage developers to establish sidewalk networks, break up mega-parcels, and build alleys where appropriate.

3. **Upgrade Bus Stops and Shelters:** GRTC, working with the state and local jurisdictions, is currently upgrading bus stop amenities and shelters systemwide. Once a preferred corridor is selected, a robust bus stop upgrade plan starting with the highest ridership stops, will help prepare residents and businesses for the buildout of a BRT line and improve the rider experience. GRTC's current shelter plan has funding to install 81 bus shelters between FY2020 and FY2024, out of more than 1,600 bus stops across the system.[55] The federal delegation may be able to help the region

BUS STOP WITH A MAP AND SHELTER

"With slanted benches on some stops, if you have a disability, you can't sit. Every bus stop should have a bench and a shelter."

– GRTC Bus Rider, 2021. See more in Appendix B.

Credit: GRTC

TRANSIT AND MULTIMODAL TRANSPORTATION INFRASTRUCTURE

secure federal funding to enhance the reach and speed of this plan's implementation through programs such as RAISE competitive grants, congressionally directed spending ("earmarks"), and the Federal Transit Administration's Areas of Persistent Poverty grant program. In addition to shelter upgrades, GRTC can create an interactive bus stop inventory and maintenance plan where riders can make requests and report maintenance needs. The region should consider the National Association of City Transportation Officials' Transit Street Design Guide and Transit Center's Equity in Practice guidebook for best practices around shelters and bus stops.[56]

4. **Plan for Seamless Downtown Pulse Connectivity and County Transit Expansion**: In addition to better North-South connectivity, a North-South BRT should provide easy, convenient transfers to the Pulse, stop placement that integrates into the existing GRTC network, and route termini that seamlessly connects to existing routes, future extensions, and potential park and ride lots at termini. Overall, about 48% of GRTC riders transfer to another bus and 57% of Pulse riders transfer to another route.[57] Seamless connections into the rest of the network, including first/last mile solutions, will ensure that a new BRT line is an enhancement to the current system.

5. **Create and Execute a Bus Operator Recruitment & Fleet Expansion Strategy:** Increasing the frequency of buses is one of the best tools to improve the quality of transit service. Running more buses requires purchasing more buses and hiring and retaining bus operators. GRTC, in coordination with the state and the local jurisdictions, should develop a strategy to expand its bus operator recruitment pipeline as well as its bus fleet and bus maintenance.

> **"As far as the Pulse, the next bus stop is four or five blocks down and some people miss the next bus because they have to walk so far. The stops need to be closer to the regular stops."**
>
> *– GRTC Bus Rider, 2021. See more in Appendix B.*

> **"Sometimes you have to wait two hours in the hot sun [on Hull Street]. I think they need to get the whole system straight first."**
>
> *– GRTC Bus Rider, 2021. See more in Appendix B.*

AFFORDABLE HOUSING AND COMMERCIAL BUSINESS SPACE

Improving transit service can increase demand for property in the area, increasing property values but also increasing the possibility for involuntary displacement of residents and businesses. The majority of GRTC bus riders live in households that earn less than $50,000 per year.[58] Existing riders need opportunities to remain and locate nearby high-quality transit.

1. **Create Specific Goals for Affordability & Access to Frequent Transit:** Measurable targets tied to goals around increasing and preserving affordable housing and affordable commercial space near frequent transit will help ensure that a new BRT line improves service to the riders who need it most. Goals should have specifics metrics that can be regularly tracked, reported on, and updated (e.g., by 2030, 75% of low-income households live within a quarter mile of frequent bus service that comes every 15 minutes or less with specific targets for affordable units at 80, 50, and 30% of the Area Median Income). While the Richmond 300 Master Plan calls for 10,000 new affordable housing units across the city and the Hull Street Corridor Revitalization plan calls for more affordable housing along the Hull Street, tying those two objectives into a specific and measurable target can help track progress to make sure development along the preferred North-South corridor is meeting goals around inclusion.[59]
2. **Leverage Private Funds with Public Money to Create More Affordable Housing Units:** Each jurisdiction can employ a variety of funding tools and incentives to support affordable housing. This could include a stronger commitment to the Maggie Walker Community Land Trust (MWCLT), active in all three jurisdictions, to support their acquisition of property within a mile of the potential North-South corridors to maintain permanently affordable homeownership opportunities for low and moderate-income households. The City of Richmond's Affordable Housing Trust Fund (AHTF), Chesterfield County, and and Henrico County have already provided funding to the Maggie Walker CLT, the designated land bank for the region. The AHTF can also leverage investment in affordable housing by other non-profits (i.e., Richmond Better Housing, Project Homes, and Virginia Supportive Housing) and for-profit developers to significantly increase the production of affordable units and the return on investment of public money, such as the $4 million in American Rescue Plan money Chesterfield County plans to use to support affordable housing.[60] Continued efforts to map publicly-owned land along potential transit corridors, as well as mapping tax delinquent properties and underperforming parcels (improvement value to land value ratio less than 1.0), can help preposition those parcels for redevelopment

AFFORDABLE HOUSING AND COMMERCIAL BUSINESS SPACE

partnerships with affordable housing developers. This would enable the local jurisdictions to become equity partners with MWCLT and other developers of affordable housing to accelerate the construction and rehabilitation of affordable housing along the preferred corridor.

3. **Expand the Toolkit of Incentives to Develop Mixed-Income Communities:** Without incentive-rich tools to encourage private sector development of mixed-income communities, development along the corridors will cater towards market-rate and higher-income needs. Each jurisdiction should identify ways to strengthen their toolkit to incent the rehabilitation and new development of affordable housing units and mixed-income communities that are served by transit. Affordable Housing Trust Funds, support for community land trusts, public-private equity partnerships, accessory dwelling

THE COLBROOK PROPOSED AFFORDABLE DEVELOPMENT IN CHESTERFIELD COUNTY

Credit: Baskervill

AFFORDABLE HOUSING AND COMMERCIAL BUSINESS SPACE

unit ordinances, rebates on real estate taxes, real estate tax abatements, and waivers for parking requirements and water and sewer connection fees should be explored to incent affordable mixed-income development along the preferred corridor. With active support from local jurisdictions, development agreements can make portions of large parcels available for affordable housing. Chesterfield County recently purchased Spring Rock Green Center to redevelop the center into a mixed-use community with a sports complex. If a portion of the land for similar large projects could be sold at a discounted rate with an agreement that a specific percentage of units are built for affordable and workforce housing, the jurisdictions could greatly accelerate the development of mixed-income communities along the preferred corridor.

