RESULTS FOR AMERICA

Economic Mobility Catalog: Case Study

Bus rapid transit: Richmond, VA

Housing & Community Development

Supportive Neighborhoods

MORE ABOUT THE STRATEGY USED IN THIS CASE STUDY: Public transportation access and subsidies, Commercial corridor revitalization

At-a-Glance

Summary

- High traffic volumes led to increased congestion on Broad Street, a major commercial and transportation corridor in Richmond and Henrico County. While the Greater Richmond Transit Company's (GRTC) most popular bus route ran along Broad Street, its frequent stops resulted in long trip times. At the same time, the corridor's car-centric development patterns became increasingly out of sync with Richmond's commitment to become a more walkable, compact city. As a result, local and state leaders began searching for options to improve transit and spur new economic development along the corridor.
- In 2014, after studying potential transit investments along Broad Street, GRTC's Board of Directors approved bus rapid transit (BRT) as its preferred solution for the corridor. With features similar to light rail or metro systems, BRT lines provide frequent, fast, and reliable transit service along a fixed route. Launched in 2018, the Pulse is a 7.6 mile BRT line connecting commercial districts and key civic, healthcare, and educational institutions in Richmond and Henrico County. To take full advantage of the Pulse, GRTC also launched a redesign of its broader transit system concurrently with the Pulse.
- Factors that were key to the Pulse's success included close intergovernmental cooperation, strong support from political leaders, a deep commitment to public outreach, frequent service and high-quality amenities for riders, and proactive rezoning and land use planning.
- Obstacles that the Pulse faced included initial public skepticism, complications caused by legacy infrastructure, staffing shortages, the impact of COVID-19 on transit ridership, and concerns over traffic safety.

Results and Accomplishments

8,000	10,899	$14.4B
By 2019, weekday ridership on the Pulse peaked at over 8,000 per day, more than double the initially expected volume. While COVID-19 later reduced transit use, ridership on the Pulse has begun to recover.	**Since 2018, 10,899 new dwellings have been built or are planned within 0.5 miles of the Pulse corridor.**	**Since 2016, the assessed value of property within 0.5 miles of the Pulse has increased by 50 percent, now totaling $14.4 billion.**

- **Recognized as a high-quality BRT system:** The Institute for Transportation and Development Policy (ITDP) sets internationally-recognized standards for evaluating BRT systems. ITDP rated the Pulse as a Bronze Standard BRT system, recognizing it for incorporating best practices like platform-level boarding and off-board fare collection. The Pulse became only the seventh BRT system in the United States to receive at least a Bronze Standard rating.
- **Catalyzing economic development:** Since 2018, 107 developments valued at at least $1.5M have been planned or built within 0.5 miles of the Pulse. These developments have contributed to a 50 percent increase in assessed property values along the corridor over a seven-year period.
- **Improving transit ridership:** During the project's study phase, average weekday ridership on the Pulse was forecasted to reach 4,000 by 2035. Since the Pulse's launch in 2018, ridership has exceeded this projection in all but four months, each of which were during the height of the COVID-19 pandemic.
- **Studying the potential for an expansion:** Given the Pulse's success, officials at Henrico County and GRTC have begun studying a potential extension of the line farther into the county. Regional leaders are also evaluating corridors for a potential second BRT line in the Richmond area.

Overview

What was the challenge?

- **Congestion on crucial corridor:** Broad Street, which runs through Richmond and nearby Henrico County, is one of the area's major commercial and transportation corridors. The street's high traffic volumes and multiple bus routes resulted in traffic congestion, leading to lower speeds and longer trip times for both drivers and public buses.
- **Inadequate transit along Broad Street:** GRTC's number six bus line, which ran the length of Broad Street, had strong ridership and relatively frequent service. However, the route made frequent stops, which made it slow to move across the corridor. As the region's most popular route, local and state leaders began looking at options to improve transit along the corridor.

- **A need for greater economic development:** The City of Richmond saw the revitalization of Broad Street as a key priority. Consistent with its vision of building a more walkable, compact city, Richmond sought a catalyst for denser, mixed-use development. As early as in its 2001 Master Plan, the City of Richmond envisioned fixed-route transit along Broad Street as a tool to spur development.
- **Limited transit accessibility system-wide:** Residents in Richmond and Henrico County had limited access to employment and key services, like education and healthcare, on the GRTC system. Advocacy groups, like RVA Rapid Transit, were pushing local leaders to identify ways to better connect the community through public transportation.

What was the solution?

