



CHARLOTTESVILLE AREA TRANSIT

CHARLOTTESVILLE TRANSIT STUDY

Final Report - Complete

April 2013



In association with:



Travesky &
Associates, Ltd.

TABLE OF CONTENTS

1	Introduction.....	3
2	Market Demand Analysis	4
3	Assessment of Existing Services.....	28
4	Service Change Options	84
5	Public Involvement Process and Feedback Received	125
6	Overview of Recommended Service Changes.....	128
7	Proposed Service Changes by Route	135
8	Capital Enhancements	164
9	Operating Cost Requirements.....	171
10	Implementation Plan	172
11	Service Change Impacts.....	174
12	Service Expansion Opportunities.....	177

Appendix A - Review of Existing Plans and Studies

Appendix B - Ridership Estimation Methodology

1 INTRODUCTION

In 2010 and 2011, the Virginia Department of Transportation's Department of Rail and Public Transportation (DRPT) commissioned an analysis of Charlottesville Area Transit (CAT) services as part of its ongoing Transit Development Plan (TDP) process. That effort consisted of an analysis of existing CAT services, including a rider survey, a ridership count, and an examination of route and system operating characteristics. The study then proposed service changes that could enhance system clarity and improve overall system design without making major changes to the underlying route structure.

However, following the completion of the TDP, there were community discussions about whether more significant changes should be made than those proposed in the TDP. The City Council ultimately decided that it did desire an evaluation of more significant changes. It commissioned this study, the Charlottesville Transit Study, to re-examine the information developed for the 2011 TDP, add new analysis, and examine far-reaching system changes.

As described in the final chapter of the report, the resulting recommendations would maintain the strongest components of the existing system—those that already work well—with far-reaching changes to less effective services.

This report provides an overview of the study process and analysis leading up to the construction of final recommendations. This report contains the following:

- A **Market Demand Analysis**, assessing the specific need for transit services in Charlottesville based on employment, population, and key regional destinations
- An **Assessment of Existing Service**, including an overview of system-wide strengths and weaknesses, as well as an assessment on a route-by-route basis
- A summary of the two **Service Change Options**, which encompassed two different strategies for improving services, and were presented to the public for comment
- A review of the **Public Input** process and feedback received from the public
- **Final Recommendations** of the study, including details of systemwide changes and changes on a route by route basis, and a strategy for plan implementation
- A **Review of Existing Plans and Studies**, which summarizes key planning efforts related to transit, provided as Appendix A

Additionally, a set of Service Guidelines has been created as part of this study, and is provided separately as a standalone document.

2 MARKET DEMAND ANALYSIS

INTRODUCTION

Charlottesville and the surrounding region have changed significantly over the past decade, gaining both jobs and residents. Furthermore, even under recent slower economic conditions, communities continue to change—population shifts to new areas, demographic groups contract and expand, neighborhoods are revitalized and job centers move. An essential aspect to designing and developing effective transit services lies in understanding these changes so that transit services continue to reflect their operating environment, locally and regionally. As part of the Transit Study, the study team looked at the existing market for transit services in terms of population and employment, as well as the size and location of key demographic groups, in order to understand how well CAT's services are matched to the current travel demand and growth trends. The analysis also identifies potential new markets and service opportunities.

The market analysis examines these changes and considers their implications on the demand for transit in the Charlottesville region. Results from this analysis are used in subsequent phases of the Transit Study and inform the design of transit service improvements, described later in this document.

OVERVIEW

The primary urban center of the metropolitan area is the City of Charlottesville, which has a traditional downtown core, high-density urban residential neighborhoods, and several major regional institutions, the largest of which is the University of Virginia (UVA). While there is considerable density in the City of Charlottesville, the density of surrounding Albemarle County varies greatly and ranges from areas of higher residential and commercial density along primary travel corridors, such as US 29, to areas with much lower density south of I-64. The Charlottesville region has grown in population in recent years, but development patterns have varied and changed as new residents move in. The Charlottesville-Albemarle County area is encompassed by the Thomas Jefferson Planning District (TJPDC) and is a designated urbanized area for planning purposes. The City of Charlottesville and Albemarle County are covered by a Metropolitan Planning Organization (MPO), the Charlottesville-Albemarle MPO.

POPULATION

In 2010, Charlottesville had approximately 40,000 residents and Albemarle County had 84,000 residents. These figures represent a growth of approximately 8% over 10 years for Charlottesville and 18% for Albemarle County. Between 2000 and 2010, Albemarle

County grew at more than twice the rate of Charlottesville. Figure 1 shows the population in 2000 and 2010 according to the US Census.

Based on population forecasts maintained by the Thomas Jefferson Planning District Commission (TJPDC) for long-range planning purposes in the region, by 2040, Charlottesville and Albemarle County populations are forecast to increase by 21% and 41%, respectively. Figure 2 shows the 2010 existing and 2040 forecast population growth.

Figure 1 Population Growth in Charlottesville and Albemarle County

Year	Charlottesville		Albemarle County	
	Population	Percent Change (2000 to 2010)	Population	Percent Change (2000 to 2010)
2000	40,099	8%	84,186	18%
2010	43,475		98,970	

Source: U.S. Census Bureau, 2000 and 2010

Figure 2 Forecast Population Growth in Charlottesville and Albemarle County

Year	Charlottesville		Albemarle County	
	Population	Percent Change (2010 to 2040)	Population	Percent Change (2010 to 2040)
2010	43,475	21%	98,970	41%
2040	52,575		139,110	

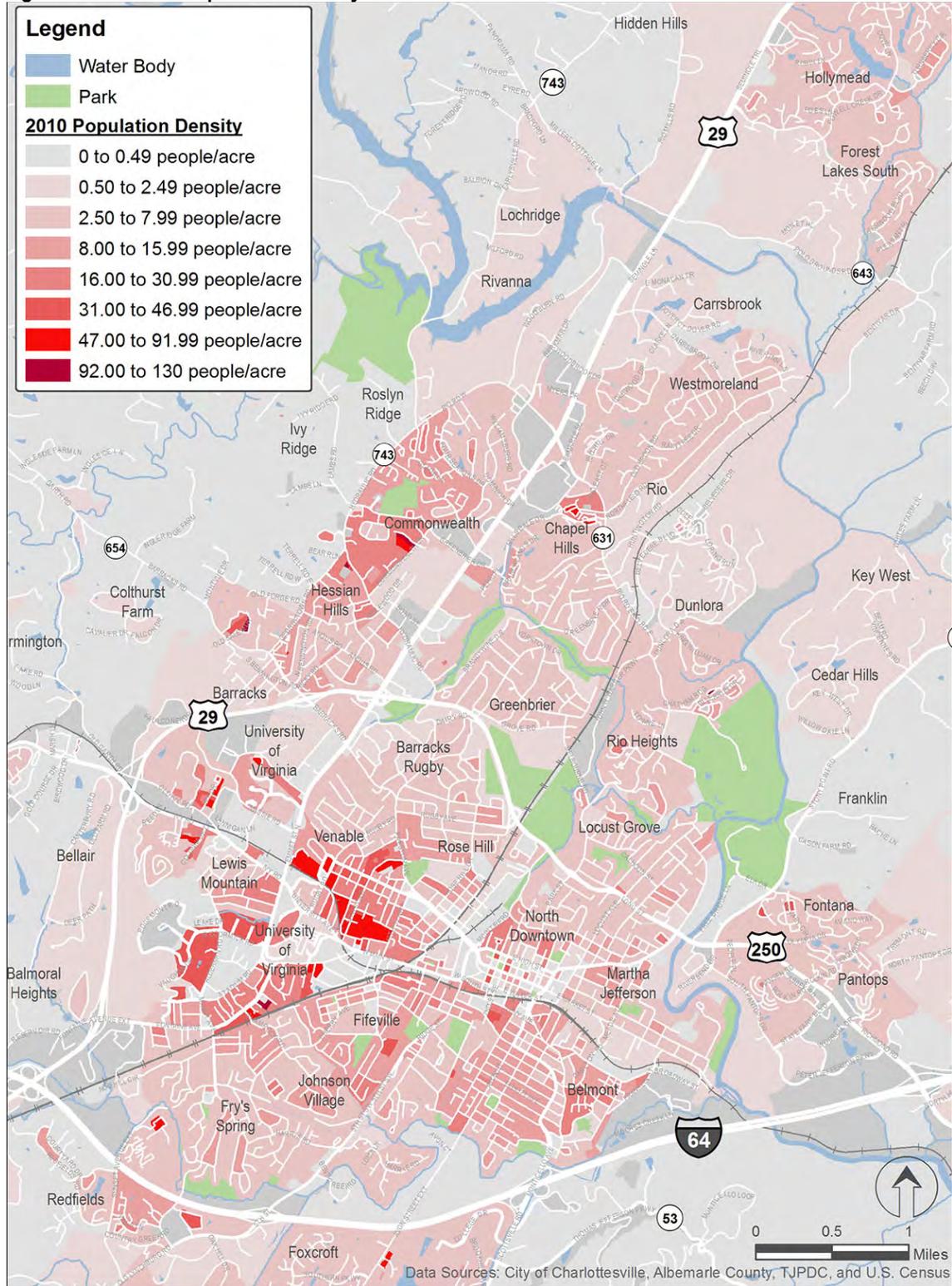
Source: Thomas Jefferson Planning District Commission Travel Demand Model, 2040 data; U.S. Census Bureau, 2010

Today, the City of Charlottesville is considerably developed. Within Albemarle County, TJPDC projects that population growth will continue to occur in currently rural areas; however, the County’s comprehensive plan includes a focus on increasing population densities (and population overall) within developed areas of the county. The 2010 and 2040 forecast population densities are shown in Figure 3 and Figure 4, respectively. Based on a review of population data, the following areas were noted as having substantial and growing densities:

- **The Venable neighborhood just north of The Corner.** This neighborhood is a popular area for UVA off-Grounds student housing due to its proximity to the Central Grounds of UVA.
- **McCormick Road, Alderman Road, and Observatory Hill areas.** A considerable quantity of on-Grounds student housing is concentrated along these corridors and the University continues to develop additional housing in these areas.
- **Rio Road and Seminole Trail areas.** These residential communities, located in the vicinity of Fashion Square Mall and Rio Hill Shopping Center, are projected to increase substantially by 2040.
- **Route 29 near Hollymead Town Center.** Population density in this area is projected to increase substantially by 2040 as a result of planned development in Albemarle County.

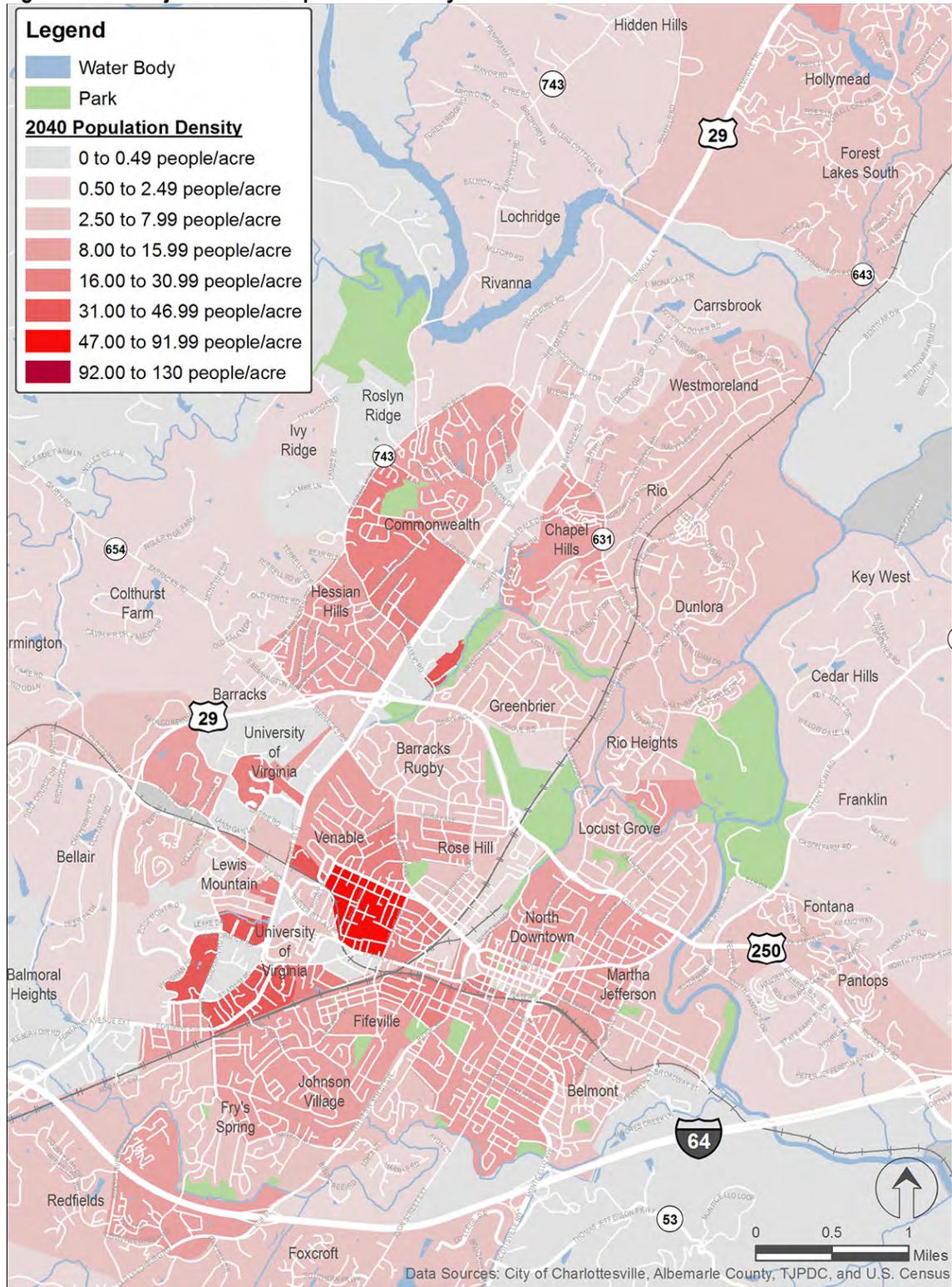
CHARLOTTESVILLE TRANSIT STUDY | Final Report
 Charlottesville Area Transit

Figure 3 2010 Population Density



CHARLOTTESVILLE TRANSIT STUDY | Final Report
 Charlottesville Area Transit

Figure 4 **Projected 2040 Population Density**



EMPLOYMENT

In 2010, there were approximately 24,000 jobs in Charlottesville and 52,000 jobs in Albemarle County, based on TJPDC's regional travel demand model. As shown in Figure 5, employment forecasts maintained by the TJPDC project that employment in Charlottesville and Albemarle County will increase by 19% and 87%, respectively, by 2040.

Figure 5 Employment Growth in Charlottesville and Albemarle County

Year	Charlottesville		Albemarle County	
	Employment	Percent Change (2010 to 2040)	Employment	Percent Change (2010 to 2040)
2010	35,044	19%	46,902	87%
2040	41,811		87,917	

Source: U.S. Census Bureau, 2010 data; Thomas Jefferson Planning District Commission Travel Demand Model, 2040 data

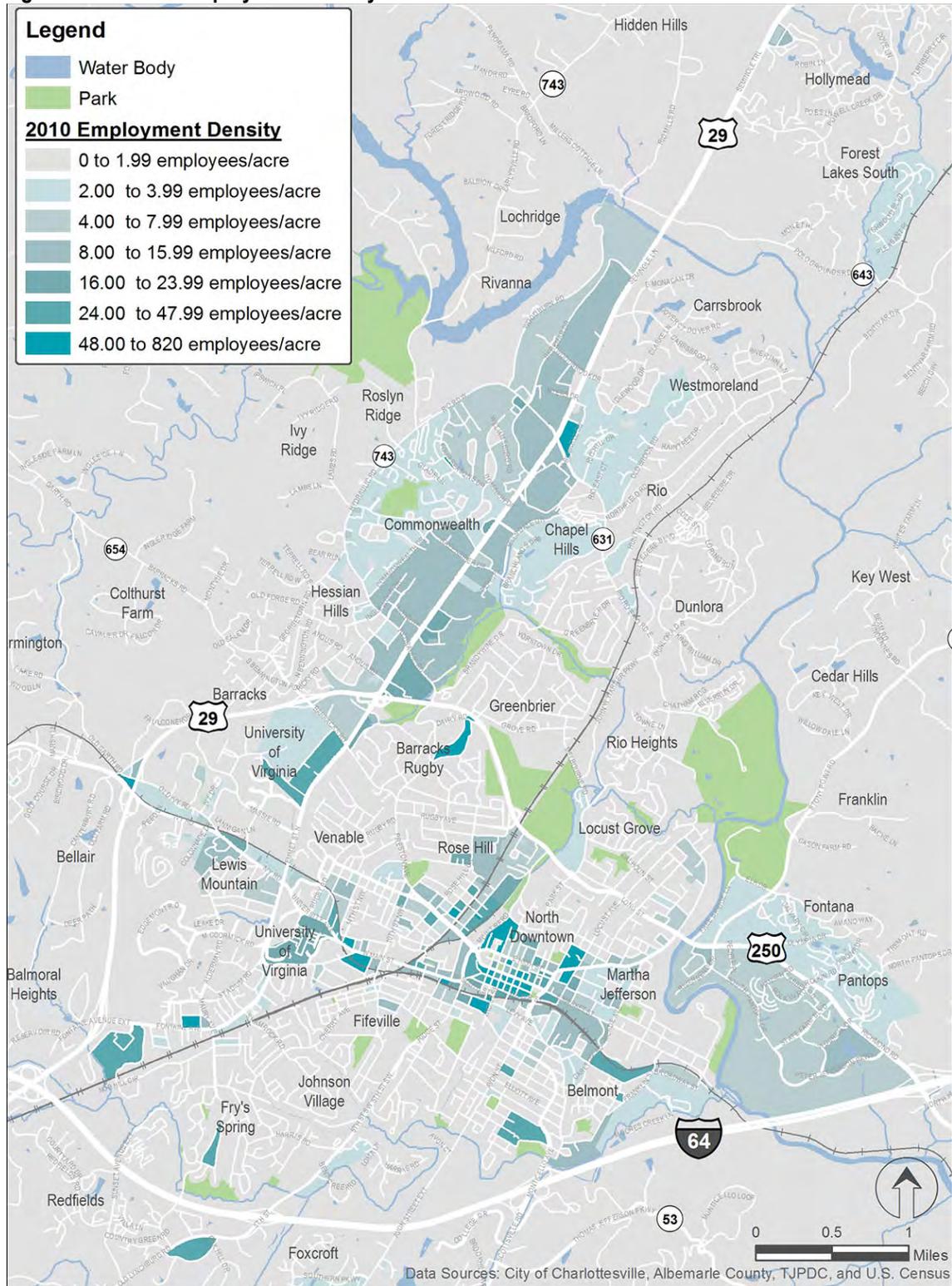
Figure 6 and Figure 7 show study area employment density for 2010 and 2040, respectively. The following areas were noted as having higher than average employment density:

- Downtown Charlottesville, including small, mid-sized and large employers and City of Charlottesville offices
- University of Virginia (including the University Hospital and clinics)
- Barracks Road Shopping Center, a significant regional retail center
- Fashion Square mall and surrounding stores and restaurants
- Martha Jefferson Hospital (Pantops Campus)

Between 2010 and 2040, employment density is generally projected by TJPDC to increase in the same areas where existing employment clusters exist. Key areas where employment will become more concentrated include downtown Charlottesville, the UVA area, Pantops, the Fontaine Research Park area, and along Route 29.

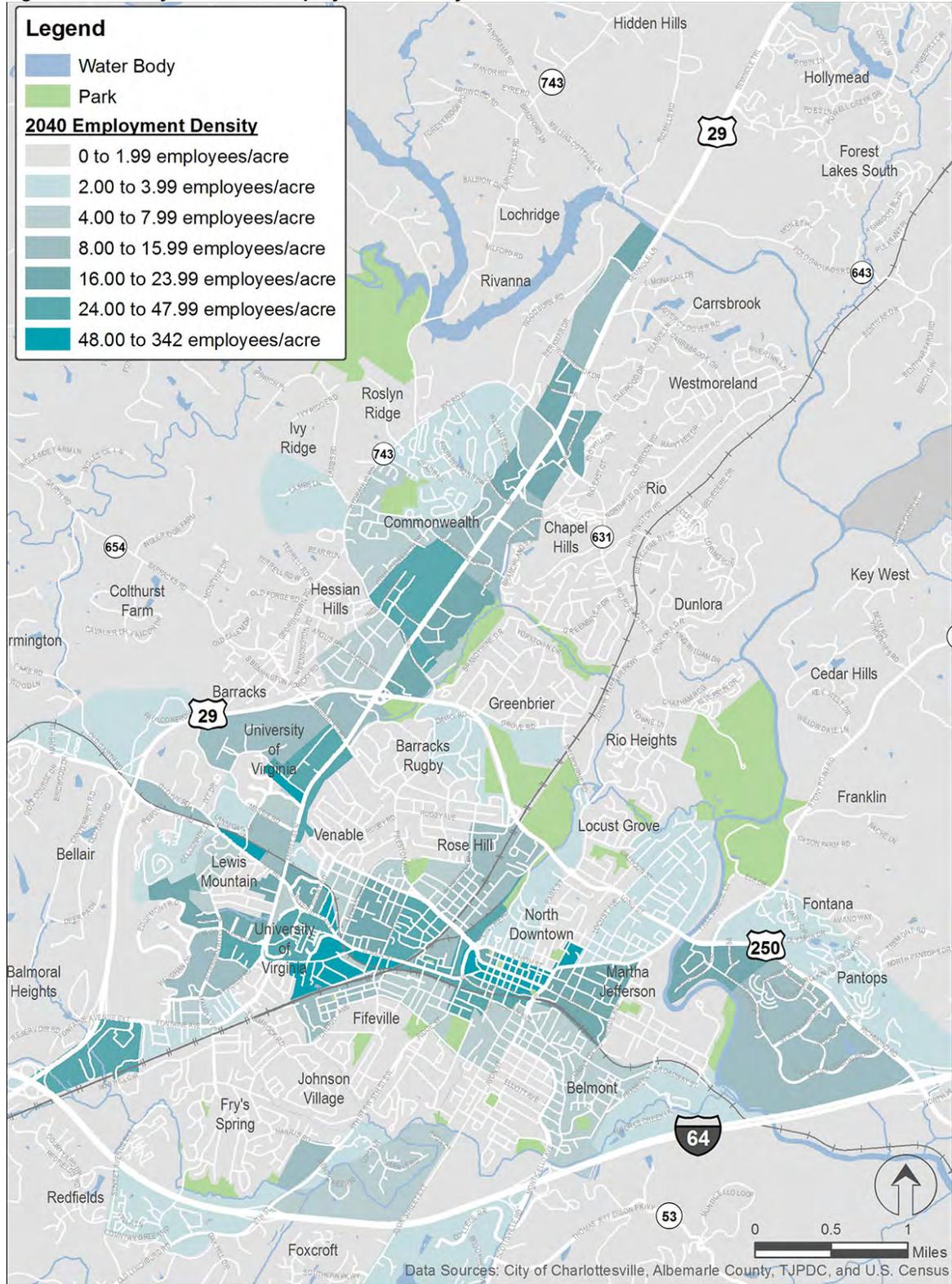
CHARLOTTESVILLE TRANSIT STUDY | Final Report
 Charlottesville Area Transit

Figure 6 2010 Employment Density



CHARLOTTESVILLE TRANSIT STUDY | Final Report
 Charlottesville Area Transit

Figure 7 Projected 2040 Employment Density



COMPOSITE TRANSIT NEED

Often, areas have a blend of population density and employment density. To provide a useful means of identifying mixed-use areas with potentially high transit activity, population and employment were combined into a single index representing the combination of both. The Transit Composite Index shown in Figure 8 is based on a combination of population and employment densities by block, related to the transit service frequencies that can typically be supported. The index was developed based on synthesis of a variety of research and documents that identify the supportable level of transit frequency for various levels of population and employment density.¹ Areas with notable ability to support frequent transit include:

- Downtown Charlottesville mall area
- University of Virginia Hospital area
- Barracks Road Shopping Center and the surrounding residential areas
- Seminole Square Shopping Center and the surrounding residential areas
- University of Virginia Central Grounds
- Fontaine Research Park
- Venable neighborhood area, bounded by Grady Street, West Main Street, McIntire Road, and Rugby Road
- Pantops south of Route 250

As shown, existing CAT services generally match closely with the highest need areas.

KEY TRANSIT DESTINATIONS

Figure 9 presents a map of key transit activity destinations within the greater Charlottesville region. These destinations include residential developments, important commercial and retail locations, employment areas and locations of community services. Many of these destinations draw visitors from across the Charlottesville region. Consistent with overall development patterns in the region, many of the key service destinations in the region are clustered in the downtown Charlottesville area and along Route 29.

CAT RIDER TRAVEL FLOWS

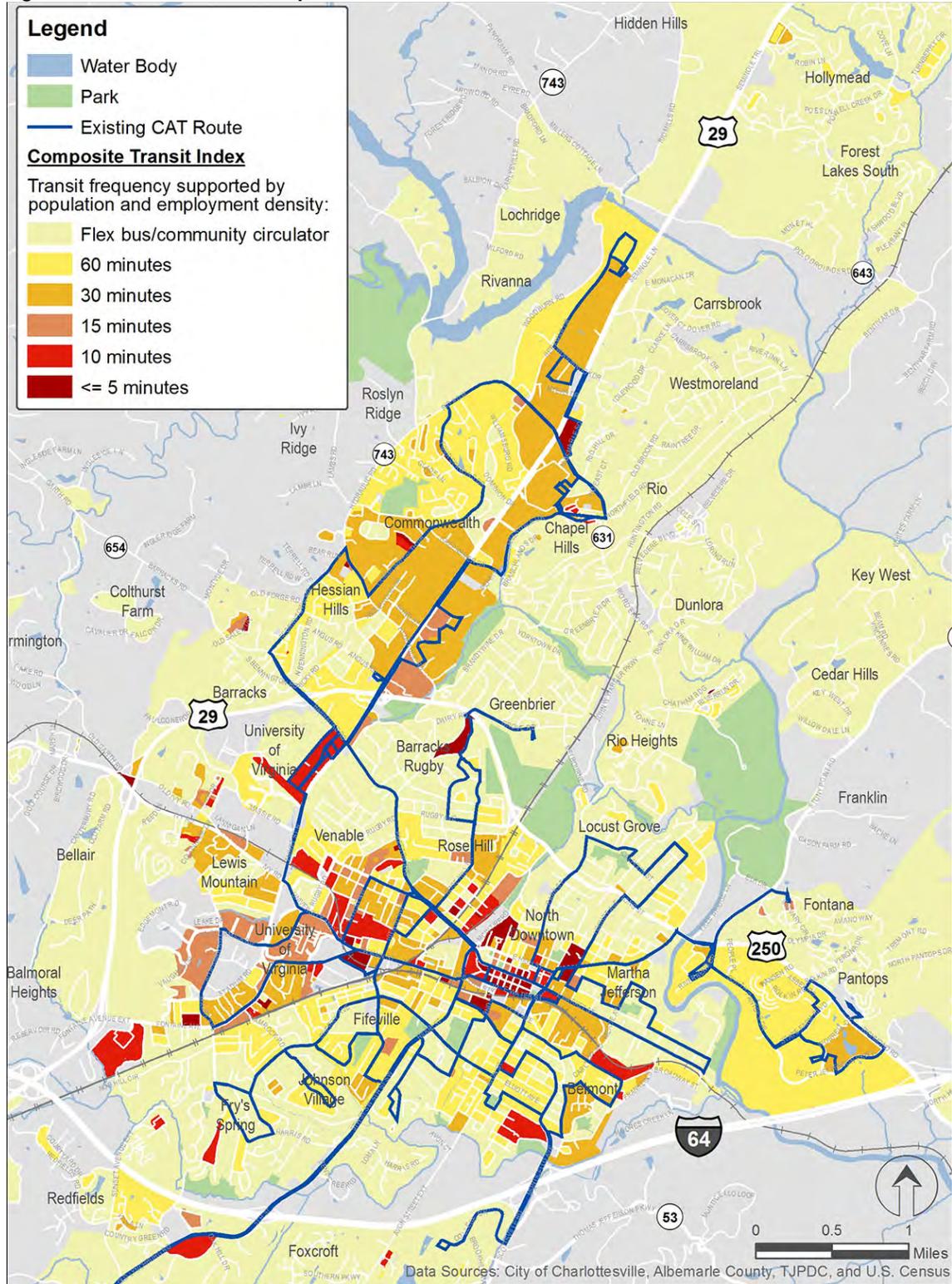
As part of the 2011 Transit Development Plan rider survey, CAT riders were asked for their travel origin and destination. Figure 10 presents a map of riders' survey answers. These figures are based on a total of 491 rider surveys with both an origin and a destination that could be accurately mapped. The figures shown in Figure 10 have been inflated to reflect the approximate level of travel for the entire CAT system; these travel distributions may reflect some sample bias as a result of different survey sample sizes on different routes, but provide an approximation of system travel flows. As shown, much of the heaviest travel takes place within the core of CAT's service area: in the triangle

¹ Examples include TCRP Report 102: Transit-Oriented Development in the United States: Experiences, Challenges, and Prospect (2004), Boris Pushkarev and Jeffrey Zupan, Public Transportation and Land Use Policy (1977), and L.D. Frank and Gary Pivo, The Relationship between Land Use and Travel Behavior in the Puget Sound Region, Washington State DOT (1994).

between UVA, downtown Charlottesville, and the Barracks Road Shopping Center area. Additionally, travel between areas along the Route 29 corridor and other locations within the City and County is also relatively strong.

CHARLOTTESVILLE TRANSIT STUDY | Final Report
 Charlottesville Area Transit

Figure 8 2010 Transit Composite Index



CHARLOTTESVILLE TRANSIT STUDY | Final Report
Charlottesville Area Transit

Figure 9 Key Transit Service Destinations

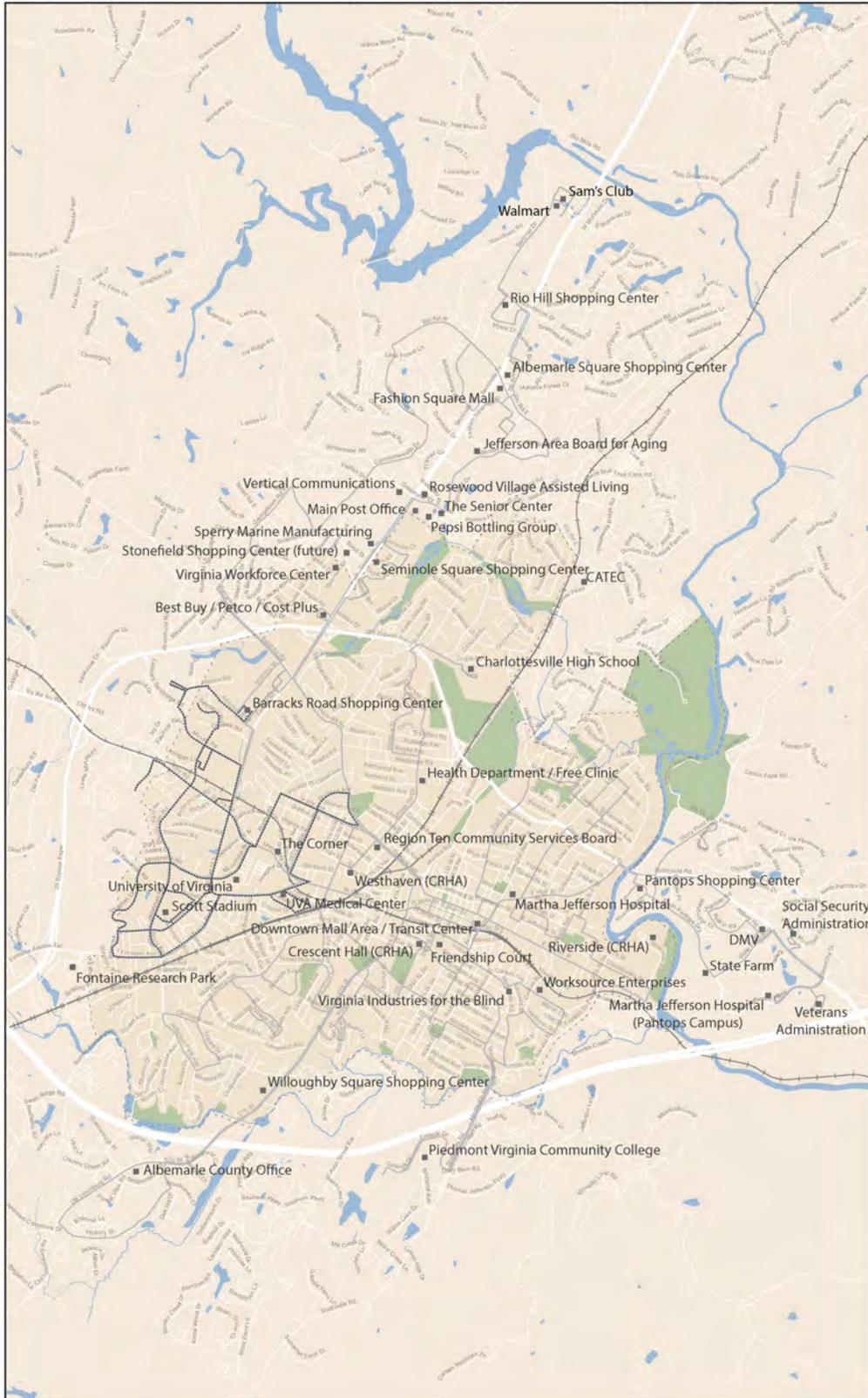
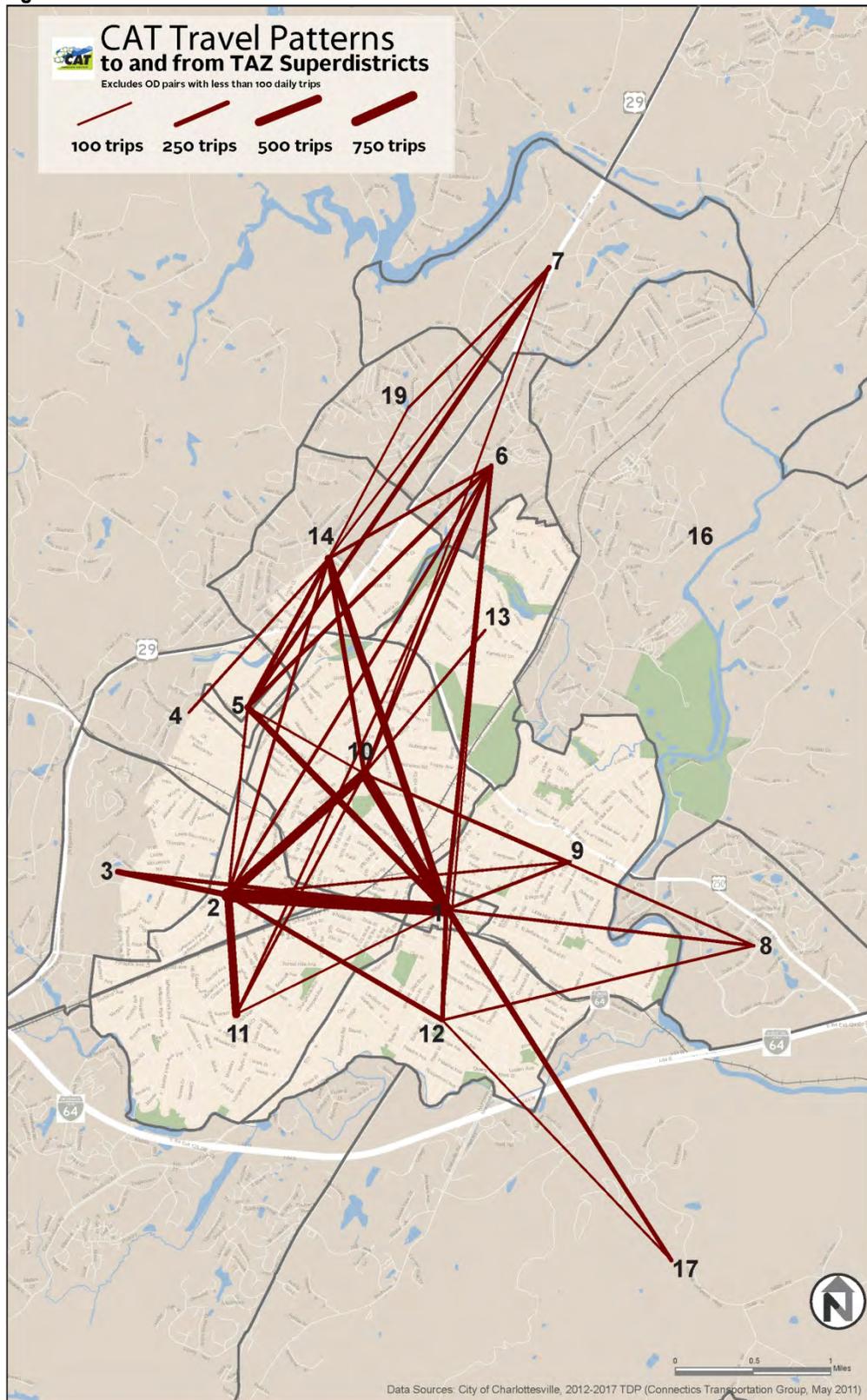


Figure 10 CAT Rider Travel Flows



TRANSIT MARKET DEMOGRAPHICS

When considering transit service design and meeting local demand, it is important to consider the two primary markets for public transportation:

- **Discretionary riders** are those who have adequate resources and the ability to operate a private vehicle but choose to use transit because it offers them comparable convenience or because of other personal choices. For example, they may choose transit to avoid driving on congested roads or into areas with parking fees. The strongest markets of these riders are in areas with high population and employment densities, where transit services can be operated successfully with higher frequency.
- **Transit dependent riders** are those who use transit services because they lack access to or are unable to operate a private vehicle. These riders depend on transit to serve a portion of their mobility needs. The market analysis focuses on typical demographic indicators of transit dependency in order to best identify areas where transit service should be provided to meet mobility needs of potentially disadvantaged populations.

In reality, most transit riders fall somewhere along the spectrum of these two markets. However, by targeting high-quality transit services to populations with a high propensity to use transit—those with some dependency on transit services—service levels can be made sufficiently attractive to draw a base of discretionary riders as well.

Certain key demographic characteristics have been associated with a higher than average propensity to use transit services. The following section identifies the size and distribution of these demographic groups. Figure 11 shows a summary of population sub-groups that are of interest when considering transit dependency, and the percentage of each of these populations within the Charlottesville region.

Figure 11 Proportion of Population in Transit Market Demographic Groups

	Charlottesville	Albemarle County
Population Under 18	14%	22%
Population Over 65	9%	14%
Population Below Poverty Line	27%	8%
Households with No English Speakers	3%	3%
Occupied Households with No Vehicle	11%	5%
Minority Population	28%	17%
Population with Disability	14%	13%

Source: U.S. Census Bureau, 2010 and 2040 data

Income

According to the 2010 Census, 27% of the Charlottesville population and 8% of the Albemarle County population were below the poverty threshold used by the US Census Bureau to measure income (see Figure 12). Income is very closely correlated with riders'

propensity to use transit services, and is typically the key determinant of whether a person will utilize transit services.

Figure 12 U.S. Census Household Poverty Thresholds for 2010 by Size of Family

Number of People per Household	Average Poverty Threshold
One Person	\$11,139
Two People	\$14,218
Three People	\$17,374
Four People	\$22,314
Five People	\$26,439
Six People	\$29,897
Seven People	\$34,009
Eight People	\$37,934
Nine People	\$45,220

Source: U.S. Census Bureau, 2010 data

Areas with a high percentage of low income population, shown in Figure 13, include:

- Residential areas surrounding the University Central Grounds -- in addition to students, this area also has some low-income non-student households
- Residential area south of downtown Charlottesville
- Residential area between Grady Avenue and Preston Avenue

Population Under 18

Youths aged 18 and under are typically considered likely transit riders because a considerable number do not have a driver's license or access to a personal vehicle. Key areas within the Charlottesville region that have concentrations of young people, shown in Figure 14, include:

- Hydraulic Road area/Greenbrier, which is proximate to a major residential area and is convenient to Charlottesville High School and Walker Upper Elementary School
- Cherry Avenue area, which is in close proximity to Buford Middle School and Johnson Elementary School

While the region surrounding Charlottesville (to the north, west and southwest) has a relatively high proportion of youths, these areas have relatively low population density, which is more difficult to serve with transit.

Population Over 65

Residents over the age of 65 are typically more likely to use transit than other population age groups due to their decreasing ability to drive a car and due to other mobility impairments. Based on data from the 2010 Census, 10% of Charlottesville residents and

14% of Albemarle County residents are over age 65. Figure 15 shows how this demographic group is distributed throughout Charlottesville and Albemarle County. Areas with a high percentage of population over age 65 include:

- Downtown Charlottesville and residential areas north of downtown and south of US 250
- Residential area directly east of Route 29 between East Rio Road and Route 250
- Rural areas to the northwest of Charlottesville

Although some of the outlying areas surrounding Charlottesville have a high proportion of older adults, these areas have relatively low population density overall, which makes these areas difficult to serve effectively with transit services. Additionally, the senior market is often eligible for specialized transportation services, such as those provided by JAUNT Inc., which might meet a portion of this demographic group's mobility needs.

Households with No Vehicle

In 2010, 11% of households in Charlottesville had no private automobile; in Albemarle County, 6% of households had no vehicle. Figure 16 shows the distribution of these households. Areas with a high percentage of households with no vehicle include:

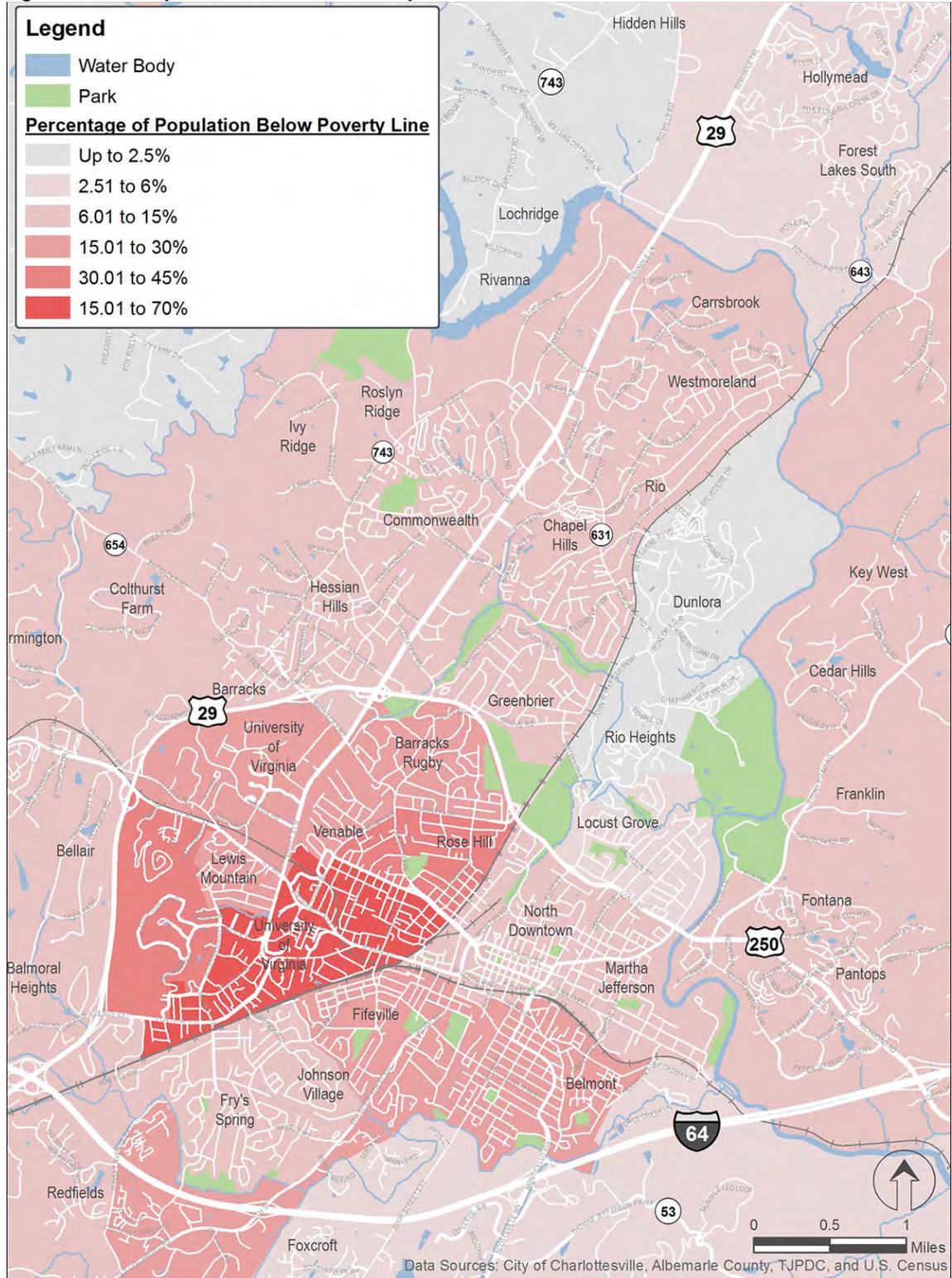
- University Grounds and immediate surrounding areas
- Downtown Charlottesville and surrounding neighborhoods
- Neighborhoods along the east side of US 29 between the city/county line and the Rivanna River
- Neighborhoods south of I-64 along 5th Street extended/Old Lynchburg Road

Disability

Persons with disabilities often rely on transit services to meet mobility needs. In 2000, 14% of Charlottesville residents and 13% of Albemarle County residents over the age of 5 years were disabled. Figure 17 shows how disabled individuals are distributed throughout the region; in particular, the Belmont and Martha Jefferson neighborhoods have a high proportion of persons with disabilities.

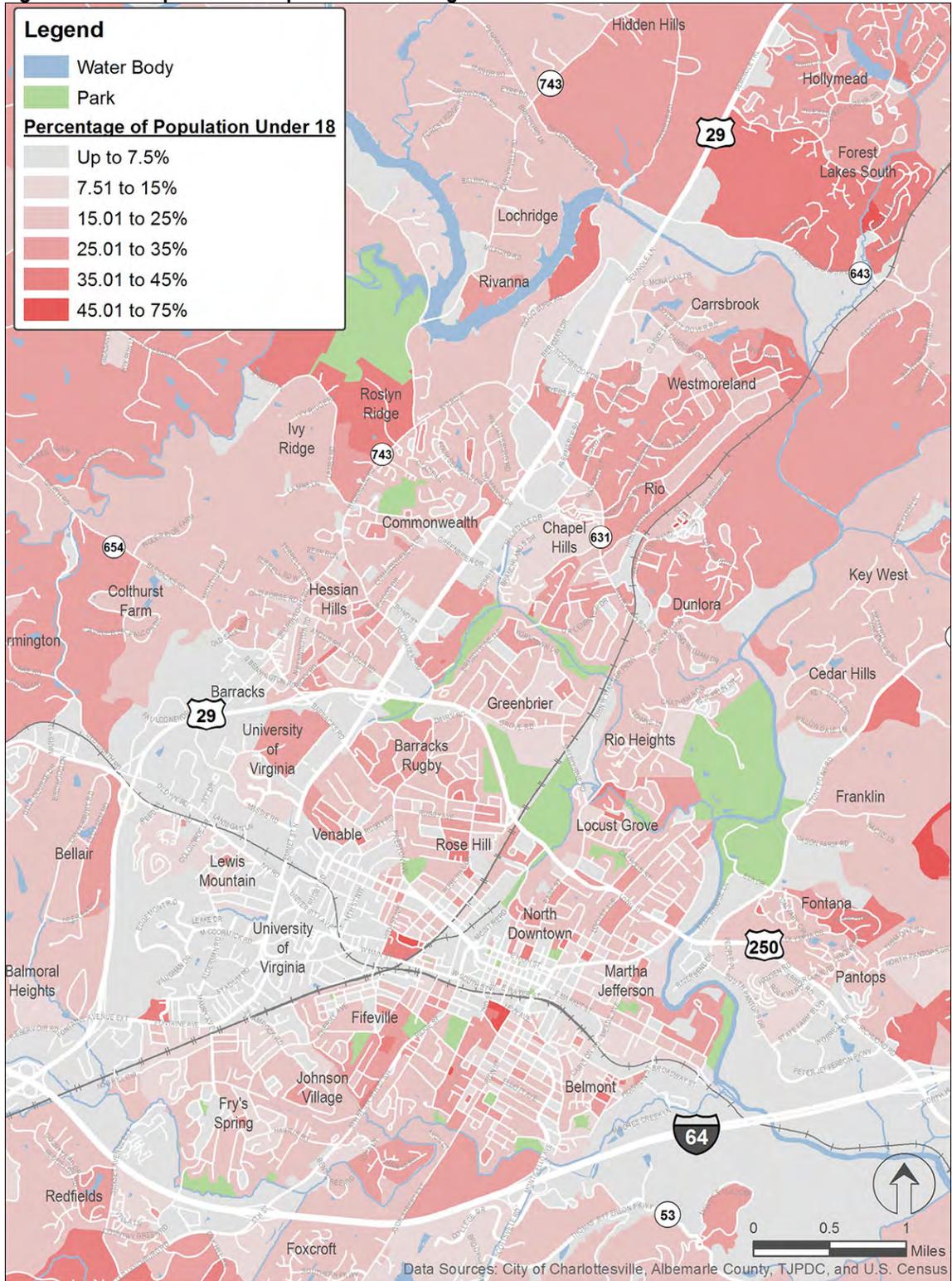
CHARLOTTESVILLE TRANSIT STUDY | Final Report
 Charlottesville Area Transit

Figure 13 Proportion of Low Income Population



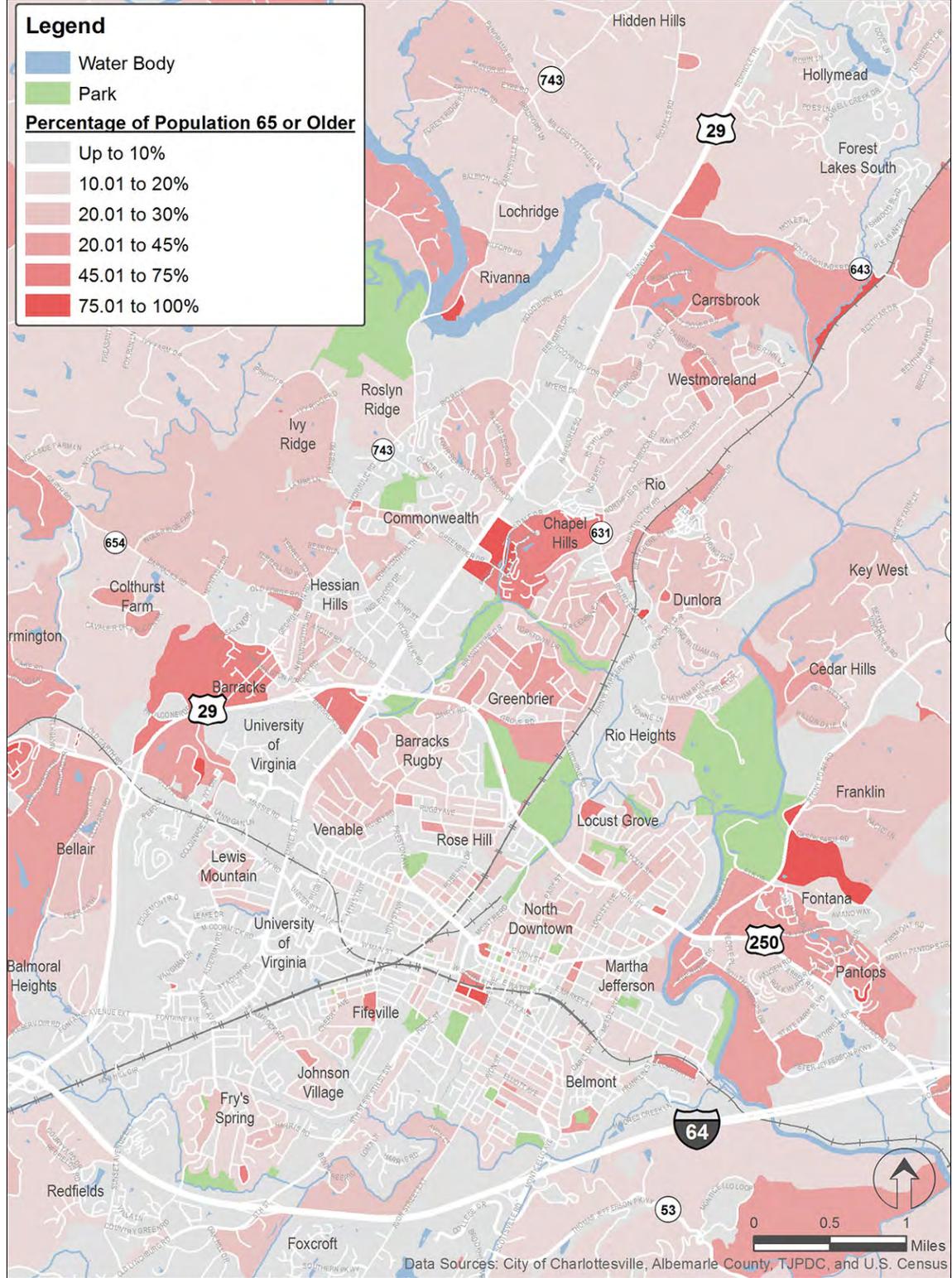
CHARLOTTESVILLE TRANSIT STUDY | Final Report
 Charlottesville Area Transit

Figure 14 Proportion of Population Under Age 18



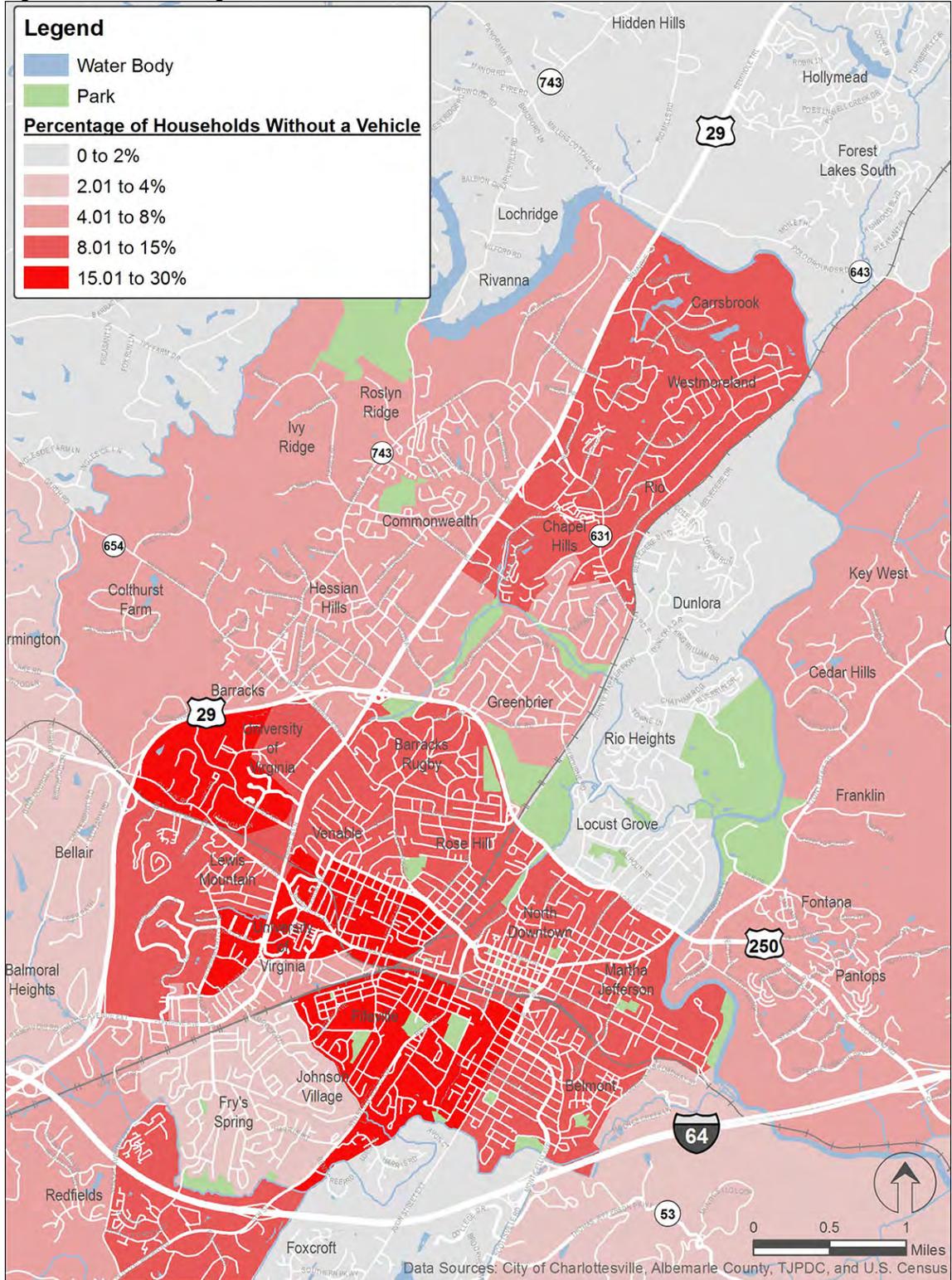
CHARLOTTESVILLE TRANSIT STUDY | Final Report
 Charlottesville Area Transit

Figure 15 Proportion of Population Over Age 65



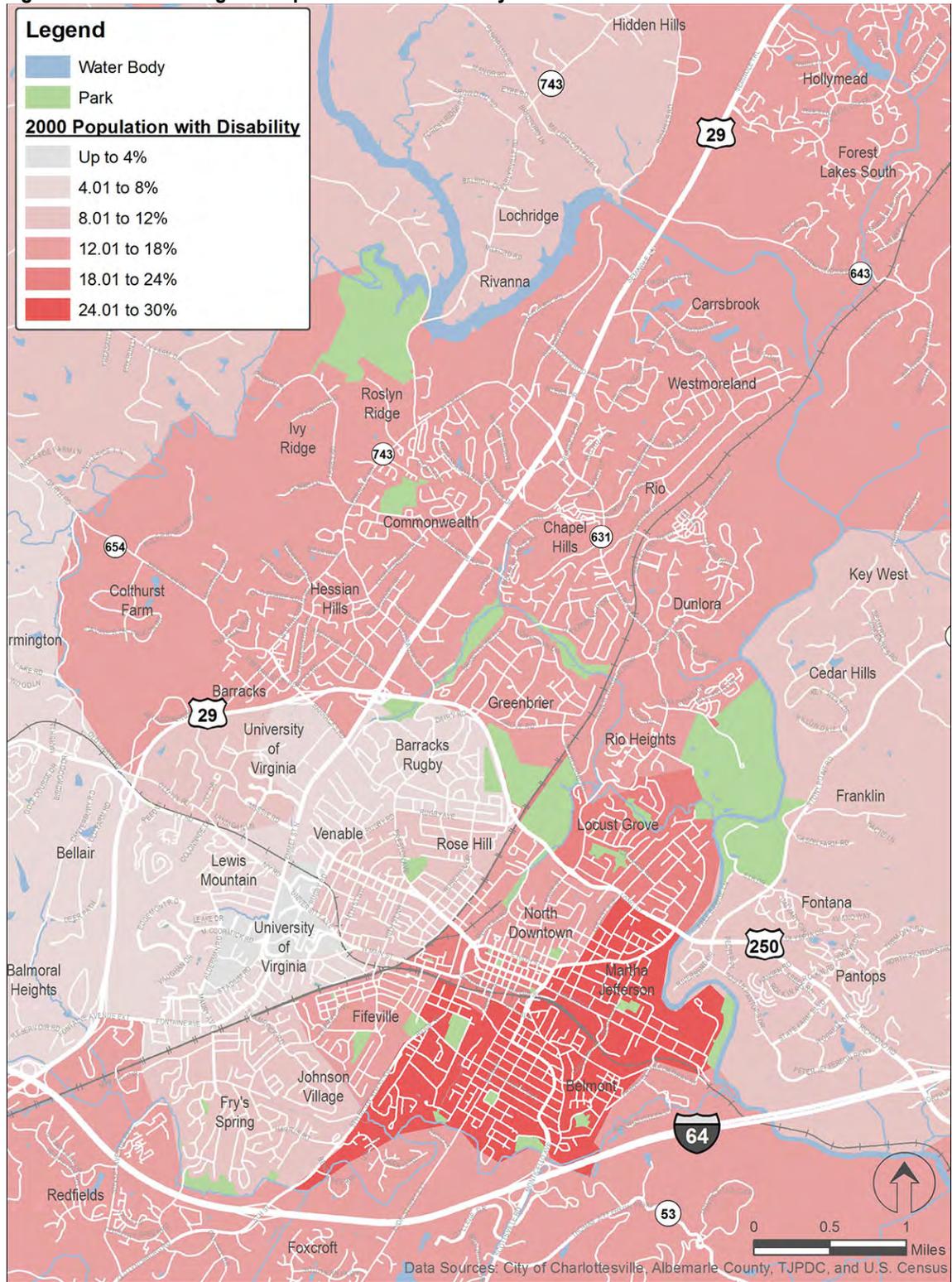
CHARLOTTESVILLE TRANSIT STUDY | Final Report
 Charlottesville Area Transit

Figure 16 Percentage of Households with No Vehicle



CHARLOTTESVILLE TRANSIT STUDY | Final Report
 Charlottesville Area Transit

Figure 17 Percentage of Population with Disability



VULNERABLE COMMUNITIES

In addition to the demographic groups described previously, transit service plans must consider the needs of vulnerable and disadvantaged communities in transit service planning decisions. These communities include persons with limited English proficiency and persons of minority races. In conducting the Transit Study, the locations of these groups has been considered so that changes do not disproportionately and adversely affect persons in these groups.

