Transit Strategic Plan

Greater Lynchburg Transit Company

FISCAL YEARS 2019-2028

MAY 2020 FINAL

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1. Overview of Greater Lynchburg Transit Company Services and Strategic Vision

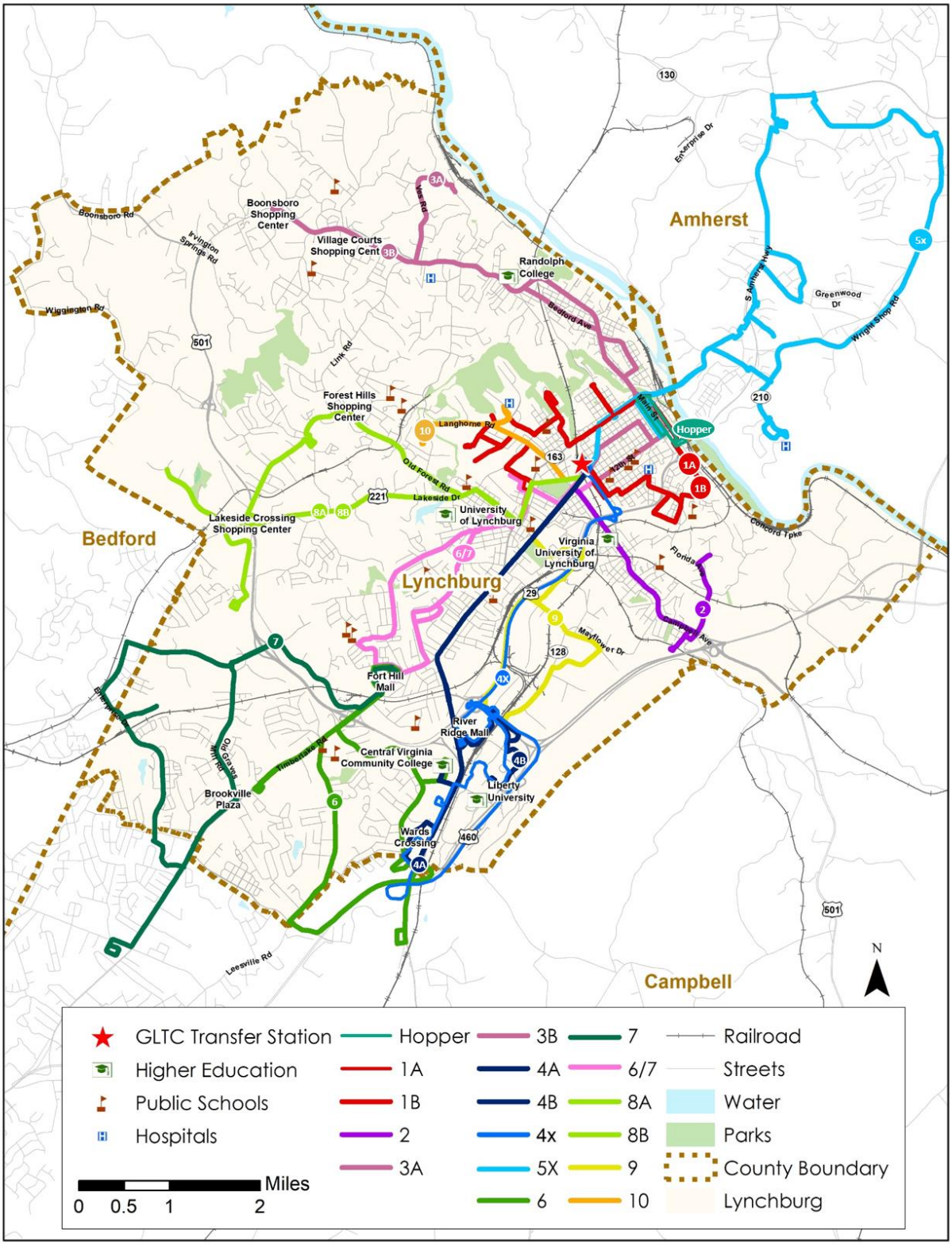
1.1. System Overview

GLTC provides fixed route transit service and paratransit services within the City of Lynchburg and portions of neighboring jurisdictions outside the city limits. It has 15 fixed routes in Lynchburg, Madison Heights, and Liberty University. Portions of existing routes enter Amherst, Bedford, and Campbell Counties as well. **Figure 1-1** shows GLTC's fixed route service.

GLTC offers paratransit services for qualifying individuals who are unable to ride regular GLTC buses due to a disability. Following ADA requirements, GLTC uses smaller vehicles to provide origin to destination services for those who request service. Paratransit is available anywhere in the City of Lynchburg and 0.75 miles around the bus routes that are outside the city.

GLTC provides connections to intercity travel through its transfer station, which is adjacent to the Kemper Street Station for Amtrak and Greyhound services, providing access to and from intercity passenger rail and bus services. Amtrak service provides direct connections to Roanoke, VA, and Washington, DC. Route 6 provides a connection to the Lynchburg Regional Airport.

Figure 1-1: GLTC Bus Routes



Source: GLTC, 2017.

1.1.1. Current and Recent GLTC Initiatives

1.1.1.1. Service Partnerships

In addition to Liberty University, partnerships exist with other organizations to provide fare-free rides. These include:

- *Central Virginia Community College*: This partnership allows all students, faculty, and staff to use the GLTC fixed route bus system for free with a valid University ID
- *Liberty University*: In addition to the service provided on the Liberty University Campus, a partnership exists to allow all students, faculty, and staff to use the GLTC fixed route bus system for free with a valid University ID

1.1.1.2. Public Outreach

GLTC uses public feedback to improve their services. In 2004, GLTC implemented the Public Comment Process for Fare and Service Changes that met the Federal Transit Administration's Office of Civil Rights, which under the Civil Rights Act of 1964 (Title VI), required equity in service and fare changes. GLTC updates the Title VI program frequently, with most recently year in September 2019.

As part of the 2018 Transit Development Plan, GLTC surveyed a total of 973 people via web, mobile, in-person, and through paper surveys. The majority of respondents were frequent riders, but this public outreach effort also collected survey responses from less-frequent riders and members of the community that do not ride transit. The survey was coupled with interviews of key stakeholders in the region, including local governments, higher education institutions, and economic development organizations. Responses from surveys were used to identify deficiencies and gaps in service and potential solutions to address them.

GLTC has two advisory committees where public community members also can get involved: ADA (Paratransit) Advisory Committee and Customer (Bus) Advisory Committee. The committee representatives are appointed by the GLTC Board of Directors. Committee meetings generally occur monthly at GLTC (specific dates are listed on GLTC's website) and are open to the public.

The public also can attend Board meetings. Meeting times, dates, and minutes are provided on the GLTC website and at the GLTC office. The Marketing & Customer Experience Manager, in their capacity as Clerk of the Board, also is available to answer any questions by phone.

1.2. Strategic Vision

GLTC's mission is to provide safe, dependable, affordable, accessible, and high-quality public transportation to the Central Virginia community.

The Strategic Plan's goals, objectives, and performance measures reflect GLTC's core mission and are summarized in this section.

Establishing agreed upon goals, objectives, and service design standards creates a framework for transit agencies to establish managerial direction and outline how to pursue and measure progress. The City of Lynchburg's Comprehensive Plan was reviewed to ensure that any overarching transportation goals were incorporated in development the GLTC's Strategic Vision.

Public and stakeholder outreach during the fall 2017, discussed in greater detail in **Section 2.1.1.5**, informed the priorities for improvements to the GLTC system in four areas: frequency, service hours, direct routing, and service destinations.

- **Higher frequencies** were the top priority for riders and non-riders and the lack of high frequency service was noted by non-riders as their top reason for not using GLTC service.
- **Increased hours of service,** including additional service during nights and weekends, was also a major priority for riders and non-riders; employers also indicated this to be a challenge for maintaining a reliable workforce.
- **Direct routing** and **service destinations** are related priorities for the public and stakeholders, who prioritized more direct routes (both less circuitous and requiring fewer transfers) to major destinations. The community noted direct routing and reduced travel times between certain service destinations as a high priority. Colleges in the area specifically highlighted these issues as factors for ridership by student populations.

The noted priorities informed the GLTC goals and objectives. While goals generally define a longer-term purpose toward which an effort is directed, objectives provide additional details or targets for how the goal will be achieved and in what intermediate timeframe. The goals and objectives presented reflect discussions with GLTC and should be assessed on an annual basis.

The strategic vision, goals, and objectives were adopted by the GLTC Board of Directors as part of the 2018 Transit Development Plan (TDP) Update in September 2018.

1.2.1. Goals and Objectives

Four primary goals identified that support GLTC's mission are:

1. Provide a safe, reliable, efficient, and effective transportation service
2. Be an integral component of economic development in the City of Lynchburg and surrounding areas by providing access to jobs, health care, shopping, education, and other community locations, and enhance economic development by improving access to local businesses
3. Continue to strengthen organizational processes to ensure continuity of services and best practices
4. Build partnerships with employers, colleges and universities, and other private and public stakeholders

The City of Lynchburg's 2030 Comprehensive Plan, prepared following the last major TDP update, emphasized the continued desire to strengthen neighborhood connections and access to work, shopping, parks, schools, and public service through multimodal connections with transit service being a viable option. As the City supports the expansion of different modal choices for residents with different needs and preferences, there is ongoing coordination of the GLTC route planning and the City's land use planning to provide for the successful growth and development of the City. This emphasis on connecting land uses to provide modal choices will allow GLTC to address public and stakeholder feedback on the demand for frequent, direct services to major destinations through its service planning.

Goal #1 - Provide a safe, reliable, efficient, and effective transportation service.

Objective 1.1 – Provide excellent customer service through timely service, well-trained drivers, and comfortable accommodations.

MEASURE	TARGET	STRATEGY
Complaint investigation time	Less than two-week follow-up time for customer complaints	Conduct customer service training for staff twice per year
Percent change in annual citizen participation and overall satisfaction	Achieve an above average overall rider satisfaction rating	Conduct annual rider satisfaction surveys; establish a baseline for rider satisfaction and monitor annually

Objective 1.2 – Maintain efficient scheduling and routing practices to ensure as short a wait time for customers as possible.

MEASURE	TARGET	STRATEGY
On-time performance	85% on time	Real-time monitoring and logging via automatic vehicle location technology
Length of trip	Limit ride lengths for customers to no more than two times the comparable trip via automobile	Prior to implementing service changes, compare trip times with Google drive estimates at same day/time

Objective 1.3 – Increase visibility of GLTC and provide public with most relevant and easily accessible information.

MEASURE	TARGET	STRATEGY
Dissemination of information for systemwide changes	Establish robust marketing campaign 30 days prior to systemwide changes via all media streams	Develop a GLTC branding/marketing campaign
Timeliness of content updates to GLTC website	Update transit service changes on website at least 14 days prior to new service implementation	Maintain transit information on the GLTC website and those of other partners in the area

Objective 1.4 – Maintain a transportation system that promotes the safety of all users.

MEASURE	TARGET	STRATEGY
Accident frequency rate	Less than one accident per 100,000 miles.	Monitor accident reports monthly and identify patterns of accidents to determine route issues and potential training needs
Mean distance between in-service breakdowns	Miles between road calls are greater than preventative maintenance mileage interval.	Monitor fleet maintenance reports monthly.

Goal #2 - Be an integral component of economic development in the City of Lynchburg and surrounding areas by providing access to jobs, health care, shopping, education, and other community locations, and enhancing economic development by improving access to local businesses.

Objective 2.1 – Provide reliable services that benefit local businesses, human and social service agencies, medical facilities, and other service providers in the City.

MEASURE	TARGET	STRATEGY
Ridership to identified agencies or medical facilities	Increase the number of riders at specific areas	Coordinate with businesses and agencies to understand need; increase awareness of availability of vouchers through human and social service; target marketing efforts to social service agencies and medical facilities

Goal #3 - Continue to strengthen organizational processes to ensure continuity of services and best practices.

Objective 3.1 – Coordinate with the Virginia Department of Rail and Public Transportation on capital and operational funding applications and on compliance with state and federal regulations.

MEASURE	TARGET	STRATEGY
Number of grant applications submitted	Maintain or increase the number of new grant applications on an annual basis	Increase grant research
Findings from compliance reviews	No more than five findings per year; no consecutive findings	Establish recommended processes and timely close-out of any identified issues

Objective 3.2 – Establish an annual process for reviewing and adjusting goals and objectives.

MEASURE	TARGET	STRATEGY
Annual progress/update reporting completed	Submit annually any changes to goals/objectives and rationale	Annual reporting on performance towards goals and objectives
Alignment with relevant City/Regional goals	GLTC input provided in transportation study's goal development	Assess new City or regional studies with transit/transportation goals pertaining to City of Lynchburg

Goal #4 - Build partnerships with employers, colleges and universities, and other private and public stakeholders.

Objective 4.1 – Support local and regional economic development initiatives to explore potential demand to expand cost-effective transit service to areas outside of those presently being serviced.

MEASURE	TARGET	STRATEGY
Number of new partnerships with employment, economic development, colleges/universities, and agencies	Seek to establish one partnership annually	Participate in discussions with regional chamber or economic development; provide partners with transit ridership, programs, and services information

1.2.2. Service Guidelines

In March 1996, the GLTC Board adopted the GLTC Suggested Service Guidelines. Service guidelines are intended to provide assistance to management in making service decisions and in planning remedial actions. As such, they are part of the decision-making process and subject to ongoing review. Service guidelines should be seen as an "ideal" to which to strive, but may be unable to obtain because of financial or political constraints, thus the reason they are "suggested" versus mandated.

Service Area:

- Within ¼ mile of 50 percent of area residents
- Residential dwelling areas with densities equal to or greater than 4,000 persons/square-mile
- Employers with 200+ employees (individual employers and clusters)
- Secondary schools and colleges with enrollments of 500+ students
- Shopping centers with at least 50,000 square feet of retail space
- Social service agencies, government agencies, and medical facilities with at least 100 daily users

Hours:

- Weekdays: Early enough for workers and students to make day shift and late enough to return home at end of day shift; reduced span for weekends
- Service Headways: 30 minutes during peak periods and 60 minutes during other periods; headways for regularly scheduled service should conform to regularly recurring clock intervals

Route Characteristics:

- Length should not exceed 25 miles round-trip or 2 hours
- Only one route per arterial on approaches to central business district or major transit terminal, with the exception of express route service

Financial Performance:

- Twenty percent of operating costs from farebox and partnership contracts

Fare Structure:

- Exact fare
- Customer "friendly" — in readily available denominations
- Easy to administer

Ridership Performance:

- Passengers per revenue hour should exceed 12
- Individual route "trips" should have 2+ passengers

Quality/Loading Standards:

- Peak: up to 120 percent of seating capacity
- Off Peak: up to 100 percent of seating capacity, no standees

Quality/Schedule Adherence:

- 85 percent of all trips on-time (0-5 minutes late)
- Average route distance should not exceed 20 miles within an hour, except on routes serving limited-access facilities, such as highways

Quality/Bus Stops:

- Spacing: No closer than 700 feet

- Request stops in low-density areas at operator discretion
- "Near-side" stops unless safety warrants "far-side" stops at intersections
- Length: Enough to pull bus with both doors parallel to curb
- Shelters: Stops with at least 50 boardings/day
- Benches: Stops with at least 25 boardings/day
- Financial resources to maintain shelters and benches including periodic cleaning

Quality/Maintenance:

- Available spares should not exceed 15 percent of peak fleet; overall spare ratio should not exceed 30 percent
- One hundred percent of preventative maintenance performed at vehicle manufacturer recommended intervals
- Buses washed daily
- One hundred percent operational heating, ventilation, and air conditioning on in-service buses
- One hundred percent operational wheelchair lifts on in-service buses
- Miles between road calls should be greater than preventative maintenance mileage interval

Quality/Customer Service:

- Telephone information service for period that system operates
- Information calls answered within a timely manner
- Provide dated route maps and timetable upon change to existing service
- Complaints investigated with follow-up to complainant within two weeks of report

1.2.3. Performance Standards

Table 1-1 summarizes performance standards that align with the goals, objectives, and service design standards of GLTC.

Table 1-1: Summary of Performance Standards

ASPECT	STANDARD
Ridership	Increased ridership annually to target areas, including human and social service agencies and medical facilities
	At least 12 passengers per revenue hour per route
Financial Efficiency	At least 20 percent of operating costs are funded through farebox revenue and partnership contracts
Safety	Less than one accident per 100,000 miles
Customer Satisfaction	Less than two-week follow-up time for customer complaints
Accessibility	50 percent of area residents served by transit within ¼ mile
	All areas with residential densities of greater than 4,000 persons/square-mile served
	All employers (or clusters of employers) with more than 200 employees served
	All secondary schools and colleges with more than 500 students served
	All shopping centers with more than 50,000 square feet of retail space served
	All social service agencies, government agencies, and medical facilities with at least 100 daily visitors served
Maintenance	Available spares are less than 15 percent of peak fleet
	Overall spare ratio is less than 30 percent of peak fleet
	100 percent of preventative maintenance is performed at vehicle manufacturer recommended intervals
	100 percent operational heating, ventilation, and air conditioning on in-service buses
	100 percent operational wheelchair lifts on in-service buses
	Miles between road calls greater than preventative maintenance mileage interval
On-time Performance	85 percent on-time (within 0-5 minutes of schedule)
Funding and Partnerships	Maintain or increase number of grant applications annually
	Have fewer than five findings per year on grant compliance reviews
	Have no recurring findings on consecutive grant compliance reviews
	Establish one new partnership with local employers, colleges and universities, or public agencies annually

2. System Performance and Operations Analysis

This section evaluates existing service using quantitative and qualitative measures. Demographic trends and forecasts were used to provide context on the service in which GLTC operates. Historical service data such as ridership, revenue, operating cost, revenue miles, and revenue hours were used to evaluate the system. Each route and service type were compared with systemwide measures using fiscal year 2018 data. A three-year (FY 2016 to FY 2018) retrospective performance analysis was conducted that shows steady performance.

Stakeholder input was an important part of evaluating existing service. The findings from an online and in-person public survey and stakeholder interviews are included in this section. The survey gathered information from current customers as well as individuals that do not currently use the service. Input also was gathered from key stakeholders in local governments, higher education institutions, economic development organizations, and customer groups through interviews.

The findings from the various analyses were compiled to identify deficiencies or gaps in the existing service. Potential solutions were identified that would alter existing services to effectively and efficiently meet the needs of Lynchburg in the future. These gaps and solutions form the basis of the service and capital improvement plan included in **Sections 3 and 4**.

2.1. System and Service Data

2.1.1. Existing Service Analysis

This section provides a summary of GLTC's service in fiscal year 2018 and 3-year historical trends for fiscal years 2016 through 2018.

2.1.1.1. Demographics and Land Use

In the National Transit Database 2017 Annual Agency Profile, GLTC noted that it served 72 square miles and a population of 80,846 residents, or 1,123 residents per square mile.[1]

Table 2-1 shows population estimates and projections for Lynchburg and the surrounding counties. The City of Lynchburg is projected to experience population growth, along with many of the surrounding counties. Appomattox, Bedford, and Campbell Counties are projected to grow at slightly lower rates than the City, while Amherst County is projected to experience a slight population decline.

[1] Source: 2017 National Transit Database

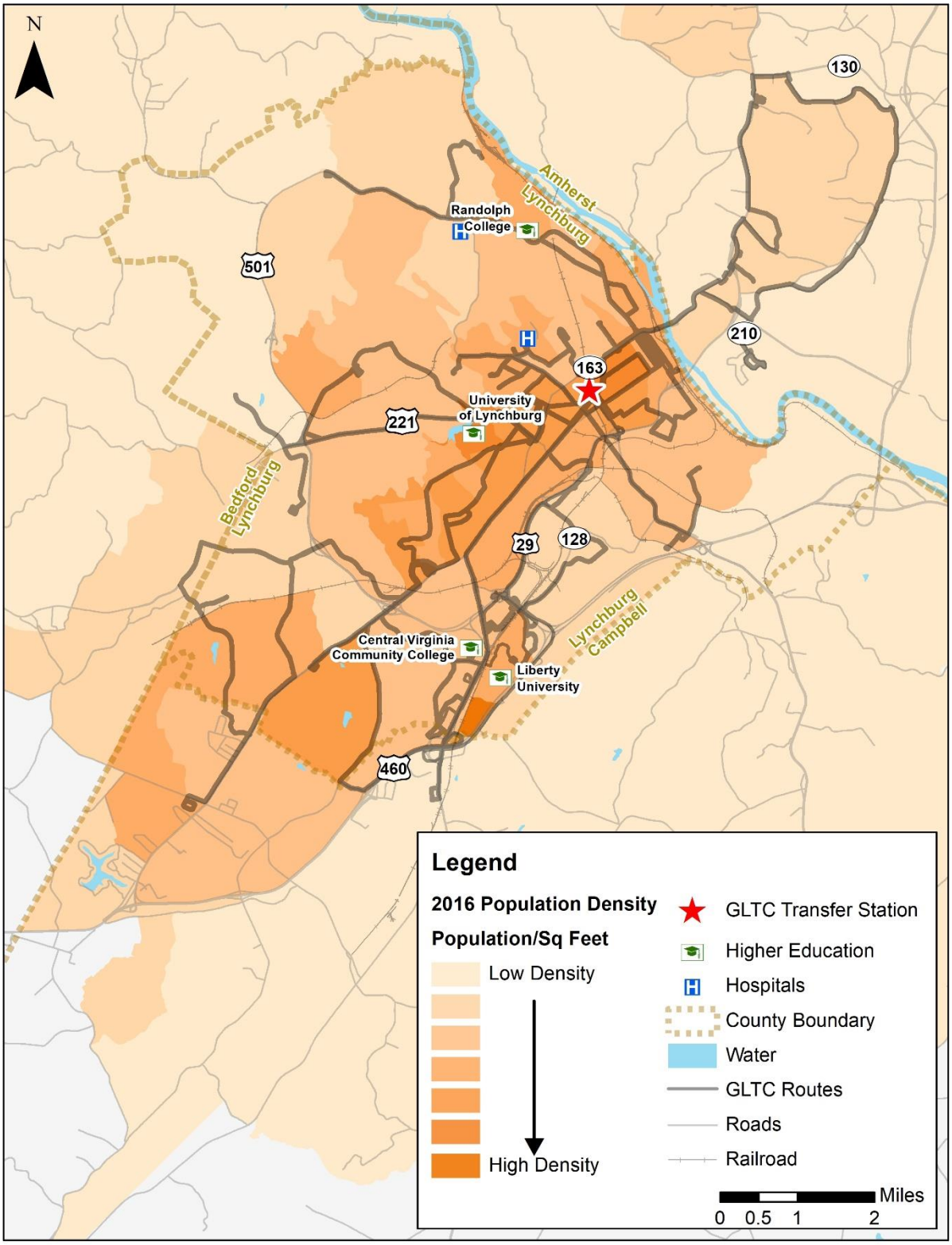
Table 2-1: Total Population Projections

Locality	2018 Estimate	2025 (2018-2025 Change)	2035 (2018-2035 Change)	2045 (2018-2045 Change)
City of Lynchburg	81,339	85,599 (5.2%)	93,202 (14.6%)	100,102 (23.1%)
Amherst County	31,867	31,612 (-0.8%)	31,264 (-1.9%)	30,700 (-3.7%)
Appomattox County	15,679	16,399 (4.6%)	17,320 (10.5%)	18,113 (15.5%)
Bedford County	78,329	83,262 (6.3%)	89,260 (14.0%)	94,591 (20.8%)
Campbell County	55,425	58,772 (6.0%)	61,296 (10.6%)	63,375 (14.3%)

Source: Weldon Cooper Center, University of Virginia.

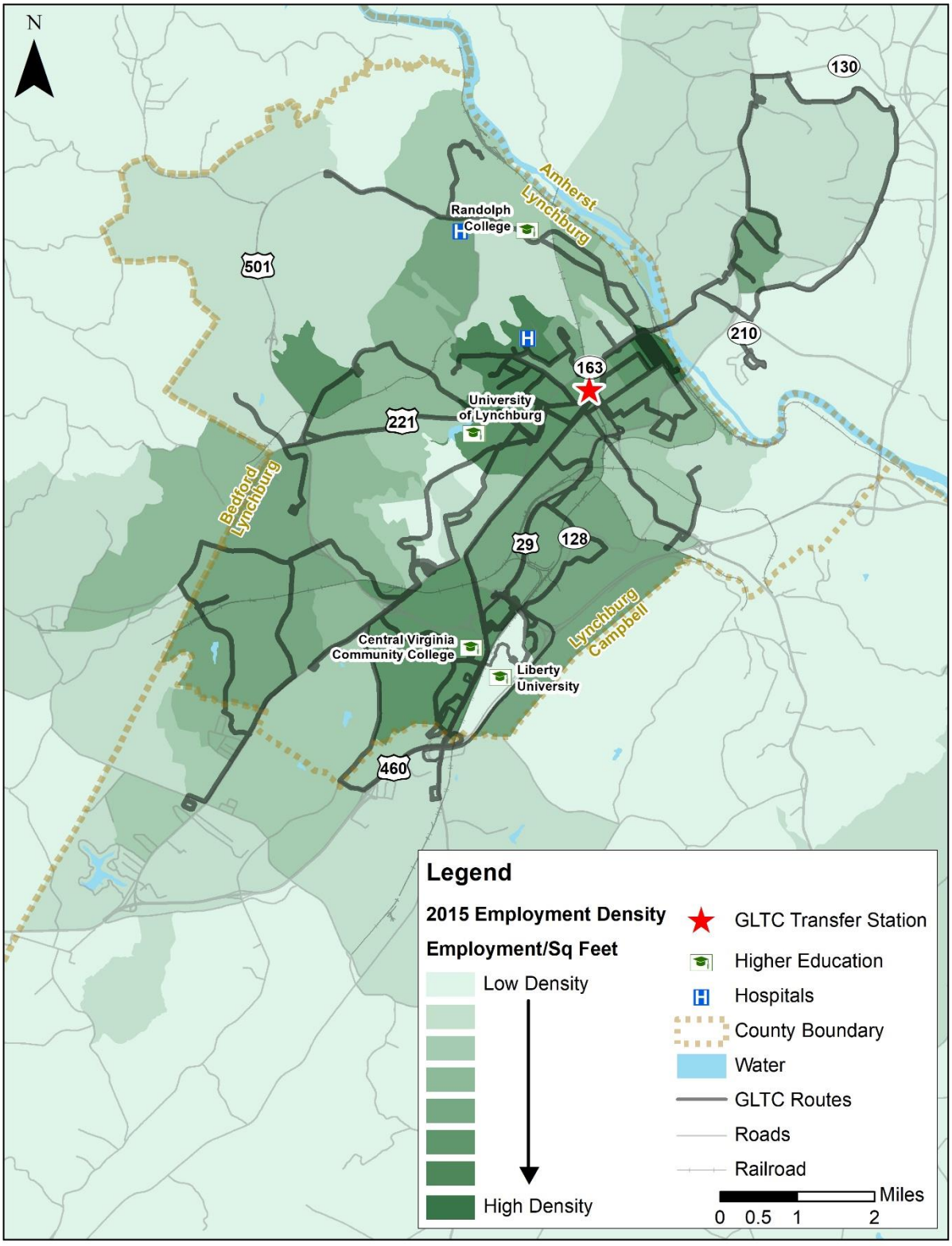
Maps of existing population and employment densities are shown in **Figure 2-1** and **Figure 2-2**, respectively. GLTC currently provides route coverage to much of the higher density areas. A map of future land use designations for the City of Lynchburg is provided in **Figure 2-3** to provide context on how the City is expected to develop in the future.

Figure 2-1: 2016 Population Density



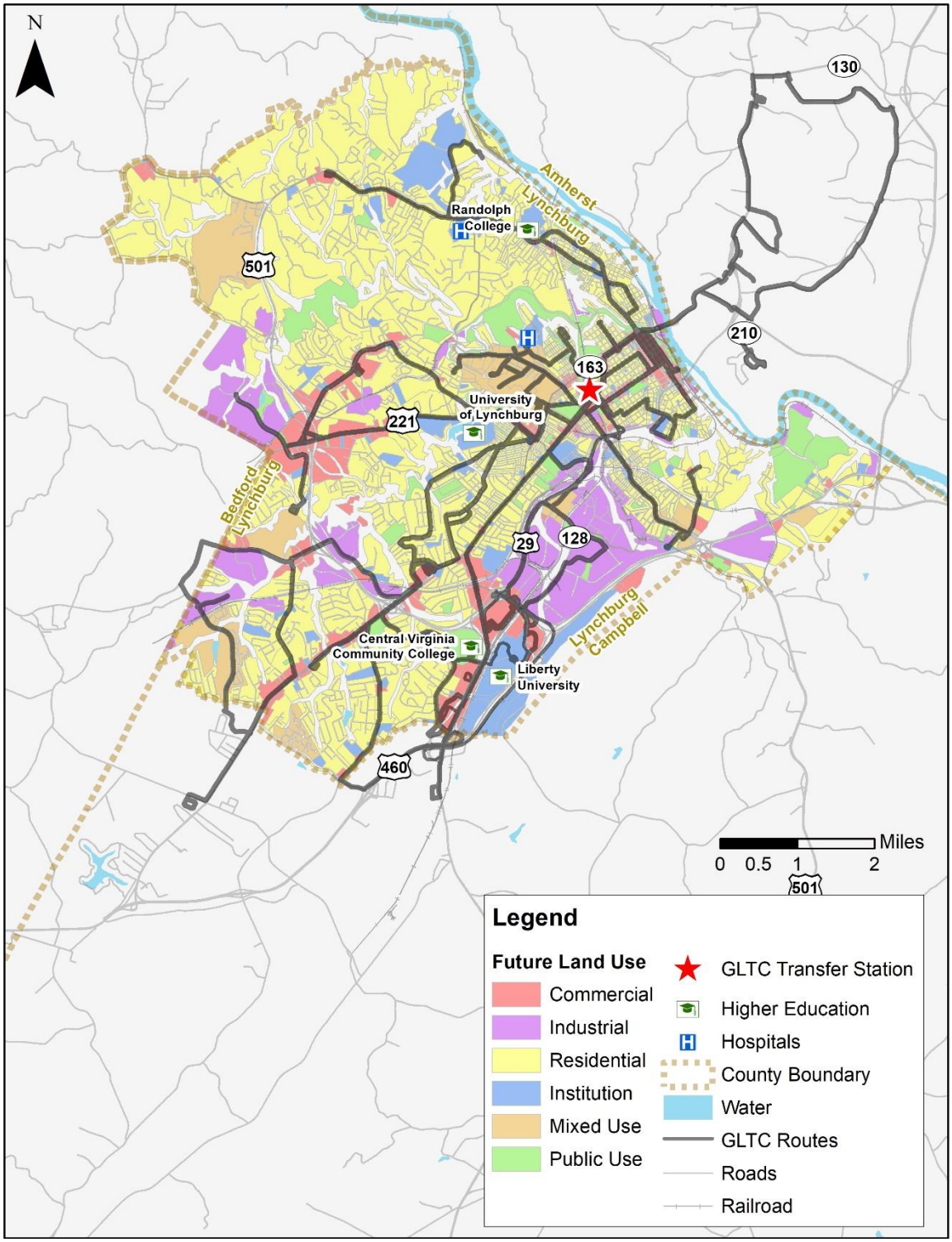
Source: U.S. Census Bureau, 2016.

Figure 2-2: 2015 Employment Density



Source: U.S. Census Bureau, 2015.

Figure 2-3: City of Lynchburg Future Land Use Designations



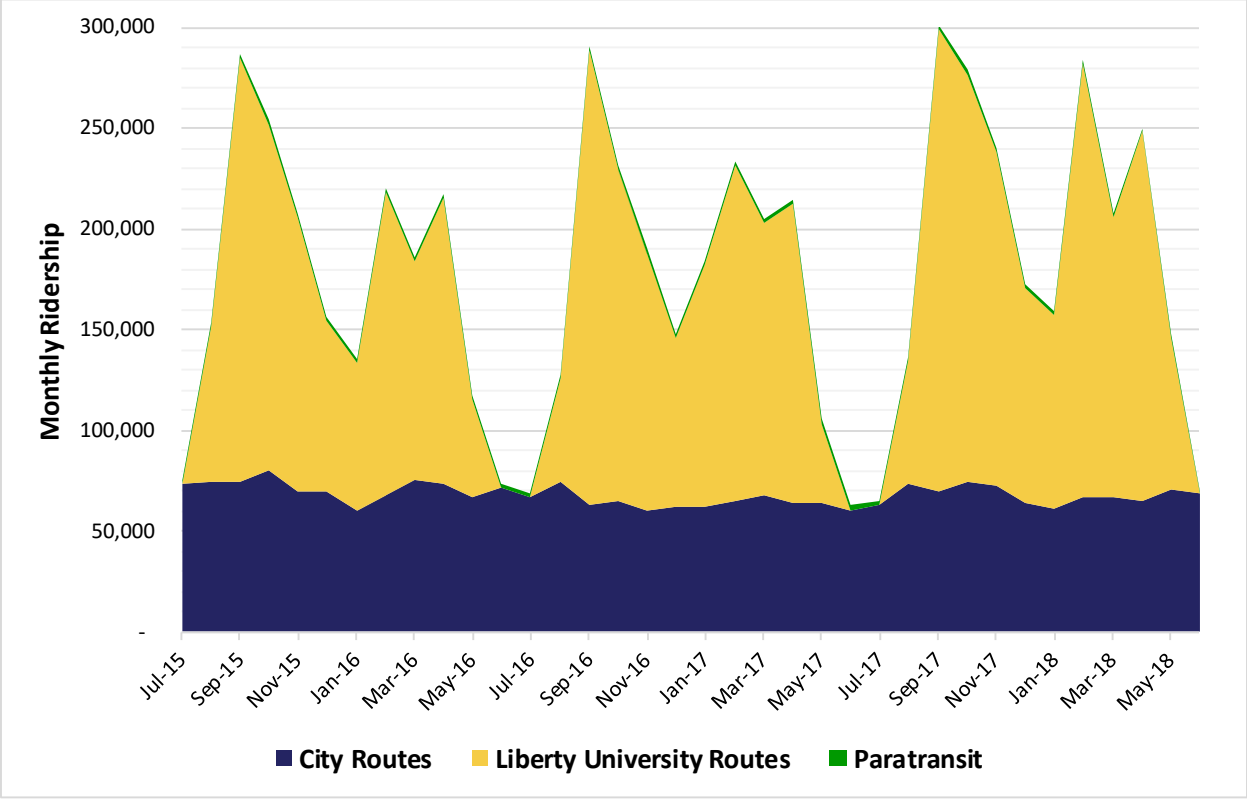
Source: City of Lynchburg, 2017.

2.1.1.2. Ridership and Revenue Service

Figure 2-4 shows monthly ridership by service types – City routes, Liberty University routes (operated by GLTC), and paratransit. The extent to which Liberty University affects ridership is clear in the figure, and the fluctuations in this ridership corresponds to semester schedules. Liberty University has made service reductions from year to year.

