



VDOT Multimodal Planning Grant: EMPLOYMENT MOBILITY

January 2009



prepared for
Virginia Department of Transportation

prepared by
New River Valley Planning District Commission
in cooperation with the U.S. Department of Transportation,
Federal Highway Administration and the Multimodal Office

The contents of this report reflect the views of the NEW RIVER VALLEY PLANNING DISTRICT COMMISSION (PDC). The PDC is responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the Federal Highway Administration and the Multimodal Office. This report does not constitute a standard, specification, or regulation.

.....

FHWA or the Multimodal Office acceptance of this report as evidence of fulfillment of the objectives of this planning study does not constitute endorsement/approval of the need for any recommended improvements nor does it constitute approval of their location and design or a commitment to fund any such improvements. Additional project level environmental impact assessments and/or studies of alternatives may be necessary

TABLE OF CONTENTS



EXECUTIVE SUMMARY	v
I. INTRODUCTION	1
1.1 Project Overview	1
1.2 Project Area Background	3
II. METHODS	5
2.1 Multimodal Plan Elements	5
2.2 Project Timeline	5
2.3 Stakeholders Group	5
2.4 Park & Ride Survey	6
Creation	6
Administration	6
2.5 Employee Survey	7
Creation	7
Administration	7
2.6 Consultants	8
III. RESULTS	9
3.1 Park & Ride Survey	9
3.2 Employee Survey	10
Part I: Transportation Information	10
Part II: Transportation Barriers	11
Part III: Transportation Solutions	11
Part IV: Demographics	13
IV. RECOMMENDATIONS	31
4.1 Benefits of Public Transportation	32
4.2 Routes	33

4.3 Semi-fixed Routes	65
4.4 Transit Hubs	73
4.5 Costs	73
Capital Costs	73
Operational Costs	74
4.6 Cost Sharing and Matching Funds.....	74
4.7 Scheduling	75
4.8 Vehicles	76
4.9 Implementation.....	76
 V. CONCLUSION	 79
 APPENDIX A - Park & Ride Survey	 A1
APPENDIX B - Employee Transportation Survey.....	A2
APPENDIX C - Park & Ride Survey Results	A10
APPENDIX D - Employee Survey Results	A14
APPENDIX E - A Vision for New River Valley Commuter Employment Transportation	A36
APPENDIX F - Press and Publicity.....	A103

LIST OF FIGURES

Region-wide Map.....	1
Region map with labeled corridors	2
Park & Ride Map	15
Employment Centers: NRV	17
Employment Centers: Blacksburg, Christiansburg, Radford	19
Commuter Origin: NRV	21
Commuter Destinations: NRV	23
Commuter Destinations: Christiansburg, Blacksburg	25
Family Income Less than \$35,000	27
Physically Disabled Persons	29
NRV 7 Routes	35
Route 1: Glen Lyn to Blacksburg	39
Route 2: Pearisburg to Dublin.....	43
Route 3: Draper to Fairlawn	47
Route 4: Radford to Christiansburg/Falling Branch	51
Route 5: Floyd to Downtown Christiansburg.....	53
Route 6: Blacksburg - Radford - Christiansburg Loop	59
Route 7: Christiansburg to Shawsville	63
Vanpool Service Area: Blacksburg-Christiansburg-Radford	67
Vanpool Service Area: Pulaski	69
Vanpool Service Area: Pearisburg	71

LIST OF TABLES

Transportation Solutions Chart	12
Listing of Route Length and Estimated Time for Seven Proposed Routes	34
Glen Lyn to Blacksburg Route	37
Pearisburg to Dublin Route	41
Draper to Fairlawn Route	45
Radford to Christiansburg Industrial Park Route	49
Floyd to Christiansburg Route	53
Blacksburg-Radford-Christiansburg Route	57
Christiansburg to Shawsville Route	61
Example Morning Schedule for Glen Lyn to Blacksburg	75
Example Evening Schedule for Blacksburg to Glen Lyn	76

EXECUTIVE SUMMARY



This Employment Mobility study is prepared through funding under the Multimodal Planning Grant administered by the Virginia Department of Transportation (VDOT). The purpose of this study was to develop a vision for rural transportation within the New River Valley. The eighteen-month project analyzed commuter patterns, barriers to transportation, and explored transportation solutions through two surveys and the guidance of a knowledgeable stakeholder group. Located in Southwest Virginia, the New River Valley includes the Counties of Giles, Floyd, Montgomery, and Pulaski, and the Towns therein, and the City of Radford.

VDOT defines a Multimodal and Land Use Plan as one that educates and trains in multimodal and land use planning and develops an implementable plan. This project's scope can be summarized in the following four main components:

- Creation of local stakeholders group to guide progress of project
- Design and implementation of two surveys addressing regional commuting patterns, transportation barriers, and assessment of interest in alternative transportation
- Coordination of region's public and private transportation providers to explore multimodal solutions to employee mobility in the New River Valley
- Drafting of first-phase recommendations for a regional transit system by current transportation providers

Project progress was overseen by a stakeholders group that was tasked with providing input concerning survey creation, identifying both formal and informal existing Park & Ride lots as part of the survey process, and promoting the survey after its completion. The stakeholders played an active and continuous role during the Employment Mobility study, meeting regularly throughout the project to provide input and feedback.

The first survey, administered in person at Park & Ride lots across the region, was created in order to address how formal and informal Park & Ride lots are being utilized, and assess the ability for these lots to serve as rural bus stops along a fixed or semi-fixed transit route. The surveys were conducted over a four-month period, with each lot surveyed more than once. To broaden the

project's demographics beyond Park & Ride lot users, a more comprehensive survey was created in order to target employees across the entire region. This survey focused on four main categories: Transportation Information, Transportation Barriers, Transportation Solutions, and Demographics. Demand was illustrated through a series of maps.

The scope of work for the study was broken into two segments: the tasks completed by the New River Valley Planning District Commission (PDC) and the tasks completed by the selected Consultants. The PDC performed all activities concerning stakeholders meetings, survey distribution, and data entry, while the Consultants were tasked with technical and transit specific activities. Using Blacksburg Transit (BT), Pulaski Area Transit (PAT), and Community Transit (CT) (the region's existing transportation providers) to analyze the survey data, the project was able to draw on the knowledge and expertise of those already involved in transit.

As an enhancement to the project, the PDC applied for and was awarded grant funds through the Transportation and Housing Alliance Toolkit (THA) program to develop maps of the region identifying and analyzing disabled, aging, and low-income populations within the project area and to located other points of interest such as employment center and health care providers.

Results of both surveys point to an overall interest in both carpooling and public transportation. Other than for those employees who live and work in the region's urban areas, walking and biking to work was an infeasible form of commuting. Over half (55%) of the Employee Survey respondents reported that they would be willing to pay \$2 for a one-way trip and \$3.50 for a round trip. Nearly 80% of those who said they would *not* be willing to pay those prices for public transportation, claimed that they would be willing to pay *some* amount. Most responses were females (67%) who fell into the 45-54 age bracket (29%). Over half of those who participated resided in Montgomery County, namely the Towns of Christiansburg and Blacksburg.

The recommendations within this report were based on a review of local comprehensive plans and other studies as well as a review of data provided by the NRVPCD from the employment mobility survey and related data collection efforts. These data were used in conjunction with the expertise from the group to make the following recommendations:

- Service providers including BT, CT, and PAT, in conjunction with other service providers can serve the needs of commuters in this region.
- Seven routes would best service commuters in the New River Valley including:
 1. Glen Lyn to Blacksburg
 2. Pearisburg to Dublin
 3. Draper to Fairlawn
 4. Radford to Christiansburg/Falling Branch
 5. Floyd to Downtown Christiansburg
 6. Blacksburg to Radford to Christiansburg
 7. Christiansburg to Shawsville
- Additional transportation services should be included to transport riders from transit stops to their employment centers. It is proposed that this will be accomplished through a network of vanpools running on semi-fixed routes. Maps of the proposed vanpool system can be found in Section 4.3 of the report.
- Refinements of this vision should focus on connections among routes and with other service providers via a hub concept.
- At current 2009 prices, the anticipated cost of vehicles range from \$50,000 to \$360,000 per vehicle, depending on whether vans or buses are chosen for a particular route or area. Operational costs are estimated to be between \$60,000 to \$100,000 per route, based on hours of operation, deadhead miles, number of stops, price of fuel, etc. Additional funding would also need to be set aside for replacement vehicles.
- Cost sharing and matching funds programs such as those provided by Federal and State government should be thoroughly explored and sought after.
- Scheduling should initially focus on servicing commuters that work Monday through Friday, 8 AM to 5 PM. For example, the Glen Lyn to Blacksburg route would start at 6:20 AM and end at approximately 7:44 PM. These route hours would be expanded as funding and ridership demand allows.
- Vehicles could range from standard 12 person vans, to 15 or 21-passenger body on chassis (BOC) vans, which allows for wheelchairs and includes a high ceiling so that passengers can easily stand upright while entering or exiting the vehicle. Other options include using 30, 35, or 40-foot buses such as those used by Blacksburg Transit.

