Comprehensive Operations Analysis

December 2017

Johnson City MTPO
Metropolitan Transportation Planning Organization

AECOM

Acknowledgments

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Executive Summary

Johnson City Transit (JCT) provides an excellent mobility service to the Johnson City community. The JCT service operates both fixed-route and demand responsive services, which includes paratransit services to certified ADA passengers. JCT daily ridership is estimated to exceed 2,000 passenger trips. The hub of the service is the Transit Center at 137 W. Market Street, which serves as the main transfer point for JCT riders, Greyhound and local taxi companies, and provides connection service to NET Trans riders.

The objective of this Comprehensive Operations Analysis (COA) is to identify areas where the fixed-route bus service, demand response paratransit service, and East Tennessee State University (Bucshot routes) service could be more responsive in meeting the growing transit needs. The AECOM team has developed a methodology to address existing conditions and crafted recommendations based on a phased-in approach to meet future needs. The main focus of this document is the fixed-route service metrics, analyzing categories that include geo-spatial routing, operational elements necessary to meet on-time performance, addressing route productivity, reviewing demographic data and evaluating the strengths, weaknesses, opportunities and challenges of meeting both the public demands and seeking to make infrastructure recommendations to improve transit service administration.

Driver and Rider Surveys

As part of the COA process, the AECOM team conducted driver and rider surveys to gain valuable insight into JCT operations, travel patterns, and rider demographics. Interviews with JCT drivers occurred on September 7, 2017. The objective of the surveys was to receive operational feedback from the drivers' perspectives in order to document effective practices and to address scheduling, routing, and any safety concerns associated with JCT's fixed-route service. Participation in the survey was voluntary and anonymous.

The rider survey took place during the week of September 18-23, 2017. It was made available both in English and Spanish. JCT provided two incentives that significantly improved the data collections results. First, JCT offered a free 10-ride pass to riders who completed the survey and second, JCT implemented a free-ride-week during the time of the survey. Due to the JCT incentives, the original target of 310 surveys for a statistical valid survey was surpassed significantly with a total of 1,700 rider interactions yielding a total of 1,200 completed surveys. The survey methodology and results are explained further in Chapter 3.0.

Land Use and Demographics

The AECOM team reviewed existing conditions of land use development and the latest demographic data to determine both unmet needs and future expansion possibilities for transit service. The Johnson City MTPO staff and JCT staff provided valuable information on both short-range and long-range planning parameters that is reflected in the recommendations.

Current Service

An operational inventory was conducted to analyze route structures, route lengths, running times, schedule convenience and connectivity, bus equipment and the scheduling of ADA paratransit service. The AECOM team conducted surveys with bus drivers and system riders to obtain objective input on meeting operational aspects of the current operation. This process was helpful in creating data summaries and trend analytics to assist with providing baseline projections and future forecasting.

Service Issues

Some of the service issues that were identified included:

- On-time performance of the fixed-route service
- ADA paratransit scheduling
- Increased congestion due to local train activity and increase in traffic
- Connective service to the Jonesborough community
- Driver training
- Duplication of fixed-route services
- Clarity of route information

Peer Analysis

A peer analysis was performed to analyze the general performance indicators, effectiveness measures, and efficiency measures of JCT in relation to its peer transit agencies. The analysis was based on an established methodology from the *Florida Transit Information System's Urban Integrated National Transit Database (Urban iNTD)*. Fixed-route and demand response services were assessed separately due to their distinct differences in operational characteristics. The results of the peer analysis are summarized below and explained further in Section 4.4:

Fixed-Route

- Provides the greatest numbers of fixed-route trips and revenue hours
- Consistently ranks higher than fixed-route peers in all of the effectiveness measures
- Ranks average compared to its peers for efficiency

Demand Response

- Provides the most number of passenger trips per capita
- Is not as efficient compared to its peers.

Recommendations

The COA recommends changes related to the JCT fixed-route network, amenities, paratransit service and scheduling software, rideshare program, and capital needs. The recommendations are summarized in Table ES-2 at the end of the Executive Summary.

The objective of the recommended route changes are to address the on-time performance issues and geographic duplication of service. The goals of these changes are to improve on-time performance, increase efficiency and improve customer service. Each recommended route change is described in Section 5.1 along with an accompanying map.

The COA presents four alternatives, or service plans, to offer JCT and the MTPO with options for balancing transit service with available resources. JCT and the MTPO may choose to select any of the four service plans or a hybrid of several. The service plans are described below and the associated costs are summarized in Table ES-1.

Service Plan 1

Service Plan 1 is a cost-neutral alternative that would improve transit service while maintaining the same operational costs. This is accomplished by restructuring JCT's existing fixed routes to improve on-time performance and efficiency while using the same number of vehicles and drivers to provide the service. The frequency and duration of transit service remains nearly identical to the current service.

Service Plan 2

Service Plan 2 provides the same frequency and duration as Service Plan 1, but includes the Jonesborough Express (JBX) route and therefore would not be cost-neutral. Service Plan 2 includes two morning and two afternoon JBX trips Monday-Friday for an additional annual cost of approximately $80,000.

Service Plan 2 also includes modified Bucshot Red and Bucshot Teal routes. The modified Bucshot Red would no longer serve Monarch Apartments, serving instead as a campus circulator. The modified Bucshot Teal would serve Monarch Apartments and University Edge with one bus throughout the day and a second bus at peak morning and afternoon times for a total of four operating hours per day. The incremental cost associated with the modified Bucshot routes is $40,000.

Service Plan 3

Service Plan 3 also includes four daily JBX trips and modified Bucshot Red and Bucshot Teal routes. It increases frequency from once every 60 minutes to once every 30 minutes on Routes 1, 2, and 4 only. All other daytime routes would have the same frequencies and durations as Service Plans 1 and 2. These three routes were chosen for increased frequency due to their higher performance in the comparative route analysis (refer to Section 2.5). Service Plan 3 proposes a modified PM Evening route. The existing PM Evening North and West routes would be combined into one route that would serve the same locations. Bi-directional transit service would be provided on this route thereby decreasing travel time for riders. On-time performance would be anticipated to improve for the PM Evening route. The estimated cost for Service Plan 3 would be approximately $810,000 more than Service Plan 1.

Service Plan 4

Service Plan 4 increases frequencies on Routes 1 through 7 to 30 minutes, includes eight daily JBX trips, and includes the PM Evening route discussed under Service Plan 3. The modified Bucshot Red and Bucshot Teal routes are included as well. It is estimated to cost approximately $1,660,000 more than Service Plan 1.

The costs of each respective service plan are summarized in Table ES-1, and are based on JCT's most recent operating cost per revenue hour of $63.78, 252 annual weekday operating days, and 52 annual Saturday operating days for fixed routes. For the Bucshot routes, 146 weekday operating days were assumed based on the 2017-2018 academic year. All of the service plans include the same Saturday service that is currently being provided. The JBX Route would not operate on Saturdays.

Table ES-1: Summary of Service Plans

	Service Plan 1	Service Plan 2	Service Plan 3	Service Plan 4
Total Estimated Annual Operating Costs	$2,010,000	$2,130,000	$2,820,000	$3,670,000
Additional Fixed Route Vehicles Needed	0	0	3	8
Total Estimated Fleet Capital Costs	$0	$0	$825,000	$2,200,000

Note: All costs reported in FY 2017 Dollars

Supporting Elements

In order to support the recommended fixed-route system, several elements are recommended related to administration, operations, and transit amenities. These supporting elements are listed below and explained further in Section 5.4.

- Perform a Title VI Analysis for the recommended fixed routes
- Revise maps and schedules to reflect the route changes
- Create a new position for a Mobility Manager
- Conduct a feasibility study for a transit maintenance facility
- Expand Rider Orientation Programs to ETSU students and faculty
- Adopt a Transit Amenities policy
- Install additional amenities at fixed-route stop locations

Paratransit Recommendations

JCT currently schedules the XTRA Paratransit service trips manually. It is recommended that JCT procure and implement paratransit scheduling software to automate this process, which would increase efficiency and likely lower operating costs. An analysis of JCT's paratransit peers showed that the current service is not as efficient compared to other peer systems. Utilizing scheduling software would improve JCT's ranking. An additional benefit of this software is the potential for riders to schedule rides online in addition to calling the JCT office.

In addition to procuring software, JCT may install Mobile Data Terminals (MDT) on its demand response vehicles. MDTs are tablets that allow for the drivers to easily view manifests and directions. They can also notify dispatch when a pickup or drop-off has occurred, thereby limiting the need for radio communications.

Paratransit trips are inherently more expensive to provide than are fixed-route trips. JCT may incentivize using the fixed-route system further by offering a free fare to Personal Care Attendants (PCA) accompanying the eligible paratransit rider on a fixed-route trip. PCAs currently ride free on paratransit trips so this policy may be extended to the fixed-route system.

Rideshare Program

JCT may initiate a Rideshare Program to enhance its fixed-route and demand response services and provide employment mobility options. Commuters, through their respective employers, would enter into agreements with JCT to utilize a passenger van to commute to and from their place of employment. The program could serve the two largest employers currently not served by JCT: Citi Commerce Solutions with over 2,000 employees and Frontier Health with approximately 1,000 employees. Both of these employers are located in Gray, within 1,000 feet of each other.

Financial

This COA estimates the funding required to fully implement one of the proposed service plans along with the corresponding capital program. Potential funding sources are identified at the federal, state, and local level. Further investments will be needed to expand the current fixed-route system to allow expanded hours of service and a larger service area with a route to the Town of Jonesborough. The overall financial goal of this COA is to manage these resources to provide maximum public benefit and long-term sustainability.

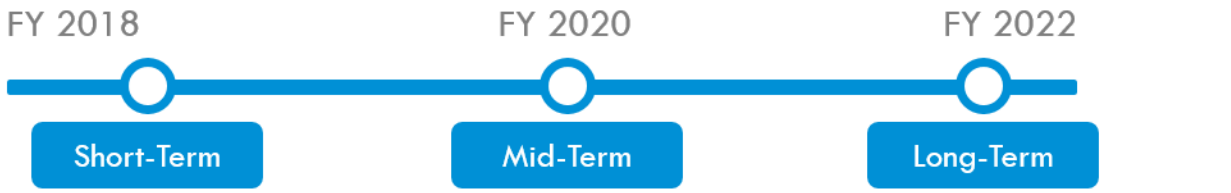
There are some specific capital needs that have been identified for funding over the next few years. In working with the JCT staff, we have included the following information on financial commitments needed to improve the transit operation:

- Improved bus stop amenities
- Procurement of additional vehicles for recommended fixed routes
- Replacement of HVAC system at the JCT Transit Center
- Replacement of the surveillance system at the JCT Transit Center
- Purchase of heavy-duty bus lifts
- Purchase of property for bus vehicle storage
- Replacement of bus lot surveillance cameras
- Replacement of AVL/Routing Software
- Implementation of an automated fare system

Table ES-2: Summary of Recommendations

Recommendation	Implementation Phase	Page Reference
Recommended Fixed Routes		
Implement Service Plan 1 (Implement One Service Plan)	Mid-Term	5-25
Implement Service Plan 2	Mid-Term	5-25
Implement Service Plan 3	Mid-Term	5-25
Implement Service Plan 4	Mid-Term	5-26
Title VI Compliance	Mid-Term	5-28
Revise Schedules and Maps	Mid-Term	5-28
Amenity Recommendations		
Adopt a Transit Amenity Policy	Short-Term	5-29
Install Additional Amenities	Mid-Term	5-29
Paratransit Recommendations		
Procure paratransit scheduling software	Short-Term	5-34
Update paratransit documents	Short-Term	5-34
Incentivize use of the fixed-route system	Short-Term	5-35
Rideshare Program		
Coordinate a Rideshare Program with regional employers	Long-Term	5-37
Administration Recommendations		
Add a Mobility Manager position	Long-Term	5-28
Conduct a feasibility study for transit maintenance facility	Long-Term	5-28
Expand the Rider Orientation Program	Mid-Term	5-29
Enhance driver training	Short-Term	5-28
Capital Needs		
Procure additional vehicles for recommended fixed routes	Mid-Term	5-27
Replace HVAC system at the JCT Transit Center	Mid-Term	6-3
Replace surveillance system at the JCT Transit Center	Short-Term	6-3
Purchase heavy-duty bus lifts	Short-Term	6-3
Purchase property for bus vehicle storage	Mid-Term	6-3
Replace bus lot surveillance cameras	Mid-Term	6-3
Replace AVL/Routing Software	Long-Term	6-3
Implement an automated fare system	Long-Term	6-3

Figure ES-1: Action Plan



Short-Term

- Adopt a Transit Amenities Policy
- Procure paratransit scheduling software
- Updated paratransit documents
- Incentivize use of the fixed-route system
- Enhance driver training
- Replace surveillance system at JCT Transit Center
- Purchase heavy-duty bus lifts

Mid-Term

- Implement Service Plan 1, 2, 3 or 4
- Perform Title VI Compliance
- Revise Schedules and Maps
- Install Additional Amenities
- Expand the Rider Orientation Program
- Procure additional vehicles for recommended fixed routes
- Replace HVAC system at the JCT Transit Center
- Purchase property for bus vehicle storage
- Replace bus lot surveillance cameras

Long-Term

- Coordinate a Rideshare Program with regional employers
- Add a Mobility Manager position
- Conduct a feasibility study for transit maintenance facility
- Replace AVL/Routing Software
- Implement an automated fare system

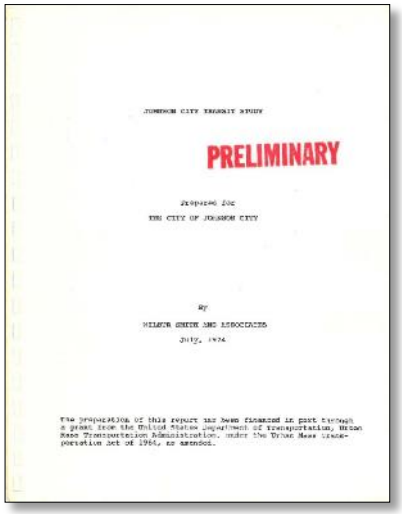
1.0 Analysis of Existing Conditions

This chapter provides an overview of previous plans, land use and development patterns, major travel nodes and activity centers, regional employment trends, and demographics in order to give a better understanding of the study area and its relation to Johnson City Transit (JCT) services.

JCT provides fixed route, paratransit, and job access transit services within the Johnson City corporate limits. According to the most recent National Transit Database (NTD) data, JCT provided over 620,000 fixed-route unlinked passenger trips and approximately 48,000 demand response trips in FY 2017. JCT administration and operations are based out of the JCT Transit Center located at 137 West Market Street in downtown Johnson City.

1.1 Local and Regional Context

Transit plans relevant to JCT, including the 1974 study that recommended the transit service, are summarized in this section.


JOHNSON CITY TRANSIT STUDY

PRELIMINARY

Prepared for
THE CITY OF JOHNSON CITY

By
NELSON SMITH AND ASSOCIATES
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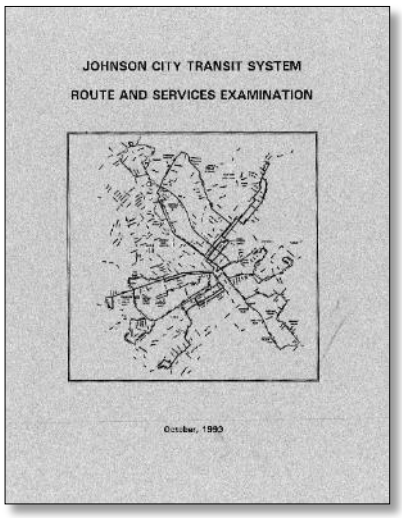
Johnson City Transit Study (1974)

In 1974 Johnson City undertook a transit study to assess the feasibility of providing a public transit system. At the time of the study, public transportation was provided by three private companies: Washington County Utility District, Continental Trailways, and Greene Bus Lines. The Washington County Utility District oversaw the Johnson City Transit Division, which operated four fixed routes. However, the study noted that this service was on the decline with decreased ridership and increased operating costs. Continental Trailways and Greene Bus Lines operated intercity bus service.

In response to the state of public transit and demonstrated transit need in the area, the study outlined a five-year transit development program. As part of the program, the study recommended public operation of the transit system by Johnson City, which led to the creation of JCT.

The five-year program included nine fixed routes; procurement of 29 buses, support vehicles, fareboxes, a marketing program, and a downtown bus station. During peak hours, 15 minute frequency was proposed and 30 to 45 minute frequencies during midday and

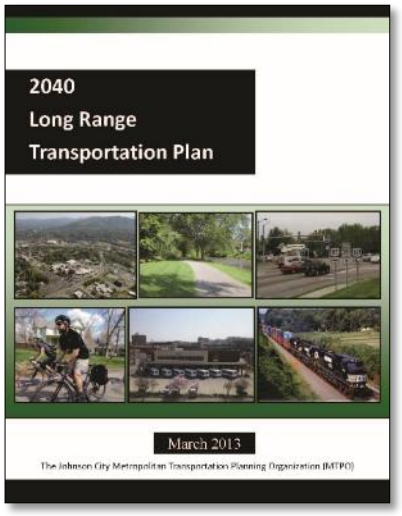
evening service. Five demand response zones were suggested to support the fixed-route service.



Johnson City Transit System: Route and Services Examination (1993)

JCT assessed its transit services by evaluating system operation, ridership, and performance measures. The assessment's objective was to determine if JCT's services could be more efficiently operated by a private transportation provider. As part of the assessment, service proposals were solicited from private transportation providers. However, no proposals were received.

The assessment determined that the operating expenses per revenue mile for fixed-route and demand response services were below the national averages for a small urbanized system.



2040 Long Range Transportation Plan (2013)

The 2040 Long Range Transportation Plan (LRTP) was prepared by the Johnson City Metropolitan Transportation Planning Organization (MTPO) as part of the continuing, comprehensive, and cooperative transportation planning process required by federal law for urbanized areas. Federal policy requires metropolitan planning organizations such as the Johnson City MTPO to develop a multimodal transportation plan with at least a 20-year planning horizon.

The 2040 LRTP establishes a transportation vision for the urbanized area and identifies specific roadway, non-motorized, and public transportation improvements based on public input, demographic analysis, and travel demand modeling. These improvements are fiscally constrained, meaning that the associated costs are tied to projected revenues.

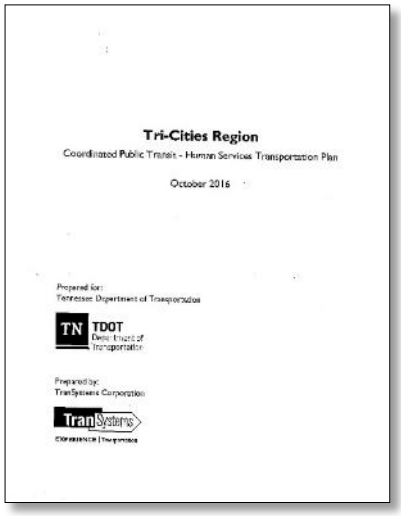
Public transportation improvements in the 2040 LTRP include:

- 156 buses and vans to replace existing vehicles meeting useful life criteria between 2014 and 2040 ($21.6 million)
- 21 additional buses and vans to expand transit service between 2014 and 2040 ($2.3 million)
- Transit amenities such as bus shelters, benches, and transit terminal improvements ($1.5 million)
- System signs and other enhancements such as bicycle and pedestrian facilities ($1.5 million)

- Automated vehicle locators and other technologies ($1.5 million)
- Support facilities and equipment ($1.5 million)

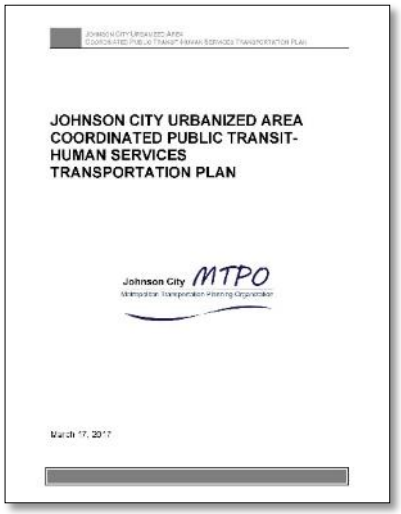
ETSU Campus Master Plan Update (2014)

The ETSU Campus Master Plan was updated in 2014 and focused on changes to the campus that have occurred since the last update in 2010. The plan documents the JCT transit services that are provided on ETSU campus; however, the plan does not make any specific recommendations pertaining to transit routing or scheduling. The parking element of the plan recommends moving parking away from the campus core in order to increase green space and make the campus more "pedestrian friendly." As a result, increased transit services may be needed to provide mobility for park-n-ride services between parking areas and on campus destinations.



Tri-Cities Region Coordinated Public Transit-Human Services Transportation Plan (2016)

The purpose of the Coordinated Public Transit—Human Services Transportation Plan (CPT-HSTP) for the Tri-Cities region, which includes the counties of Carter, Greene, Hancock, Hawkins, Johnson, Sullivan, Unicoi and Washington in Tennessee and Scott and Washington Counties in Virginia, is to create a better transit system for transportation disadvantaged populations: older adults, persons with disabilities, and persons with low income. The planning process included an evaluation of existing services and current service gaps and unmet needs faced by transportation disadvantaged populations. Using the information gathered through a public involvement process, a series of strategies was then created to address the identified service gaps and unmet needs. The plan, which was managed by TDOT, prioritizes strategies and activities for funding and implementation.



Johnson City Urbanized Area Coordinated Public Transit-Human Services Transportation Plan (2017)

The Johnson City MTPO adopted the Johnson City Urbanized Area Coordinated Public Transit-Human Services Transportation Plan in March 2017 in order to: improve transportation services for persons with disabilities, older adults, and individuals with lower incomes. This plan was authored by the Johnson City MTPO as required by the federal transportation law Fixing America's Surface Transportation (FAST) Act, in order to receive certain federal public transportation funding. It was an update to the previous coordinated plan originally adopted in 2007 and updated in 2012.

This plan establishes a coordinated public transit-human services transportation plan for the Johnson City Urbanized Area for all FTA human service transportation programs. Included in this plan is a demographic analysis of the urbanized area, review of existing transportation services, summary of public and stakeholder participation, assessment of needs and service gaps, and potential transit solutions and strategies.

The plan identifies three priority areas for addressing service gaps and unmet needs:

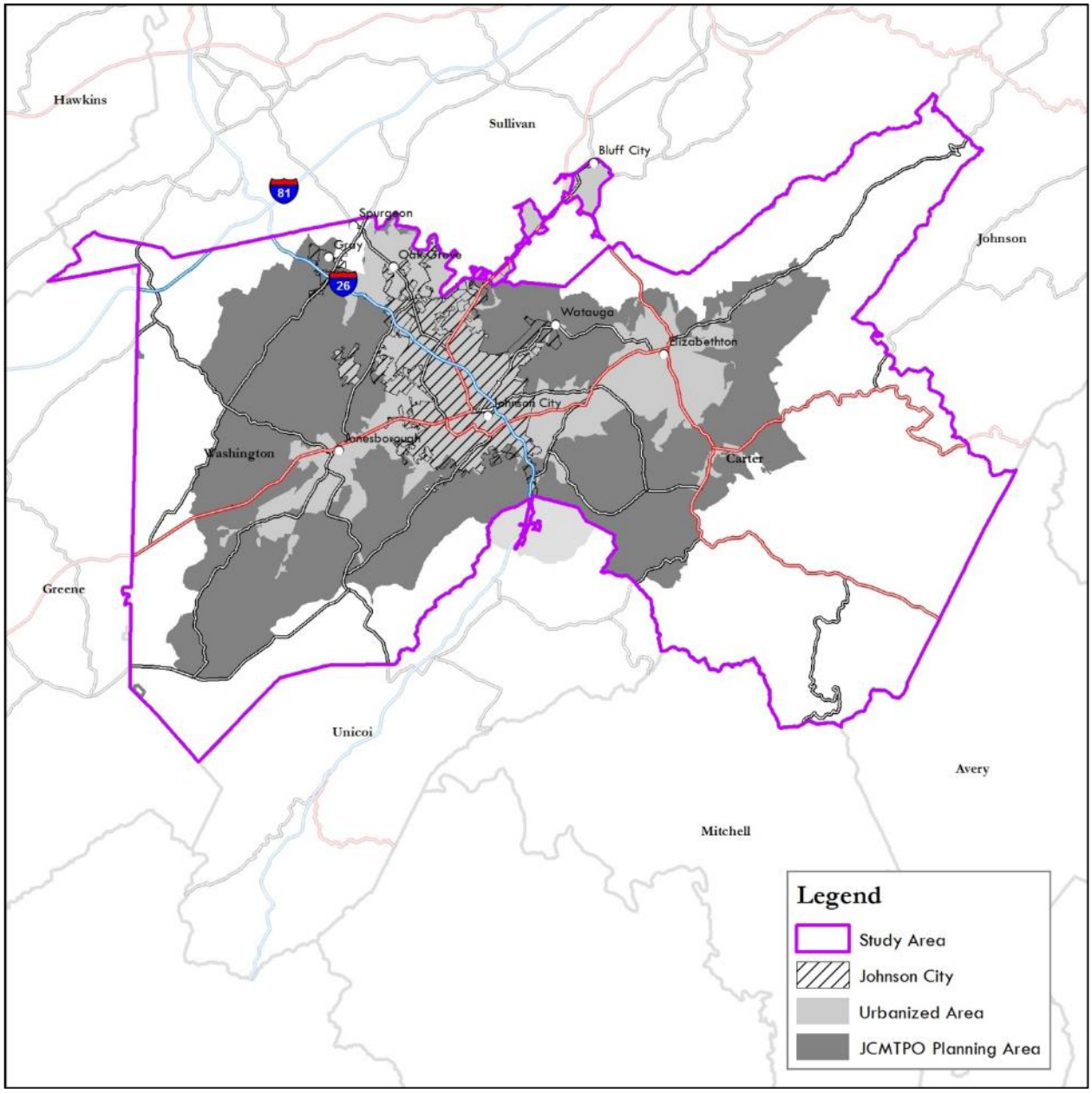
- Expand service area and expand service hours
- Increase information and awareness of transit services
- Facilitate efficient and usable transit by increasing rider assistance, first-mile/last-mile improvements, and amenities

1.2 Study Area

The JCT COA focuses on the existing and anticipated mobility needs of targeted populations and the general public throughout the JCT service area. The service area is defined by the Johnson City Urbanized Area boundary. The Johnson City MTPO is the planning body responsible for the planning and programming of federal transportation funds for the Johnson City Urbanized Area. The Johnson City Urbanized Area includes the communities of Johnson City, Jonesborough, Elizabethton, Watauga, Bluff City, and Unicoi. The Johnson City MTPO planning boundary extends beyond the urbanized area to include larger portions of Washington, Carter, and Unicoi Counties.

For the purpose of the COA, a combination of Johnson City municipal limits, the Johnson City Urbanized Area, and the entirety of Washington and Carter Counties will serve as the study area. The Johnson City municipal limits and urbanized area will be separately analyzed, representing the JCT service area. Study Area geographies are shown in Figure 1-1. The study area encompasses 683.3 square miles. Some of the major highways that run through the study area are: I-26, I-81, US-11E, US-321 and US-19E.

Figure 1-1: Study Area



1.3 Land Use and Development

Figure 1-2 shows the development footprint in relation to the urbanized area and areas within a ¼-mile of JCT service. JCT serves a large portion of existing development within the urbanized area. However, there are pockets of significant development inside the urbanized area not currently served by JCT. These areas include Jonesborough, Elizabethton, Gray, Piney Flats, and Bluff City. Some of these pockets are located in unincorporated Washington, Carter and Sullivan Counties where the county governments do not provide financial assistance to JCT.

Figure 1-2: Existing Development

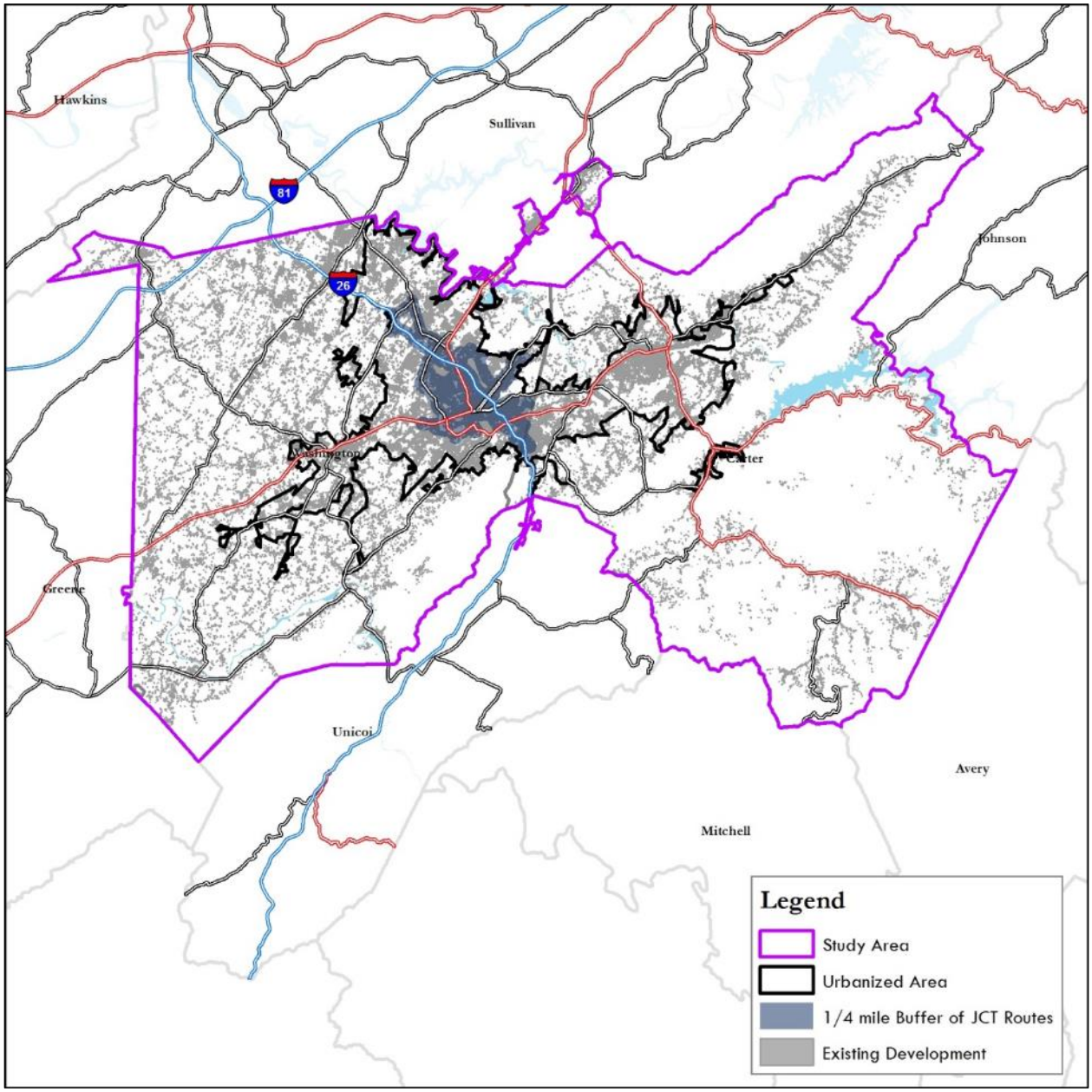


Figure 1-3 shows land uses in relation to the urbanized area and areas within a ¼-mile of JCT service. JCT serves a large portion of more intense land uses within Johnson City. Some places with intense land uses inside the urbanized area are not currently served by JCT. These areas are in proximity to Elizabethton, Jonesborough, Bluff City, and Watauga. Additionally, areas of intensive land uses outside the urbanized area are not currently served by JCT because federal transit funding going to JCT can only be used for transit services inside the urbanized area boundary. These areas include Gray and unincorporated Washington County.

Figure 1-3: Generalized Land Use

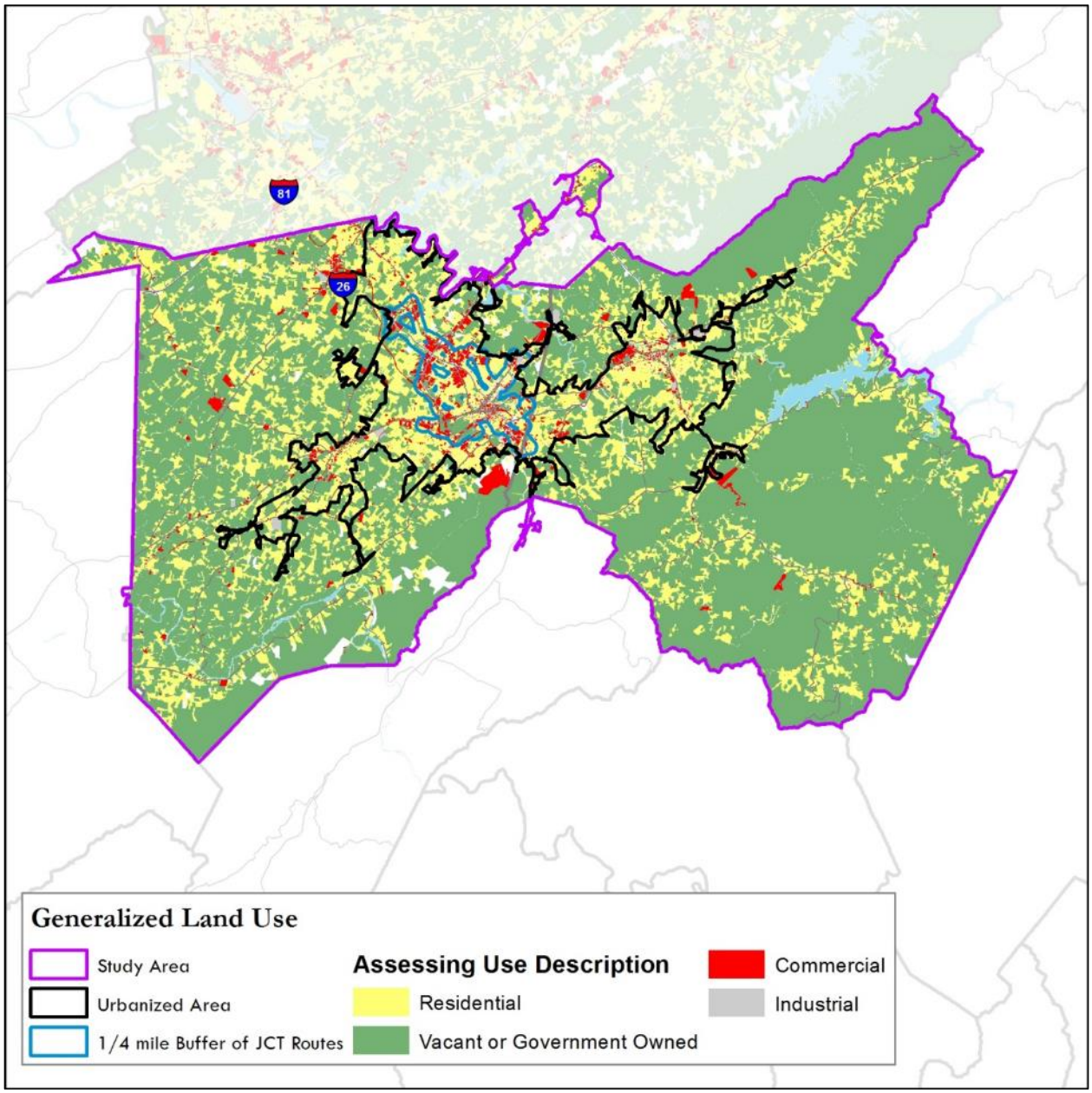


Figure 1-4 shows expected population growth trends in relation to the urbanized area and areas within a ¼-mile of JCT service. The growth trends shown represent the projected increase in population from the MTPO's Travel Demand Model's Transportation Analysis Zones (TAZs). The majority of growth is anticipated to fall outside the urbanized area and away from areas currently served by JCT. Due to being located outside the urbanized area, some areas anticipating population growth, such as northwestern Washington County, cannot currently be served by JCT.

Figure 1-4: Expected Population Growth

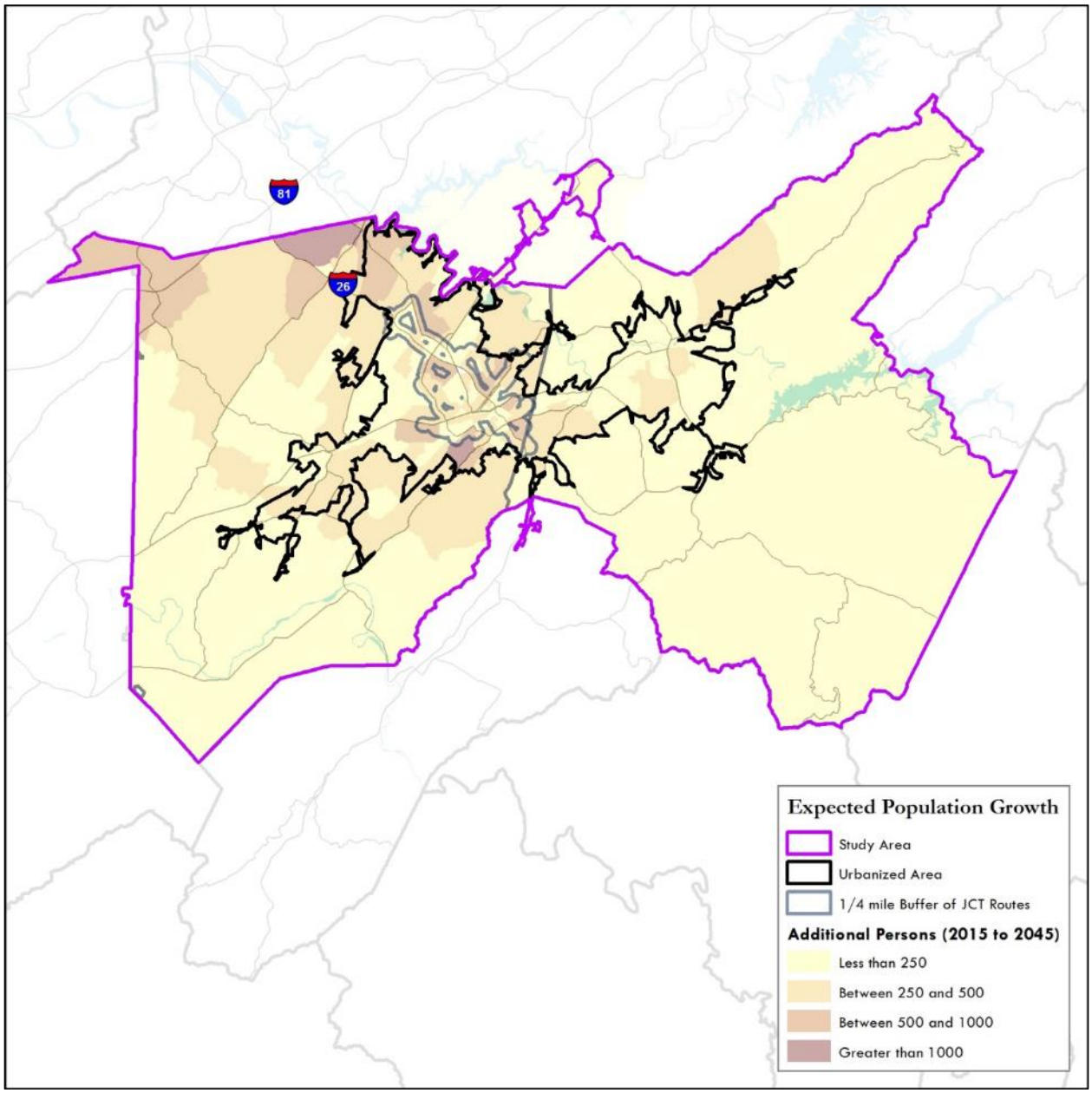
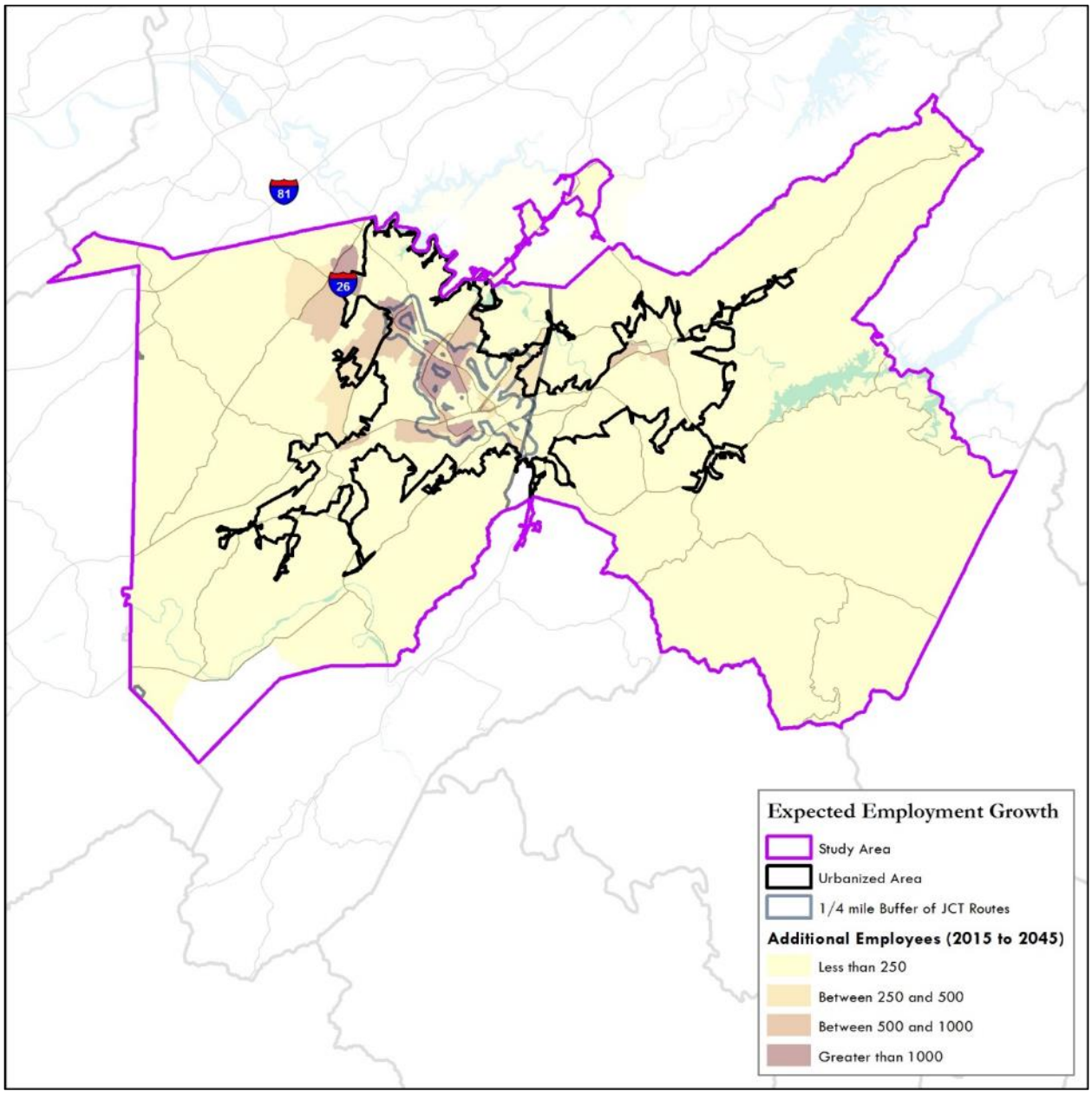


Figure 1-5 shows expected employment growth trends in relation to the urbanized area and areas within a ¼-mile of JCT service. The growth trends shown represent the projected increase in employment from the MTPO's Travel Demand Model's TAZs. The majority of growth is anticipated to fall inside the urbanized area and close to areas served by JCT. Some areas experiencing employment growth inside the urbanized area are not currently served by JCT. These areas include Jonesborough and Elizabethton. Additionally, due to being located outside the urbanized area, some areas anticipating employment growth are not currently served by JCT. These areas include both Gray and Oak Grove.

Figure 1-5: Expected Employment Growth



1.4 Major Travel Nodes and Activity Centers

Figure 1-6 notes the major travel nodes and activity centers in the study area overlaid with existing JCT bus routes. Included in the list of activity centers are major transit destinations such as: East Tennessee State University, multiple parks, major employers, and other public facilities. As shown on the figure, JCT currently serves the majority of the activity centers. They are listed in Table 1-1 by ID, which corresponds to the figure.

Figure 1-6: Activity Centers

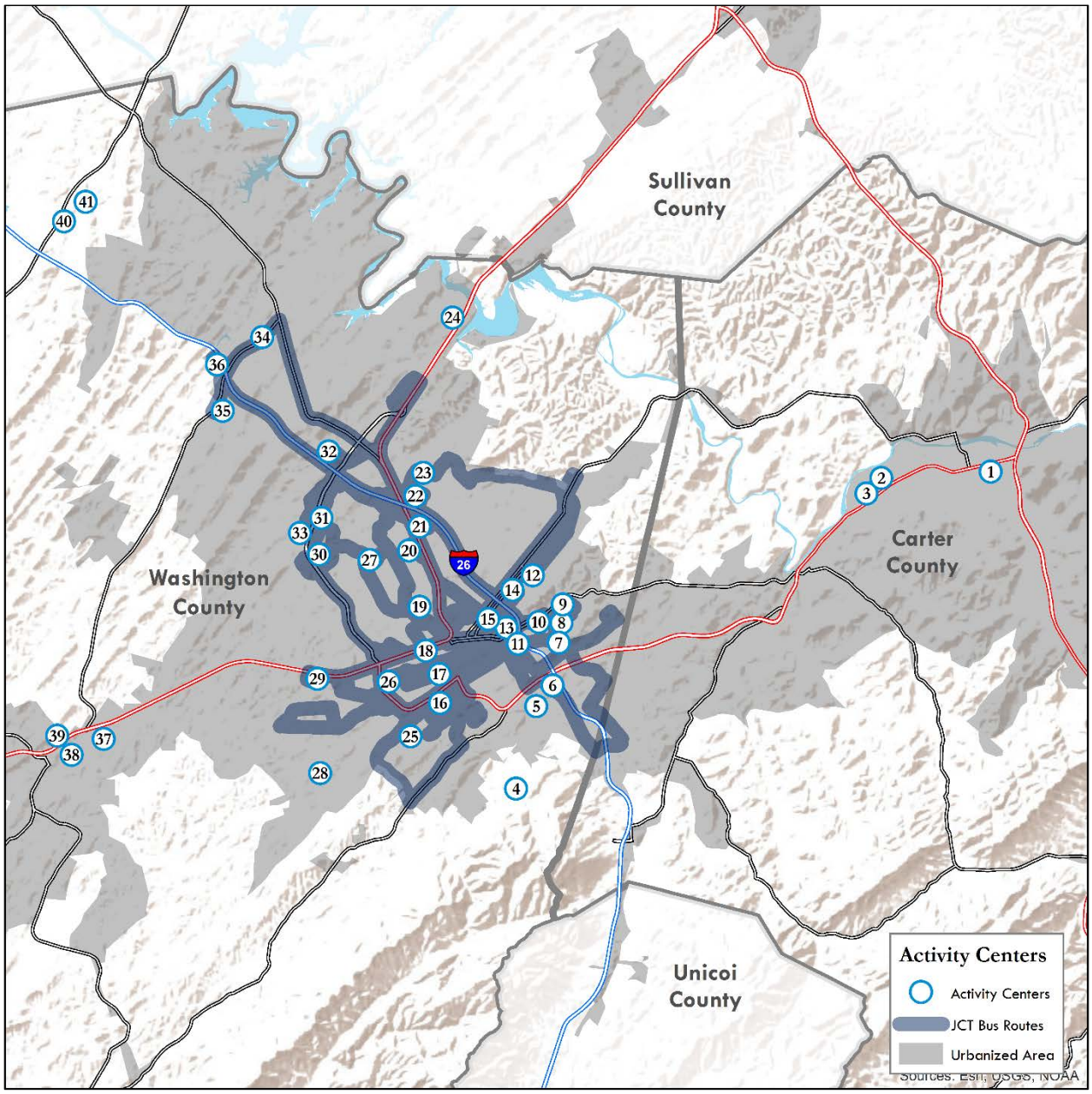


Table 1-1: List of Activity Centers

ID	Name	Address	Served by JCT
1	Downtown Elizabethton	Elizabethton, TN	No
2	Walmart (Elizabethton)	1001 Over Mountain Dr, Elizabethton, TN 37643	No
3	Sycamore Shoals Hospital	1501 W Elk Ave, Elizabethton, TN 37643	No
4	Buffalo Mountain Park	570 Highridge Rd, Johnson City, TN 37604	No
5	Industrial Park	310 Lafe Cox Drive, Johnson City, TN 37604	Yes
6	Center South Shopping Ctr.	1900 S Roan St, Johnson City, TN 37601	Yes
7	Tweetsie Trailhead	Alabama St, Johnson City, TN 37601	Yes
8	Keystone Park	601 Bert St, Johnson City, TN 37601	Yes
9	Housing Authority	901 Pardee St, Johnson City, TN 37601	Yes
10	Memorial Park Community Center	510 Bert St, Johnson City, TN 37601	Yes
11	Human Services	103 E Walnut St, Johnson City, TN 37601	Yes
12	American Water Heater Co	1100 E Fairview Ave, Johnson City, TN 37601	Yes
13	Hands On! Regional Museum	315 E Main St, Johnson City, TN 37601	Yes
14	Juvenile Court	607 E Myrtle Ave, Johnson City, TN 37601	Yes
15	Johnson City Public Library	100 W Millard St, Johnson City, TN 37604	Yes
16	ETSU	1276 Gilbreath Dr, Johnson City, TN 37614	Yes
17	VA Hospital	Lamont St & Veterans Way, Johnson City, TN 37604	Yes
18	Johnson City/Washington County Veterans' Memorial	703 W Main St, Johnson City, TN 37604	Yes
19	Freedom Hall Civic Center	1320 Pactolas Road, Johnson City, TN 37604	Yes
20	The Mall at Johnson City	2011 N Roan St, Johnson City, TN 37601	Yes
21	Target	2116 N Roan St, Johnson City, TN 37601	Yes
22	Health Dept.	219 Princeton Rd, Johnson City, TN 37601	Yes
23	Internal Revenue Service	2513 Wesley St, Johnson City, TN 37601	Yes
24	Winged Deer Park	4137 Bristol Hwy, Johnson City, TN 37601	No
25	ETSU Campus Recreation Field Complex	1510 Seminole Dr, Johnson City, TN 37604	Yes
26	Mountain States Health Alliance	203 Gray Commons Cir #120, Johnson City, TN 37615	Yes
27	Social Security Administration	818 Sunset Dr Suite 203, Johnson City, TN 37604	Yes
28	Willow Springs Park	1201 Huffine Rd, Johnson City, TN 37604	No
29	Walmart (West Market)	2915 W Market St, Johnson City, TN 37604	Yes
30	Franklin Woods Comm. Hospital	300 Med Tech Pkwy, Johnson City, TN 37604	Yes
31	Johnson City Crossing	3211 Peoples St, Johnson City, TN 37604	Yes
32	Walmart (Browns Mill)	3111 Browns Mill Rd, Johnson City, TN 37604	Yes
33	Washington County Clerk	378 Marketplace Blvd, Ste 1, Johnson City, TN 37604	Yes
34	Advanced Call Center Technologies	3035 Boones Creek Rd, Johnson City, TN 37615	Yes
35	BrightRidge	2600 Boones Creek Rd, Johnson City, TN 37615	Yes
36	Driver's License Dept.	4717 Lake Park Dr, Johnson City, TN 37615	Yes
37	Jonesborough Senior Center	307 E Main St, Jonesborough, TN 37659	No
38	Washington County Clerk	100 E Main St, Jonesborough, TN 37659	No
39	George Jaynes Justice Center	108 W Jackson Blvd #1210, Jonesborough, TN 37659	No
40	Citi Commerce Solutions	541 Sid Martin Rd, Gray, TN 37615	No*
41	Frontier Health	1167 Spratlin Park Dr, Johnson City, TN 37615	No

*JCT currently transports at least one demand response client.

1.5 Regional Employment Profile

Figure 1-7 demonstrates the movement of workers who reside or work in the urbanized area and its surrounding counties, according to 2014 Longitudinal Employer-Household Dynamics (LEHD) statistics. Out of the approximately 46,681 workers who reside in the urbanized area, 25,948 (55.6%) work in urbanized area. Of the 63,446 workers that are employed in the urbanized area, 22,166 (34.9%) come from immediately surrounding counties. As shown in

Table 1-2, 7,539 (36.4%) of workers that reside in the urbanized area work in the remainder of Sullivan County. Conversely, 9,221 (24.6%) of workers employed in the urbanized area reside in the remainder of Sullivan County.

Figure 1-7: Urbanized Area Employment Flows

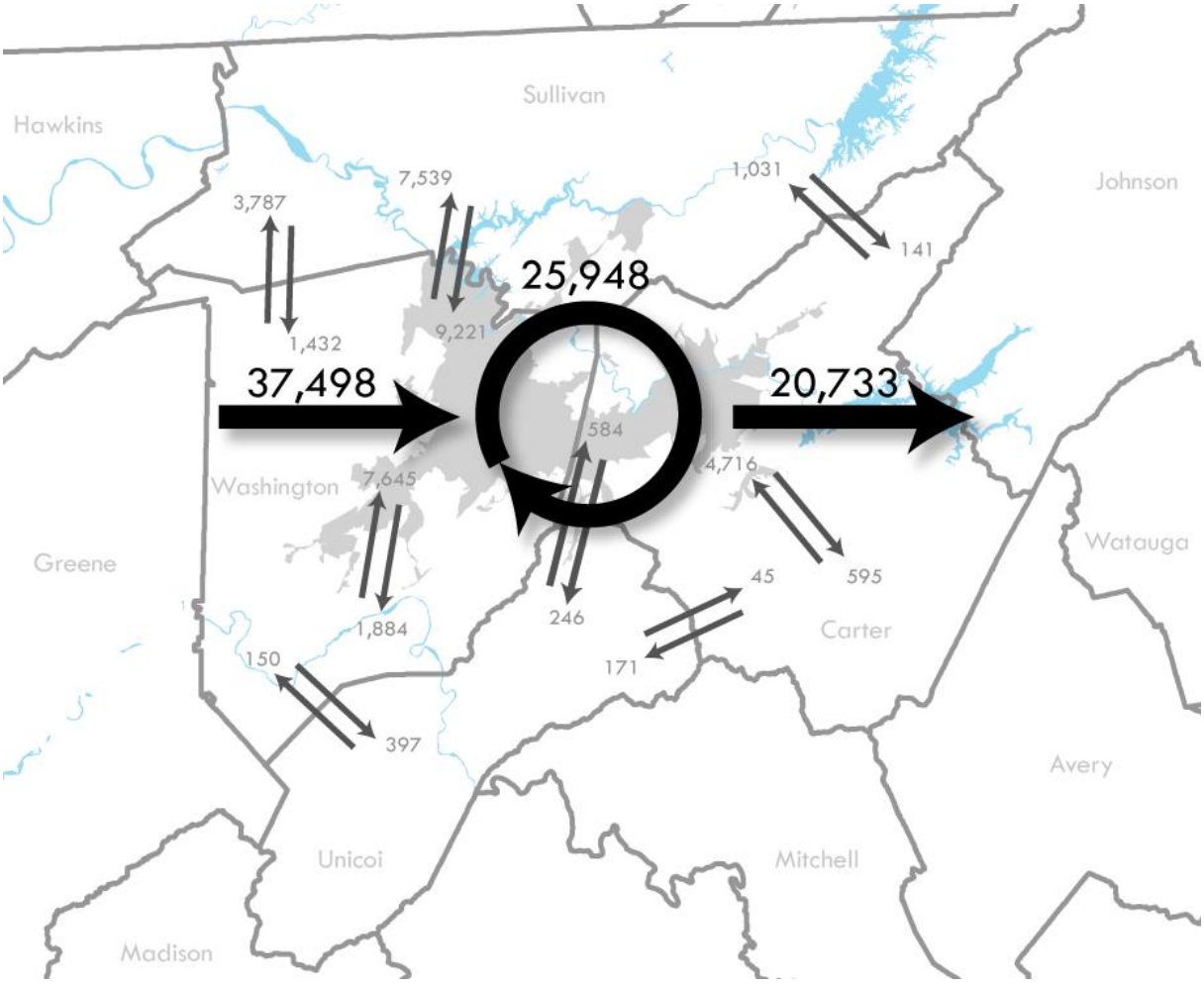


Table 1-2: Employee Travel From and Into the Urbanized Area

Employee Travel Flows Into the Urbanized Area		
From	Employees	Percentage
Bristol city, VA	305	0.8%
Carter Non-UA	4,716	12.6%
Greene County, TN	1,139	3.0%
Hawkins County, TN	399	1.1%
Johnson County, TN	175	0.5%
Scott County, VA	47	0.1%
Sullivan Non-UA	9,221	24.6%
Unicoi Non-UA	584	1.6%
Washington County, VA	245	0.7%
Washington County, TN Non-UA	7,645	20.4%
Other	*13,022*	*34.7%*

Employee Travel Flows From the Urbanized Area		
To	Employees	Percentage
Bristol city, VA	352	1.7%
Carter Non-UA	595	2.9%
Greene County, TN	2,130	10.3%
Hawkins County, TN	1,526	7.4%
Johnson County, TN	563	2.7%
Scott County, VA	377	1.8%
Sullivan Non-UA	7,539	36.4%
Unicoi Non-UA	246	1.2%
Washington County, VA	466	2.2%
Washington County, TN Non-UA	1,884	9.1%
Other	*5,055*	*24.4%*

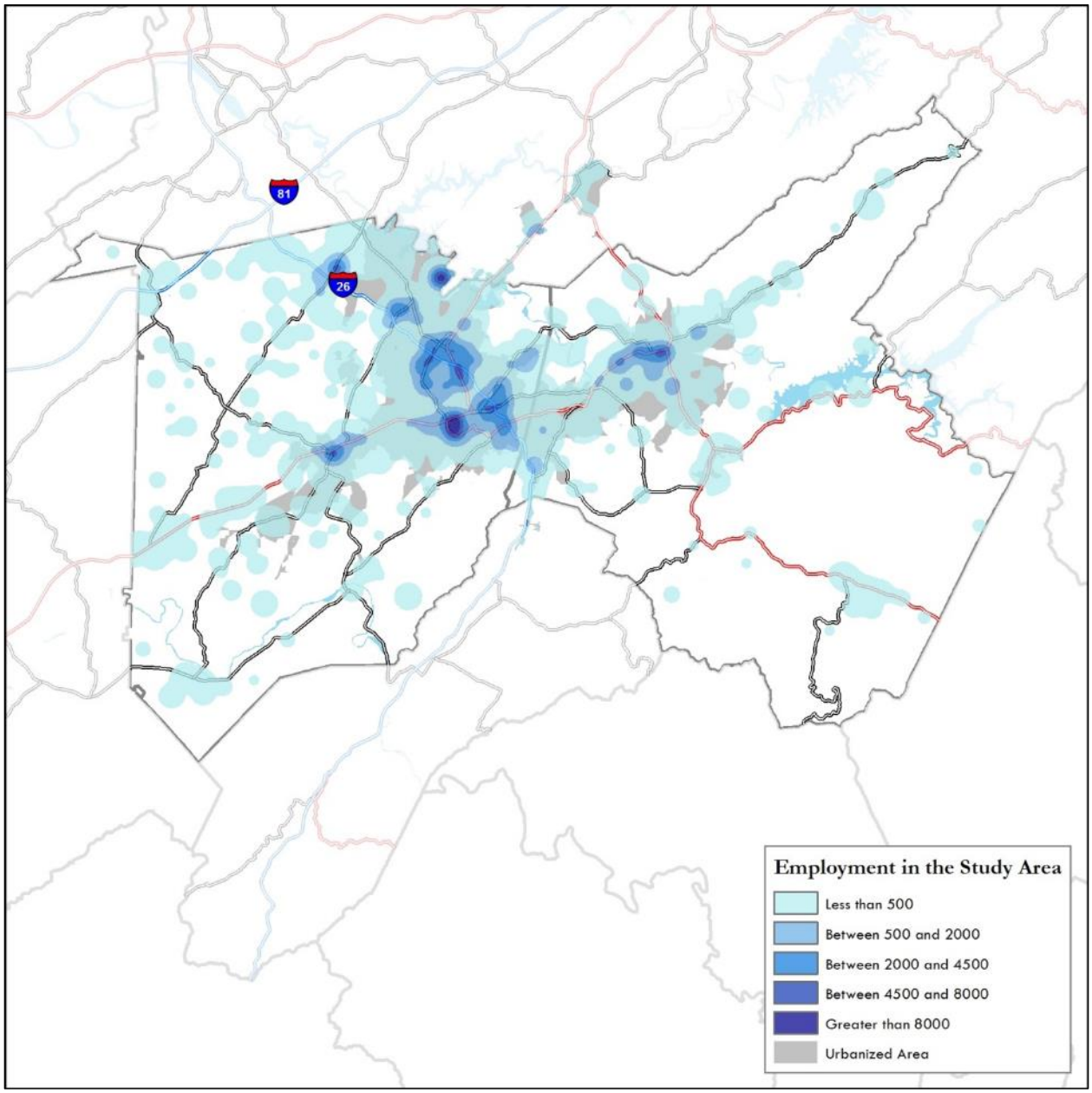
Table 1-3 shows the top employers in the study area based on the number of employees reported by the InfoUSA Employment database. The industries reflected in the list of the top employers are: Health Services, Manufacturing; Public Administration; and Professional and Business Services.

Table 1-3: Major Employers in the Study Area

Rank	Employees	Employer	Sector	Served by JCT
1	3,500	Mountain States Health Alliance	Health Care Management	Yes
2	3,000	VA Medical Center	Hospitals	Yes
3	2,510	Johnson City Medical Center	Hospitals	Yes
4	2,370	East Tennessee State University	Schools	Yes
5	2,078	Citi Commerce Solutions	Data Processing	No
6	1,500	VA Medical Center-Mountain Home	Clinics	Yes
7	1,500	Advanced Call Center Tech LLC	Call Centers	Yes
8	1,200	Crisis Response Service	Crisis Intervention Service	Yes
9	1,200	Watauga Children & Youth Service	Mental Health Services	Yes
10	1,100	American Water Heater Co	Water Heaters-Wholesale	Yes
11	1,000	Elizabethton Management Info	Government Offices-City, Village & Township	No
12	1,000	Frontier Health-Administration Office	Mental Health Services	No
13	700	BWXT Nuclear Operations Group Inc (Nuclear Fuel Service)	Industrial Organic Chemicals NEC (Manufacturers)	No
14	646	Doctor's Assisted Wellness	Medical Centers	Yes
15	646	Johnson City Specialty Hospital	Medical Centers	Yes
16	646	Johnson City Medical Center	Hospitals	Yes
17	646	Vein Co	Medical Centers	Yes
18	600	Aeronautical Accessories	Aircraft Components-Manufacturers	No
19	500	TPI Corp	Metal Stamping (Manufacturers)	No

Figure 1-8 illustrates employment in the study area and density of jobs based on number of employees, according to LEHD statistics. The largest employers in the study area are clustered along the I-26, State of Franklin Road, and Market Street corridors. JCT provides service along these main corridors and therefore serves these employers well. Most employers lie within or directly around the Johnson City, Jonesborough, and Elizabethton boundaries. JCT does not currently provide service to Jonesborough or Elizabethton.

Figure 1-8: Employment in the Study Area



1.6 Demographic Profile

For the COA, several data sources[1] are used to describe the demographics of the study area as defined in Section 1.2. All available data sources used for this analysis conform to the 2010 Census defined geographies; however, based on the availability of differing datasets and their different sized boundaries (block, block group, tract), it was necessary to develop a methodology to assign data from a larger geography, such as a block group, into a smaller unit such as a block. This is particularly important in order to compare demographic data totals within the study area to the urbanized area and the counties.

Based on conversations with the MTPO, a methodology was developed to best align Census geographies with the established boundaries used in this study. Census tracts comprised of at least 40% of the Study Area and the block groups these tracts contain were used for the demographic information that follows. Figure 1-9 displays the relationship between the study area and the Census geographies. In order to align these geographies with the urbanized area defined in Section 1.2, Census tracts comprised of at least 40% urbanized area and the block groups these tracts contain were used for the demographic information that is summarized in Table 1-4.

Figure 1-10 displays the relationship between the urbanized area and the Census geographies used. Table 1-4 provides a summary of demographic information. These statistics include population density, targeted populations, and transit dependent populations for the study area and urbanized area equivalents defined in this Section as well as within the Johnson City corporate limits.

Table 1-4: Demographic Profile

Demographic	Study Area	Urbanized Area	Johnson City Corporate Limits
Population Density (Persons per sq. mi.)	269	915	1,502
Below Poverty	19.8%	22.3%	23.1%
Zero Vehicle Households	5.9%	7.5%	8.3%
Persons with Disabilities	14.5%	14.4%	13.4%
Population 65 Years and Up	17.3%	17.5%	15.5%
Population 17 Years and Under	19.7%	19.1%	19.4%
Minority Population	8.7%	11.8%	15.7%
Transit Dependent Population	11.4%	15.3%	4.7%

[1] Steven Manson, Jonathan Schroeder, David Van Riper, and Steven Ruggles. *IPUMS National Historical Geographic Information System: Version 12.0* [Database]. Minneapolis: University of Minnesota. 2017. http://doi.org/10.18128/D050.V12.0

Figure 1-9: Study Area and Census Geographies

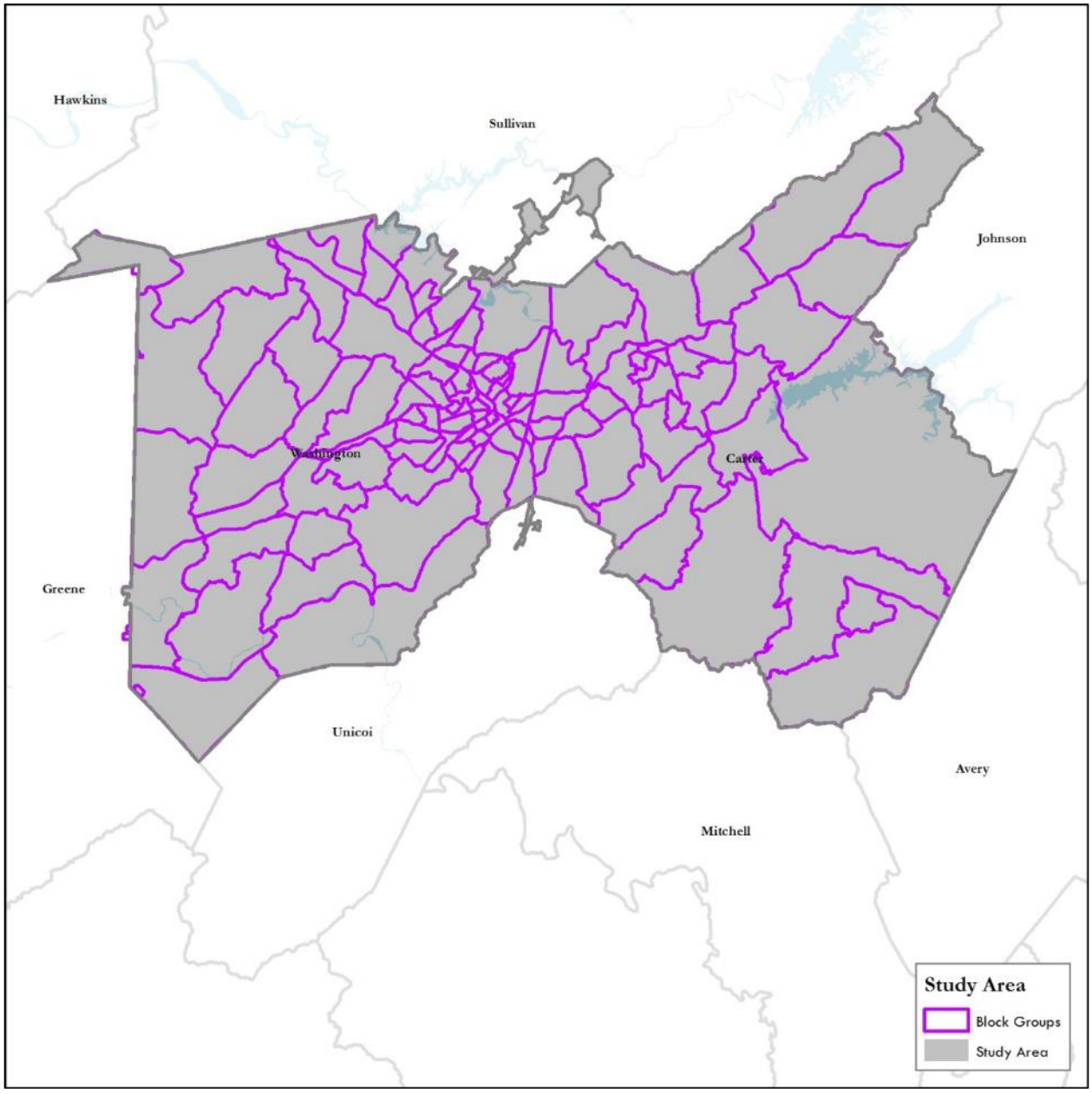
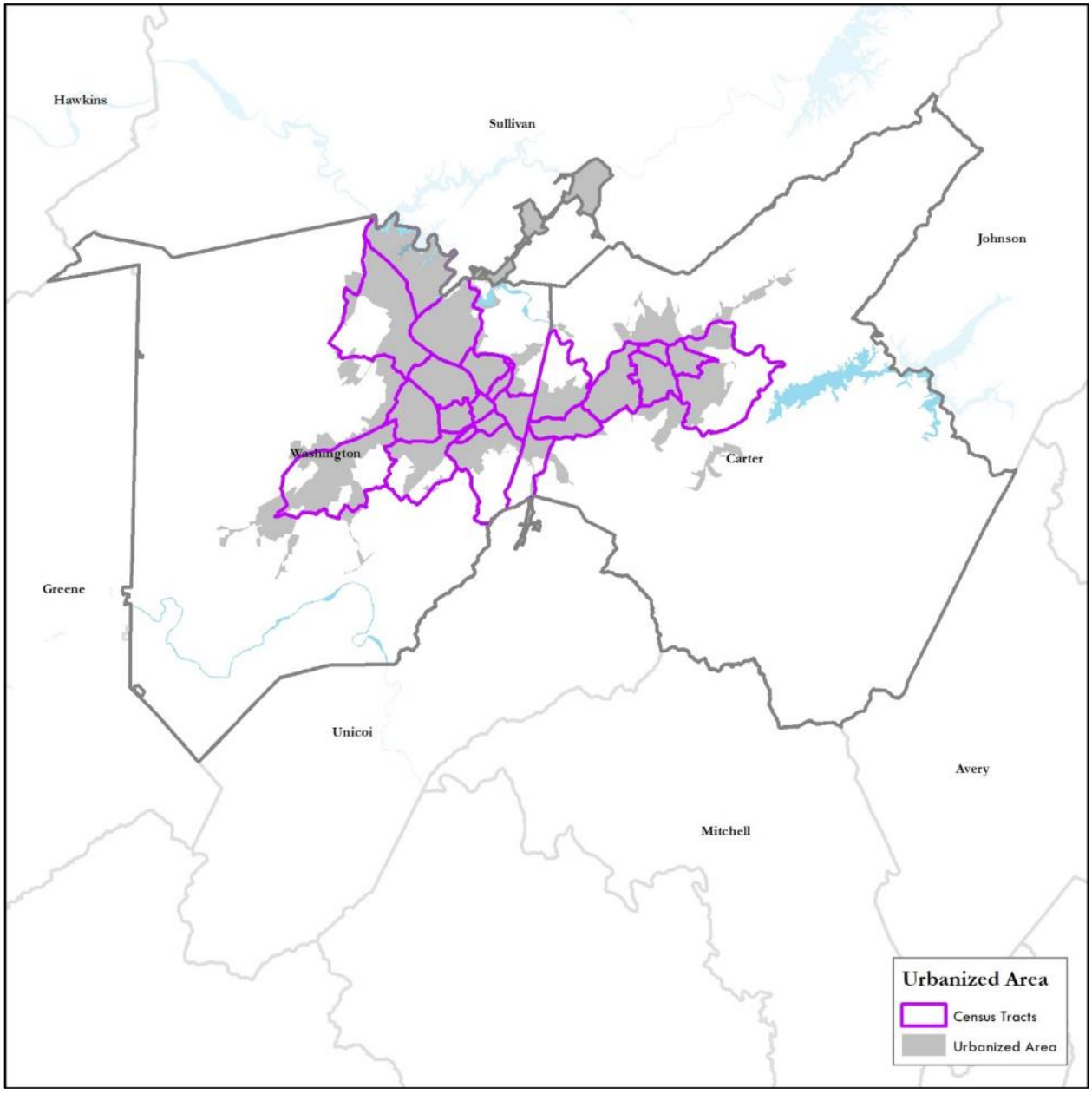


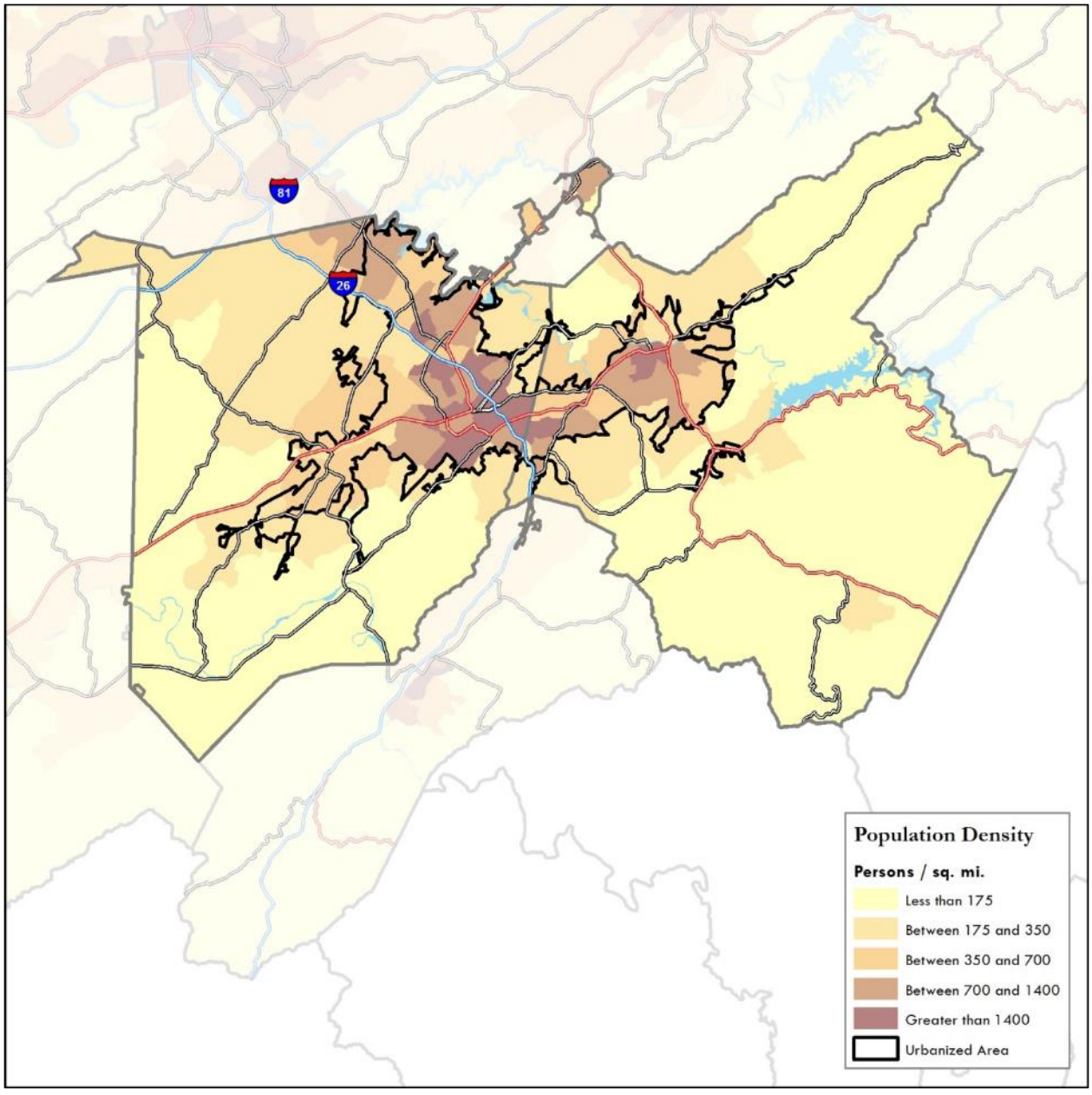
Figure 1-10: Urbanized Area and Census Geographies



Population Density

According to the 2015 American Community Survey (ACS) 5-year population estimates, the study area had 182,258 people residing in an area of approximately 677 square miles. Shown in Table 1-4, the average population density in the study area is 269 persons per square mile and a density of 915 persons per square mile in the urbanized area. Displayed in Figure 1-11, the urbanized area has pockets of higher population throughout, with the most densely populated areas on the I-26 and US 321 corridors.

Figure 1-11: Population Density



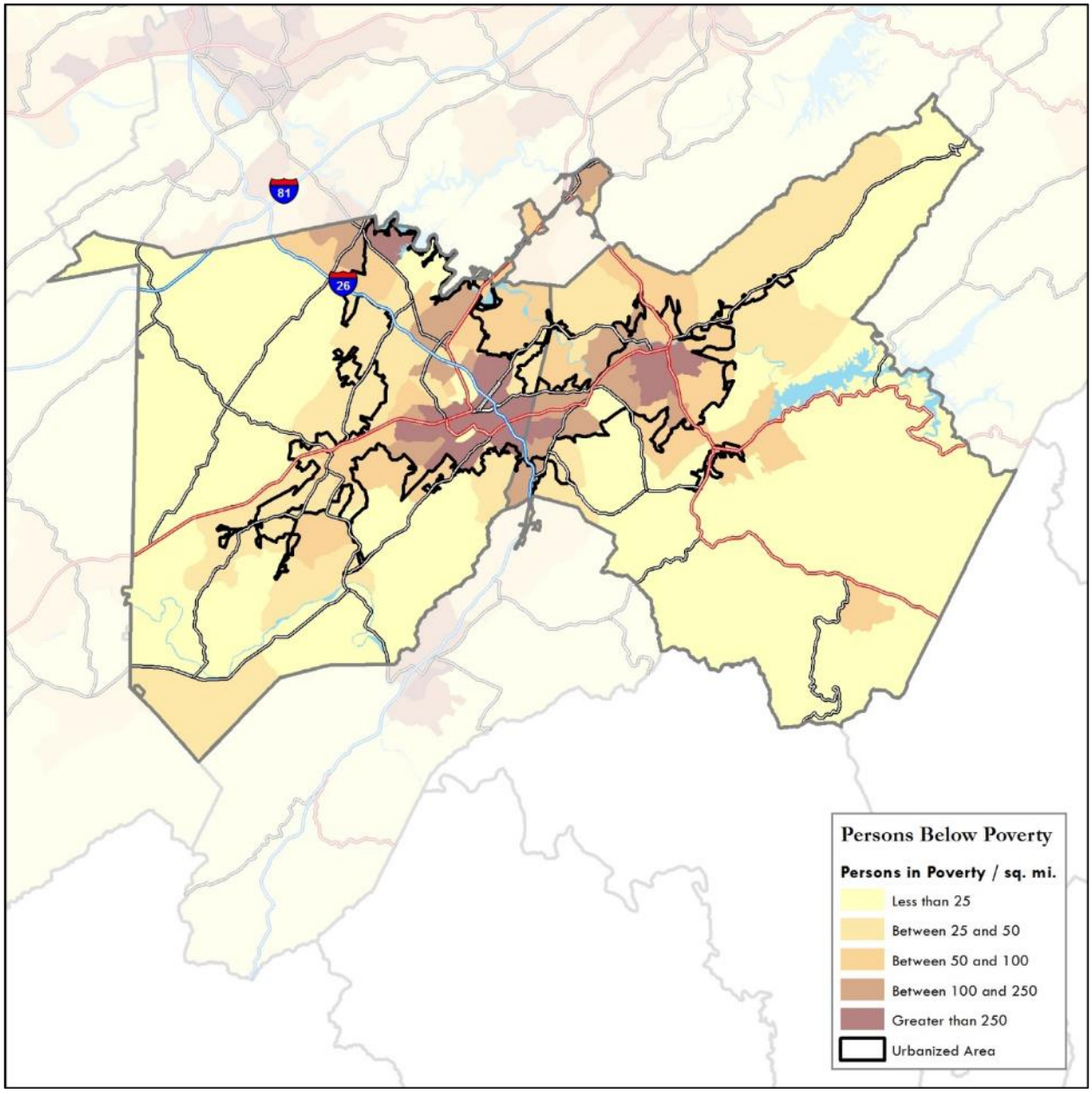
Poverty

Approximately 19.8% of persons living in the study area fall below national poverty thresholds. This is a significant figure with regard to potential transit needs. The poverty thresholds provided by the census are based on the number of adults as well as children in a household, the age of the adults in the household, and total household income. In general, those households with one individual under the age of 65, with an income less than $12,119 are considered to be in poverty. For two adults, under age 65, without children, the threshold is $15,600.

Figure 1-12 shows the density of persons in poverty within the study area. For the population for whom poverty status was determined through 2015 ACS census block group estimates, the study area poverty estimates are more than the Tennessee statewide average of persons in poverty (17.6%). The most densely populated areas for persons in poverty are within the urbanized area, specifically along the US 321, US 19W, and SR-36 corridors.

Based on the rider survey (Section 3.2), 63% of surveyed riders' households have annual incomes less than $12,000. Johnson City has higher concentrations of poverty, which are served by JCT's existing fixed routes and demand response service. Elizabethton is another community within the urbanized area with a higher concentration of poverty. Elizabethton is currently not served by JCT.

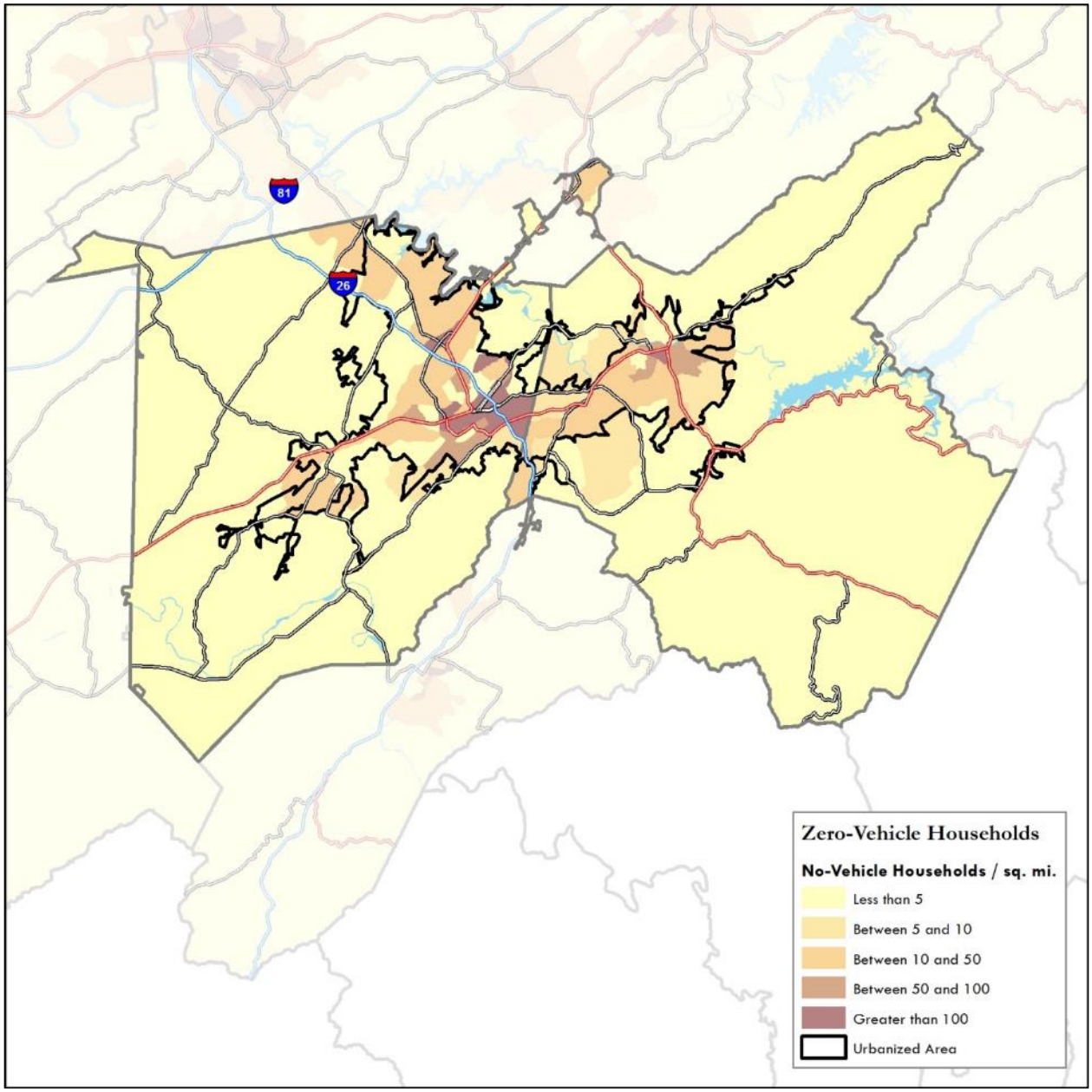
Figure 1-12: Poverty



Zero Vehicle Households

According to 2015 ACS estimates, more than 4,489 of the approximately 76,532 households in the study area do not have access to a vehicle. These households account for about 5.9% of the total number of households in the study area, less than the Tennessee statewide percentages (6.4%). According to census block group estimations, most of these households are in the urbanized area and near downtown Johnson City, as displayed in Figure 1-13. It was surprising to note that the Rider survey results indicated that 69% of the surveyed riders do not have a valid driver's license. Of the 31% that do have valid driver's licenses, only 24% have access to a working vehicle.

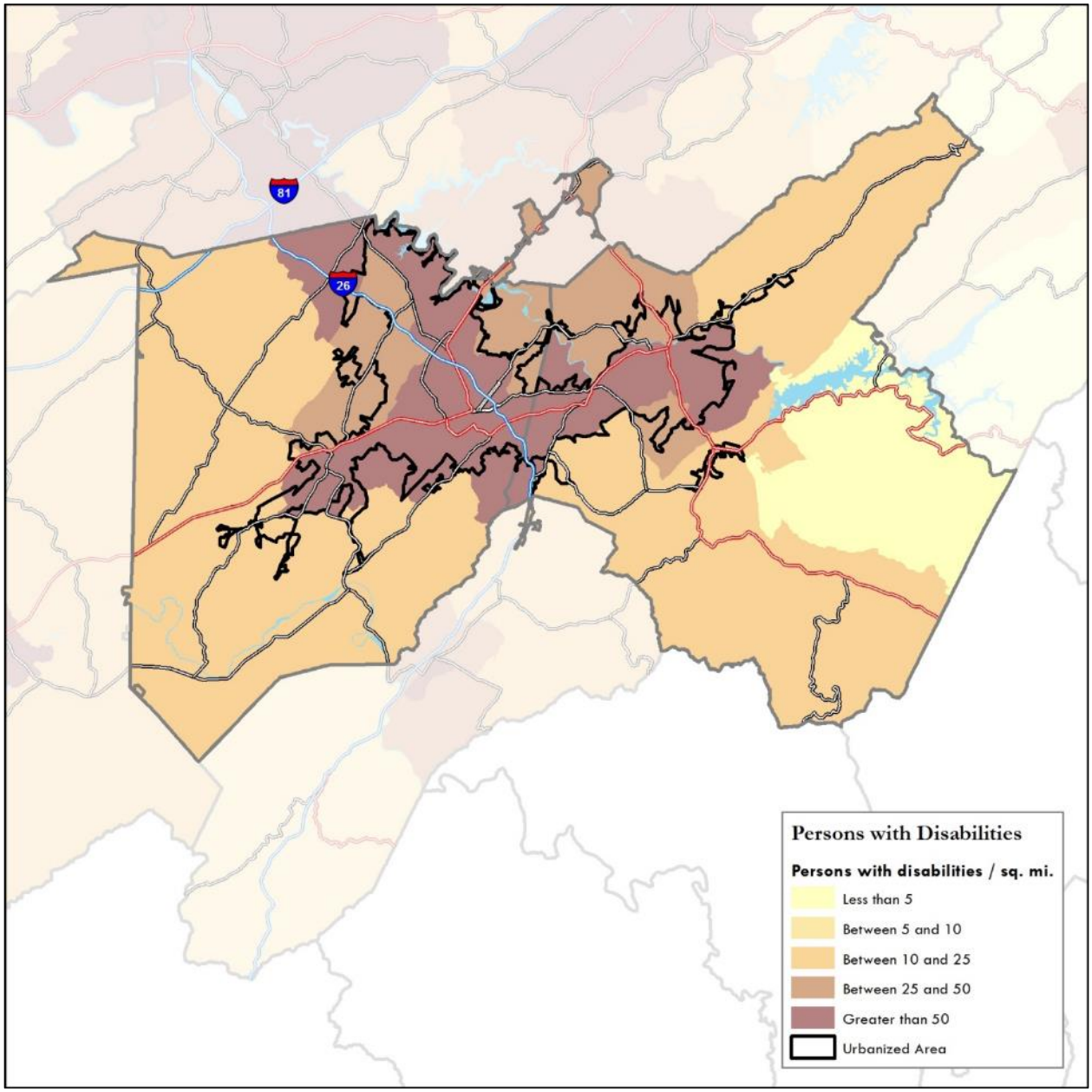
Figure 1-13: Zero Vehicle Households



Persons with Disabilities

Slightly more than 7% of people employed within the labor force of study area reported a disability (hearing, vision, cognitive, ambulatory, self-care, or independent living difficulties) in the 2015 ACS. Among those who are unemployed in the labor force, approximately 19.2% of people have a disability. As shown in Figure 1-14, the census tracts with the highest density of persons with disabilities are in the urbanized area and in Gray. JCT provides XTRA Paratransit service to eligible certified riders with disabilities who are unable to use the fixed routes. The paratransit service area is the corporate limits of Johnson City or ¾ mile from a fixed route, whichever distance is greater.

