Pulaski Area Transit Development Plan FY2019 – FY2024

Final Report

Pulaski Area Transit

September 2018

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Introduction

The Pulaski Area Transit Development Plan provides a vision for the transit agency to meet demand over the next ten years. The plan consists of the following chapters:

- Chapter 1: Transit System Overview
- Chapter 2: Goals, Objectives, and Service Design Standards
- Chapter 3: Service and System Evaluation
- Chapter 4: Service and Capital Improvement Plan
- Chapter 5: Implementation Plan
- Chapter 6: Financial Plan

The focus of this plan was to meet the growing demand found in Pulaski County and recommend improvements that would provide better regional connections across Pulaski County, Radford, and Montgomery County.

Gap Analysis

In addition to an overview of the current PAT network and update to the agency's goals and service standards, one of the main components of this plan is the identification of "gaps" in the current transit network. These "gaps" include areas with high transit demand that do not have service or do not have the right amount of service, connections that are prevalent in the region's travel patterns that cannot be made using transit, and inadequate service levels (frequencies and hours of operation, or span) on existing services that result in overcrowding or underutilized services. The gaps found in the PAT network are summarized in the following table:

Gaps in Transit Coverage, Connections, and Service Levels

Gap Type	Service	Period	Location
Coverage	-	Peak Periods	Pulaski County Corporate Center (Pepperell Way)
Connection	-	Peak Periods	Southwest Radford to Pulaski County Corporate Center (Pepperell Way)
		Peak Periods	Pulaski to Carilion New River Valley Hospital in Radford
		Peak Periods	Pulaski to New River Valley Commerce Park (Route 100/International Blvd)
Service Level	New River Express	All-Day, Increase span	New River Community College, Dublin, Fairlawn, Christiansburg
	Demand Service	All-Day, Provide more trips	Pulaski Town

Service and Capital Improvements

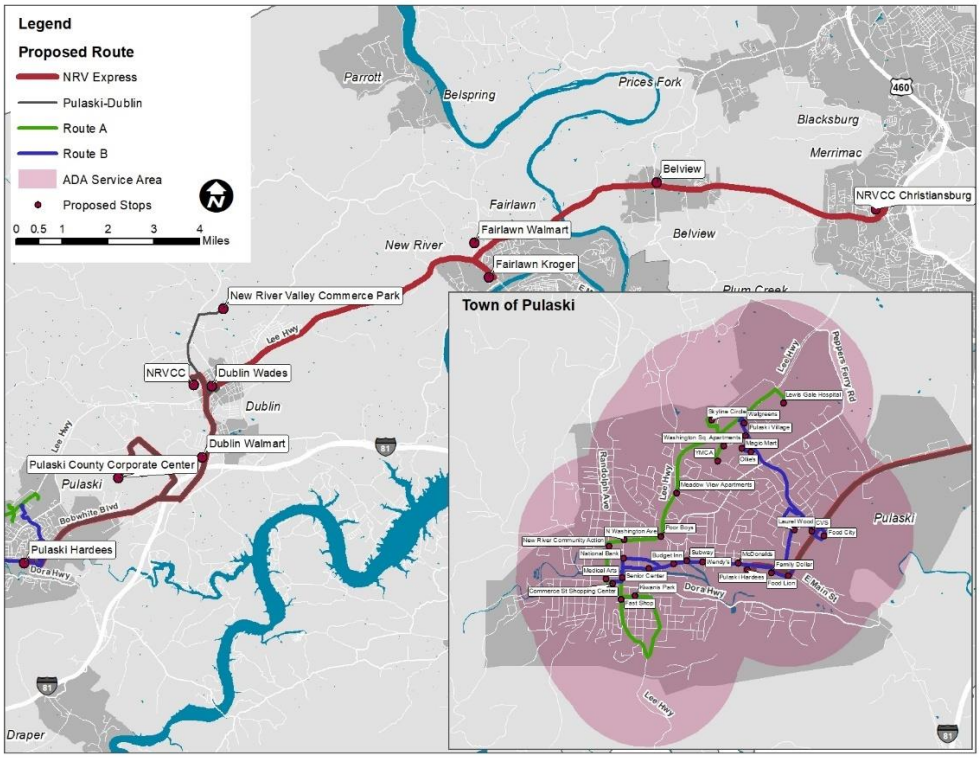
The service and capital improvements developed for this plan include service changes and new services to fill the "gaps" identified in the Gap Analysis, new routes to ensure that PAT is able to operate more efficiently and meet its daily demand, service changes and new services to improve regional transit

connectivity, and the capital investments needed to support these service recommendations and ensure that PAT maintains a state of good repair on all of its capital assets. The following table and figure summarize the service recommendations included in the plan.

Summary of Proposed Improvements by Route / Service

Route / Service	Proposed Improvement	Proposed Timeframe
New Fixed Routes A and B	Implement these two new routes within the Town of Pulaski with a weekday span of 7:00am-5:00pm and a Saturday span of 9:00am-3:00pm.	Short term (1-3 years)
	Increase weekday span to 7:00am-6:00pm.	Mid term (3 to 10 years)
Demand Response	Restrict demand response service to the Town of Pulaski within ¾-mile of Routes A and B and operate this service with a weekday span of 7:00am-5:00pm and a Saturday span of 9:00am-3:00pm.	Short term (1-3 years)
	Increase weekday span to 7:00am-6:00pm.	Mid term (3 to 10 years)
NRV Express	Add service to the route so it will have 4 daily trips to Christiansburg and the schedule will be adjusted so the route will have a timed transfer at the Fairlawn Kroger with Radford Transit Route 20. Additionally, a stop will be added in Belview.	Mid term (3 to 10 years)
	Add a stop in Belview.	Mid term (3 to 10 years)
	Operate all 10 weekday trips to Christiansburg on weekdays. On Saturdays, operate 6 trips, all of which will go to Christiansburg.	Long term (10 plus years)
Pulaski-Dublin Route	Implement this new peak period route between Pulaski, the Pulaski County Corporate Center, and the New River Valley Commerce Park.	Mid term (3 to 10 years)

Pulaski Area Transit Recommendations for Full Service

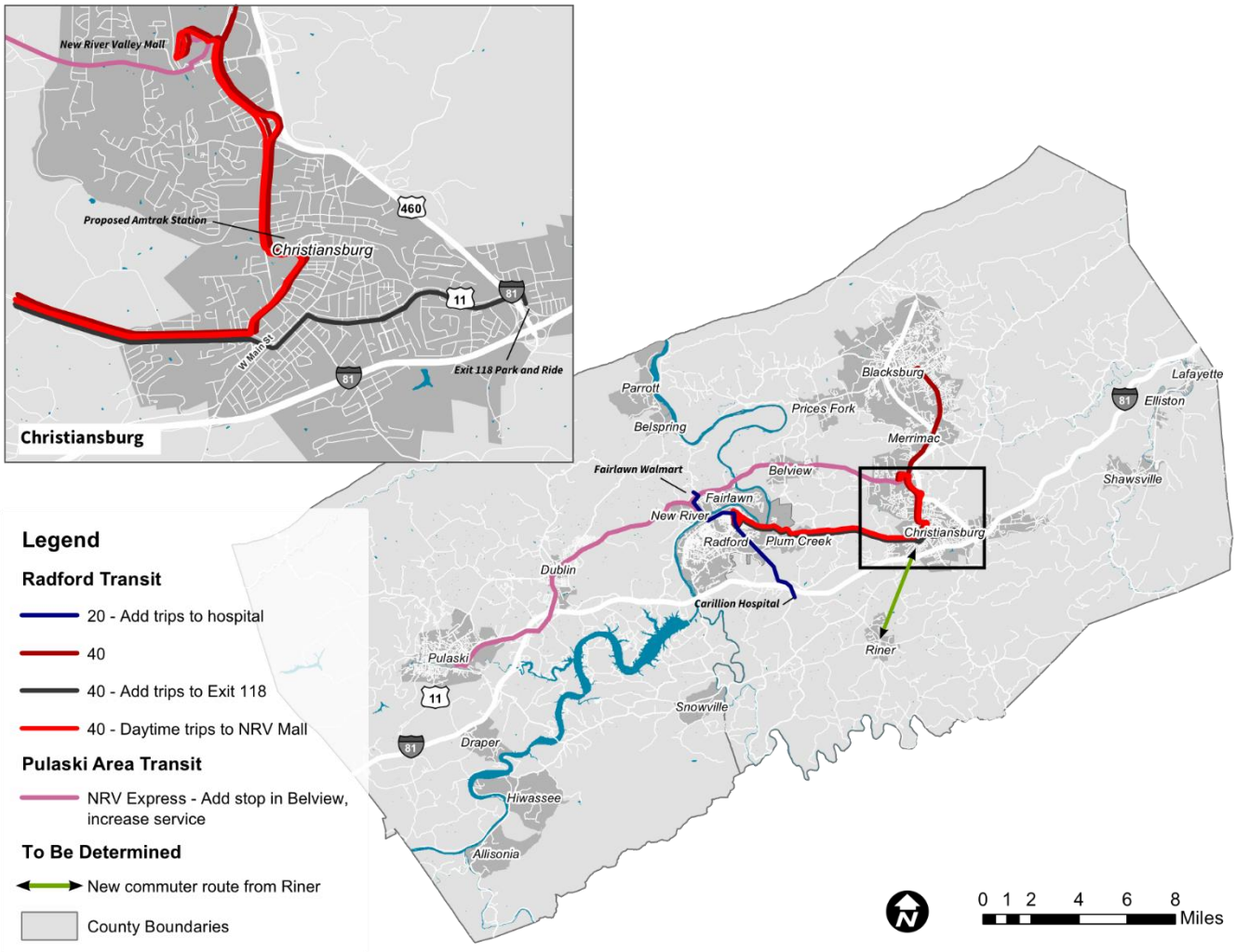


The regional improvements in this plan that integrate PAT service with Radford Transit and Blacksburg Transit service are summarized in the following table and figure. With these recommendations in place, New River Valley residents will be able to travel seamlessly across the region with ease and will be able to reach major regional destinations via transit.

Regional Integration Recommendations Summary

Service	Recommendation	Regional Benefit
RT Route 40	Operate route between Radford University and the NRV Mall between 7:00 am and 2:40 pm, and then between Radford University and Squires after 2:40 pm (current alignment)	All-day service provided between Radford and Christiansburg, with easy transfer to Blacksburg services during morning and midday periods
	Operate select trips to the Exit 118 Park and Ride in Christiansburg	Connection between Radford and regional Park and Ride with Virginia Breeze service
	Add a stop at the proposed Amtrak station in Christiansburg.	Connection between Radford and interstate Amtrak service
RT Route 20	Extend certain trips to Carillion Hospital in Radford	Provide dedicated service to a regional medical center
	Coordinate schedules with PAT NRV Express at the Fairlawn Walmart	Seamless travel between Pulaski, Dublin, Fairlawn, Radford, and the Carillion Hospital
PAT NRV Express	Increase span of service to 10:00 pm on weekdays, and to 6:00 pm on Saturdays	Increased utility of this route for travel between Pulaski, Dublin, Fairlawn, and Christiansburg, including the proposed Amtrak Station
	Increase frequencies incrementally to 90 minutes and then 60 minutes	Increased utility of this route for travel between Pulaski, Dublin, Fairlawn, and Christiansburg
	Coordinate schedules with RT Route 20 at the Fairlawn Walmart	Seamless travel between Pulaski, Dublin, Fairlawn, Radford, and the Carillion Hospital
BT Two Town Trolley	Coordinate schedule with the BT Two Town Trolley at the NRV Mall	Seamless travel between Pulaski, Dublin, Fairlawn, Christiansburg, and Blacksburg
	Add a stop at the proposed Amtrak station in Christiansburg	Connection between Blacksburg and interstate Amtrak service
BT Explorer	Add a stop at the proposed Amtrak station in Christiansburg	Connection between Christiansburg and interstate Amtrak service
Riner	Operate new year-round peak hour commuter route between Riner and Christiansburg, Blacksburg, or both	Provide commuter service between southern Montgomery County and Christiansburg/Blacksburg

Regional Integration Recommendations Summary



The capital improvements in the plan include the following items:

- The regular replacement of vehicles when they reach the end of their useful life,
- The purchase of new vehicles to supplement service expansion recommendations, and
- New bus stops to support the fixed route recommendations.

Implementation and Financial Plans

The implementation plan outlines the steps needed to carry out the recommended service and capital improvements and illustrates the difference between providing the baseline service requirements and implementing the service recommendations.

The financial plan provides a planning-level forecast of PAT's costs and revenue over the 10-year plan time-frame and is composed of both an operating and capital component.

The operating budget is associated with regularly reoccurring costs such as labor, maintenance, insurance, and administration. These costs are stable over time and are closely tied to the amount of service provided. The operating budget is broken further down by the cost of operating existing service and the cost associated with implementing the plan recommendations. Capital costs reflect investments in procurement of replacement or expansion assets including vehicles. These figures fluctuate considerably year over year.

Overall, PAT is susceptible to changes in funding and policy at the state and federal level, including:

- Changes to, or abolishment of, the ADTAP federal funding program
- Major increases in transit service within Virginia (e.g. Silver Line Phase II) that will reduce PAT's share of state operating assistance.
- Changes in state capital match rates.

The operating and capital budget forecasts for this plan are summarized in the following tables.

Operating Budget Forecast (Figures in 1000s)

		Short-Term Recommendations				Mid-Term Recommendations				
Fiscal Year	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Operating Revenue										
Fare Revenue	$ 80.00	$ 80.80	$ 81.61	$ 82.42	$ 83.25	$ 84.08	$ 84.92	$ 85.77	$ 86.63	$ 87.49
Operating Revenue Subtotal	$ 80.00	$ 80.80	$ 81.61	$ 82.42	$ 83.25	$ 84.08	$ 84.92	$ 85.77	$ 86.63	$ 87.49
Grants										
Federal	$ 262.20	$ 267.71	$ 273.33	$ 279.07	$ 284.93	$ 290.91	$ 297.02	$ 303.26	$ 309.63	$ 316.13
State	$ 143.65	$ 143.65	$ 143.65	$ 143.65	$ 145.08	$ 146.53	$ 150.93	$ 155.46	$ 160.12	$ 164.93
Local	$ 118.55	$ 130.38	$ 142.63	$ 155.31	$ 167.00	$ 169.55	$ 179.13	$ 189.07	$ 199.38	$ 210.08
Grant Revenue Subtotal	$ 524.40	$ 541.74	$ 559.60	$ 578.02	$ 597.01	$ 607.00	$ 627.09	$ 647.79	$ 669.14	$ 691.14
Total Revenue	**$ 604.40**	**$ 622.54**	**$ 641.21**	**$ 660.45**	**$ 680.26**	**$ 691.08**	**$ 712.01**	**$ 733.56**	**$ 755.76**	**$ 778.63**
Operating Costs										
Existing Service	$ 604.40	$ 622.54	$ 641.21	$ 660.45	$ 680.26	$ 700.67	$ 721.69	$ 743.34	$ 765.64	$ 788.61
Net Cost of TDP Recommendations	$ -	$ 16.45	$ 16.61	$ 16.78	$ 16.95	$ (9.58)	$ (9.68)	$ (9.78)	$ (9.88)	$ (9.97)
Total Operating Costs	**$ 604.40**	**$ 638.98**	**$ 657.82**	**$ 677.23**	**$ 697.21**	**$ 691.08**	**$ 712.01**	**$ 733.56**	**$ 755.76**	**$ 778.63**
Additional Funding Need to Implement TDP Recommendations	**$ -**	**$ 16.45**	**$ 16.61**	**$ 16.78**	**$ 16.95**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**

Capital Budget Forecast (Figures in 1000s)

Fiscal Year	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Capital Revenue										
Federal	$ 6.45	$ 64.88	$ 67.41	$ 189.02	$ 203.79	$ 143.74	$ 149.42	$ 81.62	$ 161.45	$ 88.12
State	$ 1.29	$ 12.98	$ 13.48	$ 37.80	$ 40.76	$ 28.75	$ 29.88	$ 16.32	$ 32.29	$ 17.62
Local	$ 0.32	$ 3.24	$ 3.37	$ 9.45	$ 10.19	$ 7.19	$ 7.47	$ 4.08	$ 8.07	$ 4.41
Total Capital Revenue	**$ 8.06**	**$ 81.10**	**$ 84.26**	**$ 236.28**	**$ 254.74**	**$ 179.68**	**$ 186.77**	**$ 102.03**	**$ 201.81**	**$ 110.15**
Capital Costs	**$ 8.06**	**$ 81.10**	**$ 84.26**	**$ 236.28**	**$ 254.74**	**$ 179.68**	**$ 186.77**	**$ 102.03**	**$ 201.81**	**$ 110.15**

1 Transit System Overview

1.1 HISTORY

Figure 1: Organizational Timeline

Beginning in 2003, the Town of Pulaski undertook plans to establish a public transit system. The vision was to provide a service catering to non-driving populations increasingly dependent on taxicabs as their sole means of transportation. The Town further leveraged a demonstration grant awarded from the Virginia Department of Rail and Public Transit, by conducting local fund raising from business partners and holding a golf tournament. The first advisory council meeting was held in August of 2004 and recommended establishing both a fixed route and demand responsive public transportation service.

Service was initiated in October 2004. The Town partnered with the New River Valley Agency on Aging/Senior Services (NRVSS) to operate the new service known as Pulaski Area Transit (PAT). Over the next year PAT expanded to providing over 100 trips per day and was recognized as the fastest growing new transit system in the state. In 2005 PAT received funds from the Federal Transit Administration (FTA) 5311 program and began submitting information to the National Transit Database via the streamlined rural reporting requirements.

Approximately half of PAT's funding comes from Federal sources, twenty percent from the state, and thirty percent from local entities. Participants in the local funding contribution include the Town of Pulaski and Pulaski County. In addition to the now annual golf tournament, additional PAT funding contributions come from providing special trips for area events, the local Area Agency on Aging, New River Community College, Walmart and other local area businesses.

After startup, PAT began to receive recognition for its operations. Most notably in 2006 when PAT won the Small Business of the Year award from the Pulaski County Chamber of Commerce. Also, in 2008, PAT was one of two transit systems in the country to receive the Success in Enhancing Ridership Award from the FTA for areas with populations below 50,000 persons.

In 2011, PAT participated in a Regional Transit Organization Study. In serving on the advisory committee, PAT provided input on determining the advantages and disadvantages of potential regional organizational models to

consolidate transit services across areas represented by the New River Valley Planning District Commission (PDC 4) and the Blacksburg-Christiansburg-Montgomery Area Metropolitan Planning Organization.

In anticipation of continued growth and expansion, PAT conducted a feasibility study for a new maintenance and operations facility in 2012. Up to $13.5 million was estimated for a facility capable of handling up to 23 PAT vehicles in addition to 41 NRVSS vans. As of this TDP update, further advancing of this project has not been initiated.

Most recently, in 2014 PAT collaborated with NRVSS to request funding under the FTA 5317 New Freedom program. Federal and state funding requests focused on new vehicles, a mobility manager position, operating assistance and capital assistance. Also, in 2015 PAT provided a service extension of the New River Express from Fairlawn to the New River Mall at Christiansburg. The expansion included two daily (Monday-Friday) roundtrips. In 2015, PAT crossed the threshold of having provided over 100,000 trips since beginning operations.

1.2 GOVERNANCE

PAT is governed by the NRVSS Board of Directors and the PAT Advisory Council which represent stakeholders from the local area. Both the board and the council meet quarterly. The Board of Directors of the New River Valley Agency on Aging is the principal policy making unit. Oversight in program determinations, assuring the availability of funds and accountability for their expenditure are the primary functions of the Board. Members are appointed by the governing bodies in each of the eight governmental jurisdictions in PDC 4. There are eight primary members and eight alternate members appointed. The FY 2014-2015 Board members included:

- Richard Ballengee - Town of Christiansburg
- John Peek (Chair) – Giles County
- Susan Anderson (Chair) - Town of Blacksburg
- Lydia Hickam - Town of Pulaski
- Deena Flinchum (Treasurer) - Montgomery County
- Mary Ann Semones (Vice Chair) - City of Radford
- Elaine Powell - Pulaski County
- Terri Morris - Floyd County

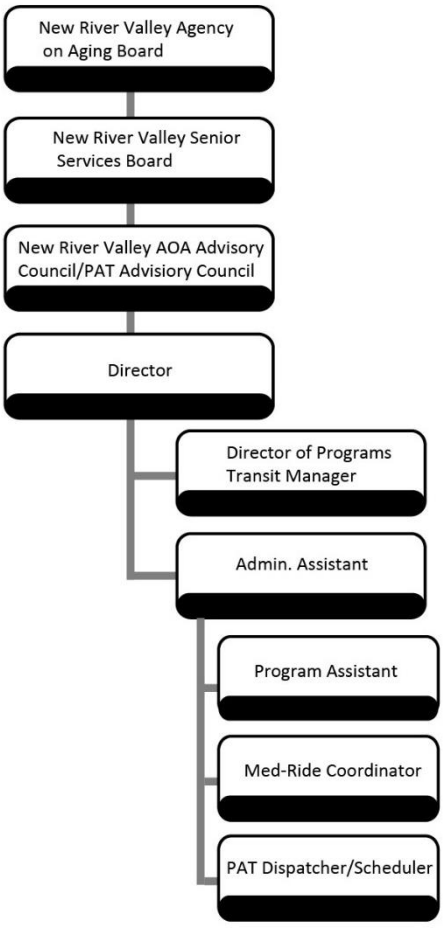
The Advisory Council of the New River Valley Agency on Aging carries out an advisory function that furthers the Agency's mission of developing and coordinating community based systems of services for older adults in PDC 4. The Advisory Council provides recommendations to the Agency's Board of Directors on policies, planning, and programming. Development of the Agency's Area Plan is a primary responsibility of the Advisory Council. Members of the Advisory Council are appointed to serve on the Advisory Council by the Agency's Board of Directors. Members represent community organizations, health and human services agencies, consumers of services, local elected officials, minority populations, and persons with leadership experience.

1.3 ORGANIZATIONAL STRUCTURE

PAT is led by a Transit Manager/Director of Programs, defined as a 95 percent full-time position. Administrative employees of NRVSS contribute a percentage of their workweek to the operation of PAT with their hours specifically separated for accounting purposes. PAT shares office space and staff with its partner agencies.

The organization chart presented shows the close relationship between PAT and its partner agencies, the New River Valley Agency on Aging and New River Valley Senior Services. The NRVSS Operations group is responsible for the normal day-to-day operations of all PAT and NRVSS transportation services. This group also manages all associated personnel, including bus operators. PAT currently employs 14 part-time drivers, four dispatchers and three full-time staff.

Figure 2: Organizational Chart



1.4 SERVICES PROVIDED AND AREAS SERVED

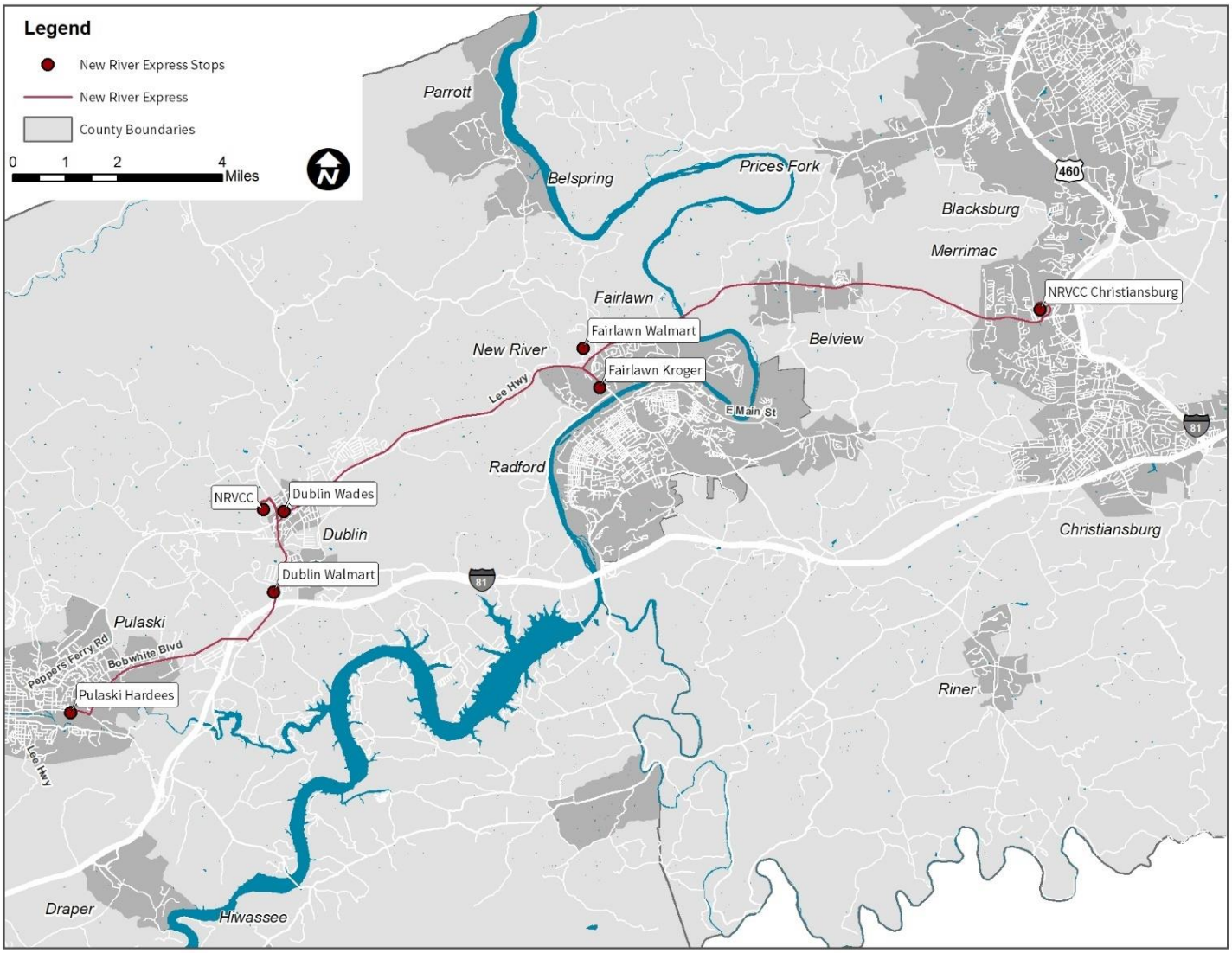
PAT operates a scheduled deviated fixed route within the Town of Pulaski and extending into the Pulaski County communities of Dublin and Fairlawn. From Fairlawn, the route connects to Christiansburg with no intermediate stops.

Figure 3: East Main Street in the Town of Pulaski

Fairlawn, located approximately 16 miles from Pulaski, is at the border of Pulaski County and Montgomery County. The City of Radford lies across the New River at this location and bus stops are shared in Fairlawn between PAT and Radford Transit.

Service in the Town of Dublin is limited to either drop-off or pick-up, as trips within Dublin are not permitted since the City of Dublin does not contribute to PAT's budget. A limited number of on-demand riders are accommodated on this service. This service is branded as the New River Express (See Figure 4).

Figure 4: PAT Service Area – New River Express



The New River Express operates four round-trips during weekdays. Two trips were extended in 2015, to the New River Valley Mall and New River Community College (NRCC) in Christiansburg. Intermediate stops on weekdays include the Pulaski Hardee's, New River Community College main campus, Dublin Walmart, Dublin Wades, Fairlawn Kroger, and Fairlawn Walmart. Service hours are 7:00am to 5:00pm Monday – Friday. Service is offered only to the Dublin Walmart on Saturday, with service hours of 9:00am to 3:00 pm for two round trips.

Table 1: New River Express Monday-Friday Schedule

Pulaski Hardees (RT. 99)	NRCC	Dublin Walmart	Wades	Fairlawn Kroger	Fairlawn Walmart	NRV Mall/NRCC Christiansburg
7:20am (L)	7:45am	7:55am	8:00am	8:20am	8:30am	8:50am
10:15am (R)	9:50am	10:00am	9:40am	9:20am	9:10am	
10:15am (L)	10:30am	10:40am	10:45am	11:05am	11:15am	
12:00pm (R)	11:40am	11:45am	11:30am	-		
12:30pm (L)	12:45pm	12:55pm	1:00pm	1:20pm	1:30pm	1:50pm
3:15pm (R)	2:50pm	3:00pm	2:40pm	2:20pm	2:10pm	
3:45pm (L)	4:15pm	4:00pm	4:20pm	4:35pm	4:40pm	
5:20pm (R)	-	5:05pm	4:55pm			

(L) – Leave time, (R) – Return time

PAT also offers 24-hour demand response service in all areas within the Town of Pulaski and 3/4 mile outside the Town limits. At the time of this TDP update, PAT averages around 350-400 trips provided per day. The service is operated as two shifts with five buses each, increasing the number of buses on each shift to seven or eight as demand dictates. As records have indicated the first of the month is when there is higher traffic and drivers work over sometimes when certain days seem to be higher traffic.