Households with No English Speakers

In 2010, 3% of Charlottesville households and 3% of Albemarle County households had no English speakers; Figure 18 shows the distribution of these households. Notable areas with a high percentage of these households include:

- Poplar Glen
- Huntington Village
- Fifeville neighborhood
- The Rio Road (between Rio Road and US 29) residential area, west of Fashion Square Mall

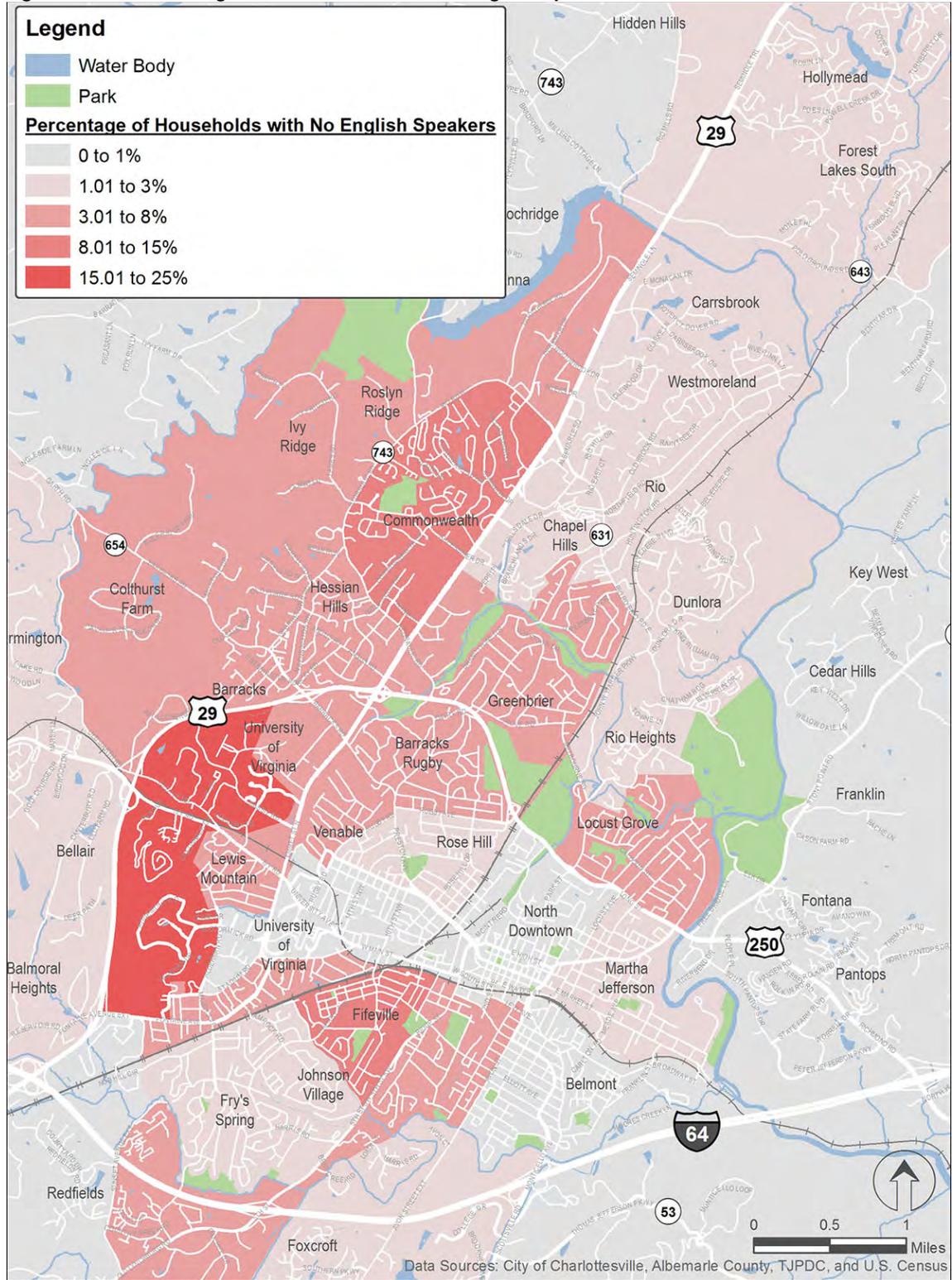
Minority

In 2010, 34% of the Charlottesville population and 21% of the Albemarle County population were of minority race. Figure 19 shows how minority individuals are distributed throughout the region; areas with a high percentage of minorities include:

- Downtown Charlottesville
- Fifeville and the neighborhoods immediately south of downtown Charlottesville
- Neighborhoods along I-29 near Hessian Hills and Commonwealth
- Neighborhoods east of I-29 near Lewis Mountain
- Neighborhoods south of I-64 along 5th Street extended/Old Lynchburg Road
- Neighborhoods to the north of Ivy Road between Copeley Road and Route 29

CHARLOTTESVILLE TRANSIT STUDY | Final Report
 Charlottesville Area Transit

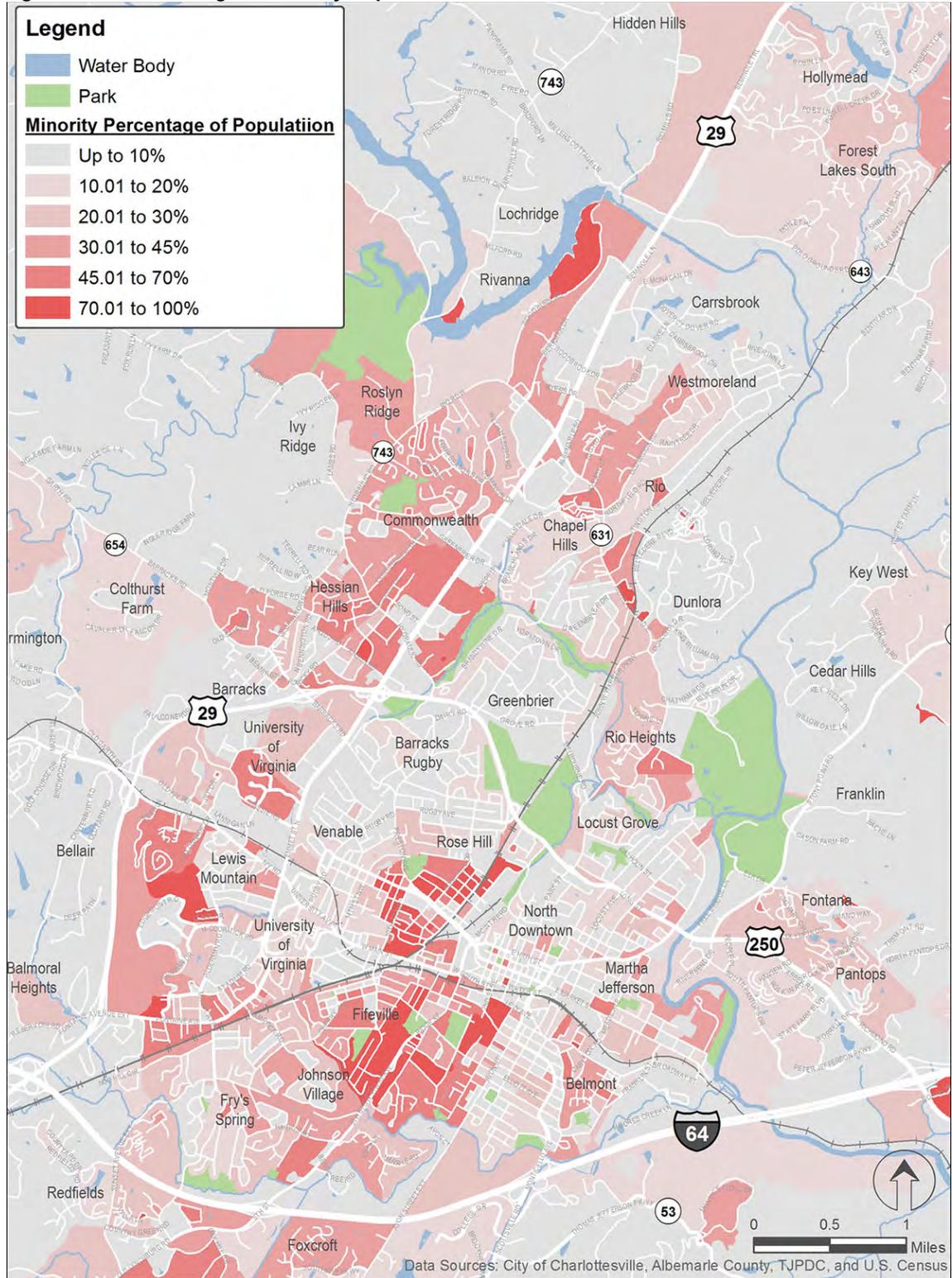
Figure 18 Percentage of Households with No English Speakers



CHARLOTTESVILLE TRANSIT STUDY | Final Report

Charlottesville Area Transit

Figure 19 Percentage of Minority Population



IMPLICATIONS FOR THE TRANSIT STUDY

Major findings of the analysis of market demand have the following implications for the Transit Study:

- The core of the region's development—including both residential and commercial development—forms an "L" shape between Route 29, UVA, and downtown Charlottesville. In most ways, this L shape is projected to remain the backbone of development within the region in the future, and will also represent core transit service target markets where higher-frequency services are likely to be warranted and more successful.
- Between 2010 and 2040, employment is projected to grow and become denser largely in areas where it is already relatively dense, in the "L" shape as mentioned previously. By contrast, population growth is happening both in already-developed areas as well as in new markets, including more growth and denser development within Albemarle County.
- In general, existing CAT routes currently match well with most of the areas with potentially high transit need in the study area. Specific areas with a notably high need for service include:
 - UVA and its immediate environs
 - Downtown Charlottesville
 - The Route 29 corridor, especially between UVA and Fashion Square Mall
 - Neighborhoods within Charlottesville to the south of downtown, including Fifeville, Fry's Spring, and Belmont
- Certain areas with lower density of demand due to lower population and employment densities may be good markets for flex-routes or general public demand response services. Transit service analyses will determine if the demand warrants service for these markets.

3 ASSESSMENT OF EXISTING SERVICES

OVERVIEW OF EXISTING SERVICES

CAT is the primary provider of general public fixed-route transit services in the Charlottesville, VA region. CAT currently provides 12 daytime local fixed bus routes and four evening local fixed bus routes, all of which are open to the public. Service is provided seven days per week, with most services operating on weekdays and Saturdays beginning around 6:30 AM and ending between around 6:00 PM and 11:30 PM. CAT also operates limited Sunday service on its two highest ridership routes, Route 7 and the Free Trolley, which connect some of the area's strongest commercial and employment destinations between downtown, the University of Virginia (UVA), and along Route 29. CAT's fixed-route services are complemented by those of University Transit Services (UTS), which provides primarily fixed-route services in the vicinity of UVA, and JAUNT, Inc., which provides demand-responsive service within the Charlottesville region, including CAT's ADA complementary paratransit services, as well as several fixed routes.

SYSTEM STRENGTHS AND WEAKNESSES

CAT provides an important transportation service to the Charlottesville community. However, transit services must often be updated to keep pace with changing community needs, shifting demographics and new development patterns. To that end, the TDP and the Transit Study have identified the following key service strengths, weaknesses and opportunities for CAT's services:

Strengths

- **Geographic coverage is strong.** Transit services in Charlottesville generally match well with current and expected future areas of population and employment development. Additionally, most areas of the city have some level of coverage. However, much of this coverage is on one-way loops or on circuitous legs of routes, which limits the usefulness of service.
- **The downtown area and the connection between UVA and downtown are well served.** During stakeholder interviews, many noted that the Free Trolley is widely known and appreciated, and that it effectively serves its corridor, a primary market for transit services.
- **Riders are generally supportive of CAT service.** Based on the results of the 2009 Transit Marketing Study survey, riders are generally supportive of services and most will continue to use services in the future. Nevertheless, as noted in the study, "while all stakeholders believe transit is essential to the community, they don't see it as a service that is good enough for the average resident to use."

Among the goals of the Transit Service Study has been to determine how CAT can improve the design of its services to better meet the needs of its primary markets.

Weaknesses

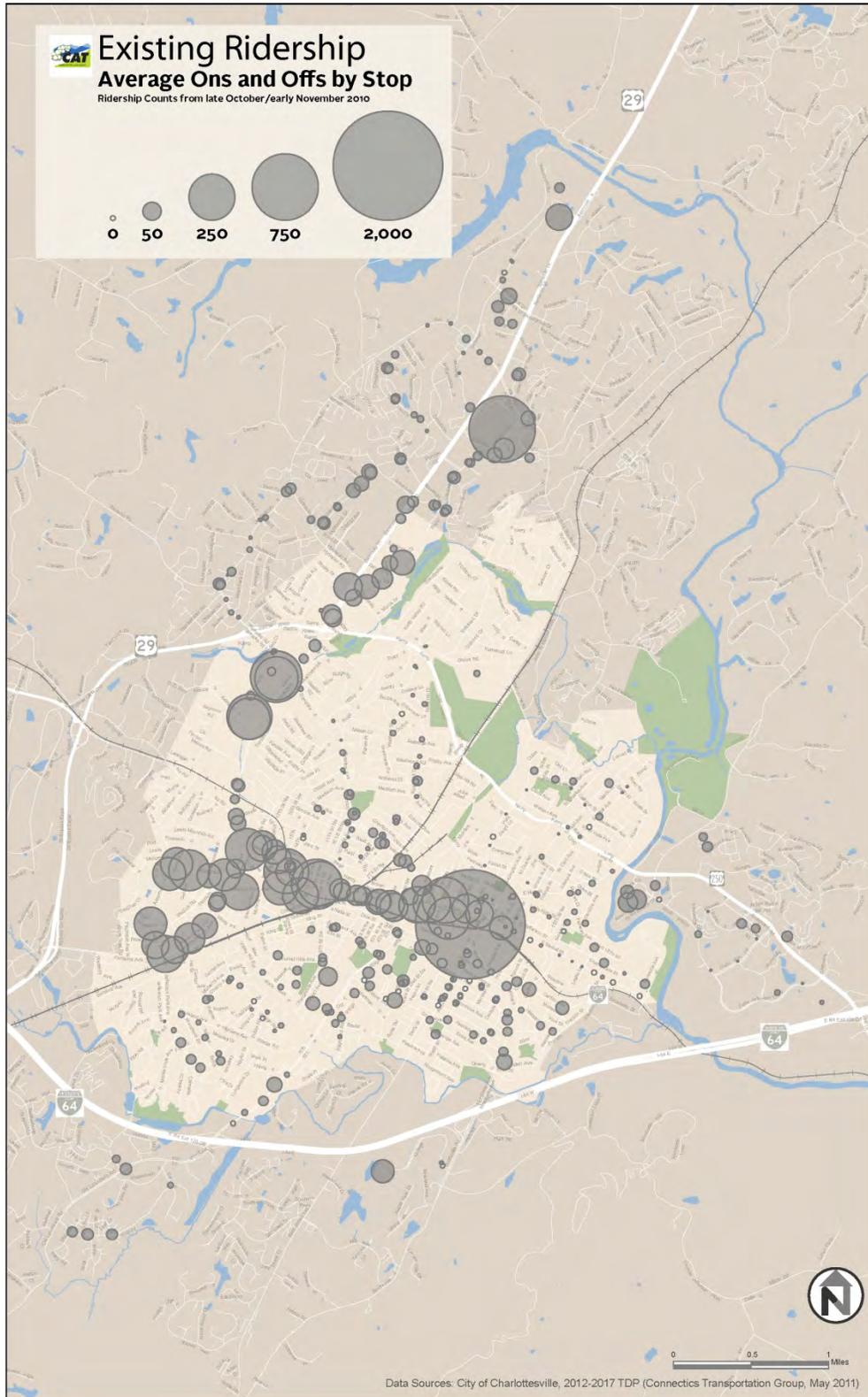
- **Routes are circuitous.** Service is provided by a large number of routes in only one direction or using loops or jogs off the most direct path. This means that many riders have a relatively indirect trip to their destination. While the aim of this type of service is to provide more coverage to the community, service that is overly circuitous is generally rejected by all but the most transit dependent riders.
- **Circulation through downtown Charlottesville is challenging.** The Downtown Transit Station (DTS) is located very centrally to downtown activity centers and key destinations, but roadway access to the station is complicated by factors including one-way streets, lack of north-south access across the pedestrian mall, and the 9th Street overpass over Water Street. As a result, most routes connecting at DTS follow a one-way loop pattern.
- **Stops are very frequent.** On many CAT routes, stops are spaced only a block apart. This results in service that stops frequently and is slower than necessary.

Opportunities

- **Redesign transit routes to better serve transit demands.** Many of CAT's routes serve important transit target markets, but could be adjusted to more closely match demand levels. This may mean increasing the amount of service in areas of denser population and activity and reducing it in other places.
- **Provide more direct service.** Riders prefer direct service to service that meanders. Although circuitous service can sometimes provide more geographic coverage, this must be balanced against the need to compete with other modes of transportation (such as driving), which provide a direct connection between the user's origin and destination. There are numerous opportunities to straighten out CAT routes and provide a more direct trip for riders. While this may require some additional walking, riders are also more attracted to direct service and therefore more willing to walk to the stop.
- **Increase stop spacing.** While close stop spacing reduces walking distances, it also results in service that stops frequently and limits speed. As a rule of thumb, riders will walk up to a quarter-mile to local bus transit service. Stop spacing in the CAT system is generally much closer than that, and could be increased in many areas.
- **Develop a new outer transfer center.** To avoid having almost all routes travel to DTS, an additional outer transfer center could be developed. During the course of the Transit Study, a number of options were considered, but based on the proposed design of future services, the UVA Hospital was selected as a strong location at which to develop a transfer hub. Barracks Road Shopping Center also emerged as a key location for enhancement as a transfer point, as has also been noted in previous studies. Additionally, with more routes focused at Willoughby Square Shopping Center, an enhanced bus stop transfer point at that location would be beneficial.

The following section describes, for each route in the CAT system, the operating and ridership characteristics of the route, its strengths, weaknesses and service change opportunities, and any recommended changes described in the 2011 TDP. During subsequent phases of the study, some of these opportunities for service changes have been adopted, while others have been modified, and new changes have also been introduced as a result of wider system changes. A map of system ridership is presented in Figure 20.

Figure 20 Total System Ridership Activity - Weekday



ROUTE PROFILES

Free Trolley

The CAT Free Trolley is a signature CAT route that operates between downtown Charlottesville and UVA and serves the UVA Medical Center. The route operates along a large loop circulating through UVA via Jefferson Park Avenue, Alderman Road, McCormick Road, and University Avenue; it travels via West Main Street to downtown Charlottesville, where it travels in a one-way loop through the downtown Charlottesville area via Market Street and Water Street. The Trolley is the only route in the CAT system that crosses the downtown pedestrian mall, doing so on 2nd Street.

The Trolley is the highest-frequency route in the CAT system, operating every 15 minutes on weekdays and Saturdays (between approximately 7:00 AM and 11:30 PM) and every 30 to 45 minutes on Sundays (from 8:00 AM to 5:30 PM). Because the Trolley is fare-free for all riders, provides direct service between Charlottesville's two largest employment and activity destinations, and operates with high frequency, the route has high visibility and a strong reputation within the community.

The route serves the following activity centers:

- University of Virginia
- UVA Medical Center
- Scott Stadium
- The Corner
- Downtown Transit Station and downtown Charlottesville

Figure 21 CAT Free Trolley Service Characteristics

	Span of Service	Headways (mins)
Weekday		
Day	6:40 AM – 6:25 PM	15
Night*	6:45 PM – 11:33 PM	15
Saturday*	6:40 AM – 11:33 PM	15
Sunday	8:00 AM – 5:30 PM	30-45

Figure 22 Free Trolley Weekday Ridership Activity



Ridership Characteristics

The Free Trolley carries an average of 2,586 riders per weekday, 2,807 riders per Saturday, and 756 riders per Sunday (see Figure 22). The Trolley is by far the highest

ridership route in the CAT system, and accounts for 32% of total system ridership activity on weekdays. Ridership after 10:00 PM on weekdays and before 8:00 AM on Saturdays is relatively low (fewer than 10 passengers per trip). On Sundays, ridership begins to increase slowly during the morning and the last few trips of the day (between 3:30 PM and 5:00 PM) carry the highest ridership of the day—nearly 100 boardings per trip.

Strengths

- **Strong community profile and high visibility.** The Free Trolley has unique branding within the CAT system, and was noted by stakeholders as having a strong reputation within the community.
- **Strong ridership.** The Trolley's ridership is not only strong overall, but also strong within all segments of the route. Moreover, because riders are traveling to and from locations at all points along the route, there is a great deal of rider turnover, and total ridership is much higher than the maximum rider load.

Weaknesses

- **Operation in congested conditions.** The Trolley serves some of the densest areas in Charlottesville, but this also means that buses compete with other traffic, and are often delayed in congestion. For this reason, the route operates using a variable cycle time of between 45 minutes (from 7:45 AM to 7:00 PM on weekdays and after 12:30 PM on Sundays) and 30 minutes (during all other times).
- **High rider loads.** Although there is a great deal of rider turnover along the route, on Saturdays the maximum load is 51 passengers per trip, and on weekdays exceeds 40 passengers per trip during the morning and midday.

Opportunities

- **Reduce frequency on weekday evenings and Saturday mornings.** Weekday evening trips after 10:00 PM and trips before 8:00 AM on Saturdays carry relatively few passengers. These trips could be eliminated to provide additional resources elsewhere.
- **Adjust hours of service on Sundays.** The Trolley ends relatively early on Sundays (at 5:30 PM). Service could be extended later in the evening to provide some level of evening service, at least every 45 minutes until 8:00 PM.

2011 TDP Recommendations

The 2011 TDP recommended that the Trolley should decrease in frequency during weekday evenings and Saturday mornings to better match demand. No other changes (including route alignment changes) were recommended.

Route 1A – East Market

Route 1A is designed to serve the commercial and industrial area directly east of downtown Charlottesville and the Meade Park neighborhood. The route operates along a long, skinny loop eastbound via Market Street, north on Riverside Avenue, and westbound via a circuitous path in the vicinity of Chesapeake Street. The route operates on weekdays and Saturdays, and is interlined with Route 1A (which also operates during the evening period). No service is provided on Sundays.

The route serves the following activity centers:

- Commercial and industrial district west of downtown Charlottesville near Market Street
- Downtown Transit Station and downtown Charlottesville

Figure 23 Route 1A Service Characteristics

	Span of Service	Headways (mins)
Weekday		
Day	6:20 AM – 6:25 PM	60
Night	No service	60
Saturday	6:20 AM – 6:25 PM*	60
Sunday	No service	N/A

Ridership Characteristics

Route 1A carries an average of 87 riders per weekday and 53 riders per Saturday. Only 6% of total boarding and alighting activity takes place along Market Street (see Figure 24); 49% of total activity takes place in the westbound portion of the route. Route 1A accounts for just over 1% of total ridership activity in the system.

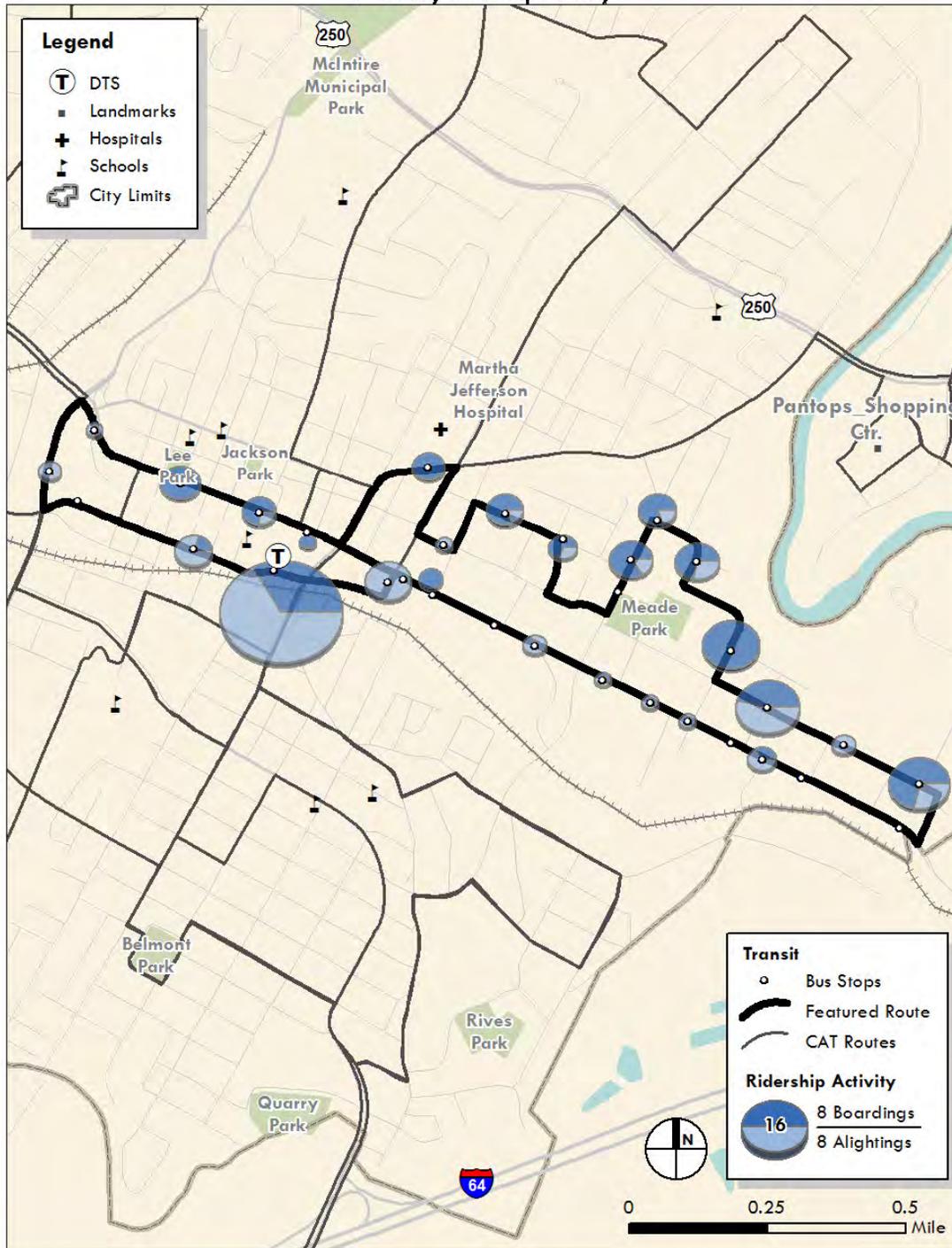
Strengths

- **Route 1A can be provided with less than one peak vehicle.** Route 1A serves an area of relatively low to moderate transit need, but because Route 1A is interlined with Route 1B, the vehicle used to provide service on this route can be shared with another service area and route.

Weaknesses

- **Low ridership and productivity.** Route 1A is a relatively low productivity route that serves a community with only a relatively small need for transit service compared with other sections of the city.

Figure 24 Route 1A Weekday Ridership Activity



- **Route alignment is circuitous.** Route 1A follows a circuitous path through the Meade Park neighborhood; speeds are impeded by frequent turns, added travel distance due to a zig-zag path, and the route’s use of neighborhood streets.
- **Stops are spaced closely.** Stops are spaced very closely along most of the route—every 1 to 2 blocks—which impedes travel time.

Opportunities

- **Discontinue all service.** Route 1A is very unproductive and could be eliminated to provide resources for other routes. Alternatively, service could be consolidated with other routes, such as Route 10 or Route 2A.
- **Discontinue service on Saturdays.** If service is not discontinued altogether, service could be eliminated on Saturdays to provide resources for other routes.
- **Straighten alignment.** Route 1A operates along an extremely circuitous path. Route 1A could be straightened to operate more directly; an example outer-end alignment would be via Jefferson Street and Chesapeake Street.
- **Operate service bi-directionally.** Route 1A serves almost no passengers along Market Street. At the same time, riders along the route's productive portion in the vicinity of Chesapeake Street are served in only one direction. Instead, the route could be operated bi-directionally along and near Chesapeake Street. A short outer-end turnaround loop could be used instead of a large one-way loop.
- **Increase stop spacing.** The distance between stops could be increased to increase route speed.
- **Eliminate 6:20 AM trip on weekdays and the 6:20 AM and 7:20 AM trips on Saturdays.** These trips carry relatively low ridership (five passengers per trip on the weekday trip and two passengers per trip on the Saturday trips) and could be eliminated to increase productivity.

2011 TDP Recommendations

The 2011 TDP recommended that Route 2A should be consolidated with Route 1A and Route 10 to create two routes serving the highest activity areas of the three routes; the new routes would be numbered Route 10 and Route 12. The revised Route 10 would travel eastbound via Market Street until Fairway Avenue, then travel northward to serve the Pantops area.

Route 1B – Piedmont Virginia Community College (PVCC) and Route 23 – PVCC Night Service

Route 1B is primarily designed to connect downtown Charlottesville with Piedmont Virginia Community College (PVCC), and operates via the Belmont neighborhood. The route uses a fairly circuitous alignment between downtown Charlottesville and PVCC that winds through the Belmont neighborhood. It begins at PVCC and travels inbound via Scottsville Road Monticello Avenue, Rialto Street, Montrose Avenue and Avon Street. The route travels outbound toward Avon Street via Water Street, Ridge Street, Monticello Avenue, 2nd Street, and Garrett Street, then resumes bi-directional service using the same alignment as is used in the inbound direction.

Route 1B operates on weekdays and Saturdays; no service is provided on Sundays. During the daytime, the route is interlined with Route 1A. Night service is provided by Route 23, which operates using an identical alignment; the only difference is that the route uses a different name and number. Both Route 1B and Route 23 operate every 60 minutes. Route 23 is interlined with Route 24.

The route serves the following activity centers:

- Piedmont Virginia Community College (PVCC)
- Friendship Court residential development
- Piedmont House (halfway house)
- Downtown Transit Station and downtown Charlottesville

Figure 25 Route 1B Service Characteristics

	Span of Service	Headways (mins)
Weekday		
Day	6:45 AM - 6:03 PM	60
Night*	6:45 PM - 11:03 PM	60
Saturday	6:45 AM - 6:03 PM	60
Sunday	No service	N/A

*Note: Refers to Route 23 service

Ridership Characteristics

Route 1B carries 154 riders per weekday and 25 riders per Saturday. The route serves a strong outer anchor, PVCC, that accounts for 35% of total ridership activity on the route (see Figure 26). Downtown-area stops in the route's northern loop account for approximately 49% of boardings; in total, 85% of the route's boarding activity takes place at the route's outer ends. Very little ridership activity (24 riders per day) takes place in Belmont, where stops are spaced very closely.

Route 23 serves 23 riders per weekday and 9 riders per Saturday. Ridership patterns by stop generally reflect those of weekday service (see Figure 27). In total, Route 1B and Route 23 account for 2% of total weekday system ridership activity.

Figure 26 Route 1B Weekday Ridership Activity

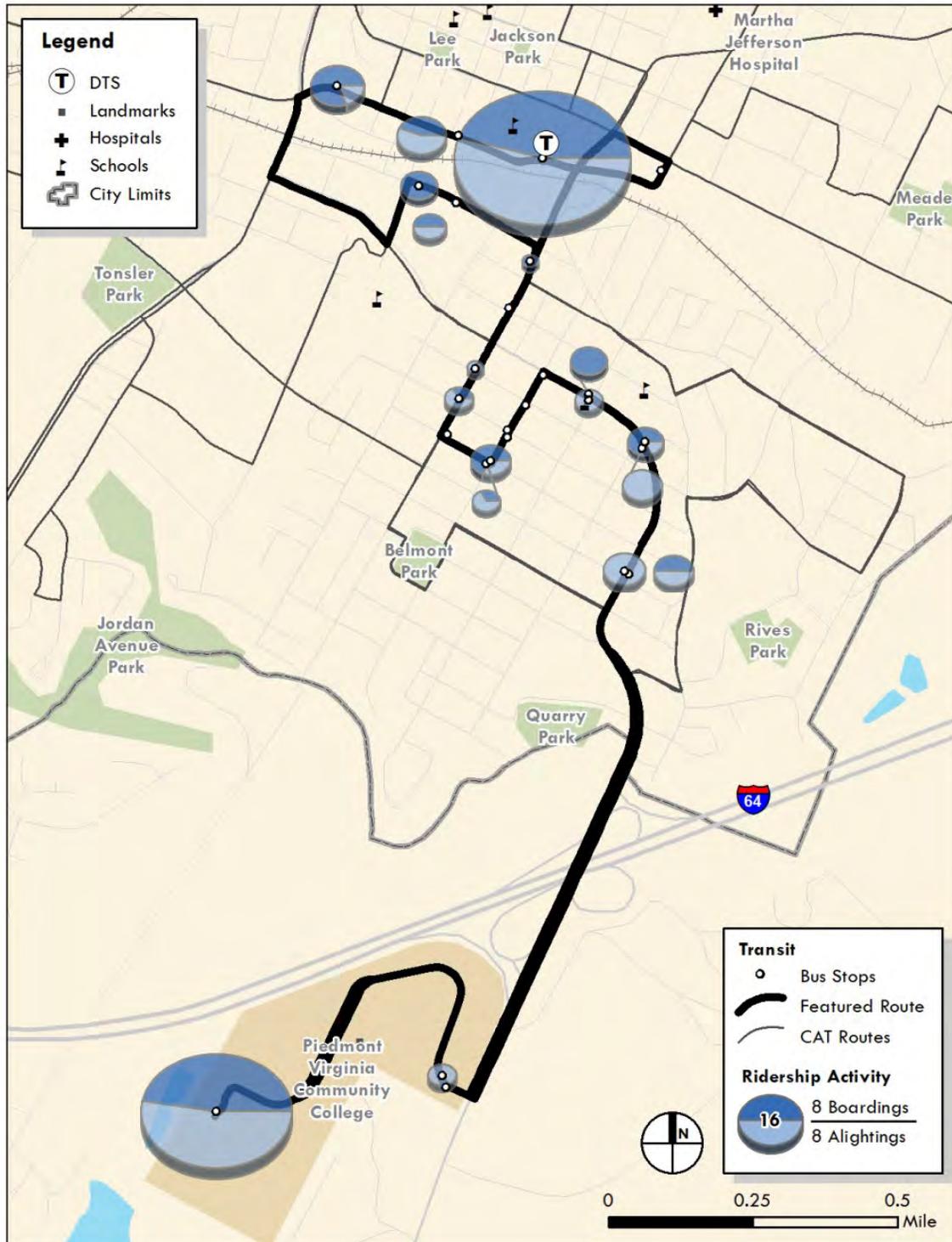
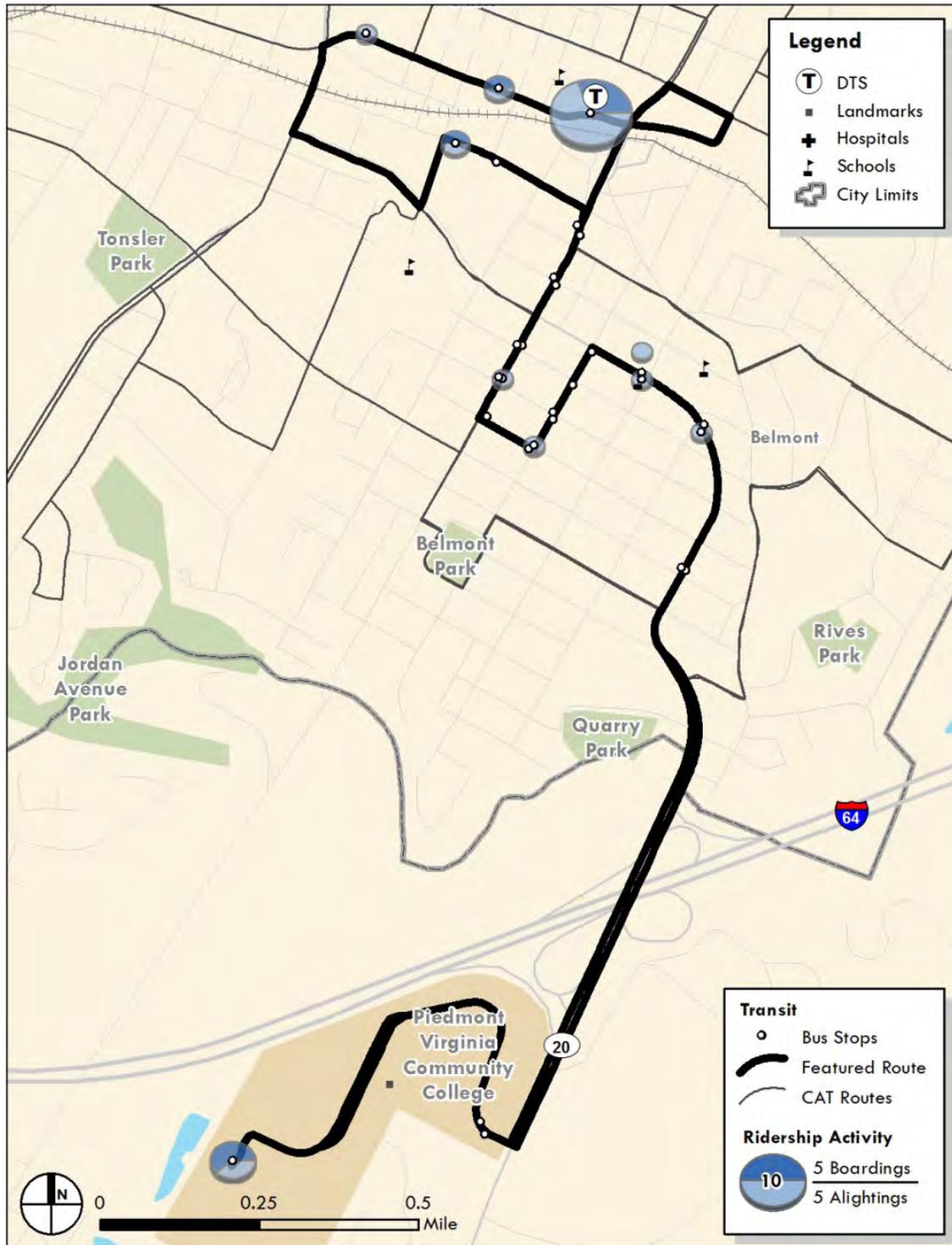


Figure 27 Route 23 Weekday Ridership Activity



Strengths

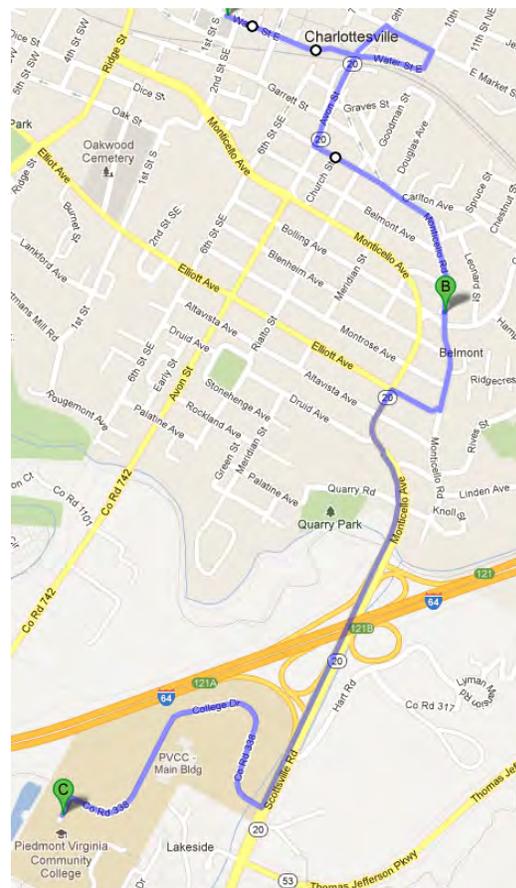
- **Strong outer anchor destination.** PVCC is a strong outer destination that attracts a relatively large number of riders for the route.

Weaknesses

- **Route alignment is circuitous.** While the route serves a strong anchor destination at its outer end (PVCC), the route uses a circuitous path that doubles-back on itself via Avon Street, Montrose Avenue, Rialto Street, and Monticello Avenue.
- **Ridership along most of the route is low.** While the route's outer ends carry relatively high ridership, the route's middle section carries relatively little ridership—only 15% of total boardings.
- **Stop spacing is close.** Along Avon Street and Rialto Street, there is roughly one stop per block. Although ridership is relatively low in this area, this stop spacing is much too close, and results in service that stops frequently and limits route speed.
- **Day and night service are branded differently.** Route 1B (daytime service) and Route 23 (night service) are effectively the same route, but are branded differently. This adds complexity to service, and makes service more complicated to utilize.

Opportunities

- **Consolidate service on Routes 1B and 3 to provide more frequency.** To achieve higher service frequency, it would be necessary to consolidate some routes. Route 1B and Route 3 (which serves other portions of the Belmont neighborhood) could be consolidated and operated more frequently. An example of how this could be accomplished is shown at right. This change would result in fewer areas served, but the areas that are served would be served more frequently.
- **Straighten route alignment.** Route 1B could be realigned to operate more directly in the following ways:
 - Travel east from Avon Street via Montrose Avenue or Elliot Avenue and eliminate northbound jog toward Monticello Avenue; or, turn



directly from Avon Street onto Monticello Avenue.

- Loop through downtown via Water Street and Market Street, rather than via Ridge Street/ Monticello Avenue/2nd Street/Garrett Street

Route changes should be undertaken in conjunction with changes to Route 3, which is closely related.

- **Increase stop spacing.** Stop spacing along Avon Street and Rialto Street could be increased to increase route speed.
- **Eliminate 6:45 AM weekday and Saturday trips.** The first trip of the day at 6:45 AM carries only two riders on weekdays and no riders on Saturdays. This trip could be eliminated to improve productivity.
- **Discontinue Saturday service.** On Saturdays, Route 1B carries a maximum of five riders per trip, and only 25 passengers during the entire day. Service on Saturdays could be eliminated to provide additional frequency on other routes.
- **End service after 6:45 PM.** The last four weekday trips (operated on Route 23), and all Saturday trips on Route 23, serve five or fewer passengers each. These trips could be eliminated to provide additional resources elsewhere.

2011 TDP Recommendations

The 2011 TDP recommended that Route 1B should operate to PVCC directly via Avon Street Extended, and be renumbered as Route 1. A portion of Route 1B's alignment in the Belmont neighborhood would be replaced by a re-routing of service on Route 3.

Route 2A – Locust Avenue

Route 2A serves a primarily residential area to the north of downtown Charlottesville, including the North Downtown and Locust Grove neighborhoods. It operates along a large one-way loop, primarily traveling along Park Street, North Avenue, St. Clair Avenue, and Locust Avenue. The route operates on weekdays and Saturdays once every hour (see Figure 28); no evening or Sunday service is provided. Route 2A is interlined with Route 2B. The route primarily serves low- and moderate-density residential areas, as well as the Downtown Transit Station.

Figure 28 Route 2A Service Characteristics

	Span of Service	Headways (mins)
Weekday		
Day	6:20 AM – 6:30 PM	60
Night	No service	60
Saturday	6:20 AM – 6:30 PM	60
Sunday	No service	N/A

Ridership Characteristics

Route 2A carries 68 passengers per weekday and 43 passengers per Saturday, and accounts for just under 1% of total weekday system ridership activity. The route’s ridership activity is concentrated at the northern end of its loop (north of the Route 250 Bypass, along North Avenue and the northern portions of Locust Avenue and St. Clair Avenue), and in downtown Charlottesville (see Figure 29). In total, 29 out of 68 weekday passengers (or 43%) board in the northern area, and 31 riders (or 46%) board downtown; only 8 riders board elsewhere. This means that the route provides service in unproductive areas for most of its alignment.

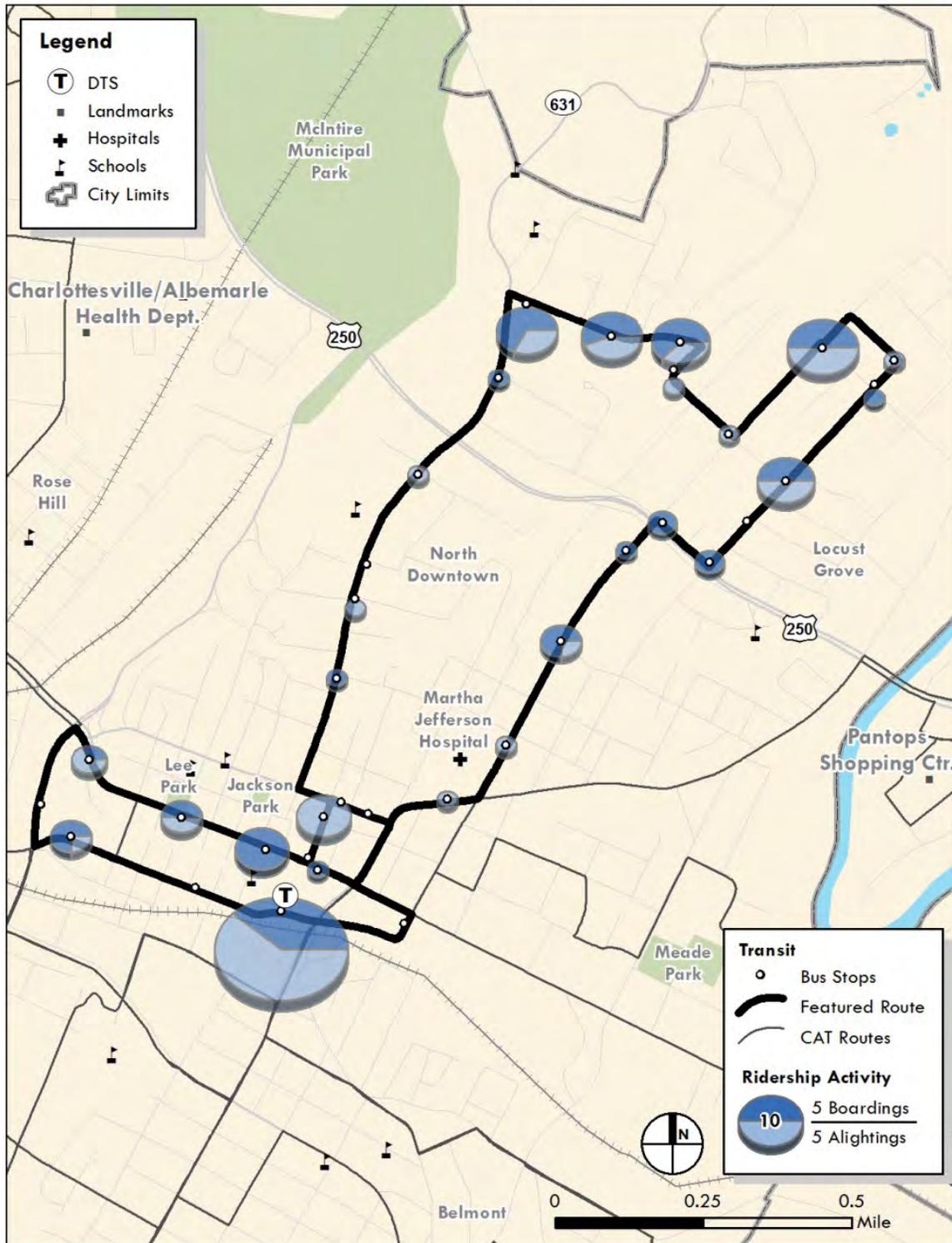
Strengths

- **Route 2A can be provided with less than one peak vehicle.** Route 2A serves an area of relatively low to moderate transit need, but because Route 2A is interlined with Route 2B, the vehicle used to provide service on this route can be shared with another service area and route.

Weaknesses

- **Below average productivity.** Route 2A performs below average among CAT routes in terms of productivity. Although the northernmost portion of its alignment carries some ridership, the remainder of its unique alignment carries very few riders.

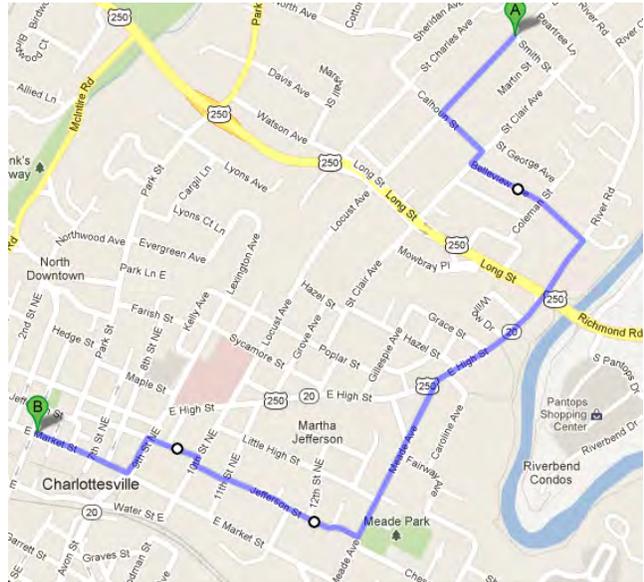
Figure 29 Route 2A Weekday Ridership Activity



- **Circuitous one-way service.** Route 2A operates in one direction only, along a very circuitous path. This makes service very difficult for riders to use, especially those who travel from near the start or end of the loop.
- **Stop spacing is close.** Along the route's northern alignment, there is roughly one stop per block. Although ridership is relatively low in this area, this stop spacing is much too close, and can result in service that stops frequently and limits route speed.

Opportunities

- **Eliminate Route 2A.** Route 2A operates in a relatively low density area and carries few riders. The route could be eliminated to provide additional service resources elsewhere.
- **Consolidate Route 2A with Route 1A.** Route 2A could be consolidated with Route 1A to provide service to both areas. An example of how this could be provided is shown at right. Other route consolidation opportunities are also possible, and depend on changes selected for other routes.
- **Eliminate Saturday service.** Route 2A carries very little ridership on Saturdays; Saturday service could be eliminated to provide additional resources elsewhere.
- **Increase stop spacing.** Stop spacing along the route could be increased to increase route speed.
- **Condense Saturday service schedule.** Route 2A carries no ridership on the first Saturday trip of the day, and low ridership on all other trips. To provide service on Saturdays, but to limit costs, the service schedule could be condensed to provide service during more limited hours, for example, between 9:00 AM and 5:00 PM.



2011 TDP Recommendations

The 2011 TDP recommended that Route 2A should be consolidated with Route 1A and Route 10 to create two routes serving the highest activity areas of the three routes; the new routes would be numbered Route 10 and Route 12.

Route 2B – Southwood

Route 2B Southwood provides service south of downtown Charlottesville, primarily operating along Ridge Street/South 5th Street and Hickory Road in the Moore’s Creek neighborhood of Albemarle County. The route primarily serves a low-income residential community on Hickory Street and the Albemarle County Office Building, as well as the Willoughby Square Shopping Center on South 5th Street. There is very limited residential or commercial activity along most of the route’s corridor, however. Half of the cost to operate Route 2B is provided by Albemarle County. Service is provided on weekdays and Saturdays once every hour; no evening or Sunday service is provided.

The route serves the following activity centers:

- Willoughby Square Shopping Center
- Albemarle County Office Building
- Low-income housing along Hickory Street
- Southwood Boys and Girls Club
- Downtown Transit Station and downtown Charlottesville

Figure 30 Route 2B Service Characteristics

	Span of Service	Headways (mins)
Weekday		
Day	6:45 AM – 6:01 PM	60
Night	No service	60
Saturday	6:45 AM – 6:01 PM	60
Sunday	No service	N/A

Ridership Characteristics

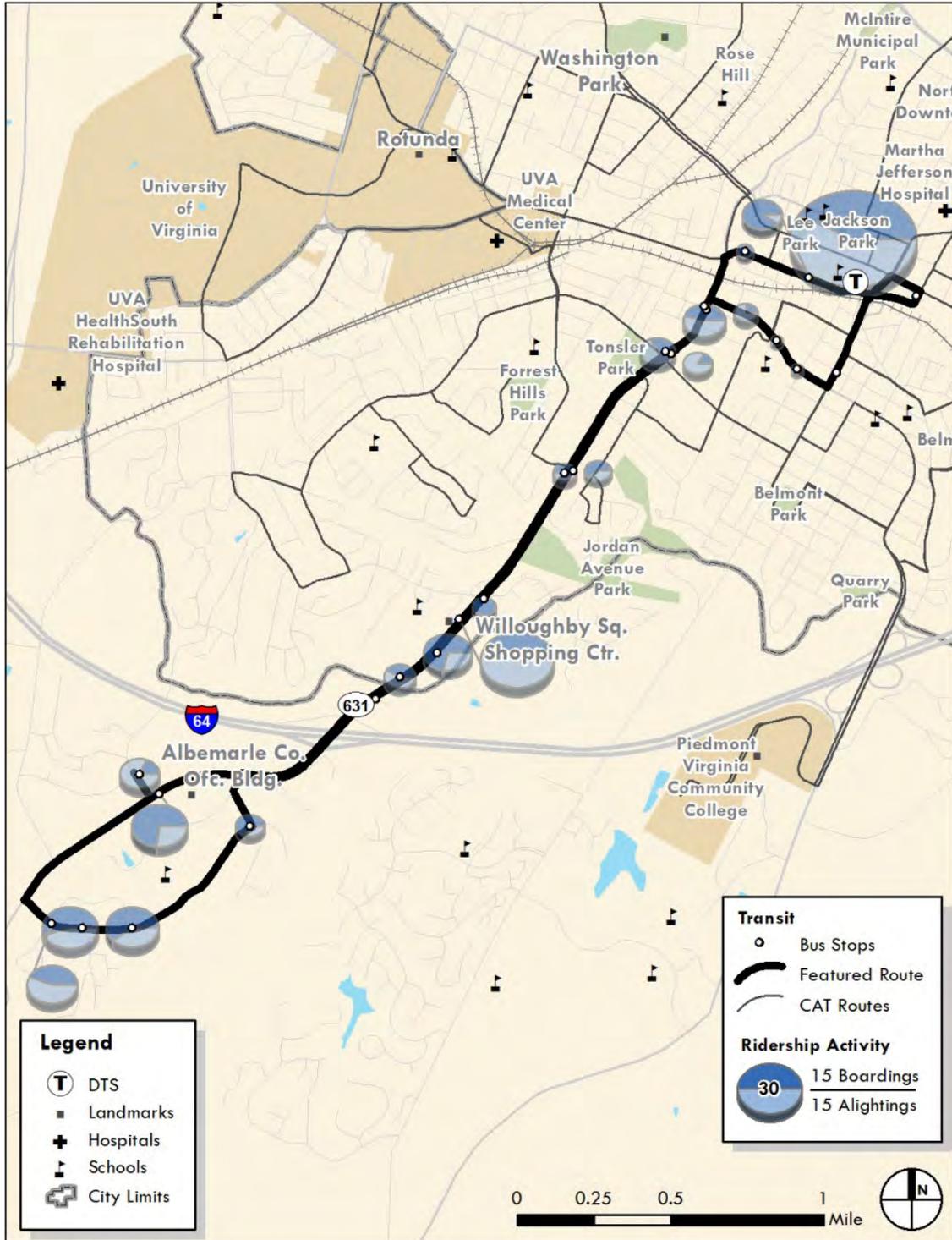
Route 2B carries an average of 169 riders per weekday and 105 riders per Saturday. The route accounts for just over 2% of total weekday system ridership activity. Ridership along Route 2B is sparse due to the route’s operation along the 5th Street/Ridge Street arterial (see Figure 31). Key ridership concentrations include:

- South of I-64 (54 daily boardings, or 32%)
- Willoughby Square Shopping Center area (41 daily boardings, or 24%)
- Near downtown Charlottesville (64 daily boardings, or 44%)

Almost all boardings taking place in the vicinity of downtown Charlottesville take place either at the Downtown Transit Station or near 5th Street; none take place along most of Monticello Avenue or Avon Street.

CHARLOTTESVILLE TRANSIT STUDY | Final Report
 Charlottesville Area Transit

Figure 31 Route 2B Weekday Ridership Activity



Note: At the time that the data shown in the above figure was collected, Route 2B served a large one-way loop at its outer end. The loop has since been converted to two-way service that terminates at the Southwood low-income housing development.

Strengths

- **Outer destinations.** Route 2B serves relatively strong anchor destinations at its outer end, which helps to make the route productive.
- **Travel Speed.** Route 2B is primarily designed to serve destinations at and near its outer end; the route travels along the Ridge Street/South 5th Street corridor to reach these destinations, which allows relatively fast travel speeds.
- **Stop spacing.** Unlike other routes in the CAT system, Route 2B's stops are relatively widely spaced, except in commercial areas where activity is more concentrated and pedestrian conditions limit riders' ability to walk.

Weaknesses

- **Unproductive corridor.** While Ridge Street/South 5th Street provides relatively swift travel speeds, this is because there are only a limited number of demand generators worth serving directly along the route. Pedestrian access to much of the corridor is very limited, and the arterial is lined by only very limited travel generators for most of the route's length. While the route is bordered on either side of the northern portion of its alignment by relatively strong transit markets, access to the corridor is relatively limited.

Opportunities

- **Eliminate 6:20 AM trip.** Like many routes in the CAT system, ridership is low on the first trip of the day; this trip could be eliminated to increase productivity and provide resources elsewhere.