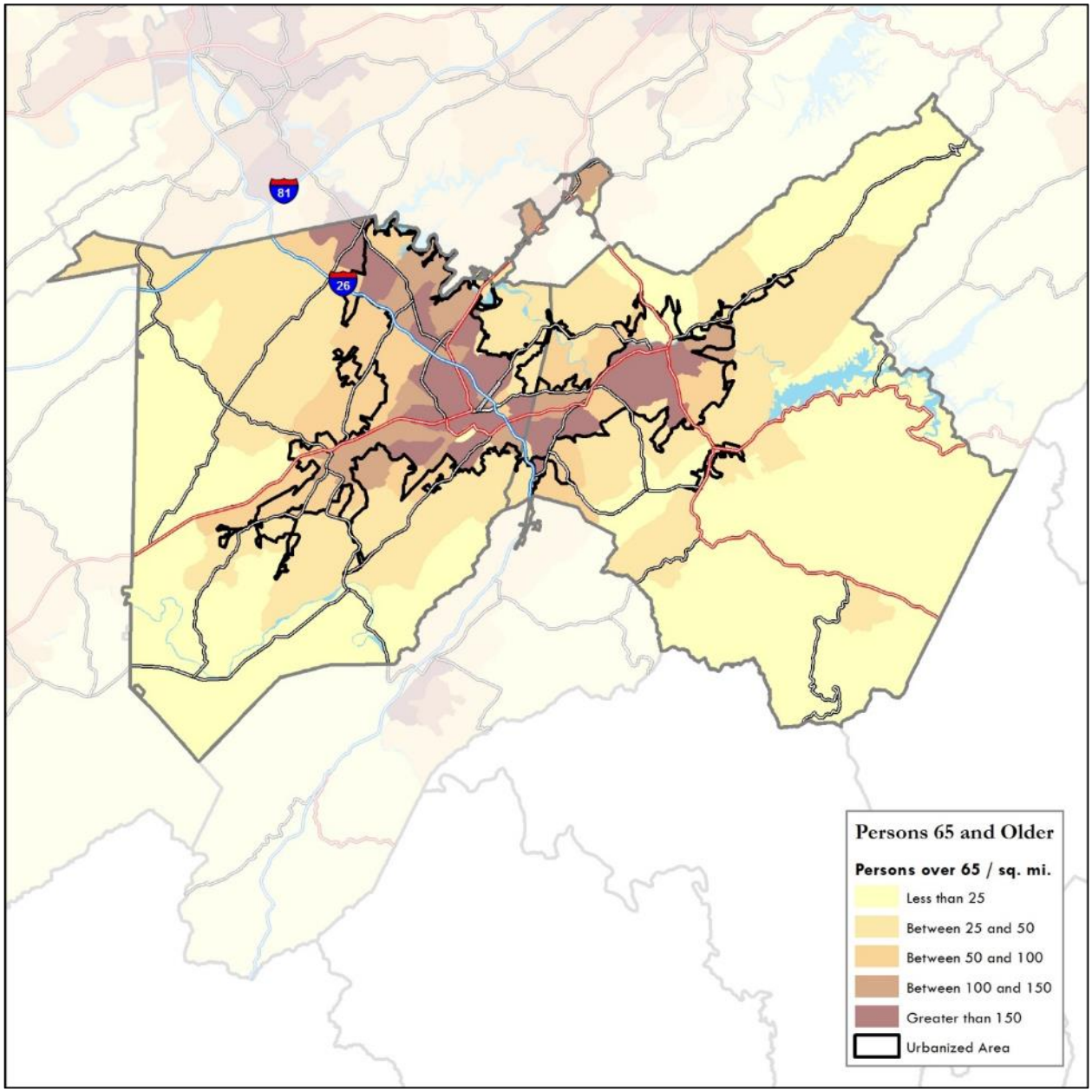
Figure 1-14: Persons with Disabilities



Population 65 Years and Over

In the study area, persons 65 years and older accounted for 17.3% of the total population. Displayed in Figure 1-15, the densest clusters of older persons correlate with higher general population densities in the urbanized area along major corridors. Information from the on-board survey shows that JCT serves a broad age-range of riders; however, persons over 65 account for only 9% of bus ridership.

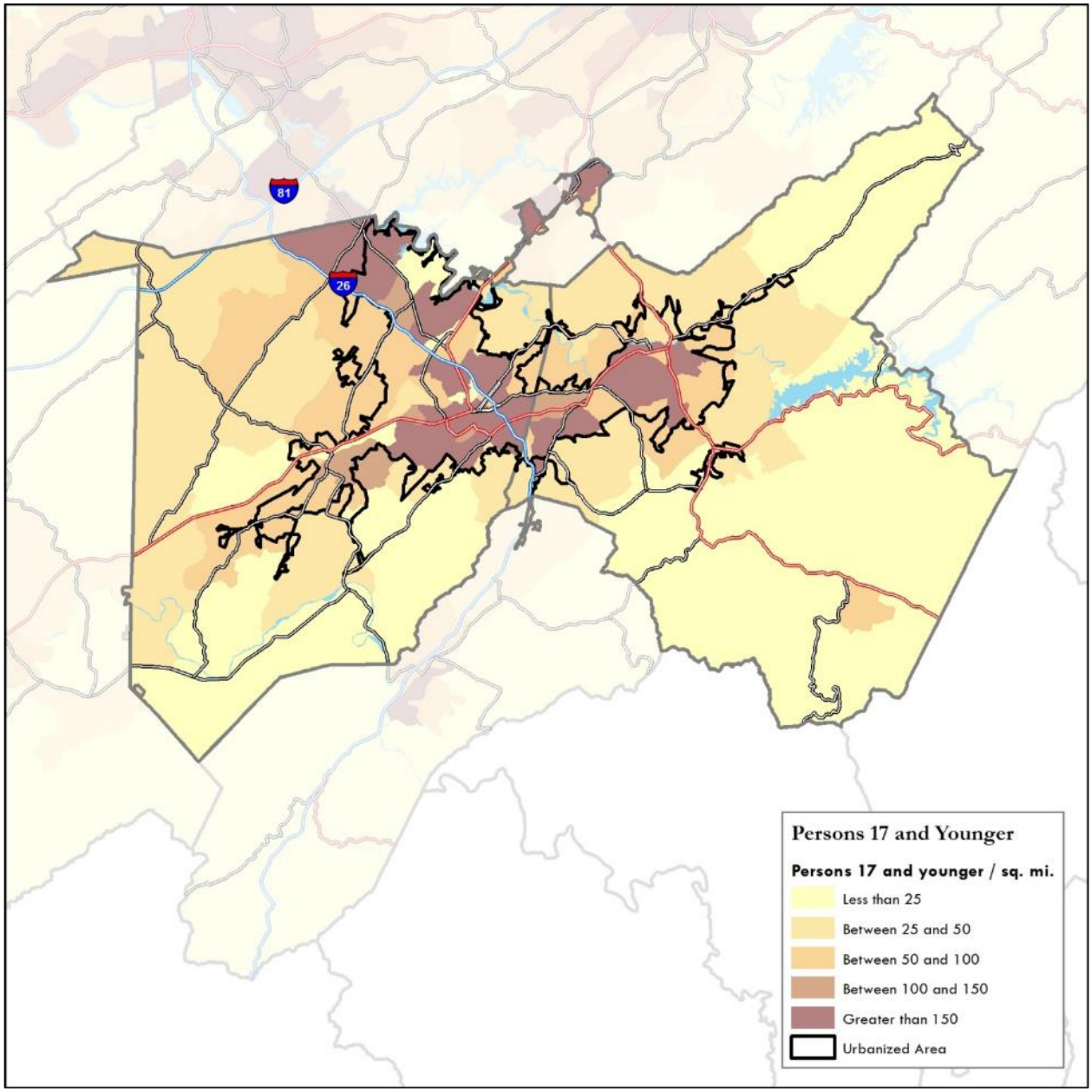
Figure 1-15: Population 65 Years and Over



Population 17 Years and Under

In the study area, persons 17 years and younger accounted for 19.7% of the total population. Densities of persons 17 and younger are shown in Figure 1-16. The densest clusters of younger persons correlate with higher general population densities in the urbanized area along major corridors.

Figure 1-16: Population 17 Years and Younger

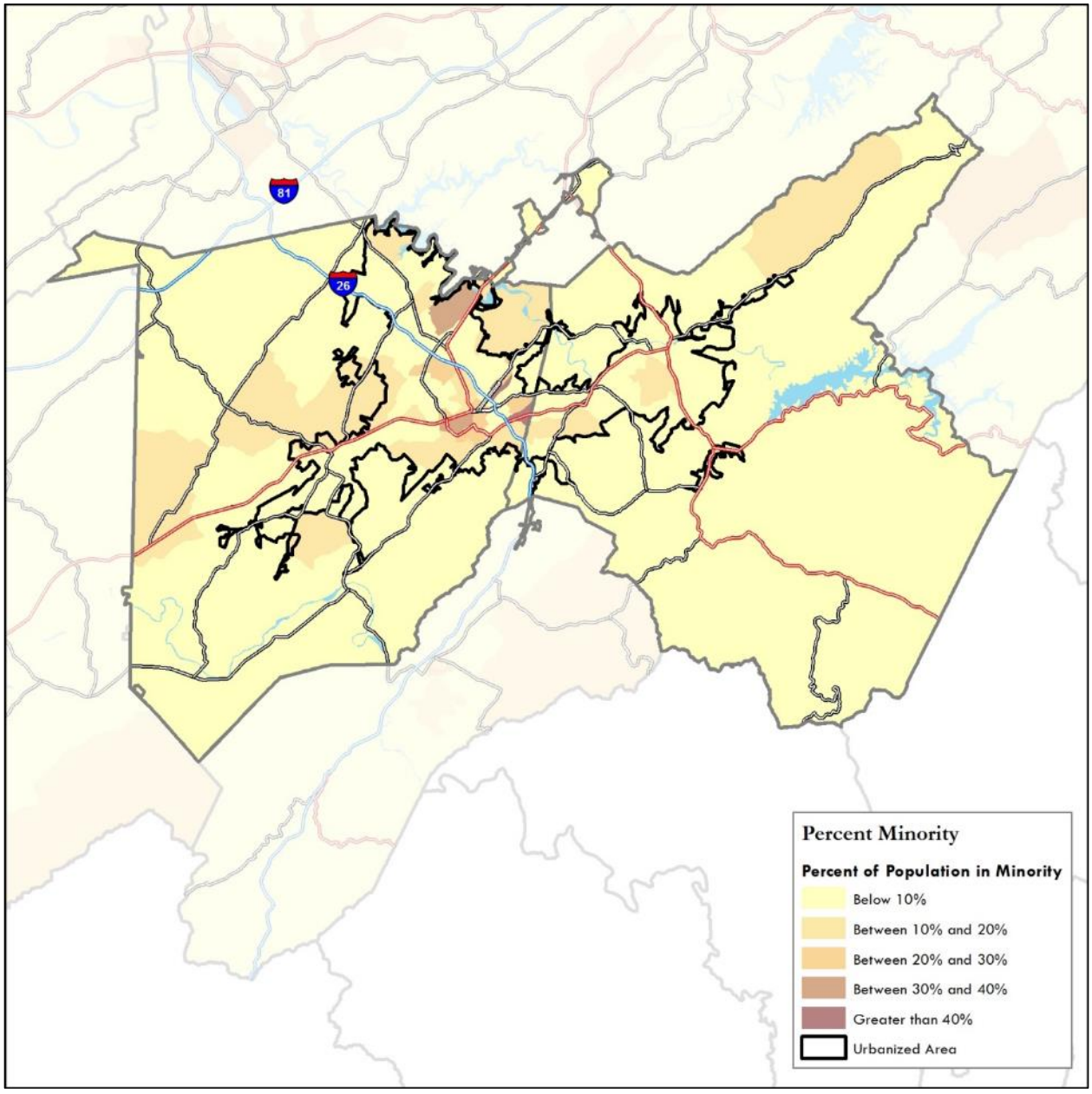


Minority Population

In the study area, minority populations accounted for 8.7% of the total population. The block groups and their minority percentages are shown in Figure 1-17. The densest clusters of minority populations are scattered throughout the study area. The Rider survey indicated that of the minority populations, 3.1% indicated that they are Black/African American and 2.7% indicated that they are Hispanic. Less than 1% of the population is considered as Limited English Proficiency (LEP). Spanish is the most prevalent primary language used for the LEP population.

Rider survey data also showed that for those riders who selected just one race or ethnicity, 73% are white, 19% are Black/African American, 2% are Native American, 1% are Asian, 1% are Hispanic/Latino, and 4% are Other/Mixed/All Races. JCT fixed-route and demand response services provide transit to areas of higher minority concentrations within the Johnson City corporate limits, but do not provide transit to all areas of higher minority concentrations within the study area.

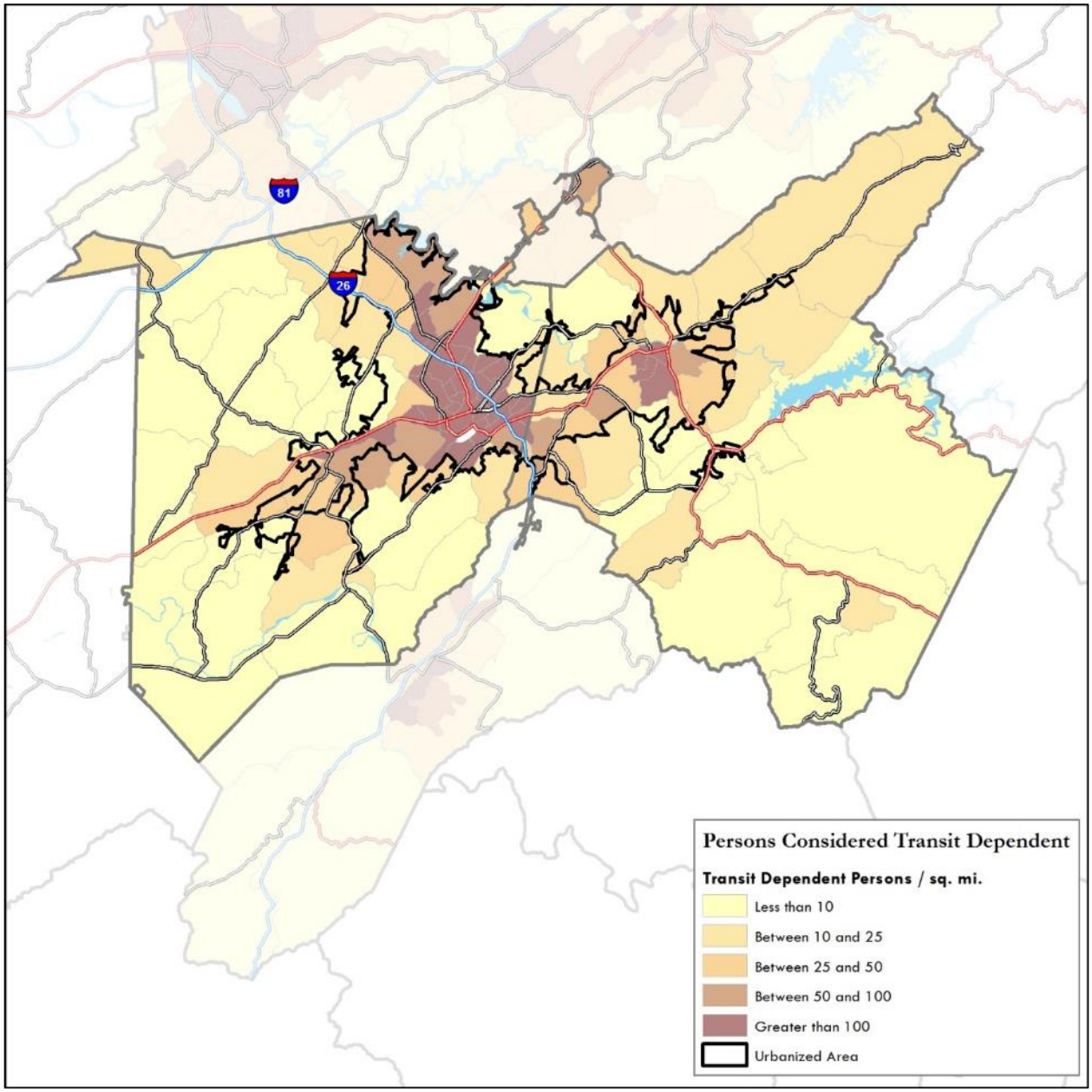
Figure 1-17: Minority Population



Transit Dependent Population

The Federal Transit Administration (FTA) defines "transit dependent persons" as individuals residing in households that do not own a car. According to 2015 ACS estimates, more than 20,738 of the approximately 182,258 people in the urbanized area do not have access to a vehicle. These people account for about 15.3% of the total number of population in the urbanized area compared to 11.4% in the study area. Figure 1-18 shows the locations of high densities of persons considered transit dependent. According to census tract estimations, most of these persons live within the urbanized area. JCT currently provides fixed-route and demand response transit services to these areas with higher concentrations of transit dependent persons, except for Elizabethton.

Figure 1-18: Transit Dependent Population



2.0 Analysis of Existing JCT Service

This chapter provides an overview of the JCT organization and administration, transit services provided, and travel patterns in the service area. The existing fixed routes are analyzed quantitatively according to operational, performance, and demographic factors and then ranked as part of the Route Fact Book in this chapter.

2.1 Organization and Administration

JCT commenced operations in 1979 and provides fixed route, paratransit, and job access transit services within the Johnson City corporate limits. In addition, it operates the fare-free Bucshot transit service on and around the East Tennessee State University (ETSU) campus. Fixed route and Job Access vehicles arrive and depart from the JCT Transit Center located at 137 West Market Street in downtown Johnson City. The JCT administrative offices are located at the transit center.

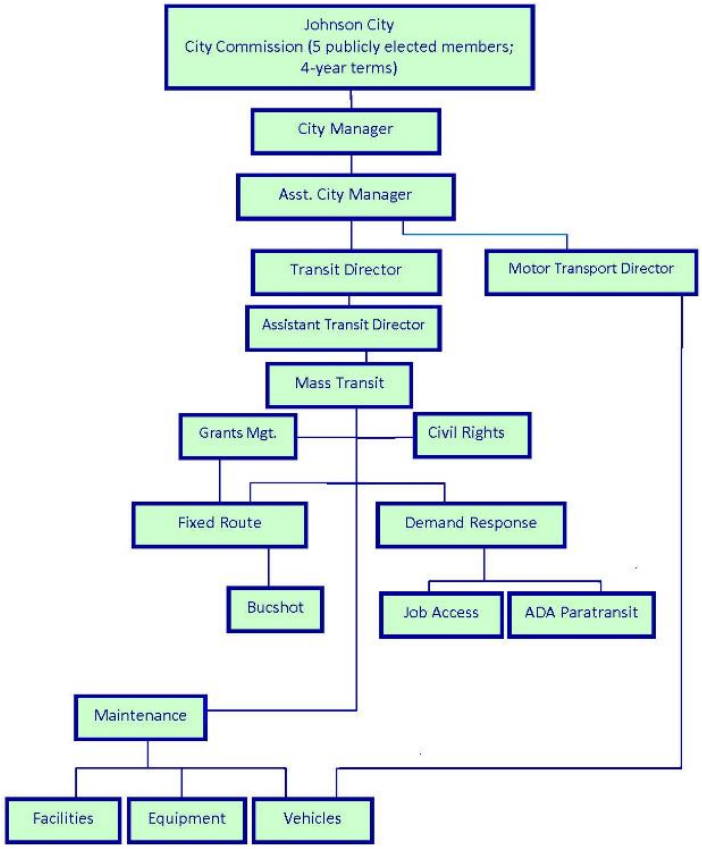
Funding

JCT receives federal transportation funding through the FTA and the Tennessee Department of Transportation (TDOT). Funding is allocated directly to the Johnson City Urbanized Area through a federal apportionment process along with state funding that is allocated to JCT specifically. Johnson City is the recipient of Section 5307 (Urbanized Area Funds), Section 5303 (Metropolitan Planning Organization funding), Section 5310 (Enhanced Mobility of Seniors and Individuals with Disability funding), Section 5339 funding (Bus and Bus Facilities Program). Additionally, TDOT allocates funding from the Urban Operating Program (UROP). Each of these funding programs has a local match requirement in which Johnson City must allocate a specified local match as a percentage of the total funding amount.

Organizational Structure

JCT is led by a Transit Director who reports to the Assistant City Manager. Supporting the Transit Director is the Assistant Transit Director who oversees the operations, maintenance, grants management, and civil rights functions of JCT. The current organizational chart is shown in Figure 2-1.

Figure 2-1: JCT Organizational Chart



Source: JCT, 2017.

2.2 Transit Services

JCT provides several types of transit services: 15 fixed routes, 5 Bucshot routes, XTRA Paratransit, and Job Access, which are described in more detail below. These services do not operate on Sundays or the following holidays: New Year's Day, Martin Luther King Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday after Thanksgiving, Christmas Eve, and Christmas Day.

Fixed-Route System

JCT operates 15 fixed routes that serve residents, businesses, medical centers, government offices, and educational institutions within the Johnson City corporate limits. The daytime routes run from 6:15 am to 6:15 pm and start and end at the JCT Transit Center. The two evening routes operate from 6:15 pm to 11:00 pm with the PM Evening North route and the PM Evening West route originating and terminating at the ETSU Charles C. Sherrod Library. Nine routes operate on Saturday from 8:15 am to 5:15 pm. They operate on 60 or 90 minute frequencies. Table 2-1 summarizes the JCT fixed routes. A map of the fixed-route system is shown on Figure 2-2 and Figure 2-3.

Table 2-1: Fixed Routes

Route	Weekday Hours	Saturday Hours	Frequency
Blue 15 After	6:15 am – 5:45 pm	No service	60 mins
Blue 15 Til	6:45 am – 6:15 pm	8:45 am – 5:15 pm	60 mins
Gold 15 After	6:15 am – 5:45 pm	8:15 am – 4:45 pm	60 mins
Gold 15 Til	6:45 am – 6:15 pm	8:45 am – 5:15 pm	60 mins
Green 15 After	6:15 am – 5:45 pm	8:15 am – 4:45 pm	60 mins
Green 15 Til	6:45 am – 6:15 pm	8:45 am – 5:15 pm	60 mins
Purple 15 After	6:15 am – 5:45 pm	8:15 am – 4:45 pm	60 mins
Purple 15 Til	6:45 am – 6:15 pm	No service	60 mins
Red 15 After	6:15 am – 5:45 pm	8:15 am – 4:45 pm	60 mins
Red 15 Til	6:45 am – 6:15 pm	8:45 am – 5:15 pm	60 mins
Silver 15 After	7:15 am – 4:45 pm	8:15 am – 4:45 pm	60 mins
Orange North	7:15 am – 4:55 pm	No service	90 mins
Orange West	8:00 am – 4:15 pm	No service	90 mins
PM Evening North	6:15 pm – 10:00 pm	No service	90 mins
PM Evening West	7:00 pm – 11:00 pm	No service	90 mins

The base fare for fixed routes is $1.00 and $0.50 for elementary students, senior citizens, Medicare, and riders with disabilities. It is fare-free for children age 5 or under as well as for ETSU students and staff. Proof of age, Half-Fare Eligibility I.D. Cards, Medicare Cards, and ETSU IDs must be shown to the driver to receive the discounted fare. Transfers are free and must be used 30 minutes after they are issued. The JCT fare structure for fixed routes is shown in Table 2-2.

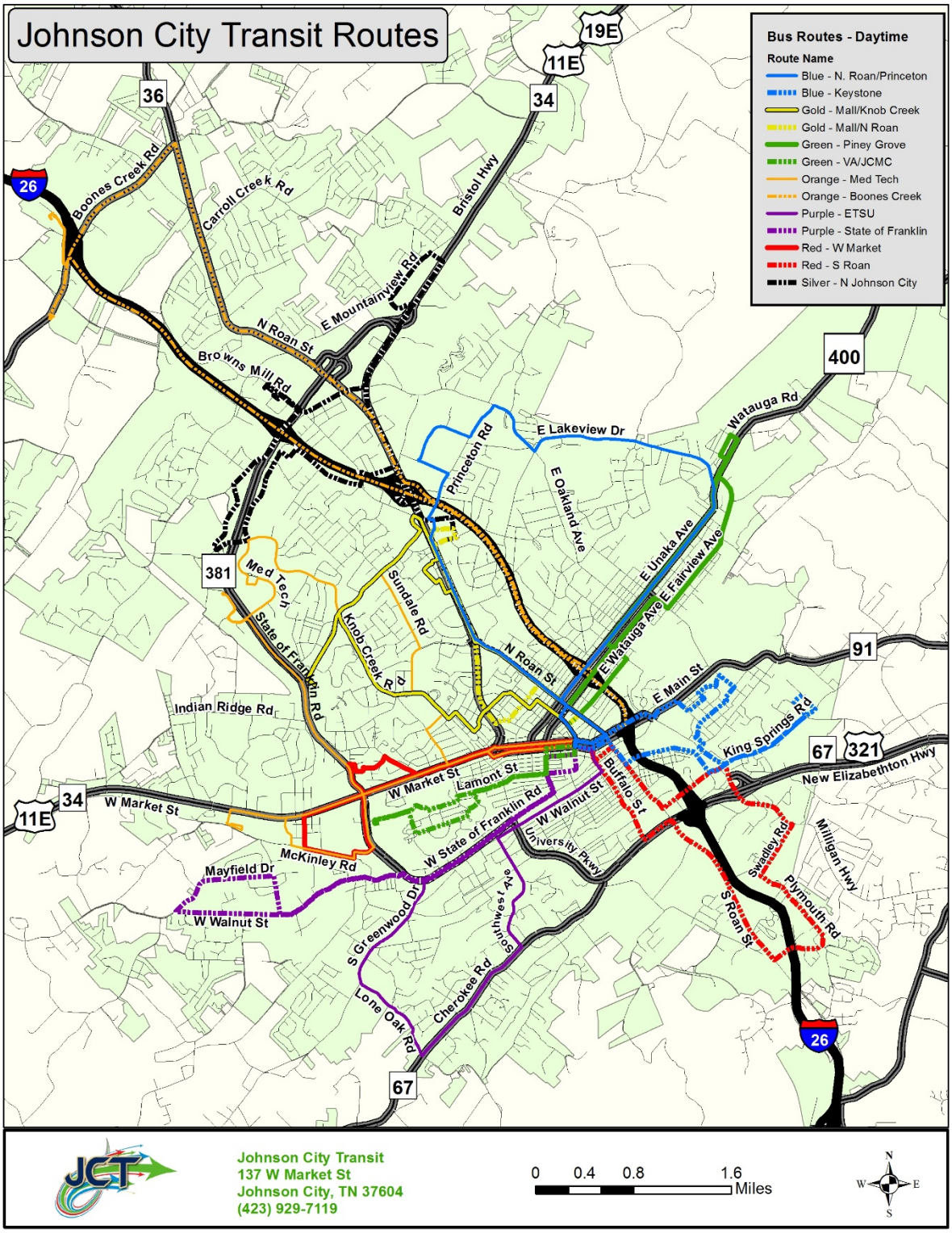
Table 2-2: Fixed Route Fares

Fare Group	Fare Amount
Base Fare	$1.00
Age 5 and Under	Free
Elementary Students (K-5)	$0.50
Senior Citizens	$0.50
Medicare	$0.50
Disabled	$0.50
ETSU Students/Staff	Free
Transfers	Free

Source: JCT, 2017.

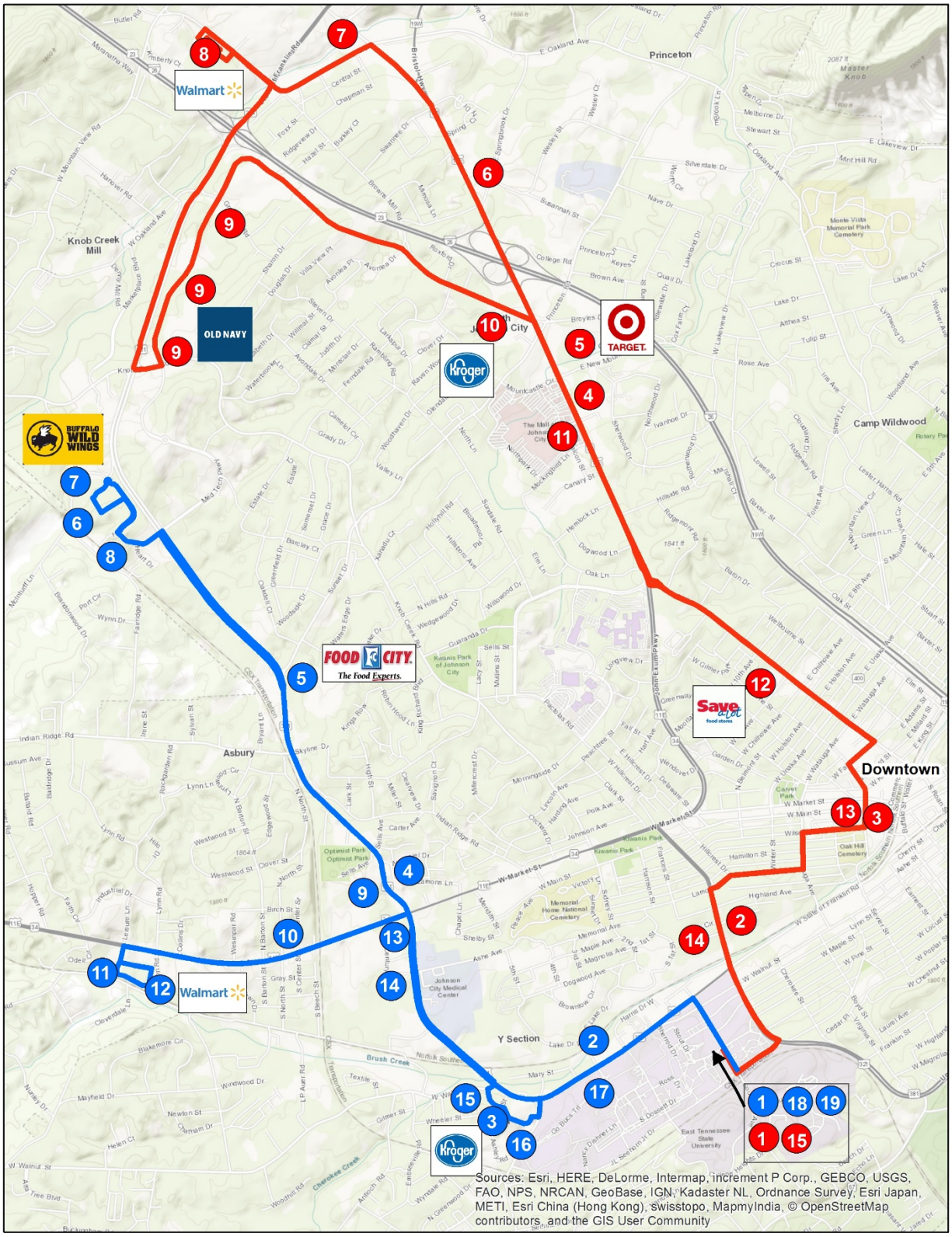
JCT has an Exact Fare Policy where drivers do not carry change. Alternatively, riders may purchase an Express Pass for $25.00 that allows for unlimited rides during the calendar month or a Multi-Ride Pass for $20.00. The Multi-Ride Pass offers riders 25 one-way trips, representing a savings of $5.00 when comparing to the base fare.

Figure 2-2: Current JCT Daytime Fixed Routes



Source: JCT, 2017.

Figure 2-3: JCT Evening Fixed Routes



Source: JCT, 2017.

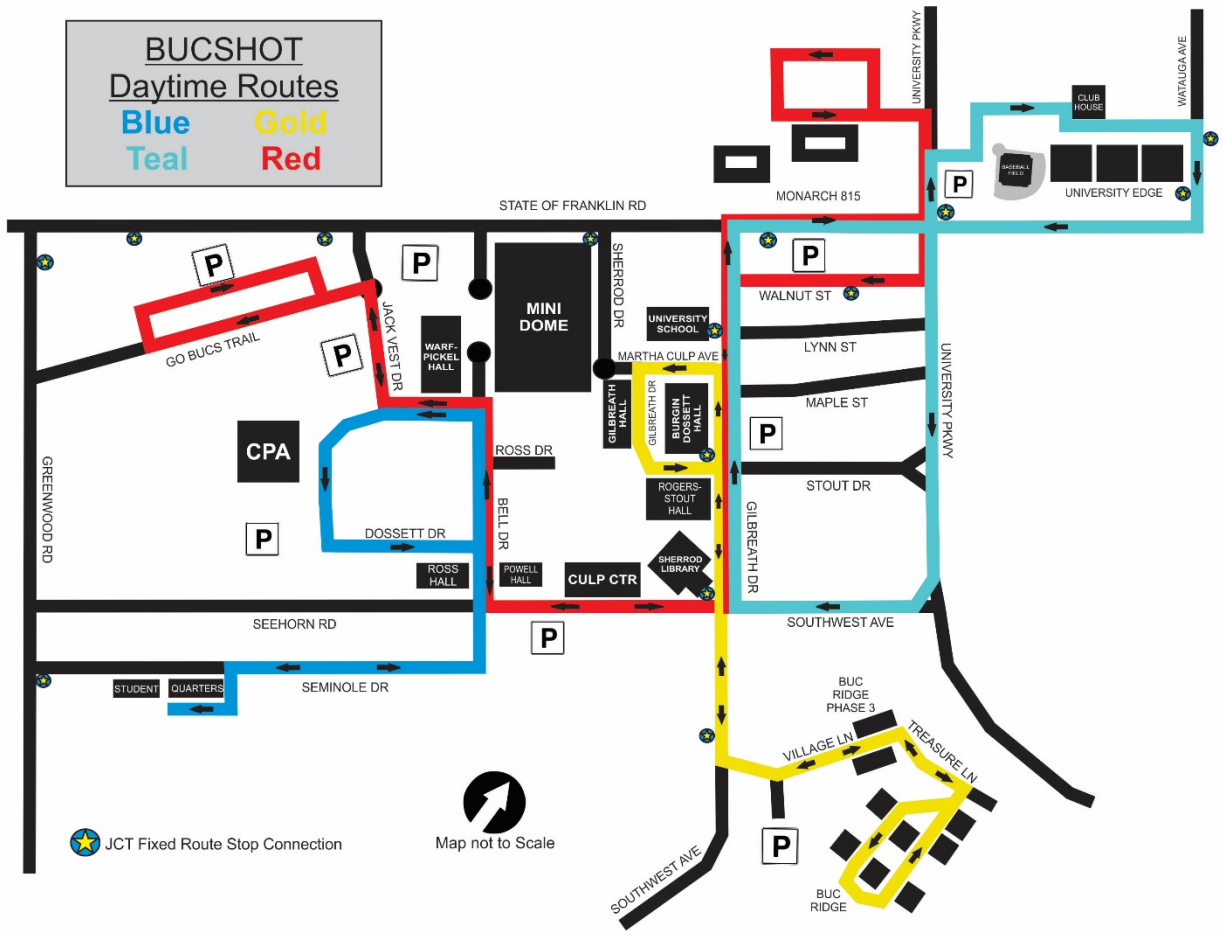
Bucshot Service

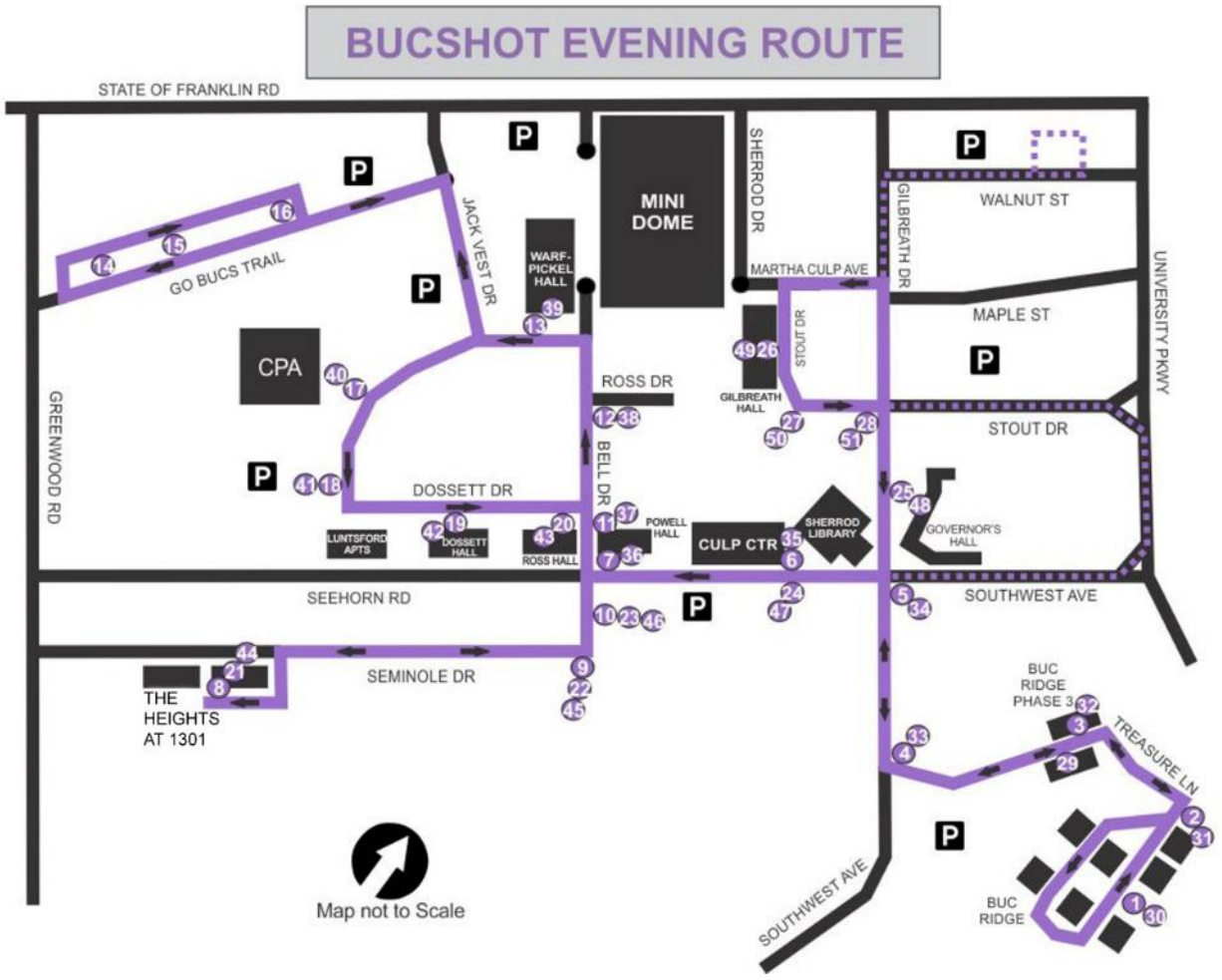
Bucshot provides ETSU students and faculty as well as the general public with a fare-free transit service on and around the ETSU campus. This service began in August 2003 through an agreement with ETSU. It operates during the fall and spring ETSU semesters and does not operate when ETSU classes are not in session. ETSU provides contract matching funds to cover the estimated operating costs and fares associated with this service.

JCT operates the fixed-route Bucshot service with light duty transit vehicles on 15 to 20 minute frequencies, which connect the campus with residential areas and other JCT routes. There are five Bucshot routes, which are described below and shown in Figure 2-4:

- **Bucshot Gold:** Makes a 15-minute loop around the east side of campus, including Buc Ridge apartments. The Gold operates from 7:30 am thru 5:00 pm, Monday through Friday. (Last daily run of the Gold route begins at 4:45 pm.)
- **Bucshot Blue:** Makes a 15-minute loop around the west side of campus, including Student Quarters (formerly Campus Ridge) apartments. The Blue route operates from 7:45 am until 4:00 pm, Monday through Friday (Last daily run of the Blue route begins at 3:45 pm.)
- **Bucshot Teal:** Makes a 15-minute loop between the east side of campus and University Edge apartments. The Teal route operates from 7:45 am until 4:00 pm, Monday through Friday. (Last daily run of the Teal route begins at 3:45 pm.)
- **Bucshot Red:** Makes a 20-minute loop beginning at Monarch Apartments and going between the ETSU West Walnut Street parking lot and near the new parking garage on the west side of campus. The Red route operates from 7:40 am until 4:00 pm, Monday through Thursday, and from 7:40 am until 2:15 pm on Friday.
- **Bucshot Evening:** Operates on a fixed-route schedule from 5:00 pm until 10:45 pm Monday through Friday on a one-hour frequency. The last daily run of the Evening route begins at 10:00 pm. Safe-Voyage trips are available upon request to areas served by the Bucshot Gold and Blue routes from 8:00 pm until 12:00 midnight, Monday through Friday. Areas served by the Teal route are served by Safe-Voyage trips from 10:45 pm until 12:00 midnight, Monday through Friday. All evening Bucshot service is currently provided by one bus.

Figure 2-4: Bucshot Routes




BUCSHOT EVENING ROUTE
STATE OF FRANKLIN RD
GO BUCS TRAIL
JACK VEST DR
MINI DOME
WARF-PICKEL HALL
SHERROD DR
MARTHA CULP AVE
WALNUT ST
GILBREATH DR
UNIVERSITY PKWY
MAPLE ST
STOUT DR
GILBREATH HALL
CPA
ROSS DR
GREENWOOD RD
DOSSETT DR
BELL DR
LUNTSFORD APTS
DOSSETT HALL
ROSS HALL
POWELL HALL
CULP CTR
SHERROD LIBRARY
GOVERNOR'S HALL
SEEHORN RD
SOUTHWEST AVE
SEMINOLE DR
THE HEIGHTS AT 1301
BUC RIDGE PHASE 3
TREASURE LN
BUC RIDGE
Map not to Scale

XTRA Paratransit

In addition to fixed-route service, JCT provides demand response service to eligible persons with disabilities who are unable to use the fixed routes. Named the "XTRA" service, it is available to eligible clients within ¾ mile of a JCT fixed route or the corporate limits of Johnson City, whichever provides furthest service to the JCT client (see Figure 2-5). XTRA Paratransit is curb-to-curb service, provided from the curb in front of the client's pick-up point to the curb in front of the client's destination. (Door-to-door service, as needed, is provided on a case-by-case basis, as determined by the JCT Director, Paratransit Vehicle, and the JCT Paratransit Coordinator).

These eligible riders must complete a JCT Paratransit Service Application in order to be certified as "ADA Paratransit Eligible" to use the service. The application includes a certification by the applicant's medical professional or a JCT-approved social service agency. (JCT-approved agencies list is included in the JCT Paratransit Service Application.) JCT has 21 days to confirm eligibility. If JCT has not made a determination within that time, the applicant will have presumptive eligibility and be permitted to use paratransit services, until the eligibility decision is made by the approving authorities and reviewed by JCT staff. Applications are available at the JCT Transit Center, by mail, and on the JCT website.

Reservations can be made up to two weeks in advance of the scheduled trip and are accepted until 5:00 pm the day before requested service. XTRA Paratransit operates during the same hours as the JCT fixed routes: 6:15 am to 11:00 pm Monday through Friday and 8:15 am to 5:15 pm on Saturdays. The base fare is $2.00 per one-way trip if the origin and destination are located within ¾ mile of a fixed route. Trips with origins and destinations outside the ¾ mile of a fixed route but within the corporate limits of Johnson City are accommodated as space allows and charged a higher fare based on trip distance. The XTRA Paratransit service area is shown on Figure 2-5.

The XTRA Paratransit service is operated using a small light-duty bus or van equipped with lifts or ramps that can accommodate up to 660 pounds. JCT will accommodate wheelchairs that can be safely loaded, transported, and unloaded from its vehicles. Wheelchairs must have at least a two inch clearance between the wheels and the edge of the lift or ramp.

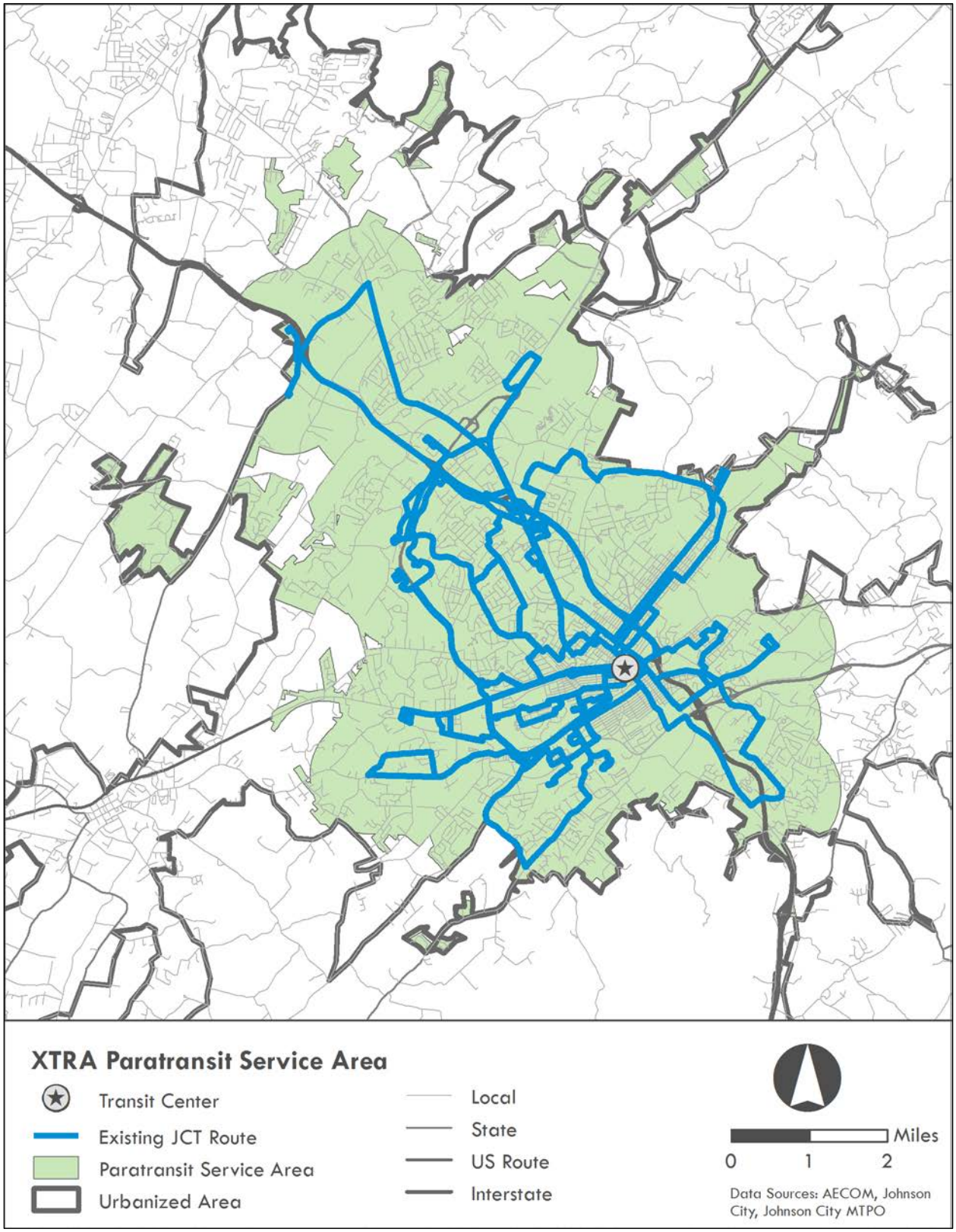
Job Access

JCT offers the Job Access transit service in order to "bridge the transportation gap" for low-income individuals and persons with disabilities and their transit needs to go to places of employment and/or employment-related activities. With grant funding provided by USDOT and TDOT, the service is provided as a supplement to fixed-route service within the corporate city limits of Johnson City. Job Access provides service to riders whose trips are outside fixed-route operating hours, and/or who have pick-up points and/or destinations within the corporate boundaries of Johnson City, which are outside of the JCT fixed-route service area. Job Access is a scheduled demand response, curb-to-curb service.

Reservations for this service must be made at least two days in advance of the requested trip by calling the JCT demand response office.

Job Access service is available from 5:30 am until midnight, Monday through Saturday (excluding holidays). The fare is $2.50 per person per one-way trip. Service is operated using a small bus or van that are lift or ramp-equipped to accommodate riders with special needs.

Figure 2-5: XTRA Paratransit Service Area



Ridership

The number of unlinked passenger trips was analyzed between FY 2015 and FY 2017 to identify trends in JCT ridership. As shown in Table 2-3, ridership has remained relatively the same for both fixed-route (includes Bucshot) and demand response (includes Job Access) services. There was a slight decrease in ridership between FY 2015 and FY 2016. However over the three-year period, there was a 1.1% increase in fixed-route and demand response ridership.

Table 2-3: Unlinked Passenger Trips

Mode	FY 2015	FY 2016	FY 2017	Change
Fixed Route and Bucshot	613,656	607,247	620,141	+1.1%
Demand Response (includes Job Access)	47,507	47,405	48,020	+1.1%

Source: JCT, 2017.

2.3 Physical Assets and Support

JCT administration and operations are based out of the JCT Transit Center located at 137 West Market Street in downtown Johnson City. The building was formerly the Greyhound Bus Lines terminal and was converted into the JCT Transit Center in 1986. JCT fixed routes start and end at the transit center, with the center serving as the principal transfer location. Riders connect with Greyhound bus and taxi services at the center. An indoor waiting area is available for riders. There is a need to replace the HVAC system in the current facility, and funding has been allocated to support this repair in fiscal year 2019.

Vehicle maintenance is performed at 209 Water Street and vehicles are parked at 315 and 316 Millard Street in Johnson City. The approximately 7,300 square foot maintenance facility is operated by the City and was added on to the existing motor transport facility in 1983. There are currently three vehicle bays and one wash bay. The two vehicle lifts currently in operation are programmed to be replaced in FY 2018.

The JCT vehicle fleet includes medium and heavy duty buses for the fixed-route service and vans for the XTRA Paratransit and Job Access services. All JCT vehicles are equipped with lifts or ramps in order to serve all riders. Currently, there are 22 fixed-route and 17 demand response vehicles in revenue service as shown in Table 2-4 and Table 2-5. In addition, JCT has four non-revenue vehicles for administrative and maintenance use.

The average mileage for the fixed-route revenue vehicles is approximately 130,000 miles. All but one vehicle is from model year 2010 or later. The 2002 and 2010 model year vehicles are considered in "poor" condition while the 2016 models are in "excellent" condition. The seating capacity ranges from 23 to 28 seats with 2 wheelchair positions. The life expectancy based on FTA guidelines is either 7 or 12 years, based on the vehicle type.

The average mileage for the demand response revenue vehicles is approximately 90,000 miles. Most vehicles are from model year 2010 or later. The vehicles from model years 2008-2010 are considered in "poor"

condition, the three Dodge vehicles from 2013 in "good" condition, and the remaining nine vehicles in "excellent" condition. The seating capacity ranges from 3 to 16 seats with 1 to 3 wheelchair stations. The life expectancy, based on FTA guidelines, is four years for most of the demand response fleet.

Table 2-4: Fixed-Route Revenue Vehicle Inventory

Agency No.	Description	Model Year	Seating (Seats/WC)	FY 2017 Mileage	Life Expec.	Cond.
TROLLEY 1	Trolley Bus - Med Sz, Med Duty	2002	28/2 WC	111,193	7	Poor
ARBOC 1	Bus - Med Sz, Med Duty	2010	23/2 WC	167,814	7	Poor
ARBOC 2	Bus - Med Sz, Med Duty	2010	23/2 WC	159,453	7	Poor
ARBOC 3	Bus - Med Sz, Med Duty	2010	23/2 WC	190,816	7	Poor
ARBOC 4	Bus - Med Sz, Med Duty	2010	23/2 WC	167,293	7	Poor
ARBOC 5	Bus - Med Sz, Med Duty	2010	23/2 WC	175,676	7	Poor
ARBOC 6	Bus - Med Sz, Med Duty	2010	23/2 WC	184,781	7	Poor
ARBOC 7	Bus - Med Sz, Med Duty	2010	23/2 WC	175,900	7	Poor
ARBOC 8	Bus - Med Sz, Med Duty	2010	23/2 WC	188,217	7	Poor
ARBOC 9	Bus - Med Sz, Med Duty	2010	23/2 WC	171,705	7	Poor
ARBOC 10	Bus - Med Sz, Med Duty	2010	23/2 WC	171,666	7	Poor
ARBOC 11	Bus - Med Sz, Med Duty	2010	23/2 WC	183,350	7	Poor
ARBOC 12	Bus - Med Sz, Med Duty	2010	23/2 WC	168,437	7	Poor
ARBOC 13	Bus - Med Sz, Med Duty	2010	23/2 WC	174,170	7	Poor
ARBOC 14	Bus - Med Sz, Med Duty	2010	23/2 WC	165,525	7	Poor
ARBOC 15	Bus - Med Sz, Med Duty	2010	23/2 WC	171,152	7	Poor
Eldorado 1	Bus - Heavy Duty - 30 ft.	2016	24/2 WC	21,220	12	Excellent
Eldorado 2	Bus - Heavy Duty - 30 ft.	2016	24/2 WC	13,393	12	Excellent
Eldorado 3	Bus - Heavy Duty - 30 ft.	2016	24/2 WC	20,341	12	Excellent
Eldorado 4	Bus - Heavy Duty - 30 ft.	2016	24/2 WC	21,037	12	Excellent
Eldorado 5	Bus - Heavy Duty - 30 ft.	2016	24/2 WC	5,883	12	Excellent
Eldorado 6	Bus - Heavy Duty - 30 ft.	2016	24/2 WC	13,039	12	Excellent

Source: JCT, 2017.

Table 2-5: Demand Response Revenue Vehicle Inventory

Agency No.	Description	Model Year	Seating (Seats/WC)	FY 2017 Mileage	Life Expec.	Cond.
STAR 21	8&2 ADA Van	2008	8/2 WC	211,020	4	Poor
STAR 22	8&2 ADA Van	2009	8/2 WC	182,464	4	Poor
STAR 23	8&2 ADA Van	2010	8/2 WC	180,430	4	Poor
STAR 25	8&2 ADA Van	2010	8/2 WC	164,243	4	Poor
GOSHEN 3	12&2 ADA Van	2010	12/2WC	146,613	4	Poor
Dodge 1	ADA Mini-Van	2013	5/1 WC	106,361	4	Good
Dodge 2	ADA Mini-Van	2013	5/1 WC	94,855	4	Good
Dodge 3	ADA Mini-Van	2013	5/1 WC	89,777	4	Good
E1	8&2 ADA Van	2013	8/2 WC	74,999	4	Excellent
E2	8&2 ADA Van	2013	8/2 WC	70,423	4	Excellent
STAR 26	12&3 ADA Van	2014	12/3 WC	63,768	4	Excellent
MV-1	3&1 ADA Vehicle	2015	3/1 WC	19,768	4	Excellent
MV-2	3&1 ADA Vehicle	2015	3/1 WC	33,284	4	Excellent
MV-3	3&1 ADA Vehicle	2015	3/1 WC	23,439	4	Excellent
MV-4	3&1 ADA Vehicle	2015	3/1 WC	33,074	4	Excellent
Dodge 4	ADA Mini-Van	2016	6/1 WC	13,576	4	Excellent
Star 27	ADA Van	2017	16/2 WC	3,181	5	Excellent

Source: JCT, 2017.

2.4 Route Fact Book

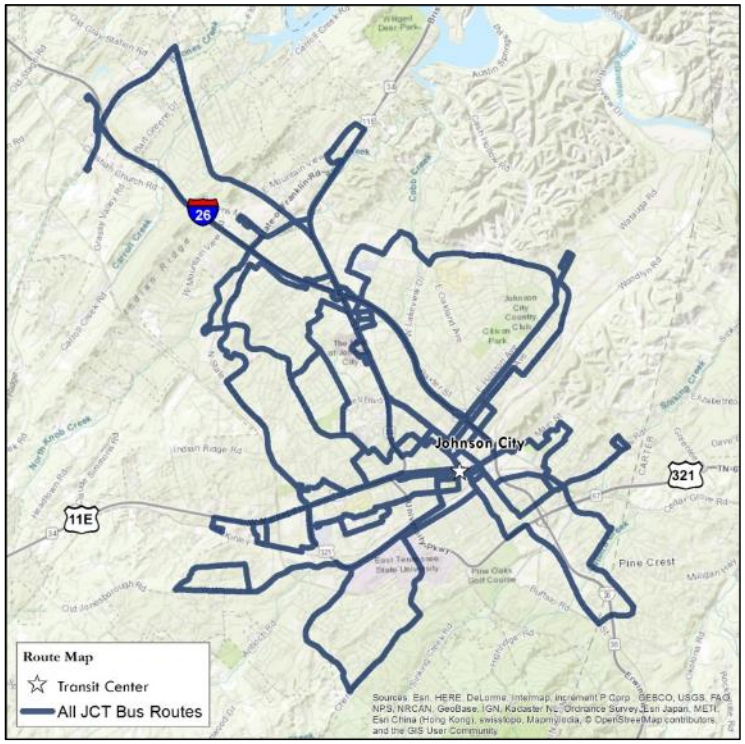
The route fact book summarizes the key operational, performance, and demographic indicators of the JCT fixed routes along with a description of the strengths, challenges, and opportunities. The indicators are based on JCT performance data averaged over three fiscal years (FY 2015 - FY 2017) and demographic data from ACS 2011-2015 five-year estimates. Estimated operating costs for each route are calculated by multiplying the average system operating cost per revenue hour by annual revenue hours for each route. Refer to Appendix A for maps showing boardings and major activity centers for each route.

The operational indicators reported for each route are summarized in Table 2-6 below for easier comparison in addition to being presented in each route profile.

Table 2-6: Summary of Operational Indicators

Route	Annual Unlinked Passenger Trips	Annual Vehicle Revenue Miles	Annual Vehicle Revenue Hours	Operating Expenses	Revenue
Blue 15 After	18,000	24,600	1,300	$81,000	$4,400
Blue 15 Til	32,300	20,900	1,500	$96,000	$8,300
Gold 15 After	25,100	25,100	1,700	$111,000	$6,300
Gold 15 Til	30,800	20,400	1,400	$89,000	$6,900
Green 15 After	37,100	23,900	1,400	$92,000	$9,500
Green 15 Til	23,800	14,800	1,200	$78,000	$6,600
Purple 15 After	34,900	25,200	1,300	$81,000	$4,900
Purple 15 Til	20,800	24,900	1,300	$83,000	$3,800
Red 15 After	37,000	19,900	1,400	$92,000	$8,900
Red 15 Til	49,400	23,300	1,300	$85,000	$12,400
Silver 15 After	50,700	44,300	2,500	$161,000	$13,300
Orange North	8,000	28,000	1,200	$75,000	$2,700
Orange West	11,300	18,700	1,000	$66,000	$3,800
PM Evening North	1,000	6,600	600	$36,000	$400
PM Evening West	500	5,300	600	$40,000	$100
Bucshot Blue	50,100	10,700	1,300	$82,000	Fare Free
Bucshot Gold	92,600	14,200	1,500	$95,000	Fare Free
Bucshot Red	14,300	10,100	1,300	$83,000	Fare Free
Bucshot Teal	32,300	13,700	1,300	$82,000	Fare Free
Bucshot Evening	11,200	7,900	700	$46,800	Fare Free

All Routes

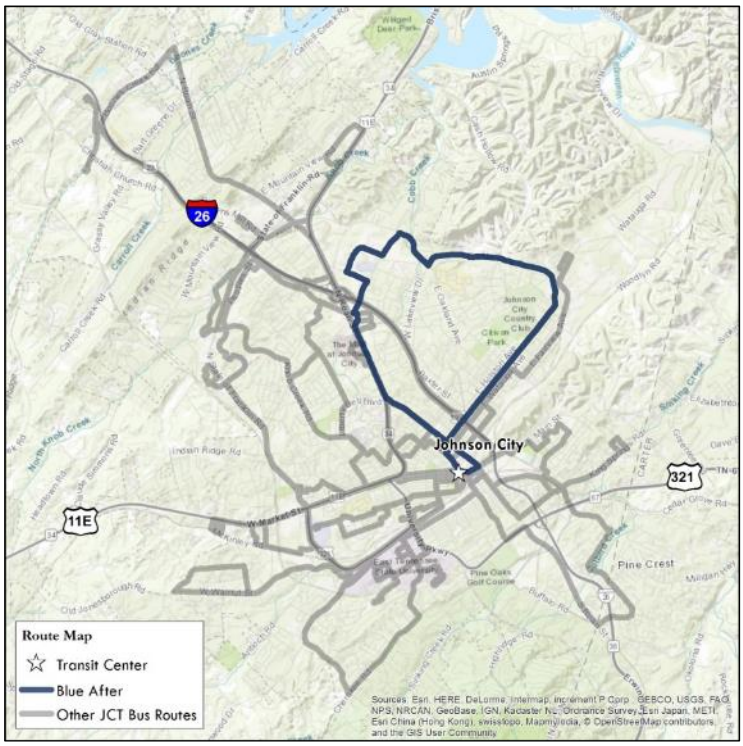


Demographic Data Source: US Census Bureau, 2015 American Community Survey (ACS) 5-year Estimates (2011-2015)

Block Groups analyzed for demographics: 47179601001, 47179601002, 47179601003, 47179604001, 47179604002, 47179604003, 47179604004, 47179604005, 47179605011, 47179605012, 47179605013, 47179605021, 47179605022, 47179605023, 47179606001, 47179606002, 47179606004, 47179606005, 47179607001, 47179608001, 47179608002, 47179608003, 47179609001, 47179609002, 47179609003, 47179609004, 47179609005, 47179610001, 47179610002, 47179610003, 47179611001, 47179611002, 47179611003, 47179611004, 47179612001, 47179612002, 47179613001, 47179613002, 47179613003, 47179613004, 47179613005, 47179614011, 47179614021, 47179614023, 47179620001, 47179620002, 47179620003, 47179620004, 4719708002, & 4719708003

Operational	
System Length (round-trip):	163.2 miles
Hours of Operation:	6:15 AM – 12:00 AM
Days of Operation:	Monday-Saturday
Unlinked Passenger Trips:	581,200
Vehicle Revenue Miles:	382,500
Vehicle Revenue Hours:	25,800
Estimated Operating Cost:	$1,654,800
Estimated Revenue:	$92,300
Performance	
Operating expenses per revenue mile:	$5.30
Operating expenses per revenue hour:	$63.78
Operating expenses per unlinked passenger trip:	$16.20
Passengers per revenue hour:	20.8
Passengers per revenue mile:	1.6
On-time performance:	67%
Farebox recovery:	7%
Demographics	
Population Density:	1,070/sq. mi.
Persons below poverty level:	23.9%
Zero Vehicle Households:	8.2%
Persons with disabilities:	16.6%
Population 65 years and Over:	15.9%
Population 17 years and Under:	19.1%
Minority Population:	15.3%
Transit Dependent Population:	7.8%

Route: Blue 15 After



Demographic Data Source: US Census Bureau, 2015 American Community Survey (ACS) 5-year Estimates (2011-2015)

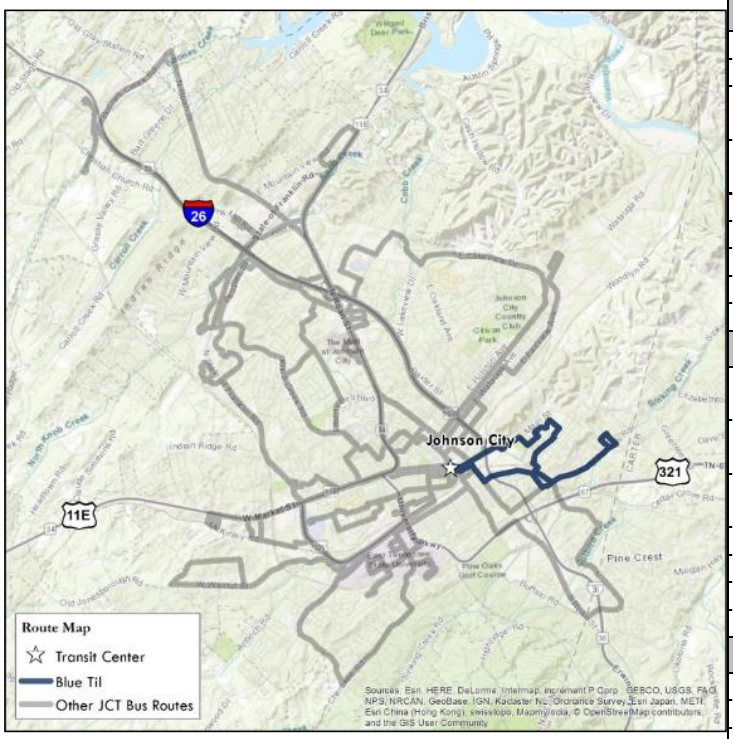
Block Groups analyzed for demographics: 47179611002, 47179611003, 47179611004, 47179612001, 47179604002, 47179610003, 47179610001, 47179613004, 47179601001, 47179604001, 47179601002, 47179610002, 47179612002, 47179601003, & 47179611001

Operational	
Length (round-trip):	9.25 miles
Frequency:	60 min.
Hours of Operation:	6:15 am - 5:45 pm
Days of Operation:	Monday-Friday
Unlinked Passenger Trips:	18,000
Vehicle Revenue Miles:	24,600
Vehicle Revenue Hours:	1,300
Estimated Operating Cost:	$81,000
Estimated Revenue:	$4,400
Performance	
Operating expenses per revenue mile:	$3.28
Operating expenses per revenue hour:	$63.78
Operating expenses per unlinked passenger trip:	$4.49
Passengers per revenue hour:	14.3
Passengers per revenue mile:	0.7
On-time performance:	73%
Farebox recovery:	6%
Demographics	
Population Density:	792/sq. mi.
Persons below poverty level:	25.5%
Zero Vehicle Households:	10.3%
Persons with disabilities:	16.4%
Population 65 years and Over:	18.7%
Population 17 years and Under:	17.6%
Minority Population:	15.5%
Transit Dependent Population:	8.3%

Strengths, Challenges, and Opportunities

The *Blue 15 After* is a medium distance one-way loop of 9.25 Miles. It shares a portion of the route with both Gold routes as well as the Green 15 After. Ridership is generally highest beginning at the Mall and continuing around the northwest side of the loop. It sits near the top in terms of on-time performance which is very good considering the distance and destinations it covers. The route serves a wide range of community uses including the Mall at Johnson City, the Washington County Health Department, low-income housing, and industry. This route overlaps significantly with the *Green 15 After route* and ridership at stops near the businesses on Eddie Williams Road is generally low. This may indicate an opportunity to revise both routes to improve overall service in this portion of the community.

Route: Blue 15 Til



Demographic Data Source: US Census Bureau, 2015 American Community Survey (ACS) 5-year Estimates (2011-2015)

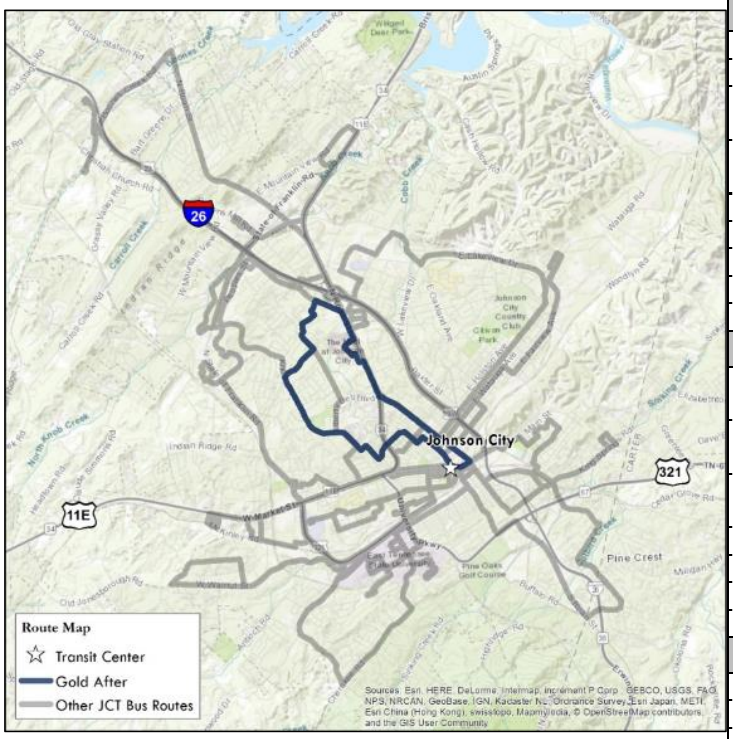
Block Groups analyzed for demographics: 47179608001, 47179608003, 47179609001, 47179609003, 47179601001, 47179601002, 47179601003, 47179609004, & 47179609002

Operational	
Length (round-trip):	6.4 miles
Frequency:	60 min.
Hours of Operation:	6:45 am – 6:15 pm
Days of Operation:	Monday-Saturday
Unlinked Passenger Trips:	32,300
Vehicle Revenue Miles:	20,900
Vehicle Revenue Hours:	1,500
Estimated Operating Cost:	$96,000
Estimated Revenue:	$8,300
Performance	
Operating expenses per revenue mile:	$4.60
Operating expenses per revenue hour:	$63.78
Operating expenses per unlinked passenger trip:	$2.98
Passengers per revenue hour:	21.4
Passengers per revenue mile:	1.5
On-time performance:	73%
Farebox recovery:	9%
Demographics	
Population Density:	2,997/sq. mi.
Persons below poverty level:	40.0%
Zero Vehicle Households:	15.4%
Persons with disabilities:	19.8%
Population 65 years and Over:	11.1%
Population 17 years and Under:	21.5%
Minority Population:	21.6%
Transit Dependent Population:	15.9%

Strengths, Challenges, and Opportunities

The *Blue 15 Til* route is one of the shorter one-way loops at 6.4 miles roundtrip. It serves low-income housing areas as well as government services such as City Hall and the Department of Human Services. It is 6th overall in both passengers per revenue mile and operating expense per trip and is also in the top tier of on-time performance. Although it is a shorter distance route, it has strong ridership performance and serves as a key route for getting lower income passengers to and from their communities.

Route: Gold 15 After



Demographic Data Source: US Census Bureau, 2015 American Community Survey (ACS) 5-year Estimates (2011-2015)

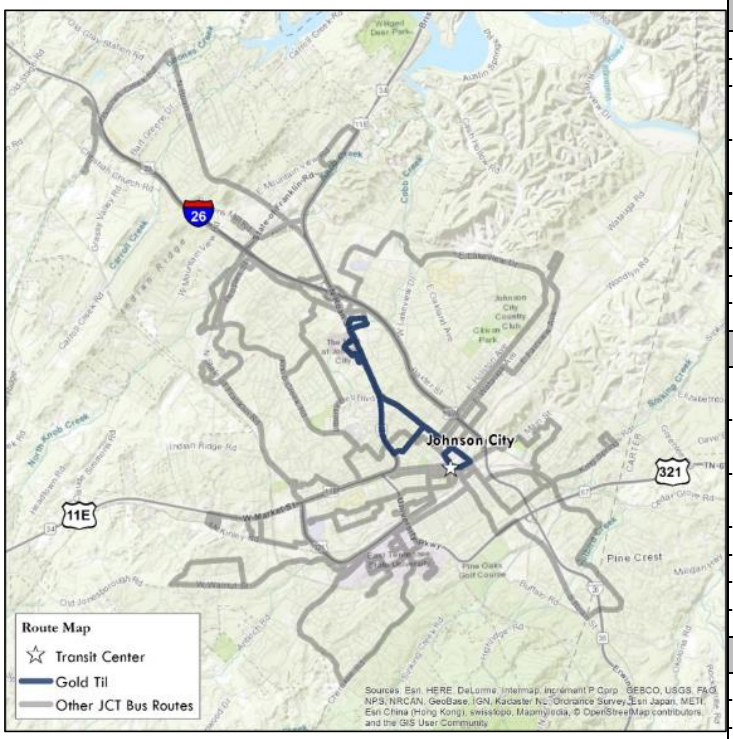
Block Groups analyzed for demographics: 47179604004, 47179620004, 47179604002, 47179601001, 47179604001, 47179601002, 47179604003, & 47179601003

Operational	
Length (round-trip):	8.5 miles
Frequency:	60 min.
Hours of Operation:	6:15 am – 5:45 pm
Days of Operation:	Monday-Saturday
Unlinked Passenger Trips:	25,100
Vehicle Revenue Miles:	25,100
Vehicle Revenue Hours:	1,700
Estimated Operating Cost:	$111,000
Estimated Revenue:	$6,300
Performance	
Operating expenses per revenue mile:	$4.41
Operating expenses per revenue hour:	$63.78
Operating expenses per unlinked passenger trip:	$4.42
Passengers per revenue hour:	14.5
Passengers per revenue mile:	1.0
On-time performance:	73%
Farebox recovery:	6%
Demographics	
Population Density:	2,111/sq. mi.
Persons below poverty level:	18.1%
Zero Vehicle Households:	9.3%
Persons with disabilities:	18.6%
Population 65 years and Over:	20.4%
Population 17 years and Under:	14.8%
Minority Population:	19.5%
Transit Dependent Population:	11.7%

Strengths, Challenges, and Opportunities

The *Gold 15 After* is a mid-length, mostly one-way loop that runs 8.5 miles and serves some essential services including a grocery, the Social Security Administration, and the Mall at Johnson City. Ridership is highest on the north end of the loop near the grocery, social security office, and mall, then increases again coming into town on N. Roan. For a mid-length route, it is toward the lower end of the group but has a high level of on-time performance. The inbound direction of the loop on N. Roan pairs well with the outbound direction of the Silver and Blue routes to provide bi-directional service on this main corridor. Due to the overlapping of the Blue, Silver and Gold routes on this corridor, there may be opportunities in the future to create a "mini-hub" where passengers can transfer without coming into downtown.

Route: Gold 15 Til



Demographic Data Source: US Census Bureau, 2015 American Community Survey (ACS) 5-year Estimates (2011-2015)

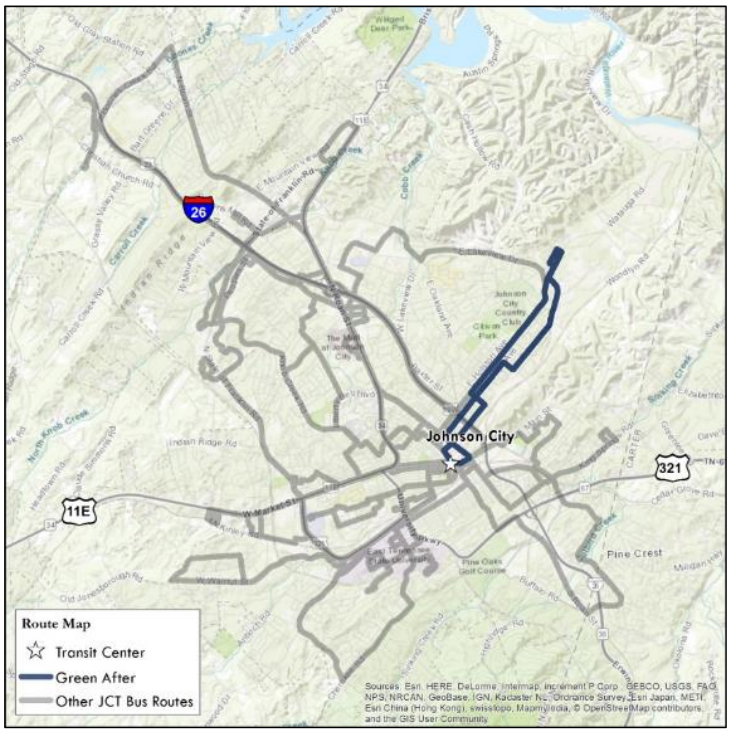
Block Groups analyzed for demographics: 47179604002, 47179601001, 47179604001, 47179601002, & 47179601003

Operational	
Length (round-trip):	6.2 miles
Frequency:	60 min.
Hours of Operation:	6:45 am – 6:15 pm
Days of Operation:	Monday-Saturday
Unlinked Passenger Trips:	30,800
Vehicle Revenue Miles:	20,400
Vehicle Revenue Hours:	1,400
Estimated Operating Cost:	$89,000
Estimated Revenue:	$6,900
Performance	
Operating expenses per revenue mile:	$4.35
Operating expenses per revenue hour:	$63.78
Operating expenses per unlinked passenger trip:	$2.88
Passengers per revenue hour:	22.1
Passengers per revenue mile:	1.5
On-time performance:	73%
Farebox recovery:	8%
Demographics	
Population Density:	1,987/sq. mi.
Persons below poverty level:	25.8%
Zero Vehicle Households:	15.6%
Persons with disabilities:	15.4%
Population 65 years and Over:	19.7%
Population 17 years and Under:	12.2%
Minority Population:	21.4%
Transit Dependent Population:	9.3%

Strengths, Challenges, and Opportunities

The *Gold 15 Til* is ranked 2nd overall with higher numbers for passengers per revenue hour and per revenue mile. At 6.2 miles, this is a shorter route and its on-time performance is in the top tier. Overall ridership is highest in the western loop portion by the Dunbar and Parkway Housing Authority communities and again near the mall and Mountcastle Drive. Aside from the loop on 8th and John Exum parkway, this route serves as a bi-directional corridor route on N. Roan. Annual ridership is close to 31,000 which is at the lower end of the shorter distance routes, yet overall performance is strong which could indicate some demand for bi-directional, non-loop services.

Route: Green 15 After



Demographic Data Source: US Census Bureau, 2015 American Community Survey (ACS) 5-year Estimates (2011-2015)

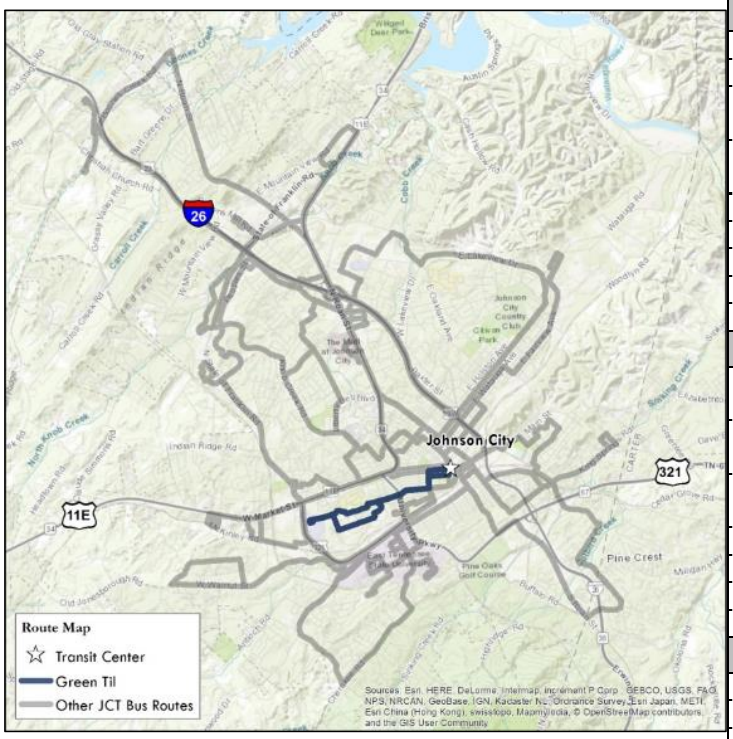
Block Groups analyzed for demographics: 47179612001, 47179610003, 47179610001, 47179601001, 47179601002, 47179610002, 47179612002, 47179601003, & 47179611001

Operational	
Length (round-trip):	7.25 miles
Frequency:	60 min.
Hours of Operation:	6:15 am – 5:45 pm
Days of Operation:	Monday-Saturday
Unlinked Passenger Trips:	37,100
Vehicle Revenue Miles:	23,900
Vehicle Revenue Hours:	1,400
Estimated Operating Cost:	$92,000
Estimated Revenue:	$9,500
Performance	
Operating expenses per revenue mile:	$3.86
Operating expenses per revenue hour:	$63.78
Operating expenses per unlinked passenger trip:	$2.50
Passengers per revenue hour:	25.6
Passengers per revenue mile:	1.6
On-time performance:	72%
Farebox recovery:	11%
Demographics	
Population Density:	641/sq. mi.
Persons below poverty level:	31.8%
Zero Vehicle Households:	12.6%
Persons with disabilities:	20.2%
Population 65 years and Over:	14.0%
Population 17 years and Under:	17.7%
Minority Population:	19.5%
Transit Dependent Population:	10.8%

Strengths, Challenges, and Opportunities

This route ranks 3rd overall and operates much like a bi-directional corridor service. It has strong passengers per hour and operates at a higher level of on-time performance. Ridership is very good at locations throughout the route, including the community past Long St., and the businesses along Eddie Williams Rd. The route provides efficient and direct service but also overlaps with the inbound portion of the *Blue 15 After*. Both buses run closely behind each other on E. Unaka toward the transit center which indicates an opportunity to redesign either or both of these routes to spread out the service, reduce geographic coverage duplication, and better maximize resources. Due to the high-performing nature of the *Green 15 After*, attention should be focused on potential redesign of the Blue which performs at a lower level overall.

Route: Green 15 Til



Demographic Data Source: US Census Bureau, 2015 American Community Survey (ACS) 5-year Estimates (2011-2015)

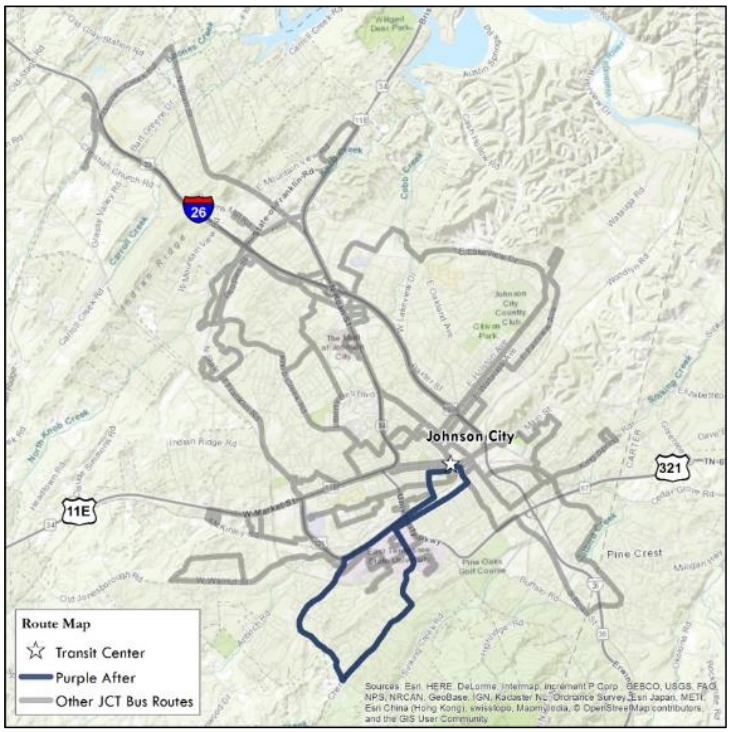
Block Groups analyzed for demographics: 47179620001 & 47179601002

Operational	
Length (round-trip):	4.5 miles
Frequency:	60 min.
Hours of Operation:	6:45 am – 6:15 pm
Days of Operation:	Monday-Saturday
Unlinked Passenger Trips:	23,800
Vehicle Revenue Miles:	14,800
Vehicle Revenue Hours:	1,200
Estimated Operating Cost:	$78,000
Estimated Revenue:	$6,600
Performance	
Operating expenses per revenue mile:	$5.23
Operating expenses per revenue hour:	$63.78
Operating expenses per unlinked passenger trip:	$3.27
Passengers per revenue hour:	19.5
Passengers per revenue mile:	1.6
On-time performance:	72%
Farebox recovery:	9%
Demographics	
Population Density:	2,126/sq. mi.
Persons below poverty level:	41.6%
Zero Vehicle Households:	20.5%
Persons with disabilities:	24.1%
Population 65 years and Over:	17.3%
Population 17 years and Under:	15.5%
Minority Population:	31.2%
Transit Dependent Population:	18.2%

Strengths, Challenges, and Opportunities

The *Green 15 Til* is 7th overall in terms of performance but is also one of the shortest main-line routes at 4.5 miles. Ridership comes in at under 24,000 which is in the lower tier of the shorter routes, yet this route serves several significant activity centers, the Johnson City Medical Center, ETSU College of Medicine, and the VA Mountain Home hospital complex. The hospital and VA are very high ridership locations. The route is designed primarily as bi-directional, except for the loop along Dogwood that serves the VA. Although this route ranks in the middle, much of this is due to the short distance it travels and the high ridership generators it serves. There may be opportunities to redesign the route to perform as a small loop that extends to Walmart and still provides service to the major destinations.

Route: Purple 15 After



Demographic Data Source: US Census Bureau, 2015 American Community Survey (ACS) 5-year Estimates (2011-2015)

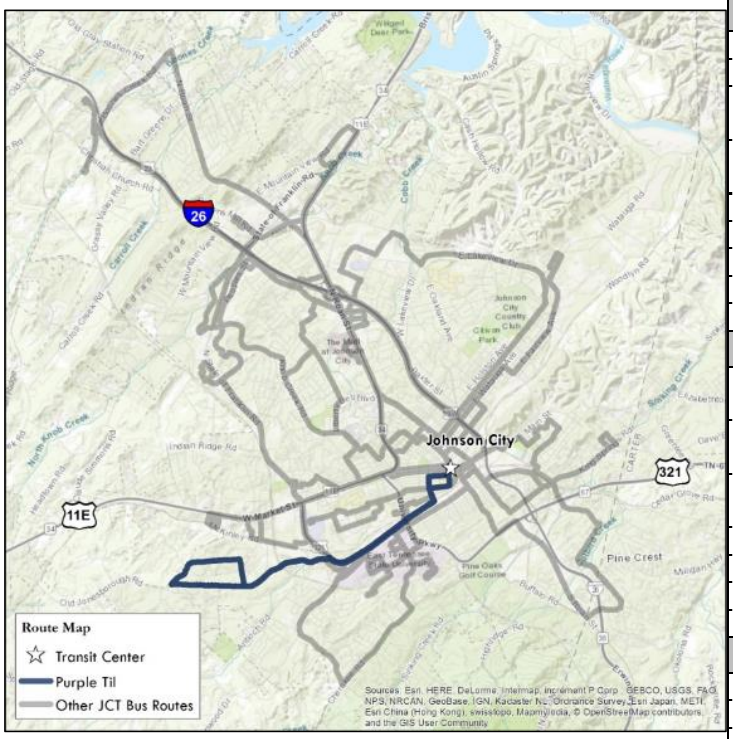
Block Groups analyzed for demographics: 47179608001, 47179608002, 47179606001, 47179606004, 47179606005, 47179601001, 47179605022, 47179605021, 47179601002, 47179607001, & 47179601003

Operational	
Length (round-trip):	7.6 miles
Frequency:	60 min.
Hours of Operation:	6:15 am – 5:45 pm
Days of Operation:	Monday-Saturday
Unlinked Passenger Trips:	34,900
Vehicle Revenue Miles:	25,200
Vehicle Revenue Hours:	1,300
Estimated Operating Cost:	$81,000
Estimated Revenue:	$4,900
Performance	
Operating expenses per revenue mile:	$3.23
Operating expenses per revenue hour:	$63.78
Operating expenses per unlinked passenger trip:	$2.33
Passengers per revenue hour:	27.4
Passengers per revenue mile:	1.4
On-time performance:	72%
Farebox recovery:	6%
Demographics	
Population Density:	1,820/sq. mi.
Persons below poverty level:	31.3%
Zero Vehicle Households:	9.6%
Persons with disabilities:	15.0%
Population 65 years and Over:	10.1%
Population 17 years and Under:	13.2%
Minority Population:	17.4%
Transit Dependent Population:	7.3%

Strengths, Challenges, and Opportunities

The *Purple 15 After* operates primarily as a quasi-bi-directional corridor service on W. State of Franklin Rd while alternating between the ETSU loop up to Cherokee Road and then becoming the *Purple 15 Til* and providing service through the W. Walnut to Mayfield Dr. loop. This route serves a critical link to the ETSU campus and the Bucshot routes. The major attractors on this route are ETSU, the Continuing Education Center, and residences. There is good ridership across all areas of the route coming in at nearly 35,000 rides annually which is strong for a mid-distance service. This route scores well on performance metrics and is ranked 4th best overall. Based on the similarities in service between this route and the *Purple 15 Til*, there may be an opportunity to rethink the route design and simplify the service that it provides.

Route: Purple 15 Til



Demographic Data Source: US Census Bureau, 2015 American Community Survey (ACS) 5-year Estimates (2011-2015)

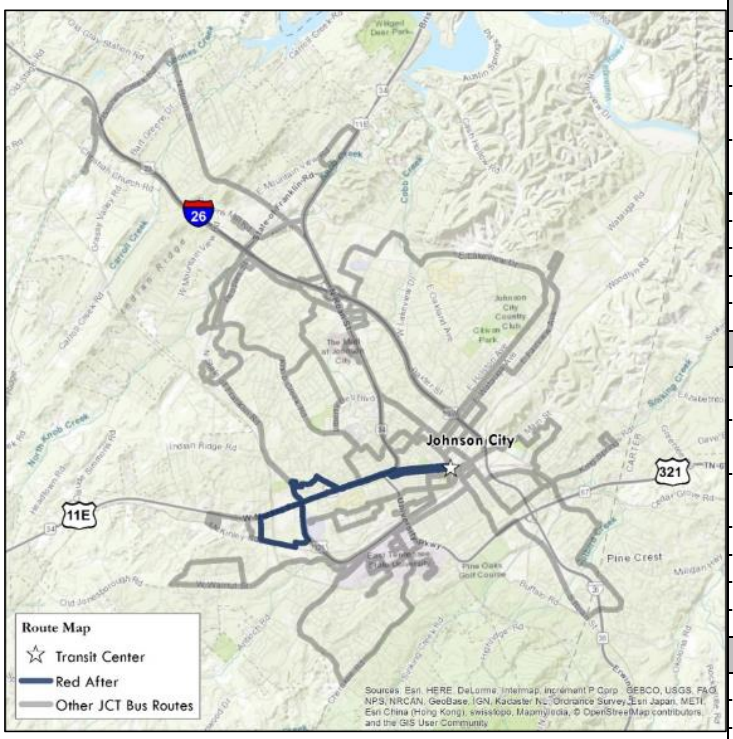
Block Groups analyzed for demographics: 47179608001, 47179608003, 47179609005, 47179606002, 47179601001, 4719708002, 4719708003, 47179601002, & 47179609004

Operational	
Length (round-trip):	8.6 miles
Frequency:	60 min.
Hours of Operation:	6:45 am – 6:15 pm
Days of Operation:	Monday-Friday
Unlinked Passenger Trips:	20,800
Vehicle Revenue Miles:	24,900
Vehicle Revenue Hours:	1,300
Estimated Operating Cost:	$83,000
Estimated Revenue:	$3,800
Performance	
Operating expenses per revenue mile:	$3.34
Operating expenses per revenue hour:	$63.78
Operating expenses per unlinked passenger trip:	$4.00
Passengers per revenue hour:	15.9
Passengers per revenue mile:	0.8
On-time performance:	72%
Farebox recovery:	5%
Demographics	
Population Density:	2,091/sq. mi.
Persons below poverty level:	27.3%
Zero Vehicle Households:	7.0%
Persons with disabilities:	15.9%
Population 65 years and Over:	9.0%
Population 17 years and Under:	15.2%
Minority Population:	18.6%
Transit Dependent Population:	7.8%

Strengths, Challenges, and Opportunities

The *Purple 15 Til* as mentioned in the previous route fact sheet, is paired with the *Purple 15 After* to provide bi-directional service along W. State of Franklin Rd. The overall rank for this route is 11th and the ridership is on the lower side at almost 21,000, for a mid-length route. It does however, perform an important link to ETSU and the residential community along Mayfield Dr. where ridership along the loop is high. There may be an opportunity to revise the routing to combine this lower producing service with the higher producing *Purple 15 After* route, and still provide the important connecting services to ETSU and the residential communities.