1.4.1 Other Transportation Services

PAT also operates the New River Valley Senior Services transportation for the elderly and other special populations program. The service area covers the entire New River Valley area with an originating address in the region. Services can be provided to specific medical sites in Roanoke, Charlottesville and Richmond for persons age 60 or over, or to someone with a physical/sensory disability. New River Valley Senior Services and Pulaski Area Transit has different fleets. Vehicles are not shared between the programs.

Figure 5:New River Valley Senior Services

1.4.2 Bus Stops

PAT has signs posted for bus stops around the Town of Pulaski. Prior studies indicated 20 bus stops designated within the Town. There are no bus shelters as PAT notes most riders wait inside a store or building where possible. The previous TDP indicated that PAT received an American Recovery and Reinvestment Act (ARRA) grant of $54,000 which would fund six future shelters. Proposed locations included in the grant were Meadowview Apartments, the ballpark, on Route 11 between Dublin and Pulaski, on Route 11 between Fairlawn and Dublin, and Washington Square.

In May 2016, PAT added a transit stop in front of the Radcliffe Museum at 4:50pm on Tuesday evenings to take individuals home from The Market Place.

1.4.3 Park and Ride Facilities

Within Pulaski County, there are no park and rides along PAT's New River Express route. Two county park and ride lots are identified via the Ride Solutions website along I-81, both south of the Town of Pulaski at Exit 94 and Exit 89.

1.5 FARE STRUCTURE

Monthly bus passes are available for $20 and can be used for unlimited trips on the New River Express deviated fixed route service during that month. These passes can be purchased at the main office or may be purchased online. The demand response system for those that want to go to straight to their destination costs $2.00 per one-way trip. Priority is given to those with disabilities. There are no discounts for seniors or the disabled. However, Social Services and Community Services provide bus passes to eligible riders. Children age three and under ride free. Children under age 12 must be accompanied by an adult.

Table 2: PAT Fare Structure

Type	Fare
Town Trips	$0.75
Demand Trips	$2.00
Pulaski County, Dublin, Fairlawn	$2.00
New River Community College	$1.00
Pulaski/Dublin to Christiansburg	$4.00
Fairlawn to Christiansburg	$2.00
Student discount	$1.00

1.6 FLEET

Figure 6: PAT Fleet

Initially, PAT's fleet expanded at a regular pace of approximately two buses per year. Fleet growth since 2014 has stabilized. All vehicles have two-way radios and new vehicles are equipped with GPS tracking technology. The previous TDP document noted that PAT would like to transition to a more diverse fleet, allowing the flexibility to dispatch the appropriate vehicle(s) for several types of trips.

In 2013, Pulaski received funding for seven new buses from the Department of Rail and Public Transportation, the federal transit administration and NRVSS. These new buses allowed for a higher rider capacity. They are 15-passenger, plus room for two wheelchairs with bicycle racks on them.

Table 3: PAT Bus Fleet

Make/Model	Manufacture Year	Type	Fuel	Seats	Quantity	Avg. Miles
Chevy Supreme	2013	Body-on-Chassis	Gasoline	15	1	83,000
Chevy Supreme	2012	Body-on-Chassis	Gasoline	15	1	78,000
Ford Starcraft All-Star	2015	Body-on-Chassis	Gasoline	15	1	42,000
Ford Starcraft All-Star	2017	Body-on-Chassis	Gasoline	15	2	0
Ford Starcraft All-Star	2015	Body-on-Chassis	Gasoline	15	1	50,000
Ford Supreme	2013	Body-on-Chassis	Gasoline	15	1	81,000
Chevy Supreme	2013	Body-on-Chassis	Gasoline	15	1	82,000
Senator II	2014	Body-on-Chassis	Gasoline	15	1	65,000
Chevy 170-599	2012	Body-on-Chassis	Gasoline	13	1	78,000
Chevy	2012	Body-on-Chassis	Gasoline	13	1	83,000

PAT's current fleet consists of 11 vehicles.

1.7 EXISTING FACILITIES

PAT's administrative offices are co-located with its partner organizations, the New River Valley Agency on Aging and the New River Valley Senior Services, at 141 East Main Street, Suite 500, Pulaski, VA 24301. The office is in a shopping plaza within the historic district of the Town of Pulaski. The offices include a driver break room and a large conference room which is used regularly for training.

There is no maintenance facility on premises, however PAT vehicles are now being washed by a contracted company and washing occurs in the PAT parking lot twice a month on Sundays. As noted earlier in this chapter, PAT undertook a feasibility study to establish a new administrative and maintenance facility. Specific needs identified as requiring this facility included parking for all vehicles in one location, a fueling area, and a covered paved wash area.

Figure 7: PAT Administrative Offices (top) and Town of Pulaski Shop (bottom)

For cost-efficiency, maintenance is contracted to the Town of Pulaski. The Town of Pulaski Public Works Department has a garage located approximately one mile from the PAT administrative offices. The Town Shops, located at State and Commerce Street, are staffed by three technicians who work on PAT buses in addition to Town vehicles. This is not done by formal agreement and results in significant cost savings. The Town maintains approximately 87 Town vehicles and 154 pieces of equipment excluding Fire Department vehicles.

1.8 TRANSIT SECURITY PROGRAM

PAT is dedicated to providing safe rides by ensuring drivers are adequately trained. PAT provides monthly training covering a range of issues and topics in short, efficient and informative sessions. These monthly training sessions also encourage communication between drivers and dispatchers and provide opportunities to share insights. Eight hours of training for defensive driving is provided annually. Standard operating procedures are in place to conduct daily pre-trips and post-trip inspections on each vehicle. Procedures for fare accounting include a daily accounting practice. PAT uses Diamond fare box canisters that have a brass cylinder to store fares collected on-board. Drivers check an empty canister out from the office at the beginning of the shift and bring the filled canister back at the end of the shift. Fares are counted, logged and deposited the next day.

1.9 INTELLIGENT TRANSPORTATION SYSTEM (ITS) PROGRAM

To organize the drivers on their dispatch route and efficiently provide their services, PAT installed GPS trackers in their buses in 2014. The firm selected to develop GPS for the PAT buses, Angel Track, uses proprietary communications which may complicate efforts to incorporate data into a regional web tool.

New vehicles come equipped with six cameras inside to monitor all activity inside the vehicles. The cameras record events and can be used for safety purposes to investigate any identified issues.

PAT does not currently host a web tool but has used GTFS through its partnership with Ride Solutions and Trillium Transit to provide route and stop updates for Google Transit. The GTFS feed is updated when PAT submits route or stop changes to Ride Solutions.

1.10 DATA COLLECTION AND REPORTING METHODOLOGY

Historically PAT has made use of tracking statistical and demographic data about their riders (age groups, mobility, wheelchair needs) to apply for funding grants (New Freedom). The reporting of the services provided and growth trends have enabled extensive fleet and service expansion initiatives.

PAT tracks demand responsive waiting times, reported to range from seven to nine minutes.

1.11 PUBLIC OUTREACH

Bus schedules are posted in the buses, at PAT's headquarters, other town and county offices and local stores, and on the New River Community College campus. Schedules are also advertised in the local newspaper. There are regular news articles and paid advertisements to reach out to potential PAT riders in the local newspaper and on the radio. PAT would like to update their website (nrvseniorservices.org) to provide more transportation information to customers and potential riders. PAT also participates in community events such as Count Pulaski Days and the Christmas and Fourth of July parades where the buses and staff are dressed up as cartoon characters. PAT also participates in the Agency of Aging Expo at the Community College, Pulaski Chamber of Commerce Expo, Halloween Treat Trail, and Pulaski Fest. Staff and volunteers wear PAT T-shirts.

PAT provides free rides to veterans on Veterans' Day and to voters on Election Day, and supports the local baseball team, the Pulaski Mariners. PAT's annual golf tournament is both a fund-raiser and a public outreach campaign. In 2008, the Town of Pulaski acquired a trolley named Lady Rebecca which is used for special events. The trolley helps to draw attention to the Town's public transportation options.

PAT has a facebook page, posting general service announcements, with over 180 followers.

Figure 8: PAT Facebook Page

2 Goals, Objectives, and Service Design Standards

To facilitate review and assure sufficient coverage, the goals and objectives in this section have been categorized into six areas of activity for the public transit operator. These categories summarize the wide variety of goal/objective statements present in the relevant agency, municipal, and regional planning documents. Areas with limited coverage were targeted for enhanced goal/objective development during the TDP process. These categories are:

GROWTH / NEW OPPORTUNITIES (GO) – Objectives related to the expansion of service geographically or in terms of frequency, including development of new ridership markets, new connections with other service providers, or expanded facilities and fleet.

OPERATIONAL EXCELLENCE (OE) – Objectives that enhance the training and effectiveness of the workforce, address the monitoring and continual improvement of service delivery, and utilize studies or resources to support streamlined operations or project implementation.

COMMUNITY INTEGRATION (CI) – Objectives that further coordinate transit with economic development and local land use preferences and represent participation in studies or locally-based planning initiatives.

FINANCIAL ACCOUNTABILITY (FA) – Objectives that address efficiency of operations and cost recovery, as well as the pursuit of expanded or new revenue sources.

REGULATORY COMPLIANCE (RC) – Objectives that support meeting the agency's regulatory requirements. These should align with guidance and reporting requirements while and establishing or exceeding any applicable performance metrics.

ENVIRONMENTAL STEWARDSHIP (ES) – Objectives that seek to reduce emissions via technology, promote travel alternatives other than driving alone, and reduce energy consumption at facilities.

The results of a review of relevant and recent planning documents that addressed transit goals, objectives, and service standards for the region are presented in the following sections.

2.1 PREVIOUS GOALS AND OBJECTIVES

The previous TDP for Pulaski Area Transit (PAT) identified five goals and nineteen (19) objectives. In addition to categorizing these previous goals/objectives this TDP update process also identified any goals reflecting one time or continuous activities. A status, if known, was provided for any one-time objectives presented in the previous TDP document.

Table 4: Previous Major TDP Update PAT Goals/Objectives

Goals/Objectives	Category(ies)	Status
Goal #1: Expand the current service area	GO	On going
Objective1.1: Increase ridership by 20% annually	GO	On going
Objective 1.2: Provide better service to remote parts of Pulaski County	GO, OE	On going
Objective 1.3: Expand service to other areas in the New River Valley	GO	On going
Goal #2: Plan for adequate financial resources to support operational plans	FA	On going
Objective2.1: Establish a variety of funding sources including federal, state, local, contracts, donations from local businesses, fares, private, and advertising	FA	On going
Objective 2.2: Help with fund-raising activities in all localities and assist in collecting funds for the local match to receive federal and state funds	FA	On going
Objective 2.3: Apply for federal and state funding to meet Board-approved expenditures as outlined in the annual budget	FA	On going
Objective 2.4: Create partnerships with local businesses, governments and the community college	CI	On going
Objective 2.5: Establish a 5% contingency reserve over operational expenses	FA	On going
Goal #3: Recruit and retain a qualified workforce	OE	On going
Objective 3.1: Develop and implement a process to retain and expand management expertise and community investments	OE	On going
Objective 3.2: Create a staff development program to foster personal and professional growth	OE	On going
Objective 3.3: Develop, implement, monitor and improve training programs that will foster excellence in performance and comply with all the regulatory issues concerning public transit	OE, RC	On going
Goal #4: Use all appropriate media to market PAT services	OE	On going
Objective 4.1: Establish and maintain a positive relationship with PAT stakeholders	OE	On going
Objective 4.2: Enhance PAT's public image so that it is recognized as a first-rate public transit provider throughout the New River Valley	OE	On going
Objective 4.3: Maintain public awareness of transportation issues, changes and input through area media such as newspapers, radio and TV.	OE	On going

Goals/Objectives	Category(ies)	Status
Objective 4.4: Develop or have access to a current web site utilizing computer technology to provide information to our customers and potential customers	OE	One time
Goal #5: Plan and manage assets to achieve proposed operational capacity	OE, RC	On going
Objective 5.1: Establish, review, replace and manage the rolling stock to accommodate planned levels of ridership	OE, RC	On going
Objective 5.2: Seek funding to replace and increase the number of vehicles to accommodate service area expansions	FA, GO	On going
Objective 5.3: Ensure all vehicles meet ADA requirements while maintaining sufficient diversity to provide the most efficient vehicle to service the job	RC	On going
Objective 5.4: Establish a facility in Pulaski to house PAT administrative, training and maintenance needs	GO	On going

2.2 ALIGNMENT WITH REGIONAL GOALS/REGULATIONS (STATE, FEDERAL)

This section reviews the alignment of previous goals and objectives developed for PAT with relevant transit/transportation goals for the region or by localities within the service area. This TDP update will afford the opportunity to further incorporate and/or strengthen PAT goals, objectives, and service standards to align with the strategic planning elements of these adopted plans, especially those adopted since the last major TDP update.

Town of Pulaski Comprehensive Plan (2016): This document contains a statement of goals and objectives designed to establish the plan as the official guide for development of the Town in the areas of land use, economic development, housing, transportation, and quality of life. A total of five (5) Transportation Goals were presented in this plan. Only one goal pertained to PAT, stating "Goal: Maintain partnership with New River Valley Senior Services and Pulaski County to provide for continued operation of Pulaski Area Transit."

Federal Transit Administration Rulemaking (2016): In August, 2016, FTA published a final rule for the Public Transportation Safety Program, which provides the overall framework for FTA to monitor, oversee, and enforce safety in the public transportation industry. This builds upon implementing a Safety Program that is both scalable and flexible through the application of Safety Management System (SMS) principles. SMS builds on existing transit safety practices by using data to proactively identify, avoid, and mitigate risks to safety.

Just prior to this rulemaking, in July 2016, the FTA published a Final Rule for Transit Asset Management (TAM). The rule requires FTA grantees to develop asset management plans for their public transportation assets, including vehicles, facilities, equipment, and other infrastructure. FTA's national Transit Asset Management System Rule:

- Defines "state of good repair";
- Requires grantees to develop a TAM plan;
- Establishes performance measures;
- Establishes annual reporting requirements to the National Transit Database; and
- Requires FTA to provide technical assistance.

These federal rules also inform DRPT updates of TDP guidance and performanced-based monitoring of transit grantees throughout the Commonwealth.

Regional Transit Study (NRVMPO – 2016): This study process was led by the New River Valley Regional Transit Coordinating Council (RTCC). The purpose of the study was to investigate potential enhancements at overlapping and high-volume bus stop locations that could improve the perception of public transportation in the region. The plan established a prioritized short-term and long-term action plan. Each action plan identified potential partnerships, investments, and policy goals for the next three to six years. A total of 14 goals to support the action plan are listed in Table 5 alongside activity area categories and statuses.

Table 5: NRVMPO Regional Transit Study Goals/Objectives

Goals/Objectives	Category(ies)	Status
Establish a time-check at existing higher-volume overlapping stops, synchronizing arrival/departure to meet demand.	OE	On-time COMPLETE
Establish additional overlapping service stops. Improve connectivity of regional network and decrease waiting times.	OE, GO	On-time COMPLETE
Ensure that all overlapping stops are handicapped accessible and create connections with surrounding bicycle and pedestrian infrastructure within a ½-mile radius	CI	On-going (2019)
Expand existing services. Examples: Christiansburg and Radford morning connection that features more stops downtown (both locations), and new services to the Carilion NRV Medical Center	GO	On-going (2019)
Provide a phone number and schedule at enhanced and hub service environment stops.	OE	On-going (2018)
Incorporate more amenities (passenger information, seating, shelter, etc.) at enhanced and/or hub service environment stops.	OE	On-going (2020)
Improve and/or create communication between overlapping services. Ability to inform potential user transfers.	OE	On-going (2020)
Construct a regional transit hub at the proposed NRV Passenger Rail Station.	GO	On-going (2020)
Create rapid commuter bus lines at key times between the universities and the Town of Christiansburg.	GO	On-going (2021)
Create and/or expand services that provide access to and from affordable housing developments.	GO, CI	On-going (2021)
Enhance connectivity between NRV services and the Smart Way.	CI	On-going (2022)
Create a method for transit users to cross services platforms with a single ID and/or fare.	OE	On-going (2022)
Overlapping service stops get branded and marketed.	CI	On-going (2022)

Goals/Objectives	Category(ies)	Status
Establish a method for bus operators to report user feedback and evaluate service/amenity improvements.	OE, RC	On-going (2022)

NRV 2040 Long Range Transportation Plan (2015) - The goals and scope of the NRV LRTP 2040 Update are the same as the goals of VTrans 2040 addressing the following transportation issues and needs within the planning area:

1. Economic Competitiveness and Prosperity
2. Accessible and Connected Places
3. Safety for All Users
4. Proactive System Management
5. Healthy and Sustainable Communities

2.3 RATIONALE FOR CHANGE

The initial set of PAT Goals and Objectives from the prior TDP document were especially comprehensive. The integration with past and current plans for the Town, County, and NRV remain well aligned. During the process of assigning measures and targets, some objectives have been altered in allow clearer tracking toward progress. Certain elements are outside PAT's ability to control or influence. The goals and objectives to be developed in this major TDP update are intended to be accomplished by PAT without completely depending on outside actors. This is important so that the agency is not held to unrealistic targets.

Key areas not addressed directly by PAT's established objectives included specific operational targets for service performance (productivity) and safety. Also, the regulatory environment has changed since the last major TDP update and new performance-based state/national requirements need to be incorporated. Existing PAT objectives emphasize fleet management and need only slight modification to better align with the FTA Transit Asset Management (TAM) minimum standards to demonstrate compliance.

2.4 NEW GOALS AND OBJECTIVES

New goals and objectives were developed by incorporating agency, regional, and state priorities. Given the comprehensive coverage of goals/objectives from the past TDP most were carried forward as ongoing initiatives. Examples of potential measures, desired targets, and strategies for reaching/maintaining targets in a timely fashion are provided. Additional detail is provided on potential sources of data or technology necessary to facilitate the measurements. Measures have been selected that best reflect PAT's unique operating environment.

Goal #1: Evaluate system and advance service and capital improvements as demand warrants.

Objective 1.1: Maintain an internal performance monitoring program by route. (OE, FA)		
System metrics compiled for passengers per hour, passengers per mile, operating expense per passenger trip.	Conduct service adjustments when below established service targets (see 2.5) for 12 consecutive months.	Incorporate monthly logging and reporting. Assure targets reflect any relevant economic/ demographic trends.
Data collection sources: *Farebox, schedule data, operations logs, financial data.*		

Objective 1.2: Manage continued positive ridership growth. (GO)		
Passenger delays/wait times for pickup	Maintain or reduce passenger wait times.	Provide expanded services as funding is available. Identify and target schedule, dispatch, and other operational improvements.
Data collection sources: *Operations logs, surveys.*		

Objective 1.3: Promote enhanced service coverage and regional connectivity to foster seamless travel across a variety of regional transit service options. (CI)		
Implementation of NRV Transit Study short-term strategies for Fairlawn bus stops.	Complete short-term strategies by no later than 2021.	Participation in regional planning initiatives, implementation of PAT-specific recommendations.
Data collection sources: *Route schedules, in-house documentation*		

Objective 1.4: Monitor and improve safety on transit service and with facilities. (OE)		
Preventable bus accident rate per 100,000 miles.	Less than 1 per 100,000 miles.	Establish/maintain driver safety recognition program, conduct refresher training for routes/operators as needed.

Objective 1.4: Monitor and improve safety on transit service and with facilities. (OE)		
Total safety incidents per 100,000 boardings	Less than 0.7 per 100,000 boardings	Identify locations or practices disproportionately contributing to incidents and target awareness campaigns or physical improvements.
Data collection sources: *Operations logs, farebox, in-house documentation.*		

Goal #2: Demonstrate to current and new partners sound financial planning practices

Objective 2.1: Help with fund-raising activities in all localities and assist in collecting a diversity of funding sources to support the local match to receive federal and state funds. (FA)		
Outreach events held on an annual basis	At least four events focused on the local community needs.	Maintain business partnerships, coordinate with other major events.
Local fund-raising amount	Met or exceed rolling three-year average of local annual fund-raising proceeds.	Share goals/targets with the public.
Data collection sources: *Financial data*		

Objective 2.2: Apply for federal and state funding to meet Board-approved expenditures as outlined in the annual budget. (FA)		
Amount of grant funding (percent of overall budget).	Maintain or increase grant funding share on an annual basis.	Increased grant research and grant applications.
Data collection sources: *Financial data*		

Goal #3: Recruit and retain a qualified workforce

Objective 3.1: Position PAT as an employer of choice that provides employee recognition, identifies non-traditional benefits, and maintains competitive salary. (OE)		
Turnover and absenteeism rates.	Achieve rates less than the Virginia transit system average by 2020.	Identify benefits in comparison to other transit companies. Establish a driver recognition program Pursue operator wellness program to decrease length of sick time needed.
Data collection sources: *Operation logs*		

Objective 3.2: Ensure safe and secure services through appropriate driver training and staff development programs. (OE)		
Employee participation	100% of employees receive a minimum of four hours of training (content-specific or comprehensive) every two years.	Establish a minimum of one annual safety meeting.
Data collection sources: *Operation logs, in house documentation, industry available training material*		

Goal #4: Use quality customer service and all appropriate media to enhance the image and market for PAT services

Objective 4.1: Provide more comfortable, more efficient, and safer operation to include a focus on timely, clean, and efficient customer service. (OE)		
Number of customer complaints per 1,000 boardings.	Less than 20.	Continued quality control for vehicle cleanliness, monitoring and correction of any recurring scheduling issues.
On-time performance	90 percent within demand response pick-up window, greater than 85 percent for deviated fixed route service.	Monitor and adjust schedules as needed.

Objective 4.1: Provide more comfortable, more efficient, and safer operation to include a focus on timely, clean, and efficient customer service. (OE)		
Average phone hold time (minutes) to make a reservation.	Two minutes or less.	Track and monitor call logs and reporting of metrics.
Data collection sources: *In-house documentation/survey, GPS tracking system, telephone system.*		

Objective 4.2: Improve communication with customers via technology applications, website enhancements, social media presence and call center information dissemination. (OE)		
Communication updates per month.	At least four (4) updates, via multiple channels (website, Facebook, etc.) to maintain interest in PAT activities/services/	Track website traffic, time to push out service alerts. Assure content is current and well organized.
Data collection sources: *In-house documentation*		

Goal #5: Plan and manage assets to achieve proposed operational capacity

Objective 5.1: Maximize and preserve the existing transit system. (OE)		
State of Good Repair backlog as a percentage of overall budget.	No more than 10 percent of annual budget.	Track items needing attention as indicated in TAM database/reporting.
Miles Between Service Road Calls.	6,500 miles	Maintain preventative maintenance schedules.
Percent of fleet exceeding lifespan (years/miles).	Follow State sponsored TAM group Plan	Adherence to FTA Useful Life Benchmarks for vehicle classifications.
Missed trips due to operational failures.	98 percent or more of all scheduled trips operated. 95 percent of all pull outs dispatched.	Reconcile schedule data with operating data/dispatch logs monthly.
Data collection sources: *Maintenance logs, TAM reporting, fleet inventory.*		

2.5 SERVICE DESIGN STANDARDS

Service design standards are critical planning tools to evaluate the effectiveness of existing service and to assure impartiality in service modification decisions. Service standards are typically developed in several categories of service, such as service coverage, passenger convenience, fiscal condition, and passenger comfort. The most effective service standards are straightforward and relatively easy to calculate and understand. Service standards reinforce the performance measurement necessary to meet many of PAT's objectives.

The previous TDP identified two broad categories for service measures: Ridership Service Productivity Measures and Cost Effectiveness Measures. Specific targets were established for each measure, which necessitates updating to reflect trends from the past six years that have impacted current operating conditions. At a minimum, cost measures based on FY2010 reporting have been inflation adjusted unless otherwise noted.

Each existing service standard has been identified with a status of either maintained, modified, or new for the purposes of this TDP update. Modifications are underlined to identify the newly proposed changes. Each measurable service standard is also associated with the most relevant objective (if applicable) in Table 6.

Table 6: Proposed PAT Service Standards

SERVICE STANDARDS	Status	Objective
Passenger Productivity (Passengers per Hour/Mile)		
Demand-responsive and deviated fixed route service should maintain a minimum of 7.0 passenger trips per revenue-hour.	Maintained	1.1
Demand-responsive and deviated fixed route service should maintain levels equivalent to .55 passenger trips per revenue-mile.	Maintained	1.1
Cost Effectiveness		
PAT's farebox recovery ratio for fixed-route services should remain at or above 11.8 percent.	Maintained	1.1
Operating cost per revenue-hour for demand responsive and deviated fixed route services should not exceed **$46.00** per revenue-hour.	Modified	1.1
PAT's operating cost per revenue-mile for demand-responsive and deviated fixed route services should not exceed **$3.75** per revenue-mile.	Modified	1.1
PAT's operating cost per passenger trip for demand-responsive and deviated fixed route services should not exceed **$7.25** per passenger trip.	Modified	1.1
Hours of Operation Monday – Friday 7 am – 6 pm. Saturdays 9-3 No Sunday Service	New	4.1
Dependability		
98% on-time service (0 to 5 minutes late) -- No trips leaving early.	New	5.1
Maintain fewer than 6,500 miles between service road calls.	New	5.1
Less than 5 percent missed trips due to operational failures.	New	5.1
Follow State sponsored TAM group Plan	New	5.1
Safety		

SERVICE STANDARDS	Status	Objective
0.10 or fewer "reportable incidents" per 100,000 miles, as defined by the National Transit Database.	New	1.4
Customer Service		
Less than 20 customer complaints per 1,000 trips.	New	4.1
Maximum reservation wait time less than 2 minutes.	New	4.1

2.6 MEASURING PERFORMANCE

For all specific targets, the previous TDP recommends that corrective measures should be investigated if ridership on PAT's fixed-route system and/or demand-responsive system fall below the levels identified for twelve (12) months in a row and there has not been a corresponding and notable change in revenue-miles or revenue-hours. All specific target measures should also be adjusted periodically to reflect current service.

Dependability

The system should be resilient to impacts caused by accidents, breakdowns, traffic delays, driver/vehicle availability and other factors that could cause a scheduled trip to be missed. Service should also not be curtailed due to the unavailability of either driver or vehicle upon initial pull out from the garage/home location for a scheduled pick up. A final component to system reliability is the average distance in service miles between when all vehicles in revenue service incur a component failures which causes it to not start or finish its assigned run.

Measurement Approach

Logs shall be maintained and updated daily to accurately reflect vehicle status at the start of the trip. Vehicles unable to begin their assigned trip or that require an additional vehicle to be dispatched due to operability shall be reported as a missed trip.

An operations/maintenance logs shall be maintained to record all service failures of a vehicle in revenue service. This measurement can be calculated each month by dividing the number of revenue miles operated by the number of road calls.

Passengers Per Revenue Hour

The minimum level of ridership a category of service should attract, expressed as the average number of passengers for each hour of revenue service provided. This measure is an industry wide standard to assess overall performance and route efficiency. While PAT has established specific targets of passenger per hour, these targets should not only consider past performance trends but also be based upon the Commonwealth average for demand responsive service. Further adjustments to account for the unique conditions in Pulaski County may be warranted. PAT also may wish to establish separate thresholds for the demand responsive and deviated fixed route service.

Measurement Approach

Look at both historic PAT system trends and work with DRPT to ascertain Commonwealth averages for rural demand responsive services. Use the most rigorous target, either 80% of the historic average or 80% of the Commonwealth average to identify any needed adjustments to specific targets.

Safety

As defined from the National Transit Database in terms of reportable incidents. A reportable incident is one in which one or more of the following conditions apply: 1) A fatality 2) Injuries requiring medical attention away from the scene for one or more persons 3) Property damage equal to or exceeding $25,000. Adoption of the NTD criteria should be considered a best practice regardless of whether the agency reports such information currently.

Measurement Approach

PAT should maintain safety logs of all incidents which can then be reviewed no less than a quarterly basis for determination of meeting the NTD reporting criteria. Additional incident forms may be required to record if the incident was preventable or was caused by another driver or outside influence. For preventable incidents, the measurement should also identify operators who may need additional training following one or more occurrences.

3 Service and System Evaluation

Pulaski Area Transit (PAT) provides demand-response service and fixed-route service. Both services operate Monday through Saturday (**Table 7**).