4. **Targeted Rental and Property Tax Relief for Low-Income Residents and Seniors:** Rising property values increase tax revenues for jurisdictions and build equity and wealth for homeowners. However, low-income and fixed-income residents, especially renters and seniors, may not be able to afford rising rents or property taxes. The jurisdictions should consider expanding and targeting rental and property tax relief programs along the preferred North-South corridor to ensure low-income and senior residents can benefit from enhanced transit service. Examples include expanding rent and property tax programs such as those administered by Henrico County's Department of Housing and Community Development, Chesterfield County's Emergency Rent and Utility Assistance Program, the City of Richmond's Eviction Diversion Program, and working with the state delegation to extend and target Virginia's Rent Relief Program to transit corridors.

5. **Provide Grants and Technical Assistance to Support Existing Small Businesses:** Retaining small businesses near transit, especially throughout potentially disruptive construction projects, ensures residents have access to jobs and amenities, while small businesses can benefit and grow from the transit investment long term. Each jurisdiction should explore opportunities to expand funding for small business grant programs such as the RVA Small Business Relief Fund or the Henrico County Small Business Resiliency Grant Program. Staff could be dedicated to conduct outreach and support existing small businesses along the preferred corridor in advance of construction-related impacts and to help businesses take advantage of new opportunities unlocked by greater access to the region, potential customers, and a larger labor pool.

"Delivery drivers need a place to park temporarily to pick up orders. Most of my business is either local residents or customers who drive in from other parts of the city or region."

– Business Owner along Pulse Corridor, 2021.

See more in Appendix C.

AFFORDABLE HOUSING AND COMMERCIAL BUSINESS SPACE

6. **Explore Zero Fare and Equitable Fare Strategies for GRTC Operations:** During the COVID pandemic, GRTC eliminated fares and has continued to operate on zero fares (i.e., fare free) for over a year and a half. The revenue collected from charging fares represents roughly 10% of annual revenues for the agency, but its collection slows every bus down during the boarding process, which increases annual operating costs and costs significant money to collect and process fares, which are overwhelmingly paid by Black, Brown, and low-income residents.[61] The region should come together to identify fare strategies that support regional goals around social inclusion and mobility.

> **"Right now the bus is free because of everything that's going on with the Coronavirus and that's a good thing."**
>
> *– GRTC Bus Rider, 2021. See more in Appendix B.*

TRANSIT-SUPPORTIVE LAND USES

Transit is more efficient and successful the more residents, businesses, and destinations are located near transit stations. Increasing the diversity and density of land uses around high-quality transit allows a jurisdiction to increase its tax base, maximize its return on investment in transit, and concentrate density in a smaller geographic footprint. Increased development activity unlocked by transit investment and transit-supportive land uses could generate more than $15 million in new annual tax revenues across the jurisdictions.[62]

1. **Concentrate Density Along Potential Corridors:** The region can continue to grow without sacrificing its diversity of neighborhood types, including single family homes, manufacturing districts, open space, and farmland. By concentrating and focusing development along specific corridors that have, or soon will have, high-quality transit infrastructure and service by updating land use tools such as zoning and form-based code, the jurisdictions can grow more efficiently, sustainably, and inclusively over time. Increasing allowed densities along transit corridors, especially by allowing "Missing Middle" housing types as has been recommended in the Richmond 300 plan, is one strategy to grow more inclusively.[63] Projections of future density along the corridor can help the jurisdictions map where zoning changes may be most effective.
2. **Diversify Land Uses Along Potential Corridors:** Strict separation of residential, commercial, and light-industrial uses creates less-dynamic communities that are more susceptible to economic shocks such as the coronavirus pandemic. Jurisdictions should encourage a diversity of land uses near transit, including regional amenities, small office buildings, apartments and a range of housing options. Emerging concepts such as the "15-minute city" can help jurisdictions strategically plan for more dynamic communities with convenient access to a range of amenities. Through revisions to comprehensive plans, as is underway in Henrico County, updates to small area plans, or targeted rezonings, such as the Greater Scott's Addition rezoning in Richmond recommended by the Pulse Corridor Plan, jurisdictions can explore updating overly restrictive patterns of

WINCHESTER GREENS TOWNHOMES ARE AN EXAMPLE OF "MISSING MIDDLE" HOUSING TYPES

Credit: Better Housing Coalition

TRANSIT-SUPPORTIVE LAND USES

land use separation as a tool to create more inclusive, sustainable communities. For example, Henrico County could explore more Community Mixed-Use Districts near transit while Chesterfield County could explore a mix of Townhouse, Multifamily, or Community Business Districts along much of the preferred corridor.

3. **Secure Public Benefits with Density Bonuses:** While zoning sets the baseline requirements for development, some jurisdictions in Virginia, including Arlington County, grant bonus density to developers in exchange for public benefits such as additional affordable housing, affordable commercial space, or public park and open space. The region's local jurisdictions should explore with their state delegation whether to enable a bonus density zoning tool for their jurisdictions that can be applied to the potential corridors in exchange for a clearly defined set of public goods.

4. **Plan Transit Stops as Hubs of Activity:** Business owners around the Pulse corridor noted that much of their clientele continues to access their business via car. Unless there is a critical mass of people that live and work around transit stops and along the corridor, many businesses will continue to rely on customers that drive to their business, which requires more resources for parking and accommodations for vehicles that conflict with efficient bus operations. Planning for a range of activity, including alley ingress and egress and safe places for delivery vehicles, is an important aspect of ensuring local businesses can continue to operate during construction and operation of the new BRT line.