Route: Red 15 After



Demographic Data Source: US Census Bureau, 2015 American Community Survey (ACS) 5-year Estimates (2011-2015)

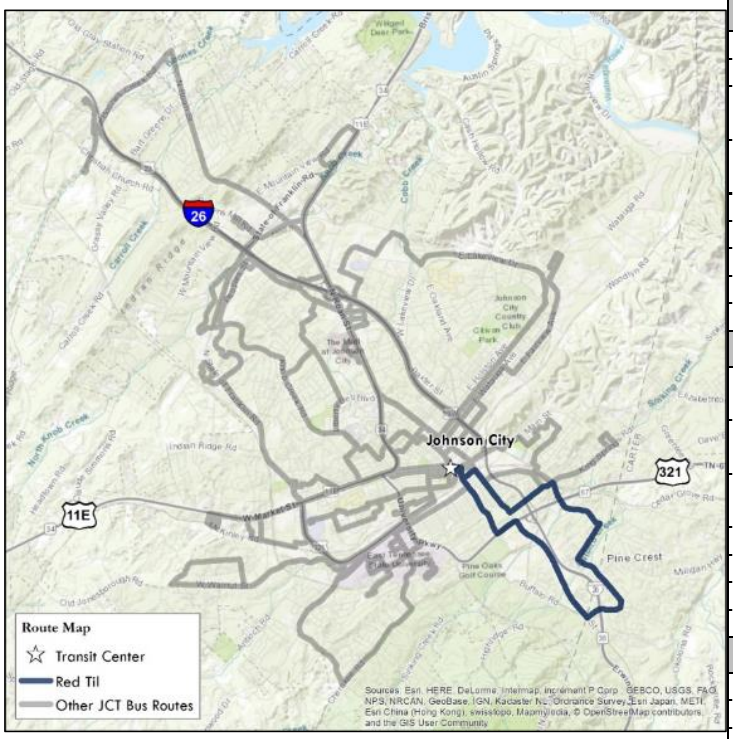
Block Groups analyzed for demographics: 47179605011, 47179620004, 47179620002, 47179620001, 47179601002, & 47179601003

Operational	
Length (round-trip):	6.2 miles
Frequency:	60 min.
Hours of Operation:	6:15 am – 5:45 pm
Days of Operation:	Monday-Saturday
Unlinked Passenger Trips:	37,000
Vehicle Revenue Miles:	19,900
Vehicle Revenue Hours:	1,400
Estimated Operating Cost:	$92,000
Estimated Revenue:	$8,900
Performance	
Operating expenses per revenue mile:	$4.64
Operating expenses per revenue hour:	$63.78
Operating expenses per unlinked passenger trip:	$2.52
Passengers per revenue hour:	25.5
Passengers per revenue mile:	1.9
On-time performance:	65%
Farebox recovery:	10%
Demographics	
Population Density:	2,629/sq. mi.
Persons below poverty level:	30.3%
Zero Vehicle Households:	14.0%
Persons with disabilities:	21.3%
Population 65 years and Over:	14.8%
Population 17 years and Under:	18.6%
Minority Population:	23.3%
Transit Dependent Population:	12.9%

Strengths, Challenges, and Opportunities

This route provides nearly 37,000 rides annually, which is the highest of the shorter distance routes, and it operates as a key bi-directional service along one of Johnson City's main thoroughfares, W. Market St. It provides service to the Community Health Center and medical facilities near JC Medical Center, as well as the high ridership neighborhood Clark Manor. This route is about ¼ mile from the Walmart on West Market St but does not serve it directly and there are no connecting sidewalks. The service area for the *Red 15 After* closely mirrors service provided by the *Green 15 Til*. There may be opportunities to redesign both of these routes and link up the major attractors/generators they serve as well as provide direct service to the W. Market St. Walmart.

Route: Red 15 Til



Demographic Data Source: US Census Bureau, 2015 American Community Survey (ACS) 5-year Estimates (2011-2015)

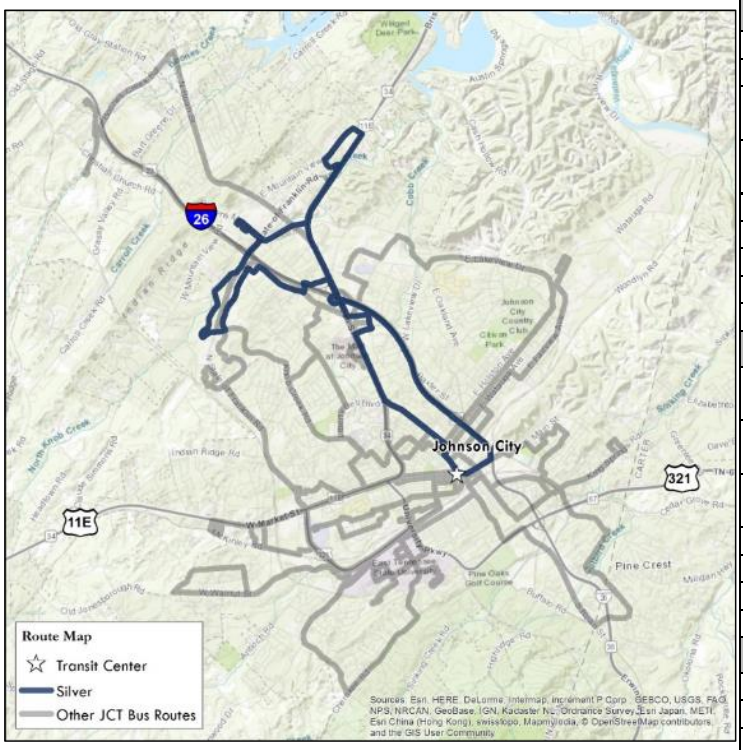
Block Groups analyzed for demographics: 47179608001, 47179608003, 47179609005, 47179606002, 47179601001, 4719708002, 4719708003, 47179601002, & 47179609004

Operational	
Length (round-trip):	7.2 miles
Frequency:	60 min.
Hours of Operation:	6:45 am – 6:15 pm
Days of Operation:	Monday-Saturday
Unlinked Passenger Trips:	49,400
Vehicle Revenue Miles:	23,300
Vehicle Revenue Hours:	1,300
Estimated Operating Cost:	$85,000
Estimated Revenue:	$12,400
Performance	
Operating expenses per revenue mile:	$3.66
Operating expenses per revenue hour:	$63.78
Operating expenses per unlinked passenger trip:	$1.72
Passengers per revenue hour:	37.1
Passengers per revenue mile:	2.1
On-time performance:	65%
Farebox recovery:	15%
Demographics	
Population Density:	1,593/sq. mi.
Persons below poverty level:	44.8%
Zero Vehicle Households:	14.4%
Persons with disabilities:	17.7%
Population 65 years and Over:	12.0%
Population 17 years and Under:	20.4%
Minority Population:	18.2%
Transit Dependent Population:	10.8%

Strengths, Challenges, and Opportunities

The *Red 15 Til* is JCT's highest performing route and has the highest mid-distance route ridership at nearly 49,500 trips annually. It has the highest passengers per revenue mile system-wide at (37) and serves several low-income communities as well as the Salvation Army Thrift store. It runs as a one-way loop covering the south-eastern portion of Johnson City. There are several locations of high ridership along most sections of the route; however, on-time performance is in a lower tier at 65%. Based on the geography and limited road network within this service area, the route is designed and performs very well. Any opportunities for improvement would rely on changes to the overall timing of the JCT system to allow for longer headways, and therefore the possibility of extending portions of this route to under-served communities.

Route: Silver 15 After



Demographic Data Source: US Census Bureau, 2015 American Community Survey (ACS) 5-year Estimates (2011-2015)

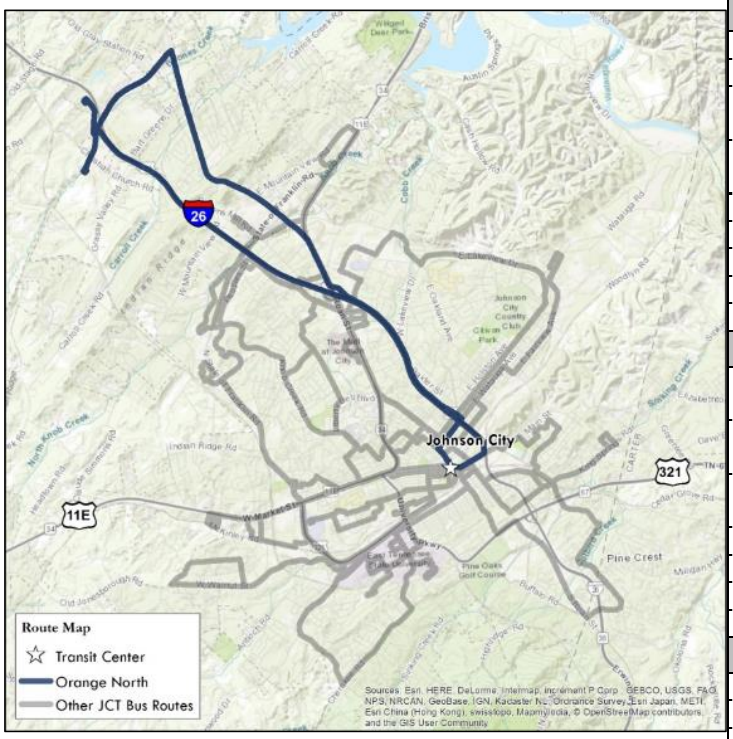
Block Groups analyzed for demographics: 47179611003, 47179604004, 47179614021, 47179613001, 47179604005, 47179604002, 47179613004, 47179601001, 47179604001, 47179601002, 47179613005, 47179601003, & 47179613003

Operational	
Length (round-trip):	16.3 miles
Frequency:	60 min.
Hours of Operation:	7:15 am – 5:15 pm
Days of Operation:	Monday-Saturday
Unlinked Passenger Trips:	50,700
Vehicle Revenue Miles:	44,300
Vehicle Revenue Hours:	2,500
Estimated Operating Cost:	$161,000
Estimated Revenue:	$13,300
Performance	
Operating expenses per revenue mile:	$3.64
Operating expenses per revenue hour:	$63.78
Operating expenses per unlinked passenger trip:	$3.18
Passengers per revenue hour:	20.1
Passengers per revenue mile:	1.1
On-time performance:	65%
Farebox recovery:	9%
Demographics	
Population Density:	898/sq. mi.
Persons below poverty level:	14.3%
Zero Vehicle Households:	8.1%
Persons with disabilities:	14.2%
Population 65 years and Over:	20.4%
Population 17 years and Under:	16.7%
Minority Population:	17.1%
Transit Dependent Population:	6.9%

Strengths, Challenges, and Opportunities

This route ranks 8th overall and is the 2nd longest route at 16.3 miles round trip. It has the highest ridership of all JCT routes at nearly 51,000 trips annually and serves many significant shopping destinations. It operates as a one-way loop with several various segments and some portions that operate along I-26. This is due to the distance the route must cover in its allotted time. The overall routing of the Silver has many turns and loops, and while this route ranks about average, some opportunities exist to improve its performance through restructuring of the route and simplification of the design. The majority of highest ridership stops for this service are located north of Sunset Drive, therefore an opportunity exists to utilize I-26 in both directions to focus the bus service in the area where it is most utilized.

Route: Orange North



Demographic Data Source: US Census Bureau, 2015 American Community Survey (ACS) 5-year Estimates (2011-2015)

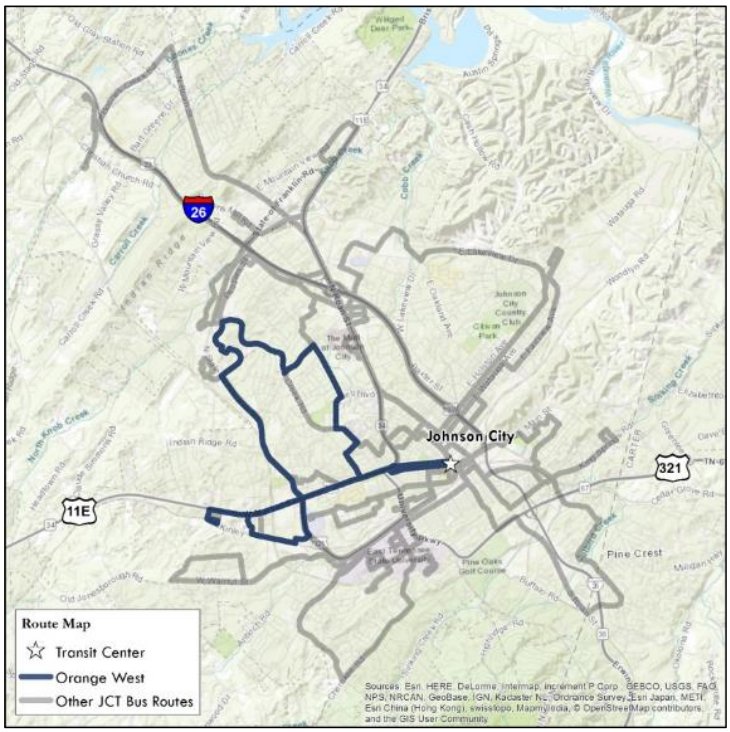
Block Groups analyzed for demographics: 47179611003, 47179611004, 47179613002, 47179604004, 47179614021, 47179604002, 47179609001, 47179610001, 47179613004, 47179601001, 47179604001, 47179614023, 47179614011, 47179601002, 47179601003, & 47179613003

Operational	
Length (round-trip):	16.8 miles
Frequency:	90 min.
Hours of Operation:	7:15 am – 5:00 pm
Days of Operation:	Monday-Friday
Unlinked Passenger Trips:	8,000
Vehicle Revenue Miles:	28,000
Vehicle Revenue Hours:	1,200
Estimated Operating Cost:	$75,000
Estimated Revenue:	$2,700
Performance	
Operating expenses per revenue mile:	$2.69
Operating expenses per revenue hour:	$63.78
Operating expenses per unlinked passenger trip:	$9.46
Passengers per revenue hour:	6.7
Passengers per revenue mile:	0.3
On-time performance:	65%
Farebox recovery:	4%
Demographics	
Population Density:	1,006/sq. mi.
Persons below poverty level:	16.1%
Zero Vehicle Households:	7.7%
Persons with disabilities:	16.4%
Population 65 years and Over:	18.8%
Population 17 years and Under:	18.0%
Minority Population:	14.1%
Transit Dependent Population:	8.8%

Strengths, Challenges, and Opportunities

The *Orange North* route faces many challenges. It is the longest of all JCT routes at nearly 17 miles round trip and it has the lowest daytime ridership at almost 8,000 trips annually. It serves several schools, the Driver Services Division, BrightRidge (formerly the Johnson City Power Board), as well as provides the northern most connection to JCT at S. Pickens Bridge Rd. Although this route ranks 13th overall, connectivity to these schools and services are needed as is evidenced by the high ridership at the northernmost leg of the route. An opportunity exists to modify the route design in conjunction with the *Silver* route to provide better connectivity between activity centers on the *Orange North* with other destinations along the *Silver* route.

Route: Orange West



Demographic Data Source: US Census Bureau, 2015 American Community Survey (ACS) 5-year Estimates (2011-2015)

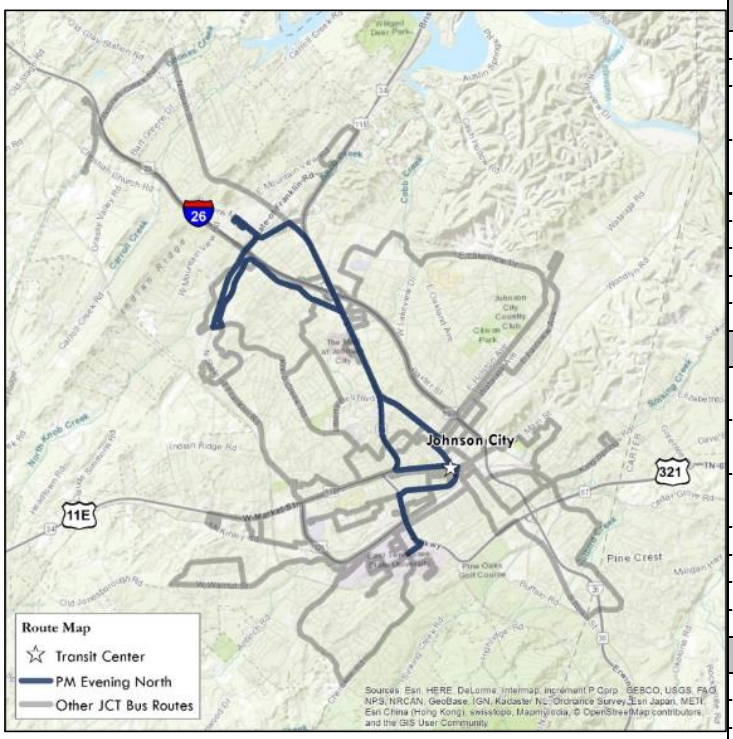
Block Groups analyzed for demographics: 47179605011, 47179605013, 47179604004, 47179620004, 47179604005, 47179620002, 47179604002, 47179620001, 47179604001, 47179605021, 47179601002, 47179604003, 47179601003, & 47179620003

Operational	
Length (round-trip):	13.8 miles
Frequency:	90 min.
Hours of Operation:	8:00 am – 4:15 pm
Days of Operation:	Monday-Friday
Unlinked Passenger Trips:	11,300
Vehicle Revenue Miles:	18,700
Vehicle Revenue Hours:	1,000
Estimated Operating Cost:	$66,000
Estimated Revenue:	$3,800
Performance	
Operating expenses per revenue mile:	$3.53
Operating expenses per revenue hour:	$63.78
Operating expenses per unlinked passenger trip:	$5.86
Passengers per revenue hour:	10.9
Passengers per revenue mile:	0.6
On-time performance:	65%
Farebox recovery:	6%
Demographics	
Population Density:	1,831/sq. mi.
Persons below poverty level:	19.1%
Zero Vehicle Households:	9.6%
Persons with disabilities:	17.6%
Population 65 years and Over:	20.1%
Population 17 years and Under:	16.5%
Minority Population:	17.4%
Transit Dependent Population:	8.4%

Strengths, Challenges, and Opportunities

The *Orange West* is a longer distance, one-way loop route that covers nearly 14 miles and serves the western portion of Johnson City. It connects to the Social Security Administration, Franklin Woods Community Hospital, Walmart on W. Market, and the JC Medical Center. Ridership is relatively low at 11,000, for such a long-distance service and this route ranks in the bottom tier of routes at 12th. There are several routes that provide overlapping and more direct connections to several of the major activity centers that the Orange West serves, which may impact ridership. There are opportunities to reconsider the design of the route to create a more bi-directional service while still providing connectivity to the communities along the existing route.

Route: PM Evening North



Demographic Data Source: US Census Bureau, 2015 American Community Survey (ACS) 5-year Estimates (2011-2015)

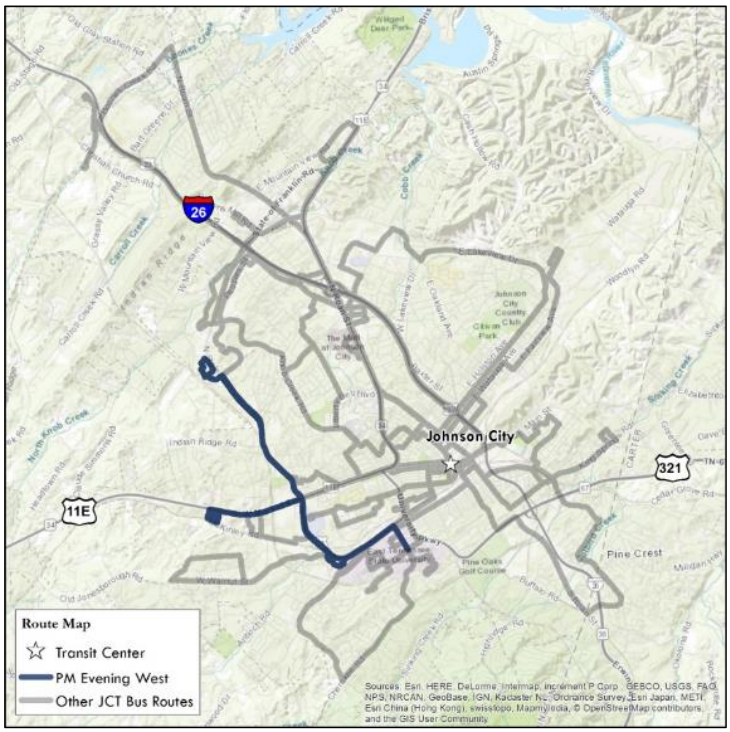
Block Groups analyzed for demographics: 47179608002, 47179606001, 47179604004, 47179620004, 47179614021, 47179604005, 47179604002, 47179608003, 47179620001, 47179613004, 47179601001, 47179604001, 47179601002, 47179607001, 47179601003, & 47179613003

Operational	
Length (round-trip):	14.4 miles
Frequency:	90 min.
Hours of Operation:	6:15 pm – 11:00 pm
Days of Operation:	Monday-Friday
Unlinked Passenger Trips:	1,000
Vehicle Revenue Miles:	6,600
Vehicle Revenue Hours:	600
Estimated Operating Cost:	$36,000
Estimated Revenue:	$400
Performance	
Operating expenses per revenue mile:	$9.03
Operating expenses per revenue hour:	$63.78
Operating expenses per unlinked passenger trip:	$71.28
Passengers per revenue hour:	1.2
Passengers per revenue mile:	0.1
On-time performance:	51%
Farebox recovery:	1%
Demographics	
Population Density:	1,112/sq. mi.
Persons below poverty level:	20.7%
Zero Vehicle Households:	9.5%
Persons with disabilities:	14.6%
Population 65 years and Over:	17.6%
Population 17 years and Under:	14.1%
Minority Population:	18.1%
Transit Dependent Population:	7.8%

Strengths, Challenges, and Opportunities

Both evening routes provide an essential service to the JCT rider community. Although overall ridership on both routes is low, it has been shown that offering even a limited evening service, has a positive impact on ridership earlier in the day. One opportunity to consider, is to look for an evening route segment that could serve the riders within the *Red 15 Til* community. The Red route has the 2nd highest JCT ridership yet that community does not currently have access to evening service. Redesigning an evening leg to serve this community could significantly boost evening ridership overall.

Route: PM Evening West



Demographic Data Source: US Census Bureau, 2015 American Community Survey (ACS) 5-year Estimates (2011-2015)

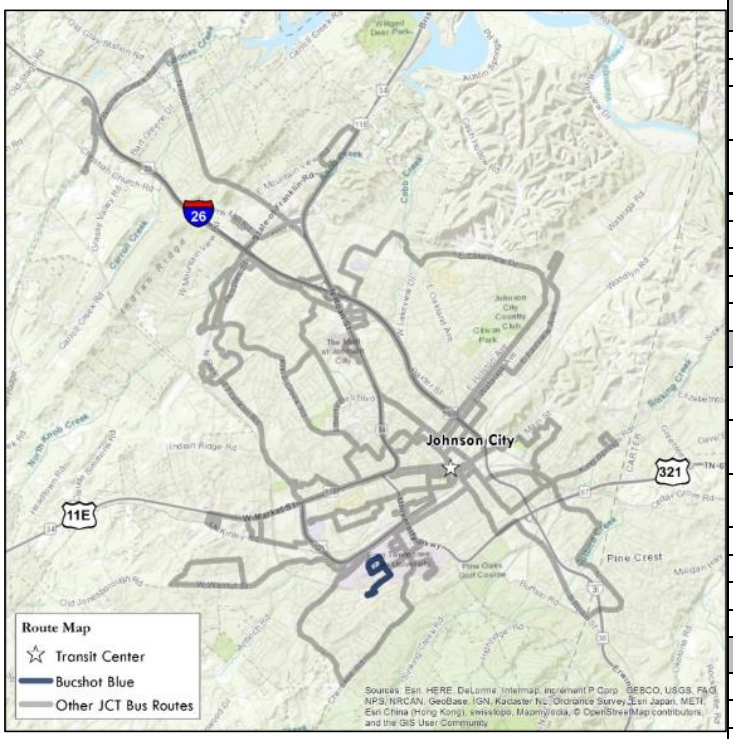
Block Groups analyzed for demographics: 47179605011, 47179605013, 47179606001, 47179604005, 47179620002, 47179620001, 47179605021, & 47179607001

Operational	
Length (round-trip):	11.6 miles
Frequency:	90 min.
Hours of Operation:	6:15 pm – 11:00 pm
Days of Operation:	Monday-Friday
Unlinked Passenger Trips:	500
Vehicle Revenue Miles:	5,300
Vehicle Revenue Hours:	600
Estimated Operating Cost:	$40,000
Estimated Revenue:	$100
Performance	
Operating expenses per revenue mile:	$12.00
Operating expenses per revenue hour:	$63.78
Operating expenses per unlinked passenger trip:	$187.90
Passengers per revenue hour:	0.5
Passengers per revenue mile:	0.1
On-time performance:	51%
Farebox recovery:	0%
Demographics	
Population Density:	1,888/sq. mi.
Persons below poverty level:	22.9%
Zero Vehicle Households:	11.4%
Persons with disabilities:	15.8%
Population 65 years and Over:	13.9%
Population 17 years and Under:	13.6%
Minority Population:	18.4%
Transit Dependent Population:	5.9%

Strengths, Challenges, and Opportunities

See notes for the PM Evening North route on the previous page.

Route: Bucshot Blue



Demographic Data Source: US Census Bureau, 2015 American Community Survey (ACS) 5-year Estimates (2011-2015)

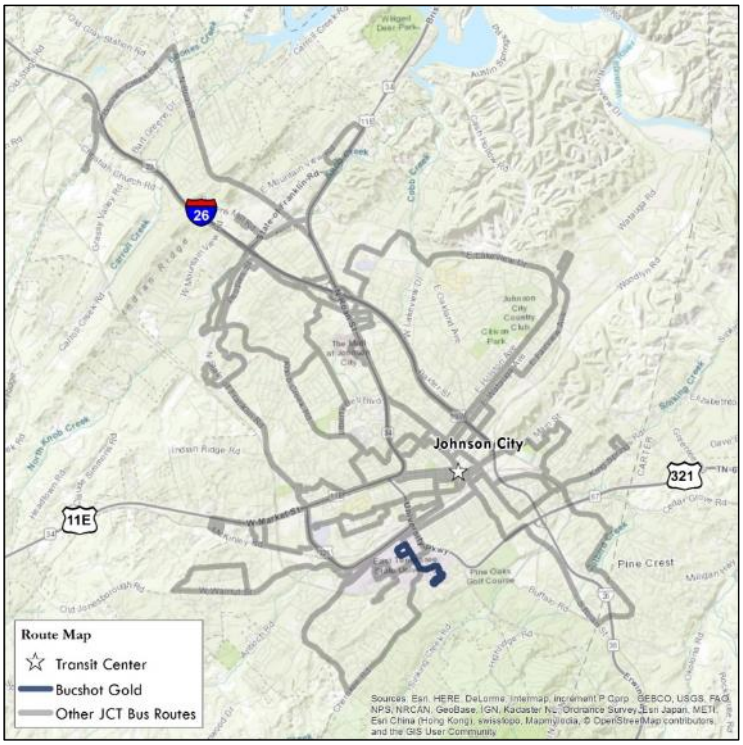
Block Groups analyzed for demographics: 47179606001, 47179606005, & 47179607001

Operational	
Length (round-trip):	1.64 miles
Frequency:	15 min.
Hours of Operation:	7.45 am – 4:00 pm
Days of Operation:	Monday-Friday
Unlinked Passenger Trips:	50,100
Vehicle Revenue Miles:	10,700
Vehicle Revenue Hours:	1,300
Estimated Operating Cost:	$82,000
Estimated Revenue:	Fare Free
Performance	
Operating expenses per revenue mile:	$7.74
Operating expenses per revenue hour:	$63.78
Operating expenses per unlinked passenger trip:	$1.64
Passengers per revenue hour:	38.9
Passengers per revenue mile:	4.7
On-time performance:	63%
Farebox recovery:	N/A
Demographics	
Population Density:	3,580/sq. mi.
Persons below poverty level:	37.1%
Zero Vehicle Households:	6.5%
Persons with disabilities:	13.0%
Population 65 years and Over:	5.8%
Population 17 years and Under:	8.6%
Minority Population:	19.2%
Transit Dependent Population:	3.8%

Strengths, Challenges, and Opportunities

The Bucshot Blue is the shortest of the Bucshot routes at just over 1.5 miles round trip. It is the 2nd best performing Bucshot route (tied with the Teal) and has the second highest ridership at over 50,000 annual (school-year) trips. Its on-time performance is on the lower-end; however, it has the second highest passengers-per-revenue hour at nearly 40. All of the Bucshot routes face a constrained operating environment on the university campus and are subject to peak surges of ridership and pedestrian activity that can cause the route to become late. Several of the roads on campus are quite narrow, even for the smaller passenger buses. One opportunity exists to request ETSU to allow "Compact-Sized-Only" parking along David Collins Way, which is a very tight roadway for the Blue route to traverse.

Route: Bucshot Gold



Demographic Data Source: US Census Bureau, 2015 American Community Survey (ACS) 5-year Estimates (2011-2015)

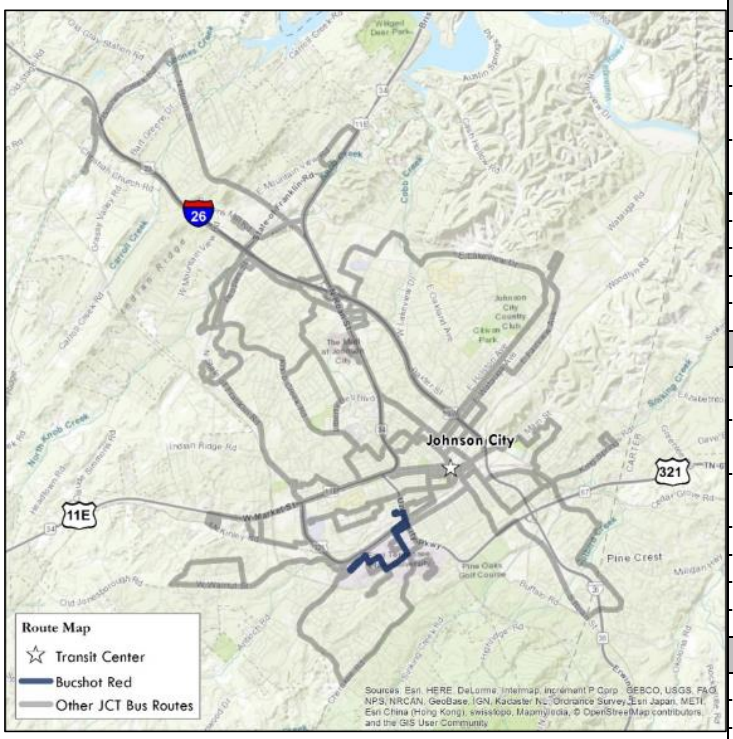
Block Groups analyzed for demographics: 471796060001& 47179607001

Operational	
Length (round-trip):	1.92 miles
Frequency:	15 min.
Hours of Operation:	7:30 am -5:00 pm
Days of Operation:	Monday-Friday
Unlinked Passenger Trips:	92,600
Vehicle Revenue Miles:	14,200
Vehicle Revenue Hours:	1,500
Estimated Operating Cost:	$95,000
Estimated Revenue:	Fare Free
Performance	
Operating expenses per revenue mile:	$6.64
Operating expenses per revenue hour:	$63.78
Operating expenses per unlinked passenger trip:	$1.02
Passengers per revenue hour:	62.5
Passengers per revenue mile:	6.5
On-time performance:	85%
Farebox recovery:	N/A
Demographics	
Population Density:	4,368/sq. mi.
Persons below poverty level:	38.6%
Zero Vehicle Households:	11.4%
Persons with disabilities:	13.0%
Population 65 years and Over:	2.3%
Population 17 years and Under:	4.9%
Minority Population:	25.4%
Transit Dependent Population:	3.8%

Strengths, Challenges, and Opportunities

The Bucshot Gold is the top performing route for both the Bucshot service and the JCT fixed route, with a ridership over 92,000 during the school year. It has the best on-time performance and highest passengers-per-revenue hour at nearly 63. It provides direct service to student housing on Buccaneer Ridge and to the central ETSU corridor of Gilbreath Dr. It also traverses some steep geography as it travels uphill to the Buccaneer Ridge housing. This could be a factor that improves ridership due to the preference of riders not to walk up steep slopes. Overall, the design of the Bucshot Gold route is effective and meets the needs of the ETSU campus.

Route: Bucshot Red



Demographic Data Source: US Census Bureau, 2015 American Community Survey (ACS) 5-year Estimates (2011-2015)

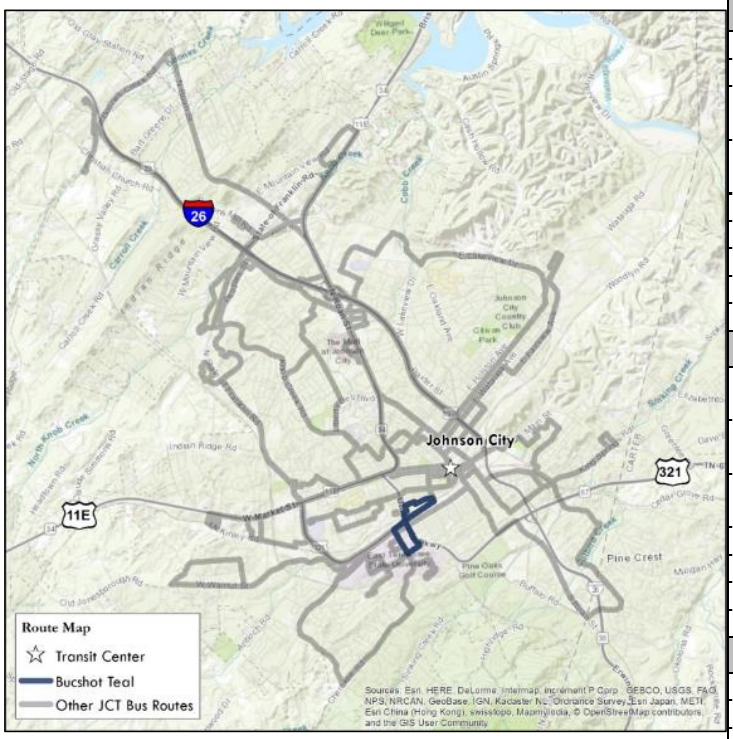
Block Groups analyzed for demographics: 47179608002, 47179620001, 47179605021, 47179601002, & 47179607001

Operational	
Length (round-trip):	3.45 miles
Frequency:	20 min.
Hours of Operation:	7:40 am – 4:00 pm
Days of Operation:	Monday-Thursday
Unlinked Passenger Trips:	14,300
Vehicle Revenue Miles:	10,100
Vehicle Revenue Hours:	1,300
Estimated Operating Cost:	$83,000
Estimated Revenue:	Fare Free
Performance	
Operating expenses per revenue mile:	$8.22
Operating expenses per revenue hour:	$63.78
Operating expenses per unlinked passenger trip:	$5.80
Passengers per revenue hour:	11.0
Passengers per revenue mile:	1.4
On-time performance:	50%
Farebox recovery:	N/A
Demographics	
Population Density:	2,528/sq. mi.
Persons below poverty level:	32.9%
Zero Vehicle Households:	14.0%
Persons with disabilities:	17.8%
Population 65 years and Over:	8.7%
Population 17 years and Under:	12.7%
Minority Population:	24.2%
Transit Dependent Population:	11.3%

Strengths, Challenges, and Opportunities

The Bucshot Red scores lowest overall in terms of performance and is challenged with the goal of being a cross campus-connector. It runs primarily as a bi-directional service from the eastern to north-western edges of campus. It is slowed by both foot-traffic of students and vehicle congestion as it travels across and around campus. As a result, it has the lowest on-time performance and passengers-per-revenue-mile. There may be some opportunities to revise this routing, in conjunction with other Bucshot routes, to improve performance; however, it should be noted that Bucshot routes are funded through agreements with ETSU and other entities, such as Monarch Apartments. Therefore, any modifications to routing must consider these funding arrangements to ensure that service is provided appropriately.

Route: Bucshot Teal



Demographic Data Source: US Census Bureau, 2015 American Community Survey (ACS) 5-year Estimates (2011-2015)

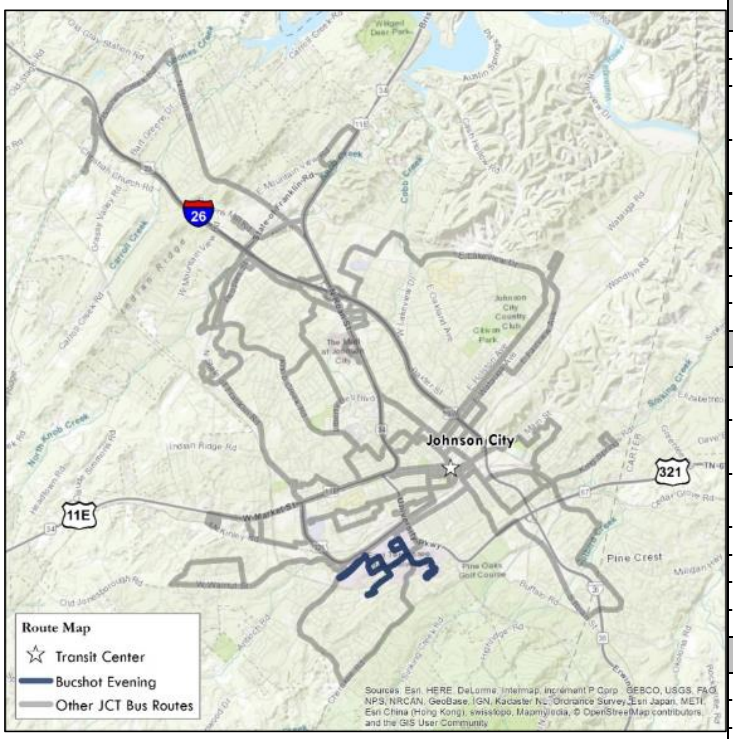
Block Groups analyzed for demographics: 47179608002, 47179605021, 47179601002, & 47179607001

Operational	
Length (round-trip):	2.03 miles
Frequency:	15 min.
Hours of Operation:	7:45 am – 4:00 pm
Days of Operation:	Monday-Friday
Unlinked Passenger Trips:	32,300
Vehicle Revenue Miles:	13,700
Vehicle Revenue Hours:	1,300
Estimated Operating Cost:	$82,000
Estimated Revenue:	Fare Free
Performance	
Operating expenses per revenue mile:	$6.00
Operating expenses per revenue hour:	$63.78
Operating expenses per unlinked passenger trip:	$2.58
Passengers per revenue hour:	25.1
Passengers per revenue mile:	2.4
On-time performance:	66%
Farebox recovery:	N/A
Demographics	
Population Density:	3,150/sq. mi.
Persons below poverty level:	32.8%
Zero Vehicle Households:	11.4%
Persons with disabilities:	15.5%
Population 65 years and Over:	5.6%
Population 17 years and Under:	11.4%
Minority Population:	22.2%
Transit Dependent Population:	9.2%

Strengths, Challenges, and Opportunities

The Bucshot Teal is the 3rd highest Bucshot ridership route at over 32,000 trips. It is partially funded by and serves the University Edge apartments. It operates as a one-way loop service to Gilbreath Drive on the ETSU campus. It is a mid-distance route at 2 miles round trip and it operates for a portion along W. State of Franklin and University Parkway which can become congested. Its on-time performance is also on the lower-end and therefore revising the timing of the routing could address this issue. Due to the routes proximity to the Monarch Apartments, there may be opportunities to revise the routing to include a stop at this location. This could increase ridership without adversely affecting the overall performance of the route.

Route: Bucshot Evening



Demographic Data Source: US Census Bureau, 2015 American Community Survey (ACS) 5-year Estimates (2011-2015)

Block Groups analyzed for demographics: 47179606001, 47179606005, & 47179607001

Operational	
Length (round-trip):	9.54 miles
Frequency:	60 min.
Hours of Operation:	5:00 pm-10:45 pm
Days of Operation:	Monday-Friday
Unlinked Passenger Trips:	11,200
Vehicle Revenue Miles:	7,900
Vehicle Revenue Hours:	700
Estimated Operating Cost:	$46,800
Estimated Revenue:	Fare Free
Performance	
Operating expenses per revenue mile:	$5.93
Operating expenses per revenue hour:	$63.78
Operating expenses per unlinked passenger trip:	$4.18
Passengers per revenue hour:	15.3
Passengers per revenue mile:	1.4
On-time performance:	78%
Farebox recovery:	N/A
Demographics	
Population Density:	3,580/sq. mi.
Persons below poverty level:	37.1%
Zero Vehicle Households:	6.5%
Persons with disabilities:	13.0%
Population 65 years and Over:	5.8%
Population 17 years and Under:	8.6%
Minority Population:	19.2%
Transit Dependent Population:	3.8%

Strengths, Challenges, and Opportunities

The Bucshot Evening service operates as a "catch-all" service to provide connections among all of the daytime Bucshot routes. It is necessarily one of the longest routes at nearly 10 miles; however, it also performs at a higher level of on-time performance due to the lower ridership demand and pedestrian and vehicle congestion on campus. Its performance is acceptable for this type of service and though ridership is not high, it can be considered a necessary service to provide evening connectivity for ETSU students.

2.5 Comparative Route Analysis

The JCT fixed routes and Bucshot routes were compared in order to quantitatively assess the performance of the routes in relation to one another. The analysis was based on the seven performance indicators contained in the Route Fact Book, which include:

- Operating expenses per revenue mile
- Operating expenses per revenue hour
- Operating expenses per unlinked passenger trip
- Passengers per revenue hour
- Passengers per revenue mile
- On-time performance
- Farebox recovery

Data for the performance indicators were averaged over the past three fiscal years (FY 2015 - FY 2017) in order to provide a more reliable assessment. Operating expenses were not available at the route level; instead they were derived by multiplying the average system operating cost per hour by the number of annual revenue vehicle hours by route. Therefore the operating expense per revenue hour is nearly identical for all routes. Farebox recovery is the percentage of expenses that are covered by the fares charged to riders. The Bucshot routes are free to ETSU students and the general public so the farebox recovery indicator is not applicable to these routes. The performance indicators are summarized by route in Table 2-7 below.

Table 2-7: Summary of Performance Indicators

Route	Oper. Exp./ rev mile	Oper. Exp./ rev hour	Oper. Exp./ trip	Pax/ rev hour	Pax/ rev mile	On-Time	Farebox Recovery
Blue 15 After	$3.28	$63.78	$4.49	14.3	0.7	73%	6%
Blue 15 Til	$4.60	$63.78	$2.98	21.4	1.5	73%	9%
Gold 15 After	$4.41	$63.78	$4.42	14.5	1.0	73%	6%
Gold 15 Til	$4.35	$63.78	$2.88	22.1	1.5	73%	8%
Green 15 After	$3.86	$63.78	$2.50	25.6	1.6	72%	11%
Green 15 Til	$5.23	$63.78	$3.27	19.5	1.6	72%	9%
Purple 15 After	$3.23	$63.78	$2.33	27.4	1.4	72%	6%
Purple 15 Til	$3.34	$63.78	$4.00	15.9	0.8	72%	5%
Red 15 After	$4.64	$63.78	$2.52	25.5	1.9	65%	10%
Red 15 Til	$3.66	$63.78	$1.72	37.1	2.1	65%	15%
Silver 15 After	$3.64	$63.78	$3.18	20.1	1.1	65%	9%
Orange North	$2.69	$63.78	$9.46	6.7	0.3	65%	4%
Orange West	$3.53	$63.78	$5.86	10.9	0.6	65%	6%
PM Evening North	$9.03	$63.78	$71.28	1.2	0.1	51%	1%
PM Evening West	$12.00	$63.78	$187.90	0.5	0.1	51%	0%
Bucshot Blue	$7.74	$63.78	$1.64	38.9	4.7	63%	N/A
Bucshot Gold	$6.64	$63.78	$1.02	62.5	6.5	85%	N/A
Bucshot Red	$8.22	$63.78	$5.80	11.0	1.4	50%	N/A
Bucshot Teal	$6.00	$63.78	$2.58	25.1	2.4	66%	N/A
Bucshot Evening	$5.93	$63.78	$4.18	15.3	1.4	78%	N/A

Similar routes were compared to one another by assigning points to each performance indicator based on ranking and then adding the rankings to determine a composite score. For example in the operating expenses per revenue mile indicator, the Orange North route received the most points (15) because it had the lowest operating expenses per revenue mile compared to the other fixed routes. Conversely, the PM Evening West

route received the fewest points (1) because it had the highest operating expenses per revenue mile. The composite scores were curved to a 100 point scale.

The fixed routes and Bucshot routes were assessed separately given the distinct differences between these types of transit services. Overall, the Red 15 Til route scored the highest and the PM Evening West route the lowest. The Red 15 Til scored well due to higher ridership, a higher farebox recovery, and lower operating expenses. However, the Red 15 Til did not score as well for on-time performance likely due to the greater number of boardings and alightings. The PM Evening West route did not score as well due to lower ridership likely because it operates in the evening and higher operating expenses due to its longer route length. Despite the PM Evening West route not scoring as well, it nonetheless provides an important service for riders that depend on transit in the evenings. The results of this comparative analysis are presented in Table 2-8.

Table 2-8: Ranking of Existing JCT Fixed Routes

Route	Oper. Exp./ rev mile	Oper. Exp./ rev hour	Oper. Exp./ trip	Pax/ rev hour	Pax/ rev mile	On-Time	Farebox Recovery	Score out of 100 pts	Rank
Blue 15 After	13	4	5	5	5	14	5	75	9
Blue 15 Til	5	4	10	10	11	14	12	90	5
Gold 15 After	6	4	6	6	7	12	6	71	10
Gold 15 Til	7	15	11	11	10	12	9	99	2
Green 15 After	8	4	13	13	12	10	14	98	3
Green 15 Til	3	4	8	8	13	10	11	81	7
Purple 15 After	14	1	14	14	9	8	8	92	4
Purple 15 Til	12	1	7	7	6	8	4	69	11
Red 15 After	4	4	12	12	14	3	13	86	6
Red 15 Til	9	4	15	15	15	3	15	100	1
Silver 15 After	10	4	9	9	8	3	10	77	8
Orange North	15	1	3	3	3	6	3	58	13
Orange West	11	4	4	4	4	6	7	64	12
PM Evening North	2	4	2	2	2	1	2	39	14
PM Evening West	1	4	1	1	1	1	1	34	15

Green color coding indicates the highest performing route while orange color coding indicates the lowest performing route.

For the Bucshot routes, the Bucshot Gold scored the highest and the Bucshot Red the lowest. The Bucshot Gold scored well due to its lower operating costs, higher ridership, and on-time performance. In comparison, the Bucshot Red had higher operating costs, lower ridership, and poorer on-time performance. All Bucshot routes scored the same for farebox recovery since they are all fare free. The comparative analysis for Bucshot routes is included in Table 2-9.

Table 2-9: Ranking of Existing JCT Bucshot Routes

Route	Oper. Exp./ rev mile	Oper. Exp./ rev hour	Oper. Exp./ trip	Pax/ rev hour	Pax/ rev mile	On-Time	Farebox Recovery	Score out of 100 pts	Rank
Bucshot Blue	3	5	5	5	5	3	1	96	2
Bucshot Gold	4	2	6	6	6	6	1	100	1
Bucshot Red	1	1	2	2	2	2	1	80	5
Bucshot Teal	5	5	4	4	4	4	1	96	2
Bucshot Evening	6	2	3	3	3	5	1	92	4

Green color coding indicates the highest performing route while orange color coding indicates the lowest performing route.

3.0 Public Involvement

Public involvement was an important focus of the COA effort in order to engage the community in understanding the area's mobility needs. The effort was a collective effort by AECOM, duGard Communications (dGC), and Transit Insight, which consisted primarily of both driver surveys and rider surveys.

Public Involvement Objectives

One of the first objectives was to hire and train local talent. dGC hired 12 temporary employees through direct hire and local temp agencies to ensure familiarity with the community and support positive economic impact within the JCT service area. Utilizing in-person training and video conference training, a structured presentation was given to discuss how to engage effectively with JCT's bus riders and the community members.

Additional branded tools were also developed that allowed employees an opportunity to connect with the brand and educational efforts to ensure proper administration of the surveys (see Figure 3-1).

The second objective was to engage and educate the public, which was of vital importance to ensure success. To further assist in the public outreach and education component, JCT informed the community and riders, two weeks prior, of the survey and 'Free-Ride' week. JCT's staff coordination of the survey to be performed during the 'Free-Ride' week was critical in the success of the survey process. Partnering in this way, and adding incentive ride passes, made for an outstanding number of completed surveys.

Media Relations

An important extension of community engagement is promoting efforts through earned media opportunities. Prior to the survey execution phase, dGC researched local media who specifically cover transit-related news. Once identified, a reporter was engaged (with JCT and the MTPO's approval), who rode along during the survey implementation in order to observe firsthand the efforts of the COA.

The reporter learned about the survey process and the innovative strategies that JCT implemented to bolster and support a successful survey. dGC developed a press release and used it to communicate with the reporter and share content online.

JCT sent an additional press release that week regarding the 'Free-Ride' week, where anyone riding the buses rode for free. Survey participants were greeted on each route, during specific times, and asked to participate in the survey. Once completed, each participant qualified for a free 10-ride pass to use thereafter. dGC was able to package these, along with information about the importance of the survey, and secure a front-page placement in the *Johnson City Press* during the week of the survey.

Zach Vance

1 / 7 Johnson City Transit surveyor Derriell Springfield asks a rider questions during a ride along the Silver Route Wednesday afternoon. The transit system is completing the surveys as part of a comprehensive review to enhance the system as a whole.

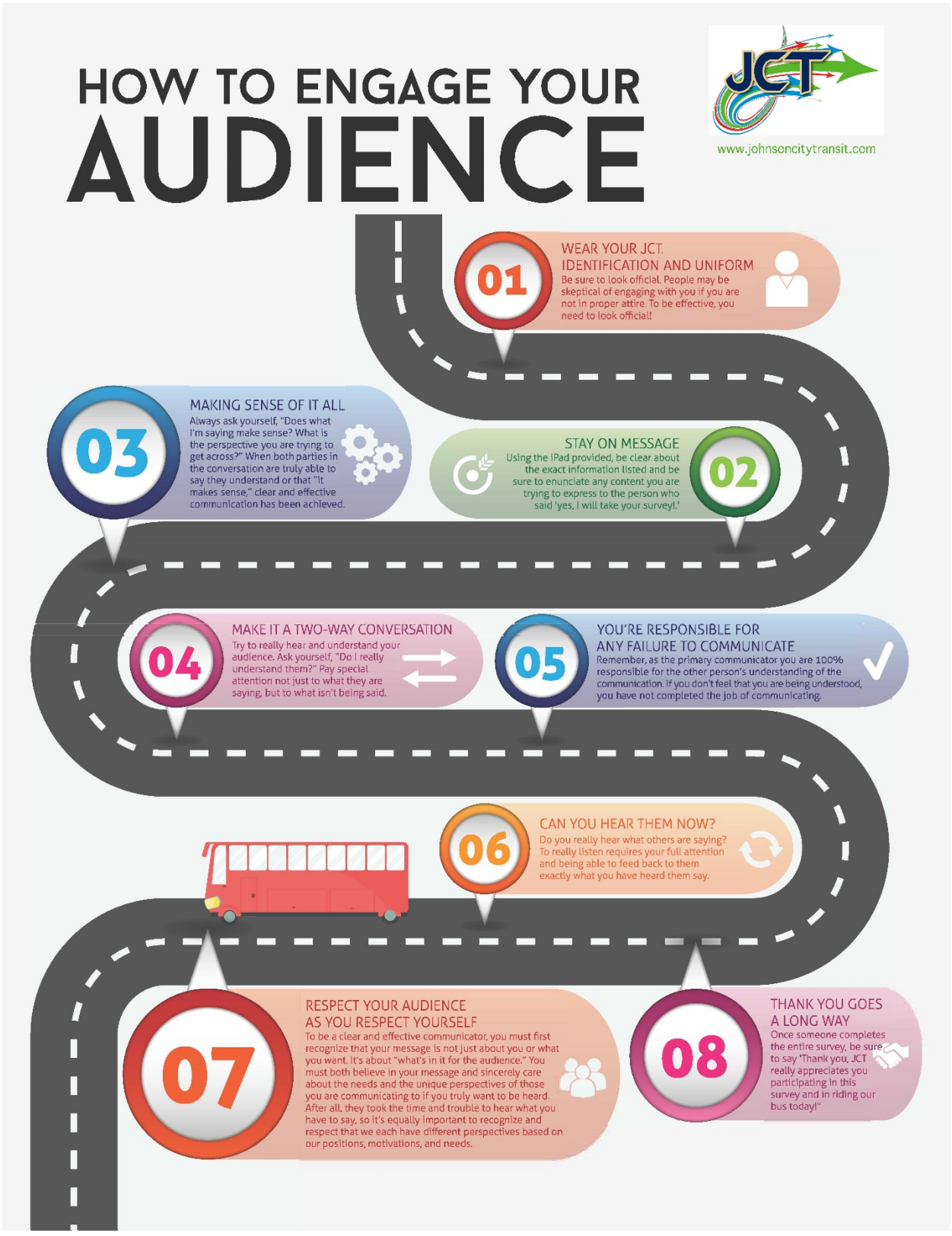
JOHNSON CITY TRANSIT

Johnson City Transit surveying hundreds of passengers to improve operations

ZACH VANCE • UPDATED SEP 20, 2017 AT 11:47 PM

zvance@johnsoncitypress.com

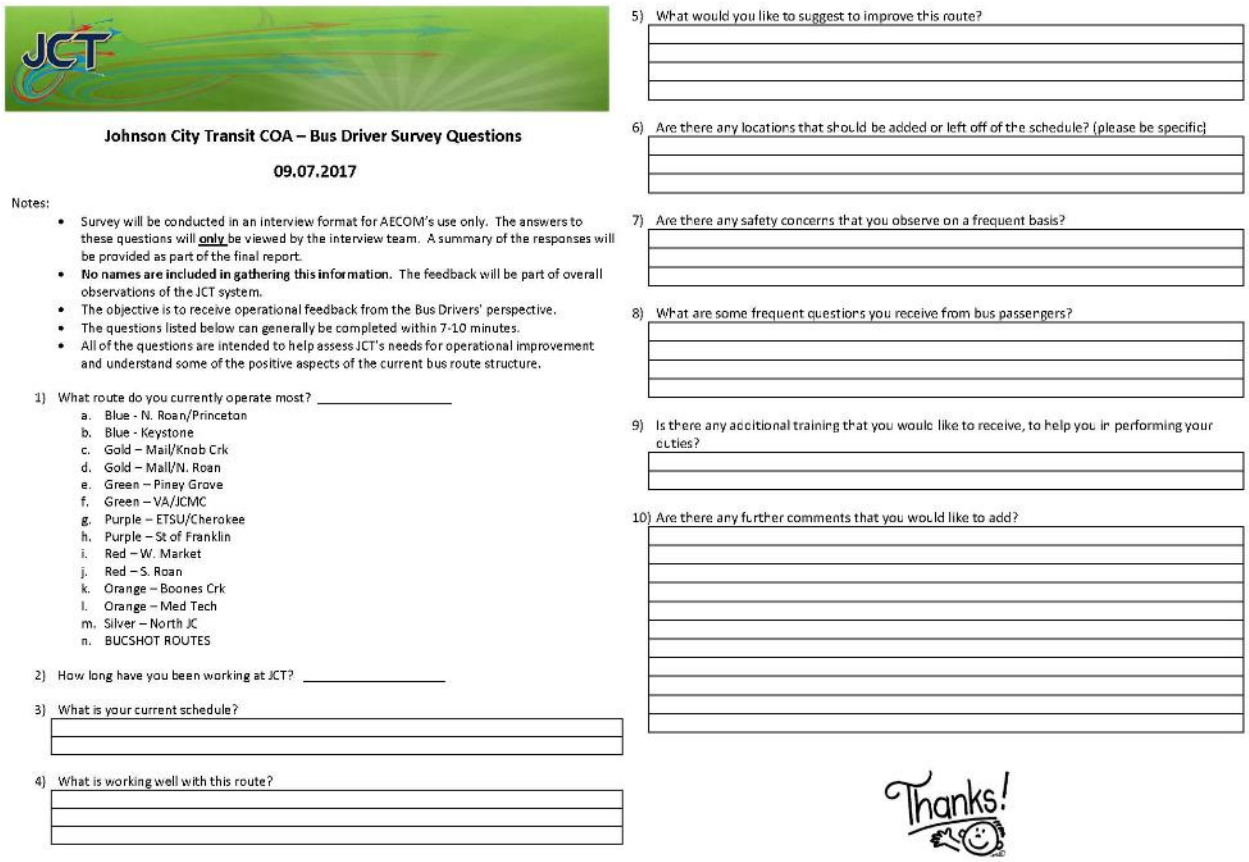
Figure 3-1: How to Engage Your Audience Training



3.1 Driver Surveys

Surveys with JCT Drivers were conducted at the JCT Transit Center and administrative offices on September 7, 2017, by the study team. The objective of the surveys was to receive operational feedback from the drivers' perspectives in order to document effective practices and to address scheduling, routing, and any safety concerns associated with JCT's fixed-route service. Participation in the survey was voluntary and anonymous. A copy of the survey instrument is shown in Figure 3-2 and the survey results are summarized below.

Figure 3-2: Bus Driver Survey Instrument



Johnson City Transit COA – Bus Driver Survey Questions

09.07.2017

Notes:

- Survey will be conducted in an interview format for AECOM's use only. The answers to these questions will **only** be viewed by the interview team. A summary of the responses will be provided as part of the final report.
- **No names are included in gathering this information.** The feedback will be part of overall observations of the JCT system.
- The objective is to receive operational feedback from the Bus Drivers' perspective.
- The questions listed below can generally be completed within 7-10 minutes.
- All of the questions are intended to help assess JCT's needs for operational improvement and understand some of the positive aspects of the current bus route structure.

1) What route do you currently operate most? _____
   a. Blue - N. Roan/Princeton
   b. Blue - Keystone
   c. Gold – Mall/Knob Crk
   d. Gold – Mall/N. Roan
   e. Green – Piney Grove
   f. Green – VA/JCMC
   g. Purple – ETSU/Cherokee
   h. Purple – St of Franklin
   i. Red – W. Market
   j. Red – S. Roan
   k. Orange – Boones Crk
   l. Orange – Med Tech
   m. Silver – North JC
   n. BUCSHOT ROUTES

2) How long have you been working at JCT? _____

3) What is your current schedule?

4) What is working well with this route?

5) What would you like to suggest to improve this route?

6) Are there any locations that should be added or left off of the schedule? (please be specific)

7) Are there any safety concerns that you observe on a frequent basis?

8) What are some frequent questions you receive from bus passengers?

9) Is there any additional training that you would like to receive, to help you in performing your duties?

10) Are there any further comments that you would like to add?

Thanks!

Summary of Survey Responses

Responses to the survey questions are summarized below. In cases where responses were specific to a particular route, the route is identified in parenthesis next to the response.

Question: What is working well with this route?

Responses:

- The route runs on-time (Silver route)
- The route serves the north part of Johnson City well (Silver route)
- Great coverage and serves a large number of people (Blue route)
- Route structure is working well
- Good coverage and good road conditions although some are narrow

Question: What would you like to suggest to improve this route?

Responses:

- Extend route schedules from 30 minute headways to 45 minute headways
- Red lights on the route can make staying on schedule challenging
- Allow driver to leave on time and not wait for other buses
- Re-time the Keystone route (Blue route)
- Make the Sandy Dr. stop an on-demand stop (Blue route)
- Make it an hour route and incorporate other areas. The route picks up riders on one street which is only one street over from another route. (Gold route)
- Tight route schedules. The Orange (45 minute headway) and Silver (60 minute headway) are working well.
- Multiple traffic signals on W Market St. and State of Franklin Rd.
- On West Market St., timing of the traffic signal does not allow enough time to make left onto State of Franklin Rd. (Red route)
- The Medtech route is full; do not change (Orange route)
- The Boones Creek route is empty; expand to Justice Center in Jonesborough (Orange route)
- All routes are pressed for time which leads to missed transfers and causes frustration for riders. Routes should either be over 30 minutes or extended to an hour with 30 minute frequency, or routes should be shortened and stops limited.
- Increase runs on the route due to high ridership (Red route)
- Perhaps keep the extra Gold bus all day (Gold route)

Question: Are there any locations that should be added or left off of the schedule?

Responses:

- Duplication of transit service in some areas: Blue and Silver routes follow each other up N Roan St., Blue and Red routes share a segment on S Roan St.
- The stop at K-Mart needs to be re-evaluated (Silver route)
- Stops are appropriate (Red route)
- Add stop at Alcoholics Anonymous at Maple and Division streets (Blue route)
- The Save-a-Lot stop is covered by multiple routes which may not be necessary (Gold route)
- Jonesborough (Justice Center) should be added

Question: Are there any safety concerns that you observe on a frequent basis?

Responses:

- Lower tree branches on Huffine Circle come into contact with the top of the transit vehicle
- Vehicle repairs are not followed up on
- Refresher training needed
- Poor sight distance at the stop on Mountain View Rd. and Timberlake Rd.
- Radio with Dispatch needs to be improved
- Paint a 'Do Not Stand' area in front of bus bays at the transit center to allow buses to dock safely
- Pressure to complete routes on time
- Because of tight schedules, wheelchairs are not secured properly
- Seatbelt use should be suggested

- Some riders want to be dropped off once bus makes left onto State of Franklin Rd. (Red route)
- Narrow roads on Swadley Rd. (Red route)
- Behavior of non-transit vehicles; they do not respect the buses
- Pitman arms break on Arboc buses
- Not checking mirrors when backing up, not following instructions and letting riders off on busy streets to catch their bus
- Air conditioners not powerful enough on hot days
- Remove bush at the Buc Ridge stop (#3031) which poses sight distance issues
- Relocate the "ETSU WETS-FM Buccaneer Ridge Central Receiving" sign as it compromises sight distance
- Realign Stout Dr. The curve combined with on-street parking makes navigating it with a bus challenging and increases wear and tear on tires

Question: What are some frequent questions you receive from bus passengers?

Responses:

- Requests for Sunday transit service
- Requests for longer service hours with regular service
- Route information
- What route goes where and when
- Why is the bus late?
- Why is this bus always late? (Red route)
- Why don't you serve the Justice Center (Orange route)
- Confusion with schedules posted online

Question: Is there any additional training that you would like to receive, to help you in performing your duties?

Responses:

- Wheelchair securement training is needed on an ongoing basis
- First Aid, CPR, Public Relations training for how to deal with hostile riders
- Emergency situation training for events such as an active shooter
- Bucshot route training
- Comprehensive route training
- Training has gone above and beyond
- Training in radio communications with communications with Dispatcher

Question: Are there any further comments that you would like to add?

Responses:

- Challenging to adhere to route schedules
- Poor communication with regard to schedule changes
- Add benches to stops at Sandy Dr., Princeton Rd. and Oakland Ave., St. Mary's Church, and Mountain View Elementary
- Designate the boarding area as non-smoking
- Drivers need a more in-depth survey with driver input and suggestions instead of specific questions
- Supply drivers with raingear
- I truly enjoy working for JCT

- Additional services should be provided for passengers with wheelchairs and walkers, which would relieve some of the stress on the route
- Higher wages, great benefits
- Text option for real-time transit information is not very effective, is down, or incorrect
- Need an increase in the hourly wage and should be paid overtime after 8 hours instead of being paid overtime after 40 hours.
- Add more relief drivers
- Buses frequently break down (2-3 per week)
- Improve communication between management and drivers
- More collaboration with managers and senior drivers on a regular basis
- Need more bus parking at bus lot
- Consider returning to the single driver, full day routine
- Coordinate with ETSU to teach students about safe walking and driving practices

3.2 Rider Surveys

Transit Insight and dGC, in partnership with AECOM conducted an "Origin and Destination" survey of passengers riding the JCT system during the week of September 18-23, 2017. The primary goal of the survey was to gather accurate information from passengers about their travel patterns as well as their demographic characteristics. This information allows JCT to better understand their riders as well as the riders' transportation needs.

At the time of the survey, JCT operated eight bus routes throughout Johnson City, labeled by color and time of departure from the transit center. In addition, JCT runs five Bucshot circulator routes, on the ETSU campus. It is important to note, that due to design of the routes, in many ways, JCT effectively operates 15 city bus routes as well as the 5 Bucshot reaching a total of 20 routes. Thirteen of the JCT routes serve as fixed-routes that provide regular bus service from early morning into early evening, with one route, the Evening Route, effectively providing the service of two routes with coverage on the North and South side of the city from 6:15 pm until 11:00 pm. The Bucshot routes circulate among and around the ETSU campus from 7:30 am until 4:00 pm with an evening route that covers all areas and operates from 5:00 pm until 11:00 pm. Surveys were conducted on all JCT fixed routes and Bucshot routes.

The survey data analysis is broken into four sections. A description of each section follows.

- Section 1: Overview – contains information about the data collected, survey methodology, and quality control procedures
- Section 2: General Rider Characteristics – provides a short summary of notable findings related to rider demographics and travel behaviors broken out by JCT and Bucshot services
- Section 3: Comprehensive Charts and Graphs – shows results from additional survey questions in graph or chart form
- Section 4: Paper Survey Instrument – provides a copy of the paper survey instrument that was used to tabulate responses from those unable to complete the in-person interview or who completed the Spanish-language survey.

Section 1: Overview

The AECOM team worked closely with JCT staff to develop the survey questions. Some key data points covered in the survey include:

- The origin (starting place) of the rider's trip
- How the rider traveled from the origin to the boarding bus stop
- An estimate of how far the rider traveled from the origin to the bus stop
- The destination (ending place) of the rider's trip
- An estimate of how far the rider traveled from the alighting stop to their destination
- Household information about the rider (number of people in household, number of children, etc.)
- General information (how riders paid the fare, smart-phone ownership, customer service performance)
- Personal Information (gender, race, employment status, income, other language spoken at home)

Survey Methodology

Transit Insight (TI) and dGC worked with ETSU contacts to recruit students to perform the data collection and interviews. In addition, TI, dGC, and temporary staff assisted with the survey and data collection throughout the process. The survey was conducted from Monday, September 18th through Saturday, September 23rd, 2017, with coverage beginning in the early morning and continuing until late evening to ensure that the survey covered all available times of the service. The survey was administered as a face-to-face interview using android tablets. Students, TI, and dGC staff conducted passenger interviews on buses, bus stops, and at the JCT Transit Station. In addition, surveyors were supplied with paper survey instruments (written in both English and Spanish) in the event that passengers did not have time to complete the survey. These paper surveys could be returned to the Customer Service and Dispatch window at the Transit Station.

Survey Interview In-progress at JCT Station

JCT provided two incentives that significantly improved the data collections results. First, JCT offered a free 10-ride pass to riders who completed the survey. At the completion of a survey, the surveyors provided a voucher to the surveyed rider which could be turned in to the dispatch window for the free 10-ride pass. In addition, JCT implemented a free-ride-week during the time of the survey. This increased passenger volume, and accordingly, increased the opportunity of survey staff to interact with passengers.

A sampling plan was developed to ensure that the overall results would be statistically valid for the JCT system. As all transit systems track individual trips, not individuals, the sampling plan was based on average daily unlinked passenger trips (UPT). The number utilized for the JCT origin-destination survey was 3,000. This was calculated based on a comparison for the same week of the survey in 2016, when ridership at ETSU is at its highest. This ridership was compared to a calculated average weekday ridership for the first quarter of 2017 and the higher number

was selected. In order to determine the appropriate level of individual riders to sample, the UPT were divided by 2 to arrive at approximately 1,500 individual passengers per day. This is an estimation, as individual riders may ride more or less than two times per day; however, for small urban transit systems, 50% of UPT is a good rule-of-thumb.

To achieve statistical validity at a confidence level of 95% and a precision level of ±5%, a minimum of 310 surveys needed to be completed. Our goal was to interact with 500 riders, or roughly 33% of daily passengers. Due to the JCT incentives, we surpassed this number significantly and achieved a total of 1,700 interactions with passengers yielding a total of 1,200 completed surveys. The AECOM team received over 900 completed surveys for the JCT fixed-route service, and over 300 surveys for the Bucshot service. Details of the survey counts by route are provided in Table 3-1.

Table 3-1: Completed Surveys by Route

JCT Route Name	Surveys Collected
Blue 15 After	50
Blue 15 Till	97
Gold 15 After	51
Gold 15 Till	87
Green 15 After	97
Green 15 Till	62
Orange North	53
Orange West	30
Purple 15 After	73
Purple 15 Till	40
Red 15 After	74
Red 15 Till	102
Silver	85
PM Evening North	7
PM Evening West	1
Total	**909**
Blue	85
Gold	96
Red	43
Teal	67
Evening	14
Safe Voyage	2
Total	**307**

Summary of Survey Approach and Procedures

Survey software on the android tablets assisted in the clarity and accuracy of collected data. The survey questionnaire was built in such a manner as to minimize the interaction time required with the passengers. Where possible, "skip-questions" were built that, depending upon the answer, automatically bypassed unnecessary questions and sped up the overall time to conduct the interview. Depending on the passenger and the surveyor, the interview process ranged between 5 and 9 minutes.

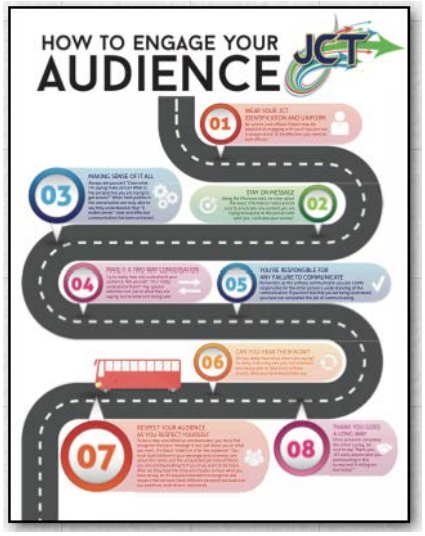
Use of these tablets and the specifically designed interview format provides a much higher response rate than self-administered paper surveys. The tablet also provides a "connection" between the passenger and interviewer. Interviewers were encouraged to sit next to the rider during the interview and allow the interviewee to look at the tablet and survey responses together. In addition, difficult questions such as household income can be shown to the passenger where they select the appropriate response with the interviewer looking away. Based on this interview approach, we were able to achieve a nearly 70% response rate to the survey. Past experience with paper surveys often return rates between 10-15%.

Survey Tablet

Transit Insight and dGC staff provided on-sight training sessions to all surveyors about the interview process and technology. Areas of training included a strong focus on customer-service and how to approach passengers, as well as techniques for getting passengers to answer some of the more "difficult" questions.

A listing of some of the more specific administration and quality control procedures are shown below:

- All interviewers wore vests that identified them as official transit surveyors and included their name.
- Each interviewer was trained to understand the importance of the survey so this could be relayed to passengers as needed.
- Interviewers boarded and alighted buses at the JCT Transit Center which served as the hub for data collection activities.
- A Transit Insight or dGC Team leader managed the data collection at all times and was available for questions, tablet distribution and collection, and to ensure that data was immediately uploaded as the students returned from their shift.



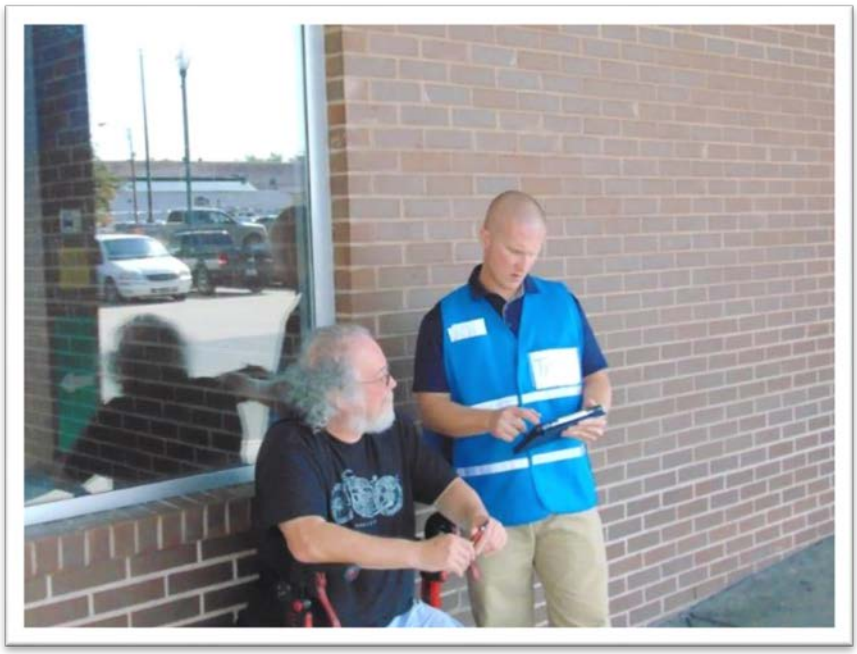
Surveyor Training Handout

Based on the small (in statistical terms) population of interview candidates, shift-schedules were targeted at higher ridership times which ranged from early morning through early evening. Interviewers were also conducted on Saturday to ensure total coverage of all fixed-route services.

Very little data entry was required due to the electronic nature of data collection; however, 35 paper surveys were completed and entered into the database. This data was reviewed twice to ensure accuracy. Transit Insight conducted a 100% review of all of the digitally collected data. Where possible, any errors that were easily identified and verified were corrected. Most of the information collected was rider reported and therefore not subject to modification. AECOM staff spent time reviewing all home address records and geo-coding them for use in GIS analysis. Corrections or modifications were made to the home address data using a combination of available resources to get the best or nearest possible location to what was reported in the interview.

Prior to full implementation of the survey, a pilot test was completed with 30 passengers at the JCT Transit Center on the morning of Thursday, September 7th. No major issues were identified; however, a few minor typos were corrected and uploaded to all survey tablets prior to the full survey kickoff.

Interview of ETSU Student on Campus



Interview of Passenger at JCT Transit Station

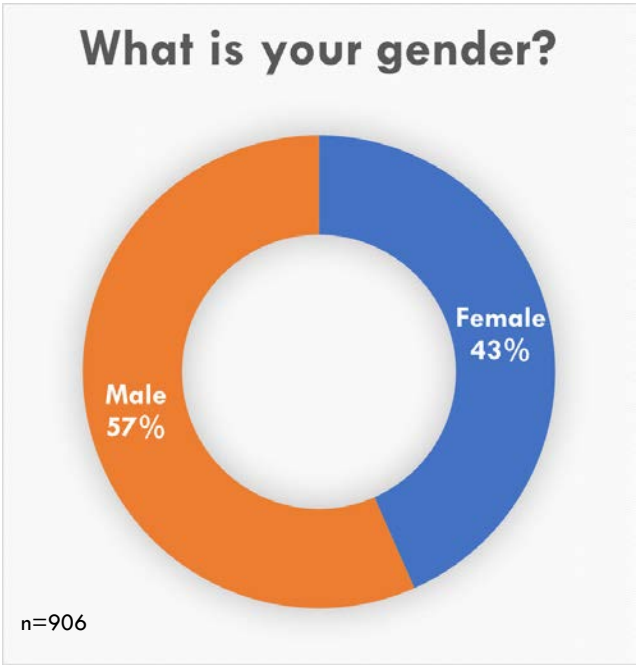
Section 2: General Ridership Characteristics

For purposes of analysis, we have split the survey results into two separate sections. The first section focuses on the JCT fixed-routes passenger travel patterns and characteristics while the second portion provides some insight in to the Bucshot riders.

JCT Fixed Route Summary

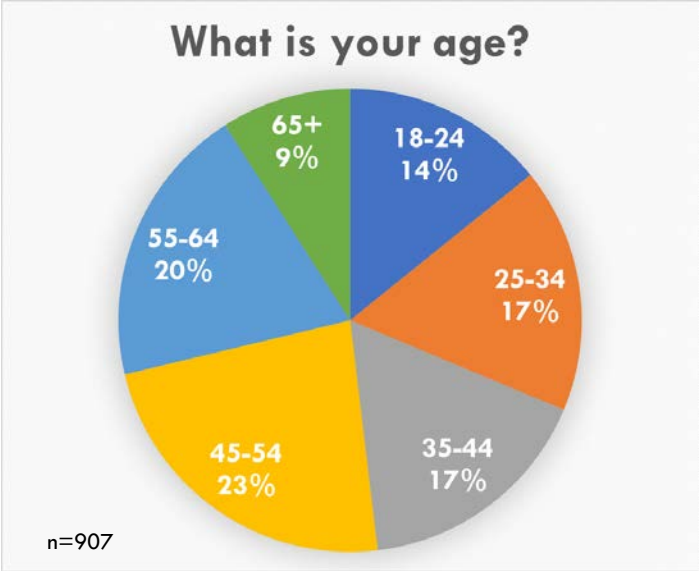
Gender

More than half (57%) of the riders surveyed were men, which is slightly unusual given that generally women make up a higher proportion of riders (55%) nationally. This could indicate that the JCT system has a slightly different demographic of riders.



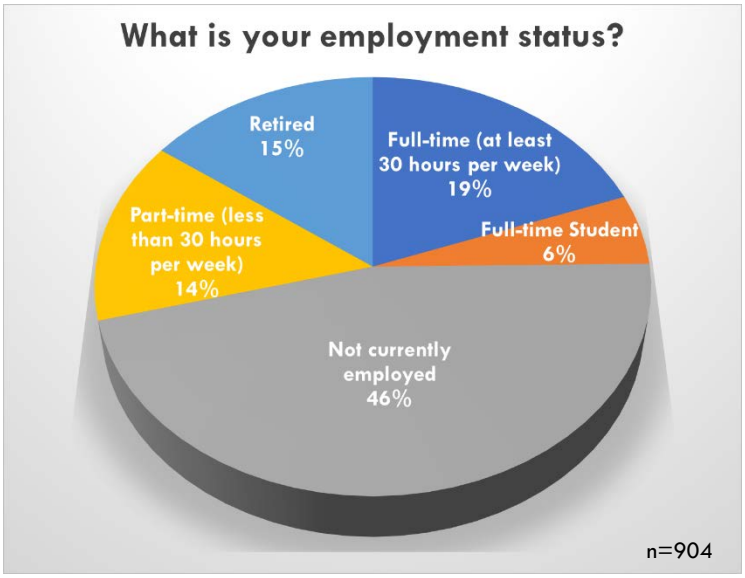
Age

The age distribution of surveyed riders was relatively even between four of the seven divisions. Age ranges for the 25-34, 35-44, 45-54, and 55-64 showed 17%, 17%, 23%, and 20% respectively. The 18-24 and 65+ ages have somewhat lower ridership for the JCT fixed-route services. However, as expected, Bucshot ridership differs substantially as is illustrated later in the section.



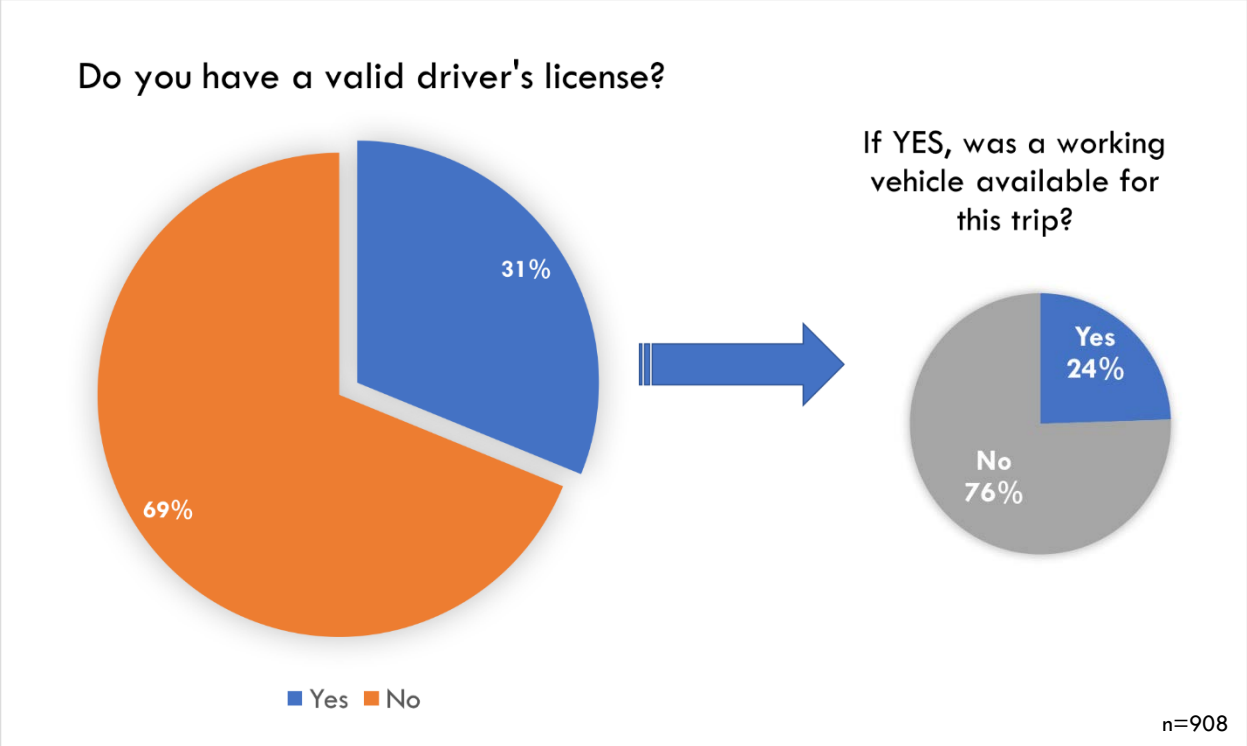
Employment

Just under half (46%) of the transit users surveyed were not currently employed. Those working either full-time (19%) or part time (14%) total 33%. Considering that 15% are retired, this indicates that the large majority of passengers (61%) have no or limited incomes.



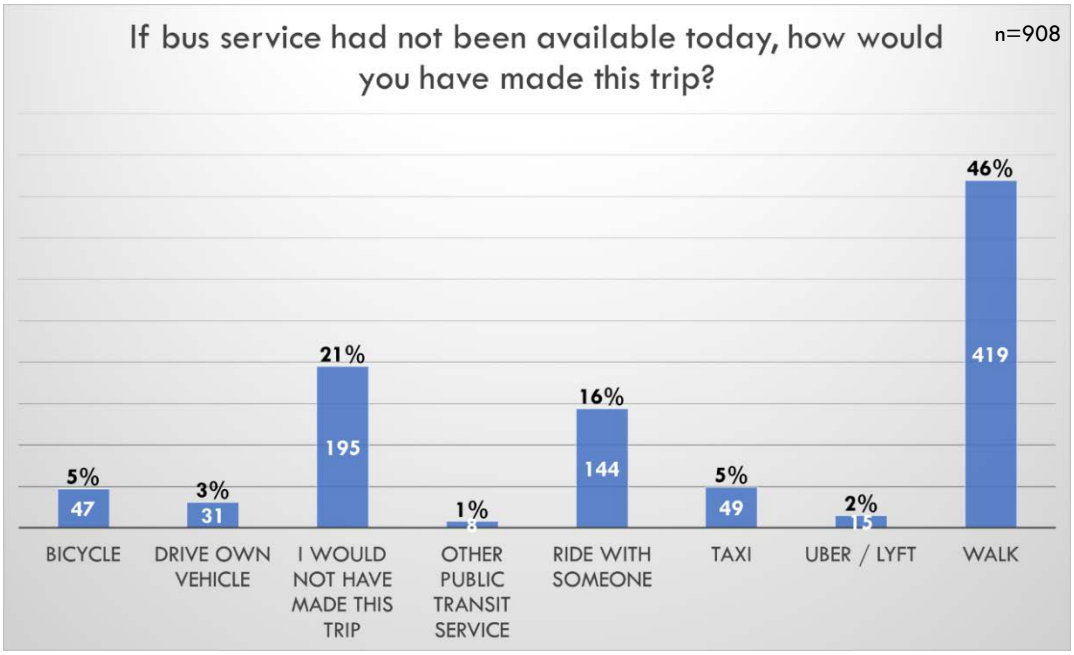
Valid Driver's License

Nearly three quarters (69%) of the JCT riders surveyed do not have a driver's license. Of the 31% that did have a driver's license, 76% did not have a working vehicle available for their trip.



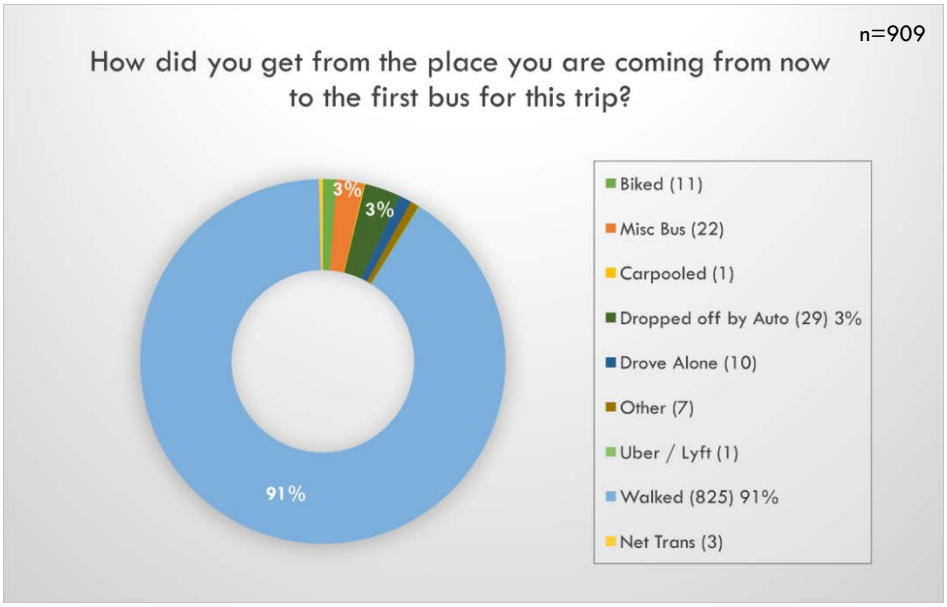
Transportation Without Bus Service

If bus service was not provided by JCT, nearly half (46%) of riders surveyed would have made the trip on foot. The next highest percentage (21%) would not have made the trip, while the remainder would have utilized other means to get to their destination. This seems to indicate that a significant number of the trips within the JCT service area are of shorter distance. It also underscores the importance of JCT's service to riders who would not have made trips if it were not for JCT.



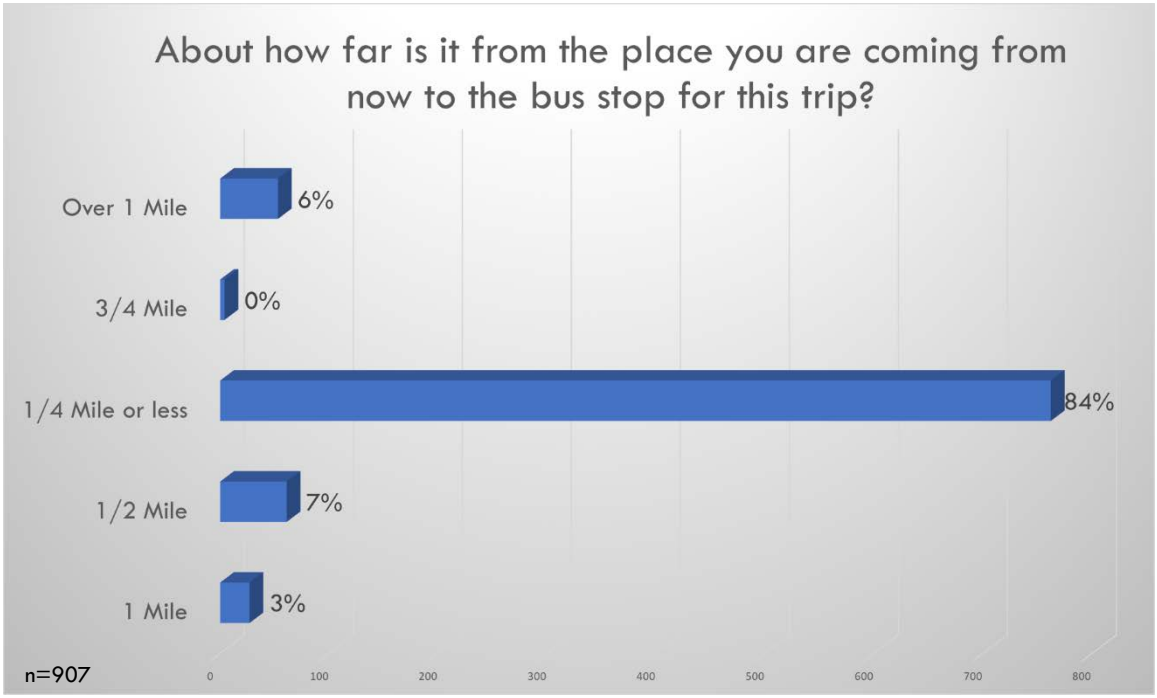
How Riders Got to the Bus

The majority of riders walk to the bus at 91% followed by being *Dropped Off* and *Misc Bus* at 3% each. The *Misc Bus* category includes riders who responded that they took a bus to reach the first bus for their trip.