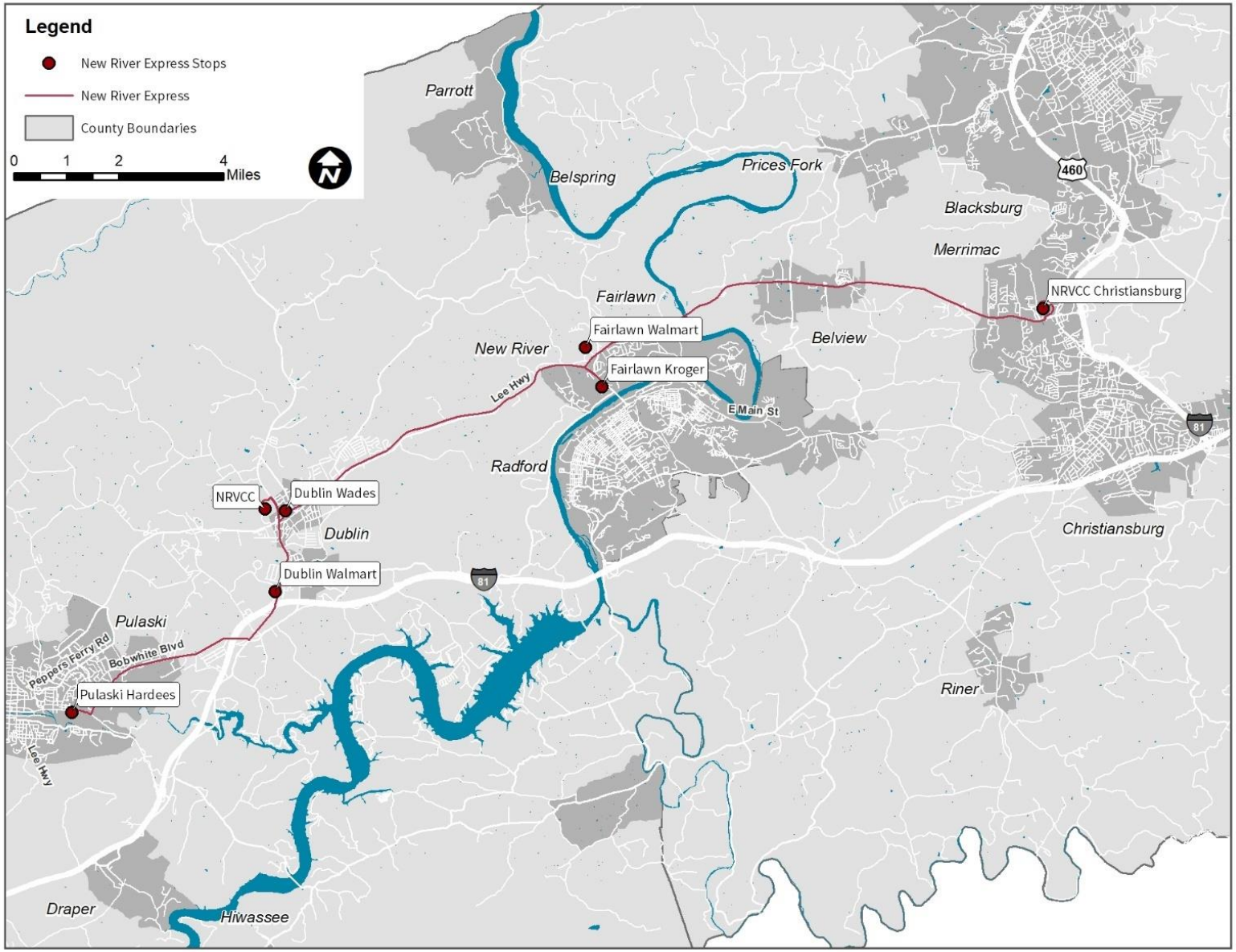
Table 7: Pulaski Area Transit Routes and Service Types

Route	From	To	Service Type
Demand – Town & County	-	-	Demand-response
New River Express	Pulaski	Dublin, Fairlawn, Christiansburg	Fixed-Route

The demand service operates within the Town of Pulaski and portions of Pulaski County, including Dublin.

The fixed-route service, the New River Express, operates between Pulaski, Dublin, Fairlawn, and Christiansburg (**Figure 9**). It provides service to the New River Valley Community College main campus in Dublin and the Christiansburg campus, along with several retail establishments in between.

Figure 9: New River Express



3.1 ROUTE LEVEL OF SERVICE

PAT operates between 7:00am and 5:00pm on weekdays and 9:00am and 3:00pm on Saturdays (**Table 8**). On the demand-response service, typical wait times for pick-ups range from 15 minutes to 45 minutes on weekdays, and 15 minutes to 30 minutes on Saturdays. Headways on the fixed route, the New River Express, vary from 125 to 175 minutes on weekdays and 210 minutes on Saturdays.

Table 8: Pulaski Area Transit Level of Service

	Weekday		Saturday	
Service	**Span of Service**	**Headway or Wait Time**	**Span of Service**	**Headway or Wait Time**
Demand – Town & County	7:00am-5:00pm	15-45	9:00am-3:00pm	15-30
New River Express	7:20am-4:55pm	125 - 175	10:00am-2:00pm	210

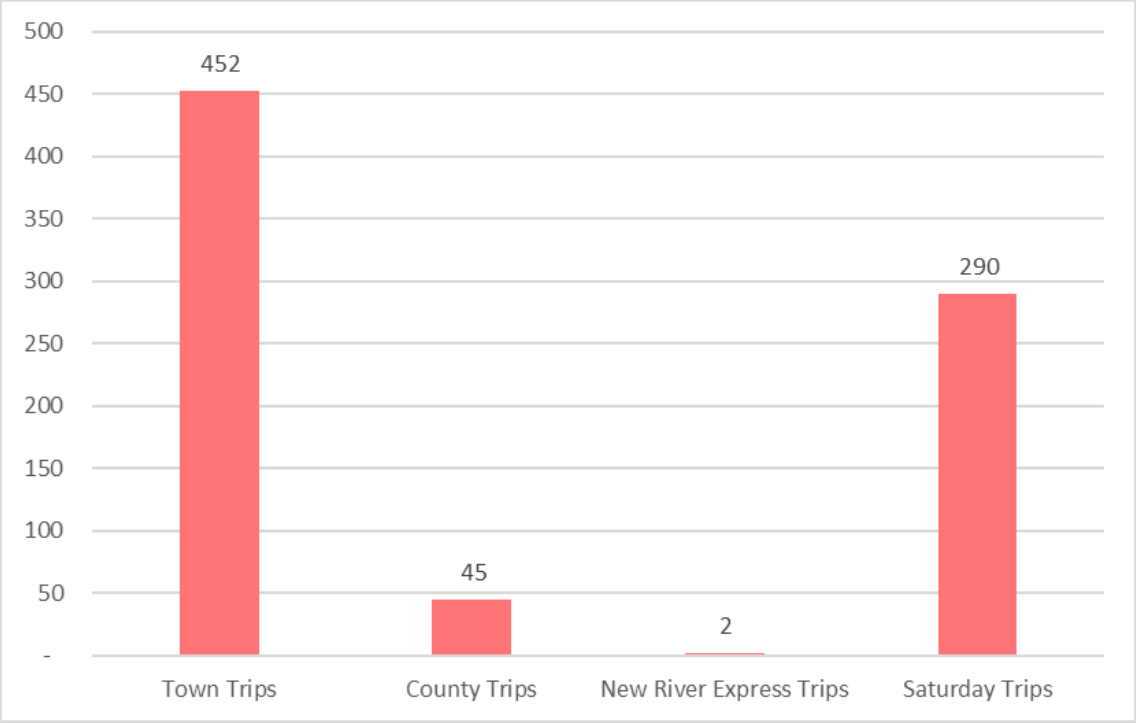
3.2 RIDERSHIP

3.2.1 Ridership

Pulaski Area Transit separates its ridership into four services: demand response trips within the town of Pulaski (town trips), demand response trips in Pulaski County (county trips), demand response trips on Saturdays (Saturday trips), and riders on its New River Express fixed-route. Trips that leave the town of Pulaski are counted as county trips. In FY2017, town trips make up the majority of PAT daily ridership, with just over 450 (57 percent) on an average weekday (**Figure 10**). Saturday trips follow, with nearly 300 per day (37 percent). New River Express service has the lowest ridership, with an average of only two riders per day.

Staff report that ride requests are consistent throughout the day and there is no traditional "peak period." On the busiest days, staff report that up to 700 calls for pick-ups on the demand-response service are received.

Figure 10: Pulaski Area Transit Average Daily Ridership by Service



3.2.2 Ridership Locations

A two-week sample of ridership on PAT's demand response service was obtained for September 2017 in order to gauge where ridership is concentrated geographically. Weekday (**Figure 11**) and Saturday (**Figure 12**) ridership reflect nearly identical ridership patterns. Areas with high pickups are concentrated in downtown Pulaski near South Washington Avenue and East Main Street. Other areas with high ridership are along East Main Street east of Newbern Road, Washington Square Apartments in northern Pulaski, and Food City along Bob White Boulevard.

Figure 11: Pulaski Area Transit Average Weekday Ridership by Stop Heat Map

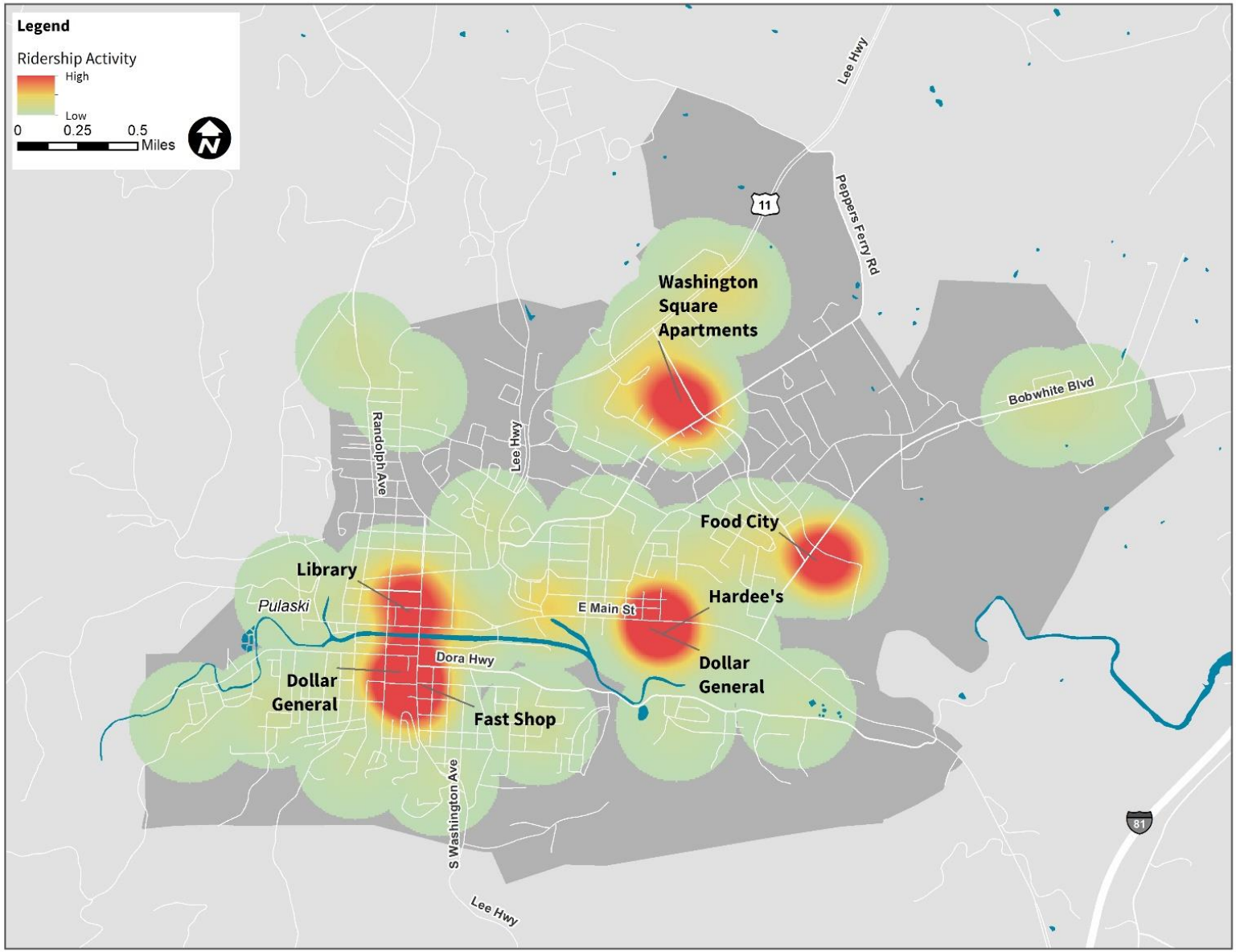
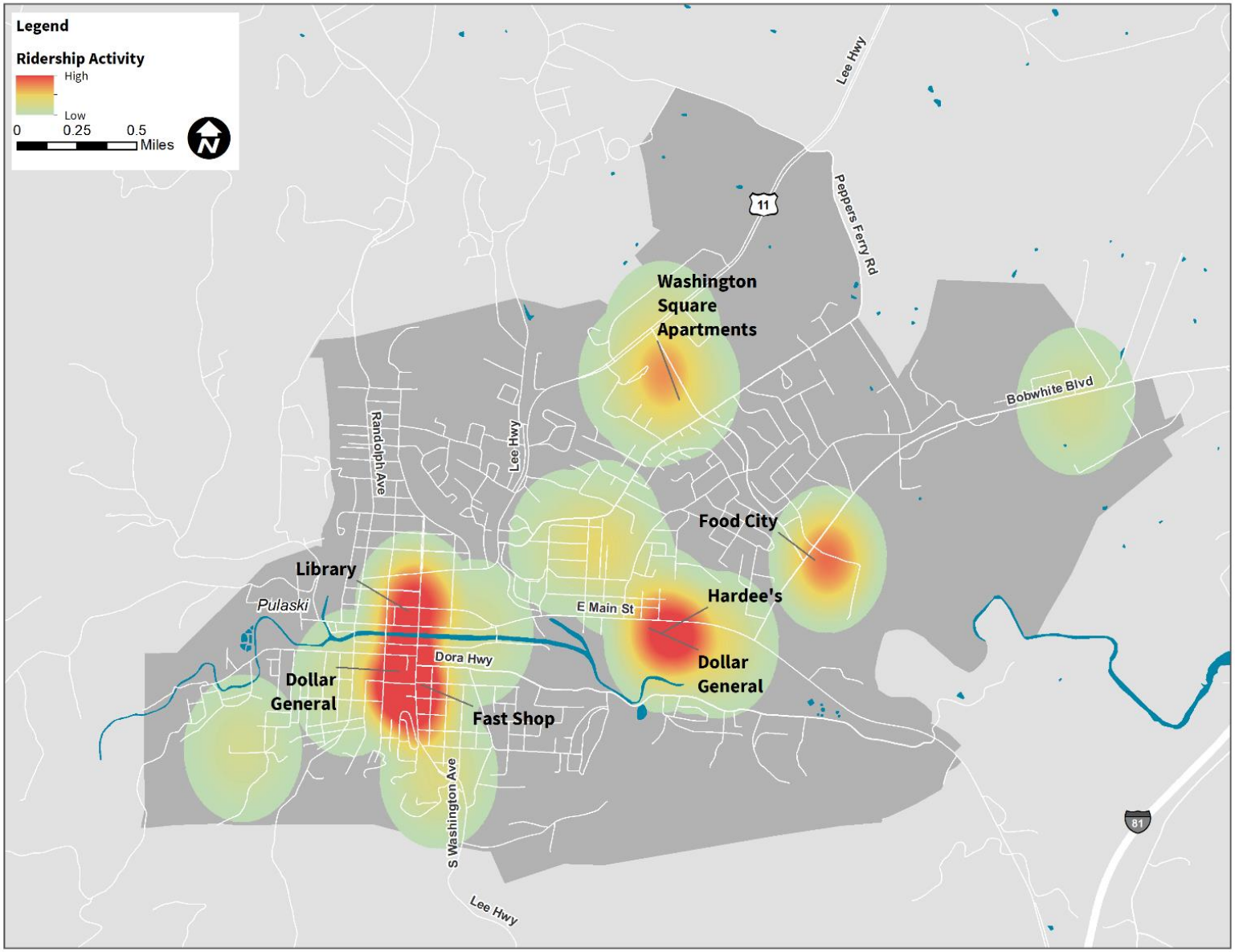


Figure 12: Pulaski Area Transit Average Saturday Ridership by Stop Heat Map



The majority of high pick up stops are located at food services, either grocery stores or restaurants. Two stops, Food City and Food Lion, have more than 50 weekday pickups (**Table 9**). Both are grocery stores located on the east side of Pulaski; Food City is located on Bobwhite Boulevard while the Food Lion is located on East Main Street. Other high pick-up stops are Fast Shop and Dollar General which are both located in downtown Pulaski.

Table 9: Pulaski Area Transit Highest Weekday Pickup Locations

Location	Number of Pick-Ups
Food City – Bobwhite Blvd	54
Food Lion	52
Fast Shop 1	42
Dollar General Commerce	40
Hardees	31
Subway	25
Dollar General on Route 99	24
Library	21
Blue Grass Apartment	17
Dollar Tree	17
Martin's Pharmacy	16
Fast Shop 2	16
McDonald's	16
Magic Mart	15
Walgreens	14
Community Services	13

3.2.3 Operating Statistics

Table 10 summarizes annual revenue hours and revenue miles for the PAT system.

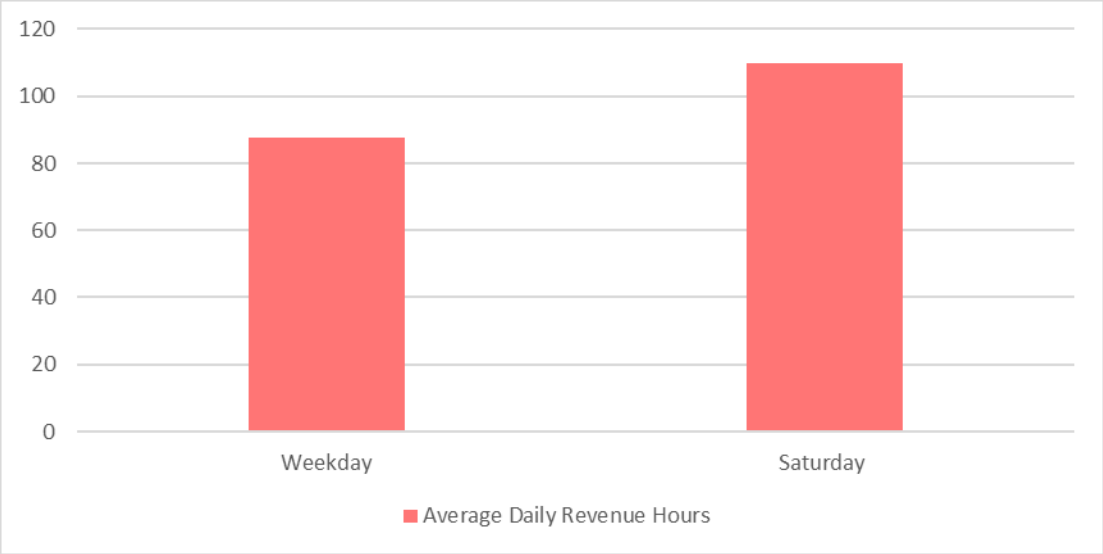
Table 10: Revenue Hours and Revenue Miles for PAT System

FY2017	Annual
Revenue Hours	19,714
Revenue Miles	261,851

Hours

On average, Pulaski Area Transit operates 88 daily revenue hours of service Monday through Friday, and 110 daily revenue hours on Saturdays (**Figure 13**).

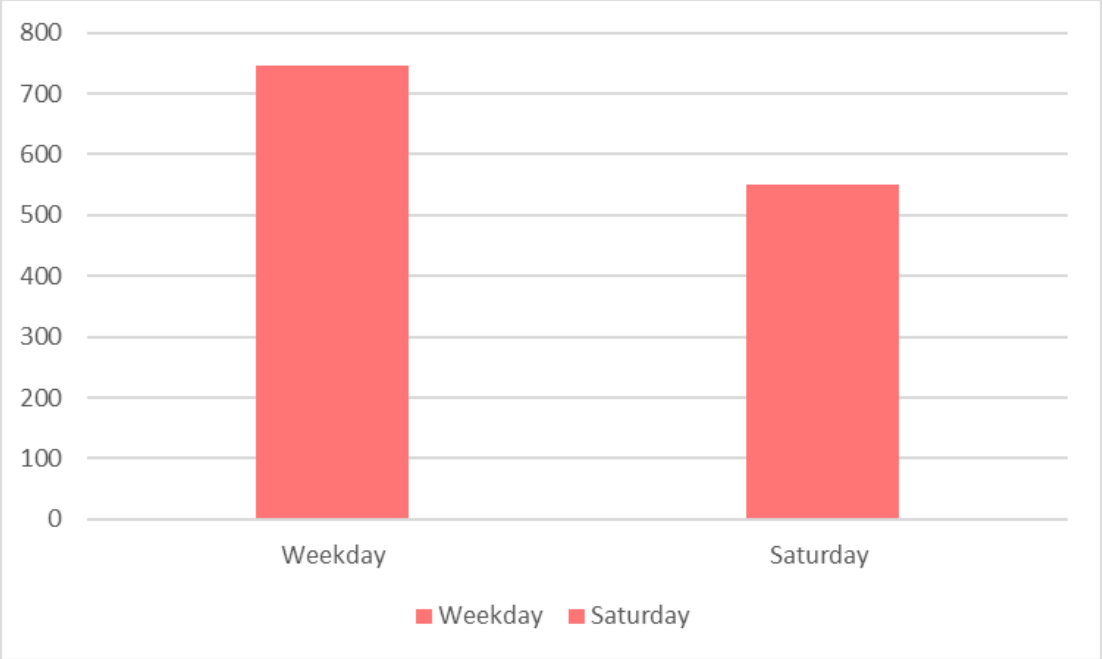
Figure 13: Pulaski Area Transit Average Daily Revenue Hours by Service Day



Miles

On average, Pulaski Area Transit operates 745 revenue miles of service on weekdays, and 550 revenue miles on Saturdays (**Figure 14)**. The number of miles per trip on average is 1.9 miles.

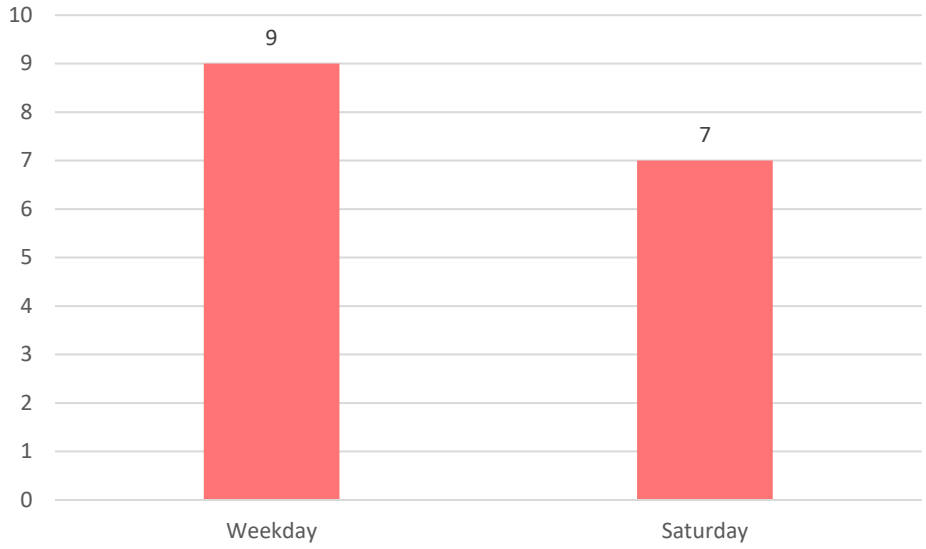
Figure 14: Pulaski Area Transit Average Daily Revenue Miles



Vehicles

Pulaski Area Transit operates 9 vehicles during weekday service and 7 vehicles during Saturday service (**Figure 15**).

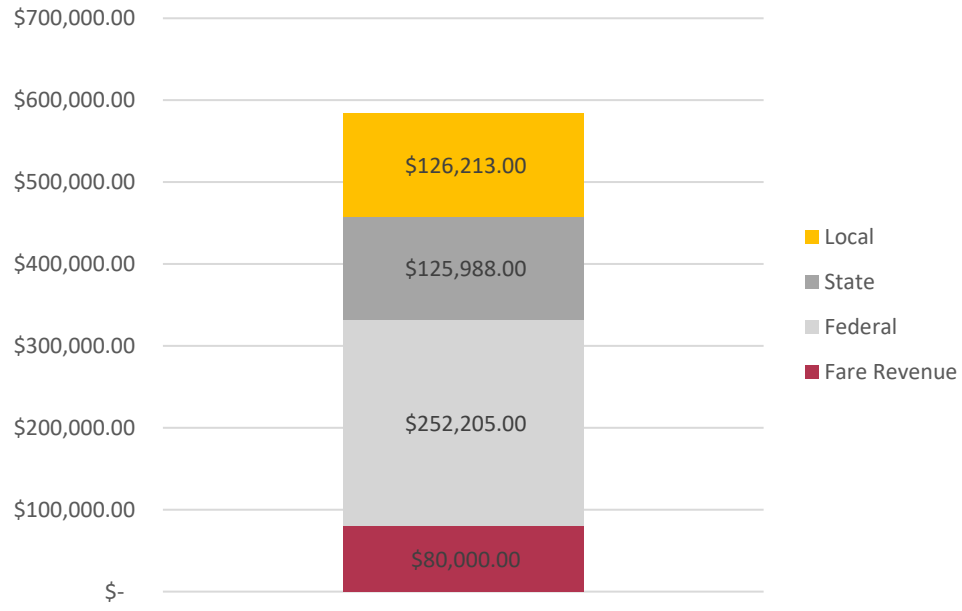
Figure 15: Pulaski Area Transit Vehicles Used by Service Day



Operating Costs

Pulaski Area Transit's revenue sources total to approximately $584,406 (**Figure 16**). Federal money makes up nearly half, 43 percent, of the total revenue. State and local funds each make up nearly a quarter, 22 percent, of the system's revenue, while farebox revenue makes up approximately 14 percent of the total revenue.

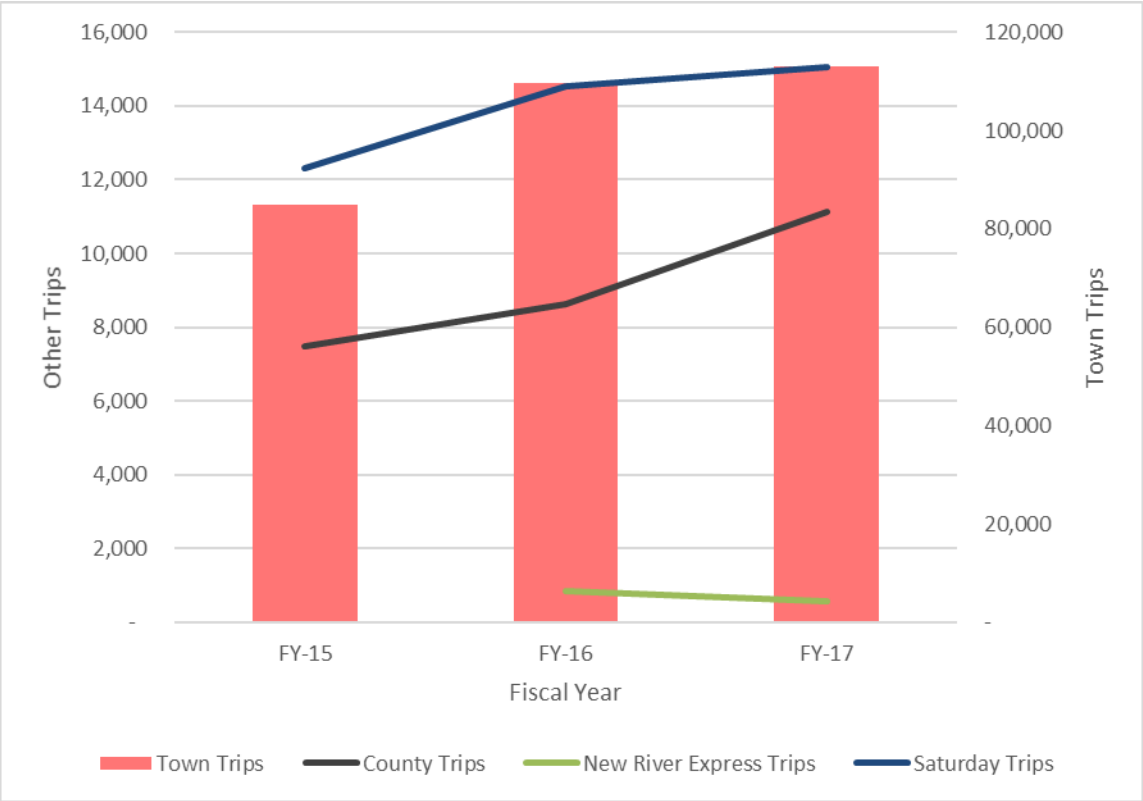
Figure 16: Pulaski Area Transit Revenue by Source



3.3 3-YEAR TREND ANALYSIS

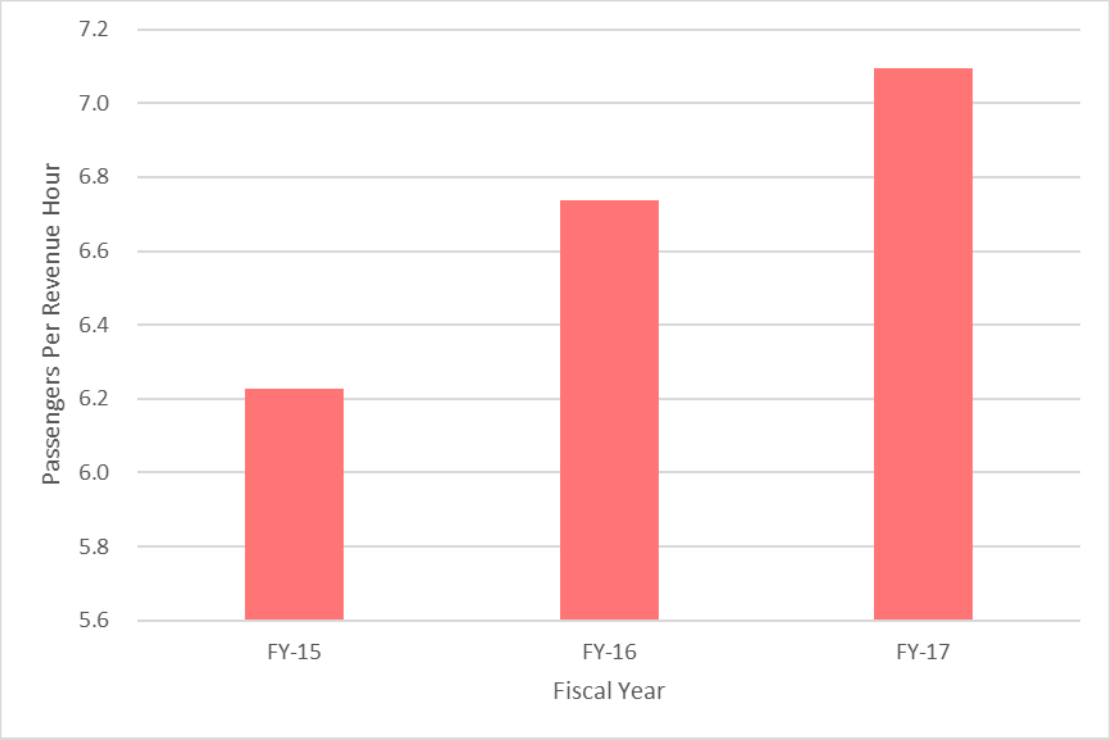
Annual ridership by service over the past three fiscal years is summarized in **Figure 17**. Ridership has increased on every service with the exception of the New River Express, which declined slightly between FY2016 and FY2017. Town trips and county trips saw the largest increases, at 33 percent and 49 percent respectively.