> **"Delivery drivers need a place to park temporarily to pick up orders. Most of my business is either local residents or customers who drive in from other parts of the city or region."**
>
> *– Business Owner along Pulse Corridor, 2021.*
> *See more in Appendix C.*

Winchester Forest Credit: Arnold Design Studio

These recommendations represent medium, long-term, and ongoing opportunities to maximize the potential for inclusive growth along the preferred North-South BRT corridor.

In 2022, the region should come together to actively support and engage in the GRTC's North-South BRT alignment study to identify the regionally preferred corridor and begin planning for BRT expansion. The jurisdictions should also consider developing joint strategies to remove barriers to the production and preservation of affordable housing and create a shared understanding of what zoning and land use regulations are most supportive of high-quality rapid transit corridors.

CONCLUSION

A North-South BRT connecting the three jurisdictions of Richmond, Chesterfield, and Henrico would create a better-connected region, unlock new opportunities for existing residents, and encourage growth in historically disinvested communities, especially on Richmond's south side. To avoid potential displacement and gentrification, the region should proactively plan for inclusion along the future corridor. The recommendations in this report focus on three key areas to ensure transit investments along the preferred corridor generate to more inclusive growth:

1. Enhance Transit Service and Build Transit-Supportive Multimodal Transportation Infrastructure
2. Preserve and Expand Affordable Housing and Commercial Business Space
3. Encourage Transit-Supportive Land Uses Near the Corridor to Benefit Existing Residents and Businesses and Welcome New Residents and Businesses Near High-Quality Transit Options

In the near-term, a tri-county BRT route stretching more than 20 miles from the northern tip of Henrico County well into Chesterfield County, will not provide a good return on investment until the corridor has transit-supportive land uses and infrastructure. However, each corridor deserves and warrants better transit service today.

Too many residents are being left behind without frequent, reliable transit access to the jobs and opportunities along Midlothian Turnpike, Hull Street, and the Route 1 corridors.

By committing to a North-South BRT expansion and adopting a phased approach to its implementation with a full build-out of the tri-county route over 10-20 years, the three jurisdictions can prepare the infrastructure and land use along the corridor to create truly vibrant, diverse, and thriving communities, without displacement. Better transit will not only improve the quality of life for today's riders and expand their access to jobs, but also expand businesses' access to the labor pool and provide more options for people to move around the region.

To grow more sustainably and inclusively in the 21st century, the region should look to its past as a leader in public transportation and the world's first in building out a streetcar network. Building the future will not be easy but working together the Richmond region can accomplish great things.

It is time to take the next big step in Richmond's transportation revolution. In 2022, elected officials, business organizations, and community leaders all must lean into GRTC's North-South BRT alignment study process to select the preferred corridor, so the region can get to work proactively planning for inclusive growth along that corridor. The Greater Washington Partnership and members of the project team are ready to work with the area's leadership to build upon recent momentum and help turn the vision of a more connected and inclusive region into reality.

ACKNOWLEDGEMENTS

In preparing this report, the Greater Washington Partnership sought the expertise of dedicated public officials and business, transportation, housing, and community stakeholders.

We would like to acknowledge the Project Team that researched and developed this report and the Advisory Committee for guiding the study's scope, research, and final recommendations and dedicating their time providing constructive comments and support in developing this report.

PROJECT TEAM

ADRIENNE TORRES *CHIEF DEVELOPMENT OFFICER, GRTC*	**BARBARA JACOCKS** *PRINCIPAL PLANNER, PLANRVA*	**BARRETT HARDIMAN** *PRINCIPAL, HARDIMAN ADVISORS*	**LAURA LAFAYETTE** *CEO, RICHMOND ASSOCIATION OF REALTORS*
JENNIFER DEBRUHL *CHIEF OF PUBLIC TRANSPORTATION, DRPT*	**JOHN EASTER** *SENIOR VICE PRESIDENT OF GOVERNMENT & COMMUNITY AFFAIRS CHAMBER RVA*	**JULIE TIMM** *CEO, GRTC*	**NITYA BATRA** *ASSISTANT MANAGER, STRATEGY & TRANSACTIONS, EY*
TIFFANY DUBINSKY *STATEWIDE TRANSIT PLANNING MANAGER, DRPT*	**TIM MELROSE** *MANAGING DIRECTOR, STRATEGY & TRANSACTIONS, EY*		

ADVISORY COMMITTEE

CARLOS BROWN *SENIOR VICE PRESIDENT, GENERAL COUNSEL AND CHIEF COMPLIANCE OFFICER, DOMINION ENERGY*	**DIRONNA MOORE CLARKE** *ADMINISTRATOR OF THE OFFICE OF EQUITABLE TRANSIT AND MOBILITY, CITY OF RICHMOND*	**TODD EURE** *ASSISTANT DIRECTOR OF TRANSPORTATION & DEVELOPMENT, HENRICO COUNTY*	**WYATT GORDAN** *POLICY & CAMPAIGN MANAGER OF LAND USE & TRANSPORTATION, VIRGINIA CONSERVATION NETWORK*
CARLY KATZ *DIRECTOR OF FEDERAL RELATIONS, VIRGINIA COMMONWEALTH UNIVERSITY*	**ERIC LEABOUGH** *DIRECTOR OF COMMUNITY REVITALIZATION, HENRICO COUNTY*	**J.J. MINOR** *PRESIDENT, RICHMOND BRANCH OF NAACP*	**MARITZA PECHIN** *DEPUTY DIRECTOR OF PLANNING & DEVELOPMENT REVIEW, CITY OF RICHMOND*
MICHELLE PETERS *DEPUTY DIRECTOR OF PLANNING AND COMMUNITY DEVELOPMENT, CITY OF RICHMOND*	**SANTIAGO PINTO** *SENIOR POLICY ECONOMIC, RICHMOND FED*	**NELSON REVELY** *DIRECTOR OF OPERATIONS, RVA RAPID TRANSIT*	**STEWART SCHWARTZ** *PRESIDENT, PARTNERSHIP FOR SMARTER GROWTH*
JESSE SMITH *DEPUTY COUNTY ADMINISTRATOR FOR COMMUNITY DEVELOPMENT, CHESTERFIELD COUNTY*	**CHESSA WALKER** *ASSISTANT DIRECTOR, CHESTERFIELD COUNTY DEPARTMENT OF TRANSRPOTATION*	**FAITH WALKER** *DIRECTOR OF COMMUNITY ENGAGEMENT, RVA RAPID TRANSIT*	**MICHEL ZAJUR** *CEO, VIRGINIA HISPANIC CHAMBER OF COMMERCE*

ABOUT

The Greater Washington Partnership is a first-of-its-kind civic alliance of CEOs in the region, drawing from the leading employers and entrepreneurs committed to making the Capital Region—from Baltimore to Richmond—one of the world's best places to live, work and build a business.