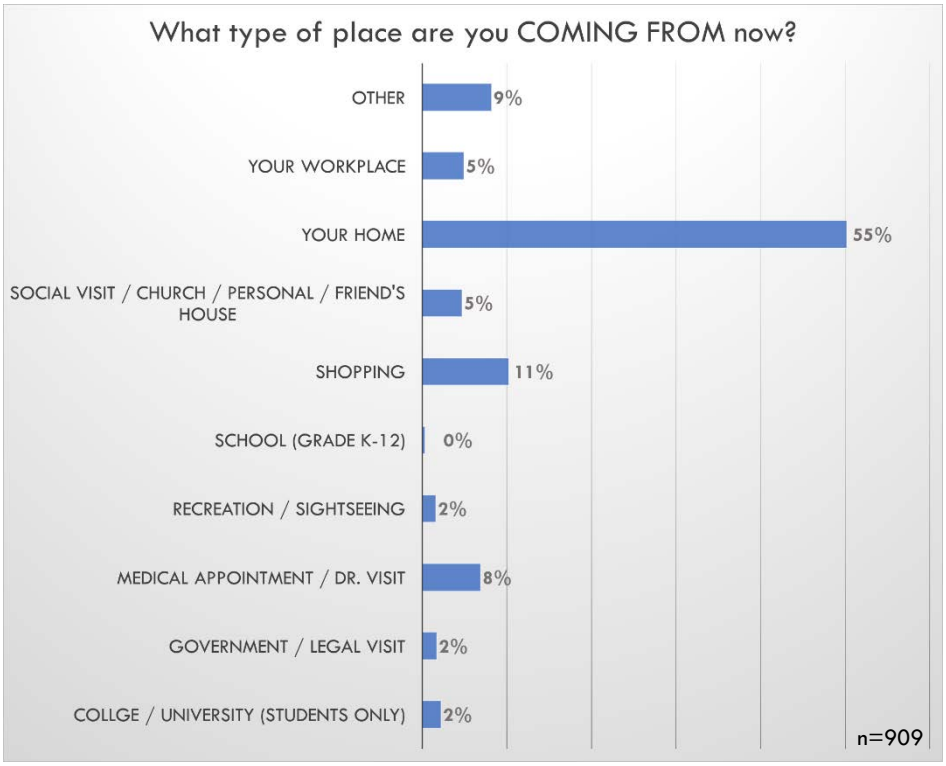
Estimated Distance from Origin to Bus Stop

Eighty four percent (84%) of surveyed riders' origins are within ¼ mile of the nearest bus stop and 7% are within ½ mile. This indicates that JCT does an excellent job reaching passengers where they are. A small percentage (6%) are at 1 mile or above.



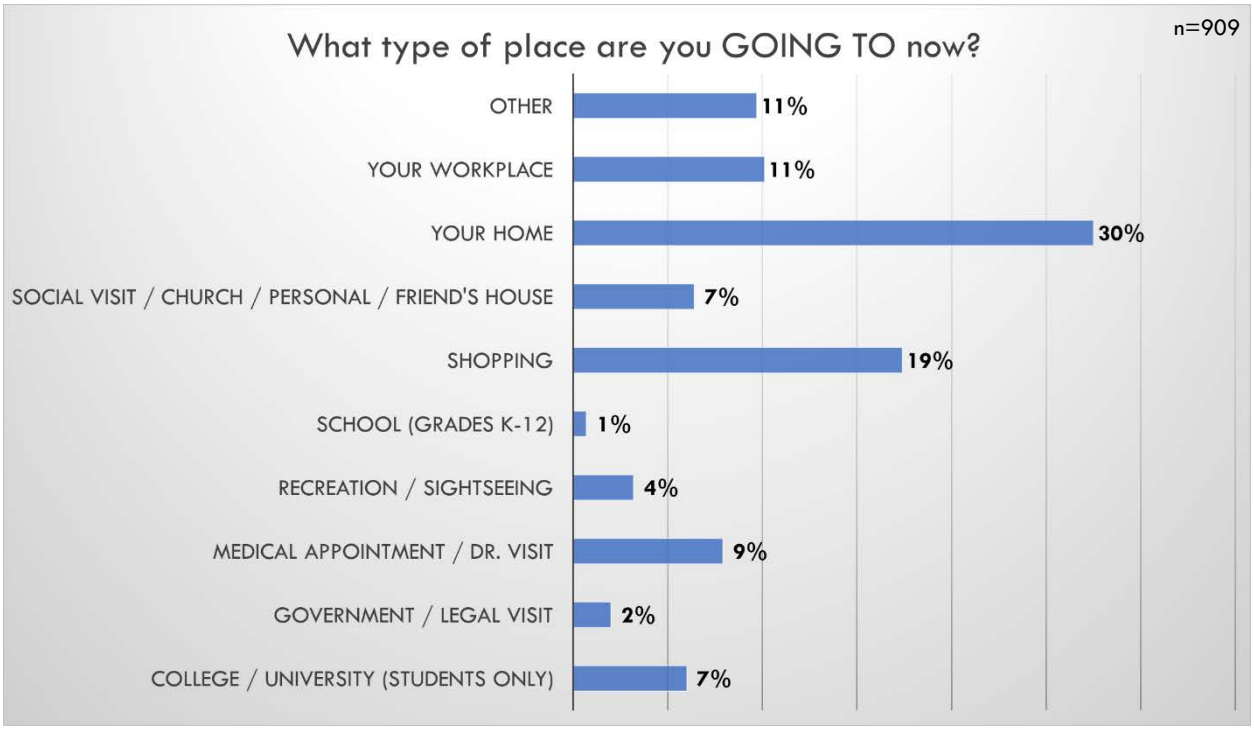
Where Transit Riders Were Coming From

Over half (55%) of the passengers surveyed were departing from their home. The next highest percentage were returning from shopping (11%) and the remainder of trips were to various destinations as shown.



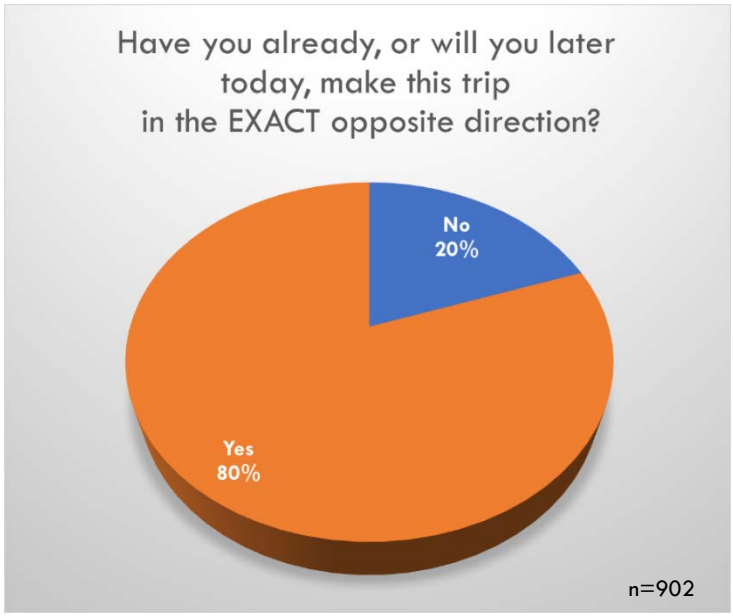
Where Transit Riders Were Going

The largest number of passengers (30%) indicated they were headed to their home, which was again followed by the second largest (19%) going to shopping destinations. *Workplace*, *Other*, and *Medical Appointments/Dr. Visit* were similar at 11%, 11%, and 9% respectively. These trip purposes are in line with the employment data which indicated that a majority of riders were not employed or retired, and therefore *Workplace* would have a low percentage of trips, while shopping and medical trips may have greater percentages.



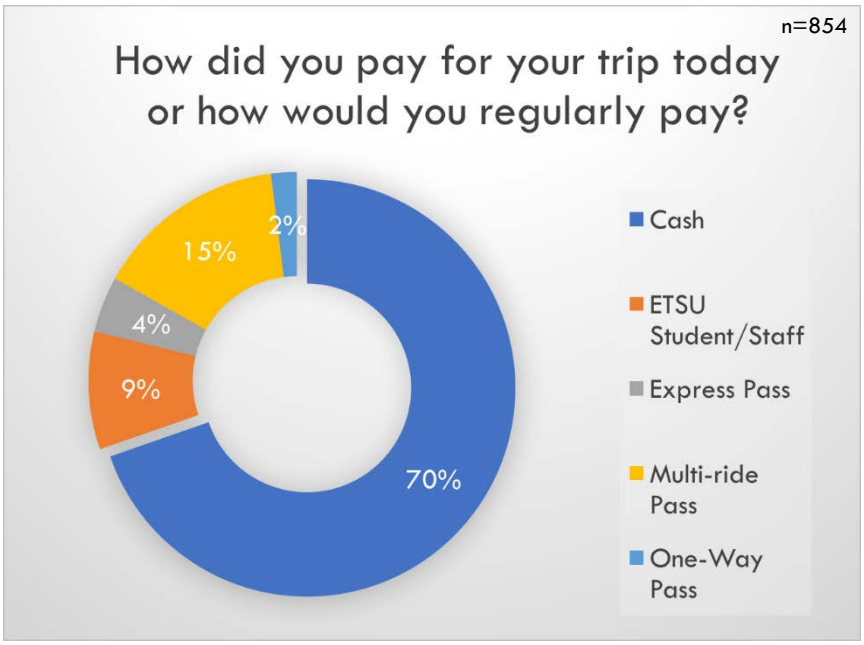
Reverse Trip

A significant majority of riders (80%) said they would make the exact opposite return trip. This indicates that a large portion of riders use JCT service for their main transportation needs, or at least for the trip they were taking during the survey.



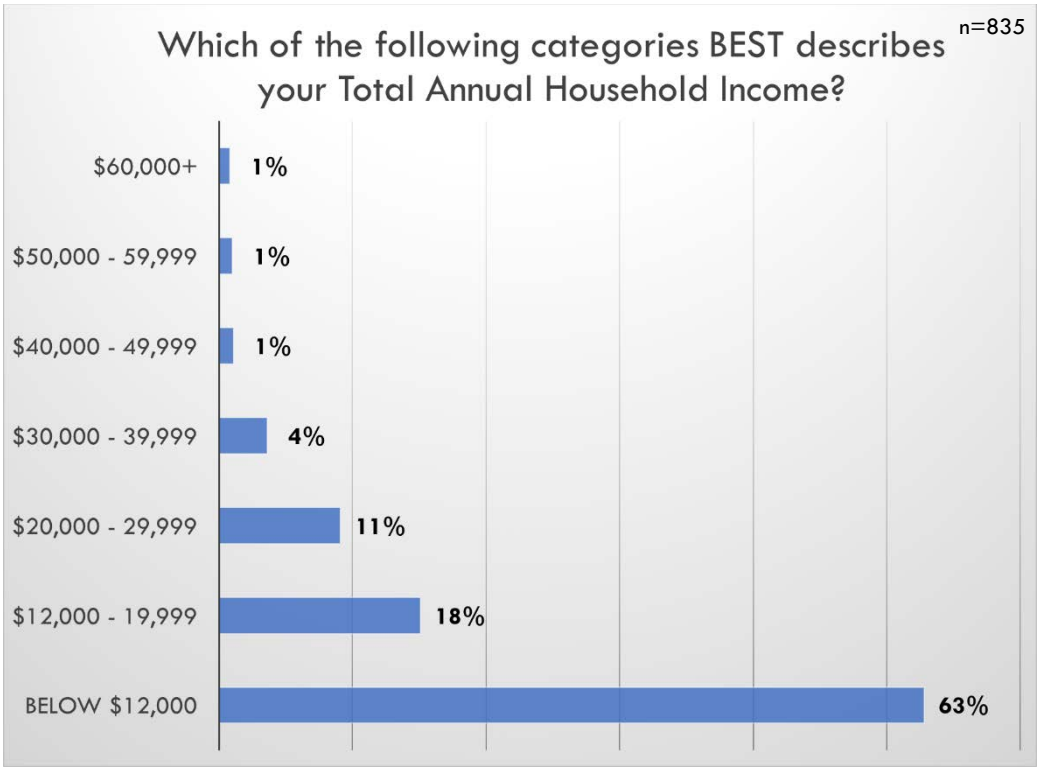
Fare Payment

A majority of the riders pay by cash (70%) regularly, while the next most frequent method comes in at 15% for the Multi-ride Pass. This is followed by ETSU students at 9%. This would indicate some opportunities for marketing efforts targeted at reducing the amount of cash payments and converting those to passes which could reduce dwell times at stops. It should also be noted that because service was fare-free during the week, the question was modified by the interviewers to ask how the rider would regularly pay to ride.



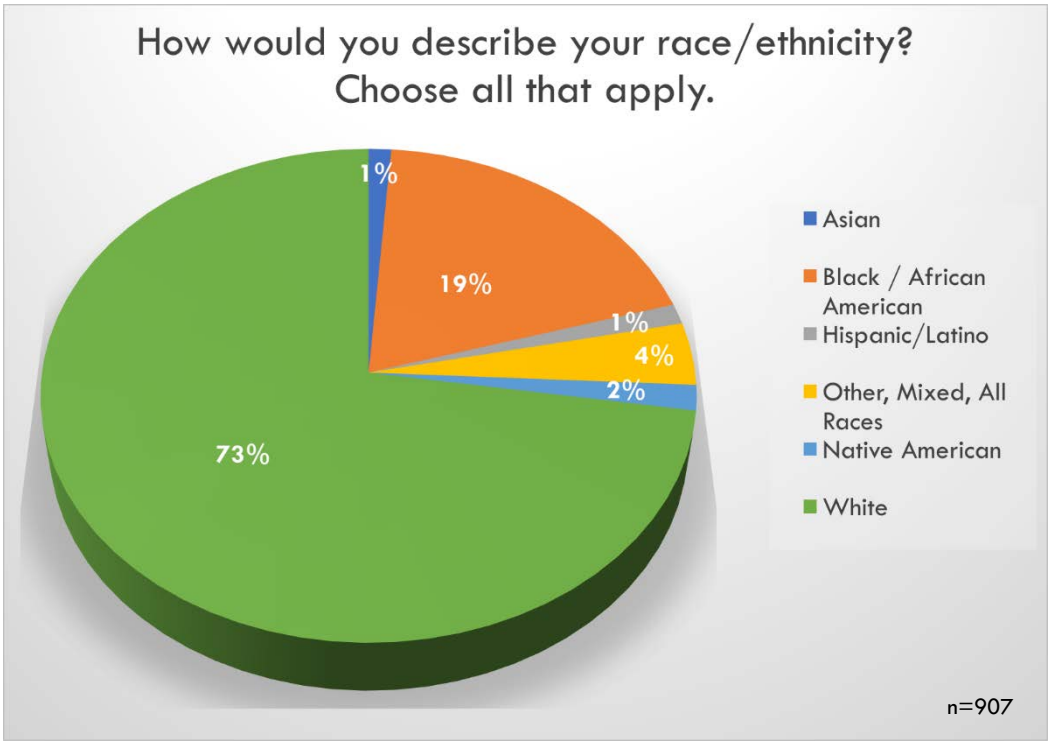
Household Income

A majority (63%) of surveyed riders' households have annual incomes less than $12,000. A total of 81% of riders indicate an annual household income of $19,999 or lower.



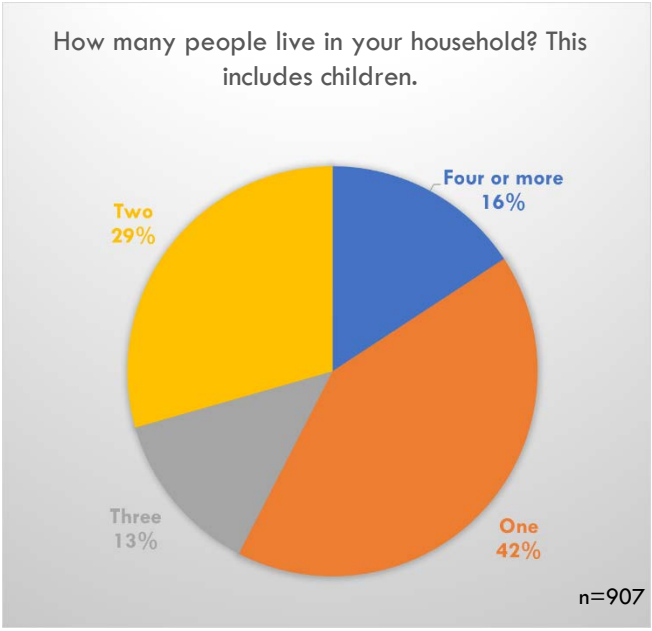
Race

The format of the race and ethnicity question is such that riders could choose as many races as appropriate. The following table summarizes only single-category selections and groups the remainder of race answers into one category called Other, Mixed (All Races). The chart below provides a general overview of race and ethnicity but is not all encompassing.



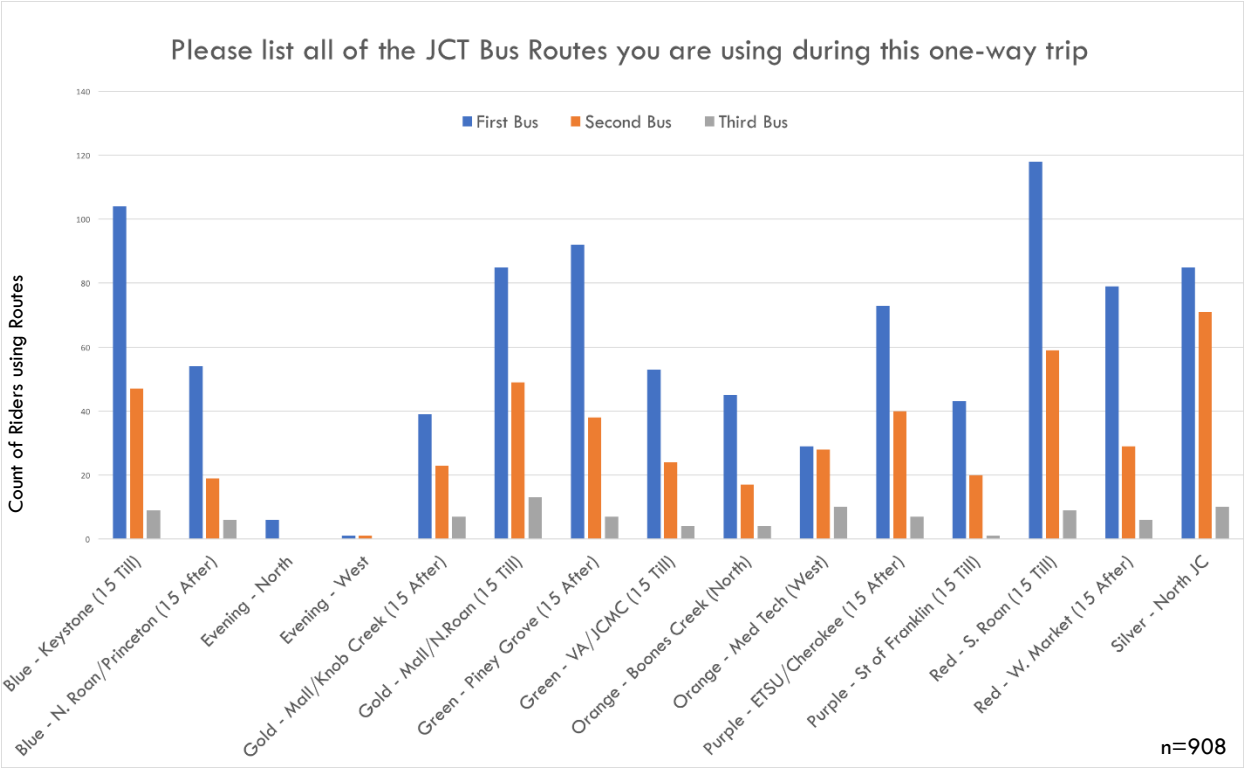
Household Size

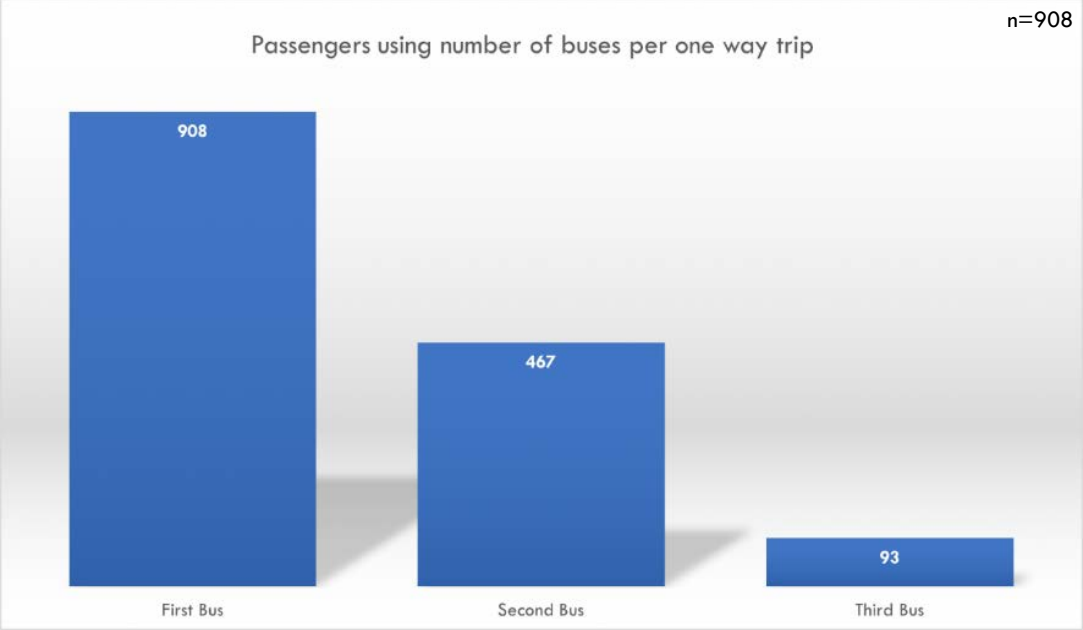
The majority of riders (42%) come from single person households, followed by two person households at 29%. The national average for a transit rider household size of one is 26% which shows that the rider population JCT serves is unique in many respects.



Listing Of All Buses Used During One-Way Trip

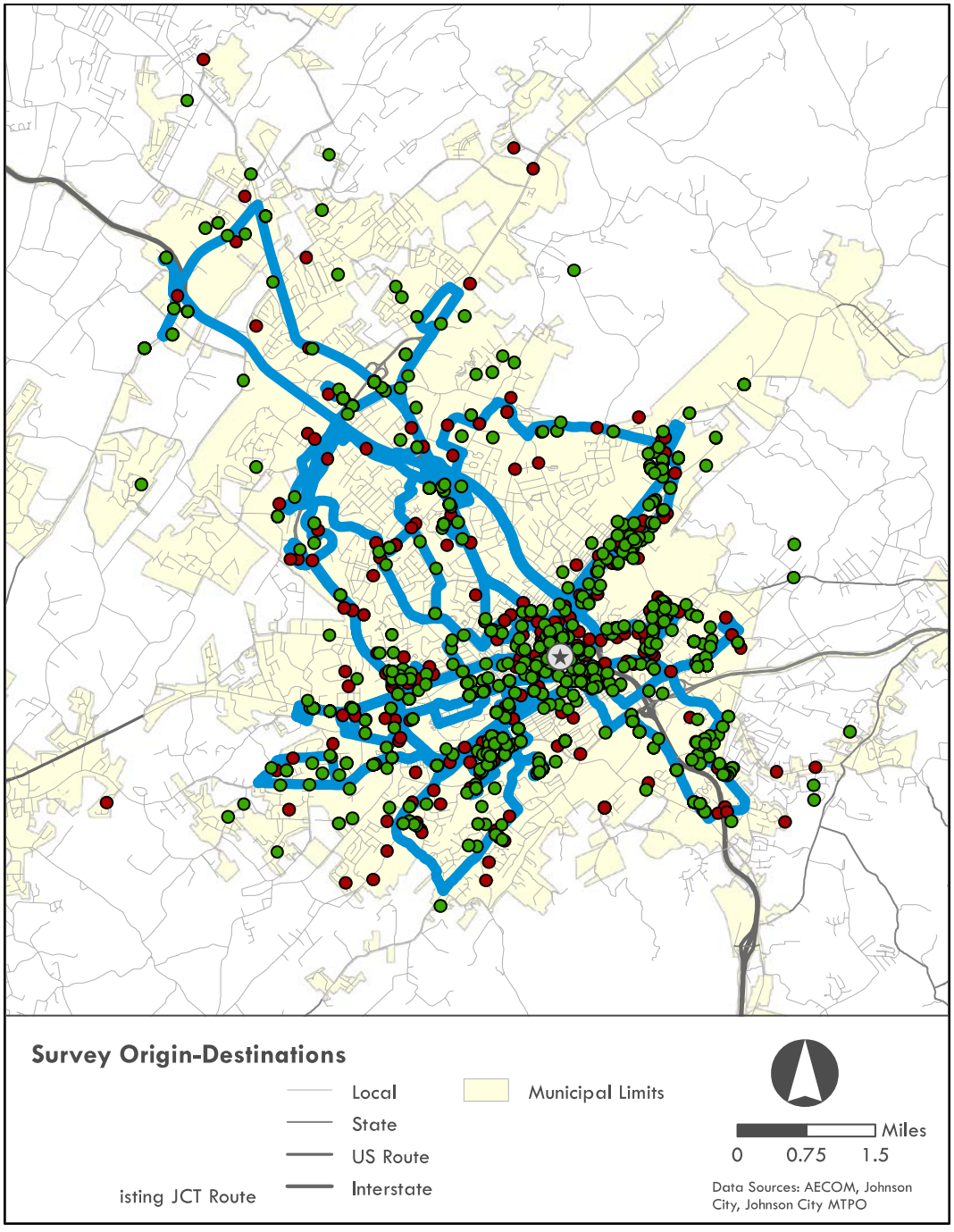
Riders were asked to list all of the buses used for this one-way trip, starting with the first bus. The charts below show a count of which buses were used First, Second, and Third. At least 908 passengers used at least one bus for their trip, while 467 passengers used two buses, and only 93 surveyed passengers used three buses for their one-way trip.





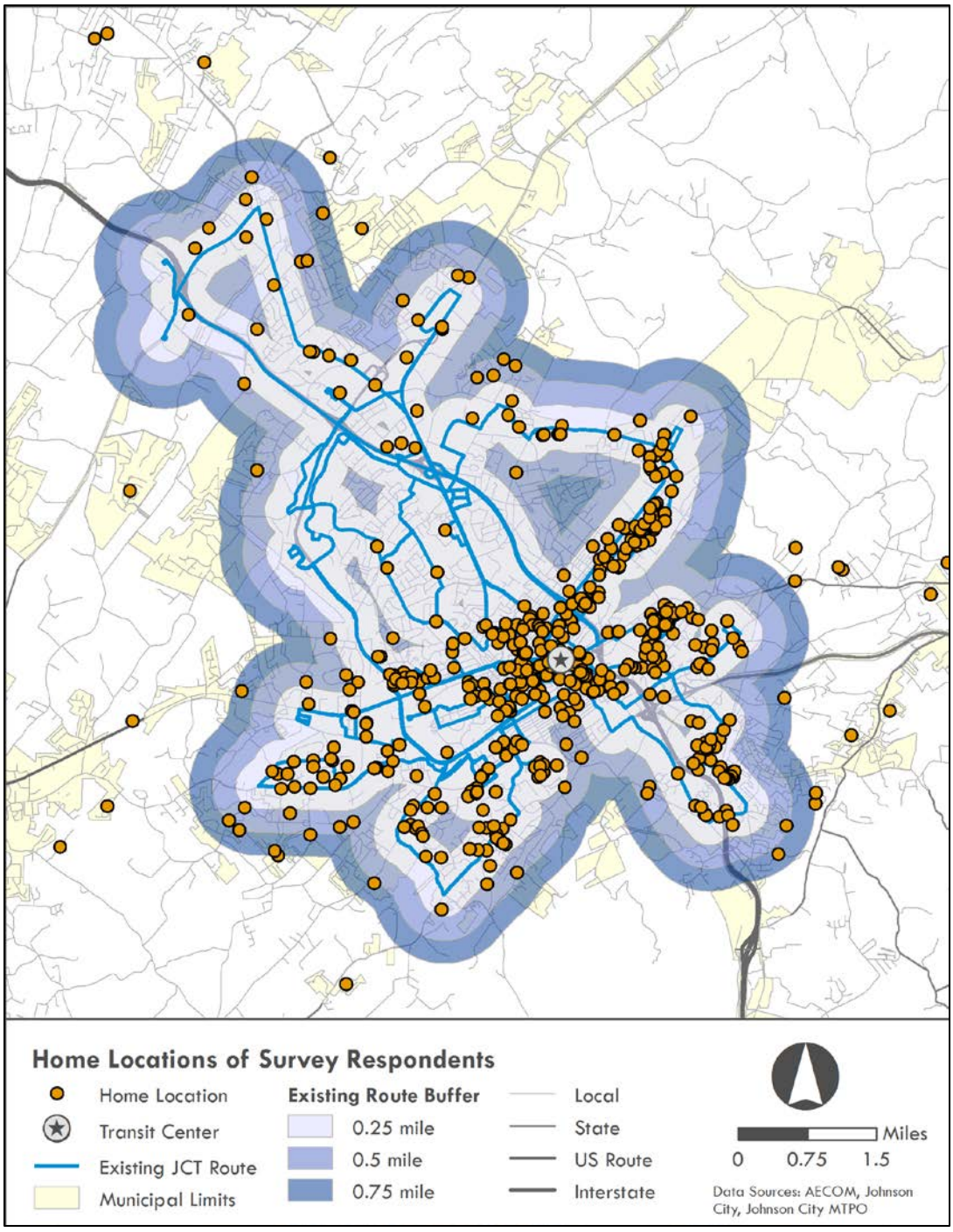
Geographic Location of Origins and Destinations

Based on the address data provided through the survey, AECOM staff were able to geolocate approximate origin and destination addresses for 982 (81%) of the total 1,200 responses. These locations are represented on the map below by green as the origin and red as the destination. This provides some insight regarding locations with concentrations of passengers and their relationship to the JCT bus routes. Specifically, this illustrates that a majority of origins occur close to downtown and verifies that JCT provides excellent geographic coverage of service.



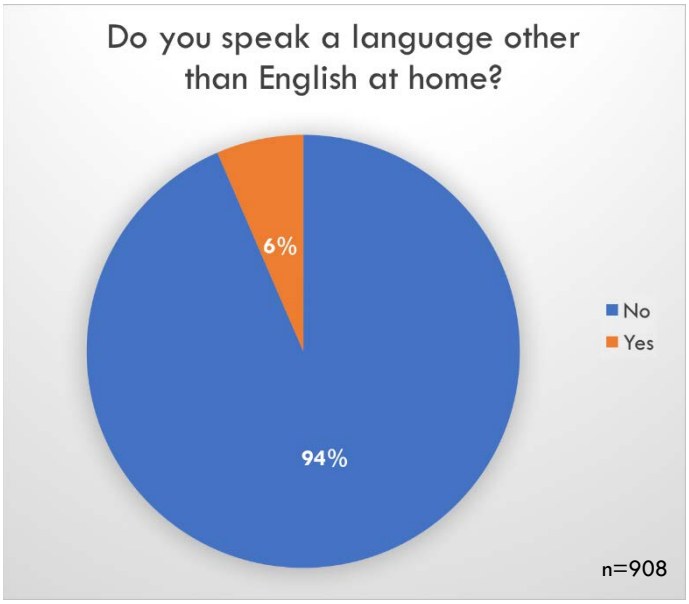
Geographic Location of Riders

Based on the address data taken through the survey, AECOM staff plotted the home locations of riders. These are represented on the map below and illustrate several primary corridors where significant populations of riders exist. These corridors are well served by existing JCT services.



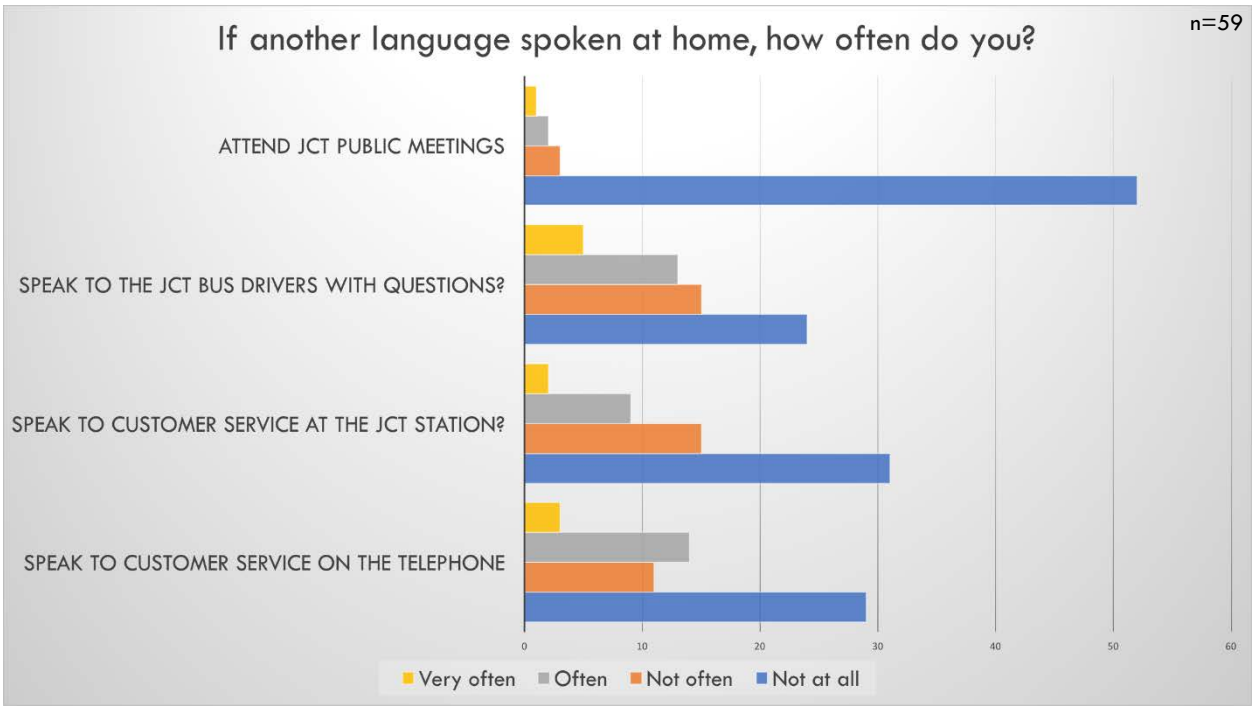
Spoken Language at Home

A small portion of surveyed riders (6%) indicated that they speak a language other than English at home. In reviewing the responses further, the respondents indicated several ethnicities and race, including Asian, Latino/Hispanic, Black/African American, and White.



Other Language at Home and Interactions with JCT Staff

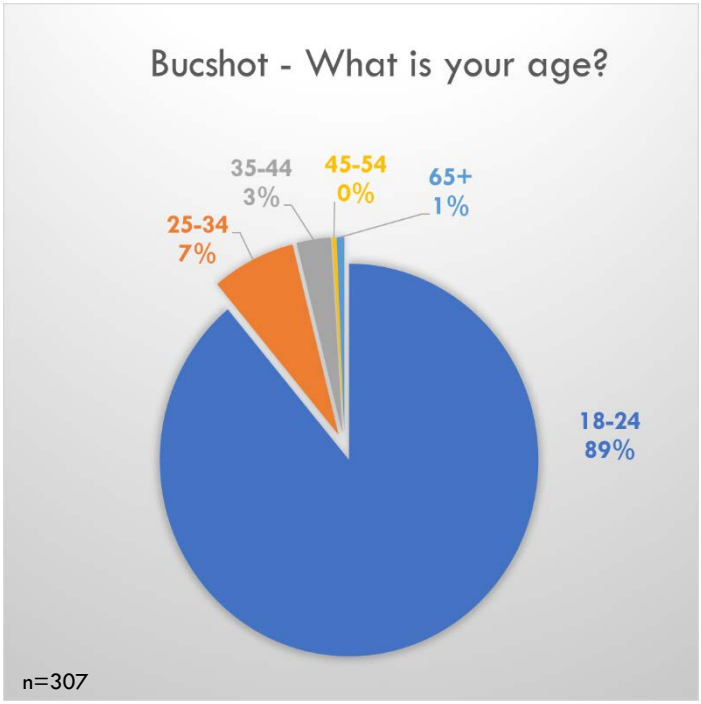
Of those that speak another language, the majority do not regularly interact with JCT staff.



Bucshot Survey Summary

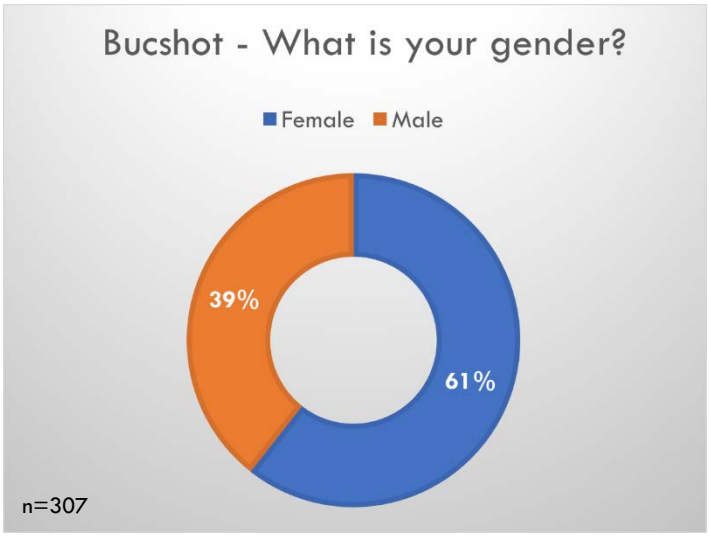
Age

As expected, a very high percentage (89%) of riders are in the 18-24 age bracket.



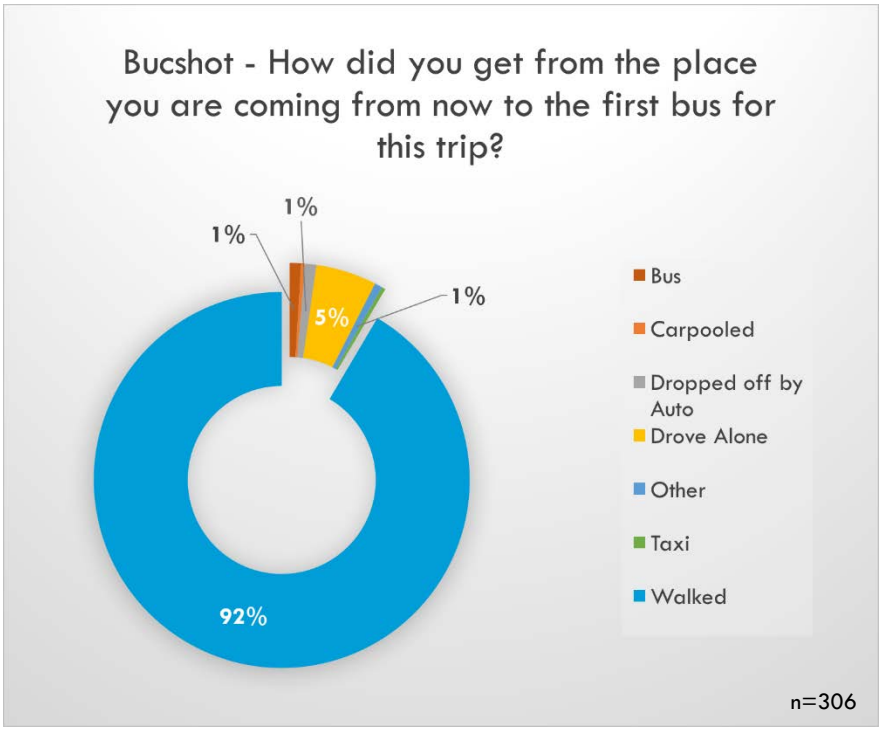
Gender

The majority of Bucshot riders are female at 61%. This is more in line with traditional and national statistics related to gender and transit.



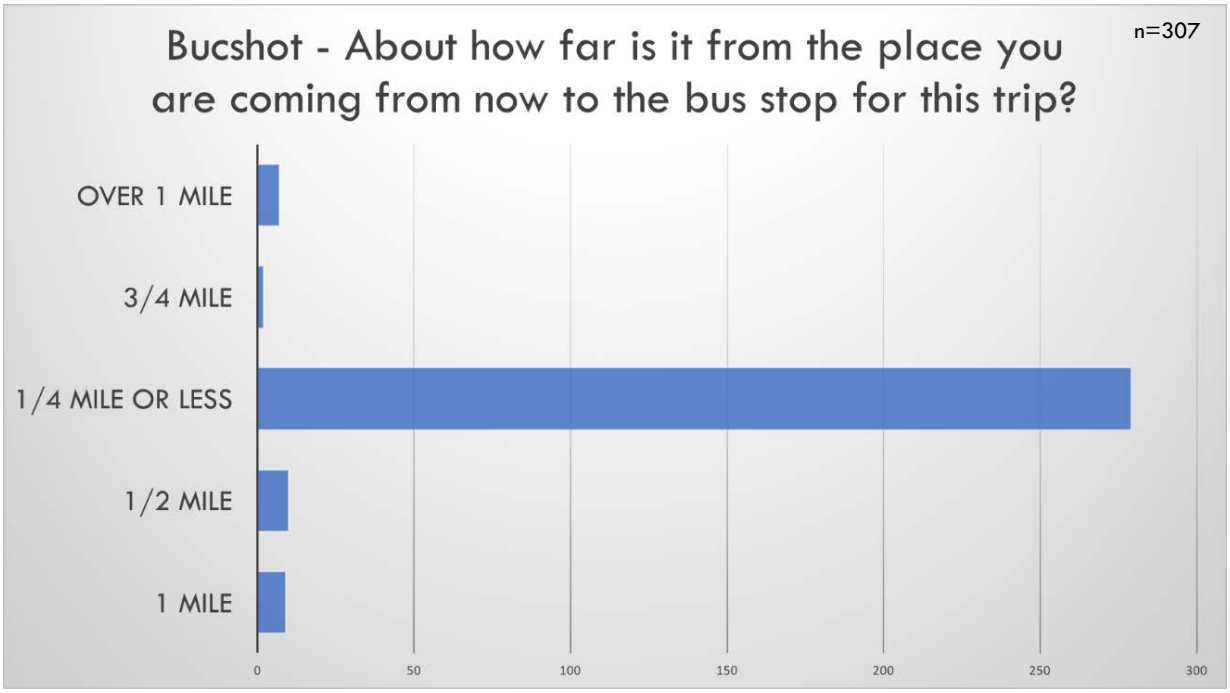
How Riders Got to the Bus

The great majority of riders 92% walk to the bus, however, the next largest cohort, 5%, drive alone.



Distance to the Bus

As with the JCT fixed-route service, the great majority of students walk less than ¼ of a mile to get to the Bucshot bus stops.



Ethnicity

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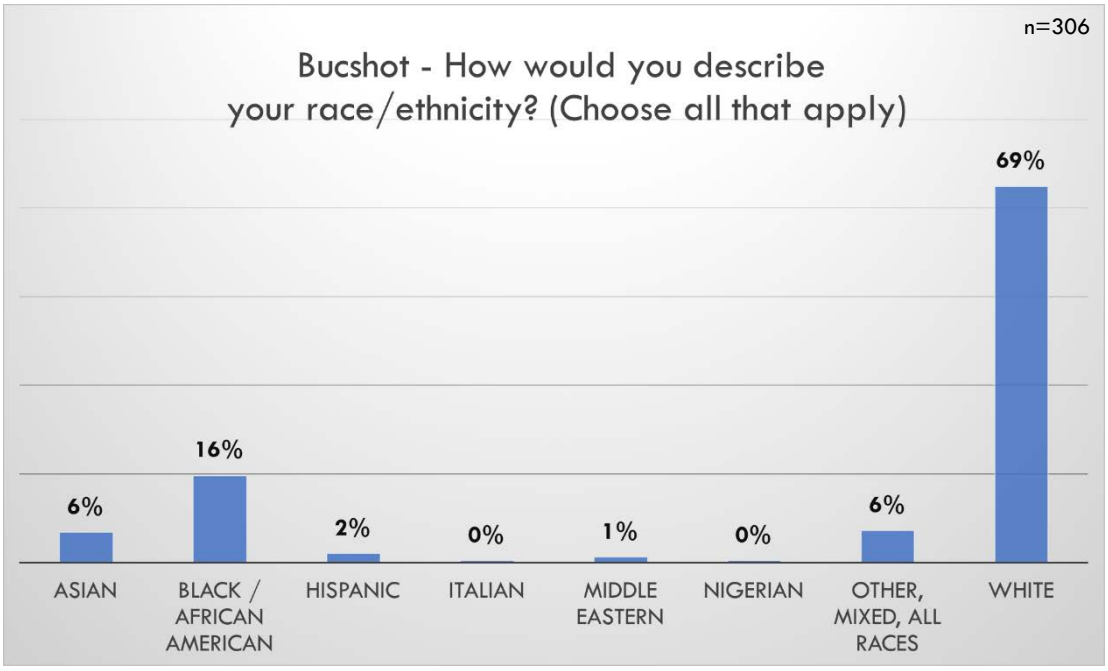
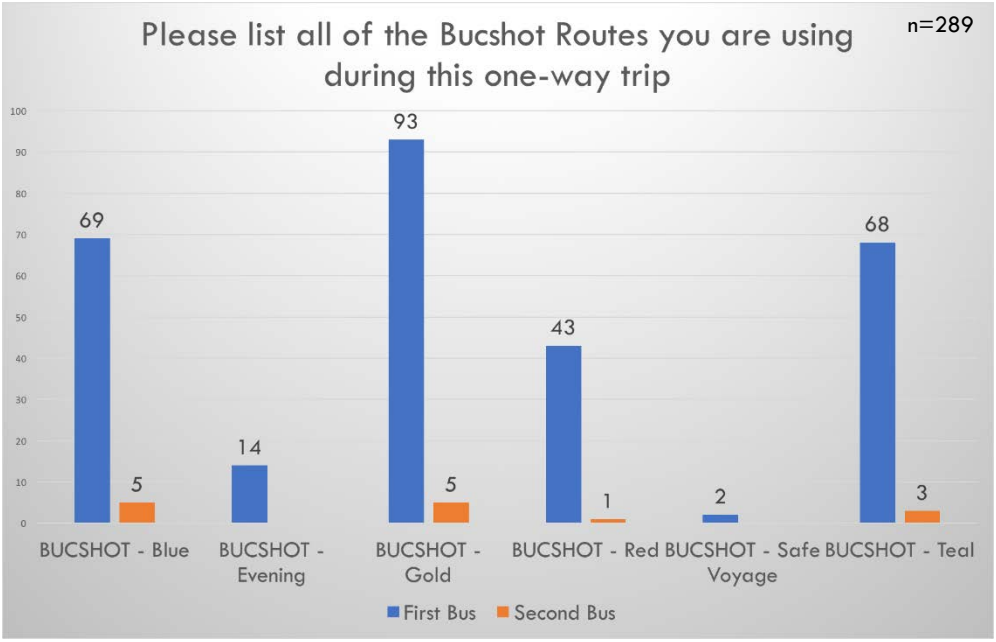


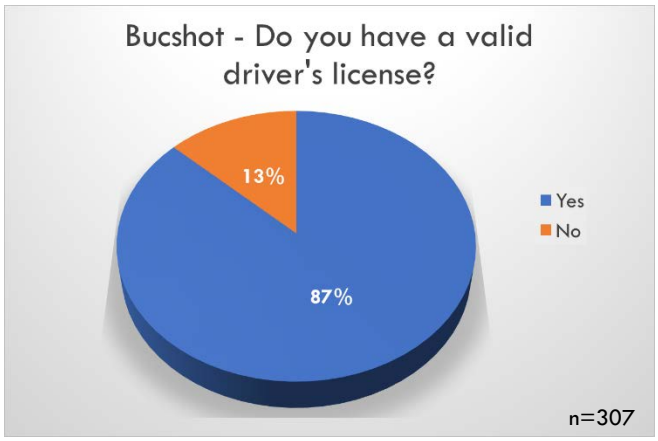
Buses utilized per one-way trip

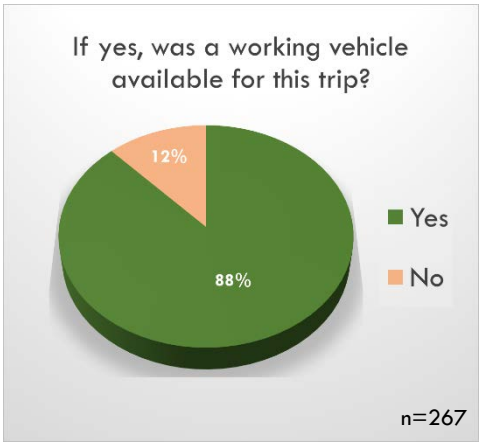
The great majority of students utilize only one bus for their cross-campus trips. There are, however, a small number of surveyed riders (15) that indicated using two buses to get to or from their destination.



Driver's License and Working Vehicle

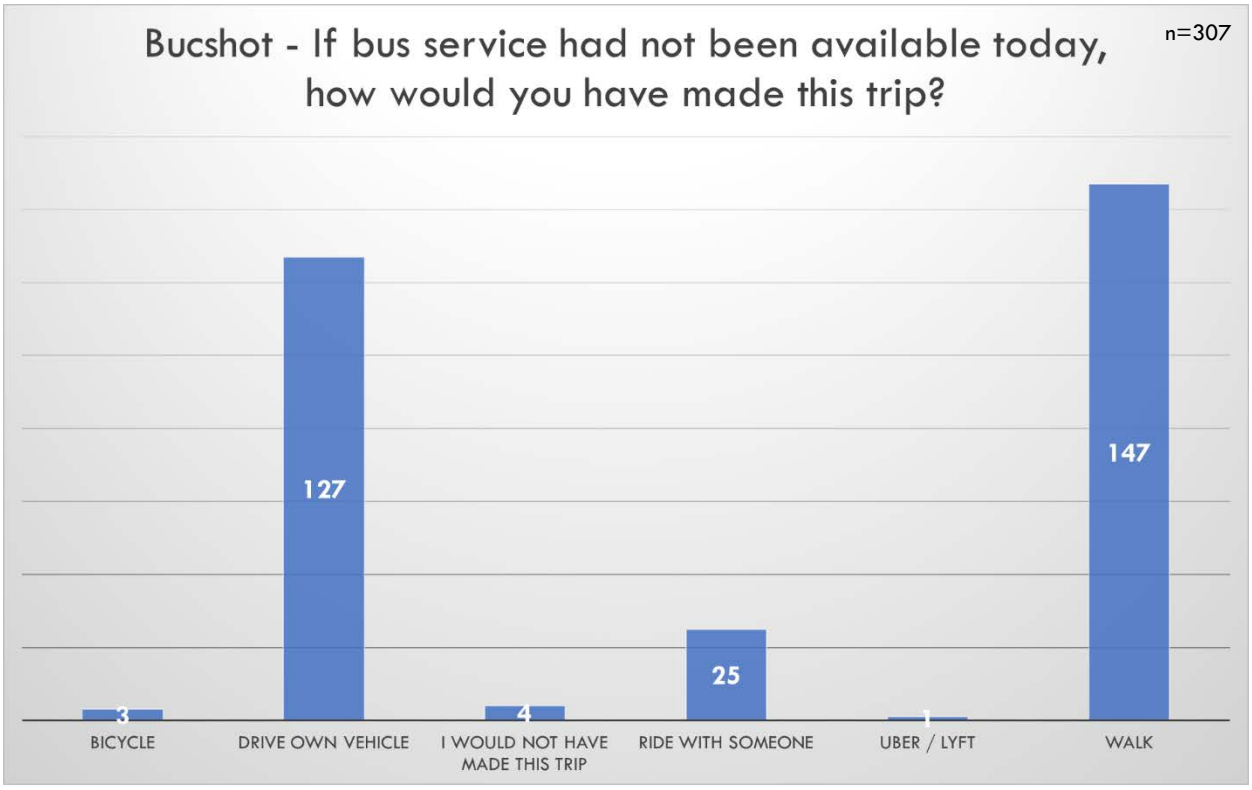
A high percentage of students (87%) have a valid driver's license, and of these, 88% had a working vehicle available for the trip.





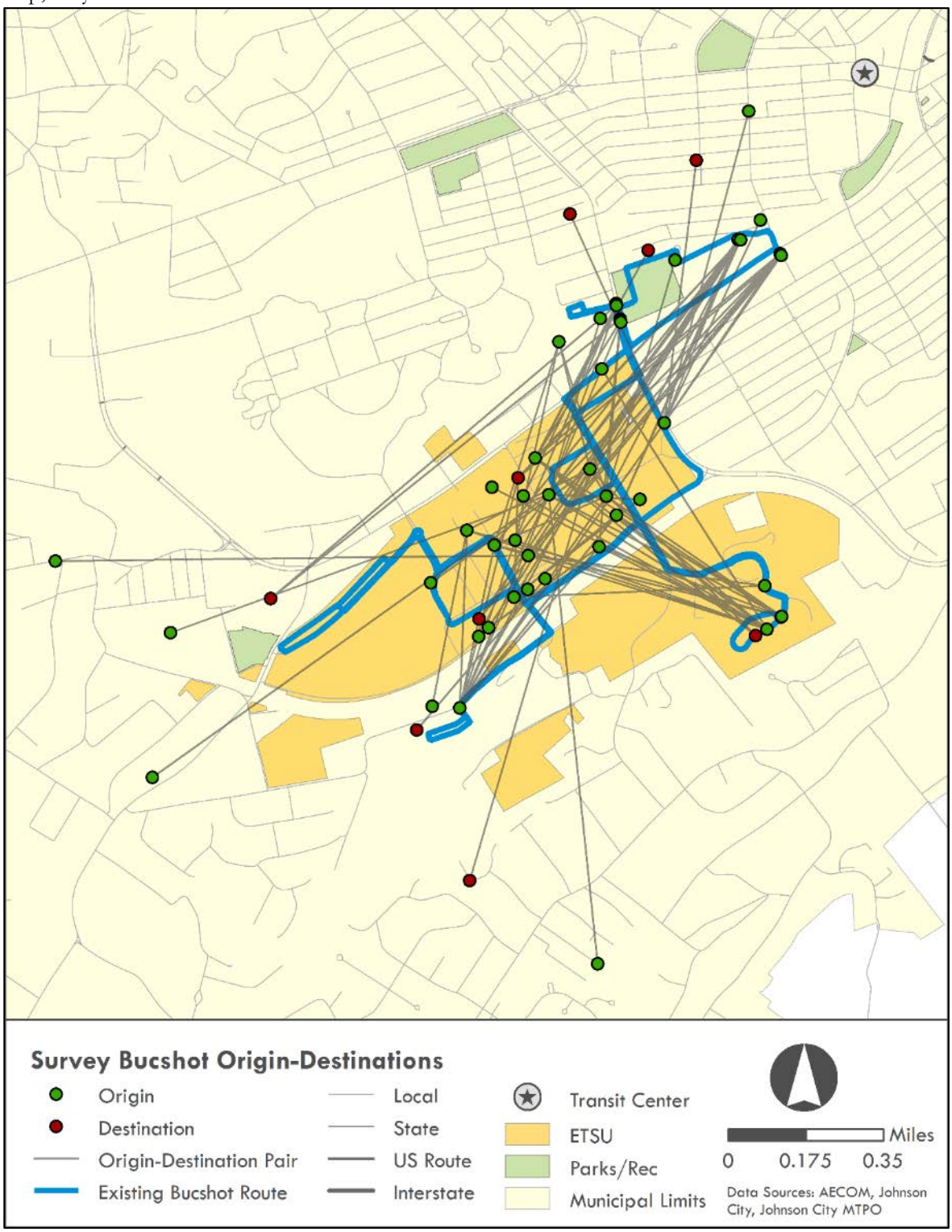
Trip without Bus Service

A large number of students (274) would have made the trip either walking (147) or driving their own vehicle (127). The greatest difference between Bucshot riders and JCT fixed-route riders is that a large portion of students would have driven their own vehicle if service was not available. This is not the case for JCT riders.



Geographic Location of Bucshot Origins and Destinations

Of the 307 surveys completed on the Bucshot routes, the AECOM team was able to geolocate 80% (246 pairs). These are shown below as green for origin and red for destination. In cases where origins and destination overlap, only one color dot will be visible.



Limitations of the Data

Although the sampling goals for this survey were far exceeded, and the data derived herein can assist JCT in understanding passengers and their needs, there are some limitations to the use of this data. The limitations listed below are intended to provide guidance to persons who will use data from this survey to conduct analysis in the future. The following list is not all inclusive, and anyone using the database should consider other limitations that are common to survey-acquired data.

Possible under-representation of very short-trips

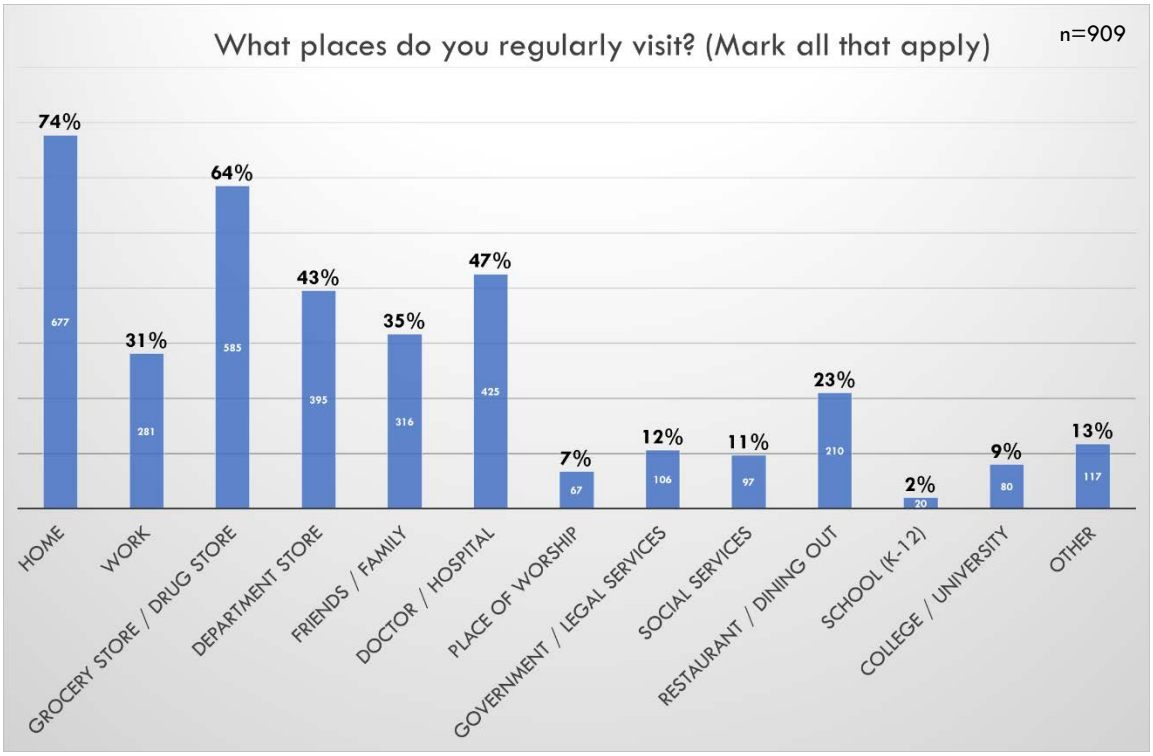
The survey took most riders about 5-9 minutes to complete. Although alternative methods of responding to the survey were provided (paper surveys), it is possible that people who made very short trips were less likely to complete the survey or return a completed survey to the collection box at the JCT Transit Center. This could mean that short trips might be under-represented in the collected data.

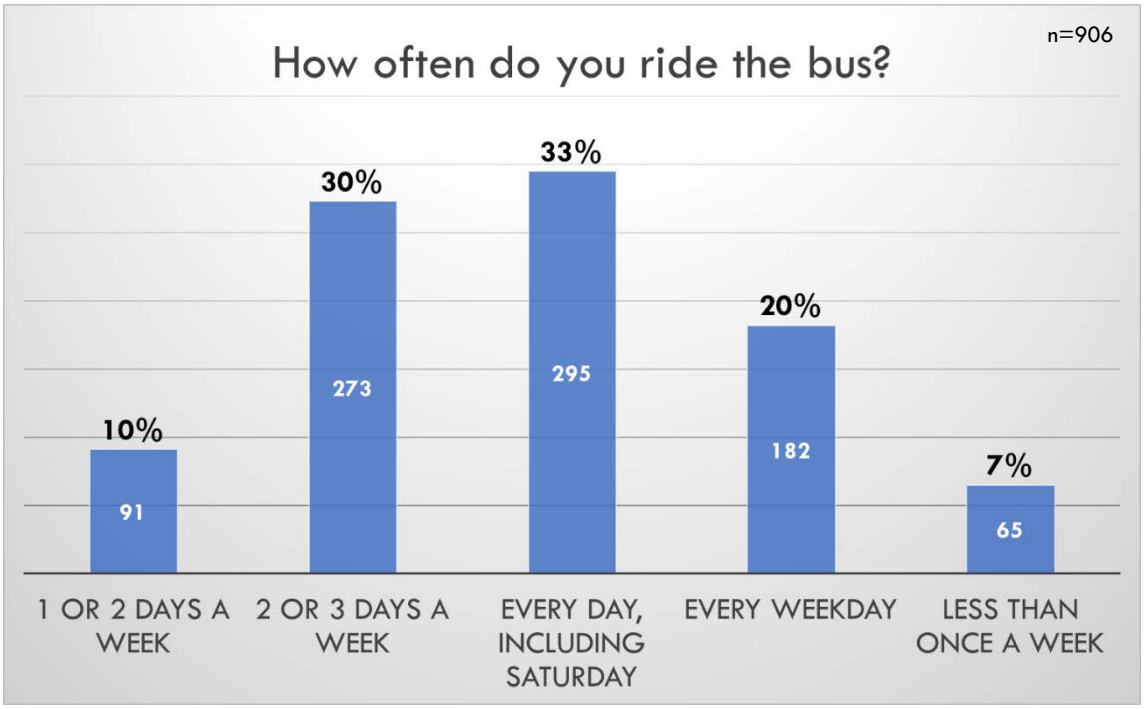
Due to relatively low volume on a route by route basis, data is not statistically representative for each individual route.

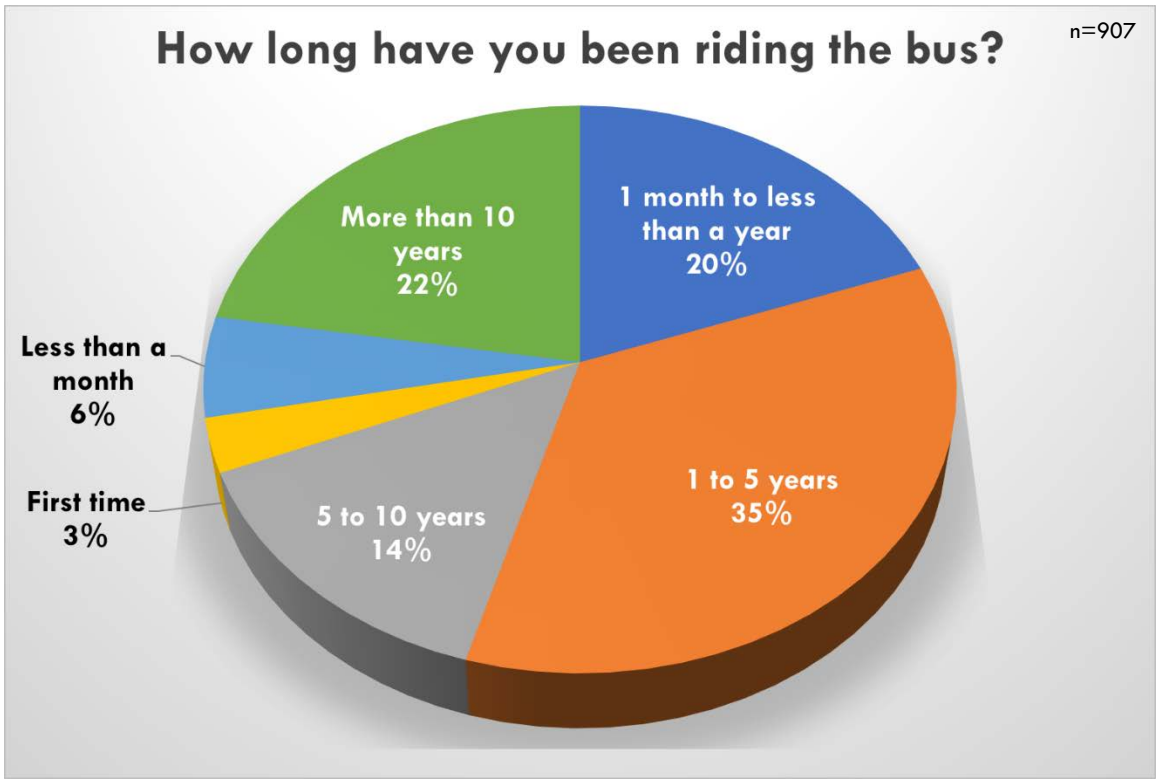
The survey was designed to ensure statistical accuracy for the entire JCT system; however, due to the small population of survey candidates on a route by route basis, it should be understood that low volume routes have unique characteristics. Therefore, the data for individual routes may not be fully representative.

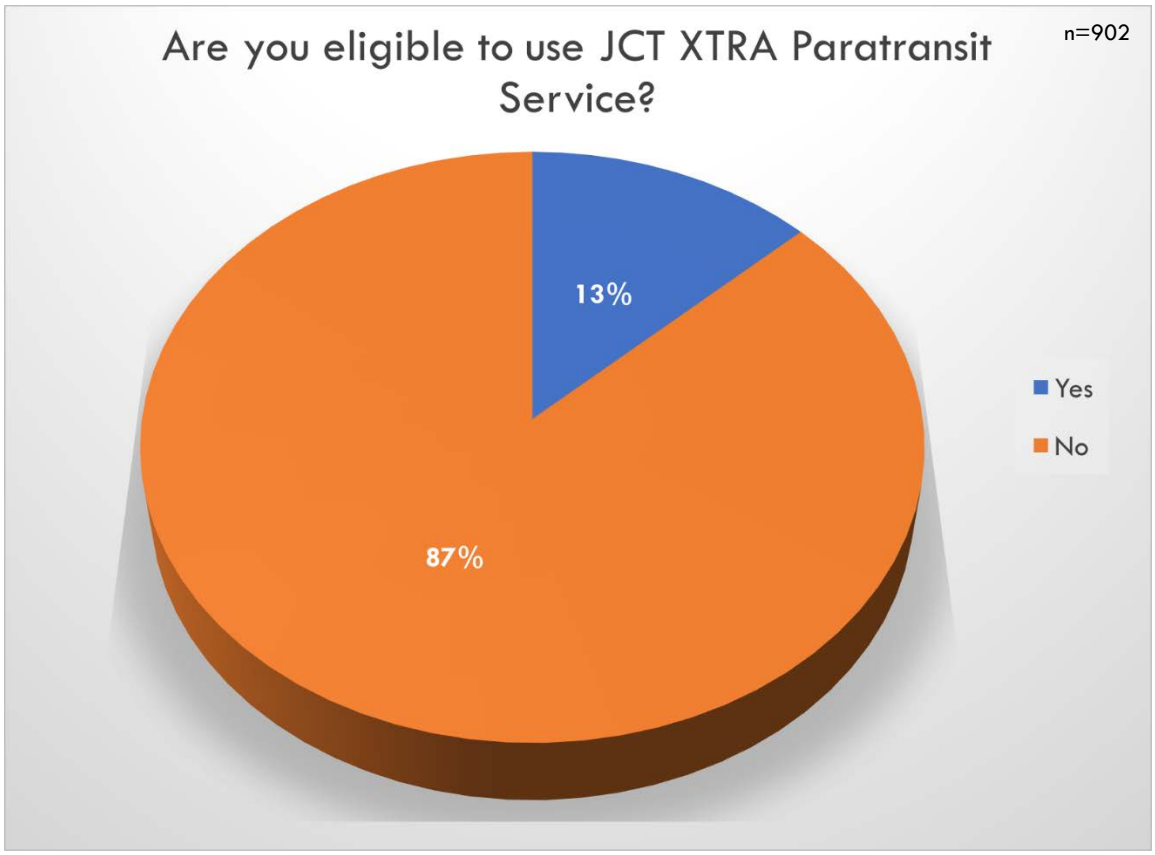
Section 3: Comprehensive Charts and Graphs

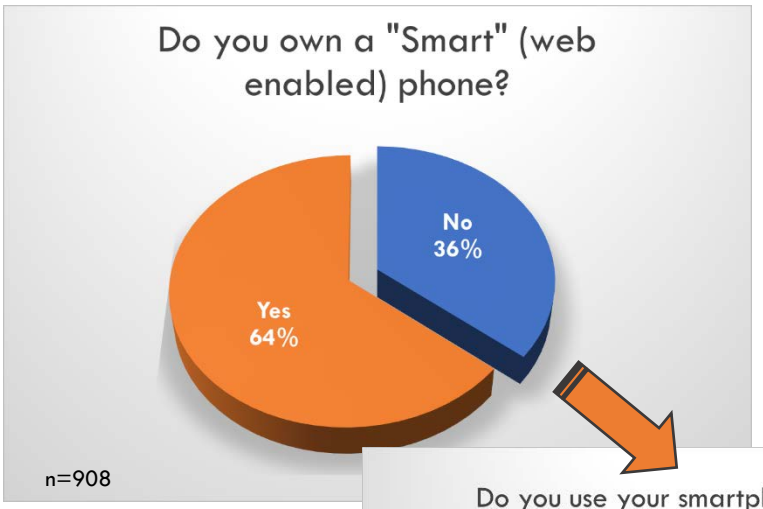
The following section provides the results of selections from the remaining questions on the survey. Many of these questions were supplemental to the core information collected about demographics and travel behaviors.

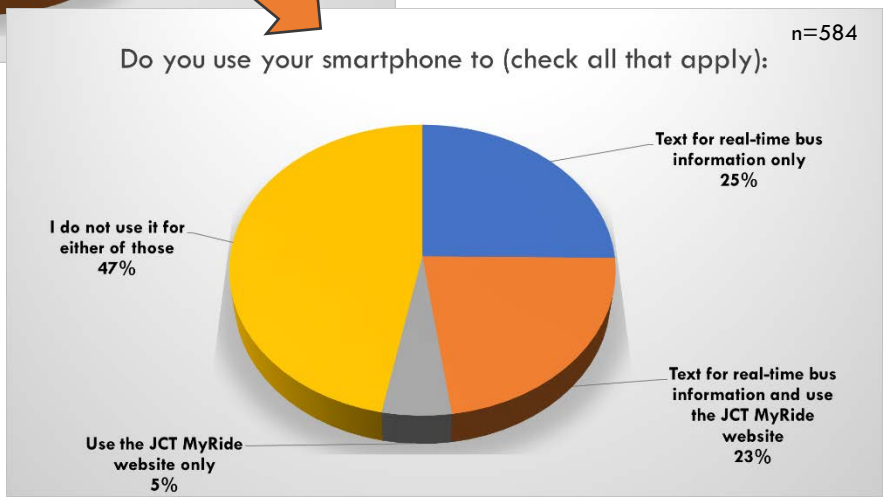


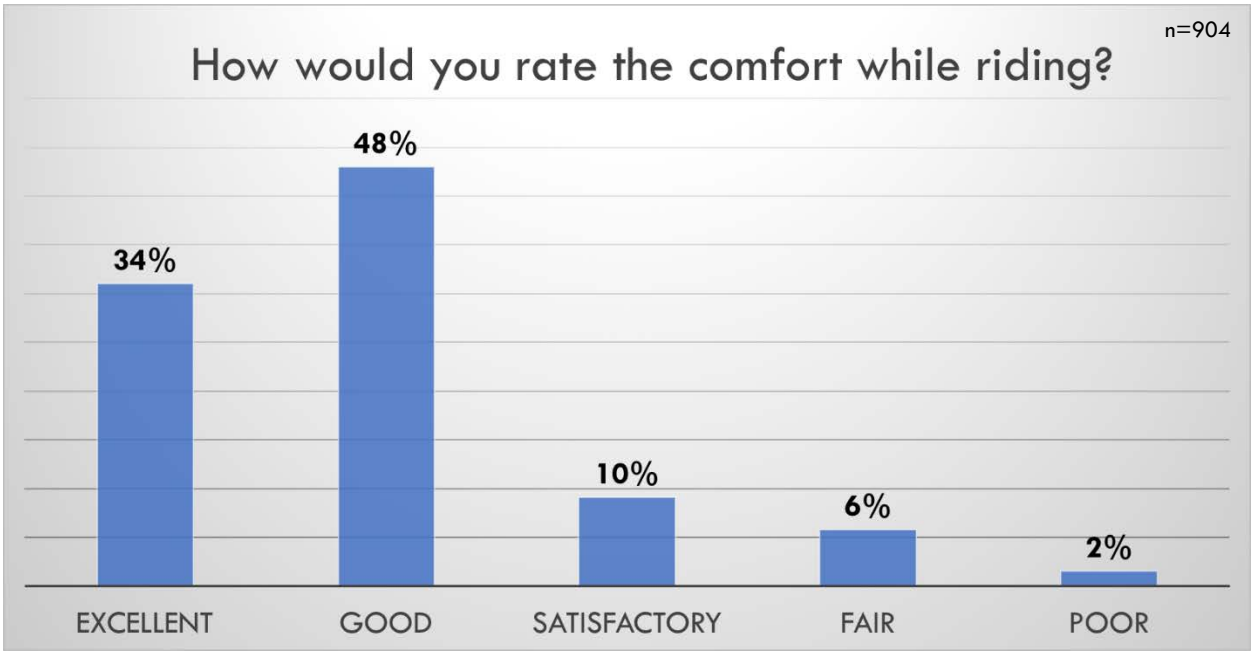


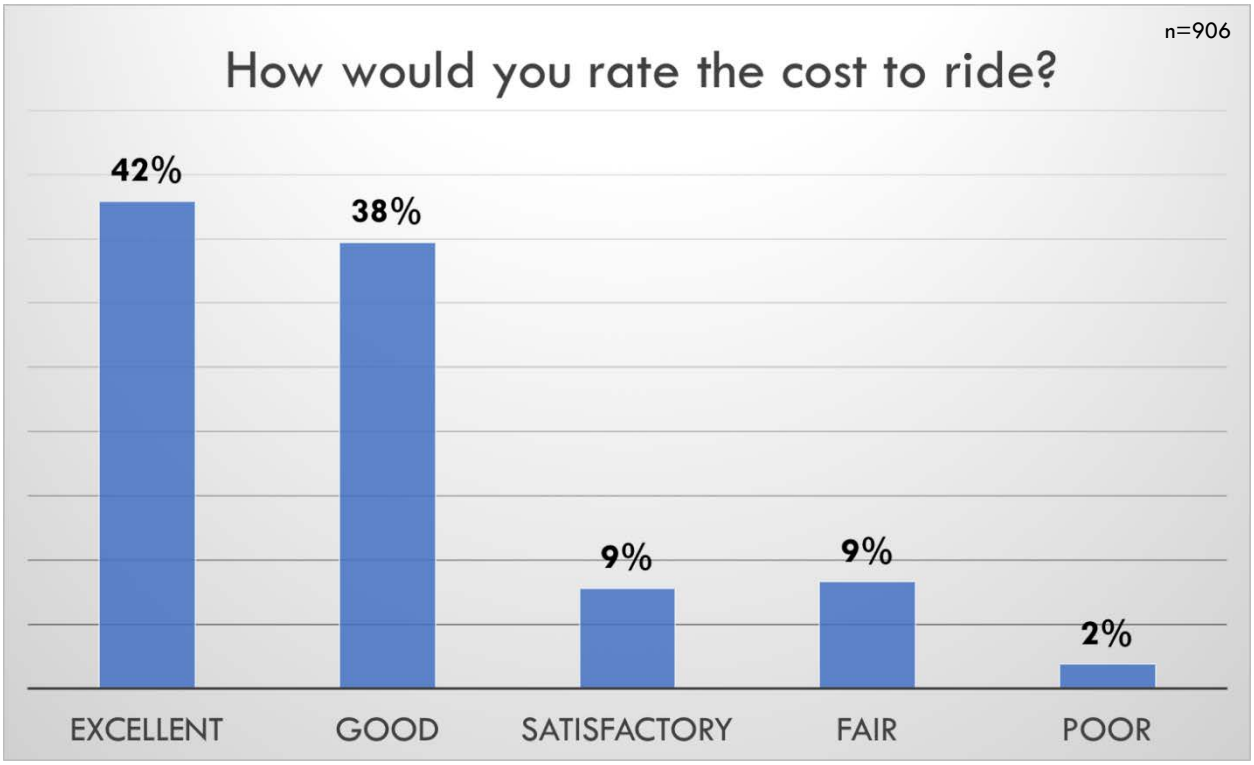

How long have you been riding the bus?
n=907
More than 10 years 22%
1 month to less than a year 20%
Less than a month 6%
First time 3%
5 to 10 years 14%
1 to 5 years 35%

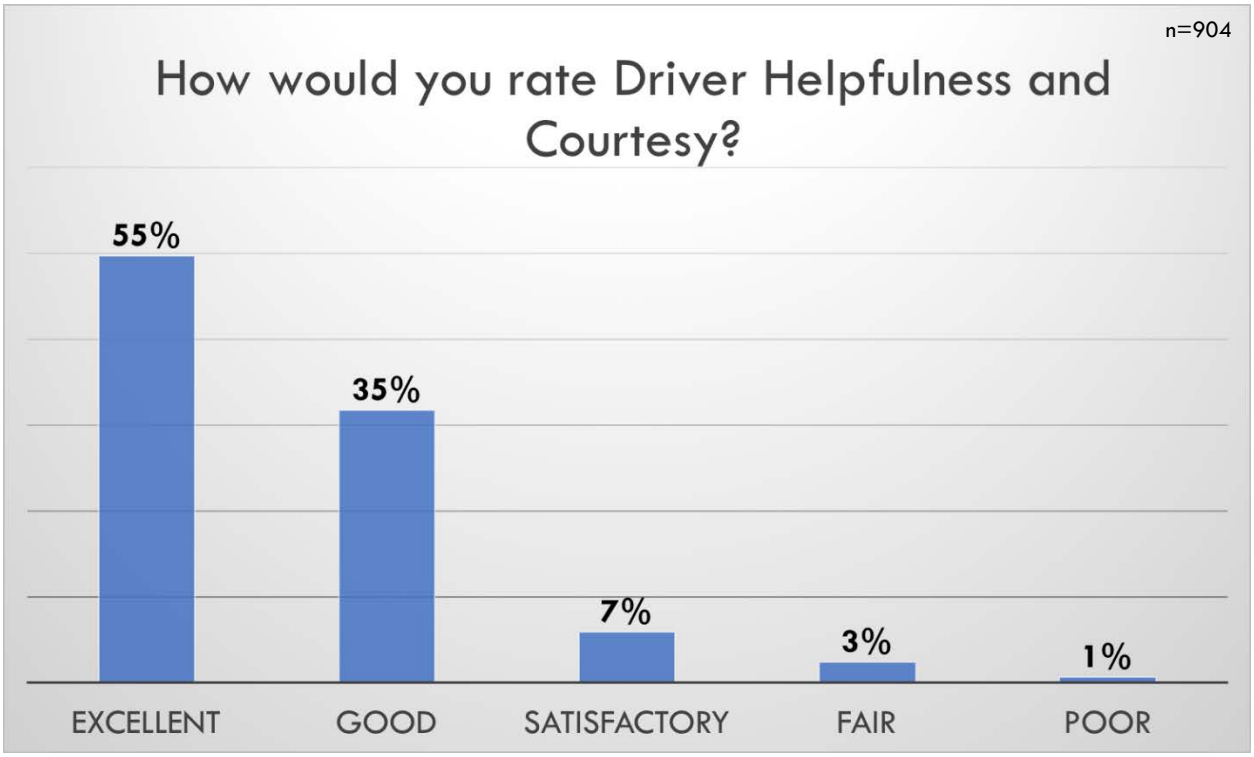

Are you eligible to use JCT XTRA Paratransit Service?
n=902
13%
87%
Yes
No

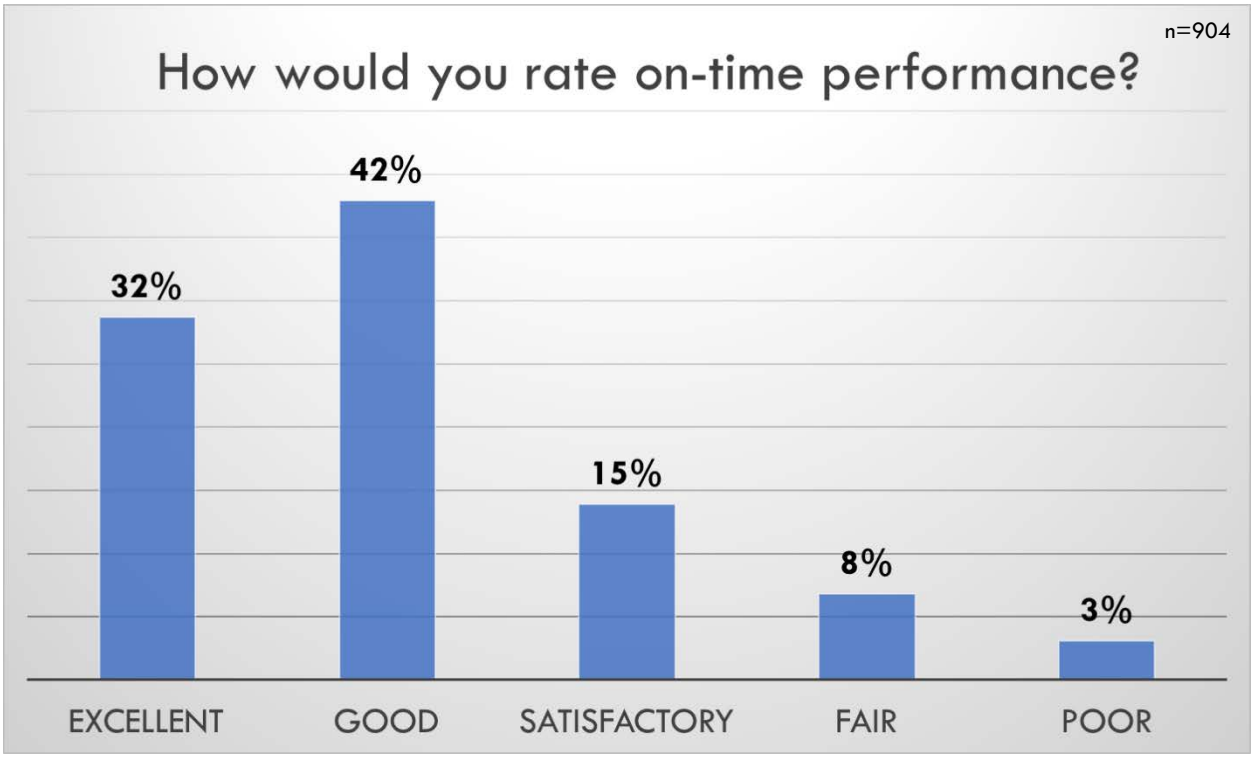

Do you own a "Smart" (web enabled) phone?
No
36%
Yes
64%
n=908

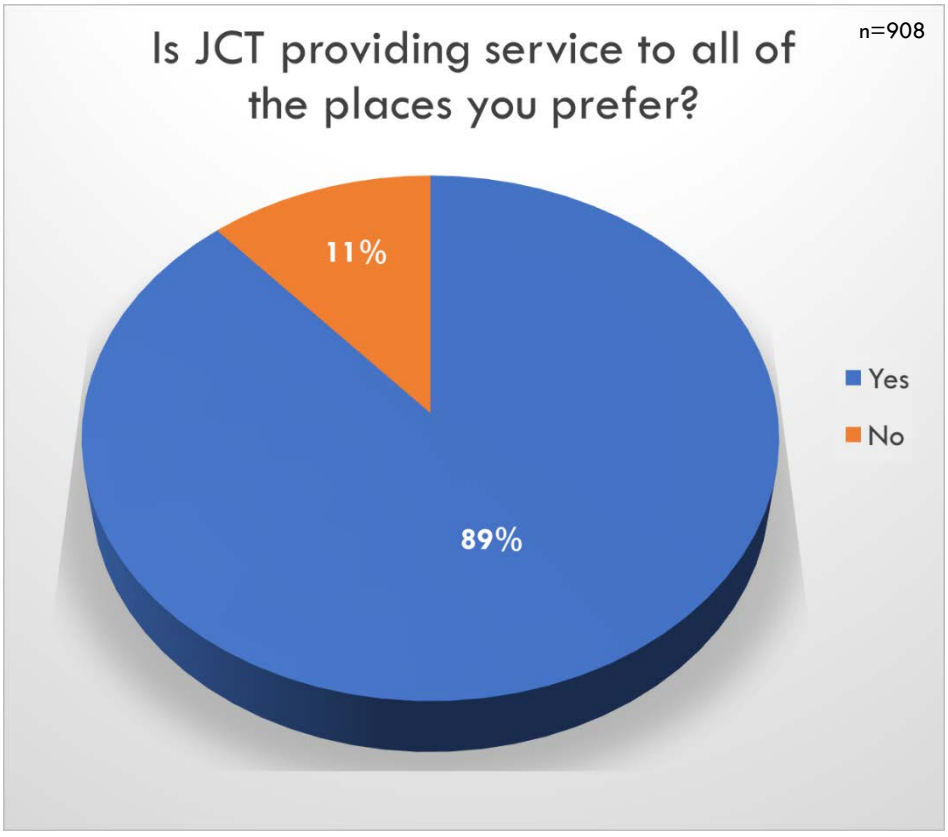

n=584
Do you use your smartphone to (check all that apply):
Text for real-time bus information only
25%
I do not use it for either of those
47%
Text for real-time bus information and use the JCT MyRide website
23%
Use the JCT MyRide website only
5%

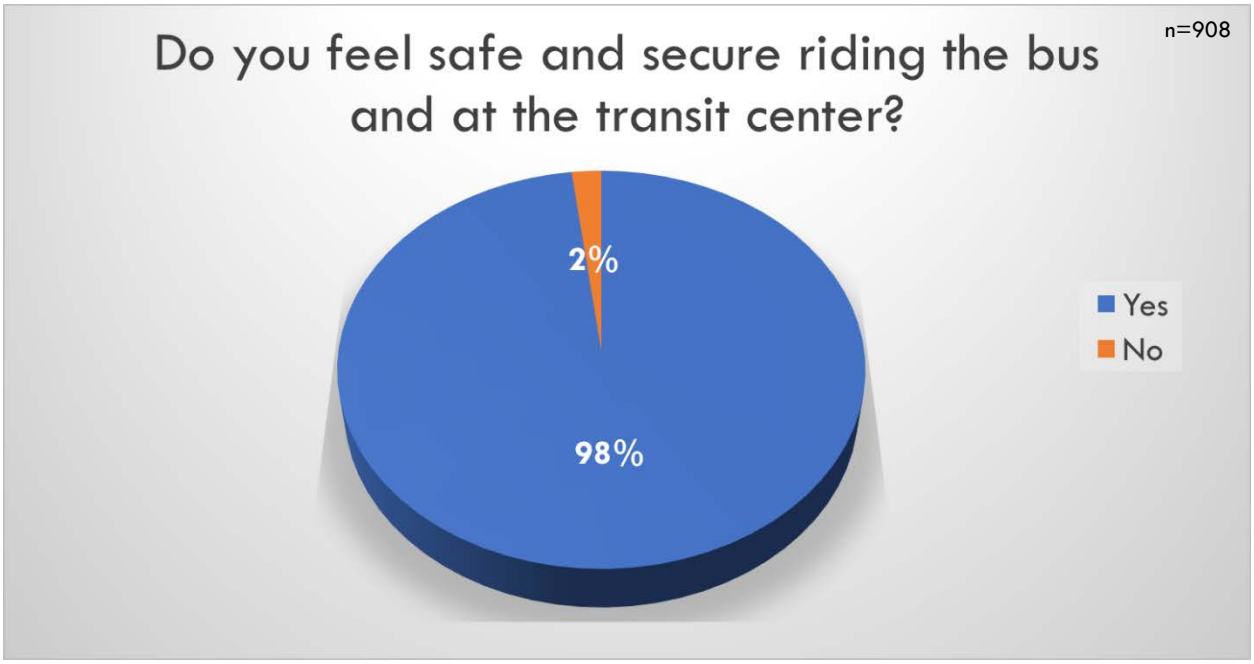

n=904
How would you rate the comfort while riding?
34%
48%
10%
6%
2%
EXCELLENT
GOOD
SATISFACTORY
FAIR
POOR


n=906
How would you rate the cost to ride?
42%
38%
9%
9%
2%
EXCELLENT
GOOD
SATISFACTORY
FAIR
POOR


n=904
How would you rate Driver Helpfulness and Courtesy?
55%
35%
7%
3%
1%
EXCELLENT
GOOD
SATISFACTORY
FAIR
POOR


n=904
How would you rate on-time performance?
32%
42%
15%
8%
3%
EXCELLENT
GOOD
SATISFACTORY
FAIR
POOR


n=908
Is JCT providing service to all of the places you prefer?
11%
89%
Yes
No


n=908
Do you feel safe and secure riding the bus and at the transit center?
2%
98%
Yes
No

Section 4: Paper Survey Instruments

Johnson City Transit (JCT) - Survey

Please take a few moments to complete this important survey. Your input will be used to plan transportation improvements in Johnson City. *All information will be kept strictly confidential.*

HOME Address: (please be specific, ex: 123 W Main Street): _____
(If you are just visiting the area, list the address you are staying in the Johnson City area.)

Zip Code: _____ ***OR Intersection if street address is not known:***

_____ **&** _____

COMING FROM?

1. **What type of place are you COMING FROM now?**
   - ☐ Your Home
   - ☐ Your Workplace
   - ☐ School (Grades K-12)
   - ☐ Shopping
   - ☐ College/University (students only)
   - ☐ Medical Appointment / Dr. Visit
   - ☐ Social Visit / Church / Personal / Friend's House
   - ☐ Recreation / Sightseeing
   - ☐ Government / Legal Visit
   - ☐ Other
2. **What is the NAME of the place you are coming from now?**

   _____
3. **What is the EXACT Street Address of this place?**

   _____

   OR Intersection if street address is not known:

   _____ **&** _____

   City: _____ **Zip:** _____
4. **How did you get from the place you are coming from now to the FIRST bus for this trip?**
   - ☐ Walked
   - ☐ Biked
   - ☐ Drove Alone
   - ☐ Carpooled
   - ☐ Taxi
   - ☐ Uber / Lyft
   - ☐ Dropped off by auto
   - ☐ Other
5. **About how far is it from the place you are coming from to the bus stop for this trip?**
   - ☐ ¼ mile
   - ☐ ½ mile
   - ☐ ¾ mile
   - ☐ 1 Mile
   - ☐ Over 1 Mile

GOING TO?