2011 TDP Recommendations

The 2011 TDP recommended that Route 2B should be renumbered to Route 2, and that it should be interlined with Route 1 (a realignment of current Route 1A).

Route 3 – Belmont and Route 21 – Belmont Night Service

Route 3 provides service to the primarily residential Belmont neighborhood. The route is among the most circuitous in the CAT system, and travels in a clockwise direction along neighborhood streets including Hinton Avenue, Carlton Avenue, Hampton Street, Monticello Road, Monticello Avenue, Altavista Avenue, Stonehenge Avenue, and Avon Street. The route operates on weekdays and Saturdays (see Figure 32) every 30 minutes during weekday peak periods and every 60 minutes during the midday. Route 3 is interlined with Route 6.

Evening service is provided on weekdays and Saturdays by Route 21 Belmont Night Service, which operates along an identical alignment. Route 21 is interlined with Route 22, and operates every 30 minutes.

The route serves the following activity centers:

- Worksource Enterprises
- Sunrise low-income housing development
- Virginia Industries for the Blind
- Downtown Transit Station and downtown Charlottesville

Figure 32 Route 3 and Route 21 Service Characteristics

	Span of Service	Headways (mins)
Weekday		
Day	6:20 AM – 6:32 PM	30-60
Night*	6:45 PM – 11:24 PM	30
Saturday*	6:45 AM – 11:24 PM	30-60
Sunday	No service	N/A

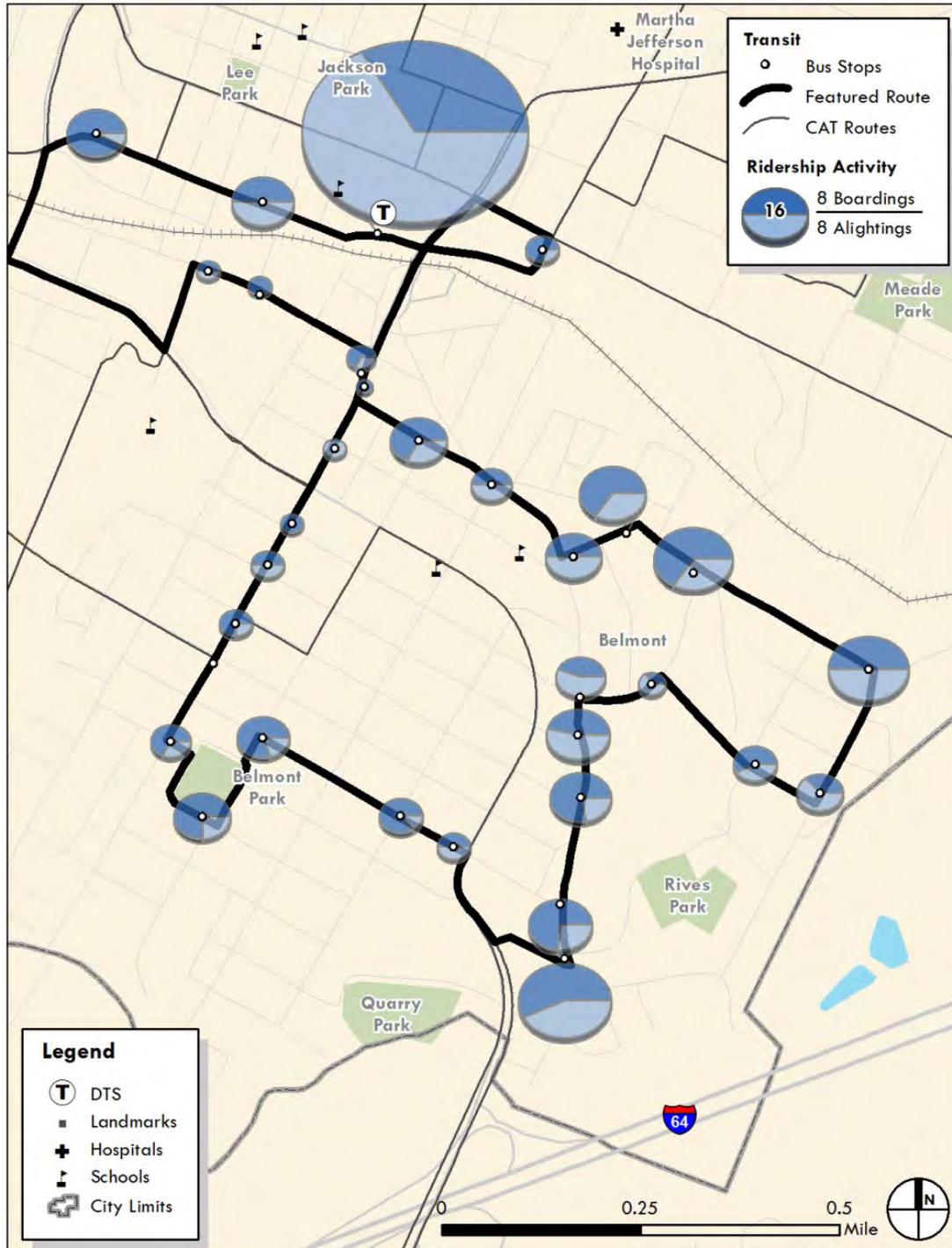
*Night service from 6:45 PM to 11:15 PM operates as Route 21.

Ridership Characteristics

Route 3 averages 243 riders per weekday and 169 riders per Saturday. Ridership is spread fairly evenly among the route’s stops, but is strongest in the route’s eastern half, particularly along Bainbridge Street, Carlton Avenue, Hampton Street, and Monticello Road—more than 42% of boardings take place in this area (see Figure 33). Ridership is also strong in the downtown Charlottesville area, where 35% of total boardings take place.

Route 21 averages 42 riders per weekday and 21 riders per Saturday. Ridership patterns by stop largely mirror those of Route 3 (see Figure 34). In total, Route 3 and Route 21 account for just under 4% of total weekday system ridership activity.

Figure 33 Route 3 Weekday Ridership Activity



CHARLOTTESVILLE TRANSIT STUDY | Final Report
 Charlottesville Area Transit

Figure 34 Route 21 Weekday Ridership Activity



Strengths

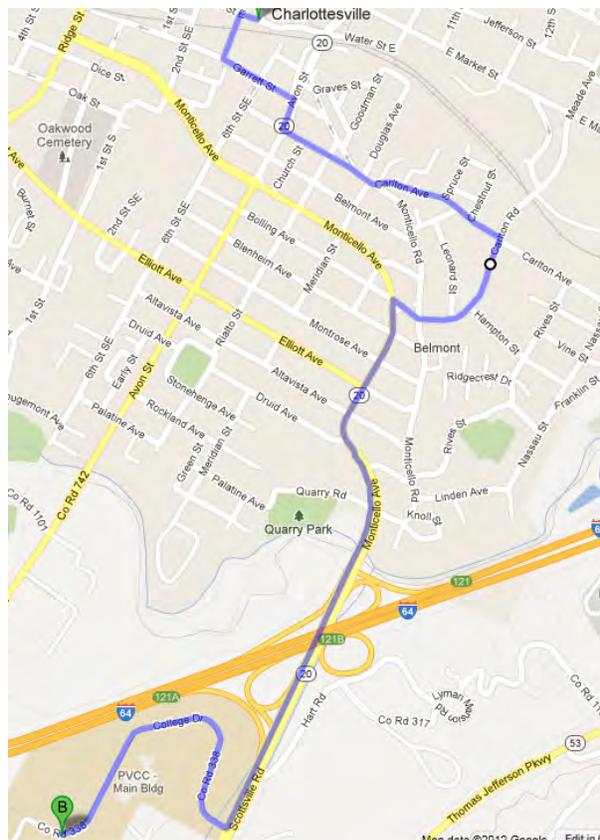
- **Relatively strong ridership and transit destination markets.** Although the Belmont neighborhood in general has mixed demographic characteristics, there is a substantial market of transit riders in the eastern portion of the neighborhood, and ridership is relatively strong in this area.
- **Route 3/Route 21 can be provided with less than one peak vehicle.** Because Route 3/Route 21 operates using a relatively short loop, the vehicle used to provide service on these routes can be shared with another route. Route 3 is interlined with Route 6, and Route 21 is interlined with Route 22 to provide hourly service on each.

Weaknesses

- **Service duplication with Route 1A.** Route 3 operates in close proximity to service provided by Route 1A, which operates between downtown Charlottesville and Piedmont Virginia Community College.
- **Route alignment is circuitous.** Route 3/Route 21 uses a circuitous path that forms a large loop through Belmont. This means that riders get service in only one direction.
- **Stop spacing is close.** Along Avon Street and Rialto Street, there is roughly one stop per block. Although ridership is relatively low in this area, this stop spacing is much too close, and can result in service that stops frequently and limits route speed.
- **Day service and night service are branded differently.** Route 3 (daytime service) and Route 21 (night service) are effectively the same route, but are branded differently. This adds complexity to service, and makes service more complicated to utilize.

Opportunities

- **Combine Route 1B and Route 3/Route 21.** Route 1B travels through the Belmont neighborhood, but carries very little ridership anywhere along its route except for at PVCC and downtown Charlottesville. The



routes could be combined with a streamlined alignment, which would allow an increase in the frequency of service. Route 1B could potentially be redesigned to serve more of the Belmont neighborhood, which would increase its mid-route ridership and provide a stronger outer anchor destination for Route 3/Route 21. An example alignment is shown at right.

- **Renumber Route 3/Route 21 with the same route number.** Route 3 and Route 21 provide exactly the same service and could be renumbered to reduce rider confusion.
- **Eliminate service before 7:20 AM.** Weekday and Saturday early morning service carries relatively few riders—fewer than 7 per trip—and could be eliminated to provide additional resources elsewhere.

2011 TDP Recommendations

The 2011 TDP recommended that Route 1B should be straightened to operate to PVCC directly via Avon Street Extended, and as such, that Route 3 would take over a portion of Route 1B's current alignment through the Belmont neighborhood along Monticello Avenue.

Route 4 – UVA Hospital and Fry’s Spring and Route 22 – Prospect Avenue/UVA Hospital Night Service

Route 4 provides service in the southeastern portion of Charlottesville, including the Fifeville and Fry’s Spring neighborhoods. The route provides service in primarily residential areas, and operates using an extremely circuitous path that travels from downtown Charlottesville via Avon Street and Elliott Street/Cherry Avenue. Along Cherry Avenue, the route deviates to serve several loops, some of them repeatedly, in the following order:

- From Cherry Avenue, the route serves a loop via 5th Street Southwest, Bailey Road, Prospect Avenue, Forest Hills Avenue, Forest Ridge Road, and Rock Creek Road
- After doubling back to travel northbound on Cherry Street, the route makes a loop via Roosevelt Brown Boulevard, Crispell Drive, Lee Street, and West Main Street (location of UVA Hospital)
- The route returns to Cherry Avenue and travels south to serve a terminal loop around Cleveland Avenue, Jefferson Park Avenue, Harris Road, and Willard Drive
- The route returns to Cherry Avenue and travels north to serve a loop via Shamrock Road, Antoinette Avenue, Village Road, and Trail Ridge Road
- The route returns to Cherry Avenue and travels north to serve the UVA Hospital loop (as described above, via Roosevelt Brown Boulevard)
- The route crosses Cherry Avenue and serves the lower portion of the Forest Hills loop again, via 9th Street SW, Forest Hills Avenue, Forest Ridge Road, and Rock Creek Avenue

The route then returns to downtown Charlottesville via Elliott Avenue and Avon Street.

The route operates on weekdays and Saturdays only; no Sunday service is provided. Service operates every 30 minutes during weekday peak periods, and every 60 minutes during weekday off-peak periods and on Saturdays (see Figure 35). Night service is provided to some portions of Route 4 by Route 22. However, the alignment of Route 22 differs slightly; it serves an abbreviated alignment of Route 4, and also covers a portion of Route 6 (on Lankford Avenue and 1st Street). Route 22 is interlined with Route 21.

The route operates using a regular service pattern during most periods, except for four short-turn trips operated on weekdays: two from UVA Hospital to DTS at the beginning of peak periods and two from DTS to UVA Hospital at the end of peak periods. These short-turns are operated primarily to shuttle vehicles in and out of service.

Route 4 serves the following activity centers:

- UVA Hospital
- The Corner
- Crescent Hall residential development, a 105-unit Charlottesville Housing Authority residence
- The Blue Ridge Commons residential development
- Downtown Transit Station and downtown Charlottesville

Additionally, Route 22 serves the South First Street residential development, a 58-unit Charlottesville Housing Authority development.

Figure 35 Route 4 Service Characteristics

	Span of Service	Headways (mins)
Weekday		
Day	6:30 AM – 6:26 PM	30
Night*	6:45 PM – 11:26 PM	30
Saturday*	6:30 AM – 11:26 PM	30-60
Sunday	No service	N/A

*Night service from 6:45 PM to 11:23 PM operates as Route 22 only between Downtown Transit Center and UVA Hospital. Route 22 operates every 30 minutes. Route 4 Saturday service operates every 60 minutes.

Ridership Characteristics

Route 4 carries an average of 359 riders per weekday and 125 riders per Saturday. Ridership volumes vary along the route (see Figure 36):

- Downtown area—145 daily boardings and alightings, or 20% of total
- Avon St/Elliott Ave—49 daily boardings, or 7%
- Eastern Forest Hills loop (east of 9th Street)—69 daily boardings, or 10% of total
- Western Forest Hills loop—45 daily boardings, or 6% of total
- Cherry Street (non-loop portions)—68 daily boardings, or 9% of total
- UVA Hospital—222 daily boardings, or 31% of total
- Terminal loop (Cleveland Ave/JPA/Willard Dr)—98 daily boardings, or 14% of total
- Shamrock Road loop—22 daily boardings, or 3% of total

Route 22 carries an average of 83 riders per weekday and 25 riders per Saturday. Similar to Route 4, ridership is relatively strong in the eastern Forest Hills Avenue area and at the UVA Hospital (see Figure 37). Ridership is also somewhat high at the southern end of 1st Street. In total, Route 22 and Route 4 represent just under 6% of total weekday system ridership activity.

CHARLOTTESVILLE TRANSIT STUDY | Final Report
 Charlottesville Area Transit

Figure 36 Route 4 Weekday Ridership Activity

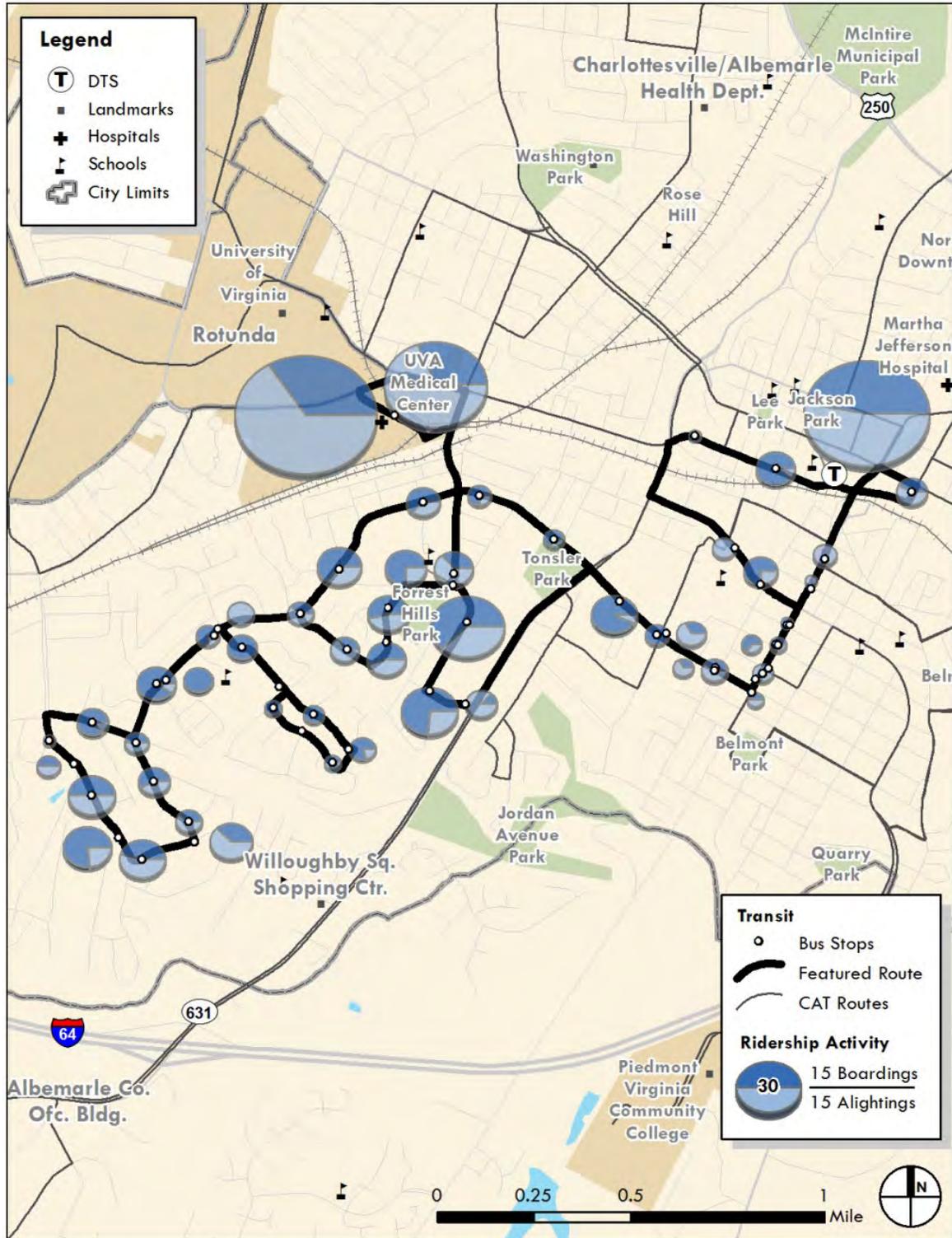
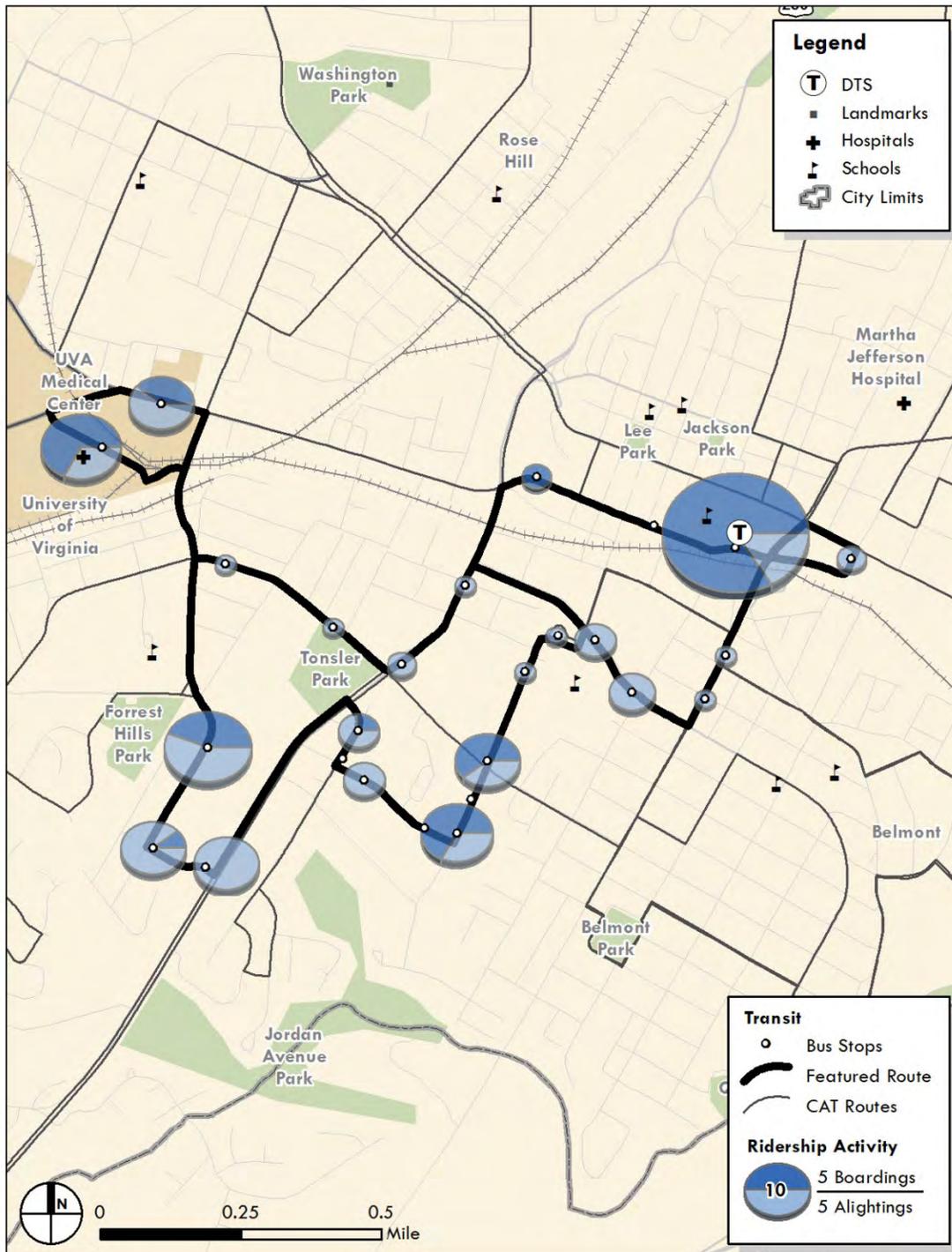


Figure 37 Route 22 Weekday Ridership Activity



Strengths

- **Strong ridership.** In spite of circuitous service, Route 4 carries a relatively high volume of ridership (5% of weekday system ridership activity). Exceptions include the two short-turn trips operating from UVA to DTS at 6:45 AM and 2:45 PM, which carry three or fewer riders each.
- **Even ridership throughout the day.** Route 4 carries relatively even ridership levels throughout the day on weekdays, an average of 17 riders per trip.

Weaknesses

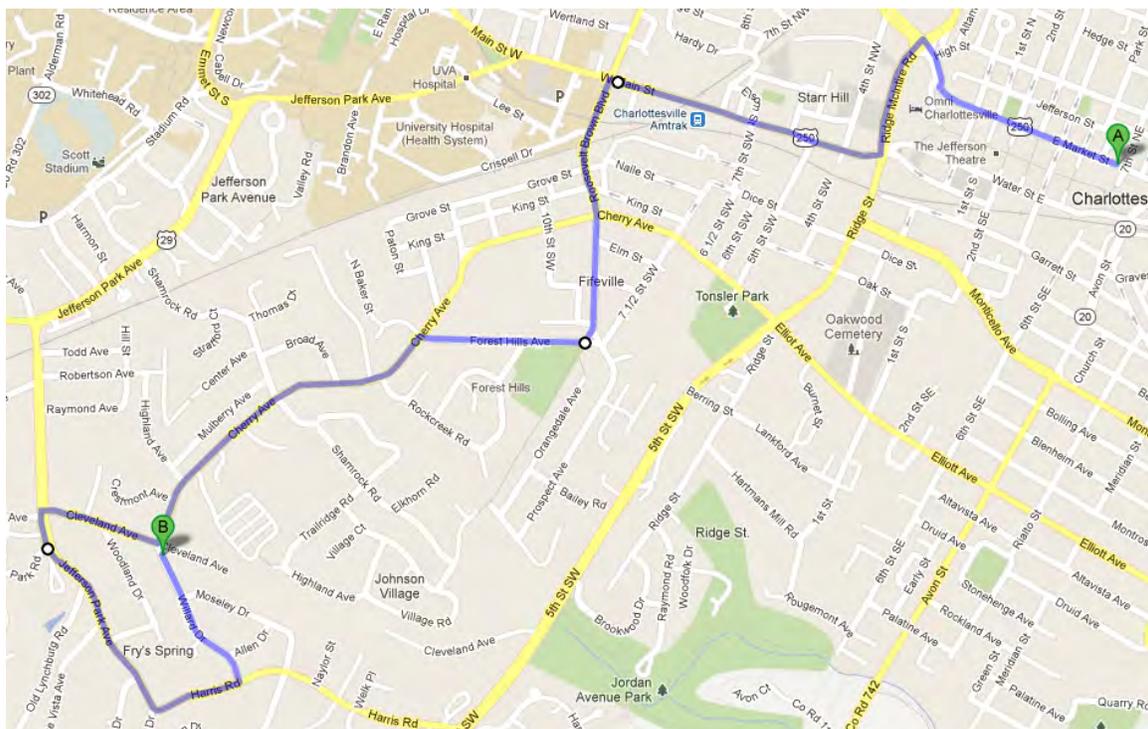
- **Circuitous service.** Route 4 is extremely circuitous, to the point that the loops are a burden on almost all of the route's riders. As noted in the 2011 TDP, "the loops are designed to provide as much service coverage to as many people as possible. The repetitive nature of some of the loops emphasizes the desire to connect origins and destinations within the route. However, out-of-direction travel is unavoidable with so many different branches and loops occurring within the same route." This route design creates undesirably long on-board times for most passengers.
- **Stop spacing is close.** Along most of the route's alignment in neighborhoods, stop spacing is relatively close. Closely spaced stops can result in service that stops frequently and limit route speed.
- **Overlap with Route 6.** Route 4 and Route 6 share some service area overlap, and both provide community circulator service within the area south of downtown Charlottesville.
- **Confusing night service.** Route 22 provides night service for both Routes 4 and Route 6, but its alignment is different from both, which adds to overall complexity and makes it more challenging for riders to understand how to use the service.
- **Afternoon on-time performance is very poor.** Route 4 average on-time performance after 2:30 PM is only 37%.

Opportunities

- **Straighten route.** Route 4 and Route 22 are primarily designed to serve residential neighborhoods in the Fifeville and Fry's Spring neighborhoods, but provides so much circuitous service that most riders must travel long distances in the wrong direction. Most of the riders served by the route's many loops live very close to the main corridor of travel, and would walk longer distances to reach the stop if service was faster and more direct. The route could be straightened in a number of ways:
 - **Eliminate Shamrock Road loop.** The Shamrock Road loop serves only 19 passengers per weekday or 5% of total, but forces other riders traveling from the route's outer end to travel through a long deviation.
 - **Provide direct service along Cherry Avenue.** Direct, fast service attracts riders to walk longer distances to the stop. An example alignment is shown below.

CHARLOTTESVILLE TRANSIT STUDY | Final Report
Charlottesville Area Transit

- **Eliminate service to Elliott Avenue east of Ridge Street.** The service area of Route 4 that operates along Elliott Avenue is partly covered by north-south service provided by Route 6. Service to this area is less productive, and service could be restructured to approach downtown Charlottesville using another alignment that would connect riders from Route 4’s primary service markets (Fry’s Spring and Fifeville) to more desirable destinations.
- **Provide evening service using the same alignment and same route numbering as the primary route.** Route 22 provides similar service to Route 4, but requires riders to learn and understand how to use a different (and also complex and circuitous) route. Night service should be provided as late as necessary on routes to meet demand, but without imposing additional route patterns unless there is a compelling reason to do so.
- **Eliminate 6:30 AM Saturday trip on Route 4.** The first Saturday trip of the day carried no observed riders, and could be eliminated to provide additional resources elsewhere.



- **End Saturday evening service at 8:00 PM.** Although ridecheck data is unavailable for some trips, the sample of trips surveyed suggest that ridership is relatively low on Route 22 on Saturdays, particularly after 8:00 PM. Service could be discontinued at 8:00 PM to provide additional resources elsewhere. Additional ridecheck data on evening service should be obtained before making this service cut.
- **Provide evening service every 60 minutes.** Ridership on Route 22 is fairly low during weekday evenings after about 8:30 PM, when ridership is less than 6 passengers per trip on most trips (except for the last two trips, at 10:45 PM and 11:15 PM). To meet the demand for late service, but to balance service levels

against demand overall, service could be provided hourly rather than every 30 minutes after 8:30 PM.

- **Increase stop spacing.** Stop spacing could be increased to increase route speed.
- **Improve on-time performance.** Straightening the route will improve the poor on-time performance in the PM.

2011 TDP Recommendations

The 2011 TDP recommended that Route 4 should be streamlined to operate along Cherry Street. The UVA loop, the terminal loop, and the loop to Shamrock Road would be preserved. Route 6 would assume some of Route 4's current service area in the Forest Hills area. Route 4 would be interlined with Route 3 and Route 6 (a three-way interline). No significant changes were proposed for Route 22.

Route 5 – Barracks Road Shopping Center and Walmart

Route 5 provides service between Walmart in Albemarle County north of Charlottesville and Barracks Road Shopping Center (BRSC). The route connects a number of regional and local shopping areas, including some of the region’s largest malls. The route also provides service to residential communities in the vicinity of Route 29, including a number of apartment complexes. Route 5 is the only route that does not serve the Downtown Transit Station. The route travels southbound via Berkmar Drive, Woodbrook Drive (serving Rio Hill Shopping Center), Route 29, Albemarle Square Shopping Center, Fashion Square Mall, Rio Road, Four Seasons Drive, Greenbrier Drive, Hydraulic Road, Georgetown Road, and Barracks Road, ending at BRSC. Route 5 connects with Route 7 and 8 at Barracks Road Shopping Center, and connects with Route 7 again further north at Fashion Square Mall.

Route 5 operates on weekdays and Saturdays, including night service (see Figure 38). Interestingly, Route 5 is one of only two routes whose night service is provided on the same numbered route as day service. No service is provided on Sundays.

The route serves the following activity centers:

- Barracks Road Shopping Center
- Fashion Square Mall
- Sam’s Club
- Lowe’s
- Walmart
- Albemarle Square Shopping Center
- Rio Hill Shopping Center

Figure 38 Route 5 Service Characteristics

	Span of Service	Headways (mins)
Weekday		
Day	6:15 AM – 5:45 PM	30
Night	6:15 PM – 10:15 PM	30
Saturday	6:30 AM – 10:45 PM	30
Sunday	No service	N/A

Ridership Characteristics

Route 5 carries an average of 796 riders per weekday and 720 riders per Saturday. Ridership peaks during the midday, but is relatively strong throughout the day. Ridership is relatively strong along most of the route’s alignment (see Figure 39 and Figure 40). Ridership on Route 5 represents 9% of total weekday system ridership activity. Stops with a particularly large volume of ridership include Barracks Road Shopping Center, Fashion Square Mall, and Walmart. Additionally, the route’s alignment along Four Seasons Drive and Greenbrier Drive carries a large volume of passengers.

Figure 39 Route 5 Weekday Ridership Activity (Southbound)

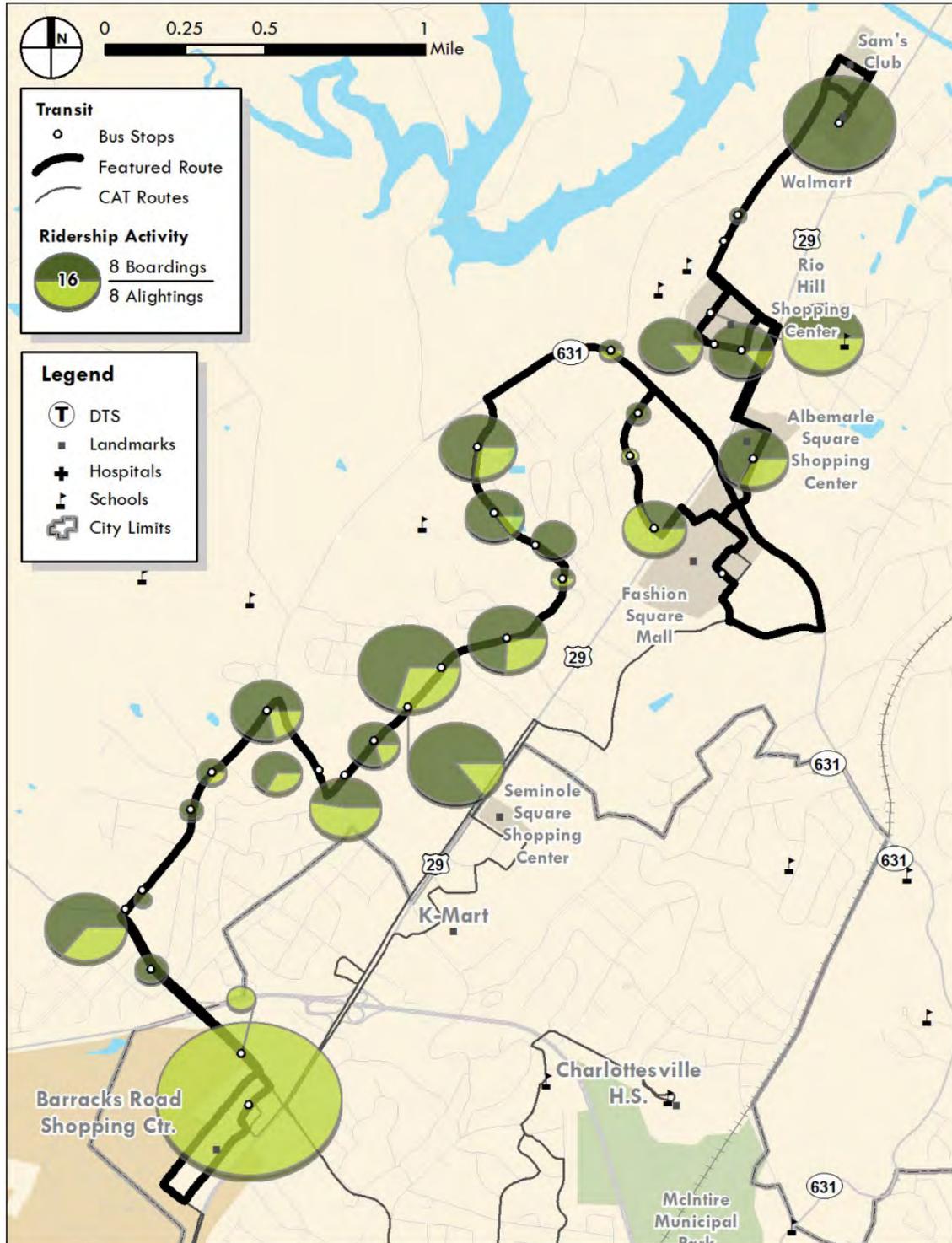
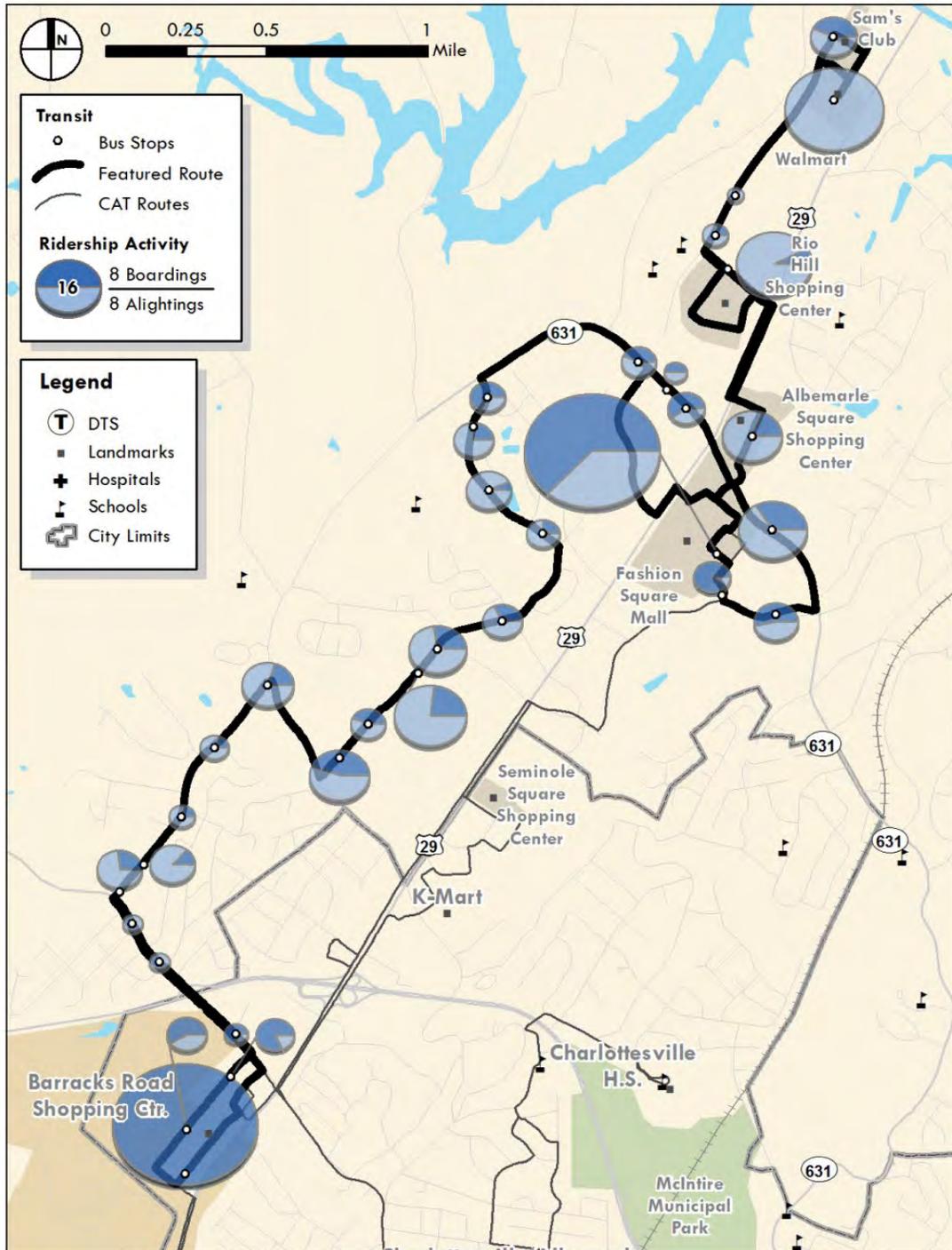


Figure 40 Route 5 Weekday Ridership Activity (Northbound)



Strengths

- **Service to strong transit markets and varied destinations.** Route 5 connects relatively high-density residential developments with some of the

largest commercial destinations in the region. As a result, the route carries relatively high ridership.

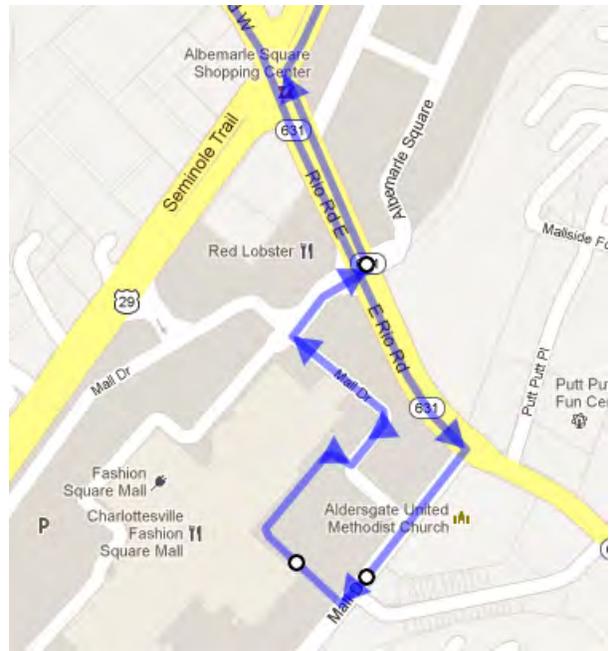
- **Strong route anchors.** Walmart and BRSC act as strong anchors at either end of the route, which contributes to ridership being relatively strong in both directions.

Weaknesses

- **Circuitous service.** While Route 5 'connects the dots' of many of northern Albemarle County's strongest transit markets, it also does so circuitously, and crosses Route 29 twice to do so.

Opportunities

- **Shorten loop around Fashion Square Mall.** Route 5's alignment serves the back side of Fashion Square Mall, along Hillsdale Drive. This segment carries only 8 riders per day, and is within a half mile walk of the Mall's back driveway; the route could be shortened to eliminate this additional travel distance, and operate instead along the back driveway. An example is shown at right.



2011 TDP Recommendations

The 2011 TDP recommended that service should be provided along Rio Road in both directions; at the time of the TDP, service was provided along Berkmar Drive in one direction and Rio Road in the other direction, just west of Fashion Square Mall. This change has already been implemented.

Route 6 – Ridge Street/UVA Hospital

Route 6 provides service in a large one-way loop to downtown Charlottesville, the residential neighborhood just south of downtown, and UVA Hospital. The route operates primarily along Avon Street, Monticello Avenue, 1st Street, Lankford Avenue, Ridge Street, loops around Raymond Road, returns northward up Ridge Street, continues north on 5th Street, west on Cherry Avenue, and loops around the UVA Hospital on Crispell Drive, Lee Street, West Main Street and 10th Street. From there, the route returns to downtown Charlottesville via Cherry Avenue and Ridge Street.

Route 5 operates on weekdays and Saturdays (see Figure 41). Weekday peak period service operates every 30 minutes, and off-peak and Saturday service operates every 60 minutes. Night service is provided on a portion of Route 6’s alignment by Route 22, which also covers a portion of Route 4’s alignment. Route 6 is interlined with Route 3. Route 22 was described in more detail previously under Route 3’s summary.

The route serves the following activity centers:

- Crescent Hall residential development, a 105-unit Charlottesville Housing Authority residence
- The Corner
- The Blue Ridge Commons residential development
- Downtown Transit Station and downtown Charlottesville

Figure 41 Route 6 Service Characteristics

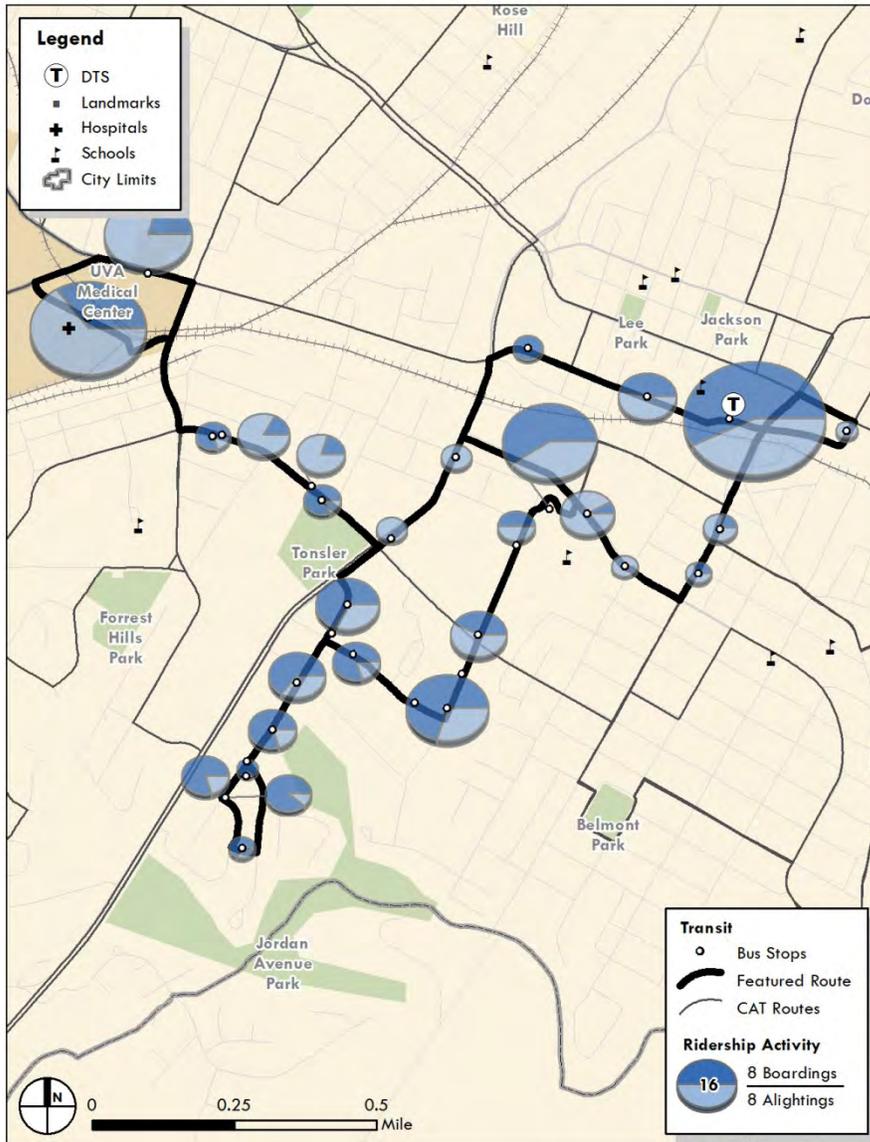
	Span of Service	Headways (mins)
Weekday		
Day	6:45 AM – 6:30 PM	30-60
Night*	6:45 PM – 11:26 PM	30
Saturday*	6:45 AM – 11:26 PM	60
Sunday	No service	N/A

*Night service from 6:45 PM to 11:23 PM operates as Route 22 only between Downtown Transit Center and UVA Hospital. Route 22 operates every 30 minutes. Saturday Route 6 operates every 60 minutes.

Ridership Characteristics

Route 6 carries an average of 207 riders on weekdays and 93 riders on Saturdays. Route 6 accounts for 3% of total weekday system ridership activity. Ridership is relatively evenly spread among all portions of the route.

Figure 42 Route 6 Weekday Ridership Activity



Strengths

- **Limited route length.** While Route 6 is very circuitous, it operates along a relatively short route, meaning that it can be operated with less than one bus and provides a short trip.
- **Strong ridership along most segments.** Route 6 serves a relatively strong residential transit market, and ridership is fairly strong on most segments of the route.

Weaknesses

- **Circuitous service.** Route 6 operates along a one-way loop, which means that riders wishing to use the route in both directions must travel long distances in the wrong direction.
- **Overlap with Route 4.** Route 4 and Route 6 share some service area overlap, and both provide community circulator service within the area south of downtown Charlottesville.
- **Confusing night service.** Route 22 provides night service for both Routes 4 and Route 6, but its alignment is different from both, which adds to overall complexity and makes it more challenging for riders to understand how to use the service.
- **Stops are spaced closely.** Stops are spaced very closely along most of the route—every 1 to 2 blocks—which impedes travel speeds.

Opportunities

- **Provide evening service using the same alignment and same route numbering as the primary route.** Route 22 provides similar service to Route 6, but requires riders to learn and understand how to use a different (and also complex and circuitous) route. Night service should be provided as late as necessary on routes to meet demand, but without imposing additional route patterns unless there is a compelling reason to do so.
- **Increase stop spacing.** The distance between stops could be increased to increase route speed.
- **End service after 6:30 PM.** Night service is provided on Route 22, but ridership on the last two trips of the day is relatively low; these trips serve 7 riders and 2 riders, respectively. Late evening service may not need to be provided in this area.

2011 TDP Recommendations

The 2011 TDP recommended changes to Route 4 that would eliminate service to the Forest Hills Avenue area, which would be assumed by Route 6. This would make Route 6 more circuitous. Route 6, Route 3 and Route 4 would be interlined.

Route 7 – Fashion Square

Route 7 provides service between Fashion Square Mall in northern Albemarle County and downtown Charlottesville. The route follows an alignment from Fashion Square Mall via Hillsdale Drive, Greenbrier Drive, Route 29, Emmet Street, travels through the Barracks Road Shopping Center (BRSC), continues on Emmet Street, Ivy Road, and West Main Street to downtown Charlottesville. Outbound service is the same as inbound service, except that the route travels directly within the Seminole Square Shopping Center lot (as opposed to inbound service, which passes the development via Route 29).

Route 7 operates on weekdays, Saturdays and Sundays, and is only of only two routes that operates on Sundays (see Figure 43). On weekdays and Saturdays, service is provided until the late evening. Interestingly, Route 7 is one of only two routes whose night service is provided on the same numbered route as day service. Service operates frequently – every 15 minutes during the weekday daytime and 30 minutes at night, every 15 to 30 minutes on Saturdays, and every 30 minutes on Sundays. Route 7 has a variable cycle time, ranging from approximately 60 minutes to 90 minutes.

The route serves the following activity centers:

- Fashion Square Mall
- Commercial area along and near Hillsdale Drive
- Seminole Square Shopping Center (including Kmart and Kroger)
- Barracks Road Shopping Center
- University of Virginia
- Jefferson Area Board for Aging (JABA)
- Downtown Transit Station and downtown Charlottesville

Figure 43 Route 7 Service Characteristics

	Span of Service	Headways (mins)
Weekday		
Day	6:30 AM – 6:15 PM	15
Night	6:45 PM – 11:15 PM	30
Saturday	6:30 AM – 11:15 PM	15-30
Sunday	7:45 AM – 5:15 PM	30

Time points: Transit Center and Fashion Square

Ridership Characteristics

Route 7 carries an average of 2,455 riders on weekdays, 1,945 riders on Saturdays, and 657 riders on Sundays. Route 7 carries almost as many riders as the Trolley, and represents 32% of total weekday system activity. Route 7’s ridership is concentrated in two markets: in the corridor between UVA and downtown Charlottesville (which accounts for 49% of total weekday boarding and alighting activity), and locations in the route’s northern half (see Figure 44 and Figure 45). In more detail:

- Barracks Road Shopping Center – 1,250 boardings and alightings, or 20%
- Seminole Square – 306 boardings and alightings, or 12%
- Fashion Square Mall – 253 boardings and alightings, or 10%
- Hillsdale Drive / Greenbrier Avenue – 107 boardings and alightings, or 4%
- Other locations along the route – 107 boardings and alightings, or 4%

Strengths

- **Strong ridership.** Route 7 carries relatively strong ridership throughout the day, and enough ridership to justify service on Sundays and frequent service all week.
- **Service to anchor destinations.** Route 7 connects a number of key regional destinations, and so ridership along much of the route is strong. The exception is the northern half of the route, where anchor destinations are relatively far apart. However, service in this corridor is relatively fast since stops are not frequent.
- **Direct routing.** Route 7 is organized along an easy to understand linear route with few loops or deviations; this makes it more convenient and accessible for passengers.

Weaknesses

- **Long alignment.** Route 7 uses a very long alignment, and is essentially two routes combined into one—an urban service operating between BRSC and downtown Charlottesville, and a suburban service connecting outer (primarily commercial) destinations. While this provides a one-seat ride for some riders, it also results in an alignment that is extremely long.
- **Two routes combined into one.** Route 7 is essentially two routes combined into one: the portion between BRSC/UVA and downtown, and the portion between Fashion Square Mall and BRSC. The portion of the alignment between UVA and downtown is especially problematic, since this portion of the route essentially duplicates the Trolley.

Opportunities

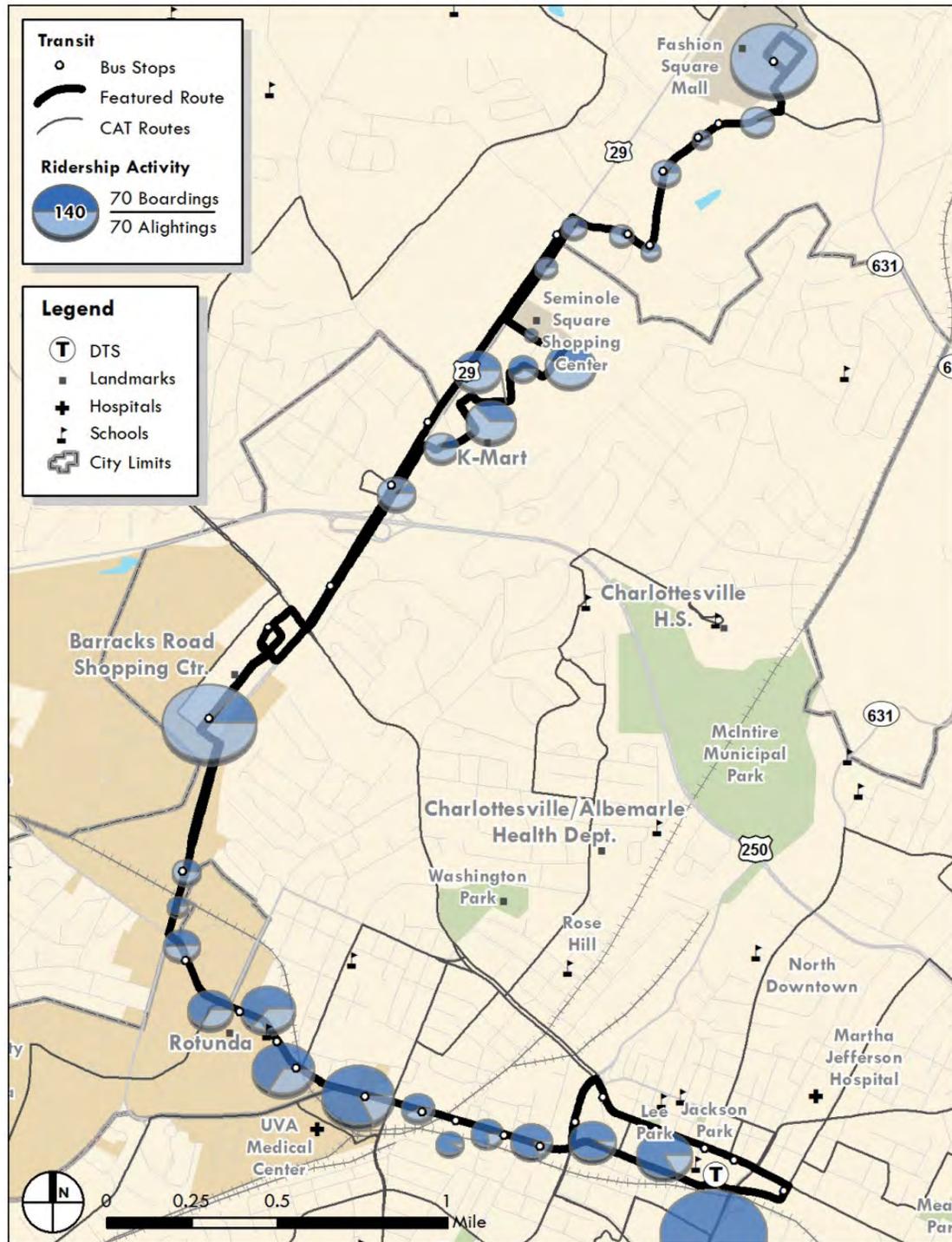
- **Convert to feeder service.** Route 7 uses a very long alignment, and could be shortened to serve its primary unique transit market, between UVA, BRSC and Fashion Square Mall. The route would terminate at Barracks Road Shopping Center. In conjunction with this change, it may be necessary to adjust the frequency on the Free Trolley to accommodate the ridership shift.
- **End weekday and Saturday service earlier.** Route 7's last inbound and outbound trip of the day serves relatively low ridership levels (less than 5 each), and could be eliminated to provide additional resources elsewhere.

2011 TDP Recommendations

The 2011 TDP recommended primarily minor scheduling adjustments to service, plus a small routing change to have Route 7 mimic the Trolley's approach near downtown Charlottesville.

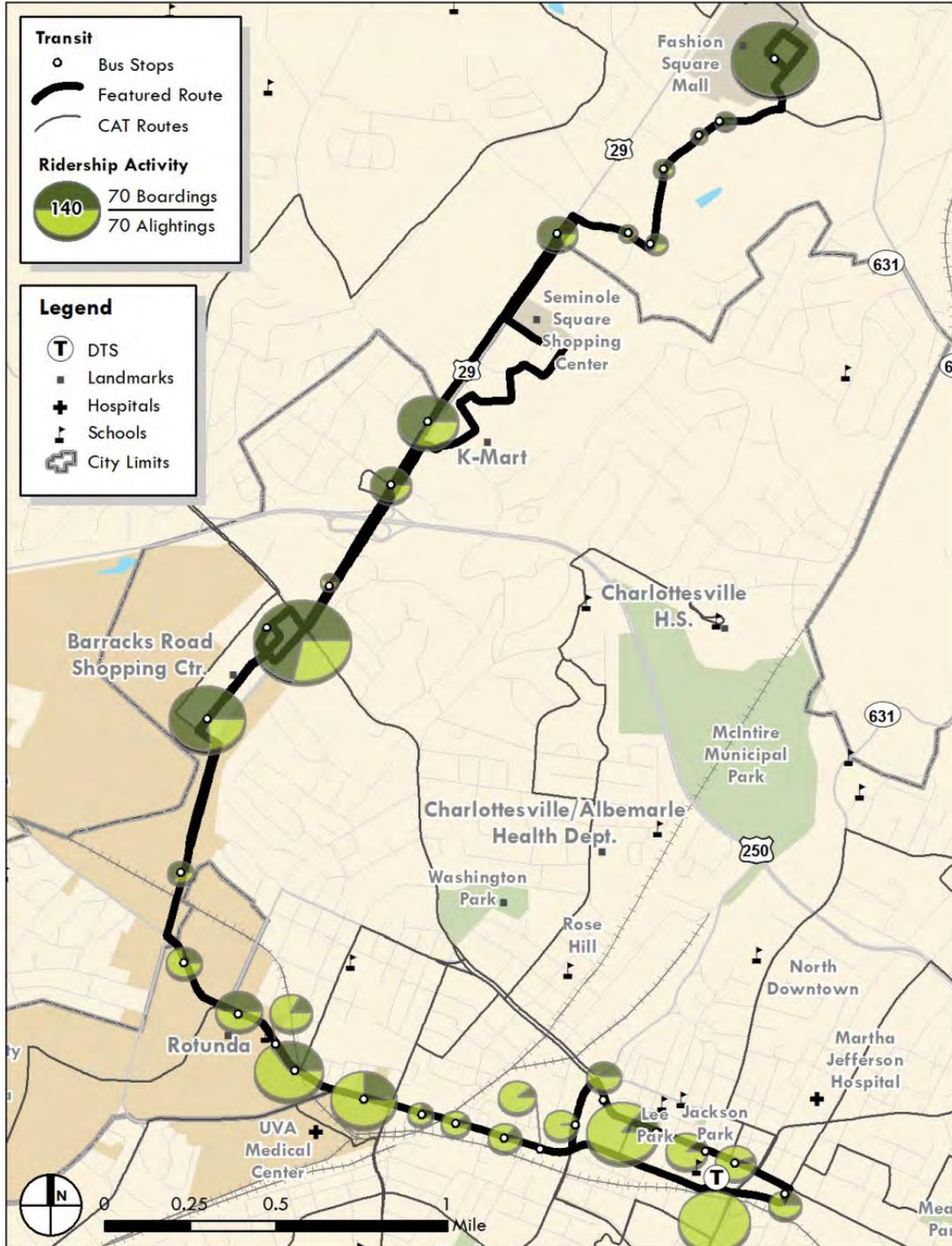
CHARLOTTESVILLE TRANSIT STUDY | Final Report
 Charlottesville Area Transit

Figure 44 Route 7 Weekday Ridership Activity (Northbound)



CHARLOTTESVILLE TRANSIT STUDY | Final Report
 Charlottesville Area Transit

Figure 45 Route 7 Weekday Ridership Activity (Southbound)



Route 8 – Barracks Road/Seminole Square

Route 8 provides service between Seminole Square Shopping Center, Barracks Road Shopping Center (BRSC) and downtown Charlottesville. The route operates through Seminole Square Shopping Center via internal circulation roads, exits to Emmet Street and travels south to BRSC, then to downtown Charlottesville via Barracks Road and Preston Avenue. The route operates on weekdays and Saturdays; no evening or Sunday service is provided (see Figure 46). Service operates every 30 minutes during the weekday peak periods and every 60 minutes during the weekday midday and on Saturdays.