- A phased approach is recommended to implement the seven routes, including:
 1. Identify roles and services for each agency
 2. Establish a formalized NRVPC and BCM-MPO collaboration focused on expanding the vision of NRV transportation services
 3. Identify potential sponsors, partners, or other funding mechanisms
 4. Refine, solidify, and market the vision
 5. Launch Commuter Transportation Service based on the seven routes

Regional public transportation is supported in many of the localities' Comprehensive Plans as well as the Metropolitan Planning Organization's (MPO) 2030 Transportation Plan, which states that "transportation via transit, bicycle, walking, air, and intercity bus is an integral part of the region's transportation system and the [MPO 2030 Transportation] Plan recommends expanding the role that these modes of travel provide in the region..."

Implementation of the routes can take place gradually, and it is most likely that each route would be launched separately. Ideally however, all of the routes would be launched within a relatively short time frame (e.g. 2-3 years), as the need for employee commuter transportation is apparent, and the need will likely grow as the population increases in the region. These recommendations serve as the first of many planning phases, and the PDC will be working to procure ongoing funding in order to continue this study.

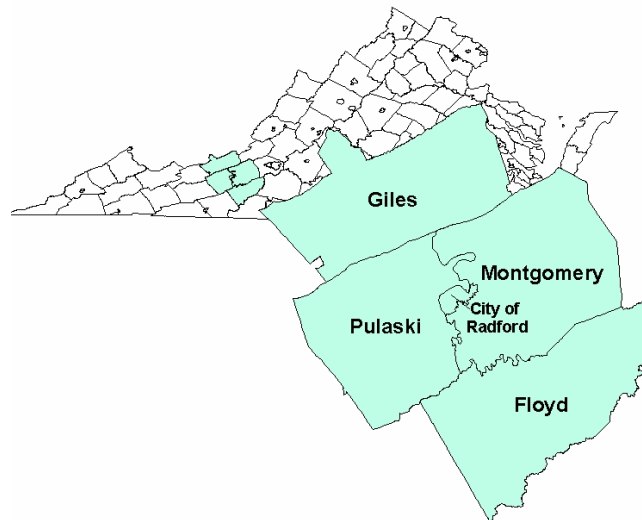
I. INTRODUCTION



1.1 Project Overview

The Employment Mobility project is the second phase to a public mobility project funded by VDOT in FY 2005-2006. The Multimodal Planning program aimed to educate and train localities in multimodal and land use planning as well as develop implementable plans. Conducted by the New River Valley Planning District Commission (PDC), this study focused on the four county and one city region that makes up the New River Valley, in order to address gaps in rural transportation and to evaluate the region for employee-based transit. Located in Southwest Virginia, this area includes the Counties of Giles, Floyd, Montgomery, and Pulaski, and the Towns therein, and the City of Radford (Figure 1).

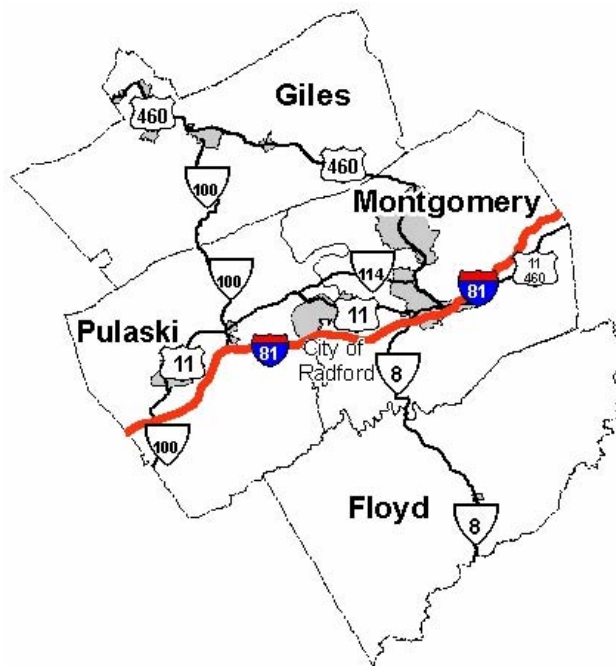
Figure 1 - New River Valley



The New River Valley is bisected by Interstate 81, with U.S. Routes 460, 11, and State Routes 100, 114, and 8 serving as the major corridors providing connectivity between the towns (Figure 2). All localities in the region retain more than 50% of their residents for local employment except for Floyd County, which retains 43%. For localities whose residents seek employment beyond their jurisdiction, often they remain in the region. For instance, only 7% of Pulaski County, 8% of Giles County, 12% of Montgomery County, and 30% of Floyd County residents commute beyond the region.¹

¹ Virginia's New River Valley Regional Data Book 2006. "Labor Force Commuting Patterns" (2006). Pg. 48. Online at: <http://www.nrvpdc.org/08Databook/workforce08.pdf> .

Figure 2 – New River Valley Major Corridors



The New River Valley has acknowledged the importance of transit since June of 1947, when the Blacksburg Transit Company (of no relation to present day Blacksburg Transit) started providing bus service.² Then in 1976, Senior Services began running routes catered to the elderly and disabled.³ Blacksburg Transit and Community Transit soon followed, in 1983 and 1986 respectively, and Pulaski Area Transit was founded in 2006 under the umbrella of Senior Services⁴. RIDE Solutions, a regional ridesharing program was formed in 2003 to generate carpool matches for individuals with similar routes.⁵ And in a partnership with the Roanoke Valley, the Smart Way is a commuter bus service that links the Roanoke Valley to the New River Valley.⁶ More information on the areas existing transit can be found in Appendix E, page A-42.

To understand commuting patterns in the region, a Park & Ride lot user survey was created. This survey addressed how formal and informal Park & Ride lots are being utilized, and assessed the ability for these lots to serve as rural bus stops along a fixed or semi-fixed transit route. Questions designed to understand lot use frequency, origin/destination, mode of transportation, and whether public transit was of interest were included. Demand was illustrated through a series of

² *Richmond Times-Dispatch*. (1947). "Town Buses Begin Runs at Blacksburg." June 7, 1947. Richmond, Virginia.

³ Senior Services. Online at <http://nrvseniorservices.org/>

⁴ Blacksburg Transit: Online at: <http://www.btransit.org/> and Pulaski Area Transit: online at: <http://www2.nr.edu/transit/pat.asp>

⁵ RIDE Solutions. Online at: <http://www.ridesolutions.org/>

⁶ Smart Way Bus. Online at: <http://www.smartwaybus.com>

maps. To further evaluate transportation needs, the PDC also created a survey targeting employees across the region to identify commuting routines and work hours, points of origin versus destination points, barriers to transportation, and to explore alternative modes of commuting. A copy of each survey can be found in the Appendix section.

As an enhancement to the project, the PDC applied for and was awarded grant funds through the Transportation and Housing Alliance Toolkit (THA) program to develop maps of the region identifying and analyzing disabled, aging, and low-income populations within the project area who could benefit from the Employment Mobility Study. The Transportation and Housing Alliance Toolkit provided the PDC the opportunity to map demographic data at the block group level, including disabled populations, low income, multi-unit housing facilities and several other demographic categories. These maps serve as indicators for transportation need. An additional set of geo-coded maps illustrate points of demand for disadvantaged populations, such as, health care providers, departments of social security, and financial institutions.

The final component of the program pulled together the region's current public transportation providers, Blacksburg Transit, Community Transit, and Pulaski Area Transit, for an analysis of the data and recommendations for meeting commuter needs with region-wide public transportation.

The project also involved continuous input from a stakeholders group formed during the first phase of this study. This group met throughout the project in order to hear progress and give input.

1.2 Project Area Background

Although the New River Valley is rural in comparison to many other localities in Virginia, the region contains two urban centers, the Towns of Blacksburg and Christiansburg, which are more densely populated. These two Towns and parts of Montgomery County make up the Blacksburg-Christiansburg Metropolitan Planning Organization (MPO), a Federal requirement for any urbanized area with a population greater than 50,000.⁷ In further compliance of Federal

⁷ Blacksburg/Christiansburg/Montgomery Metropolitan Planning Organization. (2008). Online at: <http://www.montva.com/departments/mpo/>

requirements, the MPO developed a transportation plan listing projected transportation improvements as well as projected travel demands to the year 2030.

Even though the MPO's 2030 Transportation Plan was written for the Towns of Blacksburg and Christiansburg and the surrounding urbanized portions of Montgomery County, it occasionally speaks of region-wide improvements as well. In the plan's Executive Summary it states that "transportation via transit, bicycle, walking, air, and intercity bus is an integral part of the region's transportation system and the [MPO 2030 Transportation] Plan recommends expanding the role that these modes of travel provide in the region...the Plan recommends expansion to transit in the region, park-and-ride lots, bikeways and walkways, and intercity transportation by rail, air, and bus."⁸

The *Radford Area including Fairlawn 2020 Transportation Plan* was developed as a joint effort between the Virginia Department of Transportation (VDOT), the City of Radford, Pulaski County (Fairlawn) and Montgomery County.⁹ The purpose of this study was to evaluate the existing transportation system and future demand in the area and to recommend a set of transportation improvements that could best meet existing and future transportation infrastructure needs.⁹ Currently, the Radford and Fairlawn areas are only partially served by mass transit. Tartan Transit runs two routes on weekdays: a "Campus Loop" serving predominantly Radford University students and a "City Loop," which begins at 2:30pm and makes a stop at two shopping centers and the Technology Park once an hour until 8:30pm. The City Loop does not run on the weekend.¹⁰

This report explores the viability of rural public transportation in the New River Valley. The recommendations put forth in this study were not only developed with data from two survey efforts and the input of a stakeholder group, but in conjunction with other correlating studies on transportation and localities' comprehensive plans in hopes of creating one transportation plan that aims to fulfill the needs of commuters in the entire New River Valley.