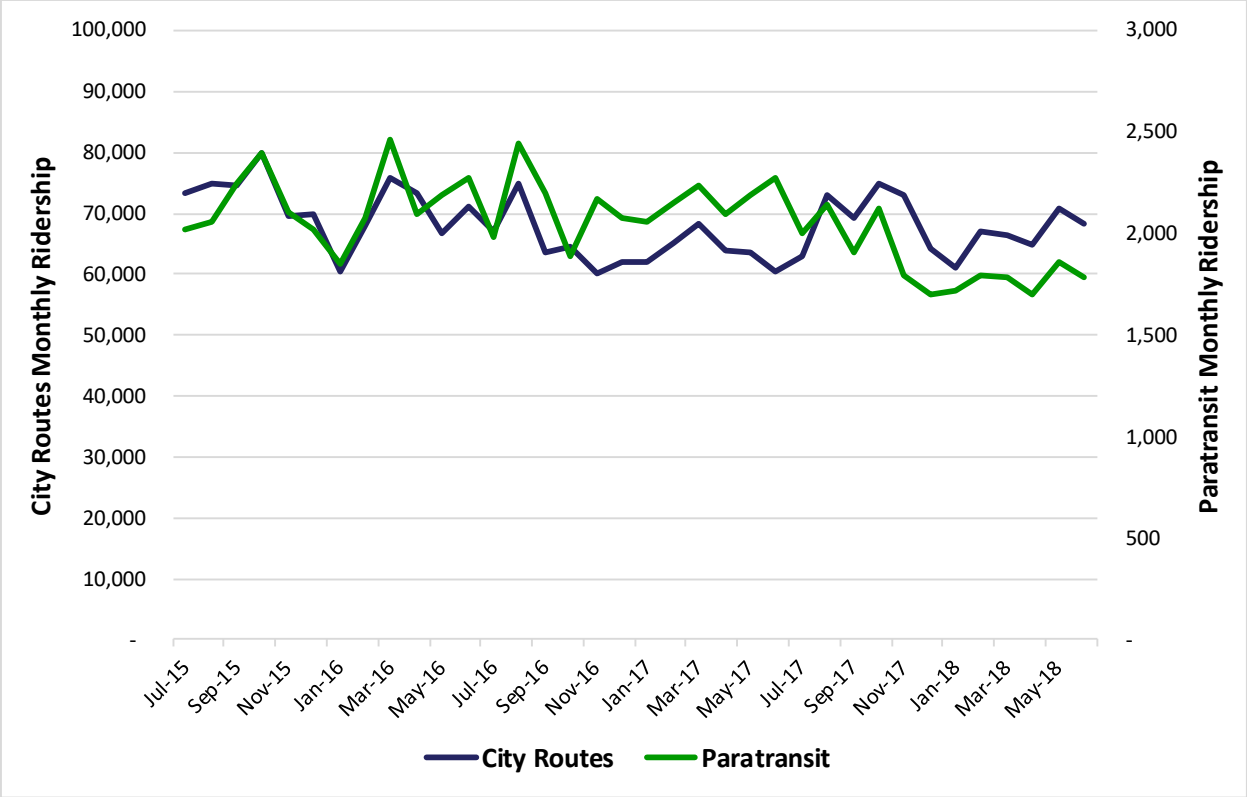
Monthly ridership for City routes and paratransit also are displayed in a separate chart, **Figure 2-5.** Seasonal variations exist in ridership, with generally lower ridership in the winter, and there is an overall trend of decreasing ridership for City fixed routes and increasing ridership for paratransit. **Section 2.2.2** contains additional details on historical trends.

Figure 2-4: Monthly Ridership



Source: GLTC, 2019.

Figure 2-5: City Routes and Paratransit Monthly Ridership



Source: GLTC, 2019.

Performance measures of passengers per revenue hour and passengers per revenue mile were compiled for each route, service type, and systemwide. This information is summarized in **Table 2-2** along with ridership, revenue hours, and revenue miles.

Table 2-2 - FY 2018 Service Operating Statistics

Key: ▲ Route measure better than overall measure for City routes
▼ Route measure worse than overall measure for City routes

Route	Ridership	Revenue Hours	Revenue Miles	Passenger/ Hour	Passenger/ Mile
1A	74,236	5,070	72,984	14.6 ▲	1.0 ▲
1B	49,618	3,520	42,650	14.1 ▲	1.2 ▲
2	62,046	4,174	65,012	14.9 ▲	1.0 ▲
3A	74,993	5,019	68,455	14.9 ▲	1.1 ▲
3B	82,685	4,891	68,523	16.9 ▲	1.2 ▲
4A	92,289	4,659	63,143	19.8 ▲	1.5 ▲
4B	67,019	4,865	59,328	13.8 ▲	1.1 ▲
4X	5,854	1,536	24,392	3.8 ▼	0.2 ▼
5	13,218	1,536	28,954	8.6 ▼	0.5 ▼
6	23,021	3,902	52,248	5.9 ▼	0.4 ▼
7	45,383	3,955	66,800	11.5 ▼	0.7 ▼
7X	3,069	671	10,669	4.6 ▼	0.3 ▼
6/7	79,978	4,273	55,549	18.7 ▲	1.4 ▲
8A	58,322	5,019	73,805	11.6 ▼	0.8 ▼
8B	43,169	3,584	54,620	12.0 ▼	0.8 ▼
9	11,529	1,664	29,061	6.9 ▼	0.4 ▼
10	28,178	2,419	27,190	11.6 ▼	1.0 ▲
Hopper	1,348	1,090	8,748	1.2 ▼	0.2 ▼
City Routes	815,955	61,846	872,130	13.2	0.9
LU Routes[1]	1,475,452	28,540	225,734	51.7	6.5
Paratransit	22,326	16,156	165,214	1.4	0.1
Systemwide	2,313,733	106,542	1,263,078	21.7	1.8

1 Only LU routes operated by GLTC are included.

2.1.1.3. Operating Revenues and Expenses

GLTC's operating revenues and expenses for fiscal years 2017 and 2018, as reported in their audited Annual Report, are provided in **Table 2-3**. The Annual Report combines GLTC's operating and capital accounts to allowed for a consolidated audit of financial resources.

Table 2-3: FY 2017 and 2018 Operating Revenues and Expenses

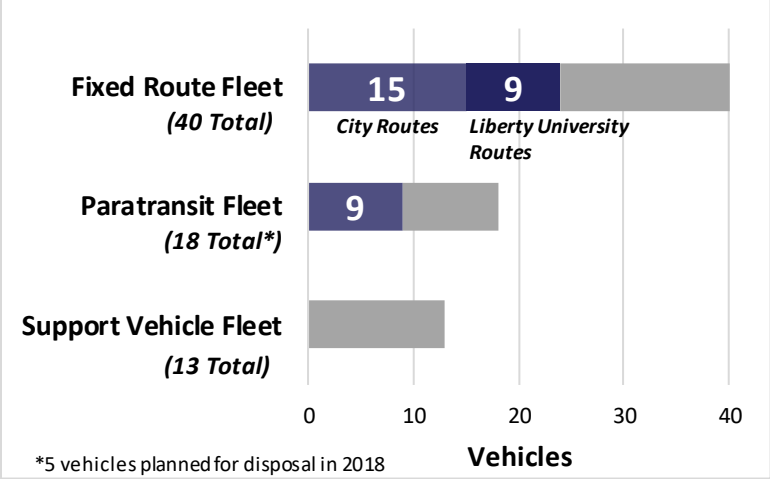
	FY 2017	FY 2018
Operating Expenses		
Operations	$ 6,761,817	$ 6,695,891
Maintenance	$ 2,143,605	$ 2,624,419
General Administration	$ 1,704,387	$ 2,261,387
Total	**$ 10,609,809**	**$ 11,581,697**
Operating Revenues		
Passenger Fares	$ 700,864	$ 631,785
Universal Bus Pass	$ 137,161	$ 138,706
Special Buses	$ 22,024	$ 18,280
Advertising	$ 81,302	$ 107,451
Registration Fees	$ 542	$ 420
Non-Transportation Revenue	$ 3,292	$ 7,594
Total	**$ 945,185**	**$ 904,236**
Non-Operating Revenues		
City of Lynchburg Subsidy	$ 640,258	$ 1,451,063
Counties Subsidy	$ 71,875	$ 73,313
Liberty University Subsidy	$ 2,239,525	$ 1,660,504
Commonwealth of Virginia Aid	$ 2,014,644	$ 1,682,106
Federal Operating Grant	$ 2,049,373	$ 2,274,007
Miscellaneous Revenue	$ 2,100	-
Other	$ 7,683	$ 10,844
Gain/(Loss) on Disposition of Capital Assets	$ 38,948	($ 28,983)
Total	**$ 7,064,406**	**$ 7,122,854**

Source: GLTC Financial Report, 2018.

2.1.1.4. Vehicle Requirements

GLTC's peak vehicle requirements are shown in **Figure 2-6**. The number of vehicles in peak service are highlighted compared to the total number of vehicles available.

Figure 2-6: Peak Vehicle Requirements



Source: GLTC, 2017.

GLTC owns a total of 40 vehicles for fixed route service and 13 vehicles for paratransit services. The buses use diesel for fuel with about two-thirds being hybrid-electric diesel buses. All buses have fareboxes, destination signs, bike racks, and security cameras. GLTC also has 13 support vehicles such as trucks, vans, and sport-utility cars. **Table 2-4** through **Table 2-6** provide summaries of the fleet roster. GLTC uses the state transit asset management plan to manage their assets and determine fleet replacements.

Table 2-4: Fixed Route Bus Inventory

Quantity	Type	Year	Make	Low Floor	Seating Capacity
40	**Transit (Fixed Route)**				
1	30-foot bus (Diesel)	2000	Optima-Chance	N	24
6	35-foot bus (Diesel)	2008	Gillig	Y	28
4	35-foot bus (Diesel)	2009	Gillig	Y	28
1	35-foot bus (Diesel)	2017	New Flyer	Y	32
8	35-foot bus (Hybrid)	2007	Gillig	Y	32
6	35-foot bus (Hybrid)	2008	Gillig	Y	32
3	40-foot bus (Hybrid)	2010	Gillig	Y	37
7	29-foot bus (Hybrid)	2010	Gillig	Y	26
4	35-foot bus (Hybrid)	2012	Gillig	Y	32

Source: GLTC, 2018.

Table 2-5: Paratransit Bus Inventory

Quantity	Type	Year	Make	Low Floor	Seating Capacity
13	**Paratransit**				
6	23-foot bus (gasoline)	2016	Ford	N	16
6	23-foot bus (gasoline)	2018	Ford	Y	10
1	23-foot bus (gasoline)	2018	Ford	N	12

Source: GLTC, 2018.

Table 2-6: Support Vehicle Bus Inventory

Quantity	Type	Year	Make	Seating Capacity
13	**Support Vehicles**			
5	Explorer AWD	2017	Ford	5
2	Expedition	2017	Ford	8
2	F-250 EXT CAB 4X4	2017	Ford	4
1	F-250 SUPER CAB 4X4	2017	Ford	4
1	F-350 4X4	2005	Ford	3
2	Express Van	2017	Chevy	10

Source: GLTC, 2018.

2.1.1.5. Public and Stakeholder Outreach

Online and In-Person Survey

In 2017, GLTC developed a survey to gather feedback from the community on the existing service and desired improvements. The survey collected information on existing travel patterns, impressions of the service, and demographic data from both current customers and non-users of the service. Surveys were administered online using a web-based public engagement tool called MetroQuest, in-person at the Kemper Street Transfer Station, and through a paper version. A total of 973 people participated in the survey. Approximately 75 percent of respondents indicated they ride the bus regularly, while 25 percent said they do not use the service.

A copy of the paper survey and detailed results can be found in the **Appendix**. The results identify differences in frequency of use, reasons for riding, origins and destinations, and socioeconomic backgrounds among frequent riders, less-frequent riders, and non-riders.

FREQUENT RIDER EXPERIENCE

Survey respondents identified as frequent riders were asked to provide the route or service they most frequently take. Each fixed route and paratransit service had respondents to this question.

Frequency: Most survey respondents use the bus regularly. Of those identifying themselves as frequent riders, 82 percent ride the bus at least two days per week. This amount is slightly greater among Liberty University routes – 89 percent compared to 76 percent for City routes.

Reason for Riding: The top reasons for using the bus for riders on City routes are not having a car (40 percent), to save money (18 percent), and to save or better use time (10 percent). The top reasons for riders on the Liberty University routes are to save or better use time (30 percent), not having a car (26 percent), and it being difficult or expensive to park (16 percent). Percentages reflect the portion of all responses received to this multi-selection question.

Origin-Destination: Home represented the highest share of origins for City routes, while the University represented the highest share for Liberty University routes. The top destination responses for City routes included work, college/university, and shopping. Given that most of the Liberty University routes circulate on campus, the University also was the most common destination among these riders.

Socioeconomic Data: Frequent riders of City routes are disproportionately lower income (80 percent with a total household income below $30,000), female (60 percent), or without access to a vehicle (57 percent). Frequent riders of the Liberty University routes have somewhat similar characteristics (50 percent with a total household income below $30,000 and 73 percent female), but with greater access to vehicles (12 percent without a vehicle in their household).

LESS FREQUENT RIDER EXPERIENCE

GLTC has experienced a declining ridership trend. Part of the survey identified why customers may be riding the bus less frequently than they used to ride. A summary of the responses is shown in **Table 2-7**. A reduction in weekend service and the availability and attractiveness of other travel options are the top reasons for riding less often. An erosion of time competitiveness of transit compared to other modes also has likely contributed to ridership decline, with many respondents desiring more direct service that is easy to use. The transfer center relocation and recent fare changes were cited less frequently; 24 responses were recorded for each of these reasons.

Respondents were asked "what could GLTC do to encourage you to ride the bus more often?". Free-form responses were used to generate the word cloud shown in Figure 2-7; larger words appeared more frequently in responses.

Table 2-7: Reported Reasons for Riding the Bus Less Frequently Than Before

Reasons for Riding the Bus Less Frequently	Response Frequency
Weekend service reduced	17%
I use other travel modes (walking, biking, Uber/Lyft, taxi)	17%
I get a ride from a friend	15%
Other	14%
I prefer to drive	14%
Evening service reduced	11%
Transfer center was relocated	5%
Fare changes	5%
Gas has become cheaper	3%

Source: GLTC Public Outreach Survey Results, 2017.

Figure 2-7: What could GLTC do to encourage you to ride the bus more often?

NON-RIDER EXPERIENCE

Approximately 25 percent of survey respondents indicated they do not ride the bus in Lynchburg. Understanding their impressions of GLTC and transit will help identify what improvements may be needed to attract new customers to the service. **Table 2-8** shows a summary of reasons for not riding the bus. Nonriders think it takes too long to use the bus to get where they need to go, or the existing routes do not service the locations they are going. Many prefer the experience of driving over using transit or need the flexibility of having a car. A total of 42 respondents said they do not know how to use the service.

Respondents were asked "what could GLTC do to attract you to use public transit?". Free-form responses were used to generate the word cloud shown in **Table 2-8** larger words appeared more frequently in responses. Providing more frequent and direct service was the most common response.

Table 2-8: Reported Reasons for Not Riding the Bus

Reasons for Not Riding the Bus	Response Frequency
It takes too long or isn't frequent enough	27%
I prefer to drive	16%
It doesn't go where I need it to	15%
I need a car because my schedule varies a lot	13%
I don't know how to use the service	8%
I prefer to use other travel modes	7%
Cost	6%
Other	5%
I didn't know the service existed	3%

Source: GLTC Public Outreach Survey Results, 2017.

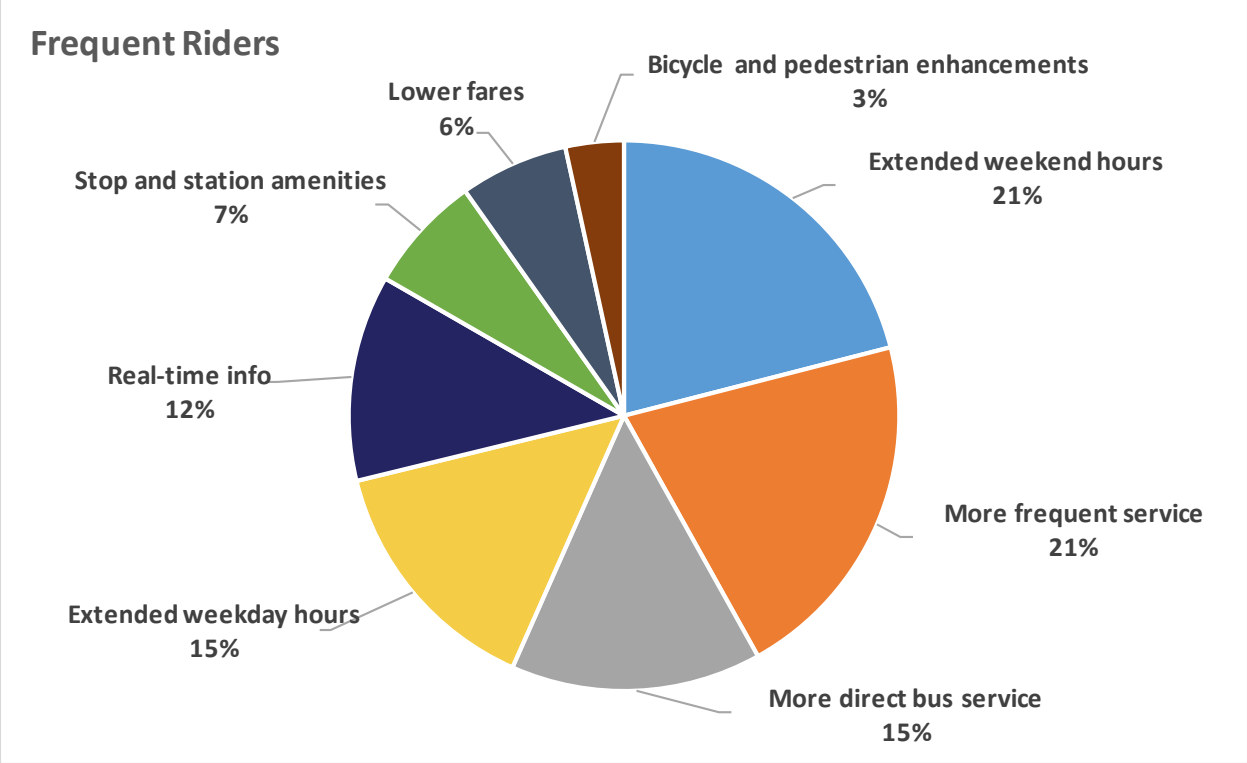
Figure 2-8: What could GLTC do to attract you to use public transit?

IMPROVEMENTS

One section of the survey identified priorities for improvement. Survey participants were instructed to allocate a $100 budget into eight different spending categories for making improvements to the service. This question recognized that GLTC works with a limited budget and collected feedback on the priorities of the respondent. Allocated budgets were totaled for each category to generate the charts shown in **Figure 2-9** and **Figure 2-10**. for frequent riders and non-riders, respectively, which show the percentage allocated to each category. Data from other rider categories including students and transit dependent (i.e., without access to a vehicle) are included in the **Appendix**.

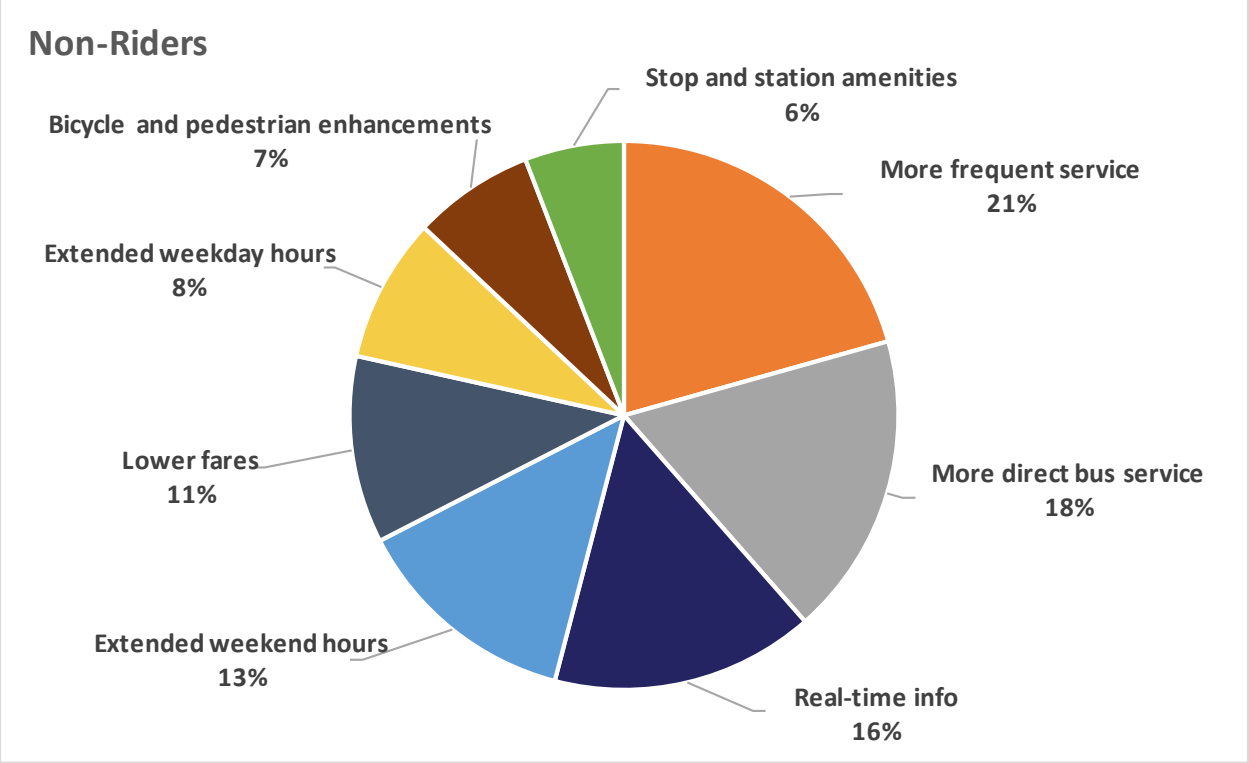
Extended weekend hours, more frequent service, and more direct service are top priorities for every category of respondents, with similar priorities for users of City routes and Liberty University routes. Non-riders also desire user-friendly, real-time information on bus arrivals to make the service easier to use. Respondents without a vehicle in their household prioritized extended weekend and weekday hours.

Figure 2-9: Priorities for Frequent Riders



Source: GLTC Public Outreach Survey Results, 2017.

Figure 2-10: Priorities for Non-Riders



Source: GLTC Public Outreach Survey Results, 2017.

Stakeholder Interviews

Stakeholder interviews were conducted in Fall 2017, with key individuals from local governments, higher education institutions, economic development organizations, and customer input groups. Outreach also included a work session at the GLTC Board Meeting in October 2017. The purpose of the outreach was to understand priorities from existing and potential riders.

LOCAL GOVERNMENTS

Outreach was made to the City of Lynchburg, and the counties of Amherst, Bedford, and Campbell. Both Campbell and Bedford Counties were not seeking additional public transit service or greater involvement with GLTC at the time of interview. The City of Lynchburg is proposing improvements to pedestrian facilities that would improve safety and accessibility to bus stops. The City also sees frequent service to downtown being critical to the growth and expansion of the area. Amherst County indicated that users of the existing service in the county are generally those that have no other transportation options. There also is a desire to increase the awareness and visibility of GLTC services offered to Amherst County.

HIGHER EDUCATION INSTITUTIONS

Outreach was made to Liberty University, University of Lynchburg, Central Virginia Community College, and Randolph College. The institutions with UPASS agreements with GLTC, which allow students and staff to ride GLTC buses for free with a valid University ID, see a benefit to this partnership but desire more robustness in ridership data being collected. More direct service to major activity centers are

desired by students, and most of the institutions feel that more targeted marketing is needed to message that the bus is a travel option for everyone in Lynchburg. The use of technology to make the service easier to use and provide user-friendly information also is seen as an opportunity for improvement.

Liberty University, which is a major partner with GLTC, has a long-term vision to reduce or eliminate most on-campus bus routes while creating a safe and walkable core to the campus. Off-campus routes, a route circulating the exterior of campus, and service to parking areas will likely continue to be needed in the future. Travel between off-campus housing locations and campus is not expected to increase significantly unless the current enrollment cap is lifted in the future.

ECONOMIC DEVELOPMENT ORGANIZATIONS

Outreach was made to the Lynchburg Regional Business Alliance, the Downtown Lynchburg Association, and the Economic Development Authority. Having GLTC service in Lynchburg is an asset to recruiting new businesses to the area. Businesses with multiple shifts have reported difficulty having employees that rely on transit work late shifts given the current service hours of GLTC. There also is a need for nighttime transportation options to get to and around downtown. Overall, the organizations indicated that more collaboration between GLTC and the business community is an opportunity for improvement. These relationships could foster future partnerships between businesses and GLTC to support new or extended service.

2.2. Evaluation of Transit Market Demand and Underserved Areas

2.2.1. Transit Demand Evaluation

To determine areas with current and future demand for transit service, GLTC reviewed the current and future geographical distribution of population and employment in the region. The distribution of specific demographic groups in the region, including older adults, minority populations, low-income households, populations with limited English proficiency, and individuals with disabilities, was also investigated to ensure equitable provision of services and to address demand from populations that are typically more dependent on transit service. Spatial analysis of population, employment, and demographic distribution was supplemented by results from GLTC's 2017 survey related to trips taken by frequent transit users and trips taken by infrequent transit users.

2.2.1.1. Population and Employment

As noted in **Section 2.1.1.1**, GLTC currently serves 72 square miles and a population of 80,846 residents, or 1,123 residents per square mile.[2] GLTC currently provides route coverage to all of the existing higher density areas, as defined by a combination of employment and population per acre, or activity density, shown in **Figure 2-11**.

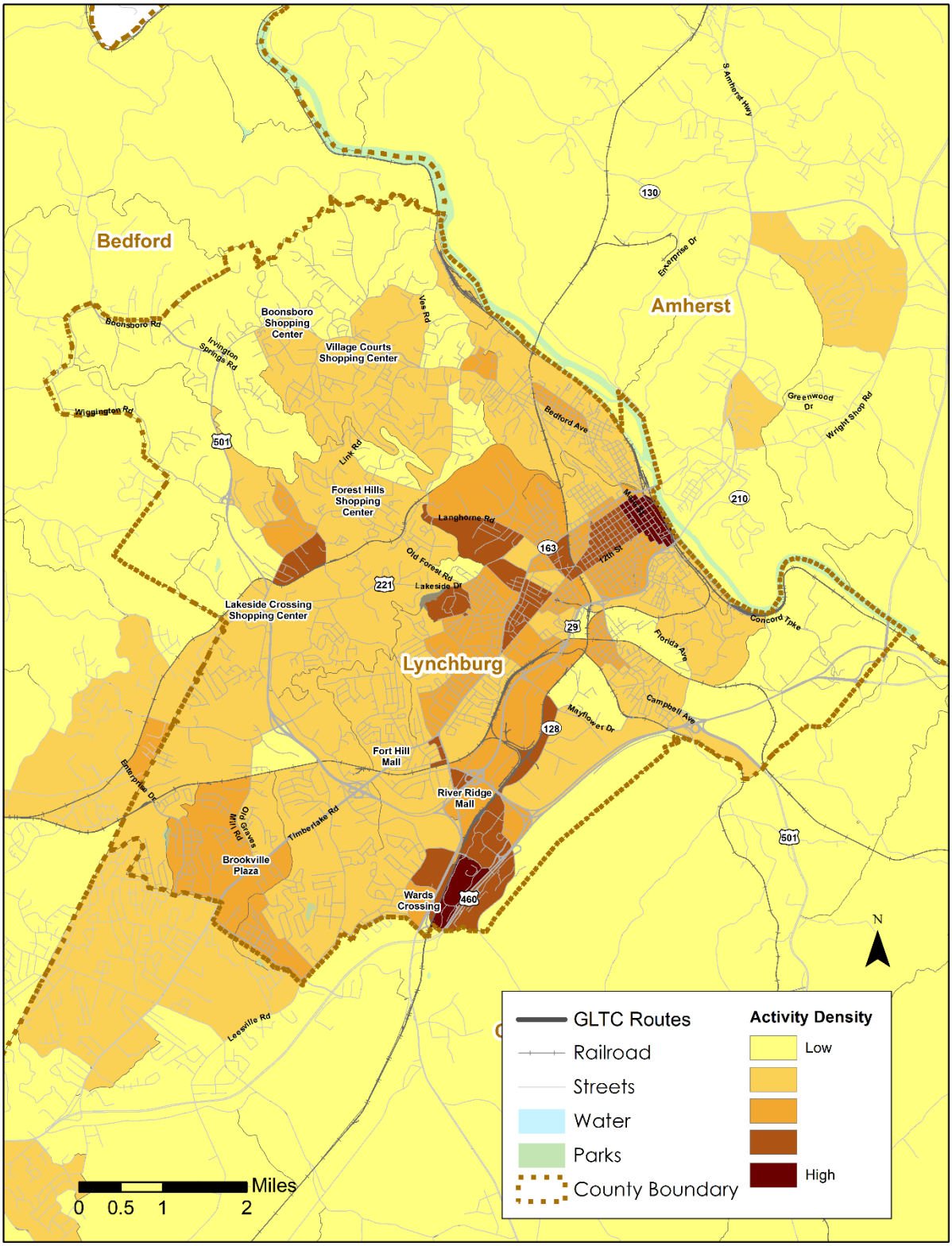
Expected population and employment levels in 2028 are shown in **Figure 2-12** and **Figure 2-13**. Major employment activity is expected to continue to concentrate along Wards Road and downtown Lynchburg.

[2] Source: 2017 National Transit Database

Population density in Lynchburg is concentrated in similar areas as employment, as shown in **Figure 2-13**. Downtown is expected to continue to be one of the most densely populated areas in the city. In addition, the eastern side of Wards Road in the southeastern portion of the City is expected to have relatively high population densities due to proximity to Liberty University. The area near the Lakeside Drive and Old Forest Road intersection also is expected to have relatively high population density by the year 2028.

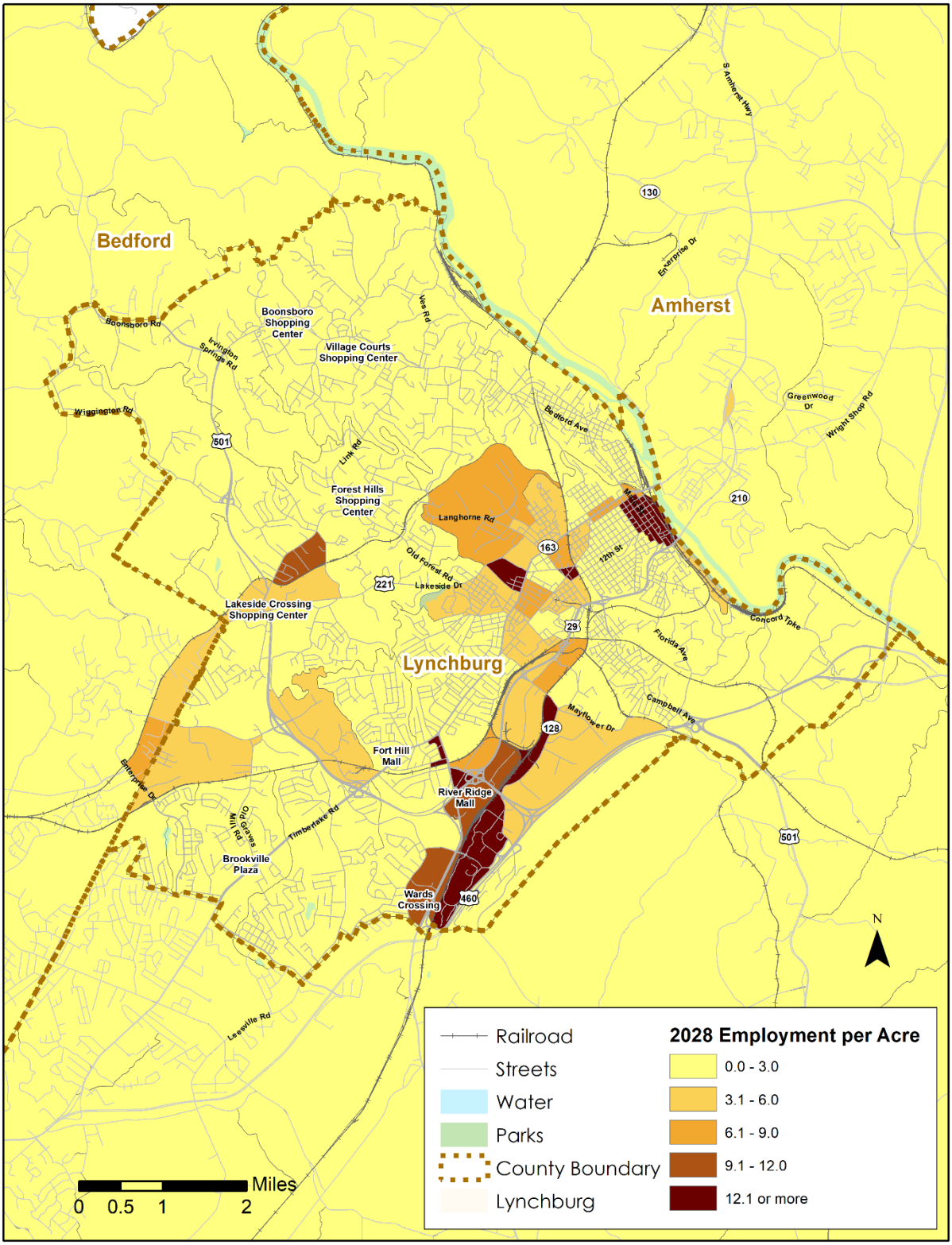
Population change, calculated by taking the difference between 2018 and 2028 population levels, is shown in **Figure 2-14**. Population growth within the Lynchburg service area is expected along Lakeside Drive, western Lynchburg near Enterprise Drive, Liberty University South, the Doral Acres/Windsor Hills areas, and others. Some loss of population is expected in the Perkins Park area and much of Amherst County.

Figure 2-11: Existing Activity Density



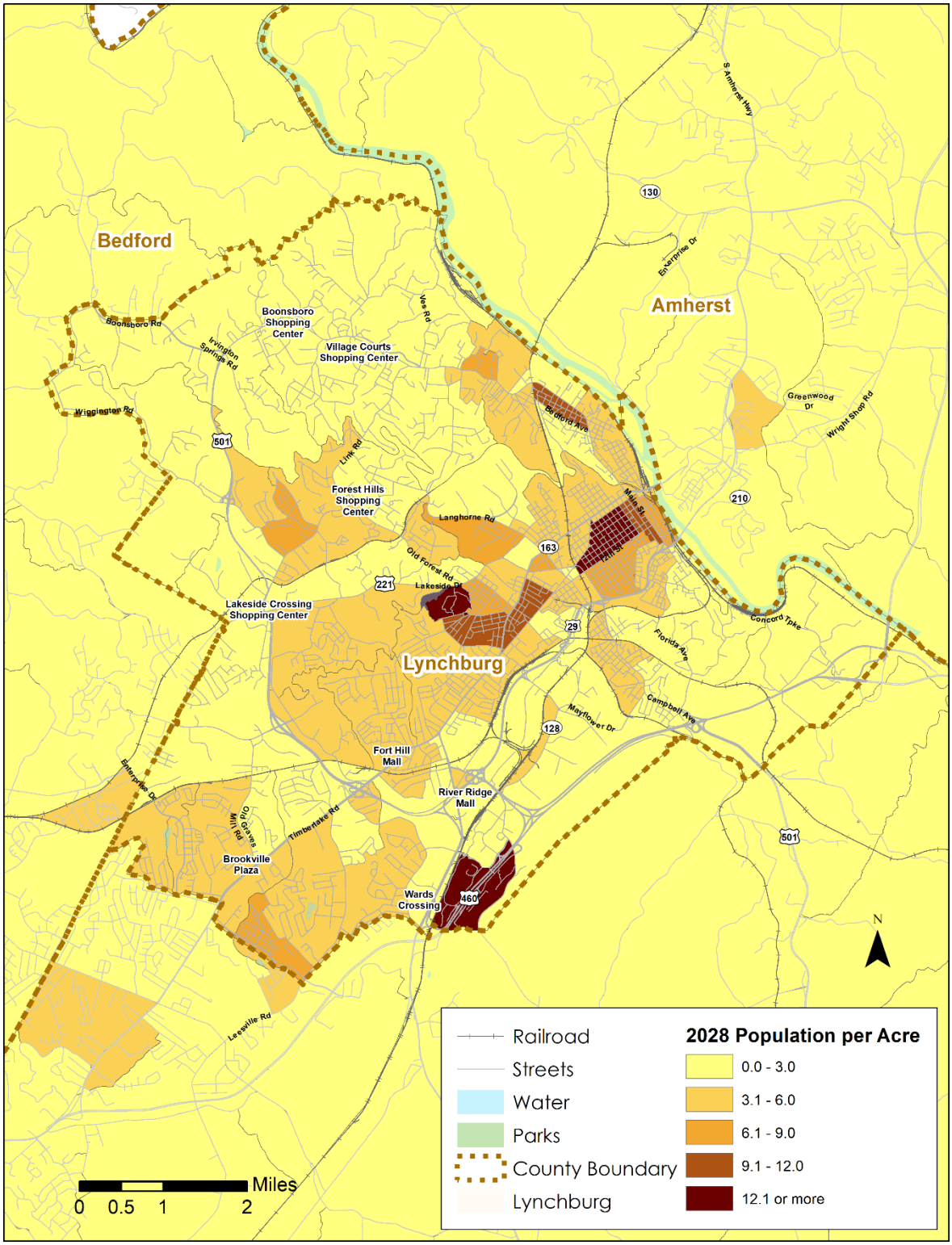
Source: Central Virginia Planning District Commission, 2018.