APPENDIX A: HIGH-LEVEL COST ESTIMATES FOR RECOMMENDATIONS

These cost estimates are indicative and should not be considered as precise estimates.

Transit and Multimodal Transportation Infrastructure

1. Enhance Transit Service and Implement a Phased North-South BRT Project
    a. Lead: GRTC
    b. Timeline: Short-Term (5 years); Medium-Term (10 years); Long-Term (15+ years)
    c. Cost: Short-term see Bus Operator Recruitment Strategy & Fleet Expansion Costs; Medium-term $50 million[64]; Long-term an additional $50 million for the expanded BRT
2. Tool: FTA Grants, Local Match, & CVTA Buildout a Safe and Connected Sidewalk Network
    a. Lead: Jurisdictions
    b. Timeline: 5 years (quarter mile); 10 years (half mile)
    c. Cost: $20.7million within 5 years; $37.1 million in additional costs within 10 years[65]
    d. Tool: Central Virginia Transportation Authority (CVTA), federal appropriations
3. Upgrade Bus Stops and Shelters
    a. Lead: GRTC
    b. Timeline: 5 years
    c. Cost: $6.4 million within 5 years; another $6.4 million additional within 10 years[66]
    d. Tool: FTA Grants & Local Match, CVTA
4. Plan for Seamless Downtown Pulse Connectivity and County Transit Expansion
    a. Lead: GRTC
    b. Timeline: 10 years
    c. Cost: N/A
    d. Tool: GRTC and City Planning Staff
5. Create and Execute a Bus Operator Recruitment & Fleet Expansion Strategy
    a. Lead: GRTC
    b. Timeline: 5 years
    c. Cost: Annual costs $2.3M; Capital costs $17 million[67]
    d. Tool: FTA Grants, Local Match, & CVTA

Affordable Housing and Commercial Business Space

1. Create Jurisdiction-Specific Goals for Affordability & Access to Frequent Transit
    a. Lead: Jurisdictions
    b. Timeline: Within 2 years, if not already complete
    c. Cost: N/A
    d. Tool: Planning, Housing, and Transportation/ Public Works Departments
2. Leverage Private Funds with Public Money to Create More Affordable Housing Units:
    a. Lead: Jurisdictions
    b. Timeline: Ongoing, higher in early years
    c. Cost: $5M for first five years; $1M ongoing
    d. Tool: Maggie Walker Community Land Trust (Virginia Housing and Virginia DHCD already donate)
3. Expand the Toolkit of Incentives to Develop Mixed-Income Communities
    a. Lead: Jurisdictions, must be allowed by Virginia
    b. Timeline: Ongoing
    c. Cost: Requires outreach and staff time
    d. Tool: Affordable Housing Trust Funds, public-private equity partnerships, accessory dwelling unit ordinances, rebates on real estate taxes, and abatements or waivers for parking requirements or water and sewer connection fees
4. Targeted Rental and Property Tax Relief for Low-Income Residents and Seniors
    a. Lead: Jurisdictions or Virginia Department of Housing and Community Development
    b. Timeline: Ongoing
    c. Cost: $1M Annual[68]
    d. Tool: Tax credit and rental assistance (ex. Virginia Rental Relief Program or Communities of Opportunity Tax Credit)

5. Provide Grants and Technical Assistance to Support Existing Small Businesses
    a. Lead: Jurisdictions
    b. Timeline: Ongoing
    c. Cost: $1M Annual[69]
    d. Tool: Economic Development Authorities (ex. Richmond Recovers Grant Program)
6. Explore Zero Fare and Equitable Fare Strategies for GRTC Operations
    a. Lead: GRTC
    b. Timeline: Ongoing
    c. Cost: $6M Annual
    d. Tool: FTA Grants, CVTA and corporate/ philanthropic support

Transit-Supportive Land Uses

1. Concentrate Density Along Potential Corridors
    a. Lead: Jurisdictions
    b. Timeline: Ongoing
    c. Cost: Requires outreach and staff time; Increase in residential tax revenues $7M[70]
    d. Tool: Zoning
2. Diversify Land Uses Along Potential Corridors
    a. Lead: Jurisdictions
    b. Timeline: Ongoing
    c. Cost: Requires outreach and staff time; Increase in commercial tax revenues $3M[71]
    d. Tool: Zoning
3. Secure Public Benefits with Density Bonuses
    a. Lead: Jurisdictions, must be allowed by Virginia
    b. Timeline: Ongoing
    c. Cost: Public goods increases value of nearby real estate, increasing tax revenues $7M[72]
    d. Tool: Zoning Variances
4. Plan Transit Stops as Hubs of Activity
    a. Lead: Jurisdictions
    b. Timeline: Ongoing
    c. Cost: Requires outreach and staff time
    d. Tool: Zoning

APPENDIX A: HIGH-LEVEL COST ESTIMATES FOR RECOMMENDATIONS

TABLE 6: SUMMARY OF RECOMMENDATION COST ESTIMATES*

	1-5 years	6-10 years	11-15 years	15+ years
Multimodal Transportation Infrastructure	$44.0M (Capital) $2.3M (Annual Driver Salaries)	$93.5M (Capital) $2.3M (Annual Driver Salaries)	$50M (Capital) $2.3M (Annual Driver Salaries)	$2.3M (Annual Driver Salaries)
Affordable housing & commercial space	$13M (Annual)	$9M (Annual)	$9M (Annual)	$9M (Annual)
Transit-supportive land uses	N/A*	$-17M (Annual new revenues)	$-17M (Annual new revenues)	$-17M (Annual new revenues)
Total Capital Costs (5-Year Period)	$44.0M	$93.5M	$50M	N/A
Total Capital Costs Per Year (Evenly Divided)	$8.8M	$18.7M	$10M	$-5.7M
Total Operating Costs	$15.3M	$11.3M	$11.3M	$11.3M
Total New Tax Revenue	N/A	$-17M	$-17M	$-17M
Total Net Annual Cost	$24.1M	$13M	$4.3M	$-5.7M