⁸ Blacksburg/Christiansburg/Montgomery Area 2030 Transportation Plan Technical Report. (November 2005). Pg. 5 Online at: <http://www.montva.com/departments/mpo/downloads/bcmfinal2030techreport.pdf>

⁹ *Radford Area Including Fairlawn 2020 Transportation Plan*. (2001). Pg. 1 Online at: http://www.virginiadot.org/projects/resources/Radford_plansummary_FINAL.pdf

¹⁰ Radford University Tartan Transit. (2009) Online at: <http://parking.asp.radford.edu/Information/TransitSchedule.htm>

II. METHODS



2.1 Multimodal Plan Elements

VDOT defines a Multimodal and Land Use Plan as one that educates and trains in multimodal and land use planning and develops an implementable plan. This project's scope can be summarized in the following four main components:

- Creation of local stakeholders group to guide progress of project
- Design and implementation of two surveys addressing regional commuting patterns, transportation barriers, and assessment of interest in alternative transportation
- Coordination of region's public and private transportation providers to explore multimodal solutions to employee mobility in the New River Valley
- Drafting of first-phase recommendations for a regional transit system by current transportation providers

2.2 Project Timeline

The work program for the Employment Mobility project was broken into two segments: PDC tasks and Consultant's tasks. Under the tasks to be completed by the PDC, monthly Stakeholders Meetings and Demand Assessment began first. The Demand Assessment portion of the project spanned the largest amount of hands-on time in order to develop and distribute surveys. Following the completion of Demand Assessment and the tabulation of all survey data, Inventory Illustration began in order to map important data findings. The remaining tasks of System Design were delegated to the Consultants.

2.3 Employee Mobility Stakeholders Group

During the 2004-2006 Coordinated Human Service Mobility project, a stakeholders group was created in order to oversee project development, offer input, and review project findings. This group included representation from Blacksburg Transit, Community Transit, and Pulaski Area Transit (the region's existing transportation providers), government officials, and other transportation experts from the New River Valley.¹¹ At the project's end, the stakeholders group

¹¹ Cambridge Systematics, Inc. and KFH Group. *New River Valley (PDC 4) Coordinated Human Service Mobility Plan*. (2008). Pg. 3

continued meeting on a bi-monthly schedule, allowing for smooth transition after the Employment Mobility Project was funded in the spring of 2007. With the focus of this project on employee transit, the addition of local employers and Human Resource managers to the group was vital to the study's development.

The stakeholders were tasked with providing input concerning survey creation, identifying both formal and informal existing Park & Ride lots as part of the survey process, and promoting the survey after its completion. The stakeholders played an active and continuous role during the Employment Mobility study, meeting regularly throughout the project to provide input and feedback. For example, the group was able to provide valuable input toward taking the demand assessment one step further to surveying employees. Since several companies expressed an interest in surveying their employees in an effort to gain a higher level of understanding in terms of their employee needs, the PDC created an employee survey.

2.4 Park & Ride Survey

Creation

The New River Valley has 16 Park & Ride Lots used by residents for commuting and other travel purposes. Only five of these lots are considered formal lots as designated by the Virginia Department of Transportation. The remaining informal lots take the form of commercial parking lots or large roadside pull-offs. Since the New River Valley's Park & Ride Lots already act as "hubs" for those seeking to either carpool or take other forms of transportation, the concept of a fixed-route transit system with potential pick-up locations at Park & Ride lots would create a natural multimodal relationship. The survey asked questions to understand lot use frequency, origin and destination points, the mode of transportation being used and whether public transit was of interest.

Administration

A short, 13 question survey was created in order to address how formal and informal Park & Ride lots are being utilized, and assess the ability for these lots to serve as rural bus stops along a fixed or semi-fixed transit route. The surveys were conducted in person over a four month period, with each lot surveyed more than once. For vehicles not captured, a weather resistant information packet was left on the windshield giving details about the survey including contact information

and a web address where the commuter could fill out the survey. The Park & Ride survey gave valuable insight into frequency of lot use, the demographics of those who frequent the lots, as well as the origin and destination of Park & Ride lot users. A copy of the Park & Ride Survey can be found in Appendix A .

2.5 Employee Survey

Creation

Originally, the project scope indicated an employer survey and a Park & Ride lot survey. The stakeholders group helped to determine that future discussions would benefit significantly by understanding the employee transportation demand in more detail. To broaden the project's demographics beyond Park & Ride lot users, a more comprehensive survey was created in order to target employees across the entire region. The stakeholders group spent several weeks deliberating the survey question content and style; the survey needed to be comprehensive enough to provide quality data, but concise enough to generate a representative sample. The final draft of the Employee survey focused on four main categories: Transportation Information, Transportation Barriers, Transportation Solutions, and Demographics.

The Transportation Information section gathered data on employees' commuting schedule, mode of transportation, start and finish times, and length and distance of commute. It also questioned respondents on their familiarity with the RIDESHARE program, a database service that matches workers with potential carpool partners. The Transportation Barriers section focused on reasons why an individual may or may not use alternative forms of transportation such as carpooling, biking, walking, and using public transportation. In the section on Transportation Solutions, survey participants were asked to consider using alternative modes of transportation more frequently if common barriers could be removed. Finally, the Demographics section allowed for a count of the age, origin and destination points, and gender of all those surveyed.

Administration

Initially, the employee survey was made available online via a link on the PDC's homepage, with hardcopies available by request. Throughout the course of the survey process, the PDC sought to make the survey accessible to all employees. At the suggestion of the stakeholders, the survey was made available over the phone to accommodate those who may be intimidated by a lengthy

written survey. And at the request of a particular employer, with the help of staff at Virginia Tech, the survey was also made available in Spanish.

The survey garnered steady response throughout the entire assessment period, with spikes in interest resulting from media attention or specialized publicity within a place of employment. To help ensure a more representative sample, stacks of hardcopies were left with HR Managers or in break rooms of participating places of employment such as Wal-Mart, Xaloy, and Wolverine. These surveys tapped into a demographic whose place of employment was not in an office setting and may not have had access to a computer. This demographic proved the most challenging to access, yet these survey responses generally provided invaluable data. A copy of the Employee Transportation Survey can be found in Appendix B.

2.6 Consultants

As previously mentioned, the scope of work for the Employment Mobility study was broken into two segments: the tasks completed by the PDC and the tasks completed by the selected Consultants. The PDC performed all activities concerning stakeholders meetings, survey distribution, and data entry, while the Consultants were tasked with technical and transit specific activities.

Using Blacksburg Transit, Pulaski Area Transit, and Community Transit, the region's existing transportation providers, to analyze the survey data, the project was able to draw on the knowledge and expertise of those already involved in transit. Their understanding of the area, the technical and logistic side of providing transportation, and knowing the strengths and weaknesses of their personal organizations made their participation vital to the study.

Following the conclusion of the Demand Assessment portion of the project, the Consultants were given the compiled data and began meeting to discuss their recommendations. Their discussions incorporated survey data, 2000 Census data, each locality's Comprehensive Plan, and other correlating transportation studies conducted in the region.

III. RESULTS



The results of both the Park & Ride survey and the Employee survey, together with the expertise of the region's transportation providers helped to shape the final recommendations in this report. This section highlights and discusses some of the more pertinent findings in the surveys. The full results from both surveys can be found in Appendix C and D.

The region's dichotomy of urban and rural not only creates challenging extremes when considering transportation for a region, but also when surveying the region. It should be noted that responses from citizens in rural localities were much different from responses received by those who live in the region's urban centers. Similarly, responses from the region's more densely populated regions were much easier to obtain.

3.1 PARK & RIDE SURVEY

At the onset of the study, Park & Ride lots were identified as potential "rural bus stops." To that effect, each identified Park & Ride lot was surveyed in person with a 13-question survey. Questions ranged from origin and destination points to the desirability of region-wide rural public transportation.

Park & Ride lots are located in all five localities in the New River Valley, however, the largest capacity and highest usage lot is located in the Town of Christiansburg, off exit 118A from I-81. With a capacity of 55 vehicles, this lot outsizes the other lots roughly six to one.¹² Data from the Park & Ride survey will reflect this.

On weekdays, each of the Park & Ride lots is used equally from day to day, with no one day having a significantly higher use rate. These numbers drop significantly on Saturday and Sunday, supporting the 68% response rate of those who reported using Park & Ride lots to commute to work.

¹² VDOT. "Online Transportation Information Map." (2009). Online at: <http://www.virginiadot.org/travel/prOTIM.asp>

Most Park & Ride lot users originate from the Towns of Blacksburg and Christiansburg and commute to Salem and Roanoke, which are located 35-45 minutes north on Interstate 81. These residents commute from the Park & Ride lot to their place of employment via the SmartWay bus. Seventy-three percent of respondents live 20 minutes away or less from the lot they use.

The Park & Ride survey also asked respondents about their familiarity with the RIDESHARE program, a program where commuters are paired up with other commuters in order to create a vanpool or carpool. Although none of the lot users surveyed were members of RIDESHARE, 53% of the respondents were familiar with the program. Further, 80% of those surveyed reported that they would be interested in public transportation if made available to them.

3.2 EMPLOYEE SURVEY

The four-part Employee survey was created to target employees across the region and identify information such as commuting patterns, barriers to transportation, prime working hours, and basic demographics. The survey was made available both in hard copy and online in attempt to capture a wide range of respondents.