Figure 2-12: Year 2028 Employment



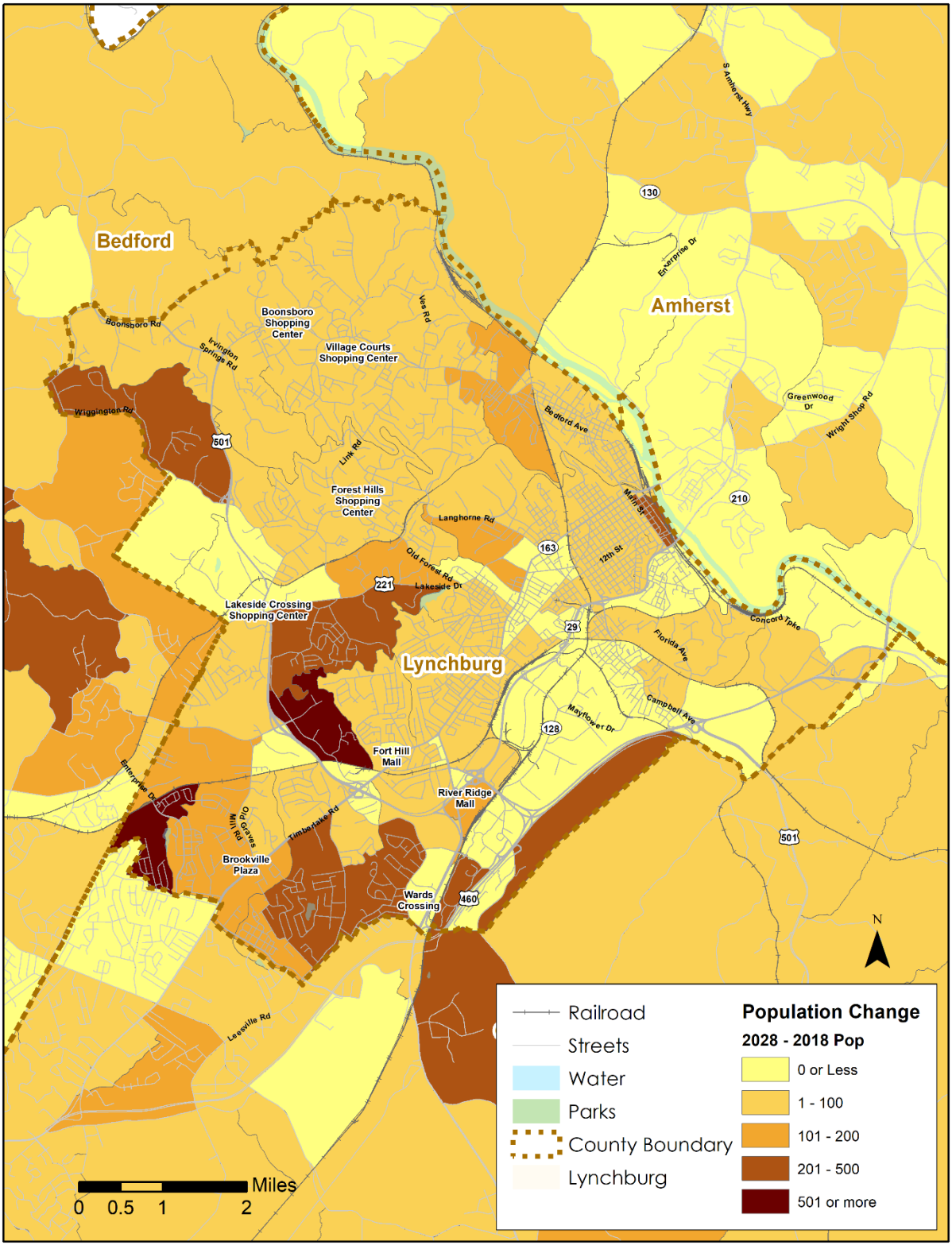
Source: Central Virginia Planning District Commission, 2018.

Figure 2-13: Year 2028 Population



Source: Central Virginia Planning District Commission, 2018.

Figure 2-14: Year 2028 Population Growth



Source: Central Virginia Planning District Commission, 2018.

2.2.1.2. Demographics

Senior Citizen Populations

The senior citizen population has a lot of potential as a transit market, which is why it is mapped here. **Figure 2-15** shows the percentage of population 65 years of age and older in Lynchburg, which appears to be most concentrated in northern Lynchburg, north and south of Rivermont Avenue. Additionally, the elderly population is concentrated near the Lynchburg Expressway and Timberlake Road interchange.

Minority Populations

To ensure equitable provision of service and fulfill GLTC's commitment to full compliance with Title VI of the Civil Rights Act of 1964, transit service must be provided in a manner that does not exclude minority populations. The concentration of minority populations in the greater Lynchburg region are mapped in **Figure 2-16** to ensure that changes to service are not disproportionally and adversely impacting minority populations. On average, the minority populations of the greater Lynchburg area account for 27.9 percent of all residents. Higher concentrations of minority populations reside: near Lynchburg College, north of US Route 221; in neighborhoods surrounding downtown Lynchburg; southwest of Liberty University, near Wards Crossing; and in Madison Heights in Amherst County.

Populations with Limited English Proficiency

Populations with limited English proficiency also must be considered to ensure equitable provision of service. The concentration of these populations in the greater Lynchburg area are mapped in **Figure 2-17**. While the populations of residents with limited English proficiency account for 2.1 percent of all residents in the greater Lynchburg area, higher concentrations of these populations can be found: in the Blue Ridge Farms neighborhood, near Peaks View Park; in the Fort Hill neighborhood, northwest of Liberty University; and in the Richland Hills neighborhood, near the interchange of US Route 501 and US Route 460-Business.

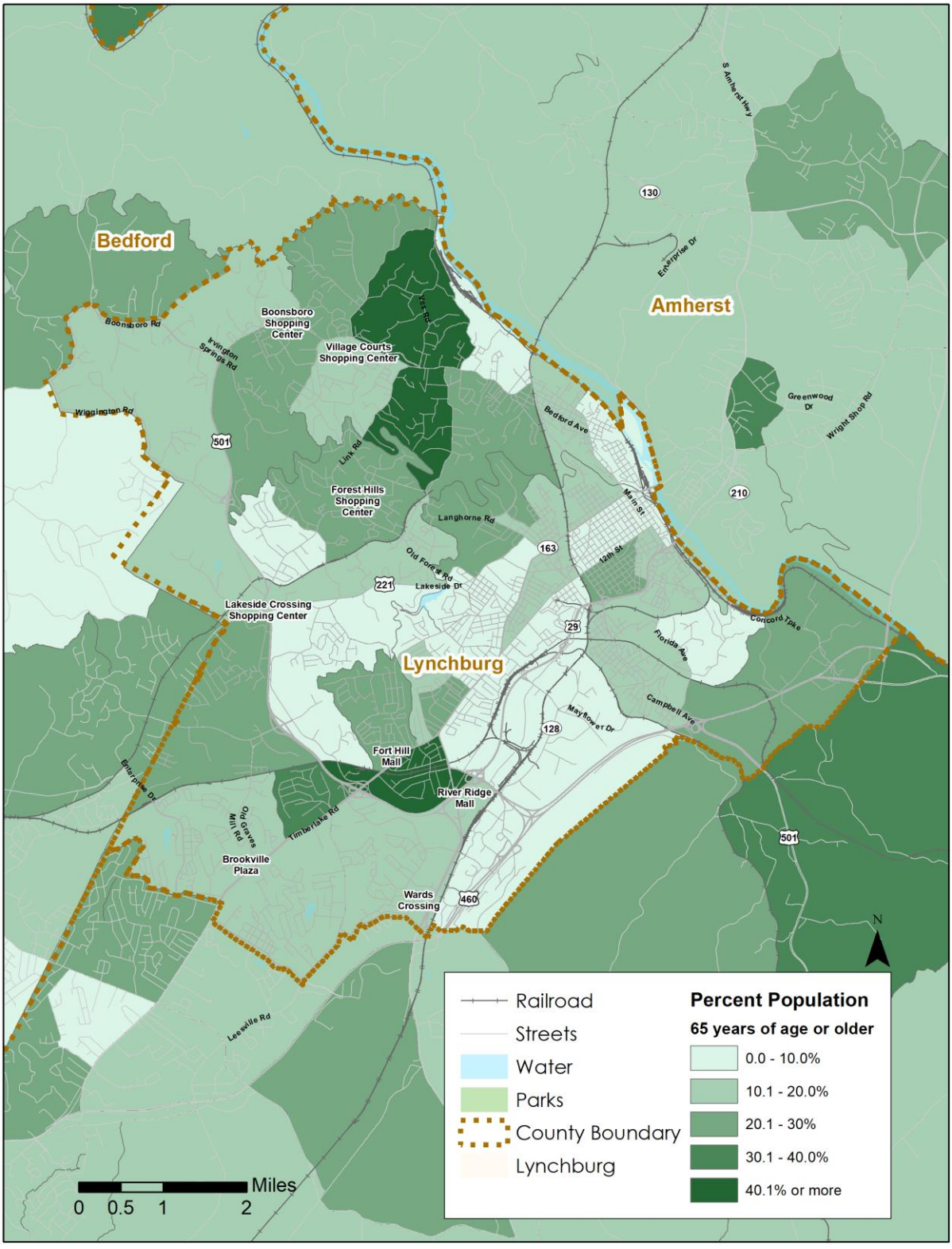
Households in Poverty

Households experiencing poverty, described as having annual household income below the federal poverty guidelines, may be more reliant on public transportation due to the costly expenses related to automobile ownership. To ensure provision of transit service to these households, concentrations of households in poverty in the greater Lynchburg area are mapped in **Figure 2-18**. On average, 16.2 percent of households in the greater Lynchburg area are experiencing poverty, with the highest concentration of these households located: in the Miller Park neighborhood, south of downtown Lynchburg; in the Winston Ridge area, east of downtown Lynchburg along the James River; and in the area around Lynchburg College.

Populations with Disabilities

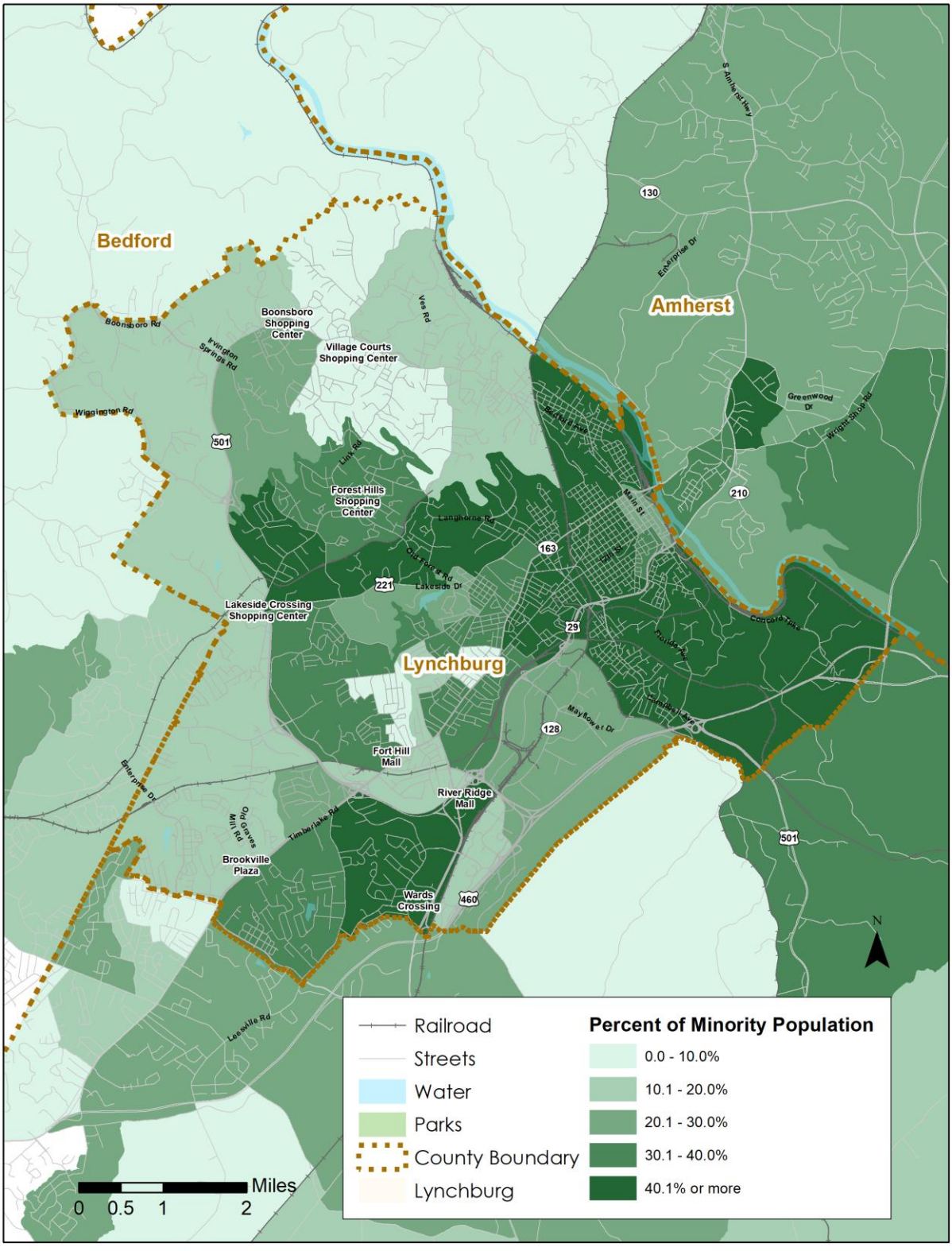
Populations with disabilities may be more reliant on public transportation, either due to physical difficulties or costly expenses associated with automobile ownership and operation. To ensure provision of transit service to these individuals, concentrations of populations with disabilities are mapped in **Figure 2-19**. On average, 13.9 percent of residents in the greater Lynchburg area have disabilities and the highest concentrated populations of individuals with disabilities are located: north of the James River in Madison Heights; in the Winston Ridge area, east of downtown Lynchburg along the James River; and north of downtown in the Rivermont neighborhood, near Riverside Park.

Figure 2-15: 2013-2017 American Community Survey Population 65 Years and Older



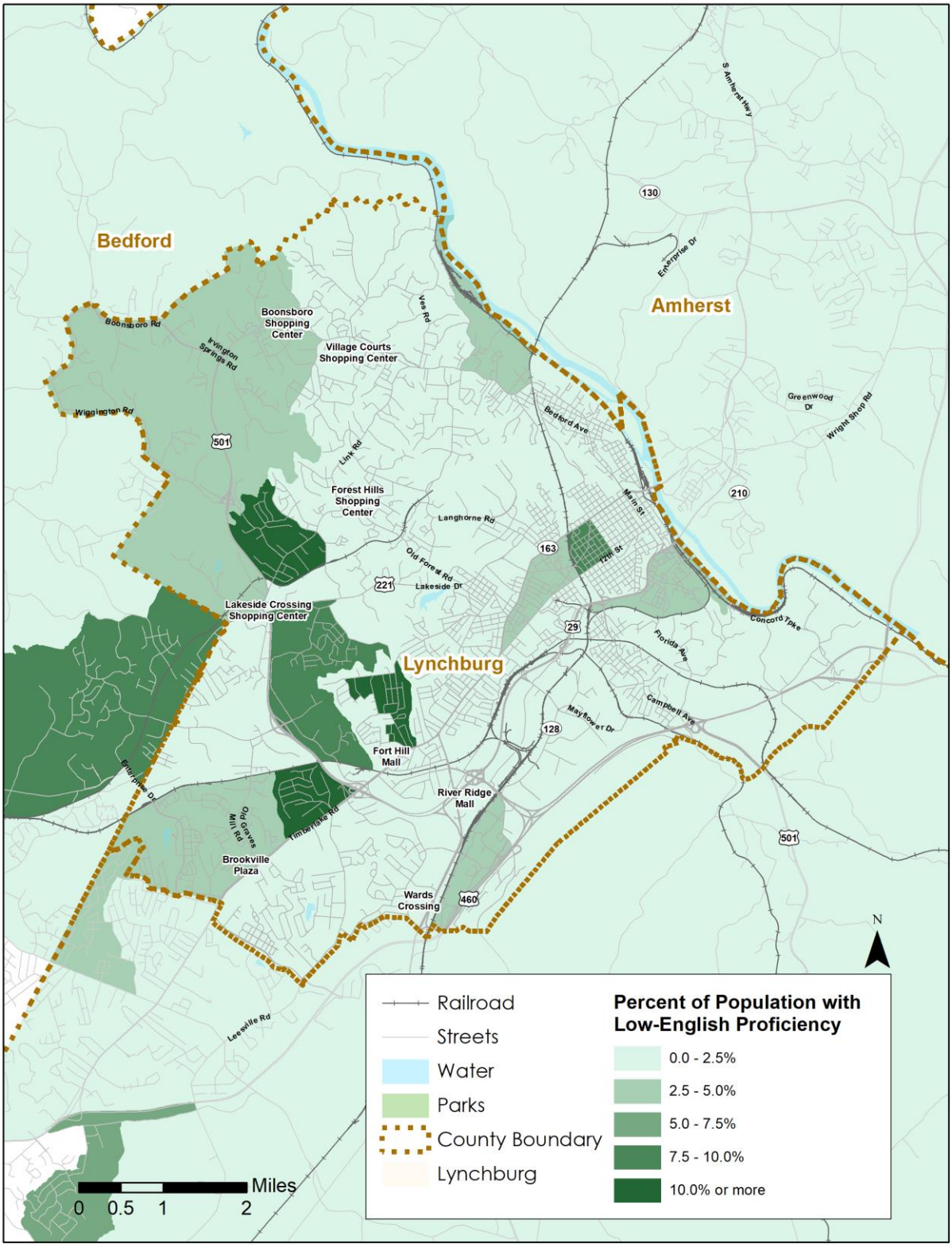
Source: Central Virginia Planning District Commission, 2018.

Figure 2-16: 2013-2017 American Community Survey Minority Populations



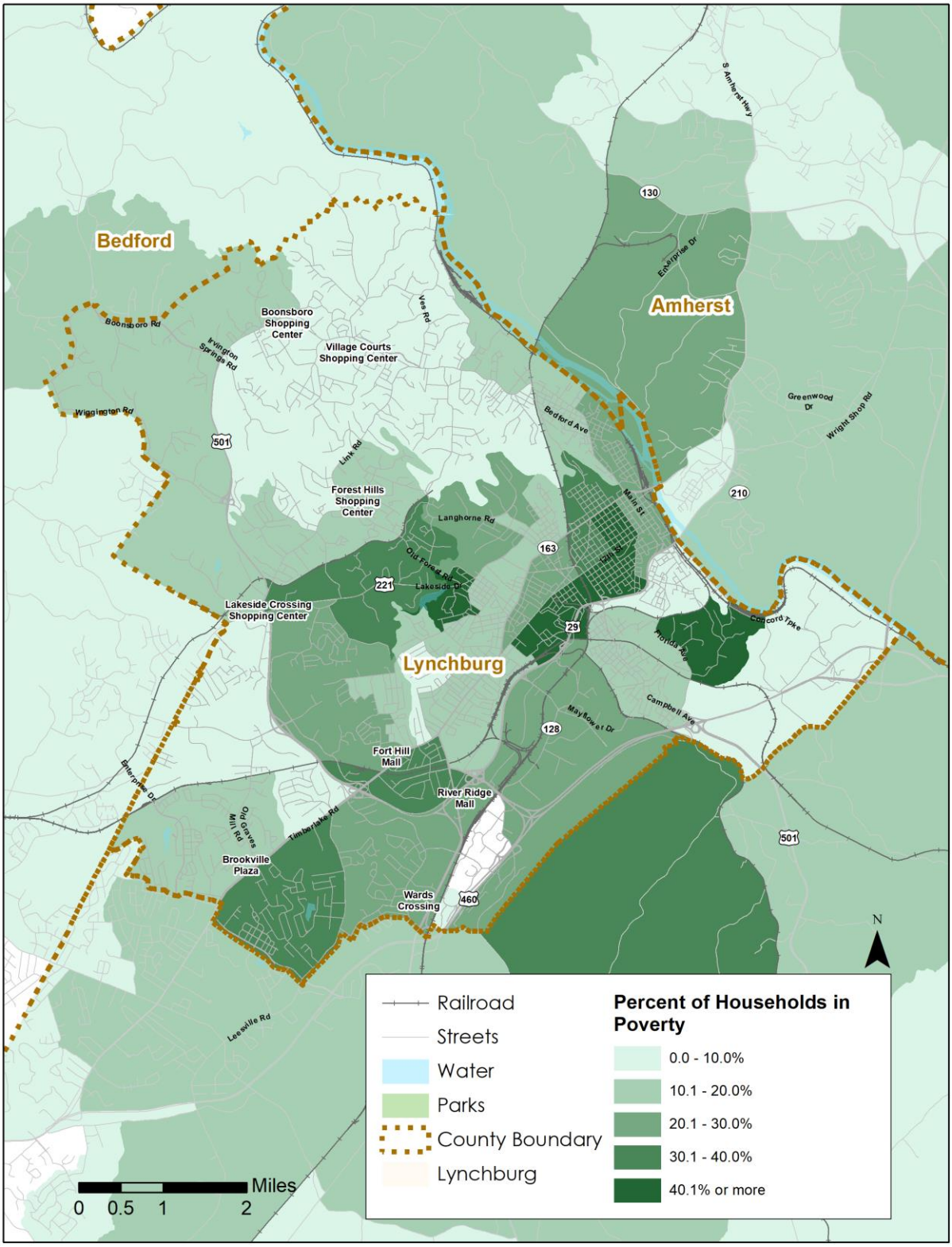
Source: Central Virginia Planning District Commission, 2018.

Figure 2-17: 2013-2017 American Community Survey Populations with Low English Proficiency



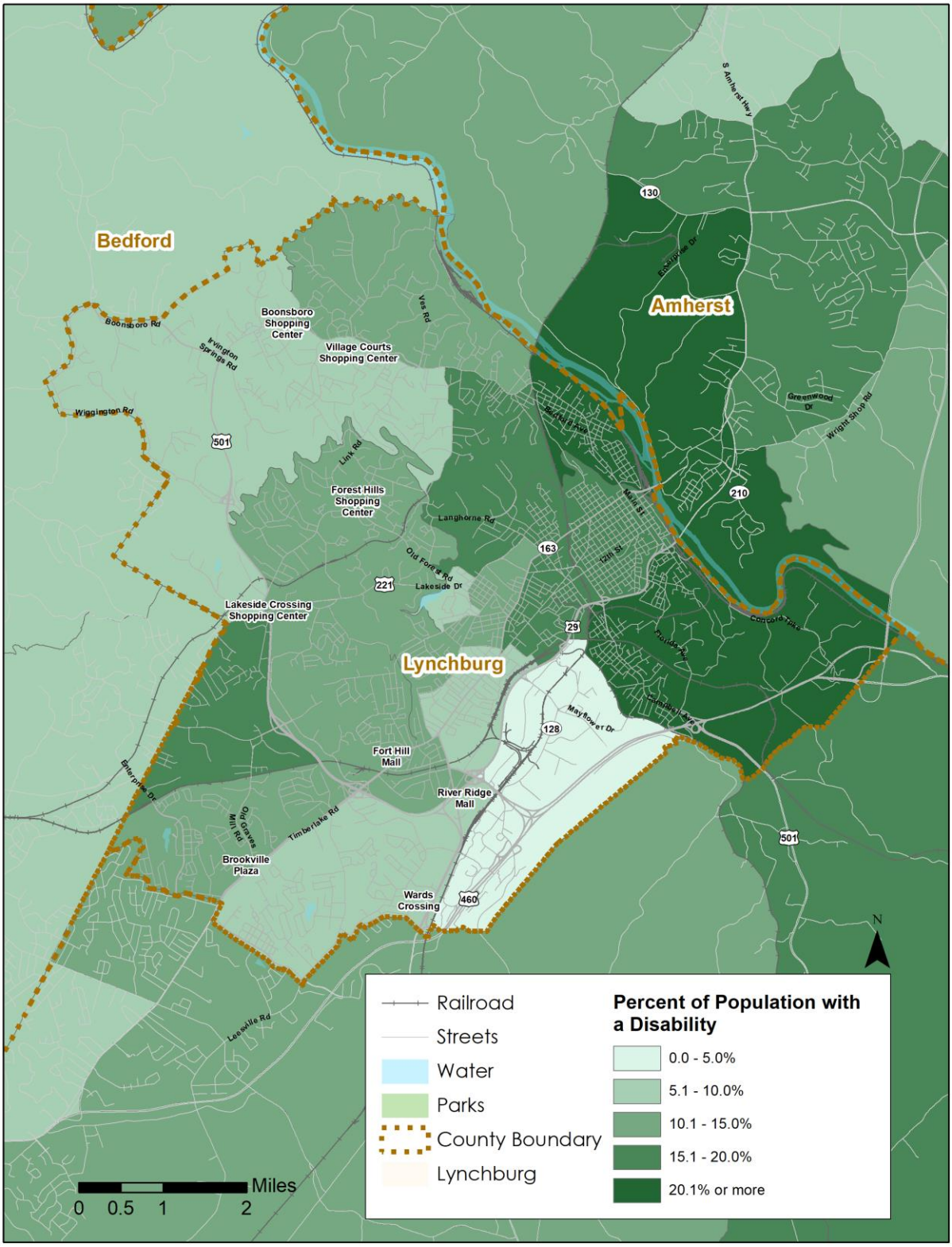
Source: Central Virginia Planning District Commission, 2018.

Figure 2-18: 2013-2017 American Community Survey Households Experiencing Poverty



Source: Central Virginia Planning District Commission, 2018.

Figure 2-19: 2013-2017 American Community Survey Populations with Disabilities



Source: Central Virginia Planning District Commission, 2018.

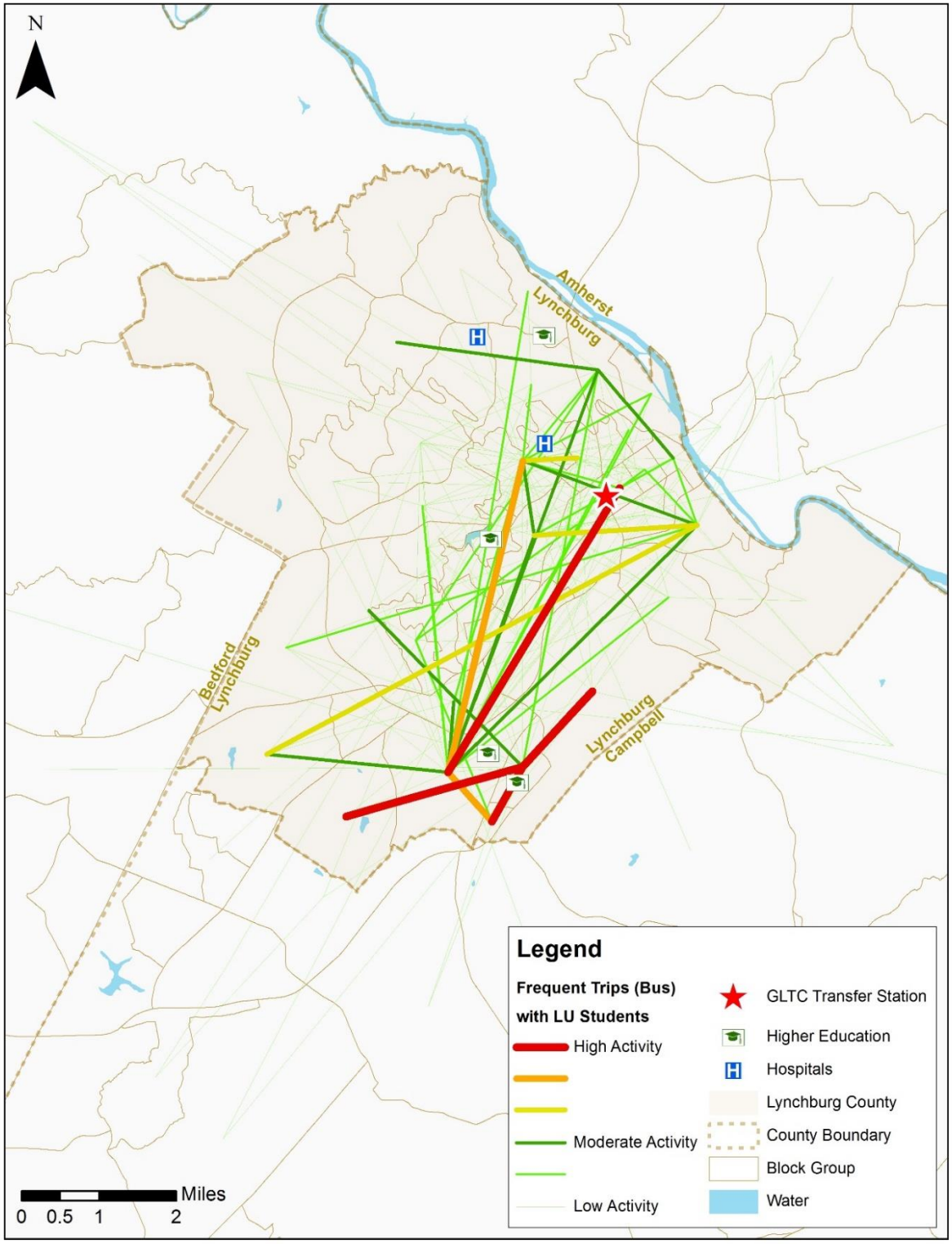
2.2.1.3. Trips Identified by Survey

The 2017 GLTC survey described in **Section 2.1.1.5** identified respondents' travel patterns including home and frequent destination locations. This also included information on the purpose and mode of the trip. For trips that are frequently made on modes other than bus, respondents were asked if they would consider taking the bus for that trip if service was improved to that area.

Home and destination locations were clustered to block groups, and frequent origin-destination pairs were identified. For analysis, it was assumed that all trips were home-based trips. **Figure 2-20** shows frequent transit trips. Major origin-destination pairs include:

- Kemper Street Transfer Station – Wards Road
- Cornerstone – Liberty University
- Liberty University Central Campus – South Campus
- Liberty University Central Campus – North Campus
- Liberty University South Campus – Wards Road
- Centra Lynchburg General Hospital/Neighboring Apartments – Wards Road
- White Rock Hill – Enterprise Drive
- White Rock Hill – Westend

Figure 2-20: Frequent Trips by Bus



Source: GLTC Public Outreach Survey Results, 2017.

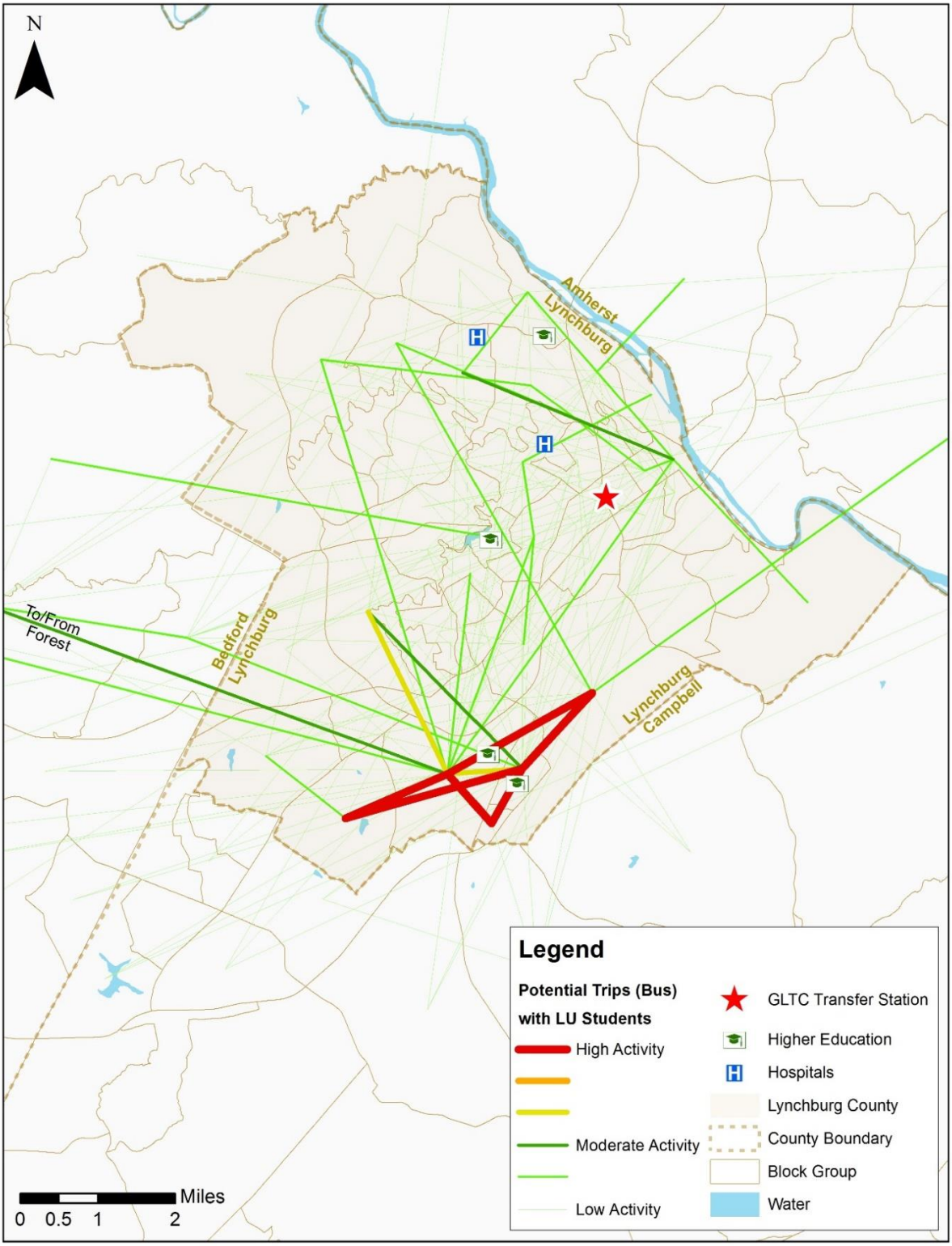
For trips that are frequently made on modes other than bus, respondents were asked if they would consider taking the bus for that trip if service was improved to that area.

Figure 2-21 shows frequent trips by other modes, but also where respondents indicated they would consider using transit if service was improved. Major origin-destination pairs include:

- Cornerstone – Liberty University
- Liberty University Central Campus – South Campus
- Liberty University Central Campus – North Campus
- Liberty University South Campus – Wards Road
- Wards Road – Forest Road Shopping/Lakeside Drive Apartments
- Liberty University – Forest Road Shopping/Lakeside Drive Apartments
- Forest – Wards Road
- Downtown – The Village Courts Shopping Center/Rivermont Avenue

This analysis with and without Liberty University students yielded similar results with the exception of a few origin-destination pairs near campus. Additional maps are included in the **Appendix**.

Figure 2-21: Frequent Trips by Other Modes that Could Potentially be Served by Bus



Source: GLTC Public Outreach Survey Results, 2017.

2.2.2. Transit Demand and Underserved Area Opportunities for Improvement

2.2.2.1. Potential High Transit Demand Areas and Underserved Needs

Liberty University is an area of high transit demand and, based on projections of population and employment growth, will continue to be a major source of transit demand in the future. The existing ridership for LU routes accounts for almost double the ridership on other GLTC routes. However, LU has reconstructed large portions of their campus to improve walkability, so trips within campus will not require the same level of service as they have in the past. LU has reduced the amount of buses serving the campus in recent years and anticipates further cuts to contracted GLTC services in the future. These cuts could result in underservice of the transit demand in the area. Additionally, the degree to which service will be cut in the future has yet to be determined, which creates additional uncertainty for GLTC and its ability to plan for underserved needs in the campus area. Transit demand for trips to and from Liberty University will continue to be high and would benefit from realignment of some nearby routes to provide more direct services.

The residential area between Route 6/7 and Routes 8A/8B south of Lakeside Drive may become an area of higher transit demand in the next ten years. Population growth for the area is anticipated to be high and current residents include significant populations with limited English proficiency and households living in poverty. Trips from the area that are currently being taken by bus are largely to the area near Liberty University, which requires at least one transfer. Residents have indicated that additional trips by bus would be taken to Liberty University if better service was provided. Additionally, residents indicated a preference for trips to be made available to Wards Crossing.