Figure 17: Pulaski Area Transit Annual Ridership, FY2015-FY2017



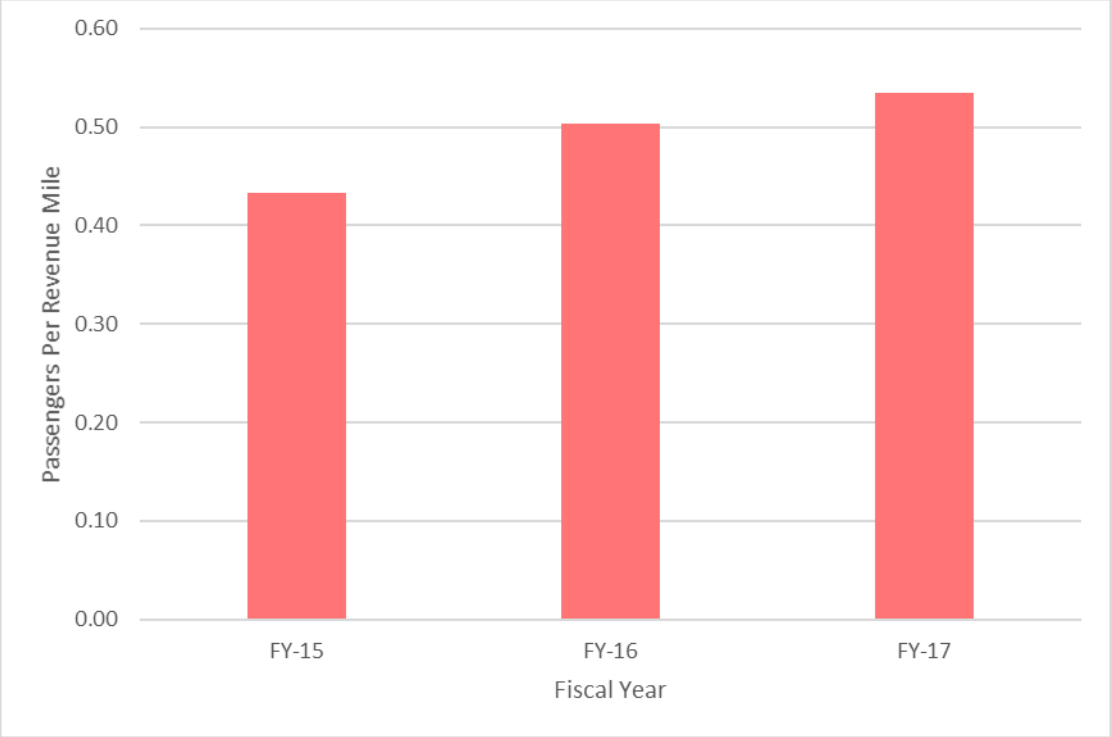
Passengers per revenue hour for the PAT system overall over the past three fiscal years is summarized in **Figure 18**. This figure increased by nearly one passenger per revenue hour over this period, meaning the service has become slightly more efficient.

Figure 18: Pulaski Area Transit Passengers Per Revenue Hour, FY2015-FY2017



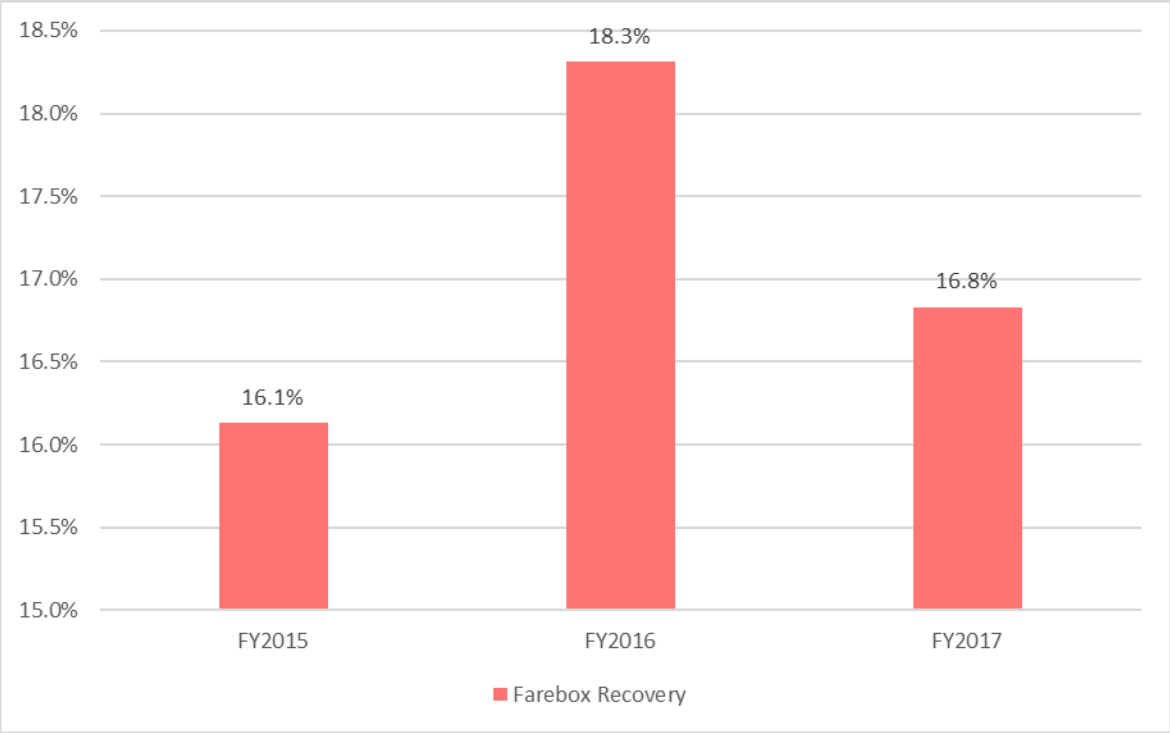
Passengers per revenue mile for the PAT system overall over the past three fiscal years is summarized **Figure 19.** This figure has steadily increased as well by nearly 0.1 passengers over the three-year period.

Figure 19: Pulaski Area Transit Miles Per Revenue Mile, FY2015-FY2017



Pulaski Area Transit's farebox recovery increased significantly between FY2015 and FY2016, primarily due to a large increase in fare revenues (**Figure 20**). The NRV Express began service in FY2016, which likely accounts for some of this increase. Between FY2016 and FY2017, however, farebox recovery dropped back down to nearly 2015 levels, as fare revenue stayed approximately the same but operating costs increased by nine percent.

Figure 20: Pulaski Area Transit Farebox Recovery, FY2012-FY2016



The net cost (total operating costs minus fare revenue) per passenger over the past three years is summarized in Figure 21. This figure decreased significantly between FY2015 and FY2016 as fare revenues increased, but then increased slightly into FY2017 due to the nine percent increase in operating costs but stagnant fare revenues. PAT's net cost per passenger overall is significantly lower than many other agencies operating demand-response service. This is likely due to the short trip lengths seen in the PAT system (1.9 miles per trip in FY2017).

Figure 21: Pulaski Area Transit Net Cost Per Passenger, FY2015-FY2017

3.4 RIDER SURVEY RESULTS

An on-board rider survey was conducted in September 2017 to gather input from current PAT riders. PAT riders are generally satisfied with the quality of service they receive. To gauge overall satisfaction, scores for eight different measures of satisfaction were counted, with the total count of each providing an equal contribution to the final score. These measured satisfaction with elements of service such as reliability, span, frequency, and cost, among others. As seen in **Figure 22**, this method demonstrates high scores for most elements of the system: 78 percent of scores were either approving or strongly approving of the quality of service, with a further 14 percent of scores neutral. Only eight percent of scores expressed dissatisfaction with the system. Riders had the highest approval for the system's fares, its comfortable buses, and its professional staff, and were least happy with the system's limited hours of service and long wait times.

Figure 22: Rider Survey General Satisfaction Score

Pulaski Area Transit's riders are demographically distinct. As seen in Figure 23**,** PAT users are disproportionately low-income, with 59 percent making less than $10,000 annually, and a further 30 percent making between $10,000 and $20,000 per year. The comparable figures for the state overall are seven percent and five percent, respectively. Only four percent of PAT riders make more than $35,000 annually, as compared to 70 percent of Virginians. 72 percent of riders are white, and 16 percent of riders are black, with no other racial or ethnic group comprising more than five percent of system ridership (**Figure 25**). Women comprise 73 percent of surveyed riders (**Figure 26**).

Figure 23: Employment Status of Surveyed Transit Riders

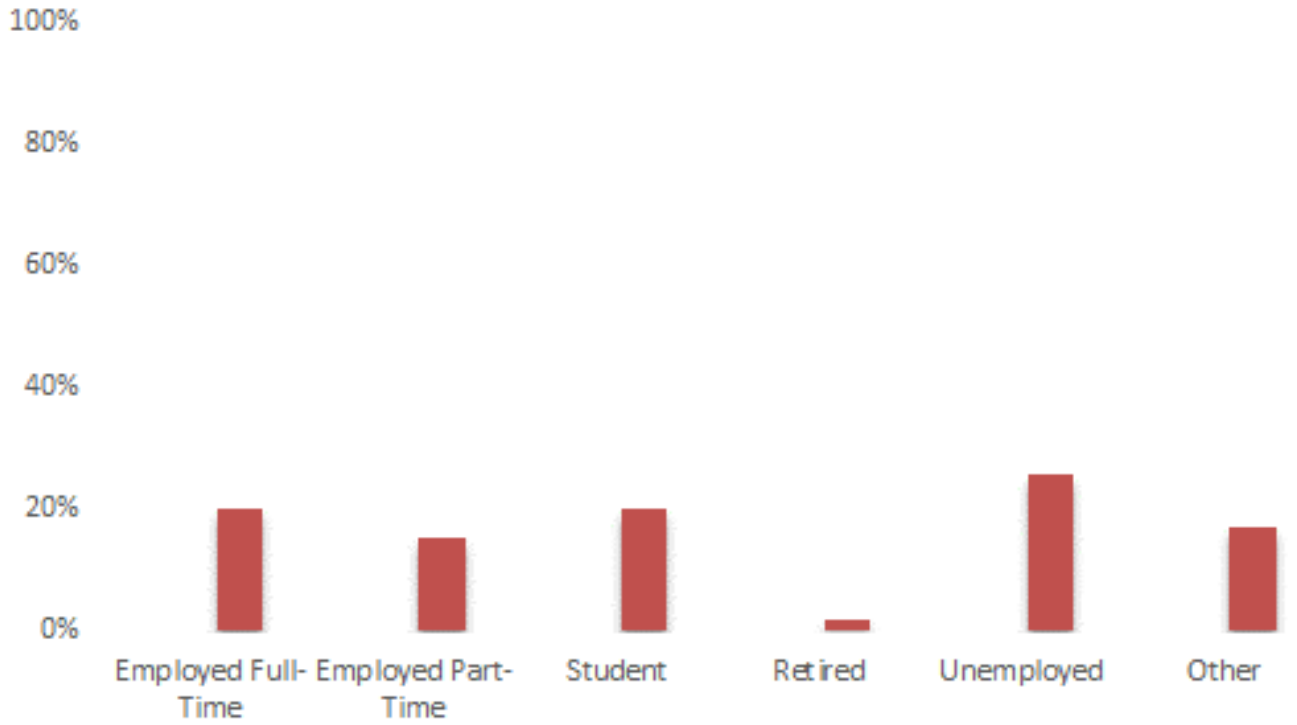


Figure 24: Income Comparison of Virginia and Surveyed Riders

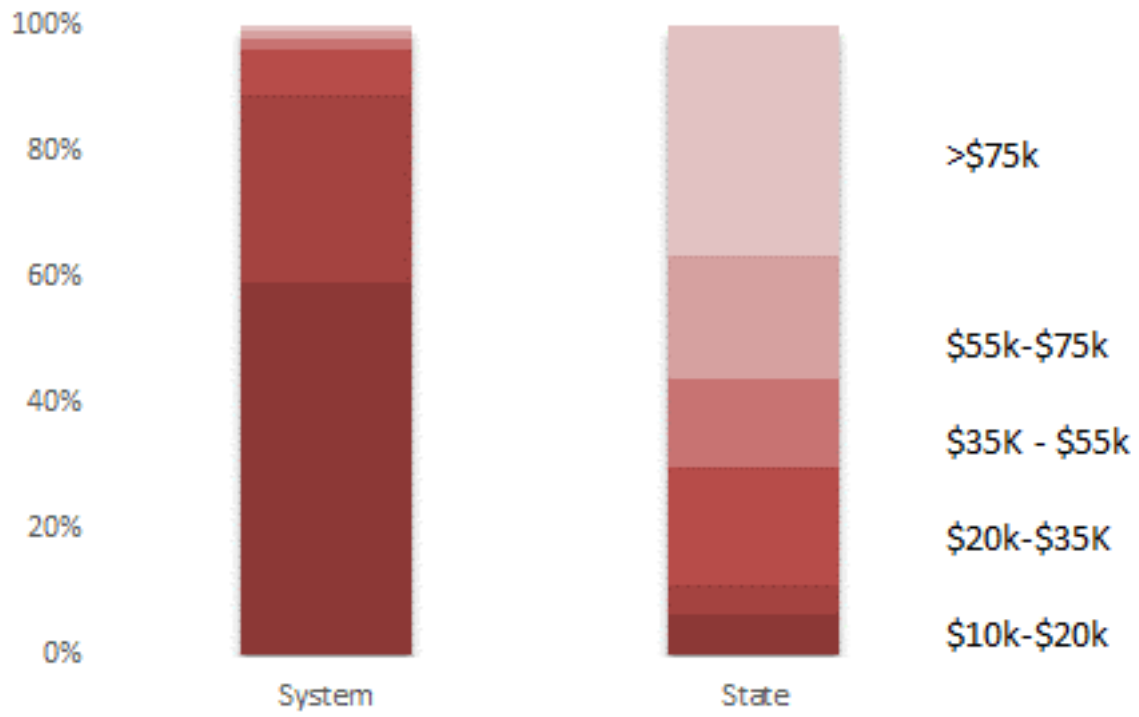


Figure 25: Racial Breakdown of Surveyed Transit Riders

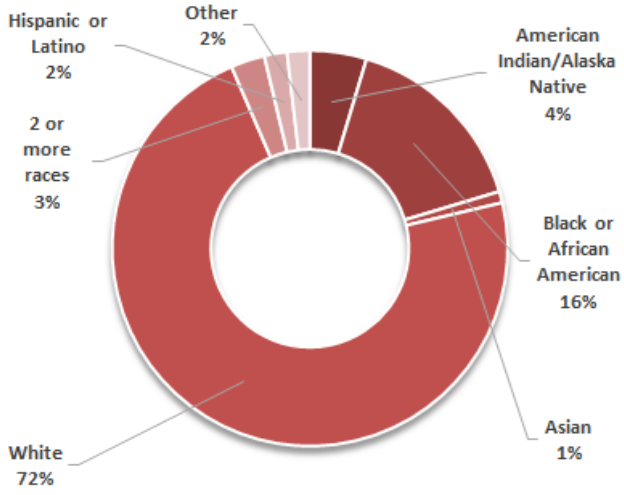
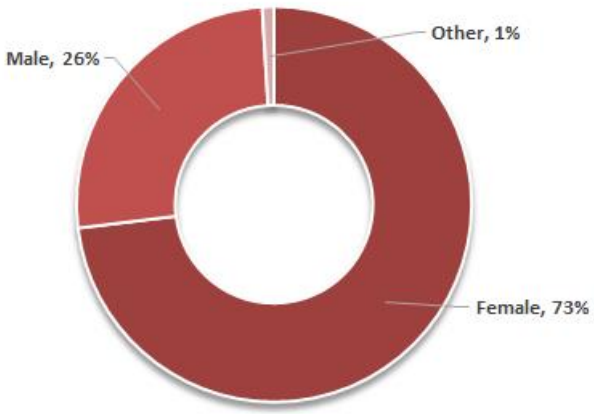


Figure 26: Gender Breakdown of Surveyed Transit Riders



Riders tend to pay for trips as they go, rather than buying passes. 66 percent of riders paid cash for their trips, while only 34 percent used a monthly pass (**Figure 27**). Most riders are not using the service for their daily commute to work or school: only 25 percent use Pulaski Area Transit for these purposes, while two-thirds of riders use it for shopping, to get to medical appointments, for running errands, or to get to recreational activities (**Figure 28**).

Figure 27: Fare Type Used by Surveyed Riders

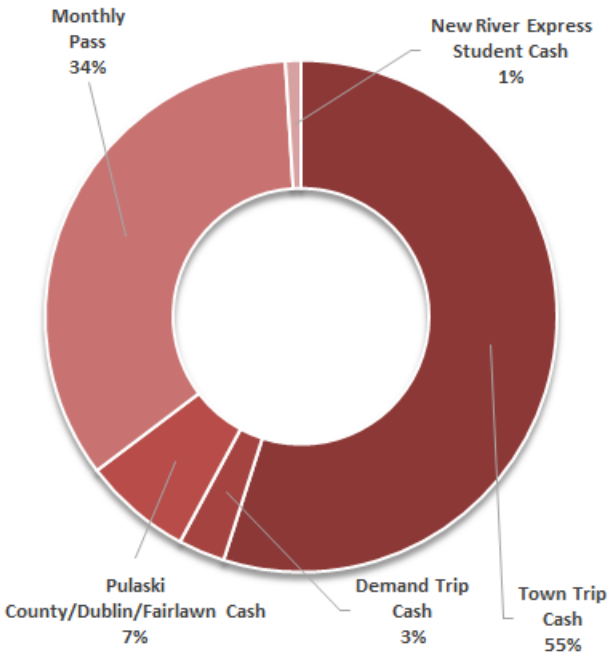
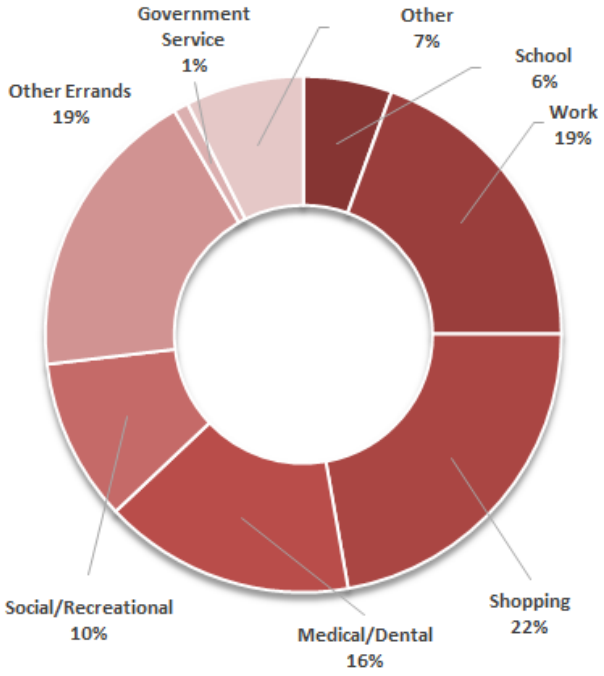


Figure 28: Trip Purpose for Surveyed Riders



Since Pulaski Area Transit is largely a demand-response system, "other" modes of access and egress were chosen by many riders, and the majority of these responses noted that the bus picked them up and dropped them off right at their destination. The remainder of responses primarily indicated that people walked or used another bus route for access or egress to and from their current bus. These results can be seen in **Figure 29** and **Figure 30.**

Figure 29: Mode of Access for Surveyed Riders

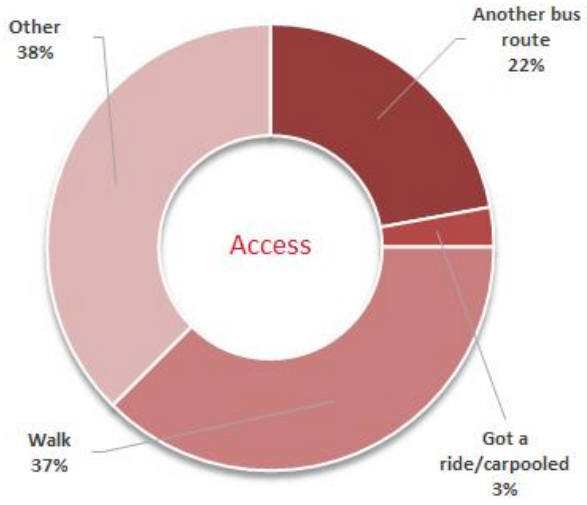
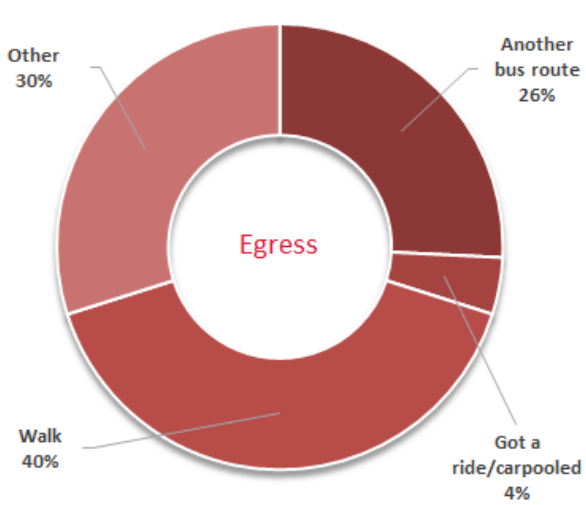
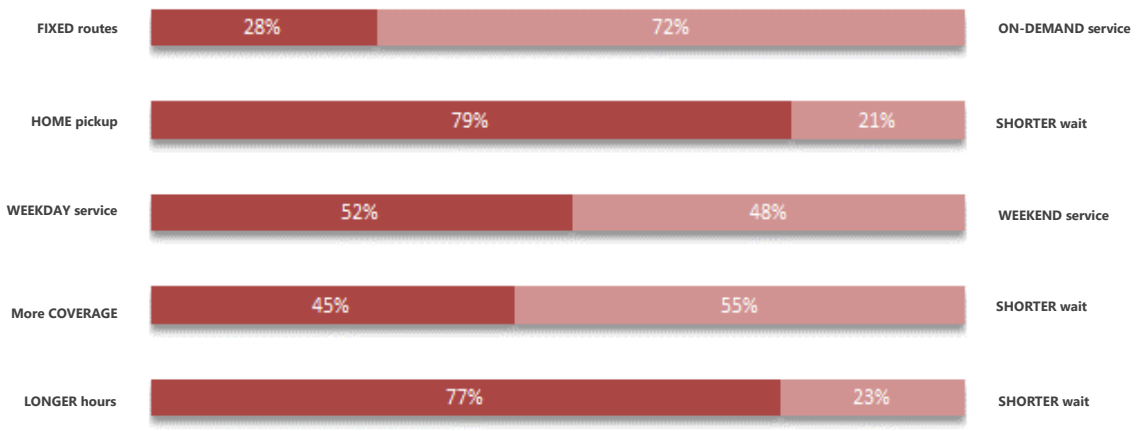


Figure 30: Mode of Egress for Surveyed Riders



Surveyed riders were also offered opportunities to express general preferences about how service might be improved, and the results of those questions can be seen in **Figure 31**. Riders strongly preferred maintaining the current on-demand service over instituting fixed-route service, 72 percent to 28 percent, and expressed a preference for home pickups over shorter waits at a bus stop by a similarly large margin, 79 percent to 21 percent. Riders also expressed a strong preference for longer hours of service over shorter wait times for buses, 77 percent to 23 percent. Riders were more evenly split on prioritizing weekday service over weekend service, 52 percent to 48 percent, as well as on the tradeoff between longer waits for service and expanded area of service, with 55 percent preferring a shorter wait for buses in a narrower coverage area.

Figure 31: Service Improvement Prioritization Preferences for Surveyed Riders



3.5 SERVICE AREA CHARACTERISTICS

This section describes the demographic and land use characteristics of the Pulaski Area Transit service area, particularly those characteristics that typically equate to a need for transit service. This analysis includes a detailed transit propensity, travel flow analysis, and a transit gap analysis to identify where improvements to transit service or new transit service might be needed.

3.5.1 Population and Employment

Figure 32 illustrates the places in which population and job densities are at their highest. For each census block, the total population and number of jobs were combined, and divided by the number of acres in each. Combined population and employment densities above six per acre are typically supportive of transit service. In Pulaski, transit demand is highest in the center of the town, with additional pockets of moderate to high demand north and east of town, along Lee Highway, Peppers Ferry Road, and Bob White Boulevard.

The Pulaski County Corporate Center and the Volvo facility also have high densities, as do several areas in Dublin near the Walmart and in the center of town.

3.5.2 Future Employment Growth

The New River Valley Travel Demand Model does not include Pulaski County, and therefore, future population and employment projections are not available. Discussions with county planning staff, however, indicated that there are two major growth areas in the county (**Figure 33**):

- New River Valley Commerce Park, located at International Blvd off Route 100, is expected to add 1,000 to 2,000 jobs in the next five to ten years, and
- Pulaski County Corporate Center (Pepperell Way) is expected to add 150 to 350 jobs in the next five years.