The route serves the following activity centers:

- Seminole Square Shopping Center
- Barracks Road Shopping Center
- Best Buy
- Region Ten Community Services Board, a disability resource center (Preston Avenue at 9th Street)
- Downtown Transit Station and downtown Charlottesville

Figure 46 Route 8 Service Characteristics

	Span of Service	Headways (mins)
Weekday		
Day	6:30 AM – 6:25 PM	30-60
Night	No service	NA
Saturday	6:30 AM – 5:55 PM	60
Sunday	No service	NA

Time points: Transit center and Kmart

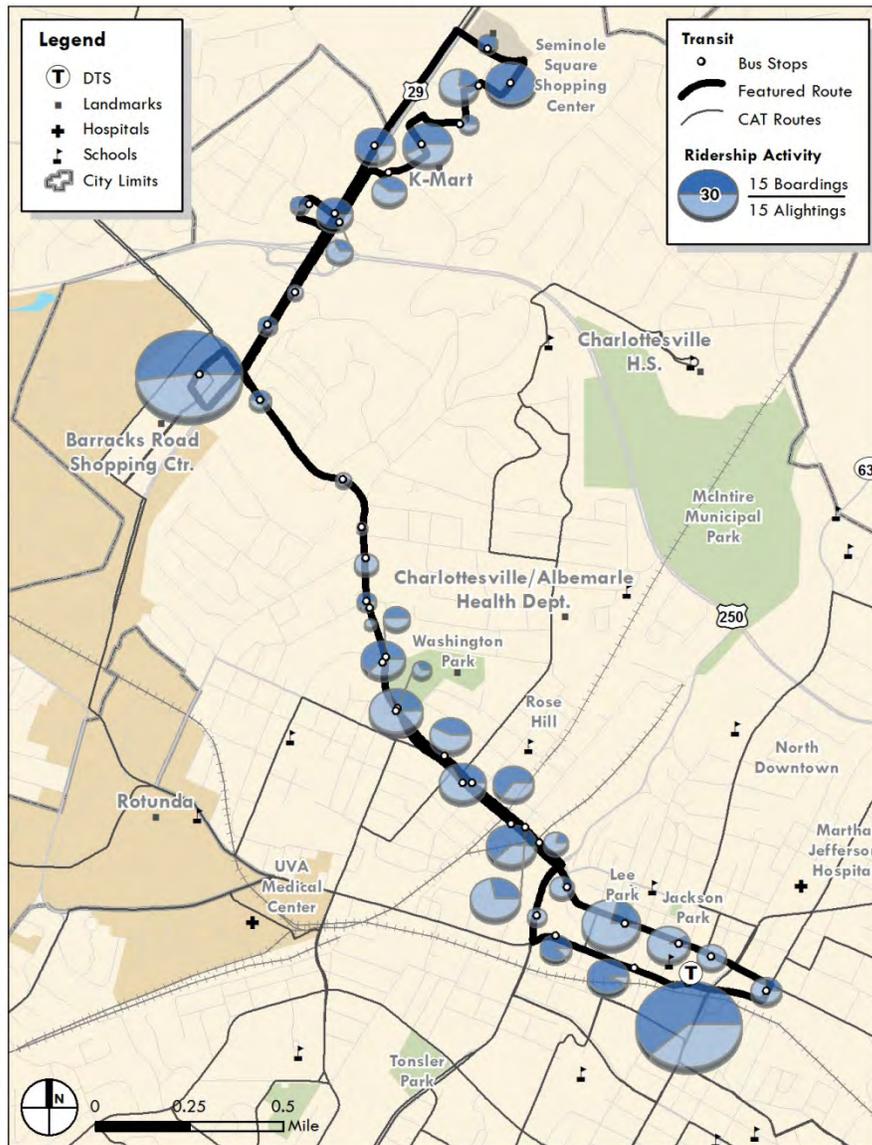
Ridership Characteristics

Route 8 carries an average of 274 riders per weekday and 163 riders per Saturday. Route 8 represents 4% of total weekday system ridership activity.

Ridership is relatively strong at the route's major activity destinations (the two malls and downtown Charlottesville, as well as along Preston Avenue (see Figure 47). Ridership along Route 29 and Barracks Road is relatively low. In more detail:

- Downtown Charlottesville accounts for 179 average weekday boardings and alightings, or 33% of total
- Preston Avenue/Barracks Road has 163 boardings and alightings, or 30%
- Barracks Road Shopping Center had 96 boardings and alightings, or 18%
- Seminole Square Shopping Center has 71 boardings and alightings, or 13%
- All other stops have 71 boardings and alightings, or 7%

Figure 47 Route 8 Weekday Ridership Activity



Strengths

- **Bi-directional and linear service.** Route 8 travels bi-directionally along almost all of its alignment, except for circulation through Seminole Square Shopping Center, which is at the end of the route; through BRSC, which has limited ability to accommodate bi-directional travel; and in downtown Charlottesville. Moreover, the route provides relatively direct service between its major service markets without excessive deviations.
- **Strong transit destinations and service markets.** Much of Preston Avenue is lined with commercial destinations, and the route is anchored at regional retail centers. Moreover, the route serves the Venable and Washington Park neighborhoods, which generate residential travel demand.

Weaknesses

- **Overlap with Route 7.** Route 7 and Route 8 both provide service between downtown Charlottesville, Barracks Road Shopping Center, and Seminole Square Shopping Center.
- **Poor On-time Performance.** Route 8 on-time performance is very poor in the AM peak, operating on-time on only 33% of trips. Performance is poor in the midday at 50% and 76% in the evening peak period.

Opportunities

- **Begin Saturday service at 8:30 AM.** The first Saturday trip, at 6:30 AM, carries only three riders, and the second trip at 7:30 carries no riders. Service could be started at 8:30 AM to better match service levels with demand.

2011 TDP Recommendations

The 2011 TDP recommended no changes to Route 8.

Route 9 – Charlottesville High School

Route 9 provides service between downtown Charlottesville and Charlottesville High School (CHS), making a mid-way loop to serve the Venable neighborhood. The route is primarily designed to serve CHS, the commercial development along Preston Avenue, and residential areas, including the Rose Hill neighborhood. Inbound, the route operates from CHS primarily via Grove Road, Gentry Lane, Wellford Street, Rugby Avenue, Rose Hill Drive; follows a counter-clockwise loop via Preston Avenue, 10th Street, West Main Street, 14th Street, Grady Avenue; then returns to Preston Avenue on its approach to downtown. Outbound, the route follows a similar alignment, but follows the loop around Grady Avenue, 14th Street, West Main Street and 10th Street in the opposite (clockwise) direction, and travels straight up Rose Hill Drive rather than operating via Wellford Street and Rugby Avenue.

Route operates on weekdays and Saturdays only; no evening or Sunday service is provided. Service operates every 60 minutes.

The route serves the following activity centers:

- Charlottesville High School (CHS)
- The Corner
- University of Virginia
- Charlottesville Free Clinic
- American Red Cross
- Region Ten Community Services Board, a disability resource center (Preston Avenue at 9th Street)
- Downtown Transit Station and downtown Charlottesville

Figure 48 Route 9 Service Characteristics

	Span of Service	Headways (mins)
Weekday		
Day	6:45 AM – 6:15 PM	60
Night	No service	NA
Saturday	6:45 AM – 5:15 PM	60
Sunday	No service	NA

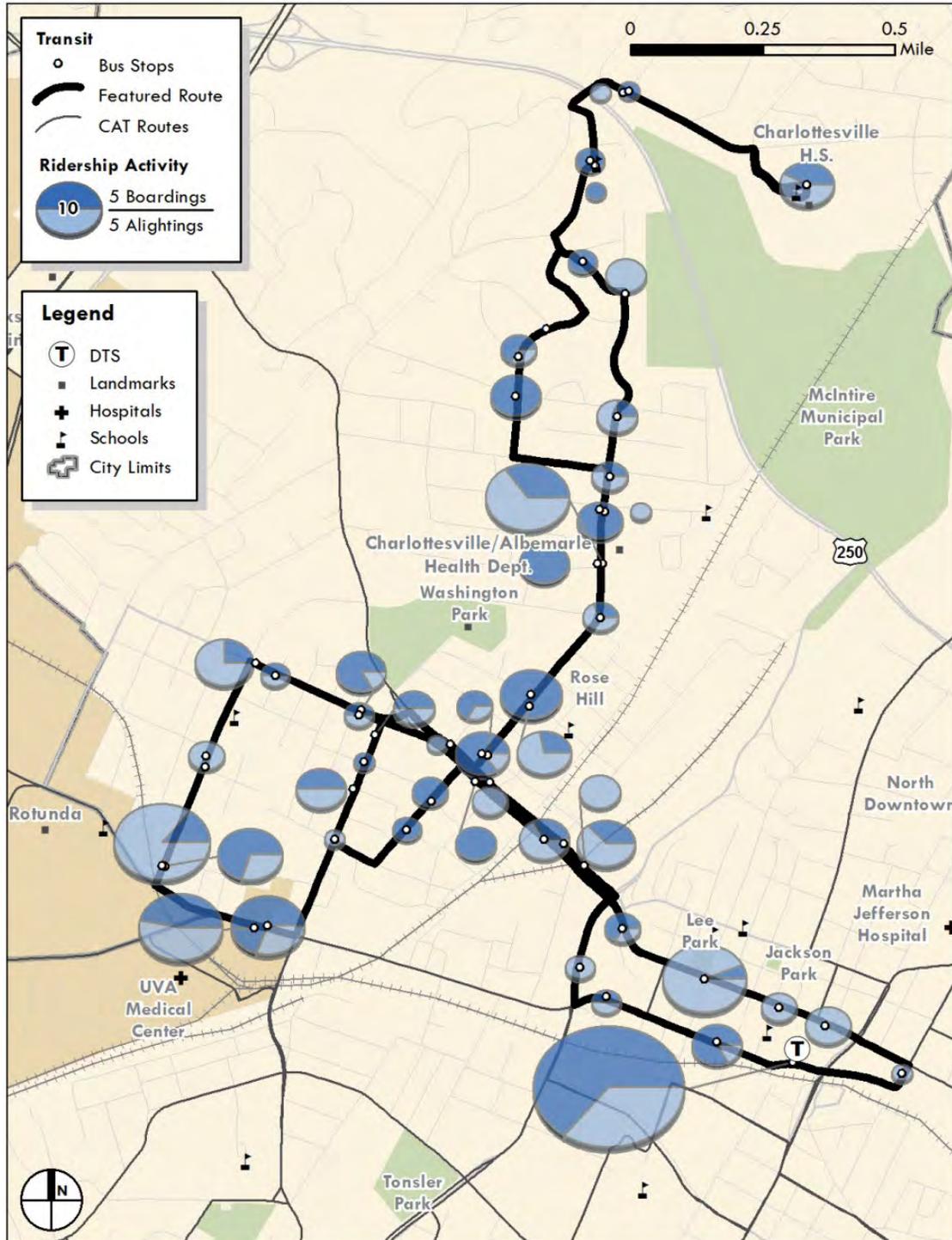
Time points: Transit Center and High School

Ridership Characteristics

Route 9 carries an average of 156 riders per weekday and 85 riders per Saturday. Ridership is very low in the route's northern portion. Route 9 represents 2% of total weekday system ridership activity. Only 19 boardings per day, or 12% of total, take place north of Rugby Avenue; this is the only segment of riders that is more than a half-mile from other transit routes. Indeed, all riders boarding in the south-western loop of the

route in the Venable neighborhood are within a half-mile of Route 8, Route 7 or the Free Trolley.

Figure 49 Route 9 Weekday Ridership Activity



- **Begin Saturday service at 8:45 AM.** The first two Saturday trips of the day, at 6:45 AM and 7:45 AM, carry only three riders each, and could be discontinued to provide additional service elsewhere.

2011 TDP Recommendations

The 2011 TDP recommended that Route 9 should be streamlined to maintain bi-directional service on 10th Street in the route's loop through the Venable neighborhood.

Route 10 – Pantops and Route 24 – Pantops Night Service

Route 10 provides service between downtown Charlottesville and the Pantops area of eastern Albemarle County. The route is designed to provide service to commercial and residential areas within Pantops, including several of the region's major employers. The route operates from downtown Charlottesville toward Pantops primarily along 9th Street, East High Street, and Long Street, and then serves the Pantops Shopping Center. From there, the route continues east via South Pantops Drive and State Farm Boulevard, and finally makes an outer loop around Martha Jefferson Drive, Peter Jefferson Parkway, and Richmond Road. During the outer loop, the route deviates to serve the Social Security Administration, before returning back to Richmond Road, and finally turns back to State Farm Road. On the route's return trip to downtown Charlottesville, the route continues north on Stony Point Road past Long Street to serve The route then makes a deviation north to serve Avemore Apartments and Wilton Farm Apartments, then returns via Stony Point Road and travels back to downtown Charlottesville in the same alignment as outbound service. Aside from the terminal loop, the downtown loop, and loops around Pantops Shopping Center and Avemore Apartments, service is mostly bi-directional.

Route 10 operates on weekdays and Saturdays. During the evenings, an abbreviated version of Route 10, numbered Route 24, provides night service to Pantops. Route 24 follows the same alignment as Route 10, except that the route serves only Avemore Apartments/Wilton Farm Apartments, Pantops Shopping Center, and downtown Charlottesville, in that order (inbound service) and in the reverse order on outbound trips. No Sunday service is provided. Routes 10 and 24 operate hourly.

The route serves the following activity centers:

- Martha Jefferson Hospital
- Wilton Farm Apartments and Avemore Apartments
- Department of Motor Vehicles
- Social Security Administration
- Pantops Shopping Center/Food Lion
- State Farm Operations Center
- Downtown Transit Station and downtown Charlottesville

Figure 50 Route 10 and 24 Service Characteristics

	Span of Service	Headways (mins)
Weekday		
Day	6:15 AM – 6:39 PM	60
Night*	7:15 PM – 11:27 PM	NA
Saturday*	6:15 AM – 11:27 PM	60
Sunday	No service	NA

*Night service from 7:15 PM to 11:27 PM operates as Route 24 and only between Transit Center and Avemore Apartments (no service to Westminster Canterbury). End of service shows last departure from Avemore Apartments

Ridership Characteristics

Route 10 carries an average of 267 riders per weekday and 229 riders per Saturday. Route 10 and Route 24 combined represent 4% of total weekday system ridership activity. Ridecheck data was collected in 2010, prior to redesigning the route to operate more bi-directionally and providing service to the newly-developed Martha Jefferson Hospital. As of that time, however, ridership was most concentrated at stops in the western portion of Pantops, including the Pantops Shopping Center. Some ridership activity also took place at the Wilton Farm Apartments/Avemore Apartments, at the Social Security Administration, and at State Farm Road near Richmond Road (see Figure 50). Ridership along High Street is very light.

Route 24 carries an average of 12 riders per weekday and 18 riders per Saturday. Route 24's ridership patterns generally mirror those of weekday service: most ridership takes place in western Pantops, and very little ridership activity takes place along High Street (see Figure 52).

Strengths

- **Multiple service destinations.** Route 10 serves a number of major employment and retail destinations, including the recently developed Pantops campus of the Martha Jefferson Hospital, as well as residential communities in Pantops.
- **Unique service area.** Route 10 is the only route serving the Pantops area, and so its identity is relatively clear.

Weaknesses

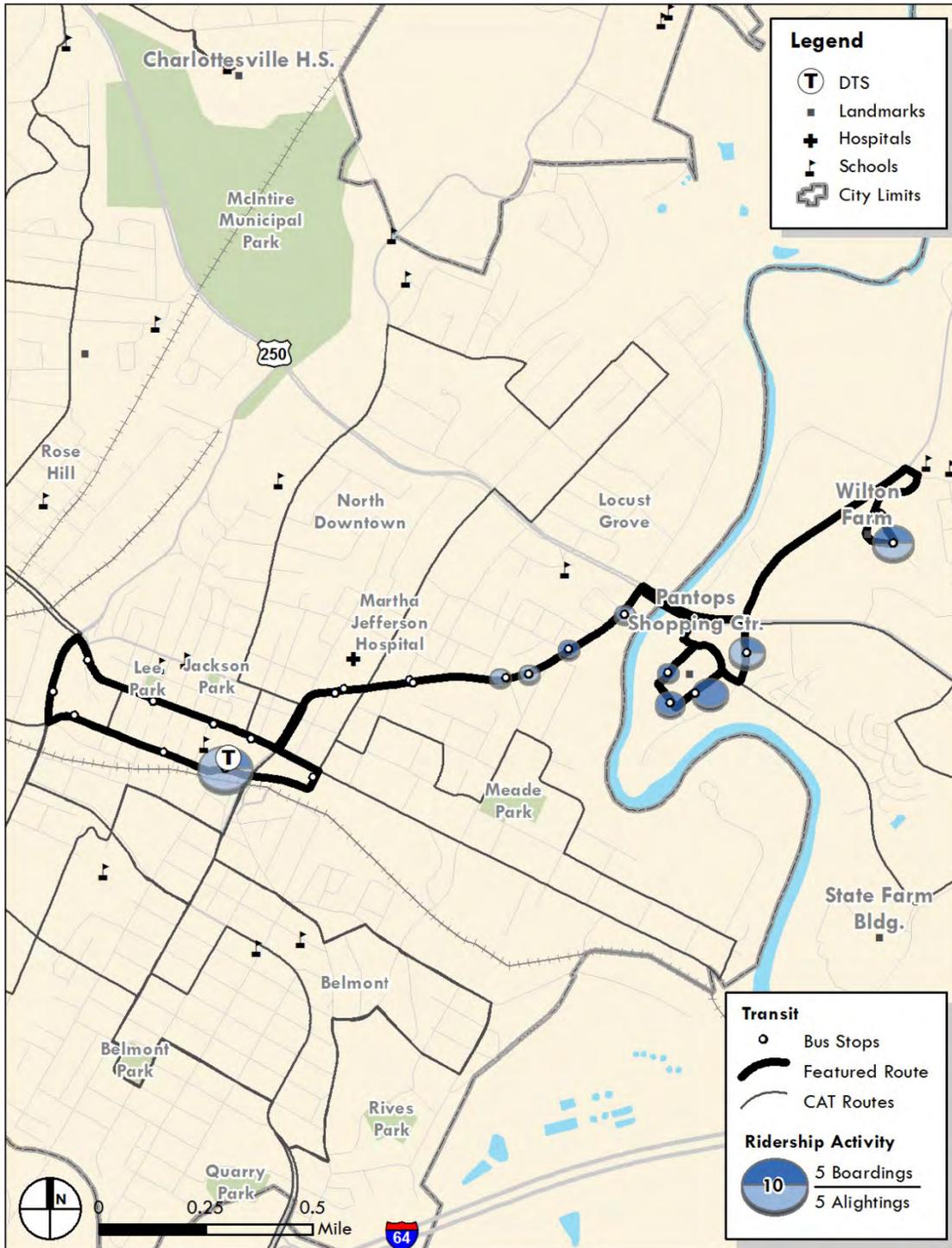
- **Circuitous service.** Route 10 provides service along a circuitous route. For example, riders at Avemore Apartments and Wilton Farm Apartments must ride through the route's entire outer end alignment, which means that the trip inbound to downtown takes 15 minutes but the trip outbound to the apartments takes 40 minutes. The circuitousness of service is caused by the need to serve multiple destinations over a large service area with a single route.
- **On-time performance.** Route 10 is especially impacted by travel delays and has difficulty in maintaining its schedule. During the midday Route 10 has an on-time performance of 44% and 14% in the evening peak period, although this data was collected prior to service changes that altered the alignment of service through Pantops.
- **Confusing night service.** Route 24 provides night service for Route 10, but operates using a different number which adds to overall complexity and makes it more challenging for riders to understand how to use the service.

Figure 51 Route 10 Weekday Ridership Activity



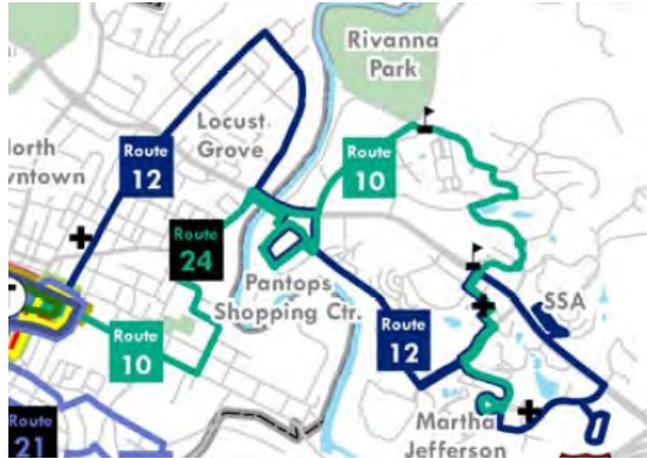
Note: Ridership map shows previous alignment, which included a one-way loop that operated partially via Route 250. Additionally, Martha Jefferson Hospital was not yet complete at the time of TDP data collection; it is likely that ridership in this area has increased.

Figure 52 Route 24 Weekday Ridership Activity



Opportunities

- **Provide service to Avemore Apartments/Wilton Farm Apartments in both directions.** Currently, these residential communities are served in one direction only, which makes it inconvenient for riders to use the route. These developments could instead be served in both directions, although a travel time savings would need to be found elsewhere to allow this within the current operating schedule.
- **Split Route 10 into two routes.** Part of the reason that Route 10 is so circuitous is that it is required to serve multiple destinations over a geographically wide area. If service was split into two routes that serve the Pantops area, service could be made more direct. The 2011 TDP provides an example of how this could be accomplished, shown at right.
- **Eliminate night service.** Route 24 carried fewer than 5 riders per trip on all trips. Route 24 could be eliminated entirely, or service could be ended early, after the 7:15 PM trip (in which case service should be provided as Route 10 and not on a distinct Route 24).
- **Renumber Route 24 as Route 10 and operate night service with short-turns.** There is likely no need to provide night service to all areas covered by Route 10, but Route 24 could be renumbered to reduce system complexity, and a short-turn variant of Route 10 could be operated instead.



2011 TDP Recommendations

At the time of the TDP, the Martha Jefferson Hospital campus in Pantops was not yet complete, and the route formed a larger one-way service loop that has since been changed. Generally, however, the 2011 TDP recommended that Route 10, Route 2A and Route 1A should be consolidated to create two routes serving the highest activity areas of the three existing routes; the new routes would be numbered Route 10 and Route 12. The revised Route 10 would travel eastbound via Market Street until Fairway Avenue, then travel northward to serve the Pantops area. Route 12 would serve the southern portions of Route 10's existing alignment.

4 SERVICE CHANGE OPTIONS

As previously mentioned, this effort built extensively on previous planning efforts, including CAT's 2011 Transit Development Plan. However, it also explored additional—and in some ways more extensive—service change options based on recent feedback, including feedback from Charlottesville City Council members.

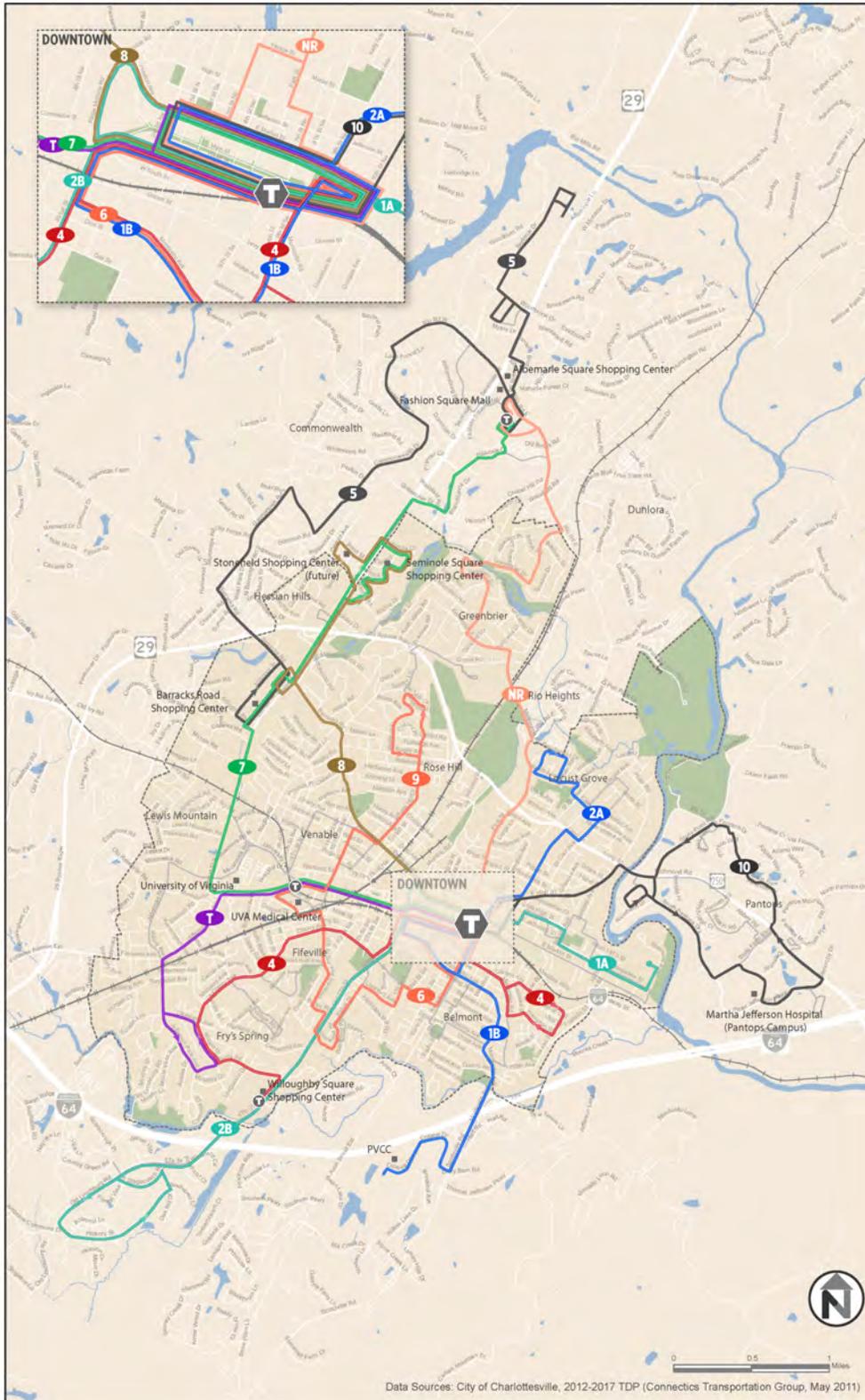
To gain a better understanding of the public's priorities and preferences for transit services, the study team compiled two different service options. Each of the two options each included a set of routes that were designed to work together, but represented different service design ideas. The service options presented were:

- **Option 1: Downtown-Focused Service.** This option is similar to CAT's current service structure in that most routes provide service to downtown Charlottesville, but provides clearer, more direct service, and reduces service duplication in order to provide more frequency. New service is provided on Route "NR" (New Route) between downtown and Fashion Square Mall.
- **Option 2: Two Primary Hubs - Downtown and Jefferson Park Avenue.** This option focuses service on two hubs: downtown Charlottesville, and a new hub at Jefferson Park Avenue between Lee Street and Lane Road. Option 2 strengthens the focus on the system's largest routes (the Trolley and Route 7) and adds new "Flex Zone" service for the Locust Grove/East Market area and Greenbrier neighborhood. Like Option 1, this option also provides clearer, more direct service and reduces service duplication in order to provide more frequency. New service is provided on Route "NR" (New Route) between downtown and Fashion Square Mall, which also travels via Greenbrier.

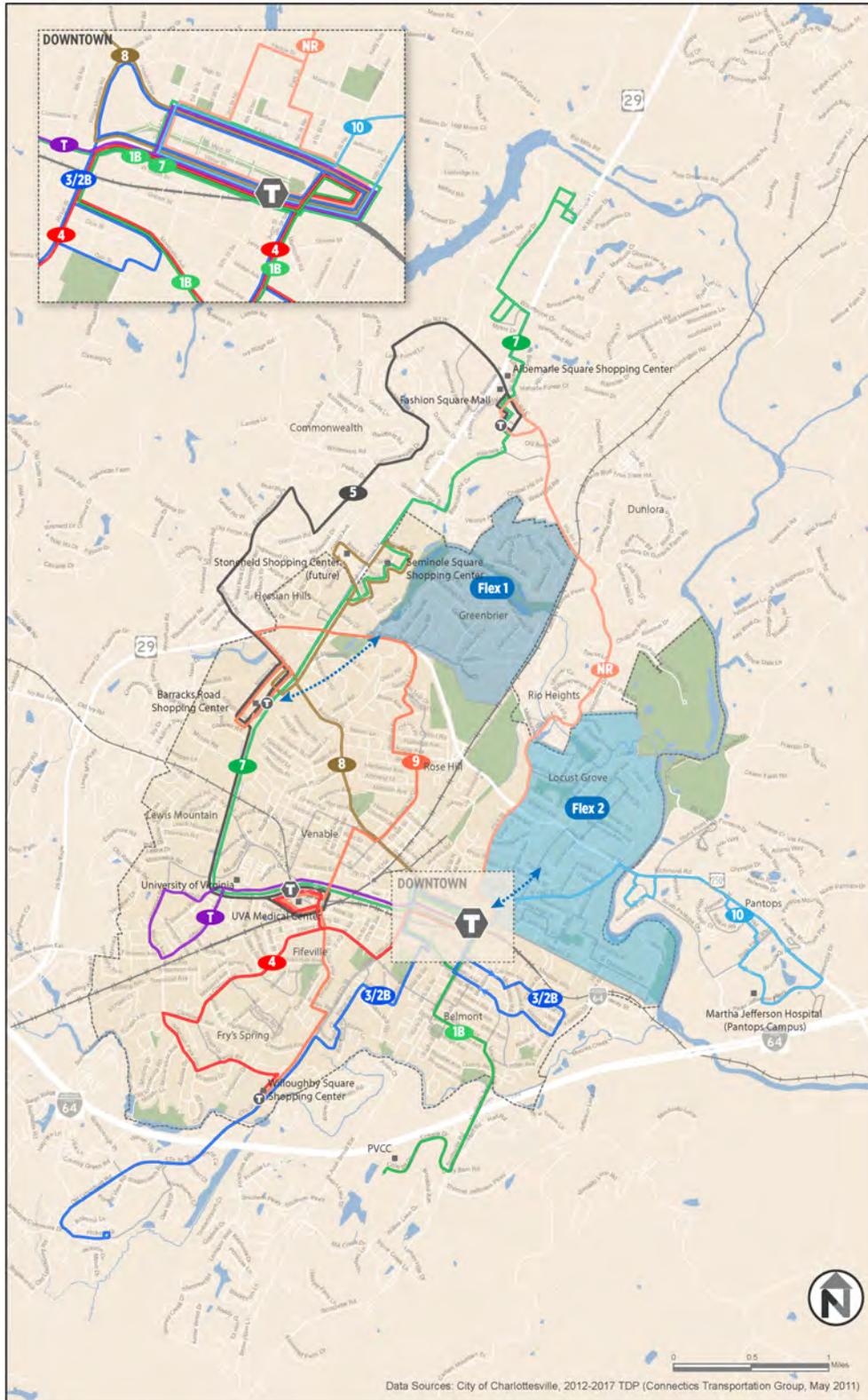
Maps of the two service options are presented on the following two pages. While Option 1 and 2 provided two distinct service options, the service change ideas contained in Option 1 and Option 2 were intended to be interchangeable to the extent feasible. The changes contained within each of the two scenarios are described on a route by route basis in the following section.

The two service change options were presented to the public at an "Open House" session in October 2012. After this session, the service option maps and change descriptions were made available at the Downtown Transit Station for two and a half weeks following the Open House. A summary of major comments received from the public and other stakeholders is presented following the route by route change descriptions.

Option 1: Downtown-Focused Service



Option 2: Two Hubs: Downtown and Jefferson Park Avenue



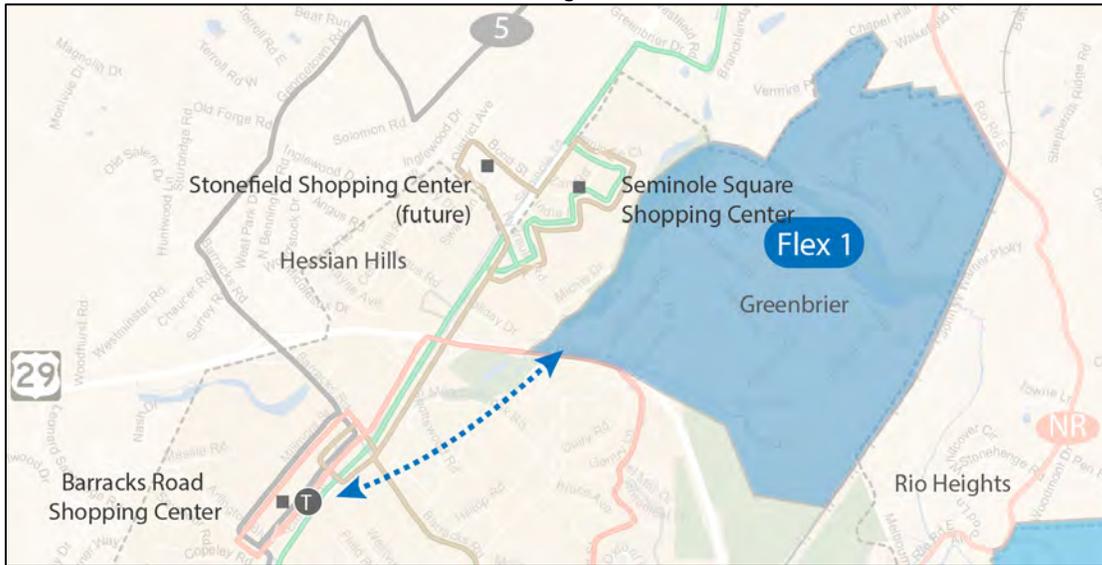
About Flex Service

Option 2 presented a new type of service for the Charlottesville region called Flex Service. Flex Service is a type of transit that covers a zone of service rather than operating along a fixed route, like most of CAT's routes do today. Although there are many different styles of Flex Service in operation around the country, the type of service proposed for Charlottesville would have functioned as follows:

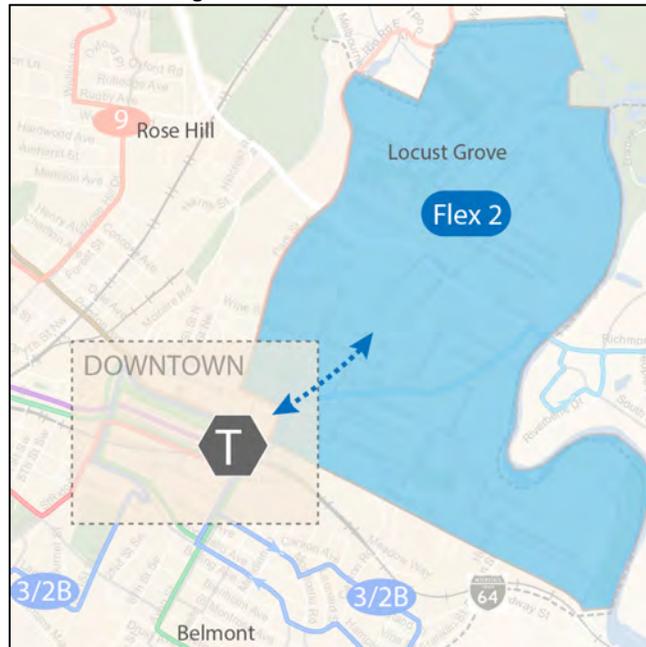
- The service would be open to the general public, and anyone would be able to ride.
- Riders would call a customer service line to reserve a trip on the Flex route. Reservations must be made in advance. While the specific advance reservation window was not determined for Charlottesville, riders are typically required to book a day ahead for early trips the next day, or four hours in advance for same-day trips later in the day.
- In Charlottesville, two Flex Service zones were proposed in Option 2: one serving the Greenbrier area ("Flex 1") and one serving the East Market Street area and Locust Grove ("Flex 2"). The span of service proposed for both service zones was 7:00 AM to 7:00 PM on weekdays.
- Riders could travel to anywhere within the zone, or to a local hub location. In the case of Flex 1 (Greenbrier), riders would have been able to travel to Barracks Road Shopping Center; in the case of Flex 2 (Locust Grove/East Market Street), riders would have been able to travel to Downtown Transit Station. Service would have been scheduled to depart once per hour from the designated hub location; riders can get an outbound ride without scheduling in advance (return trips desired).
- For trips originating within the zone, riders would have been picked up at the curb of their location within the Flex Service zone at the agreed-upon time. For return trips, riders would have been delivered to the curb of their desired location.
- Where several riders are traveling to or from similar destinations, trips could be shared if the added travel time and distance incurred for riders is reasonably short.
- Trips could be booked to recur on a regular basis. For example, if a rider wished to book a trip every weekday at 8:00 AM and at 5:30 PM, they could set these trips in advance. Riders would be required to notify CAT of any cancellations.
- Riders are expected to use the trips they book; riders who incurred multiple "no shows" within a short period of time are typically subject to a fare penalty or cancellation of future trips for a limited time.
- It had not been determined who would operate the service. Potential operators of the service could be CAT or a transit operator already providing demand-responsive transit services within the Charlottesville region.

Flex Service Options Contained in Option 2

Flex 1, serving Greenbrier



Flex 2, serving Locust Grove and East Market Street



FREE TROLLEY

The Free Trolley is a signature CAT route that operates between downtown Charlottesville and the University of Virginia. The route operates on West Main Street, followed by a one-way loop on Jefferson Park Avenue, Alderman Road, McCormick Road, and University Avenue. (The Free Trolley has temporarily been rerouted due to construction on the McCormick Road Bridge.) The CAT Free Trolley is the highest-frequency route in the CAT system. Because the Trolley is free and provides direct service between Charlottesville's two largest employment and activity destinations, ridership is strong throughout the route. However, the Free Trolley has a great deal of difficulty in keeping its schedule using its current alignment. The changes considered in Options 1 and 2 are designed to help the Trolley operate more reliably.

Comparison of Possible Changes

In both scenarios, service would begin at 7:00 AM to reflect relatively low ridership on the first two trips of the day (20 riders and 8 riders, respectively).

Option 1

- The Trolley would be reconfigured to end in the Fry's Spring neighborhood. It would operate on West Main Street and Jefferson Park Avenue, continuing until Harris Road, returning via Willard Drive, Cleveland Avenue, and Jefferson Park Avenue. The Trolley would replace Route 4 service on Jefferson Park Avenue in Fry's Spring.
- Service would operate on weekdays and Saturdays from 7:00 AM to 11:15 PM with 15-minute headways during the day, and 30 minute headways during evening. On Sundays, service would operate from 8:00 AM to 5:15 PM with 30 minute headways.

Option 2

- The Trolley would operate on West Main Street and a shortened loop through University of Virginia on Jefferson Park Avenue, Maury Avenue, Alderman Road, Whitehead Road to Stadium Road, and back to West Main Street via Jefferson Park Avenue.
- Service would operate on weekdays and Saturdays from 7:00 AM to 11:25 PM with 20-minute headways during the day and 40-minute headways during the evening. Sunday service would operate from 8:00 AM to 5:15 PM with 40-minute headways.

Before and After Service Statistics

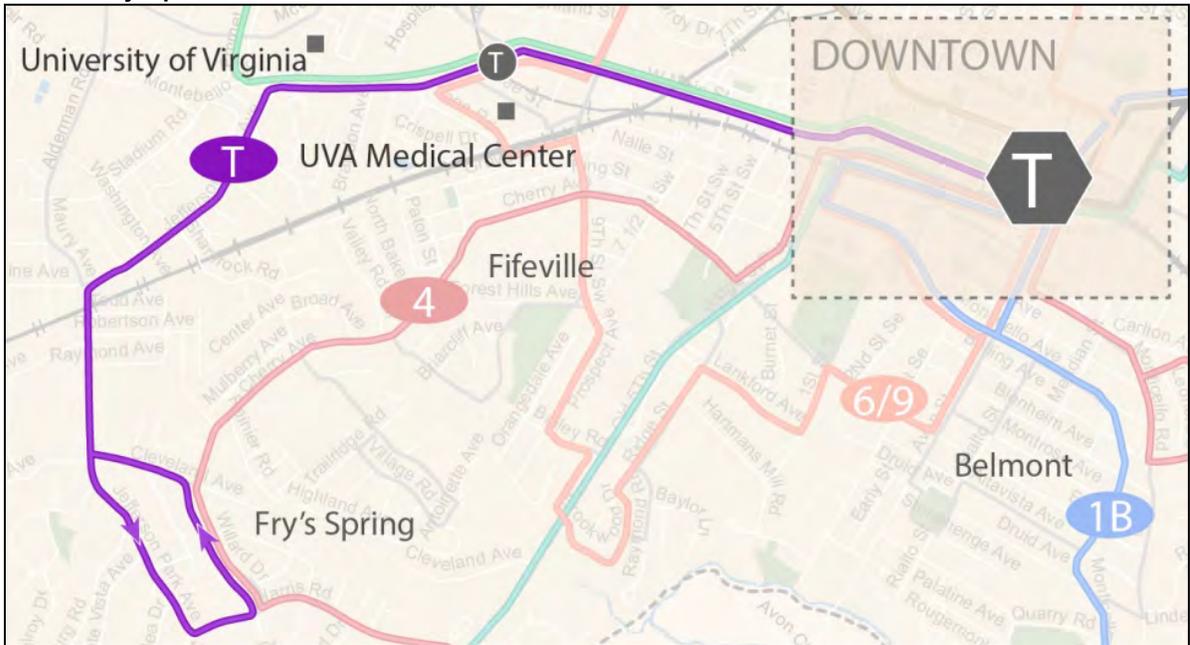
	Existing	Option 1	Option 2
Span of Service			
Weekdays	6:40 AM – 11:30 PM	7:00 AM – 11:15 PM	7:00 AM – 11:25 PM
Saturdays	6:40 AM – 11:30 PM	7:00 AM – 11:15 PM	7:00 AM – 11:25 PM
Sundays	8:00 AM – 5:00 PM	8:00 AM – 5:15 PM	8:00 AM – 5:15 PM
Frequency			
Weekdays	15	15-30	20-40
Saturdays	15	15-30	20-40
Sundays	30-45	30	40

CHARLOTTESVILLE TRANSIT STUDY | Final Report
Charlottesville Area Transit

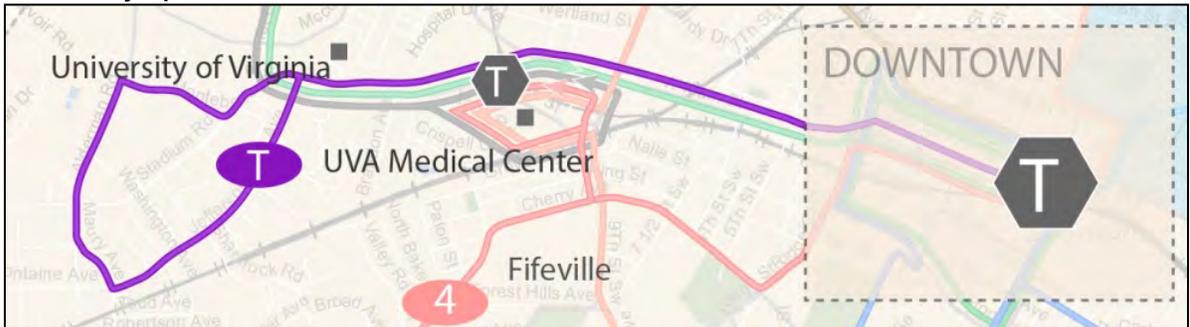
Free Trolley Existing Service



Free Trolley Option 1



Free Trolley Option 2



ROUTE 1A

Route 1A operates between downtown Charlottesville and eastern Charlottesville via East Market Street eastbound and via a winding path through neighborhood streets westbound, including Chesapeake Street, Fairway Avenue, Meade Avenue, Jefferson Street, 12th Street, Little High Street, 11th Street, 10th Street, and East High Street. Route 1A is currently interlined with Route 1B, which serves PVCC. There is no evening service. Ridership is a relatively low, as it serves a community with limited population density in comparison to other sections of the city.

Comparison of Possible Changes

In both scenarios, service would begin at 7:00 AM to reflect relatively low ridership on the first trip of the day (4 riders).

Option 1

- Route 1A would operate more directly along Little High Street, Meade Avenue, and Chesapeake Street in both directions. The route would loop at Riverside Avenue at its outer end.
- Route 1A would be interlined with Route 2B, which provides service to Albemarle County Office Building and Old Lynchburg Road.
- Weekday and Saturday service would begin at 7:00 AM and end at 6:00 PM.

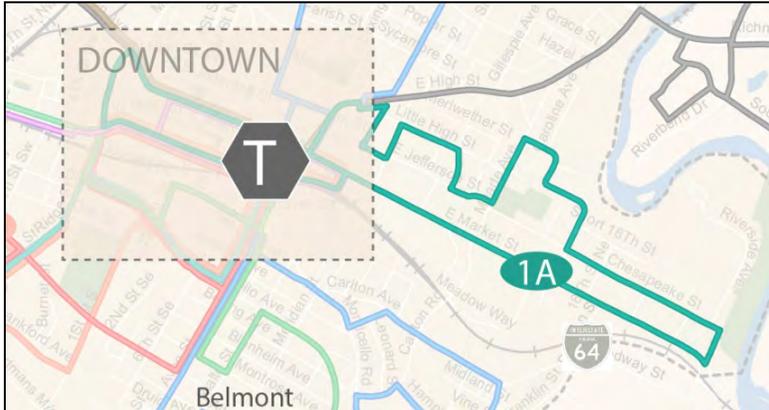
Option 2

- Route 1A would be converted to a demand-response Flex Service, which offers passengers the opportunity to call for a ride to or from any location in the defined Flex zone. Passengers would need to call in advance to book a trip; service would be provided to the curb of the desired location within the zone. Trips can be made anywhere within the Flex zone, or to and from Downtown Transit Station. For a detailed description of Flex Service parameters, please see Page 2.
- Flex Service would be offered north of East Market Street, east of Park Street, and south of the city limit between 7:00 AM and 7:00 PM.

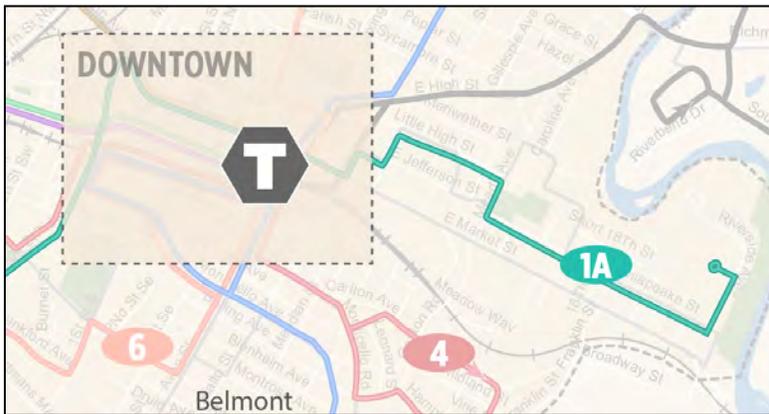
Before and After Service Statistics

	Existing	Option 1	Option 2
Span of Service			
Weekdays	6:20 AM – 6:20 PM	7:00 AM – 6:00 PM	7:00 AM – 7:00 PM
Saturdays	6:20 AM – 6:20 PM	7:00 AM – 6:00 PM	No service
Sundays	No service	No service	No service
Frequency			
Weekdays	60	60	Flex
Saturdays	60	60	No service
Sundays	No service	No service	No service

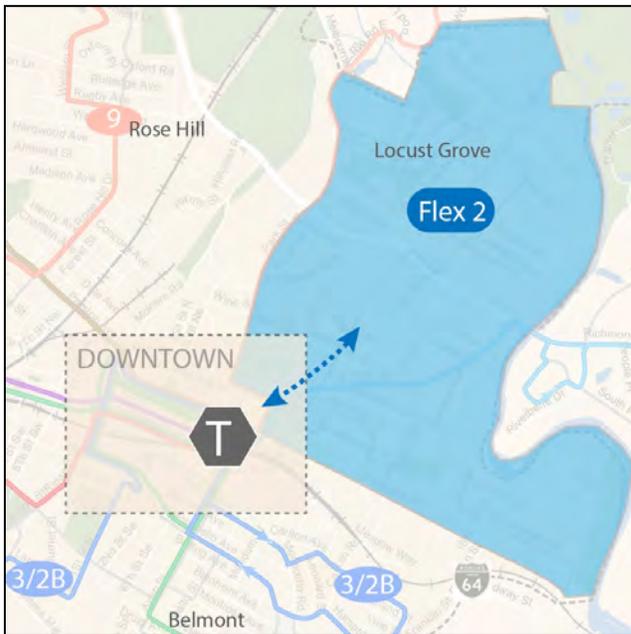
Route 1A Existing Service



Route 1A Option 1



Route 1A Option 2



ROUTE 1B / ROUTE 23

Route 1B operates between downtown Charlottesville and PVCC. It uses a circuitous path through Belmont that requires riders traveling to PVCC—the route’s primary ridership market—to travel out of direction. Route 1B is interlined with Route 1A, which serves Market Street and east Charlottesville. Evening service is provided by Route 23, which uses the same alignment as Route 1B. Ridership is relatively strong during the day on weekdays, but is very low on Saturdays and during evenings.

Comparison of Possible Changes

In both options, Route 23 would be combined with Route 1B and branded as a single route. Service in Belmont, provided by Route 3, would also be revised in conjunction with these changes (see Route 3). Service would begin at 7:00 AM due to low ridership on the first trip of the day (2 riders). Saturday service would be eliminated due to very low ridership (35 total riders all day between both routes) and to provide greater frequency elsewhere.

Option 1

- Route 1B would be straightened to operate more directly between downtown Charlottesville and PVCC via Monticello Avenue. It would be interlined with Route 2A, serving the Locust Grove area. In the evenings, Route 1B would be interlined with the southern portion of Route 6.
- Weekday service would end at 9:00 PM due to low ridership after that time (5 or fewer riders per trip).
- The Belmont neighborhood would also be served by revised Route 4.

Option 2

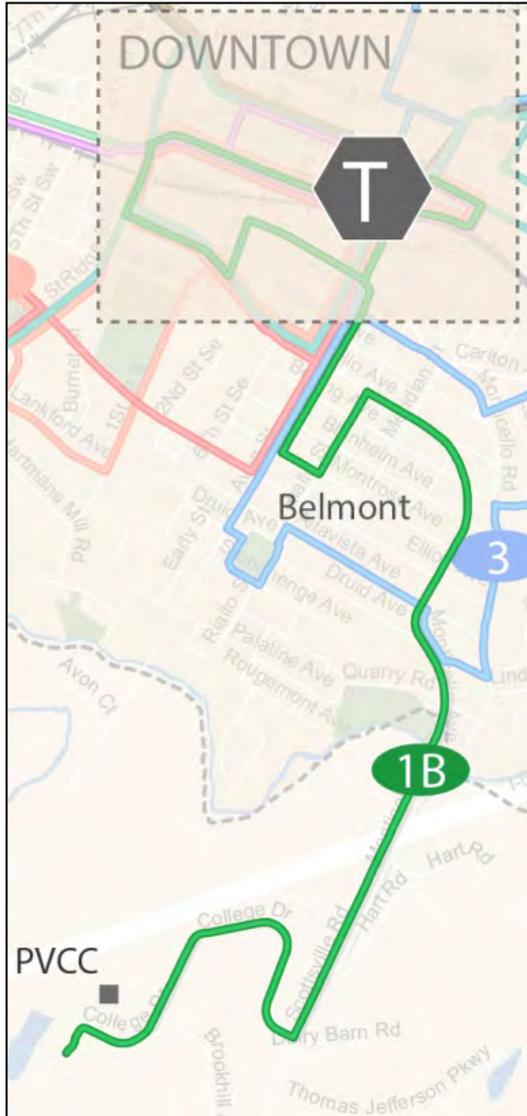
- Route 1B would be straightened to operate more directly between downtown Charlottesville and PVCC via Altavista Avenue.
- Frequency would be increased to every 30 minutes all day.
- Weekday service would end at 8:30 PM due to low ridership after that time (5 or fewer riders per trip).
- The Belmont neighborhood would also be served by revised Route 3/2B.

Before and After Service Statistics (Includes Route 23 service)

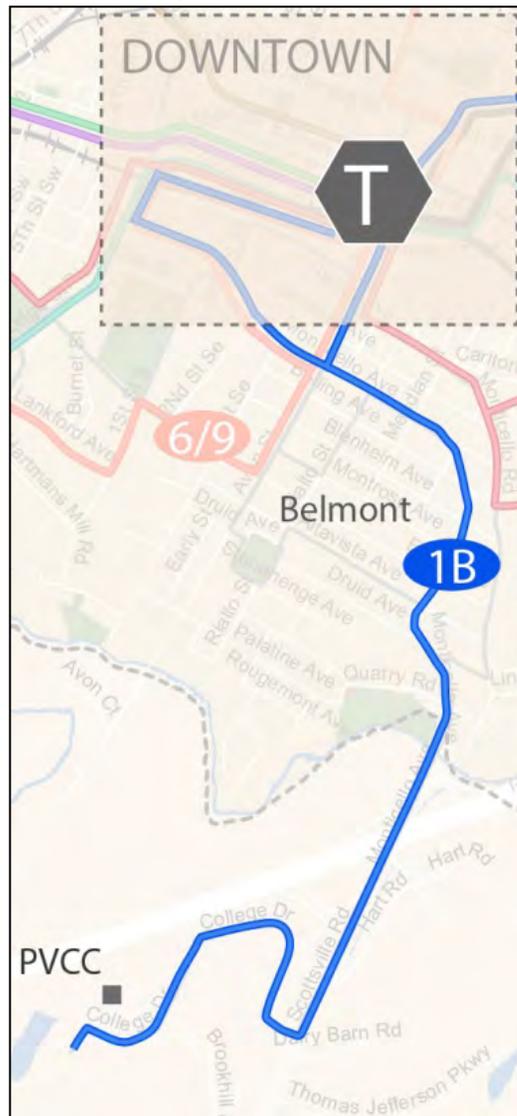
	Existing	Option 1	Option 2
Span of Service*			
Weekdays	6:45AM - 10:45PM	7:00AM - 9:00PM	7:00AM - 8:30 PM
Saturdays	6:45AM - 10:45PM	No service	No service
Sundays	No service	No service	No service
Frequency			
Weekdays	60	60	60
Saturdays	60	No service	No service
Sundays	No service	No service	No service

CHARLOTTESVILLE TRANSIT STUDY | Final Report
Charlottesville Area Transit

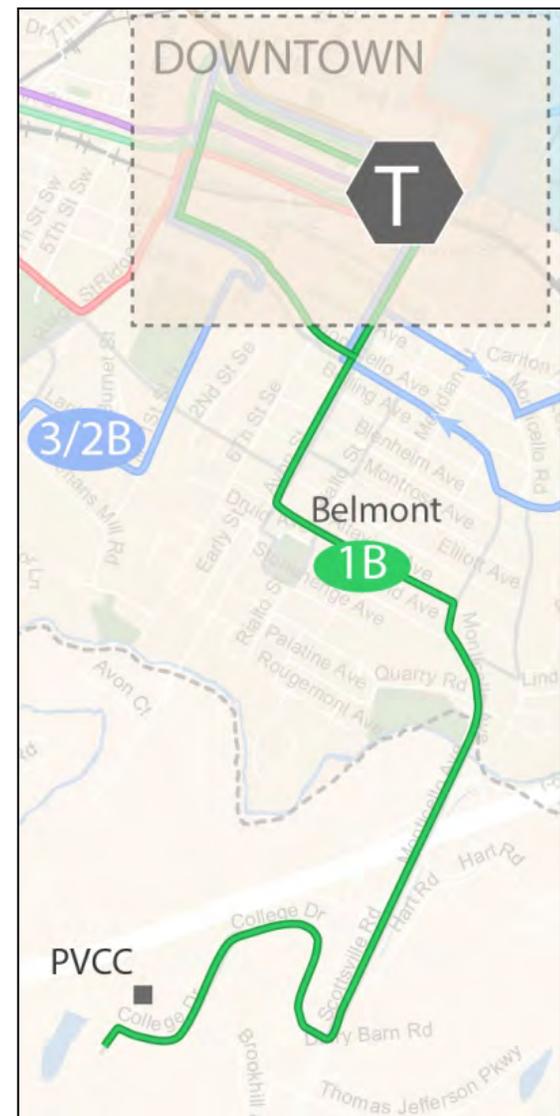
Route 1B/23 Existing Service



Route 1B/23 Option 1



Route 1B/23 Option 2



ROUTE 2A

Route 2A operates between downtown Charlottesville and Locust Grove. Route 2A operates in a large clockwise one-way loop, heading northbound on Park Street and returning to downtown southbound on Locust Avenue. Route 2A is currently interlined with Route 2B, which operates to the Albemarle County Offices and Old Lynchburg Road. Most riders board in the northern areas of the route or in downtown. Route 2A has very low productivity, and its circuitous one-way loop makes service difficult for many potential riders to use as it requires out-of-direction travel.

Comparison of Possible Changes

In both options, service would begin at 7:00 AM to reflect relatively low ridership on the first trip of the day (5 riders). Saturday service would be eliminated due to very low ridership (43 total riders all day) and to provide greater frequency elsewhere.

Option 1

- Route 2A would be straightened to operate in both directions along Locust Avenue in order to provide more consistent, bi-directional service.
- Weekday service would operate from 7:00 AM to 6:00 PM with 60-minute headways.
- Saturday service would be eliminated due to very low ridership.
- Service on Park Street would be provided by a new route that connects downtown Charlottesville to the Fashion Square Mall.

Option 2

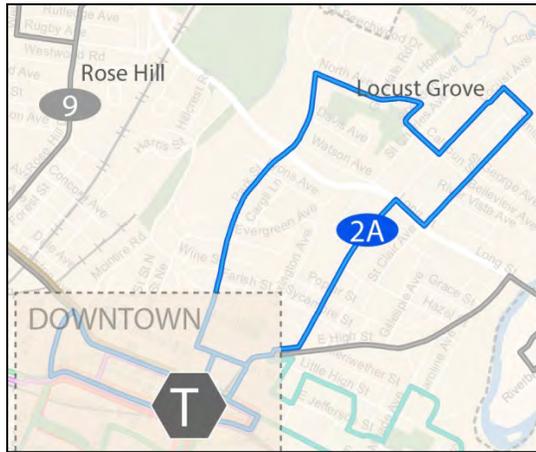
- Route 2A would be converted to a demand-response Flex Service, which offers passengers the opportunity to call for a ride to or from any location in the defined Flex zone. Passengers would need to call in advance to book a trip; service would be provided to the curb of the desired location within the zone. Trips can be made anywhere within the Flex zone, or to and from Downtown Transit Station.
- Flex Service would be offered north of East Market Street, east of Park Street, and south of the city limit, between 7:00 AM and 7:00 PM.
- Service on Park Street would be provided by a new route that connects downtown to Fashion Square Mall.