The Winston Ridge neighborhood is currently served by Route 2. This residential area is at the end of the line and contains high proportions of minority residents, populations with disabilities, and households living in poverty. Residents tend to use the bus for trips to downtown Lynchburg, the Miller Park area, and commercial and industrial areas in the southwest of the city. These trips require a long ride, which could be shortened if a connection on Florida Avenue to the nearby Route 1A/1B was made. Realignment of Route 1A/1B could also improve the speed of rides to this portion of the service area. GLTC is currently performing a survey to gauge interest in making this connection at the direction of Lynchburg City Council.

2.2.2.2. Potential Low Transit Demand Areas and Overserved Needs

Most locations that may appear to have low transit demand and overserved needs, according to population and density, demographic data, or survey responses, serve important industrial centers and large-scale community resources, such as the Virginia Department of Behavioral Health and Developmental Services' Central Virginia Training Center in Amherst County or the Lynchburg Regional Airport in Campbell County.

One potential area that may need consideration is served by Route 5X in Amherst County along Wright Shop Road. Route 5X does serve populations with disabilities and minority populations and provides connections to the Virginia Department of Behavioral Health and Developmental Services' Central Virginia Training Center; however, the area along Wright Shop Road has low existing population and employment density and anticipated growth in the area is limited. Survey responses related to existing and potential trips to this area were also minimal.

2.3. Performance Evaluation

2.3.1. Performance Evaluation

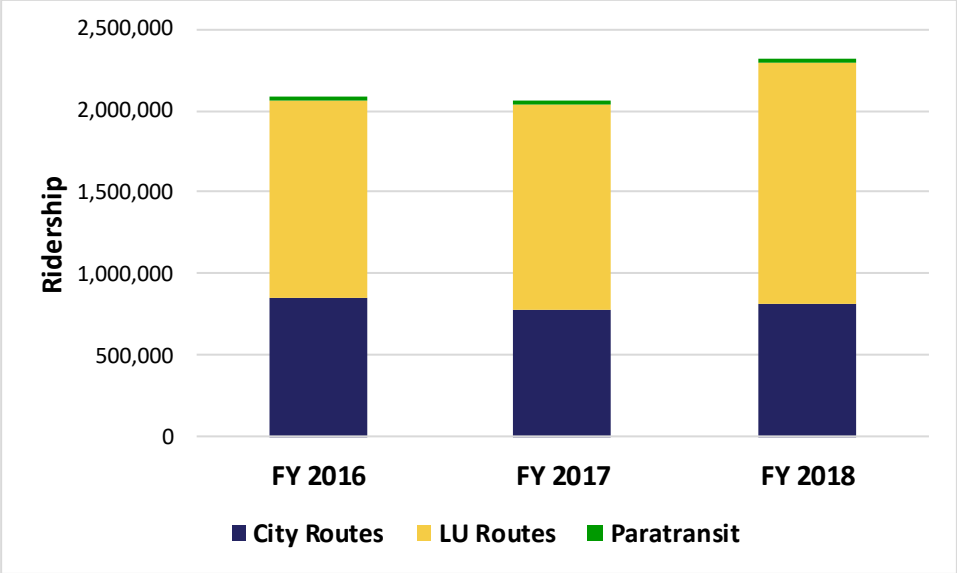
Based on available data from GLTC, performance of the system was evaluated, considering system ridership, cost efficiency, safety, and accessibility through 2018.

Ridership and Cost Efficiency

A 3-year performance trend was evaluated for fiscal years 2016 to 2018. This evaluation includes:

- Ridership trend (**Figure 2-22** and **Table 2-9**)
- Net cost per passenger trend (**Figure 2-23)**
- Fare box recovery ratio trend (**Figure 2-24**)
- Passengers per revenue hour trend (**Figure 2-25**)
- Passengers per revenue mile trend (**Figure 2-26**)

Figure 2-22: Ridership Trend Analysis



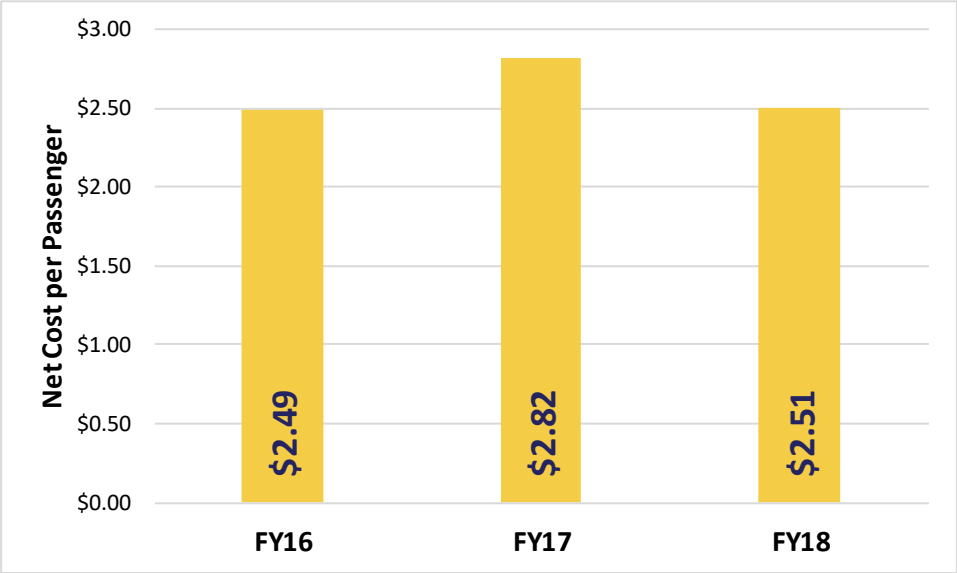
Source: GLTC, 2019.

Table 2-9: Ridership Trend Analysis

Service	FY 2016	FY 2017	FY 2018	Percent Change (2016-2018)
City Routes	857,032	775,717	815,955	-5%
LU Routes	1,201,679	1,262,393	1,475,452	23%
Paratransit	25,803	25,786	22,326	-13%
Systemwide	**2,084,514**	**2,063,896**	**2,313,733**	**11%**

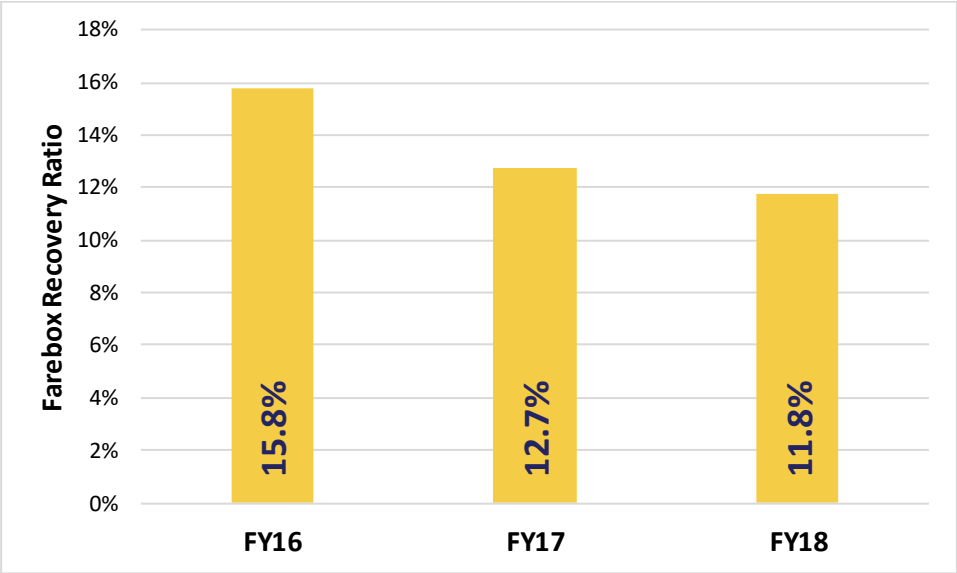
Source: GLTC, 2019.

Figure 2-23: Net Cost Per Passenger Trend Analysis



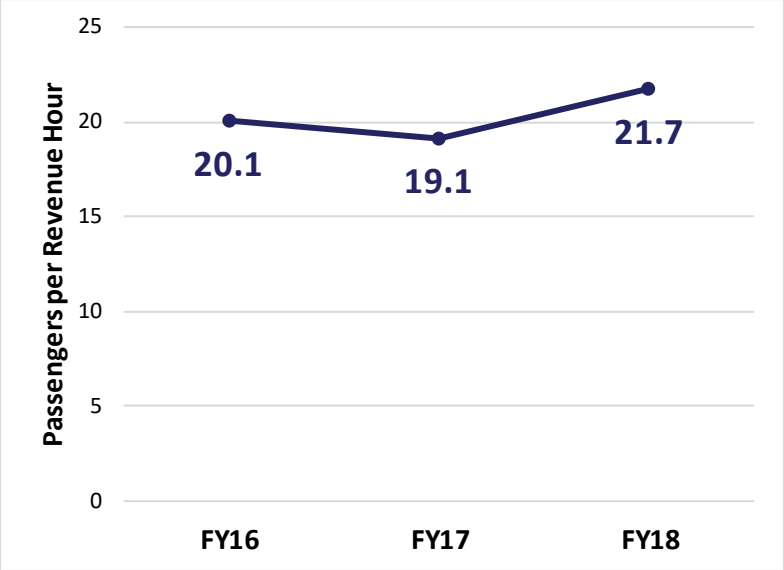
Source: GLTC, 2019.

Figure 2-24: Fare Box Recovery Ratio Trend Analysis



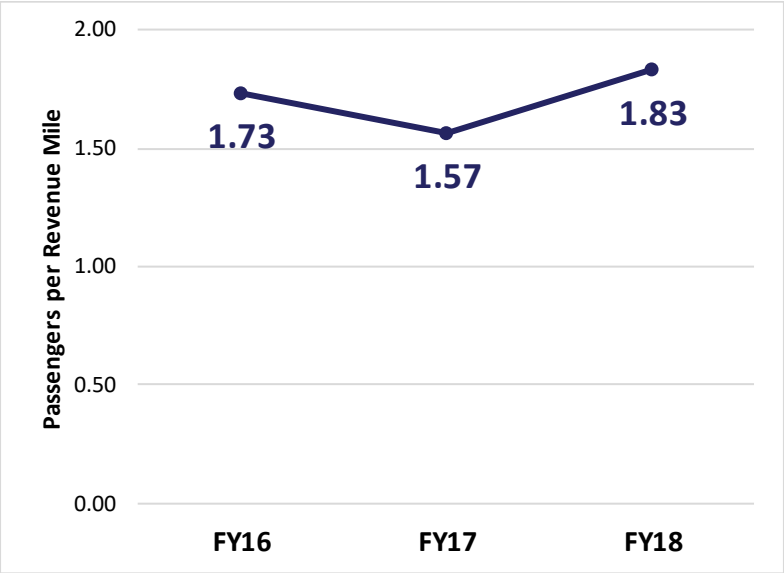
Source: GLTC, 2019.

Figure 2-25: Passengers Per Revenue Hour Trend Analysis



Source: GLTC, 2019.

Figure 2-26: Passengers Per Revenue Mile Trend Analysis



Source: GLTC, 2019.

Safety and Maintenance

Over the course of 2018, GLTC vehicles were involved in 27 crashes or 2.46 per 100,000 miles. This rate of crashes is over twice the GLTC goal of fewer than one crash per 100,000 miles.

GLTC vehicles experienced 34 breakdowns during 2018, with an average of 32,290 miles between breakdowns. This rate of breakdowns is generally better than the preventative maintenance mileage intervals for GLTC's vehicles, which meets GLTC's goal for system safety.

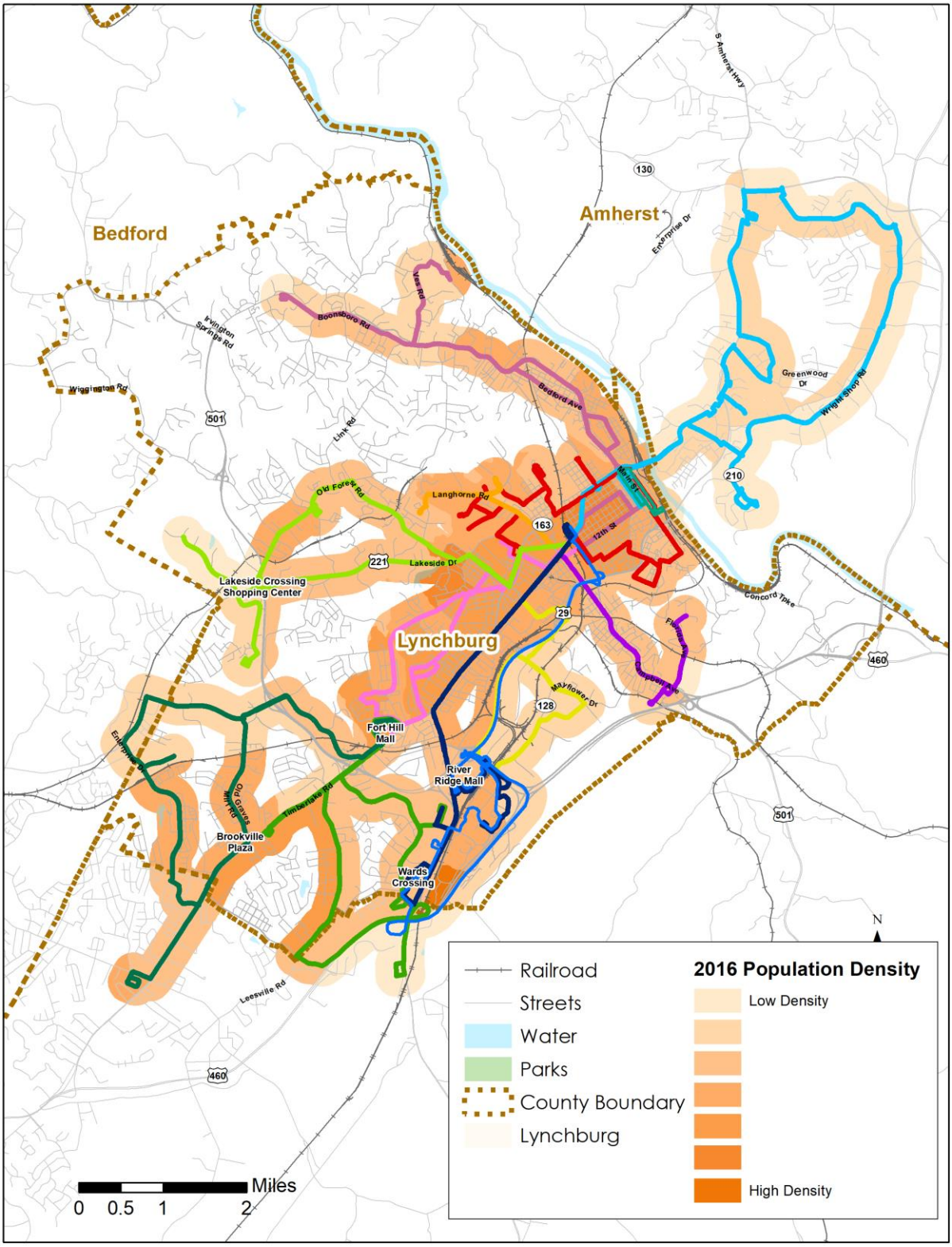
System Accessibility

GLTC routes serve approximately 60,200 residents within ¼ mile of service, which accounts for nearly 75 percent of the population included in the service area reported in the National Transit Database. The distribution of population density within ¼ mile of service is shown in **Figure 2-27**.

GLTC routes provide access to approximately 40,500 jobs within ¼ mile of service, or over 60 percent of all jobs located in census tracts served by GLTC service. The distribution of employment density within ¼ mile of service is shown in **Figure 2-28**.

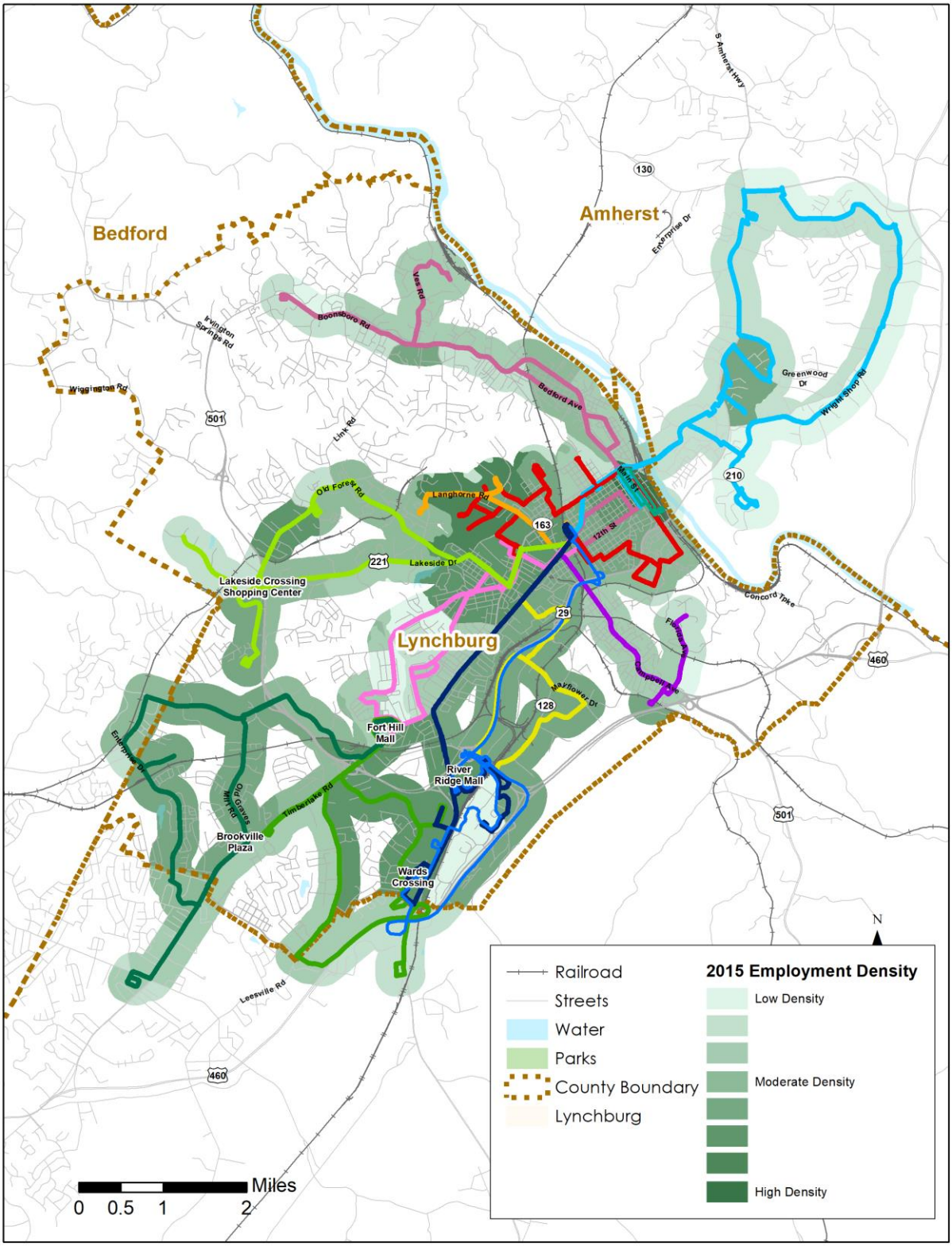
While most of the City of Lynchburg does have access to transit within ¼ mile, areas northwest of downtown have limited coverage, as do the less dense areas outside of city limits. Areas currently served directly by GLTC routes that have lower population and employment densities include industrial park areas, such as those found on Jefferson Ridge Parkway north of the Lakeside Crossing Shopping Center, and large-scale community resources, such as the Virginia Department of Behavioral Health and Developmental Services' Central Virginia Training Center in Amherst County or the Lynchburg Regional Airport in Campbell County.

Figure 2-27: Population Density within 1/4 Mile of Transit



Source: U.S. Census Bureau, 2016.

Figure 2-28: Employment Density within 1/4 Mile of Transit



Source: U.S. Census Bureau, 2015.

GLTC has also worked with the Central Virginia Metropolitan Planning Organization (CVMPO) to study system accessibility for disabled customers in 2018. This study included a comprehensive inventory of bus stops and an assessment of their accessibility under ADA guidelines. In consultation with bus operators and members of the ADA customer advisory committee, CVMPO staff inventoried sidewalks and bus stop features to determine which stops were currently ADA-accessible and which stops had strong potential for becoming ADA-accessible. Approximately 50 percent of all GLTC bus stops were determined to be ADA-accessible.

2.3.2. Performance Based Opportunities for Improvement

Though the system has provided access to areas with population and employment density and linked to shopping centers and human services, ridership on city routes has decreased over the past three years. While Liberty University routes have seen increases in ridership, the anticipated reduction in service to LU routes will likely severely reduce overall GLTC ridership, as well as supplemental revenue provided by LU. These impacts may require GLTC to focus its services in areas with opportunities for improvements to ridership and farebox recovery.

The ADA Accessibility Study completed by CVMPO identified shelters and bus stop landing pads that were constructed prior to 1990 that GLTC could revamp to improve accessibility to disabled residents. Additionally, this study identified sidewalk connectivity issues that GLTC could work with the City of Lynchburg to address to improve access to transit that would benefit both disabled residents and pedestrians in general.

Costs per passenger have generally held steady over the past three years, but the farebox recovery ratio has decreased. This trend may reverse due to reduced services to Liberty University, which will result in a decrease in the number of passengers, but a larger proportion of passengers paying fares.

GLTC has exceeded its safety goals for crashes, more than doubling the performance metric of 1 accident per 100,000 miles. This performance suggests that GLTC should review portions of its routes that may be particularly dangerous, and both align routes to avoid contributing factors to unsafe conditions, as well as work with local officials to address these conditions.

2.4. Operating and Network Efficiency Evaluation

2.4.1. Efficiency Evaluation

2.4.1.1. Level of Service

Fixed Route Service

GLTC operates 16 fixed routes Monday through Friday between 5:00 AM to 10:15 PM, and 12 fixed routes on Saturday between 5:30 AM and 9:45 PM. The route frequency varies by route and timeframe – operating from 30-minute intervals to 2-hour intervals. **Table 2-10** summarizes the fixed route services provided by GLTC by day of the week, frequency, and service span.

GLTC provides contracted on-campus shuttle service for Liberty University. The desired service levels and routes are determined by Liberty University. Route operation varies by time and day of the week, depending on the student demands. For the 2018/2019 school year, there were eight bus routes that made up the Liberty University service. **Table 2-11** summarizes the routes circulating the university.

Paratransit

Paratransit service operates at the same times that GLTC fixed route buses are in operation. The peak vehicle requirement for GLTC paratransit service is nine vehicles. Individuals must apply to be eligible to use paratransit. The application requires a medical professional to verify the qualifications for eligibility. Once eligible, users can request roundtrip pickup services during the same hours of fixed route service by making a reservation Monday through Friday between 8:30 AM and 5:00 PM. Requests can be done up to 14 days in advance, but if the individual requires a service the following day, he/she must call before 5:00 PM the day before. GLTC makes every effort to accommodate all the trips within an hour timeframe of the requested time.

Holidays

GLTC does not operate on New Year's Day, Easter Sunday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day. Services at Liberty University differ based on University breaks.

Table 2-10: Fixed Route Transit Summary

Route	WEEKDAY			SATURDAY		
	FREQUENCY	SERVICE START	SERVICE END	FREQUENCY	SERVICE START	SERVICE END
1A	60 min	5:20 AM	10:10 PM	60 min	6:23 AM	9:10 PM
1B	60 min	4:52 AM	6:40 PM	-	-	-
2	30 min (Until 6:30PM, 60 min after)	5:13 AM	8:55 PM	60 min	6:30 AM	8:55 PM
3A	60 min	5:50 AM	10:10 PM	60 min	6:15 AM	9:10 PM
3B	60 min	5:55 AM	9:40 PM	60 min	6:45 AM	9:40 PM
4A	60 min	6:00 AM	9:10 PM	60 min	7:00 AM	9:10 PM
4B	60 min	5:45AM	9:40 PM	60 min	7:10 AM	9:40 PM
4X	120 min	7:00 AM	5:55 PM	-	-	-
5X	120 min	6:00 AM	4:55 PM	-	-	-
6	60 min	5:45AM	7:40 PM	120 min	6:45 AM	5:40 PM
7	60 min	5:45 AM	7:40 PM	120 min	5:45AM	6:40 PM
7E*	60 min	8:15 PM	10:10 PM	60 min	7:15 PM	10:10 PM
8A	60 min	5:35 AM	10:10 PM	60 min	7:15 AM	10:10 PM
8B	60 min	6: 45AM	8:40 PM	-	-	-
9	60 min	5:30 AM	5:55 PM	-	-	-
10	60 min	5:10 AM	8:25 PM	60 min	7:00 AM	8:25 PM
6/7	60 min	5:30 AM	7:10 PM	60 min	5:30 AM	6:10 PM
The Hopper	10 min	6:00 PM	9:00/11:00 PM**	10 min	6:00 PM	11:00 PM

*The 7E runs an express service along Timberlake Road and Fort Avenue from Startek to the Transfer Station on Kemper Street.

** Ends at 9:00 PM on Monday, Tuesday, & Wednesday. Ends at 11:00 PM on Thursday and Friday.

Source: Data obtained from GLTC.

Table 2-11: Liberty University Bus Routes (2018/2019 Year)

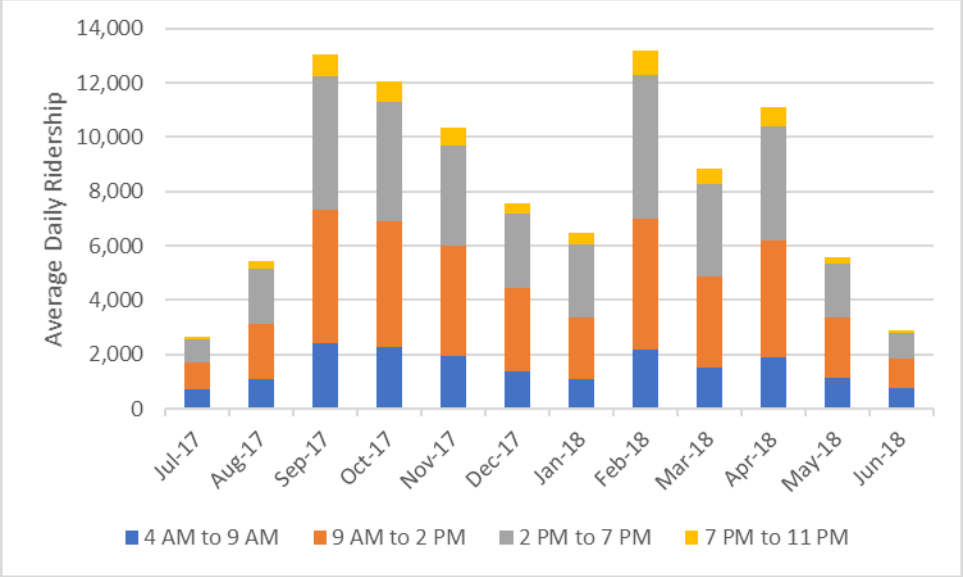
Route	WEEKDAY			WEEKEND			UNIVERSITY BREAK		
	FREQUENCY	SERVICE START	SERVICE END	FREQUENCY	SERVICE START	SERVICE END	FREQUENCY	SERVICE START	SERVICE END
70 – Express	5 min	7:00 AM	7:00 PM	-	-	-	-	-	-
71 – Main Campus	7 - 20 min	7:00 AM	11:40 PM	20 min	8:00 AM	12:20 AM	30 min	7:00 AM	7:00 PM
72 – East Campus	7 - 20 min	7:00 AM	11:40 PM	20 min	8:00 AM	12:20 AM	30 min	7:00 AM	7:00 PM
75 – Liberty Mountain	30 min (on-demand after 6:00 PM)	7:00 AM	10:00 PM	-	-	-	-	-	-
76 – Aviation	Each Period	Each Period	Each Period	-	-	-	-	-	-
84 – Freshman Parking/ Fort Hill/Annex 1	30 min	7:00 AM	12:00 AM	30 min	8:00 AM	12:00 AM	-	-	-
90 – Cornerstone	30 min	7:00 AM	9:45 PM	-	-	-	-	-	-
91 – Apartments	60 min	8:00 AM	9:00 PM	-	-	-	-	-	-

*Route does not have preplanned/set scheduled and frequency varies depending on time of day; therefore, frequency range is provided.
Source: Data obtained from Liberty University.

2.4.1.2. Ridership by Time Period

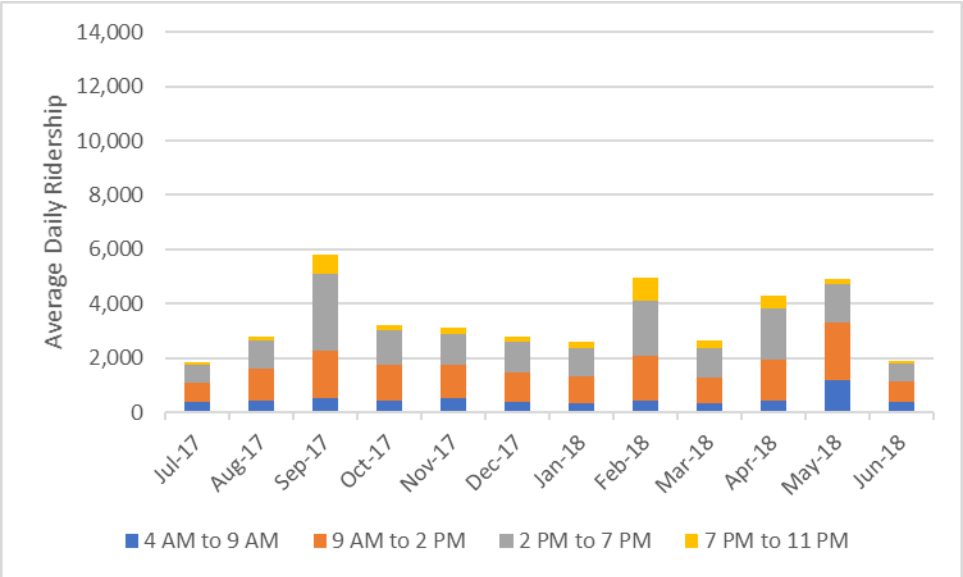
Figure 2-29 and **Figure 2-30** show average daily ridership by time of day for fiscal year 2018 for GLTC's fixed route services, while **Figure 2-31** and **Figure 2-32** cover the same time periods for paratransit services. The greatest amount of ridership on fixed route service occurs from 9 AM to 7 PM and is variations in ridership are tied closely to the schedule of Liberty University. Paratransit ridership patterns are more consistent. Both services have a fraction of average weekday ridership during Saturday service.

Figure 2-29: Fixed Route Weekday Average Daily Ridership by Time of Day



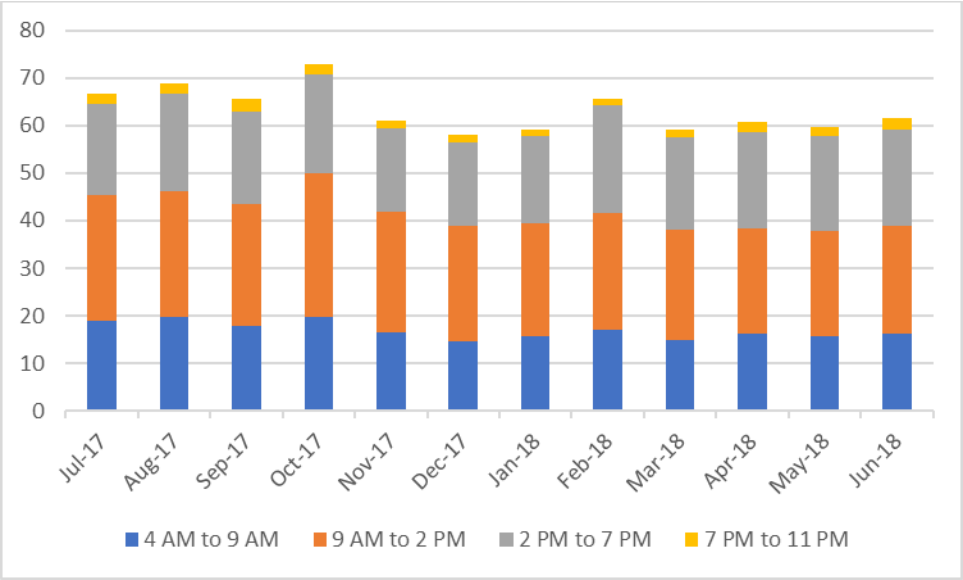
Source: GLTC, 2019.

Figure 2-30: Fixed Route Weekend Average Daily Ridership by Time of Day



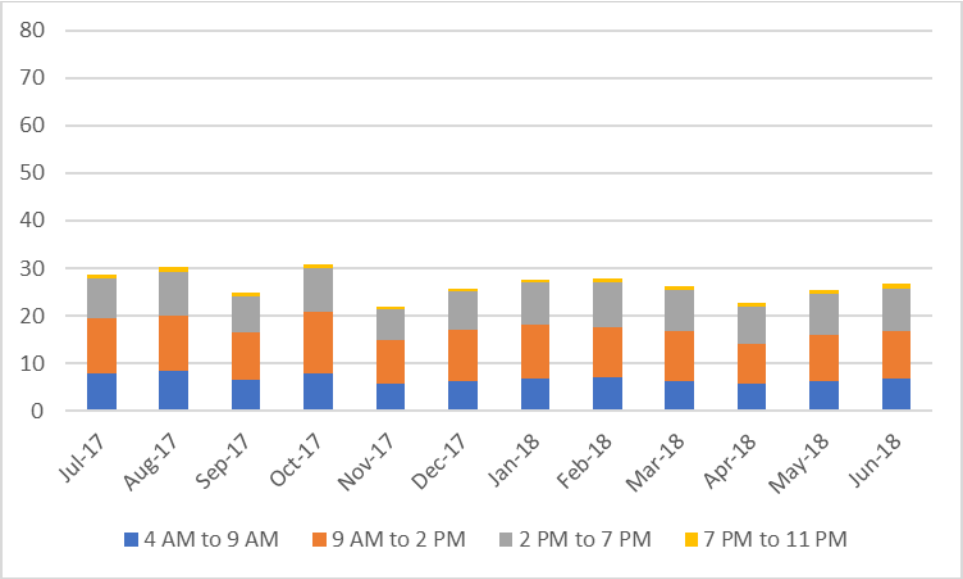
Source: GLTC, 2019.

Figure 2-31: Paratransit Weekday Average Daily Ridership by Time of Day



Source: GLTC, 2019.

Figure 2-32: Paratransit Weekend Average Daily Ridership by Time of Day



Source: GLTC, 2019.

2.4.1.3. On-Time Performance

Table 2-12 shows the on-time performance of GLTC fixed route and paratransit services for fiscal year 2018. GLTC is in the process of updating their on-time performance metrics system for 2019 to coincide with new route changes. For 2018, on-time performance for fixed route service was determined by the number of trips arriving no more than two minutes early or departing more than three minutes late.

Drivers, supervisors, and passengers have provided consistent feedback that routes with on-time performance issues are generally affected during morning and afternoon rush hour periods.

Table 2-12: On-time Performance, Fiscal Year 2018

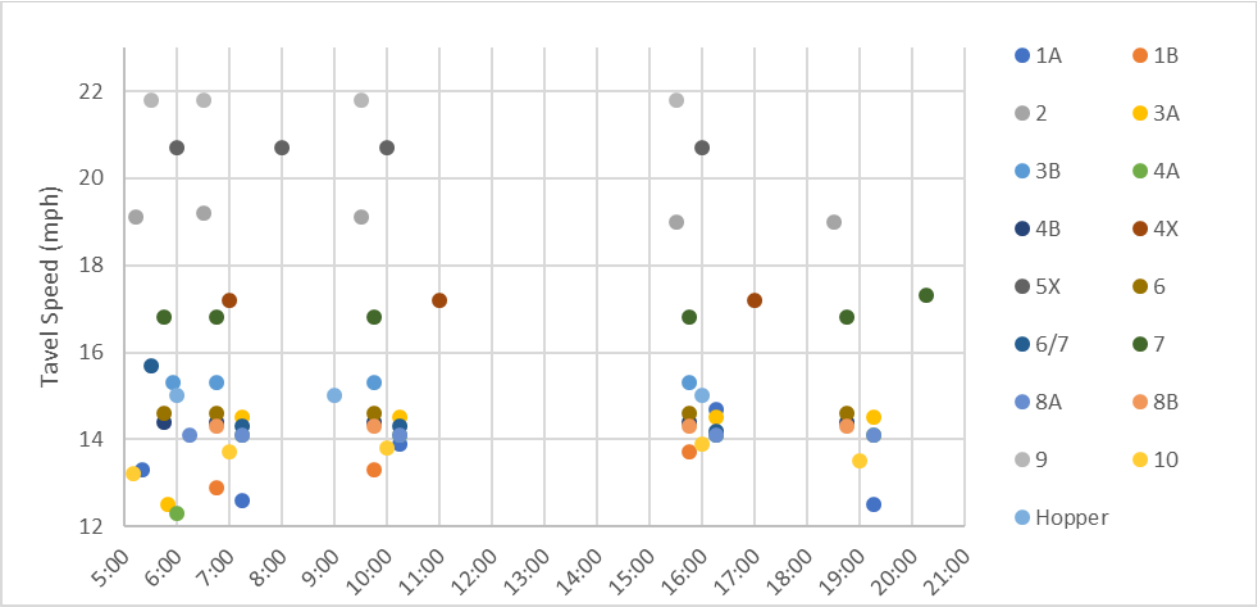
Route	Percent Trips on Time
1A	69%
1B	57%
2	82%
3A	88%
3B	87%
4A	68%
4B	87%
4X	100%
5X	100%
6	90%
7	86%
6/7	100%
8A	74%
8B	71%
9	100%
10	83%
City Routes	82%
LU Routes	80%
Paratransit	98%

Source: GLTC, 2019

2.4.1.4. Route Speeds

Average weekday speeds of each route in GLTC's fixed route service are provided by time of day in **Figure 2-33**. Route speeds were calculated by service schedules and mileage and do not reflect deviations in speed caused by on-time performance issues. GLTC does not record route speeds through its AVL system.