Figure 32: Transit Potential

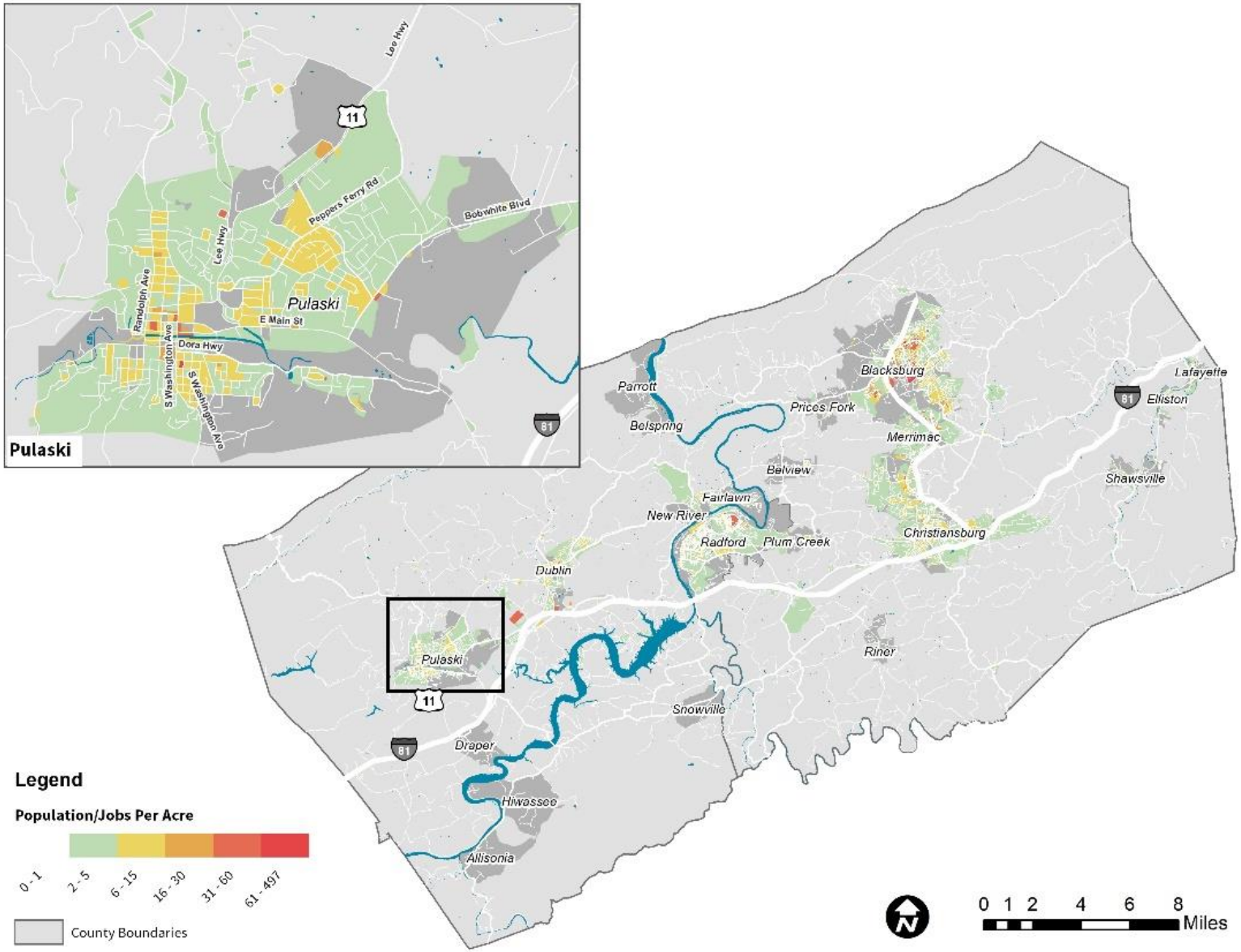
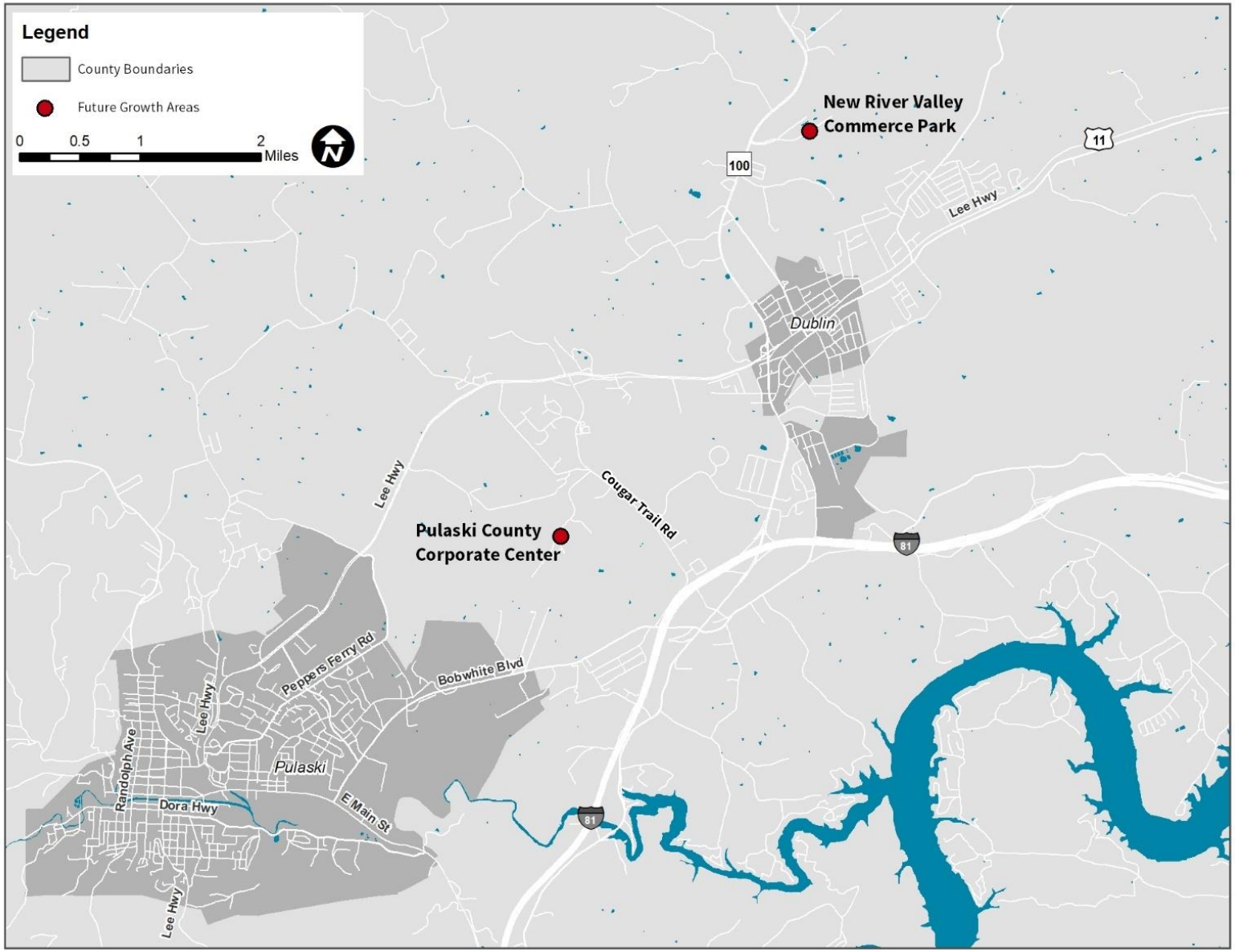


Figure 33: Future Growth Areas in Pulaski Count



3.5.3 Transit Need Analysis

In order to determine transit need in the New River Valley region, a transit need analysis was performed. This analysis uses a number of different demographic factors to determine geographic areas of high transit origin and destination need. The analysis consists of four transit indexes: Commuter, Transit-Oriented Populations, Workplace, and Non-Work. These four indexes combine to show two types of transit need: all-day service and peak service. The analysis combines a number of different metrics that are typically used to describe transit setting, including population density, employment density, household density, and the locations of transit-dependent populations.

Each index is comprised of weighted categories, and each weighted category is comprised of individual data sets obtained from the 2011 – 2015 American Community Survey (ACS) or the Longitudinal Employer-Household Dynamic (LEHD) at the block group level. Weighting is based on the expected overall contribution of each category to the overall index. Data sets typically include both raw totals and densities to ensure the most comprehensive scoring. The end result for each index is a score from 0 to 100 for each block group in the New River Valley area. The scores are calculated by comparing the figures for each block group in each data set to all the block groups analyzed.

All-Day Service Need

The need for All-Day Service is determined using two transit indexes: the Transit-Oriented Population Index and the Non-Work Index. When combined, these two indexes show where populations that are likely dependent on transit live and what non-work destinations transit riders will likely want to access.

Transit-Oriented Population Index

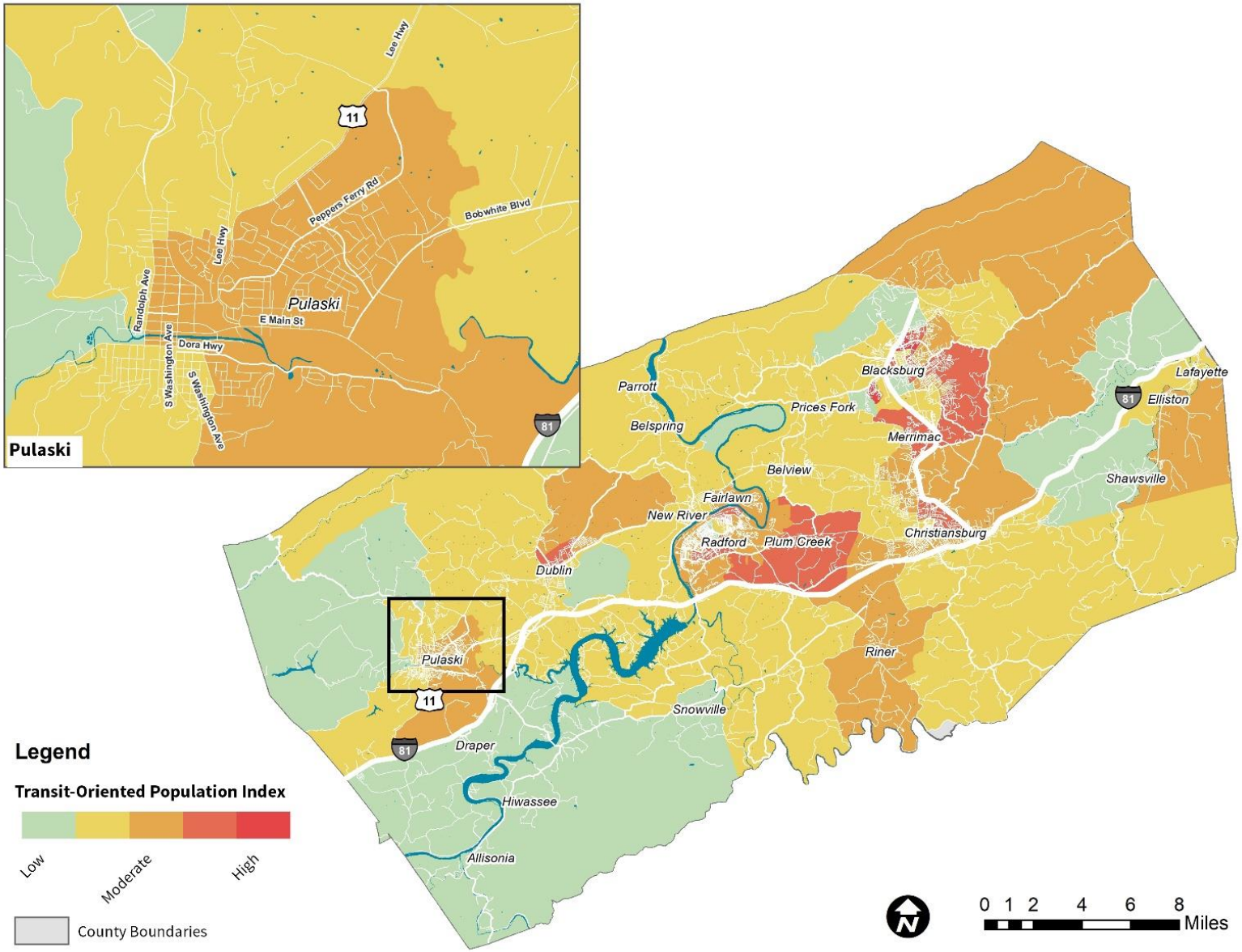
The transit-oriented population index consists of six categories: population, age, households, income, vehicle ownership, and disabled persons. The data sets that contribute to these categories are all indicative of higher population or household density, or persons that are likely to be more reliant on transit. Therefore, this index is indicative of where transit-dependent populations live. The weights for each category are based on the projected impact of each in defining transit-oriented populations. **Table 11** summarizes the data sets that are inputs to the transit-oriented populations index.

Table 11: Transit-Oriented Population Index

Index	Category	Weight	Dataset
Transit-Oriented Population	Population	30	Total Population
			Population Density
	Age	10	Total Seniors (65+)
			Senior Density
			Seniors % of Population
			Total Youth (<24)
			Youth Density
			Youths % of Population
	Households	20	Total Households
			Household Density
	Income	10	Low-Income Households
			Low-Income Household Density
			% Low-Income Households
	Vehicle Ownership	20	Total Zero-Car Households
			% Zero-Car Households
			Zero-Car Household Density
			Total One-Car Households
			% One-Car Households
			One-Car Household Density
	Disabled Person	10	Disabled Population
			Disabled Population Density
			% Disabled Persons

Transit-oriented populations are highest in Pulaski east of Randolph Avenue north of the New River, and east of Washington Avenue to the south of the river, encompassing most of Pulaski's population centers (**Figure 34**). These correspond to the areas in which transit ridership is highest, as seen in Figure 11. Dublin north of Route 11 has a higher concentration of transit-oriented populations than Pulaski overall. Finally, the transit-oriented population index is lower overall in Pulaski County than in Radford and Montgomery County.

Figure 34: Transit-Oriented Population Index Results



Non-Work Index

The non-work destination index has five categories: retail/restaurant, recreation, healthcare/social assistance, education, and government. These categories are weighted based on the typical trip purpose proportions for transit commuters. The data sets that make up these categories are employment in the sectors represented by these categories (i.e. the recreation category contains data sets from the entertainment sector and the recreation sector). The employment by sector data sets serve as proxies for how much travel demand businesses that fall into these sectors would produce, and therefore, this index is indicative of where people make non-work trips. **Table 12** summarizes the non-work destination index categories, weights, and the data sets that contribute to each category.

Table 12: Non-Work Index

Index	Category	Weight	Data Set
Non-Work	Retail/ Restaurant	20	Retail Jobs/Density
			Restaurant Jobs/Density
	Recreation	10	Entertainment/ Recreation Jobs/Density
	Healthcare/ Social Assistance	35	Healthcare & Social Assistance Jobs/Density
	Education	25	Education Jobs/Density
	Government	10	Public Admin. Jobs/Density

The highest non-work index scores can be found north of the New River, between Randolph Avenue and Lee Highway, where many government and social services are located (**Figure 35**). To the east and south of this area are other areas with relatively high non-work index scores, encompassing areas along East Main Street, South Washington Street, and Peppers Ferry Road. This can be explained by concentrations of retail in those areas, particularly along East Main Street and Peppers Ferry Road. Overall, the town of Pulaski has the highest non-work index scores in the county.

Combining the transit-oriented population index and the non-work index, the overall off-peak service need is highest in the town of Pulaski between Randolph Avenue and Lee Highway north of the New River and in Dublin (**Figure 36**). Much of the rest of the town of Pulaski demonstrates a moderate need for off-peak service.

Figure 35: Non-Work Index Results

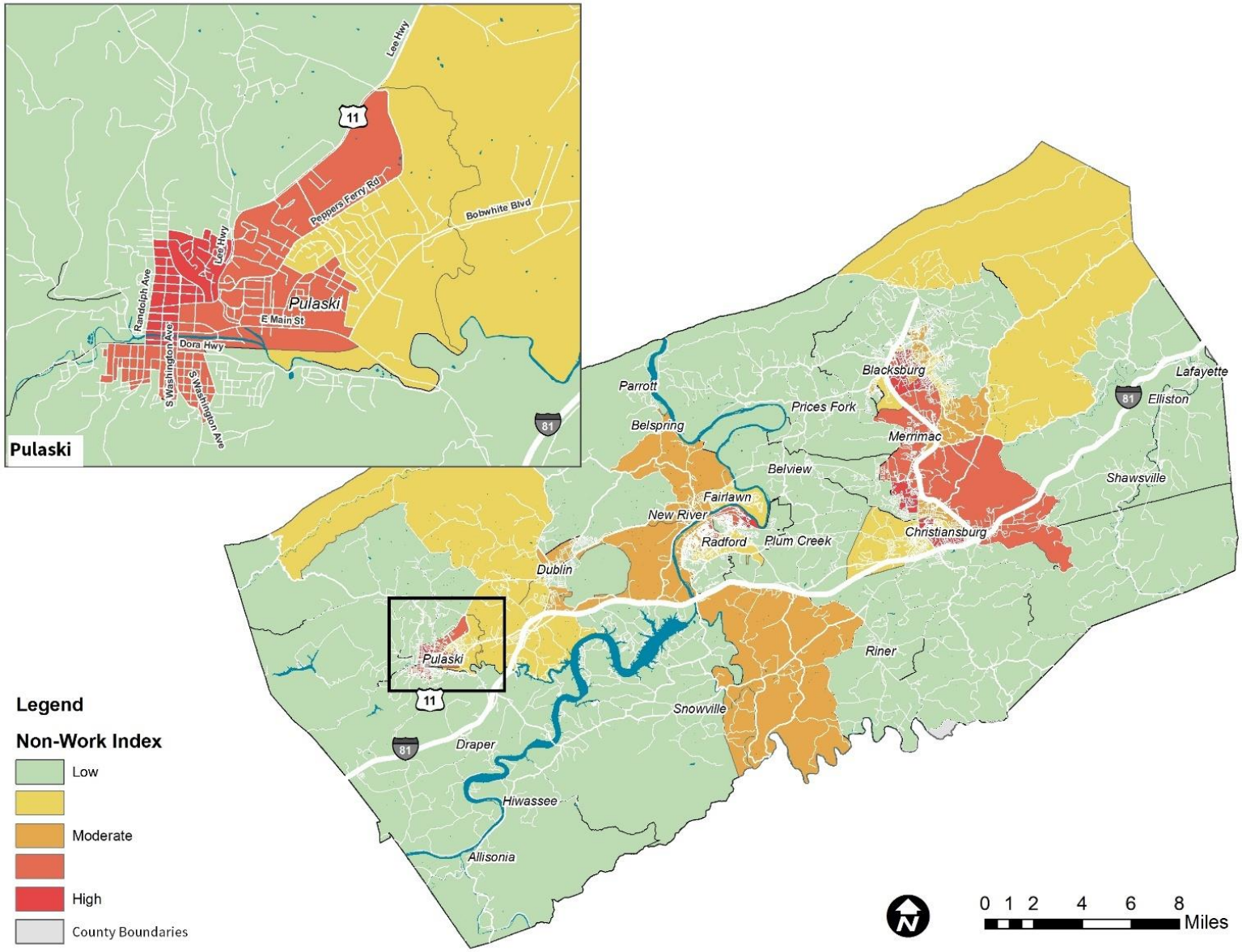
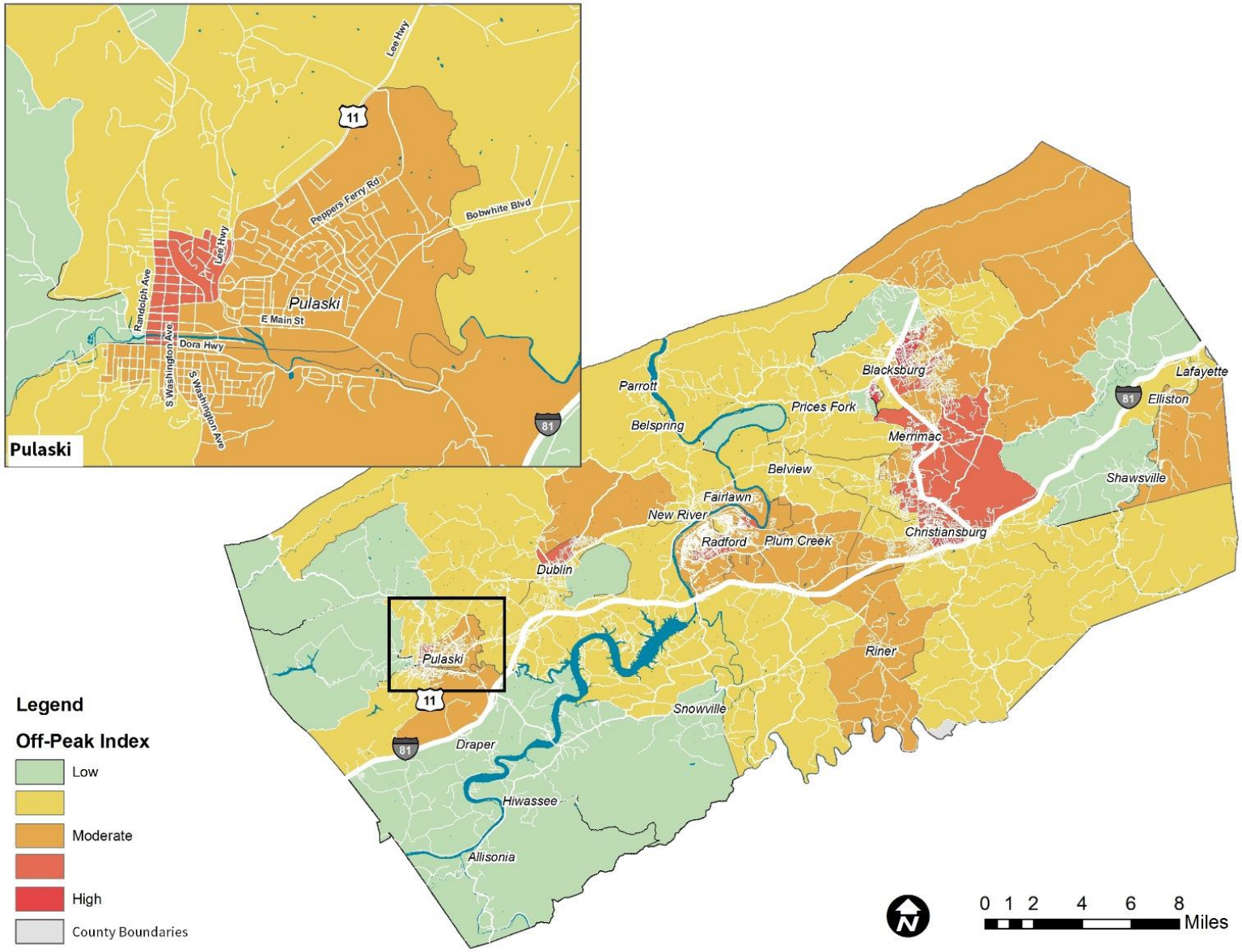


Figure 36: Off-Peak Service Need



Rush Hour Service Need

The need for rush hour commuter service is determined using two transit indexes: the Commuter Index and the Workplace Index. When combined, these two indexes show where commuter populations live and work. In the Pulaski Area Transit service area, the rush hour periods do not necessarily equate to peak ridership times since the majority of the riding population are students with varying class start and end times.

Commuter Index

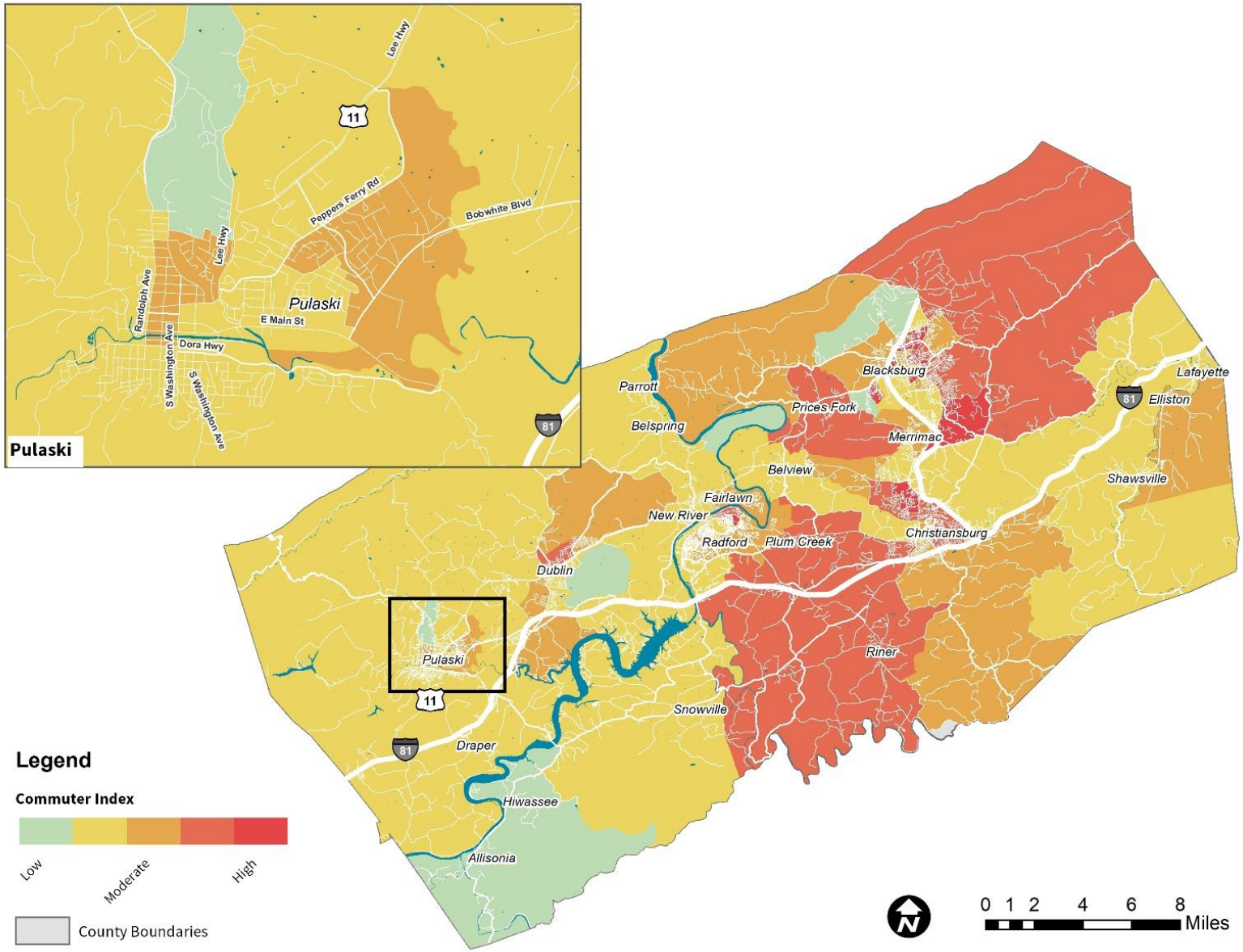
The commuter index consists of two categories: labor force and commute mode. Employed persons, commuters, and transit commuters all contribute to this index, which is indicative of where traditional peak hour commuters live, and where those that currently use transit to commute live. **Table 13** summarizes the commuter index categories, weights, and the data sets that contribute to each category.

Table 13: Commuter Index

Index	Category	Weight	Data Set
Commuters	Labor Force	70	Labor Force Size
			Labor Force Density
			Employed Persons
			Employed Person Density
			% Employed
			Total Commuters
			Commuter Density
	Commute Mode	30	Total Transit Commuters
			% Transit Commuters
			Transit Commuter Density

Commuter index scores in the town of Pulaski are highest in the area north of the New River between Randolph Ave and Lee Hwy, as well as in the area along Bob White Boulevard northeast of the center of Pulaski (**Figure 37**). Both of these areas contain a substantial residential population. The rest of town can be described as having fairly low commuter index scores. Overall, Dublin has the highest commuter index scores in the county, north of Route 11.

Figure 37: Commuter Index Results



Workplace Index

The workplace index has a single category: employment. Total employment and employment density contribute to this index, which is indicative of where people commute to for work purposes. **Table 14** summarizes the workplace index categories, weights, and the data sets that contribute to each category.

Table 14: Workplace Index

Index	Category	Weight	Data Set
Workplace	Employment	100	Total Employment
			Employment Density

Workplace Index scores are highest in the center of Pulaski, along Randolph Avenue on both sides of the New River, as well as along Bob White Boulevard/Newbern Road (Route 611) to the east of Pulaski, near I-81 (**Figure 38**). Randolph Avenue near Commerce Street has a number of industrial employers, and the Pulaski County Corporate Center, Volvo, and James Hardie are all located out the Route 611 corridor.

Combining the commuter index and workplace index scores, rush hour service index scores are highest in most of the same areas that workplace index scores are highest, particularly between Randolph Avenue and Lee Highway north of the New River, and along the Route 611 corridor to the east of the town of Pulaski (**Figure 39**). The area south of the New River within the center of Pulaski scores somewhat lower on this index than on the workplace index, due to its lower commuter index score. Much of the remainder of Pulaski County has low rush hour index scores.