Before and After Service Statistics

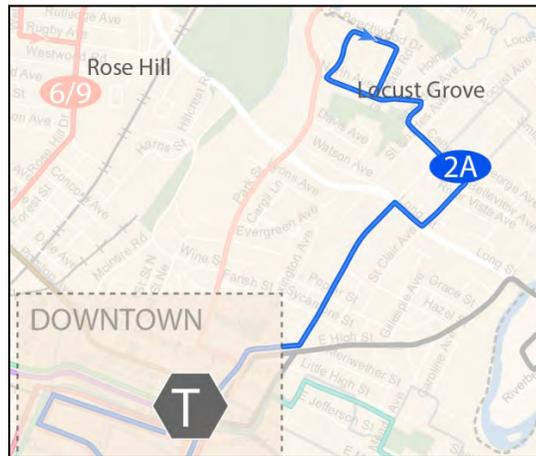
	Existing	Option 1	Option 2
Span of Service			
Weekdays	6:20 AM – 6:20 PM	7:00 AM – 6:00 PM	7:00 AM – 7:00 PM
Saturdays	6:20 AM – 6:20 PM	No service	No service
Sundays	No service	No service	No service
Frequency			
Weekdays	60	60	Flex
Saturdays	60	No service	No service
Sundays	No service	No service	No service

CHARLOTTESVILLE TRANSIT STUDY | Final Report
Charlottesville Area Transit

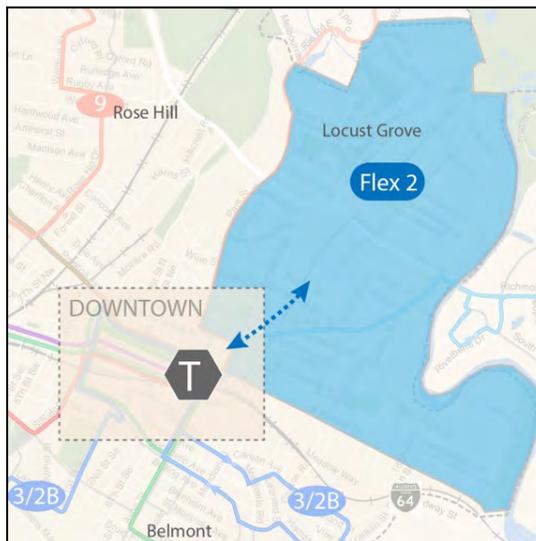
Route 2A Existing Service



Route 2A Option 1



Route 2A Option 2



ROUTE 2B

Route 2B operates between downtown Charlottesville and the Albemarle County Offices, serving neighborhoods south of downtown. It operates primarily on Ridge Street, Fifth Street, and Old Lynchburg Road, serving the Willoughby Shopping Center on its way. Route 2B is interlined with Route 2A, which serves Locust Grove via Park Street and Locust Avenue. Ridership is relatively strong at the southern end of Route 2B, but considerably less strong along the Fifth Street corridor, where pedestrian access is difficult.

Comparison of Possible Changes

In both options, service would begin at 7:30 AM to reflect relatively low ridership on the first trip of the day (8 riders).

Option 1

- Route 2B would maintain its current alignment on Ridge Street, Fifth Street, and Old Lynchburg Road. In downtown, service would be rerouted in the vicinity of downtown to continue north on Ridge McIntire Road rather than along Monticello Avenue. At the route's outer end, the route would form a one-way loop along Hickory Street and Stagecoach Road to provide service to additional residential areas. (Albemarle County Offices would be served in both directions.)
- Route 2B would be interlined with Route 1A, which operates along East Market Street.
- Weekday and Saturday service would end at 6:30 PM with 60-minute headways.

Option 2

- Route 2B would be combined with Route 3 to cover both Route 2B's existing alignment as well as Belmont. Route 6 would be eliminated, and Route 3/2B would cover part Route 6's alignment, along First Street South, Lankford Avenue, and Ridge Street, then continue on Route 2B's current alignment along Fifth Street and Old Lynchburg Road.
- In Belmont, the revised Route 3/2B would operate east on Hinton Avenue and Carlton Avenue, and west on Hampton Street and Monticello Avenue.
- Service would end at 9:00 PM on weekdays, operating with 30-minute headways during peak hours, and 60-minute headways during the off-peak. On Saturdays, the route would operate between 7:00 AM and 6:00 PM every 60 minutes.

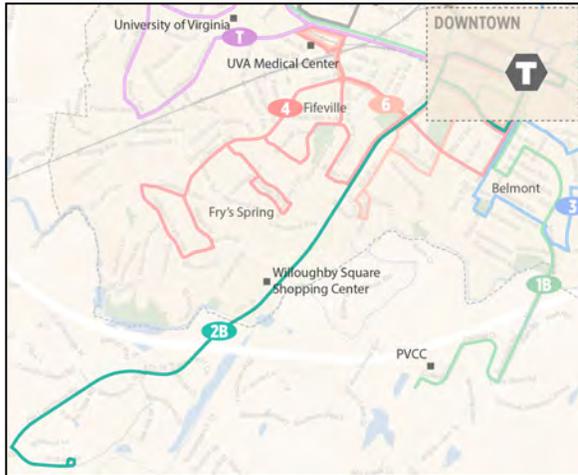
CHARLOTTESVILLE TRANSIT STUDY | Final Report
 Charlottesville Area Transit

Before and After Service Statistics

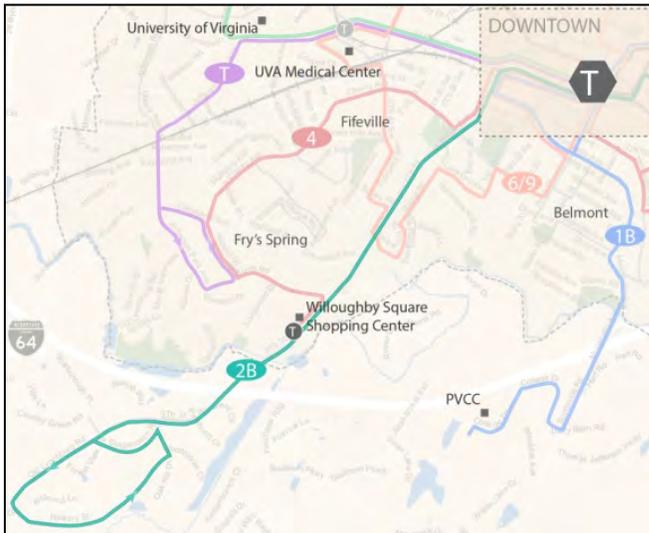
	Existing	Option 1	Option 2
Span of Service			
Weekdays	6:45 AM – 6:20 PM	7:30 AM – 6:30 PM	7:30 AM – 9:30 PM
Saturdays	6:45 AM – 6:20 PM	7:30 AM – 6:30 PM	7:30 AM – 6:30 PM
Sundays	No service	No service	No service
Frequency			
Weekdays	60	60	30-60
Saturdays	60	60	60
Sundays	No service	No service	No service

CHARLOTTESVILLE TRANSIT STUDY | Final Report
Charlottesville Area Transit

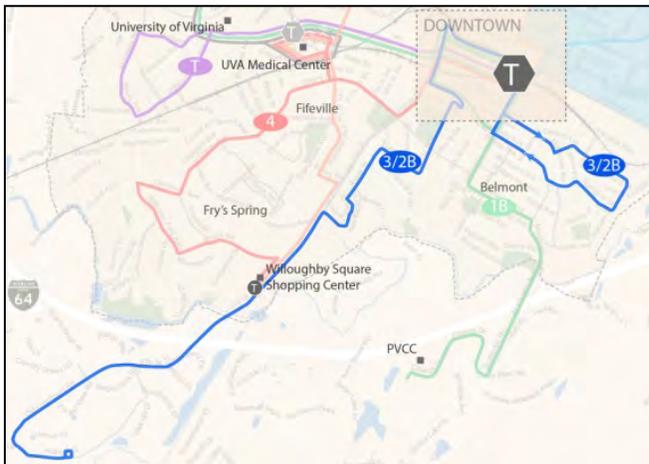
Route 2B Existing Service



Route 2B Option 1



Route 2B Option 2



ROUTE 3 / ROUTE 21

Route 3 operates between downtown Charlottesville and Belmont. Route 3 operates in a loop, traveling eastbound on Hinton Avenue, Bainbridge Street, and Carlton Avenue. Westbound, Route 3 operates primarily on Monticello Road, Monticello Avenue, Altavista Avenue, and then north on Avon Street to return to downtown. Evening service is provided by Route 21, which uses the same alignment as Route 3. Route 3 has a strong ridership during the weekday and Saturdays, and low ridership during the late evenings (only 11 riders use the service after 8:45 PM).

Comparison of Possible Changes

In both options, Route 21 would be combined with Route 3 and branded as a single route. In both options, service in Belmont provided by Route 1B would also be revised. In both options, service would begin at 7:00 AM to reflect relatively low ridership on the first trip of the day (7 riders).

Option 1

- Route 3 would be merged with Route 4, which operates to Fifeville, Fry's Spring and the Willoughby Square Shopping Center. The eastern end of the route, formerly covered by Route 3, would operate using a shorter loop along Hinton Avenue, Bainbridge Street, and Carlton Avenue, returning to downtown on Hampton Street, Monticello Avenue, and Hinton Avenue.
- Weekday service would operate from 7:00 AM to 9:00 PM with 30-minute headways. Saturday service would operate from 7:00 AM to 6:00 PM with 60-minute headways.

Option 2

- Route 3 would be combined with Route 2B, and the combined route would operate between Belmont (using a shortened alignment), downtown Charlottesville, and the Albemarle County Offices. In Belmont, the route would operate on Hinton Avenue, Bainbridge Street, and Carlton Avenue, and return on Hampton Street, Monticello Avenue and Avon Street. The western end of the route would operate primarily along Ridge Street, Fifth Street and Old Lynchburg Road, serving Willoughby Square Shopping Center.
- Service would operate between 7:00 AM to 9:00 PM on weekdays with 30-minute headways during peak hours and 60-minute headways during the off-peak (midday and evening). On Saturdays, the route would operate between 7:00 AM and 6:00 PM every 60 minutes.

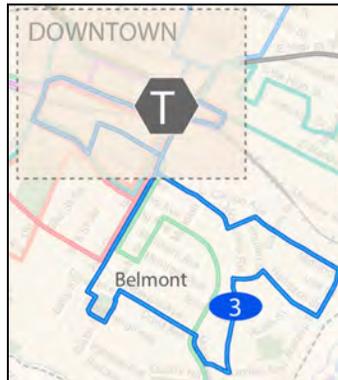
CHARLOTTESVILLE TRANSIT STUDY | Final Report
 Charlottesville Area Transit

Before and After Service Statistics (Includes Route 21 service)

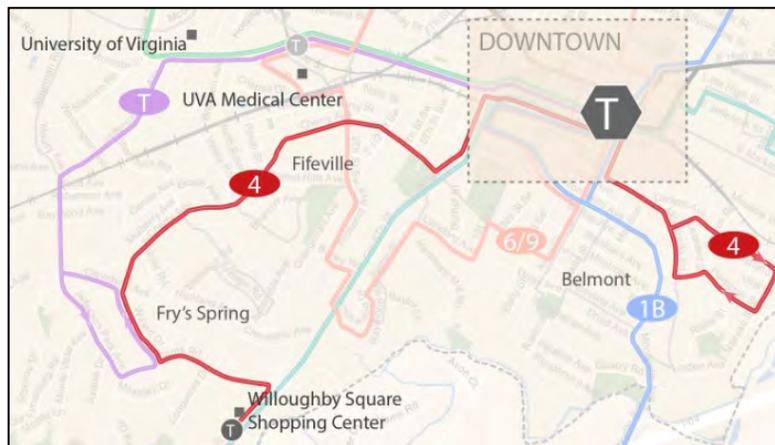
	Existing	Option 1 (Route 4)	Option 2
Span of Service*			
Weekdays	6:20 AM – 11:15 PM	7:00 AM – 9:00 PM	7:00 AM – 9:00 PM
Saturdays	6:20 AM – 11:15 PM	7:00 AM – 6:00 PM	7:00 AM – 6:00 PM
Sundays	No service	No service	No service
Frequency			
Weekdays	30-60	30	30-60
Saturdays	60	60	60
Sundays	No service	No service	No service

CHARLOTTESVILLE TRANSIT STUDY | Final Report
Charlottesville Area Transit

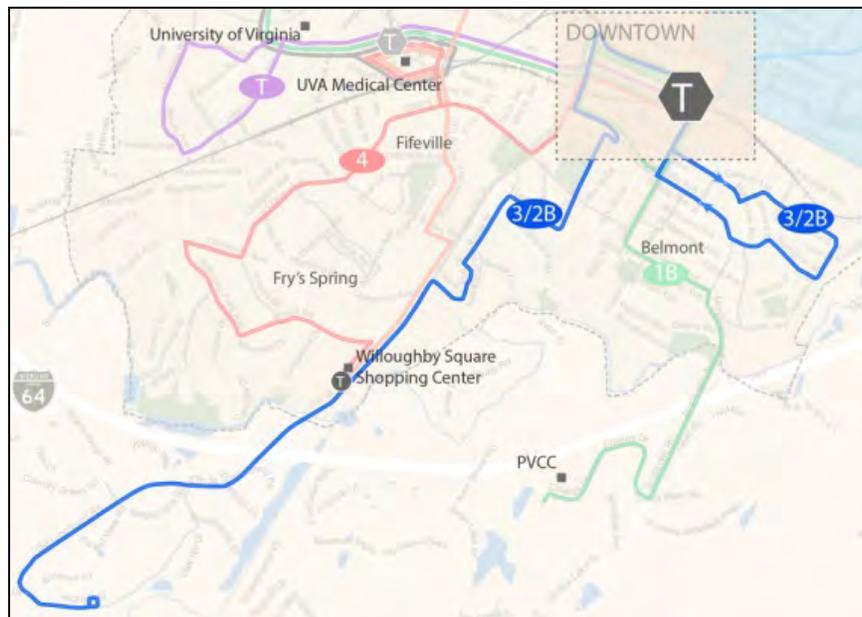
Route 3/21 Existing Service



Route 3/21 Option 1



Route 3/21 Option 2



ROUTE 4 / ROUTE 22

Route 4 operates between downtown Charlottesville and Fry's Spring. It follows a circuitous path through Fifeville and Fry's Spring, ending in a loop around Cleveland Avenue, Jefferson Park Avenue, Harris Road, and Willard Drive. Route 4 also serves the UVA Medical Center on Lee Street. Route 22 provides evening service on portions of Route 4 to the UVA Medical Center (as well as a portion of Route 6's service area). Route 4 has strong and even ridership throughout the day, but its loops force all riders to wind circuitously (and repetitively) through neighborhoods and create undesirably long travel times.

Comparison of Possible Changes

In both options, Route 22 would be combined with Route 4 and branded as a single route. In both options, service would begin at 7:00 AM to reflect relatively low ridership on the first trip of the day (3 riders). Service would end earlier (9:00 PM) to provide greater frequency.

Option 1

- Route 4 would be simplified to operate in both directions along Cherry Avenue, Willard Drive, and Harris Road. Service would be extended to the Willoughby Square Shopping Center. The UVA Hospital would not be served directly by Route 4.
- Route 4 would be merged with Route 3, and the combined route would provide service within Belmont on Hinton Avenue, Bainbridge Street, and Carlton Avenue, returning to downtown on Hampton Street, Monticello Avenue and Avon Street. Route 1B would be modified to serve a portion of Belmont.
- Weekday service would operate from 7:00 AM to 9:00 PM, every 30 minutes. Saturday service would operate from 7:00 AM to 9:00 PM every 60 minutes.

Option 2

- Route 4 would be simplified to operate in both directions along Cherry Avenue, Cleveland Avenue, Jefferson Park Avenue, and Harris Road. Service would be extended to the Willoughby Square Shopping Center. Service to UVA Hospital would be retained.
- Weekday service would operate from 7:00 AM to 9:00 PM with 30-minute headways during the daytime, and every 60 minutes during the evening. Saturday service would operate from 7:00 AM to 9:00 PM every 60 minutes.

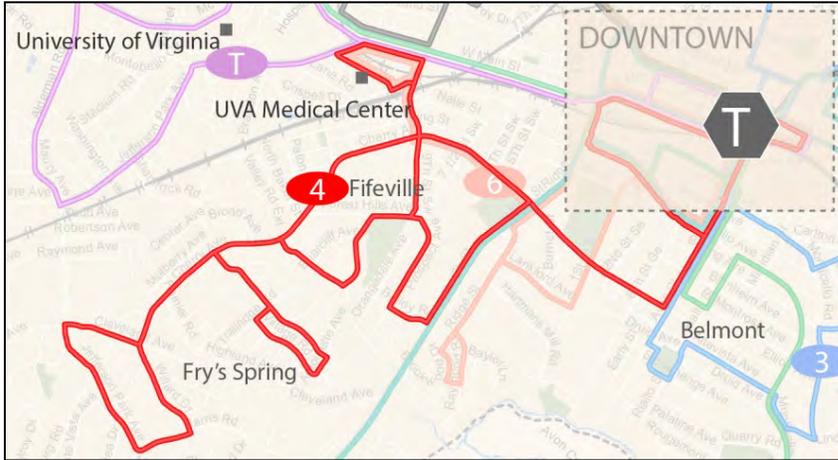
CHARLOTTESVILLE TRANSIT STUDY | Final Report
 Charlottesville Area Transit

Before and After Service Statistics (Includes Route 22 service)

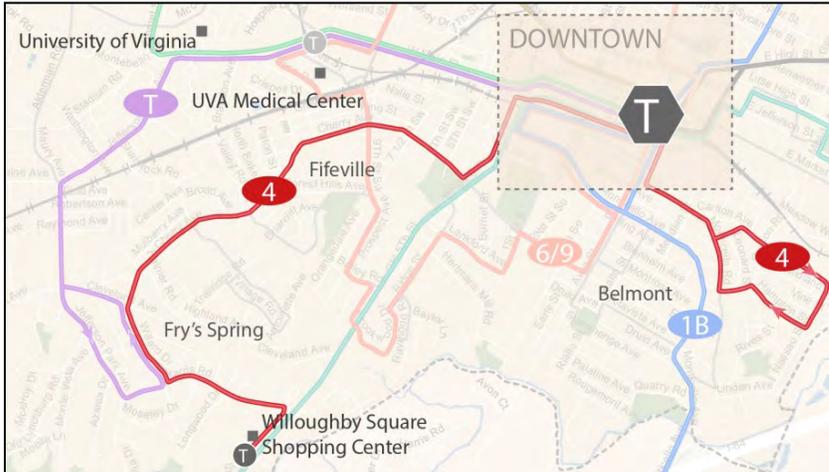
	Existing	Option 1	Option 2
Span of Service*			
Weekdays	6:30 AM – 11:15 PM	7:00 AM – 9:00 PM	7:00 AM – 9:00 PM
Saturdays	6:30 AM – 11:15 PM	7:00 AM – 9:00 PM	7:00 AM – 9:00 PM
Sundays	No service	No service	No service
Frequency			
Weekdays	30-60	30	30-60
Saturdays	60	60	60
Sundays	No service	No service	No service

CHARLOTTESVILLE TRANSIT STUDY | Final Report
Charlottesville Area Transit

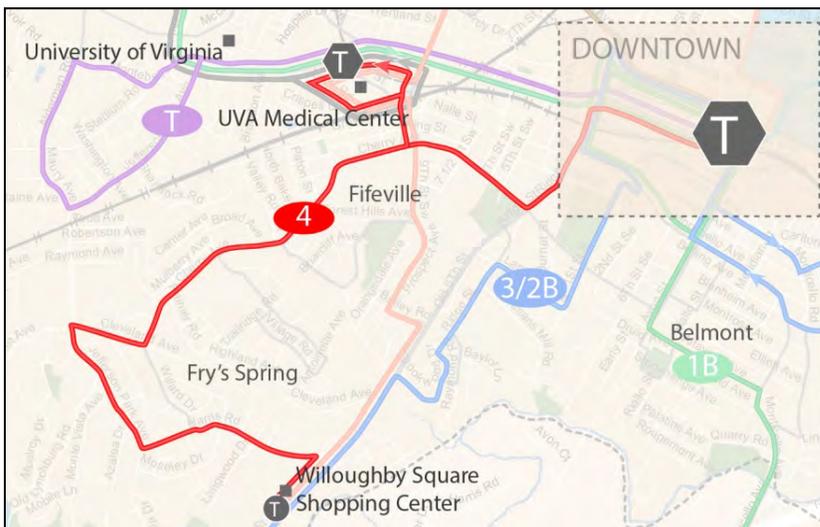
Route 4/22 Existing Service



Route 4/22 Option 1



Route 4/22 Option 2



ROUTE 5

Route 5 operates between Walmart and the Barracks Road Shopping Center, serving some of the city’s largest shopping centers as well as residential communities. The route travels primarily along Barracks Road, Georgetown Road, Commonwealth Drive, Rio Road, and Berkmar Drive. Ridership is very strong—Route 5 carries the third-highest ridership in the system—due to the well-defined transit markets and numerous major destinations served by the route. Ridership during the early mornings and late evenings on weekdays and Saturdays is relatively lower than that during the midday.

Comparison of Possible Changes

Option 1

- Route 5 would continue operating with its existing alignment, except for near Fashion Square Mall, where the loop along Hillsdale Drive would be eliminated due to low ridership.
- Service would operate from 7:00 AM until 8:30 PM with 30-minute headways, and 30 minute headways on Saturdays during the day and 60 minute headways during the evenings.

Option 2

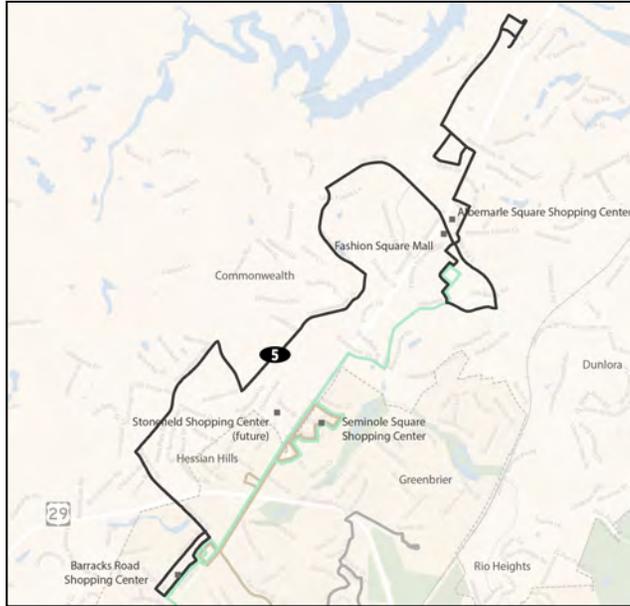
- Route 5 would be extended to operate from a new hub at Jefferson Park Avenue to Fashion Square Mall via Emmett Street to Barracks Road and then continue on its existing alignment, but would end at Fashion Square Mall. Route 7 would replace service currently provided by Route 5 between Fashion Square Mall and Walmart.
- Service would operate on weekdays from 7:00 AM to 9:00 PM with 30-minute frequency, and on Saturdays from 7:00 AM to 9:00 PM with 30 minute frequency during the day and 60 minute frequency during the evening.

Before and After Service Statistics

	Existing	Option 1	Option 2
Span of Service			
Weekdays	6:45 AM – 10:15 PM	7:00 AM – 8:30 PM	7:00 AM – 9:00 PM
Saturdays	6:15 AM – 10:15 PM	7:00 AM – 8:30 PM	7:00 AM – 9:00 PM
Sundays	No service	No service	No service
Frequency			
Weekdays	30	30	30
Saturdays	30	30-60	30-60
Sundays	No service	No service	No service

CHARLOTTESVILLE TRANSIT STUDY | Final Report
Charlottesville Area Transit

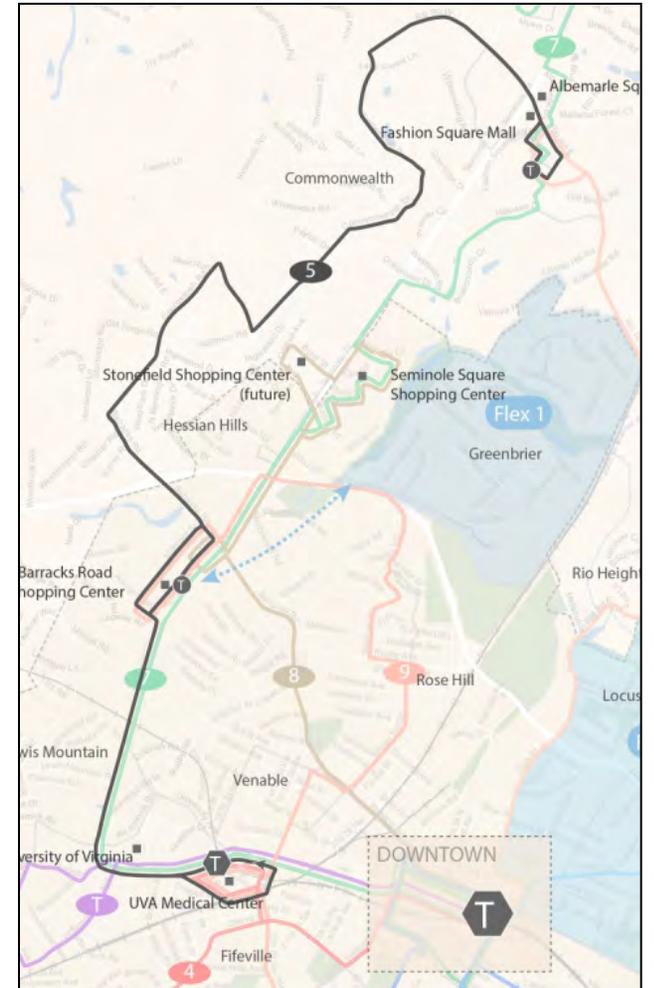
Route 5 Existing Service



Route 5 Option 1



Route 5 Option 2



ROUTE 6 / ROUTE 22

Route 6 provides service in a large circuitous loop between downtown Charlottesville, residential neighborhoods south of downtown, and the UVA Medical Center. Route 6 operates primarily on First Street, Lankford Avenue, Ridge Street, loops around Raymond Road, returns northward on Ridge Street, and loops to the UVA Medical Center via Cherry Avenue, and returns to downtown. Ridership is strong and relatively even along the route, but its circuitous service forces passengers to travel long distances in the wrong direction. Route 6 also overlaps with some sections of Route 4, and Route 22 provides evening service on some sections of the route.

Comparison of Possible Changes

Option 1

- Route 6's alignment would be simplified to operate between downtown Charlottesville and Jefferson Park Avenue. Route 6 would operate in both directions primarily on Avon Street, Cherry Avenue, Lankford Avenue, Ridge Street, Brookwood Drive, Bailey Road, Prospect Avenue and 9th Street Southwest to UVA Hospital.
- Route 6 would operate from 7:00 AM until 9:25 PM with a 30-minute headway during the day, and a 60-minute headway in the evening, ending earlier due to low ridership after this time (13 riders).
- During the day, Route 6 would be interlined at Jefferson Park Avenue with Route 9, which provides service to Venable and Rose Hill; the two routes would connect at UVA Medical Center. In the evening, Route 6 would be interlined in downtown with Route 1B, which provides service to PVCC; the two routes would connect downtown.

Option 2

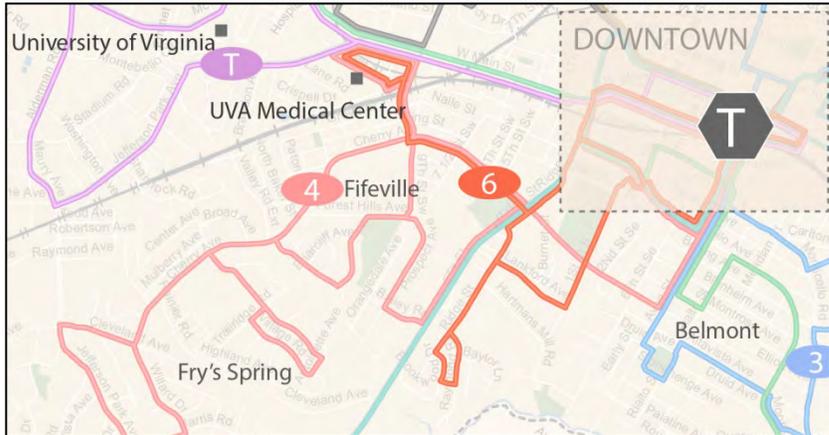
- Route 6 would be discontinued and merged with other routes (see other routes for details):
 - Route 1B would serve Monticello Avenue.
 - Route 3/2B would serve Brookwood Drive, Ridge Street, and Lankford Avenue.
 - Route 4 would serve Cherry Avenue.
 - Route 9 would serve Prospect Avenue and Bailey Road; it would also connect to Willoughby Square Shopping Center.

Before and After Service Statistics (Includes Route 22 service)

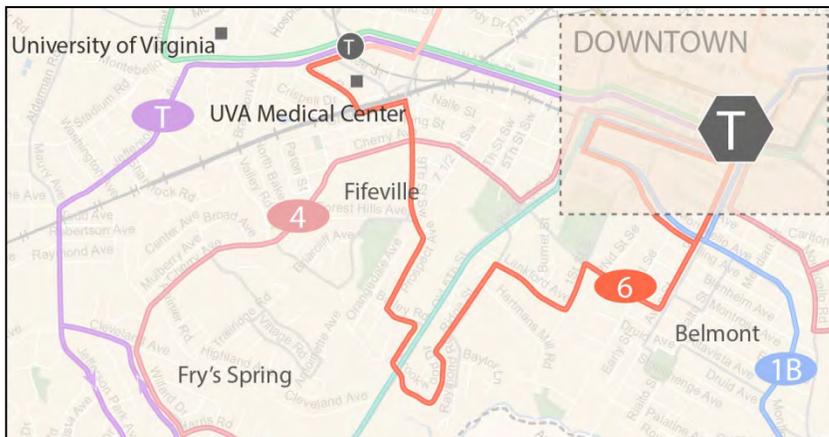
	Existing	Option 1	Option 2
Span of Service*			
Weekdays	6:45 AM – 11:15 PM	7:00 AM – 9:25 PM	–
Saturdays	6:15 AM – 11:15 PM	7:00 AM – 9:25 PM	–
Sundays	No service	No service	–
Frequency			
Weekdays	30	30	–
Saturdays	60	60	–
Sundays	No service	No service	–

CHARLOTTESVILLE TRANSIT STUDY | Final Report
Charlottesville Area Transit

Route 6 Existing Service



Route 6 Option 1



Route 6 Option 2

Service would be discontinued and replaced with other routes. See Routes 1B, 2B, 3, 4, and 9

ROUTE 7

Route 7 operates between downtown Charlottesville and Fashion Square Mall. The route operates primarily on West Main Street, Emmet Street North, Greenbrier Drive, and Hillsdale Drive to Fashion Square. Route 7 is the second-highest ridership route in the system, after the Free Trolley, and ridership activity is heavy in both the corridor between UVA and downtown and in the commercial areas in the northern half of the route. The last trips on weekdays and Saturdays, however, have low ridership.

Comparison of Possible Changes

In both options, service would end at about 10:00 PM in order to reflect relatively low ridership on the last three trips of the day (25 total riders).

Option 1

- Route 7 would operate between downtown Charlottesville and Fashion Square along its current alignment, except through the UVA area, where it would operate along Emmet Street and Jefferson Park Avenue.
- Weekday service would operate from 6:30 AM to 10:00 PM, on Saturdays from 6:30 AM to 10:00 PM, and on Sundays from 8:00 AM to 5:00 PM.

Option 2

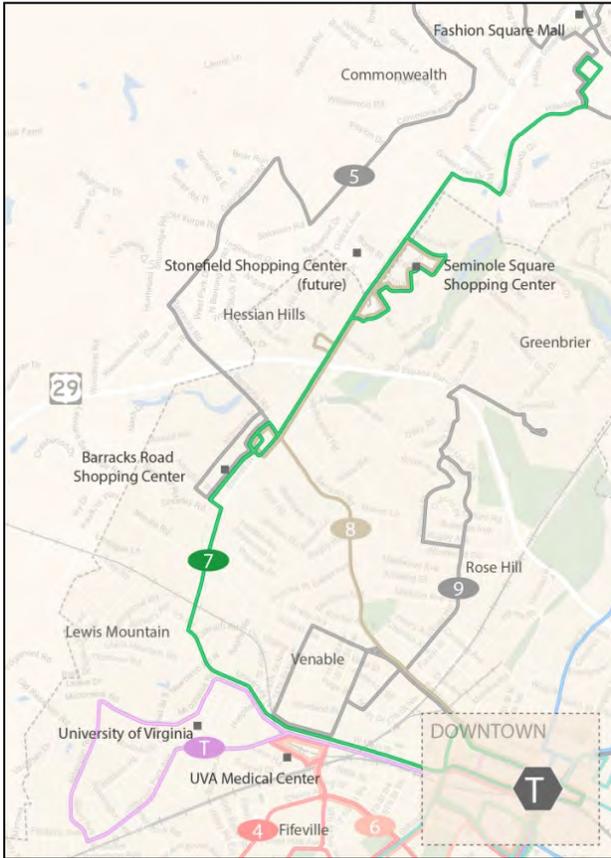
- Route 7 would operate between downtown Charlottesville and Walmart, assuming a portion of Route 5's alignment between Fashion Square Mall and Walmart. Route 7 would follow its existing alignment between downtown and Fashion Square.
- Weekday service would operate from 6:30 AM to 10:20 PM, operating every 20 minutes during the day and every 30 minutes during the evening. Saturday service would operate from 6:30 AM to 10:20 PM, operating every 20 minutes during the day and every 30 minutes during the evening. Sunday service would operate from 8:00 AM to 5:20 PM every 30 minutes.

Before and After Service Statistics

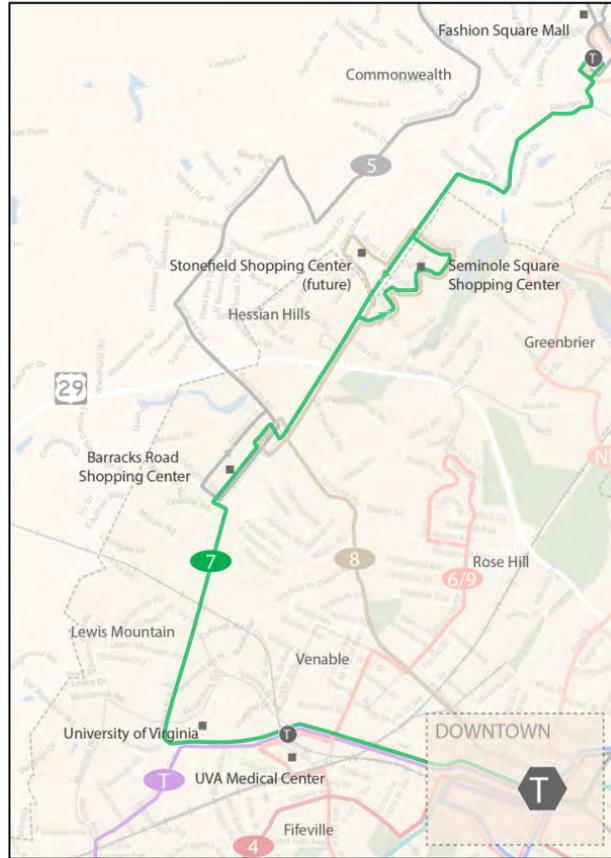
	Existing	Option 1	Option 2
Span of Service			
Weekdays	6:30 AM – 11:15 PM	6:30 AM – 10:00 PM	6:30 AM – 10:20 PM
Saturdays	6:30 AM – 11:15 PM	6:30 AM – 10:00 PM	6:30 AM – 10:20 PM
Sundays	7:45 AM – 5:15 PM	8:00 AM – 5:00 PM	8:00 AM – 5:20 PM
Frequency			
Weekdays	15-30	15-30	20-30
Saturdays	15-30	15-30	20-30
Sundays	30	30	30

CHARLOTTESVILLE TRANSIT STUDY | Final Report
Charlottesville Area Transit

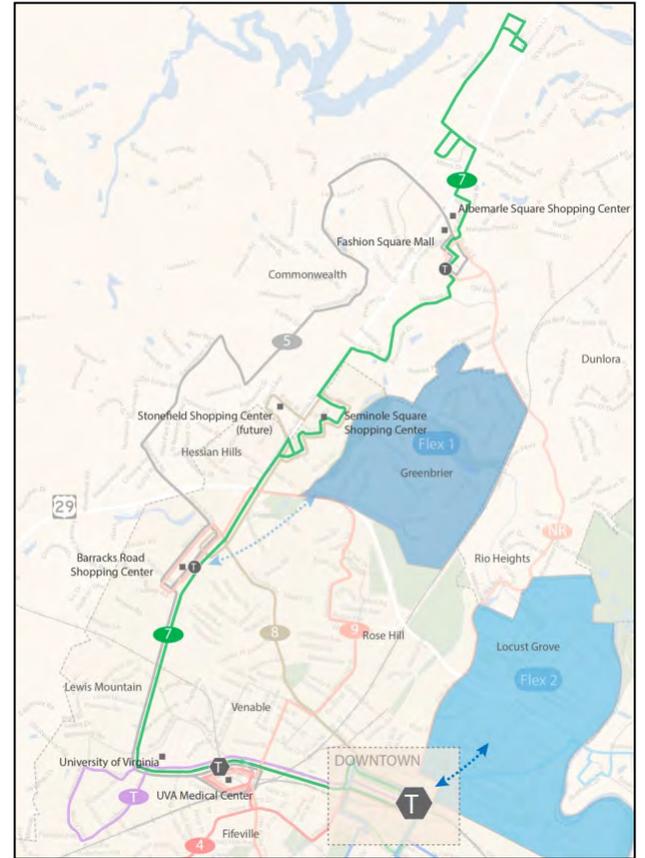
Route 7 Existing Service



Route 7 Option 1



Route 7 Option 2



ROUTE 8

Route 8 operates between downtown Charlottesville and Seminole Square Shopping Center via the Barracks Shopping Center. It operates primarily on Preston Road, Barracks Road, and Emmet Street. The route’s ridership is relatively strong, particularly in downtown Charlottesville and at the major shopping centers.

Comparison of Possible Changes

In both options, service would begin at about 7:00 AM in order to reflect relatively low ridership on the first trip of the day (8 riders).

Option 1

- Route 8 would operate along its current alignment, except in the southbound direction, where the route would also serve the future Stonefield Shopping Center. Service to the Best Buy on Angus Road would be discontinued.
- Route 8 would operate on weekdays from 7:00 AM to 7:30 PM with 30-minute headways, and on Saturdays between 7:00 AM and 6:30 PM with 60 minute headways.

Option 2

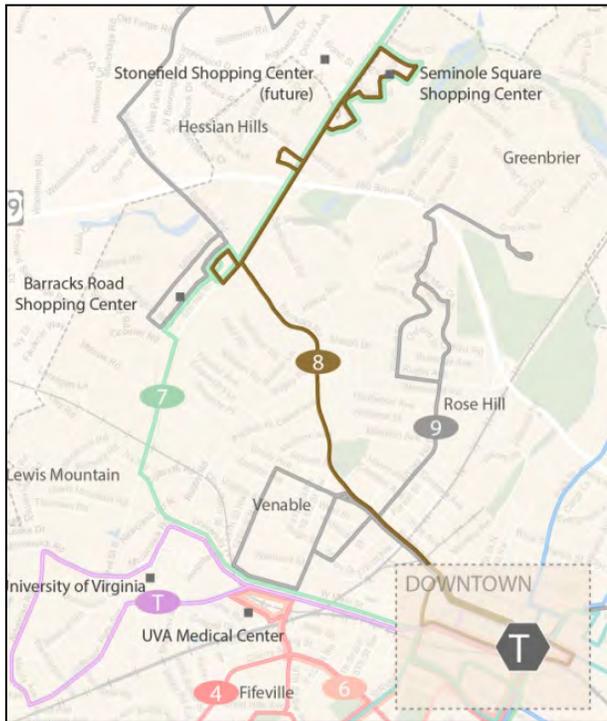
- Route 8 would operate along the current alignment, except in the southbound direction, where the route would also serve the future Stonefield Shopping Center. Service to the Best Buy on Angus Road would be discontinued.
- Route 8 would operate from 7:00 AM to 6:30 PM with 60 minute headways; frequency would be reduced partially due to increased service to Seminole Square Shopping Center provided by Route 7. Saturday service would operate between 7:00 AM and 6:30 PM with 60 minute headways.

Before and After Service Statistics

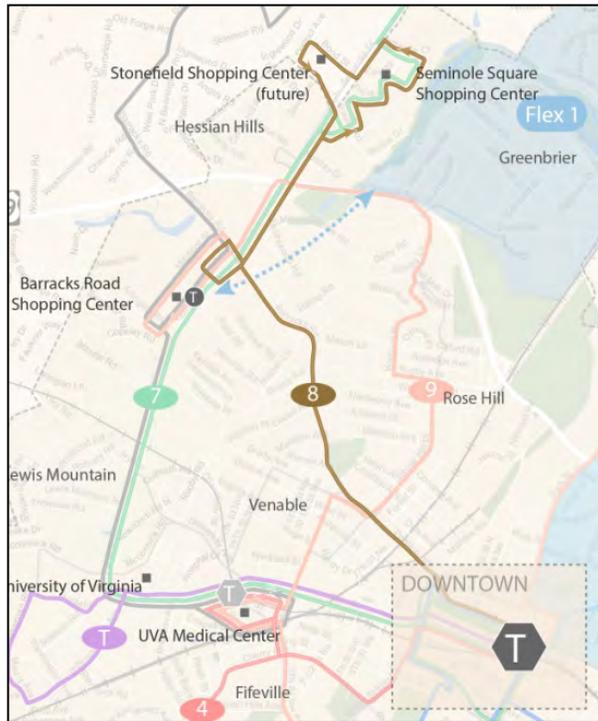
	Existing	Option 1	Option 2
Span of Service			
Weekdays	6:30 AM to 6:00 PM	7:00 AM to 7:30 PM	7:00 AM to 6:30 PM
Saturdays	6:30 AM to 6:00 PM	7:00 AM to 6:30 PM	7:00 AM to 6:30 PM
Sundays	No service	No service	No service
Frequency			
Weekdays	30-60	30	60
Saturdays	60	60	60
Sundays	No service	No service	No service

CHARLOTTESVILLE TRANSIT STUDY | Final Report
Charlottesville Area Transit

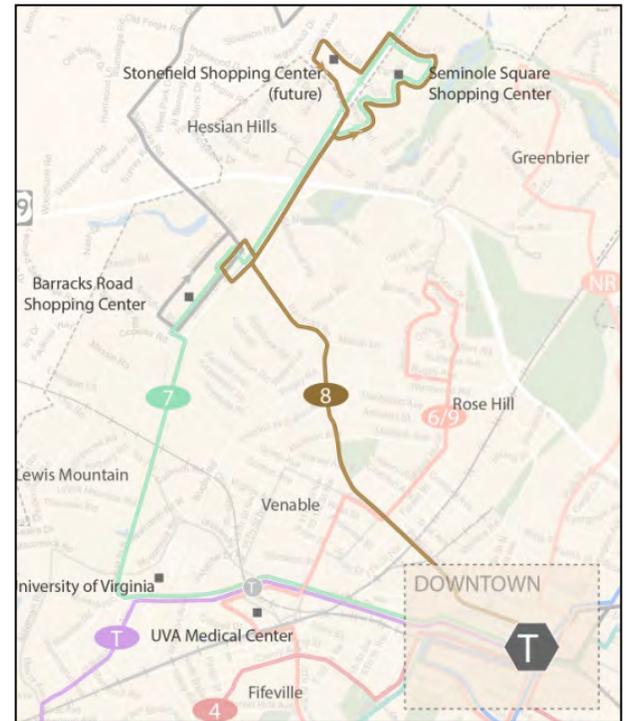
Route 8 Existing Service



Route 8 Option 1



Route 8 Option 2



ROUTE 9

Route 9 operates from downtown Charlottesville to Charlottesville High School, making a loop halfway through its route to serve the Venable neighborhood. Route 9 primarily operates on Preston Avenue, 14th Street NW, West Main Street, 10th Street Northwest, Rose Hill Drive, and Gentry Lane. Ridership is relatively high in the Venable area, but very low north of Venable. The circuitous loop in the Venable neighborhood operates in a bi-directional loop that is challenging for riders to use, and the area is also within a half-mile of Routes 7, 8 and the Free Trolley.

Comparison of Possible Changes

Option 1

- Route 9 would be simplified to operate between Jefferson Park Avenue and Del Mar Drive in Rose Hill via Tenth Street NW, Preston Avenue, and Rose Hill Drive, making a terminal loop around the Rose Hill neighborhood. Service to Charlottesville High School would be discontinued due to very low ridership.
- Route 9 would be interlined with Route 6, which would service to Fifeville, the area south of downtown Charlottesville, and the Downtown Transit Station.
- Route 9 would operate on weekdays from 7:00 AM to 6:30 PM with 30-minute headways, and on Saturdays from 7:00 AM to 9:30 PM with 60-minute headways.

Option 2

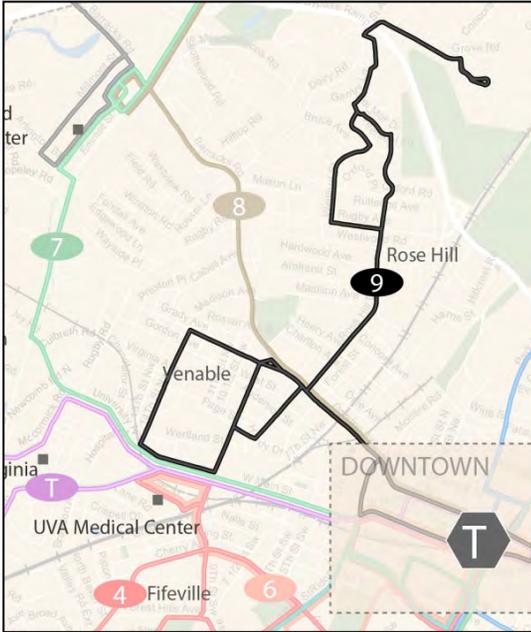
- Route 9 would be simplified and combined with Route 6 to operate from Willoughby Square Shopping Center to Barracks Road Shopping Center via a new transit hub at Jefferson Park Avenue and via Rose Hill. It would operate primarily on Fifth Street, Prospect Avenue, Tenth Avenue NW, Rose Hill Drive, Wellford Street, 250 Bypass, and east to Barracks Road Shopping Center via Barracks Road. Service to Charlottesville High School would be discontinued due to very low ridership.
- Route 9 would operate from 7:00 AM to 6:30 PM with 30-minute during weekdays and 60-minute headways in the evening, and from 7:00 AM to 6:30 PM on Saturdays with 60-minute headways all day.

Before and After Service Statistics

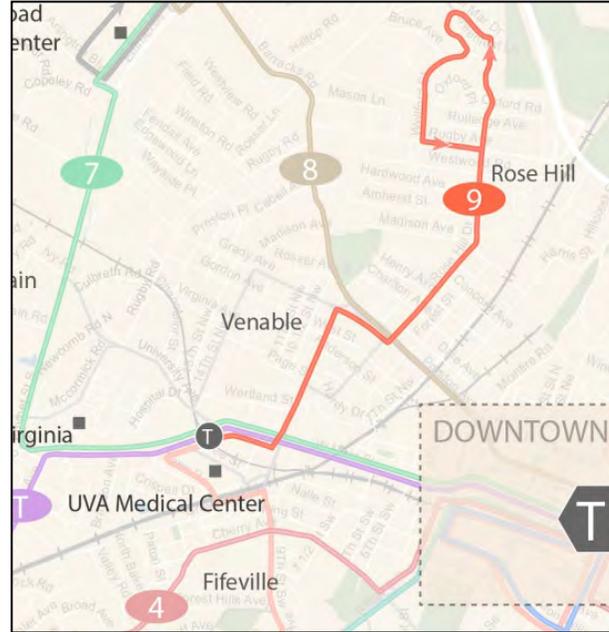
	Existing	Option 1	Option 2
Span of Service			
Weekdays	6:45 AM – 5:45 PM	7:00 AM – 6:30 PM	7:00 AM – 6:30 PM
Saturdays	6:45 PM – 5:45 PM	7:00 AM – 9:30 PM	7:00 AM – 6:30 PM
Sundays	No service	No service	No service
Frequency			
Weekdays	60	30	30-60
Saturdays	60	60	60
Sundays	No service	No service	No service

CHARLOTTESVILLE TRANSIT STUDY | Final Report
Charlottesville Area Transit

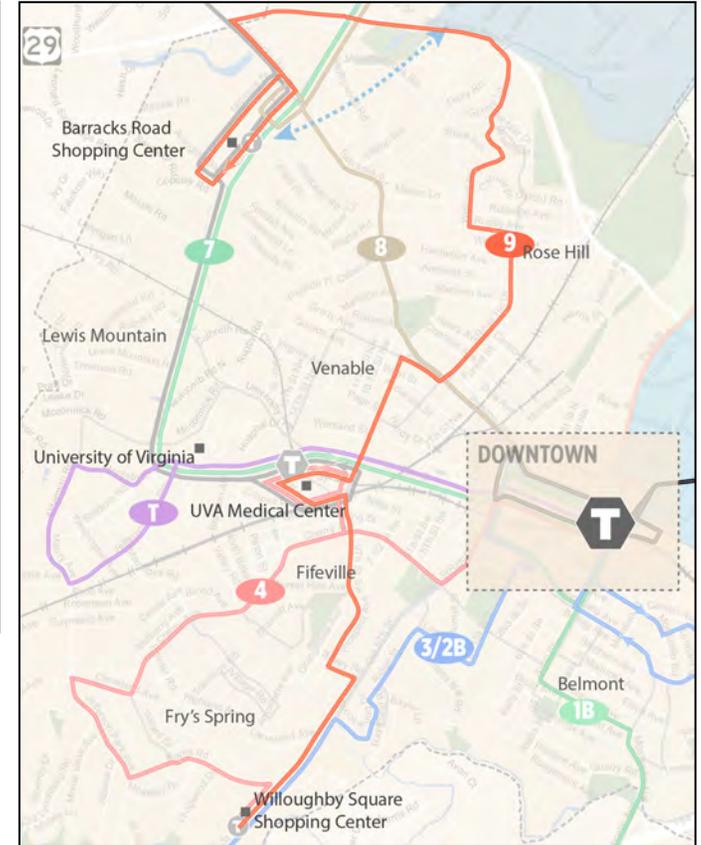
Route 9 Existing Service



Route 9 Option 1



Route 9 Option 2



ROUTE 10 / ROUTE 24

Route 10 operates between downtown Charlottesville and Pantops. The route operates from Charlottesville via East High Street and then loops to serve the Avemore Apartments and Wilton Farm Apartments on Stony Point Road. It then returns south and continues on South Pantops Drive, and then loops around via Martha Jefferson Drive, the Peterson Jefferson Parkway, and Richmond Road. It serves several major employers, retail locations, and government services, such as Food Lion, the Martha Jefferson Hospital Pantops Campus, State Farm, the Department of Motor Vehicles, the Veterans Administration, and the Social Security Administration. Route 24 provides night service on a portion of Route 10, between Avemore Apartments and downtown. Ridership is concentrated on the western portions of the route (as of 2010). Evening ridership is very low. The route's one-way loop structure is challenging for riders to use, but provides a level of geographic coverage that would not otherwise be possible with a single route.

Comparison of Possible Changes

In both options, service would begin at about 7:00 AM in order to reflect relatively low ridership on the first trip of the day (only 7 riders on weekdays and 12 on Saturdays during the evenings).

Option 1

- In Option 1, Route 10 would be redesigned to make one large loop through the Pantops area, operating on South Pantops Drive, State Farm Boulevard, Martha Jefferson Drive, Peter Jefferson Parkway, Richmond Road, and then north on Rolkin Road, through Avemore Apartments, and returning to downtown Charlottesville via Stony Point Road and East High Street. This loop provides more coverage, but service is operated in one direction only. Most areas currently served today would continue to be served, with the exception of the Social Security Administration, the Veterans Administration, and Giant Food/Department of Motor Vehicles area.
- Route 10 would operate on weekdays and Saturdays from 7:00 AM to 7:20 PM with 60 minute headways.

Option 2

- In Option 2, Route 10 would be simplified to serve a short loop at the Pantops Shopping Center, continue on Richmond Road, and then follow a one-way loop serving Abbey Road, State Farm Boulevard, the Martha Jefferson Hospital Pantops Campus, Peter Jefferson Parkway, and returning to downtown by Richmond Road. This route design provides more direct, two-way service through the Pantops area, but serves fewer locations. Avemore Apartments, Wilton Farm Apartments, the Social Security Administration, and some other locations along the existing route would no longer be served.
- Route 10 would operate on weekdays and Saturdays from 7:00 AM to 7:25 PM with 60-minute headways.

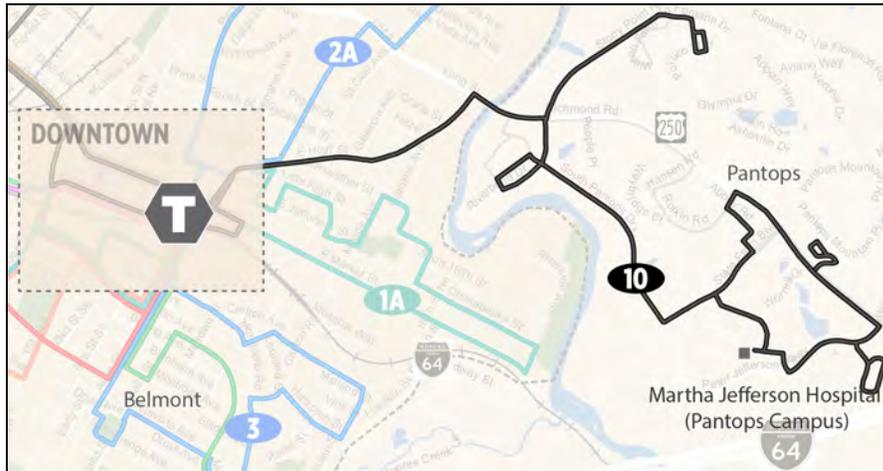
CHARLOTTESVILLE TRANSIT STUDY | Final Report
 Charlottesville Area Transit

Before and After Service Statistics

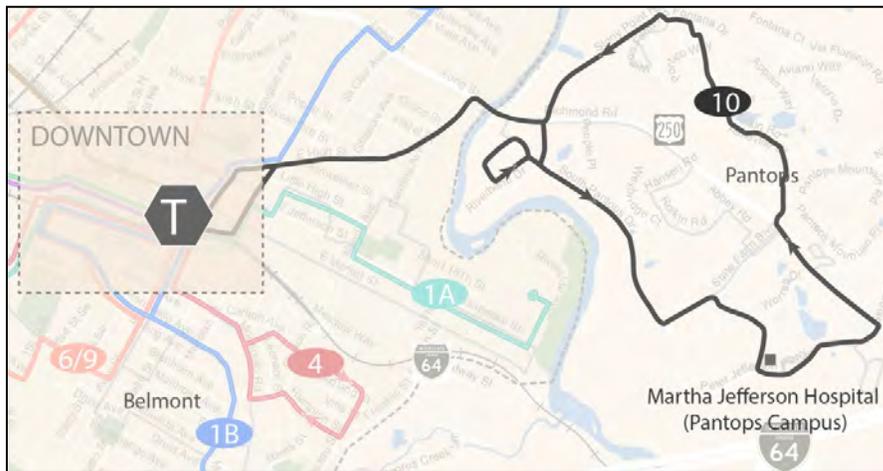
	Existing	Option 1	Option 2
Span of Service			
Weekdays	6:15 AM – 11:15 PM	7:00 AM – 7:20 PM	7:00 AM – 7:25 PM
Saturdays	6:15 AM – 11:15 PM	7:00 AM – 7:20 PM	7:00 AM – 7:25 PM
Sundays	No service	No service	No service
Frequency			
Weekdays	60	60	60
Saturdays	60	60	60
Sundays	No service	No service	No service

CHARLOTTESVILLE TRANSIT STUDY | Final Report
Charlottesville Area Transit

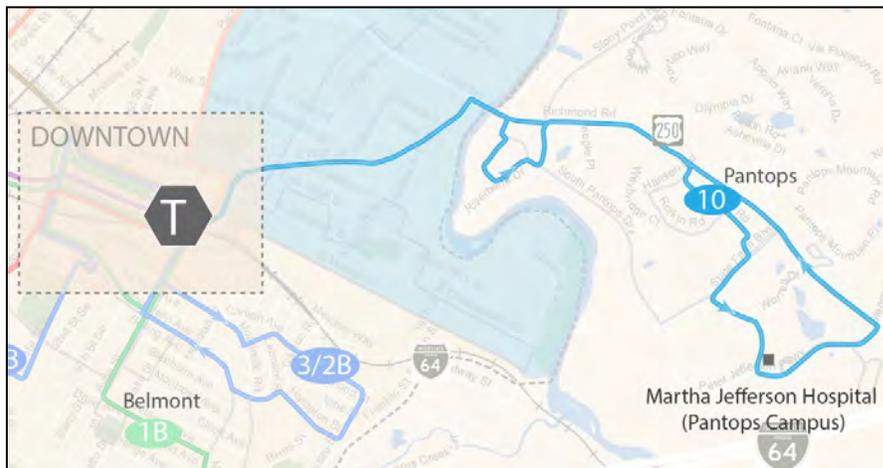
Route 10 Existing Service



Route 10 Option 1



Route 10 Option 2



NEW FASHION SQUARE/DOWNTOWN/ GREENBRIER SERVICE

Route “NR” is a new route that would connect downtown Charlottesville to Fashion Square Mall, operating largely via Park Street on its southern end (with different alignment options on its northern end). The new route would partially replace Route 2A along Park Street and provide new service to residential areas north of downtown Charlottesville.

Comparison of Possible Changes

Option 1

- In Option 1, Route NR would operate from downtown to Fashion Square via Park Street and Melbourne Road in the Locust Grove area. It would then provide local service within Greenbrier along Kenwood Lane and Greenbrier Drive, and then operate along Rio Road East to Fashion Square Mall.
- Service would operate on weekdays and Saturdays from 7:00 AM to 6:30 PM. It would operate with 30 minute headways during weekday AM and PM peak hours, and 60 minute headways during the weekday midday and on Saturdays.

Option 2

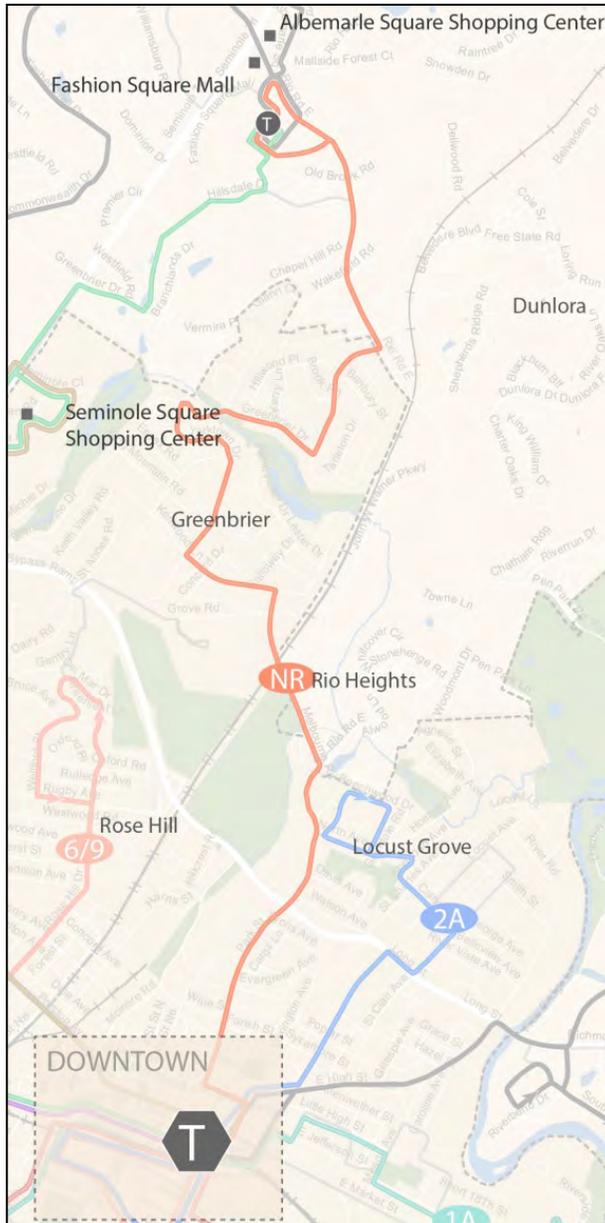
- In Option 2, Route NR would operate from downtown to Fashion Square via Park Street in Locust Grove and along Rio Road East through Rio Heights to Fashion Square Mall. Service in Greenbrier would be provided by a demand-response Flex service.
- Service would operate on weekdays and Saturdays from 7:00 AM to 6:30 PM with 60 minute headways.