- **Building modern rapid transit:** To meet these challenges, GRTC launched the Pulse bus rapid transit line in 2018. The 7.6 mile corridor runs through Richmond and Henrico County, connecting commercial districts and key civic, healthcare, and educational institutions. Providing service every 10 minutes at peak times on weekdays and every 15 minutes at peak times on weekends, the Pulse offers frequent, fast, and reliable service along the area's busiest transit corridor.
- **Incorporating BRT best practices:** In designing the Pulse, GRTC adopted several elements known to make BRT systems faster, more comfortable, and more cost-effective. These include platform-level boarding, off-board fare collection, and smart traffic signal technology. The Pulse also operates partially within dedicated lanes in either the median or along the curb, minimizing conflicts with general traffic.
- **Pairing BRT with a system redesign:** GRTC redesigned the broader transit network to better integrate with the Pulse. By orienting the Pulse as the "spine" of its network, GRTC created faster, more frequent routes to connect busy areas; leveraged new, high-frequency routes to reduce the need for connections; renamed routes to make them easier to understand; and more.

What factors drove success?

- **Close intergovernmental cooperation:** Across the project's history, cooperation between city, county, state, and federal governments contributed to the Pulse's success. Each level of government contributed funding to the project, and local and state governments shared technical expertise, staff time, and other resources. For instance, GRTC transitioned management of the Pulse's construction to the Virginia Department of Transportation (VDOT) which had experience with large construction projects.
- **A transit option that meets varied needs:** The Pulse offers high frequency service (i.e., at 10 or 15 minute intervals) from 6:00 AM to 11:30 PM on weekdays and from 6:00 AM to 9:00 AM and 4:00 to 7:00 PM on weekends. By offering frequent service on evenings and weekends, the Pulse serves as a viable transportation option for the whole community, not just for commuters.

- **Concurrent land use planning:** In 2017, the City of Richmond adopted the Pulse Corridor Plan, which evaluated how the City could support compact, mixed-use, and equitable development around Pulse stations. Based on the plan, the City rezoned land around five stations, allowing for denser developments. Since 2018, 107 developments valued at at least $1.5M have been planned or built within 0.5 miles of the Pulse, largely in rezoned areas.
- **Strong public outreach efforts:** As GRTC began designing the Pulse in late 2014, it launched an expansive public outreach campaign to share information, gather feedback, and address concerns. In addition to providing regular updates via its website and social media accounts, GRTC held or attended dozens of community meetings and conducted door-to-door outreach along the corridor. These efforts expanded during the construction phase, when the City of Richmond and Lane Construction, the project's contractor, provided additional outreach capacity.
- **A positive rider experience:** The Pulse offers a range of amenities that make it a more attractive transit option than a traditional bus. These include Wi-Fi access on Pulse buses; attractive, well-lit stations; displays with real-time arrival information at each station, and more.
- **Strong and consistent political support:** Elected officials from the local, state, and federal level supported the development of the Pulse. This support helped GRTC secure funding, built public support for the project, and ensured that conflicts between government agencies were resolved quickly.

What were the major obstacles?

- **Initial public skepticism:** Especially early on, some members of the public questioned the need for rapid transit along the corridor and expressed concern for how it would impact nearby neighborhoods and businesses. To address this skepticism, GRTC conducted community outreach and produced marketing materials to dispel rumors and educate the public on the benefits of the Pulse.
- **Addressing legacy infrastructure:** As a historic city, construction in Richmond posed additional challenges. While building the Pulse, crews discovered disused utility infrastructure, like clay and asbestos-cement pipes, that added cost to the project and posed engineering challenges. However, by developing a close relationship with area utility companies, the project team minimized disruption.
- **COVID-19 impacts ridership:** As in transit systems throughout the country, the COVID-19 pandemic negatively affected ridership on the Pulse. Additionally, since the Pulse serves a large number of commuters, its ridership has been slower to rebound than the broader GRTC system. That said, ridership rebounded in FY 2022, increasing by nearly a quarter million trips over FY 2021.
- **Staffing shortages affect service levels:** Like many transit agencies across the country, GRTC faced operator shortages in response to the COVID-19 pandemic. At times, this forced GRTC to briefly reduce service levels on certain routes, including the Pulse.

- **Concern for traffic safety:** Since its launch, the Pulse has been involved in a small number of collisions with pedestrians and other vehicles. These incidents led to calls for improvements to Broad Street to make it safer. In response, the City of Richmond secured a $2 million grant to paint all of the Pulse's dedicated lanes solid red, improving their visibility.

Timeline

2010

Broad Street Corridor Rapid Transit Study Begins

The Virginia Department of Rail and Public Transportation (DRPT) and the Greater Richmond Transit Company (GRTC) studies the potential for transit investment along the Broad Street Corridor, a seven-mile stretch running through the City of Richmond and parts of Henrico County.

SPRING 2014

Study Team Presents Project Idea to Decisionmakers

After completing its study of the corridor and addressing public and stakeholder feedback, the study team recommends construction of a BRT line to key decisionmakers, including GRTC's Board of Directors, the City of Richmond, the Metropolitan Planning Organization, and more.