**Does not account for a jurisdiction's staffing and planning purposes – a core function that is already budgeted*

For comparison:

- Richmond City FY2022 Annual Fiscal Plan: $772.8M
- Richmond City FY2022 Capital Improvement Plan: $63.2M
- Chesterfield County FY2022 Budget: $807.0M
- Henrico County FY2021-2022 Budget: $1.4B

APPENDIX B: INTERVIEW RESPONSES FROM GRTC BUS RIDERS

In Partnership with RVA Rapid Transit, the study team interviewed more than thirty GRTC bus riders in Summer 2021 to gather perceptions of the Pulse BRT, the GRTC system writ-large, and preferences around a North-South BRT alignment south of downtown. The sample of interviews is not statistically relevant to make general conclusions across GRTC riders but highlights from the interviews are shared below.

Question 1: How did the Pulse on Broad Street change your experience riding the bus? Positives and negatives?

- "It has gotten better since learning the new route names."
- "Positive because if you miss one another comes in 15 minutes."
- "I don't ride it much because when I go to the Kroger, you have to cross over Willow Lawn Drive and there is just too much traffic to cross the street."
- "At first it was negative because I didn't understand it, but now I understand it so it's a little better."
- "It's less stopping and gets you where you need to go faster. It definitely works."
- "Sometimes you have to wait an hour for other buses, and this is like every 10 to 15 minutes."
- "It's ridiculous how they made slanted benches on some stops, if you have a disability, you can't sit. Every bus stop should have a bench and a shelter."
- "We have to use the Pulse. There isn't any way around it because of how they got the system set up. But they need a Pulse bus stop at Willow Lawn before they make the turn."
- "I like the Pulse. It's quick and comfortable."
- "I like the Pulse. You get up town very easy. Back and forth."
- "I don't think it's gotten any easier because the Pulse isn't anything but the Broad Street 6. The next bus stop is four or five blocks down and some people miss the next bus because they have to walk so far. As far as the Pulse, it's good. But the stops need to be closer to the regular stops."
- "I think the Pulse has made it better. It gets me all the way across town. It runs better. Every 15 minutes is really good."
- "Sometimes it's not on time but it's fine. The drivers are very courteous. They help a lot."
- "It's okay. Ain't nothing perfect. I think it's cool. You get on free."

Question 2: If GRTC created a North-South Pulse route, on the south side, would you prefer the route ran on Hull St, Midlothian Turnpike, or Route 1? Why?

- "A Pulse on the South Side? I'm all for that. Where do I sign up? Is there a petition?"
- "All of those are busy, but there's more people with jobs on Midlothian who need to get to work."
- "I don't know if the Pulse on Hull Street would work because sometimes you have to wait two hours in the hot sun. I think they need to get the whole system straight first."
- "It should go down Hull Street to the Cloverleaf Mall."
- "There's a lot of people that live down Hull Street and take the bus."
- "Offhand, I'd say a Pulse should be considered for all three southern routes."
- "I've had several job offers that I would have been able to take if the bus just went a little further down Midlothian to where the mall is. I would have been in a lot better shape right now."
- "If the Pulse were right here on Hull Street it would be flexible like Broad Street and get people to work."

- "I think it should go up Hull Street because Hull Street is a long route."
- "I also think there should be a bus going up to Mechanicsville, Short Pump, and Stony Run."
- "It would be awesome for a bus to go to Chesterfield Towne Center because there are good jobs and good opportunities out there."
- "On the south side, they've improved the service greatly over the years. There used to be no service at all out here years ago."
- "That would be good. But I'm not from the South Side so I don't know where it should go."
- "Any or all of those would be good. There's a lot of people on Hull in the morning and afternoon rush. If they had a Pulse out here, I think a lot of people would use it."
- "Midlothian, because it's hard and they don't have a lot of buses that run down there. All the buses come down Hull anyway. Midlothian is where the help is needed at."
- "To me it doesn't have to be as fancy as the Pulse."
- "It should go on Midlothian. Are they going to Chesterfield Mall? They need to. People need to get to work and the bus doesn't get out there."

Question 3: What is the hardest part about using the bus today? Would a North-South Pulse Line make it better or worse?

- "The bus gets me to where I need to go. I don't care if it's late or early. I'll just sit there and wait. This morning, the bus just rode on by me. I waited 30 minutes for the next bus. I don't mind it. I don't mind. It's great for me."
- "It's not hard. I'm patient and can wait until the bus comes."
- "Until my husband got in a car accident, I didn't use the bus because he drove me. But there's nothing hard about it. I've learned it pretty well."
- "I've never really given that any thought, but sometimes it do be late."
- "Sometimes the bus takes an hour to arrive. Sometimes more than that."
- "There's nothing hard about riding the bus because it's free. You get what you pay for."
- "There's nothing really hard about the Pulse. With the regular routes, there's a lot of things I would change."
- "Right now the bus is free because of everything that's going on with the Coronavirus and that's a good thing, because if it wasn't free I would be really pissed off all the time."
- "The schedules and tracker are messed up. Sometimes I look and it says it's coming in 5 minutes, next second it says 30 minutes. But other than that, it works well."
- "We need more Pulse, more everything. This is the Capital City!"

APPENDIX C: INTERVIEW RESPONSES FROM BUSINESS OWNERS ALONG THE PULSE CORRIDOR

The study team also interviewed several business owners along the Pulse Corridor in Summer 2021, including retailers, co-working spaces, and developers, to gather perceptions of the Pulse BRT and its impact on business operations and location decisions. The sample of interviews is not statistically relevant to make general conclusions across business owners but a summary of findings from the interviews are shared below.