Figure 2-33: Weekday Average Fixed Route Speeds by Time of Day



Source: GLTC, 2019

2.4.2. Efficiency Based Opportunities for Improvement

GLTC has opportunities to improve and meet service guidelines for several routes based on the review of service frequencies, on-time performance, and route speeds.

- **Service Frequencies:** Service guidelines recommend 30-minute frequencies during peak periods and 60-minute frequencies during off-peak periods. Currently several routes do provide this frequency, either on their own (such as Route 2 and the Downtown Hopper) or through overlapping alignments (such as Routes 1A/1B, 3A/3B, 4A/4B/4X, and 8A/8B). However, not all areas are served by 30-minute peak period frequencies. Additional peak service could be an opportunity to improve ridership, particularly in the AM rush hour period which has limited ridership and struggles with on-time performance due to traffic congestion.
- **On-Time Performance:** Service guidelines recommend an on-time performance of 85 percent. Many individual routes meet this goal, but the fixed route system's 82 percent on-time performance is slightly below the goal. Realignment of the most heavily affected routes and more realistic schedules during affected schedules could improve systemwide reliability.
- **Route Speeds:** Service guidelines recommend average route speeds that do not exceed 20 miles per hour. Routes 5X and 9 exceed this recommendation throughout the day. This is likely related to the portions of their routes that are aligned on the Amherst Highway and the Lynchburg Expressway, respectively. Several of the routes which have on-time performance issues, such as 1A/1B, 4A, and 8A/8B, have some of the lowest average speeds, especially in the morning. Realignment of these routes could improve speed and positively impact on-time performance.

2.5. Analysis of Opportunities to Collaborate with Other Transit Providers

2.5.1. Collaboration Analysis

The following other transportation service providers, which GLTC currently has partnerships with, also serve the greater Lynchburg area:

- **Greyhound** – Intercity bus service to Lynchburg is provided at GLTC's Transfer Center. GLTC also is an external ticket vendor for Greyhound, authorized to sell and print tickets on their behalf.
- **Central Virginia Alliance for Community Living (CVACL)** – The Agency on Aging in the greater Lynchburg area, which provides transportation for individuals without the appropriate means. CVACL utilizes GLTC's paratransit service and pays fares for individuals within the paratransit service area who qualify.
- **Ride Solutions** – The ride matching and alternative transportation program housed at the Central Virginia Planning District Commission promotes GLTC service to individuals interested in alternate modes of transportation. The Central Virginia Planning District Commission also coordinates and assists with planning efforts in the region, including transit services.

The following transportation service providers serving the greater Lynchburg area do not currently have partnerships to coordinate services with GLTC:

- **Taxicab Services** – Multiple taxicab companies serve Lynchburg.
- **Transportation Network Companies** – Uber and Lyft provide service in and around Lynchburg.
- **Car Sharing** – Zipcar is located at Liberty University at Residential Commons One and East Campus Clubhouse.
- **University Shuttle Services** – Liberty University offers a reservation-based shuttle service for students to access locations such as Lynchburg Regional Airport, Roanoke Regional Airport, and Kemper Street Station. Randolph College has a shuttle service that runs on Friday and Saturday to retail locations on Wards Road.
- **Human Services Shuttles** – Centra operates its own medical service shuttles known as PACE and the Central Virginia Alliance for Community Living is the local Agency on Aging and provides Human Service Transportation.
- **Amtrak –** Passenger rail service is provided from the Kemper Street Station on Amtrak's Crescent and Northeast Regional lines.

2.5.2. Collaboration Based Opportunities for Improvement

Opportunities for future collaboration exist with partners within the greater Lynchburg area and for connections to communities outside of Lynchburg. These opportunities include:

- **Ride Solutions** – Central Virginia Planning District Commission will be completing a study on the feasibility for deployment of vanpools throughout the greater Lynchburg area, following the completion of a statewide vanpool study being developed by DRPT. The local vanpool study has the potential to identify vanpool markets that are not currently served by transit, which could expand the number of area residents who will have access to transit services.
- **Virginia Breeze** – DRPT's intercity bus transit service currently provides service along I-81 from Blacksburg to Washington, D.C., but has plans to expand to two new corridors in 2020. One corridor will connect Martinsville, Danville, Farmville, and Richmond along the US 360 and US 58 corridors. The other will provide service along the US 29 corridor from Danville to Washington, D.C., with stops in the GLTC service area in Lynchburg and Amherst.

3. Planned Improvements and Modifications

GLTC adjusted nearly all the routes in the system to coordinate the change in the transfer station location from The Plaza to Kemper Station in 2014. Aside from these changes, there have been few modifications to adapt to the changing development patterns in Lynchburg. As Lynchburg continues to change, population and employment shifts will place additional stress on the transportation network. The transit system will need to adjust to the new landscape to effectively serve the community.

This chapter describes how GLTC would like to improve and modify the transit network to keep pace with the evolving demands over the next ten years. The first section, **Planned Service Improvements**, describes each project with maps, operating statistics, ridership projections, as well as how the project fulfill identified goals. The list of projects only includes improvements that are financially constrained, and therefore can reasonably be expected to be funded over the timeframe of the TSP. However, a project's financial feasibility alone does not warrant its implementation. Furthermore, a projects inclusion in this chapter does not guarantee its implementation. Instead, this section is intended to be used as a reference for evaluation as funding becomes available over the course of the TSP timeframe.

Because of the importance of transit travel-time improvements of these projects, a section titled **Travel Time Comparisons** follows the first section. This section examines the travel movements of several key travel movements identified through the surveying effort in the previous chapter. The third section, **Prioritization of Planned Service Improvements**, reveals the anticipated timeframe and associated costs for each project, classified as either short-term, mid-term, or long-term. A section entitled **Service Development** concludes the chapter with a summary of service hours and miles. A project detailing Sunday service was evaluated but is less likely to be implemented over the ten-year TSP timeframe and therefore is included separately under **Unconstrained Improvements**.

3.1. Planned Service Improvements

This section is composed of a list of financially constrained projects that will be considered over the TSP timeframe. The list is intended to serve as a reference as funding becomes available, rather than a commitment or guarantee of future service. Each project includes a description of the service plans and includes maps where appropriate for visual representation of existing and planned alignments. Revenue hours and miles are included to show the change, if any, in service provided. Where changes to the alignment of the route occurs, revenue miles for proposed routes are calculated by multiplying the percent increase of route length by the annual revenue miles. This method creates revenue miles that are proportional to the increase in route length.

The associated costs of each project are also included. Operating costs are calculated using the 2017 National Transit Database cost per revenue hour of $83.39, which is then adjusted to an average rate of 2.3 percent to $87.27 in 2019 dollars to account for inflation (all costs presented henceforth are in 2019 dollars). It is important to note that using revenue hours to determine operating costs does not capture the impact that revenue miles has on operating costs. Changes in revenue miles may impact operating costs associated with fuel and wear and tear of vehicles and other equipment. Estimated costs are included where the addition of vehicles is necessary to operate the additional service.

For ridership estimates, the percent increase in service miles is applied to existing ridership to calculate the expected ridership on proposed routes. In other words, an increase in route length with corresponding service miles is estimated to yield a proportional increase in ridership.

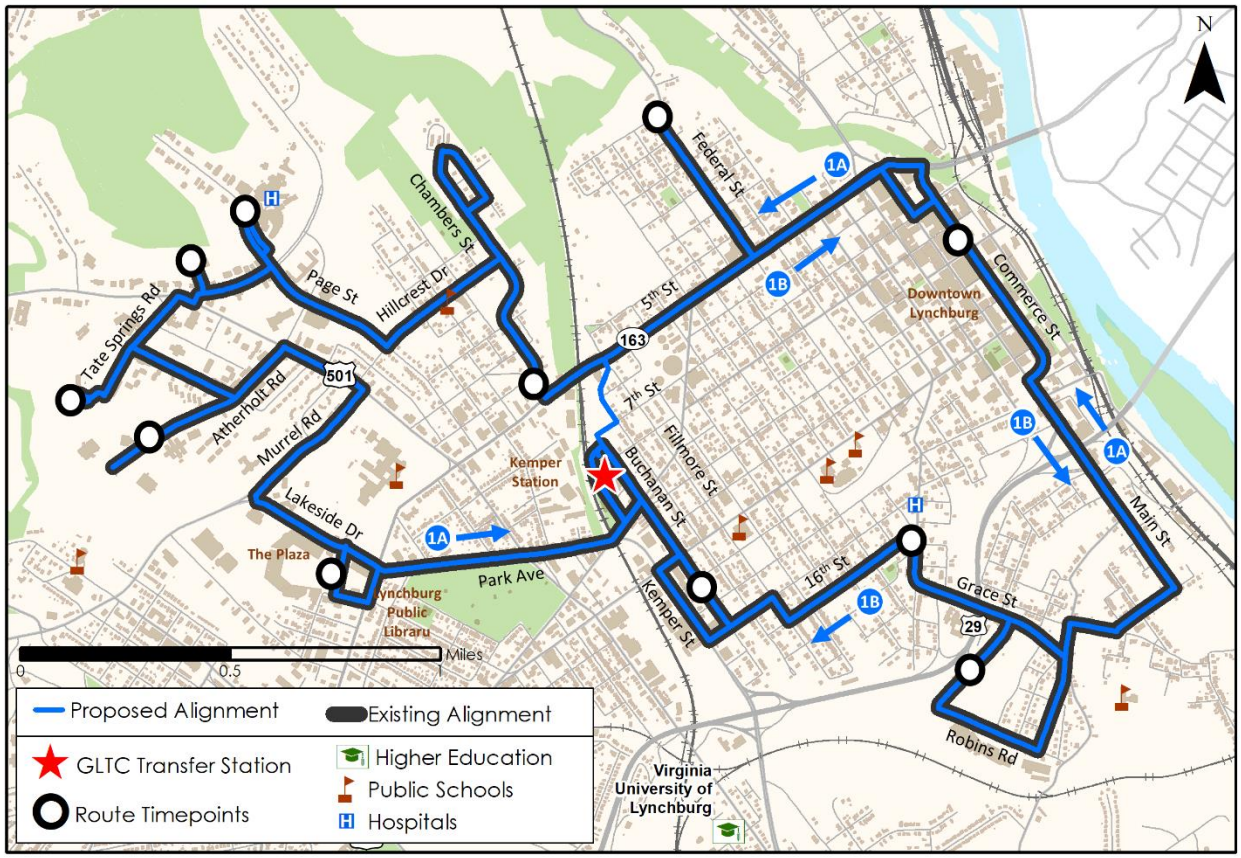
Additional information regarding the assumptions in these calculations is included in the relevant project descriptions. Each project concludes with a justification and needs fulfillment section, detailing how the project meets the identified goals of the TSP.

It is important to note that this section does not prioritize the specified projects, and the order of projects shown here is not intended to reflect any ranking or likelihood of implementation. Prioritization into appropriate timeframes (short-term, mid-term, or long-term) is detailed in the Prioritization of Planned Service Projects section.

3.1.1. Route 1A and Route 1B

Service Changes: The proposal for this improvement involves including an additional trip to Kemper Station on Route 1A and Route 1B. The routes would access Kemper Station from 5th Street, using Pierce Street to and from the transfer center. The remainder of each of the routes conform to the existing alignments. Each route requires a single bus to operate the 60-minute scheduled headways. A visual of the recommended changes is shown below in **Figure 3-1**.

Figure 3-1: Alignment of Existing Routes 1A and 1B and Proposed Routes 1A and 1B



Source: GLTC TSP Planned Improvements and Modifications, 2019.

The proposal for Route 1A and Route 1B mirror the existing routes in terms of schedule, service hours, and span of service, and therefore would not have significant impact on operating costs (shown in **Table 3-1**). The additional service miles, also shown in **Table 3-1** will likely increase ridership.

Table 3-1: Annual Operating Statistics for Existing and Proposed Routes 1A and 1B

	Existing 1A	Existing 1B	Proposed 1A	Proposed 1B	Total Change
Revenue Hours	6,530	4,067	6,530	4,067	0
Revenue Miles	81,824	49,078	86,151	51,923	7,173
Peak Vehicles	1	1	1	1	0
Operating Cost	$569,873	$354,927	$569,873	$354,927	$0
Ridership	76,000	47,100	80,000	49,900	6,800

Source: GLTC TSP Planned Improvements and Modifications, 2019.

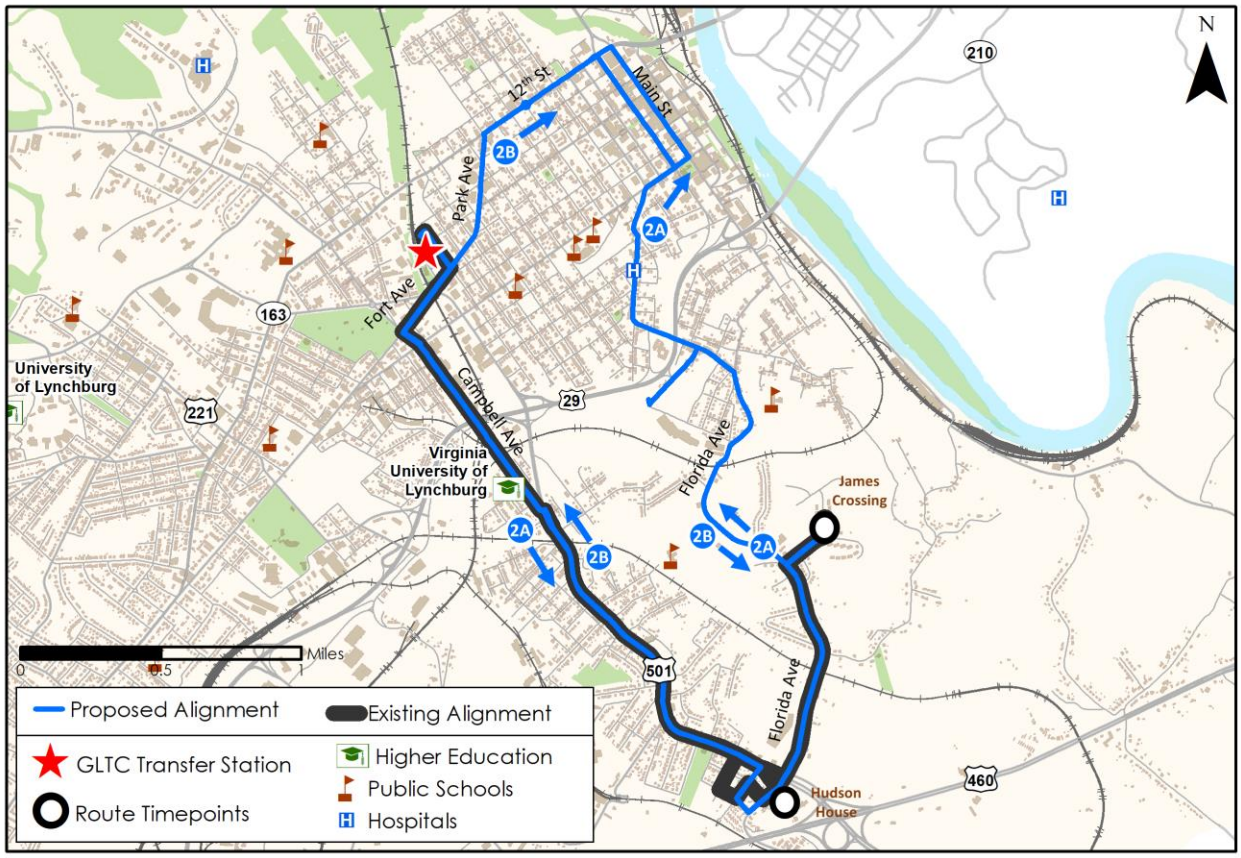
Justification and Needs Fulfillment:

- Route 1A and Route 1B have unconventional alignments. However, because of the circulation around downtown, and the bi-directional service when combined, the service performs relatively well. Only minor adjustments are recommended to maintain the strong performance of these routes.
- The second stop at Kemper Station will reduce the time it takes for many passengers to connect to other routes in the system. Additionally, the extra time needed to divert from the existing alignment to serve Kemper Station a second time is minimal.

3.1.2. Existing Route 2 and Proposed Route 2A and Route 2B

Service Changes: This planned improvement increases the coverage of service along Florida Avenue by creating 2 patterns of Route 2. The existing Route 2 begins at Kemper Station and operates along Campbell Avenue and Florida Avenue, with an outbound ending point at James Crossing. The proposal for this route is to maintain the alignment from Kemper Station to James Crossing. From James Crossing, the route would continue north on Florida Avenue and connect with Routes 1A and 1B on Grace Street. The route would then service Robins Road before turning back onto Grace Street and travel downtown. The route would then serve Main Street, 5th Street, and Park Avenue to serve Downtown Lynchburg, thereby completing a loop alignment. The route would also operate in the opposite direction to create bi-directional service. Like Route 1, Route 2 will have an A pattern that operates in a counterclockwise direction, and a B pattern that operates in a clockwise direction. Each route would operate on 30-minute headways.

Figure 3-2: Alignment of Existing Route 2 and Proposed Route 2A and Route 2B



Source: GLTC TSP Planned Improvements and Modifications, 2019.

The proposed Route 2 would require two vehicles to operate 30-minute headways on each pattern. The service hours would mirror the existing service, which would result in a cumulative increase of 4,191 revenue hours annually. The operating cost would double, increasing by $365,749 a year, shown in **Table 3-2.** The calculated ridership impact shows an increase of 68,600 riders based on the increase in service miles.

Table 3-2: Annual Statistics for Existing Route 2 and Proposed Route 2A and Route 2B

	Existing 2	Proposed 2A	Proposed 2B	Total Change
Revenue Hours	4,191	4,191	4,191	4,191
Revenue Miles	72,341	78,361	78,361	84,382
Peak Vehicles	1	1	1	1
Operating Cost	$365,749	$365,749	$365,749	$365,749
Ridership	58,800	63,700	63,700	68,600

Source: GLTC TSP Planned Improvements and Modifications, 2019.

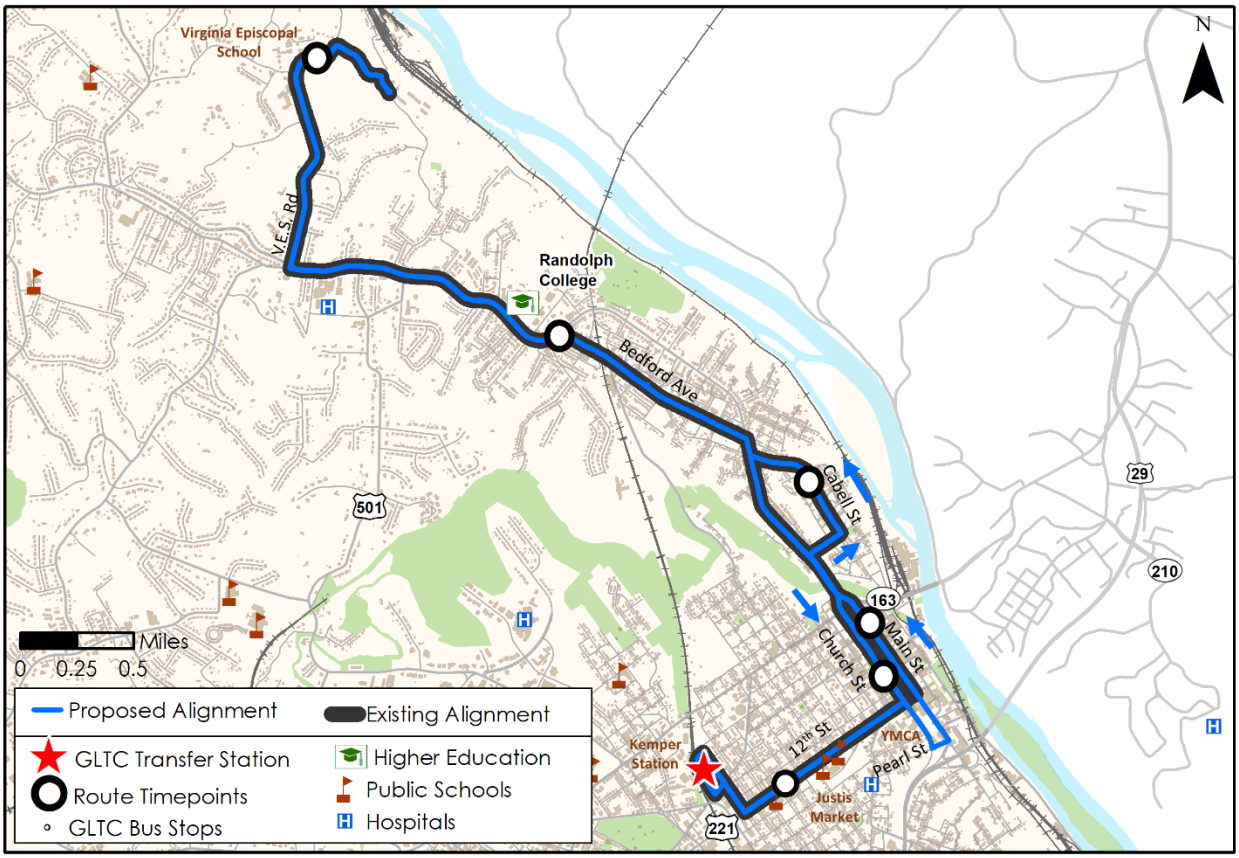
Justification and Needs Fulfillment:

- There have been requests for service from Florida Avenue to downtown. The proposed service would provide that direct connection from James Crossing along Florida Avenue to downtown Lynchburg.
- There has been a desire to connect Route 1A and 1B to Route 2. The redesigned alignment of Route 2 into two separate routes would provide this connection on Florida Avenue.
- GLTC researched the possibility of providing service along Florida Avenue between Grace Street and Greenfield Drive by interviewing and surveying the community. The results showed the majority of respondents thought additional service along Florida Avenue would be beneficial. In fact, 77% of respondents answered "yes" when asked if service added to Florida Avenue would benefit them. When asked if they would pay regular fare to catch a bus on Florida Avenue, 79% of respondents replied "yes".

3.1.3. Route 3A

Service Changes: The existing alignment of Route 3A is proposed to remain as is, with the exception of extending the route in downtown Lynchburg from 12th Street to Pearl Street, shown below in **Figure 3-3**. Route 3A requires one bus for operation with 60-minute headways.

Figure 3-3: Alignment of Existing Route 3A and Proposed Route 3A



Source: GLTC TSP Planned Improvements and Modifications, 2019.

The proposed alignment for 3A would retain the existing schedule, service hours, and span of service. The change in operating cost is expected to be zero, as shown in **Table 3-3**. The additional service on the southeastern end of the route would increase the revenue miles, leading to an anticipated boost in ridership.

Table 3-3: Annual Statistics for Existing Route 3A and Proposed Route 3A

	Existing 3A	Proposed 3A	Total Change
Revenue Hours	5,258	5,258	0
Revenue Miles	69,352	75,975	6,622
Peak Vehicles	1	1	0
Operating Cost	$458,866	$458,866	$0
Ridership	83,800	91,800	8,000

Source: GLTC TSP Planned Improvements and Modifications, 2019.

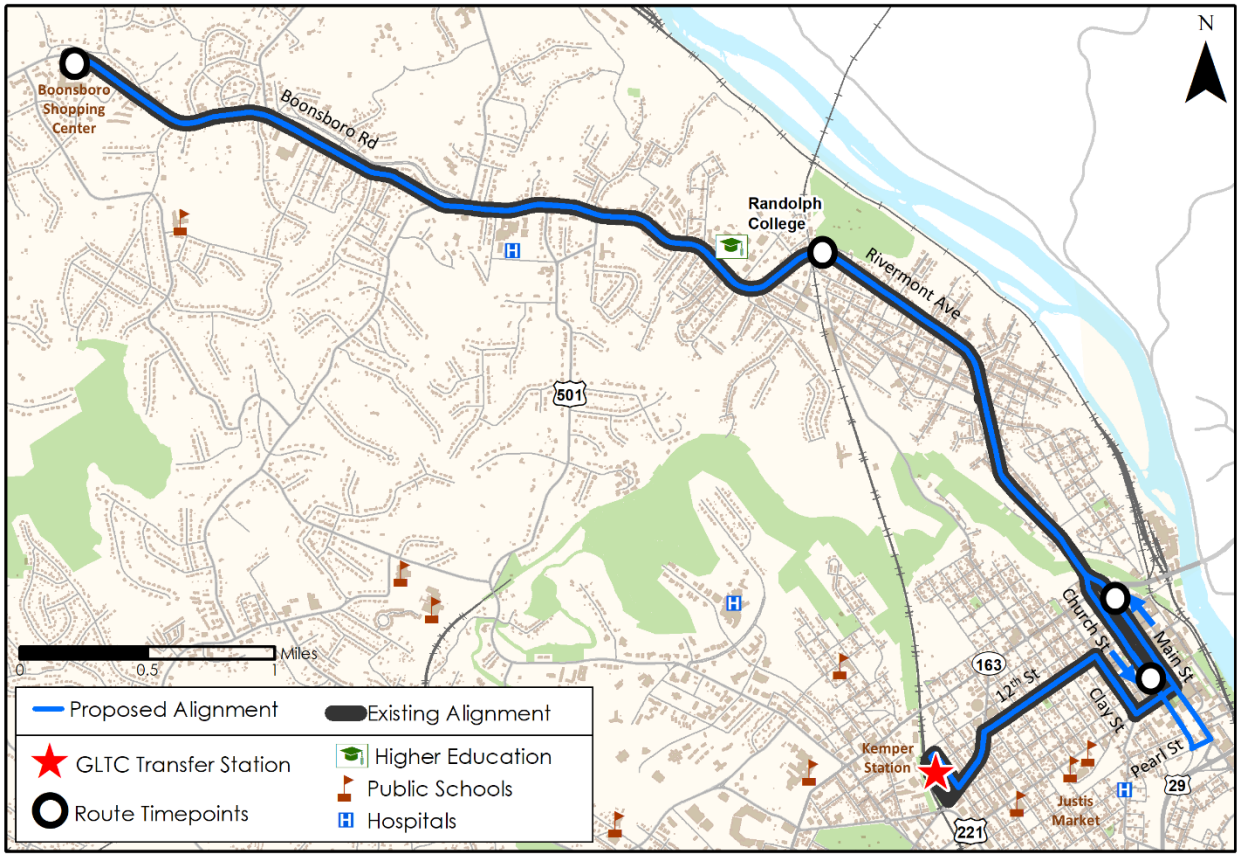
Justification and Needs Fulfillment:

- Route 3A has strong ridership and this is expected to continue since the route fundamentally stays the same.
- Although the extension to Pearl Street creates out of direction travel for passengers, it would fulfill passenger requests to serve the YMCA.
- Service to Daniels Hill creates a deviation from Rivermont Avenue in the outbound direction, creating a loop mid-route, which is typically not recommended. However, the removal of this service would be unpopular with residents in this area and is therefore recommended to be maintained.

3.1.4. Route 3B

Service Changes: Like the recommendation for Route 3A, this service improvement is planned to extend the southeastern section of the route to Pearl Street. The remainder of the route will remain intact, without any further adjustments. The alignment of the planned Route 3B is shown below in **Figure 3-4**.

Figure 3-4: Alignment of Existing Route 3B and Proposed Route 3B



Source: GLTC TSP Planned Improvements and Modifications, 2019.

The proposed Route 3B has the same schedule and revenue hours as the existing Route 3B. The peak vehicles required would also therefore, remain at one bus for the 60-minute headways. The ridership would likely increase slightly because of the additional service in the downtown area. There would be no

anticipated increase in operating cost with this service modification, because the revenue hours are held constant.

Table 3-4: Annual Statistics for Existing Route 3B and Proposed Route 3B

	Existing 3B	Proposed 3B	Total Change
Revenue Hours	5,001	5,258	0
Revenue Miles	69,468	75,865	6,396
Peak Vehicles	1	1	0
Operating Cost	$436,437	$436,437	$0
Ridership	78,200	85,400	7,200

Source: GLTC TSP Planned Improvements and Modifications, 2019.

Justification and Needs Fulfillment:

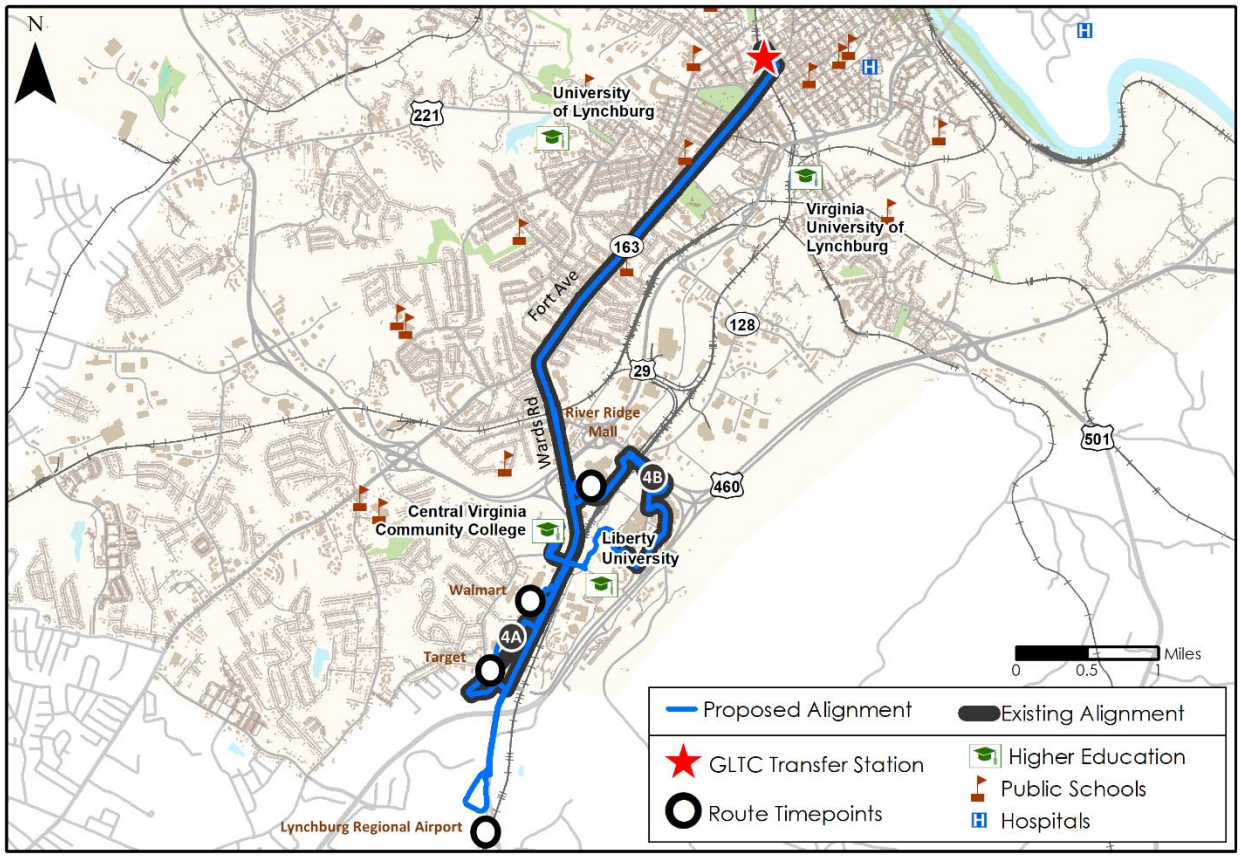
- As in Route 3A, Route 3B has strong ridership and this is expected to continue since the route fundamentally stays the same.
- Although the extension to Pearl Street creates out of direction travel for passengers, it would fulfill the passenger requests to serve the YMCA.
- Maintaining similarities between routes 3A and 3B reinforces contiguity and legibility of the transit system.

3.1.5. Route 4

Service Changes: It is recommended that Route 4A and 4B are combined into a single route. The combined alignment would serve River Ridge Mall, Liberty University, Central Virginia Community College, and then the commercial development along Wards Road. Select trips (approximately 5 per day) would continue along Wards Road to Lynchburg Regional Airport. The alignment of the proposed Route 4 is shown below in **Figure 3-5**.

The proposed service change will provide greater connectivity of regional significance introducing service from GLTC Transfer Station, which also serves Amtrak Station, and the Lynchburg Regional Airport. Such service enhancements will offer a regional backbone transit service in the area.

Figure 3-5: Alignment of Existing Route 4A/4B and Proposed Route 4



Source: GLTC TSP Planned Improvements and Modifications, 2019.

The additional service operated by the modified alignment of the proposed Route 4 requires about 34,000 additional revenue miles per year. No additional vehicles would be needed to operate the modified service. The revenue hours required to operate the modified service remains the same as the existing service, and therefore would not impact the operating cost. Overall, ridership is estimated to increase with the additional service to Liberty University, from approximately 170,000 to 217,000 riders per year.

Table 3-5: Annual Statistics for Existing Route 4A/4B and Proposed Route 4A

	Existing 4A	Existing 4B	Proposed 4	Total Change
Revenue Hours	6,322	5,203	11,535	0
Revenue Miles	63,322	65,787	163,037	33,929
Peak Vehicles	1	1	2	0
Operating Cost	$552,609	$454,066	$1,006,675	$0
Ridership	98,300	71,500	216,700	46,900

Source: GLTC TSP Planned Improvements and Modifications, 2019.