Before and After Service Statistics

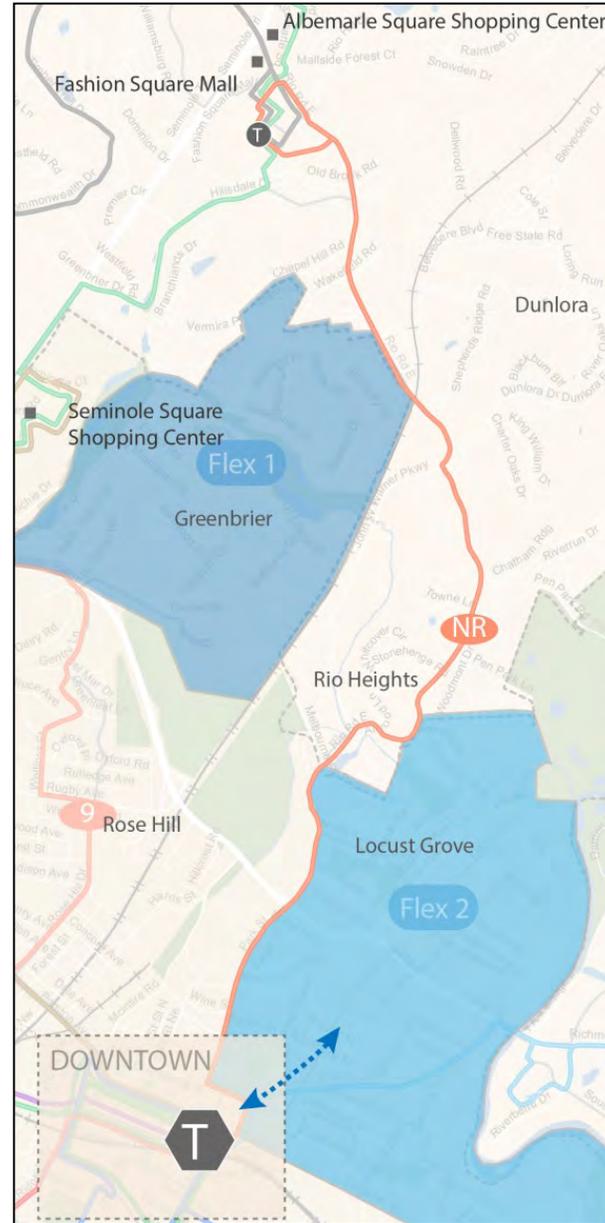
	Existing	Option 1	Option 2
Span of Service			
Weekdays	–	7:00 AM – 6:30 PM	7:00 AM – 6:00 PM
Saturdays	–	7:00 AM – 6:30 PM	7:00 AM – 6:00 PM
Sundays	–	No service	No service
Frequency			
Weekdays	–	30-60	60
Saturdays	–	60	60
Sundays	–	No service	No service

CHARLOTTESVILLE TRANSIT STUDY | Final Report
Charlottesville Area Transit

Route NR Option 1



Route NR Option 2



5 PUBLIC INVOLVEMENT PROCESS AND FEEDBACK RECEIVED

PUBLIC INVOLVEMENT PROCESS

In developing a future strategy for CAT's services, this study used a number of different sources to understand public priorities and preferences for transit services. This effort builds extensively on the 2011 Transit Development Plan, which contained a number of public outreach activities. These include:

- An on-board survey of CAT riders
- Interviews with CAT staff, regional stakeholders, and members of government
- Two public meetings to collect public feedback

Additionally, the 2009 CAT Transit Marketing Study included an on-board survey and stakeholder interviews, which were also considered during this study.

The CAT Transit Study has included several opportunities for public feedback:

- **October 2012 Public Open House.** The Service Change Options described in Chapter 4 were presented to the public at an Open House on October 16th, 2012, which was attended by approximately 70 individuals. Comments were received verbally and in writing. Poster-boards and a descriptive handbook describing the service options remained at the Downtown Transit Station for roughly two and a half weeks, and comments were collected in a dropbox.
- **December 2012 Public Meeting and City Council Session.** A set of draft Service Recommendations was presented to the public at a Public Meeting on December 17, 2012, as well as at a City Council Session on the same date. Approximately 50 individuals attended the Public Meeting, and comments were received verbally and in writing. Poster-boards describing the proposed service changes were posted at the Downtown Transit Station for roughly three weeks thereafter. The study team also met directly with Charlottesville City Councilors to gather direct feedback on proposed service changes and concerns.
- **Online feedback.** Both the Service Options and the draft service change recommendations were presented online on CAT's website for approximately three weeks each, and comments were received via email. Comments received via CAT's Facebook page were also recorded.

In total, roughly 200 comments were received through these methods, and key themes among the comments are described below.

COMMENTS RECEIVED FROM THE PUBLIC AND STAKEHOLDERS

Each individual comment received during the course of the study was reviewed by the study team for consideration in developing the final service concept. Key or consistent themes that emerged among the comments received during all phases of the study include:

- Many comments expressed enthusiasm for changes, including a number of comments that were very positive about the proposed service changes, with particular support for straighter, more direct service.
- Overall, there was no clear consensus preference for one Service Option or the other. This is not surprising, since both Options provided different combinations of changes for each route. Comments on most routes were mixed, and preferences largely depended on where the respondent lived. Some comments endorsed one Option or the other, but there was no clear preferred Option among the two.
- However, some route designs presented in the Service Options received more or less support:
 - Comments expressed much more support for the Option 1 Trolley, which would serve a shortened loop at UVA, than for the Option 2 Trolley, which would serve Fry's Spring.
 - There was some hesitance to embrace Flex Service, largely due to the reservation timeframe.
 - Interest was much stronger in having Route 11 provide service along Rio Road than into Greenbrier. Comparatively, only a small number of comments about service in Greenbrier were received. Of those that were received, there was a preference for fixed route service rather than Flex Service.
- Interest in specific routes and areas included:
 - A great deal of interest in potential changes to Route 4
 - Interest in additional service along Route 29
 - Interest in Route 4, especially in the interior of the Forest Hills neighborhood and along Avon Street, and concern about walking and safety issues
 - Routes serving areas south of Charlottesville (e.g. Belmont) were noted frequently as a service priority, particularly during evenings
 - Route 10, including requests for added service frequency
 - Concern for loss of service in the northernmost portion of Locust Grove
 - Interest in service to Barracks West and the Colonnades housing developments
 - Some concern for the absence of Saturday service on Routes 1 and 11 (currently, all services operate with the same schedule on Saturdays as on weekdays)
- A number of comments requested new or retained service to specific locations, including:
 - CATEC and evening service to PVCC to provide connections to workforce training opportunities
 - Lakeview Apartments, located off of Avon Street Extended, south of I-64
 - Monticello Vista Apartments, 1400 Monticello Road

CHARLOTTESVILLE TRANSIT STUDY | Comparison of Route Changes
Charlottesville Area Transit

- The Senior Center in Belvedere (generally supporting the proposed new route to operate along Rio Road).
- Timberlake Place, a senior living facility under development at 1502 E. Market Street
- The Corner on University Avenue
- Some comments were resistant to changes due to the imposition of additional walking.
- In addition to suggested routing changes, there were a large number of calls for higher frequency, earlier and later service, and more service on Sundays.
- A few comments expressed concern over the difference in service start and end times among routes (i.e. that some routes would begin or end later than others)

The final service concept incorporates this feedback to the extent feasible, and balances a diverse set of priorities and preferences held by the public, stakeholders, and public agencies. The final service plan is presented in Chapter 6, Overview of Recommended Service Changes.

6 OVERVIEW OF RECOMMENDED SERVICE CHANGES

The Charlottesville region is a dynamic, vibrant urban area that has grown and changed over time. The region has a number of major institutions, including UVA and the UVA and Martha Jefferson Hospital systems, a diverse regional economy, and a growing population. Over time, the region's patterns of development and activity have shifted, and its transit system must adapt to these changes. To determine how services could be most effective, the CAT Transit Study evaluated a number of different service design possibilities, including substantially different models for organizing services, such as hub-and-spoke models for system design, demand-responsive service types, and different designs for individual fixed routes.

The recommended service changes consist of different types of service design and schedule changes designed to work together to build a stronger system:

Service Design

- Develop a service hierarchy, including Key Routes, Local Routes, and Lifeline Routes, with service standards for each route type
- Operate service consistently throughout the day
- Realign service to improve reliability and directness
- Consolidate duplicative services
- Expand service to new areas

Schedule

- Adjust service frequencies and spans to better match demand
- Adjust Saturday schedules and discontinue some poorly utilized routes on Saturdays

These changes are summarized below, and described on a route-by-route basis in Chapter 7. A map of recommended services is presented in Figure 53.

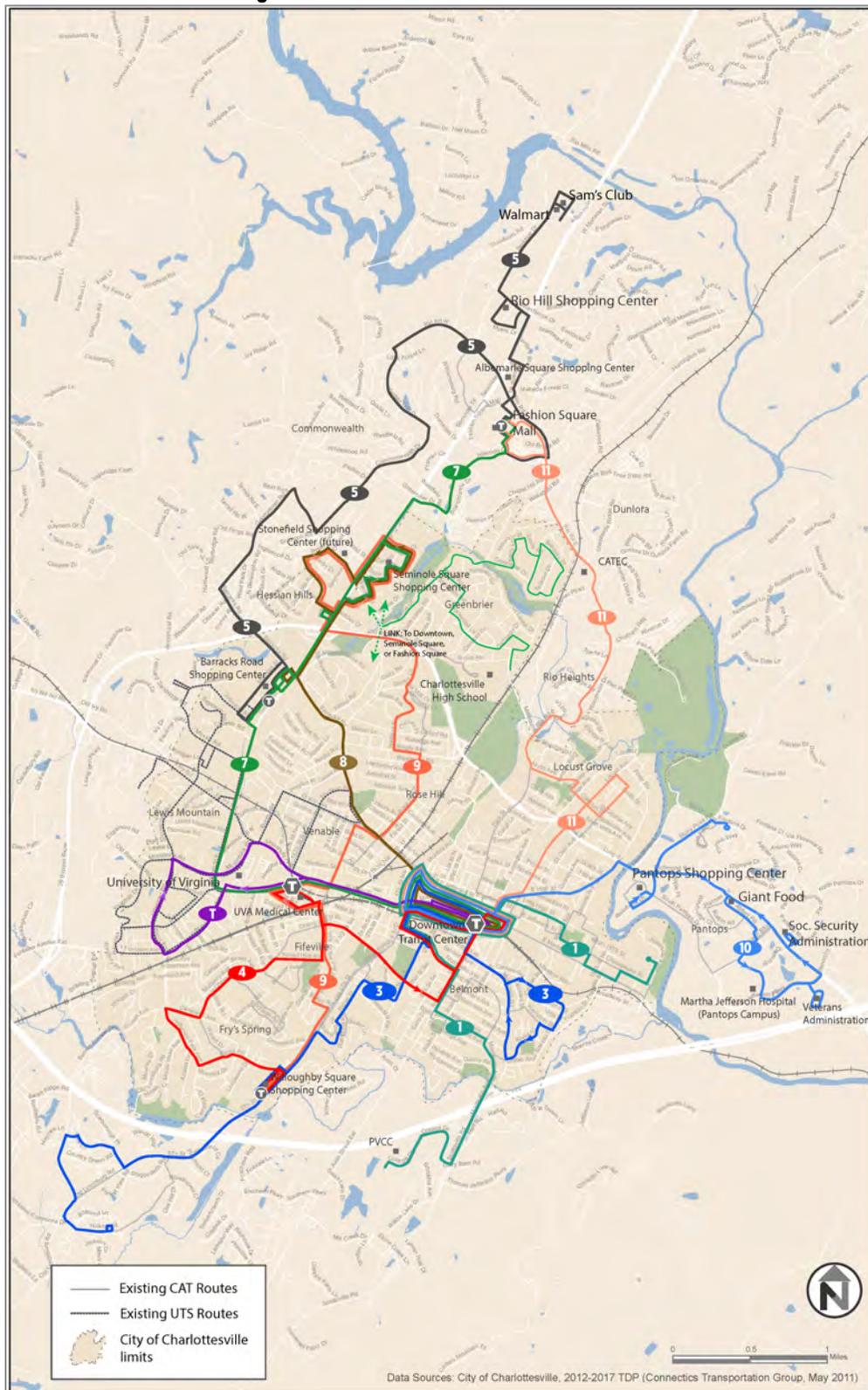
SERVICE DESIGN CHANGES

Develop a Service Hierarchy

Today, CAT matches services to demand on an as-needed basis, responding to service needs on a case by case basis. However, to improve system clarity, and to help CAT target

CHARLOTTESVILLE TRANSIT STUDY | Final Report
 Charlottesville Area Transit

Figure 53 Recommended CAT Routes



its investments in future service, CAT will classify its routes as one of three types: Key Routes, Local Routes, and Lifeline Routes.² More detail on each type is provided below.

Key Routes

In cities with rapid transit and light rail lines, the rail lines typically form the backbone of those systems, with other services designed around the rail lines. Charlottesville does not have a rail system around which to plan services, but it does have two key routes—the Free Trolley and Route 7—that can form the high-frequency “backbone” of the CAT system. These routes operate along primary arterials and offer simple, straight, and direct service. Key corridors are targeted for passenger amenities, service enhancements, intersection improvements, and any other improvements as may be identified. To be considered a Key Route, a route must meet the following criteria:

- Have a frequency of 15 minutes or better, and/or
- Average at least 30 passengers per hour, and/or
- Average daily weekday ridership is 1,500 or greater

As part of the development of a service hierarchy for CAT’s services, Route 7 Fashion Square/Barracks Road and the UVA/Downtown Free Trolley will be designated as Key Routes.

Local Routes

Local routes comprise the majority of CAT's routes, and provide service to Charlottesville and Albemarle County's commercial areas, neighborhoods, and other destinations. These routes operate in densely developed areas where demand for transit service is relatively strong, but do not support the high frequency service provided by Key Routes. Local Routes will include:

- Route 1 Market Street/Belmont
- Route 3 Belmont/5th Street
- Route 4 Fry’s Spring/Fifeville
- Route 5 Walmart/Barracks Road
- Route 8 Stonefield/Barracks Road
- Route 9 Rose Hill/UVA Med/Fifeville
- Route 10 Pantops/High Street

Lifeline Routes

Lifeline Routes are provided in limited areas where there are demonstrably high levels of special need – for example, very high proportions of elderly residents, low income residents, or households without automobiles. These are fixed routes that do not meet the standards set for the local service network but that are maintained to provide a limited amount of service to meet critical needs. Lifeline Routes within the CAT system will include:

- Route 11 Rio Road/Locust Grove

² Additionally, two service types are included in CAT’s service hierarchy but are not currently proposed for implementation: Express/Commuter Routes, and Flex Service (a type of demand-responsive service). These service types were considered during the Transit Study and ultimately not recommended for short-term changes, but could be considered for future implementation.

Establish Service Standards

CAT strives to provide quality transit service in a cost-effective manner that is consistent and equitable. To do so, CAT must make a number of competing decisions on where demand is greatest, on which types of service would work best and be most appropriate, and where limited resources can and should be used.

To provide a basis to respond to service requests and guide future investment decisions, the Transit Study team has developed a set of service design guidelines and service standards that will be used to:

- Design service
- Determine appropriate service levels, including frequency, span of service, and vehicle type
- Measure and establish minimum levels of service performance

The service guidelines will be applied to the entire set of services provided by CAT and are intended to bring clarity and consistency to the process of continually adjusting and improving transit services to meet varied and changing customer needs.

In most cases, the service guidelines define minimum thresholds that must be met, and most services would exceed the minimum thresholds. However, the guidelines are also designed to—within limits—provide flexibility to respond to varied customer needs and community expectation in an accountable, equitable, and efficient manner. Service guidelines have been established for each service type within the hierarchy described in the previous section (Key Routes, Local Routes, Lifeline Routes). CAT’s detailed Service Guidelines are provided within a separate document.

Operate Service Consistently Throughout the Day

Currently, four routes operate only during the evening: Route 21, 22, 23, and 24. Two of these routes exactly duplicate their complementary daytime route (Route 21/Route 3, and Route 23/Route 1B), while the others provide a wholly different alignment in a similar service area (Route 22 complements Route 4 and Route 6 without covering either in their entirety, and Route 24 covers only a portion of Route 10). This is confusing, requires riders to learn to use multiple routes to navigate the system, and is a deterrent to using the system. In the recommended service plan, all routes will operate consistently throughout the day with the same branding/route number and a consistent alignment.

Improve Reliability and Directness

In many cases, changes can be made to make service simpler, as well as more direct, which will make service faster. Major changes include:

- All routes: Many of CAT's bus stops are placed very close together, and in some cases, only a block or less apart. This leads to service that is slower than necessary and reduces transit's attractiveness. Stops should be consolidated to increase operating speed. The Service Guidelines provide direction on the appropriate stop spacing for routes operating in high and low density areas.
- Route 1A: Route 1A will be straightened and revised to operate bi-directionally and would operate as Route 1.

- **Route 1B:** Route 1B will be straightened to eliminate backtracking in Belmont and would operate as Route 1.
- **Route 2B and Route 3:** Route 2B and Route 3 will be combined. Route 3's alignment in Belmont will be shortened to improve directness, and the combination of Route 3 and 2B will provide direct access to the grocery store at Willoughby Square Shopping Center. The combined route will operate as Route 3.
- **Route 4:** Route 4 will be made substantially simpler and more direct, and will operate bi-directionally along a consistent alignment all day.
- **Route 9:** Route 9 will be substantially straightened to operate more directly, eliminating a large bi-directional loop through the Venable neighborhood, and will be extended to serve Willoughby Square Shopping Center rather than downtown Charlottesville. (Connections to downtown can be made via either Route 7 or the Free Trolley, which operate very frequently.) At its northern end, Route 9 will be extended to serve Seminole Square Shopping Center via Rose Hill. Service to Charlottesville High School generates almost no ridership and will be served instead by the Greenbrier LINK.
- **Route 10:** Route 10 will be refined to provide service somewhat more directly to the highest demand areas of Pantops.

Consolidate Duplicative Services

In a number of cases, multiple routes serve similar areas, and compete with each other more than they complement each other. The consolidation of duplicative routes will both improve service and reduce operating costs:

- **Route 2A:** The alignment currently covered by Route 2A in Locust Grove will be covered by new Route 11.
- **Route 6:** The alignment currently covered by Route 6 in the area south of downtown Charlottesville will be covered by a combination of Route 3, Route 9, and Route 4.
- **Route 9:** Route 9 provides service directly to downtown Charlottesville, which is also provided by numerous other routes. Route 9 will instead focus on providing cross-town service, and service to downtown would be provided by other routes such as Route 7, Route 8, and the Free Trolley.

Expand Service to New Areas

The market analysis that was conducted at the beginning of the study indicated that there are some areas where there is demand for transit that is not well served. To improve service to these areas:

- Service to Willoughby Square Shopping Center will be greatly enhanced by providing service via Route 3, Route 4, and Route 9.
- Route 3 (covering part of former Route 2B) will be extended to serve the Villas at Southern Ridge/Sherwood Manor.
- Route 4 will be extended to Willoughby Square Shopping Center.
- Route 8 will be extended to provide service to the new Stonefield Shopping Center.
- Route 9 will be extended on both ends to serve Seminole Square Shopping Center and Willoughby Square Shopping Center.

- New route 11 will be established to provide a direct link between downtown Charlottesville, CATEC, and Fashion Square Mall, and to provide more direct service coverage in Locust Grove (currently served by Route 2A, which is very circuitous).
 - A limited evening service will be provided to cater to students enrolled at evening CATEC classes on a 'pilot' basis while the level of demand is assessed.

Strengthen CAT's Unique Role in the Community

Transit services within the Charlottesville region are provided by three separate agencies: CAT, University Transit Service (UTS), and JAUNT, Inc. These agencies often collaborate with one another to improve services in the region, but ultimately each agency has a distinct set of service responsibilities and goals. Currently, some of the services provided by the agencies overlap and compete with one another. For example, the Venable neighborhood is served by both UTS and CAT. To reduce the amount of duplicative service, CAT's objectives within the regional family of services would be defined to more closely reflect its unique role; the typology of services would be as follows:

- CAT provides local and regional fixed-route transit service to the general public within the Charlottesville area
- UTS provides service to University of Virginia affiliates and the general public in the vicinity of the University
- JAUNT, Inc. provides demand-responsive service to older adults, persons with disabilities, and the general public in the Charlottesville region

While many of CAT's services will continue to operate to and from UVA as one of the region's major institutions and employment destinations, UTS would continue to provide strong local connections within the neighborhoods immediately surrounding UVA to allow CAT to focus on providing longer-distance services.

SCHEDULE CHANGES

Adjust Service Frequencies and Spans to Match Demand

A key goal of the Transit Study was to determine how service frequency could be increased. The new CAT Service Guidelines provide standards for minimum service frequency and span by route type. Additionally, service hours for each route are designed to provide a balance between the need to provide service hours across the day with the need to provide productive service.

As described previously, in the revised service plan, any evening service provided will be provided using the same alignment and route number as during the daytime. The net effect of this change will be that evening service will require more service resources to operate for each route, because night routes would not be shortened or combined with other routes during the evening. As a result, to maintain a close to cost-neutral service plan, service in some areas would end earlier in the evening; in exchange for somewhat shorter hours on some routes, service would be more consistent and easy to use, and geographic service coverage in the evenings would be greater.

Adjust Saturday Schedules

Currently, all routes operate on weekdays and Saturdays, and most (all except Routes 3, 4, 6, and 8) operate with similar schedules on Saturdays as on weekdays. However, Saturday ridership is much lower than weekday ridership on all but the three most heavily patronized routes (Free Trolley, Route 7 and Route 5). In total, Saturday service carries just under 55% of the weekday ridership.

To reflect the difference in productivity between weekdays and Saturdays, while maintaining a level of flexibility for riders, Saturday service will continue to be provided on most routes. However, the hours of service will be condensed, since productivity is generally much lower early and late in the day.

In addition, due to very low Saturday ridership on some routes, Saturday service will be discontinued on three routes:

- Route 1A (53 Saturday riders)
- Route 1B (25 Saturday riders)
- Route 2A (43 Saturday riders)

7 PROPOSED SERVICE CHANGES BY ROUTE

The following section provides a description of service changes recommended for each CAT route. Figure 3 provides an overview of the correspondence between existing CAT routes and future CAT routes. For each route, the “peak” is the three-hour commute period of heaviest travel during the morning and afternoon; the peak span varies by route, but is generally 6:30 AM to 9:30 AM and 3:00 PM to 6:00 PM.

Figure 54 Conversion between Existing Routes and Future Routes

Current Route	Future Route
Free Trolley	UVA/Downtown Free Trolley
Route 1A	Route 1 Market Street/Belmont
Route 1B	Route 1 Market Street/Belmont, Or Route 3 Belmont/5 th Street
Route 2A	Route 11 Rio Road/Locust Grove
Route 2B	Route 3 Belmont/Fry's Spring
Route 3	Route 1 Market Street/Belmont, or Route 3 Belmont/5 th Street
Route 4	Route 4 Fry's Spring/Fifeville
Route 5	Route 5 Walmart/Barracks Road
Route 6	Route 3 Belmont/Fry's Spring or Route 4 Fry's Spring/Fifeville
Route 7	Route 7 Fashion Square/Barracks Road
Route 8	Route 8 Stonefield/Barracks Road
Route 9	Route 9, Route 8 Stonefield/Barracks Road, or UTS U-Loop
Route 10	Route 10 Pantops/High Street
Route 21	Route 3 Belmont/Fry's Spring
Route 22	Route 3 Belmont/Fry's Spring, Route 4 Fry's Spring/Fifeville Route 4 or Route 9, Route 8 Stonefield/Barracks Road
Route 23	Route 1 Market Street/Belmont
Route 24	Route 10 Pantops/High Street
LINK	Greenbrier LINK

ROUTE 1A

Route 1A carries relatively low ridership, but provides service within a unique area of Charlottesville with a need for transit service. A major problem with the existing service is that it is indirect and circuitous, and requires all riders to either walk additional distance or travel out of direction to provide only a small amount of additional coverage. Changes include:

- Service will be redesigned to operate along a straighter and more direct alignment primarily via Chesapeake Avenue and extended to Riverside Avenue. Service would operate bi-directionally (except in downtown). The route will make a jog to provide service to the senior residential facility on Market Street.
- To respond to a desire to provide evening service to PVCC, weekday evening service on Route 1 will be extended to end at 9:30 PM.
- Route 1A and Route 1B will be branded as a single route, Route 1 Market Street/Belmont.
- Weekday service will begin at 7:30 AM due to very low ridership on the first trip of the day (5 riders).
- Saturday service will be discontinued due to very low ridership (53 riders).
- The route's alignment through downtown Charlottesville will be streamlined. Outbound service on former Route 1A will begin on Market Street, and riders using Route 1A outbound would board on Market Street.

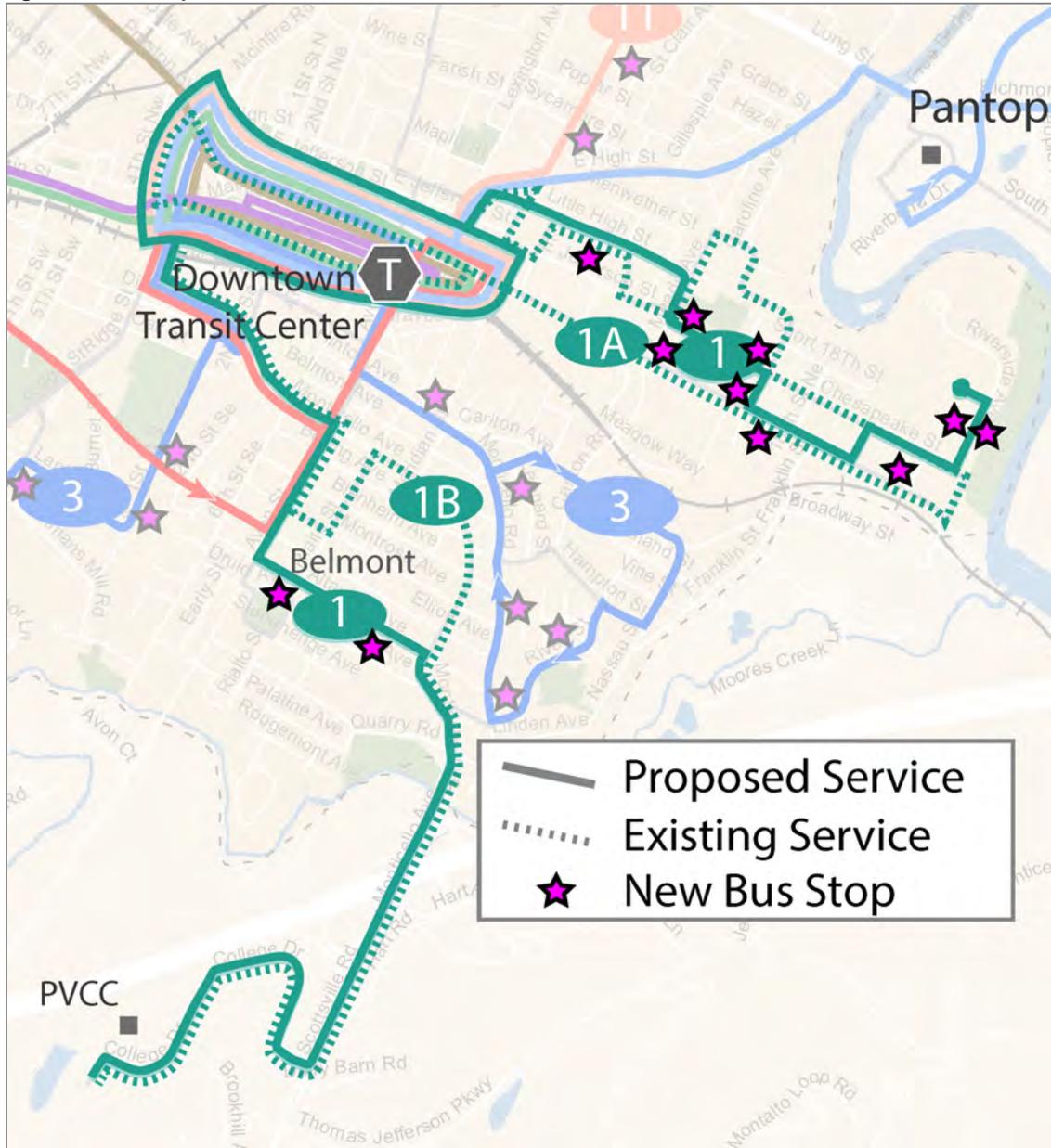
Figure 55 Route 1A Before and After Service Statistics

	Existing Route 1A	Proposed Route 1 (Former 1A portion)
Span of Service		
Weekdays	6:20 AM - 6:20 PM	7:30 AM – 9:30 PM
Saturdays	6:20 AM - 6:20 PM	--
Sundays	--	--
Frequency		
Weekdays - Peak	60	60
Weekdays - Off-Peak	60	60
Saturdays	60	--
Sundays	--	--

Note: Span of Service times refer to departure times of first and last daily trip from Downtown Transit Station.

CHARLOTTESVILLE TRANSIT STUDY | Comparison of Route Changes
Charlottesville Area Transit

Figure 56 Proposed Route 1



ROUTE 1B

Route 1B provides service between PVCC and downtown Charlottesville via the Belmont neighborhood. Service is circuitous through Belmont, forcing riders traveling to or from the outer end of the route to travel out of direction, to serve only a small minority of riders. Night service is provided by Route 23. Changes would include:

- Route 1B and Route 1A will be branded as a single route: Route 1 Market Street/Belmont.
- Although ridership after 7:00 PM is low, to respond to a desire to provide evening service to PVCC, weekday evening service on Route 1 will be extended to end at 9:30 PM.
- Service will be streamlined to operate more directly via Altavista Avenue to provide coverage within Belmont in conjunction with Route 3 Belmont/5th Street.
- Saturday service will be discontinued due to very low ridership (35 daily riders all day, including ridership on Route 23).
- The route’s alignment through downtown Charlottesville will be streamlined; inbound service on Route 1B would end on Market Street, and riders using Route 1B inbound would alight on Market Street.

Figure 57 Route 1B Before and After Service Statistics

	Existing Route 1B	Proposed Route 1
Span of Service		
Weekdays	6:45 AM - 10:45 PM*	7:00 AM – 9:30 PM
Saturdays	6:45 AM - 10:45 PM*	--
Sundays	--	--
Frequency		
Weekdays - Peak	60	60
Weekdays - Off-Peak	60	60
Saturdays	60	--
Sundays	--	--

Note: Span of Service times refer to departure times of first and last daily trip from Downtown Transit Station.

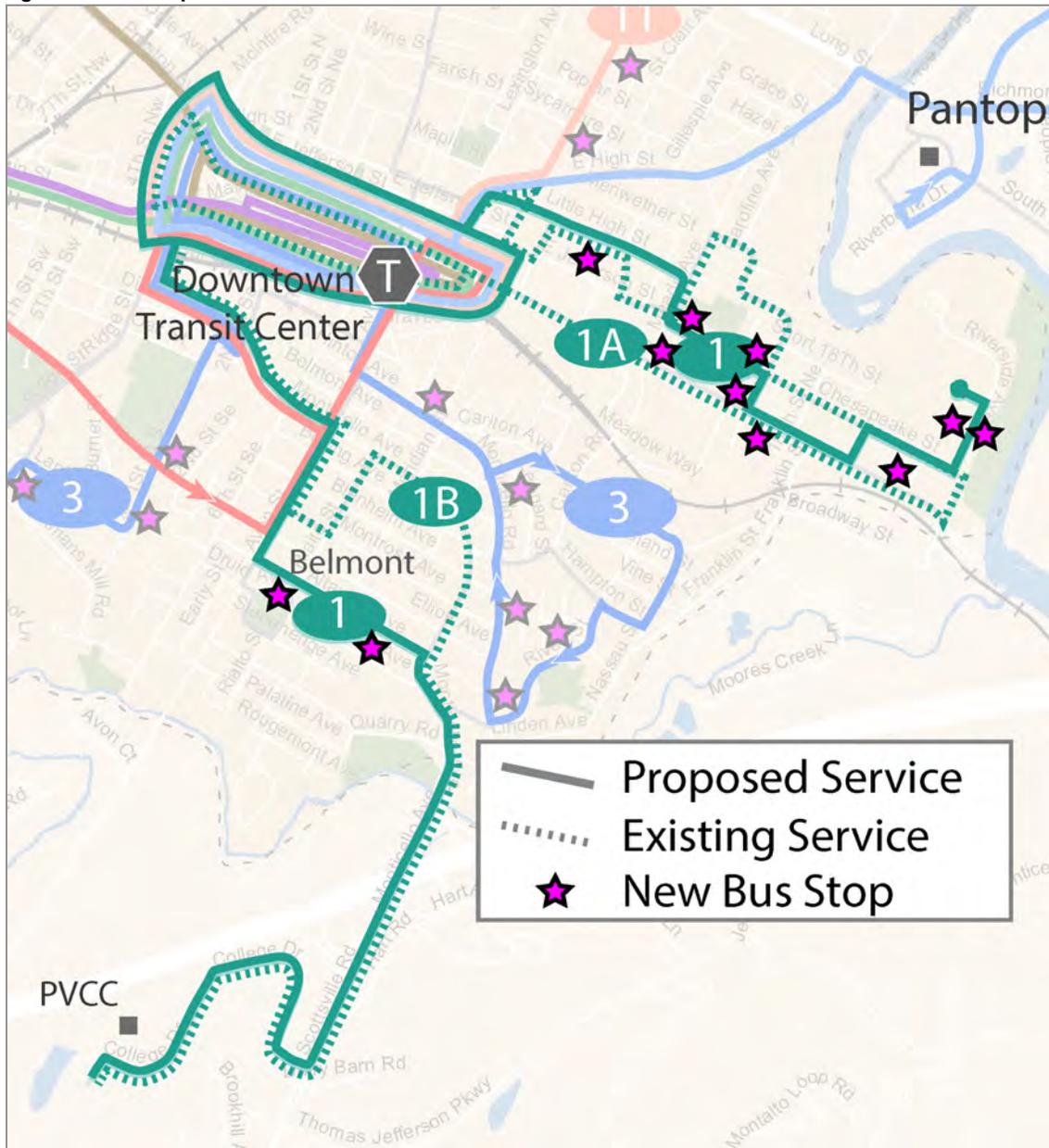
*Note: Evening span of service refers to Route 23

Related Changes

Route 3 will also be modified to provide coverage through the northern portion of Belmont and would be combined with Route 2B; the combined route will operate as Route 3 Belmont/5th Street.

CHARLOTTESVILLE TRANSIT STUDY | Comparison of Route Changes
Charlottesville Area Transit

Figure 58 Proposed Route 1



ROUTE 2A

Route 2A carries only 68 riders per weekday and 43 riders per Saturday, which is extremely low. Most of these riders board in the northernmost portion of the route. To improve productivity and efficiency, the Locust Grove area would be served by Route 11 Rio Road/Locust Grove, which would also connect to Rio Road and CATEC. No Saturday service would be provided. (See Route 11 section for additional information.)

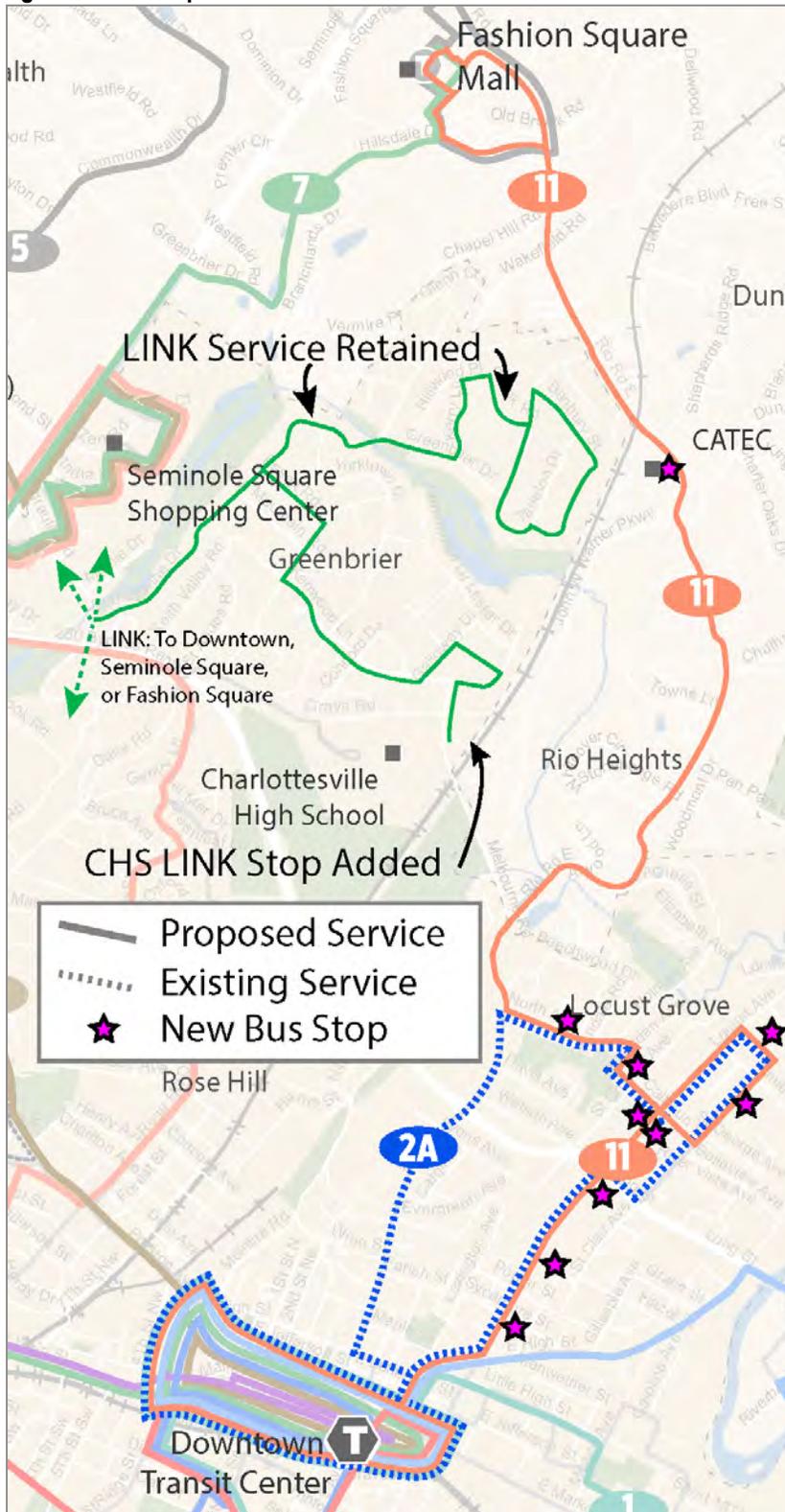
Figure 59 Route 2A Before and After Statistics

	Existing Route 2A	Proposed Route 11
Span of Service		
Weekdays	6:20 AM - 6:20 PM	7:00 AM - 6:00 PM (9:15PM)*
Saturdays	6:20 AM - 6:20 PM	--
Sundays	--	--
Frequency		
Weekdays - Peak	60	60
Weekdays - Off-Peak	60	60
Saturdays	60	--
Sundays	--	--

Note: Span of Service times refer to departure times of first and last daily trip from Downtown Transit Station.

*A single short-turn trip of Route 11 would depart CATEC at approximately 9:15 PM in order to serve late-night classes; no northbound service would be provided on this trip except for service between CATEC and Fashion Square Mall.

Figure 60 Proposed Route 11



Note: Additional bus stops along Rio Road are planned but exact locations will be determined during the implementation process.

ROUTE 2B

Route 2B carries fairly strong ridership, particularly at its outer end. It is currently interlined with Route 2A, but since Route 2A would be discontinued, and because Route 2B takes less than an hour to operate, Route 2B would be combined with Route 3, which provides service within Belmont. Other changes include:

- Service will operate as Route 3 Belmont/5th Street.
- Service at the route’s outer end will be re-aligned to provide service to the Villas at Southern Ridge and Sherwood Manor.
- Service in the inner portion of Route 2B will be re-aligned to cover a portion of Route 6’s alignment and would operate via Lankford Avenue and 1st Street.
- Route 3's alignment through downtown Charlottesville will be streamlined. Westbound service will stop at Market Street rather than circulate to serve the Downtown Transit Station. Riders using Route 3 inbound from Southwood would alight on Market Street, and riders boarding for Belmont would board on Market Street. Otherwise, riders would board and alight at Downtown Transit Station.
- Service on weekdays will begin at 6:30 AM and end at 10:00 PM, which is an expansion of service hours for Route 2B riders.
- Weekday peak period service will operate every 30 minutes.
- Service on Saturdays will begin at 7:00 AM and end at 9:00 PM.

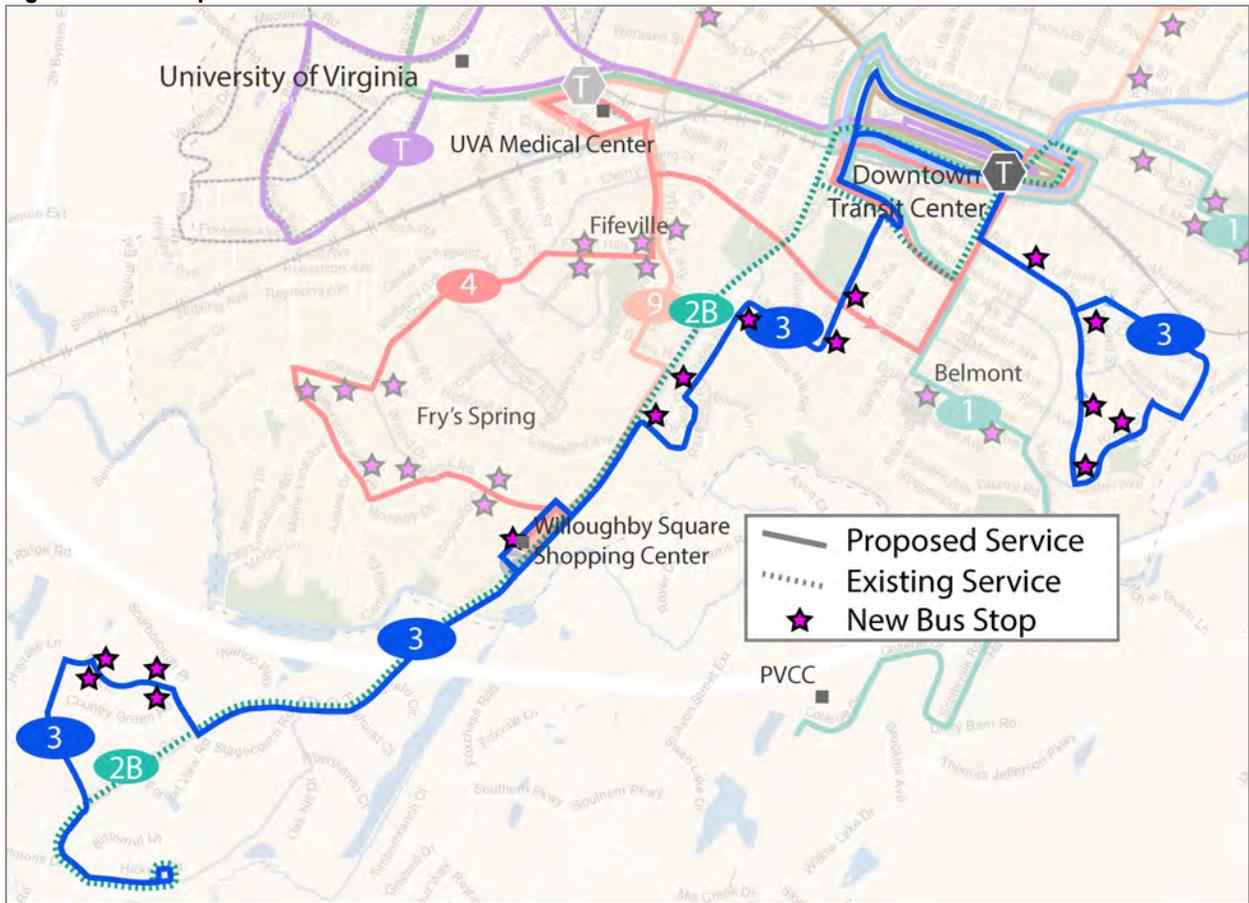
Figure 61 Route 2B Before and After Statistics

	Existing Route 2B	Proposed Route 3
Span of Service		
Weekdays	6:45 AM - 5:45 PM	6:30 AM – 10:00 PM
Saturdays	6:45 AM - 5:45 PM	7:00 PM – 9:00 PM
Sundays	--	--
Frequency		
Weekdays - Peak	60	30
Weekdays - Off-Peak	60	60
Saturdays	60	60
Sundays	--	--

Note: Span of Service times refer to departure times of first and last daily trip from Downtown Transit Station.

CHARLOTTESVILLE TRANSIT STUDY | Comparison of Route Changes
Charlottesville Area Transit

Figure 62 Proposed Route 3



ROUTE 3

Route 3 provides service within Belmont. The route is generally productive, but provides service that is extremely circuitous. As a result, service is very slow and requires riders to travel out of direction to reach their destination. Route 3 will be reconfigured to operate much more directly through Belmont, and the route would be combined with Route 2B, which will provide a one-seat ride between Belmont and shopping opportunities at Willoughby Square Shopping Center. The route will operate as Route 3 Belmont/5th Street. Route 1 Market Street/Belmont Street will provide service within the southern Belmont area.

Other changes include:

- Service on weekdays will begin at 6:30 AM and end earlier at 10:00 PM (current Route 21 service carries only two riders after 10:00 PM).
- Service on Saturdays will be condensed to begin at 7:30 AM and end at 10:00 PM due to low ridership.
- Route 3's alignment through downtown Charlottesville will be streamlined. Westbound service on Route 3 will stop at Market Street rather than circulate to serve Downtown Transit Station. Riders using Route 3 inbound from Southwood will alight on Market Street, and riders boarding for Belmont will also board on Market Street. Otherwise, riders will board and alight at Downtown Transit Station.

Figure 63 Route 3 Before and After Statistics

	Existing Route 3	Proposed Route 3
Span of Service		
Weekdays	6:20 AM – 11:15 PM*	6:30 AM – 10:00 PM
Saturdays	6:20 AM – 11:15 PM*	7:30 PM – 10:00 PM
Sundays	--	--
Frequency		
Weekdays - Peak	30	30
Weekdays - Off-Peak	60	60
Saturdays	60	60
Sundays	--	--

Note: Span of Service times refer to departure times of first and last daily trip from Downtown Transit Station.

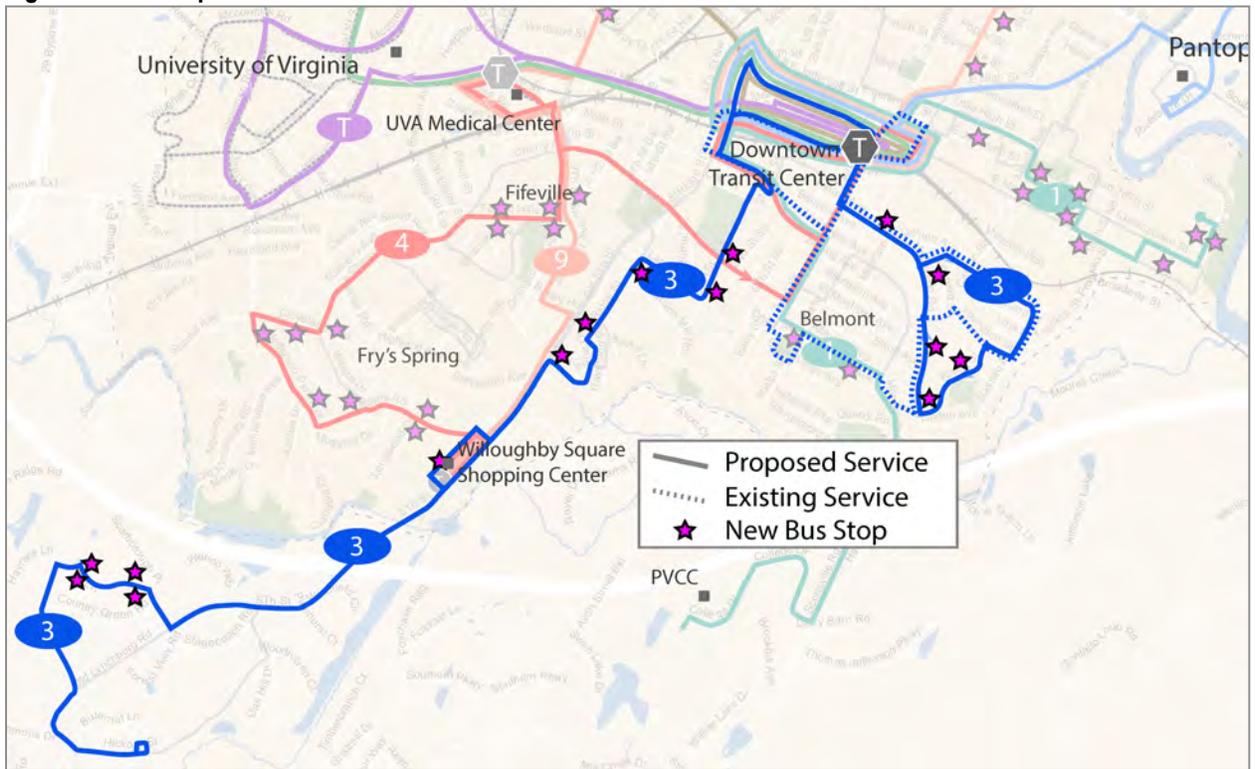
**Evening span of service refers to Route 21. Note that service on Route 21 operates every 30 minutes.

Related Changes

Route 1B will also be re-aligned to provide coverage through the southern portion of Belmont and re-designated as Route 1 Market Street/Belmont.

CHARLOTTESVILLE TRANSIT STUDY | Final Report
Charlottesville Area Transit

Figure 64 Proposed Route 3



ROUTE 4

Route 4 is extremely circuitous, providing indirect and confusing service in order to provide additional coverage that is only blocks apart. As a result, Route 4 competes with walking rather than with driving, which deters all but the most dedicated riders. Although some riders prefer front-door service, most comments indicated a clear preference for straighter and more direct service. Route 4 will be straightened and made more direct, and will be a Local route within CAT's service hierarchy. Changes include:

- Route 4 will operate almost entirely bi-directionally except in the vicinity of downtown Charlottesville. As a result, service will be much faster for riders, and operate directly to its major destinations. Service will be provided to both downtown Charlottesville and the UVA Hospital hub. Night service will operate consistently as Route 4, and will provide much greater service coverage than current Route 22.
- Service will operate via Forest Hills Avenue and 9th Street to respond to requests for service to this neighborhood.
- Service would operate via Avon Street Extended in both directions to respond to requests for later evening service in Belmont.
- Service along the Shamrock Road loop will be discontinued; a total of four weekday riders and 2 Saturday riders will be further than one-third of a mile from service on Route 4 along Cherry Avenue.
- Saturday service will begin at 7:30 AM, as no ridership was recorded on the first trip, and will end slightly earlier at 10:30 PM to reflect low evening ridership.
- A portion of Route 4's alignment along 9th Street SW, Prospect Avenue and Bailey Road will also be covered by service on Route 9 Rose Hill/UVA Med/Fifeville (see Route 9 section for additional information).

Figure 65 Route 4 Before and After Service Statistics

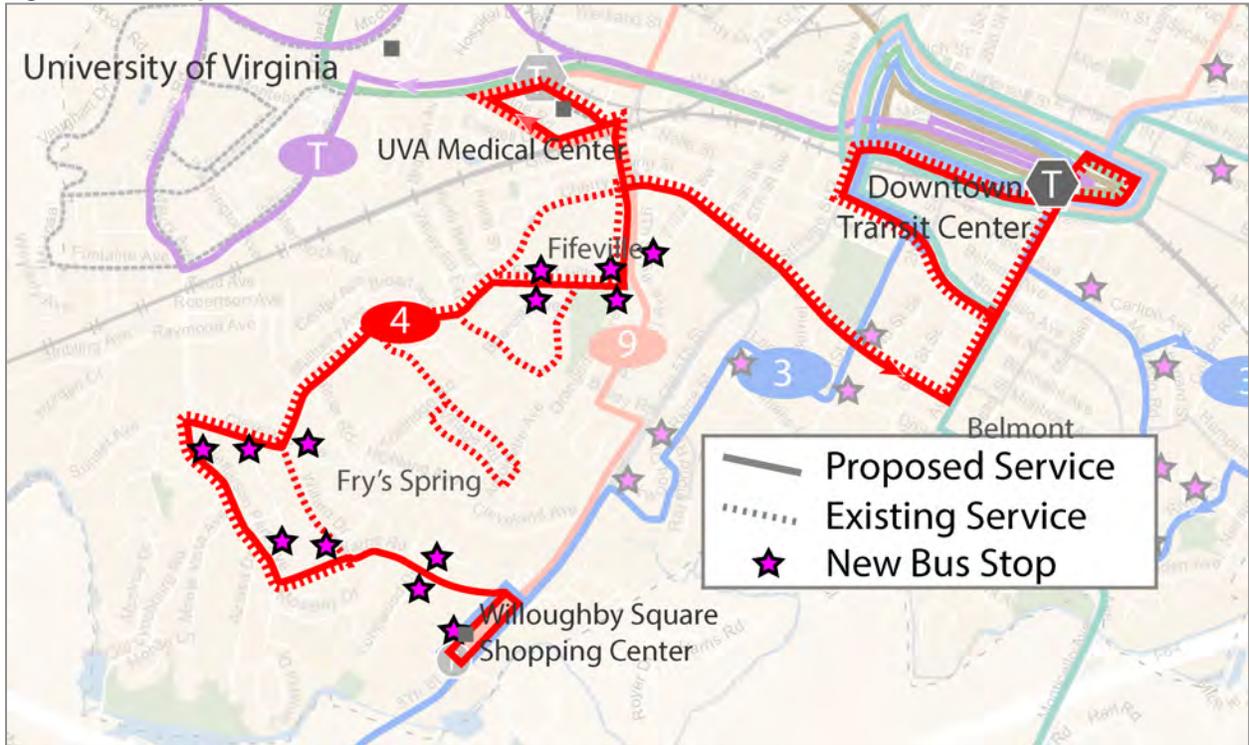
	Existing Route 4	Proposed Route 4	Proposed Route 9
Span of Service			
Weekdays	6:30 AM - 11:15 PM*	6:30 AM - 11:30 PM	7:00 AM – 8:00 PM
Saturdays	6:30 AM - 11:15 PM*	7:30 AM - 10:30 PM	8:00 AM – 8:00 PM
Sundays	--	--	--
Frequency			
Weekdays - Peak	30	30	30
Weekdays - Off-Peak	60*	60	60
Saturdays	60	60	60
Sundays	--	--	--

Note: Span of Service times refer to departure times of first and last daily trip from Downtown Transit Station for Route 4. *Evening span of service refers to Route 22. Note that service on Route 22 operates every 30 minutes. Route 22 only covers a portion of Route 4's service area.

Related Changes

Route 9 will be reconfigured to provide service between Willoughby Square Shopping Center and Seminole Square Shopping Center via part of Route 4's existing alignment. Route 6 will be discontinued.

Figure 66 Proposed Route 4



ROUTE 5

Route 5 provides service between Barracks Road Shopping Center and Walmart via residential neighborhoods in Albemarle County, and the route is heavily patronized. Service levels generally match very well with demand. This route will continue to operate as it currently does as Route 5 Walmart/Barracks Road.

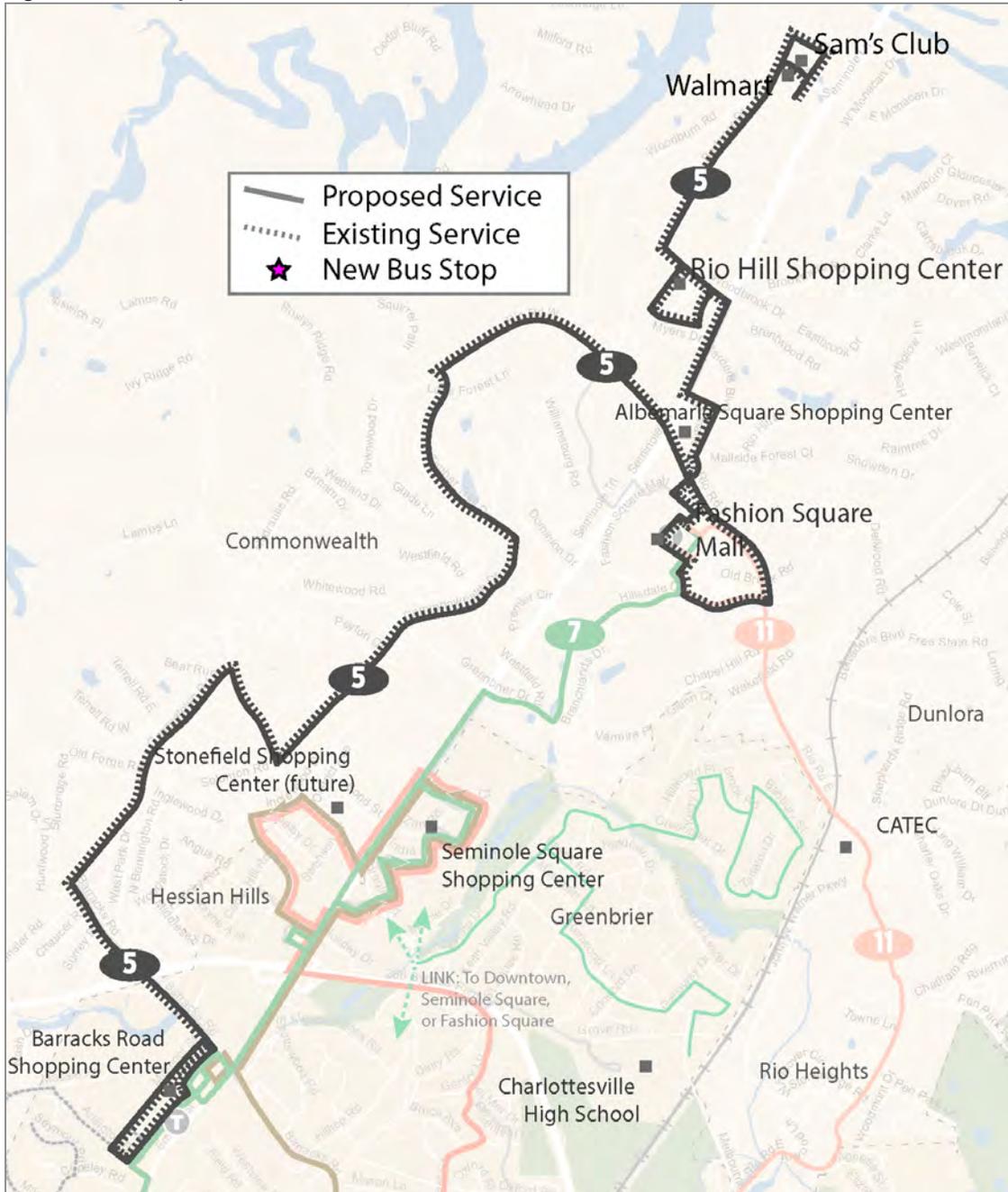
Figure 67 Route 5 Before and After Service Statistics

	Existing Route 5	Proposed Route 5
Span of Service		
Weekdays	6:15 AM - 10:15 PM	6:15 AM - 10:15 PM
Saturdays	6:15 AM - 10:15 PM	6:15 AM - 10:15 PM
Sundays	--	--
Frequency		
Weekdays - Peak	30	30
Weekdays - Off-Peak	30	30
Saturdays	30	30
Sundays	--	--

Note: Span of Service times refer to departure times of first and last daily trip from Walmart.