6. **What type of place are you GOING TO now?**
   - ☐ Your Home
   - ☐ Your Workplace
   - ☐ School (Grades K-12)
   - ☐ Shopping
   - ☐ College/University (students only)
   - ☐ Medical Appointment / Dr. Visit
   - ☐ Social Visit / Church / Personal / Friend's House
   - ☐ Recreation / Sightseeing
   - ☐ Government / Legal Visit
   - ☐ Other
7. **What is the NAME of the place you are going to now?**

   _____
8. **What is the EXACT Street Address of this place?**

   _____

   OR Intersection if street address is not known:

   _____ **&** _____

   City: _____ **Zip:** _____
9. **How will you get to your destination once you get off the LAST bus you are using for this trip?**
   - ☐ Walk
   - ☐ Bike
   - ☐ Drive Alone
   - ☐ Carpool
   - ☐ Taxi
   - ☐ Uber / Lyft
   - ☐ Dropped off by auto
   - ☐ Other
10. **About how far is it from where you get off the last bus to your final destination for this trip?**
    - ☐ ¼ mile
    - ☐ ½ mile
    - ☐ ¾ mile
    - ☐ 1 Mile
    - ☐ Over 1 Mile

THIS BUS (Answer the following based on your current one-way trip between the places listed above)

11. **What bus route are you riding now? (Write in Route Number and Name.)** _____
12. **What is today's date and the approximate time you got on THIS bus?** Date: _____ Hour/Minute: _____ am / pm
13. **Are you traveling toward downtown (inbound) or away from downtown (outbound)?** ☐ Inbound ☐ Outbound
14. **Please list all of the JCT bus routes you are using to get to your final destination FOR THIS TRIP, in order below. PLEASE CIRCLE THE ROUTE YOU WERE USING WHEN YOU COMPLETED THIS SURVEY.**

ORIGIN → _____ (1st Bus Route) → _____ (2nd Bus Route) → _____ (3rd Bus Route) → DESTINATION

15. **Have you already, or will you later today, make this trip in the EXACT opposite direction)?** ☐ Yes ☐ No

Please complete the questions on the back.

OTHER IMPORTANT ITEMS

16. What places do you regularly visit using JCT? (Mark all that apply.)
☐ Home ☐ Department Store ☐ Place of Worship ☐ Government/Legal Services
☐ Work ☐ Friends/Family ☐ Social Services ☐ Grocery/Drug Store
☐ School(K-12) ☐ Doctor/Hospital ☐ College/University ☐ Restaurant/Dining Out
☐ Other: _____

17. Do you have a valid driver's license? ☐ Yes ☐ No

17a. If YES, was a working vehicle available for this trip? ☐ Yes ☐ No

18. If bus service had not been available today, how would you have made this trip?
☐ Drive own vehicle ☐ Uber/Lyft ☐ Walk ☐ Taxi ☐ Bicycle ☐ Other Public Transit Service
☐ Ride with someone ☐ I would not have made this trip

19. How often do you ride the bus?
☐ Every day, including Saturday ☐ Every weekday ☐ 2 or 3 days a week
☐ 1 or 2 days a week ☐ Less than once a week

20. How long have you been riding the bus?
☐ First time ☐ Less than a month ☐ 1 month – less than a year
☐ 1 to 5 years ☐ 5 to 10 years ☐ More than 10 years

21. Are you eligible to use JCT XTRA Paratransit Service? ☐ Yes ☐ No

22. Do you own a Smart (web-enabled) phone? ☐ Yes ☐ No

22a. If YES, do you use your Smart phone to text for real-time bus information? ☐ Yes ☐ No

22b. If YES, do you use your Smart phone to use the JCT MyRide website? ☐ Yes ☐ No

23. What is your employment status? (Check the one response that BEST describes you)
☐ Employed full-time (at least 30 hours per week) ☐ Employed part-time (less than 35 hours per week)
☐ Retired ☐ Full-time student
☐ Not currently employed

24. What is your AGE? ☐ Under 18 ☐ 18-24 ☐ 25-34 ☐ 35-44 ☐ 45-54 ☐ 55-64 ☐ 65+

25. What is your Gender? ☐ Male ☐ Female

26. Are you Hispanic/Latino? ☐ Yes ☐ No

27. How would you describe your race/ethnicity? (check all that apply)
☐ White ☐ Black/African American ☐ Asian ☐ Native American ☐ Other

28. Including YOU, how many people live in your household (this includes children)?
☐ One ☐ Two ☐ Three ☐ Four or more

29. Including YOU, how many adults (age 18 and older) live in your household?
☐ One ☐ Two ☐ Three ☐ Four or more

30. How did you pay for your trip today?
☐ Cash ☐ ETSU Student/Staff ☐ One-Way Pass ☐ Express Pass ☐ Multi-ride Pass

31. Which of the following categories BEST describes your TOTAL ANNUAL HOUSEHOLD INCOME? This is the total income for ALL WAGE EARNERS in the household.
☐ Below $12,000 ☐ $20,000 - $29,999 ☐ $40,000 - $49,999 ☐ $60,000 +
☐ $12,000-$19,999 ☐ $30,000 - $39,999 ☐ $50,000 - $59,999

32. How would you rate the comfort while riding?
☐ Poor ☐ Fair ☐ Satisfactory ☐ Good ☐ Excellent

33. How would you rate the cost to ride?
☐ Poor ☐ Fair ☐ Satisfactory ☐ Good ☐ Excellent

34. How would you rate driver helpfulness and courtesy?
☐ Poor ☐ Fair ☐ Satisfactory ☐ Good ☐ Excellent

35. How would you rate the on-time performance of the service? (On-time Performance is defined as arriving no later than 5 minutes of the posted time on the schedule.)
☐ Poor ☐ Fair ☐ Satisfactory ☐ Good ☐ Excellent

36. Do you feel safe and secure riding the bus and at the Transit Center? ☐ Yes ☐ No

22a. If NOT, please describe why: _____

37. Is JCT providing service to all of the places you prefer?
☐ Yes ☐ No

37a. IF NOT, please write in the place(s) you would prefer service? _____

38. Do you speak a language other than English at home? ☐ Yes ☐ No
38a. If YES, how well do you speak and understand English? ☐ Very Well ☐ Less than very well
38b. If Yes, how often do you use the following services?

(1) *Speak to Customer Service on the telephone:*	☐ *Very Often*	☐ *Often*	☐ *Not Often*	☐ *Not at all*
(2) *Speak to Customer Service at the JCT Transit Ctr:*	☐ *Very Often*	☐ *Often*	☐ *Not Often*	☐ *Not at all*
(3) *Speak to JCT Bus Drivers with questions:*	☐ *Very Often*	☐ *Often*	☐ *Not Often*	☐ *Not at all*
(4) *Attend JCT Public Meetings:*	☐ *Very Often*	☐ *Often*	☐ *Not Often*	☐ *Not at all*

Thank you for your help!

Please RETURN THIS SURVEY to any survey staff or drop off at the DISPATCH BOOTH at the Johnson City Transit Center.

All completed surveys must be received at JCT by September 30th, 2017

Johnson City Transit (JCT) - Encuesta

Por favor tome unos momentos para completar esta importante encuesta. Su contribución se usará para planificar mejoras de transporte en Johnson City. Toda la información se mantendrá estrictamente confidencial.

Dirección RESIDENCIAL: (por favor sea especifico, ejemplo: 123 Calle Principal): _____
(Si usted está de visita en el área, escriba la dirección donde se está quedando en el área de Johnson City.)

Código Postal: _____ ***O Intersección si no conoce la dirección:***

_____ **&** _____

¿DE DÓNDE VIENE?

1. ¿De qué tipo de lugar VIENE usted ahora?

- ☐ Su Casa
- ☐ Su Lugar de Trabajo
- ☐ Escuela (Grados K-12)
- ☐ Compras
- ☐ Universidad (estudiantes solamente)
- ☐ Cita Médica / Visita al Doctor
- ☐ Visita Social / Iglesia / Asunto Personal / Casa de un Amigo
- ☐ Recreación / Turismo
- ☐ Oficina de Gobierno / Visita Legal
- ☐ Otro

2. ¿Cuál es el NOMBRE del lugar de donde viene usted ahora?

_____

3. ¿Cuál es la dirección EXACTA de este lugar?

_____

O Intersección más cercana si no conoce la dirección:

_____ **&** _____

Ciudad: _____ **Código Postal:** _____

4. ¿Cómo llegó desde el lugar de donde viene ahora hasta el PRIMER autobús para este viaje?

- ☐ Caminé
- ☐ En Bicicleta
- ☐ Manejé solo(a)
- ☐ Viajé con otro (carpool)
- ☐ Taxi
- ☐ Uber / Lyft
- ☐ Alguien me trajo en su auto
- ☐ Otro

5. ¿Cuán lejos queda el lugar de donde viene de la parada de autobús?

- ☐ ¼ de milla (3-4 cuadras)
- ☐ 1 milla (13-16 cuadras)
- ☐ ½ milla (5-8 cuadras)
- ☐ Más de 1 milla
- ☐ ¾ de milla (9-12 cuadras)

¿HACIA DÓNDE VA?

6. ¿Hacia qué tipo de lugar SE DIRIGE ahora?

- ☐ Su Casa
- ☐ Su Lugar de Trabajo
- ☐ Escuela (Grados K-12)
- ☐ Compras
- ☐ Universidad (estudiantes solamente)
- ☐ Cita Médica / Visita al Doctor
- ☐ Visita Social / Iglesia / Asunto Personal / Casa de un Amigo
- ☐ Recreación / Turismo
- ☐ Oficina de Gobierno / Visita Legal
- ☐ Otro

7. ¿Cuál es el NOMBRE del lugar a donde se dirige ahora?

_____

8. ¿Cuál es la dirección EXACTA de este lugar?

_____

O Intersección más cercana si no conoce la dirección:

_____ **&** _____

Ciudad: _____ **Código Postal:** _____

9. ¿Cómo llegará hasta su destino final cuando se baje del ÚLTIMO autobús que use para este viaje?

- ☐ Caminaré
- ☐ En Bicicleta
- ☐ Manejaré solo(a)
- ☐ Viajaré con otro (carpool)
- ☐ Taxi
- ☐ Uber / Lyft
- ☐ Alguien me dejará en su auto
- ☐ Otro

10. ¿Cuán lejos queda su destino final de donde se baja de su último autobús?

- ☐ ¼ de milla (3-4 cuadras)
- ☐ 1 milla (13-16 cuadras)
- ☐ ½ milla (5-8 cuadras)
- ☐ Más de 1 milla
- ☐ ¾ de milla (9-12 cuadras)

ESTE AUTOBÚS

(Responda a las siguientes preguntas de acuerdo con este viaje de ida entre los lugares mencionados arriba)

11. ¿Qué ruta está utilizando ahora? (Escriba el Número y Nombre de la Ruta.) _____

12. ¿Cuál es la fecha de hoy y la hora en que se subió a este autobús? Fecha: _____ Hora/Minuto: _____ am / pm

13. ¿Está viajando hacia el centro de la ciudad o desde el centro de la ciudad? ☐ Hacia el Centro ☐ Desde el Centro

14. Por favor enumere en orden todas las rutas de autobús de JCT que está utilizando para llegar a su destino final durante ESTE VIAJE. POR FAVOR CIRCULE LA RUTA QUE USÓ CUANDO COMPLETÓ ESTA ENCUESTA.

ORIGEN → _____ → _____ → _____ → **DESTINO**

1ra Ruta de Autobús | 2da Ruta de Autobús | 3ra Ruta de Autobús

15. ¿Usted ya hizo o hará más tarde hoy este mismo viaje en la EXACTA dirección opuesta? ☐ Sí ☐ No

Por favor complete las preguntas de atrás.

16. **¿Qué lugares visita usted con regularidad usando JCT? (Marque todos los que apliquen.)**
☐ Casa ☐ Tienda por Departamento ☐ Iglesia ☐ Oficina de Gobierno/Servicios Legales
☐ Trabajo ☐ Amigos/Familia ☐ Servicios Sociales ☐ Mercado/Farmacia
☐ Escuela (K-12) ☐ Doctor/Hospital ☐ Universidad ☐ Restaurante/Cenar Fuera
☐ Otro: _____

17. **¿Posee usted un permiso de conducir vigente?** ☐ Sí ☐ No

17a. **Si contestó SÍ, había un vehículo en buen estado disponible para este viaje?** ☐ Sí ☐ No

18. **Si el autobús no estuviera disponible, como habría hecho este viaje hoy?**
☐ Manejaría mi propio auto ☐ Uber/Lyft ☐ Caminaría ☐ Taxi ☐ Otro Servicio de Transporte Público
☐ Viajaría con alguien ☐ No hubiera hecho este viaje ☐ Bicicleta

19. **¿Cuán frecuentemente viaja en autobús?**
☐ Cada día incluyendo sábado ☐ Cada día laboral de semana ☐ 2 o 3 días por semana
☐ 1 o 2 días por semana ☐ Menos de una vez a la semana

20. **¿Cuánto tiempo lleva viajando en autobús?**
☐ Primera vez ☐ Menos de un mes ☐ 1 mes – menos de un año
☐ 1 a 5 años ☐ 5 a 10 años ☐ Más de 10 años

21. **¿Es usted elegible para usar el servicio de JCT XTRA?** ☐ Sí ☐ No

22. **¿Tiene usted un teléfono celular inteligente (con acceso a Internet)?** ☐ Sí ☐ No

22a. **Si contestó SÍ, utiliza su teléfono inteligente para recibir textos con información en tiempo real sobre los autobuses?**
☐ Sí ☐ No

22b **Si contestó SÍ, utiliza su teléfono inteligente para visitar la página web MyRide de JCT?** ☐ Sí ☐ No

23. **¿Cuál es su situación de empleo?** (Marque la respuesta que MEJOR lo describa a usted.)
☐ Empleado a tiempo completo (al menos 30 horas a la semana) ☐ Empleado a medio tiempo (menos de 30 horas a la semana)
☐ Retirado ☐ Estudiante a tiempo completo
☐ Desempleado

24. **¿Cuál es su EDAD?** ☐ Menos de 18 años ☐ 18-24 años ☐ 25-34 años ☐ 35-44 años
☐ 45-54 años ☐ 55-64 años ☐ 65+ años

25. **¿Cuál es su género?** ☐ Masculino ☐ Femenino

26. **¿Es usted Hispano/Latino?** ☐ Sí ☐ No

27. **¿Cómo describe usted su raza/etnicidad? (marque todas las que apliquen)**
☐ Blanco ☐ Negro/Afro Americano ☐ Asiático ☐ Nativo Americano ☐ Otro

28. **Incluyéndolo a USTED, ¿Cuántas personas viven en su hogar (incluye niños)?**
☐ Uno ☐ Dos ☐ Tres ☐ Cuatro o más

29. **Incluyéndolo a USTED, ¿Cuántos adultos (18 años de edad o mayores) viven en su hogar?**
☐ Uno ☐ Dos ☐ Tres ☐ Cuatro o más

30. **¿Cómo pagó usted su tarifa para este viaje hoy?**
☐ Efectivo ☐ Estudiante/Personal de ETSU ☐ Pase de viaje de ida ☐ Pase Expreso ☐ Pase de varios viajes

31. **¿Cuál de las siguientes categorías describe MEJOR el INGRESO ANNUAL DE SU FAMILIA? Este es el ingreso total para todas las personas que generan ingreso en el hogar.**
☐ Menos de $12,000 ☐ $20,000 - $29,999 ☐ $40,000 - $49,999 ☐ $60,000 +
☐ $12,000-$19,999 ☐ $30,000 - $39,999 ☐ $50,000 - $59,999

32. **¿Cómo calificaría usted la comodidad mientras usa el autobús?**
☐ Pobre ☐ Razonable ☐ Satisfactorio ☐ Bueno ☐ Excelente

33. **¿Cómo calificaría el costo de la tarifa de este viaje?**
☐ Pobre ☐ Razonable ☐ Satisfactorio ☐ Bueno ☐ Excelente

34. **¿Cómo calificaría la amabilidad y cortesía de los conductores?**
☐ Pobre ☐ Razonable ☐ Satisfactorio ☐ Bueno ☐ Excelente

35. **¿Cómo calificaría el desempeño a tiempo del servicio? (El desempeño a tiempo se define como los autobuses llegando no más tarde de 5 minutos del tiempo establecido en el horario.)**
☐ Pobre ☐ Razonable ☐ Satisfactorio ☐ Bueno ☐ Excelente

36. **¿Se siente usted seguro usando los autobuses y la Terminal de Tránsito?** ☐ Sí ☐ No

22a. **Si contestó NO, por favor describa por qué:** _____

37. **¿Provee JCT servicio a todos los lugares que usted prefiere?**
☐ Sí ☐ No

37a. **Si contestó NO, por favor escriba el lugar o lugares donde usted preferiría servicio** _____

38. **Habla usted otro idioma además de inglés en su hogar?** ☐ Sí ☐ No
38a. **Si contestó Sí, ¿Cuán bien habla y entiende usted el inglés** ☐ Muy bien ☐ No muy bien
38b. **Si contestó Sí, ¿Cuán frecuentemente usa los siguientes servicios?**

(1) *Habla con Servicio al Cliente por teléfono:*	☐ *Muy frecuente*	☐ *Frecuente*	☐ *Infrecuente*	☐ *Nunca*
(2) *Habla con Servicio al Cliente en la Terminal de Tránsito*	☐ *Muy frecuente*	☐ *Frecuente*	☐ *Infrecuente*	☐ *Nunca*
(3) *Habla con conductores de JCT con preguntas*	☐ *Muy frecuente*	☐ *Frecuente*	☐ *Infrecuente*	☐ *Nunca*
(4) *Asiste a Reuniones Públicas de JCT:*	☐ *Muy frecuente*	☐ *Frecuente*	☐ *Infrecuente*	☐ *Nunca*

¡Gracias por su ayuda!

Por favor DEVULEVA ESTA ENCUESTA a cualquier personal de la encuesta o déjela en el PUESTO de SERVICIO AL CLIENTE en la Terminal de Tránsito de Johnson City.

Todas las encuestas completadas deben ser recibidas en JCT antes del 30 de septiembre de 2017

4.0 Identification of Service Issues

Chapter 4.0 identifies service issues associated with JCT's fixed route, Bucshot, and XTRA Paratransit services based on the qualitative and quantitative analyses of existing transit service presented in Chapter 2.0 as well as public involvement efforts as discussed in Chapter 3.0.

4.1 Service Coverage

JCT currently provides transit services within the Johnson City corporate limits. The one exception is the XTRA Paratransit service which may be provided up to ¾ mile away from a JCT fixed route and therefore slightly outside the corporate limits. As the recipient of FTA Section 5307 funds, JCT may provide transit services beyond the Johnson City corporate limits - but within the Johnson City Urbanized Area as defined by the US Census. Providing transit service to other parts of the urbanized area was assessed as part of this COA.

Jonesborough

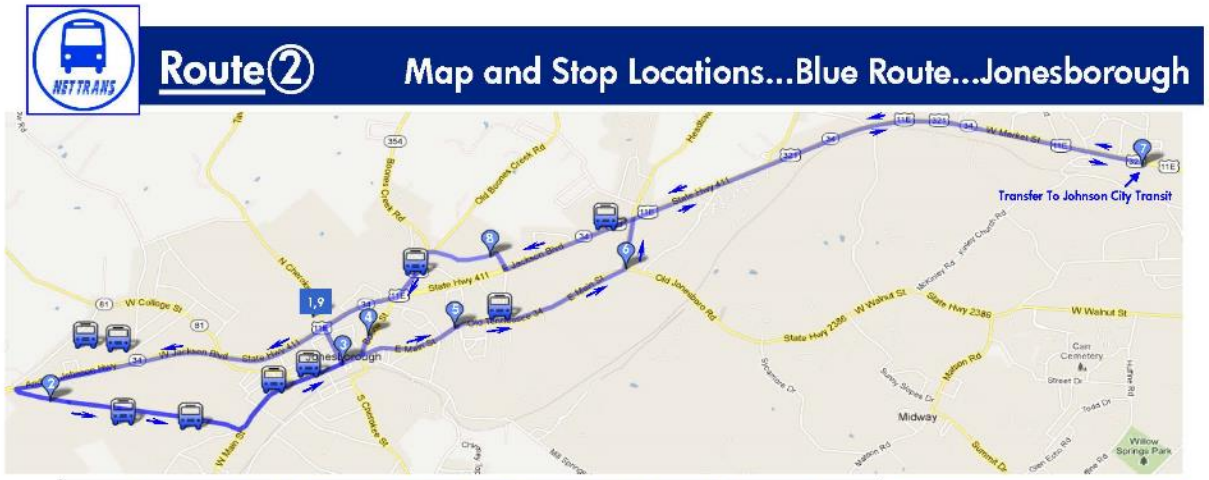
In the past, transit service was provided between Johnson City and Jonesborough by Northeast Tennessee Regional Public Transit (NET Trans), the rural transportation provider for the eight-county region comprised of Carter, Greene, Hancock, Hawkins, Johnson, Sullivan, Unicoi, and Washington counties. It also provides service to urbanized areas outside city limits for Bristol, Kingsport, and Johnson City.

NET Tran's Blue Route 2 operated a loop within Jonesborough and connected with JCT at the Walmart off of Leisure Lane as shown in Figure 4-1 on the next page. Destinations served included downtown Jonesborough, Justice Center, Senior Center, Walmart, and Wetlands. The route operated on an hour headway with three morning trips and five afternoon trips.

The route has since been discontinued; however, a need for this service still exists. As reflected in surveys with riders and interviews with drivers and staff, transit services are requested particularly to serve the George Jaynes Justice Center in Jonesborough. The courthouse was previously located in Johnson City but recently moved to its current location which has presented a hardship for transit riders in accessing the needed services at the Justice Center.

Furthermore, the demographic analysis in Section 1.6 demonstrates that there are higher population densities and concentrations of households without access to vehicles in Jonesborough and the US 11E corridor compared to the study area. As discussed in Sections 1.3 and 1.5, the population and employment growth are anticipated to occur between 2015 and 2045 in Jonesborough, according to the MTPO's Travel Demand Model. Furthermore LEHD data identifies higher employment concentrations in Jonesborough relative to the study area.

Figure 4-1: Former NET Trans Jonesborough-Johnson City Route



Going to Johnson City ⟷ Going to Jonesborough

	Justice Center 1	Senior Center/ Wetlands 2	Downtown 3	Visitors Center 4	Main St. Village 5	Headtown/ Main 6	Wal-Mart 7	Food City 8	Justice Center 9
AM	-	-	-	-	-	-	-	-	-
	8:15	8:22	8:30	8:33	8:35	8:37	8:45	8:57	9:05
	9:15	9:22	9:30	9:33	9:35	9:37	9:45	9:57	10:05
	10:15	10:22	10:30	10:33	10:35	10:37	10:45	10:57	11:05
PM	-	-	-	-	-	-	-	-	-
	12:15	12:22	12:30	12:33	12:35	12:37	12:45	12:57	1:05
	1:15	1:22	1:30	1:33	1:35	1:37	1:45	1:57	2:05
	2:15	2:22	2:30	2:33	2:35	2:37	2:45	2:57	3:05
	3:15	3:22	3:30	3:33	3:35	3:37	3:45	3:57	4:05
	4:15	4:22	4:30	4:33	4:35	4:37	4:45	4:57	5:05
	-	-	-	-	-	-	-	-	-

How To Read This Schedule

Match the stop location on the map to the column of times to see when the bus serves that location. (these locations are called "time points").

To determine when the bus serves a stop in between time points, look at when it is due at the time point before your stop and the time point after your stop, and you can estimate when it will arrive.

Always be at your stop 3-5 minutes early. Each stop is marked with a sign.

You may also flag down a bus anywhere along the route as it approaches.

Source: NET Trans

Elizabethton

Elizabethton is a city of approximately 14,000 residents located 10 miles east of Johnson City. It is currently not served by JCT. According to demographic analysis, there are higher concentrations of households without access to vehicles and individuals living below poverty compared to Carter County. Similar to Jonesborough, current employment concentrations are greater in Elizabethton relative to other portions of the study area and population and employment growth are expected in Elizabethton between 2015 and 2045.

There are several major activity centers that could generate transit trips such as downtown Elizabethton, Sycamore Shoals Hospital, and Walmart. Extending transit service to Elizabethton may be explored in the future.

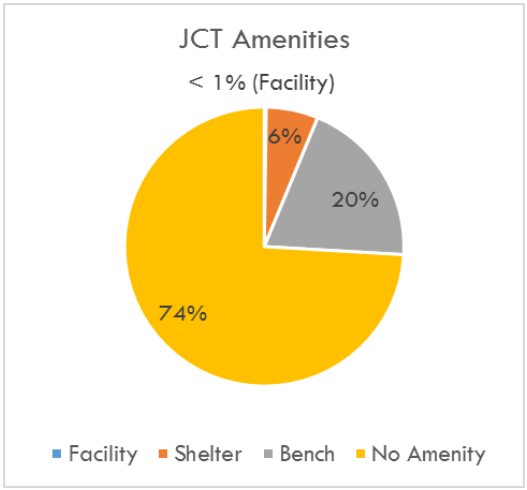
4.2 Amenities

JCT provides benches and shelters at some stops along its existing fixed routes. Amenities such as these provide riders with refuge from the elements and comfort while waiting for their bus. In many cases, transit agencies will prioritize amenities for stops with higher ridership in order to serve as many riders as feasible with constrained resources. As part of this COA, the distribution of amenities throughout the fixed-route system and correlation between amenities and ridership were assessed.

Distribution of Amenities

There are approximately 427 stops within the JCT fixed-route network. Of those stops, 314 do not currently have amenities, 85 have benches, 27 have shelters, and one is a facility: the JCT Transit Center. Figure 4-2 shows the breakdown between amenity types.

Figure 4-2: JCT Amenities



The distribution of amenities was analyzed at the route level. Since routes have different total numbers of stops, the percentage of each amenity type is also given. As shown in Table 4-1, the distribution of amenities is not equal between all routes:

- Stops with no amenities range from 33% to 100% of route stops
- Benches range from 0% to 41% of route stops
- Shelters range from 0% to 25% of route stops
- Facilities range from 0% to 8% of route stops

Table 4-1: Amenities by Route

Route	No Amenity		Bench		Shelter		Facility	
Blue 15 After	37	79%	8	17%	1	2%	1	2%
Blue 15 Til	20	67%	5	17%	4	13%	1	3%
Gold 15 After	28	82%	3	9%	2	6%	1	3%
Gold 15 Til	23	70%	8	24%	1	3%	1	3%
Green 15 After	28	58%	16	33%	3	6%	1	2%
Green 15 Til	17	68%	5	20%	2	8%	1	4%
Purple 15 After	27	77%	6	17%	1	3%	1	3%
Purple 15 Til	27	82%	3	9%	2	6%	1	3%
Red 15 After	15	52%	10	34%	3	10%	1	3%
Red 15 Til	23	70%	9	27%	0	0%	1	3%
Silver 15 After	25	56%	16	36%	3	7%	1	2%
Orange North	7	41%	7	41%	2	12%	1	6%
Orange West	26	60%	14	33%	2	5%	1	2%
PM Evening North	4	33%	4	33%	3	25%	1	8%
PM Evening West	13	81%	2	13%	1	6%	0	0%
Bucshot Red	8	67%	1	8%	3	25%	0	0%
Bucshot Teal	6	100%	0	0%	0	0%	0	0%
Bucshot Gold	10	91%	0	0%	1	9%	0	0%
Bucshot Blue	7	100%	0	0%	0	0%	0	0%
Bucshot Evening	46	90%	0	0%	5	10%	0	0%

Routes would not necessarily be expected to have equal percentages of each amenity type. Amenities are placed based on factors besides geography such as ridership and proximity to major activity centers like hospitals. However, large discrepancies between amenity distributions may suggest that service is not being provided equitably to riders. Figure 4-3 through Figure 4-22 show amenity distributions at the route level.

Ridership and Amenities

The correlation between ridership and amenities was examined by comparing annual boardings to amenities. Boarding data was based on the most recent available from September 2017. The top 25 stops for annual boardings are shown in Table 4-2 along with the amenities provided at them. Out of the 25, approximately half (13) have benches, shelters, or a facility. The JCT Transit Center is the most frequented stop with approximately 169,000 annual boardings.

The rest of the stops do not have any amenities despite having high ridership. Several of the stops without amenities are on the ETSU campus. Adding amenities at these locations would require coordination with the university. The relationship between ridership and amenities is shown graphically on Figure 4-3 through Figure 4-22 on the following pages. Amenities are denoted by a circle with a letter abbreviation (e.g. B for bench). Boardings are depicted by graduated circles at the stops. Larger circles indicate more boardings.

Table 4-2: Amenities by Ridership

Ridership Rank	Stop Name	Annual Boardings	Amenities
1	Transit Ctr	168,837	Facility
2	Rogers-Stout Hall	40,430	Bench
3	Campus Ridge	29,351	
4	Buc Ridge Shelter	24,457	Shelter
5	Gilbreath Hall	19,449	
6	Buc Ridge Phase 3	16,347	
7	Univ Edge - 910 Watauga	14,929	
8	Walmart - Garden Ctr	13,290	Shelter
9	Buc Ridge Stop Sign	11,170	
10	Ross Hall	7,531	
11	Powell Hall	7,219	
12	Monarch	6,897	
13	Bell & Ross	5,774	
14	Pier 1 - Target Ctr	5,139	Bench
15	Warf-Pickel Hall	4,553	
16	The Mall - Upper Level	4,548	
17	SOF - Earth Fare	4,013	Shelter
18	S. Roan - Across from Price Less	3,902	Bench
19	Plymouth - Pinecrest Vlg	3,869	Bench
20	N. Roan - Sears Auto Ctr	3,791	Bench
21	Governors/Centennial Hall	3,523	
22	King Springs & Bell Ridge	3,377	Shelter
23	N. Roan - Save-A-Lot	3,325	Shelter
24	E. Unaka - Tyler Apts	3,317	Shelter
25	E. Mkt - Downtown Ctr	3,243	Bench

Figure 4-3: Blue 15 After Amenities

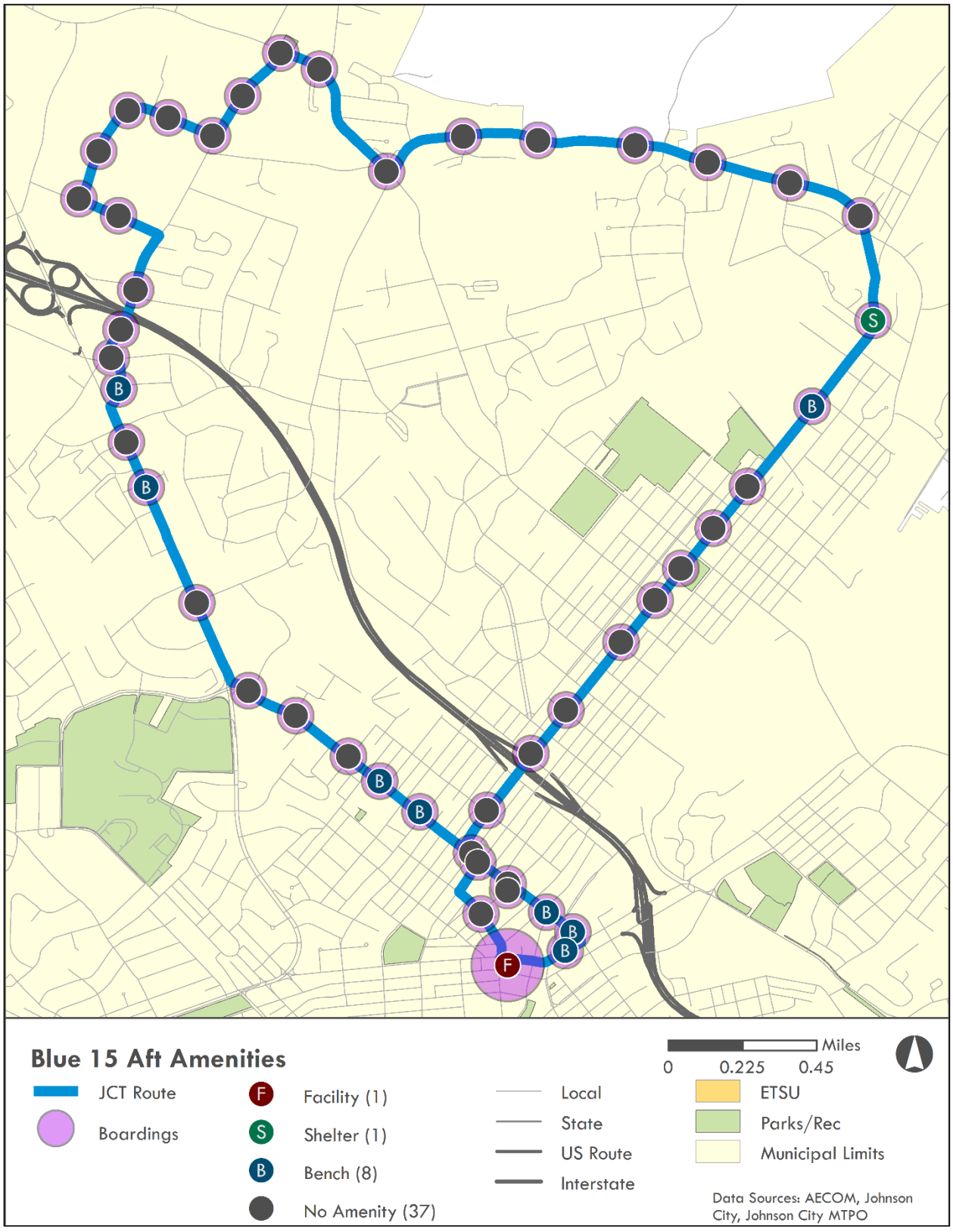


Figure 4-4: Blue 15 Til Amenities

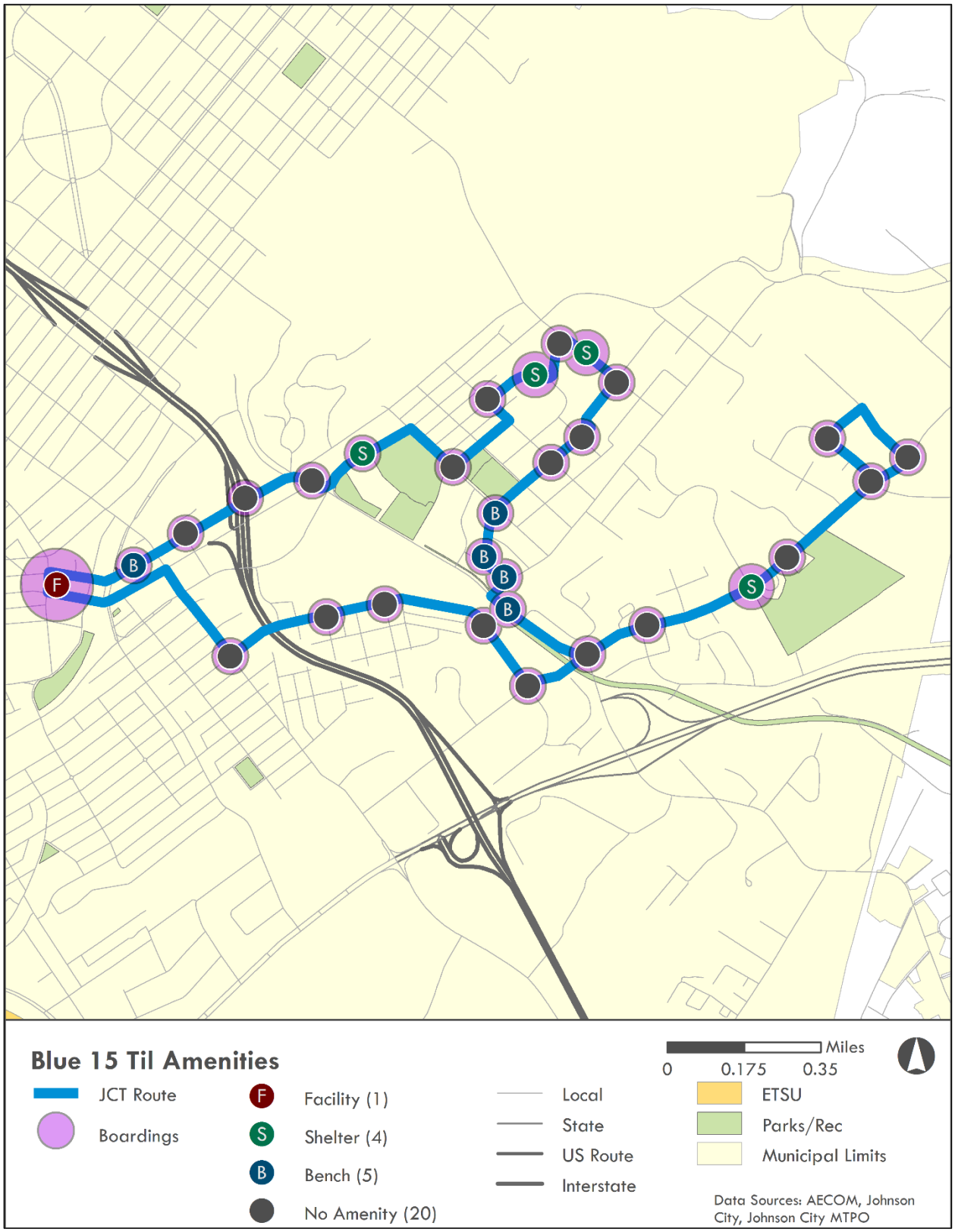


Figure 4-5: Gold 15 After Amenities

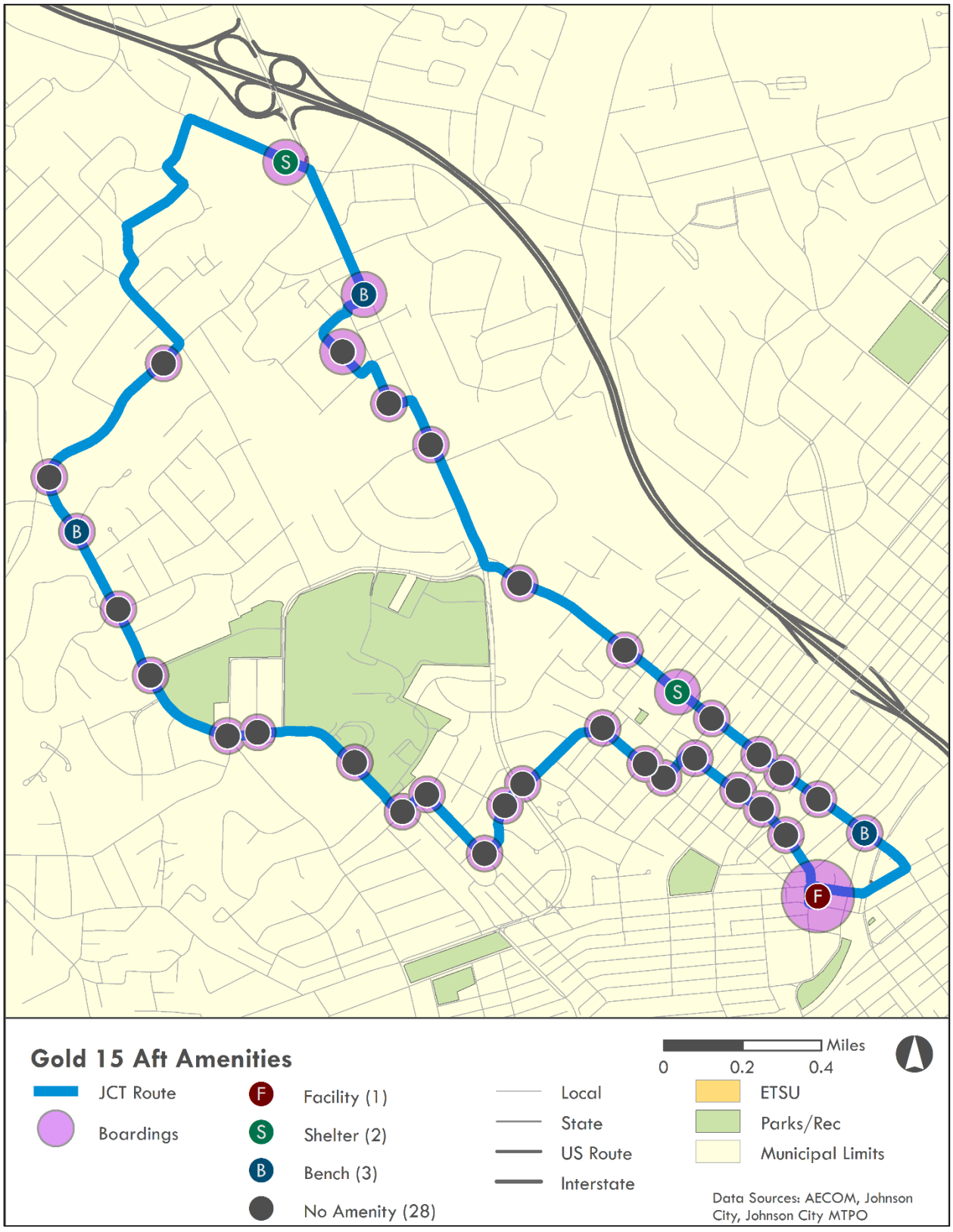


Figure 4-6: Blue 15 Til Amenities

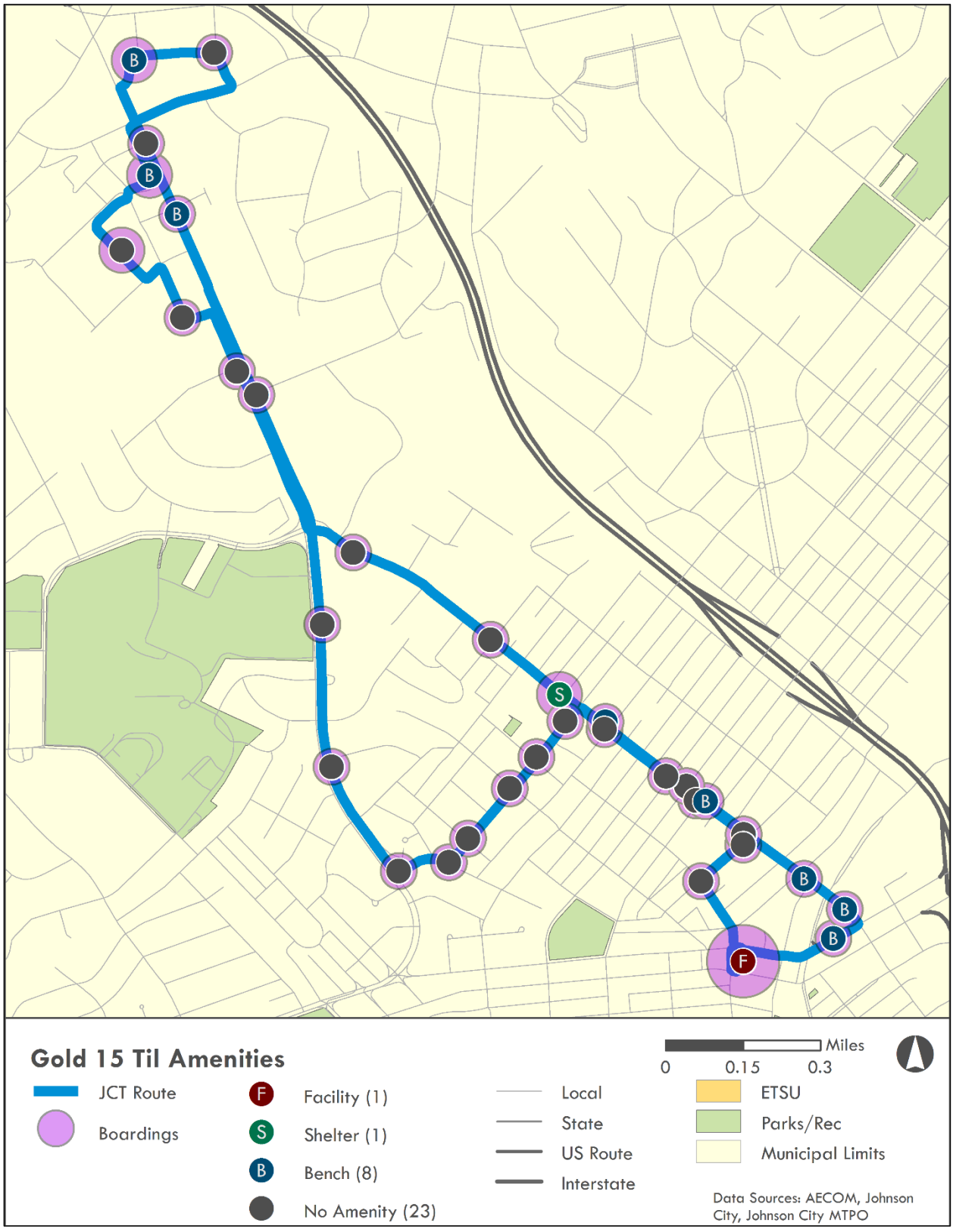


Figure 4-7: Green 15 After Amenities

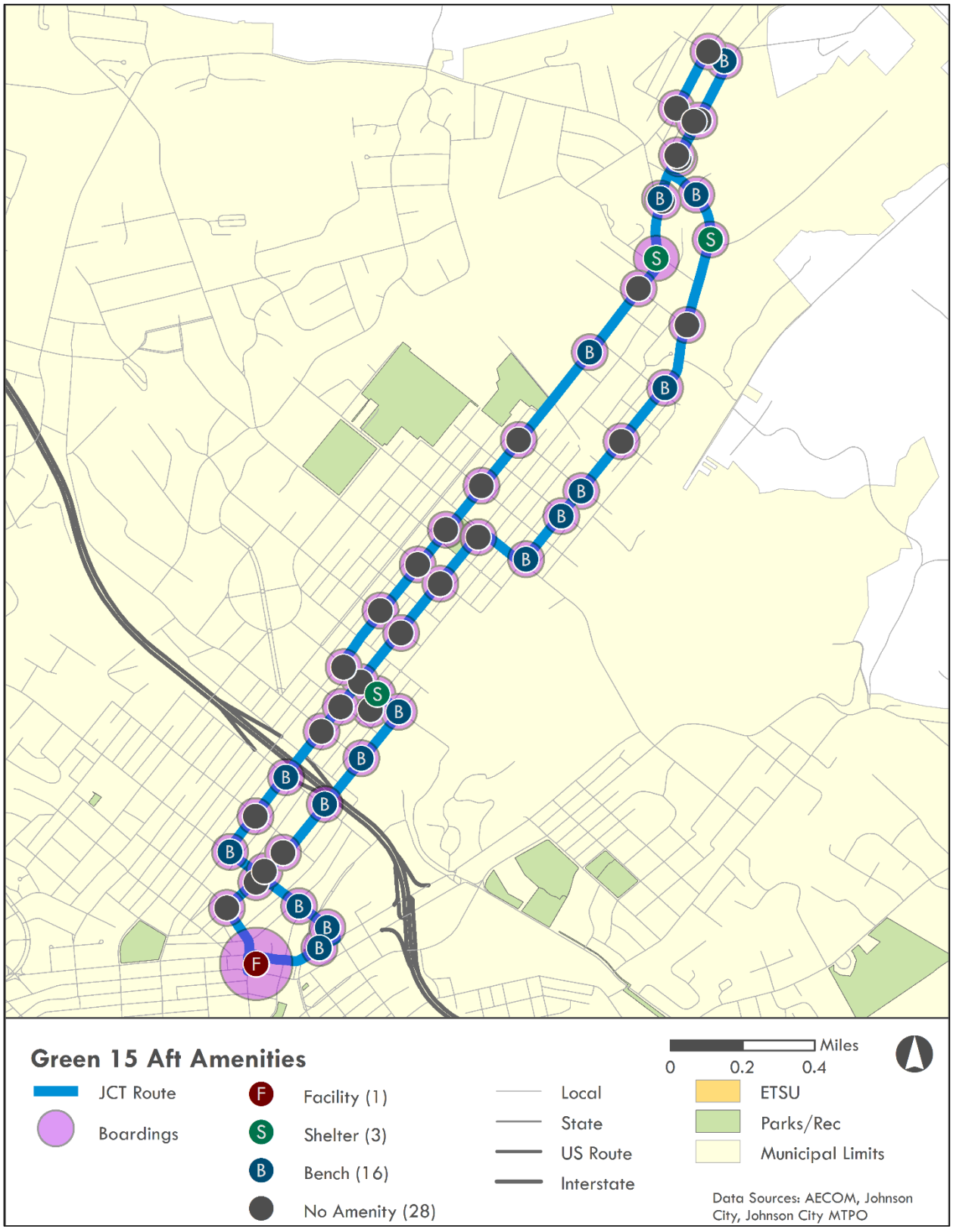


Figure 4-8: Green 15 Til Amenities

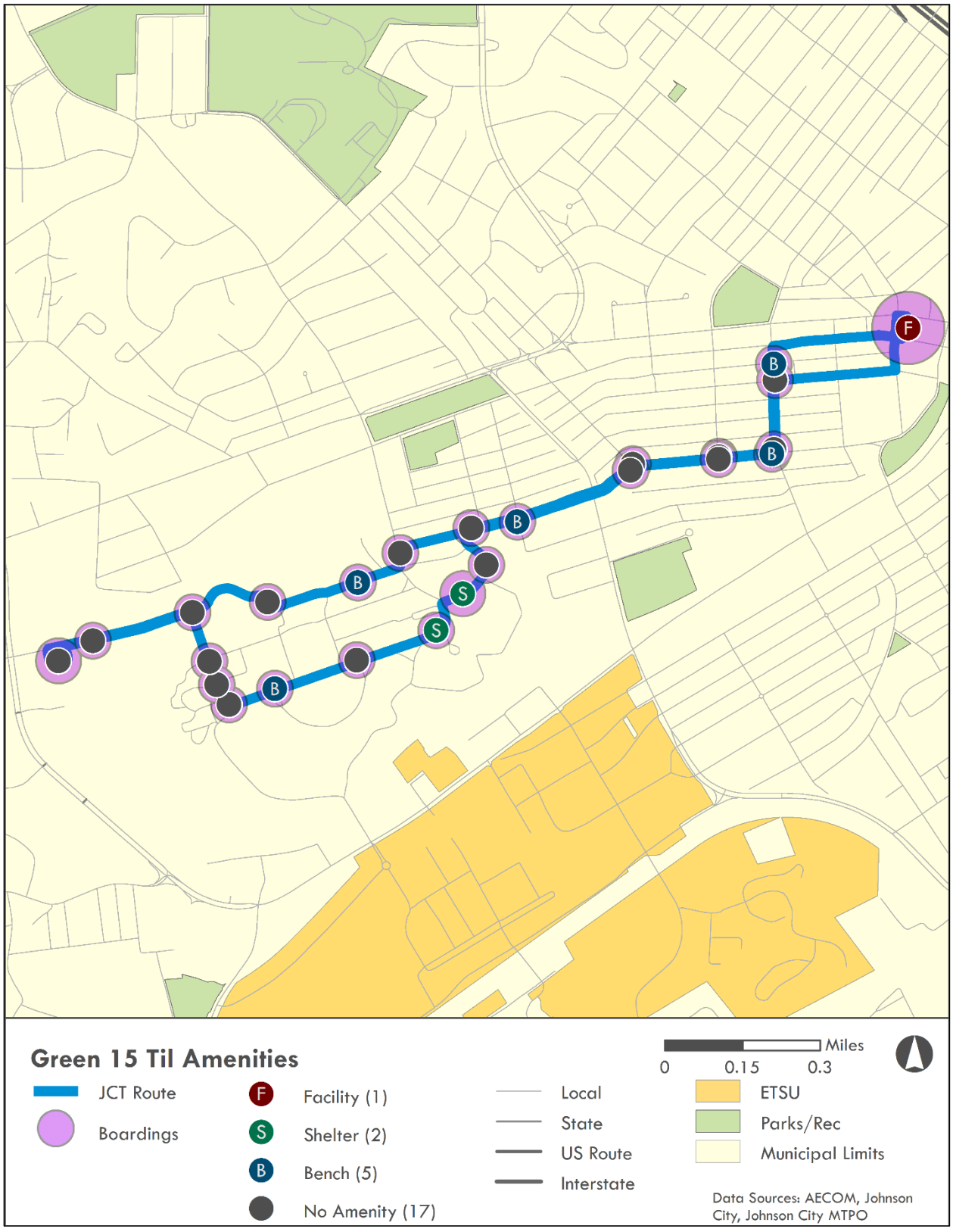


Figure 4-9: Purple 15 After Amenities

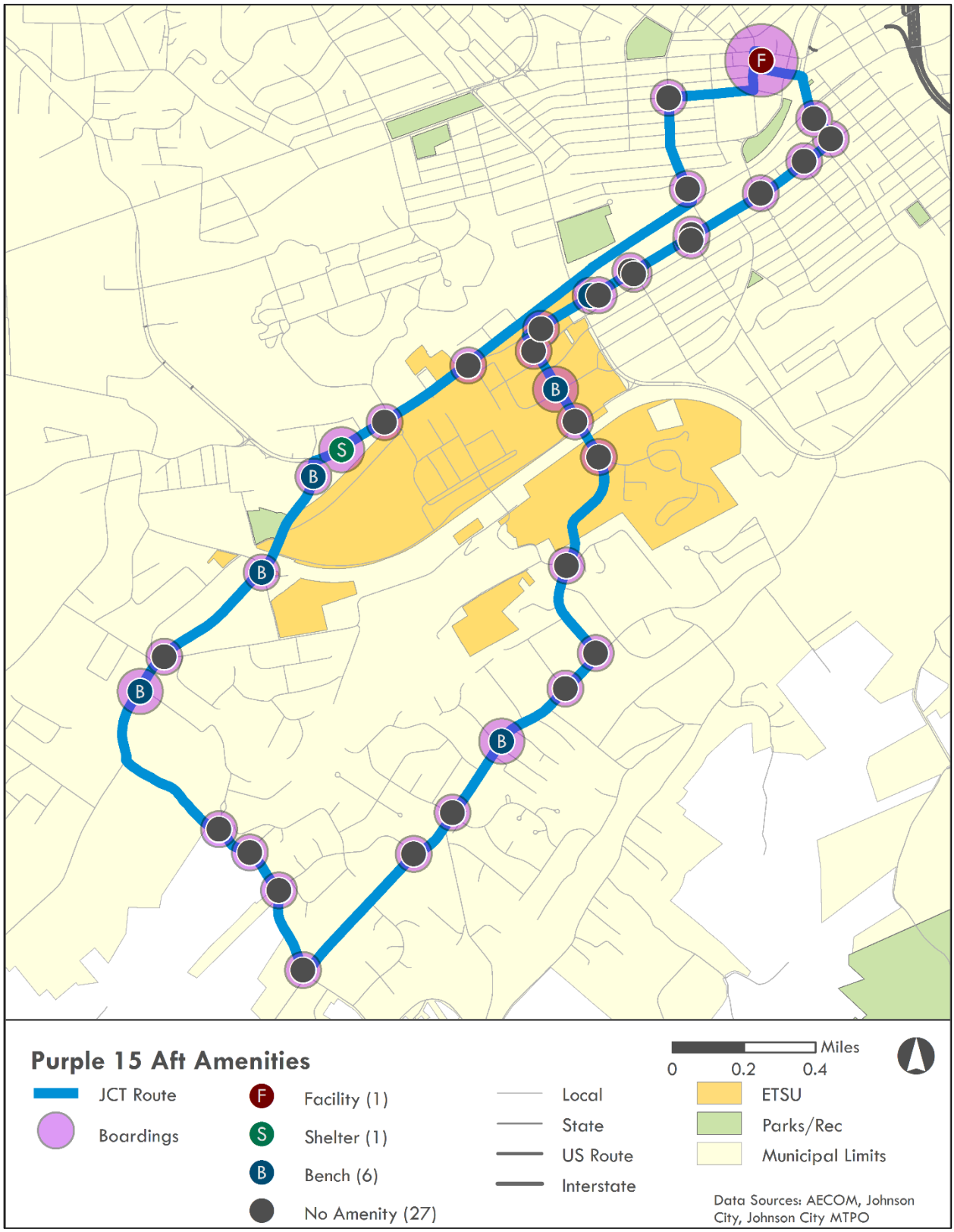


Figure 4-10: Purple 15 Til Amenities

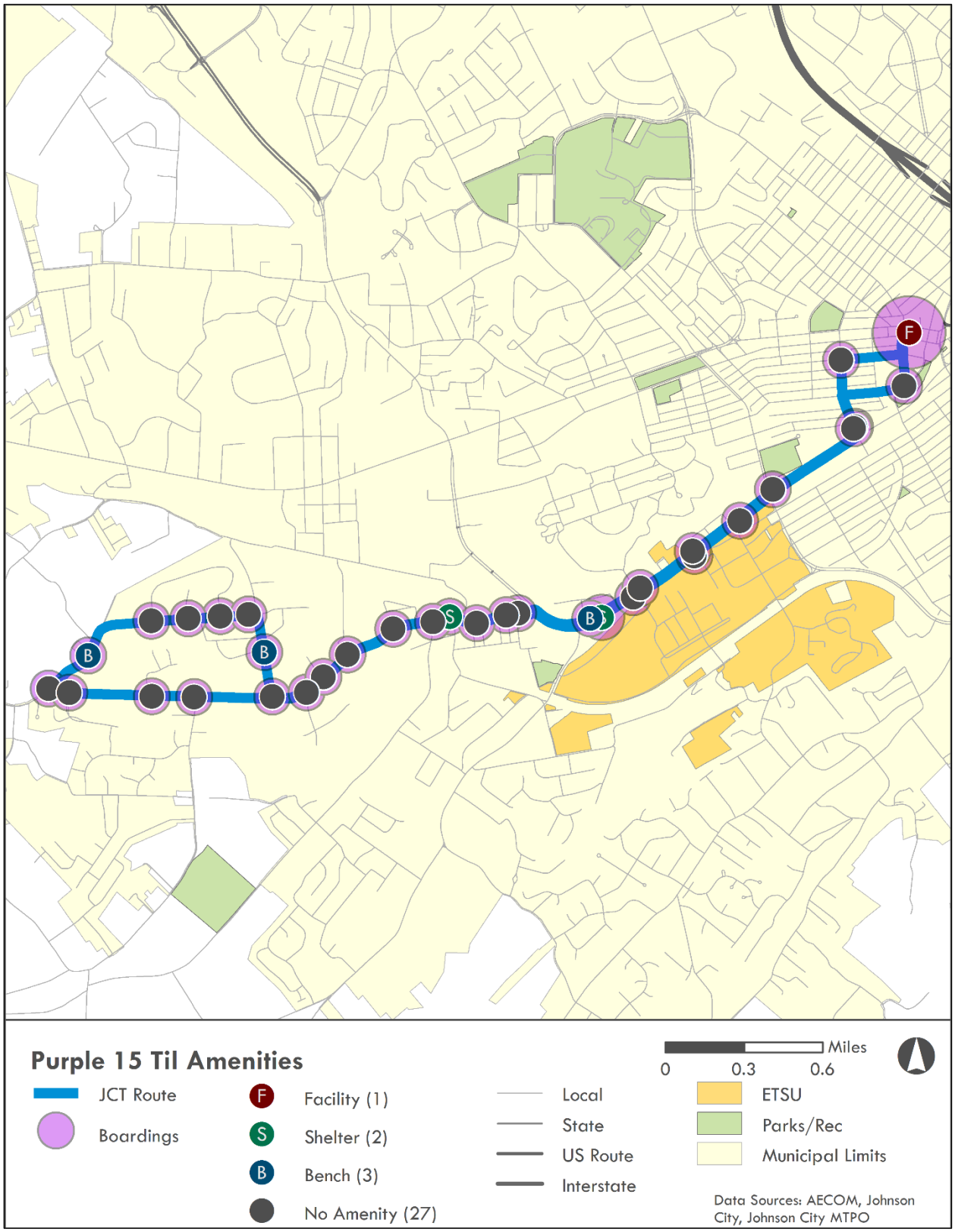


Figure 4-11: Red 15 After Amenities

Figure 4-12: Red 15 Til Amenities

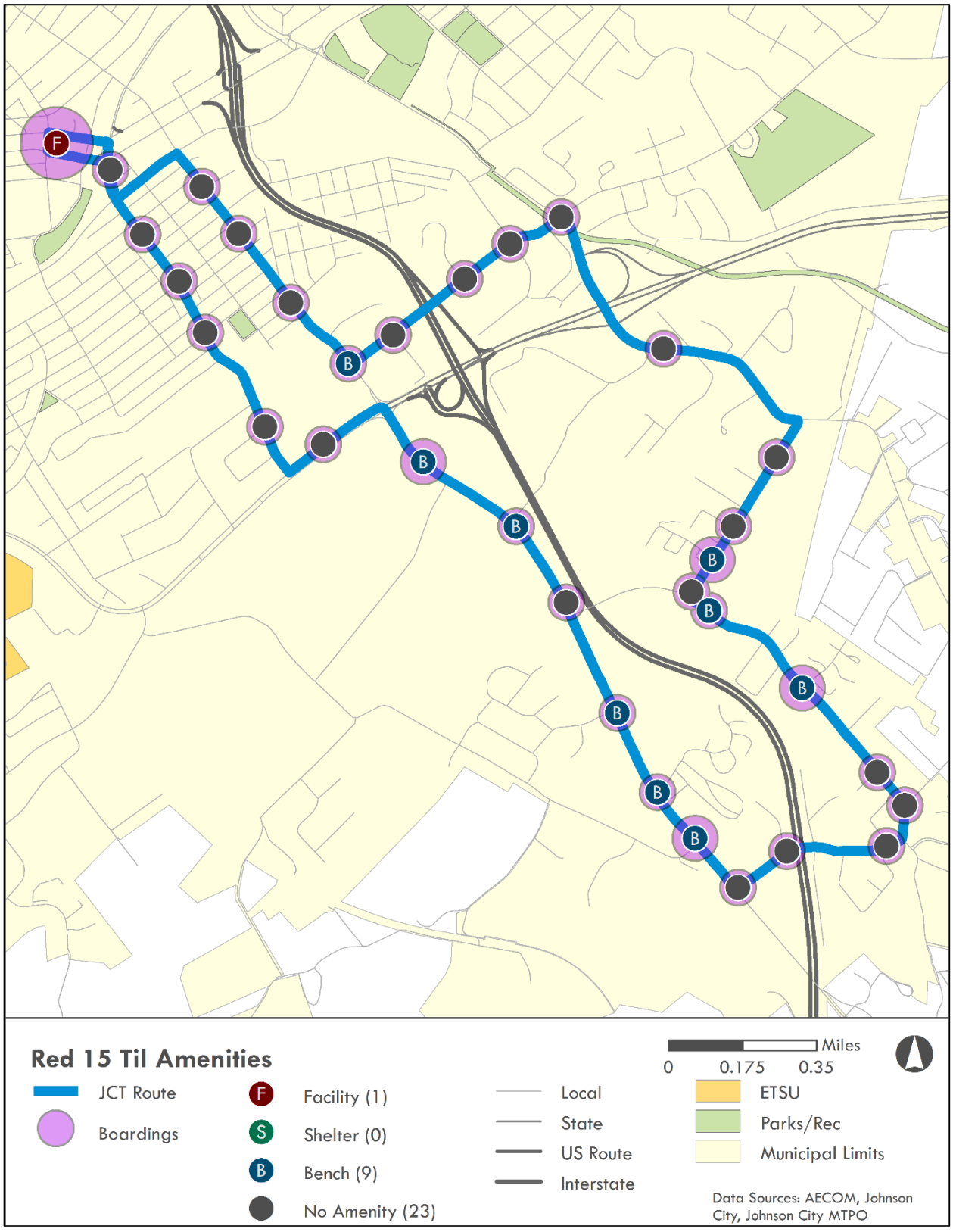


Figure 4-13: Silver 15 After Amenities

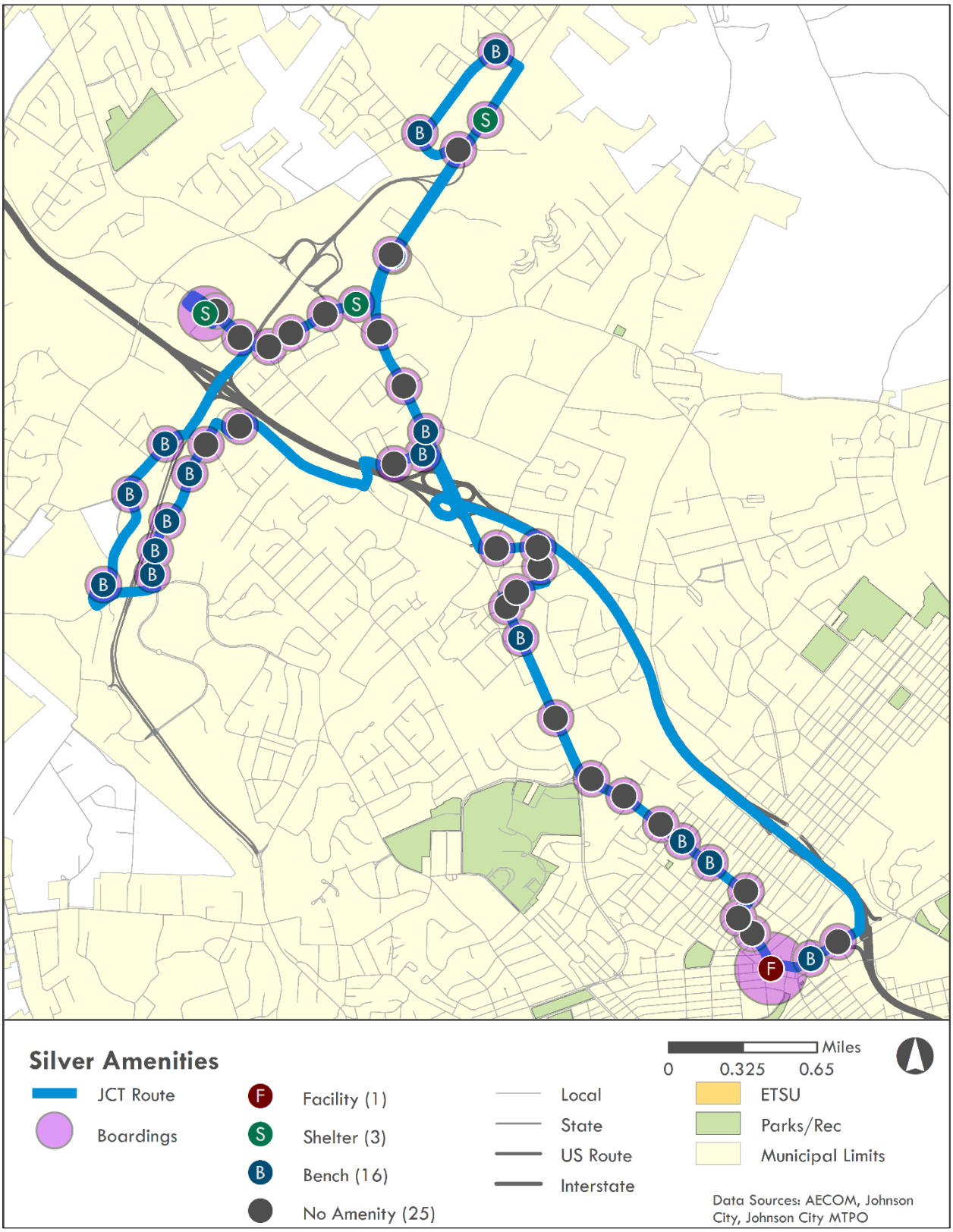


Figure 4-14: Orange North Amenities

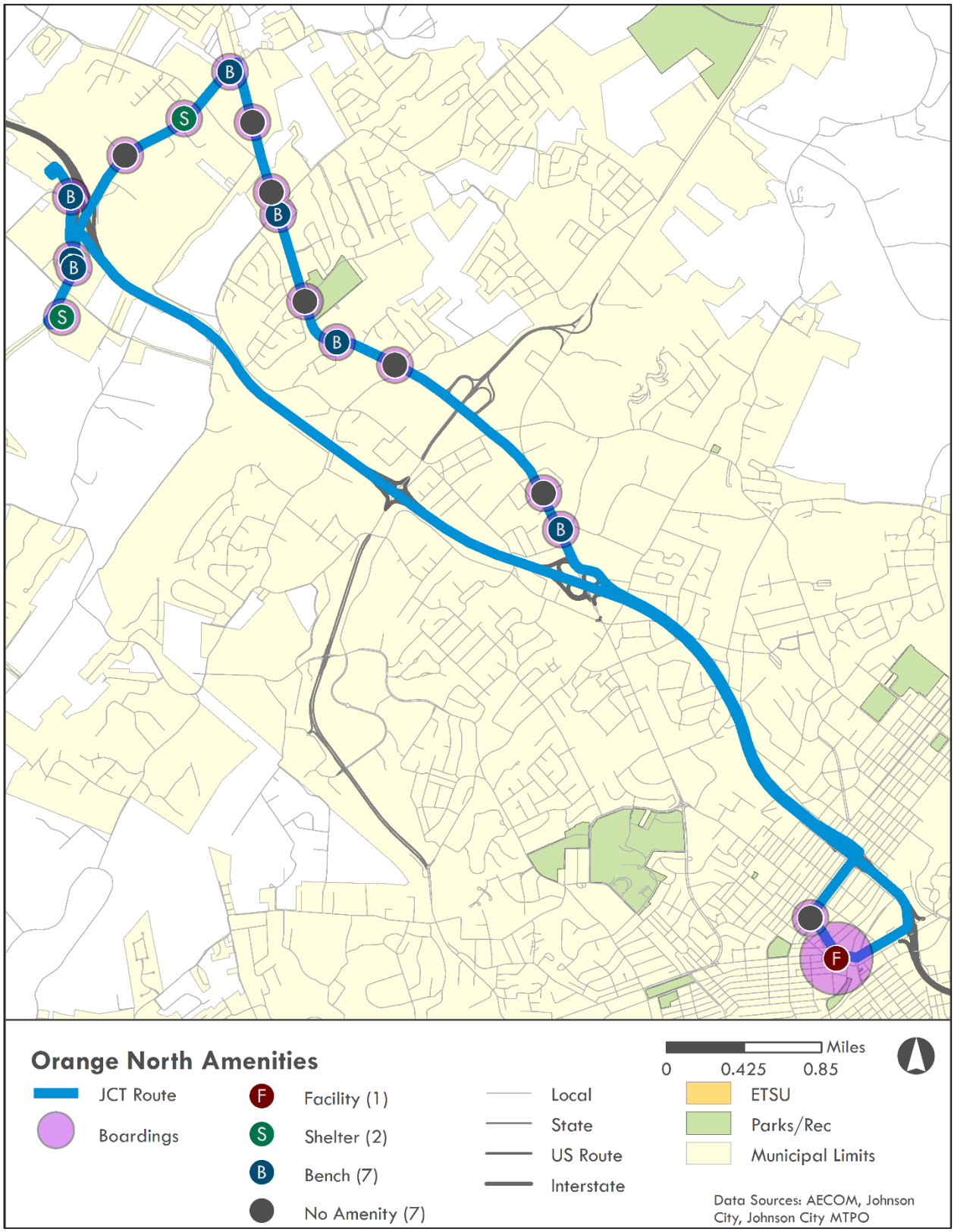


Figure 4-15: Orange West Amenities

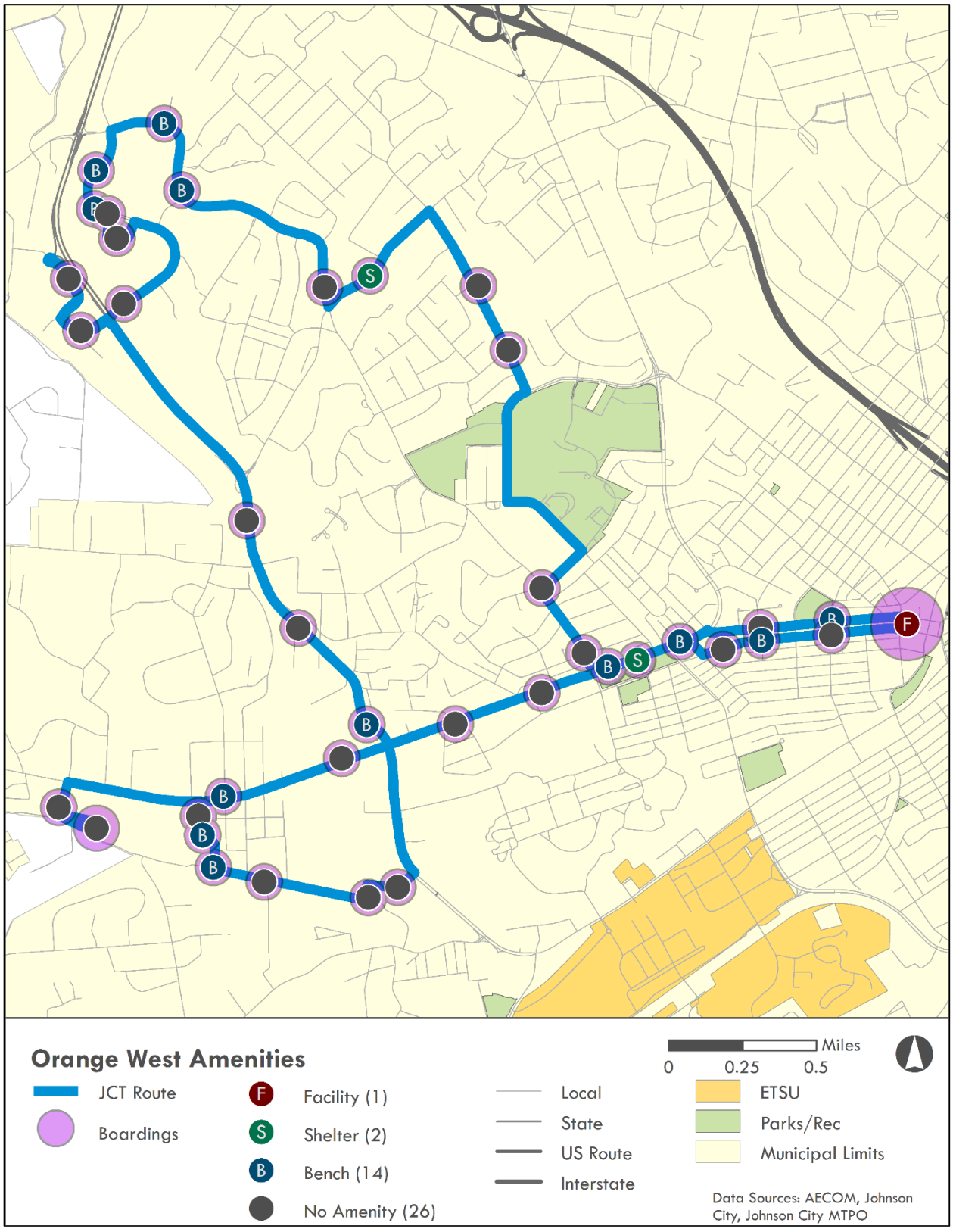


Figure 4-16: PM Evening North Amenities

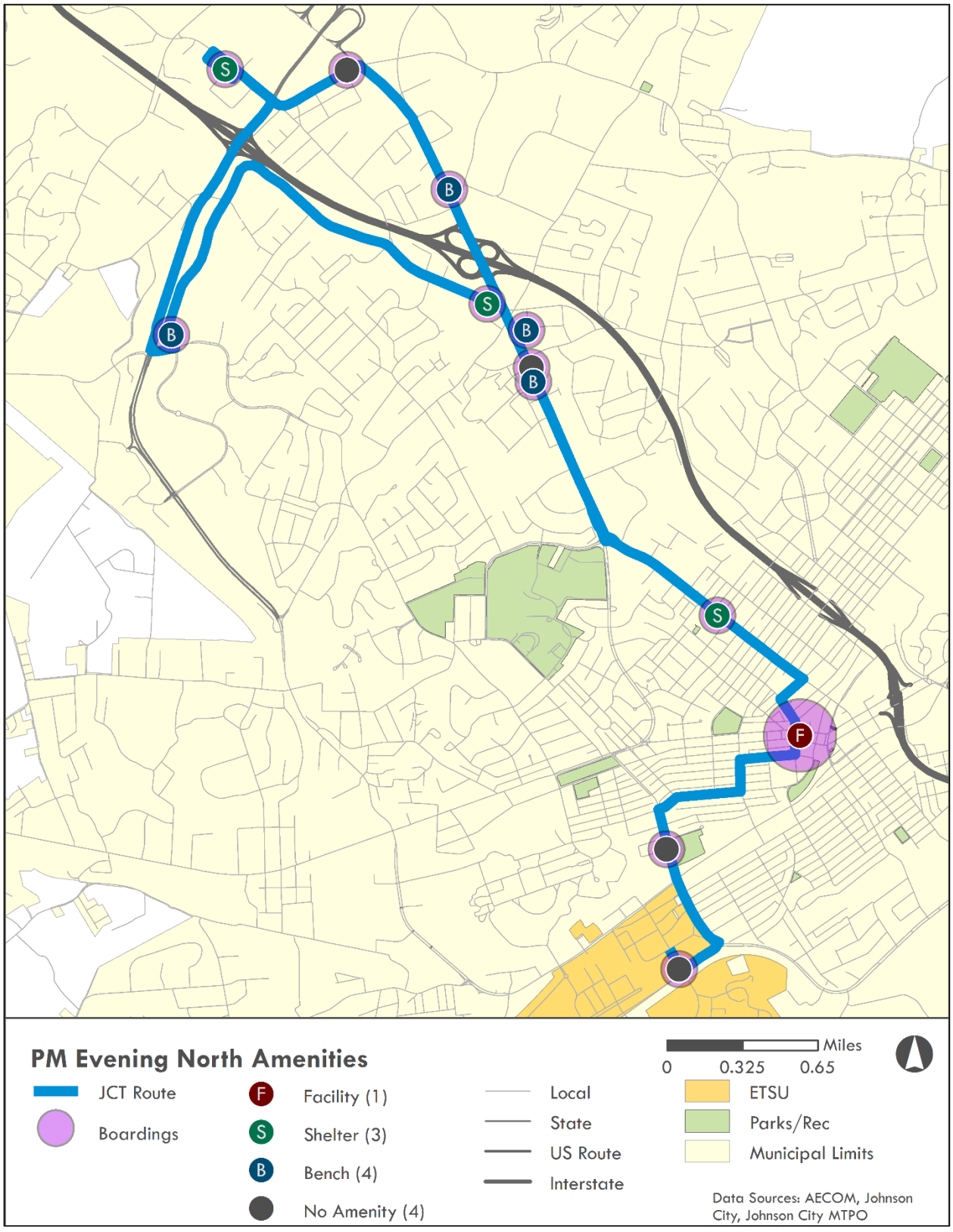


Figure 4-17: PM Evening West Amenities

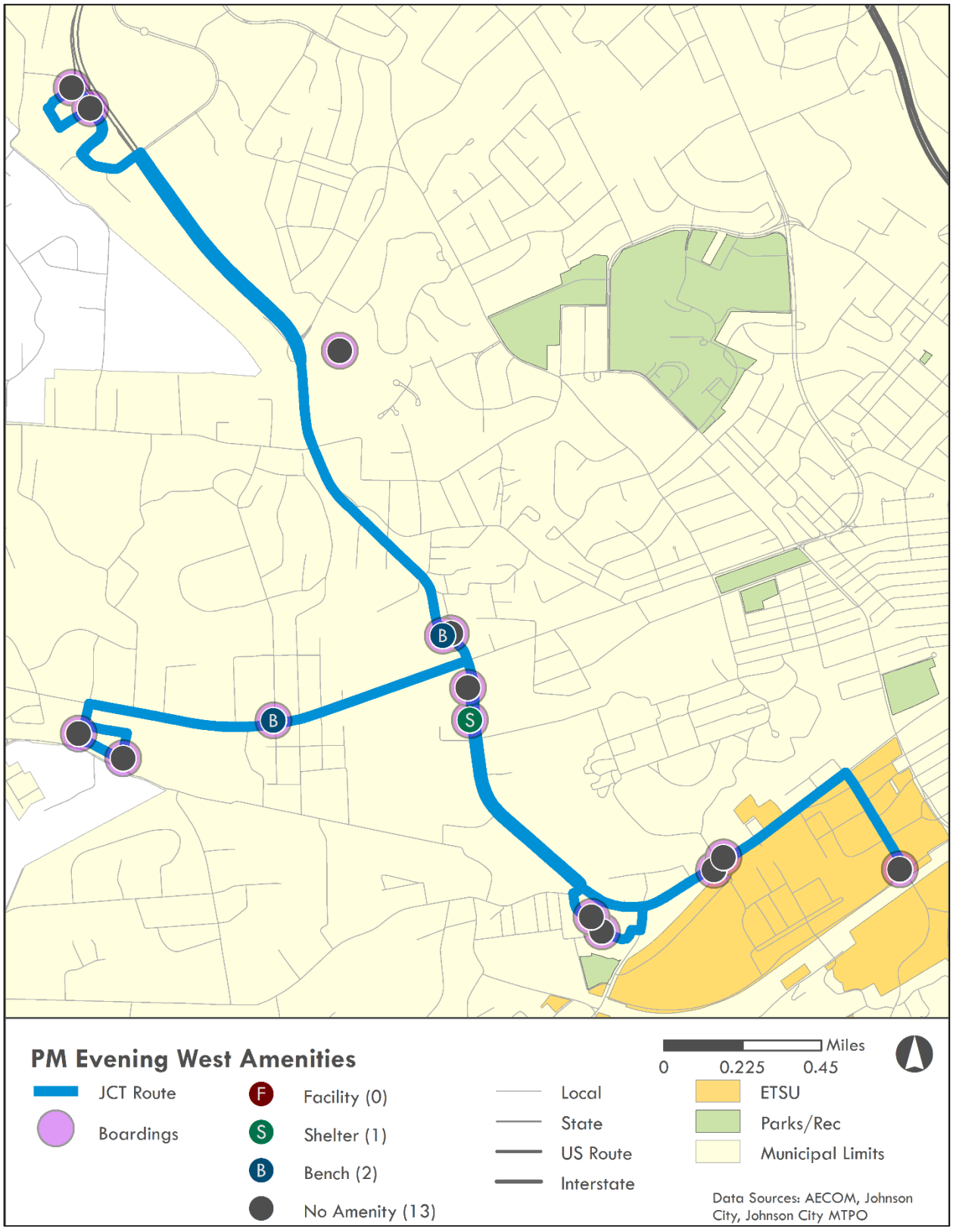


Figure 4-18: Bucshot Blue Amenities

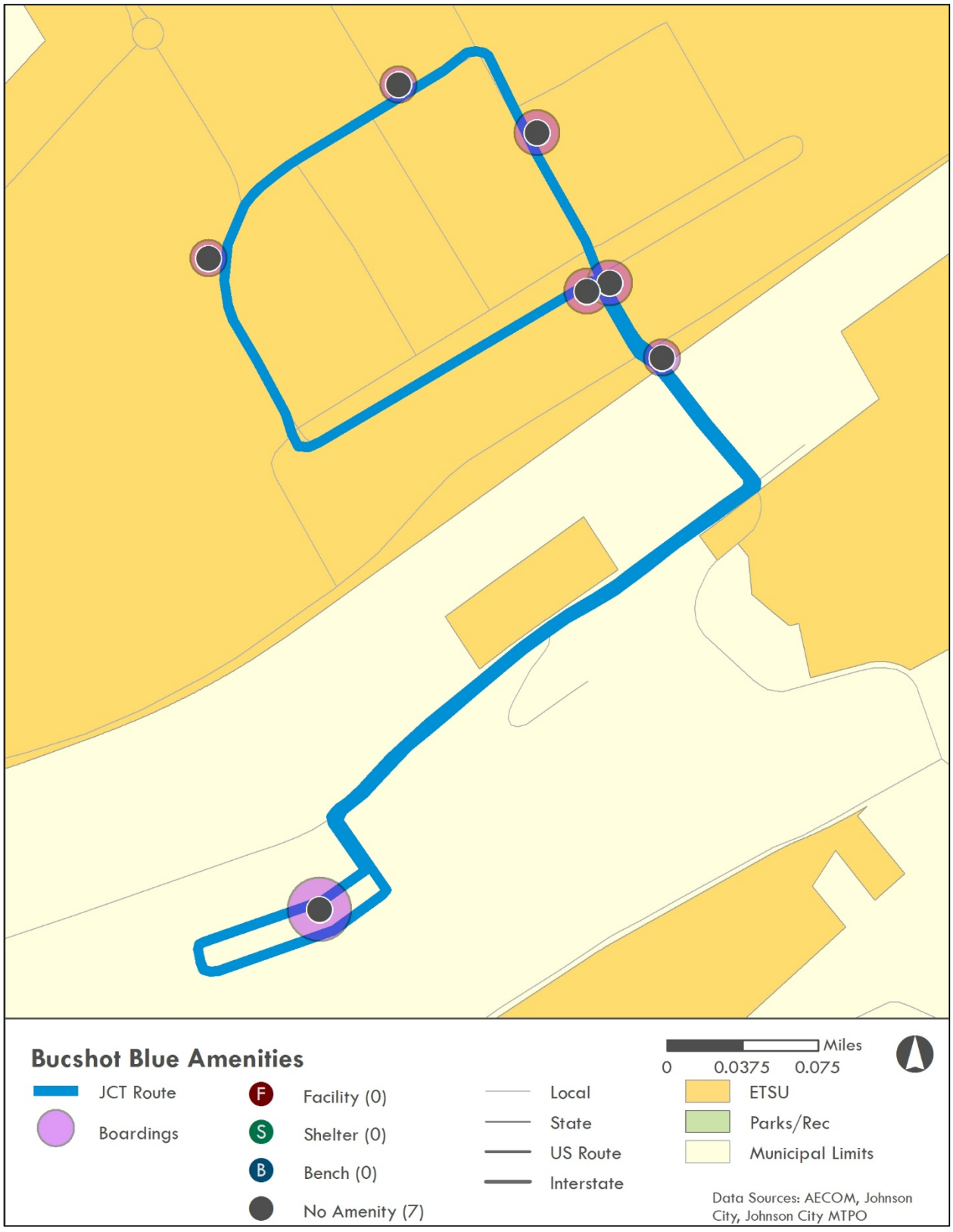


Figure 4-19: Bucshot Gold Amenities

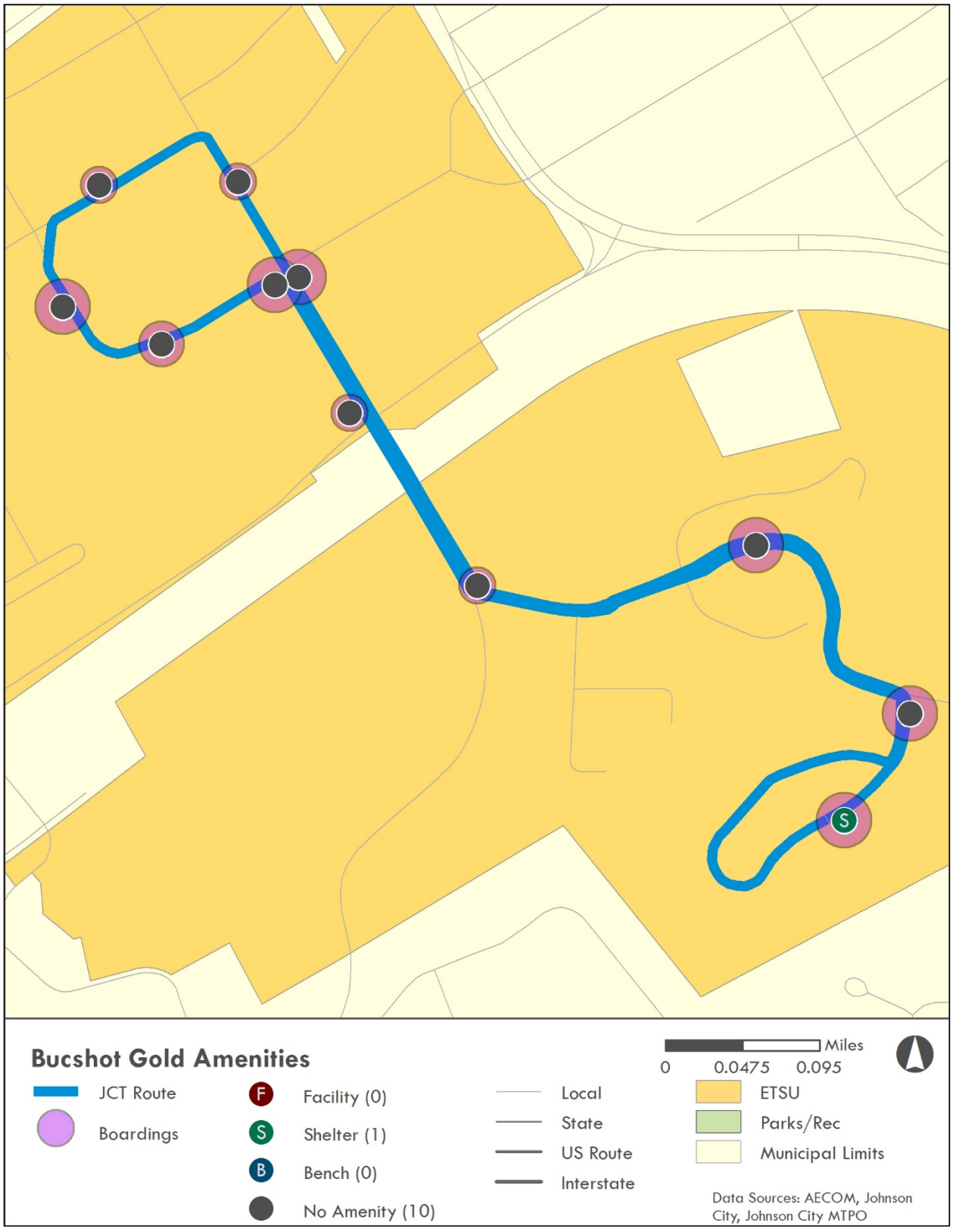


Figure 4-20: Bucshot Red Amenities

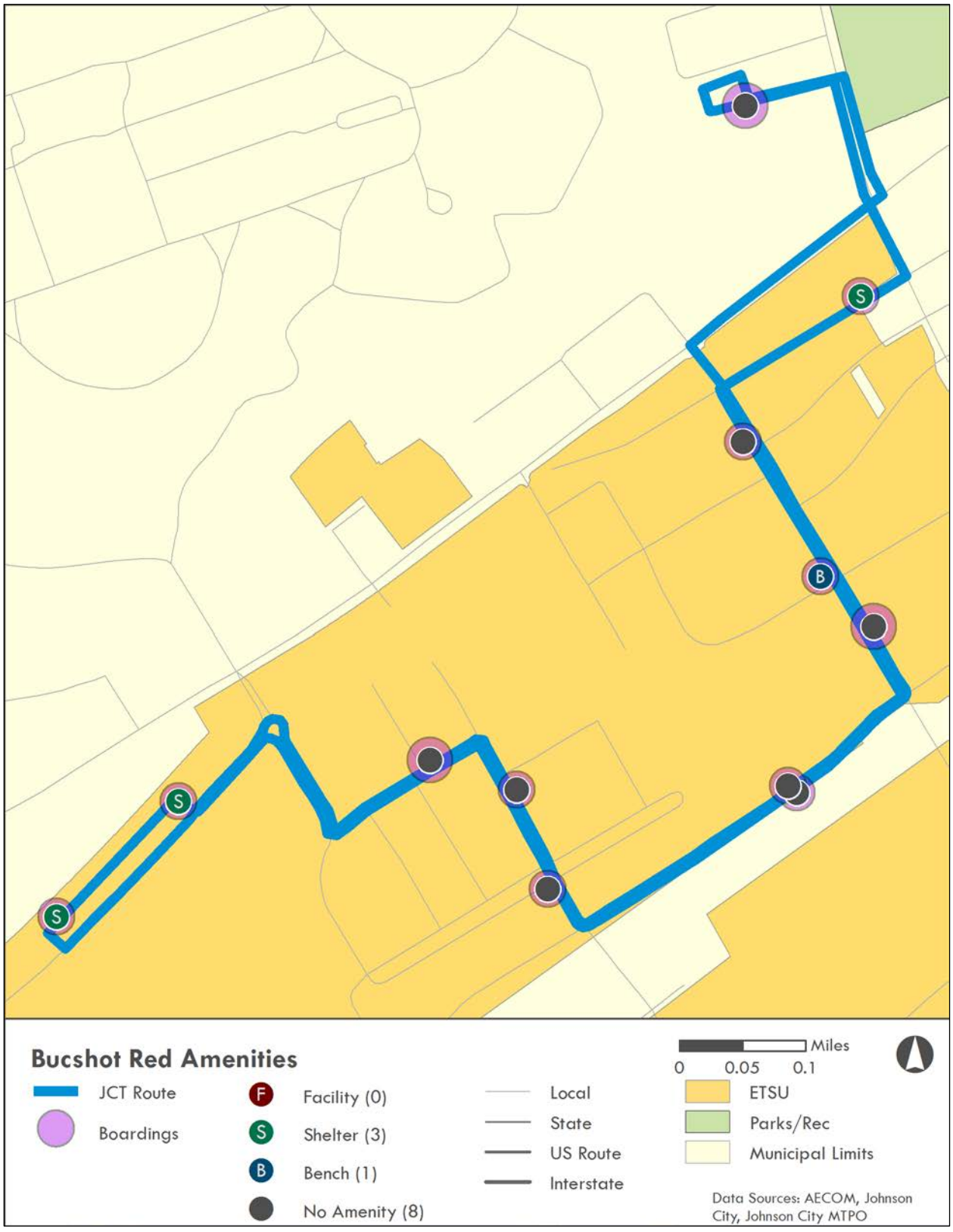


Figure 4-21: Bucshot Teal Amenities

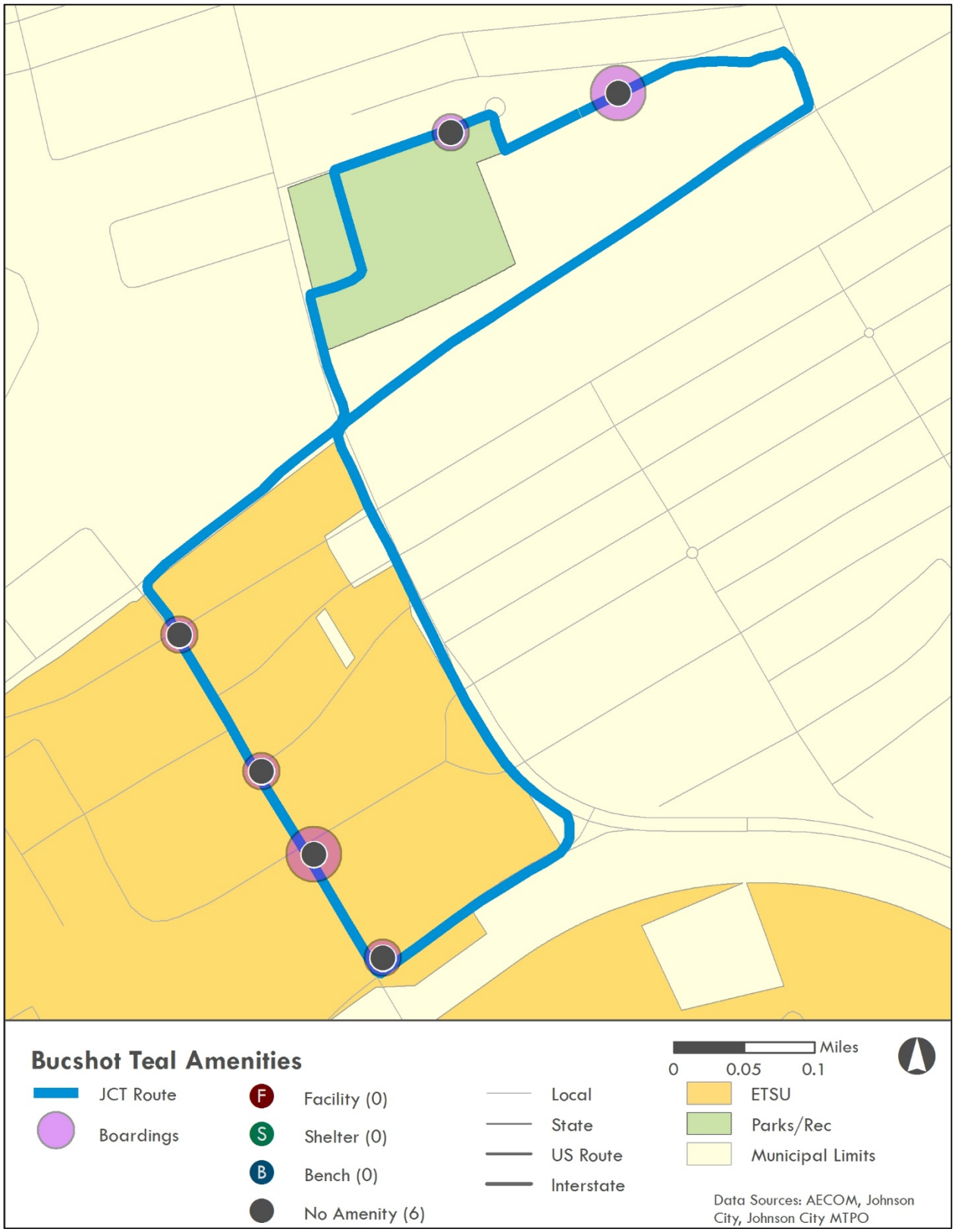
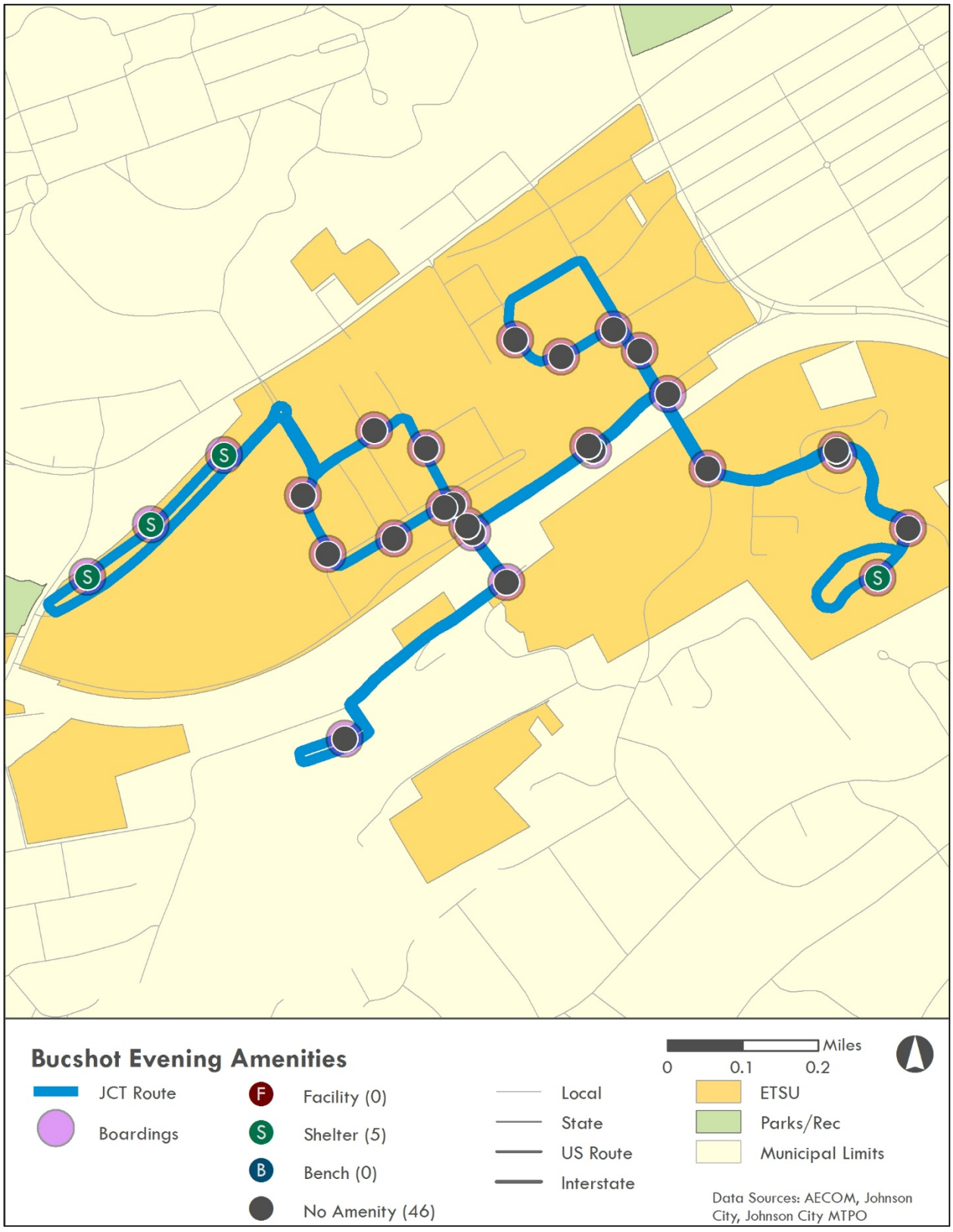


Figure 4-22: Bucshot Evening Amenities



4.3 Route Timing

The timing of JCT fixed routes and Bucshot service was assessed using a specific qualitative and quantitative approach. Qualitatively, JCT drivers provided insight on route timing through surveys that they completed. The survey process is explained in Section 3.1 and the insights relevant to on-time performance are summarized below:

When asked "What would you like to suggest to improve this route?" drivers responded:

- Extend route schedules from 30 minute headways to 45 minute headways
- Re-time the Keystone route (Blue route)
- Tight route schedules. The Orange (45 minute headway) and Silver (60 minute headway) are working well.
- All routes are pressed for time which leads to missed transfers and causes frustration for riders. Routes should either be over 30 minutes or extended to an hour with 30 minute frequency, or routes should be shortened and stops limited.