The project gained media coverage in the Roanoke Times, the Southwest Times, and over a local radio station, WUVT 90.7 FM (Appendix F). The local National Public Radio (NPR) station out of Roanoke also conducted an interview which ran in April of 2008. Following the media attention and in conjunction with the publicity efforts of the stakeholders group, the response rate and business participation increased steadily over the course of the project. In the end, the survey generated 750 online responses and 150 hardcopy responses, for a total of 900 surveys completed.

Part I: Transportation Information

The first section of the survey asked respondents about their current commuting schedules. From Monday through Friday, respondents reported that they drove themselves to work 82%-86% of the time, Carpooled with others 8%-9% of the time, took Public Transportation 1%-2% of the time, rode their Bikes 2%-3% of the time, Walked 1%-2% of the time, and Worked from Home 1%-3% of the time. On weekday mornings, the window of greatest activity occurred between 7:00am and 10:00am, with weekday evenings receiving the most activity between 3:00pm and 7:00pm. Peak

times occurred during the 8:00am hour and 5:00pm hour. On average, employees were driving anywhere from 1-20 miles to work, with the bulk of commutes lasting 10-30 minutes.

Part I also surveyed employees on their familiarity with the RIDESHARE program. Although only 16 (2%) of the respondents were members of RIDESHARE, a strong majority (63%) had heard of the program through either an advertisement or word of mouth. Fifty-seven percent of respondents claimed they would be willing to participate in a carpooling arrangement. Additionally, the survey itself, if taken online, was designed to forward all respondents to the RIDESHARE website upon the completion of the survey. The RIDESHARE program saw a spike in registration corresponding with the release of the survey.

Part II: Transportation Barriers

The second section of the survey asked commuters to identify any barriers they may have to carpooling, biking, walking, and public transportation. For each of the modes, respondents were asked to choose from a list of barriers that applied to them, or write in one of their own. If the respondent did *not* experience a barrier using one of the alternative modes, he or she was asked to indicate that as well. In response to carpooling barriers, needing a personal vehicle to run errands before or after work was the most frequent response (466 answers, 20%). The greatest barrier for both biking and walking to work were the distance being too far (21% and 43% respectively).

Twenty percent (164) of respondents had been late to work due to unreliable transportation and 13% (108) had missed an entire day of work due to a less than standard vehicle. The last question of section two asked the open-ended question: “How could this/these barrier(s) be removed?” This question provoked hundreds of varying responses ranging from comments on road maintenance, to the weather, to gas prices, to suggestions for alternative transportation.

Part III: Transportation Solutions

The third section of the survey explores solutions to the barriers of transportation as well as gauges employee interest in more energy and fuel-efficient modes of transportation.

Respondents were posed with the question, “How much do the following affect your decision to use other modes of transportation to work?” Choices ranged from 1 (Does NOT affect) to 5

(Strongly Affects) and Table 1 illustrates the percentage of respondents who answered with a 4 or a 5.

Table 1 - Factors That Affect the Use of Alternative Transportation

I would consider taking public transportation, car/vanpooling, walking, or biking to work more often	4	5 – Strongly Affects
If a Guaranteed Ride Home program, which would guarantee me a ride home in case of emergency were available	18%	24%
If my work start and finish times were flexible	16%	21%
If there was a company vehicle I could use for business use during the day	14%	21%
If the cost of public transportation were subsidized by my employer	14%	25%
If there was help (e.g. my employer or an agency) to find people with whom to carpool/vanpool	18%	16%
If public transportation passes were sold at work	10%	11%
If childcare services were located at or near my place of work	4%	9%
If secure and convenient bicycle parking racks and/or lockers were available at work	5%	6.5%
If parking was reserved close to my building for carpools/vanpools	8%	8%
If parking rates were lower for those who carpool/vanpool than for those who drive alone	8%	9%
If transportation information (e.g. biking routes, public transportation routes and scheduling) were available at work	13%	11%
If showers, clothing lockers, and change facilities were available at work	9%	9%
If a shuttle bus service from my workplace to a major public transportation station was provided	12%	22%

When given the choice of alternative modes of transportation, the majority (43%) stated that they would choose public transportation. A Needs Assessment on transportation conducted in Eastern Montgomery County also supports the desire for more accessible public transportation. “Fifty three persons (70%) responded that they would utilize public transportation if it was available to get to work. Forty-four of those responding listed the number of days per week which they would desire service. Of those 44 [respondents], 32 (73%) indicated that they would use public transportation 4-5 days per week.”¹³ In addition, over half (55%) of the Employee Survey respondents reported that they would be willing to pay \$2 for a one-way trip and \$3.50 for a

¹³ Montgomery County. *Eastern Montgomery Needs Assessment* (2006). pg. 8

round trip. Nearly 80% of those who said they would *not* be willing to pay those prices for public transportation, claimed that they would be willing to pay some amount. The suggestions varied from \$.25 to \$1.75 for one-way trips and \$.25 to \$3.00 for round trips.

Part IV: Demographics

The final section of the survey identified distinguishing attributes in the group of respondents as a whole. Questions such as age, gender, and community of residence helped to pinpoint the type of people filling out the surveys.

Most responses were females (67%) who fell into the 45-54 age bracket (29%). Over half of those who participated resided in Montgomery County, namely the Towns of Christiansburg and Blacksburg. This is supported by the most frequent residential zip codes belonging to those in Christiansburg (26%) and Blacksburg (23%) as well. The City of Radford, Town of Dublin (Pulaski County) and the Town of Pulaski (Pulaski County) also had notable levels of response.

Other reported areas of residence included Newport, Narrows and Pearisburg, in Giles; Snowville and Fairlawn, in Pulaski; Riner and Shawsville, in Montgomery; and Floyd County.

Figure 3 – New River Valley Employment Centers by Number of Employees

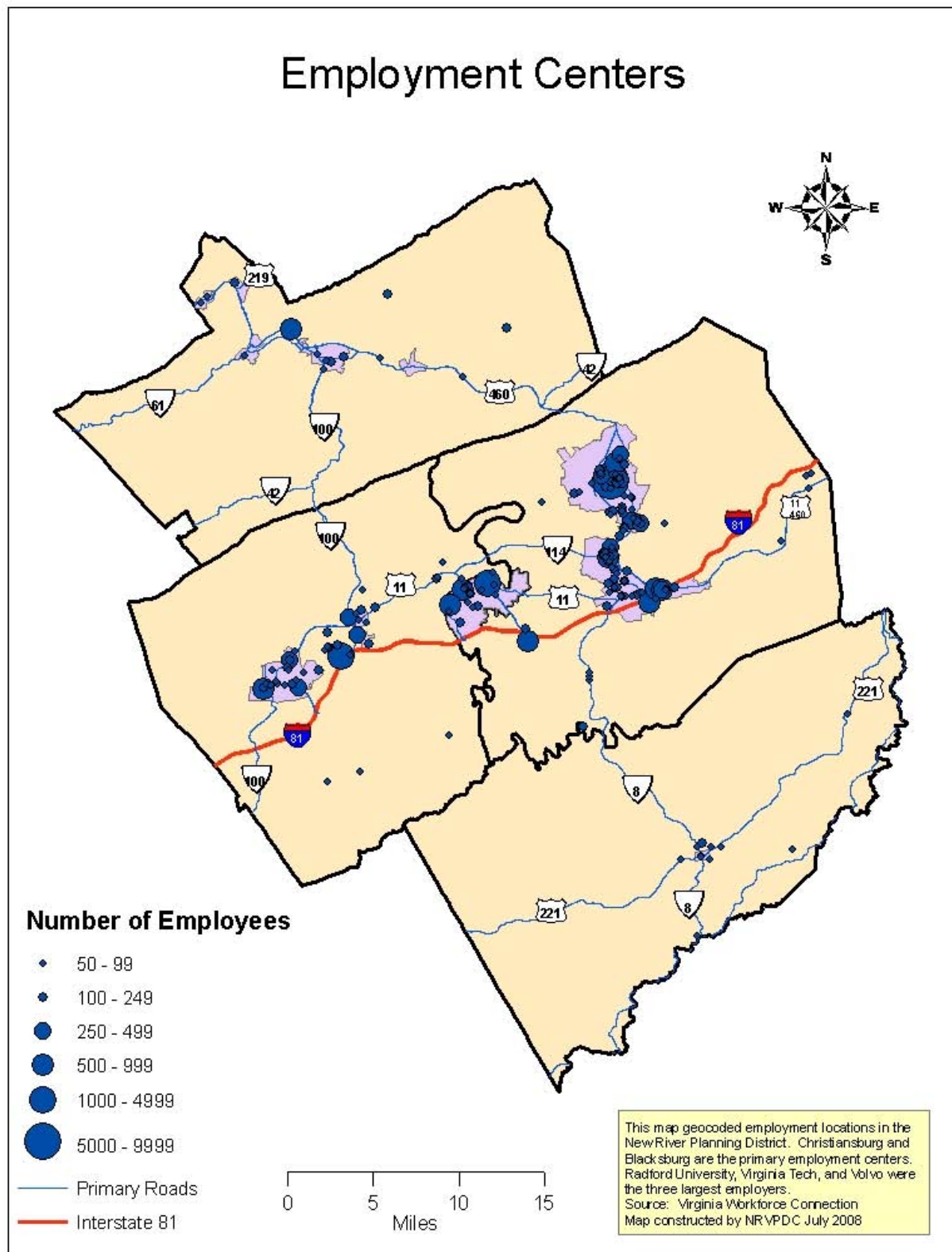


Figure 4 - Employment Centers in Towns of Blacksburg and Christiansburg and the City of Radford by Number of Employees