JUNE 2014

GRTC's Board Approves Broad Street BRT Project June 2014

GRTC's Board of Directors approves the Broad Street BRT as its preferred transit solution for the corridor. Shortly thereafter, GRTC issues and awards a request for proposal for architectural and engineering services.

SEPTEMBER 2014

US DOT Awards Project TIGER Grant

With endorsements from DRPT, the City of Richmond, and Henrico County, GRTC applies for a Transit Investment Generating Economic Recovery (TIGER) grant to fund the BRT project. In September 2014, Secretary of Transportation Anthony Foxx awards GRTC a $24.9M TIGER grant.

WINTER 2014

Community Outreach Efforts Begin

With the start of the early design phase, GRTC begins holding quarterly meetings to update the public on the status of the project. To supplement these meetings, GRTC organizes or attends dozens of meetings with neighborhood and community groups.

PROGRAM LAUNCH

OCTOBER 2015

Project Design Completed

The Broad Street BRT team completes the preliminary engineering phase and semi-final design of the project, clearing the way for GRTC to begin procurement of construction services.

SUMMER 2016

Construction of Pulse Line Begins

After awarding a contract to Lane Construction Corporation, construction of the Pulse begins in the Summer of 2016. The Virginia Department of Transportation provides project management support during this period.

JUNE 2018

Pulse Bus Service Begins

The Pulse begins operation with local, state, and federal officials in attendance. GRTC passes out Pulse-branded merchandise; transit ambassadors walk the corridor to answer questions; and GRTC provides free transit for the Pulse's first week.

JUNE 2018

System Redesign Launches

As the Pulse begins service, GRTC launches its system redesign, which reorients its other bus lines to take advantage of the Pulse.

MARCH 2020

GRTC Announces Fare-Free Transit

In response to the COVID-19 pandemic, GRTC suspends fare collection throughout its system, including on the Pulse.

DECEMBER 2022

GRTC Continues Zero-Fare Program

Citing increased ridership, strong public support, and its commitment to **improving transit access for all residents**, GRTC later extended its Zero-Fare program through June 2024.

Implementation Process

How did leaders confront the problem?

- **DRPT and GRTC study options for rapid transit:** In 2010, GRTC partnered with the Virginia Department of Rail and Public Transportation (DRPT) to initiate the Broad Street Corridor Rapid Transit Study. The study aimed to identify a transportation improvement that would achieve several goals, including encouraging new transit oriented development, providing an attractive alternative to automobile travel, improving environmental quality, and more.

- **Recommending BRT for Broad Street:** In 2014, the study team presented a proposal for a BRT line on Broad Street to the GRTC Board of Directors and multiple other stakeholders. Later that year, the Board of Directors approved the study team's recommendation to build a BRT line along the corridor.
- **Conducting public outreach:** As GRTC began designing the Pulse, it began an extensive public outreach campaign. GRTC held or attended dozens of community meetings and conducted door-to-door outreach along the corridor. This allowed GRTC to address residents and business owners' key issues, including the placement of stations and the preservation of parking and left turn access at intersections.

How was the strategy designed?

- **Matching station locations and land uses:** GRTC aimed to place Pulse stations nearby land uses that encourage walking and transit use. For instance, instead of placing a station across from an automotive parts store, as originally planned, GRTC moved the station a block down, across from a grocery store. While land use was an important consideration, GRTC also accounted for the presence of utilities and the preferences of adjacent businesses and institutions when siting Pulse stations.
- **Creating a sense of place:** The design of Pulse stations aimed to create a "sense of place" by incorporating historical design elements from architecture along the corridor. For example, the stations were built with brick similar to that used in surrounding buildings; heavy steel frames that mirror the design of local bridges; and fir wood, which matches materials used in the nearby Science Museum of Virginia.
- **Enhancing the rider experience:** Compared to conventional bus service, the Pulse offers multiple features designed to improve the rider experience. These include Wi-Fi access on Pulse buses, displays with real-time arrival information at Pulse stations, and more.
- **Redesigning the transit system:** GRTC redesigned its broader transit system to take advantage of the Pulse. As part of the redesign, GRTC created faster, more frequent routes to connect busy areas; leveraged new, high-frequency routes to reduce the need for connections; renamed routes to make them easier to understand; and more.

How was the plan implemented?

- **Leveraging state-level expertise:** When construction began on the Pulse in 2016, VDOT served as the project manager. This allowed GRTC to take advantage of VDOT's additional staffing and greater expertise managing large construction projects. Meanwhile, GRTC focused on advising VDOT on the Pulse's design and ensuring compliance with requirements associated with the project's funding.