Figure 38: Workplace Index Results

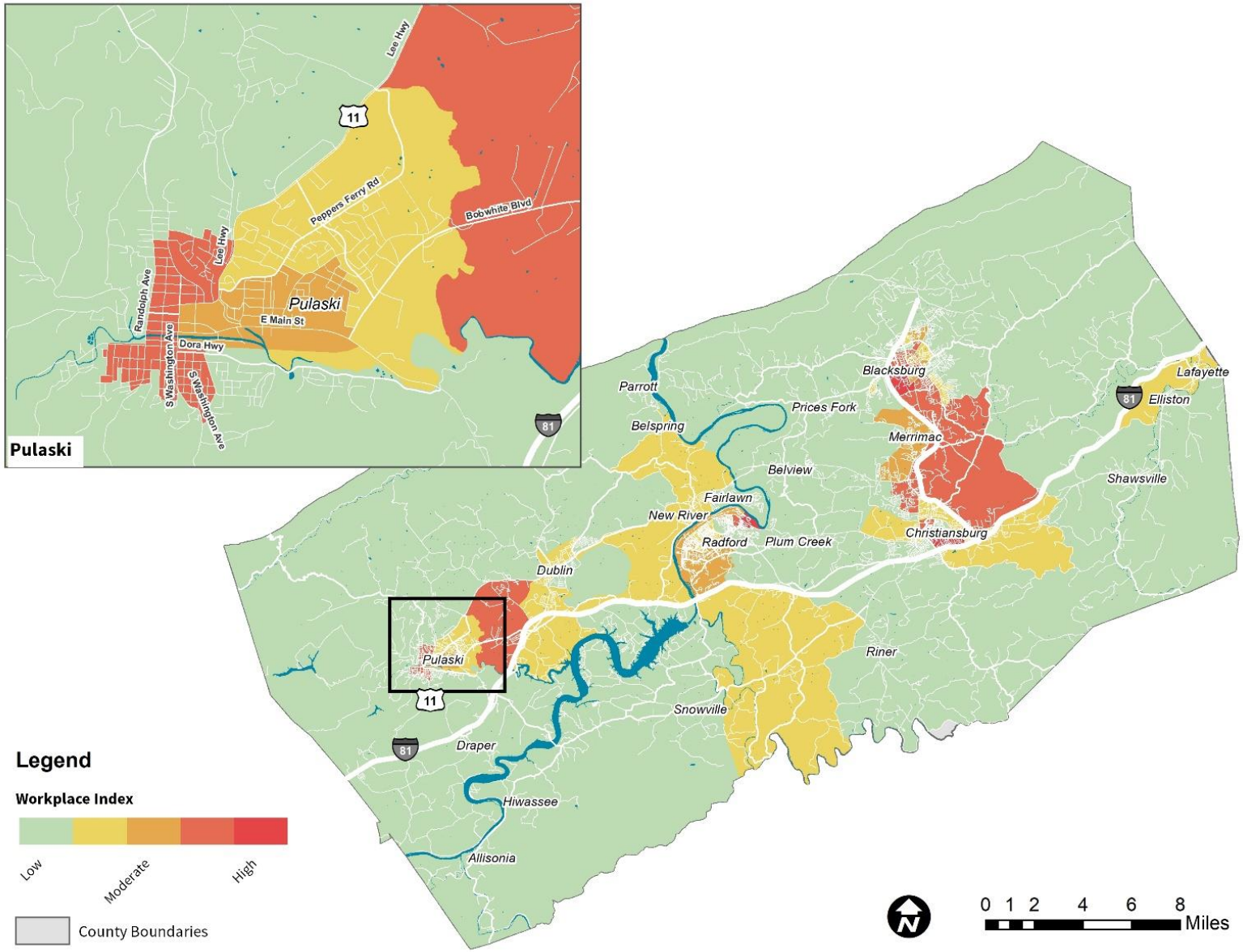
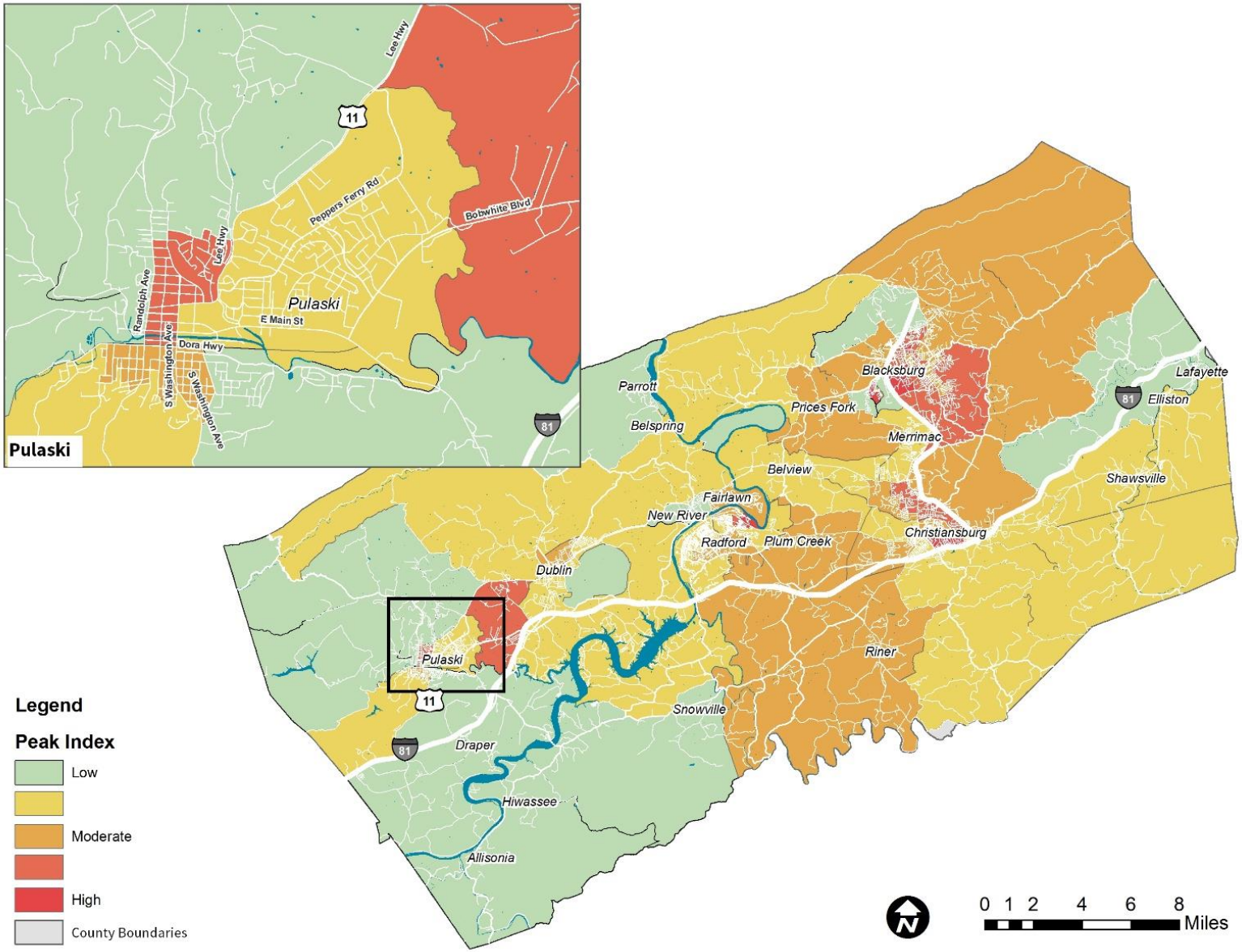


Figure 39: Rush Hour Service Need



Travel Flow Analysis

The New River Valley MPO travel demand model is centered on Blacksburg/Christiansburg and does not include Pulaski County. Therefore, the LEHD Origin-Destination Employment Statistics (LODES) home to work travel flows were compiled instead in order to analyze travel patterns in the county.

LODES Home to Work Flows

The LODES home to work travel flows were compiled for the New River Valley counties for 2015, the latest year available. These travel flows were aggregated to the block group level and then scored based on the number of flows in each pair, the commuter index score of the origin block group, and the workplace score of the destination block group. Unlike the travel demand model flows, these flows are available for the entire New River Valley region.

The results of this analysis are illustrated in **Figure 40**. The majority of the travel flows in the Pulaski Area involve the industrial area between US-11 and I-81 (Pepperell Way and Cougar Trail Road), where the Pulaski County Corporate Center, Volvo, and James Hardie are located. While these flows are not scored highly for transit, there is a significant number of them coming from throughout the county and nearby Radford and Montgomery County.

Rider Survey Travel Flows

In addition to the travel demand model and LODES travel flows, rider surveys also asked Pulaski Area Transit riders to describe the start and end points of their journeys. The responses were then geocoded and aggregated at the census block group level, with flows between each unique pair of block groups grouped together and counted.

The results of this analysis can be seen in **Figure 41**. The highest travel flows can be found between East Main Street in Pulaski and areas immediately to the south of the New River, as well as the area northeast of the town center, between Lee Highway and Peppers Ferry Road. All of these areas have substantial shopping or employment centers to drive ridership. Travel flows between other areas are relatively low, though a fair number exist between Pulaski and Dublin/Fairlawn.

Figure 40: Home to Work (LODES) Travel Flows Scored

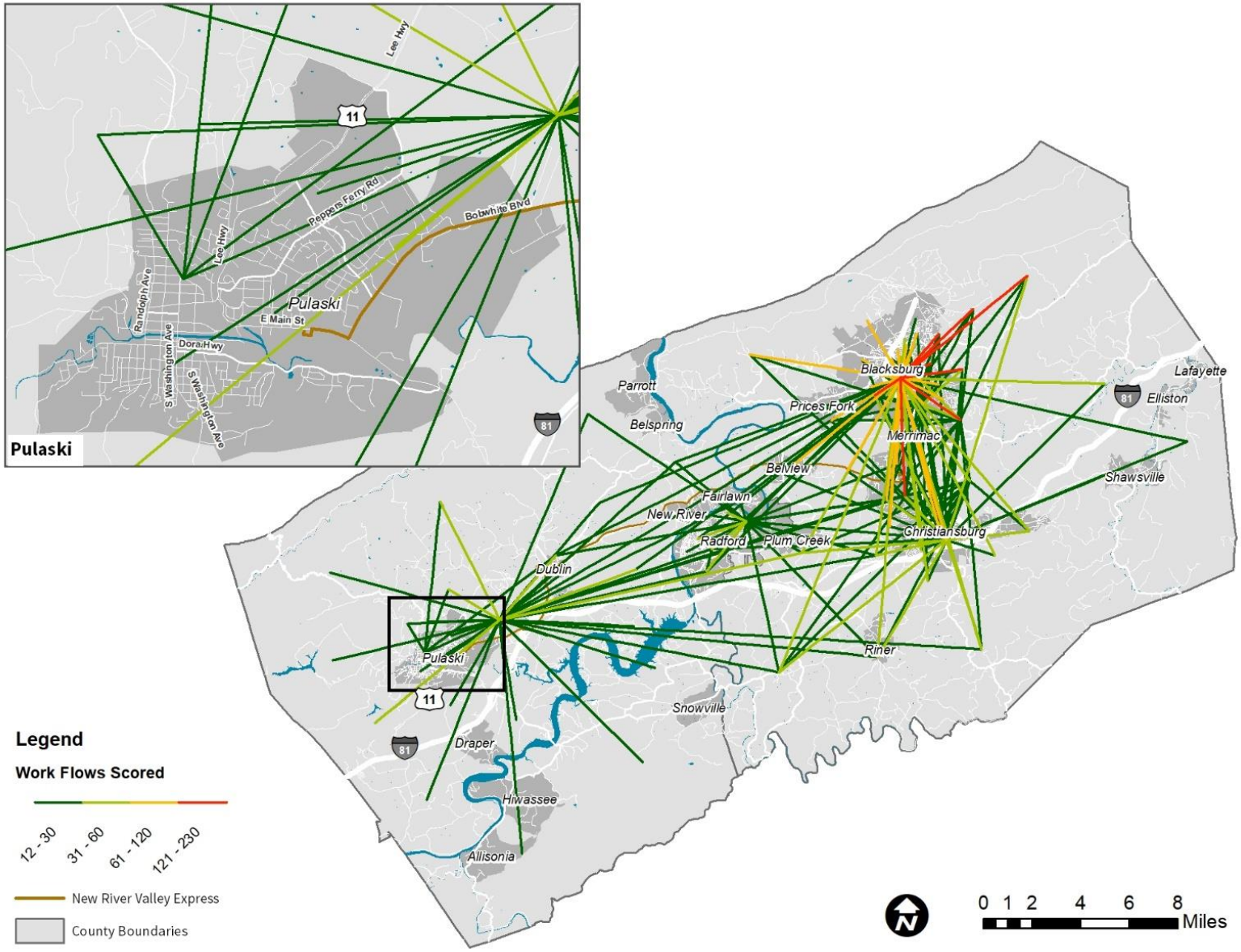
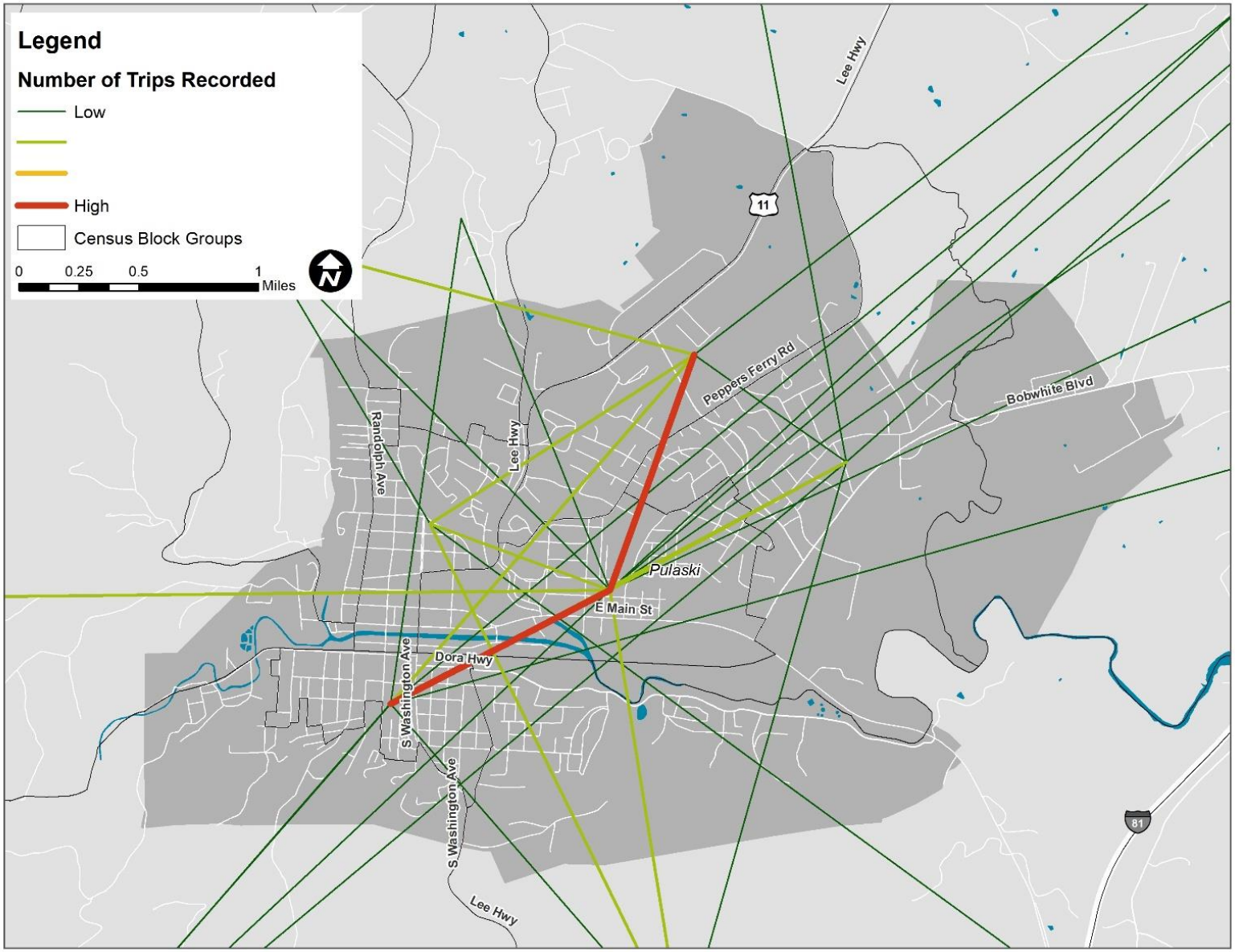


Figure 41: Rider Survey Travel Flows



3.6 STAKEHOLDER INPUT

Stakeholder input on the Pulaski Area Transit system was gathered from Pulaski Area Transit, the town of Pulaski, the Pulaski County Planning Department, the New River Valley Community College, and the New River Valley MPO and Regional Commission.

- Pulaski Area Transit (PAT):
  - A new fixed-route alignment is currently being planned
  - There are concerns about losing some passengers when the fixed-route is introduced.
- Town of Pulaski:
  - PAT buses have similar destinations, but different origins.
  - Service is not as efficient as it could be; a regular schedule and route alignment would be helpful.
  - Many stops are not considered safe due to the lack of crosswalks.
  - There are currently financial constraints.
  - The Town Council could be further educated regarding service costs.
- Pulaski County Planning Department:
  - A new comprehensive plan will be started in July 2018, which will incorporate Uber as a transportation factor.
  - Performing regional trips (e.g. Pulaski to Radford for doctor visits) is very difficult for many people
  - There is a 1,000-acre industrial park near Dublin that has planned growth (New River Valley Commerce Park).
- New River Valley Community College:
  - Students often use the New River Valley Express Route to Christianburg to get to the classes offered at that campus.
  - Class times are from 8:00am to 10:00pm.
  - Many students hold jobs located near the extremities of the town
- New River Valley MPO and Regional Commission:
  - The County is a financial supporter of PAT.
  - Bus stop safety needs to be considered.
  - There is an initiative for livability.
  - Most workers are of an older age.
  - A conservative approach should be considered due to the DRPT funding fiscal cliff.
  - Visibility of transit in the region needs to be increased – creating more information for people.
  - A new Blacksburg service, known as Virginia Breeze, is an intercity bus connector with additional development occurring near the Mall in Christianburg.
  - Red Sun Tomato near the NRVCC is looking for a reliable workforce and could benefit from increased PAT service.

3.7 GAP ANALYSIS

Existing transit services were compared to the results of the transit need analysis and the travel flow analysis in order to identify gaps in transit coverage in the Pulaski area. Based on this comparison, gaps in coverage and missing connections were identified and summarized in **Table 15**. Additionally, the ridership data was compared to the service levels provided to identify gaps in service levels – basically, where service levels are not meeting demand.

Table 15: Gaps in Transit Coverage, Connections, and Service Levels

Gap Type	Service	Period	Location
Coverage	-	Peak Periods	Pulaski County Corporate Center (Pepperell Way)
Connection	-	Peak Periods	Southwest Radford to Pulaski County Corporate Center (Pepperell Way)
		Peak Periods	Pulaski to Carilion New River Valley Hospital in Radford
		Peak Periods	Pulaski to New River Valley Commerce Park (Route 100/International Blvd)
Service Level	New River Express	All-Day, Increase span	New River Community College, Dublin, Fairlawn, Christiansburg
	Demand Service	All-Day, Provide more trips	Pulaski Town

4 Service and Capital Improvement Plan

This chapter recommends changes to existing services and new services to fill gaps in the existing transit network and improve unproductive services. The capital needs of the agency to maintain a state of good repair and to support the service recommendations are also included.

4.1 SERVICE IMPROVEMENTS AND NEEDS

The service improvements for Pulaski Area Transit generally fall into two categories: recommendations to fill the gaps in the transit network that were identified in Chapter 3, and strategies to improve the productivity of the network.

4.1.1 Recommendations to Fill Gaps

The Gap Analysis in Chapter 3 identified transit service gaps that fall into three categories: coverage gaps, connection gaps, and service level gaps (see Table 15). Service improvements were developed to "fill" each of these gaps, as summarized in Table 16. The improvements include strategies such as restructuring existing routes, route extensions, and service increases. For further details on these proposed changes, see the detailed route change sheets in Appendix A.

Table 16: Recommendations to Fill Gaps in Transit Coverage, Connections, and Service Levels

Gap Type	Service	Period	Location	Improvement
Coverage	-	Peak Periods	Pulaski County Corporate Center (Pepperell Way)	Pulaski-Dublin fixed route
Connection	-	Peak Periods	Southwest Radford to Pulaski County Corporate Center (Pepperell Way)	Pulaski-Dublin fixed route, New NRV Express schedule
	-	Peak Periods	Pulaski to Carilion New River Valley Hospital in Radford	New NRV Express schedule, extension of Radford Route 20
	-	Peak Periods	Pulaski to New River Valley Commerce Park (Route 100/International Blvd)	Pulaski-Dublin fixed route
Service Level	New River Express	All-Day, Increase span	New River Community College, Dublin, Fairlawn, Christiansburg	New NRV Express schedule
	Demand Service	All-Day, Provide more trips	Pulaski Town	Fixed Routes A and B

4.1.2 Unproductive Services

PAT's standard for passengers per revenue hour is 7.0, and for passengers per revenue mile, 0.55. As summarized in Table 17 the system meets the passengers per revenue hour standard but does not meet the passengers per revenue mile standard, though it comes within five percent. To help improve the productivity and efficiency of the system, the following is recommended:

- Implement two new fixed routes within the Town of Pulaski.

- Restrict demand response service to the area within the Town of Pulaski that is more than ¼-mile from the two fixed routes.
- Increase service on the NRV Express and add a stop for commuters in Belview.
- Implement a new Pulaski to Dublin fixed route that connects Pulaski with the Pulaski County Corporate Center and the New River Valley Commerce Park.

These recommendations will create efficiencies in the PAT system that will serve more passengers per revenue hour and increase service to levels that will attract new ridership. The new route between Pulaski and Dublin will also provide access to two major employment sites which will encourage new riders to try the system and open up new employment opportunities for current riders. For further details on these proposed changes, see the detailed route change sheets in Appendix A.

Table 17: Pulaski Area Transit Productivity Service Standards Summary by Route

	Passengers/Rev. Hour	Passengers/Rev. Mile	Passengers/Rev. Hour Standard	Passengers/Rev. Mile Standard
Standard	**7.0**	**0.55**		
PAT System	7.1	0.53	Meets	Does Not Meet

4.1.3 Level of Service Improvements

The level of service standards for PAT are summarized in Table 18. In the mid term, the proposed fixed routes, the demand service, and the NRV Express will meet the minimum span of service. The proposed Pulaski-Dublin route will not meet the minimum span of service, however it is a commuter route that is designed for peak period commuters and therefore does not need to operate during the midday period. Table 19 summarizes service level changes that are recommended by route. For further details on these proposed changes, see the detailed route change sheets in Appendix A.

Table 18: Pulaski Area Transit Level of Service Standards

Standard	Day	Standard
Minimum Span of Service	Weekdays	7:00 AM – 6:00 PM
	Saturdays	9:00 AM – 3:00 PM

Table 19: Pulaski Area Transit Level of Service Standards and Proposed Improvements Summary by Route

Route	LOS Standard	Proposed Improvement
Demand Response	Does Not Meet	Implement new fixed routes A and B with supplemental demand response service that all operate 7:00 AM – 6:00 PM on weekdays and 9:00 AM – 3:00 PM on Saturdays.
NRV Express	Does Not Meet	Increase span of service to 7:00 AM – 6:00 PM on weekdays and 9:00 AM – 3:00 PM on Saturdays. Add trips to the route.

4.1.4 System Integration

Ensuring that there is regional connectivity in the New River Valley is vital to the success of the three transit systems that operate in this area, including Blacksburg Transit, Radford Transit and Pulaski Area Transit. Currently,

there are two intraregional services that operate within the region, and one service that connects the region to Roanoke:

- Intraregional services:
  - Radford Transit Route 40, operating between Radford University and Christiansburg/Blacksburg/Virginia Tech.
  - Pulaski Area Transit New River Valley Express, operating between Pulaski, Dublin, Fairlawn, and Christiansburg.
- Interregional services:
  - Smartway, operating between Christiansburg and Roanoke.

While these services exist, they have limited service levels that do not currently provide adequate regional service:

- RT Route 40 does not operate before 2:40 pm on weekdays and Saturdays, has no Sunday service, and does not operate during Reduced Service. Route 40 stops in Christiansburg, Blacksburg, and at Virginia Tech.
- PAT NRV Express only operates between 7:45 am and 5:05 pm on weekdays and between 10:00 am and 2:00 pm on Saturdays. The NRV Express stops in Christiansburg.
- There is no schedule coordination between RT Route 40 and any of the Blacksburg Transit routes, and no schedule coordination between PAT NRV Express, RT Route 20, and the BT Two Town Trolley and Explorer.

Additionally, there is some overlap between routes operating in different systems, mainly RT Route 40 and the BT Two Town Trolley on Franklin Street in Christiansburg and Main Street in Blacksburg.

In order to improve connectivity within the New River Valley region, several recommendations were developed and are summarized in Table 20 and illustrated in Figure 42. The majority of these recommendations involve coordination of schedules across the three systems in the region, however two involve the extension of existing Radford Transit routes to benefit the regional overall.

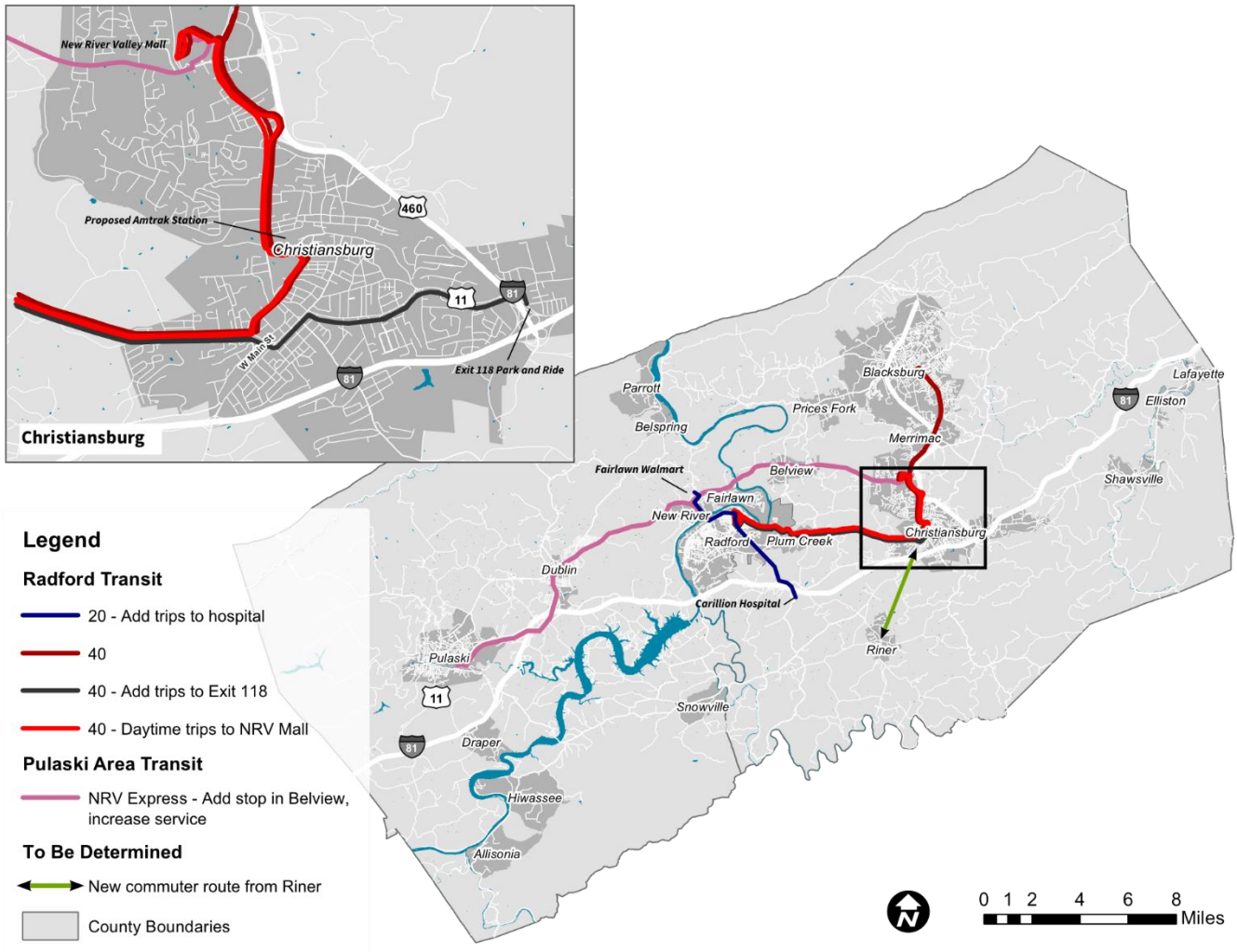
Table 20: Regional Integration Recommendations Summary

Service	Recommendation	Regional Benefit
RT Route 40	Operate route between Radford University and the NRV Mall between 7:00 am and 2:40 pm, and then between Radford University and Squires after 2:40 pm (current alignment)	All-day service provided between Radford and Christiansburg, with easy transfer to Blacksburg services during morning and midday periods
	Operate select trips to the Exit 118 Park and Ride in Christiansburg	Connection between Radford and regional park and ride with Virginia Breeze service
	Add a stop at the proposed Amtrak station in Christiansburg.	Connection between Radford and interstate Amtrak service
RT Route 20	Extend certain trips to Carillion Hospital in Radford	Provide dedicated service to a regional medical center
	Coordinate schedules with PAT NRV Express at the Fairlawn Walmart	Seamless travel between Pulaski, Dublin, Fairlawn, Radford, and the Carillion Hospital
PAT NRV Express	Increase span of service to 10:00 pm on weekdays, and to 6:00 pm on Saturdays	Increased utility of this route for travel between Pulaski, Dublin, Fairlawn, and Christiansburg, including the proposed Amtrak Station

Service	Recommendation	Regional Benefit
	Increase frequencies incrementally to 90 minutes and then 60 minutes	Increased utility of this route for travel between Pulaski, Dublin, Fairlawn, and Christiansburg
	Coordinate schedules with RT Route 20 at the Fairlawn Walmart	Seamless travel between Pulaski, Dublin, Fairlawn, Radford, and the Carillion Hospital
BT Two Town Trolley	Coordinate schedule with the BT Two Town Trolley at the NRV Mall	Seamless travel between Pulaski, Dublin, Fairlawn, Christiansburg, and Blacksburg
	Add a stop at the proposed Amtrak station in Christiansburg	Connection between Blacksburg and interstate Amtrak service
BT Explorer	Add a stop at the proposed Amtrak station in Christiansburg	Connection between Christiansburg and interstate Amtrak service
Riner	Operate new year-round peak hour commuter route between Riner and Christiansburg, Blacksburg, or both	Provide commuter service between southern Montgomery County and Christiansburg/Blacksburg

Eliminating the duplication of service along Franklin Street and South Main Street between the Blacksburg Two Town Trolley and Radford Route 40 was considered, however Radford Transit does not want to potentially lose ridership by forcing a transfer between Route 40 and the Two Town Trolley during the late night periods when this route is viewed as a safety measure to reduce impaired driving between the two towns. Therefore, this service will continue to operate as it does today, however new "short" trips on Route 40 will be added between Radford and the NRV Mall during the morning and early afternoon, and an additional stop will be added at South Main Street and Ardmore Street in Blacksburg (serving First and Main).