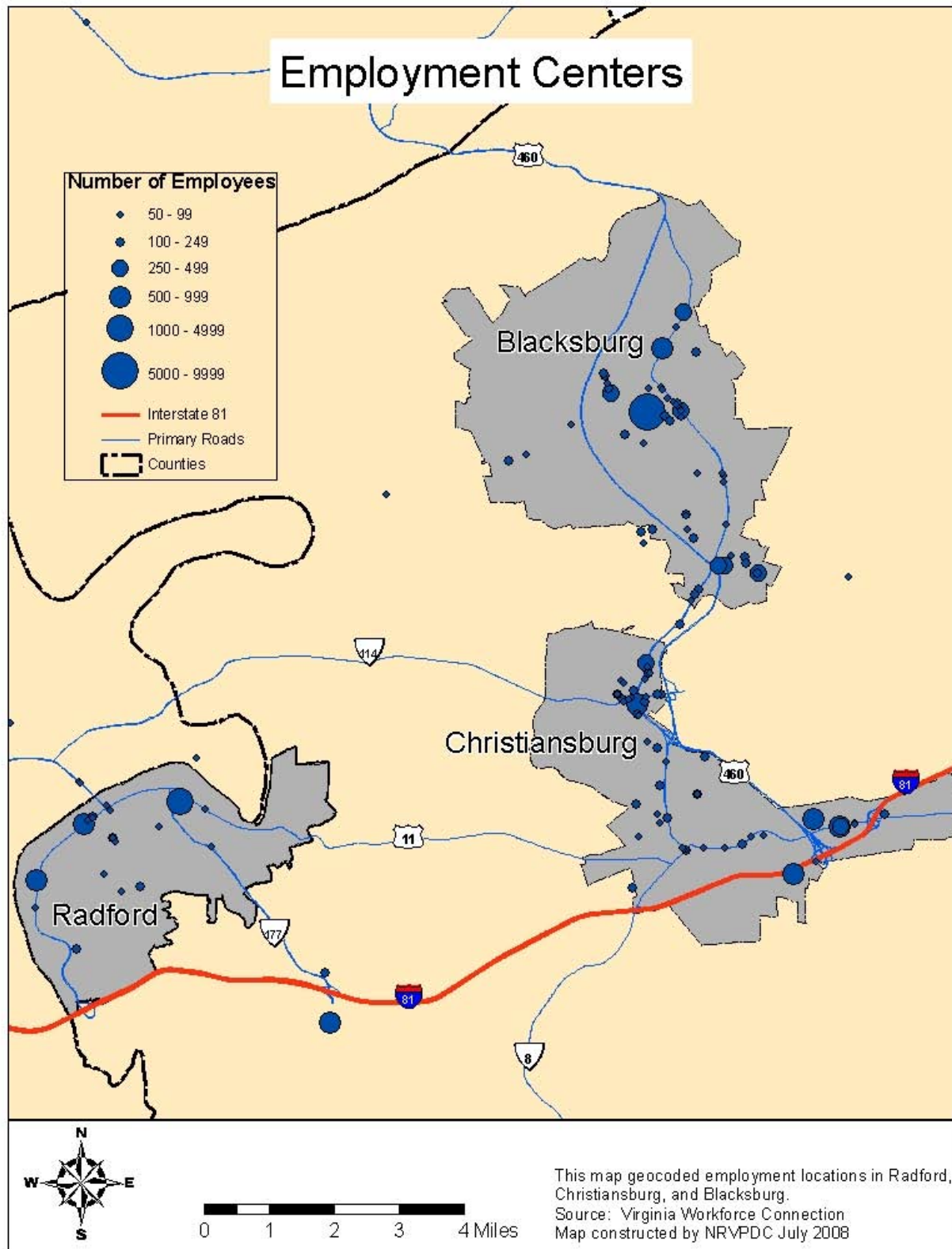


Figure 5 - Origin of Commuters in New River Valley

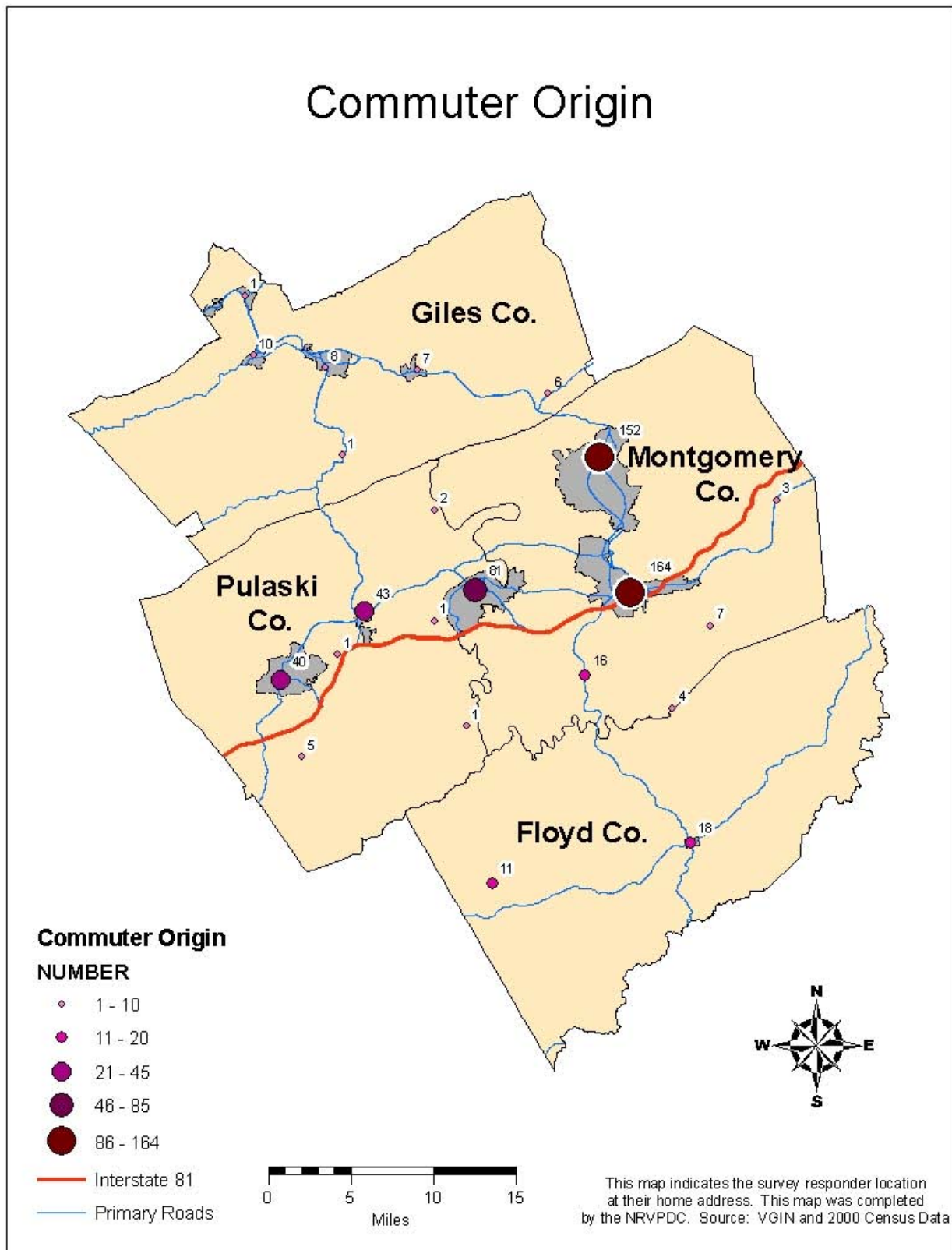


Figure 6 – Destination of Commuters in New River Valley

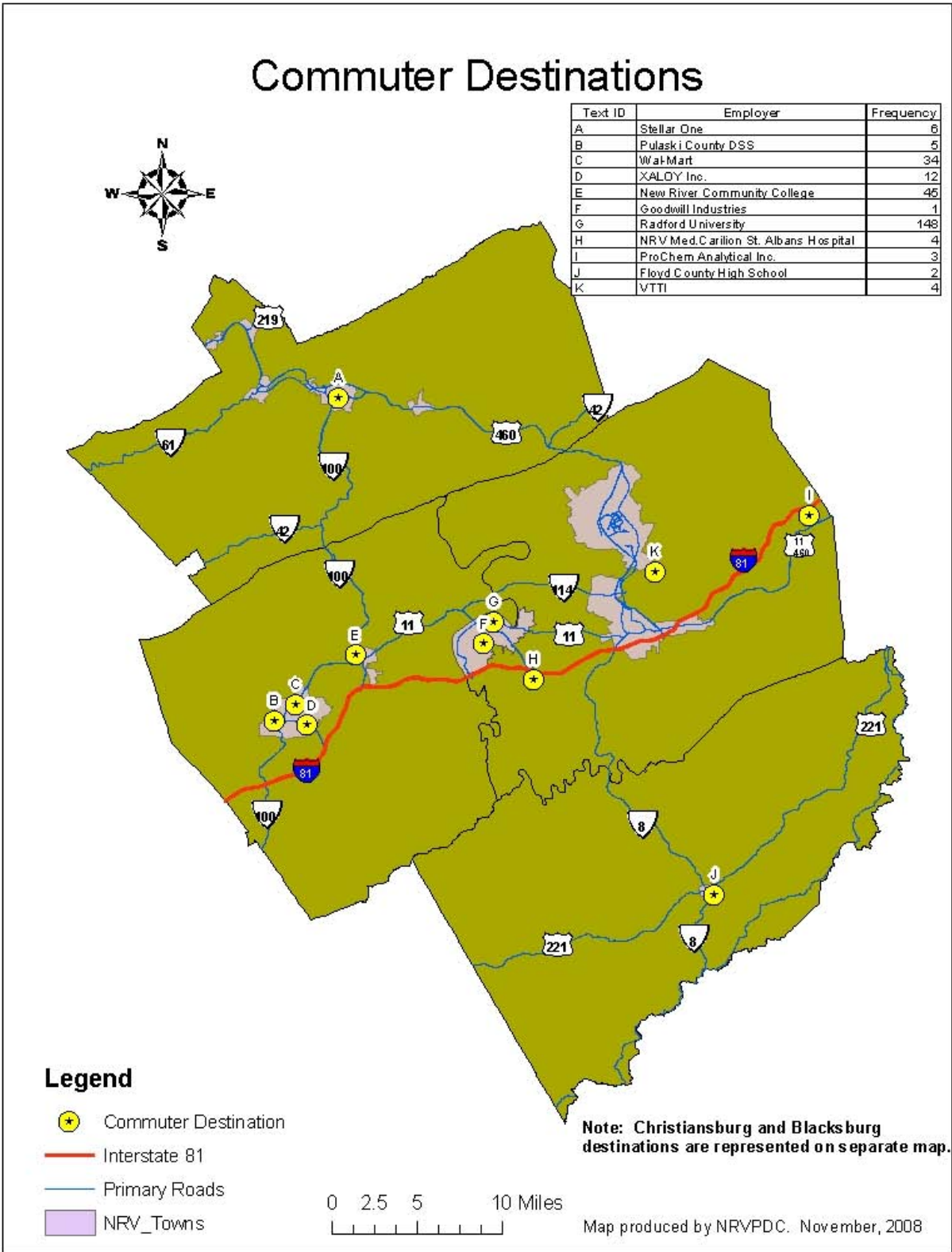


Figure 7 - Commuter Destinations in the Town of Blacksburg

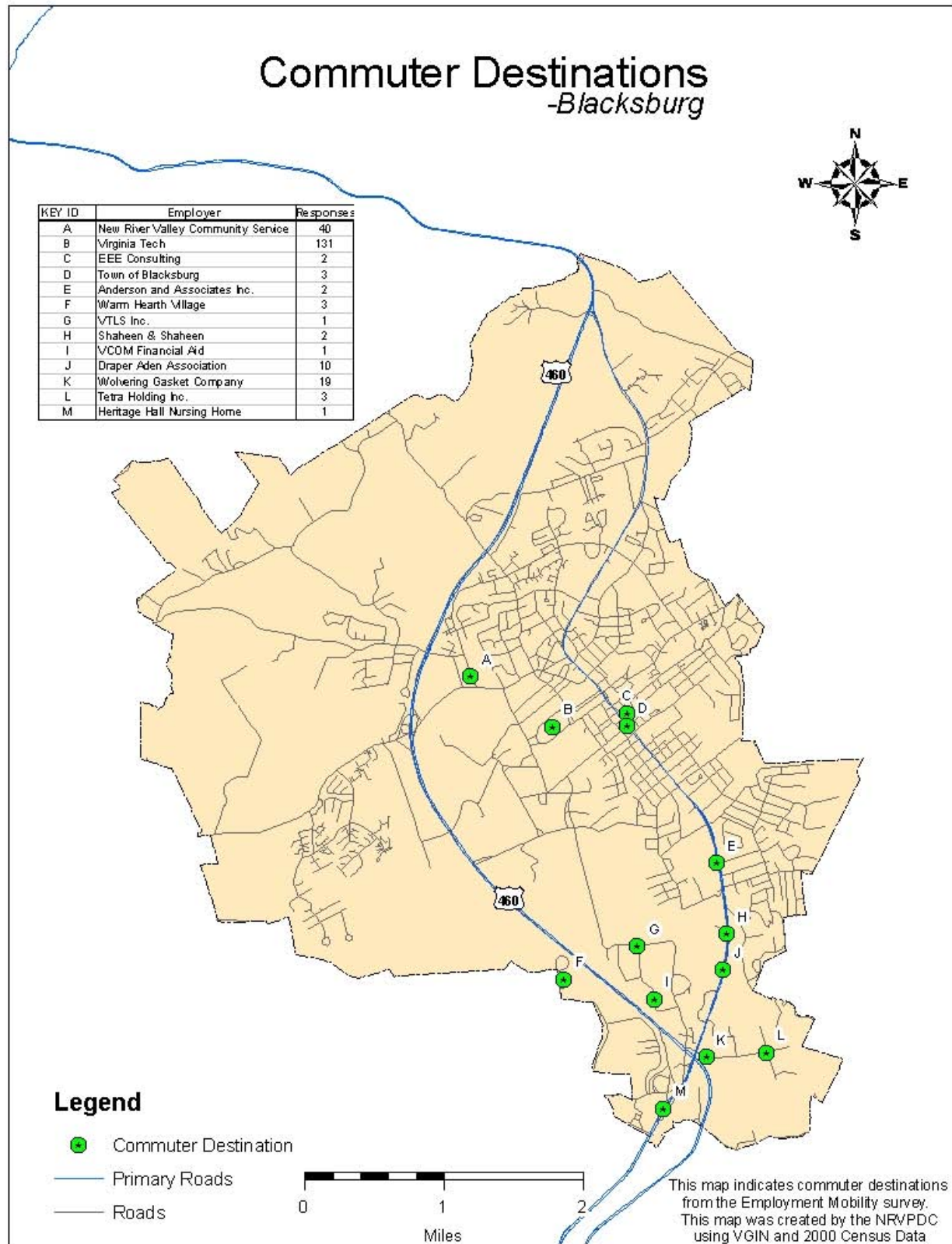


Figure 8 - Commuter Destinations in the Town of Christiansburg

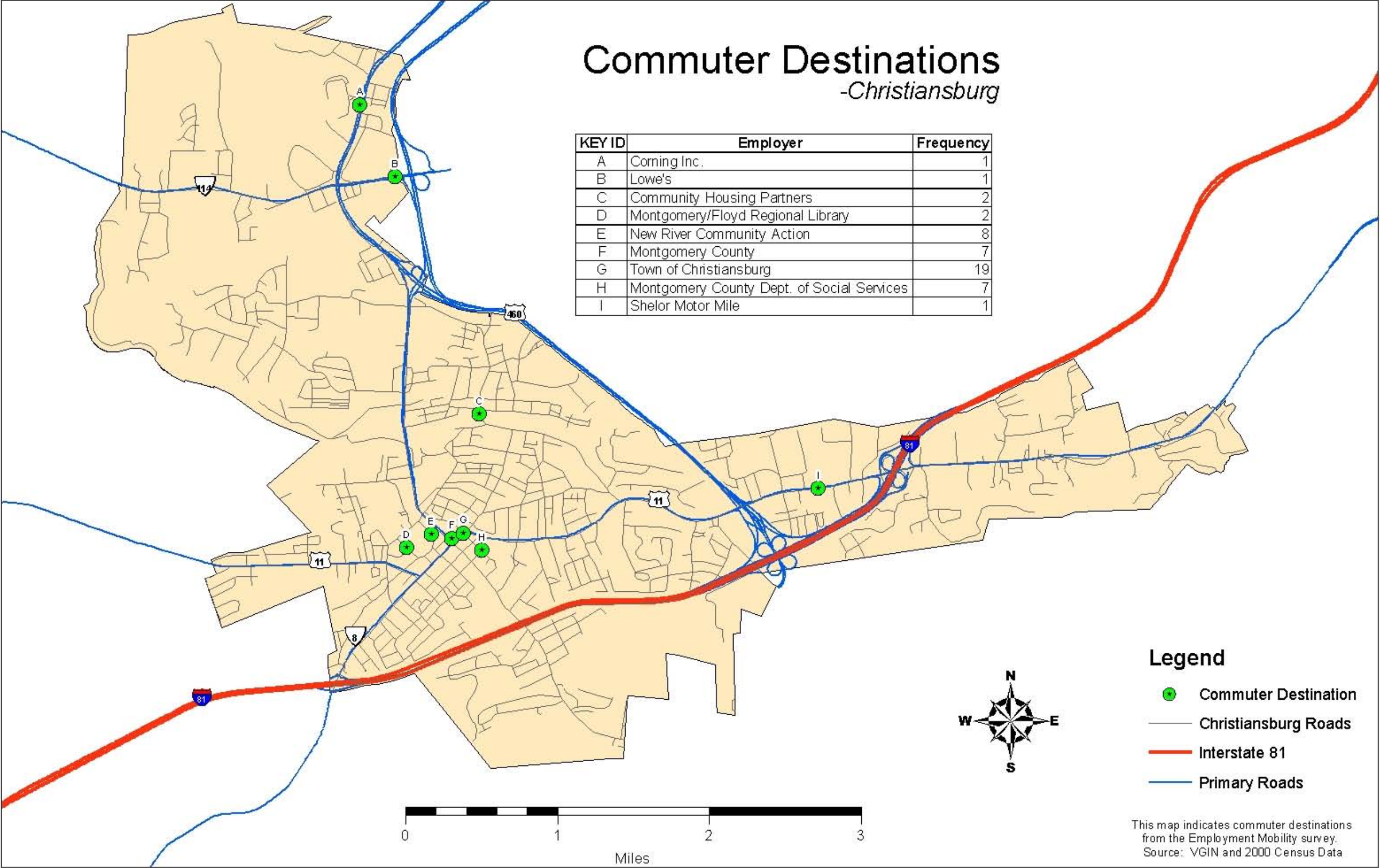


Figure 9 - Family Income Less Than \$35,000 in the New River Valley

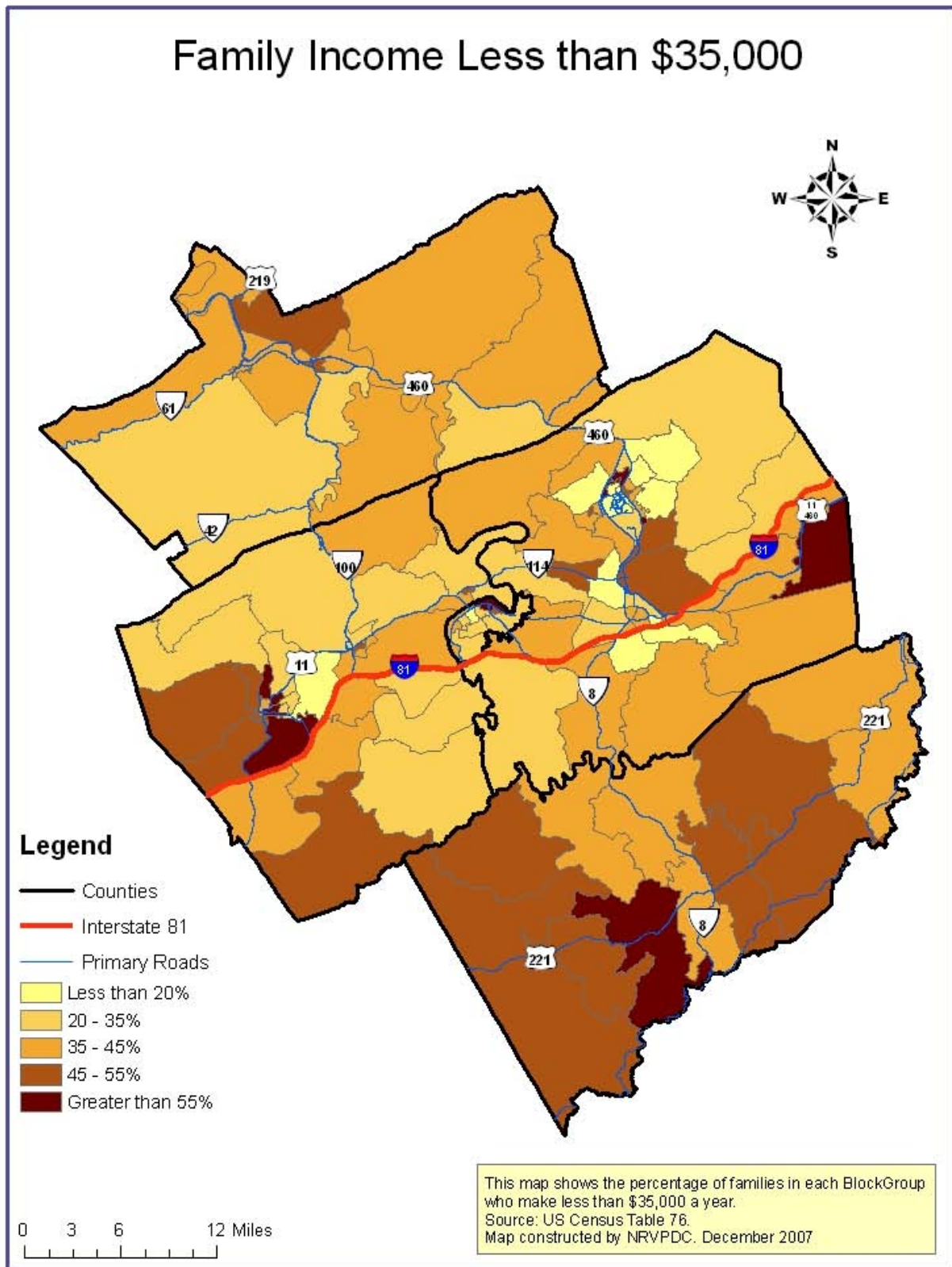
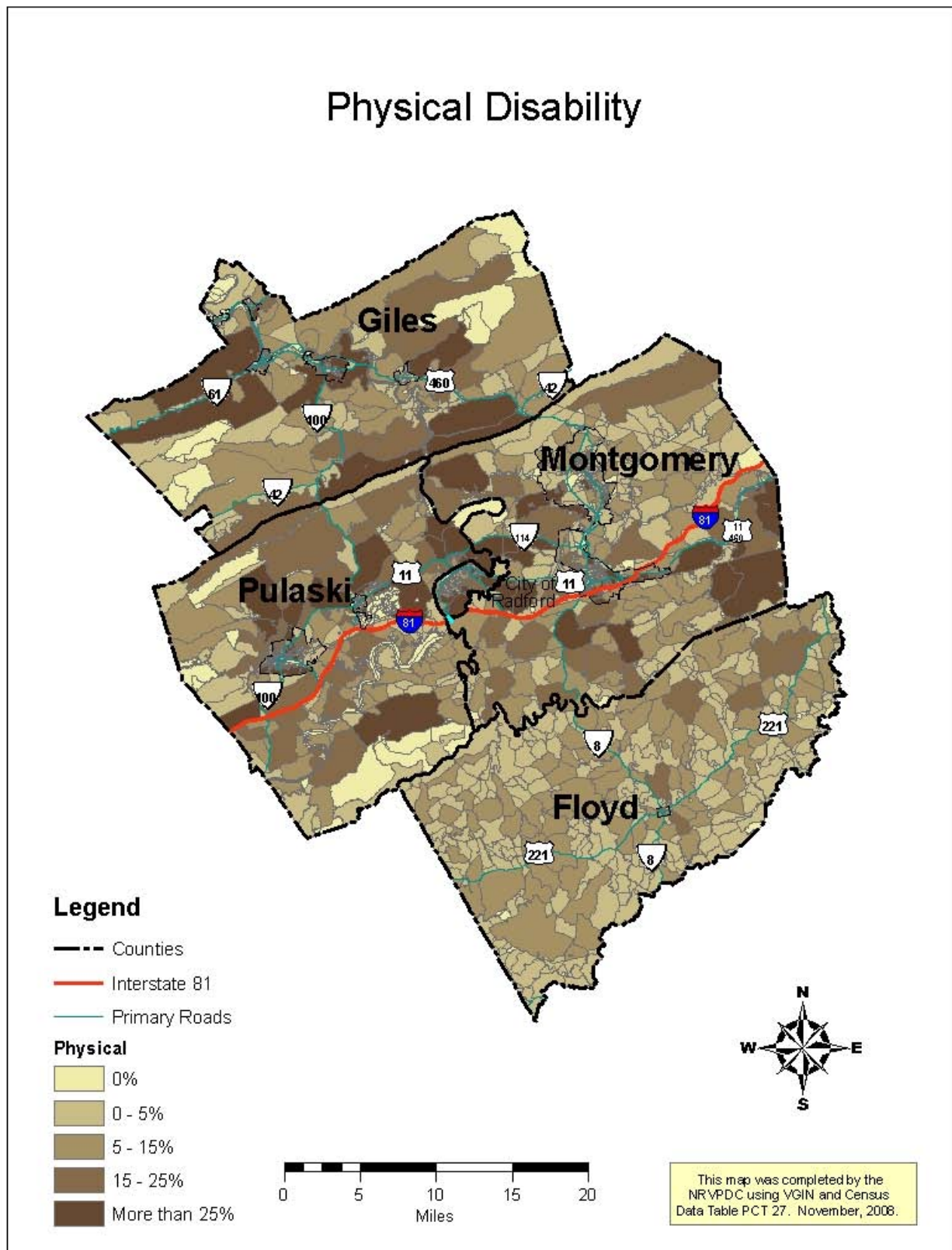


Figure 10 - Physical Disabilities in New River Valley



IV. RECOMMENDATIONS



The majority of the New River Valley's workforce commutes within the region, and there are limited options of main thoroughfares for travel. With a contained local workforce and a limited