Overall, the business representatives interviewed had a general understanding of the need for improved transit infrastructure, however, they were ambivalent about the impacts of the Broad Street Pulse Line given the impacts of COVID on ridership and the economy writ large.

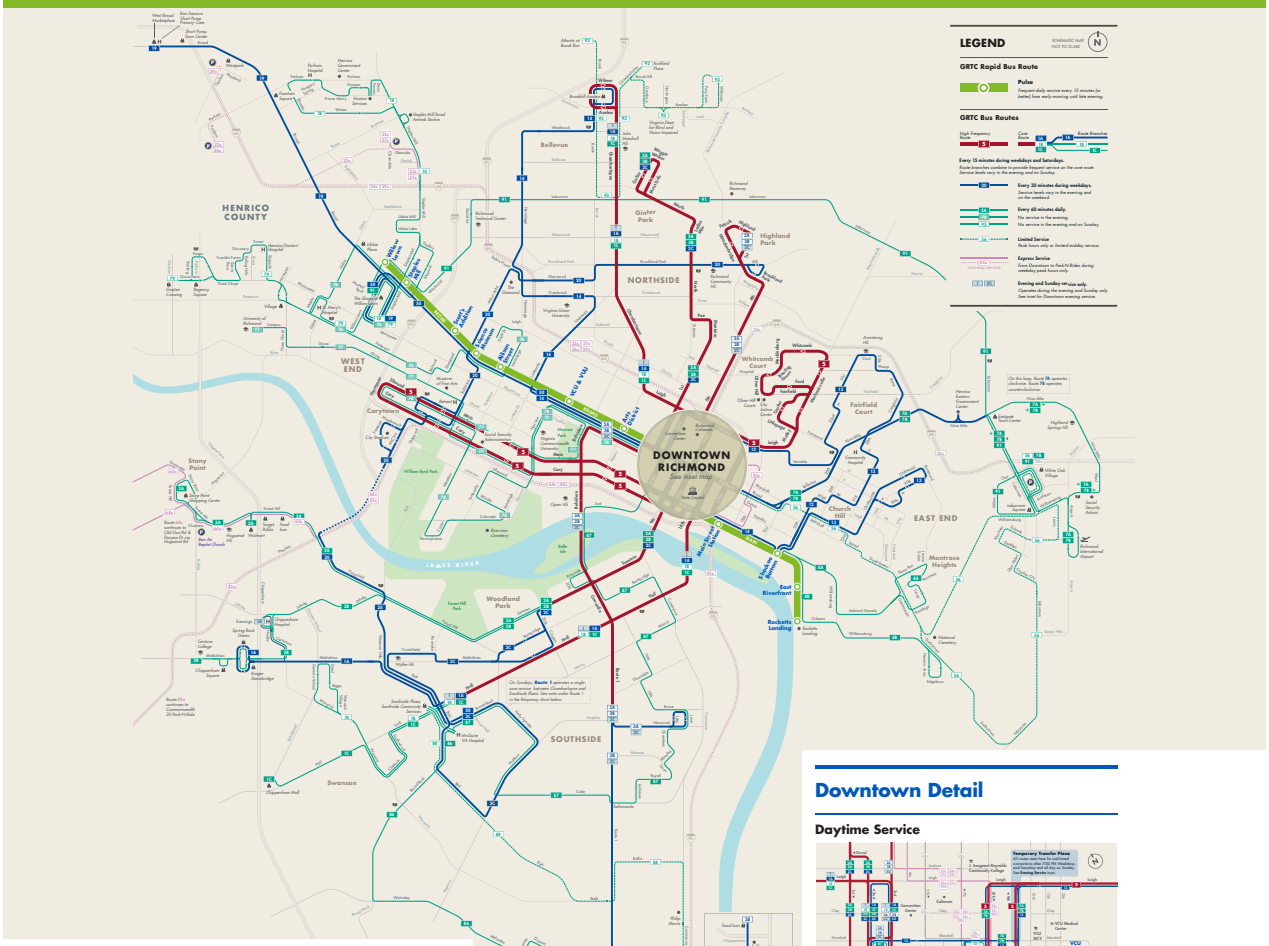
Given the geographic layout of the region and lack of high-quality transit options, most residents in the region still rely on a personal vehicle to move around the region. Many businesses along the corridor still rely on parking to attract customers – even in the densest parts of the city and near transit stations. Removal of parking options to create transit infrastructure is seen as a competitive disadvantage for some businesses. Enhanced communications with businesses about their needs can help develop strategies to bundle parking between developments and locate nearby opportunities to identify and use underutilized parking nearby. Councilmembers, Boards of Supervisors, and community leaders need frequent and robust briefings on large infrastructure projects as they move through design and construction. This best practice is true for BRT projects too. Good communication for infrastructure projects allows these leaders to stay informed and better communicate with their respective constituencies as they are the most likely to hear from businesses when there are challenges with construction or operation. Understanding the business models and client bases for local businesses is essential to ensuring that a new Pulse line improves system functionality while minimizing disruption to local businesses.

Quotes:

- "I tell my customers about the Pulse, but more promotion from the City and GRTC would be a huge benefit."
- "Many of my customers don't know the frequency or the route of the Pulse or that it is free for now, they might use it if the Pulse line were promoted better."
- "When the project started, I heard a lot about the Pulse from local leaders. Now, not so much."
- "Attracting large companies and national retailer requires parking availability. Those businesses have their own parking requirements, and if your property can't meet them, they won't even consider locating there."
- "Delivery drivers need a place to park temporarily to pick up orders. Most of my business is either local residents or customers who drive in from other parts of the city or region."
- "Parking costs are tough for small business owners. While some of my clients use Pulse, the majority still have a vehicle and drive in. The Pulse is more popular at our downtown location without parking, but our Scott's Addition location has parking, and most people drive in."
- "There needs to be better connections between the Pulse stops and local GRTC lines. There are still challenges for riders who need to transfer."
- "We need to improve the pedestrian and bike infrastructure around Pulse stops."