Figure 42: Regional Integration Recommendations Summary



With these recommendations in place, New River Valley residents will be able to travel seamlessly across the region with ease and will be able to reach major regional destinations via transit. Additionally, increased access to the proposed Amtrak station in Christiansburg will enable residents in Blacksburg, Christiansburg, and Radford to reach this interstate service using only a single route, and residents of Pulaski, Dublin, and Fairlawn the ability to reach it using only two routes.

4.1.5 Summary of All Improvements

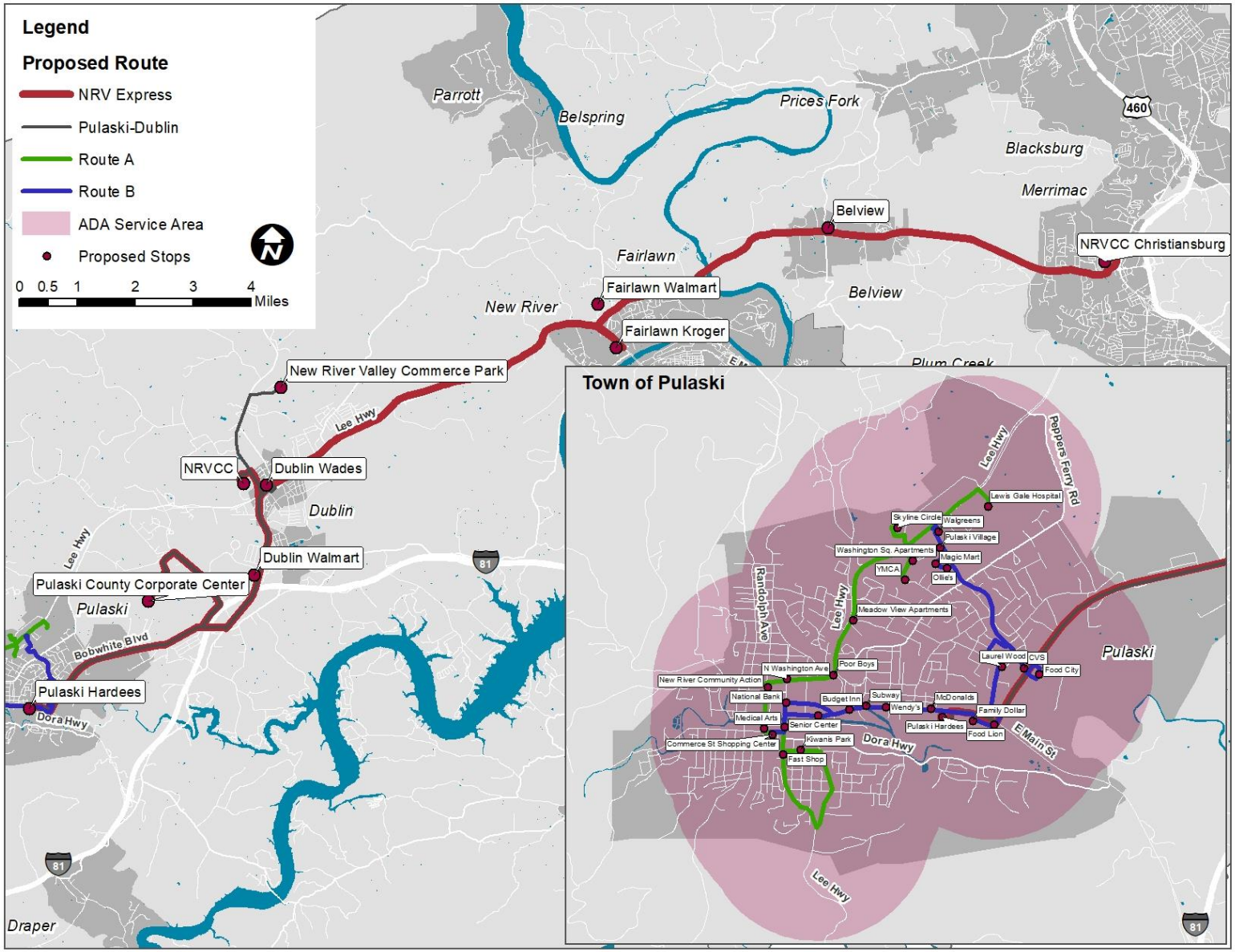
A summary of all the recommended improvements by route is included in Table 21. For further details on these proposed changes, see the detailed route change sheets in Appendix A. Figure 43 illustrates the recommended changes.

Table 21: Summary of Proposed Improvements by Route

Route / Service	Proposed Improvement	Proposed Timeframe
New Fixed Routes A and B	Implement these two new routes within the Town of Pulaski with a weekday span of 7:00am-5:00pm and a Saturday span of 9:00am-3:00pm.	Short term (1-3 years)

Route / Service	Proposed Improvement	Proposed Timeframe
	Increase weekday span to 7:00am-6:00pm.	Mid term (3 to 10 years)
Demand Response	Restrict demand response service to the Town of Pulaski within ¾-mile of Routes A and B and operate this service with a weekday span of 7:00am-5:00pm and a Saturday span of 9:00am-3:00pm.	Short term (1-3 years)
	Increase weekday span to 7:00am-6:00pm.	Mid term (3 to 10 years)
NRV Express	Add service to the route so it will have 4 daily trips to Christiansburg and the schedule will be adjusted so the route will have a timed transfer at the Fairlawn Kroger with Radford Transit Route 20. Additionally, a stop will be added in Belview.	Mid term (3 to 10 years)
	Add a stop in Belview.	Mid term (3 to 10 years)
	Operate all 10 weekday trips to Christiansburg on weekdays. On Saturdays, operate 6 trips, all of which will go to Christiansburg.	Long term (10 plus years)
Pulaski-Dublin Route	Implement this new peak period route between Pulaski, the Pulaski County Corporate Center, and the New River Valley Commerce Park.	Mid term (3 to 10 years)

Figure 43: Proposed Recommendations for Pulaski Area Transit



4.1.6 Ridership Estimates

Long term ridership estimates were developed using several methods based on the data available for each route.

- For the NRV Express, the projected revenue hours incorporating its recommendations were compared to the estimated number of revenue hours on this route for FY2018. A revenue hour to ridership elasticity of +1.01 was then used, based on case studies present in TCRP Report 95[1].
- For Routes A and B, it was estimated that 81 percent of current demand response ridership would be within ¼-mile of the routes (113,000 annual trips). Since these routes would run hourly, however, and the current wait times for demand response pick-ups average around 30 minutes, there would likely be a loss in ridership. To account for this, a headway (wait time) to ridership elasticity of -0.8 was used to calculate the estimated ridership on Routes A and B if they were operating in FY2017 (resulting in a total of 65,290).
- The demand response ridership was calculated by comparing the projected revenue hours to those operated in FY2018. A revenue hour to ridership elasticity of +1.01 was then used, based on case studies present in TCRP Report 95[2].
- The Pulaski-Dublin route ridership was estimated using 2.0 passengers per revenue hour – the expected productivity for this route based on similar type routes in nearby Radford, Blacksburg, and Christiansburg.

The ridership estimates are summarized in Table 22. Overall, ridership is expected to increase by 36 percent systemwide when all of the proposed changes are implemented.

Table 22: Ridership Estimates

Route	Current			Future (By Long Term)		
	Annual Revenue Hours (Estimate)	Ridership	Passengers/ Revenue Hour	Annual Revenue Hours	Projected Passengers/ Revenue Hour	Projected Ridership
NRV Express	4,572	563	0.1	9,006	0.1	1,117
Pulaski-Dublin	-	-	-	1,524	2.0	3,048
Route A	3,106	32,645	10.5	5,900	11.5	68,072
Route B	3,106	32,645	10.5	5,900	11.5	68,072
Demand	15,206	73,937	4.9	3,368	4.8	16,026
Total	**19,778**	**139,790**	**7.1**	**32,503**	**5.8**	**189,568**

[1] TRB, 2004. Transit Cooperative Research Program Report 95: Traveler Response to Transportation System Changes, Chapter 9: Transit Scheduling and Frequency. Available at: http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_95c9.pdf. Accessed on 4/15/19.

[2] TRB, 2004. Transit Cooperative Research Program Report 95: Traveler Response to Transportation System Changes, Chapter 9: Transit Scheduling and Frequency. Available at: http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_95c9.pdf. Accessed on 4/15/19.

4.1 SERVICE AND NEEDS PRIORITIZATION

Overall, the recommended changes to the system will result in an increase in annual revenue hours and therefore an increase in annual operating costs (see Table 23**Error! Reference source not found.**). In FY2017, Pulaski Area Transit operated 19,778 revenue hours; the recommendations in this plan would increase that figure by approximately 11,000 revenue hours annually in the long term. The annual operating cost in FY2019 dollars would also increase over the FY2018 operating budget, from approximately $604,400 to $947,300. Additionally, the number of peak vehicles required will increase from the current 11 during Regular Service to 13. The implementation plan and financial plan in subsequent chapters will provide further details on how the recommended system will be implemented with financial constraint.

Table 23: Proposed System Estimations by Route at Full Implementation

Route	Annual Revenue Hours	Annual Operating Cost	Peak Vehicles
Demand	8,668	$264,892	5
NRV Express	9,006	$275,218	3
Pulaski-Dublin	1,524	$46,572	1
Route A	5,900	$180,300	2
Route B	5,900	$180,300	2
Total	**30,998**	**$947,283**	**13**

4.1.1 Capital Projects and Facility Needs

The primary capital needs for Pulaski Area Transit are the regular replacement of vehicles, the purchase of new vehicles for service expansions, and bus stop improvements for proposed Routes A and B and the Pulaski-Dublin route. Information from the FY2020-FY2024 Capital Improvement Plan (CIP) for PAT provides insight into baseline needs with the timing and inclusion of expansion activities detailed in Chapter 5 of this TDP.

4.1.2 Prioritization

In order to prioritize the recommendations for PAT, a methodology was developed that would evaluate each route's importance to the overall network. Three main categories were used for this analysis, summarized in **Table 24**. This approach ensures that each route's full function in the network is accounted for.

Table 24: Prioritization Methodology

Measure	Based On:	Maximum Score
Ridership	Annual ridership in FY2017	0.50
Service to Transit-Dependent Populations	Estimated number of low-income households, zero-car households, persons with disabilities, and seniors within ½-mile of each route	0.25
Access to Jobs	Estimated number of jobs within ½-mile of each route	0.25
	Total	**1.0**

The results of this analysis are summarized in **Table 25**. Routes A, B and the demand response service as a package are ranked highest, followed by the NRV Express and the Pulaski-Dublin route. Routes A and B would be implemented together with the demand response service changes. This prioritization will be used in the implementation plan as an addition to operating cost to help decide in what year in each range (short term, mid term, or long term) each route's recommendations should be implemented.

Table 25: Prioritization of Routes

Route	Score
Routes A & B / Demand Response	0.71
NRV Express	0.44
Pulaski-Dublin	0.41

5 Implementation Plan

This chapter of the Pulaski Area Transit (PAT) TDP illustrates the difference between providing the baseline service requirements and implementing the expanded service recommendations described in Chapter 4. All elements of this chapter reinforce the timing of the PAT capital improvement program (CIP) throughout a ten-year planning horizon. Primary capital components include the fleet and facilities. Essential maintenance, rehabilitation, and state of good repair projects are identified to inform PAT's ongoing transit asset management program and to assure no service degradation results from the timing of improvements. This chapter will inform the project funding costs and revenue sources detailed in Chapter 6. Where applicable, this chapter will also distinguish those projects in the CIP which PAT reasonably anticipates local funding to be available, and those with no current funding allocated.

5.1 ROLLING STOCK UTILIZATION

This section presents the vehicle replacement and expansion needs to provide envisioned services throughout this TDP period. Included in this section are the implications of right-sizing the fleet/spare ratio, vehicle life-cycle maintenance, technological retrofit, and any impacts to the overall utilization of the fleet during the implementation of new services outlined in Chapter 4.

5.1.1 Fleet Inventory

PAT has a fleet of 11 vehicles for revenue service. PAT does not have dedicated spares and indicates that the Vehicles Operated in Maximum Service (VOMS) is the same as its fleet. PAT maintains a fleet of smaller support vehicles, with two (2) identified as non-revenue supervisory vehicles.

All PAT vehicles are of the Body on Chassis (BOC) type, with a Federal Transit Administration Useful Life Benchmark (ULB) of 10 years. Ongoing assessment of these ULB in subsequent years should be informed with a qualitative condition assessment as part of PAT's Asset Management program.

All vehicle information for PAT's revenue fleet is provided in Table 26. Vehicle replacement and retirement analysis in the subsequent sections will begin starting with FY2019.

Table 26: PAT Fixed Route Fleet Inventory

Year	Make/Model	Length (Feet)	Capacity	FTA ULB (Years)	Number of Vehicles
2012	Body on Chassis	<30	13	10	3
2013	Body on Chassis	<30	15	10	3
2014	Body on Chassis	<30	15	10	1
2015	Body on Chassis	<30	15	10	2
2017	Body on Chassis	<30	15	10	2
Total Fleet (In Service)					**11**

5.1.2 Vehicle Replacement

From FY2019-2029, PAT's baseline fleet requirements would entail retiring a total of 11 vehicles (the entire fleet), and acquiring 14 vehicles. The additional procurements beyond replacing vehicles in excess of their ULB would be for the purposes of building a spare ratio of similar sized vehicles to support a VOMS of 11 vehicles. Three vehicles would be added to the fleet during this planning period, with procurements in FY2020, FY2021, and FY2026. As a result, the current spare ratio of zero percent increases to 21.4 percent by FY 2026.

PAT anticipates replacement of retired vehicles with vehicles of a comparable size. The baseline vehicle replacement schedule and analysis are presented in Table 27. Total replacement costs were calculated using base vehicle costs for two vehicle types. All costs were inflated to FY2019 dollars. Vehicle cost estimates used in these calculations include:

- 13 passenger BOC $66,000
- 15 passenger BOC $70,000

Future vehicle replacement costs are projected to increase at 4 percent per year beginning with FY2020. The results of the baseline vehicle replacement program, identifying the vehicle type by replacement year and subsequent overall cost is presented in Table 28

Table 27: PAT Fixed Route Baseline Vehicle Replacement Schedule

	Fiscal Year									
	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028
Carryover	11	11	12	13	13	13	13	13	14	14
Retire	0	0	0	3	3	1	2	0	2	0
New	0	1	1	3	3	1	2	1	2	0
Total Fleet	11	12	13	13	13	13	13	14	14	14
VOMS	11	11	11	11	11	11	11	11	11	11
Spare Ratio	0.0%	8.3%	15.4%	15.4%	15.4%	15.4%	15.4%	21.4%	21.4%	21.4%
Exceeding ULB	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table 28: PAT Baseline Vehicle Replacement by Vehicle and Annual Cost

	Fiscal Year									
	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028
Vehicle Type										
13 Pax BOC				2						
15 Pax BOC		1	1	1	3	1	2	1	2	
Total Vehicles		1	1	3	3	1	2	1	2	
Annual Cost	$-	$72,800	$75,712	$227,223	$245,670	$85,166	$177,145	$92,115	$191,600	$-

5.1.3 Vehicle Expansion

For PAT to operate the services identified in Chapter 4, the fleet would require two expansion vehicles. VOMs will increase from a baseline of 11 to 13 by FY 2024. Two expansion vehicles will be used to provide additional service, and the acquisition of three vehicles to assure sufficient spares would be maintained from the baseline analysis.

The timing and implementation of Chapter 4 recommendations that increase VOMS are as follows:

FY2022 – NRV Express Expansion (1 additional vehicle)
FY2024 – Pulaski-Dublin Expansion (1 additional vehicle)

Vehicle types needed for new services were envisioned to maintain the same vehicles used on the respective routes to be enhanced.

From FY2019-FY2028 PAT's fixed route fleet expansion would require 2 additional vehicles over baseline. These additional vehicle purchases would occur in FY2022 and FY2024. Three additional vehicles would be procured to build a spare ratio for existing and expanded service. Vehicles contributing to the spare ratio would be procured in FY2020, FY2026 and FY2028. The results of the expansion vehicle acquisitions and baseline replacement program for the existing fleet is presented in Table 29 and Table 30.

Table 29: PAT Fixed Route Expansion Vehicle Replacement Schedule

	Fiscal Year									
	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028
Carryover	11	11	12	13	13	13	14	14	15	15
Retire	0	0	0	3	3	1	2	0	2	0
New	0	1	1	3	3	2	2	1	2	1
Total Fleet	**11**	**12**	**13**	**13**	**13**	**14**	**14**	**15**	**15**	**16**
VOMS	11	11	11	12	12	13	13	13	13	13
Spare Ratio	0.0%	8.3%	15.4%	7.7%	7.7%	7.1%	7.1%	13.3%	13.3%	18.8%
Exceeding ULB	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Table 30: PAT Fleet Expansion Vehicle Acquisition and Baseline Replacement by Vehicle and Annual Cost

	Fiscal Year									
	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028
Vehicle Type										
13 Pax BOC				2						
15 Pax BOC		1	1	1	3	2	2	1	2	1
Total Vehicles	0	1	1	3	3	2	2	1	2	1

	Fiscal Year									
	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028
Annual Cost	$-	$72,800	$75,712	$227,223	$245,670	$170,331	$177,145	$92,115	$191,600	$99,632

5.1.4 Baseline and Expansion Comparison

This section contrasts baseline and expansion implementation requirements. Figure 44 represents the total annual vehicle replacements required for the TDP period from FY2019-FY2029 for both baseline and expansion plans. Figure 45 represents the net effect on the total PAT fleet size over the same period because of the baseline and expansion vehicle acquisition and replacement programs. Figure 46 represents the cumulative expenditure over the entire duration between the baseline and expansion programs.

Figure 44: Annual Vehicle Procurements FY2019-FY2029

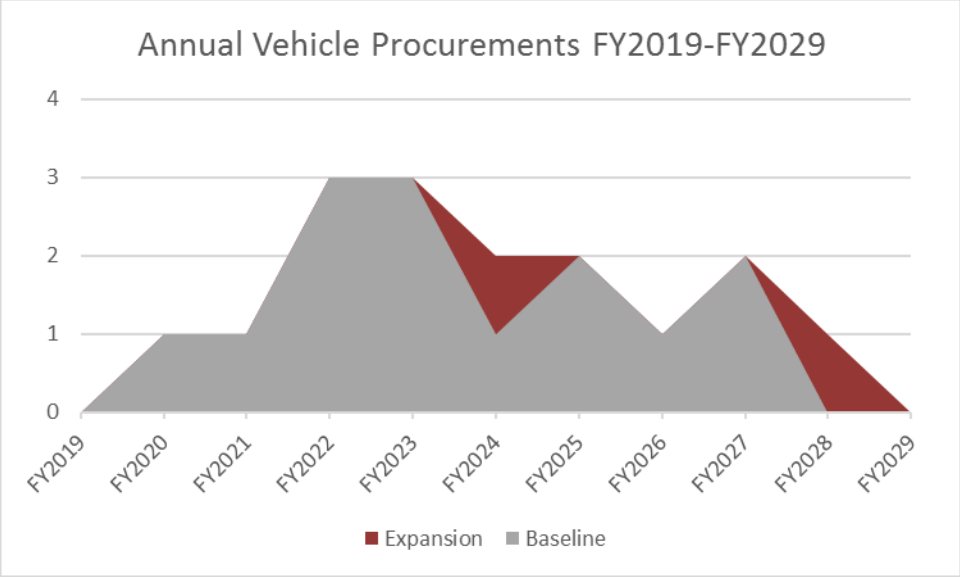


Figure 45: Total Fleet Size FY2019-FY2029

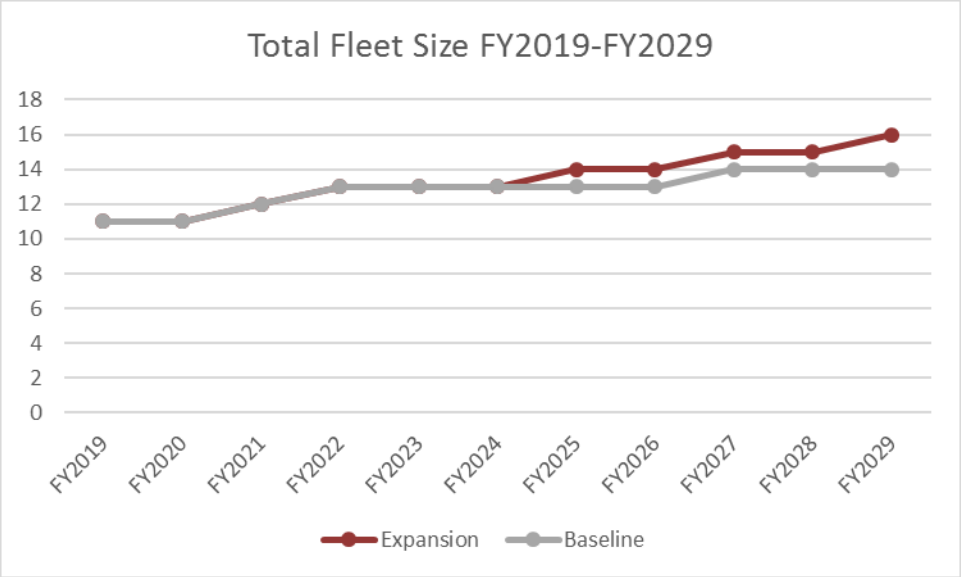
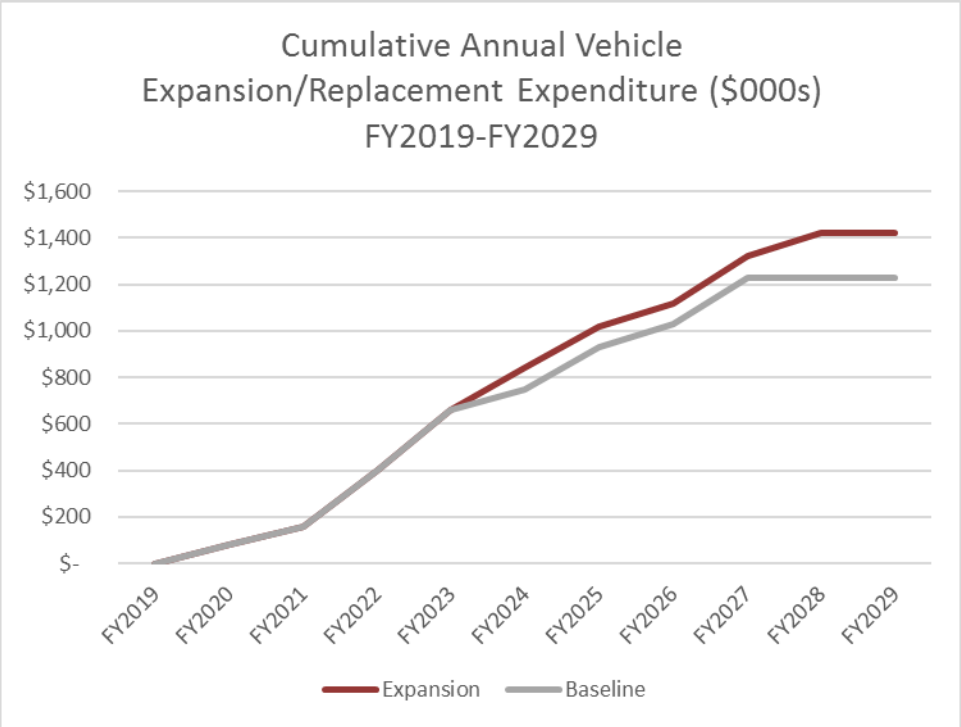


Figure 46: Cumulative Annual Vehicle Expansion/Replacement Expenditure FY2019-FY2029



Results for both the six-year and full TDP timeframe are depicted in Table 31.

Table 31: PAT Baseline and Expansion Cost Comparisons by Timeframe

	Fiscal Years			
	FY2019-FY2024		FY2019-FY2028	
	Baseline	Expansion	Baseline	Expansion
Total New/Replacement Vehicles	9	10	14	16
Total Cost	$706,571	$791,736	$1,167,430	$1,352,228

5.2 MAJOR SYSTEM MAINTENANCE AND OPERATIONS FACILITIES

PAT's current facilities are adequate and are expected to satisfy the agency's needs through FY2028, the final year of this plan. PAT's administration building is co-located with the New River Valley Senior Services, and its vehicles are stored in the parking lot there which has adequate space. Vehicle maintenance is performed in the town of Pulaski garage by town mechanics, and this is expected to continue.

5.3 PASSENGER AMENITIES

The three proposed fixed routes will require new bus stops. PAT purchased bus stops signs for Routes A and B prior to this plan, and the town of Pulaski will install these signs using existing resources. In addition to these bus stop signs, 10 stops were identified for further improvements as part of the Bus Stop Safety and Accessibility Study completed in 2018. The proposed improvements to these stops range from additional signage to the installation of shelters and improvements to sidewalks and curb ramps to make stops ADA accessible. The proposed Pulaski-Dublin route will also require new bus stop signs at several locations. **Table 32** summarizes the proposed bus stop improvements from the Bus Stop Safety and Accessibility Study and the new locations on the Pulaski-Dublin route. Overall, the estimated cost of the proposed improvements is approximately $81,000.

Table 32: Bus Stop Improvements

Stop	Cost Estimate (FY2019)
Martins Pharmacy	$18,750
Pulaski Village	$5,350
Food City	$1,900
Food Lion	$600
LewisGale Hospital	$15,975
Dollar Tree	$3,300
Community Services	$4,750
Social Services/Dollar General	$9,650
Washington Square Apartments	$8,150
Meadowview Apartments	$12,185
Pulaski-Dublin Route Stop Signs (5 locations)	$250
Total Cost	$80,860

5.4 NEW TECHNOLOGY SYSTEMS OR UPGRADES

There are no recommendations for equipment within the TDP timeframe, although needs may change in future years.

6 Financial Plan

The purpose of the Financial Plan is to provide a planning-level forecast of PAT's costs and revenue over the 10-year TDP time-frame. The Financial Plan is composed of both an operating and capital component.

The operating budget is associated with regularly reoccurring costs such as labor, maintenance, insurance, and administration. These costs are stable over time and tend to be closely tied to the amount of service provided. The operating budget is broken further down by the cost of operating existing service and the cost associated with implementing the TDP recommendations. There is no additional cost associated with the TDP recommendations, as this TDP has been designed to be cost-neutral, so no additional local, state, or federal funds above projected funding are required.

Capital costs reflect one-off investments in procurement of replacement or expansion assets such as vehicles, buildings, and IT systems. These figures fluctuate considerably year over year.

6.1 DATA ASSUMPTIONS AND SOURCES

To develop this financial plan, a range of assumptions were made. Long-range budgets are a projection based on a snapshot in time, and as such should be updated regularly to ensure accuracy. Generally, certainty over costs and revenue decrease further into the future.

6.1.1 Operating Budget Assumptions

Direct Revenue

Direct operating revenue includes funds raised from fares, contracted services, sale of assets, advertising, or any other revenue-generated directly by a transit property. The direct revenue figures are based on estimates for FY2019 reported in DRPT's FY19 Six-Year Improvement Plan (SYIP). Because PAT has no revenue coming from advertising, contract services, or other revenue streams, only fare revenue is listed in Table 33 below. This plan assumes fare revenue will escalate at 3 percent annually, per the growth assumption suggested in DRPT in its TDP guidance. This plan assumes modest fare increases of 2 percent annually.

Fare revenue for new service is based off the estimated changes in ridership developed in Chapter 4, multiplied by PAT's average fare revenue per trip of 57 cents. Because this TDP involves conversion of some demand response service to fixed route service, ridership is anticipated to decline during the short term period (FYs 2020 through 2023), but it is expected to increase in the mid- and long-term.