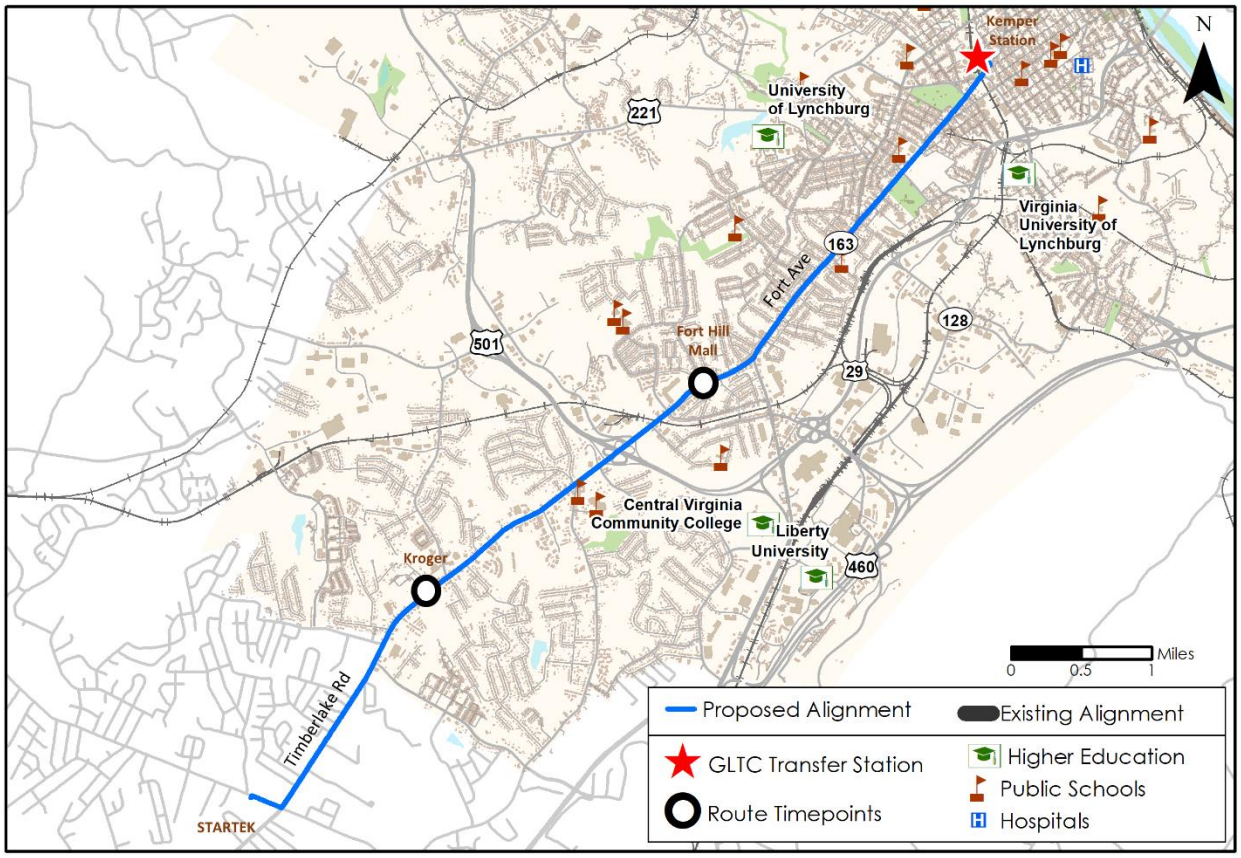
Justification and Needs Fulfillment:

- Additional connections from Liberty University to Wards Road and Wards Crossing is desirable and moving the alignment of Route 4 to service Liberty University provides this connection.
- The existing Route 6 serves the Airport; however, Route 6 (existing and proposed) operates primarily as a local connector to other routes, with segments operating through low-density neighborhoods. Serving the Airport is better suited for a route that makes connections with major destinations rather than small neighborhoods. Route 4 is a better candidate as it connects to Kemper Station, River Ridge Mall, Liberty University, and Central Virginia Community College. Connecting these major destinations with the airport is a natural fit.

3.1.6. Existing Route 4X, Existing Route 7E, and Proposed Route 11

Service Changes: Route 4X is recommended to be eliminated, with hours reallocated to Route 7E, which in turn would operate all day as proposed Route 11, shown below in **Figure 3-6**. Route 11 would provide all day service directly from Kemper Station to Timberlake Road/STARTEK. The existing Route 4X operates on 120-minute headways, which would be maintained with proposed Route 11, and it would be interlined with Route 5X, which also operates on 120-minute headways. A requirement of one bus is sufficient to operate both routes.

Figure 3-6: Alignment of Proposed Route 11



Source: GLTC TSP Planned Improvements and Modifications, 2019.

Replacing Routes 4X and 7E with Route 11 would not require any additional revenue hours and, therefore, no additional operating costs. **Table 3-6** below shows estimated summary statistics because the actual values are not currently available for Routes 4X and 7E. Ridership data also is not available for Routes 4X and 7E, so ridership for the proposed Route 11 was estimated using average riders per revenue mile for Routes 6 and 6/7, which cover similar service areas.

Table 3-6: Annual Statistics for Existing Routes 4X and 7E, and Proposed Route 11

	Existing 4X	Existing 7E	Proposed 11	Total Change
Revenue Hours	1,543	510	2,053	0
Revenue Miles	24,117	8,109	32,436	210
Peak Vehicles	0.5	0	0.5	0
Operating Cost	$134,658	$44,508	$179,165	$0
Ridership	N/A	N/A	16,600	N/A

Source: GLTC TSP Planned Improvements and Modifications, 2019.

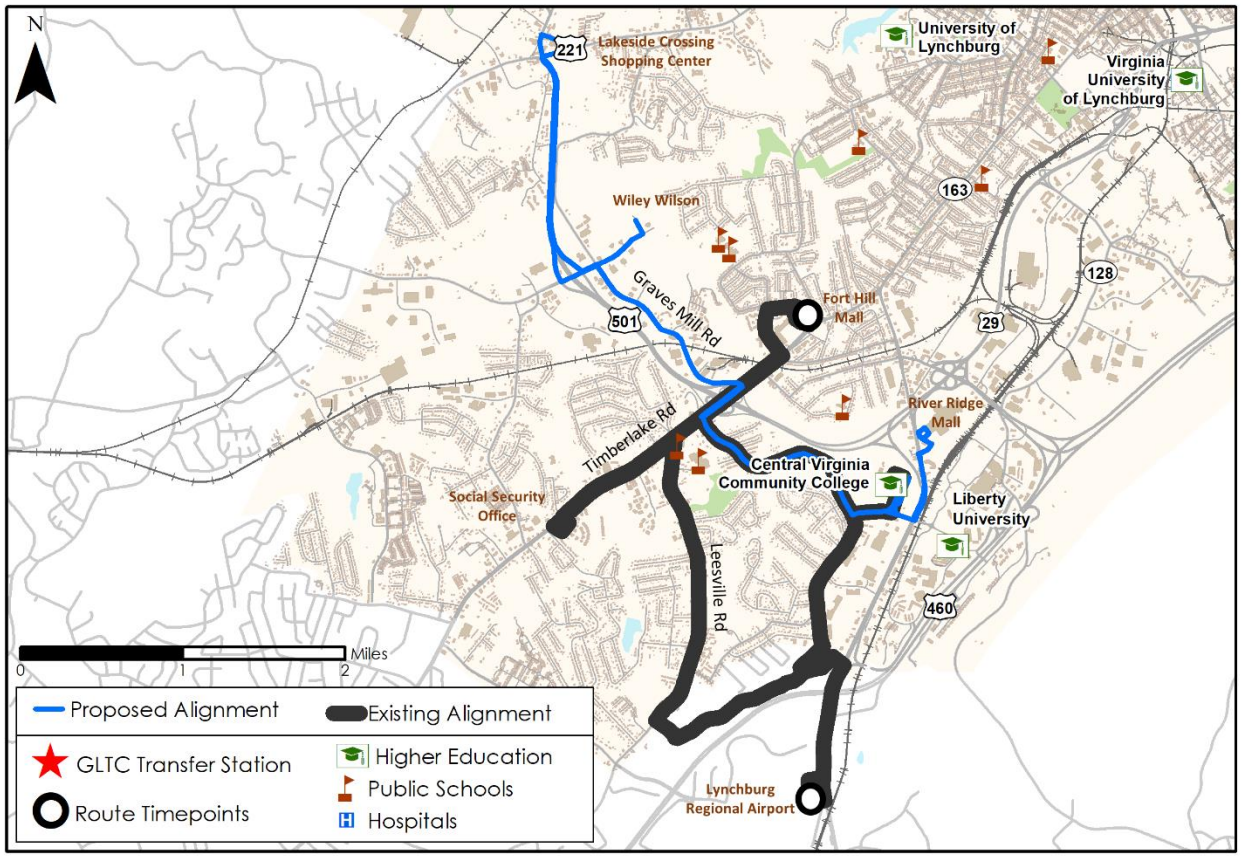
Justification and Needs Fulfillment:

- The alignment of proposed Route 11 would give passengers a direct connection from STARTEK to Kemper Station, all along Fort Avenue.
- There are multiple social services along this route, which has significant potential for ridership.

3.1.7. Route 6

Service Changes: The recommended alignment for Route 6 includes several major changes to the existing alignment. The western terminus would be relocated to Lakeside Crossing Shopping Center, which includes connections to the proposed Routes 8A and 8B. Route 6 would travel south on the Lynchburg Expressway before serving Graves Mill Road east of the freeway, and then travel along Wades Ferry Road to access Central Virginia Community College. The eastern terminus of the route would be at the new transfer location at River Ridge Mall. The proposed Route 6 is shown below in **Figure 3-7**, with the existing Route 6 for comparison.

Figure 3-7: Alignment of Existing Route 6 and Proposed Route 6



Source: GLTC TSP Planned Improvements and Modifications, 2019.

The existing Route 6 requires a single vehicle to operate 60-minute headways. The proposed Route 6 would utilize the same revenue hours currently in operation for Route 6, leading to the same vehicle requirements and operating costs. The total revenue miles would increase slightly, as the proposed

alignment is about 0.5 miles longer than the existing alignment. Ridership, which is based on route miles here, is therefore anticipated to increase slightly, shown below in **Table 3-7**.

Table 3-7: Annual Statistics for Existing Route 6 and Proposed Route 6

	Existing 6	Proposed 6	Total Change
Revenue Hours	4,190	4,190	0
Revenue Miles	55,628	57,788	2,160
Peak Vehicles	1	1	0
Operating Cost	$365,661	$365,661	$0
Ridership	20,200	21,000	800

Source: GLTC TSP Planned Improvements and Modifications, 2019.

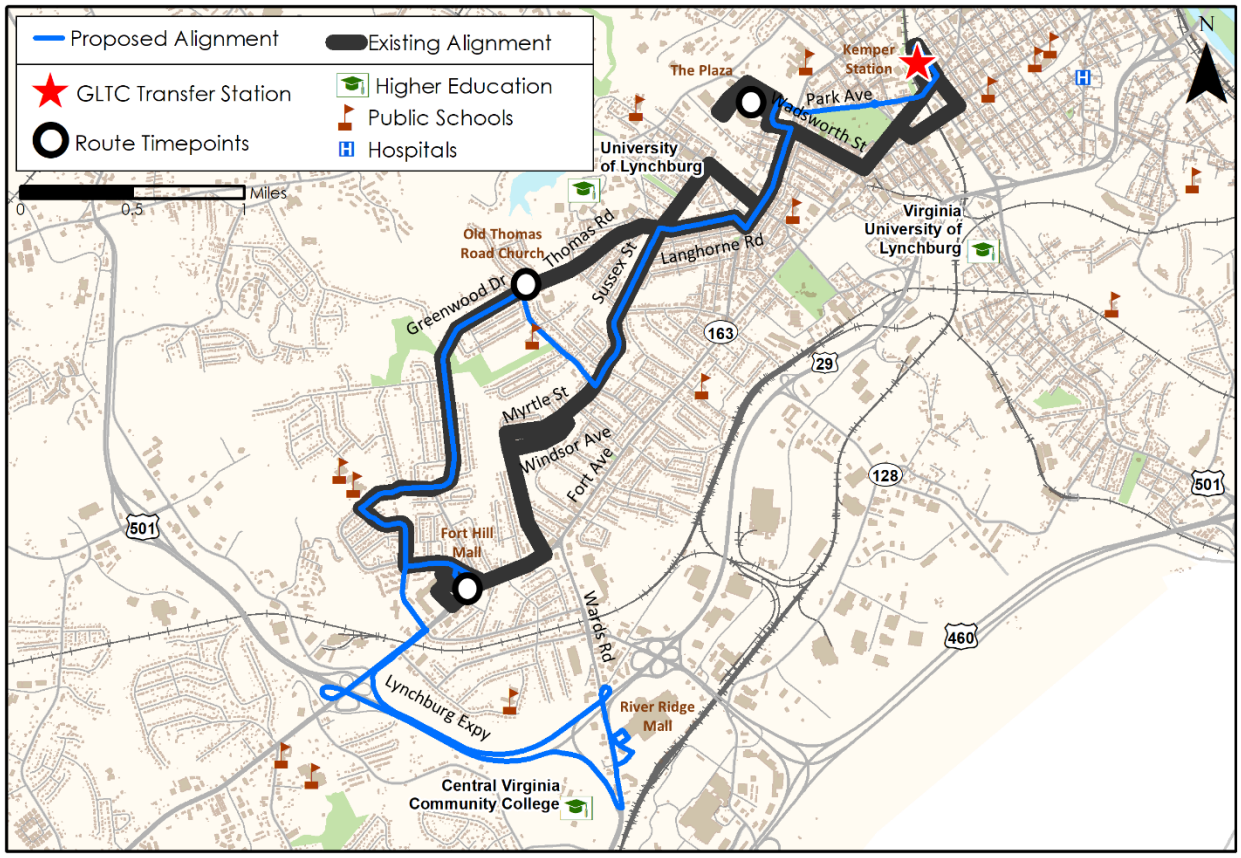
Justification and Needs Fulfillment:

- To reduce out of direction travel and reduce travel times to major destinations, the connection to the airport would be removed (proposed to be served by Route 4) as well as the Social Security office (proposed to be served by Route 7).
- The proposed alignment is significantly more linear, providing a direct connection to several locations (Lakeside Crossing Shopping Center, Nationwide Drive, Graves Mill Road, Wards Ferry Road, Central Virginia Community College, and River Ridge Mall) along the route.
- In the existing system, Route 6 connects to four other routes. Under the proposed short-term system Route 6 connects to seven routes.

3.1.8. Route 6/7 (Proposed Route 10)

Service Changes: The recommended alignment for Route 6/7 continues the existing service from Kemper Station to the Plaza and Richmond Street. The current alignment operates one-way loops through the neighborhoods between Lakeside Drive and Fort Avenue. The proposed alignment operates bi-directional service on sections of both the northern and southern sides of the loop. The proposed route would exit Kemper Station and follow Park Avenue to Memorial Drive. The alignment would then travel through the Fort Hill neighborhood on Langhorne Lane, Sussex Drive, Perrymont Avenue, to serve the Long Meadows neighborhood. The route would then connect to Fort Hill Village, as shown in **Figure 3-8**. The existing service on Thomas Road, Myrtle Street, and Westview Drive is removed. The proposed Route 10 then turns onto Fort Avenue before accessing the Lynchburg Expressway to terminate at River Ridge Mall

Figure 3-8: Alignment of Existing Route 6/7 and Proposed Route 10



Source: GLTC TSP Planned Improvements and Modifications, 2019.

There are no additional revenue hours or peak vehicles required to replace the existing Route 6/7 with the proposed Route 10, shown in **Table 3-8**. Stretching the southern terminus of the route to River Ridge Mall will require about 23,500 additional revenue miles per year. Ridership is expected to increase by about 11,100 riders per year.

Table 3-8: Annual Statistics for Existing Route 6/7 and Proposed Route 10

	Existing 6/7	Proposed 10	Total Change
Revenue Hours	7,764	7,764	0
Revenue Miles	100,647	130,996	30,349
Peak Vehicles	1	1	0
Operating Cost	$677,021	$677,021	$0
Ridership	47,000	61,700	14,300

Source: GLTC TSP Planned Improvements and Modifications, 2019.

Justification and Needs Fulfillment:

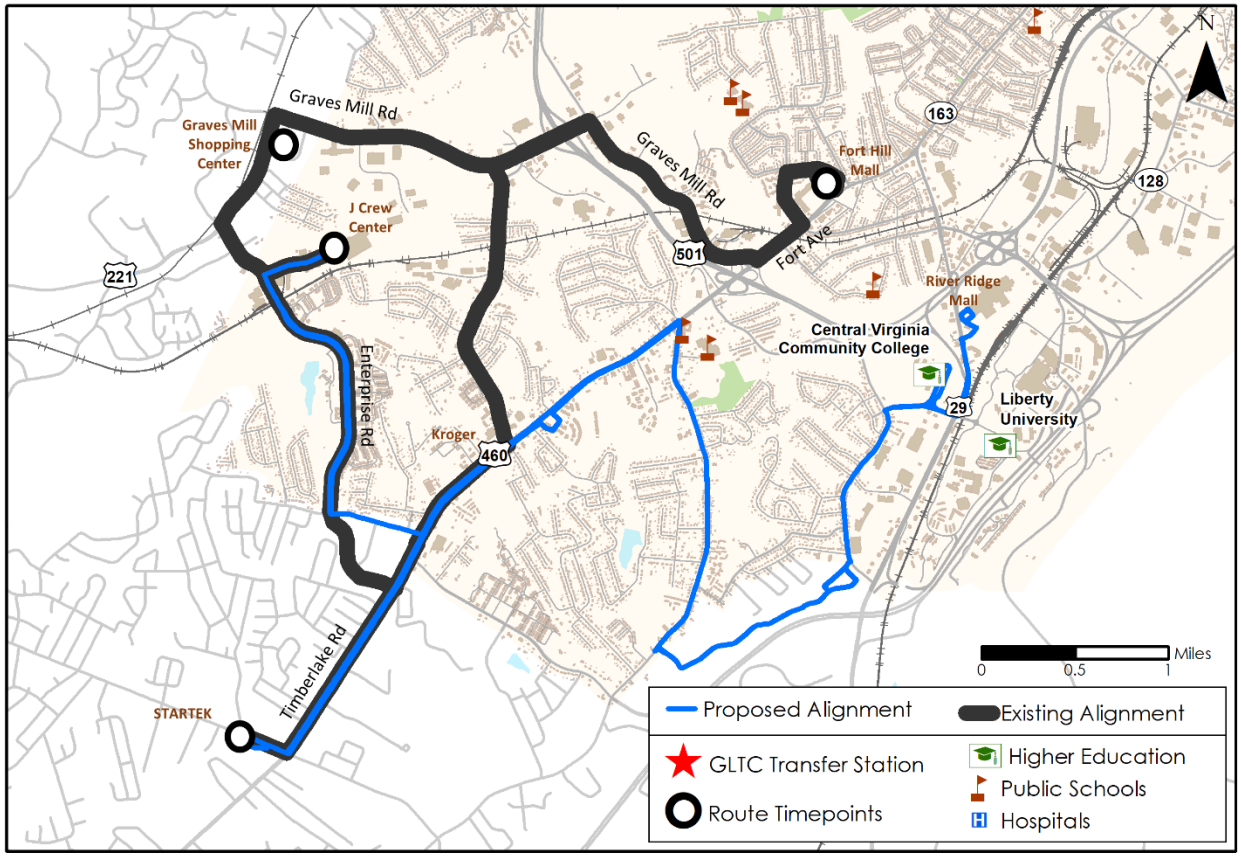
- The proposed alignment removes the large one-way loop, operating in a more bi-directional service.

- Route 6/7 currently operates multiple patterns that require passengers to learn a complicated schedule. This is in contrast to other routes in the system that use an A/B system for distinguishing direction of travel. Removing the one-way loop and simplifying the schedule will make Route 6/7 more approachable for new riders.
- Removal of the service on the Thomas Road, Myrtle Street, and Westview Drive sections of the existing 6/7 may cause an issue for some riders. However, a large portion of this area will still have service within 0.25 mile of the route, and nearly all of this area will have service within 0.5 mile of the route.

3.1.9. Route 7

Service Changes: The Route 7 is proposed to make major alignment changes, shown cartographically in **Figure 3-9**. The proposed service would start service at River Ridge Mall and then serve Central Virginia Community College and the commercial developments along Wards Ferry Road. The route would then travel south along Simons Run, and then north on Leesville Road, to access Timberlake Road, where it runs south to the Social Security office. Two patterns for Route 7 are recommended—Pattern A serving J Crew Distribution and Contact Center on Dillard Drive, and Pattern B serving STARTEK on Waterlick Road. Route 7 is expected to continue to operate 60-minute headways, requiring one bus for operation. Each pattern will operate every 120 minutes.

Figure 3-9: Alignment of Existing Route 7 and Proposed Route 7



Source: GLTC TSP Planned Improvements and Modifications, 2019.

The change in alignment from the existing Route 7 to the proposed Route 7 results in an increase in annual revenue miles of about 8,250), as shown in **Table 3-9**. Like other plans in the short-term, this alteration stays cost neutral as the revenue hours and peak vehicles requirement remains the same. Ridership is expected to increase a small amount based on the additional revenue miles and may also see ridership gains from increased connectivity to other routes and operating as bi-directional service.

Table 3-9: Annual Statistics for Existing Route 7 and Proposed Route 7

	Existing 7	Proposed 7	Total Change
Revenue Hours	4,392	4,392	0
Revenue Miles	67,265	75,515	8,250
Peak Vehicles	1	1	0
Operating Cost	$383,290	$382,290	$0
Ridership	44,700	50,200	5,500

Source: GLTC TSP Planned Improvements and Modifications, 2019.

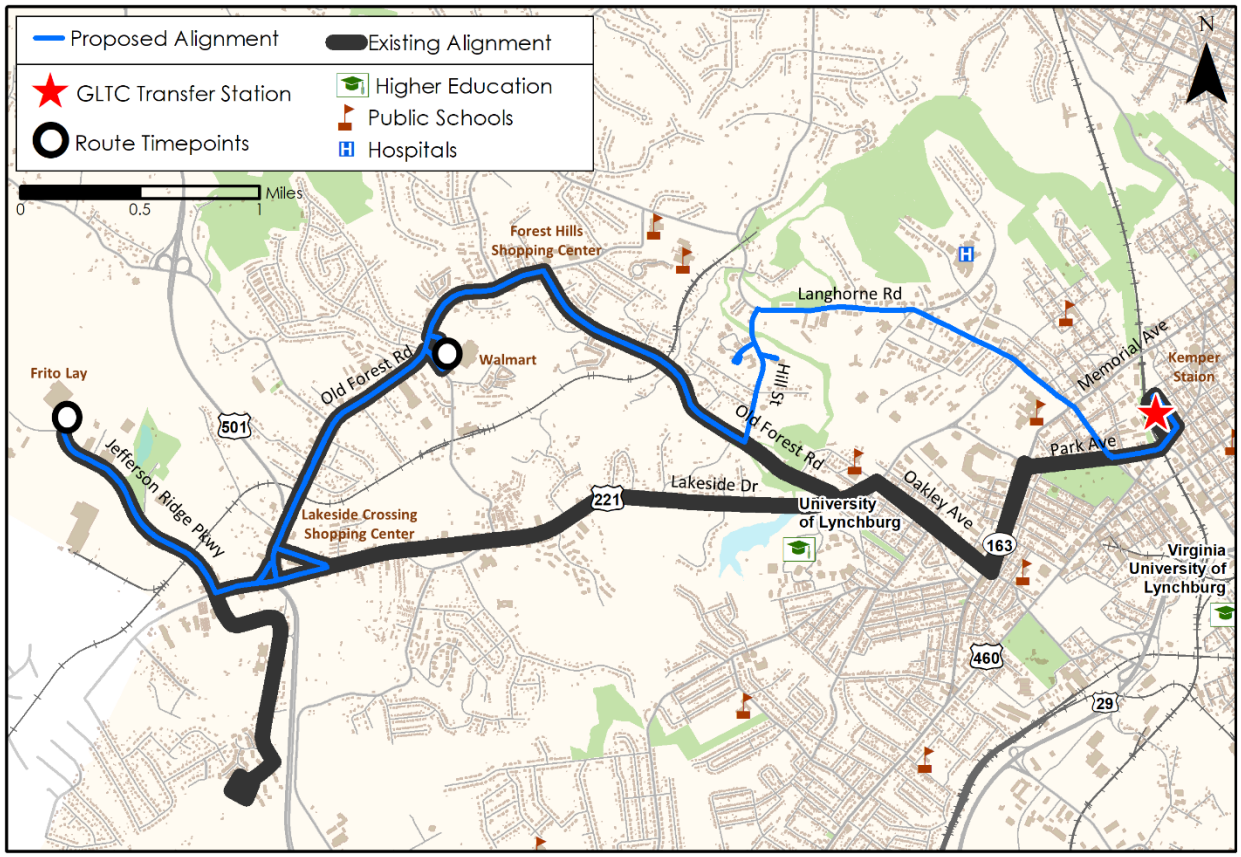
Justification and Needs Fulfillment:

- The proposed alignment for Route 7 reduces the out of direction travel by removing the large one-way loop in the center of the route.
- Access to the new transfer location provides more connections to the rest of the transit system.
- Splitting the route into an A and B pattern would reduce the number of times this route serves STARTEK and J Crew Distribution and Contact Center throughout the day. However, the combination of bi-directional service and improved access to other routes offer a compelling package as a tradeoff. In addition, STARTEK still receives hourly service via of the combination of the proposed Route 7 and proposed Route 11. When the Route 7 operates service to the J Crew Distribution and Contact Center, the bus operating the proposed Route 11/Route 5 interline would operate the Route 11 service, thereby providing STARTEK with bus access every 60 minutes.
- Service on Graves Mill Road from Forest Road to Lynchburg Freeway would be removed. This stretch is recommended to be covered by the modified Route 8B (see below section on proposed Route 12).
- Service on Old Graves Mill Road would be removed. This area is primarily low density with low transit potential. Kendall Square Apartments complex is located on the stretch of Old Graves Mills Road with proposed removal of transit; however, this complex is only 0.2 mile from transit access on Timberlake Road.
- It may be possible to divert Route 7 to Cornerstone during months where Liberty University does not serve this development.
- Dialogue with STARTEK and J Crew Distribution and Contact Center is advisable to make sure that the service changes are not overly burdensome on their employees.
- In the existing system, Route 7 connects to two routes. In the proposed system, Route 7 connects to seven routes.

3.1.10. Existing Route 8A and Proposed Route 8

The existing Route 8A and Route 8B one-way pairs are recommended to be modified to operate bi-directional service. Instead of Route 8A reaching Old Forest Road via the current alignment along Memorial Avenue and Oakley Avenue, the proposed Route 8A assumes the alignment of Route 10 on Memorial Avenue, Langhorne Road, and Hill Street, shown below in **Figure 3-10**. The route would then operate along Old Forest Road as the current alignment before serving the Lakeside Crossing Shopping Center. Route 8A would then continue to Jefferson Ridge Parkway and Frito-Lay, Inc. Route 8A is expected to operate with one bus with 60-minute headways.

Figure 3-10: Alignment of Existing Route 8A and Proposed Route 8



Source: GLTC TSP Planned Improvements and Modifications, 2019.

The implementation of the proposed Route 8 is critical to add resources to the proposed Route 9, shown in **Table 3-10**. By operating the proposed Route 8 on the alignment of the existing Route 10, Route 10 could be eliminated, which in turn would free resources for use on the proposed Route 9. Peak vehicles and revenue hours would remain consistent from the existing plan to the proposed plan with this group of routes. Although these changes would result in a net gain in revenue miles, the ridership gains among these routes would likely be neutral because of additional miles on Route 9 (less productive), and fewer miles on the Route 8A and Route 10 combination. The additional ridership gained in the next section (Route 8B/proposed route 12), for a more complete perspective on ridership impacts.

Table 3-10: Annual Statistics for Existing Routes 8A, 9, and 10, and Proposed Routes 8 and 9

	Existing 8A	Existing 9	Existing 10	Proposed 8	Proposed 9	Total Change
Revenue Hours	5,258	1,580	2,282	5,258	3,862	0
Revenue Miles	67,333	31,361	28,585	86,137	56,192	12,049
Peak Vehicles	1	0.5	0.5	1	1	0
Operating Cost	$458,498	$137,776	$198,990	$458,498	$336,766	$0
Ridership	54,600	11,600	25,000	69,000	20,800	-1,400

Source: GLTC TSP Planned Improvements and Modifications, 2019.

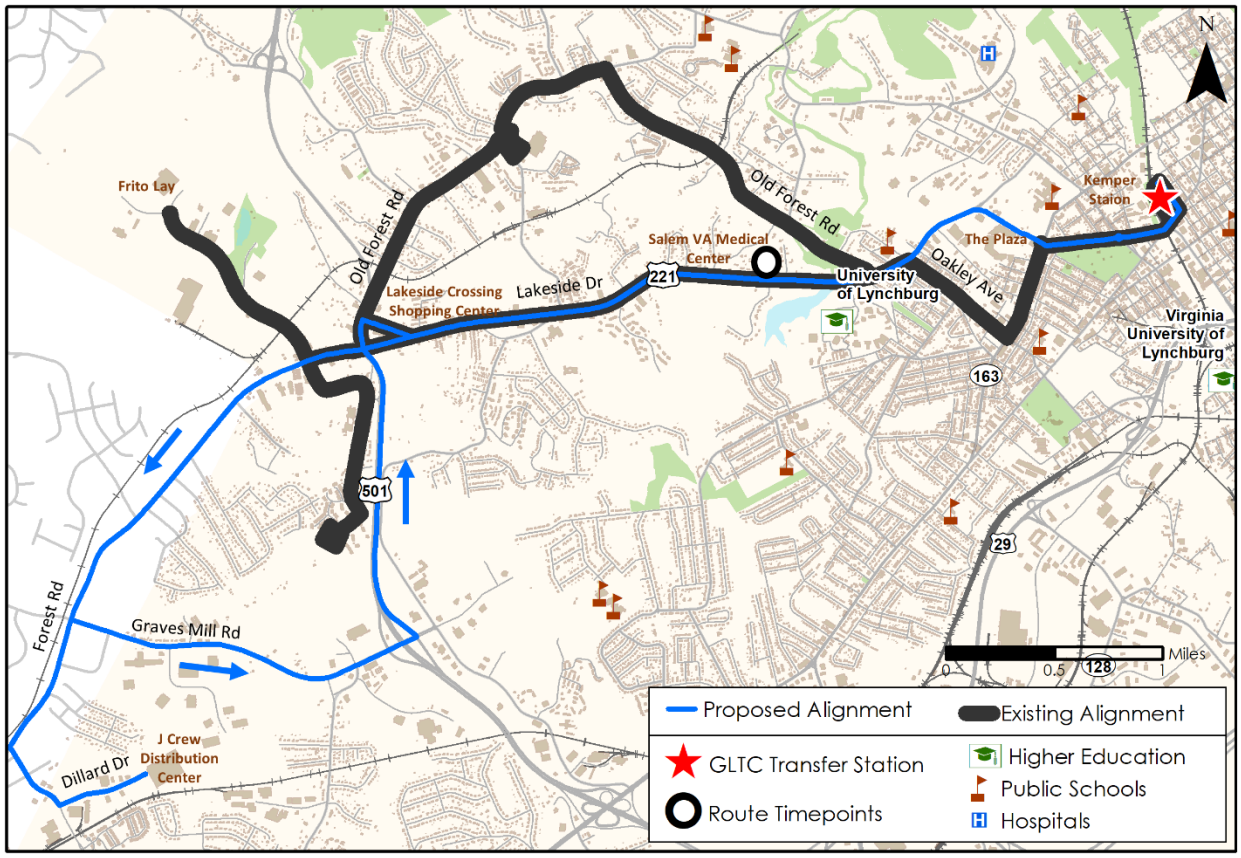
Justification and Needs Fulfillment:

- Proposed Route 8 changes the pattern out of Kemper Station to remove duplicative service with Route 8B and instead operates along the Route 10 alignment. This change would enable the removal of Route 10 and the additional service on Route 9 (previously interlined with Route 10).
- The removal of the large one-way loops simplifies travel for passengers, which would help encourage new riders to try the transit system.
- Connecting at the Lakeside Crossing Shopping center would give passengers the opportunity to transfer to the proposed Route 6 that serves Wards Crossing, Central Virginia Community College, and River Ridge Mall.

3.1.11. Existing Route 8B and Proposed Route 12

Service Changes: Like Route 8A, Route 8B would cease the existing one-way loop around Old Forest Road and Lakeside Drive. Instead, Route 8B will serve the Lakeside Drive corridor until connecting at the Lakeside Crossing Shopping Center, shown in **Figure 3-11**. Route 8B would no longer serve Breezewood Drive, and instead would continue onto Forest Road to Serve the J Crew Distribution Center. On the return trip, the route would turn onto Graves Mill Road and then Lynchburg Expressway to access Lakeside Drive. Route 8B would continue to operate with a vehicle requirement of one bus with 60-minute headways. It is also proposed that this alignment be renamed to Route 12.

Figure 3-11: Alignment of Existing Route 8B and Proposed Route 12



Source: GLTC TSP Planned Improvements and Modifications, 2019.

The proposed Route 12 would use the resources from the existing Route 8B with no need for additional funding. The proposed Route 12 would operate a longer alignment than the existing Route 8B, enabling greater service area and projected ridership growth. Approximately 12,300 additional passengers would be expected to ride the proposed Route 12 than the existing Route 8B, as shown in **Table 3-11**.

Table 3-11: Annual Statistics for Existing Route 8B and Proposed Route 12

	Existing 8B	Proposed 12	Total Change
Revenue Hours	3,857	3,857	0
Revenue Miles	50,004	63,969	13,965
Peak Vehicles	1	1	0
Operating Cost	$336,330	$336,330	$0
Ridership	44,200	56,500	12,300

Source: GLTC TSP Planned Improvements and Modifications, 2019.

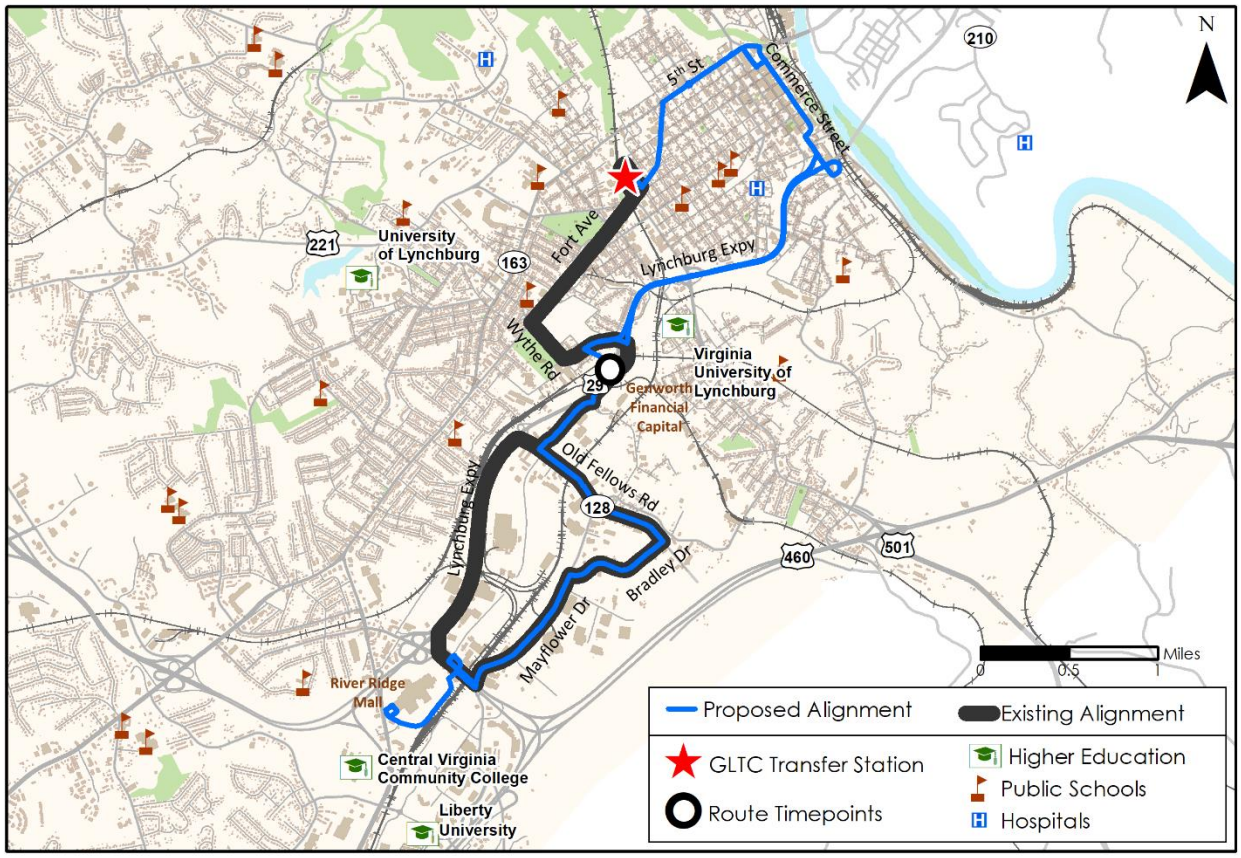
Justification and Needs Fulfillment:

- Changing service along Lakeside Drive to dedicated routes with bi-directional service would simplify travel for passengers, which would help encourage new riders to use the GLTC network.
- The recommended removal of Route 7 on Graves Mill Road and the Food Lion Shopping Center would be restored with Route 8B changes.
- The Lakeside Crossing Shopping Center connection would give passengers along Lakeside Drive better access to Wards Crossing, Central Virginia Community College, and River Ridge Mall.

3.1.12. Route 9

Service Changes: The short-term recommendation for Route 9 is to extend the alignment at both ends to serve River Ridge Mall at the southern end and downtown on the northern end, as shown in **Figure 3-12**. Service along Odd Fellows Road and Mayflower Drive would change from one-way service to bi-directional service. Service along Fort Avenue and Wythe Road would be removed, with Route 9 using the Lynchburg Expressway instead. The existing Route 9 needs 30 minutes for each roundtrip, which interlines with the 30-minute Route 10, creating a 60-minute cycle time. In the proposed route structure, the removal of Route 10 would enable a dedicated bus for Route 9. Refer to **Table 3-10** for operating statistics for Route 9.