System Map

GRTC TRANSIT SYSTEM



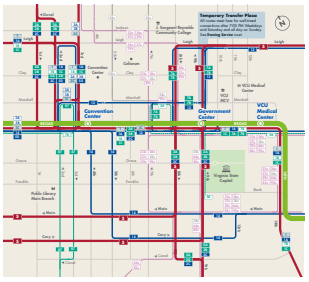
GRTC Bus Service

APPROXIMATE TIME BETWEEN BUSES IN MINUTES

Route	Route Name	WEEKDAY Peak	WEEKDAY Midday	WEEKDAY Evening	SATURDAY Day	SATURDAY Evening	SUNDAY Day	SUNDAY Evening
Pulse	Rapid Bus Route	10	15	15-30	15	30	15	30
1	Chamberlayne/Southside Plaza	See Routes 1A, 1B & 1C					30	30
	On Sundays, **Route 1** operates a single core service between Chamberlayne in the north and Southside Plaza in the south. Customers traveling south of Southside Plaza are advised to transfer to routes **1A** or **1C**.							
1A	Chamberlayne/Hull/Midlothian	30	30	60	30	50	--	--
1B	Chamberlayne/Hull/Warwick	60	60	--	60	--	--	--
1C	Chamberlayne/Hull/Elkhardt	60	60	60	60	60	--	--
2A	North Ave/Forest Hill	60	60	60	60	60	60	60
2B	North Ave/Jahnke/Midlothian	60	60	60	60	60	60	60
2C	North Ave/Midlothian/Belt Blvd	30	30	60	30	60	60	60
3A	Highland/Route 1/Harwood	30	30	--	30	--	--	--
3B	Highland/Route 1	30	30	--	30	--	--	--
3C	Highland/Harwood/Route 1	--	--	30	--	30-60	30	30-60
4A	Montrose	30	60	60	60	60	60	60
4B	Darbytown	30	60	60	60	60	60	60
5	Cary/Main/Whitcomb	15	15	30	15	30-60	30	30-60
7A	Nine Mile Henrico	60	60	60	60	60	60	60
7B	Nine Mile Henrico	60	60	60	60	60	60	60
12	Church Hill	30	30	30	30	30	30	30
13	Oakwood	30	30	30	30	30	30	30
14	Hermitage/East Main	30	30	30	30	30	30	30
18	Henrico Government Center	60	60	--	--	--	--	--
19	West Broad Street	30	30	30	30	30	30	30
20	Orbital	30	30	30	30	30	30	30
52	Broad Street	40	40	40	40	40	40	40
56	South Laburnum	60	60 PM PEAK	--	--	--	--	--
78	Patterson	40	40	--	60	--	60	--
82	Grove	40	40	--	60	--	60	--
87	Cary/Maymont	30	40	40	60	--	60	--
79	Patterson/Parham	45	45	--	--	--	--	--
86	Broad Rock/Walmsley	60	60	60	60	60	60	60
87	Bellemeade/Hopkins	60	60	60	60	--	60	--
88	Belt/Bells/Ruffin	30	30 PM PEAK	--	30 PEAKS	--	--	--
91	Laburnum Connector	60	60	60	60	60	60	60
93	Azalea Connector	60	60	--	--	--	--	--
23n	Glenside/Parham Express	REDUCED SCHEDULE SEE PUBLIC TIMETABLE						
26n	Parham Express	REDUCED SCHEDULE SEE PUBLIC TIMETABLE						
27n	Glenside Express	REDUCED SCHEDULE SEE PUBLIC TIMETABLE						
28n	White Oak Village Express	ROUTE SUSPENDED UNTIL FURTHER NOTICE						
29n	Gaskins Express	REDUCED SCHEDULE SEE PUBLIC TIMETABLE						
66n	Stony Point Express	REDUCED SCHEDULE SEE PUBLIC TIMETABLE						
82n	Commonwealth 20	REDUCED SCHEDULE SEE PUBLIC TIMETABLE						
95n	Petersburg	30	30 PM PEAK	--	--	--	--	--

Downtown Detail

Daytime Service



Evening Service

Routes **1**, **1A**, **1C**, **2A**, **2C**, **5** and **14** serve the Temporary Transfer Plaza (9th St).

Route **3C** operates in the evening only.

Route **12** serves the Temporary Transfer Plaza (9th St) throughout the day.

Service to Area Hospitals

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

Bon Secours Richmond Community Hospital	7A, 78, 12
Bon Secours Short Pump Primary Care	19
Chippenham Hospital	2B
Henrico Doctors' Hospital	79
McGuire VA Hospital	2C, 20, 86, 87
Parham Hospital	18
Retreat Doctors' Hospital	5, 20, 77, 78
St. Mary's Hospital	76, 79
VCU Medical Center	Pulse BRT and other routes (See Downtown Detail)