Operating Grant Revenue

The Federal government, Commonwealth of Virginia, and local jurisdictions provide operating assistance to PAT in the form of grants. The base year allocation for federal and state funding is derived from DRPT's FY19 Six-Year Improvement Plan (SYIP).

PAT's federal funding comes from the Appalachian Development Public Transportation Assistance Program (ADTAP). This funding is expected to grow year-over-year by 2.1 percent, the nationwide average growth of the Federal Formula fund program.

State funding is escalated off the FY19 base year according to changes DRPT's projected statewide transit operating assistance budget from FY20 to FY24 as reported by the FY19 SYIP. After FY24, state operating assistance is assumed to grow by 3 percent.

Local funding is assumed to grow by 3 percent annually.

Operating Costs

Operating costs are assumed to grow by 3 percent a year over the FY18 cost per revenue hour of $30.56. The operating budget assumes that the TDP short-term recommendations are implemented in FY20, with the mid-term recommendations introduced in FY24.

6.1.2 Capital Budget Assumptions

Capital Revenue

PAT relies of Federal ADTAP funding for most of its capital needs. The capital budget assumes federal funds will continue to support 80 percent of capital needs, with 16 percent coming from state matching funds, and 4 percent from local matching funds.

Capital Costs

PAT's capital costs are derived from the CIP outlined in Chapter 4. Vehicle costs are anticipated to increase 4 percent annually per DRPT guidance; all other costs have been escalated from FY19 values by 3 percent a year to account for inflation, also per DRPT guidance.

6.2 OPERATING BUDGET

Table 33 presents the 10-year operating budget forecast for PAT. The budget includes the cost of operating service in each year based on the changes outlined in the TDP and assumptions related to cost escalation.

Although the net cost of providing the service called for in the TDP recommendations is anticipated to be zero, declines in ridership and, thus, fare revenue are anticipated in the short-term due to the service type conversion from demand response to fixed route. If no funding is made available to cover this gap, the remaining amount of demand response service provided will be reduced to align with available resources.

Because federal and state funding are not anticipated to keep pace with 3 percent annual increases in the cost of providing service, local funding required just to maintain existing service between FYs 2020 and 2023 will increase more quickly than 3% per year. Despite PAT's conversion of demand response service to fixed route service in FY 2020, this plan assumes that local funding will be provided during those years to cover what would have been the cost of maintaining existing service, minus other revenue sources, absent these changes.

Mid-term recommendations in FY2024, which are anticipated to lead to ridership increases that surpass current ridership, will lower the amount of local funding that will need to be provided in that year, and will actually reduce the overall cost of service between FY 2023 and FY 2024. From FYs 2024 through 2028, local funding is anticipated

to cover the difference between total operating costs, including the cost of implementing TDP recommendations, minus other sources of revenue (fares, federal funding, and state funding).

6.3 CAPITAL BUDGET

Table 34 presents the 10-year capital budget forecast for PAT. In 2019 dollars, PAT's capital needs are expected to average $119,300 per year over the 10-year TDP planning timeframe. Needs fluctuate considerably year-over-year based on fleet replacement needs.

6.4 CONCLUSION

As PAT relies extensively on grants to support its operating and capital budget, the agency is susceptible to changes in funding and policy at the state and federal level, including:

- Changes to, or abolishment of, the ADTAP federal funding program
- Major increases in transit service within Virginia (e.g. Silver Line Phase II) that will reduce PAT's share of state operating assistance.
- Changes in state capital match rates.

Any fluctuations in local general fund revenue will impact the ability of jurisdictions to support PAT service.

Table 33: Operating Budget Forecast (Figures in 1000s)

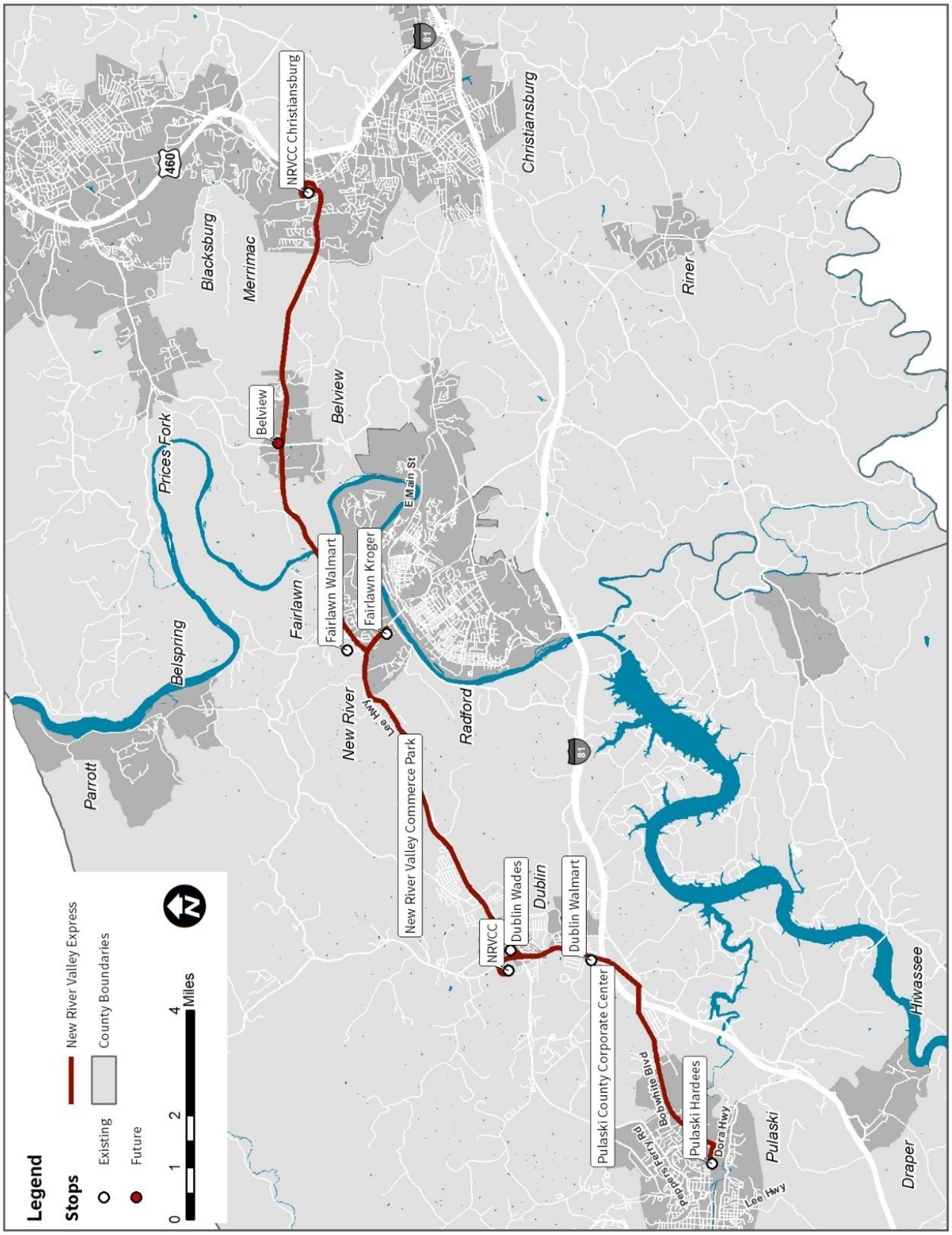
		Short-Term Recommendations				Mid-Term Recommendations				
Fiscal Year	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Operating Revenue										
Fare Revenue	$ 80.00	$ 80.80	$ 81.61	$ 82.42	$ 83.25	$ 84.08	$ 84.92	$ 85.77	$ 86.63	$ 87.49
Operating Revenue Subtotal	$ 80.00	$ 80.80	$ 81.61	$ 82.42	$ 83.25	$ 84.08	$ 84.92	$ 85.77	$ 86.63	$ 87.49
Grants										
Federal	$ 262.20	$ 267.71	$ 273.33	$ 279.07	$ 284.93	$ 290.91	$ 297.02	$ 303.26	$ 309.63	$ 316.13
State	$ 143.65	$ 143.65	$ 143.65	$ 143.65	$ 145.08	$ 146.53	$ 150.93	$ 155.46	$ 160.12	$ 164.93
Local	$ 118.55	$ 130.38	$ 142.63	$ 155.31	$ 167.00	$ 169.55	$ 179.13	$ 189.07	$ 199.38	$ 210.08
Grant Revenue Subtotal	$ 524.40	$ 541.74	$ 559.60	$ 578.02	$ 597.01	$ 607.00	$ 627.09	$ 647.79	$ 669.14	$ 691.14
Total Revenue	**$ 604.40**	**$ 622.54**	**$ 641.21**	**$ 660.45**	**$ 680.26**	**$ 691.08**	**$ 712.01**	**$ 733.56**	**$ 755.76**	**$ 778.63**
Operating Costs										
Existing Service	$ 604.40	$ 622.54	$ 641.21	$ 660.45	$ 680.26	$ 700.67	$ 721.69	$ 743.34	$ 765.64	$ 788.61
Net Cost of TDP Recommendations	$ -	$ 16.45	$ 16.61	$ 16.78	$ 16.95	$ (9.58)	$ (9.68)	$ (9.78)	$ (9.88)	$ (9.97)
Total Operating Costs	**$ 604.40**	**$ 638.98**	**$ 657.82**	**$ 677.23**	**$ 697.21**	**$ 691.08**	**$ 712.01**	**$ 733.56**	**$ 755.76**	**$ 778.63**
Additional Funding Need to Implement TDP Recommendations	**$ -**	**$ 16.45**	**$ 16.61**	**$ 16.78**	**$ 16.95**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**

Table 34: Capital Budget Forecast (Figures in 1000s)

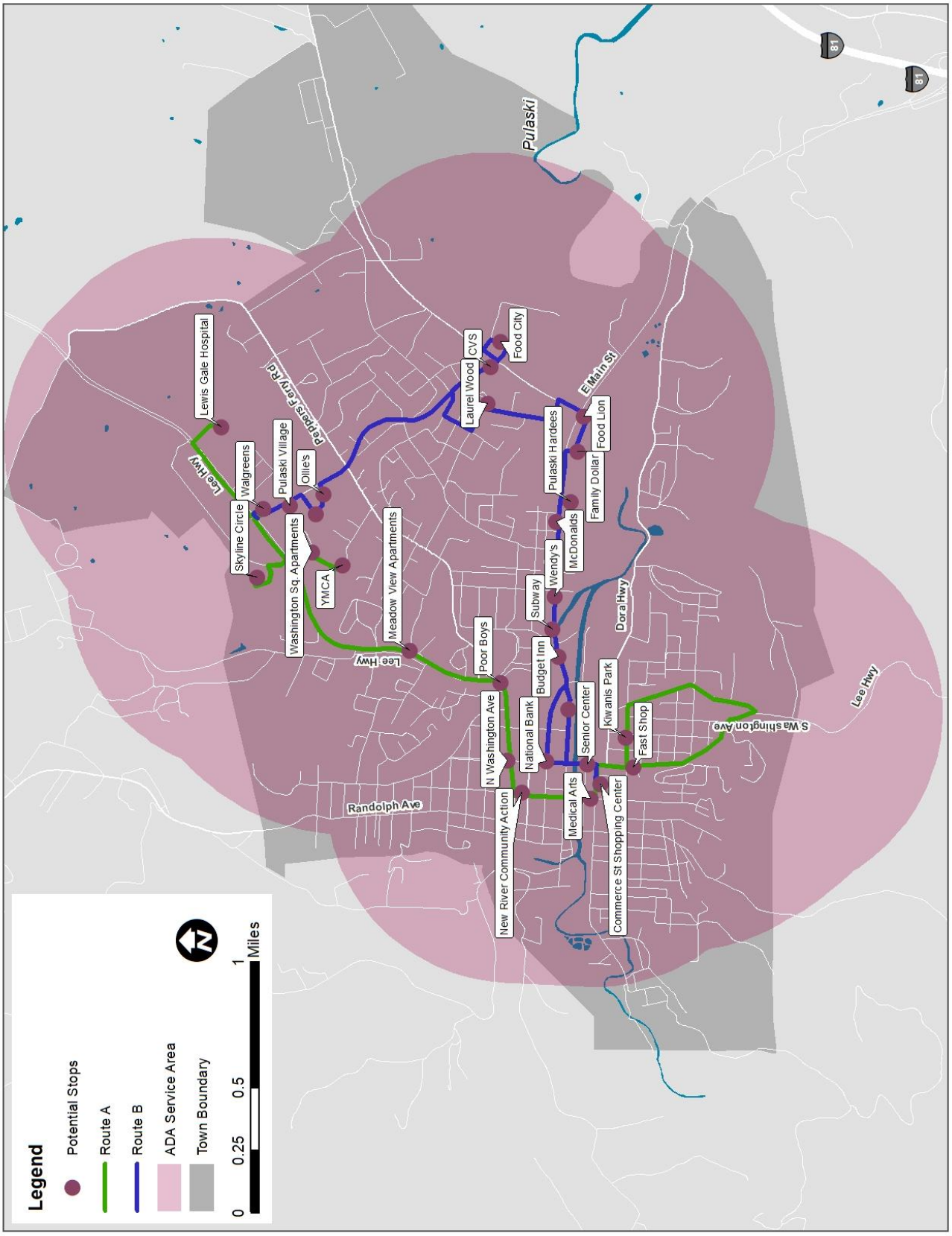
Fiscal Year	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Capital Revenue										
Federal	$ 6.45	$ 64.88	$ 67.41	$ 189.02	$ 203.79	$ 143.74	$ 149.42	$ 81.62	$ 161.45	$ 88.12
State	$ 1.29	$ 12.98	$ 13.48	$ 37.80	$ 40.76	$ 28.75	$ 29.88	$ 16.32	$ 32.29	$ 17.62
Local	$ 0.32	$ 3.24	$ 3.37	$ 9.45	$ 10.19	$ 7.19	$ 7.47	$ 4.08	$ 8.07	$ 4.41
Total Capital Revenue	**$ 8.06**	**$ 81.10**	**$ 84.26**	**$ 236.28**	**$ 254.74**	**$ 179.68**	**$ 186.77**	**$ 102.03**	**$ 201.81**	**$ 110.15**
Capital Costs	**$ 8.06**	**$ 81.10**	**$ 84.26**	**$ 236.28**	**$ 254.74**	**$ 179.68**	**$ 186.77**	**$ 102.03**	**$ 201.81**	**$ 110.15**

Appendix A: Route Change Sheets

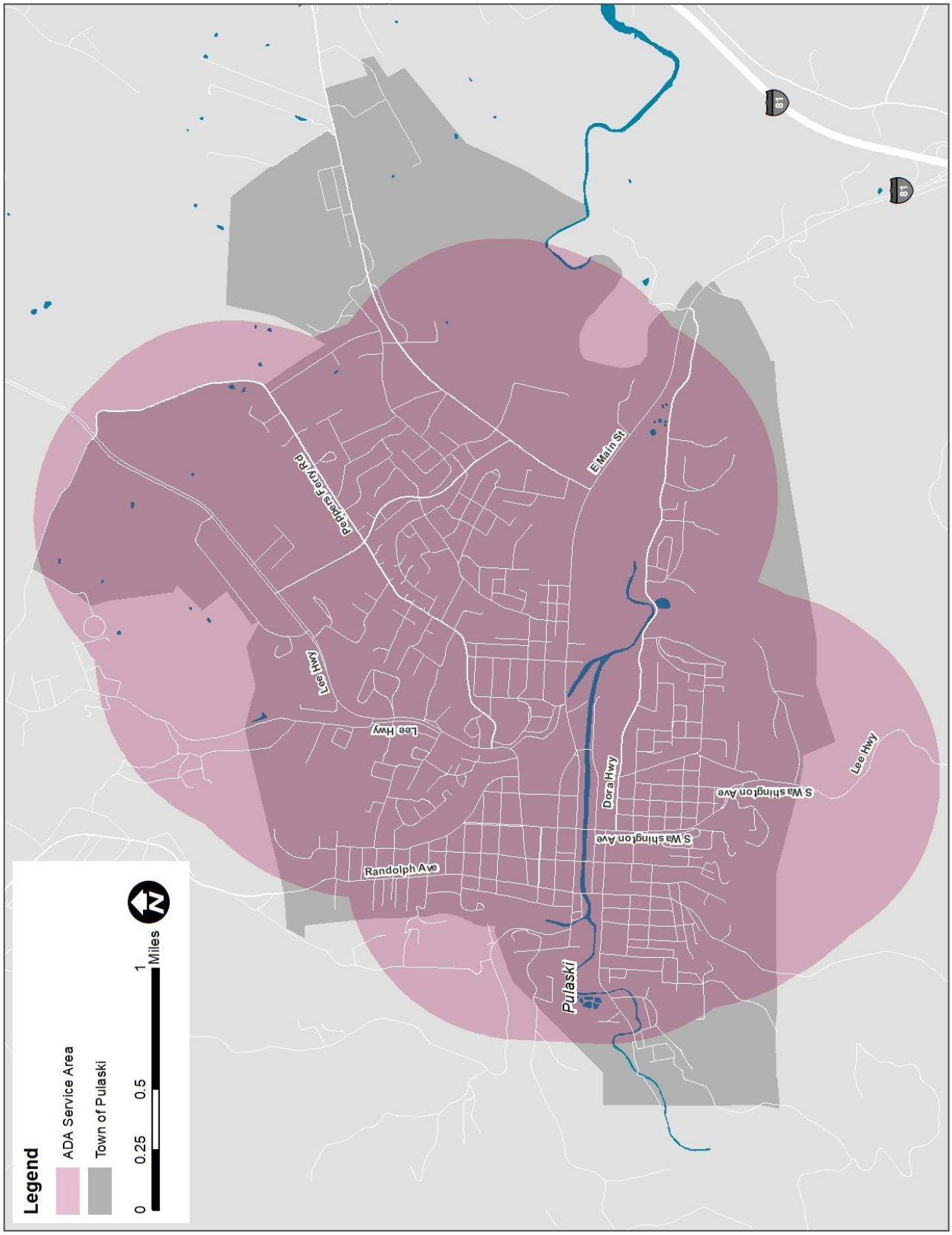
NRV Express			Existing	Proposed
	From		Pulaski Hardees	Pulaski Hardees
	To		Dublin/Fairlawn/NRVCC Christiansburg	Dublin/Fairlawn/NRVCC Christiansburg
Service Span	**Weekday**		7:20am-4:55pm	7:00am-6:00pm
	Saturday		10:00am-2:00pm	9:00am-3:00pm
	Sunday		--	
Service Frequency	**Weekday**	**Peak**	2 trips to Christiansburg, 6 trips to Fairlawn	4 trips to Christiansburg, 6 trips to Fairlawn (Mid Term) / 10 trips to Christiansburg (Long Term)
		Off-Peak	--	--
	Saturday		4 trips to Dublin	4 trips to Dublin (Mid Term) / 6 trips to Christiansburg (Long Term)
	Sunday		--	--
Description of Change	In the mid term, service will be added to the route so it will have 4 daily trips to Christiansburg and the schedule will be adjusted so the route will have a timed transfer at the Fairlawn Kroger with Radford Transit Route 20. Additionally, a stop will be added in Belview. In the long term, all 10 weekday trips will go to Christiansburg on weekdays, and on Saturdays, 6 trips will be operated and all will go to Christiansburg.			
Justification for Change	The route serves several regional destinations with high demand for transit during peak and off-peak periods. Additionally, a timed transfer with Radford Transit Route 20 would allow Pulaski residents to reach Carillion Hospital in a convenient manner. Service between Belview and Christiansburg/Blacksburg was identified as a service need in the gaps analysis.			
Areas with Reduced Service	None			
Implementation Timeframe	Mid term (3 to 10 years) / Long term (10 plus years)			


Legend
Stops
Existing
Future
New River Valley Express
County Boundaries
0
1
2
4
Miles
N
NRVCC Christiansburg
Belview
Fairlawn Walmart
Fairlawn Kroger
New River Valley Commerce Park
NRVCC
Dublin Wades
Dublin Walmart
Pulaski County Corporate Center
Pulaski Hardees
Dora Hwy
Peppers Ferry Rd
Bobwhite Blvd
Lee Hwy
E Main St
Lee Hwy
460
81
Blacksburg
Merrimac
Christiansburg
Riner
Prices Fork
Belview
Belspring
Fairlawn
New River
Radford
Parrott
Dublin
Pulaski
Draper
Hiwassee

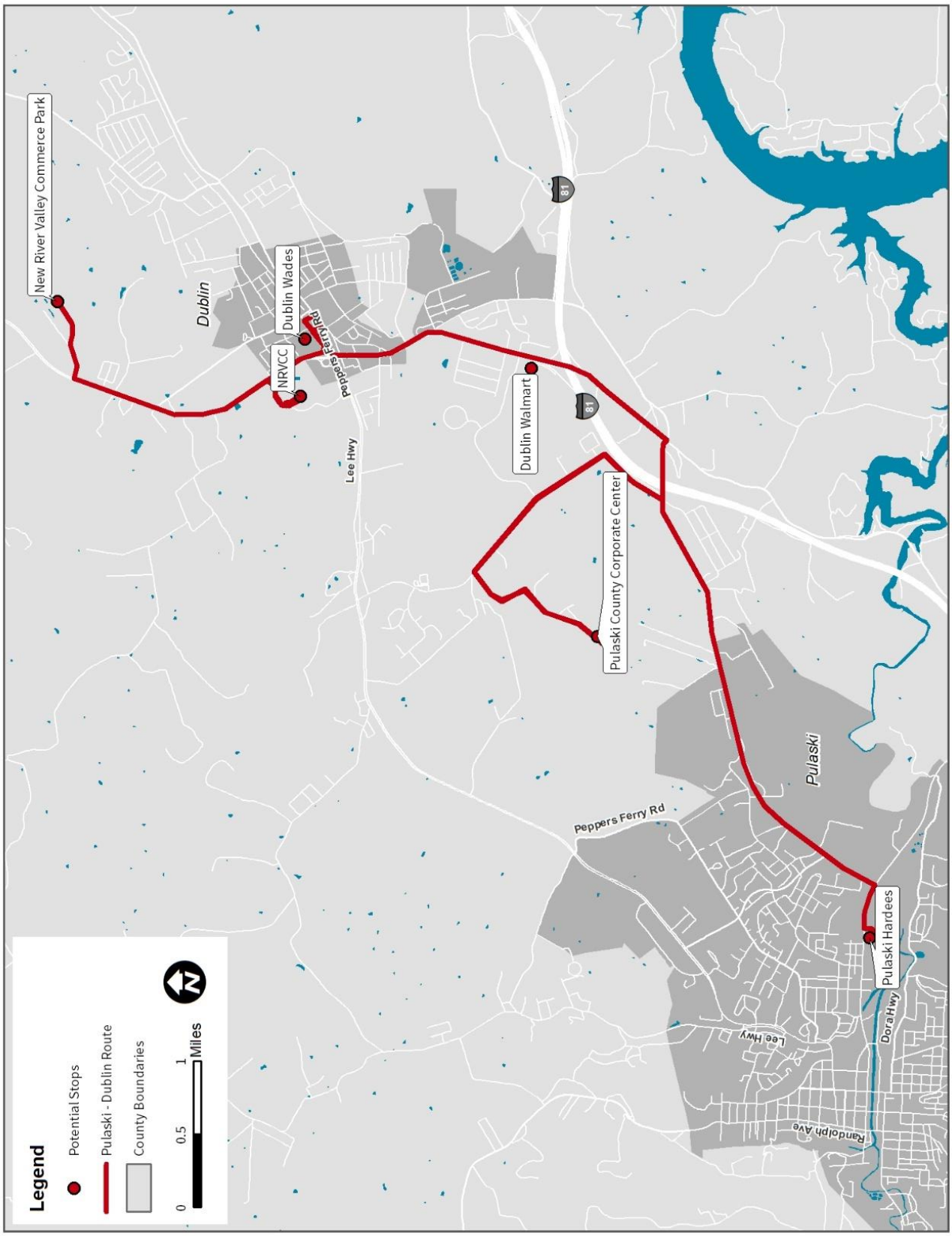
Fixed Routes A & B			Existing	Proposed
	From		--	A: Commerce St Shopping Center to LewisGale Hospital B: Commerce St Shopping Center to Walgreens
	To		--	
Service Span	**Weekday**		--	7:00am-5:00pm (short term) / 7:00am-6:00pm (mid term)
	Saturday		--	9:00am-3:00pm
	Sunday		--	--
Service Frequency	**Weekday**	**Peak**	--	30
		Off-Peak	--	--
	Saturday		--	60
	Sunday		--	--
Description of Change	Two new fixed routes will be implemented to replace some of the existing demand response service that operates within the Town of Pulaski. Route A will primarily use Route 11, while Route B will primarily use Main Street and Memorial Drive. A timed transfer will be available at the Commerce Street Shopping Center and at the Walgreens on Memorial Drive. The routes will operate every half-hour.			
Justification for Change	Pulaski currently over 700 calls per day for its demand response service and has outgrown this type of service. Implementing fixed routes will provide a consistent schedule for the majority of its current pick-up locations and will be more efficient than the current system. 81 percent of current ridership will be within ¼-mile of these routes.			
Areas with Reduced Service	The current wait times vary from 15 minutes to 60 minutes, the fixed routes will provide a similar level of service that is more efficient and consistent.			
Implementation Timeframe	Short term (1 to 3 years) / Mid term (3 to 10 years)			


Legend
Potential Stops
Route A
Route B
ADA Service Area
Town Boundary
0
0.25
0.5
1
Miles
Pulaski
E Main St
Lee Hwy
Peppers Ferry Rd
Randolph Ave
Dora Hwy
S Washington Ave
Lewis Gale Hospital
Walgreens
Pulaski Village
Ollie's
Skyline Circle
Washington Sq. Apartments
YMCA
Meadow View Apartments
Laurel Wood
CVS
Food City
Pulaski Hardees
Food Lion
Family Dollar
McDonalds
Wendy's
Subway
Budget Inn
Poor Boys
N Washington Ave
National Bank
Senior Center
Kiwanis Park
Fast Shop
Medical Arts
Commerce St Shopping Center
New River Community Action

Demand Service			Existing	Proposed
	From		Town of Pulaski	Within Town of Pulaski more than ¼-mile from Routes A and B
	To		--	--
Service Span	**Weekday**		7:00pm-5:00pm	7:00am-5:00pm (short term) / 7:00am-6:00pm (mid term)
	Saturday		9:00am-3:00pm	9:00am-3:00pm
	Sunday		--	--
Service Frequency	**Weekday**	**Peak**	Varies	Varies
		Off-Peak	--	--
	Saturday		Varies	Varies
	Sunday		--	--
Description of Change	Two new fixed routes will be implemented to replace some of the existing demand response service that operates within the Town of Pulaski. Route A will primarily use Route 11, while Route B will primarily use Main Street and Memorial Drive. A timed transfer will be available at the Commerce Street Shopping Center and at the Walgreens on Memorial Drive. The routes will operate every half-hour. Demand response service will be offered within 3/4-miles of Routes A and B.			
Justification for Change	Pulaski currently over 700 calls per day for its demand response service and has outgrown this type of service. Implementing fixed routes will provide a consistent schedule for the majority of its current pick-up locations and will be more efficient than the current system.			
Areas with Reduced Service	The current wait times vary from 15 minutes to 60 minutes, the fixed routes plus the demand response service will provide a similar level of service that is more efficient and consistent.			
Implementation Timeframe	Short term (1 to 3 years) / Mid term (3 to 10 years)			


81
81
E Main St
Peppers Ferry Rd
Lee Hwy
Lee Hwy
Dora Hwy
S Washington Ave
S Washington Ave
Lee Hwy
Randolph Ave
Pulaski
Legend
ADA Service Area
Town of Pulaski
0
0.25
0.5
1
Miles
N

Pulaski – Dublin Route			Existing	Proposed
	From		--	Pulaski Hardees
	To		--	New River Valley Commerce Park
Service Span	**Weekday**		--	6:00am-9:00am; 3:00pm-6:00pm
	Saturday		--	--
	Sunday		--	--
Service Frequency	**Weekday**	Peak	--	4 trips
		Off-Peak	--	--
	Saturday		--	--
	Sunday		--	--
Description of Change	This new route would connect Pulaski with the Pulaski County Corporate Center and the New River Valley Commerce Park.			
Justification for Change	The Corporate Center and Commerce Park are both projected to see significant growth in employment over the next ten years and are both major regional destinations			
Areas with Reduced Service	None			
Implementation Timeframe	Mid term (3 to 10 years)			


New River Valley Commerce Park
Dublin
Dublin Wades
NRVCC
Pepper Ferry Rd
Lee Hwy
Dublin Walmart
Pulaski County Corporate Center
Pulaski
Peppers Ferry Rd
Pulaski Hardees
Dora Hwy
Lee Hwy
Randolph Ave
Legend
Potential Stops
Pulaski - Dublin Route
County Boundaries
0
0.5
1
Miles