Figure 3-12: Alignment of Existing Route 9 and Proposed Route 9



Source: GLTC TSP Planned Improvements and Modifications, 2019.

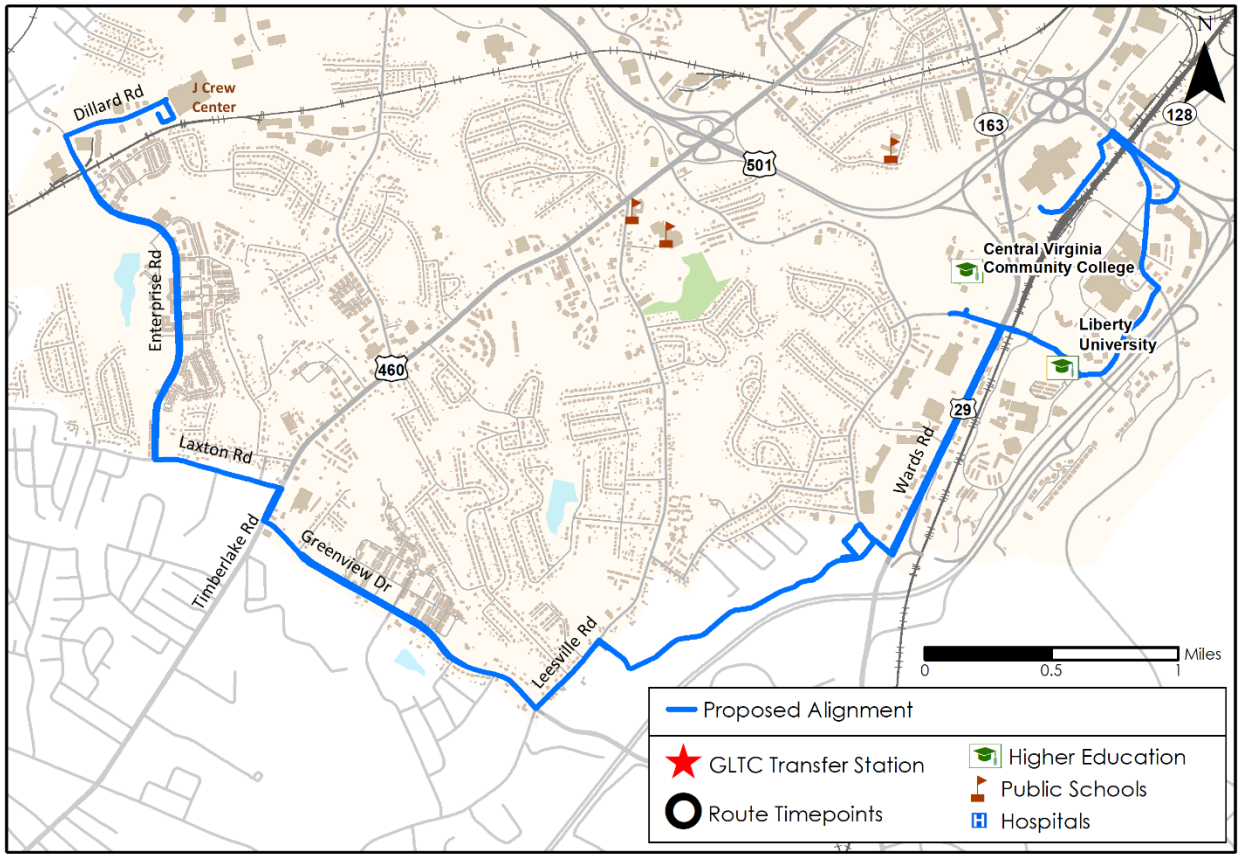
Justification and Needs Fulfillment:

- The removal of the large loop on Odd Fellow Road and Mayflower Drive would enable bi-directional service, thereby shortening travel times.
- Using more of the Lynchburg Expressway would reduce delay from congestion on Fort Avenue.

3.1.14. Proposed Enterprise Drive/Greenview Drive/Wards Road Route

Service Changes: This route would operate from J Crew Distribution and Contact Center along Enterprise Drive, briefly operating on Timberlake Road before serving Greenview Drive. This route would then use Simons Run and Wards Ferry Road to access and serve Wards Road. This route would divert to Central Virginia Community College before serving Liberty University and River Ridge Mall. **Figure 3-13** shows the proposed alignment of this route. The requirement for this route would be one bus operating at a 60-minute headway.

Figure 3-13: Alignment of Proposed Enterprise Drive/Greenview Drive/Wards Road Route



Source: GLTC TSP Planned Improvements and Modifications, 2019.

Operating statistics for the proposed Enterprise Drive/Greenview Drive/Wards Road Route are shown in **Table 3-12**. This new route would operate a similar schedule as the existing Route 6, with 15.13 revenue hours a day. It would require one bus operating nearly 4,000 revenue hours and just over 73,000 revenue miles annually. Ridership also is based on average riders per revenue mile for the existing Route 6, which would yield approximately 28,000 riders annually.

Table 3-12: Annual Statistics for Enterprise Drive/Greenview Drive/Wards Road Route

	Proposed Route
Revenue Hours	3,952
Revenue Miles	73,270
Peak Vehicles	1
Operating Cost	$344,891
Ridership	28,000

Source: GLTC TSP Planned Improvements and Modifications, 2019.

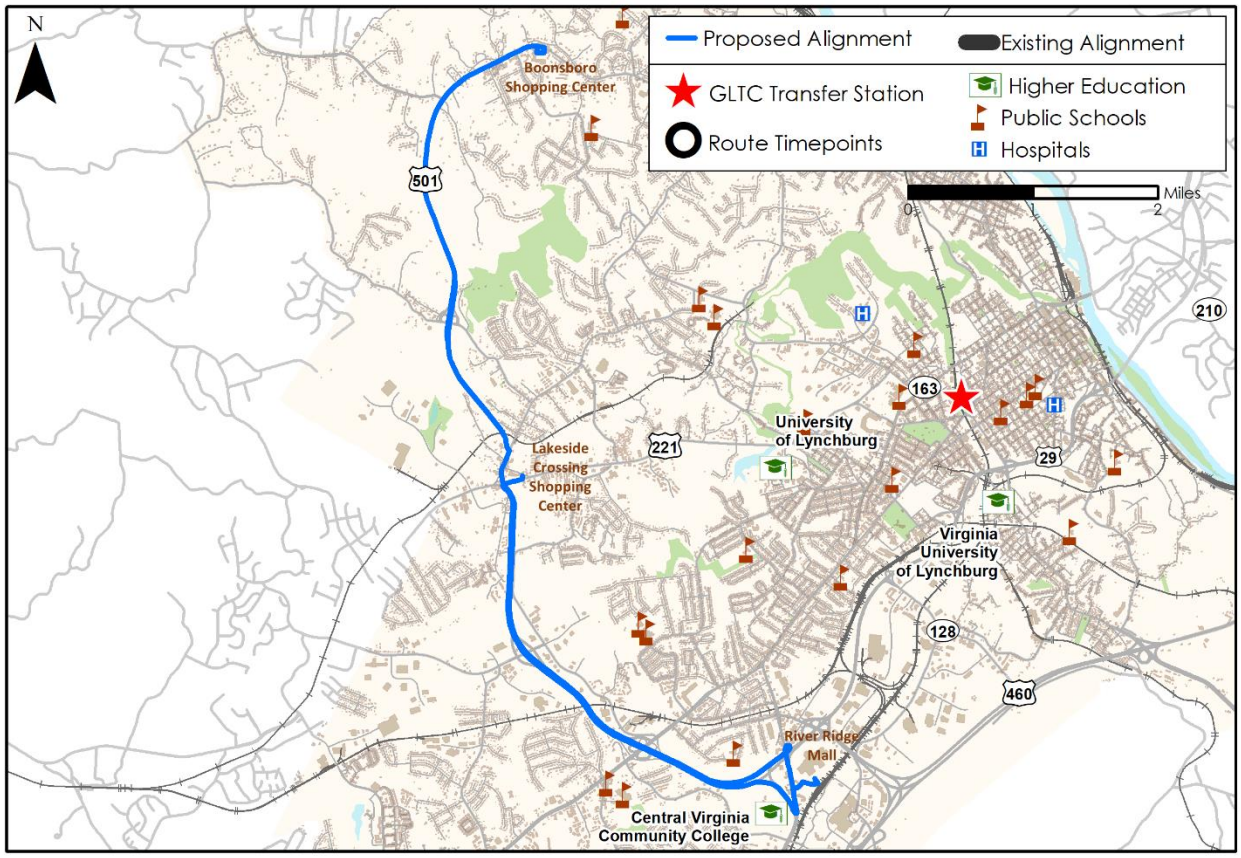
Justification and Needs Fulfillment:

- This route would offer additional service along Wards Road by connecting passengers from other routes at River Ridge Mall to other shopping and major destinations.
- The connection from Cornerstone to Wards Road and Liberty University would give residents in this development year-round access to major destinations.
- Serving the J Crew Distribution and Contact Center all day with this route would enable Route 7 to serve STARTEK all day instead of operating an A and B pattern with alternating trips serving each location.

3.1.15. Lynchburg Expressway Route

Service Changes: This route would operate from Boonsboro Road at the terminus of Route 3B and use the Lynchburg Expressway to River Ridge Mall, shown in **Figure 3-14**. A mid-route stop is recommended at Lakeside Crossing Shopping Center. This route would require a single bus operating at a 60-minute headway.

Figure 3-14: Alignment Proposed for Lynchburg Expressway Route



Source: GLTC TSP Planned Improvements and Modifications, 2019.

The proposed Lynchburg Expressway Route would operate the same schedule as the existing Route 6, which serves 15.13 hours a day. The annual ridership is estimated to be approximately 28,000 using the Route 6 riders per revenue mile estimation. Additional statistics for the proposed Lynchburg Expressway Route are shown in **Table 3-13**.

Table 3-13: Annual Statistics for Proposed Lynchburg Expressway Route

	Proposed Route
Revenue Hours	3,952
Revenue Miles	74,060
Peak Vehicles	1
Operating Cost	$344,891
Ridership	28,300

Source: GLTC TSP Planned Improvements and Modifications, 2019.

Justification and Needs Fulfillment:

- The Lynchburg Expressway Route would offer fast service from Route 3B to route connections at River Ridge Mall. Additional connections with proposed Routes 6, 8, and 12 (existing Routes 8A

and 8B) also would enhance mobility for residents in these areas. This includes students, faculty, and staff at Randolph College, who could connect to the Lynchburg Expressway Route for shopping destinations.

3.1.16. Weekday Span of Service Increase for Routes Select Routes

Service Changes: This service proposal shows increasing the span of service for select routes (1B, 2, 4A, 4B, 5, 11, and 9) shown in **Table 3-14**. The increase in span of service would extend service to 10 PM for Routes 1B, 2, 4A, and 4B. Route 1B currently has 14 trips running 14 revenue hours each day. This proposed service would increase the service by three hours to match the service of Route 1A. The existing Route 2 operates at 30-minute service for about 15 hours, creating 30 trips each weekday. The proposed service would operate an additional hour each weekday for two more trips. Routes 4A and 4B operate at 16 and 17 hours on weekdays, respectively. This service span increase accounts for two additional hours for Route 4A and one additional hour for 4B, bringing each route to a total of 18 hours every weekday.

This plan proposes additional service span for Routes 5, 11, and 9 as well. Proposed Routes 5 and 11, which are interlined, each operate six trips per weekday. Each route takes 60 minutes to complete; therefore, each route has 120-minute headways. An additional two revenue hours is recommended for these routes that should be implemented at the same time to keep the interline. Route 5 would operate until 7 PM, and Route 11 would operate until 8 PM. The proposed Route 9 also is planned to increase the span of service by an additional two hours, bringing the total span of service to 8.2 hours, shown In **Table 3-14**. Route 9 would run until 8 PM, increasing revenue hours from 6.2 to 8.2.

Using an average fixed route bus cost per hour of $87.27, the total operating cost of all service increases would be approximately $289,400 annually. Adding service at the very beginning and end of service periods typically does not increase ridership at the same rate of riders per revenue hour for the rest of the route. In **Table 3-14**, ridership of additional service hours is estimated to be 50 percent of the average riders per revenue hour for each route. The average passenger per revenue mile from existing Route 6 was used as a proxy for proposed Routes 5 and 11 because existing ridership data are not available. With the addition of two hours, an additional 1,200 riders annually would be expected from Route 5 and Route 11 each.

Table 3-14: Operating Statistics for Extended Span of Service on Select Routes

Proposed Route	Existing Daily Revenue Hours	Proposed Span of Service	Additional Operating Cost	Additional Capital Cost	Additional Annual Ridership
1B	13.80	16.80	$66,700	$0	4,400
2	14.85	15.85	$22,200	$0	1,800
4	33.27	36.27	$66,800	$0	5,900
5	6.05	8.05	$44,500	$0	1,200
11	8.05	10.05	$44,500	$0	1,200
9	6.20	8.20	$44,500	$0	1,900
Total	88.22	95.22	$289,400	$0	16,400

Source: GLTC TSP Planned Improvements and Modifications, 2019.

Justification and Needs Fulfillment:

- Routes 1A and 1B operate complimentary patterns, providing passengers bi-directional service for making return trips as fast as the initial trip. Increasing the service on Route 1B to match the span of Route 1A would create bi-directional service all day.
- Route 2 is a strong performing route, with frequent service and relatively high ridership. Increasing the span of service would enable riders to use the service later in the day, providing a transit option for workers with later shifts.
- Routes 4A and 4B both have high ridership and offering service later in the day would give riders an option for evening return trips.
- Route 5 is the only route in Amherst County and runs for about 6 hours a day. Increasing the hours of operation would give residents of Amherst greater opportunity to commute to work via transit. This recommendation is contingent on Amherst County's funding contribution to GLTC to operate the service.
- Proposed Route 11 is an all-day version of the existing Route 7E, which operates a clean linear alignment along Timberlake Road and Fort Avenue. Extending the service hours into the evening would enable employees at STARTEK to make the return trip home later in the day. The proposed Route 11 also includes the resources from Route 7E, which operates evenings. The Route 7E portion of the proposed Route 11 would shift two hours later to accommodate the extended span of service.
- Increasing the span of service on routes would give GLTC the opportunity to provide additional service without the large capital costs that other service increases would incur, such as the costs associated with purchasing and maintaining more vehicles.

3.1.17. Weekday Headway Improvements for Select Routes

Service Changes: This recommendation would upgrade Routes 3A, 3B, 4A, and 4B from the current 60-minute headways to 30-minute headways. For Route 8, 30-minute service is recommended for peak hours only (6 revenue hours daily). An additional bus would be required on each route to operate the improvement.

Table 3-15 shows the existing and proposed revenue hours for the additional service associated with increasing the frequencies for Routes 3A, 3B, 4A, 4B, and 8 (peak only). The additional operating costs is based on a $87.80 average cost per revenue hour for fixed route services. Capital costs are estimated using GLTC's previous cost for a Gillig Hybrid vehicle with 32-person seating capacity from 2012, inflated to 2019 dollars with an inflation rate of 2.3 percent per year. Capital costs would be $3,365,000 to purchase five vehicles. For operations, improving the four routes would total about $1,614,300 in annual operating cost for the four route improvements. Additional ridership is estimated to be about 60 percent of the existing annual ridership because increasing frequency typically does not have a linear relationship with service.

Table 3-15: Operating Statistics for Additional Bus on Routes 3A, 3B, 4A, 4B and 8

Proposed Route	Existing Daily Revenue Hours	Proposed Daily Revenue Hours	Additional Operating Cost	Additional Capital Cost	Additional Annual Ridership
3A	17.14	34.28	$381,400	$673,000	41,800
3B	16.13	32.26	$359,000	$673,000	38,600
4A	16.13	32.26	$359,000	$673,000	39,300
4B	17.14	34.28	$381,400	$673,000	41,000
8	17.42	23.42	$133,500	$673,000	10,500
Total	83.96	156.50	$1,614,300	$3,365,000	171,200

Source: GLTC TSP Planned Improvements and Modifications, 2019.

Justification and Needs Fulfillment:

- Routes 3A, 3B, and 4A provide the strongest ridership per revenue hour numbers in the system in 2017. Bolstering the service on these routes provides the greatest opportunity to increase ridership and provide service where it is needed the most.
- The significant operating and capital costs of these projects make the improvements a significant investment. Other less costly improvements are recommended to be made first before committing to additional operating and capital dollars required for this improvement.

3.1.18. Saturday Service Improvements

Service Changes: This recommendation would upgrade the Saturday service for select routes (existing Routes 1B, and 8B). The existing system runs interlined service for Routes 6 and 7 with one bus, yielding 120-minute headways for each route. Routes 1B and 8B do not operate on Saturdays. In the proposed system, Routes 6 and 7 would each have a dedicated vehicle so that headways would be improved to 60 minutes. Service in the proposed system also would be improved for Routes 1B and 8B, where Saturday service would run to match the revenue hours of Routes 1A and 8A, respectively.

Table 3-16 shows the existing and proposed daily revenue hours of service and the associated operating costs. Proposed daily revenue hours for Route 1B were obtained from the existing Route 1A revenue hours. For Routes 6 and 7, the existing route revenue hours were doubled to account for two buses instead of the existing single bus. For Route 12, the existing Route 8A was used to estimate the proposed daily revenue hours. Ridership, also shown in **Table 3-16**, is estimated to be about 60 percent of the existing ridership, to account for decreasing riders per hour during weekend service.

Table 3-16: Operating Statistics for Improved Saturday Service

Proposed Route	Existing Daily Revenue Hours	Proposed Daily Revenue Hours	Additional Operating Cost	Additional Capital Cost	Additional Annual Ridership
1B	0.00	13.95	$60,900	$0	4,900
12	0.00	14.66	$64,000	$0	5,000
Total	12.03	53.67	$181,800	$0	12,700

Source: GLTC TSP Planned Improvements and Modifications, 2019.

Justification and Needs Fulfillment:

- Routes 1A and 1B together operate bi-directional service, and without operating Route 1B on Saturdays, riders only have service in the counterclockwise direction. This leads to much longer travel times for many travel movements in the downtown area. This also impacts the time it takes riders to get to and from Kemper Street Station, thereby increasing the overall travel time for more complex travel patterns that involve the downtown area.
- Operating the proposed Route 12 on Saturdays to match the existing Route 8A service hours would provide bi-directional service for passengers along Lakeside Drive to Graves Mill Shopping Center on the west end of the route and downtown on the east end of the route. Connecting passengers in these areas to the rest of the system on Saturdays would provide additional work and shopping opportunities. Connections at Lakeside Crossing Shopping Center are more effective with the proposed Route 12 in operation as well.

3.1.19. Pilot of Saturday Demand Response / On-Call Zone Service

Service Changes: This recommendation would replace fixed route service on two different routes on Saturdays with demand response/on-call zone service. Routes 10 and 6/7X would both be eliminated on Saturdays, and resources would be shifted to a demand response service instead. For the Route 10 replacement, passengers in the neighborhoods northwest of Fort Avenue (Fort Hill and Long Meadows), would be required to call in advance to reserve a trip. The demand response vehicle would pick the passenger up at a predetermined location at an existing bus stop and time and take them to one of two locations: Kemper Station or River Ridge Mall. The route would serve each of the locations once an hour at scheduled times. The return trip would need to be scheduled in advance as well.

The service replacing the 6/7X Saturday route would operate along the existing Route 6/7X alignment. However, passengers would need to call in advance to schedule their trip. For this route replacement, all passengers picked up would be dropped off at River Ridge Mall. The route would serve River Ridge Mall once an hour. Passengers would need to schedule the return trip in advance as well.

Table 3-17 shows the existing fixed route service compared to the proposed demand response service. The demand response service would operate the same number of revenue hours as the existing service on Saturdays. By maintaining the same number of vehicles in service, the proposed demand response service would be a cost neutral change in terms of both operating and capital costs. Ridership would be expected to stay at similar levels as the current underperforming fixed route service. However, attempting to predict ridership before a pilot can begin and data collection can take place, is unlikely to clarify ridership response to the service.

Table 3-17: Operating Statistics for Replacing Routes 10 and 6/7X Saturday Service with Demand Response

Proposed Route	Existing Saturday Revenue Hours	Demand Response Saturday Revenue Hours	Operating Cost Change	Additional Capital Cost
10	14.50	14.50	$0	$0
6/7X	14.00	14.00	$0	$0
Total	28.50	28.50	$0	$0

Source: GLTC TSP Planned Improvements and Modifications, 2019.

Justification and Needs Fulfillment:

- It is important to note here that the policy decisions for this new service will be critical. New demand response service should not be made so desirable that the service is overwhelmed. Designing the service to connect to other fixed route services at a small number of drop-off locations, instead of a door-to-door operation, would help keeping the demand to a reasonable limit.
- The large zone size of Route 6/7X may create difficulty in maintaining on-time performance, so restricting the drop-off point to one location is recommended. The smaller zone size of the Route 10 replacement is more conducive to two drop-off locations.
- It is recommended that the price of the demand response service is the same as the fixed route service. Moreover, because there are no transfers issued on the fixed route services, it is recommended that the policy maintains no free transfers to from the demand response service to the connecting routes.
- Piloting a project with demand response on Saturdays would enable GLTC to introduce a new service gradually without major disruption to existing ridership. It would be very beneficial to have a robust data collection effort on the new service, so later decisions regarding demand response services can be well informed.
- The 24-hour advance reservation system is recommended, at least in the beginning of the process, to give GLTC time to plan the timing and order of pick ups and drop offs. Depending on the success of the pilot, GLTC could invest in software to reduce the need for 24-hour notice for reservations. Website and smart phone applications could be developed or purchased to improve user experience as well.

3.1.20. Travel Time Comparisons

An important consideration in the reallocation of services is the travel time observed to and from key locations in the service area. As part of the rider and non-rider surveys, origin and destination pairs were collected and aggregated. Several origin-destination pairs were identified as important connections, and these were confirmed by GLTC staff. As part of this analysis, five key travel patterns were chosen to compare. These origin-destination pairs are as follows:

- Timberlake Road to Wards Road
- Liberty University South/Central Campus to Wards Road
- Centra Lynchburg General Hospital/Neighboring Apartments to Wards Road
- White Rock Hill to Timberlake Road
- Downtown to Liberty University/Mall

For each origin-destination pair, the travel time for the existing system is compared with the short-term proposed plan. Distances were measured using road network lengths, and times were calculated using an average transit travel speed of 15 miles per hour. In the case of walk times, an average of 3 miles per hour was used. Transfer times were estimated by dividing the headway in half to calculate average wait times regardless of schedule. For instance, if a passenger needs to make a connection at a location that is served by two buses an hour for a combined headway of 30 minutes an hour, then the average wait time is 15 minutes (half of the scheduled headway). When multiple bus routes could be used to get to the destination, then all buses regardless of its route are added into the headway calculation. Total times are calculated by summing all travel segments, and a comparison is made between the existing system and proposed system.

Timberlake Road to Wards Road Travel Time Comparison

Timberlake Road is flanked by several commercial developments, beyond which there are neighborhoods consisting of multi-family and single-family residential housing. Connecting this area to the Wards Road area would provide shopping and work trips for residents of these neighborhoods. To travel from this area of Lynchburg to the Wards Road shopping area on the current transit system, passengers must take Route 7 to Fort Hill Mall, where they would connect with Route 6. A wait time of 30 minutes is estimated because Route 6 operates at one bus per hour. The total travel time is about 76 minutes, which is 55 minutes slower than the proposed system, that consists of the taking the realigned Route 7 without any transfers necessary. A comparison of travel times is shown in **Table 3-18**.

Table 3-18: Timberlake Road to Wards Road Travel Time Comparison (Minutes)*

	In-Vehicle Time	Number of Transfers	Total Transfer Time	Total Travel Time
Existing System	46	1	30	76
Proposed System	21	0	0	21
Difference	25	1	30	**55**

**Travel times are calculated using the point locations of Timberlake Road at Greenview Drive to Wards Road at Wards Ferry Road*

Source: GLTC TSP Planned Improvements and Modifications, 2019.

Liberty University South to Wards Road Travel Time Comparison

Liberty University South consists of several Liberty University academic and common buildings, which are close in proximity to Wards Road, but are separated by railroad tracks. Transit access from this area to Wards Road would effectively circulate students, staff, and faculty to major shopping and other commercial development in Lynchburg. In the existing system, this travel movement would require taking Route 4B from Liberty University to River Ridge Mall, where the passenger would connect to Route 4A. The hourly service of each of these routes leads to a transfer time of about 30 minutes, leading to a total travel time of 45 minutes, as shown in **Table 3-19**. Alternatively, passengers have the option of walking for about 13 minutes from Liberty University to Wards Road. The time spent riding on Route 4A would be about 9 minutes, bringing the total time to about 22 minutes. In the proposed system, the passenger could connect to Route 4 directly to get to the Wards Road and Wards Ferry Road shopping area, which would take about 9 minutes total, without the need to transfer. The total travel time savings is about 36 minutes for this travel movement.

Table 3-19: Liberty University to Wards Road Travel Time Comparison (Minutes)*

	In-Vehicle Time	Number of Transfers	Total Transfer Time	Total Travel Time
Existing System	15	1	30	45
Proposed System	9	0	0	9
Difference	6	1	30	**36**

**Travel times are calculated using the point locations of University Boulevard at Evans Boulevard to Wards Road at Wards Ferry Road*

Source: GLTC TSP Planned Improvements and Modifications, 2019.

Centra Lynchburg General Hospital to Wards Road Travel Time Comparison

Centra Lynchburg General Hospital is located a little over a mile northwest of Kemper Station. Access from Centra Lynchburg General Hospital to the major commercial activity along Wards Road requires boarding Route 10 and transferring at Kemper Station. From the transfer center, passengers must connect to Route 4A to get to Wards Road, for a total travel time of about 62 minutes. In the proposed system transit network, passengers could walk to the modified Route 8, using the same alignment as the existing Route 10. Connecting at Kemper Station, however, is estimated to be less than half as long as in the existing network because riders will connect to Route 4 to get to Wards Road. Travel time comparisons of the existing system and the proposed system for this travel movement are shown in **Table 3-20**.

Table 3-20: Centra Lynchburg Hospital to Wards Road Travel Time Comparison (Minutes)*

	In-Vehicle Time	Number of Transfers	Total Transfer Time	Total Travel Time
Existing System	32	1	30	62
Proposed System	37	1	15	52
Difference	-5	0	15	**10**

**Travel times are calculated using the point locations of Centra Lynchburg General Hospital to Wards Road at Wards Ferry Road*

Source: GLTC TSP Planned Service Improvements, 2019.

White Rock Hill to Timberlake Road Travel Time Comparison

The White Rock Hill area of Lynchburg is located southeast of downtown and is composed of mostly single-family homes. The travel time from White Rock Hill to Timberlake Road is lengthy in the existing system. First, passengers must board Route 1B to access Kemper Station, where they have an average wait time of 30 minutes to catch Route 6/7. From Route 6/7, passengers will need to make an additional transfer at Fort Hill Mall to connect to Route 7. The total travel time for this path is approximately 110 minutes, as shown in **Table 3-21**. The proposed transit system has a reduced total travel time of 92 minutes. This is achieved through the reallocation of services, making the existing Route 7E and all-day route named Route 11. Despite the 120-minute headway of Route 11, yielding an average of 60-minute wait time (without passenger awareness of schedule information), the proposed system is still nearly 20 minutes quicker than the existing system.

Table 3-21: White Rock Hill to Timberlake Road Travel Time Comparison (Minutes)*

	In-Vehicle Time	Number of Transfers	Total Transfer Time	Total Travel Time
Existing System	50	2	60	110
Proposed System	32	1	60	92
Difference	18	1	0	**18**

**Travel times are calculated using the point locations of Grace Street at Florida Avenue and Timberlake Road at Greenview Drive*

Source: GLTC TSP Planned Improvements and Modifications, 2019.

Downtown Lynchburg to River Ridge Mall Travel Time Comparison

Downtown Lynchburg to River Ridge Mall is a heavily requested trip pattern. In the existing system this trip takes about 66 minutes. Passengers access the transit system by boarding on Route 1B and alighting at Kemper Station to make a transfer to Route 4B. The transfer is estimated to take about 30 minutes due to the hourly schedule of Route 4B. In the proposed system, the total travel time is estimated to be reduced by 36 minutes. The improved travel time in the proposed system, as shown in **Table 3-22**, is possible because of the direct connection between downtown and River Ridge Mall with Route 9.

Table 3-22: Downtown to River Ridge Mall Travel Time Comparison (Minutes)*

	In-Vehicle Time	Number of Transfers	Total Transfer Time	Total Travel Time
Existing System	36	1	30	66
Proposed System	30	0	0	30
Difference	6	1	30	**36**

**Travel times are calculated using the point locations of Commerce Street at 12th Street to Liberty University*

Source: GLTC TSP Planned Improvements and Modifications, 2019.

3.2. Prioritization of Planned Service Improvements

Each of the projects detailed in the preceding section addresses identified needs of the transit system. Programming the projects over a 10-year timeframe will help GLTC plan for the capital and operating expenses that come with an increase in service levels. This section of the TSP assigns a desirable timeframe for each of the projects, based on prioritization that considers the needs fulfillment, cost and time necessary for implementation. **Table 3-23** shows the year-by-year progression of the short-(1 to 3 years), mid- (3 to 7 years), and long-(7 to 10 years) term plans throughout the lifespan of this TSP. A total of 24 projects are included in the prioritization, all of which include cost estimates in FY19 dollars.

By FY21, the short-term plan is expected to be implemented, which increases the total operating costs by $1,259,249 annually. The majority of these projects can be completed by reallocating existing resources: only five of the fifteen projects proposed in the short-term require any additional funds, and only one of the fifteen projects has capital costs associated. For the projects that do require additional funding the costs would likely need to be covered by either local funds or private partnerships with businesses, as funding through performance-based programs such as SMART SCALE are likely to be too competitive. Capital costs are only expected in FY21, where the purchase of two vehicles would be required to operate the additional frequency on Route 4. All projects in the short-term plan are considered high priority and could be implemented relatively quickly.

The mid-term plans include four projects spanning from FY22 to FY25, all of which are designated as medium priority. The total annual operating cost increase over this time is $305,700, while the associated capital costs total $673,000. These projects include a mix of increased weekday and Saturday service.

The long-term plans make up the final three years of the TSP (FY26, FY27, and FY28). Five of the twenty-four projects in the TSP are grouped into the long-term plan, all of which have low priority compared to the other projects. This timeframe includes piloting the demand response service on Saturdays, increasing span of service on Route 9, additional weekday frequency on Routes 3A and 3B, as well as two new routes.

Beyond the lifespan of the TSP, GLTC may offer the addition of Sunday service. Operating on Sundays would cause significant increases in revenue hours and miles, resulting in a large increase in operating cost for GLTC. The reimplementation of Sunday service should be approached carefully because of the recent experience of poor performing service. Sunday service is explored in more detail in **Section 3.4.1**.

Table 3-23: Prioritization of Planned Service Improvements

Time Frame	Fiscal Year	Project	Priority Level	Additional Annual Operating Costs	Capital Costs
Short-Term	2019		-	-	-
	2020	Routes 1A and 1B connection to Kemper Station	High	$0	$0
		Route 3A extension	High	$0	$0
		Route 3B extension	High	$0	$0
		Route 4A and 4B realignment (combine and rename to Route 4)	High	$0	$0
		Eliminate existing Route 4X and Route 7E and implement proposed Route 11	High	$0	$0
		Route 6 realignment	High	$0	$0
		Route 6/7 realignment (change name to Route 10)	High	$0	$0
		Route 7 realignment	High	$0	$0
		Route 8A realignment (change name to Route 8), Route 9 realignment, removal of route 10	High	$0	$0
		Route 8B realignment (change name to Route 12)	High	$0	$0
		Route 2 realignment, addition of second pattern	High	$365,749	$0
		Extend weekday hours for Route 2	High	$22,300	$0
		Extend weekday hours for Route 4	High	$66,800	$0
		Add Saturday Service for Routes 12	High	$64,000	$0
	2021	Additional weekday frequency on Route 4	High	$740,400	$1,346,000
Mid-Term	2022	Additional weekday frequency on Route 8 peak only	Medium	$133,500	$673,000
	2023	Add Saturday Service for Routes 1B	Medium	$60,900	$0
	2024	Extended weekday hours for Route 1B	Medium	$66,800	$0
	2025	Extended weekday hours for Routes 5 and 11	Medium	$44,500	$0
Long-Term	2026	Pilot Saturday Demand Response	Low	-$60,200	$0
	2027	Extended weekday hours for Route 9	Low	$44,500	$0
		Additional weekday frequency on Routes 3A, 3B	Low	$740,400	$1,346,000
	2028	Addition of new Route (Lynchburg Expressway)	Low	$344,891	$0
		Addition of new Route (Enterprise Dr/Greenview Dr/Wards Rd Route)	Low	$344,891	$0

Source: GLTC TSP Planned Improvements and Modifications, 2019.

3.3. Service Development

GLTC desires to increase service gradually over the course of the 10-year TSP timeframe. It is important to caveat this statement however, by noting that increases in funding are necessary to implement all of the improvements. Given that the service development is heavily influenced on the availability of funding, the timing of planned improvements requiring additional funding is uncertain and subject to change over time.

A total of twelve of the twenty-four improvements do not require additional revenue hours to implement, shown in **Table 3-24**. Of the projects that require additional revenue hours, many of them are moderate in size, requiring less than 1,000 revenue hours annually. Overall, the TSP projects call for an increase in service where it is already performing the best and expands to areas that show the greatest potential. Many of the planned improvements take advantage of excessive layovers, by extending routes to offer service to new areas. Although the projects in this section are not currently included in the Statewide Transportation Improvement Plan or Six-Year Improvement Plan, all plans presented here are expected to be included in the next update to each document.

Despite the overall addition of route miles in the system, there are some areas that would lose service. The existing Route 7 serves southwest Lynchburg. With the realignment of Route 7, service would be removed from Old Graves Mill Road and Forest Road. The removal is justified by the fact that Old Graves Mill Road is not productive in ridership. Old Graves Mill Road is primarily made up of low-density residential development, except for one apartment complex near the intersection with Timberlake Road. Residents here are still within 0.2 mile of Timberlake Road, where they can access Routes 7 and 11. One more small reduction in service is on Breezewood Drive, where Routes 8A and 8B currently operate. This segment of Routes 8A/8B is reported to have poor ridership, and removal is expected to have little to no impact on existing ridership. The last section of service removal is in sections of the Fort Hill and Long Meadows neighborhoods, where the existing Route 6/7 is recommended to operate bi-directional service as the proposed Route 10. The areas where service is removed consists of low-density residential development, and does not produce significant ridership. Moreover, much of the area is within 0.25 mile of the new alignment or Fort Avenue, which is proposed to be served by three routes (Routes 11, 4A, and 4B).

The additional service comes in a variety of improvements, including extensions to routes, realigning routes, increased span of service on weekdays and Saturdays, increased frequency on weekdays, piloting demand response service, and implementing new routes. Most of the service changes in the short-term are realignments to routes, using existing resources without impacting the total revenue hours. Additional revenue hours are required however, for extending the weekday hours for Route 2 and Route 4, and adding Saturday service for Route 12. Increasing the frequency on Route 4 to every 30 minutes has the greatest impact on revenue hours and miles by far, increasing revenue hours by 8,484 and revenue miles by 129,412. Overall, every project increases the service miles required, except for project that reduces headways on Route 2 to 60 minutes and creates a Route 2A/2B, which reduces the service miles by about 4,468 annually.

During the mid-term, GLTC will increase the annual revenue hours by 4,013 and revenue miles by 48,755. The greatest impact in service requirements over this timeframe is increasing the weekday frequency on Route 8 during peak hours, which increases service hours by 1,530 and service miles by 21,412 annually.

The long-term timeframe for GLTC includes a total of five projects, ranging from additional weekday frequency, weekday span, two new routes, as well as piloting new demand response service. The two new routes, the Lynchburg Expressway Route and Enterprise Drive/Wards Road, would require about 8,000 additional revenue hours annually and two vehicles. Although these routes have potential over the long-term, the current demand for these travel patterns is less than much of the other planned improvements and therefore included at the end of the TSP timeframe.

Beyond the lifespan of the TSP, GLTC may offer the addition of Sunday service. Operating on Sundays would cause significant increases in revenue hours and miles, resulting in a large increase in operating cost for GLTC. The reimplementation of Sunday service should be approached carefully because of the recent experience of poor performing service. Sunday service is explored in more detail in **Section 3.4.1**.