CHARLOTTESVILLE TRANSIT STUDY | Comparison of Route Changes
Charlottesville Area Transit

Figure 68 Proposed Route 5



ROUTE 6

Route 6 is primarily designed to serve neighborhoods south of downtown Charlottesville, but provides circuitous service in close proximity to other routes providing service in this area. Moreover, much of its eastern half operates in only one direction, which means that riders must either walk to or from their stop or travel a long distance out of direction to reach their destination.

Route 6 will be discontinued, and its resources used to provide stronger service on other routes operating in the same area. Route 6's area will be covered as follows:

- Along Brookwood Drive/Raymond Road, Ridge Street, Lankford Avenue, and South 1st Street, service will be provided by Route 3 Belmont/5th Street.
- Between UVA Hospital and Cherry Avenue, service will be provided by Route 4 Fifeville/Fry's Spring.

As a result of these changes, service within Route 6's coverage area will be much more consistent and easy to understand and use.

Figure 69 Route 6 Before and After Service Statistics

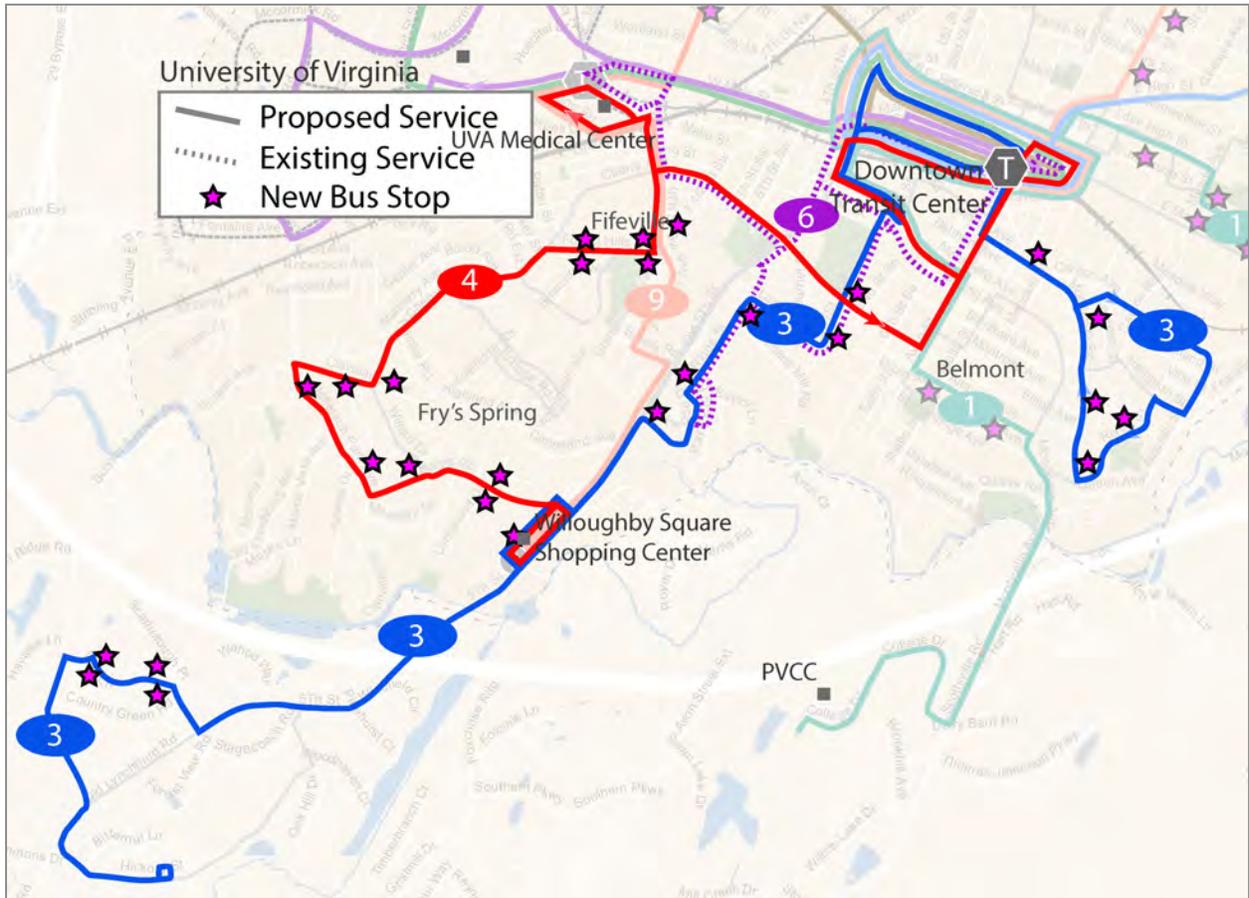
	Existing Route 6	Proposed Route 4	Proposed Route 3
Span of Service			
Weekdays	6:45 AM - 11:15 PM	6:30 AM - 11:30 PM	6:30 AM – 10:00 PM
Saturdays	6:45 AM - 11:15 PM	7:30 AM - 11:00 PM	7:00 AM – 9:00 PM
Sundays	--	--	--
Frequency			
Weekdays - Peak	30	30	30
Weekdays - Off-Peak	60*	60	60
Saturdays	60	60	60
Sundays	--	--	--

Note: Span of Service times refer to departure times of first and last daily trip from Downtown Transit Station.

*Evening span of service refers to Route 22. Note that service on Route 22 operates every 30 minutes. Route 22 only covers a portion of Route 6's service area.

CHARLOTTESVILLE TRANSIT STUDY | Comparison of Route Changes
Charlottesville Area Transit

Figure 70 Proposed Route 6



ROUTE 7

Route 7 provides service between downtown Charlottesville, UVA, Barracks Road Shopping Center, and Fashion Square Mall. Service levels generally match very well with demand. Route 7 will be reconfigured to operate via Jefferson Park Avenue and Emmet Street rather than via University Avenue (The Corner) avoid congestion and improve reliability, with service operating as Route 7 Fashion Square/Barracks Road.

Figure 71 Route 7 Before and After Service Statistics

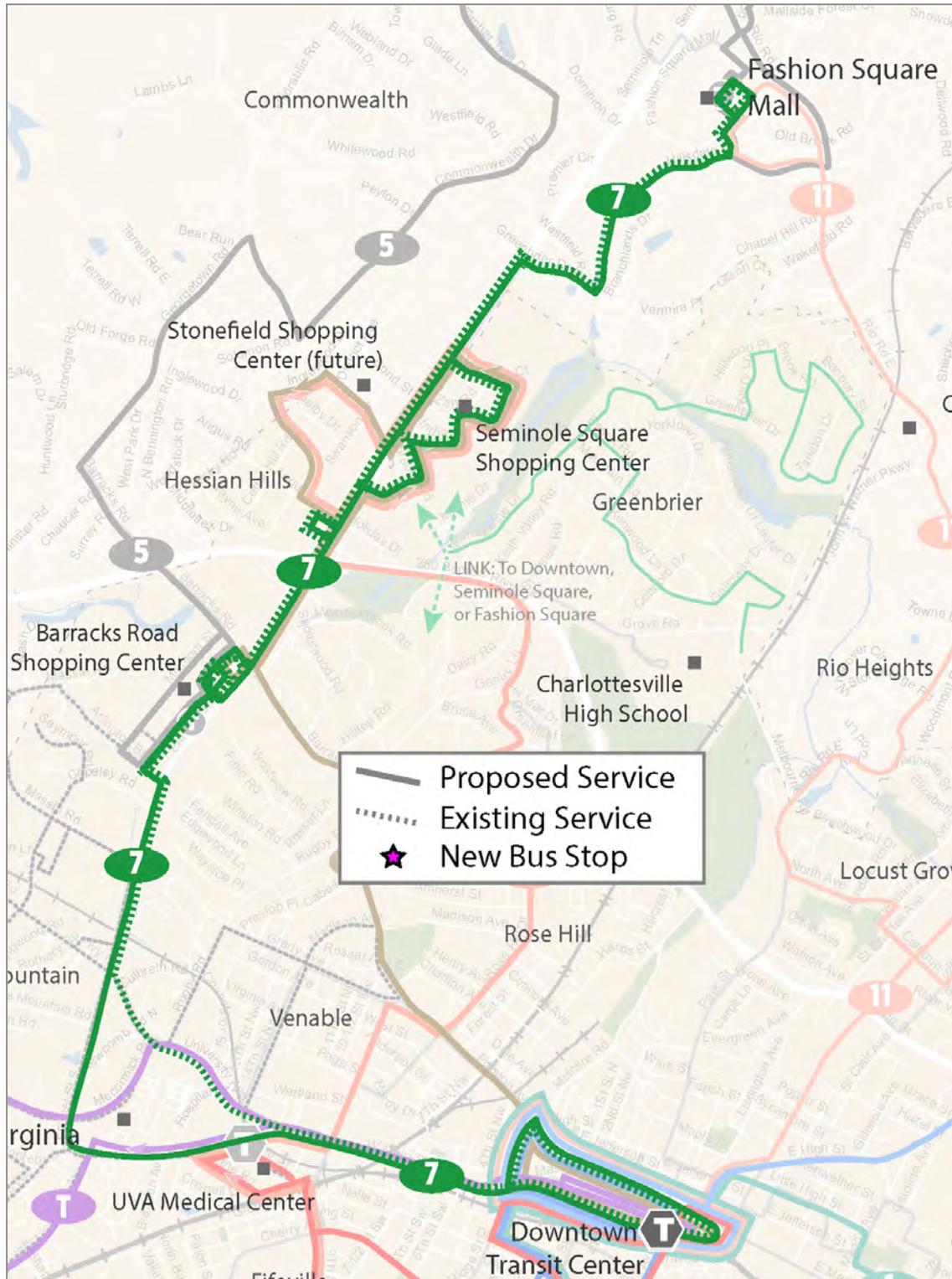
	Existing Route 7	Proposed Route 7
Span of Service		
Weekdays	6:30 AM - 11:45 PM	6:30 AM - 11:45 PM
Saturdays	6:30 AM - 11:45 PM	6:30 AM - 11:45 PM
Sundays	7:45 AM - 5:15 PM	7:45 AM - 5:15 PM
Frequency		
Weekdays - Peak	15*	15*
Weekdays - Off-Peak	30*	30*
Saturdays	15-30*	15-30*
Sundays	30	30

Note: Span of Service times refer to departure times of first and last daily trip from Downtown Transit Station.

*Prior to 6:45 PM, service operates every 15 minutes. After 6:45 PM, service operates every 30 minutes.

CHARLOTTESVILLE TRANSIT STUDY | Comparison of Route Changes
Charlottesville Area Transit

Figure 72 Proposed Route 7



ROUTE 8

Route 8 provides service between downtown Charlottesville and Barracks Road Shopping Center via Preston Avenue/Barracks Road. Route 8 generally performs well, and service levels are well-matched with demand, except during Saturday mornings when ridership is low. Changes include:

- Service will be extended to Stonefield Shopping Center and operated as Route 8 Stonefield/Barracks Road.
- Service on Saturdays will shift forward by two hours to reflect periods of highest demand. Service will begin at 8:30 AM due to very low ridership on early morning Saturday trips (4 total riders prior to 8:30 AM), and service will end at 7:30 PM to reflect higher evening demand.

Figure 73 Route 8 Before and After Service Statistics

	Existing Route 8	Proposed Route 8
Span of Service		
Weekdays	6:30 AM - 6:00 PM	6:30 AM - 6:00 PM
Saturdays	6:30 AM – 5:30 PM	8:30 AM – 7:30 PM
Sundays	--	--
Frequency		
Weekdays - Peak	30	30
Weekdays - Off-Peak	60	60
Saturdays	60	60
Sundays	--	--

Note: Span of Service times refer to departure times of first and last daily trip from Downtown Transit Station.

Figure 74 Proposed Route 8



ROUTE 9

Route 9 currently provides service between downtown Charlottesville and Charlottesville High School via the Venable neighborhood. The route is extremely circuitous, and although bi-directional service is provided along much of the route, it is provided by two interlocking one-way loops that make service very confusing. Additionally, much of Route 9’s service area generates very little ridership, largely because the route does not serve a strong anchor on its northern end. Charlottesville High School generates only 3 riders per day, which is extremely low, and ridership in the northern portion of Route 9’s service area is also weak. Service in the Venable neighborhood is more productive, but also duplicates service provided by UTS. To address these issues, Route 9 will be reconfigured as follows:

- Route 9 will operate between Willoughby Square Shopping Center, UVA Hospital, Rose Hill, and Seminole Square Shopping Center, which will provide strong anchors at both ends of the route. Service will be extended to Stonefield Shopping Center.
- Direct service to downtown Charlottesville will be discontinued, but frequent connections will be available on Route 7 Fashion Square/Barracks Road and the UVA/Downtown Free Trolley.
- Service to Charlottesville High School will be served instead by the Greenbrier LINK.
- Some riders may shift to UTS, which operates routes through the Venable neighborhood every 15 to 30 minutes.
- Weekday service will operate between 7:00 AM and 8:00 PM.
- Saturday service will operate between 8:00 AM and 8:00 PM.

Figure 75 Route 9 Before and After Service Statistics

	Existing Route 9	Proposed Route 9
Span of Service		
Weekdays	6:45 AM - 5:45 PM	7:00 AM – 8:00 PM
Saturdays	6:45 AM - 5:45 PM	8:00 AM – 8:00 PM
Sundays	--	--
Frequency		
Weekdays - Peak	60	30
Weekdays - Off-Peak	60	60
Saturdays	60	60
Sundays	--	--

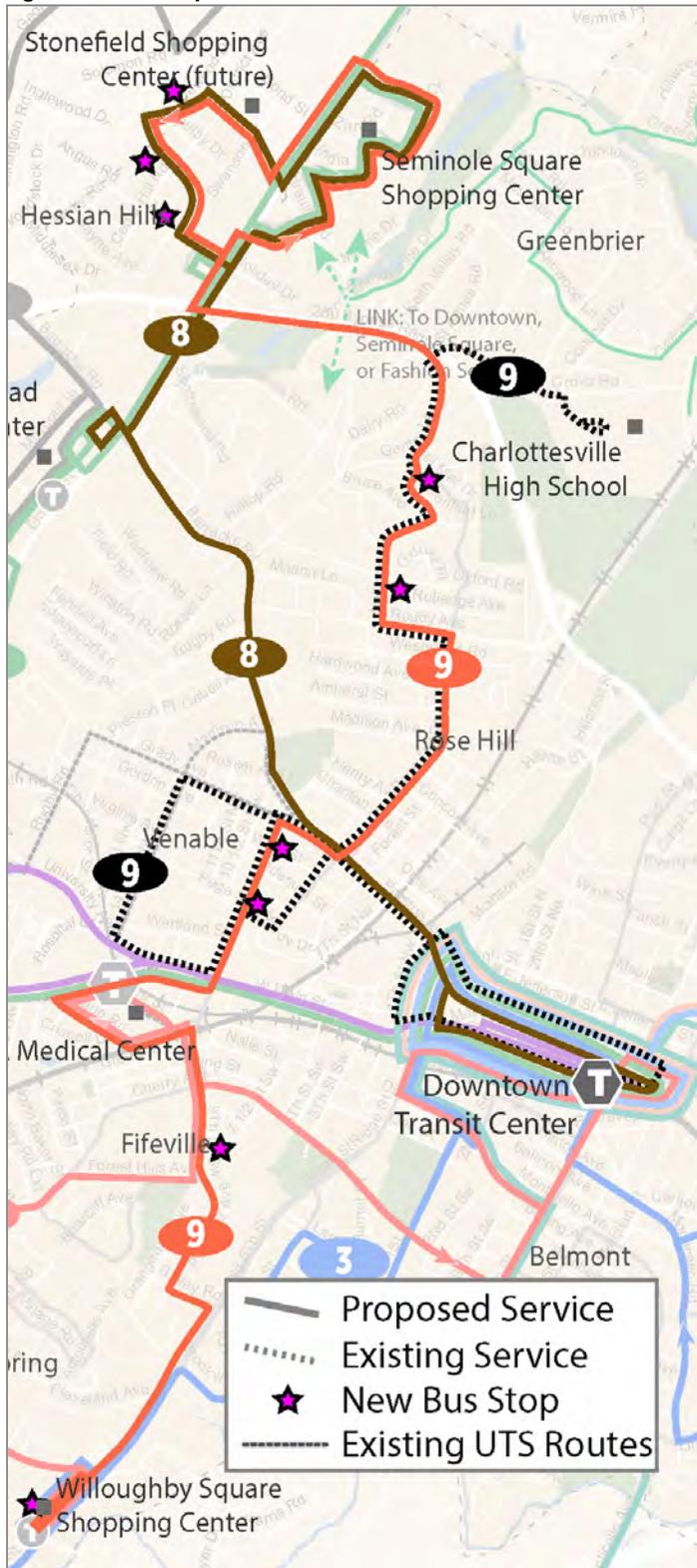
Note: Span of Service times refer to departure times of first and last daily trip from Downtown Transit Station.

Related Changes

Route 4 will be reconfigured to operate substantially more directly. Route 6, which also currently operates in the Fifeville neighborhood, will be discontinued.

CHARLOTTESVILLE TRANSIT STUDY | Comparison of Route Changes
 Charlottesville Area Transit

Figure 76 Proposed Route 9



ROUTE 10

Route 10 provides service between downtown Charlottesville and Pantops. Service is generally productive, but the route is extremely circuitous, which requires riders to travel long distances out of direction. Some of this is due to the road structure in Pantops, which has a large number of turn restrictions and limited pedestrian connections in areas where Route 10 operates, but also partly due to a desire to provide a broad level of service coverage to the area with a single route. Route 24 provides complementary evening service, but only operates to the Pantops Shopping Center and Avemore Apartments/Wilton Farms.

Route 10 will be reconfigured to provide a slightly more direct trip for many riders, although it will operate as a large loop through the Pantops area in order to respond to requests from the County and public to maintain service to most of the route's existing service destinations. Service will be reconfigured to access Avemore Apartments/Wilton Farms via Appian Way from the southeast, eliminating the need for all other riders to travel through a deviation to the area to reach downtown Charlottesville.

Additionally, the following changes will be made:

- Service will be provided to the front door of Giant Food in the outbound direction.
- Service will no longer operate along South Pantops Drive due to very low ridership (fewer than 5 riders per day) and to save travel time by operating more directly to the route's key ridership activity centers.
- Weekday service will end at 7:30 PM instead of 11:15 PM due to very low evening ridership (seven total riders on the last four trips after 8:15 PM).
- Saturday service will begin at 6:30 AM and end at 7:30 PM due to low Saturday evening ridership (approximately 15 total riders after 8:15 PM).

Service changes for Route 10 were developed in conjunction with Albemarle County representatives and may be subject to additional modification as needed.

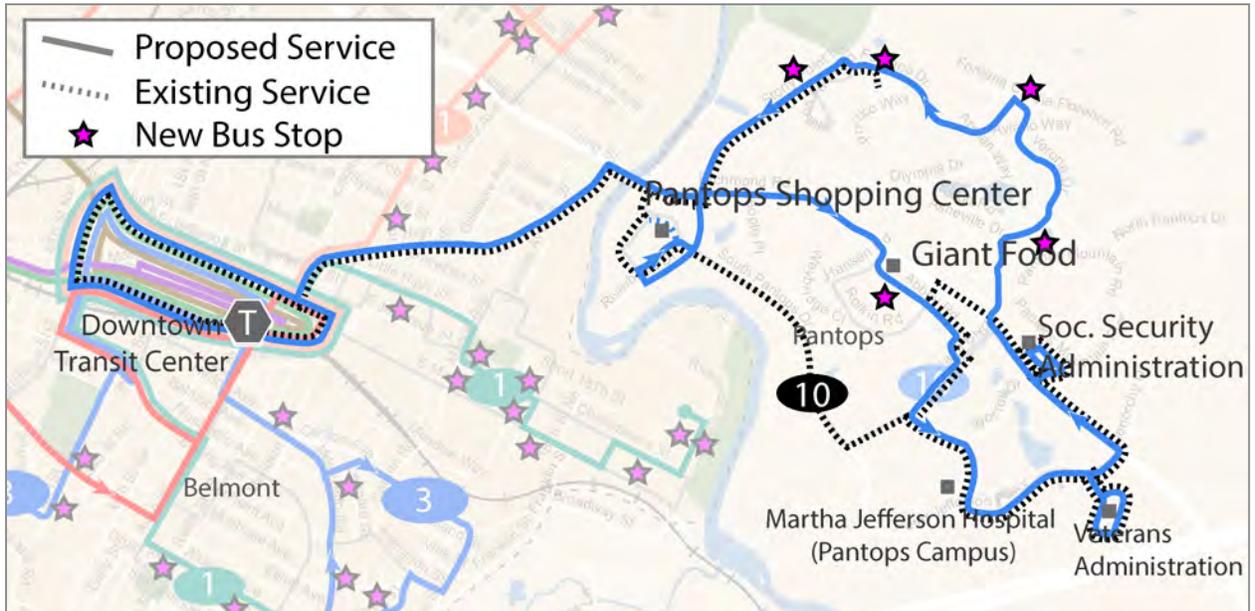
Figure 77 Route 10 Before and After Service Statistics

	Existing Route 10	Proposed Route 10
Span of Service		
Weekdays	6:15 AM - 11:15 PM*	6:30 AM – 7:30 PM
Saturdays	6:15 AM - 11:15 PM*	6:30 AM – 7:30 PM
Sundays	--	--
Frequency		
Weekdays - Peak	60	60
Weekdays - Off-Peak	60	60
Saturdays	60	60
Sundays	--	--

Note: Span of Service times refer to departure times of first and last daily trip from Downtown Transit Station.

*Evening span of service refers to Route 24. Note that service on Route 22 operates every 30 minutes. Route 24 only covers a portion of Route 10's service area.

Figure 78 Proposed Route 10



ROUTE 11 (NEW SERVICE)

Route 11 is a new route that will operate between downtown Charlottesville and Fashion Square Mall via areas north of downtown. There are two alignment options for this route; the first is the option advanced as the proposed alignment within the Final Recommendations, and the second would likely generate more ridership but would require additional funding and cover less of the City of Charlottesville:

- **Proposed Option Route 11: Downtown to Fashion Square Mall** via Locust Avenue, North Avenue and Rio Road (also serving CATEC). This alignment features a much stronger anchor destination (Fashion Square) and would generate an estimated 250-300 riders per day. See Figure 80. This alignment option would require the retention of service on the Greenbrier LINK, which would add approximately \$10,300 per year to the total cost of the plan. The Greenbrier LINK would be improved with enhanced marketing and would be extended to serve Charlottesville High School.
- **Alternative Route 11: Downtown to CATEC** via Locust Avenue, North Avenue, Melbourne Road, Greenbrier, and East Rio Road. This version of Route 11 would also replace the Greenbrier LINK, which provides demand-responsive service within Greenbrier, but serves only two riders per day. This alignment would generate an estimated 100-150 riders per day.³ See Figure 81.

Figure 79 Route 11 Service Statistics

Proposed Route 11	
Span of Service	
Weekdays	7:00 AM – 6:00 PM (9:15 PM)*
Saturdays	--
Sundays	--
Frequency	
Weekdays - Peak	60
Weekdays - Off-Peak	60
Saturdays	--
Sundays	--

Note: Span of Service times refer to departure times of first and last daily trip from Downtown Transit Station.

*A single short-turn trip of Route 11 would depart CATEC at approximately 9:15 PM in order to serve late-night classes; no northbound service would be provided on this trip except for service between CATEC and Fashion Square Mall.

³ Because Route 11 is a new route, ridership estimates are order of magnitude assessments. Estimates are based on population and employment density within a ¼ mile radius; major activity generators served; and existing ridership on Route 2A.

Figure 80 Proposed Route 11

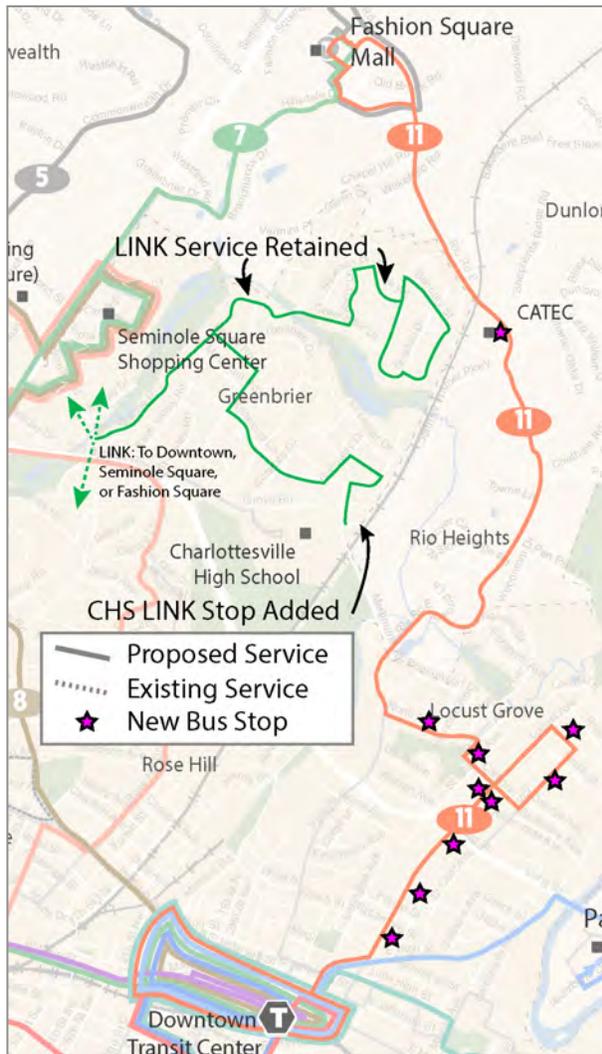
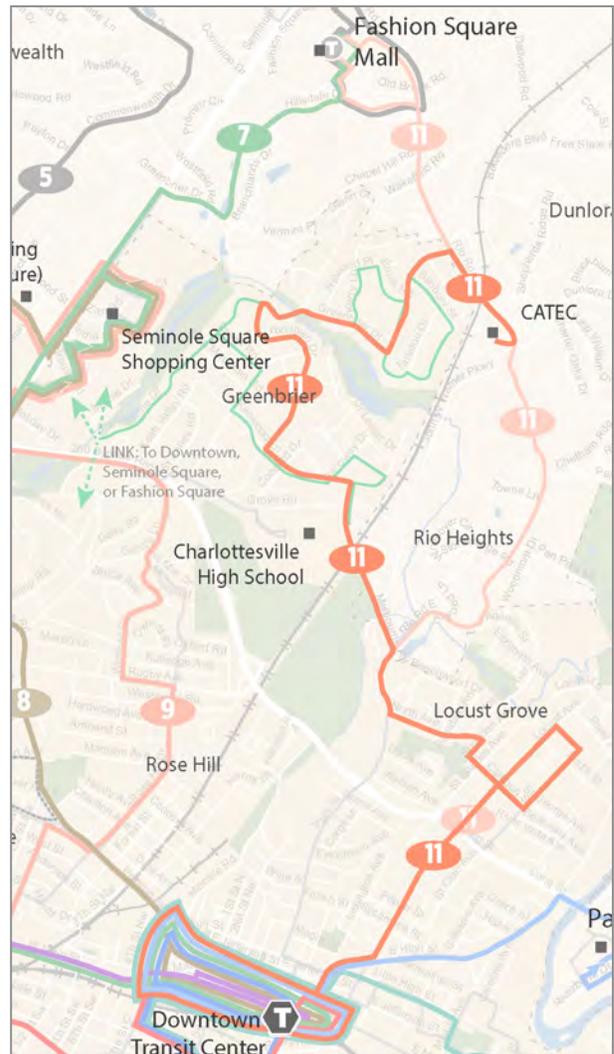


Figure 81 Alternative Route 11 Alignment



Note: Additional bus stops along Rio Road are planned but exact locations will be determined during the implementation process.

In both alignment options, Route 11 would operate with the following characteristics:

- The route will cover most of 2A's current route in Locust Grove, which will be eliminated.
- Route 11 will operate between 7:00 AM and 6:00 PM.
- An additional trip on Route 11 will depart CATEC at 9:15 PM to provide service to students enrolled in evening workforce development courses. The trip will operate from CATEC to Fashion Square Mall, return to CATEC, and then operate to downtown. This trip would be provided on a 'pilot' basis to ascertain ridership demand.

FREE TROLLEY

The Free Trolley is a highly productive route that has a strong identity within the CAT system and carries very strong ridership seven days per week. However, Sunday ridership is much higher in the late afternoon and evening than it is in the morning. To address this, the following change is recommended:

- Sunday service should begin and end one hour later, operating from 9:00 AM to 6:00 PM, to reflect much higher afternoon/evening demand than morning demand.

Figure 82 Free Trolley Before and After Service Statistics

	Existing Free Trolley	Proposed Free Trolley
Span of Service		
Weekdays	6:40 AM - 11:30 PM	6:40 AM - 11:30 PM
Saturdays	6:40 AM - 11:30 PM	6:40 AM - 11:30 PM
Sundays	8:00 AM - 5:00 PM	9:00 AM – 6:00 PM
Frequency		
Weekdays - Peak	15	15
Weekdays - Off-Peak	15	15
Saturdays	15	15
Sundays	30-45*	30-45*

Note: Span of Service times refer to departure times of first and last daily trip from Downtown Transit Station.

*Note: Sunday Service operates every 30 minutes until 12:30 PM and every 45 minutes after 12:30 PM due to traffic congestion.

Figure 83 Proposed Free Trolley



8 CAPITAL ENHANCEMENTS

BUS STOP IMPROVEMENTS

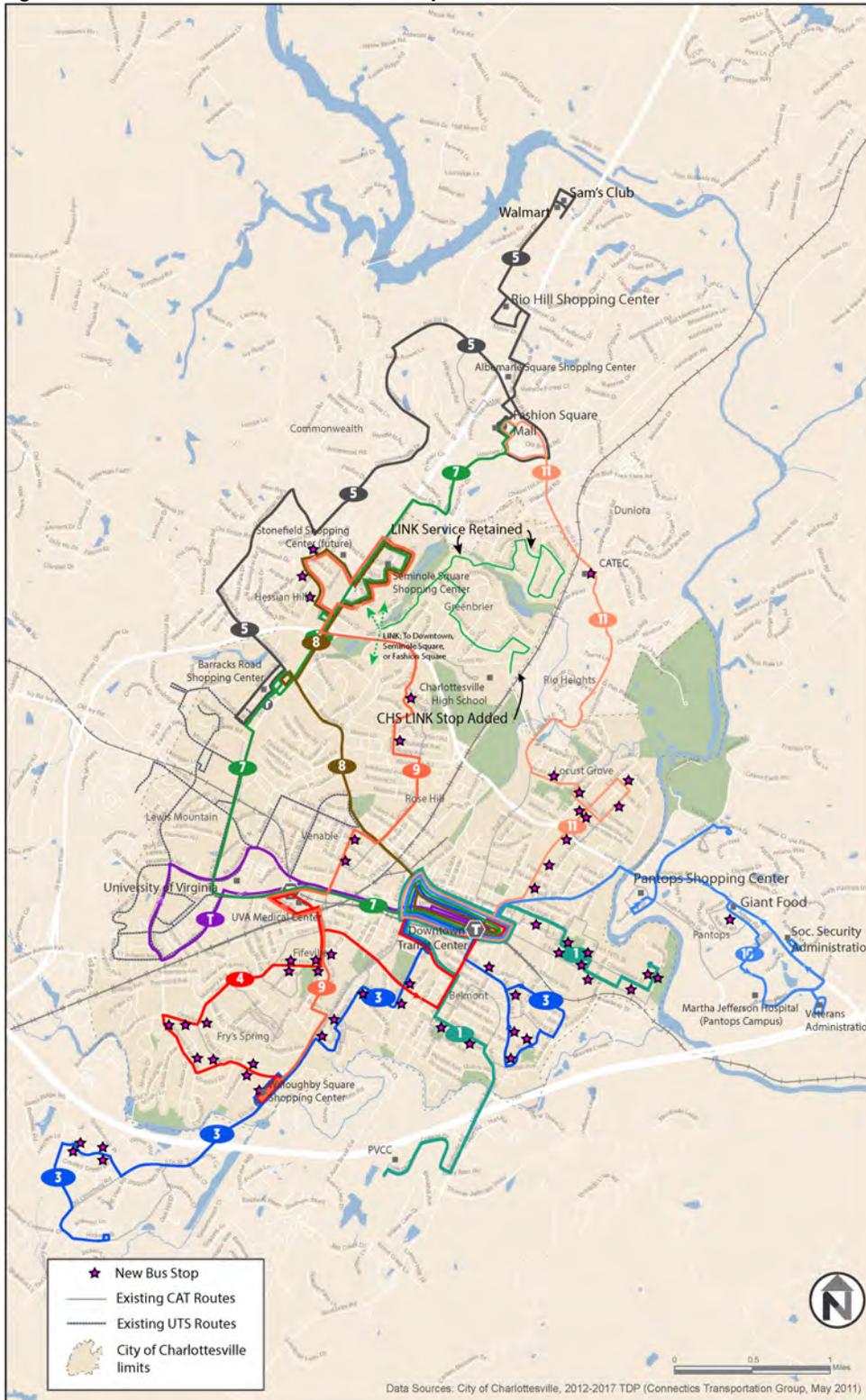
Route changes of the type proposed have impacts on bus stop infrastructure on a system-wide basis. New stops must be installed where new service will be provided, and existing bus stops that will no longer be served must be removed (to avoid confusion about the availability of service at a location). The signs and poles from discontinued stops can typically be re-used at new stops, if enough are available, but still incur installation labor costs.

The typical minimum requirement for a new bus stop, in cases where pedestrian access is already adequate, is a basic sign and a pole. In cases where pedestrian access is limited, additional sidewalk/access improvement may be necessary. Wherever possible, it is also desirable to include a waiting pad, bench, and trash receptacle. At enhanced stops, a bus shelter, lighting, and enhanced signage may also be included.

A map of system-wide recommended new bus stop locations is shown in Figure 84. In total, 74 new stops are proposed. An initial estimate of the costs to install site-specific amenities, including contingency, is **\$75,000**. Note that at time of the final report, additional bus stops along Rio Road are planned but exact locations will be determined during the implementation process.

CHARLOTTESVILLE TRANSIT STUDY | Final Report
 Charlottesville Area Transit

Figure 84 Recommended New Bus Stop Locations



Note: Only *new* bus stop installations are shown. Existing stops are not shown, and most of CAT's existing stops would continue to operate. Additional bus stops along Rio Road are planned but exact locations will be determined during the implementation process.

NEW TRANSFER HUBS

To support the service change recommendations, it is recommended that CAT develop three transfer hubs at key locations where passenger transfer activity would be increased and where substantially more passengers would likely be waiting for service. These enhancements represent a more substantial level of investment at individual locations than the system-wide bus stop installations described above.⁴

The following sections describe the planning-level recommended enhancements at each hub location. In addition to the costs listed below, CAT can also consider the opportunity to add real-time information signs at these locations, which present customers with information about next bus arrival times. The passenger waiting experience typically affects riders' overall perception of the quality of services more greatly than does time spent on-board transit. Therefore, alleviating ambiguity about the time until the next bus arrives contributes to a more pleasant riding experience, and may help to attract new riders. However, real-time information signs are typically costly; a planning-level cost estimate for signs is \$25,000 each. CAT is currently in discussions with vendors regarding future opportunities and specific costs for real-time information installations.

UVA Hospital Hub

In the proposed service plan, the existing CAT/UTS bus stop at the UVA Hospital entrance (on Jefferson Park Avenue between Lee Street and Lane Road) would play a stronger role in the CAT system. The stop would serve more routes and more vehicles per hour, particularly with service from Route 7 and the Free Trolley (both of which operate every 15 minutes) and Route 9, which would no longer operate directly to downtown. Of the transfer hub enhancements recommended in the study, the UVA Hospital Hub is the most critical due to its role as a secondary transfer point to downtown.

The UVA Hospital bus stop would be enhanced to provide more capacity for riders, and convey a stronger image of the importance of the stop as a key system transfer point (see Figure 85). On the north side of the street, the stop already has an established bus

⁴ The following conditions apply to the cost estimates for new transfer hubs:

- Costs assume that no major reconstruction of the existing streetscape or street is required to accommodate bus stop modifications.
- Costs assume that shelter foundations will not require utility relocations.
- Costs do not assume pavement or striping modifications to JPA.
- Planning level construction cost estimates are in year 2012 dollars and do not include additional contingency (beyond amount shown) or escalation to a future year mid-point of construction.
- Costs shown do not include demolition, major utility relocations/major drainage modifications/new service, agency project costs, or engineering and inspection costs.
- The Consultant has no control over the cost of labor, materials, equipment, or services furnished by others, or over methods of determining price, or over competitive bidding or market conditions.
- Any and all professional opinions as to costs reflected herein, including but not limited to professional opinions as to the costs of construction materials, are made on the basis of professional experience and a long-range planning level of evaluation. The Consultant cannot and does not guarantee or warrant that proposals, bids, or actual costs will not vary from the professional opinions of costs shown herein.

Figure 85 Proposed UVA Hospital Hub Site

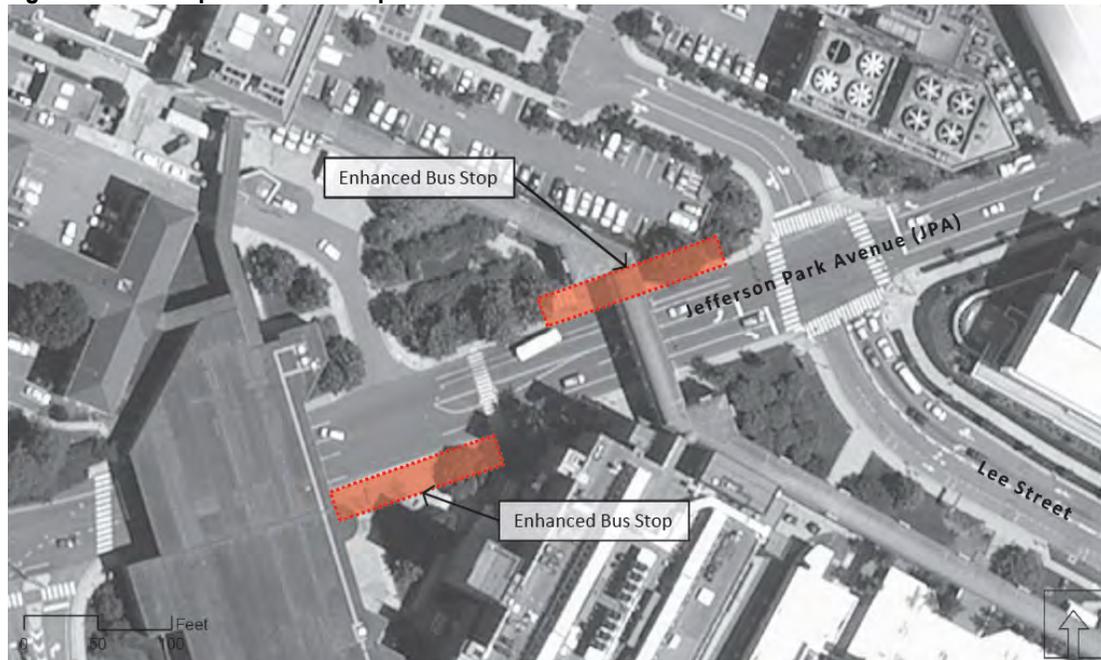


Figure 86 Capital Cost Estimate for UVA Hospital Hub

Enhancement	Cost
North Side of JPA	
Bus Shelter, incl. bench (3, 6' x 12')	\$43,200
Retaining Wall, approx. 3' (50 lf)	\$6,000
Sign/Service Information (1)	\$500
Sidewalk/Shelter Pad (1,150 sf)	\$4,600
Trash Receptacle (2)	\$1,300
Total Opinion of Probable Construction Costs - North Side	\$55,600
South Side of JPA	
Bus Shelter (2, 6 x 12)	\$ 28,800
Sign/Service Information (1)	\$ 500
Sidewalk/Shelter Pad (850 sf)	\$ 3,400
Trash Receptacle (1)	\$ 650
Total Opinion of Probable Construction Costs - South Side	\$53,380
Subtotal	\$ 88,950
Contingency (50%)	\$ 44,480
Contractor Overhead (10%)	\$ 8,900
Total Opinion of Probable Construction Costs	\$142,320

stop/shelter; major enhancements would include an expanded bus shelter to accommodate more riders and related construction work to refit the retaining wall and sidewalk area to accommodate the shelter. On the south side of the street, the bus stop would be located in front of the Claude Moore Health Sciences Library and Jordan Hall steps. Major enhancements would include the installation of a bus shelter and sidewalk/wait pad improvements.

Market Street at 5th Street Enhanced Bus Stop

Currently, buses travel circuitously through the downtown Charlottesville area in order to serve the Downtown Transit Station, which is necessitated by one-way street patterns, physical constraints at the Downtown Transit Station, and physical barriers such as nearby railroad tracks. In an effort to maximize vehicle service hours and increase directness of service, two routes (Route 1 and Route 3) would be revised to serve Downtown Transit Station in only one direction (southbound and westbound, respectively). That means, in the opposite direction, riders would board and alight along Market Street and walk to Downtown Transit Station if needed (most route transfers are also available along Market Street as well).

To mitigate the impacts of this change on riders, and to make system navigation easier in general, the bus stop at Market at 5th Street (in front of the Market Street Garage) would be enhanced with additional signage to help riders navigate the system and area.

Figure 87 Market Street at 5th Street Enhanced Stop



Figure 88 Capital Cost Estimate for Market Street at 5th Street Hub

Enhancement	Cost
Enhanced Sign/Service Information (1)	\$ 500
Contingency (50%)	\$ 250
Contractor Overhead (10%)	\$ 50
Total (opinion of probable construction cost)	\$ 800

Costs assume no pavement or striping modifications on Market Street.

Willoughby Square Shopping Center

In the recommended service plan, the number of routes that serve Willoughby Square Shopping Center would increase from one to three (Routes 3, 4, and 9), and for two of these routes, the shopping center would be the southern terminus. To accommodate increased vehicle travel at Willoughby Square Shopping Center, as well as to accommodate vehicle layovers, an enhanced bus stop at Willoughby Square Shopping Center would be needed. Two locations are possible:

- In front of the front retail face of the shopping center (preferred option)
- Along 5th Street southbound at the existing CAT bus stop

The selection of a site depends on considerations including ability of parking lot pavement to support bus vehicle travel, developer approval, and appropriate pedestrian access. Amenity enhancements needed depend on the site selection, but the stop should include a shelter and waiting pad, pedestrian access, lighting, bench, and trash receptacle.

Figure 89 Capital Cost Estimate for Preferred Option – On retail frontage

Enhancement	Cost
Preferred Alternative	
Sign/Service Information (1)	\$ 500
Bench (3)	\$ 2,550
Trash Receptacle (1)	\$ 650
Subtotal	\$ 3,700
Contingency (50%)	\$ 1,850
Contractor Overhead (10%)	\$ 370
Total (opinion of probable construction cost)	\$ 5,920

Costs assume that no parking lot reconfiguration, curb modification, or pavement strengthening is required.

Figure 90 Capital Cost Estimate for Secondary Option – At existing CAT stop on 5th Street

Enhancement	Cost
Secondary Option	
Bus Shelter, incl. bench (2, 6' x 12')	\$ 28,800
Retaining Wall, approx. 3' (50 lf)	\$ 6,000
Sign/Service Information (1)	\$ 500
Sidewalk/Shelter Pad (1,400 sf)	\$ 5,600
Curb Ramp (6)	\$ 4,800
Pedestrian Lights (5)	\$ 12,500
Trash Receptacle (2)	\$ 1,300
Roadway Pavement (1,200 sf)	\$ 11,200
Curb and Gutter (175 lf)	\$ 4,200
Landscape (10%)	\$ 7,490
Subtotal	\$ 82,390
Contingency (50%)	\$ 41,200
Contractor Overhead (10%)	\$ 8,240
Total (opinion of probable construction cost)	\$ 131,830

Costs assume asphalt pavement for the bus bays. Costs assume that an ADA accessible path can be constructed along the shopping center entrance roadway without ramps and railings.

Other Transfer Hub Enhancement Opportunities

The Barracks Road Shopping Center and Fashion Square Mall are two additional locations within the CAT system that generate high volumes of ridership and transfer activity. While no specific enhancements to these locations are recommended as part of this study, their role as key transfer points within the CAT system will be maintained, and they could be considered for future development and enhancement. In particular, the Barracks Road Shopping Center requires vehicles to navigate circuitously and slowly through the parking lots; if circulation could be improved, both CAT and UTS services could benefit from reduced travel time. Additional exploration of enhancements for these two locations should be considered.

9 OPERATING COST REQUIREMENTS

The Transit Study aimed to redesign transit services with no or only a very nominal amount of additional cost. However, after the creation of the cost-neutral Draft Final Concept service recommendations, it was determined that additional service to provide access to late evening workforce development classes at PVCC and CATEC was desirable. This resulted in the addition of two expansions in service over and above the cost-neutral Draft Final Concept services:

- Extended hours of service on Route 1 to provide evening service to PVCC.
- An additional trip serving CATEC, Fashion Square Mall and downtown Charlottesville just after 9:00 PM (see Route 11 for more details).

Since providing these additional hours while maintaining a cost-neutral plan would mean taking away service from some other area, it was determined that a small cost increase to provide these additional services would be preferable. The services proposed in Chapters 6 and 7 would result in an additional cost increase of \$60,000, which is an increase over CAT's existing annual budget of \$6,272,000.

10 IMPLEMENTATION PLAN

IMPLEMENTATION TIMELINE

The service change recommendations are structured such that they can be implemented simultaneously during CAT's regularly scheduled annual service change, which is scheduled each year in August. No implementation phasing is required. Prior to enacting the recommended changes, the following tasks must be completed:

- Conduct public hearings and community outreach on service changes
- Finalize service redesign and service schedule, and create and re-bid new driver schedules
- Compile, print and disseminate new service maps, public schedules, and information
- Provide (at least) a pole and sign at each new bus stop, if necessary
- Remove signs at bus stops that would be phased out

It typically requires at least six months for these types of changes to be executed. Therefore, the earliest that changes could be finalized consistent with CAT's regular service change schedule would be July 2014. However, with a "special" change, the service improvements could be implemented sooner. The following section provides a broad schedule for the implementation of service changes.

Immediate Term Service Changes and Capital Planning (6 - 18 months):

- Conduct final service planning for recommended route changes. This involves finalizing alignments, timing routes, ensuring that draft schedules are accurate, and identifying time points for passenger schedules.
- Identify bus stops that can be consolidated to speed service.
- Update marketing and information materials to reflect service changes and ensure a wide distribution.
- Conduct final public outreach and transition plan to ensure passengers know and understand upcoming changes. The transition plan should include posting notices on all stops that will no longer be served and providing directions to the next nearest stop. CAT could also contemplate undertaking some or all of the following outreach activities to promote awareness of service changes:
 - Assemble "street teams" to guide and instruct passengers about the changes
 - Put additional staff on the service information line to answer calls and questions
 - Develop marketing campaigns such as offering free fares during the first week of service changes.

- Work with the City of Charlottesville, Albemarle County, and other partners to identify funding sources to support construction of the transfer hubs described in Chapter 8. Grant funds should be pursued aggressively as capital planning has a longer lead time than service planning.

Medium Term Service Development Tasks (18 - 36 months):

- Begin to implement passenger facility improvements as funding becomes available. These projects should be a joint CAT and City of Charlottesville or Albemarle County effort that involves not only creating and improving passenger waiting areas but also strengthening the pedestrian network overall.

Longer Term Service Planning/Service Development Tasks (3 - 5 years)

- Implement passenger improvements to support service changes.
- Monitor/evaluate changes adopted as part of Transit Study.

MINIMUM IMPLEMENTATION COSTS

The total annual operating costs for the Final Recommendations over and above existing funding levels is approximately \$50,000. To execute the plan as designed, and because many of the recommended service changes are interrelated, this funding should ideally be available prior to implementation.

New bus stops must be added prior to service changes, and old bus stops that would no longer be used must be removed. The total estimated cost for newly added bus stops is \$75,000.

Additionally, the plan calls for between \$149,000 and \$275,000 in capital enhancements for three new transfer hubs as described in Chapter 8. However, while these hubs would greatly benefit service operations and improve the rider experience, it is not necessary for these to be constructed prior to service changes.

1.1 SERVICE CHANGE IMPACTS

This chapter describes the ridership and system impacts of the recommended service changes. The proposed service changes would make service easier to understand and use, more direct, and for many riders, offer faster service. Overall, the recommendations would result in increased ridership and expanded service area.

RIDERSHIP IMPACTS

The recommended service changes are designed to provide improved transit services for Charlottesville with only a very limited net increase in the operating cost of service. As summarized in Figure 22, the recommended changes would result in approximately a 6% estimated weekday ridership increase. Much of this increase is due to the implementation of simpler, more direct service that operates consistently throughout the day, as well as increases in travel speed. Saturday ridership also increases on several routes, although some riders would no longer have service on Route 1 (formerly Route 1A/1B) or former Route 2A on Saturdays, as these routes would operate on weekdays only. For comparison reference, existing CAT ridership by route is shown in Figure 23.

Figure 91 Daily Ridership Estimates for Recommended System

Route	Weekday Ridership	Saturday Ridership	Sunday Ridership
Route 1	291	-	-
Route 3	683	514	-
Route 4	680	231	-
Route 5	705	759	-
Route 7	2,444	2,011	649
Route 8	308	177	-
Route 9	259	142	-
Route 10	300	323	-
Route 11	275	-	-
Trolley	2,468	2,658	748
Total	8,410	6,816	1,397
Total change from existing	478	225	34
Percent change from existing	8%	3%	2%

Figure 92 Existing CAT Daily Ridership by Route

Route	Weekday Ridership	Saturday Ridership	Sunday Ridership
Route 1A	87	53	--
Route 1B	154	25	--
Route 2A	68	43	--
Route 2B	169	105	--
Route 3	243	169	--
Route 4	359	125	--
Route 5	705	759	--
Route 6	207	93	--
Route 7	2,444	2,011	649
Route 8	274	163	--
Route 9	156	85	--
Route 10	267	229	--
Route 11	42	21	--
Route 21	83	25	--
Route 22	23	9	--
Route 23	12	18	--
Route 24	2,468	2,658	--
Trolley	87	53	714
Total Daily Ridership	7,761	6,591	1,363

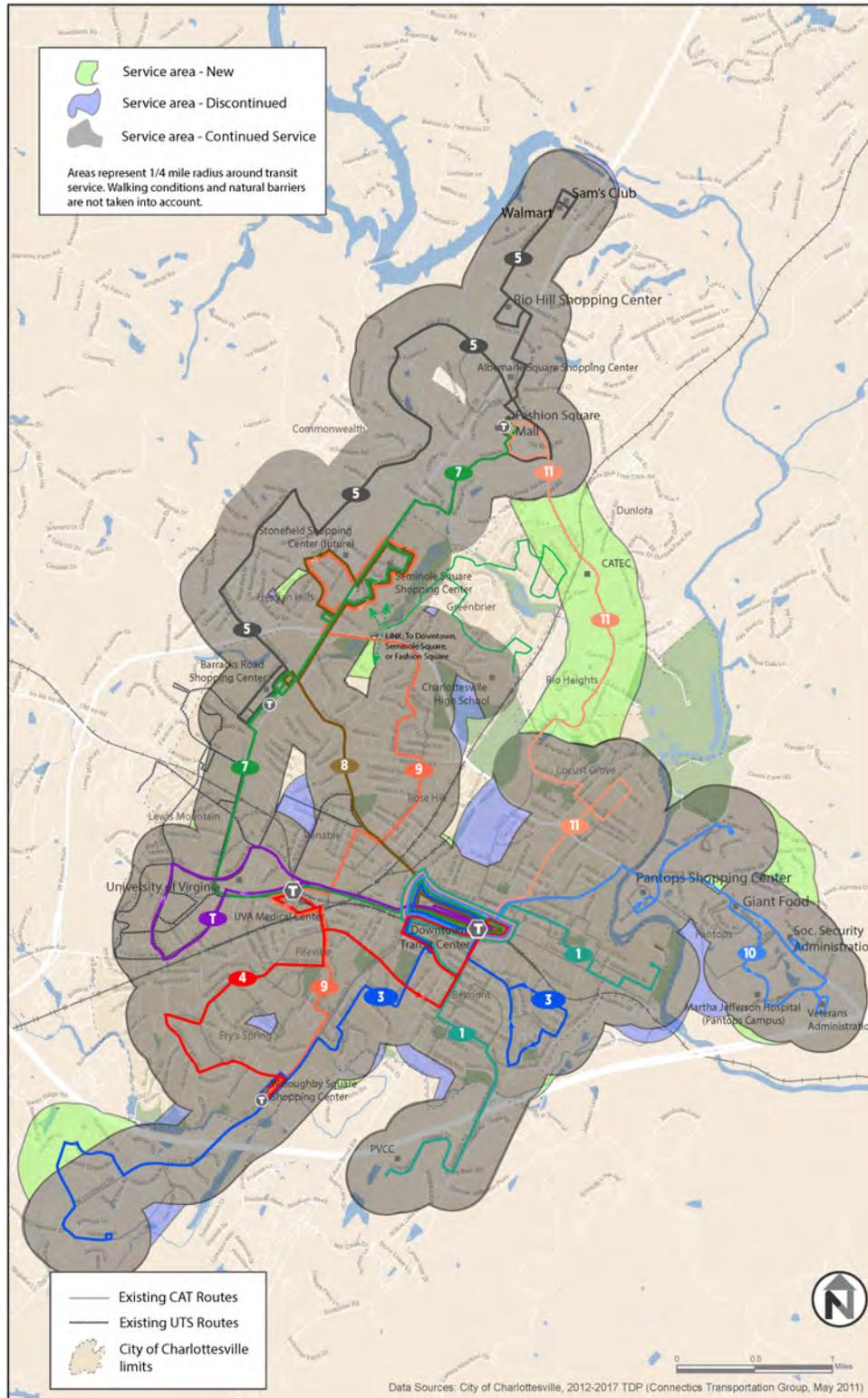
IMPACTS ON SERVICE COVERAGE

As a result of the proposed changes, fixed-route service to new areas would be provided, specifically to Greenbrier and other neighborhoods in northern Charlottesville. In some areas where ridership is very light, service coverage would be reduced. Figure 93 depicts the impacts on CAT's service area that would result from the proposed route changes, based on a 1/4 mile radius around fixed-route services. As shown, the vast majority of CAT's current service area would continue to be served. (Note that the radius around services does not take into account natural and other physical barriers; the map is intended to provide a general rather than specific assessment of service coverage changes.)

CHARLOTTESVILLE TRANSIT STUDY | Final Report

Charlottesville Area Transit

Figure 93 Changes to CAT Fixed-Route Service Area



Note: Existing service area does not include the Greenbrier LINK service, which provides demand-responsive service.

1.2 SERVICE EXPANSION OPPORTUNITIES

The CAT Transit Service Study aimed to provide transit service improvements that could be accomplished for only a relatively small increase in costs. However, the restructuring of services also results in a system that has the potential attract even more new ridership if service levels are improved, which would require additional financial resources. This chapter provides an overview of opportunities to enhance CAT's services with additional service frequency and hours of service. In brief, the opportunities presented include:

- **Extension of Route 7 to Walmart.** In this scenario, Route 7 would be extended to Walmart to meet a desire for more direct service along Route 29.
- **Service Enhancements to Meet Service Guidelines.** As part of this study, CAT has developed a set of Service Guidelines that define minimum operating levels for its routes, according to each route's role within the service hierarchy. In this scenario, service frequency or span on four routes would be increased slightly to meet the Guidelines for each respective route.
- **More Frequent Service.** Higher frequency has been noted by the public and stakeholders as a key goal for CAT's services, to make service more appealing to both regular and casual riders. In this scenario, the cost to operate all routes every 30 minutes all day on weekdays is provided.
- **Longer Hours of Service.** Service that begins earlier and/or ends later would accommodate a larger range of rider schedules and improve the appeal and consistency of services. The cost to provide additional service span hours (e.g. extending a route's end time from 8:00 PM to 9:00 PM) is described in this section.

Cost estimates for service expansion opportunities assume an operating cost per hour of \$45. This cost includes the incremental costs of new service hours, such as driver wages, fuel, and maintenance, but does not include the costs of additional administrative overhead, such as additional management staff; therefore, very large service expansions may trigger additional costs. CAT's fully-loaded hourly rate (including administrative costs) reported to the Federal Transit Administration is \$71.55 per hour.

An overview of the costs of the different service scenarios is presented in Figure 94. The methodology for ridership estimates is provided in the full Final Report, which is a separate document.

Figure 94 Costs and Ridership Impacts of Service Expansion Opportunities

Service Expansion	Annual Cost (over existing)	Ridership Gain (over existing)		
		Weekday	Saturday	Sunday
Final Recommendations	\$50,000	8%	3%	2%
Route 7 to Walmart	\$655,000	12%	7%	16%
Service Guidelines	\$195,000	10%	3%	6%
30-Minute Frequency	\$870,000	19%	3%	2%
Additional Service Span	Varies	Varies	Varies	Varies

EXTENSION OF ROUTE 7 TO WALMART

With this option, Route 7 would be extended to Walmart to provide more direct service along Route 29. A similar option was presented as part of the Service Change Scenarios, and was received very favorably. However, because Route 7 operates with 15-minute frequency, the cost to provide this extended service would have resulted in reduced service in other areas of Charlottesville, and without additional funding commitment from Albemarle County, was not considered feasible for short-term implementation. However, the opportunity to provide enhanced, consistent service along Route 29, one of the region's most significant commercial, employment and residential corridors, would be a strong improvement in service, if funding arrangements can be made.