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ENDNOTES

1. Brookings Metro Monitor
2. Greater Washington Partnership's Inclusive Growth Dashboard, September 2021; Richmond City Health District, "Richmond Declares Racism a Public Health Crisis."
3. Richmond 300: A Guide for Growth, 12.
4. American Community Survey, 2019 5-Year Estimates.
5. Greater Washington Partnership, "Richmond's Transit Revolution: GRTC Ridership and Accessibility Analysis," 2019, 3.
6. WMATA COVID-19 Public Information; PlanRVA COVID-19 Pandemic and Mobility
7. Jake Blumgart, "How Did Richmond Rebuild Its Bus Ridership Numbers?" Governing, August 5, 2021 https://www.governing.com/now/how-did-richmond-rebuild-its-bus-ridership-numbers
8. Richmond 300: A Guide for Growth, 23.
9. Moving Forward: The Comprehensive Plan for Chesterfield County, BD 20.
10. Henrico County: Vision 2026, 35.
11. 1 Luis Antonio Lindau, Cristina Albuquerque Moreira da Silva, Guillermo Petzhold and Daniela Facchini, Restructuring Public Transport Through Bus Rapid Transit: An International and Interdisciplinary Perspective, (Bristol, UK: Bristol University Press, 2016)..
12. Institute for Transportation and Development Policy, "What is BRT?" https://www.itdp.org/library/standards-and-guides/the-bus-rapid-transit-standard/what-is-brt/.
13. Lindau, et al., Restructuring Public Transport Through Bus Rapid Transit, 24.
14. Ibid.
15. Danyelle Solomon, Connor Maxwell, Abril Castro, "Systemic Inequality: Displacement, Exclusion, and Segregation," Center for American Progress, (August 2019).
16. John Hersey, "ETOD: E is for Equity," Rail-Volution, (March 21, 2016) https://railvolution.org/etod-e-is-for-equity/.
17. "Equitable Transit-Oriented Development," SPARCC, http://www.sparcchub.org/wp-content/uploads/2021/02/Pathways-ETOD.pdf, 24.
18. Ibid.
19. Lisa K. Bates, "Gentrification and Displacement Study: Implementing an Equitable Inclusive Development Strategy in the Context of Gentrification" (2013). Urban Studies and Planning Faculty Publications and Presentations, 9.
20. Bates, "Gentrification and Displacement Study," 9.
21. Ibid.
22. Bates, "Gentrification and Displacement Study,", 11.
23. Ibid.
24. GRTC 2019 Passenger Survey, 54.
25. http://ridegrtc.com/brt/study-history
26. GWP Analysis using ESRI ArcGIS
27. IDA Study: Richmond 2020; Pulse Corridor Plan, 2017, 9.
28. National Walkability Index, US Environmental Protection Agency
29. Smart Location Database, US Environmental Protection Agency; Travel Time and US Census (LEHD) Origin-Destination Employment Statistics
30. Greater Washington Partnership, "Richmond's Transit Revolution: GRTC Ridership and Accessibility Analysis," 2019, 14.
31. Based on GRTC Annual Report 2019 and Weekday Ridership on Route 6 in May 2017.
32. GRTC 2019 Passenger Survey, 54.
33. GWP Analysis using ESRI data (2019)

34. City of Richmond Inventory of Low-Income Housing Tax Credit Projects (2012-2019)
35. City of Richmond parcel assessments
36. Greater RVA Transit Vision Plan
37. Greater Washington Partnership Analysis, using ESRI ArcGIS 2021 Data.
38. Greater Washington Partnership Analysis, using ESRI ArcGIS 2021 Data.
39. Greater Washington Partnership Analysis, using ESRI ArcGIS 2021 Data.
40. Richmond Times Dispatch, July 5, 2021
41. Richmond Times Dispatch, August 6, 2021
42. GRTC 2019 Passenger Survey, 50.
43. Greater Washington Partnership Analysis, using ESRI ArcGIS 2021 Data.
44. ITDP Awards Bronze Standard BRT Rating to Richmond GRTC Pulse, June 25, 2019.
45. Greater Richmond Transit Company, "Broad Street Rapid Transit Study Economic Impacts," May 2014, 2.
46. Plan RVA and IMPLAN. Note: The capital cost estimate of $2.2M per mile accounts for vehicles, bus stops, shelters, sidewalks, intersection improvements, and transit signal priority is based on Plan RVA estimates.
47. Plan RVA and IMPLAN. Note: The capital cost estimate of $2.2M per mile accounts for vehicles, bus stops, shelters, sidewalks, intersection improvements, and transit signal priority is based on Plan RVA estimates.
48. RTA's HealthLine — the world-class standard for BRT service," Greater Cleveland Regional Transit Authority.
49. Based on GRTC ridership trends pre & post Pulse operations; GRTC Passenger Survey (2019) and Benefit-Cost Analysis Guidance, Department of Transportation 2021.
50. GRTC ridership trends
51. Based on isochrone analysis using Travel Time and US Census (LEHD) Origin-Destination Employment Statistics (2018)
52. Ibid.
53. Ibid.
54. National Walkability Index and Smart Location Database, US Environmental Protection Agency
55. GRTC Bus Shelter Plan FY2020-FY2024
56. Transit Street Design Guide, NACTO; Equity in Practice: A Guidebook for Transit Agencies, Transit Center.
57. GRTC 2019 Passenger Survey, 31.
58. GRTC 2019 Passenger Survey, 54.
59. Richmond 300: A Guide for Growth, 152; Hull Street Corridor Revitalization Plan, 54.
60. Richmond Times Dispatch, August 5, 2021.
61. GRTC Revised Draft FY2021 Operational Budget with COVID-Funding and Needs and Multi-Year Considerations, 7.
62. See Appendix A
63. Richmond 300: A Guide for Growth, 152.
64. GRTC Pulse project cost ~$53M
65. Assumes 20.7 miles of sidewalk needed within quarter mile of corridors; 37.1 miles within between quarter and half mile of corridors; $1,000,000 per mile construction costs of sidewalk, including easements, adjustment of utilities, and drainage facilities
66. 255 existing bus stops along potential corridors: $50,000 per stop enhancement budget
67. $800,000 for 20 buses; $1M for Bus Operator Recruitment Strategy and Implementation; 30 extra operators at $75k salary and benefits
68. Tax relief based on property value increase is revenue neutral. $1M in rental relief can provide 1K households $1k in annual rental assistance.
69. $1M in small business grants and technical assistance can provide 1K businesses $10k in grants or technical assistance
70. Richmond taxes real estate at $1.20 per $100; Chesterfield County taxes real estate at 96 cents per $100 of assessed value and Henrico County taxes real estate at 87 cents per $100. ~30,000 households along each potential N-S corridor; If increased density increases # of households by 10% within 5 years = 3,000+ households. Valued at an average of $200k, taxed at $1.2 per $100 = $7.2M increased in tax revenue across the jurisdictions.
71. ~4,000 business along each potential N-S corridor; With diversified land uses and density # of businesses increases by 10% within 5 years = 400+ new businesses; Avg ~$3,500 collected from businesses in taxes on business gross receipts, sales, and use taxes = $1.4M in new revenue; Real estate tax, valued at $300k in real estate per business taxed at $1.2 per $100 = $1.44M in new revenue
72. ~30,000 households at $200k in real estate; ~4,000 business at $300k in real estate; increased public goods and improved transit increases value 10% = $7.2M in increased residential real estate property taxes; $144K in increased commercial real estate property taxes

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