Table 3-24: Planned Service Implementation over Life of TSP

Time Frame	Fiscal Year	Project	Priority Level	Annual Service Hours Change	Annual Service Miles Change
Short-Term	2019		-	-	-
	2020	Routes 1A and 1B connection to Kemper Station	High	0	7,173
		Route 3A extension	High	0	6,622
		Route 3B extension	High	0	6,622
		Route 4A and 4B realignment (combine and rename to Route 4)	High	0	33,929
		Eliminate existing Route 4X and Route 7E and implement proposed Route 11	High	0	210
		Route 6 realignment	High	0	2,160
		Route 6/7 realignment (change name to Route 10)	High	0	30,349
		Route 7 realignment	High	0	8,250
		Route 8A realignment (change name to Route 8), Route 9 realignment, removal of route 10	High	0	12,049
		Route 8B realignment (change name to Route 12)	High	0	13,965
		Route 2 realignment, addition of second pattern	High	4,191	84,382
		Extend weekday hours for Route 2	High	255	4,402
		Extend weekday hours for Route 4	High	765	9,333
		Add Saturday Service for Routes 12	High	733	12,157
	2021	Additional weekday frequency on Route 4	High	8,484	129,412
Mid-Term	2022	Additional weekday frequency on Route 8 peak only	Medium	1,530	21,625
	2023	Add Saturday Service for Routes 1B	Medium	698	8,905
	2024	Extended weekday hours for Route 1B	Medium	765	9,767
	2025	Extended weekday hours for Routes 5 and 11	Medium	1,020	8,458
Long-Term	2026	Pilot Saturday Demand Response	Low	0	0
	2027	Extended weekday hours for Route 9	Low	510	8,458
		Additional weekday frequency on Routes 3A, 3B	Low	8,484	120,289
	2028	Addition of new Route (Lynchburg Expressway)	Low	3,952	74,060
		Addition of new Route (Enterprise Dr/Greenview Dr/Wards Rd Route)	Low	3,952	73,270

Source: GLTC TSP Planned Improvements and Modifications, 2019.

3.3.1. Title VI and Triennial Review

The most recent completed GLTC Triennial Review (2018) was reviewed and there were not any deficiencies that require corrective action via service planning efforts. Therefore, the service and capital improvement plans made in this section have not been in response to Triennial Review deficiencies.

3.4. Unconstrained Improvements

3.4.1. Sunday Service

Service Changes: The existing GLTC system does not currently operate service on Sundays, although it did until 2011. A long-term recommendation is to reinstate Sunday service. While specific details of Sunday service would need to be worked out closer to service implementation, figures are shown here to provide a high-level estimate of reasonable operations.

Table 3-25 shows the service requirements to implement Sunday service. Values are calculated based on existing Saturday service to avoid complicating this plan with service alternative combinations. Moreover, because of the history of Sunday service in Lynchburg, it is prudent to offer conservative estimates, even for the long-term plan. The existing Saturday service requires about 14,100 revenue hours annually, which equates to about $1,230,900 in annual operating costs. No additional major capital costs would be incurred because the existing fleet could handle an additional day of service without the need for more equipment. Ridership is estimated based on systemwide ridership per revenue mile of 0.81 and diminished by 50 percent to account for the history of low Sunday ridership. A total of just under 90,000 riders are expected for Sunday service.

Table 3-25: Operating Statistics for Sunday Service

	Proposed Sunday Service
Revenue Hours	14,116
Revenue Miles	221,559
Peak Vehicles	12
Operating Cost	$1,230,900
Capital Cost	$0
Ridership	89,700

Source: GLTC TSP Planned Improvements and Modifications, 2019.

Justification and Needs Fulfillment:

- When Sunday service was previously offered, the high operating costs were weighed against the poor ridership, which resulted in GLTC cancelling the service. An analysis conducted at the time indicated low productivities and GLTC ultimately decided resources would be better spent on other days of operation. Because of previous experience, we recommend Sunday service to be considered only after the short-term and mid-term plans are implemented.

4. Implementation Plan

The implementation plan outlines the steps and improvements needed to support the operations and services described in Chapter 3. Capital investments in rolling stock, facilities, passenger amenities, and technology will be needed as both lifecycle replacement of existing assets and implementation of new assets. Improvements to the service will also need to be communicated to the community through new branding and marketing.

4.1. Asset Management

GLTC is a Tier II agency in Virginia and participates in DRPT-sponsored group Asset Management Plan (AMP). The Group Plan involves coordination with member agencies for improvement of the state of good repair of transit assets. The AMP provides a framework for prioritizing capital investments and data from which to communicate capital and operating needs. Implementation details provided in the following sections is used by GLTC to procure, operate, maintain, retrofit, and replace transit assets to manage performance, risks, and lifecycle costs.

4.1.1. Existing Rolling Stock Utilization

An overview of GLTC's existing fleet is contained in the **Appendix**. GLTC owns a total of 40 vehicles for fixed route service, 13 vehicles for paratransit services, and 12 support vehicles. A portion of GLTC's fixed route bus fleet is also dedicated to Liberty University transit service. Over the 10-year horizon of the TSP, existing vehicles will need to be replaced to maintain a state of good repair and current service levels. **Table 4-1** provides the schedule of replacement for existing GLTC rolling stock.

Table 4-1. Vehicle Replacement Needs

Action	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28
Replace										
Bus Fleet	8	1	3	15	4	3	4			5
Paratransit Fleet				6		7			6	
Support Vehicle Fleet	1				9	4		1		

4.1.1.1. Fixed Route Bus Fleet

Over the course of the TSP, GLTC will replace a total of 43 buses and purchase 6 expansion buses. Capital investment in replacement buses is anticipated primarily in the first six years as most of the fleet was put into service in the late 2000s. GLTC intends to sell and replace retired vehicles with vehicles of a similar size. Replacement buses are anticipated to have the following characteristics for compatibility with the existing fleet and maintenance facilities:

- **Type:** Standard Bus
- **Length:** 35/40 feet
- **Wheel Chair Capacity:** 2
- **Seating Capacity:** 32
- **Mode of Power:** Diesel
- **Useful Life**: 12 years/500,000 miles

The main mode of power will be diesel, but GLTC will explore electric power in the future. Replacement and expansion bus purchases are assumed to have a unit cost of $550,000 ($ FY 2019) with a 4% annual escalation rate.

4.1.1.2. Paratransit Bus Fleet

Capital investment in replacement vehicles for the paratransit fleet is anticipated in FY 2022, FY 2024 and FY 2027. Seven new vehicles were placed into service in 2018 (five replacements and two expansion vehicles). GLTC intends to sell and replace retired vehicles with vehicles of a similar size. Replacement paratransit vehicles are anticipated to have the following characteristics for compatibility with the existing fleet and maintenance facilities:

- **Type:** Medium-Duty Shuttle Bus
- **Length:** 25 feet
- **Wheel Chair Capacity:** 2
- **Seating Capacity:** 16
- **Mode of Power:** Gasoline
- **Useful Life**: 5 years/150,000 miles

Replacement paratransit purchases are assumed to have a unit cost of $145,000 ($ FY 2019) with a 4% annual escalation rate.

4.1.1.3. Support Vehicle Fleet

GLTC owns a fleet of support vehicles for operations and maintenance personnel duties. These vehicles will be sold and replaced with similar vehicles at the end of their useful life throughout the TSP years. Replacement support vehicle purchases are assumed to have a unit cost of $37,000 ($ FY 2019) with a 4% annual escalation rate.

4.2. Capital Implementation

4.2.1. Rolling Stock Expansion

Capital investments will be needed for expansion buses to support service in the mid-term and long-term years. **Table 4-2** summarizes the capital actions needed for improved transit services. A detailed table can be found in the **Appendix**.

Expansion bus purchases are anticipated in FY 2022 to support two new routes and in FY 2025 to support headway improvements. Expansion bus purchases are anticipated have matching characteristics to existing and replacement buses for compatibility with existing fleet and maintenance facilities.

Table 4-2. Rolling Stock Capital Needs

Action	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28
Bus Fleet				2			4			
Paratransit Fleet										
Support Vehicle Fleet										

4.2.2. Major System Maintenance and Operations Facilities

GLTC opened two major facilities for administration, operation, dispatch and maintenance in recent years. The Kemper Street Transfer Station was opened in 2014 and the GLTC Operations and Maintenance Facility was opened in 2017. Additional bus bays at the transfer station may be needed in the long-term to support headway improvements since the existing facility is well-utilized with the existing service plan (Kemper Station Bus Bay Expansion). Capital investment for two additional bus bays and accompanying passenger amenities (shelter, benches, lighting, etc.) are planned for FY 2025.

Additionally, infrastructure improvements are needed at a new transfer location at or near the River Ridge Mall (Wards Road Transfer Location Improvements). GLTC will be considering a partnership with an existing land owner to accommodate this improvement to avoid the resource requirements for land acquisition. Infrastructure improvements include bus pull-offs, sidewalks, curb ramps, passenger waiting areas, and shelters. This project is planned for FY 2022 to coincide with the short-term service improvements.

Facility capital needs are summarized in **Table 4-3.** Funds have not been secured for the Wards Road Transfer or Kemper Station Bus Bay Expansion improvement projects. Cost estimates assume a 3% annual escalation rate and 25% for professional engineering and construction contingency.

Table 4-3. Facility Capital Needs ($1000s)

Project	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28
Wards Road Transfer Location Improvements				$148						
Kemper Station Bus Bay Expansion							$223			

Assumptions:
Concrete work, 2 shelters, 6 benches at both Wards Road and Kemper Station locations
3% annual escalation

4.2.3. Passenger Amenities

In addition to the passenger facility improvements at transfer locations described in **Section 4.2.2,** GLTC is planning to implement passenger amenities to maintain and improve bus stops. GLTC has acquired new bus stop signs, as shown in **Figure 4-1**, to be installed at all bus stops. Installation of these signs will coincide with service improvements and route rebranding recommended.

Figure 4-1: Bus Stop Signs

The Central Virginia Planning District Commission (CVPDC) completed an ADA Bus Stop Accessibility Study which identified ADA compliance rates for bus stop features such as sidewalk connectivity, curb ramps, crosswalks, and boarding/alighting areas. The following were recommended in the study:

1. Make all GLTC bus stop shelters ADA accessible (12 shelters need upgrade)
2. Make all GLTC bus stop landing pads ADA accessible (250 stops need upgrade)
3. Make all GLTC bus stops accessible by ADA accessible sidewalk (286 stops need upgrade)

GLTC plans to work with the City to implement needed upgrades to current bus shelters and stops to improve ADA compliance.

Bus stop shelters are planned for installation at heavily used stop locations throughout the service area, and reconstruction of non-ADA compliant shelters identified in CVPDC's ADA Bus Stop Accessibility Study. GLTC will be identifying specific improvements to stops prioritized by the GLTC ADA Committee and begin implementing upgrades in FY 2022. Unit costs for bus shelter purchases and installation are estimated at $10,000 each with a 3% annual escalation rate.

Table 4-4. Passenger Amenities Capital Needs ($1000s)

Project	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28
Bus Stop Signs		$5								
Bus Stop Shelters				$167	$127		$61			$67

Assumptions:
12 shelters in FY20, 10 shelters in FY21, and 5 shelters in FY22, FY25, and FY28
3% annual escalation

4.2.4. New Technology Systems or Upgrades

GLTC has several current and proposed technology system upgrade projects that will enhance operations, expand data collection, and improve the customer experience. Technology capital needs are summarized in **Table 4-5.** Given that technology in the transit industry is evolving, GLTC will continue to evaluate its needs in future updates.

Table 4-5. Technology System Capital Needs ($1000s)

Project	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28
Farebox Upgrade	$1,500									
Real-Time Passenger Information Signs	$384									
Surveillance Upgrades		$55								
CAD/AVL System			$504							

Assumptions:
CAD/AVL system consists of 42 units of on-board hardware, installation costs, fixed route software, passenger information software, 10% project management and development, 10% contingency
3% annual escalation

4.2.4.1. Fare Collection Improvements

GLTC has a project to replace all electronic fareboxes in the fleet and has already secured DRPT and FTA grant funding. This project is expected to be implemented in FY 2019 and will modernize GLTC's fare collection equipment.

4.2.4.2. Traveler Information Improvements

GLTC has a project to implement digital signage displays to provide bus arrival times to waiting passengers and already has secured DRPT grant funding. This project is expected to be implemented in FY 2019. Digital signage displays will be placed at high-priority locations such as the Kemper Street Transfer Station. Additional real-time passenger information will be implemented with CAD/AVL improvements.

4.2.4.3. CAD/AVL System

GLTC plans to implement CAD/AVL to better manage dispatch of fixed route service. Currently, vehicle location is available through an existing system but the system does not have dispatch functionalities. Public outreach conducted during the TDP process also found that customers desire more user-friendly information on how to use the service and when the bus will arrive. Implementation of a CAD/AVL system would improve the efficiency of GLTC operations and provide more effective information to customers on bus arrivals.

The CAD/AVL improvement includes in-vehicle hardware, fixed route CAD/AVL software, real-time passenger information software, and a smartphone application. Implementation is planned for FY 2021. The cost estimate was derived from similar project cost estimates of other transit systems in Virginia and includes hardware and software costs, installation costs, and 20% for project management, development, and contingency with a 3% annual escalation rate.

4.2.5. Marketing and Branding

GLTC plans to rebrand its route numbers as part of the implementation of the service improvements. Rebranding the routes will give the system a new feel and make service changes easier to understand for customers, especially for routes with significant alignment changes. Changes to website, route maps, and brochures will be needed in FY 2020. Additional schedule brochure updates will be needed in FY 2022 with the addition of two new routes.

While not included in capital improvement needs, GLTC will need additional marketing efforts to publicize and educate the community on service improvements. The community outreach conducted during the TDP process found that target marketing campaigns are needed to increase awareness of the service. These marketing messages should be targeted towards specific customer groups such as students, business patrons, and regular system users. Marketing should emphasize the alternative travel options and connections provided by GLTC and aim to improve the perception of the service.

5. Financial Plan

The purpose of the Financial Plan portion of the TSP is to construct a reasonable projection of GLTC's operating and capital funding sources over the next ten fiscal years. Financial figures are estimated based on the most up to date available data provided by GLTC and DRPT, with projections that use standard escalation rates and figures from the Six Year Improvement Plan (SYIP). It is important to note that, as with any projection, the degree of uncertainty increases for every additional year into the future. All figures are presented in year-of-expenditure dollars (YOE$) unless otherwise noted. The financial plan chapter of this TSP is divided into three sections: operating and maintenance costs and funding sources; bus purchases and funding sources; and facility improvement costs and funding sources. While this chapter focuses on the future, a three-year retrospective of operating and capitals expenses and revenues is contained in the **Appendix** along with the most recent GLTC financial audit.

5.1. Operating and Maintenance Costs and Funding Sources

A baseline of FY 2020 operating and maintenance costs was created using data from GLTC and DRPT's FY 2020 (Six-Year Improvement Program). A series of assumptions (described in more detail below) were then utilized to create revenue and expense projections over TSP timeframe. From FY 2020 to FY 2028, annual operating expenses are anticipated to increase from $7,500,975 to $9,502,011 (an increase of $2,001,036) due to inflation alone. Optional service expansion detailed in Chapter 3 would increase the FY 2028 annual operating costs to $12,695,262, an increase of $5,194,287. In other words, the service changes increase O&M costs by $3,193,251 when compared to a no-service changes scenario.

Table 5-1 shows operating and maintenance expenses for both the existing system as well as the service plans changes in Chapter 3. FY 2020 is used here as a baseline, where service changes have either already been made or will be made within the fiscal year. FY 2019 values, which are actuals provided by GLTC, are included to maintain a consistent timeframe of FY 2019-2028 within the TSP. Changes that require additional revenue hours occur in every year except for FY 2026. By year 2028, the proposed system requires 118,344 revenue hours, an increase of 29,395 revenue hours per year over the existing system requirements. The associated costs with the service additions are $3,193,251 in year of expenditure dollars.

Table 5-1: Operating and Maintenance Costs– Existing System and Service Changes ($1000s)

Fiscal Year	FY19 (Actual)	FY20 (Baseline)	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28
Existing System										
Fixed Route Revenue Hours	81,521	75,577	75,577	75,577	75,577	75,577	75,577	75,577	75,577	75,577
Paratransit Revenue Hours	13,372	13,372	13,372	13,372	13,372	13,372	13,372	13,372	13,372	13,372
Total Revenue Hours	94,893	88,949	88,949	88,949	88,949	88,949	88,949	88,949	88,949	88,949
Operating Costs	$7,952	$7,501	$7,726	$7,958	$8,197	$8,442	$8,696	$8,957	$9,225	$9,502
Service Additions										
Annual Revenue Hours		5,944	8,484	1,530	698	765	1,020		8,994	7,904
Annual Operating Cost		$519	$763	$142	$67	$75	$52		$965	$874
Cumulative Revenue Hours		5,944	8,484	10,014	10,712	11,477	12,497	12,497	21,491	29,395
Cumulative Operating Cost		$519	$763	$927	$1,021	$1,127	$1,213	$1,249	$2,252	$3,193
Totals										
Total Revenue Hours	94,893	88,949	97,433	98,963	99,661	100,426	101,446	101,446	110,440	118,344
Total Operating Costs (YOE$)	$7,952	$7,501	$8,489	$8,885	$9,218	$9,570	$9,908	$10,206	$11,477	$12,695

1. Costs are stated in year of expenditure dollars, with the assumed escalation factor of three percent per year
2. Annual revenue hours includes city routes, LU routes, and paratransit routes
3. Operational changes include only the changes that incur additional operational costs
4. FY20 service additions have already been included in the "Existing System"

Transit operating revenues are categorized into the following:

- Federal
- State
- Local
- Farebox
- Advertising
- Other Income

The three most recent Financial Reports completed by independent auditors show that, on average, the federal operating revenues account for about 24% of the total operating expenses. Therefore, this TSP assumes federal revenues will account for 24% of the total operating expenses each of the future years.

State operating assistance funds for all transit systems in Virginia were obtained for FY 2020 through FY 2025 from the 2020 SYIP. Changes in total operating assistance funds were calculated on a year-by-year basis and shown in **Table 5-2** below. For FY 2019-2023, the annual change in total state operating assistance was applied to the previous fiscal year to approximate the available operating revenues to GLTC from the state. For FY 2024-2028, the average rate change from FY 2018-2023 was used to estimate operating revenues. The most recent data from FY 2019 show that the state contributed $2,022,003 in operating assistance, representing 25.4% of the total operating revenues. For FY 2020, state operating assistance is expected to be about $2,063,498 (27.5% of total), equating to an increase in terms of both total and percentage from the previous year. State operating assistance is formula-based, where assistance cannot exceed 30% of an agency's overall operating budget.

Table 5-2: State Operating Assistance Rate Change*

Year	Annual Increase/Decrease
FY20 to FY21	-0.94%
FY21 to FY22	2.48%
FY22 to FY23	1.45%
FY23 to FY24	1.44%
FY24 to FY25	1.41%

**Please see discussion below related to change in state funding methodology and potential implications for GLTC.*

It is important to note however, that the amount of state funding GLTC receives is likely to change because of recent changes in allocation methodology. In 2018 the Virginia General Assembly passed a statute requiring transit grant funding to be performance based (Section 33.2-1526.1 of the Code of Virginia). Prior to this, state funding was based on operating costs of the agency. The new statute is partially implemented in FY 2020 before taking full effect in FY 2021, where an agency's allocation is based on the size of the agency and the past three years of performance. Sizing metrics include: operating costs (50%), ridership (30%), revenue vehicle hours (10%), and revenue vehicle miles (10%). The sizing allocation is then adjusted based on the last three years of performance, using passengers per revenue vehicle hour, passengers per revenue vehicle mile, operating cost per revenue vehicle hour, operating cost per vehicle revenue mile, and operating cost per passenger. Because of the service

changes GLTC has undergone, including large changes in service provided to Liberty University discussed below, there is additional uncertainty in how the performance methodology will affect state funding revenues.

Another significant component of GLTC O&M funding comes from contracted services with Liberty University. The local private university has historically contracted service with GLTC to serve the transportation needs of the faculty, staff, and students with fixed-route bus service. In addition, the LU-UPASS program enables those affiliated with the university to use the GLTC routes free of charge by using a university pass. The last four years of funding that GLTC has received for these services can be seen below in **Table 5-3**, which show large year over year decreases in funding. The greatest decrease in funding occurs from FY 2019 to FY 2020, where the combined contracted services amount decreased by about $991,000. The large decreases show that contracted service from Liberty University is not a guaranteed funding source for GLTC moving forward. Should the contracted service be eliminated completely, both the O&M costs and revenues would decrease, which ultimately may result in changes in local funding needs.

Table 5-3: Liberty University

Year	Liberty University Contracted Service	LU- UPASS
FY17	$2,239,525	$60,060
FY18	$1,660,504	$60,060
FY19	$1,435,415	$60,060
FY20[1]	$336,400	$168,000

1. FY20 is based on the estimated service plan

A summary of Federal, state, and other anticipated funding sources for operating and maintenance costs are shown in **Table 5-4** and **Table 5-5.** To establish a baseline scenario, **Table 5-4** shows revenues based on the assumption of no changes to the existing system as of FY 2020, evidenced by revenue hours held constant through FY 2028. The total operating costs however, increase with the assumed inflation rate of 3% each year. Farebox revenues are expected to remain constant with no plans for additional services and no increase in fares. Contract service is projected to remain the same without concrete information on future changes. Advertising and other income are projected to increase modestly with the assumed inflation rate of 3%. Overall, the anticipated local funding need will grow from $1,805,060 to $3,593,897 over from FY 2020 to FY 2028 in YOE dollars, an increase of $1,788,837.

Alternatively, **Table 5-5** shows the requirements given the service changes from Chapter 3 take place. The annual revenue hours increase from 88,949 in FY 2020 to 118,344 in FY 2028, incurring a rise in total operating costs from $7,500,975 to $12,695,262. The additional funding is projected to come from a variety of sources, also shown in **Table 5-5**. Farebox revenues increase with the additional revenue miles estimated in the Chapter 3 service plans. By FY 2028, farebox revenues are expected to increase to about $851,385 annually because of the service expansion projects. This equates to an additional $243,813 in fares over the baseline scenario with no service changes in **Table 5-4**. However, the additional projects also increase the estimated local contribution necessary. In 2019, the local requirement for operating and maintenance is approximately $1,805,060, but in FY 2028 the local

requirement increases to $5,630,119, assuming GLTC proceeds with all of the projects in the service expansion plans.

Table 5-4: Operating and Maintenance Revenues No Service Changes ($1000s)

Fiscal Year	FY19 (Actual)	FY20 (Baseline)	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28
Revenue Hours	94,890	88,950	88,950	88,950	88,950	88,950	88,950	88,950	88,950	88,950
Total Operating Cost	$7,952	$7,501	$7,726	$7,958	$8,197	$8,442	$8,696	$8,957	$9,225	$9,502
Expected Revenue Sources										
Farebox	$610	$608	$608	$608	$608	$608	$608	$608	$608	$608
Contract Service	$1,435	$334	$334	$334	$334	$334	$334	$334	$334	$334
Advertising	$83	$90	$93	$95	$98	$101	$104	$107	$111	$114
Federal	$1,954	$2,358	$1,854	$1,910	$1,967	$2,026	$2,087	$2,150	$2,214	$2,280
State	$2,022	$2,063	$2,044	$2,095	$2,125	$2,156	$2,186	$2,212	$2,238	$2,264
Other Income	$183	$243	$251	$258	$266	$274	$282	$291	$299	$308
Local	$1,666	$1,805	$2,543	$2,658	$2,798	$2,944	$3,095	$3,256	$3,422	$3,594

1. FY19 revenue hours based on actuals. FY20 based on projections provided by GLTC. FY21-28 remain constant.
2. FY19 O&M costs based on actuals. FY20 based on projections provided by GLTC. FY21-28 based on a 3% annual inflation rate.
3. FY19 farebox based on actuals. FY20 based on projections provided by GLTC. FY21-28 remain constant.
4. FY19 contract service based on actuals. FY20 based on projections provided by GLTC. FY21-28 remain constant.
5. FY19 advertising based on actuals. FY20 based on projections provided by GLTC. FY21-28 based on a 3% annual inflation rate.
6. FY19 federal funding based on actuals. FY20 based on projections provided by GLTC. FY21-28 reflects 24% of total operating expenses.
7. FY19 state funding based on actuals. FY20 based on projections provided by GLTC. FY21-25 based on annual state O&M funding changes in FY20 SYIP (2021=-0.94%, 2022=2.48%, 2023=1.45%, 2024=1.44%, 2025=1.41%); FY26-28 are assumed to be the average of annual growth from FY21-25).
8. FY19 other income based on actuals. FY20 based on projections provided by GLTC. FY21-28 based on 3% inflation rate.
9. FY19-28 local funding captures remaining amount of funds required.

Table 5-5: Operating and Maintenance Revenues Service Plans – Service Changes Only ($1000s)

Fiscal Year	FY19 (Actual)	FY20 (Baseline)	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28
Revenue Hours	94,890	88,950	97,430	98,960	99,660	100,430	101,450	101,450	110,440	118,340
Total	$7,952	$7,501	$8,489	$8,885	$9,218	$9,570	$9,908	$10,206	$11,477	$12,695
Expected Revenue Sources										
Farebox	$610	$608	$689	$699	$704	$709	$711	$711	$794	$851
Contract Service	$1,435	$334	$334	$334	$334	$334	$334	$334	$334	$334
Advertising	$83	$90	$93	$98	$107	$121	$140	$167	$206	$261
Federal	$1,954	$2,358	$2,037	$2,132	$2,212	$2,297	$2,378	$2,449	$2,755	$3,047
State	$2,022	$2,063	$2,044	$2,095	$2,125	$2,156	$2,186	$2,212	$2,238	$2,264
Other Income	$183	$243	$251	$258	$266	$274	$282	$291	$299	$308
Local (Required)	$1,666	$1,805	$3,041	$3,268	$3,469	$3,680	$3,877	$4,041	$4,851	$5,630

1. FY19 revenue hours based on actuals. FY20 based on projections provided by GLTC. FY21-28 increase based on service plans described in Chapter 3.
2. FY19 O&M costs based on actuals. FY20 based on projections provided by GLTC. FY21-28 based on service plans described in Chapter 3 and a 3% inflation rate.
3. FY19 farebox based on actuals. FY20 based on projections provided by GLTC. FY21-28 increase based on additional revenue miles outlined in Chapter 3.
4. FY19 contract service based on actuals. FY20 based on projections provided by GLTC. FY21-28 remain constant.
5. FY19 advertising based on actuals. FY20 based on projections provided by GLTC. FY21-28 based on a 3% annual inflation rate.
6. FY19 federal funding based on actuals. FY20 based on projections provided by GLTC. FY21-28 reflects 24% of total operating expenses.
7. FY19 state funding based on actuals. FY20 based on projections provided by GLTC. FY21-25 based on annual state O&M funding changes in FY20 SYIP (2021=-0.94%, 2022=2.48%, 2023=1.45%, 2024=1.44%, 2025=1.41%); FY26-28 are assumed to be the average of annual growth from FY21-25).
8. FY19 other income based on actuals. FY20 based on projections provided by GLTC. FY21-28 based on 3% inflation rate.
9. FY19-28 local funding captures remaining amount of funds required.

5.2. Bus Purchase Costs and Funding Sources

The Chapter 4 Implementation Plan includes the vehicle replacement and expansion program, which is utilized here to create the financial plan for funding bus purchases, shown in **Table 5-6**. The replacement schedule calls for new vehicles every year, with anywhere between one and twenty-three vehicles in any given year. The greatest number of vehicles is expected in FY 2022, where there is a need for seventeen buses and six paratransit vehicles, yielding an estimated $11,496,000 in capital costs. On average, capital costs from vehicle acquisition are about $3.3 million annually.

Funding vehicle purchase costs is expected to come from three sources: federal, state, and local. The composition of funding sources, in terms of percentages, is based on the distribution in the 2018 SYIP with 80% coming from federal, 16% coming from state, and the remaining 4% coming from local funds. As such, funding amounts by source increase and decrease based on the anticipated need for vehicle replacement in Chapter 4.

5.3. Facility Improvement and Other Capital Costs and Funding Sources

In addition to vehicle procurement, GLTC will have a variety of other costs related to capital expenses such as facilities, passenger amenities, and technology. **Table 5-7** shows a year-by-year breakdown of the anticipated costs detailed in Chapter 4 paired with funding amounts and sources. Most of the funding requirements occur within the first four years of the TSP lifecycle. In FY 2019, $1,500,000 in farebox upgrades drives the total costs to approximately $1,884,000. FY 21 includes $504,000 for the CAD/AVL System. In FY 2022, the Wards Road Transfer Location Improvement and bus stop shelters combine to cost $315,000.

Like vehicle costs, the facility improvements and other capital costs are covered by a combination of federal, state, and local sources. Similar to vehicle costs, the funding is expected to remain at the current split of 80% federal, 16% state, and the remaining 4% from local sources.

Table 5-6: Financial Plan for Funding Bus Purchases ($1000s)

Fiscal Year	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28
Vehicle Costs										
Bus Fleet	$4,400	$572	$1,785	$10,517	$2,574	$2,007	$2,784	$0	$0	$3,914
Paratransit Fleet	$0	$0	$0	$979	$0	$1,235	$0	$0	$1,191	$0
Support Vehicle Fleet	$37	$0	$0	$0	$390	$180	$0	$49	$0	$0
Total Vehicle Costs	$4,437	$572	$1,785	$11,496	$2,963	$3,422	$2,784	$49	$1,191	$3,914
Anticipated Funding Sources										
Federal	$3,550	$458	$1,428	$9,197	$2,371	$2,738	$2,227	$39	$953	$3,131
State	$710	$92	$286	$1,839	$474	$548	$445	$8	$191	$626
Local	$177	$23	$71	$460	$119	$137	$111	$2	$48	$157

1. Facility improvement costs identified in Chapter 5 of TDP
2. Buses purchases assume 80% funding through FTA (Section 5339 program and/or Flexible STP), 16% funding from State, and the remaining 4% funding from local government.
3. All costs are in year of expenditure dollars.

Table 5-7: Financial Plan for Funding Facility Improvement and other Capital Costs ($1000s)

Fiscal Year	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28
Anticipated Costs										
Facilities										
Wards Road Transfer Location Improvements	-	-	-	$148	-	-	-	-	-	-
Kemper Station Bus Bay Expansion	-	-	-	-	-	-	$223	-	-	-
Passenger Amenities										
Bus Stop Sign Stickers	-	$5	-	-	-	-	-	-	-	-
Bus Stop Shelters	-	-	-	$167	$127	-	$61	-	-	$67
Technology										
Farebox Upgrade	$1,500	-	-	-	-	-	-	-	-	-
Real-Time Passenger Information Signs	$384	-	-	-	-	-	-	-	-	-
Surveillance Upgrades	-	$55	-	-	-	-	-	-	-	-
CAD/AVL System	-	-	$504	-	-	-	-	-	-	-
Total Costs	$1,884	$60	$504	$315	$127	$0	$285	$0	$0	$67
Anticipated Funding Sources										
Federal	$1,507	$48	$0	$252	$0	$0	$228	$0	$0	$54
State	$301	$10	$0	$50	$0	$0	$46	$0	$0	$11
Local	$75	$2	$0	$13	$0	$0	$11	$0	$0	$3

1. Facility improvement costs identified in Chapter 5 of TDP
2. Buses purchases assume 80% funding through FTA (Section 5339 program and/or Flexible STP), 16% funding from State, and the remaining 4% funding from local government.
3. All costs are in year of expenditure dollars.

5.4. Potential New Sources for Additional Revenue

Since the required local funds for operating and maintenance revenues are anticipated to increase significantly, both in the baseline scenario without service changes and in the scenario that includes the proposed service changes, GLTC should identify potential new sources for the local match, in addition to its existing funding from local jurisdictions. This section reviews these funding opportunities from private, local, and state sources.

5.4.1. Private Sources

- **Transit Benefits Sales Pitch** – This funding strategy involves the development of a recurring program that visits major employers, elected officials, and key entities to promote the benefits of transit and seek out partnership opportunities. GLTC could also reach out to the public by hosting transit information nights or improving bus service advertisement. By promoting the benefits of transit, GLTC could encourage additional ridership, especially to major employers, thereby improving farebox recovery. This pitch could be coordinated with TDM marketing efforts in partnership with CVPDC and Ride Solutions.
- **Partnerships with Major Employers and Institutions** – Partnerships between GLTC and major employers, such as corporate centers, universities, and hospitals, could provide local services that cater to specific needs while receiving financial support from these employers. These services could be new routes or modifications to existing routes. Since partners will likely only contribute if their needs are met, funds acquired through the use of this funding strategy will probably be project specific.
- **Private Financing and Proffers** - GLTC has the potential to identify philanthropic foundations or individuals that are interested in maintaining transit service coverage or providing for-profit transit service. Another potential is to find a developer that is willing to pay for transit service that serves a proposed major development, as a proffer. Proffers are conditions imposed on new developments as a means to mitigate impacts identified in the zoning process. Proffers can take the form of cash contributions, donations of land, or construction and dedication of planned public projects. In 2013, the Commission on Local Governments found that the largest share of proffered funds was spent on transportation improvements.

5.4.2. Local Sources

- **Parking Fees** – GLTC could potentially generate additional revenue by charging parking fees at the transfer center. If GLTC is involved in the development of park-and-ride facilities in the future, these locations could be charged as well. Alternately, local jurisdictions like the City of Lynchburg could charge parking fees in areas served by transit and provide this source of local revenue to GLTC.

5.4.3. State Sources

- **SMART SCALE** - SMART SCALE is Virginia's method for prioritizing projects for the Commonwealth's SYIP. This funding includes state funds that are not governed by other programs, such as CMAQ, Revenue Sharing, TA, set-asides, region-specific funding, and State of Good Repair. Prioritization scores for each project are calculated based on anticipated costs and benefits related to congestion mitigation, economic development, accessibility, safety, environmental quality, and land use. Capital improvements, such as new bus stop facilities and signage, could be funded through SMART SCALE, particularly where these improvements are

part of a larger project related to improving a specific corridor's congestion, accessibility, and safety.

- **Additional DRPT Operating Assistance Funding** – DRPT Operating Assistance is currently employed by GLTC to fund approximately 20 percent of operating costs (average FY 2014-2016). This funding is dependent on system performance and availability is balanced across all funding recipients in the Commonwealth. DRPT Operating Assistance can cover up to 30 percent of operating costs, which indicates that GLTC could access additional funding, if it is able to improve system ridership and performance.
- **DRPT Demonstration Project Assistance** – The Demonstration Project Assistance Aid Grant Program supports innovative investments in public transportation. These grants provide funding for a limited timeframe, typically between one and three years, to fulfill up to 80 percent of initial funding needs for new services or technologies. DRPT requires project sponsors to demonstrate that funding sources beyond the initial grant period have been identified and are feasible to continue operation of any new service or technology. GLTC does not currently receive funding through this program but could consider this source for potential technology-related projects or a micro-transit program.
- **DRPT Public Transportation Intern Program** – This program is designed to promote and develop careers in public transportation and commuter assistance. Its goal is to provide interns with hands-on experience in as many aspects of public transportation or commuter assistance management and operations as possible through direct exposure to activities and methods of public transportation. GLTC has benefited from this program in 2018 and 2019, employing an intern to assist in marketing efforts. In 2020, GLTC is using this program to provide an intern with experience in implementation of transit technologies, but could return to employing an intern to staff transit benefit marketing pitches in the future.
- **DRPT Transportation Management Project Assistance** – This program supports new and/or expanded transportation demand management (TDM) services that reduce demand for single occupancy vehicles and reduce traffic congestion. This funding is for projects generally not part of the regular operation of the local TDM program, which would include transit benefits marketing pitches and partnership activities with major employers and institutions.

5.4.4. Federal Sources

- **FTA Section 5312 Public Transportation Innovation –** This program provides competitive funds to develop innovative products and services assisting transit agencies in better meeting the needs of their customers. Eligible activities include research, development, demonstration and deployment projects, and evaluation of technology of national significance to public transportation.
- **FTA Section 5324 – Public Transportation Emergency Relief Program -** Helps states and public transportation systems pay for protecting, repairing, and/or replacing equipment and facilities that may suffer or have suffered serious damage as a result of an emergency, including natural disasters such as floods, hurricanes, and tornadoes. While GLTC is not eligible at this time for FTA Section 5324, funding is available in the case of a future national emergency or major disaster.