When asked "Are there any safety concerns that you observe on a frequent basis?" drivers responded:

- Pressure to complete routes on time
- Because of tight schedules, wheelchairs are not secured properly

When asked "What are some frequent questions you receive from bus passengers?" drivers commented that riders often ask why the bus is late.

The quantitative approach looked at route timing using the on-time performance data produced by the TripSpark software at the route level. On-time performance data was available for the fixed routes grouped by color and for each of the individual Bucshot routes. The average on-time performance between FY 2015 and FY 2017 is reported in Table 4-3. For fixed routes, it ranges from 51% to 73% when including the PM Evening route, but ranges from 65% to 73% when that route is excluded. For Bucshot routes, on-time performance ranges from 50% to 85%. This on-time performance indicates that many routes are challenged to meet the published schedule.

This finding was further confirmed by a quantitative assessment of the scheduled cycle times for each route compared to the approximated run times as a function of the routes' average speeds. The total time it takes for a bus to complete a trip is referred to as the "run time." The run time includes the vehicle's travel time (time between start and end points) and recovery time. "Cycle time" is the run time rounded to the nearest logical increment in which a route would operate. For example, a route with a run time of 28 minutes would be scheduled to run on a cycle of 30 minutes. The scheduled cycle times for the JCT fixed routes vary between 30 and 90 minutes, and 15 to 60 minutes for the Bucshot routes. These scheduled cycle times were compared to derived run times to determine if the route schedules were either adequate or did not allow enough time for the buses to complete the trips within the published schedule time.

Run times were derived by first calculating an average speed for each route. This was done by dividing annual revenue miles by annual revenue hours to result an average miles per hour speed. The travel time was derived by dividing the route length by the average route speed. JCT does not have a recovery or layover policy in place so five minutes (an industry standard timing element for layovers) was assumed to be the recovery time that each fixed route would spend at the transit center in order for riders to board and alight and make connections to other routes. It also includes time to account for unforeseen delays along the route. Bucshot routes are different from fixed routes in that they do not "pulse" at a transit center. Instead, three minutes was assumed

to be the recovery time for the Bucshot routes to account for potential delays or interruptions. The travel time was then added to the recovery time to result in a run time.

As shown in Table 4-3, the difference between the derived run time and scheduled cycle time was calculated to identify routes for which the scheduled cycle time is likely not adequate. These routes have negative differences shown as red in the table. In the majority of instances, a negative difference correlated with lower on-time performance (TripSpark data) as would be expected. Some routes such as the Red 15 Til have positive differences, but the difference is very close to zero indicating that the scheduled cycle time may not be adequate. Based on this analysis, only the Green 15 Til, Purple 15 After, PM Evening routes, and Bucshot Evening route had differences greater than one minute suggesting that the scheduled cycle time is likely adequate. These three routes also had higher on-time performance according to the analyzed TripSpark data.

For the Bucshot Blue and Bucshot Teal, poor on-time performance is due to the bus arriving early at the starting point for the route.

Table 4-3: Quantitative Assessment of Existing Route Timing

Route	Actual			Derived						
	RT Length (mi)	Scheduled Cycle (min)	On-Time (%)	Annual Rev-Mi	Annual Rev-Hr	Avg. Speed (mph)	Travel Time (min)	Recovery (min)	Run Time (min)	Diff. (min)
Blue 15 After	9.25	30	73%	24,582	1,265	19.4	28.6	5.0	33.6	(3.56)
Blue 15 Til	6.4	30	73%	20,921	1,507	13.9	27.7	5.0	32.7	(2.66)
Gold 15 After	8.5	30	73%	25,115	1,739	14.4	35.3	5.0	40.3	(10.30)
Gold 15 Til	6.2	30	73%	20,425	1,391	14.7	25.3	5.0	30.3	(0.33)
Green 15 After	7.25	30	72%	23,929	1,449	16.5	26.3	5.0	31.3	(1.34)
Green 15 Til	4.5	30	72%	14,840	1,217	12.2	22.1	5.0	27.1	2.86
Purple 15 After	7.6	30	72%	25,227	1,275	19.8	23.0	5.0	28.0	1.96
Purple 15 Til	8.6	30	72%	24,910	1,305	19.1	27.0	5.0	32.0	(2.03)
Red 15 After	6.2	30	65%	19,942	1,449	13.8	27.0	5.0	32.0	(2.03)
Red 15 Til	7.2	30	65%	23,297	1,333	17.5	24.7	5.0	29.7	0.28
Silver 15 After	16.3	60	65%	44,348	2,525	17.6	55.7	5.0	60.7	(0.69)
Orange North	16.8	45	65%	27,967	1,181	23.7	42.6	5.0	47.6	(2.55)
Orange West	13.8	45	65%	18,720	1,037	18.0	45.9	5.0	50.9	(5.88)
PM Evening North	14.4	90	51%	6,596	569	11.6	74.6	5.0	79.6	10.43
PM Evening West	11.6	90	51%	5,298	633	8.4	83.1	5.0	88.1	1.91
Bucshot Blue	1.64	15	63%	10,666	1,287	8.3	11.9	3.0	14.9	0.13
Bucshot Gold	1.92	15	85%	14,235	1,482	9.6	12.0	3.0	15.0	0.01
Bucshot Red	3.45	20	50%	10,109	1,300	7.8	26.6	3.0	29.6	(9.62)
Bucshot Teal	2.03	15	66%	13,681	1,287	10.6	11.5	3.0	14.5	0.54
Bucshot Evening	9.54	60	78%	7,886	733	10.8	53.2	3.0	56.2	3.78

Grey color coding denotes routes for which the approximated run time exceeds the scheduled cycle time.

4.4 Peer Analysis

A peer analysis was performed to analyze the general performance indicators, effectiveness measures, and efficiency measures of JCT in relation to its peer transit agencies. The *Florida Transit Information System's Urban Integrated National Transit Database (Urban iNTD)* was used for the analysis. Urban iNTD identifies peer systems based on the Transit Cooperative Research Program (TCRP) Project G-11, *A Methodology for Performance Measurement and Peer Comparison in the Public Transportation Industry*. Peers are selected based on the following service characteristics and urban area characteristics:

Service Characteristics

- Total vehicle miles operated
- Total operating budget
- Percent demand response
- Percent service purchased
- Service area type

Urban Area Characteristics

- Urban area population
- Population growth rate
- Population density
- State capital
- Percent population with college degree
- Percent poverty
- Annual delay (hours) per traveler
- Freeway lane-miles per capita
- Distance

Fixed Route Peer Analysis

Peer analyses were conducted separately for fixed-route and demand response services due to their distinct differences in operational characteristics. The top five peers identified for JCT's fixed-route service are:

1. City of Gastonia (Gastonia, NC)*
2. Kingsport Area Transit System (Kingsport, TN)
3. The City of Bowling Green/Community Action of Southern Kentucky (Bowling Green, KY)
4. Coeur d'Alene Tribe dba Citylink Transit (Worley, ID)
5. Tuscaloosa County Parking and Transit Authority (Tuscaloosa, AL)
6. Texarkana Urban Transit District (Texarkana, TX)*

*Data was not available for Gastonia, NC, so the sixth peer, Texarkana Urban Transit District, was used.

General Performance Indicators

In comparison to its peers (see Table 4-4), JCT provides the greatest numbers of fixed-route trips and revenue hours, and the second most number of revenue miles. It has the highest total operating expenses and the most number of vehicles operated in maximum service. JCT operates more transit service than these peers but ranks third for service area population and service area. In other words, JCT provides more transit service per capita, indeed a benefit to the Johnson City community.

Effectiveness Measures

JCT consistently ranks higher than these peers in all three of the effectiveness measures for fixed-route service: passenger trips per capita, passenger trips per revenue mile, and passenger trips per revenue hour. These metrics demonstrate that not only is JCT offering more transit service to the community, but that riders are utilizing the service.

Efficiency Measures

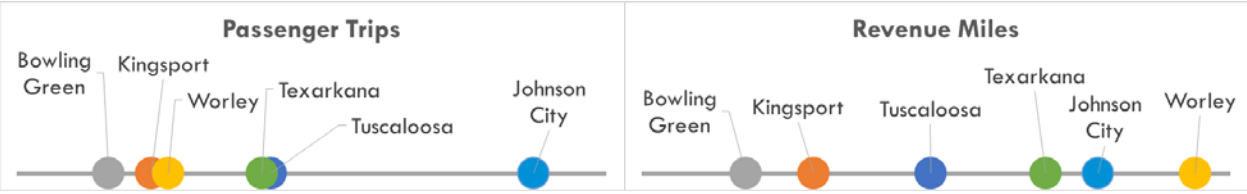
In terms of efficiency, JCT is average compared to its peers on the metrics of operating expenses per passenger trip, operating expenses per revenue mile, operating expenses per revenue hour, and farebox recovery. There may be opportunities to improve on these efficiency measures by streamlining and optimizing JCT's fixed routes. Recommendations for accomplishing this are discussed in Chapter 5.0.

Table 4-4: Fixed Route Peer Analysis

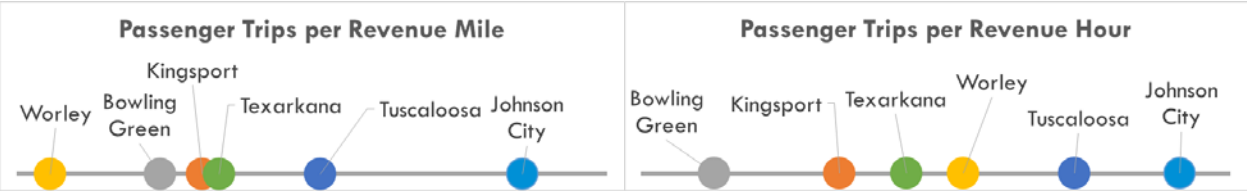
Indicator	Johnson City	Kingsport	Bowling Green	Worley	Tuscaloosa	Texarkana
General Performance Indicators						
Service Area Pop.	61,630	53,126	55,000	n/a	136,487	76,027
Service Area (sq. mi.)	44	47	15	n/a	171	36
Passenger Trips	613,656	160,488	109,329	180,696	301,699	291,494
Revenue Miles	410,129	216,918	170,968	475,896	296,570	374,562
Revenue Hours	32,634	14,967	14,128	13,229	18,521	23,687
Total Operating Expense	$2,020,553	$848,654	$955,762	$742,576	$1,256,794	$1,451,845
VOMS[1]	15	6	6	2	7	6
Effectiveness Measures						
Passenger Trips per Capita	9.96	3.02	1.99	n/a	2.21	3.83
Passenger Trips per Rev. Mile	1.50	0.74	0.64	0.38	1.02	0.78
Passenger Trips per Rev. Hour	18.80	10.72	7.74	13.66	16.29	12.31
Efficiency Measures						
Oper. Exp. per Passenger Trip	$3.29	$5.29	$8.74	$4.11	$4.17	$4.98
Oper. Exp. per Revenue Mile	$4.93	$3.91	$5.59	$1.56	$4.24	$3.88
Oper. Exp. per Revenue Hour	$61.92	$56.70	$67.65	$56.13	$67.86	$61.29
Farebox Recovery (%)	8.74	7.18	6.47	0.00	11.15	9.39

[1]VOMS: Vehicles Operated in Maximum Service, Source: FTIS Urban iNTD

General Performance Indicators



Effectiveness Measures



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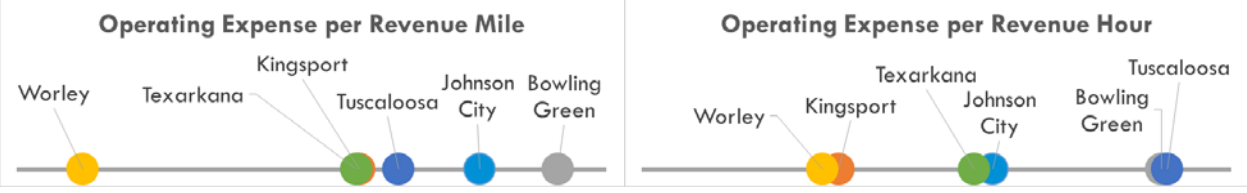


Demand Response Analysis

The top five peers identified for JCT's demand response service are:

1. Pitt Area Transit System (Greenville, NC)
2. Gaston County (Gastonia, NC)
3. Kingsport Area Transit System (Kingsport, TN)
4. Tuscaloosa County Parking and Transit Authority (Tuscaloosa, AL)
5. Metra Transit System (Columbus, GA)

General Performance Indicators

Similar to fixed-route service, JCT ranks high for general performance indicators amongst these demand response peers (see Table 4-5). In terms of total passenger trips, revenue miles, and revenue hours, the demand response systems in Greenville, NC, and Gaston County, NC, provide more service than does JCT. However, it is important to note that the size of the service areas for the systems is very different: JCT's service area is 44 square miles, Greenville's is 652 square miles, and Gaston County's is 364 square miles. Furthermore, the Greenville and Gaston County systems are countywide whereas JCT's is citywide.

Effectiveness Measures

JCT provides an effective demand response service based on the metrics of passenger trips per capita, passenger trips per revenue mile, and passenger trips per revenue hour. JCT provides the most number of passenger trips per capita, the second most number of passenger trips per revenue mile, and the third most number of passenger trips per revenue hour.

Efficiency Measures

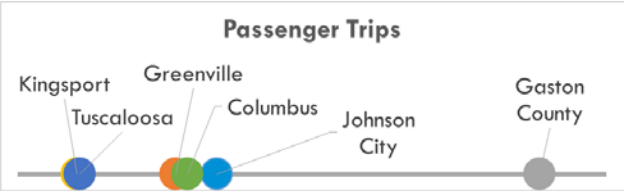
JCT's demand response service is not the most efficient compared to its peers according to operating expenses per passenger trip, operating expenses per revenue mile, and operating expenses per revenue hour. Currently JCT does not use paratransit scheduling software, but is planning to in the near future. Such software may assist JCT with batching trips and optimizing demand response routes to be more efficient.

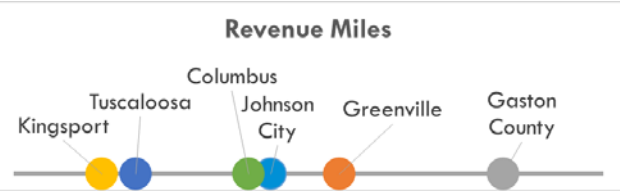
Table 4-5: Demand Response Peer Analysis

Indicator	Johnson City	Greenville	Gaston County	Kingsport	Tuscaloosa	Columbus
General Performance Indicators						
Service Area Pop.	61,630	174,263	211,127	53,126	136,487	230,208
Service Area (sq. mi.)	44	652	364	47	171	132
Passenger Trips	47,507	37,641	124,128	14,187	14,842	40,503
Revenue Miles	261,342	331,510	498,170	90,156	124,537	238,914
Revenue Hours	23,528	23,666	26,800	9,291	9,679	16,923
Total Operating Expense	$1,455,104	$753,488	$1,743,220	$561,505	$430,568	$270,402
VOMS[1]	12	16	26	4	5	7
Effectiveness Measures						
Passenger Trips per Capita	0.77	0.22	0.59	0.27	0.11	0.18
Passenger Trips per Revenue Mile	0.18	0.11	0.25	0.16	0.12	0.17
Passenger Trips per Revenue Hour	2.02	1.59	4.63	1.53	1.53	2.39
Efficiency Measures						
Operating Exp. per Passenger Trip	$30.63	$20.02	$14.04	$39.58	$29.01	$6.68
Operating Exp. per Revenue Mile	$5.57	$2.27	$3.50	$6.23	$3.46	$1.13
Operating Exp. per Revenue Hour	$61.85	$31.84	$65.05	$60.44	$44.48	$15.98

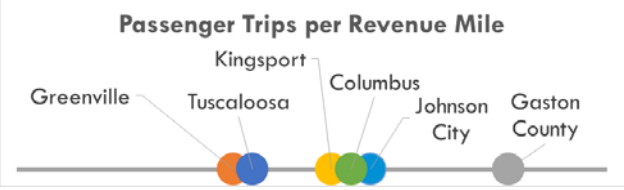
[1]VOMS: Vehicles Operated in Maximum Service, Source: FTIS Urban iNTD

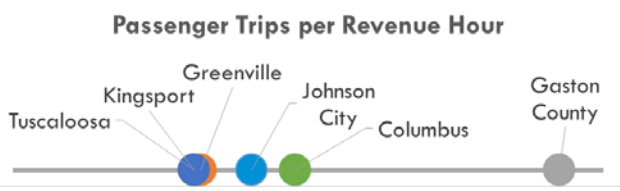
General Performance Indicators



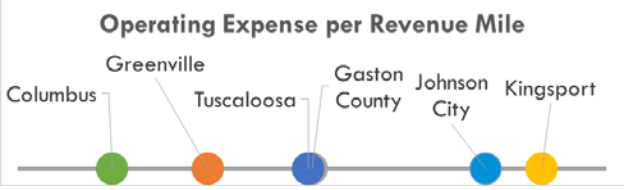


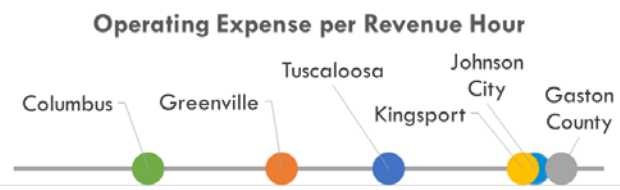
Effectiveness Measures





Efficiency Measures



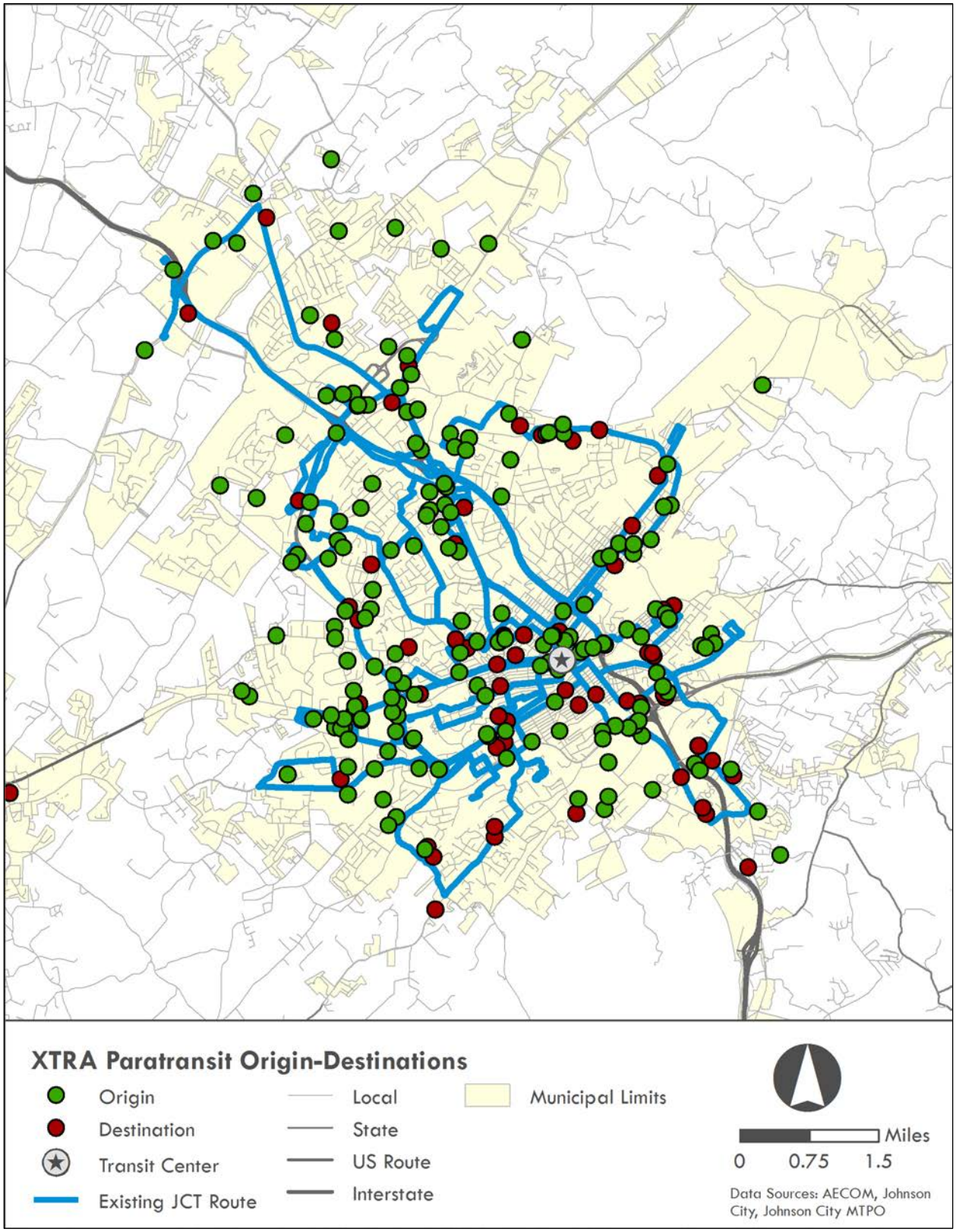


4.5 XTRA Paratransit Service Origins and Destinations

In order to better understand the XTRA Paratransit Service that JCT currently provides, the origins and destinations were analyzed from two sample days (September 5 and 7, 2017), and the results were geocoded and mapped. This was accomplished by taking written origin and destination addresses provided by JCT and running them through a geocoding service to identify their spatial locations.

As shown in Figure 4-23, the paratransit origins and destinations are distributed uniformly throughout the paratransit service area, which is defined as the corporate limits of Johnson City or ¾ mile from a fixed route, whichever is greater. It is interesting to note that many origins and destinations are in close proximity to an existing fixed route. There were several origins north of the Silver Route that were more than ¾ mile from a fixed route, but within the corporate limits. The proximity of origins and destinations to the fixed routes helps demonstrate that the fixed-route system provides effective route coverage for accessing destinations within the community.

Figure 4-23: XTRA Paratransit Origins and Destinations



5.0 Action Plan

The Action Plan proposes recommendations to the current JCT system, identifies the associated operating and capital costs, and notes the supporting elements that JCT may implement to improve service. The Action Plan is informed by the land use and demographic analysis, rider and driver surveys, and the identification of service issues. Recommendations are explained in the subsequent sections and summarized in Table 5-5 on page 5-39.

5.1 Recommended Fixed-Route System

As part of this COA, the system performance was analyzed to reflect the fixed-route efficiencies in the areas of: on-time performance, route connectivity, passenger effectiveness, and overall operational efficiencies. Using both qualitative and quantitative approaches based on interviews with riders, drivers and staff, and combined with an analysis of route times, demographics, and ridership data, several opportunities for improving the existing routes have been identified. This narrative provides an overview of the recommended fixed-route changes and the accompanying maps will help articulate the new service designs.

All daytime fixed routes would operate on a 60 minute cycle, arriving and departing from the JCT Transit Center. The routes have been designed so that potential bi-directional transit service could be provided in the future, should JCT choose to operate some routes with this design. The placement of two buses on a particular route would provide the desired 30-minute headway, and this was programmed into our recommendations. An overall system recommendation is to use a numbering scheme for naming routes instead of colors. As such, this narrative refers to the recommended routes by numbers.

Section 5.2 provides four service alternatives in order to prioritize these transit investments. The frequency and level of service changes among the service alternatives while the routes remain the same, except for the PM Evening route.

The descriptions below describe the recommended direction of services (if bi-directional service is not implemented). Maps for each of the recommended routes are provided on pages 5-7 through 5-24.

Route 1

Route 1 is envisioned as JCT's central route, providing efficient service to major activity centers including the ETSU College of Medicine, Johnson City Medical Center, VA Hospital and Walmart. From the JCT Transit Center, Route 1 would head west on W Market St. to Indian Ridge Rd. where it would serve the Clark Manor neighborhood. The route would return to W Market St. via Benjamin St. and Lamons Ln. in order to avoid making a left turn at the un-signalized intersection of Nathaniel Dr. and N State of Franklin Rd. It would serve the Walmart off of Leisure Ln and then head east on W Market St. to Woodlawn Dr.

The route would proceed towards Johnson City Medical Center by taking McKinley Rd. to Professional Park Dr. and then to N State of Franklin Rd. After serving the medical center, the route would stop at the ETSU College of Medicine and VA Hospital before returning to the JCT Transit Center via Lamont St. and Watauga Ave.

Route 2

Route 2 is a modified version of the existing Gold Route. Starting at the JCT Transit Center, the route would head north on N Boone St. to Moorland Dr. and then north on John Exum Pkwy. The route is purposely designed to head north in this section so that it could use the current stop at Science Hill High School where an existing pedestrian bridge provides connectivity to the school.

After stopping at the high school, the route would serve The Mall at Johnson City, the Target located in the Johnson City Plaza and the Kroger off of Sunset Drive. Route 2 would continue south on Sunset Dr. stopping at the Social Security Administration on the same side of the road so as to minimize pedestrian safety concerns. Continuing further south, the route would stop at the parking lot of Food City and then return north on Sunset Dr. to Knob Creek Rd. The route would then turn south on Knob Creek Rd and head east on Pactolas Rd. to serve Liberty Bell Middle School and the Freedom Hall Civic Center. Route 2 would return to the JCT Transit Center via John Exum Pkwy. and W. Main St.

Route 3

Route 3 is a hybrid of the existing Blue 15 After and Green 15 After. It would leave from the JCT Transit Center heading northwest on N Roan St, serving the Target at Johnson City Plaza Shopping Center. Due to safety and timing considerations, the route would no longer enter the shopping center from the un-signalized entrance off N Roan St. Instead, it would follow E Mountcastle Dr. to Johnson City Plaza Dr. to Broyles Dr.

The route would then stop at the Washington County Health Department and Internal Revenue Service before heading east on E Oakland Ave and E Lakeview Dr. The route would serve Tyler Apartments on E Lakeview Dr. and the Volunteer Blind Industries. The loop north of E Fairview Ave. on McArthur St. and Long St. is currently used by the Green 15 After to turn the bus. This loop would be discontinued. After stopping at the Tyler Apartments, the route would proceed on Roosevelt St. to E Fairview Ave. until N Broadway St. It would travel north on N Broadway St., west on E Unaka Ave., and south on New St. returning to E Fairview Ave. This routing would serve the Walgreens and Johnson City Juvenile Court. The route would return to the JCT Transit Center via E Fairview Ave. thereby also serving the Johnson City Public Library.

Route 4

Route 4 is a combination of the existing Red 15 Til and Blue 15 Til routes. This combined route would travel east on E Main St. to Bert St. where it would stop at the US Postal Service, Johnson City Senior's Center, and Memorial Park Community Center. By heading east on Cranberry and Pardee streets, the route would serve the Johnson City Housing Authority followed by a stop at the Tweetsie Trail Parking.

Route 4 would continue east on King Springs Rd. serving Mountain View Elementary School and then turn around on Stoneybrook Dr. and Valley View Dr. Heading south on Milligan Highway, the route would turn south on Swadley Road to serve several apartment complexes that currently have high transit ridership. The route would head south on Plymouth Rd. to Mayflower Rd. and then north on S Roan St. Route 4 would serve the Heritage Park community and businesses along S Roan St. It would stop at the Department of Human Services on S Roan St. The route would return to the JCT Transit Center via S Roan St and W Market St.

Route 5

Route 5 is essentially the consolidation of the Purple 15 After and Purple 15 Til into one route with slight modifications. Route 5 would depart from the JCT Transit Center, heading south on Sevier St. to W Walnut St. where it would turn south onto Gilbreath Drive in order to serve ETSU. Following the stops on the ETSU campus, it would serve residential neighborhoods on Southwest Ave. and Cherokee Rd.

After stopping at Cherokee Elementary School, it would continue north on Lone Oak Rd. to S Greenwood Drive and make a left onto W State of Franklin Rd. at the signalized intersection. The route would then turn left onto West Walnut St. and complete the loop that the Purple 15 Til does today on Carter Sells Rd. and Mayfield Drive. On the inbound portion of the route, Route 5 would turn right off of West Walnut St. into the

Kroger shopping center to make a stop. It would then make a right out of the shopping center directly onto W State of Franklin Rd. where it would return to the JCT Transit Center via W Watauga Ave.

Route 6

Route 6 is a hybrid of several existing JCT routes and serves western Johnson City. Departing from the JCT Transit Center, Route 6 heads west on W Market St. and north on N State of Franklin Rd., serving businesses at the intersection and the Clark Manor neighborhood. Continuing north, the route would operate with limited stops along N State of Franklin Rd. due to high traffic volumes and speeds which create unsafe conditions for transit stops.

The route turns east on Med Tech Pkwy. stopping at the US Postal Service and several medical offices. At the Franklin Woods Community Hospital, the bus would turn into the parking lot as is currently done by the Orange West route. North of the hospital, the route would continue on Peoples St. serving the Johnson City Crossing shopping center and other commercial areas. At Greenline Rd. it would reenter N State of Franklin Rd. and head north under the I-26 overpass to Walmart on Browns Mill Rd. Route 6 would turn around at Walmart, heading south on N State of Franklin Rd to W Oakland Ave. It would serve businesses located along W Oakland Ave. and Marketplace Blvd.

Route 6 would briefly reenter N State of Franklin Rd. at the Knob Creek Rd. intersection and exit onto Hamilton Place Dr. in order to serve the businesses located at Hamilton Place. The route would enter N State of Franklin Rd. via Med Tech Pkwy and return to the JCT Transit Center via W Market St. and W Main St. Along N State of Franklin Road, it would serve limited stops due to safety considerations similar to the northbound portion of this route.

Route 7

Route 7 is a redesign of the existing Silver and Orange North routes. Departing from the JCT Transit Center, Route 7 would travel west on I-26 to Exit 20A, N Roan St. It would head north on N Roan St. serving The Shoppes at Peerless Centre and hotels. The route would take Bristol Highway, serving additional businesses. It would then head south on E Mountainview Rd. to Timberlake Rd. and south on Bristol Highway where it would serve NHC HealthCare Johnson City, multi-family neighborhoods, and Big Lots on Oakland Avenue. From Oakland Avenue, the route would turn right on N Roan St. and continue north, stopping at Indian Trail Middle School, Ingles, and commercial locations.

At Boones Creek Rd. Route 7 would turn south and serve the Driver's License Department located on Lake Park Dr. and afterwards, BrightRidge (formerly the Johnson City Power Board) off of Boones Creek Rd. It would return to the JCT Transit Center via I-26.

PM Evening Route

JCT currently operates the PM Evening North and the PM Evening West routes. No changes are recommended to these routes under Service Plans 1 or 2 in order to provide cost-neutral options (refer to Section 5.2). In Service Plans 3 and 4, the existing PM Evening routes would be combined into one route that would utilize two buses and serve the same locations with bi-directional transit service. Bi-directional transit service means that one transit vehicle would operate in a clockwise direction around the loop and another transit vehicle in the counterclockwise direction. This could decrease travel time for some trips as riders would not have to ride the entire loop to complete their trip. Instead they could take an outbound bus and return on an inbound bus.

According to the quantitative assessment of route timing presented later in this section, on-time performance would be expected to improve for this route compared to the existing evening routes.

Jonesborough Express (JBX) Route

The JBX would expand JCT service connecting Johnson City with the Town of Jonesborough. Currently, fixed-route transit service is not provided between these two communities. In years past NET Trans provided a fixed route between Jonesborough the Walmart off of W Market St.; however, it was discontinued. As reflected in surveys with riders and interviews with drivers and staff, transit services are requested particularly to serve the George Jaynes Justice Center in Jonesborough. The courthouse was previously located in Johnson City but recently moved to its current location which has presented a hardship for transit riders needing to access the governmental services at the Justice Center.

The JBX Route is envisioned as an express route starting and ending at the JCT Transit Center in order to provide a seamless transit connection instead of riders incurring a transfer. The route would depart from the transit center heading west on W Market St. As this service would be express in nature, the first stop would be the George Jaynes Justice Center where the bus would enter the facility grounds from N Cherokee St. From the Justice Center, the route would cross US 11E at the traffic signal with N 2nd Ave and continue to Old Tennessee 34. Heading east, the JBX Route would stop once in downtown Jonesborough in front of the Washington County Clerk office.

The route would serve the Jonesborough Senior Center. It would enter the parking lot and stop at the front entrance in order to minimize walking distances for seniors. To reenter US 11E, the bus would exit the parking lot on Longview Dr. and head north. The last stop on the JBX Route would be the Walmart on W Market St. where the bus would enter the parking lot and serve the existing JCT transit shelter. After the Walmart stop, the route would return to the JCT Transit Center via W. Main St.

Bucshot Red

The current Bucshot Red route has on-time performance challenges as evidenced in our collected surveys, interviews and the quantitative analysis of route timing. It is intended as an east-west campus route for ETSU. In order to address on-time performance and retain its core function of connecting campus, we are proposing two alternatives for the Bucshot Red route.

In Service Plan 1 the Bucshot Red would travel south on Gilbreath Dr., west on J L Seehorn Jr. Rd., and north on John Robert Bell Dr. to N Dossett Dr. Heading west on N Dossett Dr., the route would take Jack Vest Dr. to Go Bucs Trail where it would stop at Lot 22a. It would only serve the northernmost shelter and would access W State of Franklin Rd. via the parking lot connection. The route would continue to University Pkwy and serve the Monarch Apartments before returning to Gilbreath Dr. This routing pattern is recommended in order to improve efficiency and on-time performance.

In Service Plans 2, 3, and 4, the Bucshot Red would travel south on Gilbreath Dr., west on J L Seehorn Jr. Rd., and north on John Robert Bell Dr. to N Dossett Dr. Heading west on N Dossett Dr., the route would take Jack Vest Dr. to Go Bucs Trail where it would stop at Lot 22a. Next, the route would return to Jack Vest Dr. and take W State of Franklin Rd. to complete the loop at Gilbreath Dr. The Bucshot Red would no longer serve Monarch Apartments, thereby improving on-time performance. As an alternative, the Bucshot Teal route would stop at these apartments. With this route redesign, the Bucshot Red could operate comfortably on a 20 minute frequency allowing for several minutes of recovery time to account for heavier traffic or other related delays.

Currently, Monarch Apartments sponsors the Bucshot Red route. Changes made to this route would need to be done in coordination with Monarch Apartments. One potential arrangement is for Monarch Apartments and University Edge Apartments to share the cost of the Bucshot Teal route.

Bucshot Teal

In Service Plan 1, no modifications are proposed to the Bucshot Teal. In Service Plans 2, 3, and 4, it would maintain the same core routing and would make an additional stop at the Monarch Apartments. In order to serve the apartments, it is recommended that the current route direction be reversed so that the bus can make right turns in and out of the complex. A second bus is recommended for two hours during peak morning times and two hours during peak afternoon times to accommodate demand.

The route would proceed north on Gilbreath Dr. and east on W State of Franklin Rd. as it is currently configured. Instead of making a left onto University Pkwy the route would continue east on W State of Franklin Rd. to W Watauga Ave. where it would make a left and proceed north. It would make a left into the University Edge Apartments and then a left onto University Pkwy. The route would enter and exit the Monarch Apartments using right turns. It would continue south on University Pkwy. to Southwest Ave. where it would complete its loop at Gilbreath Dr. In Service Plans 2, 3, and 4, the Bucshot Teal would operate on a 20 minute cycle instead of its current 15 minute cycle.

The Bucshot Teal is sponsored by the University Edge Apartments, and therefore changes made to this route would need to be done in coordination with University Edge.

Bucshot Gold and Bucshot Blue

No routing or timing changes are currently recommended for the Bucshot Gold or Bucshot Blue. As campus continues to grow and student enrollment increases, JCT may consider increasing the cycle time from 15 to 20 minutes to maintain on-time performance and consistency with the cycle times of the recommended Bucshot Red and Teal routes. The ETSU Campus Master Plan, updated in 2014, based the academic space master plan on an overall enrollment growth rate of 25% by 2020.[2]

Bucshot Evening

The Bucshot Evening route serves multiple ETSU campus locations from 5:00 pm to 10:45 pm Monday through Friday. After assessing this route for potential efficiencies, it is apparent that the current route is the most efficient manner for serving these locations. Therefore no changes are recommended to the routing or timing of the Bucshot Evening Route.

Bucshot Safe Voyage

No changes are recommended to the routing or timing of the Bucshot Safe Voyage Route as this is a demand response type service.

Route Timing

The timing of the recommended routes was evaluated similarly to the quantitative timing assessment of existing JCT fixed routes and Bucshot routes in Section 4.3. This evaluation was performed in order to avoid issues with route timing once the recommended routes are implemented. The results are presented in Table 5-1.

[2] ETSU Campus Master Plan, 2014. Comprehensive Facilities Planning and Woolpert Design. Page 13.

The initial run time was calculated for each route using Google Map's travel time algorithm. The algorithm assumes that the travel time is for an automobile, so a scale factor between 1.20 and 1.30 was applied to the initial run time to account for a transit vehicle traveling slower and making more stops. The scale factor values were based on similar assessments for transit projects around the country. The specific value assigned to each route was based on the type of route.

For routes on typical city streets, a scale factor of 1.30 was used. Route 6 would travel a significant portion of the route on N State of Franklin Rd., which has higher posted speed limits and limited access. Furthermore, Route 6 would not stop as frequently on this road due to safety concerns related to speed and traffic. Therefore, a scale factor of 1.25 was applied. Similarly, a scale factor of 1.25 was applied to Route 7 since it would travel a significant portion on I-26. The Jonesborough Express route would make limited stops on its route and travel on US 11E, a roadway with higher posted speeds. A scale factor of 1.20 was used.

A recovery time of five minutes was added to the revised time for the recommended fixed routes and a recovery time of three minutes was added to the revised time for the Bucshot routes. The total cycle time was then calculated using the following formula:

Formula

$$T_C = (T_i * S) + T_R$$

Variable	**Definition**
T_C	Cycle Time
T_i	Initial Travel Time
S	Scale Factor
T_R	Recovery Time

In Table 5-1, the run time is compared to the cycle time, which is the closest logical cycle in which a route could operate. For example, a route with a run time of 55 minutes would be scheduled to run every 60 minutes. As shown in the table, all recommended routes have a run time equal to or less than the cycle time suggesting that they would work when implemented. In many cases routes have additional time left, which is beneficial for on-time performance.

Table 5-1: Quantitative Assessment of Recommended Route Timing

Route	Initial Travel Time (min)	Scale Factor	Revised Travel Time (min)	Recovery (min)	Run Time (min)	Cycle Time (min)	Diff. (min)
Route 1	36	1.30	46.8	5.0	51.8	60	8.20
Route 2	39	1.30	50.7	5.0	55.7	60	4.30
Route 3	35	1.30	45.5	5.0	50.5	60	9.50
Route 4	36	1.30	46.8	5.0	51.8	60	8.20
Route 5	37	1.30	48.1	5.0	53.1	60	6.90
Route 6	44	1.25	55.0	5.0	60.0	60	0.00
Route 7	40	1.25	50.0	5.0	55.0	60	5.00
JBX	44	1.20	52.8	5.0	57.8	60	2.20
PM Evening North	56	1.30	72.8	5.0	77.8	45	(32.80)
PM Evening West	43	1.30	55.9	5.0	60.9	45	(15.90)
PM Evening	55	1.30	71.5	5.0	76.5	90	13.50
Bucshot Red	10	1.30	13.0	3.0	16.0	20	4.00
Bucshot Teal	12	1.30	15.6	3.0	18.6	20	1.40
Bucshot Gold	12	1.30	15.6	3.0	18.6	20	1.40
Bucshot Blue	9	1.30	11.7	3.0	14.7	20	5.30
Bucshot Evening	31	1.30	40.3	3.0	43.3	60	16.70

Figure 5-1: Recommended Route 1

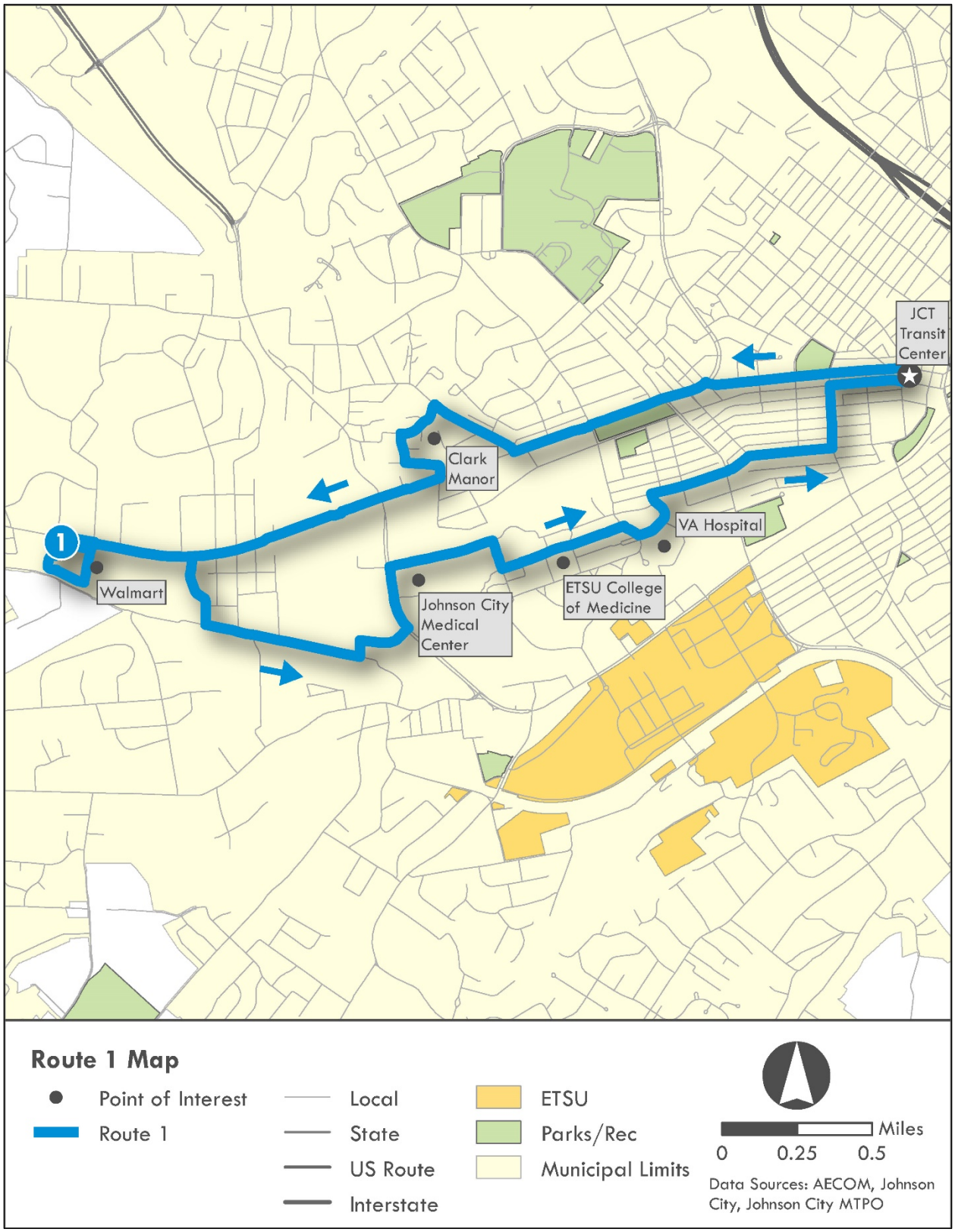


Figure 5-2: Recommended Route 2

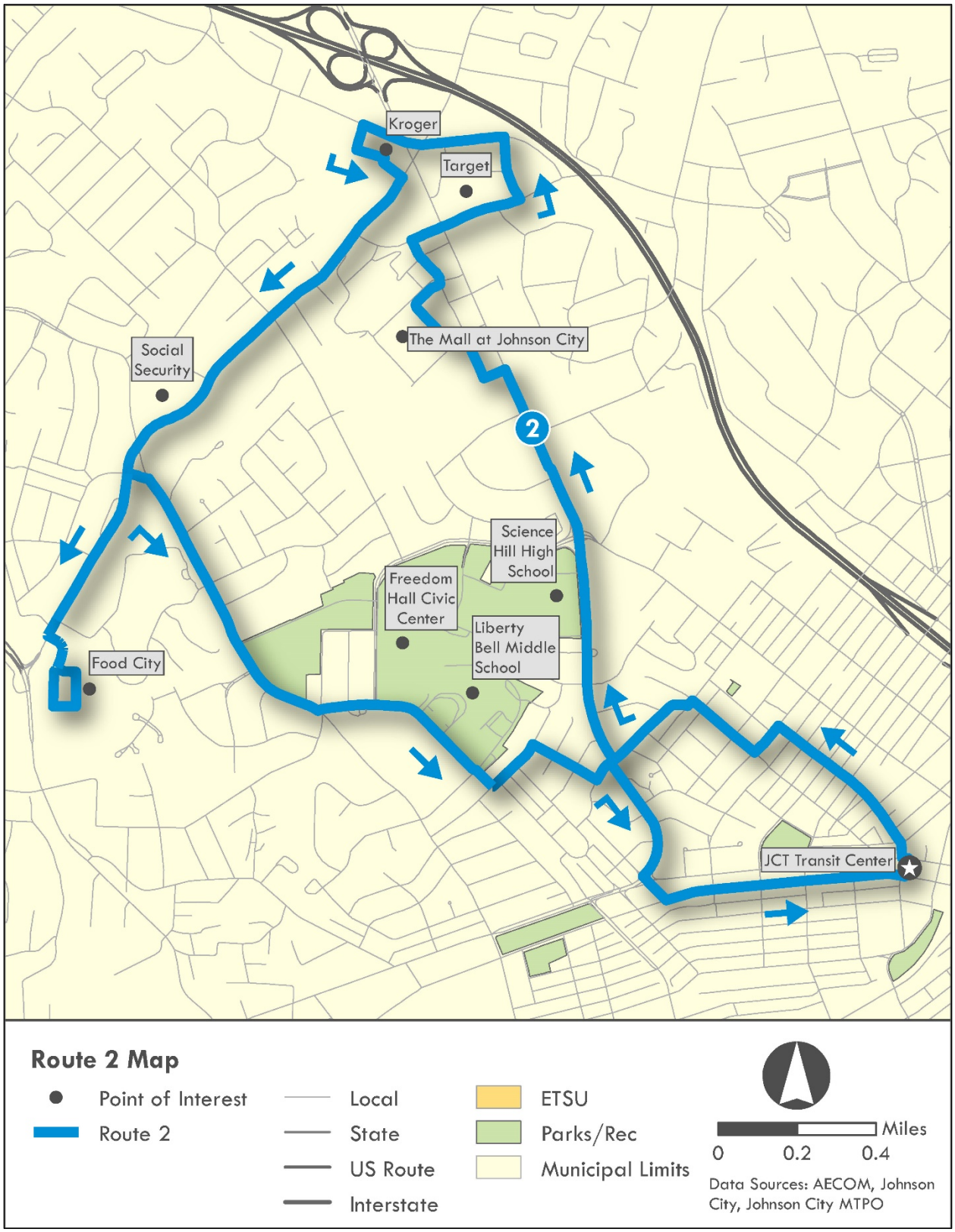


Figure 5-3: Recommended Route 3

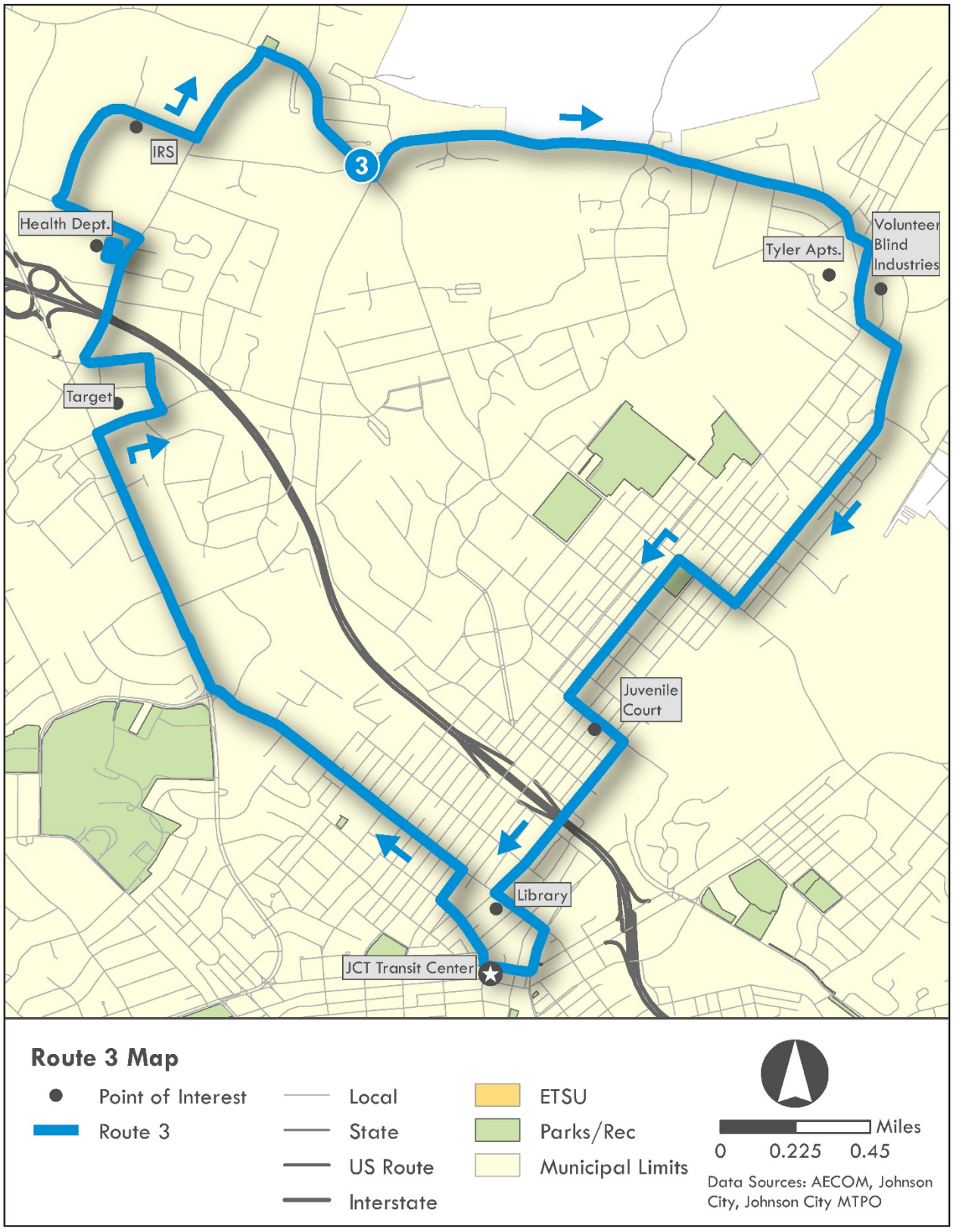


Figure 5-4: Recommended Route 4

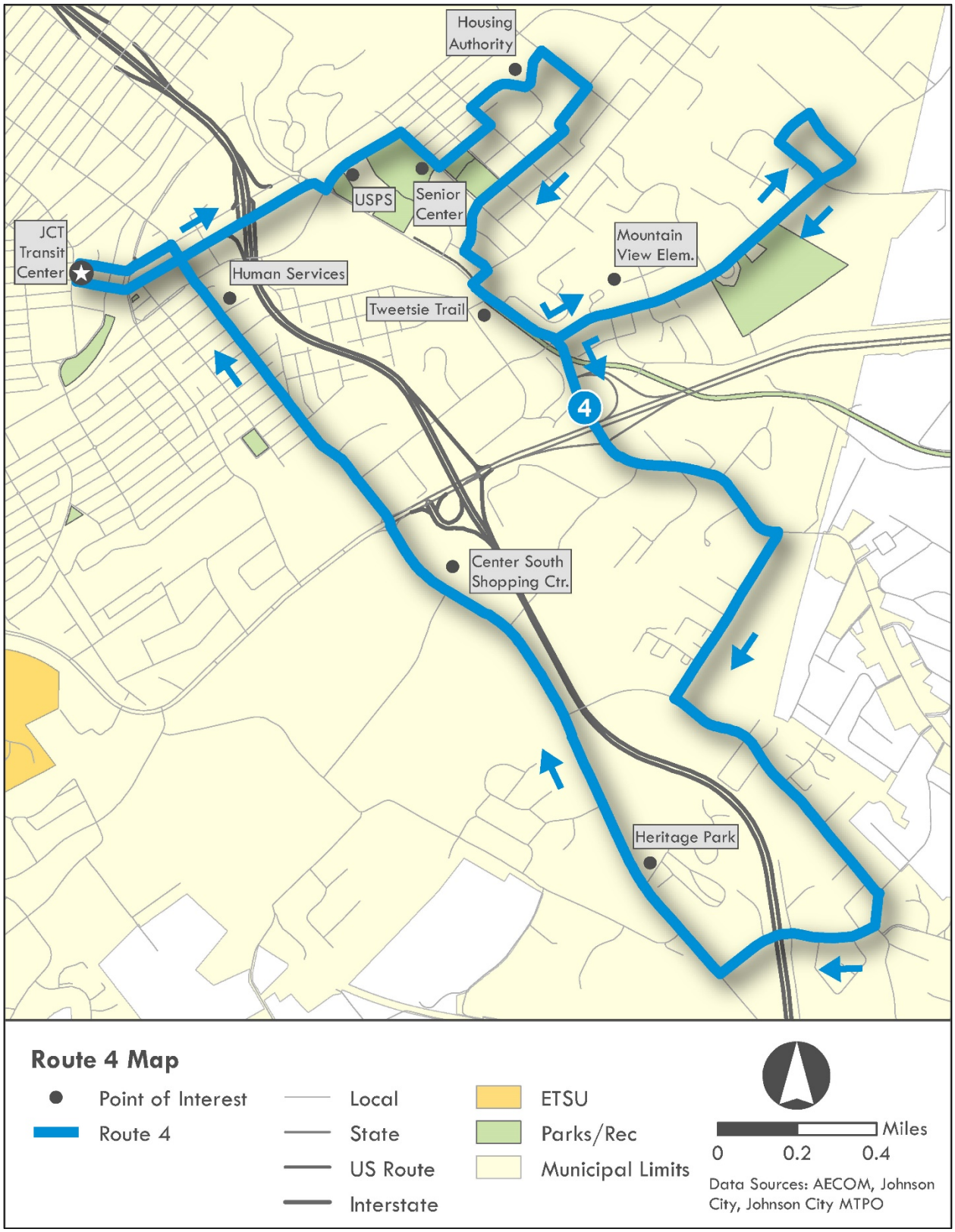


Figure 5-5: Recommended Route 5

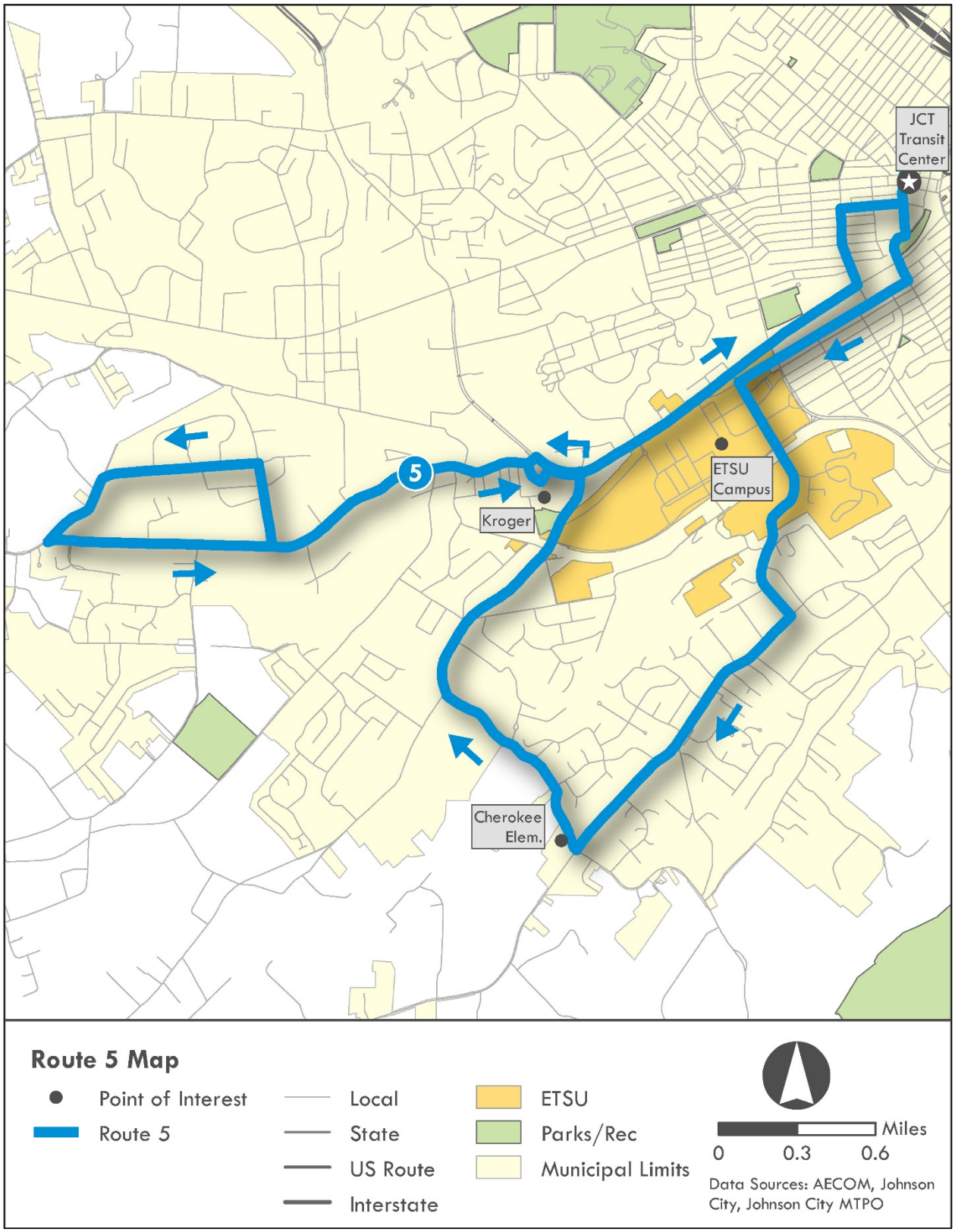


Figure 5-6: Recommended Route 6

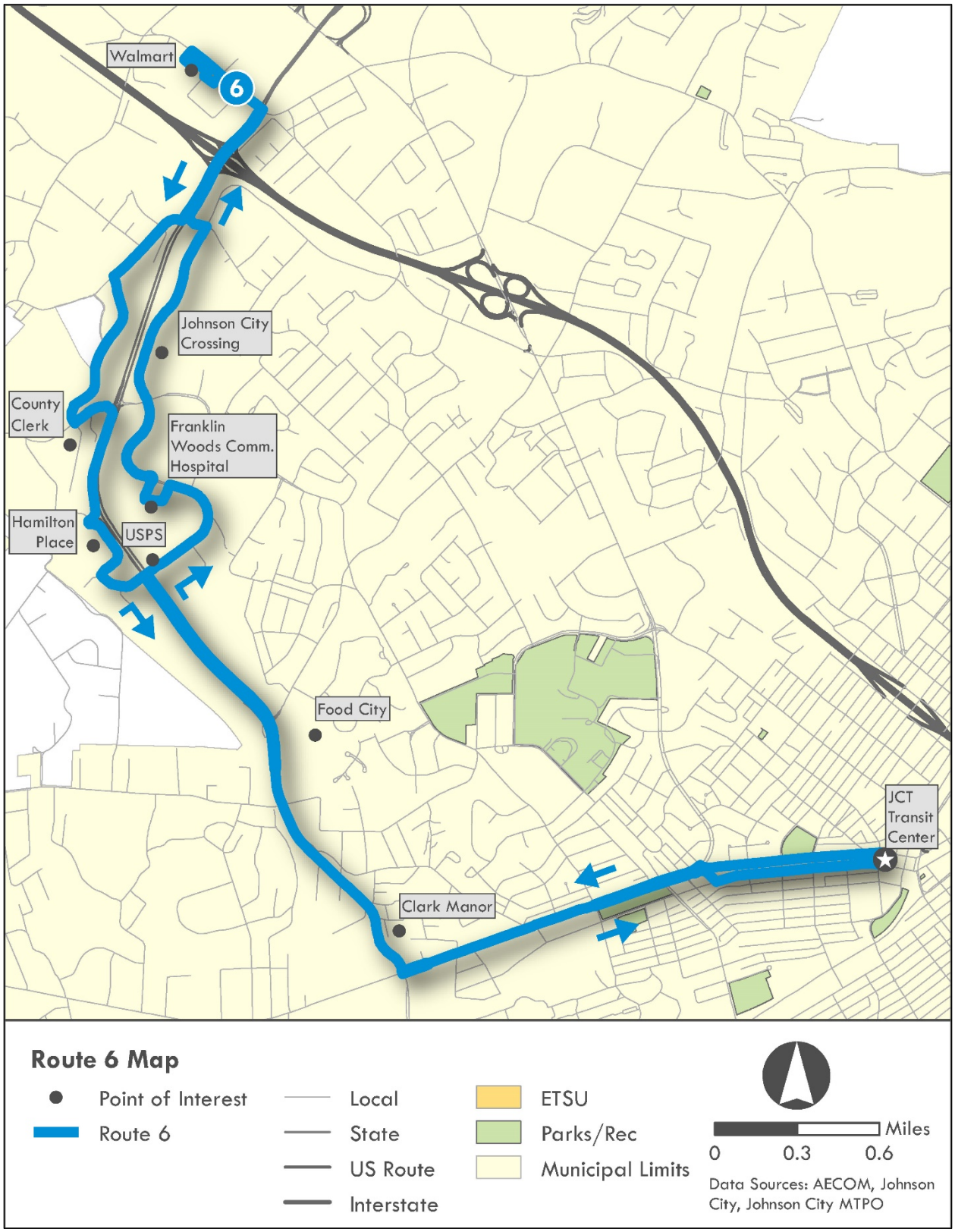


Figure 5-7: Recommended Route 7

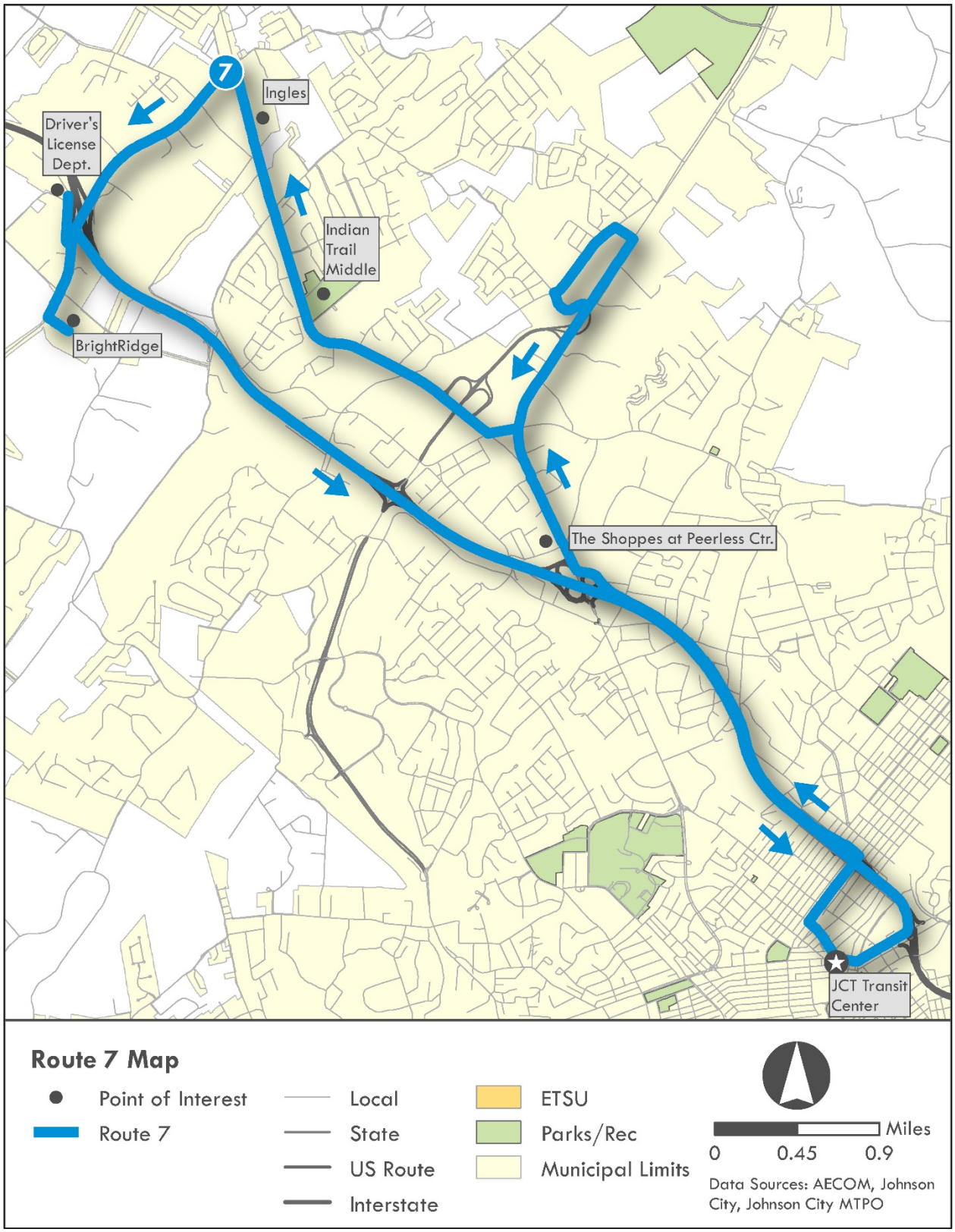


Figure 5-8: Recommended Jonesborough Express Route

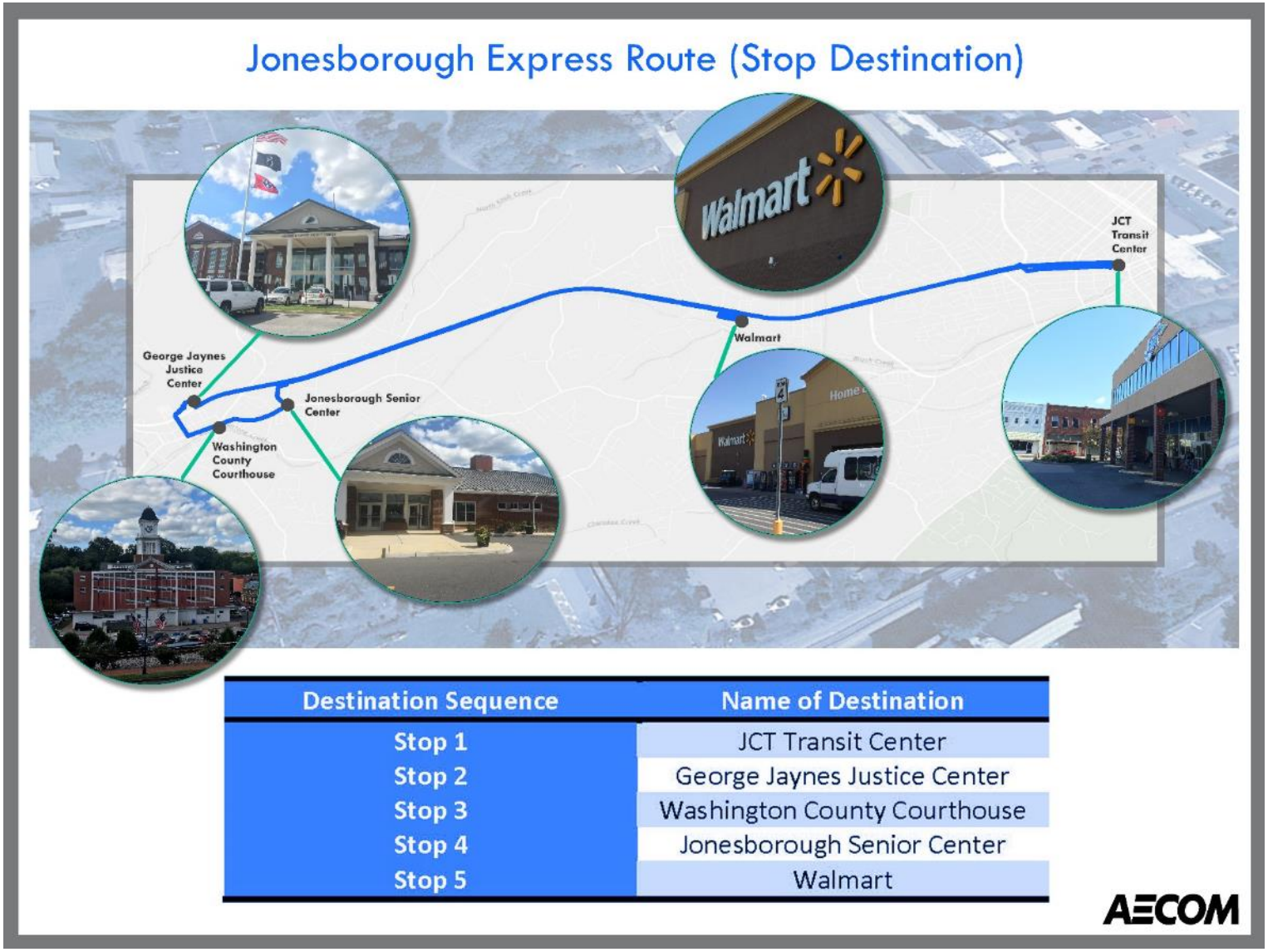


Figure 5-9: Recommended PM Evening North (Service Plans 1 and 2)

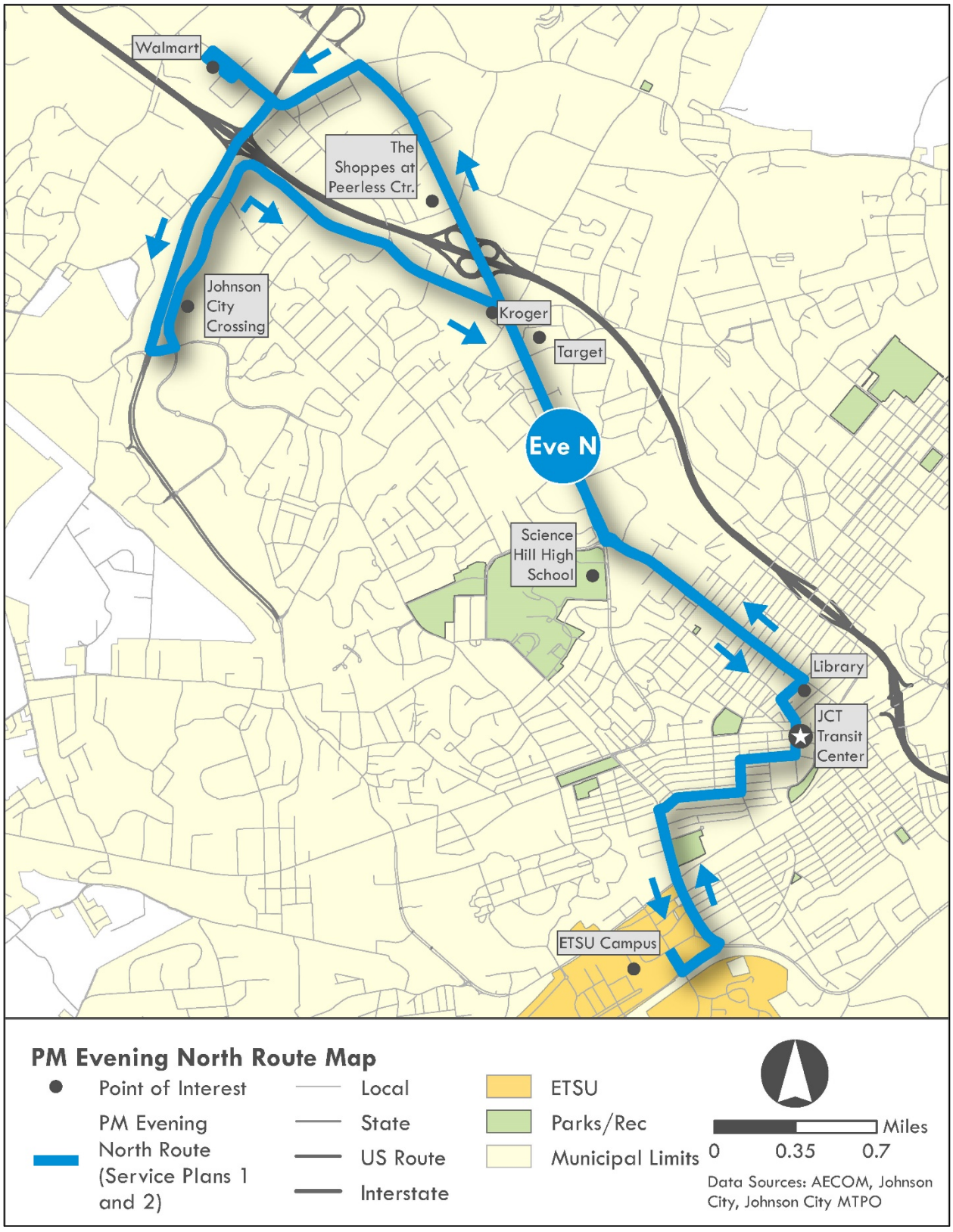


Figure 5-10: Recommended PM Evening West (Service Plans 1 and 2)

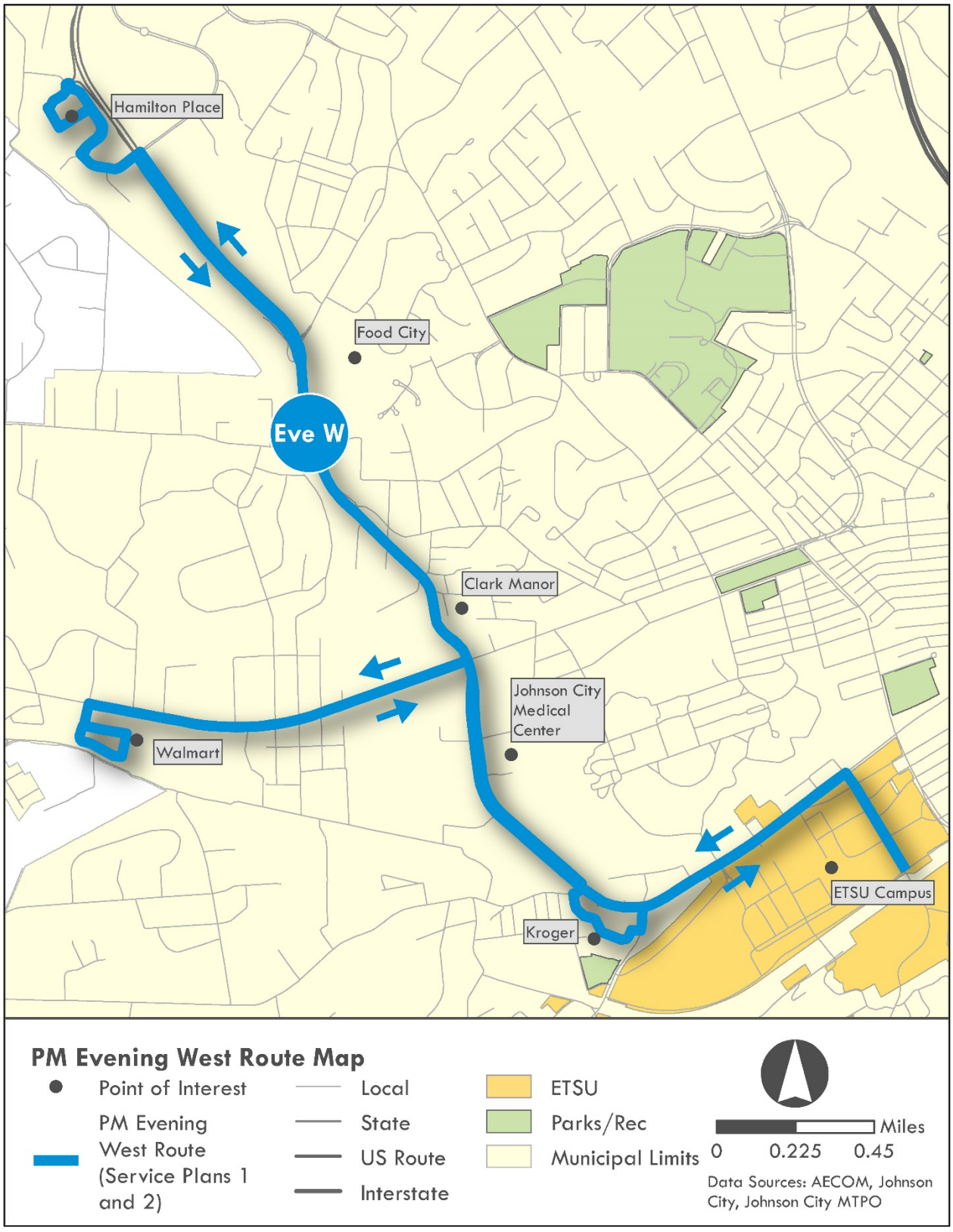


Figure 5-11: Recommended PM Evening (Service Plans 3 and 4)

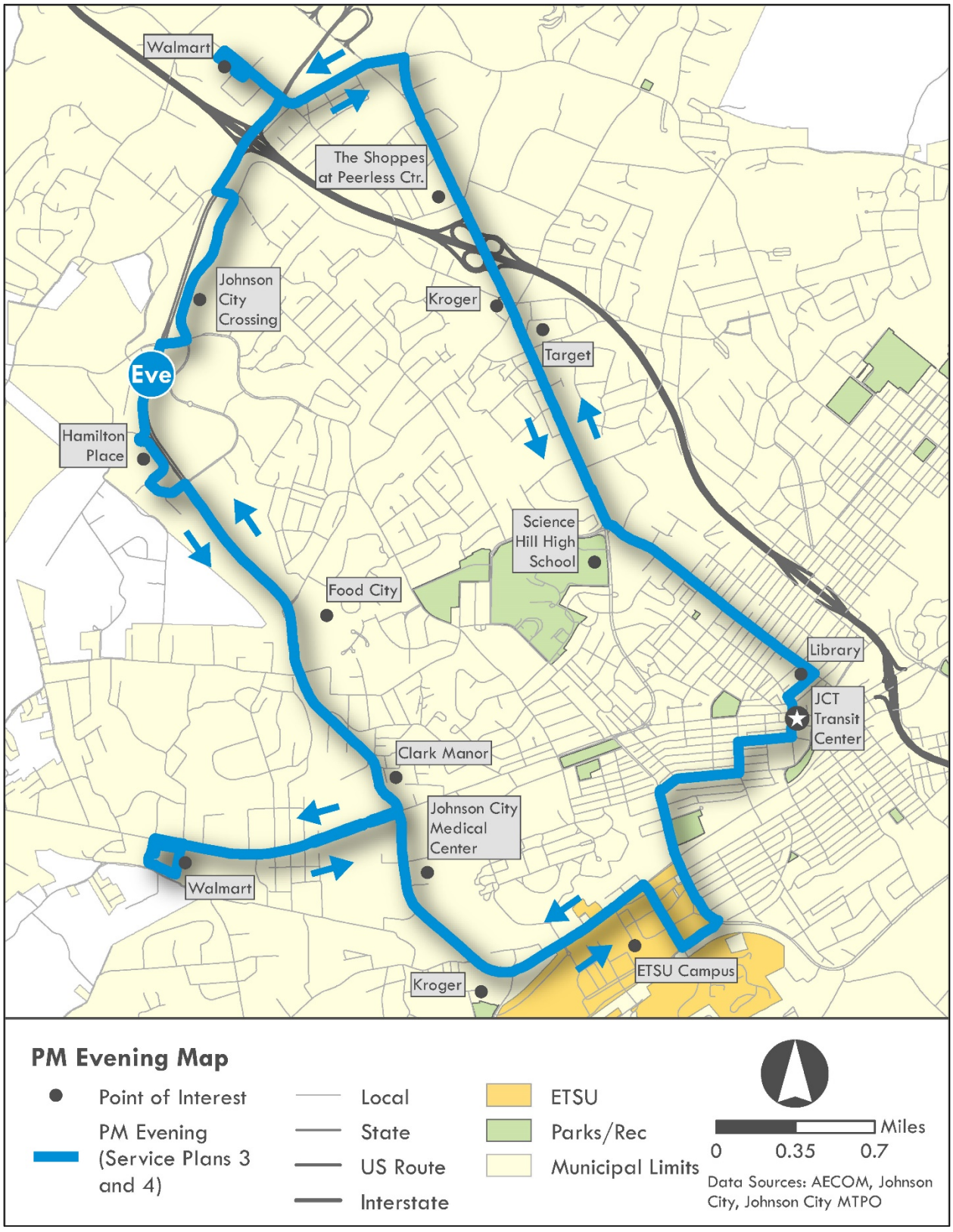


Figure 5-12: Recommended Bucshot Red (Service Plan 1)