- **Supporting impacted businesses:** During the construction of the Pulse, GRTC, the City of Richmond, and Lane Construction provided weekly updates to businesses along the corridor. These updates previewed upcoming work and detailed noise levels and access restrictions. On a case-by-case basis, GRTC and their partners adjusted plans to minimize the impact of construction on businesses' visibility, parking, and loading zones.
- **Training GRTC operators:** Before the Pulse's launch, GRTC installed a practice platform in one of its park and ride lots. Designed to match those being built at Pulse stations, the platform gave bus operators the opportunity to practice docking before construction was completed. This practical training was supplemented by a broader Pulse training curriculum, which GRTC based off of training materials from transit agencies with similar BRT lines.
- **Celebrating the launch:** When the Pulse began operation in 2018, GRTC planned the launch as an event to raise awareness and encourage ridership. Local, state, and federal officials attended; GRTC passed out Pulse-branded merchandise; transit ambassadors walked the corridor to answer questions; and all transit was fare-free for the first week.

How was the approach funded?

- **Securing significant federal funding:** In 2014, GRTC applied for a Transit Investment Generating Economic Recovery (TIGER) grant from the U.S. Department of Transportation (DOT). The DOT awarded GRTC $24.9 million for the Broad Street BRT project.
- **Matching state and local dollars:** The TIGER grant required the participating state and local governments to provide matching funding. As such, the Commonwealth of Virginia contributed $16.9 million, while the City of Richmond provided $7.6 million and Henrico County provided $400,000.
- **State funding bridges the gap:** When construction bids came in higher than expected, VDOT realized that the TIGER grant and the associated matching dollars would not cover the cost of the project. To ensure the Pulse proceeded, the Commonwealth of Virginia covered the additional cost, bringing its total contribution to $32 million.
- **Providing ongoing funding:** With the line constructed, GRTC funded the Pulse through a combination of fares and federal, state, and local government grants. This is supplemented by an agreement between GRTC and Virginia Commonwealth University (VCU), which borders the corridor. Under the agreement, VCU pays approximately $1.5 million per year to provide subsidized fares to its students and staff. A branding partnership with two area healthcare systems - Richmond Bon Secours Health System and VCU Health - provided an additional $330,000 for station maintenance.
- **Shifting to fare-free transit**: In response to the COVID-19 pandemic, GRTC suspended fare collection in March 2020. Citing increased ridership, strong public support, and its commitment to transit equity, GRTC later extended its Zero-Fare program through June 2024. A grant from DRPT and local matching funds make up for the revenue lost from fare collection.

How was the approach measured and refined?

- **Responding to higher-than-expected demand:** The Pulse was designed to accommodate approximately 3,500 riders per day. By 2019, daily ridership exceeded 8,000 per day, resulting in incidents where riders were unable to board already-full buses. To better meet demand, GRTC plans to purchase articulated buses and perform minor alterations to Pulse stations to accommodate their larger footprint.
- **Adjusting to variations in station design:** After launching the Pulse, operators found that buses under heavy loads did not properly line up with the platforms at three of the Pulse's stations. At times, this caused bus doors to get stuck on the platform. To prevent this issue, GRTC raised the Pulse buses and retrofitted their doors to have greater clearance.
- **Adding additional dedicated lanes:** The Pulse requires an additional 0.7 miles of dedicated lanes in order to qualify for funding through the Federal Transit Administration's State of Good Repair program. Recognizing this as an opportunity to cover a significant portion of maintenance costs, GRTC plans to work with local stakeholders to identify opportunities for additional dedicated right-of-way.
- **Exploring future BRT corridors:** Due to the success of the Pulse, local leaders are exploring a potential expansion of the line farther into Henrico County. A study has also been conducted on potential corridors for a second BRT line running north to south through Richmond. If funding can be secured, GRTC expects the second line to open as early as late 2028.
- **Serving as a model for peer cities:** DRPT requires urban transit systems to conduct periodic evaluations to assess their efficiency. With the success of GRTC's system redesign, DRPT has encouraged other transit agencies to take a similar approach. Recent system redesigns in Norfolk and Alexandria have followed GRTC's example.

Acknowledgments

Results for America would like to thank the following individuals for their support in writing this case study: Adrienne Torres, Chief Development Officer, GRTC; Ashley Mason, Manager of Organizational Advancement, GRTC; Sam Sink, Director of Planning and Scheduling, GRTC; Steve McNally, Project Administrator, GRTC; Timothy Barham, Director of Operations, GRTC; Anthony Carter, Director of Risk Management, GRTC; Isaac Wright, Assistant Chief of Transit Operations, GRTC; Maritza Pechin, Deputy Director of Equitable Development, City of Richmond; Jennifer DeBruhl, Director, DRPT; Todd Eure, Assistant Director of Public Works, Henrico County; and Ashley Lickliter, Senior Associate, Kimley-Horn.

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