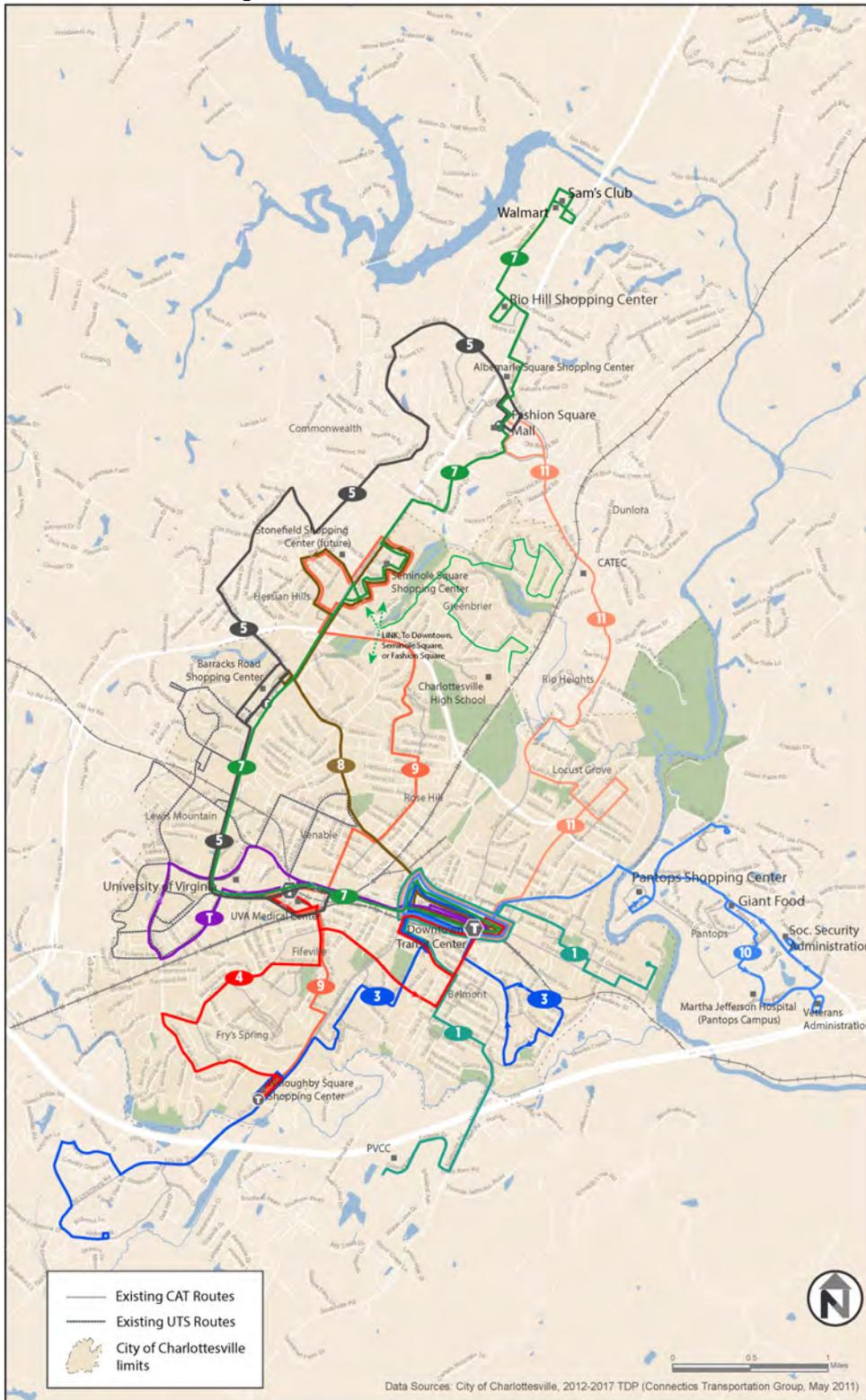
If Route 7 is extended to Walmart, Route 5 could be shortened. Changes to the design of Route 7 and Route 5 would likely include:

- Route 7 could be redesigned to provide service to the interior of Seminole Square Shopping Center in both directions, where currently only one-way service is provided.
 - Route 7 would operate every 15 minutes on weekdays and Saturdays between 6:30 AM and 10:45 PM (similar to existing service). (In reality, it is likely that a longer evening headway (such as every 20 minutes) would suffice and costs would be lower.) On Sundays, Route 7 would operate every 30 minutes between 8:00 AM and 6:15 PM.
- Route 5 would operate between Fashion Square Mall and the new transfer hub at the UVA Hospital, and would be able to operate within a one-hour cycle time.
 - Route 5 would operate every 30 minutes all day on weekdays and Saturdays.

All other transit routes would remain as presented in the Final Recommendations. The total annual additional cost to provide this redesign would be **\$655,000** (over existing service). The anticipated level of ridership gain would be 9% on weekdays, 7% on Saturdays, and 16% on Sundays over existing ridership levels. A map of the potential service design of Route 5 and Route 7 is provided in Figure 95.

CHARLOTTESVILLE TRANSIT STUDY | Final Report
 Charlottesville Area Transit

Figure 95 Revised Route 5 and Route 7



SERVICE ENHANCEMENTS TO MEET SERVICE GUIDELINES

In accordance with the CAT Service Guidelines, routes are categorized by service type. Each route must meet minimum frequency and span of service guidelines, depending on the service type of the route; Key Routes, Local Routes, and Lifeline Routes are the primary service types.

The CAT Service Guidelines document provides minimum service level standards that all routes must meet. These include service design guidelines, service level guidelines, and productivity guidelines. The service level guidelines require that each route meets a certain minimum level of service frequency (service headways) and span of service (hours of operation). The standards vary by route type; for example, a Key Route is required to operate for a longer service span than other service types. More detail can be found in the CAT Service Guidelines document.

According to the service guidelines, two routes do not meet the minimum span of service guideline on Sundays: Route 7 and the Free Trolley, both of which are Key Routes. In the study's final recommendations, Route 7 would operate between 8:00 AM and 5:30 PM, and the Free Trolley would operate between 9:00 AM and 6:00 PM. These service spans would need to expand slightly to provide service between at least 8:00 AM and 6:00 PM. Figure 96 provides the cost to provide this additional service.

Additionally, in the final recommendations, two routes do not meet the minimum frequency guidelines: Route 1 and Route 10. Both of these routes are Local Routes, and should operate every 30 minutes during the weekday peak and every 60 minutes off-peak; however, in the final recommendations, all three operate only every 60 minutes on weekdays. The cost to provide weekday peak-period 30 minute frequency to these routes is shown in Figure 96; the total cost over existing levels would be roughly **\$145,000** annually.⁵ A ridership gain of 8% on weekdays and 6% on Sundays over existing levels could be anticipated.

Figure 96 Cost to Provide Additional Service to meet CAT Service Guidelines and Ridership Impacts

Route	Modification	Annual Revenue Hours Added	Annual Cost
Route 1	Add 30 Minute Weekday Frequency	1,530	\$68,850
Route 10	Add 30 Minute Weekday Frequency	1,530	\$68,850
Route 7	Add 30 minutes to Sunday service span	63	\$2,800
Free Trolley	Add 60 minutes to Sunday service span	100	\$4,500
Total		3,223	\$145,000

⁵ Note that it would be possible to make other modifications to the recommended service schedule to mitigate the cost of achieving compliance with the CAT Service Standards, such as reducing the span of service on routes that exceed the minimum service span; however, Figure 96 assumes no modifications of this kind.

30-MINUTE FREQUENCY

Higher frequency has been noted by City Council, the public, and stakeholders as a key goal for CAT's services, to make service more appealing to both regular and casual riders. In particular, service that operates every 30 minutes or better is generally considered a minimum to attract riders who have a choice of transportation modes available in moderate numbers. The cost to operate all routes at least every 30 minutes all day on weekdays would be **\$870,000** per year.⁶ A ridership gain of roughly 15% over existing levels on weekdays could be anticipated. Saturday and Sunday service would remain unchanged from the Final Recommendations.

COST TO PROVIDE ADDITIONAL SERVICE HOURS

The Final Recommendations provide service hours on CAT routes that serve the most productive times of day. The determination of service span in the Final Recommendations is based on both the Minimum Span of Service guideline of CAT's Service Guidelines, as well as on a ridership count conducted in 2010 that evaluated ridership by CAT route on every trip during weekdays, Saturdays, and Sundays. While the Final Recommendations meet the Minimum Span of Service Guidelines for most routes, additional service hours may be desirable. The cost to provide additional service hours at each route's off-peak service frequency is shown in Figure 97. For example, to extend weekday service on Route 8 by one hour, ending service at 7:00 PM instead of 6:00 PM on weekdays, the cost would be \$11,475 per year. For routes in italics, no Saturday and/or Sunday service is proposed within the Final Recommendations, and service would need to be added for a full service day.

Figure 97 Cost to Provide Additional Early Morning or Evening Service Hours by Route

Route	Annual Cost per Additional Service Hour		
	Weekday	Saturday	Sunday
Route 1	\$11,475	\$2,340	\$2,250
Route 3	\$11,475	\$2,340	\$2,250
Route 4	\$11,475	\$2,340	\$2,250
Route 5	\$34,425	\$7,020	\$4,500*
Route 7	\$68,850	\$11,700	\$7,020
Route 8	\$11,475	\$2,340	\$2,250
Route 9	\$11,475	\$2,340	\$2,250
Route 10	\$11,475	\$2,340	\$2,250
Route 11	\$11,475	\$2,340	\$2,250
Trolley	\$45,900	\$9,360	\$4,680

⁶ However, a service expansion of this size would represent approximately a 12% increase in CAT's overall operating costs, and may therefore also trigger a need to increase administrative staffing; therefore the true hourly cost to provide this level of service increase may be higher, potentially closer to CAT's fully-loaded hourly operating rate of \$71.55.

*Route 5 Sunday service assumes 45 minute frequencies.

VEHICLES REQUIRED IN EXPANSION SCENARIOS

Currently, CAT operates using 25 revenue vehicles (buses). Under the Final Recommendations, no additional revenue vehicles are required. However, in the Service Guidelines Scenario and the Frequent Service Scenario, additional vehicles would be required to provide service. (Extended service span hours would not incur the need to purchase additional vehicles.)

Figure 98 Required Revenue Vehicles by Service Scenario

Scenario	Vehicles Required
Existing Service	25
Final Recommendations	24
Route 7 to Walmart	24
Service Guidelines	26
30-Minute Service	27

CAT's recent vehicle purchase costs have ranged from \$320,000 to \$570,000 for large vehicles (30'-35') and \$70,000-\$80,000 for small body-on-chassis vehicles (22').

APPENDIX A

Review of Existing Plans and Studies

OVERVIEW

To understand local conditions that will have an impact on transit service options and opportunities, and to maintain consistency with other regional planning efforts in Charlottesville, the Nelson\Nygaard team reviewed relevant plans, studies and documents. This review includes 14 documents published by a variety of regional agencies.

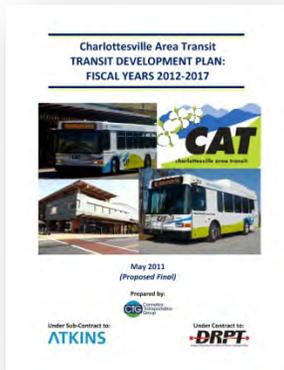
Based on these documents, the following regional projects have important impacts on current transit services or could possibly impact transit services in the future:

- Establishment of a Regional Transportation Authority (approved by the General Assembly, but has not been approved for funding)
- Development of a transfer station at the Barracks Road Shopping Center
- Consideration of a BRT, light rail or streetcar rail system for the City of Charlottesville

The existing plans and studies have been divided into three categories: transit plans, plans that pertain to the City of Charlottesville/County of Albemarle only, and plans that pertain to the entire five-county Thomas Jefferson Planning District Commission (TJPDC) region. The contents of these plans were considered when developing the analysis and recommendations for the Charlottesville Transit Study.

TRANSIT-RELATED STUDIES

CAT Transit Development Plan (2011)



Purpose:

The CAT Transit Development Plan (TDP) provides recommended changes to transit services, primarily oriented toward near-term (through FY2014) and short-term (through FY2017) changes.

Author:

Prepared for Charlottesville Area Transit by Connectics Transportation Group

Key Findings:

The CAT TDP provides an evaluation of CAT's existing transit services and recommends future changes that could be made to improve productivity, efficiency and effectiveness of the system. The study provides service recommendations as far as FY2035, but is strongly focused on changes that could be made between FY2012 and FY2017. The study is primarily oriented toward more moderate changes that could be made to the existing system route structure. The final report fulfills the Virginia Department of Rail and Public Transit's (DRPT) requirement for transit agencies to develop a Transit Development Plan with a six-year horizon.

The 2011 TDP provided an extensive data collection, stakeholder outreach and analysis that will largely be relied upon to conduct the CAT Transit Study. Data from the 2011 TDP is still recent and relevant, and modifications to the route structure have been minor.

The TDP consists of a final plan and ten Technical Memoranda which provide in-depth analysis in a number of topic areas, and detail the results of the TDP's data collection efforts. The Technical Memoranda include:

- **Tech Memo #1: Documentation of CAT Staff Input**

Tech Memo (TM) 1 presents the results of a series of interviews with CAT staff, including CAT managers, supervisors, drivers and administrative staff. Major areas of comment included service coverage/routing, frequency/span, transfers/scheduling, and ridership; administration and management; vehicles; facilities and maintenance; and safety. Comments included a number of suggestions for modifications to specific routes and operating issues.

- **Tech Memo #2: Documentation of Stakeholder Input and Public Outreach**

TM2 documents the results of a set of interviews with local and regional stakeholders. Individuals interviewed represented the City of Charlottesville (including elected officials and City departments), Albemarle County, JAUNT, Martha Jefferson Hospital, Alliance for Community Choice in Transportation, University of Virginia, and the Thomas Jefferson Planning District Commission (TJPDC). Interviewees were asked questions covering a range of topics relating to CAT service, including transit service priorities, key coverage areas and service development goals, fares, funding, and more.

▪ **Tech Memo #3: Ridecheck Survey Methodology and Results**

TM3 presents the methodology used to undertake an on-board ridecheck (boarding and alighting count) conducted during late October and early November of 2010. Results of the ridecheck were provided to the CAT Transit Study team separately in tabular format.

▪ **Tech Memo #4: On-Board Survey Methodology and Results**

TM4 presents the methodology and results of an on-board rider survey conducted in early November of 2010. Key findings included:

- 43% of trips were work trips; 16% were college trips.
- 25% of riders were new riders within the past year.
- 86% of riders ride once per week or more, and 41% ride twice a week or more.
- 32% of riders are between ages 16 and 24, and 28% are between ages 25 and 34.
- 37% of riders have no vehicle at home; 43% indicated that they have no drivers license; and 45% used CAT as their only mode of transportation.
- 37% of riders paid the fare for the trip in question using a UVA ID; 22% paid cash, and 14% used a monthly pass.
- 48% of total riders were UVA affiliates; of these, 58% were students, 32% were staff, and the remainder were faculty.
- 25% of riders had already made a connection to reach the route they were currently riding; 30% stated that they would be making a transfer following the current trip.
- 28% of riders use the printed Riders' Guide to get information about services; 22% use information available at stops; 16% use the website.
- Two-thirds of riders' household incomes are less than \$35,000 per year.

▪ **Tech Memo #5: Evaluation of Existing Service and Route Profiles**

TM5 presents an in-depth analysis of CAT's performance as a system as well as each route's performance. Individual route evaluations were compiled for each route, comparing each route along a number of categories, including ridership by time and by stop, on-time performance, operating characteristics, and more.

▪ **Tech Memo #6: Peer Agency Review**

TM6 presents a comparison of CAT services with those of peer agencies serving communities of a similar size and composition as Charlottesville. Peer agencies included:

- Lynchburg, VA (Greater Lynchburg Transit Company)
- Harrisonburg, VA (Harrisonburg Transit)
- Athens, GA (Athens Transit and UGA Campus Transit)
- Columbia, MO (Columbia Transit)

Agencies were compared across a number of categories, including amount of service provided (miles and hours), vehicles used, productivity, cost efficiency, and sources and amounts of funding. Peer communities were also compared to show differences in the operating environment. Compared with the peer average, CAT serves a somewhat larger community, has somewhat higher operating costs, and carries slightly higher ridership. However, its productivity (measured by passengers per revenue hour and per revenue mile) is among the lowest, as was farebox recovery.

- **Tech Memo #7: Latent Demand Analysis**

TM7 presents a market analysis and review of the demand for transit services throughout the Charlottesville region. The analysis evaluates the population, employment and other demographic characteristics of the region, including a number of relevant maps (see Figure 99 for an example) and analysis of both existing and future development areas. In general, CAT services match to key areas of demand within the region, with some exceptions; the report also provides an evaluation of potential new transit markets.

- **Tech Memo #8: Service Plan Recommendations**

TM8 presents the study's recommended route-by-route service changes and a plan for implementation. Changes are divided into a near-term service plan (1 to 3 year horizon), a short-range service plan (4 to 6 year horizon), and a long-range service plan (year 2035 horizon). Both descriptions of the proposed changes as well as detailed service operating plans are provided. Near-term changes are shown in Figure 100.

TM8 also presents a list of capital needs required to implement the proposed service changes. Among the most notable of these are the recommendation to proceed with the Barracks Road Shopping Center transfer facility as a secondary regional transfer center (described previously in the Proposed Barracks Road Station Design).

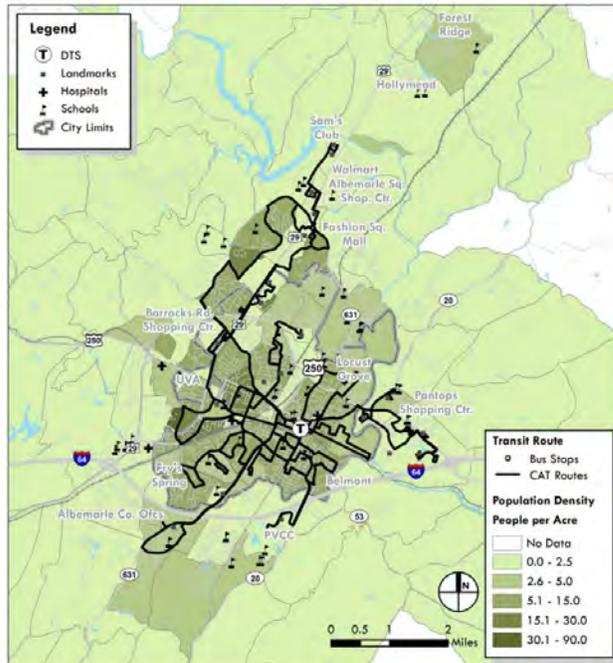
- **Tech Memo #9: TDP Financial Requirements**

TM9 presents the costs associated with the proposed service plan. The near-term service plan results in only a nominal increase in service miles and hours, while the short-range plan would result in a 14% increase in service hours and two additional peak vehicles required. TM9 outlines the cost components of the two plans and identifies potential sources of funding. It also provides a proposed implementation timeline.

The Proposed Final TDP document summarizes the results of these activities and summarizes the data contained in the technical memoranda.

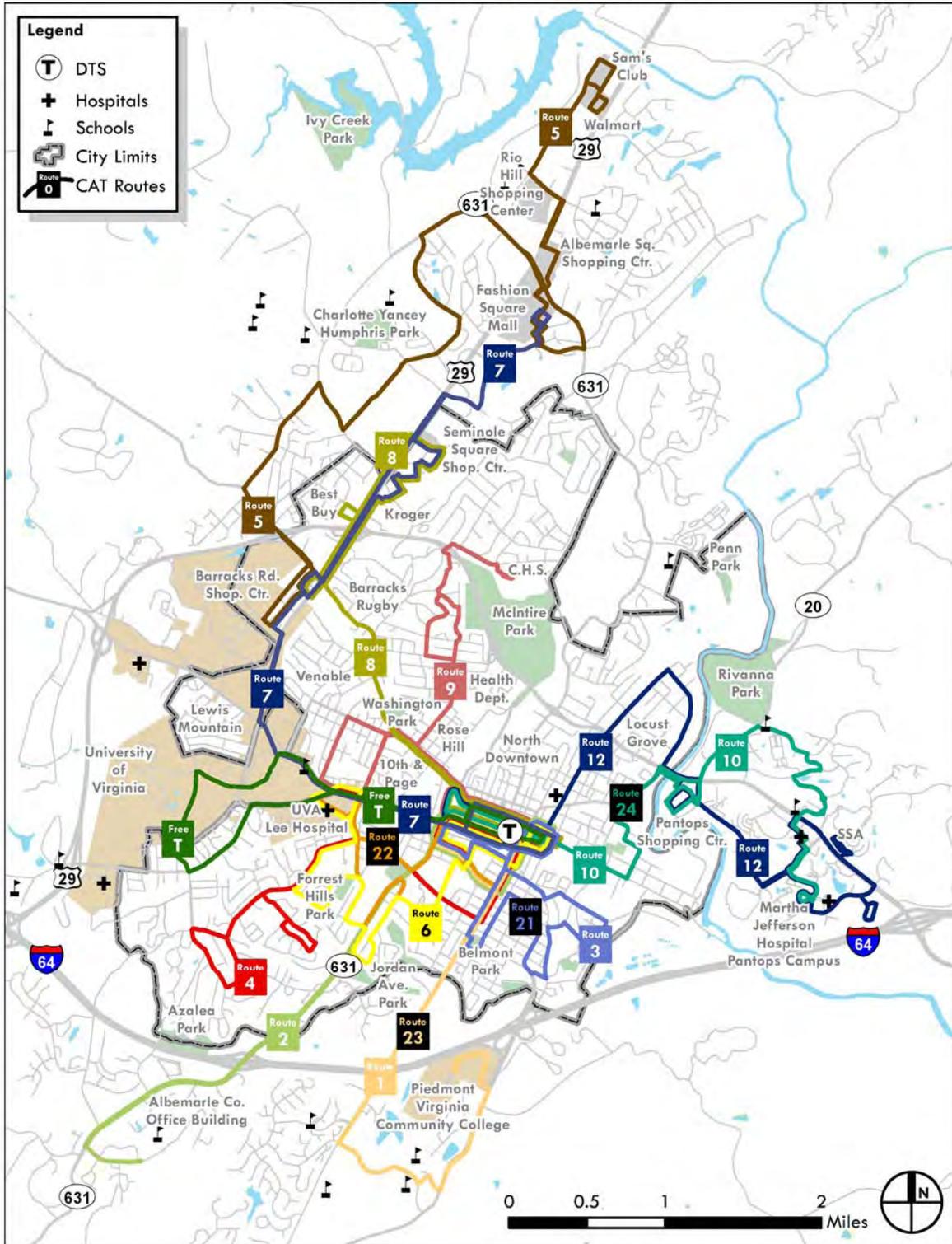
CHARLOTTESVILLE TRANSIT STUDY | Final Report
Charlottesville Area Transit

Figure 99 Population Density Map from 2011 TDP



CHARLOTTESVILLE TRANSIT STUDY | Final Report
 Charlottesville Area Transit

Figure 100 Near-Term Service Change Map from 2011 TDP



Charlottesville Transit Improvement Study (2005)



Purpose:

The Transit Improvement Study provides a service plan for CAT to improve on-time performance and reliability.

Author:

Prepared for Charlottesville Transit Service (CAT) by BMI-SG (lead consultant)

Key Findings:

In the mid-2000s, traffic congestion in the Charlottesville area had increased to the extent that CAT vehicles were no longer able to maintain their schedules, leading to unreliable service. Additionally, it was perceived that there was a great deal of duplication of service between CAT and University of Virginia Transit System (UTS). In 2005, CAT undertook the Transit Improvement Study to determine ways to address these issues and improve services overall. The study, led by transportation consulting firm BMI-SG (now Vanasse Hangen Brustlin), included a survey of riders on all CAT routes, analyses of vehicle travel times and on-time performance, and a boarding and alighting survey at each bus stop.

The study resulted in the development of a series of alternatives guided by the following principles:

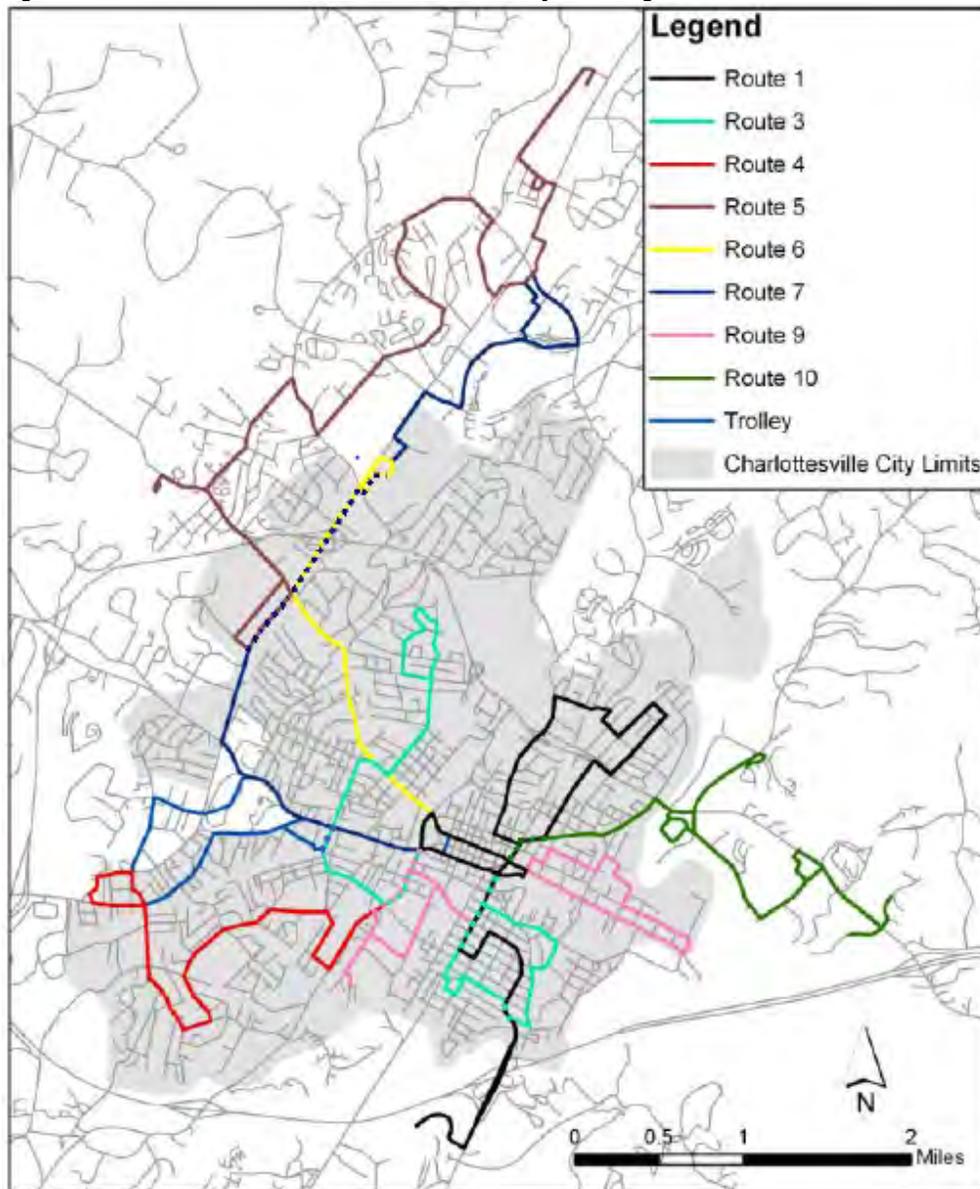
- Design routes and schedules so that reliable, on-time performance could be maintained
- Incorporate driver layover/make-up time and service to the Downtown Station in schedules
- Focus resources where they could be most productive
- Reduce duplication of CAT routes on West Main Street
- Reduce duplication with UTS services
- Require each bus to stop at the Downtown Station on each trip
- Maintain a 30-minute pulse at the Downtown Station

The study resulted in two alternative service design scenarios, both of which were designed to be cost-neutral. The first scenario, called "Minor Changes", included relatively small changes to improve performance and reliability, including increasing the number of buses allocated to specific routes or making small changes in route operations to better match published schedules. In this scenario, changes were proposed for Routes 1, 2, 3, 4, 6, 7 and the Trolley.

The second scenario, called "Major Changes," included more intensive changes that would significantly restructure the system. This scenario included changes that would combine or eliminate branches of service, add vehicles and travel time on Routes 1, 2, 3, 4, 6, 7, 9, and the Trolley. The route structure for Major Changes is shown in Figure 101 below.

The study proposed that both Minor and Major changes be broken into two phases; Phase I would occur in FY2006 and affect Routes 7, the Trolley, and three County routes, and Phase II would occur in FY2007 for the remaining routes. Compared with the CAT system today, the overall design of service presented within the study largely resembles current service; some additional coverage is provided today, and there are a number of routing differences.

Figure 101 Route Structure for Major Changes



Transit Marketing Study (May 2009)



Purpose:

The Marketing Study provides a four year strategic marketing plan for CAT services.

Author:

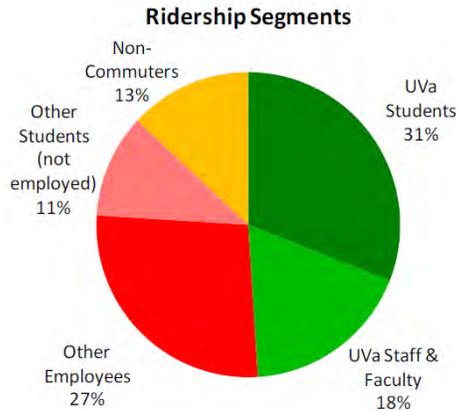
Prepared for Charlottesville Transit Service (CAT) by Transit Marketing LLC

Key Findings:

In 2009, CAT conducted a Transit Marketing Study to ascertain the effectiveness of its marketing, branding and communications programs. The study developed a profile of CAT's key ridership markets and a Marketing Plan that outlined a set of strategies to improve CAT's marketing. The study included an on-board survey of passengers and stakeholder interviews. Key findings included:

- Almost half of all riders were UVA affiliates (see Figure 102).
- Most riders were satisfied with the quality of service they received—95% would recommend CAT to a friend or coworker.
- Stakeholder interviews revealed that CAT needed improvement in the areas of customer awareness, customer knowledge, and overall customer image of public transit in Charlottesville.
- Awareness of the Free Trolley was relatively strong, and all stakeholders were supportive of the role of services in the community, many did not understand how services work, and some perceived services as not "good enough for the average resident to use".
- To increase ridership, stakeholders recommended both enhancing communications and enhancing or expanding services.

Figure 102 Charlottesville Transit Service Ridership Segments



The Marketing Plan presents strategies to improve CAT’s marketing, including branding, customer experience, passenger information, advertising, public relations, outreach and targeted ridership promotions aimed at key rider segments, such as UVa students and faculty. The recommended strategies were grouped into three broad areas:

1. Branding strategies to increase the general visibility of the system and create a cohesive image, mainly through a new name, logo, vehicle graphics, and signage.
2. Signage and amenities enhancement strategies, including designation of “signature stops” with premium amenities at key locations, potentially utilizing technology enhancements such as Automatic Vehicle Location.
3. Passenger Information strategies to make it easier for new riders to learn to use CTS services, focused on improvements to print and online public information.

The Marketing Plan includes a budget for the recommended strategies. To pay for these improvements, the Plan recommended that CTS allocate 2% of its operating budget to marketing, which was almost twice as much as was previously allocated.

Charlottesville-Albemarle Regional Transit Authority Plan (June 2008)



Purpose:

To examine the possibility of creating a single consolidated Regional Transit Authority (RTA) for the Charlottesville region, and to provide an organizational, funding and operating plan for the RTA.

Author:

Prepared for the Thomas Jefferson Planning District Commission by Vanasse Hangen Brustlin

Key Findings:

The Charlottesville-Albemarle Regional Transit Authority Plan evaluates the possibility of creating a single unified Regional Transit Authority (RTA) that would be responsible for the development and promotion of transit services for the greater Charlottesville region. The creation of an RTA would allow consolidation of existing services provided currently by University Transit Service (UTS), CAT, and JAUNT. (Although Federal charter regulations were noted as a potential problem for University of Virginia's participation in the RTA, agencies proposed as potential RTA participants included CAT, JAUNT, the City of Charlottesville, and Albemarle County.)

Paired with the consideration of consolidation of service providers was the evaluation of different transit service scenarios for the region. Six different service scenarios were considered, each of which represented different levels of investment in additional transit service. Ultimately, Option 4A, which included a heavy emphasis on Bus Rapid Transit (BRT) service along West Main Street, added eight new local routes and two commuter routes, and proposed other changes to existing service, was chosen as the preferred alternative.

The RTA Plan also provides a cost estimate for the proposed service additions and a cost sharing model primarily based on service hours (rather than on route assignment as is the current practice between the City of Charlottesville and Albemarle County for CAT service). It also proposes an implementation schedule based on a July 2009 formation date, a staffing plan, an evaluation of potential funding sources, and other implementation guidance. To date, the formation of an RTA is still under consideration, but legal and financial mechanisms to implement an RTA are still uncertain.

Proposed Barracks Road Station Design (2008)

Purpose:

The proposed Barracks Road Station design plan provides a drawing and pricing sheet for a CAT transfer station located at Barracks Road Shopping Center.

Author:

Barracks Road Shopping Center

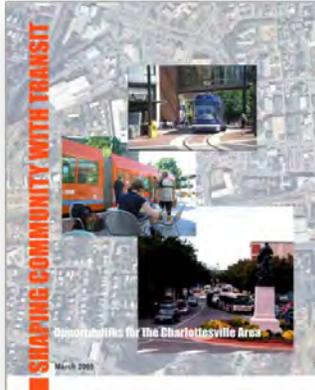
Key Findings:

Barracks Road Shopping Center (BRSC) is a popular retail destination within the City of Charlottesville located adjacent to the University of Virginia campus. As of 2012, three CAT bus routes travel through the shopping center and several CAT bus stops are located within it. As such, BRSC is a relatively important transit hub within the region. The proposed Barracks Road Station Design provides a design and cost plan for an enhanced transfer station where passengers would be able to make connections between CAT buses. The proposed design scheme includes two passenger platforms, shelters, benches, lighting, and real-time bus travel information. The transfer center would be located in the parking lot perpendicular to Emmet Street (see Redevelopment Design below in Figure 3).

The proposed Barracks Station would reduce conflict between CAT buses and passengers and other vehicle traffic within the Barracks Road Shopping Center by more effectively separating bus activity from the existing vehicle traffic and replacing the four stops already within the shopping center area.

The Redevelopment Design shown below in Figure 3 is dated March 2008 and was projected to cost \$1.6 million. CAT prepared an FY2011-FY2015 budget request for \$320,000 City funds and \$1.2 million federal dollars to fund the project. Currently, the project is still under consideration.

Corridor Concepts for Light-Rail Transit in Charlottesville and Environs (August 2002)



Purpose:

The *Corridor Concepts* study presents a concept for a streetcar transit system on an isolated right-of-way between downtown Charlottesville and several outlying areas within a 20-mile radius of the City.

Author:

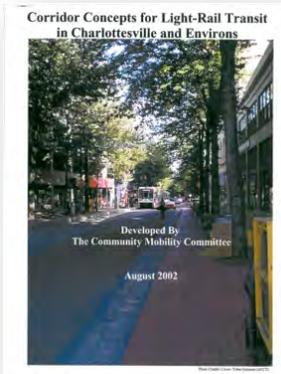
The Community Mobility Committee, an advisory committee to the Thomas Jefferson Metropolitan Planning Organization.

Key Findings:

The objective of the *Corridor Concepts* study is to present an initial corridor concept plan for a high-capacity transit system within the Charlottesville region. Developed by the Community Mobility Committee, an advisory committee to the Thomas Jefferson Metropolitan Planning Organization, *Corridor Concepts* proposes that a light rail capacity system consisting of three routes should be constructed between Charlottesville and several outlying areas surrounding the City. The paper suggests potential route alignments for the light rail, as well as potential station locations that reflect present and expected future patterns of residential, employment, and commercial development. The basic route alignments proposed mirror Route 29 North to Greene County, Route 250 East to Fluvanna County, and Route 250 West to Crozet.

The plan presents almost no justification for the extension of high-capacity transit services to relatively low-density areas within and surrounding Charlottesville, and to date, no action has been taken to move forward with rail transit in the region.

Shaping Community with Transit (March 2009)



Purpose:

This study presents a case for a streetcar to run along West Main Street in Charlottesville arguing that two major development cores along the street will provide sufficient economical support for the system.

Author:

Alliance for Community Choice in Transportation (ACCT), a Charlottesville-area network of citizens and groups dedicated to promoting balanced transportation options and transit-oriented communities; consultants Okerlund Associates and DMJM+Harris provided project support.

Key Findings:

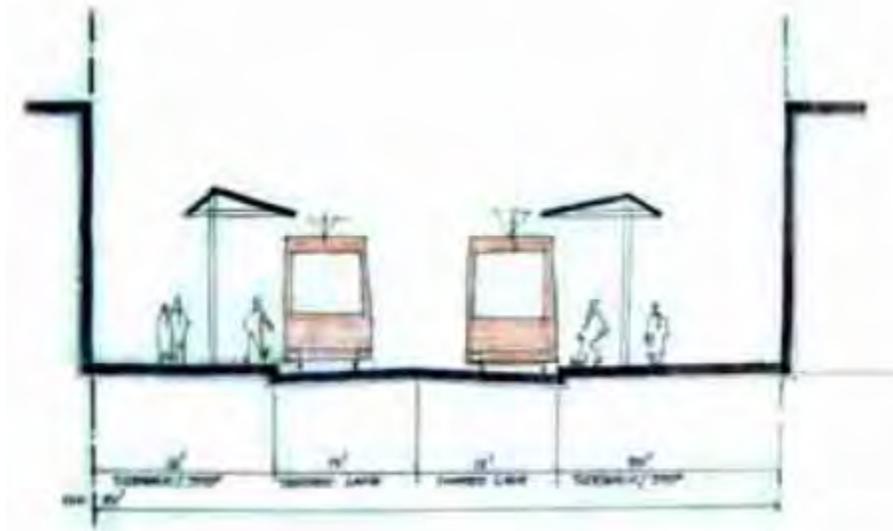
Building on the 2002 *Corridor Concepts for Light-Rail Transit* paper published in 2004, the Alliance for Community Choice in Transportation (ACCT) secured funding from the Blue Moon Fund, an environmental philanthropic organization, to research the demand for and economic feasibility of creating a streetcar system on West Main Street. This study included a 'technical preview' of the corridor to determine sketch-level feasibility of a streetcar system led by a consultant from DMJM+Harris, and a field visit to Portland, OR and Tacoma, WA to observe other national examples of streetcar implementation. *Shaping Community with Transit* reports on the results of these activities and concludes that the City would benefit from and would be able to economically support the proposed streetcar.

In support of these conclusions, the study notes that the City has two distinct cores, the downtown area and the University of Virginia, separated by about a mile along West Main Street. According to the study, both of these nodes and the corridor connecting them will be experiencing significant development in the near future and will provide sufficient ridership to warrant a streetcar system. Additionally, at the time of the study, the University was implementing strategies to discourage car usage on campus, such as creating satellite parking lots, and was planning hospital expansion on West Main Street.

The final study document presents a set of national streetcar case studies, an overview and case studies of Transit Oriented Developments (TODs), and a preliminary design scheme for a streetcar in Charlottesville (see Figure 104 for an example streetcar section presented). The study concludes with next steps, including preserving existing right-of-way for future streetcar development, completing a "Development and Design Build-out Vision" for the corridor, conducting an economic benefits analysis, completing a comprehensive technical and location feasibility evaluation, and adopting a citywide transportation plan that links transit and parking. Compared with the *Corridor Concepts* plan described previously, this study presents an initial streetcar feasibility study with a more in-depth examination of streetcar technology and the appropriateness of the

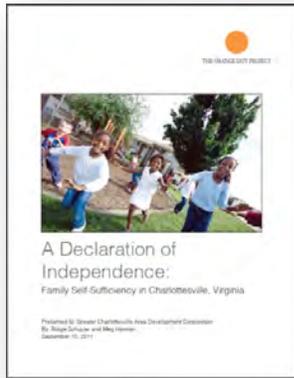
technology for the region, using a more limited geographic scope focused on higher-density areas of Charlottesville.

Figure 104 Streetscape Design for Proposed West Main Streetcar Transit Stop



CITY OF CHARLOTTESVILLE AND ALBEMARLE COUNTY STUDIES

The Orange Dot Project (September 2011)



Purpose:

The Orange Dot Project provides a strategy for the City of Charlottesville to alleviate poverty over the next generation.

Author:

Prepared for the Greater Charlottesville Area Development Corporation by Ridge Schuyler and Meg Hannan

Key Findings:

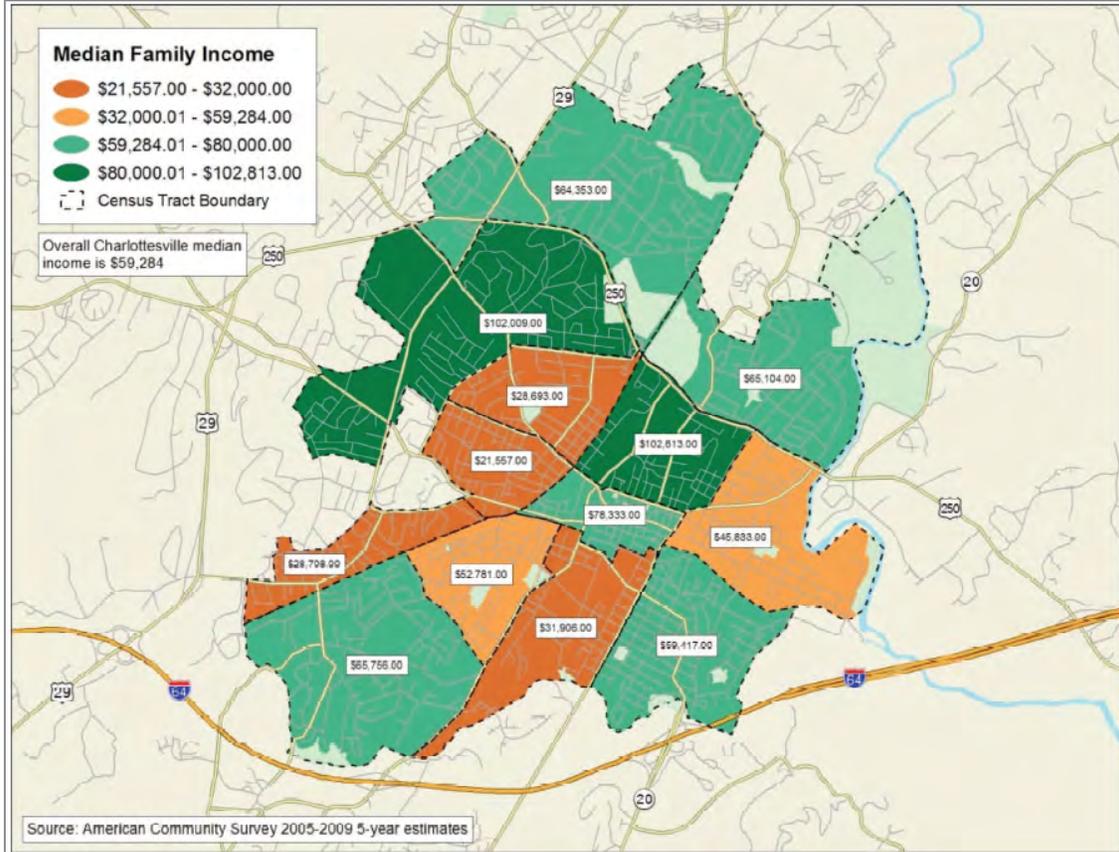
The Orange Dot Project is a study aimed at identifying means by which the City of Charlottesville can address poverty issues within the community. The report was created by two independent researchers and presented to the Greater Charlottesville Area Development Corporation in 2011. The report focuses on the 1,388 families (19.6%) in Charlottesville who are living at or below the poverty level. (Focusing on family households only and not all households living in poverty allowed the report to exclude data potentially skewed by university students.) The authors of the report emphasize that the cycle of poverty is likely continued through parents and children.

As shown in Figure 105, there are four neighborhoods within the City that have a higher than average proportion of families living below the poverty level. The Project creates a plan for addressing the cycle of poverty, and recommends a two-pronged approach:

1. Job creation at the community level that starts by taking advantage of regional economic power.
2. Job readiness at the family level through a comprehensive strategy that addresses childcare, housing, transportation, and education.

CHARLOTTESVILLE TRANSIT STUDY | Final Report
 Charlottesville Area Transit

Figure 105 Map of Charlottesville Neighborhoods with Families Living Below the Poverty Level



The City of Charlottesville Comprehensive Plan (2001)

Purpose:

The 2001 Comprehensive Plan provides an overview of regional transportation initiatives planned by the Charlottesville-Albemarle Metropolitan Planning Organization (MPO).

Author:

City of Charlottesville

Key Findings:

The *2001 Comprehensive Plan* provides broad-based goals and visions for the Charlottesville-Albemarle Metropolitan Planning area. The majority of transportation recommendations within the Plan deal with alleviating road congestion through expanding roads, building or repairing bridges, or adding traffic signals; however, the Plan also describes two recommendations for transit improvements:

1. Build a multi-modal Downtown Transit Transfer Center, which would relocate the Greyhound Bus Terminal to the site. The center would create structured parking and a tower at the Drewary Brown Bridge which would serve as a visual civic beacon on West Main, announcing the train station, and potentially increasing public awareness and transit ridership.
2. Study the feasibility of creating a light-rail transit line in the center lane of Emmet Street.

The City of Charlottesville Comprehensive Plan (2007)

Purpose:

The 2007 Comprehensive Plan examines current conditions and recommends possible changes to transportation in the City.

Author:

City of Charlottesville

Key Findings:

The *2007 Comprehensive Plan* sets a goal of providing a safe, efficient transportation system that reduces single occupancy vehicle travel (from 61% to 50% for commuters) by prioritizing alternative modes of travel. The plan acknowledges that access to transit is limited for travel between the City and adjacent counties, forcing area residents to drive to and from the City. To address this issue, the Plan provides a number of recommendations:

- Increase regional access to transit for County-City travel by actively participating in the establishment of the Regional Transit Authority and encouraging transit connections
- Cooperating with Albemarle County to explore express bus lanes and other transit improvements north of the City
- Exploring the feasibility of a streetcar along the Main Street Corridor
- Continuing to expand transit service and increase ridership (although funding is identified as a major obstacle)
- Expanding the supply of housing in areas of the City that allow residents to connect to employment opportunities by walking and using public transit

The 2007 Plan also provides an update on the progress of the Downtown Transit Station that was recommended in the 2001 Comprehensive Plan, albeit at a different location (near the downtown pedestrian mall rather than Drewary Brown Bridge). As the 2007 Plan was being written, the Station was being built, opening for the public in March of 2007, albeit at a different location. The Station provides a first floor waiting area for CAT passengers replacing transfer points formerly located on Market Street at 2nd Street, NE and Water Street at 2nd Street, SE. The map shown in Figure 106 below indicates the proposed CAT (known as CTS at the time) day service route changes with the completion of the Downtown Transit Station. Notably, services look very similar to those provided currently.

CHARLOTTESVILLE TRANSIT STUDY | Final Report
 Charlottesville Area Transit

Figure 106 Proposed CAT Day Service Route Changes after Completion of the Downtown Transit Station



- Utilize technology to maximize efficiency and convenience

The Plan also advocates for increased investment in transit. It recommends conducting a Transit Corridor Analysis to investigate various transit technologies and specific priority transit routes and stations, including the West Main-Emmet Street-Route 29 North Corridor and potential 'Transit Targets,' such as shopping centers and proposed mixed use development on Route 29. Additionally, the Plan recommends investing in new technologies for JAUNT demand response transportation to provide enhanced service to rural counties. Finally, the plan recommends allocating funding to construct new or repair existing Park and Ride Lots.

United Jefferson Area Mobility Plan (UnJAM) 2035 (May 2009)



Purpose:

The 2035 UnJam plan develops effective regional solutions to transportation and land use planning issues for the MPO area and the TJPDC five counties building upon the principles and goals established five years prior in UnJAM 2025.

Author:

Thomas Jefferson Planning District Commission (TJPDC)

Key Findings:

The 2035 United Jefferson Area Mobility Plan (UnJam) re-examines the regional mobility goals identified in UnJAM 2025 (described previously) and provides several broad based recommendations for improving transit service and increasing transit use in the region.

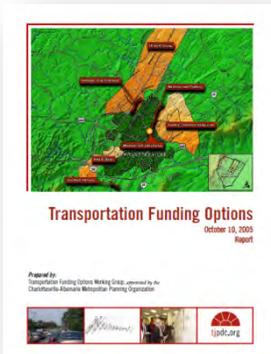
The plan recommends creation of a Regional Transit Authority (RTA) that includes additional localities and entities such as JAUNT, UTS, and Monticello. The City of Charlottesville and Albemarle County would jointly govern, manage and fund transit services through this RTA. The plan recommends that Charlottesville and Albemarle County fund the proposed RTA by levying a local tax; however, the plan acknowledges that the 2009 Virginia General Assembly granted permission to form the RTA, but did not provide the authority to host a public referendum on levying a local tax.

UnJAM 2035 also recommends improvements to the current bus system, including:

- Transportation facilities are able to support rapid transit service
- Bus stops with shelters, time tables, and bus finders
- Appropriate sidewalk access to bus stops
- Bike lane and park and ride linkages to bus stops

Additionally, the study suggests that by 2035 the growth in residential and employment concentrations within various counties may have reached sufficient density to support several light rail transit corridors.

Transportation Funding Options (October 2005)



Purpose:

This report reviews current transportation projects in the region to identify priority projects and explore alternative funding sources.

Author:

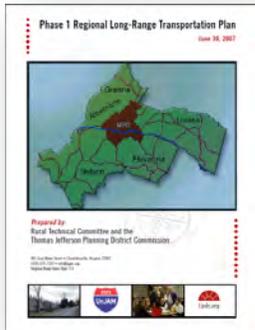
Transportation Funding Options Working Group,
appointed by the Charlottesville-Albemarle Metropolitan
Planning Organization

Key Findings:

In 2004, the Charlottesville-Albemarle Metropolitan Planning Organization (MPO) convened the Funding Options Working Group, which consisted of a small group of interested stakeholders, to explore alternative sources of funding for priority transportation projects. This effort resulted in the 2005 *Transportation Funding Options report*. Presented with the MPO-defined priority projects, the Group identifies nine high-priority projects; none of these include transit or alternative transportation projects. In 2005, the proposed total budget of these nine projects was an estimated \$127 million. The report addresses the need to secure this funding and explore alternatives revenue sources.

The report offers alternative policy options for the MPO to consider, including, but not limited to, the creation of a Transportation District, revenue sharing, public-private partnerships, contributions from property owners willing to participate in the projects, and other local funding efforts that would create bondable streams of funding. According to the report, potential alternative revenue sources include an incremental sales tax, area-specific value-added revenue, an incremental gas tax, or a blend of these options.

Regional Long-Range Transportation Plan (June 2007 - June 2008)



Purpose:

The Regional Long-Range Transportation Plan, guided by the goals of UnJAM 2025, maps existing transportation data for further analysis and planning and provides summaries of local plans.

Author:

Thomas Jefferson Planning District Commission (TJPDC)

Key Findings:

Prepared by the Thomas Jefferson Planning District Commission (TJPDC) and guided by the vision and goals identified in the United Jefferson Area Mobility Plan 2025 (UnJAM), the Regional Long-Range Transportation Plan provides maps and charts that show existing transportation systems throughout the five county TJPDC planning district. As shown in Figure 107, this report mapped existing transit, bicycle facilities, and freight generators for the five-county TJPDC area.

The Regional Long-Range Transportation Plan also provides an overlay map of existing regional and local transit services in relation to the location of disadvantaged populations (elderly, disabled, and low income) in order to identify areas into which to expand service. Figure 108 shows these findings for the five-county region.

Additional maps included in the report show land use features, such as critical facilities and commercial, residential and industrial growth areas, and socio-economic factors, such as population, and employment. The maps in this report were used to write the United Jefferson Area Mobility Plan 2035 (UnJAM).

In addition to maps, the Long-Range Transportation Plan includes summaries of local plans that were written since the completion of UnJAM 2025 in 2004; these include:

- Crozet Development Area Master Plan
- Reinvesting in Scottsville's Heritage
- Fork Union Community Plan
- Lake Monticello Community Plan
- Palmyra Community Plan
- Zion Crossroads Community Plan
- Lovingston Safety Study
- Nellysford Community Plan
- 2020 Community Plan on Aging

CHARLOTTESVILLE TRANSIT STUDY | Final Report
 Charlottesville Area Transit

Figure 107 Map of Existing Transit in the Five County TJPDC Planning District

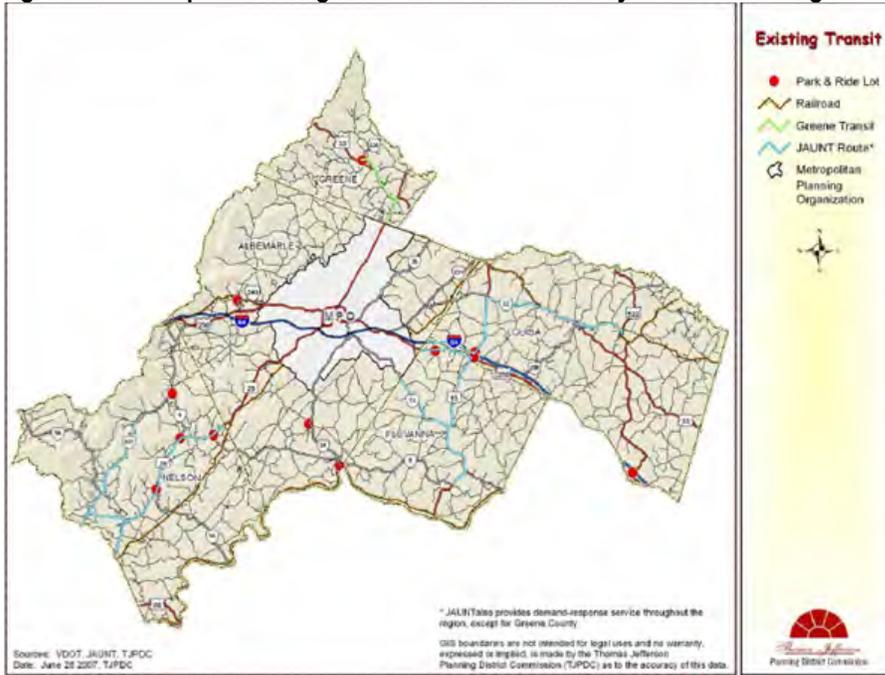
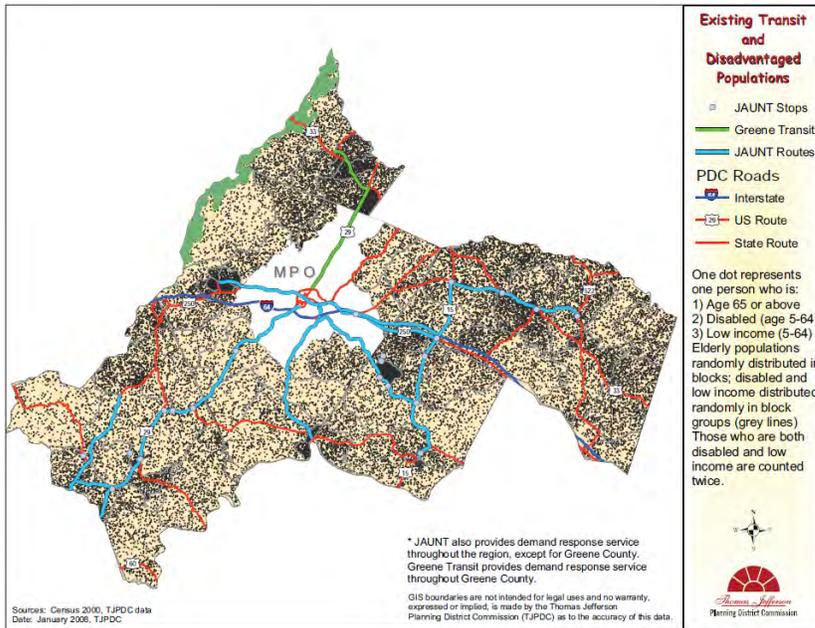


Figure 108 Map of Existing Transit and Disadvantaged Populations within the Five County TJPDC Area



APPENDIX B

Ridership Estimation Methodology

RIDERSHIP ESTIMATION METHODS

Ridership projections were developed using the following methods:

Changes in Service Levels

TCRP Report 95, “Traveler Response to Transportation System Changes,”⁷ found that “Increased bus frequency normally attracts increased patronage, and vice versa but with wide variation in results” but that “elasticities calculated for the more recently reported frequency changes group either around an elasticity of +0.3 or around +1.0, the threshold of elastic response. Nevertheless, both historical and more recent elasticities of bus service changes exhibit a service elasticity average that is on the order of +0.5.” These estimates use the average elasticity of +0.5, with service levels measured in terms of daily trips. Ridership for the 30-Minute Frequency Scenario uses an elasticity of +0.55 due to the added visibility of full-system 30 minute service.

Changes in Service Coverage

In some cases, some streets will no longer be served, and in these cases, changes in service coverage were measured in terms of changes to the number of riders that would be served. For example, if a segment of a route that carried 3% of a route’s riders would be eliminated, service coverage was assumed to decrease by 3%, and that percentage was applied to total ridership.

In other cases, the potential changes would reconfigure service so that areas now served by one route would instead be served by another. In these instances, where service characteristics would remain similar, it was assumed that riders would shift from one route to another without significant changes in overall ridership. In cases where there would be substantial changes in service levels to significant numbers of riders shifting routes, the service level elasticity of 0.5 was also applied.

Changes in Travel Time

There is only limited data available on the ridership impacts of changes in travel times on local bus routes, which indicates that travel time elasticities range from 0.22 to -0.60.⁸ For these estimates, the mid-point value of -0.4 was used. However, because of the complexities of determining travel time impacts on a route-by-route basis (which require detailed analysis of changes in running times and boarding and alighting locations of passengers), travel time impacts were only estimated in cases where the changes would be significant. In these cases, order of magnitude assumptions were applied that were intended to understate the likely improvements.

⁷ Transit Cooperative Research Program, 2004.

⁸ “Transportation Elasticities: How Prices and Other Factors Affect Travel Behavior,” Todd Litman, Victoria Transport Policy Institute, November 2005.

Changes to Simplify Service

Experience from other areas indicates that service reconfiguration directed at simplifying service can attract more regular riders, more casual or spontaneous riders, and enhance the overall transit experience. Although it is often difficult to separate the impacts of individual types of changes, experience from three other cities indicates that these types of changes can increase ridership by 10 to 20% (see Table 2). Considering the complexity of some existing CAT services, a simpler route structure and more direct service would be expected to increase ridership by up to 25%. Depending upon the degree of simplification on a route-by-route basis, increases of 0 to 25% were assumed. Larger percentage increases are applied where service becomes significantly more direct or easier to use.

Figure 109 Service Rationalization Results in Other Areas

Community	Actions	Results
Seattle/Renton, WA	Establish Hub & Spoke structure; route consolidation on key corridors; improved cross-town, community, and reverse-commute services. Intense community outreach and analysis involved in designing changes.	Ridership: +12%
Orange County, CA	Increase service on key routes; Headways made more consistent; unproductive routes eliminated; new community & feeder routes. Overall service-hours reduced	Ridership: +10% Operating Costs: -5%
Riverside, CA	Increased frequency on key direct routes, implemented clockface headways	Ridership: +20% Service Hours: +4%

Source: TCRP Report 95, Chapter 10 – Bus Routing and Coverage

Imposition of Transfers

The imposition of transfers increases travel times and makes service less convenient. The additional travel times is typically measured as the actual in-vehicle travel time, plus the wait time for the next vehicle, measured as half of the service frequency. The inconvenience of the transfer is often translated into the equivalent of 5 minutes of additional travel time.

In theory, transfer times would vary by time of day, and would be shorter during peak periods when service operates more frequently, and longer during off-peak periods when service operates less frequently. However, to simplify the analysis, wait times were estimated at 3/4ths of the peak period service frequency. Then, the total increase in travel time was estimated as the in-vehicle travel time plus the transfer time plus a five minute transfer penalty. The change in travel time was then applied to the ridership impacted by the transfer. In all service scenarios, Route 9’s service change would result in transfer impacts.