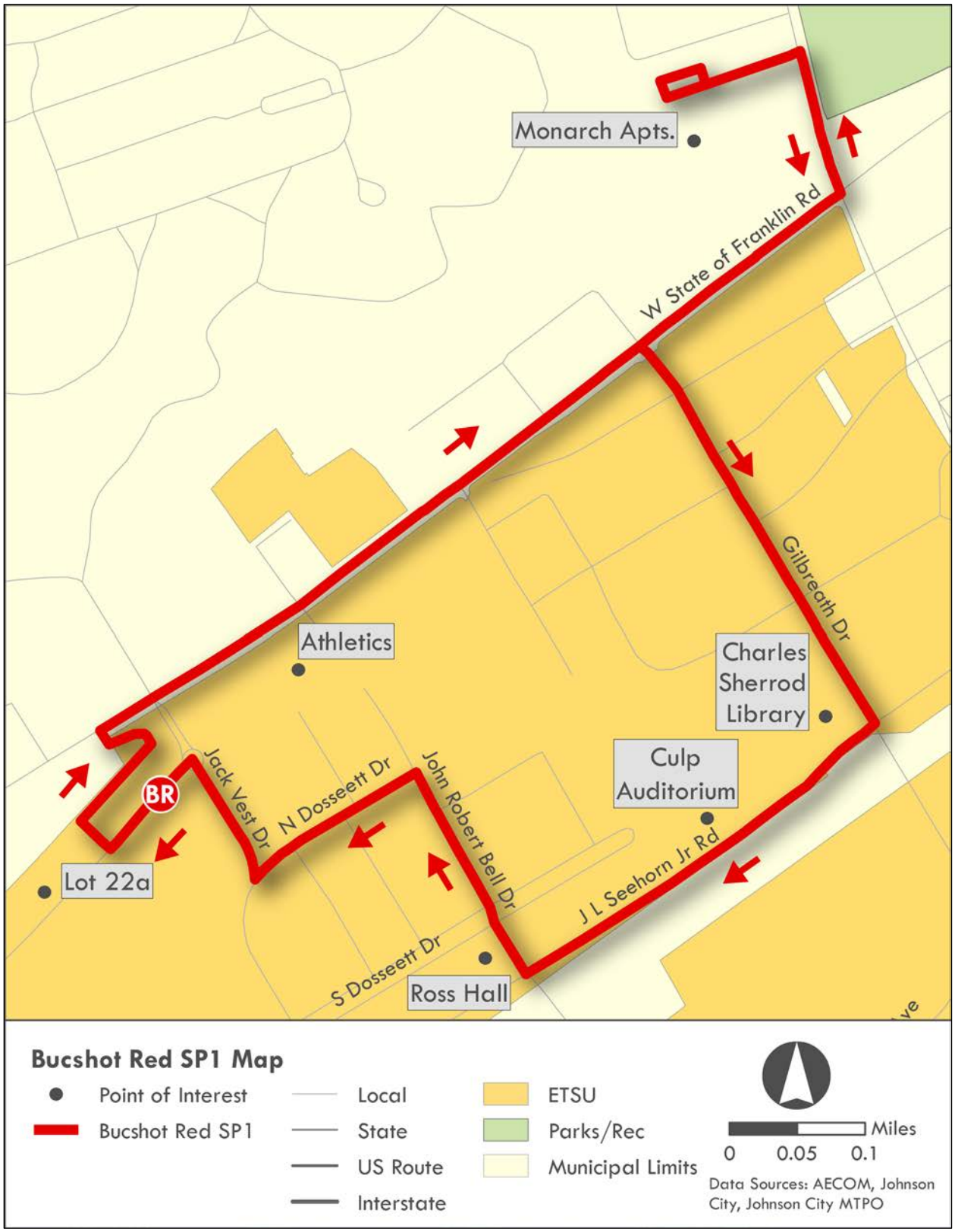


Figure 5-13: Recommended Bucshot Red (Service Plans 2, 3, 4)

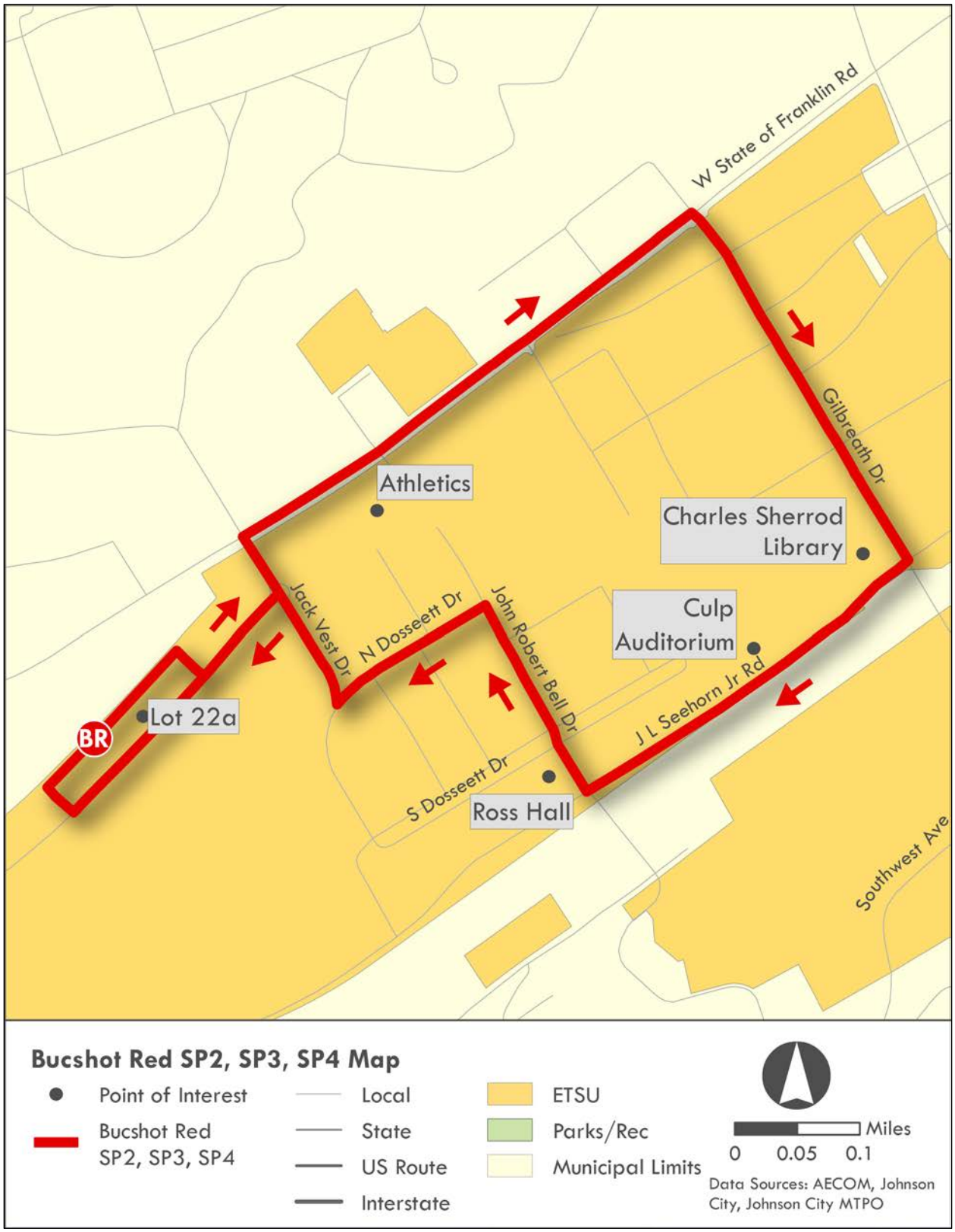


Figure 5-14: Recommended Bucshot Teal (Service Plan 1)

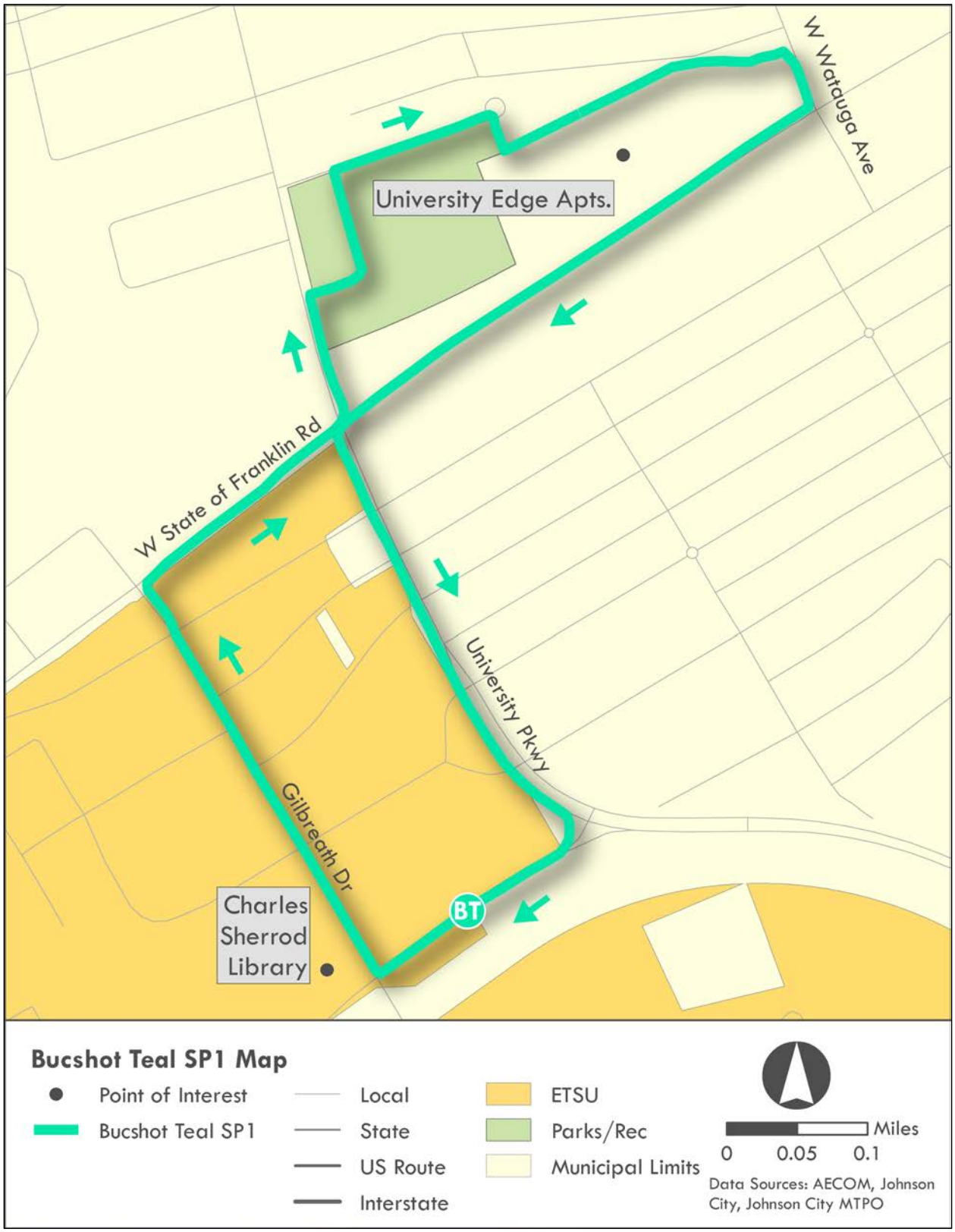


Figure 5-15: Recommended Bucshot Teal (Service Plans 2, 3, 4)

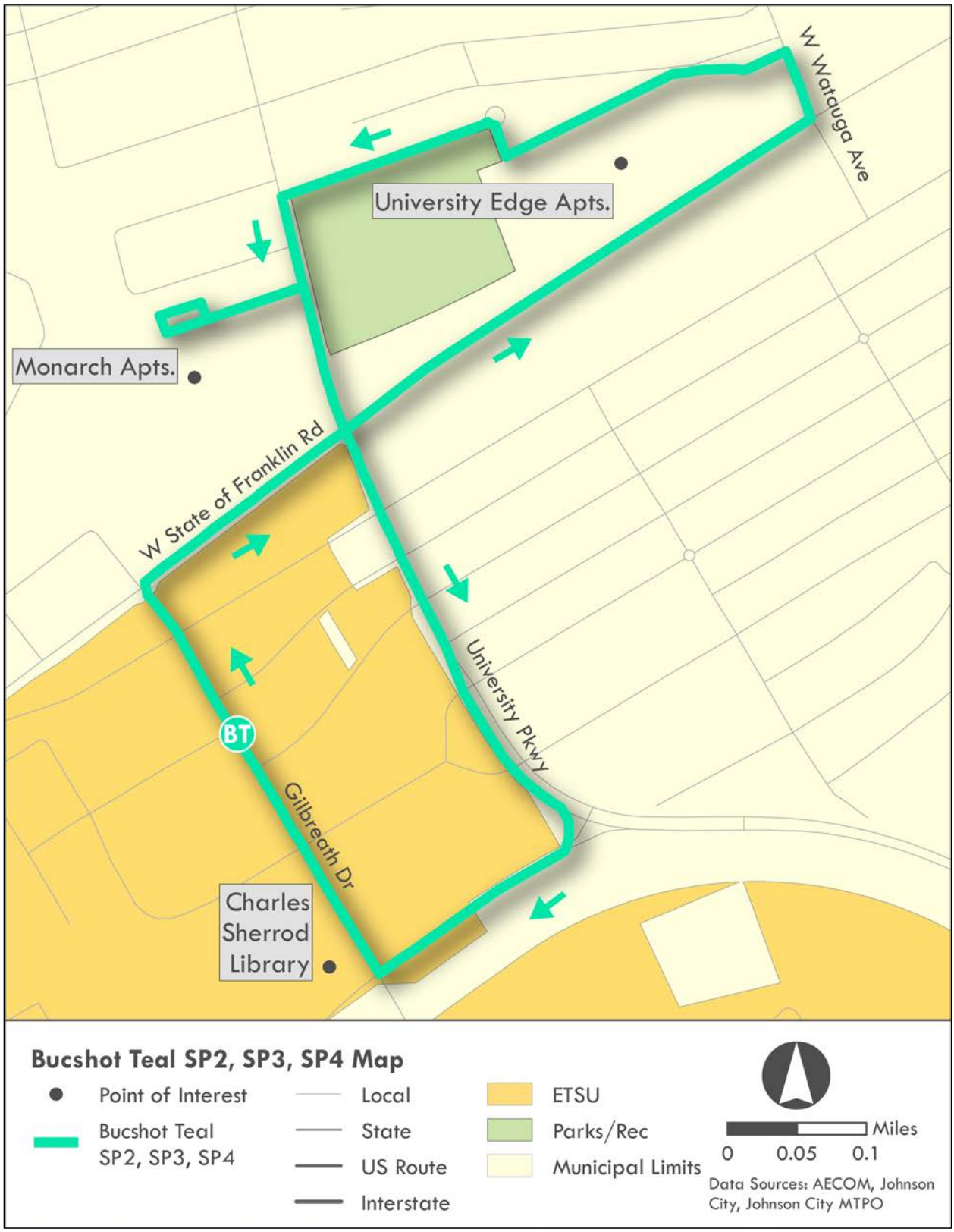


Figure 5-16: Recommended Bucshot Gold

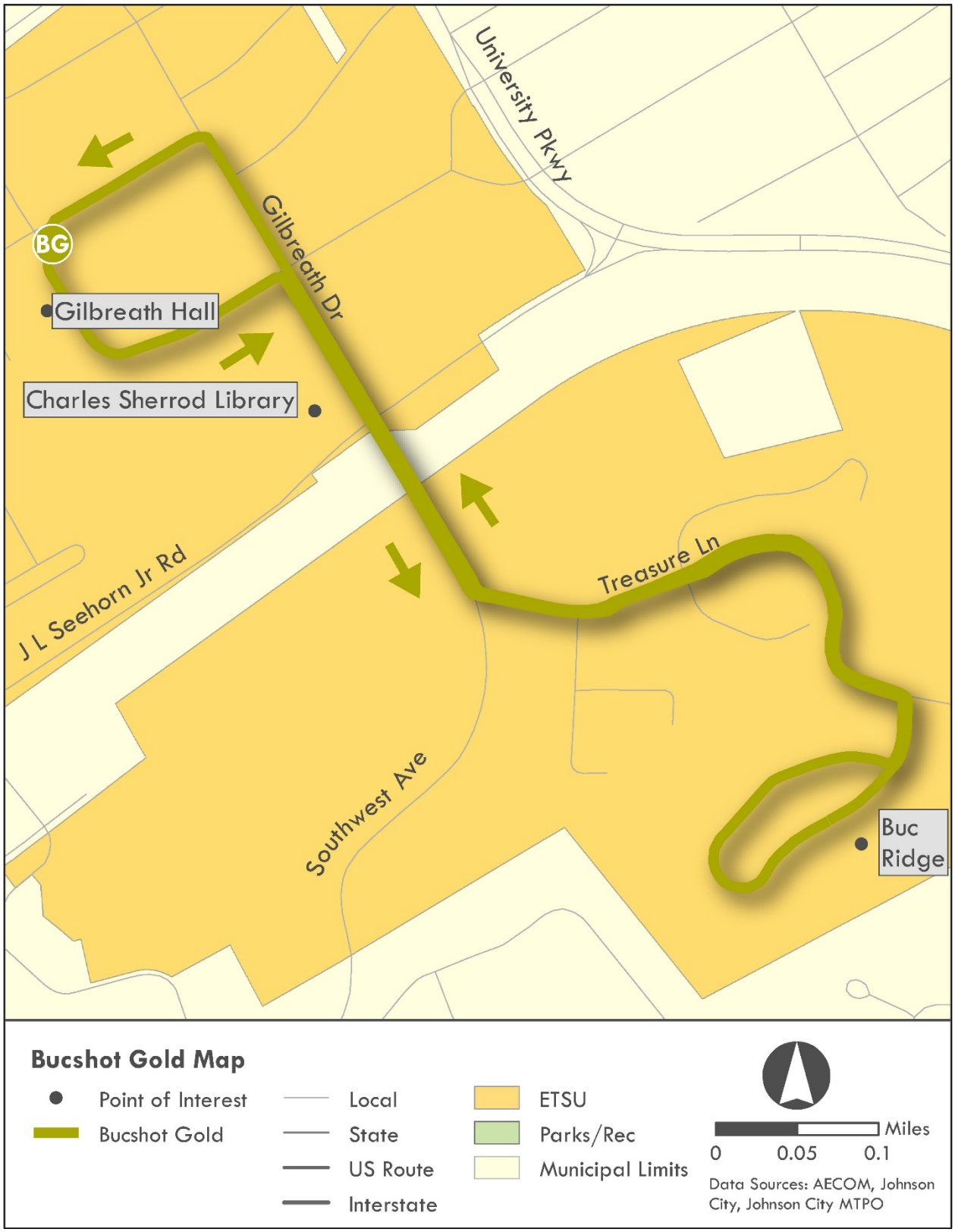


Figure 5-17: Recommended Bucshot Blue

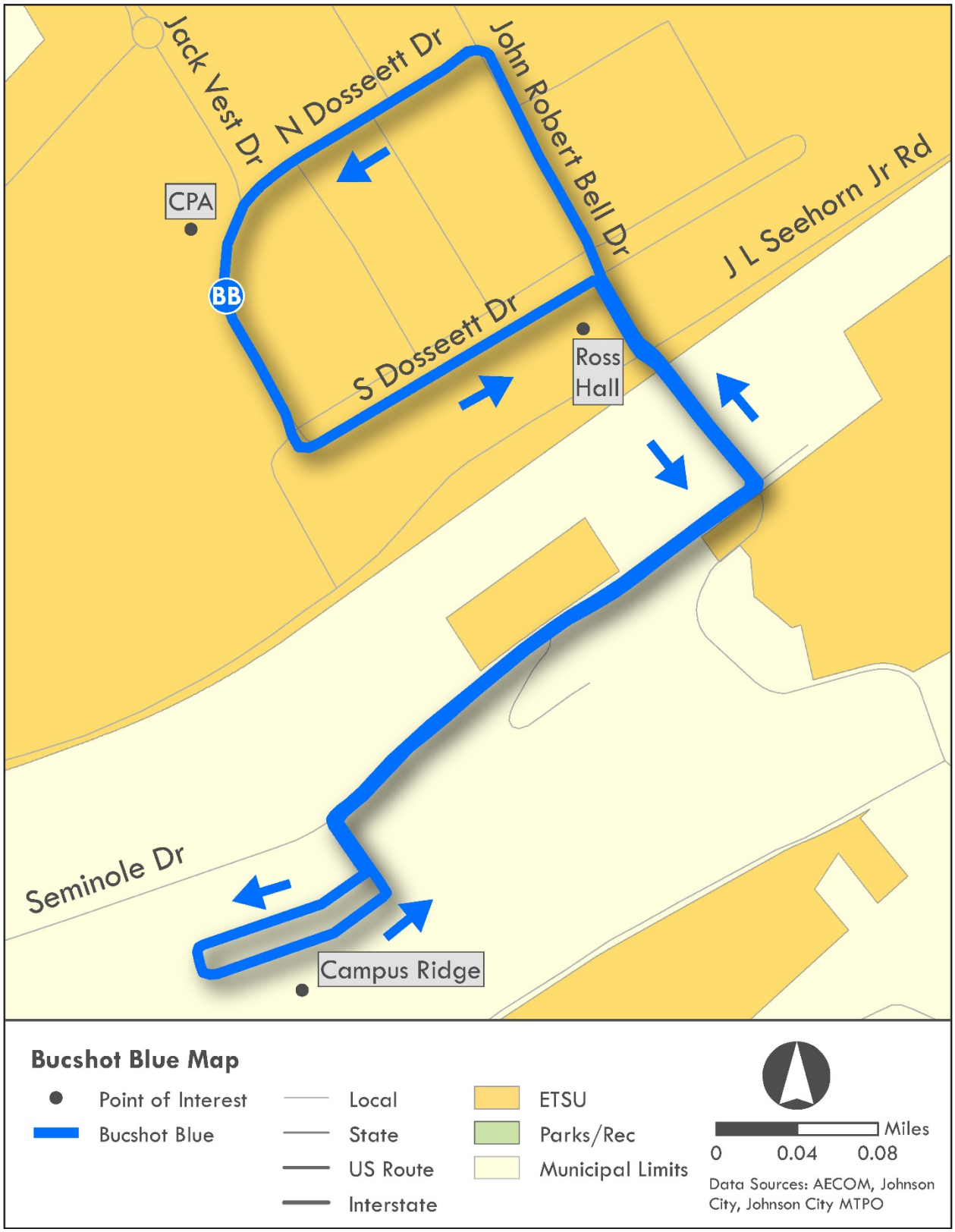
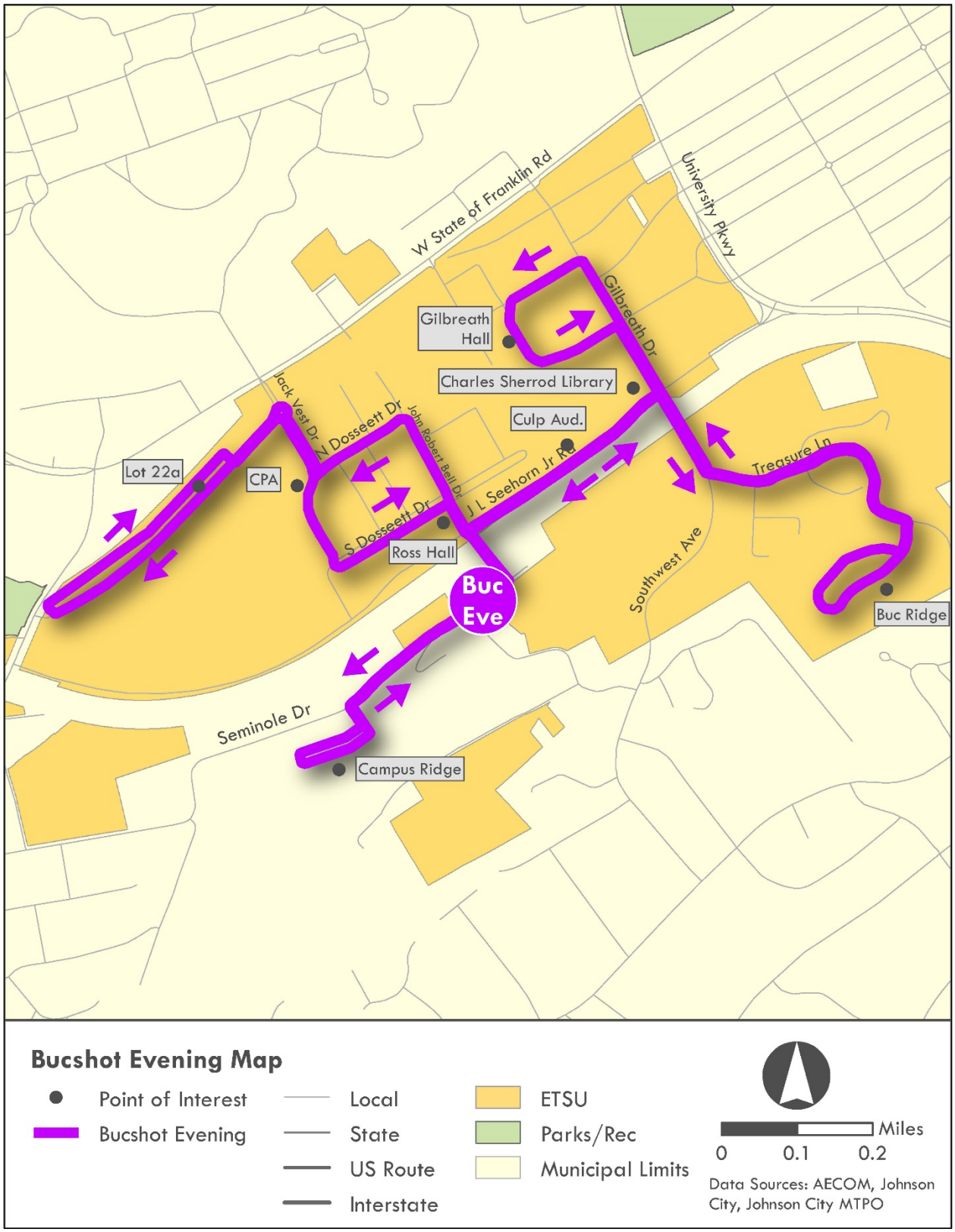


Figure 5-18: Recommended Bucshot Evening



5.2 Service Alternatives

There are several proposed service alternatives associated with the recommended routes. Each of the four service plans offer JCT and the MTPO with alternatives for balancing transit service with available resources. JCT and the MTPO may choose to select any of the four service plans or a hybrid of several. All of the costs reported in this section are in FY 2017 dollars.

All four of the service plans are based on operating Routes 1 through Route 7 twelve hours per weekday from 6:00 am to 6:00 pm, and Routes 1, 2, 3, 4, 5, and 7 eight hours on Saturday. The PM Evening routes are programmed to operate from 6:00 pm to 11:00 pm on weekdays only. The scheduling for the daytime Bucshot routes varies from a start time of 7:30 am or 7:45 am and an end time of 4:00 pm or 5:00 pm, on weekdays only. The Bucshot Evening would operate from 5:00 pm to 10:45 pm and Bucshot Safe Voyage from 10:45 pm to 12:00 am. These durations of service are consistent with JCT's current transit operations. However, JCT may adjust the start and end times for each route to accommodate the unique travel patterns of that route. The estimated hours were needed to anticipate operating costs, and the operating costs would remain constant provided that the duration of transit service remains the same.

Service Plan 1

Service Plan 1 is a cost-neutral alternative that would improve transit service while maintaining the same operational costs. This is accomplished by restructuring JCT's existing fixed routes to improve on-time performance and efficiency while using the same number of vehicles and drivers to provide the service. The frequency and duration of transit service remains nearly identical to the current service.

Service Plan 2

Service Plan 2 provides the same frequency and duration as Service Plan 1, but includes the Jonesborough Express (JBX) route and therefore would not be cost-neutral. Service Plan 2 includes two morning and two afternoon JBX trips Monday-Friday for an additional annual cost of approximately $80,000. The JBX Route would operate outside of JCT's current XTRA Paratransit service area. To comply with ADA requirements, the paratransit service area would need to be extended to encompass a ¾ mile area around the JBX Route.[3] The costs of expanding the complementary paratransit service are estimated to be approximately $110,000 annually. It is anticipated that the Town of Jonesborough would contribute to the operating costs for the operation of this service.

Service Plan 2 also includes modified Bucshot Red and Bucshot Teal routes. The modified Bucshot Red would no longer serve Monarch Apartments, serving instead as a campus circulator. The modified Bucshot Teal would serve Monarch Apartments and University Edge with one bus throughout the day and a second bus at peak morning and afternoon times for a total of four operating hours per day. The incremental cost associated with the modified Bucshot routes is $40,000.

Service Plan 3

Service Plan 3 also includes four daily JBX trips and modified Bucshot Red and Bucshot Teal routes. It increases frequency from once every 60 minutes to once every 30 minutes on Routes 1, 2, and 4 only. All other daytime routes would have the same frequencies and durations as Service Plans 1 and 2. These three routes were chosen for increased frequency due to their higher performance in the comparative route analysis (refer to Section 2.5). Service Plan 3 proposes a modified PM Evening route. The existing PM Evening North and West routes would

[3] FTA Circular 4710.1C Americans with Disabilities Act (ADA) Guidance, 2015.

be combined into one route that would serve the same locations. Bi-directional transit service would be provided on this route thereby decreasing travel time for riders. On-time performance would be anticipated to improve for the PM Evening route. The estimated cost for Service Plan 3 would be approximately $810,000 more than Service Plan 1.

Service Plan 4

Service Plan 4 increases frequencies on Routes 1 through 7 to 30 minutes, includes eight daily JBX trips, and includes the PM Evening route discussed under Service Plan 3. The modified Bucshot Red and Bucshot Teal routes are included as well. It is estimated to cost approximately $1,660,000 more than Service Plan 1.

The costs of each respective service plan are detailed in Table 5-2, and are based on JCT's most recent operating cost per revenue hour of $63.78, 252 annual weekday operating days, and 52 annual Saturday operating days for fixed routes. For the Bucshot routes, 146 weekday operating days were assumed based on the 2017-2018 academic year. All of the service plans include the same Saturday service that is currently being provided. The JBX Route would not operate on Saturdays.

Table 5-2: Service Plan Estimated Costs

Route	Service Plan 1	Service Plan 2	Service Plan 3	Service Plan 4
Route 1	$220,000	$220,000	$420,000	$420,000
Route 2	$220,000	$220,000	$420,000	$420,000
Route 3	$220,000	$220,000	$220,000	$420,000
Route 4	$220,000	$220,000	$420,000	$420,000
Route 5	$220,000	$220,000	$220,000	$420,000
Route 6	$200,000	$200,000	$200,000	$390,000
Route 7	$220,000	$220,000	$220,000	$420,000
PM Evening North	$40,000	$40,000	X	X
PM Evening West	$40,000	$40,000	X	X
PM Evening	X	X	$170,000	$170,000
Bucshot Blue	$80,000	$80,000	$80,000	$80,000
Bucshot Gold	$90,000	$90,000	$90,000	$90,000
Bucshot Red	$80,000	$80,000	$80,000	$80,000
Bucshot Teal	$80,000	$120,000	$120,000	$120,000
Bucshot Evening	$60,000	$60,000	$60,000	$60,000
Bucshot Safe Voyage	$20,000	$20,000	$20,000	$20,000
JBX Morning	X	$40,000	$40,000	$70,000
JBX Afternoon	X	$40,000	$40,000	$70,000
Total Estimated Annual Operating Costs	**$2,010,000**	**$2,130,000**	**$2,820,000**	**$3,670,000**

Note: All costs reported in FY 2017 Dollars

5.3 Capital Requirements

The capital requirements associated with each of the four service plans were assessed in relation to JCT's current fixed-route vehicle fleet. There are currently 22 vehicles available for revenue service. A spare ratio of 20% was factored into the total service plan requirements. However it is important to note that because JCT operates less than 50 revenue vehicles, it is not required to maintain a spare ratio of less than 20% per FTA guidelines. The total service plan requirements are presented in Table 5-3.

There are currently sufficient vehicles available for operation by JCT to fulfill the requirements of Service Plans 1 and 2. Service Plan 3 would require the procurement of three additional vehicles while Service Plan 4 would require eight additional vehicles due to the significant increase in service frequency. A unit cost of $275,000 per transit vehicle was used to estimate fleet capital costs, which is based on recent JCT bus procurements.

Table 5-3: Service Plan Operating Requirements

Fleet Requirement	Service Plan 1	Service Plan 2	Service Plan 3	Service Plan 4
Current JCT Vehicle Fixed Route Vehicles	22	22	22	22
Service Plan Operating Requirements	14	17	21	25
Spare Ratio Requirement (20%)	3	4	4	5
Total Service Plan Requirements	17	21	25	30
Additional Fixed Route Vehicles Needed	0	0	3	8
Total Estimated Fleet Capital Costs	**$0**	**$0**	**$825,000**	**$2,200,000**

Note: All costs reported in FY 2017 Dollars

In addition to the additional fixed-route vehicles needed to operate Service Plans 2 and 3, an additional support vehicle is recommended as well. This support vehicle would be used for route supervision and to transport drivers and mechanics to buses in operation as needed. The cost of this support vehicle is estimated at $30,000. The total capital costs and potential funding sources are presented in Section 6.1.

5.4 Supporting Elements

In order to support the recommended fixed-route system, several elements are recommended related to administration, operations, and transit amenities.

Title VI Compliance

JCT has adopted a policy as part of its Title VI program to address disparate impacts due to fixed-route service changes. In order to implement the fixed-route changes recommended in this COA, JCT's "Fare Increase and/or Major Service Change with Disparate Impact Assessment Policy" would require the agency to assess "if a disparate impact exists." The policy defines a disparate impact as "at least a twenty percent (20%) difference, plus or minus, between minority ridership and system ridership, or between minority population of the affected service area and the entire service area population which adversely impacts the minority population." In addition, JCT would be required to:

- Hold a public hearing
- Publish a notice in English and Spanish announcing the upcoming public hearing in the *Johnson City Press*, JCT website, vehicles, and transit center
- Respond to comments received regarding the proposed changes
- Review alternatives to minimize, avoid, or mitigate disparate impacts if they exist

Schedules and Maps

As part of implementing the recommended fixed routes, the JCT printed schedules, digital schedules, and route maps would need to be revised. This should happen after the Title VI compliance has been completed and in advance of new service initiation. Coordination with TripSpark, the current provider of JCT's real-time bus tracking and digital maps, would also need to occur in conjunction with the service changes.

Driver Training

JCT has an excellent driver training program. However, many drivers indicated during our interview process that they have not received updated wheelchair securement training and/or First Aid, CPR training. These training elements will only enhance the drivers' abilities to provide excellent and responsive customer service. Through a minimal investment of time and coordination, these updated training opportunities are recommended to be scheduled for all drivers.

Mobility Manager

A new Mobility Manager position is recommended for JCT. This position would provide JCT with the needed resources for coordinating a rideshare program with regional employers, as described under the supporting elements for operations. The Mobility Manager would also provide marketing/advertising coordination for the service and possible street supervision for the fixed routes and paratransit operation. In this capacity, the Mobility Manager would be available to address any issues that may arise during daily transit operations.

Feasibility Study for Transit Maintenance Facility

It is recommended that JCT conduct a feasibility study for a future transit maintenance facility. Currently vehicle maintenance is performed at 209 Water Street and vehicles are parked at 315 and 316 Millard Street in Johnson City (approximately 5.7 acres). The vehicle parking areas on Millard Street are used to store JCT transit vehicles and school buses for Johnson City Schools. The main parking area is currently at capacity and additional bus bays are needed to accomplish future bus maintenance activities.

The purpose of the feasibility study would be to identify appropriate locations to move current facilities out of the city-owned storage lot and maintenance area that could accommodate JCT's current and future maintenance and vehicle storage needs. Though the current arrangement works well, JCT would need storage space for at least 40 transit vehicles and a deadline area to park vehicles needing parts. Ideally the additional space would allow for system growth and additional storage capacity for parts and service equipment. Once specific space needs are determined, potential sites for developing a facility would be identified and ranked based on specific operational, economic, demographic, and environmental factors.

Rider Orientation Programs

JCT currently provides ADA eligible riders with travel training to become familiar with how to use the fixed-route system. This can be an effective way to increase rider confidence and promote the fixed-route system as an efficient, flexible alternative to paratransit service.

JCT may build on this success by offering rider orientation programs to ETSU students and faculty particularly given the popular Bucshot service provided on campus. Training sessions with information specific to the Bucshot service are recommended in order to orient students with the service and promote it as a safe and efficient alternative for moving around campus and the nearby community. These training sessions should be held at the beginning of the semesters to familiarize new students with the Bucshot service. Sessions may be held on campus and in the apartment complexes that are served by the service in order to effectively reach the target student audience. The recommended Mobility Manager position could provide staff support for this initiative. Information about these programs should be made available on JCT's website.

Transit Amenities

Transit amenities are important for providing a high quality transit service that is comfortable, safe, and visible in the community. As discussed in Section 4.2, approximately 26% of JCT fixed-route stops have benches or shelters. We recommend that JCT adopt a transit amenity policy, and then work towards increasing the percentage of stops with amenities. JCT may prioritize amenities at the top 25 stops by annual boardings for which no amenities are currently provided.

Transit Amenity Policy

JCT would benefit from adopting a transit stop amenity policy with criteria for determining what amenities are most appropriate—and at which stops. These policies are important for prioritizing stops when transit budgets are limited and for establishing an objective process. Transit agencies and departments often receive requests for stop amenities. While this feedback is valued, it is important to have an objective policy that evaluates the feasibility and need of such requests. Effective policies include criteria pertaining to ridership, safety, feasibility, and rider feedback.

JCT does not currently have a transit stop amenities policy, but may prepare and adopt one based on the criteria presented in this section. These criteria were compiled based on a survey of other transit agencies and from *TCRP Report 19: Guidelines for the Location and Design of Bus Stops*. They were adapted for JCT based on the unique characteristics of the JCT system, including ridership.

In order to prioritize stop amenities, JCT may classify stops into three categories based on the number of daily boardings as shown in Table 5-4. Certain amenities would be required at all stops regardless of the number of boardings: no parking restrictions, 5-by-8 foot ADA landing pads, and bus stop signs on a separate pole. Other amenities such as benches, shelters, and lighting would be recommended based on the average number of daily boardings.

Table 5-4: Stop Categories and Recommended Amenities

Amenity	Class I <10 daily boardings	Class II 10-25 daily boardings	Class III 25+ daily boardings
No Parking Restriction	Required at all stops		
ADA 5' x 8' Landing Pad	Required at all stops		
Bus Stop Sign on Separate Pole	Required at all stops		
Bench	Optional	Recommended	Provide
Shelter	Optional	Optional	Recommended
Lighting*	Optional	Optional	Recommended
Trash Receptacle	Optional	Recommended	Provide
Rider Information Panel	Optional	Recommended	Provide

*Lighting should be prioritized for stops where evening transit service is provided such as stops located along the PM Evening and Bucshot Evening routes.

Applying this criteria to the top 25 stops for boardings (see Table 4-2), eight shelters and four benches are recommended at the stops listed below. The estimated costs associated with providing these amenities is approximately $212,000, which is explained further in Chapter 6.0: Financial Plan.

Shelters

- Campus Ridge
- Gilbreath Hall
- Buc Ridge Phase 3
- Univ Edge - 910 Watauga
- Buc Ridge Stop Sign
- Ross Hall
- Powell Hall
- Monarch

Benches

- Bell & Ross
- Warf-Pickel Hall
- The Mall - Upper Level
- Governors/Centennial Hall

Transit Amenity Considerations

Considerations for the design and placement of amenities is provided as a reference for JCT.

Benches and Shelters

Benches are recommended for Class II and Class III bus stops, and are optional for Class I stops. Shelters are recommended for Class III stops, and are optional for Class I and Class II stops. Shelters should be installed at transfer locations, regardless of boardings and alightings. The amenities policy should be flexible enough to allow for benches and shelters when boardings and alighting thresholds are not met, but other factors warrant them. These factors may include:

- Number of transfers at a stop
- Right-of-way to construct shelters, waiting areas, or benches
- Number of elderly or physically challenged individuals in the area
- Proximity to major activity centers
- Frequency of service
- Adjacent land use compatibility

- Harsh environmental conditions (e.g. sunlight, wind) that would necessitate a shelter

Route Information

At transfer locations and major stops, route information should be posted that includes the route schedule and map. This information should be posted in enclosed plastic schedule holders to protect them from moisture. The following recommendations should be considered based on TCRP Report 19:

- Provide updated information when changes are made to routes and schedules.
- Consider the quality and appearance of information displays. A visually poor route map conveys a negative impression of the system.
- Make information displays permanent. Temporary methods for displaying information (such as tape-mounting) create a cluttered, unsophisticated appearance at the bus stop.
- Follow ADA clearance, mobility, and visual guidelines for access of information by individuals with impairments.

Receptacles

Trash or recycling receptacles may be provided at transit stops, especially those that have higher ridership or at transfer locations where riders may spend more time waiting for the bus. Receptacles give riders an appropriate place to discard trash instead of littering the area around the stop. However, receptacles are only functional if they are maintained on a regular basis. Before installation, JCT staff should determine who would be responsible for emptying the receptacles and if there is the financial and operational capacity to do so. The following recommendations should be considered based on TCRP Report 19:

- Anchor the receptacle securely to the ground to reduce unauthorized movement.
- Locate the receptacle away from wheelchair landing pad areas and allow for at least a 3-foot separation from other street furniture.
- Locate the receptacle at least two feet from the back of the curb.
- Ensure that the receptacle, when adjacent to the roadway, does not visually obstruct nearby driveways or land uses.
- Avoid installing receptacles that have ledges or other design features that permit liquids to pool or remain near the receptacle—this may attract insects.
- Avoid locating the receptacle in direct sunlight. The heat may encourage foul odors to develop.

Lighting and Security

Lighting is important component for promoting safety and discouraging unintended activity at transit stops. Lighting should be installed at transit stops especially if the transit service is operated early in the morning or into the evening when it is dark. Priority should be given to installing lighting at stops where ridership is higher or in locations with a past history of safety or vandalism issues. In order to conserve resources and budgets, stops should be placed near existing street lights when possible to avoid the need for additional lighting.

Security at transit stops starts with design and placement. The design and placement of shelters should maximize visibility of the stop to riders, drivers, and people passing by to deter criminal activity. Shelters should be constructed with transparent panels so that visibility is not compromised. Landscaping around shelters and

benches should be maintained regularly and kept at a low height so as not to obscure visibility. The following recommendations should be considered based on TCRP Report 19:

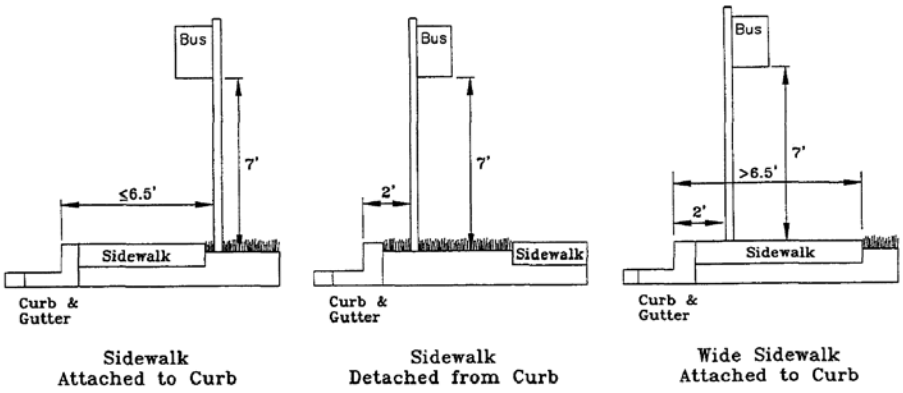
- Bus stop shelters should be constructed of materials that allow clear, unobstructed visibility of and to patrons waiting inside.
- Bus stops should be at highly visible sites that permit approaching bus drivers and passing vehicular traffic to see the bus stop clearly.
- Landscaping elements that grow to heights that would reduce visibility into and out of the bus stop should be avoided. Low-growing shrubbery and ground cover and deciduous shade trees are preferred at bus stops. Evergreen trees provide a visual barrier and should be avoided.
- Bus stops, whenever possible, should be coordinated with existing street lighting to improve visibility.
- Bus stops should be next to existing land uses, such as stores and businesses, to enhance surveillance of the site.

Transit Stop Signs

Transit stop signs should be placed at all designated fixed-route stops. The sign should include the stop ID, route number and direction (inbound or outbound), fixed-route logo, JCT name, and phone number. Each stop should have a unique ID in order for the rider to easily identify their location when communicating with JCT staff or in the case of an emergency, with police and fire departments. According to TCRP Report 19, the following criteria (Figure 5-19) should be followed when designing and locating signs:

- Sign should be placed at the location where riders board the bus
- Bottom of sign should be at least seven feet off the ground
- Sign should not be closer than two feet from the curb face

Figure 5-19: Sign Placement



TCRP Report 19.

Transit Stop Pavement Markings

In addition to sign placement, it is also important to consider pavement markings at transit stops. The curb should be painted (typically yellow) and marked as a no parking zone to avoid conflicts between parked vehicles and transit vehicles.

JCT Transit Center

Through the survey process with JCT riders, a recommendation was made to install a painted safety line in front of the bus bays at the JCT Transit Center. This line would demarcate a safe area for riders to wait before boarding buses. It should include a tactile surface in order to be accessible by persons with visual impairments. JCT may coordinate with the Johnson City Public Works Department to implement this recommendation.

ADA Compliance

New, altered, or relocated bus stops as a result of the COA recommendations should comply with ADA guidelines as discussed in FTA Circular 4710.1C Americans with Disabilities Act (ADA) Guidance (2015). The guidelines require that a boarding and alighting area with minimum dimensions of 5-by-8 feet be provided at bus stops to the maximum extent practicable. Furthermore the slope of the boarding and alighting area in the direction parallel to the roadway must be the same as that of the roadway to the maximum extent practicable. Perpendicular to the roadway, the slope must not exceed 1:48, that is, not more than 1 inch of rise over a horizontal distance of 48 inches.

For bus shelters, the minimum clear floor or ground space must be entirely within the shelter to accommodate individuals using wheelchairs and must be connected to an accessible route to the boarding and alighting area.

The guidelines also require that an accessible pathway be provided to the bus stop or, in cases where a pathway is not feasible, complementary paratransit must be provided to the individual with a disability who could otherwise ride an accessible bus but cannot reach the bus stop due to the lack of an accessible route. For further guidance, refer to Appendix B.

5.5 Paratransit Recommendations

The COA recommends that JCT implement paratransit scheduling software, suggests improvements to the paratransit service application and related information, and identifies incentives to encourage use of the fixed-route system.

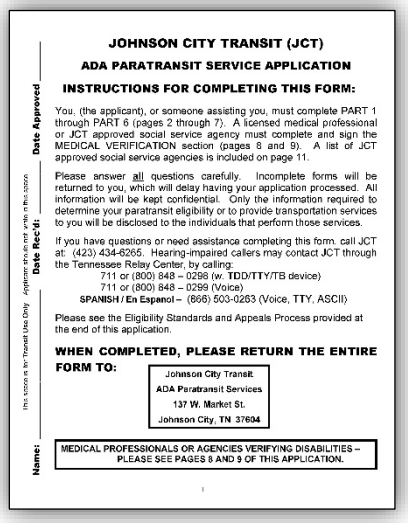
Scheduling Software and Mobile Data Terminals

JCT currently schedules the XTRA Paratransit service trips manually. However, the JCT staff has initiated a procurement for an automated scheduling software to assist with the coordination of paratransit trips. It is indeed recommended that JCT continue to pursue and implement paratransit scheduling software to automate this process. Such software would improve efficiency by reducing the amount of staff time required to do scheduling. The software would allow JCT to more easily identify trips that are located in close proximity to one another to optimize vehicle routing. This technique utilizes resources more efficiently and reduces energy consumption. It would likely improve the efficiency of the demand response service, improving upon the key metrics discussed in the peer analysis (Section 4.4): operating expenses per passenger trip, operating expenses per revenue mile, and operating expenses per revenue hour. An additional benefit of this software is the potential for riders to schedule rides online in addition to calling the JCT office.

In addition to procuring software, JCT may install Mobile Data Terminals (MDT) on its demand response vehicles. MDTs are tablets that allow for the drivers to easily view manifests and directions. The dispatcher can quickly send drivers updated trip information to the tablet. MDTs can also notify dispatch when a pickup or drop-off has occurred, which reduces the use of radio communications and keeps radios free for more urgent notifications.

Paratransit Service Application and Information

The current JCT ADA Paratransit Service Application is a succinct document that clearly explains the JCT paratransit service and outlines the instructions for applying. The first part of the application asks the applicant to answer questions related to mobility needs, abilities, and experience with JCT's fixed-route system. It also asks the applicant if she or he has interest in JCT's travel training program. The second part requires that a licensed medical professional or JCT approved social service agency complete a verification form. The final part of the application includes important reference materials: JCT ADA Paratransit Eligibility Standards, list of approved verification agencies, the JCT ADA Administrative Appeals Process, and Visitor Policy. Additional information pertaining to trip scheduling, fares, no shows, trip cancellations, and reasonable modifications is available in a separate document titled: "Johnson City Transit Paratransit Service Information for Clients." Both of these documents are clear and concise, and reflective of the ADA guidance for paratransit service.



JOHNSON CITY TRANSIT (JCT)

ADA PARATRANSIT SERVICE APPLICATION

INSTRUCTIONS FOR COMPLETING THIS FORM:

You, (the applicant), or someone assisting you, must complete PART 1 through PART 6 (pages 2 through 7). A licensed medical professional or JCT approved social service agency must complete and sign the MEDICAL VERIFICATION section (pages 8 and 9). A list of JCT approved social service agencies is included on page 11.

Please answer all questions carefully. Incomplete forms will be returned to you, which will delay having your application processed. All information will be kept confidential. Only the information required to determine your paratransit eligibility or to provide transportation services to you will be disclosed to the individuals that perform those services.

If you have questions or need assistance completing this form, call JCT at: (423) 434-6265. Hearing-impaired callers may contact JCT through the Tennessee Relay Center, by calling:
711 or (800) 848 – 0298 (w. TDD/TTY/TB device)
711 or (800) 848 – 0299 (Voice)
SPANISH / En Espanol – (866) 503-0263 (Voice, TTY, ASCII)

Please see the Eligibility Standards and Appeals Process provided at the end of this application.

WHEN COMPLETED, PLEASE RETURN THE ENTIRE FORM TO:

Johnson City Transit
ADA Paratransit Services
137 W. Market St.
Johnson City, TN 37604

MEDICAL PROFESSIONALS OR AGENCIES VERIFYING DISABILITIES – PLEASE SEE PAGES 8 AND 9 OF THIS APPLICATION.

Date Approved

Date Rec'd

Name:

JCT may consider the following recommendations to improve upon the current paratransit documents:

- Include a statement translated into common foreign languages within the paratransit service area instructing applicants to contact JCT for paratransit information available in their requested language.
- Add JCT's Equal Opportunity/Title VI Policy Statement to the JCT ADA Paratransit Service Application. It is currently included in the Johnson City Transit Paratransit Service Information for Clients document.
- Add a map to the Johnson City Transit Paratransit Service Information for Clients document, illustrating the paratransit service area.

Incentives to Use the Fixed-Route System

According to the most recent operational data submitted for the FY 2017 NTD Report, the average cost of a paratransit trip is $28.98 while the average cost of a fixed-route trip is $3.57. Therefore it is advantageous to the transit agency to provide trips using the fixed route whenever possible. Paratransit trips are inherently more expensive due to economies of scale: vehicles often travel longer distances and carry fewer riders. In comparison, the average cost of a paratransit trip amongst JCT's demand response peers ranges from $6.68 to $39.58 (see Section 4.4).

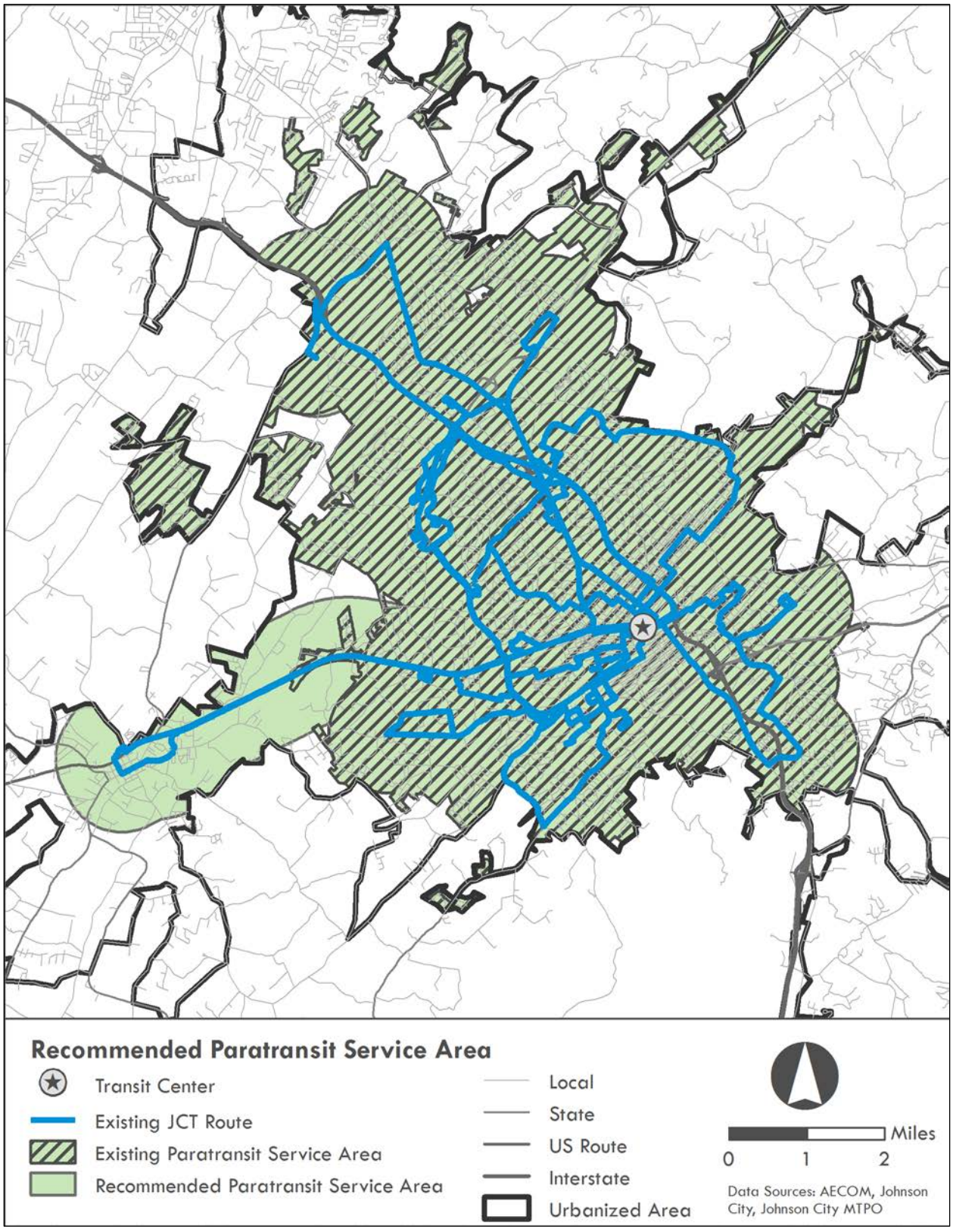
TCRP Synthesis 74: Policies and Practices for Effectively and Efficiently Meeting ADA Paratransit Demand identifies several strategies for incentivizing the fixed-route system. The fixed-route system already has two distinct incentives over paratransit service: greater flexibility and lower fares. Fixed route trips do not require reservations in advance or defined pickup/drop-off times. The fixed-route fare for riders with disabilities is $0.50 compared to $2.00 for a paratransit trip.

JCT may incentivize using the fixed-route system further by offering a free fare to Personal Care Attendants (PCA) accompanying the eligible paratransit rider on a fixed-route trip. PCAs currently ride free on paratransit trips so this policy may be extended to the fixed-route system. The TCRP study also recommends rider training programs as a means to encourage fixed-route trips. JCT may encourage its existing rider training programs further by publishing information about them on its website. It may also reach out to human service agencies frequented by paratransit riders to conduct rider training programs.

Complementary Paratransit Service for the JBX Route

As discussed in Section 5.2, the implementation of the JBX Route would require that the paratransit service area be expanded to include a ¾ mile area around the JBX Route. The recommended paratransit service area is shown in Figure 5-20. JCT may consider prepositioning a demand response vehicle in the Jonesborough community to offset deadhead miles associated with providing complementary ADA paratransit service. The costs of expanding the complementary paratransit service as a result of the JBX Route are estimated to be approximately $110,000 annually. The methodology for this estimate is explained further in Chapter 6.0: Financial Plan.

Figure 5-20: Recommended Paratransit Service Area



5.6 Rideshare Program

JCT has a unique opportunity to provide a regional rideshare service that would enhance its fixed-route and demand response services and keep with the tenor of providing regional transportation. Commuters, through their respective employers, would enter into agreements with JCT to utilize a passenger van to commute to and from their place of employment.

As noted in Section 1.5, the two largest employers currently not served by JCT are Citi Commerce Solutions with over 2,000 employees and Frontier Health with approximately 1,000 employees. They are both located in Gray within 1,000 feet of each other on Bobby Hicks Highway. Given the large number of employees and proximity of the two employers to each other, a coordinated rideshare program could be very successful. Outreach and coordination with both employers would need to occur in order to understand the employees' commuting patterns and mobility needs. As shown on Figure 5-21, a potential rideshare program could start at the JCT Transit Center, stop at the park and ride lot located at the corner of North State of Franklin Road and Browns Mill Road/West Oakland Avenue, and end at Citi Commerce Solutions and Frontier Health. The estimated trip distance is 12 miles one-way.

The JCT Rideshare Program would strive to promote energy conservation, reduce congestion, improve air quality, reduce vehicle miles, decrease highway accidents, save money for program participants and conserve natural resources. Accommodating travel demand through a comprehensive rideshare initiative, rather than single-occupant vehicles, can result in direct benefits for employees and employers as well as indirect sustainability benefits to the Johnson City community.

The program would be designed to increase the use of alternative transportation in the urbanized area by providing individuals and employers with the resources they need to start and maintain a Rideshare Program. The recommended Mobility Manager position would manage communication and maintain a working relationship with businesses and organizations. Local employers would benefit through improved worker productivity; expanded employee labor market; reduced employee turnover, which saves on training costs; reduced need for new/expanded parking facilities; and enhanced community and employee relations. More detailed information on the Rideshare Program and sample forms are included in Appendix C and Appendix D.

Figure 5-21: Rideshare Program

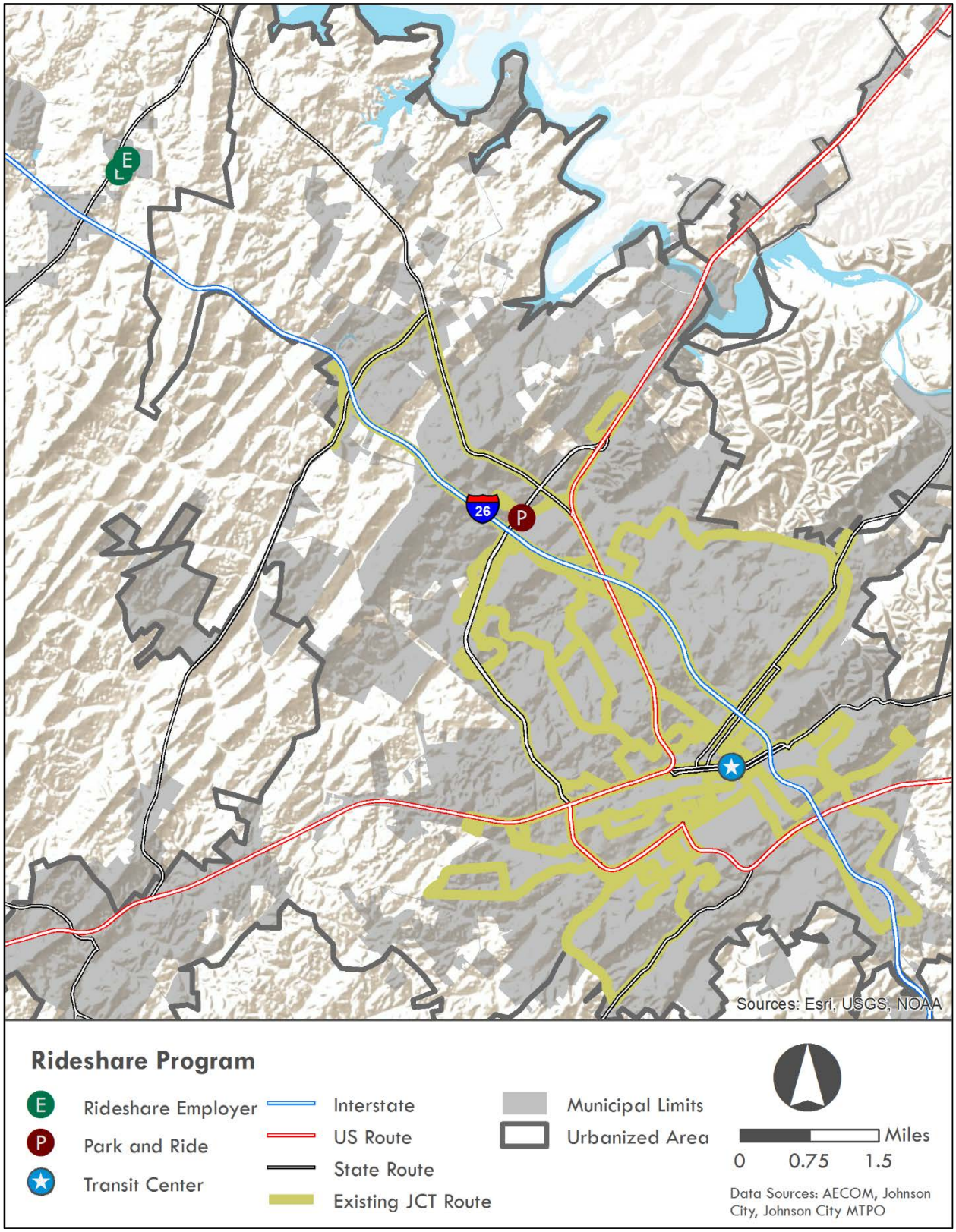


Table 5-5: Summary of Recommendations

Recommendation	Implementation Phase
Recommended Fixed Routes	
Implement Service Plan 1 (Implement One Service Plan)	Mid-Term
Implement Service Plan 2	Mid-Term
Implement Service Plan 3	Mid-Term
Implement Service Plan 4	Mid-Term
Title VI Compliance	Mid-Term
Revise Schedules and Maps	Mid-Term
Amenity Recommendations	
Adopt a Transit Amenity Policy	Short-Term
Install Additional Amenities	Mid-Term
Paratransit Recommendations	
Procure paratransit scheduling software	Short-Term
Update paratransit documents	Short-Term
Incentivize use of the fixed-route system	Short-Term
Rideshare Program	
Coordinate a Rideshare Program with regional employers	Long-Term
Administration Recommendations	
Add a Mobility Manager position	Long-Term
Conduct a feasibility study for transit maintenance facility	Long-Term
Expand the Rider Orientation Program	Mid-Term
Enhance driver training	Short-Term
Capital Needs	
Procure additional vehicles for recommended fixed routes	Mid-Term
Replace HVAC system at the JCT Transit Center	Mid-Term
Replace surveillance system at the JCT Transit Center	Short-Term
Purchase heavy-duty bus lifts	Short-Term
Purchase property for bus vehicle storage	Mid-Term
Replace bus lot surveillance cameras	Mid-Term
Replace AVL/Routing Software	Long-Term
Implement an automated fare system	Long-Term

6.0 Financial Plan

This chapter evaluates the financial plan for the proposed transit system expansion in Johnson City. JCT local funding, transit expenditures, capital and operating costs, and funding sources are calculated in this chapter. This chapter includes a discussion of several key implementation issues and the financial capacity and possible phasing of the transit system expansion.

Based on the analysis of the future potential services and input received from the public outreach process, the following recommendations have been prepared. The recommendations regarding the proposed service options are grouped into five categories: Administration, Fixed Route, Bucshot, JBX Route, and Paratransit. Operating and capital cost estimates for the proposed services were prepared using the Section 5307, Section 5310, Section 5339, state, and local funding as revenue sources.

6.1 Recommended Service Plans and Cost Estimates

The estimated annual operating costs associated with the four Service Plans presented in Chapter 5.0 are provided in Table 6-1. Potential sources of federal, state, and local funding are identified in the table as well. In Table 6-1, the following assumptions were made:

- Section 5310 funding along with some residual New Freedom funding will be utilized.
- Federal Section 5307, 5339, state, and local funding sources will also be utilized.
- The Town of Jonesborough and/or Washington County will contribute a modest amount of local funding to help support the proposed Jonesborough Express Route. This is shown as JBX Share in the table.
- The current contractual relationship with Johnson City and ETSU will continue to assist in funding the Bucshot transit routes specific to the ETSU campus.
- The same JCT administrative structure in place now will continue under either of the four proposed Service Plans.
- The additional paratransit service required for the JBX Route has been calculated and is included in the paratransit operations cost shown in the finance plan.

Table 6-2 displays the Transit Program Capital Projection utilizing Section 5307 and Section 5339 funding parameters for the COA, including estimated vehicle, passenger amenities, maintenance additions, and software upgrades, and subsidy funding requirements.

The change in paratransit operating costs as a result of implementing the JBX Route was estimated by increasing costs proportionally to the increase in the paratransit service areas. Currently, the JCT paratransit service area is 44 square miles. If the JBX Route is implemented the paratransit service area would expand to include a ¾ mile area around the JBX Route for a total service area of 49 square miles. The new paratransit service area would be 11.5% larger than the current service area. Paratransit operating costs were increased proportionally by the same amount, 11.5%.

Capital costs were estimated for providing amenities at the top 25 stops by annual boardings for which no amenities are currently provided (refer to Section 4.2 for a listing of these stops). As discussed in Section 5.4, eight shelters and four benches are recommended based on the amenity guidelines provided in Table 5-4. Unit costs of $25,000 for a shelter and $3,000 for a bench were applied based on similar transit studies.

Table 6-1: Estimated Annual Operating Costs of the Service Plan Alternatives

	Program Element	Total Operating Cost	Federal Source (5307)	Local Share	Other Federal Funds[1]	Other Local Share[2]	State Share	Local UROP Share	ETSU Share	JBX Share
Service Plan 1	Administration	$530,000	$424,000	$53,000	-	-	$53,000		-	-
	Fixed Route	$1,600,000	$505,000	$319,000	-	-	$674,800	$101,200	-	-
	Bucshot	$410,000	$86,700	$86,600	-	-	-	-	$236,700	-
	JBX Route	-	-	-	-	-	-	-	-	-
	Paratransit	$1,391,550	$608,550	$330,240	$349,400	$87,360	$16,000	-	-	-
	Total	$3,931,550	$1,624,250	$788,840	$349,400	$87,360	$743,800	$101,200	$236,700	$0
Service Plan 2	Administration	$530,000	$424,000	$53,000	-	-	$53,000	-	-	-
	Fixed Route	$1,600,000	$505,000	$319,000	-	-	$641,300	$134,700	-	-
	Bucshot	$450,000	$86,700	$126,600	-	-	-	-	$236,700	-
	JBX Route	$80,000	-	-	-	-	$48,700	$24,300	-	$7,000
	Paratransit	$1,501,510	$608,550	$440,160	$349,440	$103,360	-	-	-	-
	Total	$4,161,510	$1,624,250	$938,760	$349,440	$103,360	$743,000	$159,000	$236,700	$7,000
Service Plan 3	Administration	$530,000	$424,000	$53,000	-	-	$53,000	-	-	-
	Fixed Route	$2,290,000	$1,113,550	$406,890	-	-	$641,300	$128,260	-	-
	Bucshot	$450,000	$86,700	$126,600	-	-	-	-	$236,700	-
	JBX Route	$80,000	-	-	-	-	$48,700	$24,300	-	$7,000
	Paratransit	$1,501,510	-	-	$574,440	$927,070	-	-	-	
	Total	$4,851,510	$1,624,250	$586,490	$574,440	$927,070	$743,000	$152,560	$236,700	$7,000
Service Plan 4	Administration	$530,000	$424,000	$53,000	-	-	$53,000	-	-	-
	Fixed Route	$3,080,000	$1,093,550	$1,293,450	-	-	$603,000	$90,000	-	-
	Bucshot	$450,000	$86,700	$126,600	-	-	-	-	$236,700	-
	JBX Route	$140,000	$20,000	$3,000	-	-	$70,000	$35,000	-	$12,000
	Paratransit	$1,501,510	-	-	$574,440	$910,070	$17,000	-	-	-
	Total	$5,701,510	$1,624,250	$1,476,050	$574,440	$910,070	$743,000	$125,000	$236,700	$12,000

Notes: All amounts shown are rounded to the nearest hundred.

[1] This funding includes FTA Section 5310 funding, and New Freedom funding and residual Section 5307 funding.

[2] Matching funds for residual funding. Match assumed to be 20% non-federal.

Table 6-2: Estimated Capital Costs

Item	Units	Estimated Unit Cost	Total	Federal Share (80%)	State Share (10%)	Local Share (10%)
Transit Vehicles						
Service Plan 3	3	$275,000	$825,000	$660,000	$82,500	$82,500
Service Plan 4	8	$275,000	$2,200,000	$1,760,000	$220,000	$220,000
Support Vehicle	1	$30,000	$30,000	$24,000	$3,000	$3,000
Passenger Amenities						
Shelters	8	$25,000	$200,000	$160,000	$20,000	$20,000
Benches	4	$3,000	$12,000	$9,600	$1,200	$1,200
Maintenance Additions						
Heavy Duty Bus Lift	2	$110,000	$220,000	$176,000	$22,000	$22,000
Transit Center Surveillance	1	$20,000	$20,000	$16,000	$2,000	$2,000
Bus Lot Surveillance Cameras	8-12	$2,500	$30,000	$24,000	$3,000	$3,000
Property Vehicle Storage	1	$120,000	$120,000	$96,000	$12,000	$12,000
HVAC Replacement	1	$400,000	$400,000	$320,000	$40,000	$40,000
Software Upgrades						
AVL Routing System	1	$400,000	$400,000	$320,000	$40,000	$40,000
GPS/Scheduling Software	1	$90,000	$90,000	$72,000	$9,000	$9,000
Automated Fare System	1	$50,000	$50,000	$40,000	$5,000	$5,000
Totals			**$4,597,000**	**$3,677,600**	**$459,700**	**$459,700**

Note: Any cost and/or quantity opinions, estimates or forecasts provided by AECOM was on a basis of experience and judgment, but since AECOM has no control over market conditions or bidding procedures, AECOM cannot and does not warrant that bids, ultimate construction cost, or project economics will not vary from such opinions, estimates or forecasts.

6.2 Potential Sources of Funding

In order to fund this comprehensive operations analysis, Johnson City will continue to contribute local revenues in order to provide the necessary local match needed to acquire federal and state funding. TDOT administers various Federal and State Aid Grant Programs to assist localities with funding for public transportation systems.

TDOT is a designated recipient for FTA funding and distributes this funding to small urbanized localities based on a formula allocation. The formula is based on factors for the 2010 Census Urbanized Area population, which is adjusted each year using an estimated county growth rate, NTD revenue miles and Local Funds for Transit. Because of the variables in the allocation formula, the amount of funding will slightly change based on population, NTD data, on local participation, and on the federal apportionment to the State of Tennessee.

JCT receives funding as a direct recipient of FTA. Funding amounts are determined by TDOT as explained above and notification is then sent to JCT and FTA advising the amount of funding that will be received. JCT then applies directly to the FTA for that specified amount of funding.

6.2.1 Federal Funding

Most transit systems in the United States receive substantial federal funding. This section provides a summary of the transit funding options available for JCT. All funding programs include limiting factors related to the eligible recipients and eligible costs, either planning, capital and/or operating costs.

Federal funding is established through legislative program structures and programs maintained in the Fixing America's Surface Transportation (FAST) Act. The FAST Act preserved much of the Moving Ahead for Progress in the 21st Century (MAP-21) legislative programs and funding shares. Because the horizon of the FAST Act is much longer than MAP-21, the FAST Act provides longer term funding provisions for

transportation agencies. Federal funding categories that can be leveraged for transit improvement projects by JCT are summarized in Table 6-3 and detailed further in this section.

Table 6-3: Federal Aid Grant Programs

Program	Program Description	Eligible Recipients	Matching Ratios
FTA Section 5303, 5304 and 5305 – Metropolitan and Statewide Planning formula funding	Support transit planning expenses.	• Metropolitan Planning Organizations (MPOs) • State DOTs	Up to 80% of eligible expenses
FTA Section 5307 – Urbanized Area formula funding	Supports operating and capital costs of transit operators. Used by the State DOT to fund small urban transit systems.	Funding is made available to designated recipients, which must be public bodies. Typically the State DOT is the designated recipient for urbanized areas between 50,000 and 200,000.	Up to 50% of eligible operating expenses.
FTA Section 5310 – Enhanced Mobility of Seniors and Individuals with Disabilities formula funding	Supports capital costs in Tennessee only. Apportioned to the State DOT by the FTA to fund small urban transit systems.	• States for rural and small urban areas (small UZAs) and designated recipients chosen by the Governor of the State for large urban areas (large UZAs); or • State or local governmental entities that operates a public transportation service.	Up to 50% of eligible operating expenses. Up to 80% of eligible capital expenses. Note: The Tennessee DOT specifies this funding will only be used for capital purposes.
FTA Section 5339(a) – Bus and Bus Facilities formula grant	Provides capital funding to replace, rehabilitate and purchase buses and related equipment and to construct bus-related facilities.	• Designated Recipients of urbanized areas. • State DOTs that operate or allocate funding to fixed-route bus operators. • Sub-recipients include public agencies or private non-profits engaged in public transit.	Up to 50% of eligible operating expenses. Up to 80% of eligible capital expenses.
FTA Section 5339(b) – Bus and Bus Facilities discretionary grant	Provides capital funding to replace, rehabilitate and purchase buses and related equipment and to construct bus-related facilities.	• Designated Recipients of urbanized areas. • State DOTs that operate or allocate funding to fixed-route bus operators. • Sub-recipients include public agencies or private non-profits engaged in public transit.	Up to 80% of eligible capital expenses.
Flexible Funding Program – Surface Transportation Block Grant Program (STBG) Funds	Provides funding for a wide variety of projects that support operating and capital costs of transit operators. Used by the State DOT to fund small urban transit systems.	Funding is made available to designated recipients, which must be public bodies. Typically the State DOT is the designated recipient for urbanized areas between 50,000 and 200,000.	Up to 80% of eligible capital expenses.

Program	Program Description	Eligible Recipients	Matching Ratios
Flexible Funding Program – Congestion Mitigation and Air Quality (CMAQ) Program	Provides capital funding that must show an air quality benefit. Funding can also be used for improvements to public transit facilities, high occupancy vehicle (HOV) facilities, park-and-ride lots and traffic flow improvements.	State DOTs with areas in nonattainment or maintenance for ozone, carbon monoxide and/or particulate matter.	Up to 88.5% of eligible capital expenses.

A. Metropolitan and Statewide Planning and Non-Metropolitan Transportation Planning – Sections 5303, 5304 and 5305 Programs

These funds are available for planning activities that:

- Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency
- Increase the safety of the transportation system for motorized and non-motorized users
- Increase the security of the transportation system for motorized and non-motorized users
- Increase the accessibility and mobility of people and for freight
- Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns
- Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight
- Promote efficient system management and operation
- Emphasize the preservation of the existing transportation system

B. Urbanized Area Formula Grant – Section 5307 Program

The Section 5307 formula grant provides transit capital, operating, and planning assistance to urbanized areas with populations of more than 50,000. This program has the most encompassing eligibility of any federal program providing funding to transit systems. Grant funds are utilized to support the development, maintenance, and improvement of public transportation in urbanized areas. Eligible projects fall into three primary categories: Planning Projects, Capital Projects, and Operating Projects.

Planning eligible activities include, but are not limited to: studies related to management, operations, capital requirements, and economic feasibility; work elements and related activities preliminary to and in preparation for constructing, acquiring, or improving the operation of facilities and equipment; plans and specifications; evaluation of previously funded projects; job access and reverse commute projects; and other similar or related activities before and in preparation for the construction, acquisition, or improved operation of public transportation systems, facilities, and equipment.

Capital projects eligible under the Urbanized Area Formula Program include all projects included under 49 U.S.C. 5302(3). In general, capital project expenses involve purchasing, leasing, constructing, maintaining, or repairing facilities, rolling stock, and equipment for use in a public transportation system. Capital project costs may include all direct costs and indirect costs associated with the project (provided that the grantee has an approved cost allocation plan or indirect cost proposal). It is noted that a listing of eligible projects is not shown here because of the breadth of projects. All eligibility of projects is generally determined by the FTA regional

offices. Example eligible projects include engineering design and evaluation of transit projects, capital investments in bus and bus-related activities such as replacement and overhaul of buses, rebuilding of buses, crime prevention and security equipment, construction of maintenance and passenger facilities and capital investments in new and existing fixed guideway systems. All preventive maintenance and some ADA complementary paratransit service costs are considered eligible.

FTA provides funding to eligible recipients for costs incurred in the *operation of public transportation service*. In general, operating expenses are those costs necessary to operate, maintain, and manage a public transportation system. Operating expenses usually include such costs as driver salaries, fuel, and items having a useful life of less than one year. Recipients in small UZAs, such as Johnson City, may use Section 5307 funds for operating assistance. There is no limitation on the amount of their apportionment that recipients in these UZAs may use for operating assistance.

Established under MAP-21 and upheld by FAST Act legislation, the Section 5307 grant program also includes eligible activities from the Job Access and Reverse Commute (JARC) Program (formerly found in Section 5316), which focuses on providing services to low-income individuals to access jobs. These activities include operating assistance with a 50 percent local match for JARC activities. In addition, the urbanized area formula for distributing funds now includes the number of low-income individuals as a factor. There is no minimum or maximum amount of funding that can be spent on JARC activities.

Johnson City is the Direct Recipient for their particular small urbanized areas for the Section 5307 funding. Therefore, JCT submits all grant applications directly to FTA and completes all grant management activities required by FTA.

Johnson City as the Direct Recipient must complete the following activities:

- Identify and select projects (capital, operating, job access and reverse commute or planning) that the MPO or State DOT will include in the Statewide Transportation Improvement Program (STIP), long-range statewide transportation plan and other relevant state documents.
- Submit the grant application for the Section 5307 program of projects (POP).
- Ensuring that the annual POP complies with the requirements that at least one percent of the apportionment is used for associated transit improvements and that at least 1 percent is used for public transportation security projects unless all security needs are certified to have been met.

FTA performs a triennial review at least once every three years to evaluate the performance of each recipient of Section 5307 funds, including JCT. During the triennial review, FTA ensures the recipient is governing its program in compliance with federal statutory and administrative requirements.

The local match required for the Section 5307 funding can vary from 10% to 50% depending on the type of project. The federal share for *planning and capital projects* that receive funding under the Section 5307 Program may not exceed 80 percent of the project cost. There are several notable exceptions in which the federal share may exceed 80 percent for certain projects related to ADA, Clean Air Act, and certain bicycle projects as follows:

1. Vehicles. The federal share is 85 percent for the acquisition of vehicles for purposes of complying with or maintaining compliance with the Americans with Disabilities Act of 1990 (ADA; 42 U.S.C. 12101 et seq.) or the Clean Air Act (CAA; 42 U.S.C. 7401 et seq.).
2. Vehicle-Related Equipment and Facilities. The federal share for project costs for acquiring vehicle-related equipment or facilities (including clean fuel or alternative fuel vehicle-related equipment or

facilities) for purposes of complying or maintaining compliance with the CAA, or required by the ADA, is 90 percent.

The federal share for *operating expenses* may not exceed 50% of the net operating cost.

C. Enhanced Mobility of Seniors and Individuals with Disabilities – Section 5310 Program

The purpose of the Section 5310 Program is to improve mobility for seniors and individuals with disabilities by removing barriers to transportation service and expanding transportation mobility options. This program supports transportation services planned, designed, and carried out to meet the special transportation needs of seniors and individuals with disabilities in all areas – large urbanized (over 200,000), small urbanized (50,000-200,000), and rural (under 50,000). Eligible projects include both traditional capital investment and nontraditional investment beyond the ADA complementary paratransit services.

Program funds for Section 5310 are apportioned to:

- States for rural and small urban areas (small UZAs) and designated recipients chosen by the Governor of the State for large urban areas (large UZAs); or
- State or local governmental entities that operates a public transportation service.

Program funding eligibility for Section 5310 is stipulated in the FTA Section 5310 Circular (9070.1G). The circular stipulates that at least 55 percent of program funds must be used on capital or "traditional" 5310 projects. Example projects include:

- Buses and vans; wheelchair lifts, ramps, and securement devices; transit-related information technology systems including scheduling/routing/one-call systems; and mobility management programs.
- Acquisition of transportation services under a contract, lease, or other arrangement. Both capital and operating costs associated with contracted service are eligible capital expenses.

The remaining 45 percent can be used for other "nontraditional" Section 5310 projects. Under MAP-21, the program was modified to include projects eligible under the former Section 5317 New Freedom program, described as: Capital and operating expenses for new public transportation services and alternatives beyond those required by the ADA, designed to assist individuals with disabilities and seniors. Example projects include:

- Travel training; volunteer driver programs; building an accessible path to a bus stop including curb-cuts, sidewalks, accessible pedestrian signals or other accessible features.
- Improving signage, or way-finding technology; incremental cost of providing same day service or door-to-door service.
- Purchasing vehicles to support new accessible taxi, rides sharing and/or vanpooling programs; and mobility management.

The federal share for *capital expenses* may not exceed 80% of the net capital cost. FTA additionally allows Section 5310 funding to support operating expenses at a 50% match ratio (50% federal, 50% non-federal). However, TDOT restricts Section 5310 funding in the state of Tennessee to only support capital expenditures.

D. Bus and Bus Facilities Grant – Section 5339 Program

The Bus and Bus Facilities is a formula grant program created by MAP-21 legislation which replaced the previous Section 5309 discretionary Bus and Bus Facilities program. This capital program provides funding to replace, rehabilitate, and purchase buses and related equipment, and to construct bus-related facilities. Distribution of this grant is formula based and requires a 20% local match. A portion of the total Section 5339 program has been also set aside as a discretionary pot of funding through the FAST Act. These competitive grants also provide additional federal resources to State DOTs and designated and direct recipients to replace, rehabilitate and purchase buses and related equipment and to construct facilities including technological changes or innovations to modify low or no emission vehicles or facilities. A sub-program, the Low- or No-Emission Vehicle Program, provides competitive grants for projects that support the purchase or rehab of those specified vehicles.

E. Flexible Funding Program – Surface Transportation Block Grant Program (STBG) Funds

The STBG program provides a national annual appropriation to the Federal Highway Administration (FHWA). This funding has a broad project eligibility and funding may beF used for projects to preserve or improve conditions and performance on any Federal-aid highway, bridge project on any public road, facilities for non-motorized transportation, transit capital projects and public bus terminals and facilities. This program funding can also be "flexed" to FTA for use by transit agencies. Once flexed to FTA, the funds generally follow the regulations and eligibility of Section 5307 funding.

F. Flexible Funding Program – Congestion Mitigation and Air Quality (CMAQ) Program

The CMAQ program is also an FHWA aid program that provides a flexible funding source to state and local governments for transportation projects and programs to help meet the requirements of the Clean Air Act. JCT does not receive any CMAQ funding. The Johnson City geographic area is in air quality attainment for the Clean Air Act and, as such, does not qualify for CMAQ funding.

6.2.2 State Funding

The State of Tennessee, through TDOT, has administrative responsibility for the federal programs related to transit operating and capital for cities with populations under 200,000. Section 5307, Section 5310, Section 5311, and Section 5339 all have programs containing administrative guides that are updated for each fiscal year and are available through the Multimodal Transportation Resources Office.

The State of Tennessee programs that are sources of formula and competitive state funding available to JCT on an annual basis are listed below.

A. TDOT Urban Operating (UROP) Program Fixed Route & Paratransit in Urban Core Areas

This program provides capital and operating assistance to support fixed-route and complementary paratransit service in urban core areas of Tennessee. Eligible projects include Capital (i.e. rolling stock, preventative maintenance, equipment) and Operating (i.e. fuel, salaries, wages, fringe benefits, travel and training). Annual program funds are approved by the State Legislature and allocated to pre-determined public transportation providers by formula. The formula is based on population reported in the 2010 Census.

The match requirements are as follows:

First $500,000 in total expenses – 80% state, 20% local
After first $500,000 in total expenses – 50% state, 50% local

Transit agencies are required to comply with all state rules and requirements. Monthly, quarterly, and annual submission of information and reports to document compliance and measure project performance is required. Grantees may budget up to $1 million in UROP funds for capital expenses.

B. TDOT Critical Trips (CRIT) Program Demand Response in Urban Fringe Areas

This program provides operating assistance to support demand response service in urban fringe areas of Tennessee not served by the primary urban transit system. Eligible projects are limited to Operating Expenses (i.e. fuel, salaries, wages, and fringe benefits). Annual program funds are approved by the State Legislature and allocated to pre-determined public transportation providers by formula. The formula is based on population reported in the 2010 Census. Funds will be allocated statewide based on the population of urbanized areas not served by the primary urban transit system.

Program minimum local match requirements are as follows:

State – 50%, Local – 50%.

Agencies are required to comply with all state rules and requirements. Monthly, quarterly, and annual submission of information and reports to document compliance and measure project performance is required. At this time the First Tennessee Human Resource Agency will receive this funding. For the purposes of this COA, funding projections from the CRIT Program were not included in this financial analysis.

C. Improving Manufacturing, Public Roads and Opportunities for a Vibrant Economy (IMPROVE) Act Capital Grants

This program provides capital assistance to support public transportation services in Tennessee. Public transit providers currently receiving FTA 5307 or Section 5311 program funds are eligible. Eligible projects include:

- Transit Centers, Administration, Maintenance, and Storage Facilities
- Bus Rapid Transit and Fixed Guideway Stations
- Park and Ride Lots
- ROW Acquisition for Transit and Transit Oriented Development (TOD) Projects
- Intelligent Transportation Systems (ITS) and Technology
- Passenger Amenity Projects
- Transit Fueling and Electric Charging Stations
- Rolling Stock and Associated Equipment
- Safety and Security Equipment

Annual program funds are awarded based on a competitive selection process by TDOT that takes into consideration several evaluation criteria, geographic distribution, and distribution amongst rural and urban agencies. Evaluation factors include:

- Demonstrated benefits to safety, reduction of congestion, and economic development
- Impact to transit ridership or system performance
- Project readiness
- Benefit to an Economically Distressed Area
- Potential to leverage federal discretionary funds
- Strong local and MPO financial support

The match requirement is state 75% and local 25%. Agencies are required to comply with all state and applicable federal rules and requirements regarding procurement, construction, and project reimbursement. The amount of annual funding increases from now to State FY 2020. There is $13 million available is in State FY 2018, $17 million in State FY 2019, and $21 million in State FY 2020 and beyond. JCT is an eligible recipient for this funding. Because this funding is awarded in a competitive manner, an award of a specific amount was not included in the financial analysis for this COA.

D. Volkswagen Settlement

In 2015, Volkswagen publicly admitted to secretly and deliberately installing defeat devices in approximately 590,000 model year 2009 to 2016 motor vehicles containing 2.0 and 3.0 liter diesel engines. From October 2016 to May 2017, the U.S. District Court approved three partial settlements of varying amounts of money. The State of Tennessee will receive $45 million in settlement funds for a trust allocation that will be administered through the Tennessee Department of Environment and Conservation. The distribution plan for this funding has not yet been agreed upon for the state of Tennessee. It is envisioned that transit vehicles will be an eligible expense but this has not been finalized. Because efforts for finalizing eligible expenses and recipients is preliminary at the time of this report, funding from the Volkswagen Settlement was not included in this finance plan.

6.2.3 Local Funding

The local share for funding transit capital and operating expenses can come from a variety of sources, provided that they did not originate from a federal source. Local share is normally made in the form of cash; however, in some cases the local share can be made in the form of in-kind services or contributions. In-kind services are those services which may be used by the transit operation but paid for from another local source and not directly by the transit operation. For example, shared use of a garage facility may be counted as in-kind contribution because the value of the service provided by the use of the garage could be paid from another source such as the Public Works Department.

Typically, local share comes from three main sources, general fund, ad valorem taxes (property taxes), or sales taxes dedicated specifically to transit. For capital, general revenue or capital improvement bonds may be considered as a local share source. These funding sources are briefly described below.