supply of roadway options, exploring rural transit becomes a worthwhile endeavor to increase transportation efficiency and to provide an option for people who do not have personal transportation.

Recent efforts have shown long-standing and continued support for a regional transportation system. The MPO's Transportation Plan sites another reason for bringing transit into the New River Valley, stating, "Reduced congestion, along with upgrades to transit service, will reduce fuel consumption and improve air quality."¹⁴ Additionally, the City of Radford's Comprehensive Plan sites the following as a Neighborhood and Sector Project and Program Goals: "Seek opportunities for innovative and effective transportation systems within the City and connecting the City to the region, and the state. Seek partners for the development of a complete and fully functioning transportation system for the City."¹⁵ The Montgomery County 2025 Comprehensive Plan calls for the County to provide increased access to opportunities for citizens, including job-related transportation for the disabled and for lower income individuals and families.¹⁶

Currently underway is the Christiansburg Bus Survey, administered by the Virginia Tech Center for Survey Research for Blacksburg Transit. Preliminary analysis indicates that there is overwhelming support for expansion of the bus system in Christiansburg. Hours will be expanded from the existing Christiansburg to Blacksburg bus service (the Two Town Trolley), as well as the possibility of a "circulator route" to service the areas between the New River Valley Mall and the surrounding areas. Expansion of service into neighborhoods and into areas currently not serviced will also be strongly considered.