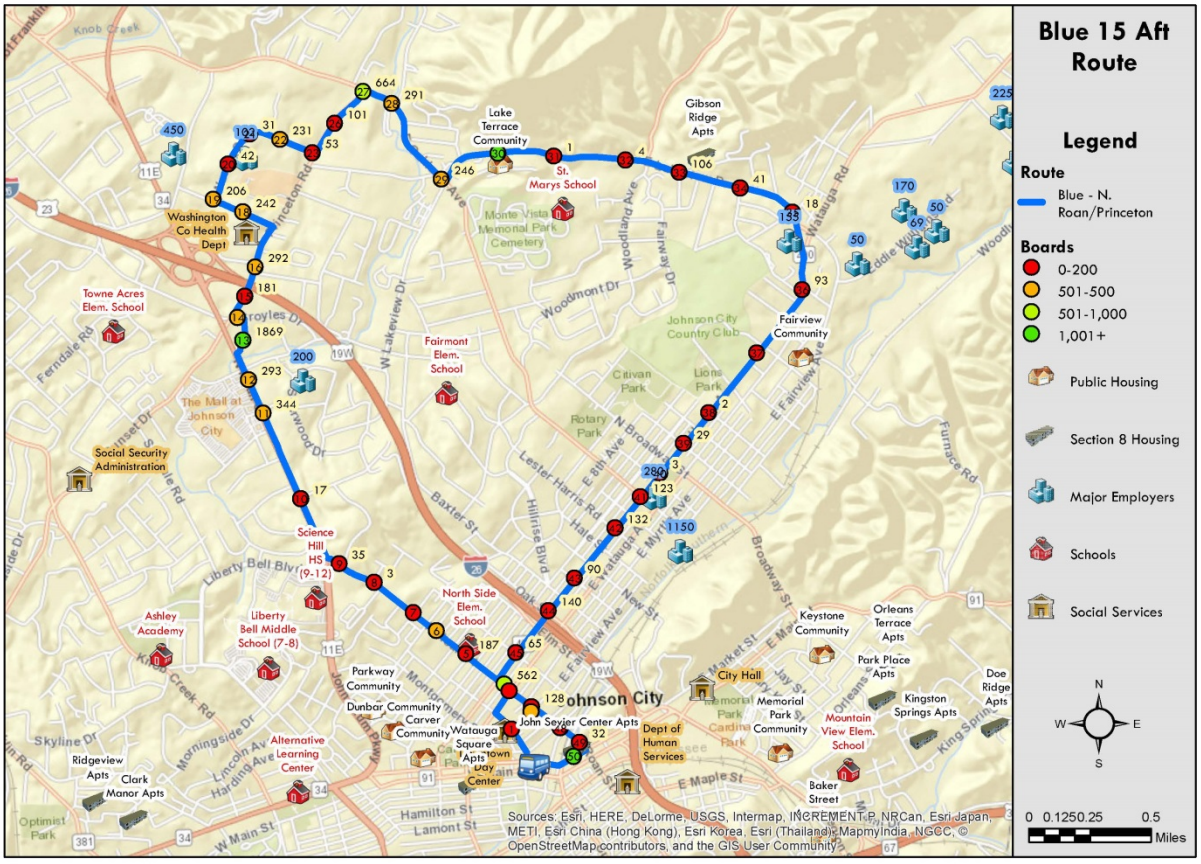
- **Public-Private Partnerships:** Large local employers could have a financial interest in the creation of various transit programs in the area. Consideration should be given to identifying these potential partners in formulating strategies to create a successful transit system.

- **Local Taxes:** A property tax designated specifically for transit operations and capital improvements could be assessed. A dedicated millage levy could offset local funding costs and deficits in farebox revenues. Other potential sources could include car rental or lodging taxes or special fees.

- **Advertising Revenues:** While transit related advertising revenues are not usually a large revenue generator, they can still be used to help with operating and maintenance cost. Advertising revenues can typically be generated from display signage applied to bus exteriors or interiors and through shelter display programs.

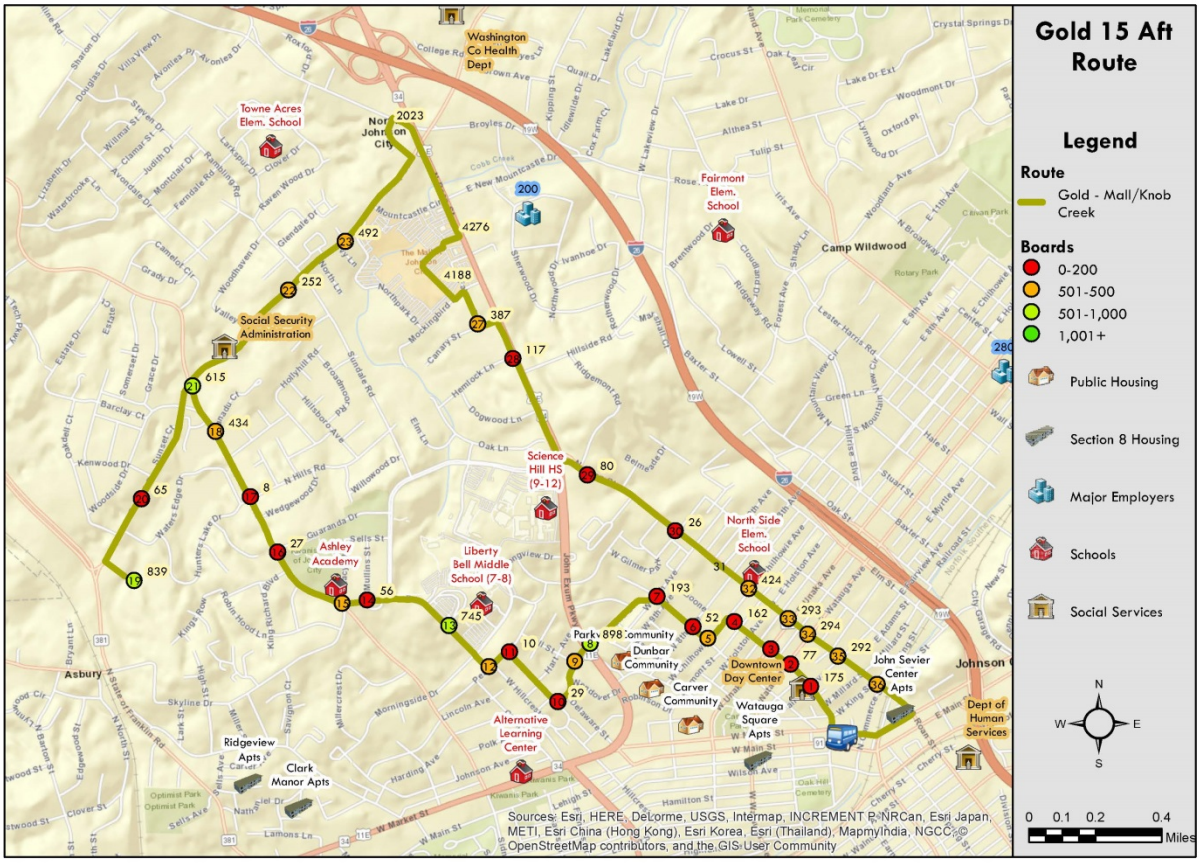
Appendix A: Route Maps

Blue 15 Aft Route

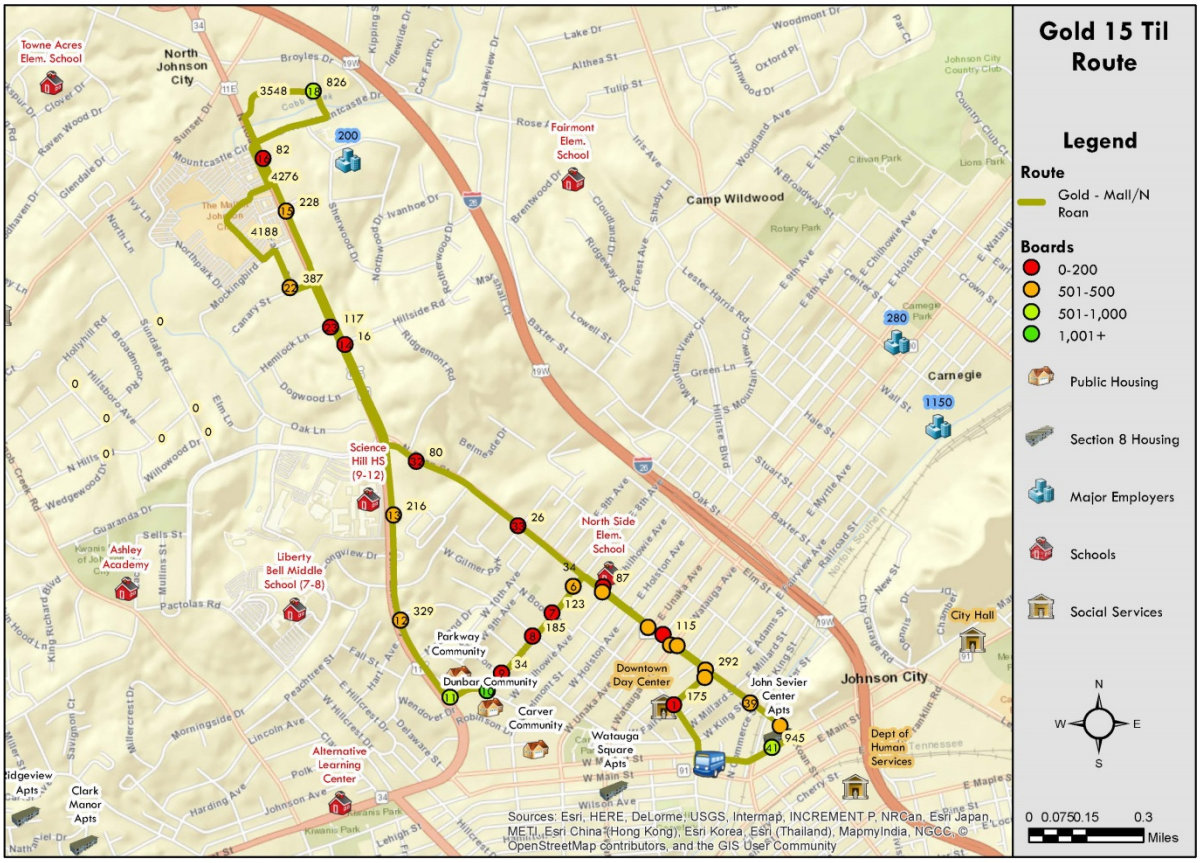


Blue 15 Til Route

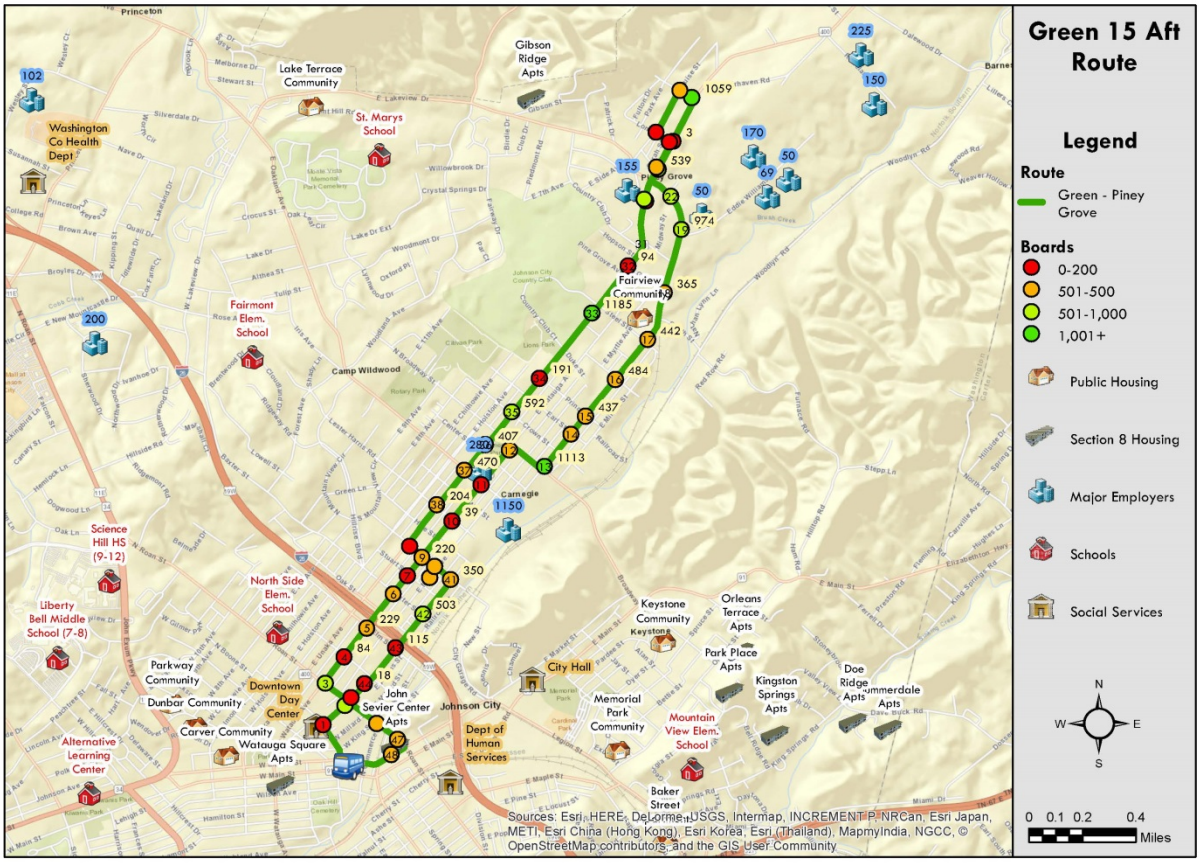
Gold 15 Aft Route



Gold 15 Til Route



Green 15 Aft Route



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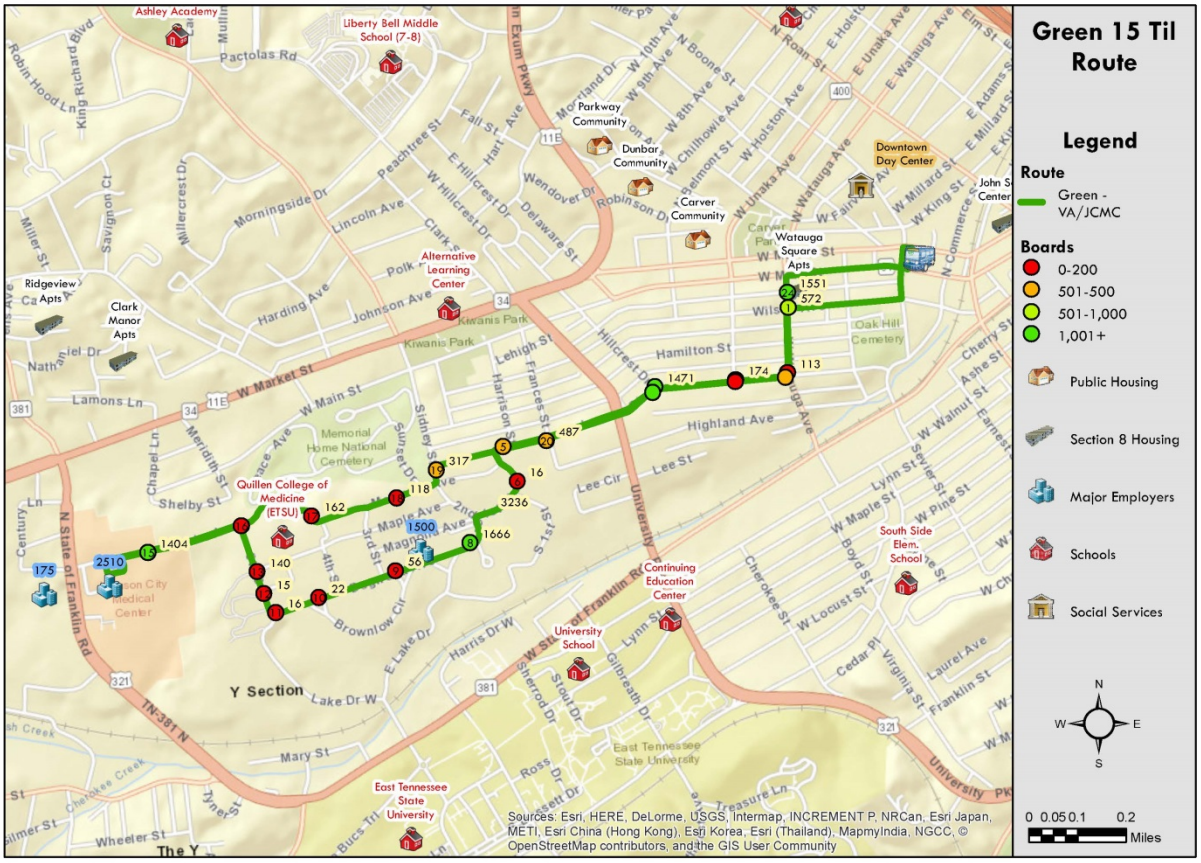
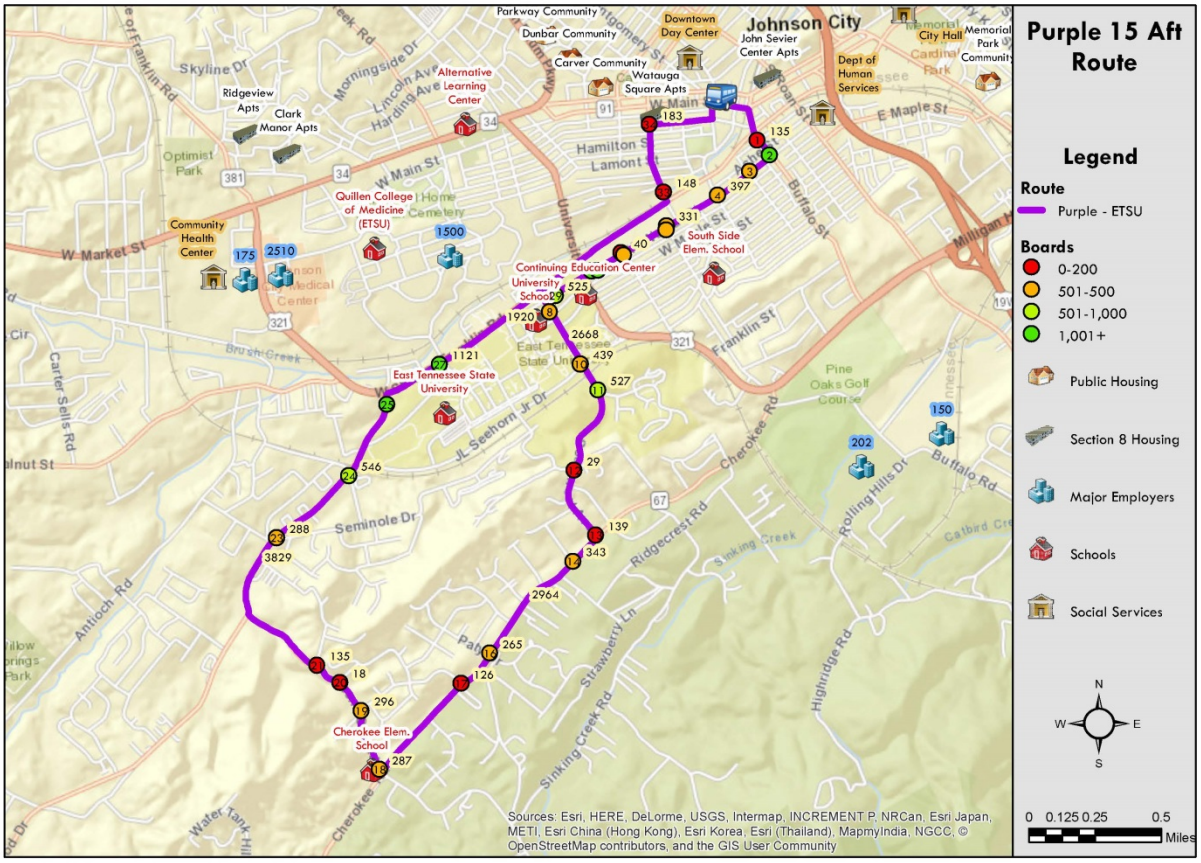


Purple 15 Aft Route



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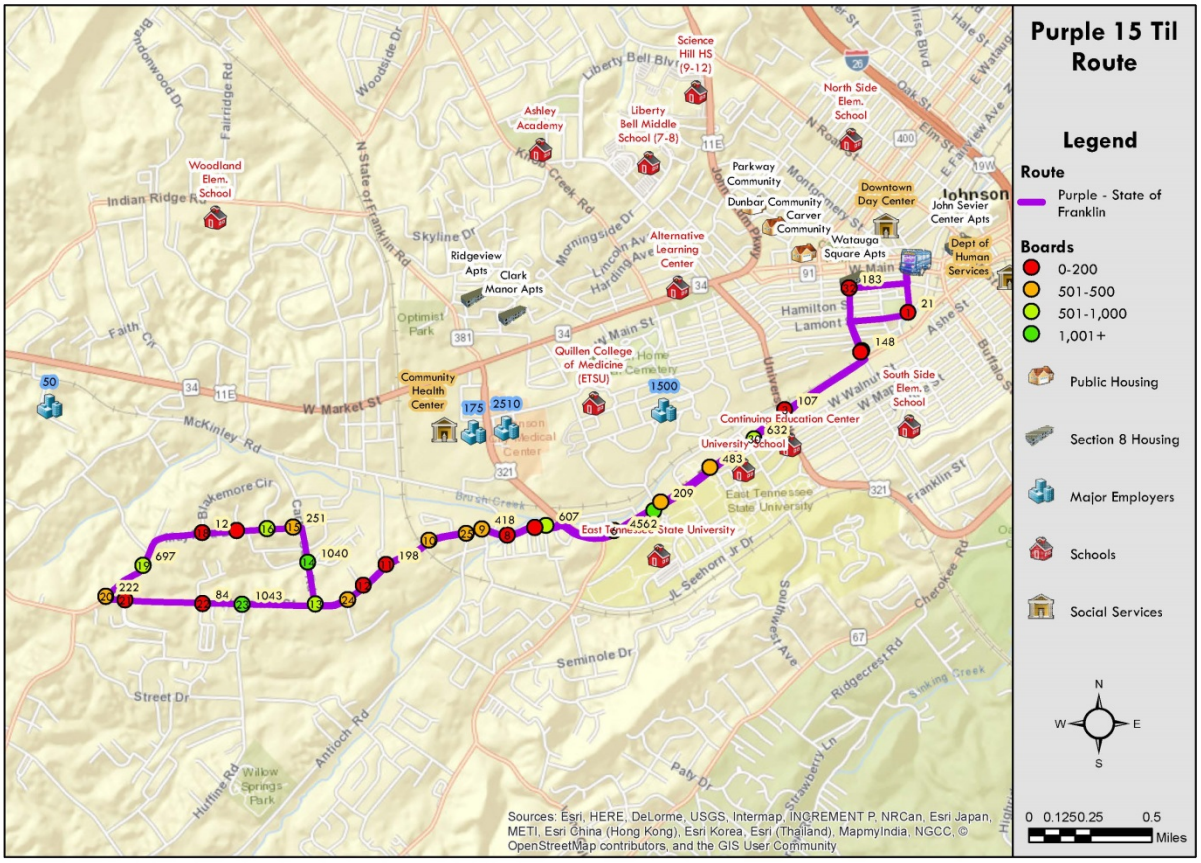
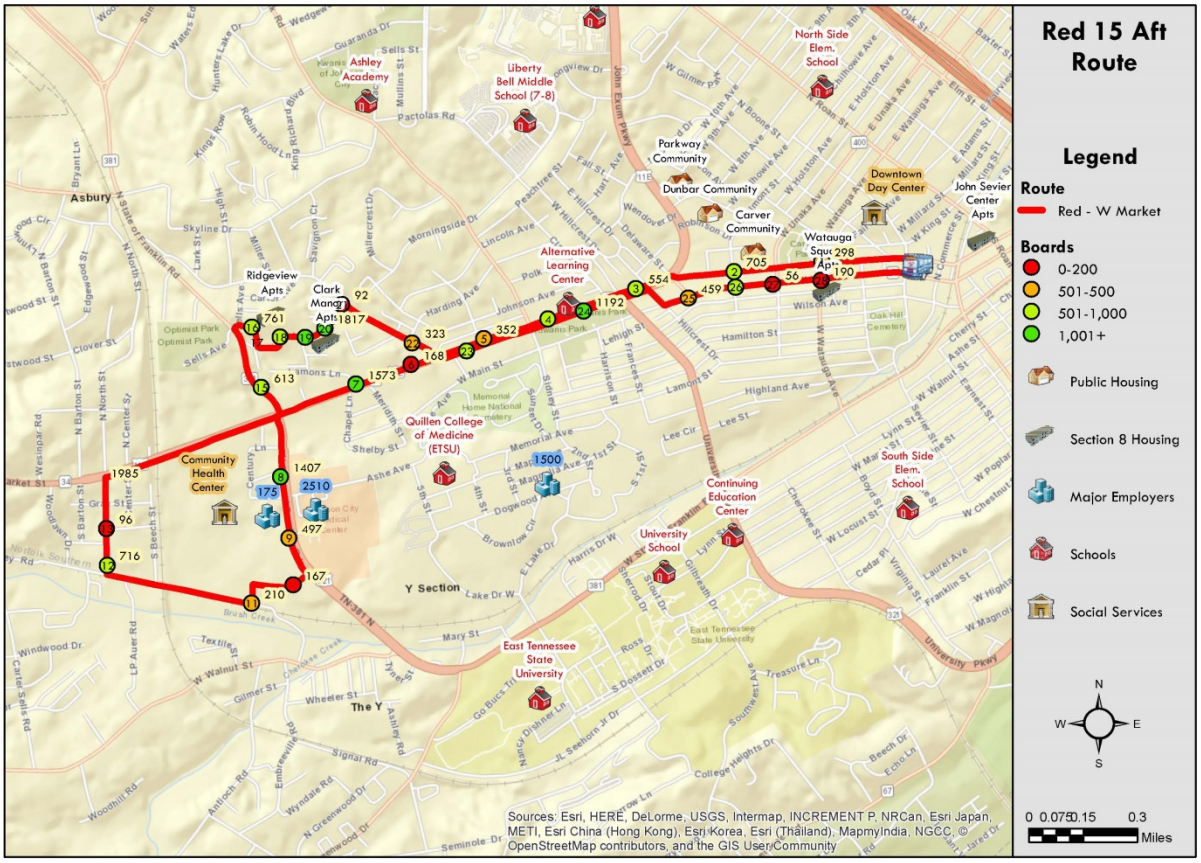
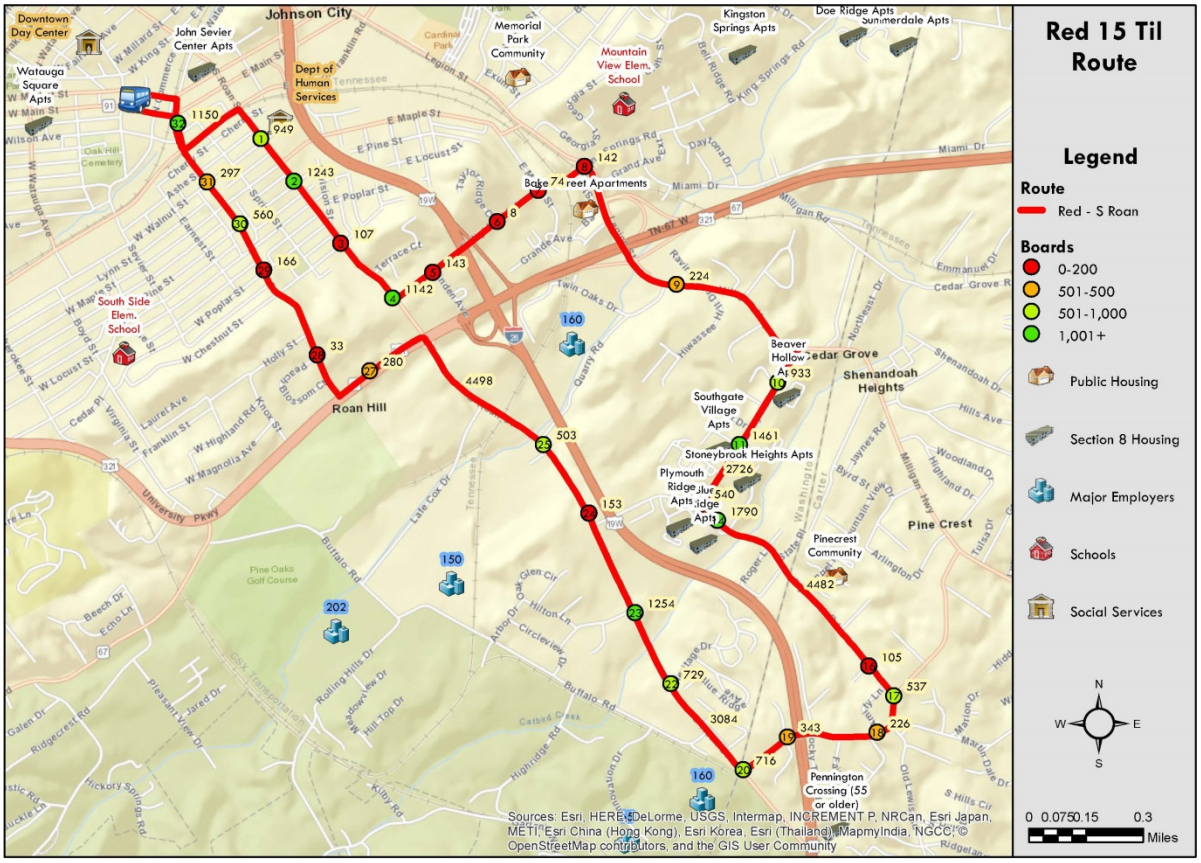


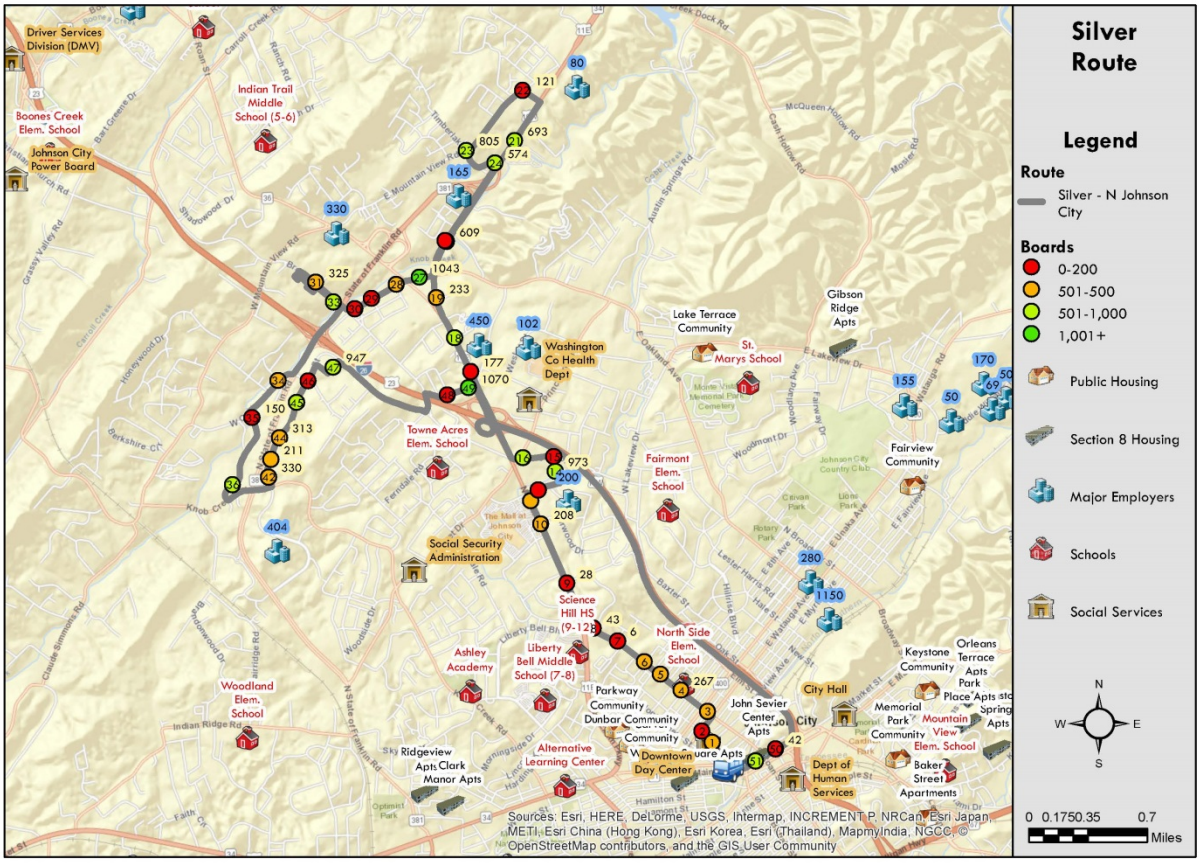
Red 15 Aft Route



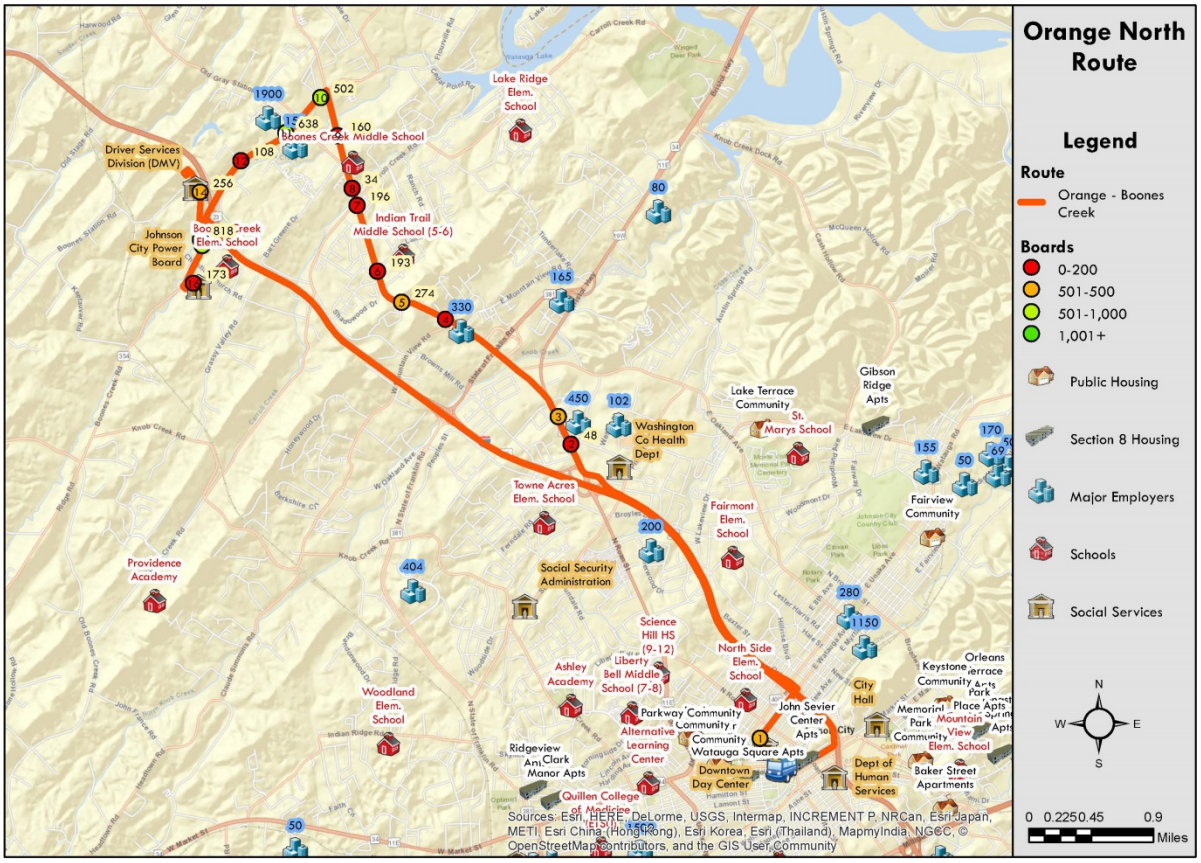
Red 15 Til Route



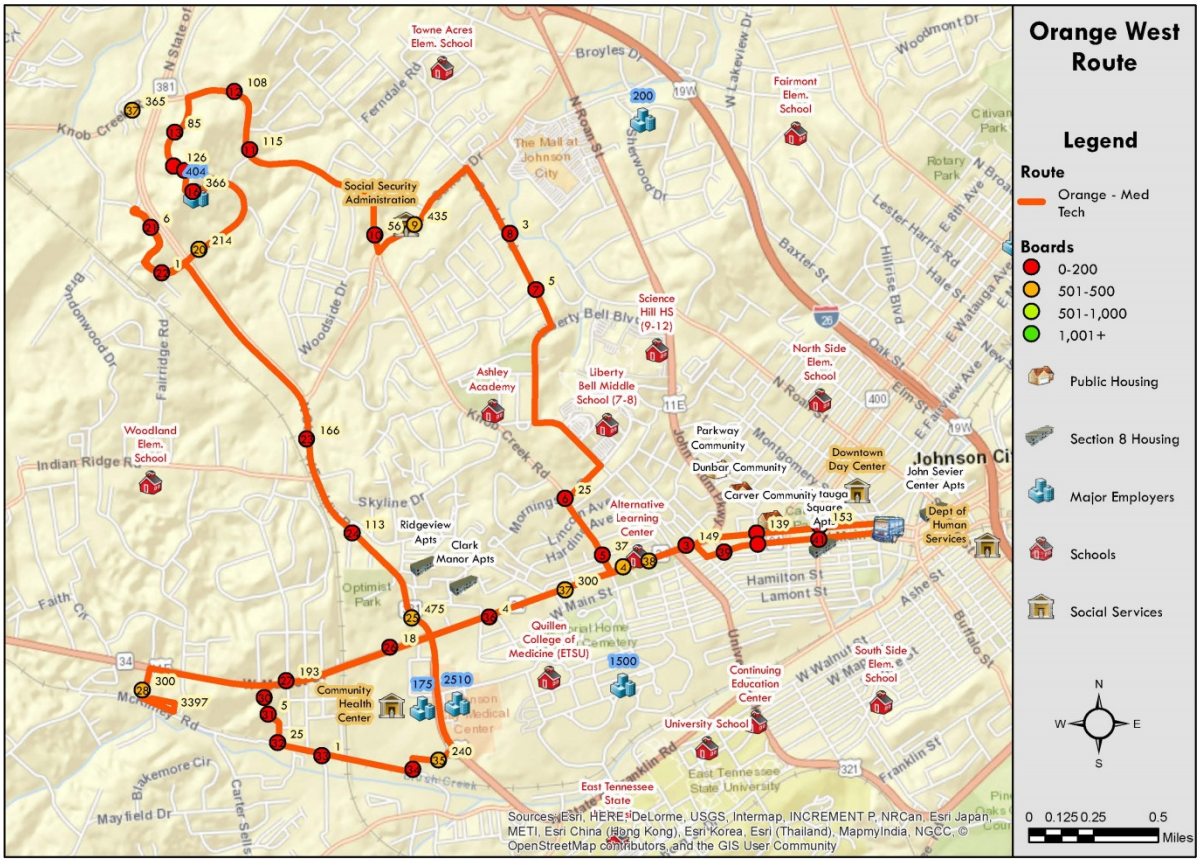
Silver Route



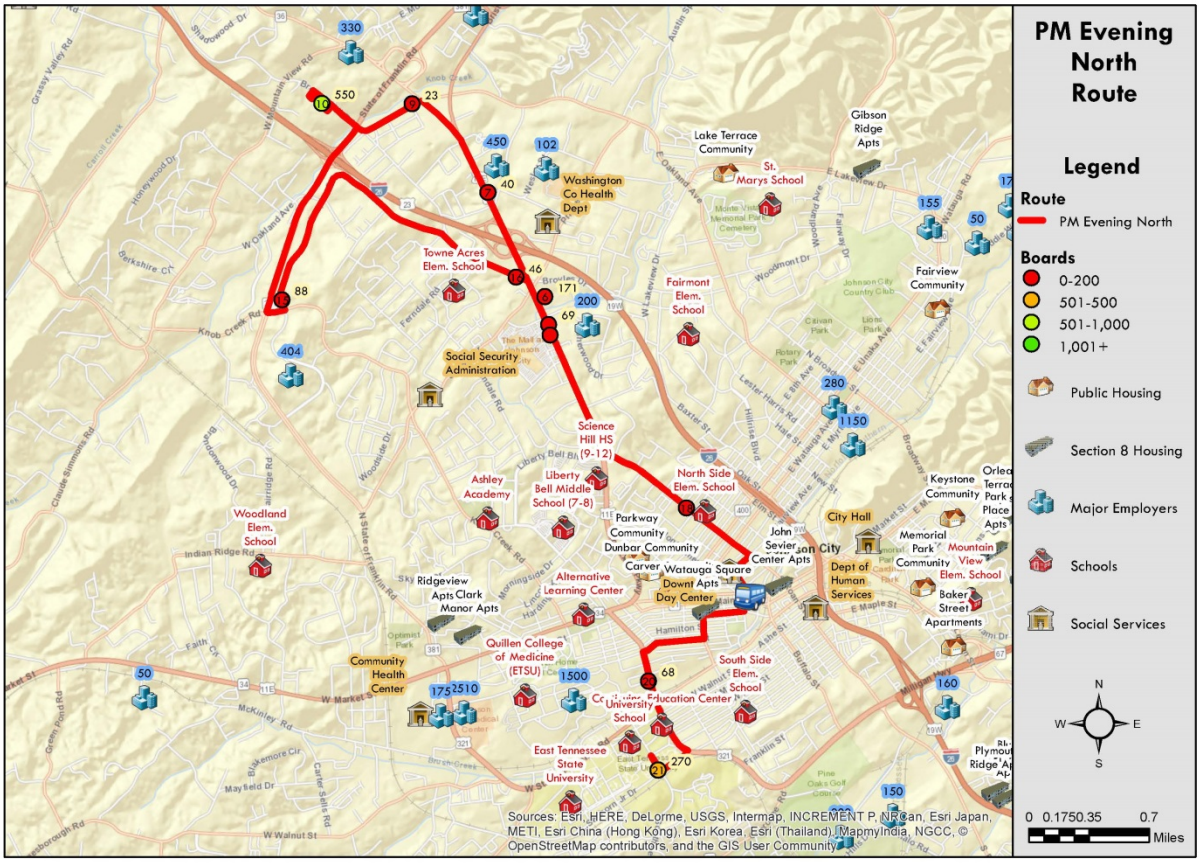
Orange North Route



Orange West Route



PM Evening North Route



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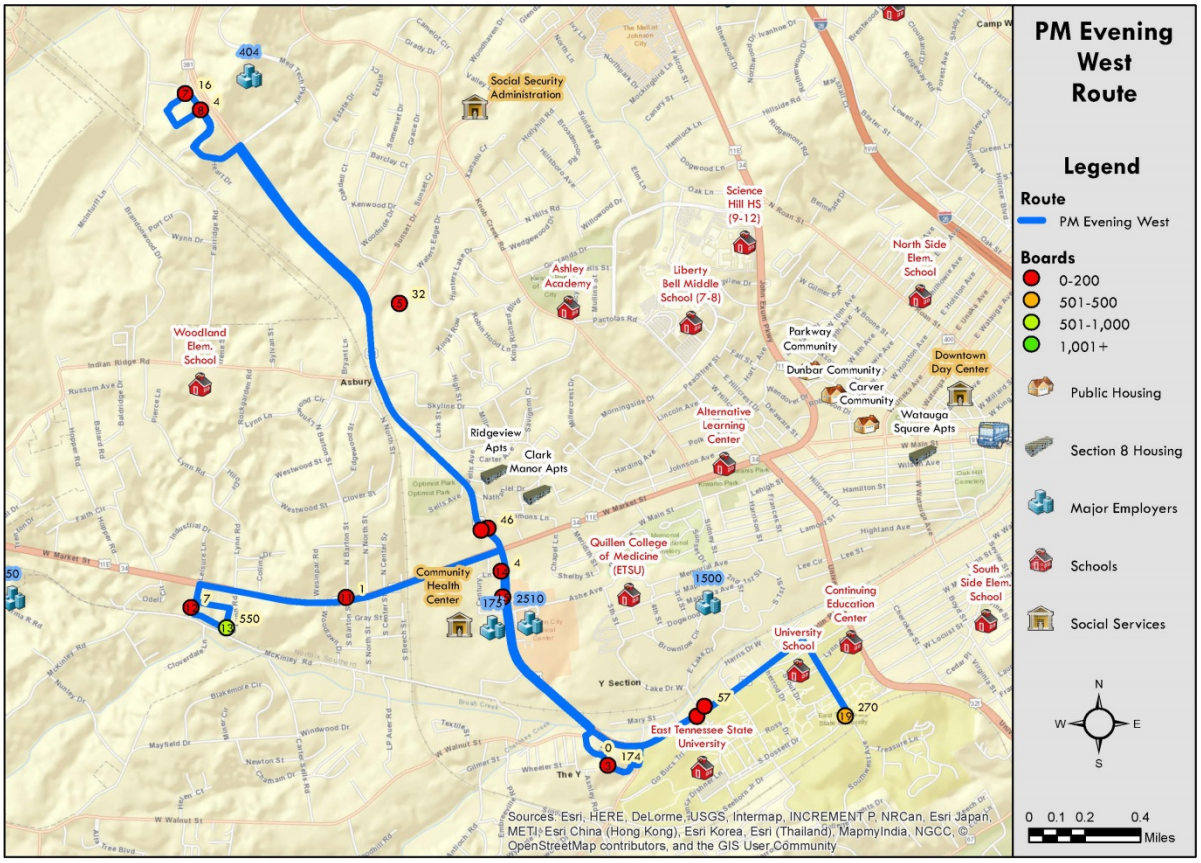
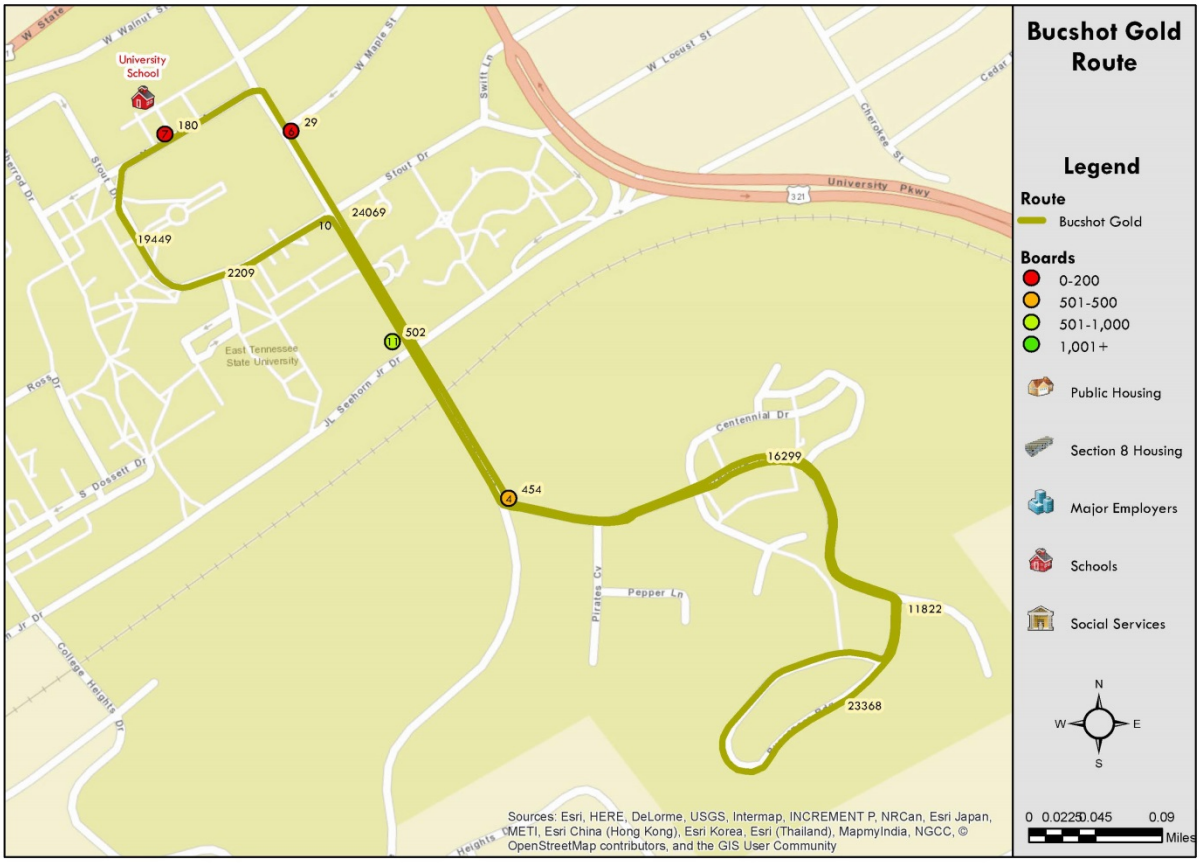
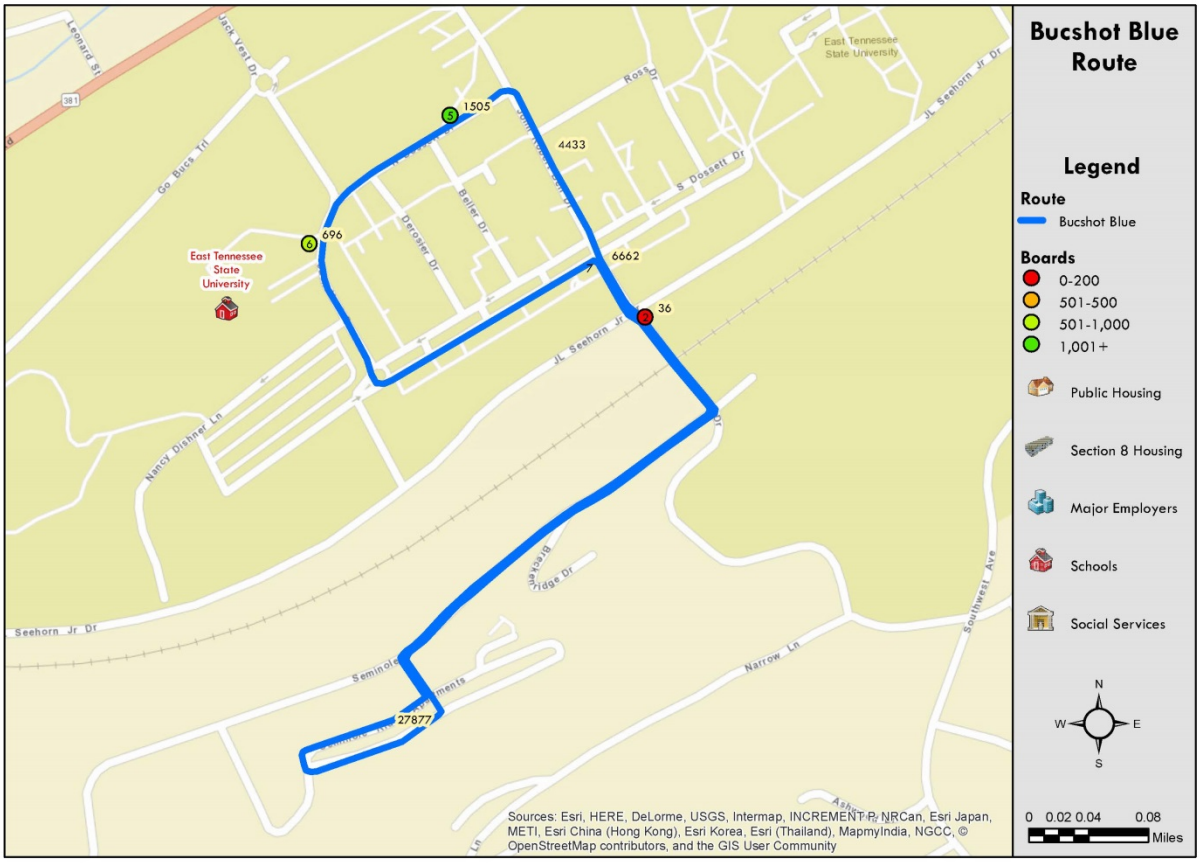


Bucshot Gold Route



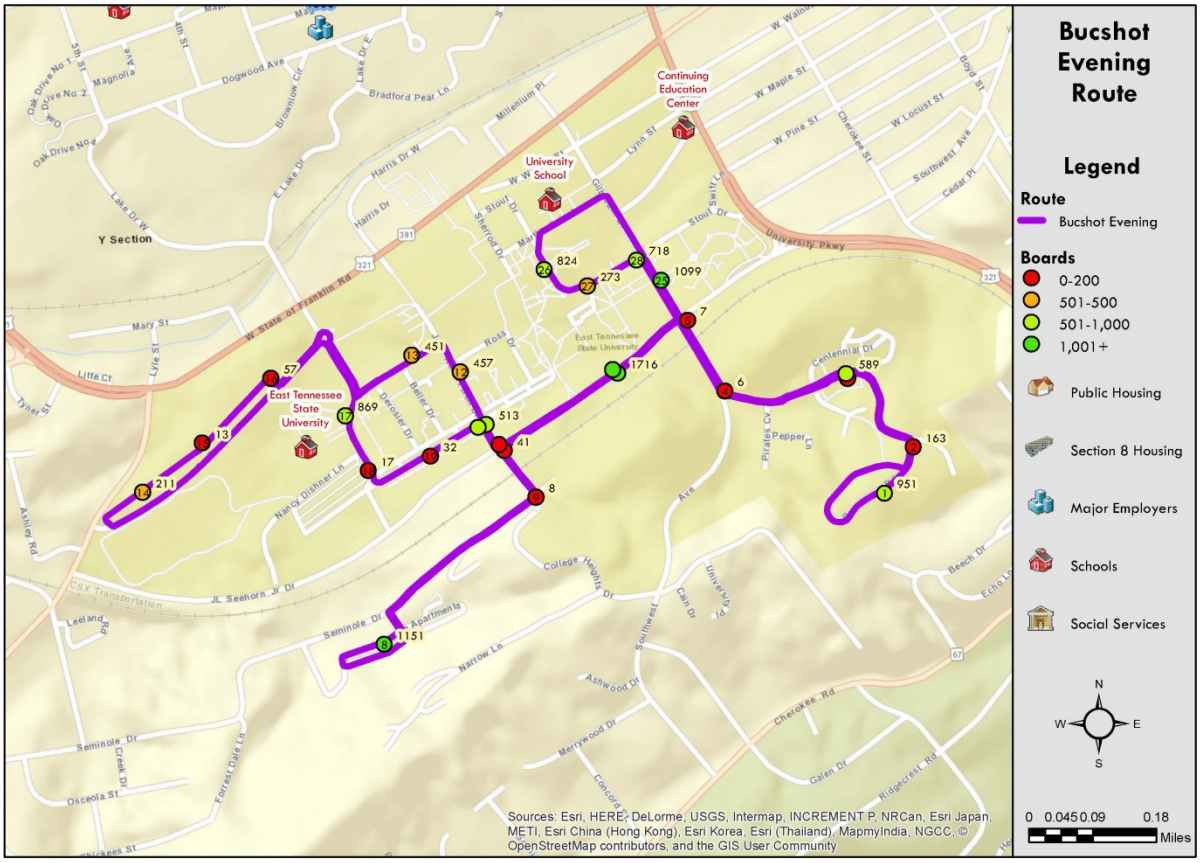
Bucshot Blue Route



Bucshot Teal Route

Bucshot Red Route

Bucshot Evening Route



Appendix B: ADA Guidance

This appendix contains excerpts from FTA Circular 4710.1C Americans with Disabilities Act (ADA) Guidance (2015) and the ADA Standards issued by the Department of Transportation. This appendix is provided for reference only and is not intended to be used in place of the aforementioned documents, which can be accessed from:

FTA Circular 4710.1C

https://www.transit.dot.gov/regulations-and-guidance/fta-circulars/americans-disabilities-act-guidance-pdf

ADA Standards for Transportation Facilities

https://www.access-board.gov/guidelines-and-standards/transportation/facilities/ada-standards-for-transportation-facilities/

FTA Circular 4710.1C – Section 3.1.3 Bus Stops

agencies constructing new commuter rail stations or making alterations to existing commuter rail stations are encouraged to coordinate their efforts with FTA and FRA early in the planning process.

3.1.3 Bus Stops

Section 810.2 of the DOT Standards applies to construction, alteration, or relocation of bus stops. This means, where practicable, siting bus stops at locations that will permit construction of a boarding and alighting area that complies with Section 810.2, which covers elements such as surface, dimensions, connections, and slope. Section 810.2 also requires:

- New, altered, or relocated bus stops must have a firm, stable surface and must provide a clear length of 96 inches (2,440 mm), measured perpendicular to the curb or vehicle roadway edge, and a clear width of 60 inches (1,525 mm), measured parallel to the vehicle roadway.
- Bus stops must also connect via an accessible route to streets, sidewalks, or pedestrian paths.
- The slope of the bus boarding and alighting area in the direction parallel to the roadway must be the same as that of the roadway to the maximum extent practicable. Perpendicular to the roadway, the slope must not exceed 1:48, that is, not more than 1 inch of rise over a horizontal distance of 48 inches.

As noted above, these requirements apply to the extent that construction specifications are within the control of public entities; compliance is required to the maximum extent practicable. If a transit agency does not own the right-of-way, but another public entity does own it, FTA encourages the transit agency to work with the public entity to come to an arrangement where a bus boarding and alighting area that complies with Section 810.2 to the maximum extent practicable is provided.

Section 209.2.3 of the DOT Standards provides that bus stops located on streets without sidewalks are subject to the same Section 810.2 requirements to the maximum extent practicable. In these cases, this means constructing or locating bus stops with connections via an accessible route to the public right-of-way; if the only public right-of-way is a roadway, this means providing connections to the roadway.

Providing Accessible Routes to Bus Stops

While sidewalks and other features of pedestrian rights-of-way are often outside a transit agency's jurisdiction, an accessible pathway to a bus stop is nevertheless an essential element of overall accessible fixed route service. A lift-equipped bus or a bus stop with a level pad of the proper dimensions serves little value to an individual with a disability if the individual cannot reach the bus stop (to board a bus) or cannot travel beyond the bus stop (after alighting from a bus). An individual with a disability who could otherwise ride an accessible bus but cannot reach the bus stop due to the lack of an accessible route would be eligible for complementary paratransit, at least on a conditional basis. (See Circular Section 9.2.) FTA encourages transit agencies to inventory the location of their bus stops in relation to accessible pedestrian routes, and coordinate with owners of public rights-of-way (e.g., local municipalities) to help ensure connections to stops are as accessible as possible.

Bus Shelters

Transit agencies usually have control over bus shelters. Section 810.3 of the DOT Standards specifies that the minimum clear floor or ground space (as set forth in Section 305) must be entirely within the shelter to accommodate individuals using wheelchairs and must be connected to an accessible route that complies with Section 402 to the boarding and alighting area.

3.1.4 BRT Facilities

Bus facilities such as transfer stations and bus rapid transit (BRT) stations often employ "platforms" from which passengers board. Such "platforms" are subject to the requirements for bus stop boarding and

809.5.2 Residential Dwelling Unit Smoke Detection System. *Residential dwelling unit* smoke detection systems shall comply with NFPA 72 (1999 or 2002 edition) (incorporated by reference, see "Referenced Standards" in Chapter 1).

809.5.2.1 Activation. All visible alarm appliances provided within the *residential dwelling unit* for smoke detection notification shall be activated upon smoke detection.

809.5.3 Interconnection. The same visible alarm appliances shall be permitted to provide notification of *residential dwelling unit* smoke detection and *building* fire alarm activation.

809.5.4 Prohibited Use. Visible alarm appliances used to indicate *residential dwelling unit* smoke detection or *building* fire alarm activation shall not be used for any other purpose within the *residential dwelling unit*.

809.5.5 Residential Dwelling Unit Primary Entrance. Communication features shall be provided at the *residential dwelling unit* primary *entrance* complying with 809.5.5.

809.5.5.1 Notification. A hard-wired electric doorbell shall be provided. A button or switch shall be provided outside the *residential dwelling unit* primary *entrance*. Activation of the button or switch shall initiate an audible tone and visible signal within the *residential dwelling unit*. Where visible doorbell signals are located in sleeping areas, they shall have controls to deactivate the signal.

809.5.5.2 Identification. A means for visually identifying a visitor without opening the *residential dwelling unit* entry door shall be provided and shall allow for a minimum 180 degree range of view.

Advisory 809.5.5.2 Identification. In doors, peepholes that include prisms clarify the image and should offer a wide-angle view of the hallway or exterior for both standing persons and wheelchair users. Such peepholes can be placed at a standard height and permit a view from several feet from the door.

809.5.6 Site, Building, or Floor Entrance. Where a system, including a closed-circuit system, permitting voice communication between a visitor and the occupant of the *residential dwelling unit* is provided, the system shall comply with 708.4.

810 Transportation Facilities

810.1 General. Transportation *facilities* shall comply with 810.

810.2 Bus Boarding and Alighting Areas. Bus boarding and alighting areas shall comply with 810.2.

Advisory 810.2 Bus Boarding and Alighting Areas. At bus stops where a shelter is provided, the bus stop pad can be located either within or outside of the shelter.

810.2.1 Surface. Bus stop boarding and alighting areas shall have a firm, stable surface.

810.2.2 Dimensions. Bus stop boarding and alighting areas shall provide a clear length of 96 inches (2440 mm) minimum, measured perpendicular to the curb or vehicle roadway edge, and a clear width of 60 inches (1525 mm) minimum, measured parallel to the vehicle roadway.

Note to Reader: The Department of Transportation's ADA standards indicate that compliance is required to the extent construction specifications are within a public entity's control:

810.2.2 Dimensions. Bus boarding and alighting areas shall provide a clear length of 96 inches (2440 mm), measured perpendicular to the curb or vehicle roadway edge, and a clear width of 60 inches (1525 mm), measured parallel to the vehicle roadway. *Public entities shall ensure that the construction of bus boarding and alighting areas comply with 810.2.2, to the extent the construction specifications are within their control.*

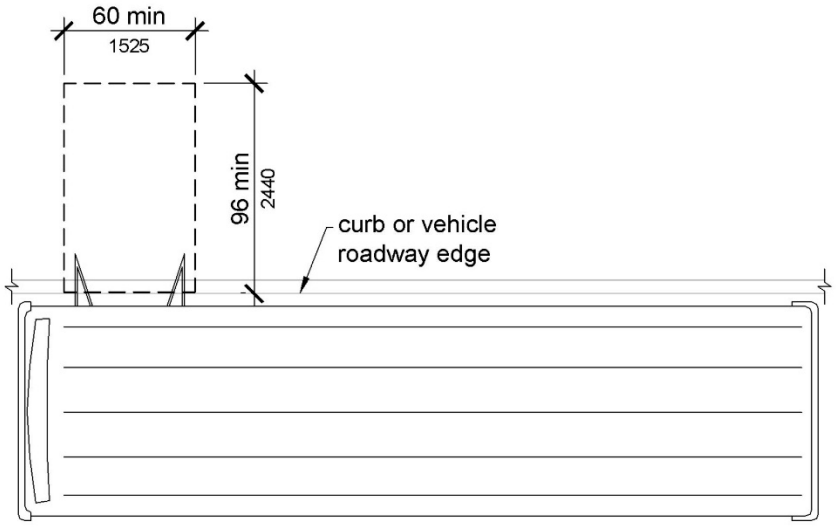


Figure 810.2.2
Dimensions of Bus Boarding and Alighting Areas

810.2.3 Connection. Bus stop boarding and alighting areas shall be connected to streets, sidewalks, or pedestrian paths by an *accessible* route complying with 402.

810.2.4 Slope. Parallel to the roadway, the slope of the bus stop boarding and alighting area shall be the same as the roadway, to the maximum extent practicable. Perpendicular to the roadway, the slope of the bus stop boarding and alighting area shall not be steeper than1:48.

810.3 Bus Shelters. Bus shelters shall provide a minimum clear floor or ground *space* complying with 305 entirely within the shelter. Bus shelters shall be connected by an *accessible* route complying with 402 to a boarding and alighting area complying with 810.2.

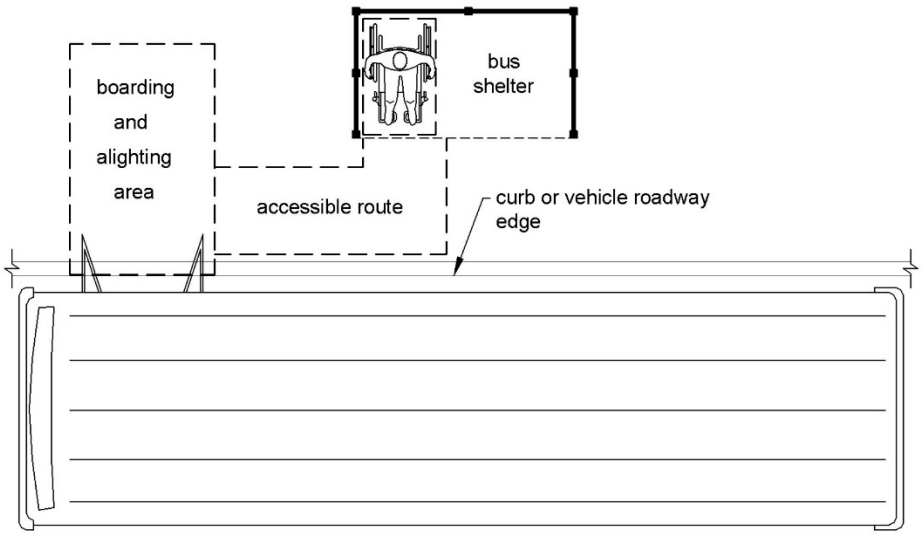


Figure 810.3
Bus Shelters

810.4 Bus Signs. Bus route identification signs shall comply with 703.5.1 through 703.5.4, and 703.5.7 and 703.5.8. In addition, to the maximum extent practicable, bus route identification signs shall comply with 703.5.5.

EXCEPTION: Bus schedules, timetables and maps that are posted at the bus stop or bus bay shall not be required to comply.

810.5 Rail Platforms. Rail platforms shall comply with 810.5.

810.5.1 Slope. Rail platforms shall not exceed a slope of 1:48 in all directions.

EXCEPTION: Where platforms serve vehicles operating on existing track or track laid in existing roadway, the slope of the platform parallel to the track shall be permitted to be equal to the slope (grade) of the roadway or existing track.

810.5.2 Detectable Warnings. Platform boarding edges not protected by platform screens or guards shall have *detectable warnings* complying with 705 along the full length of the *public use* area of the platform.

Appendix C: Detailed Rideshare Information

Emergency Ride Home Program

From time to time a participant of the rideshare may be required to leave work early due to an emergency or illness. The participant should call the JCT staff and state the nature of the emergency or illness. Under an Emergency Ride Home (ERH) Program, one of the JCT staff members would provide transportation by:

1. Authorizing a JCT staff member to provide transportation
2. Contacting a taxi company to provide transportation

Restrictions

The driver shall operate the van in accordance with all applicable State of Tennessee laws, in a reasonable and safe manner, and in such places as to not expose it or its passengers to unsafe conditions. The van shall only be driven on hard public streets and highways and other normal access roads and driveways. The driver shall not pull trailers; attach carrying racks or trailer hitches. The driver shall not transport or operate the van after consuming alcohol, illegal drugs/substances, or medications which recommend refraining from driving after ingesting. Furthermore, the driver shall not take the van to any establishment whose business could negatively impact the image of the JCT (i.e. nightclubs, ABC stores, bars, sweepstakes facilities, etc.). While operating the van, the driver shall not use a cell phone, Bluetooth device, text messaging device or equipment that may distract the attention of the Driver. Smoking would be prohibited by all van occupants. JCT would retain the right to immediately terminate any rideshare in violation of these restrictions.

Termination of the Rideshare

The driver may terminate the lease agreement at any time by giving a 30-day written notice. JCT may terminate the lease agreement without cause, or for cause, including a failure to comply with any provision, at its discretion.

Rideshare Referral Payment

JCT would want to reward drivers, backup drivers and rideshare passengers that refer potential drivers for newly created rideshares to the rideshare program. Once a referred JCT driver has leased a van for six months, a referral payment will be sent to the person who referred the new rideshare to JCT.

Driver Responsibilities/Incentives

Driver Qualifications

The driver of the rideshare must be at least 25 years old and have an excellent driving history. In order to qualify, drivers must have a valid Class C driver's license, no more than 3 points on their license, and no previous "DWI." (Driving While Impaired) convictions on their license. All drivers must submit a motor vehicle report (MVR) form and be approved by the JCT staff.

Lease Agreement

The lease agreement between the van driver, backup driver and JCT operates on a month-to-month basis. The driver and backup driver must sign the lease. In certain situations, some businesses lease the van directly through their company. In these cases, the employer representatives and the qualified drivers sign the lease agreement.

Monthly Reports

One of the driver's responsibilities is to complete a monthly revenue and expense report. These reports would be turned in on the 1st of each month for the prior month.

Daily Operations

The driver is expected to operate the van in a safe manner, arrange for a backup driver as needed, collect monthly fares and keep the van clean. Each time the van is fueled, the water, oil and transmission fluid should be checked by the driver.

Driver Training

All rideshare drivers must attend a driver orientation and training session. This consists of a comprehensive overview of all materials that would be provided by the JCT staff. Upon completion of the training, each driver must successfully complete a JCT rideshare driving test before being allowed to operate the vehicle.

Backup Driver

Each rideshare should have at least one backup driver in order to lease a van. This assures passengers continuous, reliable transportation in the case of personal sickness, emergency or vacation of the primary driver.

The rideshare backup driver must meet the same requirements and qualifications as the primary driver. The backup driver assumes the responsibility of operating the rideshare, including the monthly reports, in the absence of the rideshare driver.

Personal Use of the Van

JCT would reward its drivers with special privileges and incentives for the service rideshare drivers provide. JCT would allow up to 150 personal miles free of charge. This mileage can be used entirely by the driver or he/she may split the personal miles with the backup driver. The van can be used for a maximum of 300 personal miles at the amount specified in the lease agreement.

Driver/Rider Agreement

In order to avoid probable conflicts, JCT will develop a driver/rider agreement, which should be read and signed by the passengers before joining the rideshare. This agreement assures that all participants are aware of the rideshare rules, regulations and operating procedures.

JCT will encourage all rideshares to establish their own rideshare guidelines and set individual policies and procedures to help prevent disputes. Since the rideshare driver is primarily responsible for the rideshare, all disputes should initially be directed to the driver. If the dispute is not resolved, the JCT staff can/will provide recommendations for all involved parties.

Risk Management/Insurance

Accidents

In the event you are involved in an accident before 8:00 a.m. or after 5:00 p.m., Monday through Friday or on the weekend, the JCT staff would need to be contacted, as well as the police department or highway patrol. Should the accident occur during the workday between regular operating hours, the driver or backup driver should immediately call the JCT office and the police department or highway patrol. If necessary, JCT staff will come to the scene of the accident to conduct a preliminary accident investigation. The driver is responsible for reporting any accident, no matter how minor. Failure to report an accident could result in termination of the lease agreement with JCT.

JCT will provide liability coverage for bodily injury or property damage resulting from an accident. JCT would not provide liability coverage for any non-accidental criminal act performed while using the van. The driver or backup driver will be responsible for the first $100.00 deductible for any damages from accidents involving JCT vans. This fee is due within 30 days of the date the accident occurred.

Procedures to Follow in the Event of an Accident

Collisions and accidents range from minor fender benders (without vehicle damage) to major and multiple vehicle collisions and possible injuries. It is important that drivers know how to handle emergencies to protect lives and to ensure that questions of liability are handled properly. If an accident occurs, it is important for drivers to do the following:

- If you or any of your passengers are injured, dial 911 for medical assistance
- Protect the accident scene
    - Turn on hazard flashers
    - Move the van out or traffic if directed by a police officer
    - Make sure passengers are in a safe location
- Notify the local, county or state police
    - If police are on the scene, obtain the officer's name and badge number
    - Call your JCT representative at the provided emergency numbers
- Make no statement to anyone except:
    - A police officer on the scene
    - JCT representative
- You are insured through JCT. The name of the JCT Rideshare Program insurance carrier would be provided to you on an insurance card, which should always be kept in your glove compartment.
- Fill out the JCT Accident Report Form and give it to the JCT representative who comes to the scene.

Revenues

Rideshare Fares

Rideshare fares are based on fixed, operational and depreciation expenses associated with the van's total monthly mileage. These expenses include fixed costs (insurance, contingency), operational costs (maintenance repair, gasoline, oil, tires and parts), and depreciation costs (monthly vehicle depreciation).

The monthly fares are payable to JCT on or before the 1st of each month. Payments are made one month in advance and are good until the last day of the month.

One of the driver's responsibilities is to keep a monthly revenue and expense report. These reports are turned in on the 1st of each month for the prior month. It is recommended to send in the report with the monthly lease payment.

Rideshare Deposit Requirements

All van drivers or employer sponsors are required to submit a van security deposit to JCT before a van can be leased. The deposit should be for the amount specified in the lease agreement and in the form of a certified check or a money order.

Upon the termination of the rideshare lease agreement, the driver can submit a request for a security deposit refund. The van will be inspected to determine if there is any unreported damage to the van. Upon the

completion of the inspection and a check for any other outstanding expenses, the security deposit will be refunded to the van driver. It is the driver's responsibility to reimburse employer sponsors and/or rideshare riders as appropriate.

Prorations: New Rideshares, Vacations, Holidays, Breakdowns, Company Closings

New rideshares put into operation during the middle of a payment period are eligible to have their fares prorated for the first month of operation. The fare will be based on the actual number of days the van will be in operation for that month.

For employer vacations, the driver should notify the JCT staff as soon as possible with the dates the van will not be in operation. This is necessary so that the JCT staff can determine if the van qualifies for a prorated fee and the amount of the prorate.

Holidays are not prorated for rideshares. The van lease is based on a twenty-one day month in which holidays are averaged into the monthly fare. However, if a rideshare will not be in operation for more than three consecutive weekdays due to the employer observing holidays, the lease amount for that month will be prorated to the actual number of days operated.

If the rideshare does not operate due to a mechanical breakdown of the van, a proration may be considered under certain circumstances. If the number of days exceeds two consecutive days and no other JCT transportation is made available for the passengers, then the fares will be prorated for that month to the actual number of days operated.

Extended company closings are also valid reasons for fare pro-rations. However, to qualify for this proration, the company must be closed for a minimum of three consecutive working days. This situation also requires the approval of the JCT staff.

Vans Commuting More Than Five Days a Week

Fare calculations are based on an average 21-day month and a five-day workweek. Although most of the vans are leased for a five-day workweek, there are times and unusual circumstances in which the employees must report to work more than five days per week. When this situation occurs, the monthly fares will be adjusted according to the total mile traveled for that month. The JCT staff will adjust the fare and inform the driver of the total amount due.

Emergency/Special Seat Subsidy

Seat subsidies are at the discretion of the JCT Management.

Commuter Benefits

Federal law allows employers three ways to reduce the cost of commuting via public transportation (bus, train, ferry or registered rideshare) or qualified parking for employees. Companies can offer employees:

- a tax-free employer-paid subsidy
- a pre-tax employee-paid payroll deduction, or
- a combination of the above (shared employee- employer-paid)

Outside Fuel Purchases

In order to minimize costs, JCT encourages all rideshare drivers to fuel at the approved JCT fueling locations.

Please remember the following when using a fuel card:

1. Use only regular unleaded fuel (87 Octane)
2. Use only self-service gas pumps (No full service will be accepted)
3. Do not share or write down driver pin.
4. Fuel cards are to be used only for JCT rideshare services.

Maintenance

Exchanging Vehicles for Maintenance

When service work is needed for the vans, drivers should contact the JCT staff to schedule the repair. Once a backup van is assigned, the driver can drop the van off at the designated maintenance facility. JCT staff will make arrangements to switch the van.

Outside Maintenance Repair

In some cases temporary repairs may be necessary before the van can be taken to JCT's designated maintenance facility. Upon the approval by JCT staff, a pre-approved "Emergency Service Station" can make minor repairs. Some of these repairs may include jump-starting the van, replacing a light bulb, or fuse, etc. JCT staff will call these emergency service stations to make arrangements for these quick, minor repairs. These service stations will bill JCT for all repairs.

Appendix D: Sample Rideshare Forms

Rideshare Driver / Rider Agreement

The following rules are designed to promote the cooperation essential to successful rideshare operation. The driver and rider agree to honor these rules in good faith.

1. Pick up is limited to the agreed times and locations. The rideshare will wait a maximum of two minutes beyond the agreed time before departing from each stop. The rider is expected to be prompt so that others are not inconvenienced.
2. A reasonable effort will be made by the rideshare operator to provide a 30-day notice of a rate increase or termination.
3. The rider agrees to make full payments each month. During vacation or other periods of absence, rider may sublet his/her seat to a party who must adhere to the conditions of this agreement.
4. The rider agrees to pay the driver promptly, and in advance, understanding that fares are not refunded for any reason.
5. The rider is required to behave in a manner which promotes positive interaction with other rideshare participants.
6. The rider shall help maintain the cleanliness and appearance of the rideshare vehicle. Personal articles may be kept in the area of the rider's seat at the discretion of the rideshare operator.
7. The use of food and beverage aboard the rideshare vehicle is at the discretion of the rideshare operator.
8. The driver and rider agree to understand that the use or possession or transportation of any alcoholic beverage or any narcotic drug, chemical or other substance in violation of the law is prohibited in the van.
9. The driver agrees to immediately notify the rider and JCT if the van breaks down.
10. The driver and rider agree the use, possession or transportation of any fire arms or weapons is prohibited.
11. No smoking is allowed in any JCT vehicle at any time.

I understand and accept the conditions and rules of this agreement. The driver or rider may terminate this agreement by giving thirty (30) days written notice.

Name _____ Pick up time _____

Address _____ Pick up place _____

City _____ Drop off time _____

State & Zip Code _____ Drop off place _____

Work Phone _____ Home Phone _____

Employer _____

Rider Signature _____ Date _____

Driver Signature _____ Date _____

JCT # _____

Vehicle Identification Number _____

JCT Initial & Annual Motor Vehicle Report

Review Authorization and Rideshare Application

By your signature below, you hereby authorize the JCT to obtain a Motor Vehicle Report to consider you to drive a JCT vehicle.

Have you ever been convicted for Driving While Impaired (DUI)? _____

Applicant's Name: _____ Male: ____ Female: ___

Applicant's Address: _____

City: _____ State: _____ Zip Code: _____

Telephone, Home #: _____ Cell #: _____

Work #: _____

Date of Birth: _____

Driver's License Number: _____ State Issued: _____

Employer's Name: _____

Employer's Address / Location: _____

_____

Applicant's Signature: _____

****

JCT Office Only Below:

Motor Vehicle Report – States to be checked: _____

Date Requested: _____

Listed below are the requirements for starting a rideshare:

(1) Drivers and backup drivers must be at least 25 years old and have a valid Class C driver's license. The drivers must have no more than three points on their driving record and no DWI (Driving While Impaired) convictions.

(2) The driver is required to make a one-time security deposit for the van.

(3) The van driver and backup driver must sign a rideshare lease agreement with JCT Rideshare Program.

(4) Rideshare drivers should collect the first month's payment from rideshare participants. This payment enables the participants to ride in the van for the calendar month.

(5) Design the route and pickup points to determine the daily round trip mileage.

Rideshare routes are usually designed to go from the meeting/pickup point and to the worksite. In some cases, more than one pickup point may be necessary. Pickup points are usually located at shopping centers, churches, businesses or park and ride lots.

Designing the most direct route to your worksite is important since rideshare fares are based on the total miles the van travels. JCT does not recommend picking up participants at their homes due to the extra mileage and time involved with door-to-door service. If a participant cannot drive or does not have any transportation at all, then a fellow rideshare member is encouraged to carpool with this participant to and from the pickup point.

Each van would have a maximum seating capacity for 7 or 15 people. Vans are filled on a first-come, first-serve basis. If there are more people interested in rideshare than there are seats available, their names are either placed on a waiting list or a new rideshare will be formed. In the event of a passenger decline, JCT could provide assistance in recruiting new passengers by utilizing the waiting list and/or a free rideshare matching database. However, the rideshare will still be responsible for the total lease amount to keep the van in operation.

Combining rideshares is discussed when rideshares experience a severe decline in passengers. JCT would do everything possible to maintain the same low cost for the passengers, and if necessary, develop the most convenient route.

Lease Agreement

WHEREAS, the Johnson City Transit (hereinafter "JCT") and **(Driver's Name)** (hereinafter "Driver") desire to enter into this Agreement by which JCT will make available to Driver a van for use in carrying out this Agreement in accordance with the terms and conditions hereinafter specified; and

NOW, THEREFORE, the parties hereto do hereby contract and agree as follows:

1. This Agreement shall become effective on the date of its execution by JCT, said date being set out on the signature page adjacent to the signature of the JCT representative executing this document.
2. The term of this lease shall be on a month-to-month basis unless terminated upon a 30-day notice or according to the other terms specified herein.
3. The Driver agrees to pay to JCT by the first (1st) day of each month, a total of **$ _____ (Fare)**. (hereinafter "Fare") In addition**,** Driver will pay to JCT a sum equal to $0.55 per mile for each mile in excess of 150 (personal miles) that the said van is driven by Driver for reasons other than the transportation of Driver and passengers to and from employment, said mileage being referred to herein as personal mileage. If the Driver exceeds the 300 miles maximum, a per-mile charge of $0.80 will be assessed. Further, Driver will pay to JCT a sum of $25.00 as a late fee for any payments due JCT that are not made by the tenth (10th) day of each month, and a $25.00 sum for any check given by Driver to JCT and which is returned for insufficient funds or other reason. Still further, Driver will deposit with JCT the sum of $300.00 as a security deposit for the faithful performance by the Driver of this Agreement, said sum to be returned to Driver upon the termination of this Agreement if Driver is current with all payments to JCT as of that date. It is also agreed that JCT will review the Fare twice a year during January and July. In the sole discretion of JCT, adjustments up or down may be made to reflect the cost of operating the van and supporting the rideshare program. If adjustments are made, an addendum may be signed by the Driver and attached to the original contract in lieu of signing a new contract. Adjustments will be effective on February 1 or August 1.
4. JCT agrees to reimburse Driver for out-of-pocket costs in connection with the use of said van, said out-of-pocket costs to include gas and oil purchased by the Driver for use in said van, said expenses to be substantiated by receipt, and said payments to be an offset against amounts due to JCT by the first (1st) of each month pursuant to this Agreement.
5. JCT shall issue the driver a fuel card or other means to fuel the van. The fueling method provided by JCT shall only be used to fuel the van and only for purposes authorized by this Agreement. JCT shall be reimbursed by the Driver for any expenses related to the use of said fueling method for any purpose other than those authorized by this Agreement. If the fuel card is lost the Driver must inform JCT staff immediately.
6. JCT agrees to assist Driver in forming and maintaining a rideshare and to render other administrative assistance in connection with the program, but the extent of such assistance shall be determined by JCT.
7. Driver agrees to authorize JCT to obtain a certified copy of his/her driving record from an agency selected by JCT, and must certify to JCT that he/she does not have more than three points on his/her driving record, no Driving While Impaired (DWI) convictions, has not been convicted of more than one (1) moving violation under the motor vehicle laws of any state and has not been

convicted of any criminal offense arising out of the operation of a motor vehicle in violation of the criminal laws of any state within the immediate past three (3) years and none in the last year.

8. Driver must have a valid Class C driver's license to drive the van. Driver shall complete a rideshare driver application and an in-house training session before being eligible to operate the van. Driver shall immediately notify JCT staff upon receipt of any moving violation or criminal charge.
9. The Driver must agree to operate the van for the purpose of transporting persons from their designated pickup point to their place of employment, and from their place of employment to their pick up point, and must operate in accordance with route and other regulations prescribed by the JCT staff and must operate on a punctual schedule approved by said JCT staff.
10. The Driver shall be permitted to use the van for personal use (that is, other than transporting riders to and from employment), but such personal use shall be limited to a maximum of 300 miles per month, and the cost to the Driver for such personal use shall be as herein provided. The driver shall not take the van to any establishment whose business could negatively impact the image of JCT (i.e. nightclubs, ABC stores, bars, sweepstakes facilities, etc.).
11. Driver must notify the JCT staff of any criminal charges or convictions arising out of the operation of the van or any other motor vehicle.
12. The driver must obtain, and maintain throughout the existence of the Agreement, a reasonable number of paying passengers, determined for purposes of this Agreement to be 75% of the maximum capacity of the van. If the van falls below maximum capacity, the cost of the empty seats is then divided amongst the remaining paying passengers. Should the number of participants fall below 75% of maximum capacity, the JCT staff must be immediately notified and this Agreement shall be subject to cancellation.
13. The Driver shall operate the van in accordance with reasonable and safe practices. The Driver shall present the van to JCT for maintenance inspection upon each 6,000 miles of travel, and must clear with JCT any repair or corrective work with respect to the said van. Further, the Driver shall keep the van in a reasonably clean condition, inside and outside and shall see to it that all fluid levels and tire pressures are checked weekly.
14. The Driver shall provide secure off-street parking for the van when it is not in use.
15. The Driver shall maintain and furnish to JCT such records as JCT shall prescribe. All such records shall be maintained in the manner, and presented at the time, prescribed by the JCT staff.
16. The Driver is authorized to employ a Substitute Driver who shall be required to become a party to this Agreement, shall meet the same qualifications as those prescribed for a Driver, shall be responsible for carrying out the requirements of this Agreement on behalf of the Driver at such times as the Driver is not available, and in general shall stand in the place of the Driver when performing for the Driver pursuant to this Agreement. Any personal miles driven by a Substitute Driver shall be counted as a part of the 300 miles maximum provided for the Driver. All payments to and from the Driver and to and from JCT, shall be made as if all miles during any given month were driven by the Driver, with the understanding that the Driver will collect from, and reimburse to, the Substitute Driver on the same basis as if the payments were being made to and from the Driver.
17. Only the Driver or Substitute Driver is permitted to operate the van, except under emergency conditions or with the express approval of JCT staff.
18. The Driver is prohibited from transporting any organized groups or anyone for hire except the rideshare passengers.

19. In the case of a breakdown, JCT will make an effort to provide an alternate van. If JCT is not able to provide an alternate van pending repair or replacement, commuters will be responsible for arranging their own transportation to and from work. Pro-ration of fares for day(s) a van fails to operate due to maintenance break downs and other cases outlined in the Operations Manual must be calculated by and have prior approval of JCT staff.
20. The Driver shall prohibit the use or possession or transportation of any weapon, firearm, alcoholic beverage or any drug or other substance in violation of law within the rideshare vehicle. No smoking is allowed in any JCT vehicle.
21. The Driver will not permit the use of the vehicle to pull trailers, and no trailer hitches, temporary or permanent, are to be attached to the van.
22. The vehicle is to be driven only on hard-surfaced public streets and highways, and other normal access roads and driveways, and is not to be driven and such places or in such manner as to expose the vehicle to unsafe conditions.
23. The vehicle is not to be driven over bridges or roads posted for a maximum weight of 3 tons or less.
24. The Driver is responsible for promptly reporting any accident involving a bodily injury or property damage, the reporting to be in accordance with the procedures outlined in the Operations Manual to be kept in the van at all times. The Driver or Substitute Driver shall be responsible for any damage to the extent that said damage is not recoverable from insurance, up to a maximum of $100.00, and shall be fully responsible for any criminal acts arising out of the use of the van.
25. JCT may terminate this Agreement without cause, or for cause, including a failure to comply with any provision, at its discretion. Any failure of JCT to require compliance with any provision of this Agreement shall not be interpreted as a waiver thereof, and shall not prevent JCT from enforcing or requiring compliance with such provision or requirement at any future date.
26. The Driver shall comply with the provisions of the Americans with Disabilities Act (ADA). The Driver hereby agrees to indemnify JCT from and against all claims, suits, damages, costs, losses and expenses in any manner arising out of or connected with the failure of Driver, its subcontractors, agents, successors, assigns, officers or employees to comply with provisions of the ADA.
27. The Driver does hereby agree to indemnify and save harmless JCT, its officers, agents and employees against all claims, actions, lawsuits and demands, including reasonable attorney fees, made by anyone for any damages, loss or injury of any kind, resulting from the negligent acts or omissions of the Driver.
28. All references herein to Driver shall be deemed to include Substitute Driver, but with the further understanding that the financial arrangement shall be between JCT and the Driver with the financial arrangements between the Driver and the Substitute driver being a matter for settlement between those two parties.
29. While operating the van, the driver shall not use a cell phone, Bluetooth device, text messaging device or equipment that may distract the attention of the Driver.
30. Failure to abide by any of the conditions stated above shall be grounds for termination of the lease agreement by JCT.

IN WITNESS THEREOF, the parties hereto acknowledge the due execution of this Agreement by their signatures and on the dates indicated below.

DRIVER _____ DATE _____

SUBSTITUTE DRIVER _____ DATE _____

Johnson City Transit (JCT)

REPRESENTATIVE _____ DATE _____

Rideshare Expense / Mileage Report

Rideshare # _____ Month / Year: _____

Rideshare Driver Name: _____

Typical Departure Time from Park & Ride: _____ (ex. 7:20A)

Typical Shift Time: _____ (ex. 8A-5P)

Primary Van Beginning Mileage: _____ Primary Van Ending Mileage: _____

# of Days in the month that the van drove to work: _____

Did you exceed 150 free personal miles? _____

Did you have a back-up van during the month? _____

If yes, please answer the questions below:

If so, what was the Back-up van # _____

Dates Back-up van utilized _____ - _____

Back-up van beginning mileage: _____ and ending mileage: _____

Passenger Manifest:

Name	Subsidy Y or N If yes how much?			Amount Paid
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

Drivers

Please return rideshare expense/mileage report with check made payable to JCT no later than the 10th of the month as outlined by your lease agreement.

JCT Administration

137 West Market Street

Johnson City, TN 37604

$
$
$
$

Accident / Incident Report

Date: _____

Time: _____

Vehicle #: _____

Location: _____

Driver Name: _____

Names of Passengers

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

Explain situation fully. Please be specific and concise.

_____

_____

_____

_____

_____

_____

_____

Driver Signature _____

Rideshare Referral Form

Thank you for spreading the word about the JCT Rideshare Program! As a token of our appreciation, we want to give you a referral payment. To ensure eligibility of the referral payment, please complete and forward this Rideshare Referral Form to JCT within 10 days of the new rideshare's start date. The form can be emailed to jctadmin@johnsoncitytransit.org or mailed to JCT Administration, 137 West Market Street, Johnson City, TN 37604. The standard referral payment amount is $100 payable after the new rideshare is in operation for six months. At JCT's discretion, the amount of the payment and the timeframe for payment is subject to change. Please refer to the Mobility Manager or the most current rideshare referral payment information.

Today's Date: _____

Your Name:

_____

Your Van # / Driver Name:

_____

Your Employer:

_____

Your Mailing Address:

_____

Your Phone Number:

_____

Your Email Address:

_____

Name of Driver / Group Referred:

_____

Date New Rideshare Started:

_____

Can we contact you to participate in surveys, radio or TV ads for continued promotion of JCT's rideshare program? _____

We certify that to our knowledge the above information is accurate and that JCT should issue a Rideshare Referral Payment to the individual listed below as **Payee** after the new rideshare group remains in operation for the qualifying timeframe. We also acknowledge that it is the **Payee's** responsibility to notify JCT should their mailing address change.

Name of **Payee** (Signature)

_____

_____

Name of **Payee** (Print)

Name of Person Referred (Signature)

_____

_____

Name of Person Referred (Print)