¹⁴ MPO. Blacksburg/Christiansburg/Montgomery Area 2030 Transportation Plan Technical Report. (2005). Appendix, pg. A-2.

¹⁵ City of Radford. *City of Radford Comprehensive Plan*. (2001) pg. 29. Online at: <http://www.radford.va.us/gov/planpages/Radcomp2001.pdf>

¹⁶ Montgomery County. *Montgomery County Comprehensive Plan*. (2004)

In October of 2008, the PDC was awarded a Mobility Manager grant through funding provided by the FTA Job Access and Reverse Commute (JARC) Program. The Mobility Manager will serve as a one-stop call center for people seeking mobility services across the New River Valley region as well as for the collection of public transit demand information. The long-term vision for this position is to create and serve as a transportation broker for the region. The Consultants support plans for this position and have been encouraged to incorporate the Mobility Manager into future phases of this study.

4.1 Benefits of Public Transportation

A document about public transportation would not be complete without a brief overview of the benefits both regionally and at a national level. According to the American Public Transportation Association on a national level public transportation is key to:

- Providing jobs: \$1 billion invested into the nation's transportation infrastructure supports/creates 47,500 jobs
- Transporting people to work while generating savings: Households that use public transportation save an average of between \$6,251 and \$8,754 annually
- Reducing greenhouse gases: Public transit reduces CO₂ emissions by 37 million metric tons annually and saves the U.S. 4.2 billion gallons of gasoline annually
- Encouraging citizens to be healthier, green, and safer: Transit-friendly communities promote higher levels of physical activity (and a lower dependence on automobile travel), lead to less air pollution, and fewer vehicle crashes
- Promoting energy security and decreasing our dependency on foreign oil¹⁷

On a regional level, the Coordinated Human Services Mobility Study compiled feedback on improving mobility for older adults, people with disabilities, and low-income persons. These points were developed through a series of workshops throughout the course of the study, and can be applied on a universal basis for all commuters in the region:

• **Goals of Coordination:**

- More cost-effective service delivery
- Increased capacity to serve unmet needs

¹⁷ American Public Transportation Association (APTA). (2003; 2007; 2008a; 2008b); Center for Disease Control "Urban Sprawl and Public Health." (2002)

- o Improved quality of service
- o Services which are more easily understood and accessed by riders

- **Benefits of Coordination:**

- o Gain economies of scale
- o Reduce duplication and increase efficiency
- o Expand service hours and area
- o Improve the quality of service

- **Key Factors for Successful Coordination:**

- o Leadership – Advocacy and support; instituting mechanisms for coordination
- o Participation – Bringing the right State, regional, and local stakeholders to the table
- o Continuity – Structure to assure an ongoing forum, leadership to keep the effort focused and respond to ever-changing needs¹⁸

Limited transportation services to access employment opportunities could be addressed through the implementation of shuttle services designed around concentrated job centers. These concentrated job opportunities provide central employment destinations that could potentially be served via targeted shuttle services. Locating a critical mass of workers is the key for this strategy to be effective. This strategy may also provide a mechanism for employer partnerships.¹⁹

4.2 Routes

The group has determined that based on the geography of the region and the existing transportation options it would be best to develop transportation for the region consisting of seven routes to service the majority of commuters in the New River Valley. The following subsections provide an overview of the routes, cost, schedule, and phases involved in a seven-route system.

¹⁸ Cambridge Systematics Inc. and KFH Group. *New River Valley (PDC 4) Coordinated Human Service Mobility Plan*. (2008). pg.9

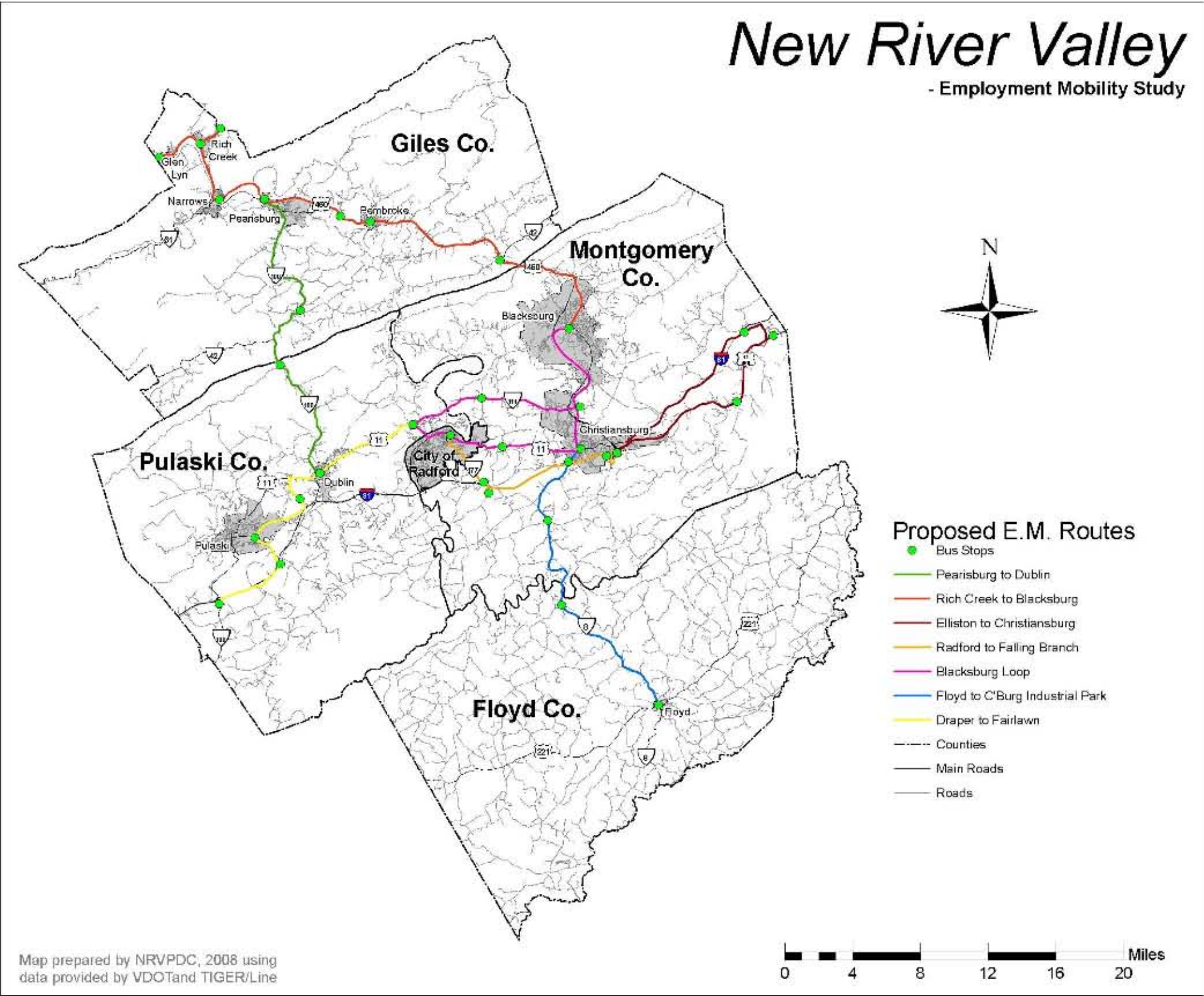
¹⁹ Cambridge Systematics, Inc. and KFH Group. *New River Valley (PDC 4) Coordinated Human Service Mobility Plan*. (2008) pg. 46

This section outlines the vision for recommended regional transportation routes for the New River Valley. There are seven proposed regional routes as listed in Table 2 and illustrated by Figure 11 showing routes and bus stops across four Counties (Pulaski, Floyd, Giles, and Montgomery) and one City (Radford). The routes include: 1) Glen Lyn to Blacksburg (red); 2) Pearisburg to Dublin (green); 3) Draper to Fairlawn (yellow); 4) Radford to Christiansburg (orange); 5) Floyd to Downtown Christiansburg (blue); 6) Blacksburg-Radford-Christiansburg (pink), and 7) Christiansburg to Shawsville (gray). Each route is explained in more detail in the following sub-sections.

Table 2 - Route Length (miles) and Estimated Time (minutes) for the seven proposed routes

Route	Length (Miles)	Estimated Time (min.)
1) Glen Lyn to Blacksburg (red)	38.20	50
2) Pearisburg to Dublin (green)	30.59	37
3) Draper to Fairlawn (yellow)	22.62	36
4) Radford to Christiansburg/Fairlawn (orange)	16.50	26
5) Floyd to Downtown Christiansburg (blue)	24.53	41
6) Blacksburg-Radford-Christiansburg (pink)	31.95	51
7) Christiansburg to Shawsville (maroon)	28.21	46

Figure 11 - New River Valley Proposed Regional Transit System



Route I: Glen Lyn to Blacksburg

A route from Rich Creek to Blacksburg (Table 3, Figure 12) would take approximately 90 to 100 minutes, including three minute stops and traffic delays, across 38 miles.

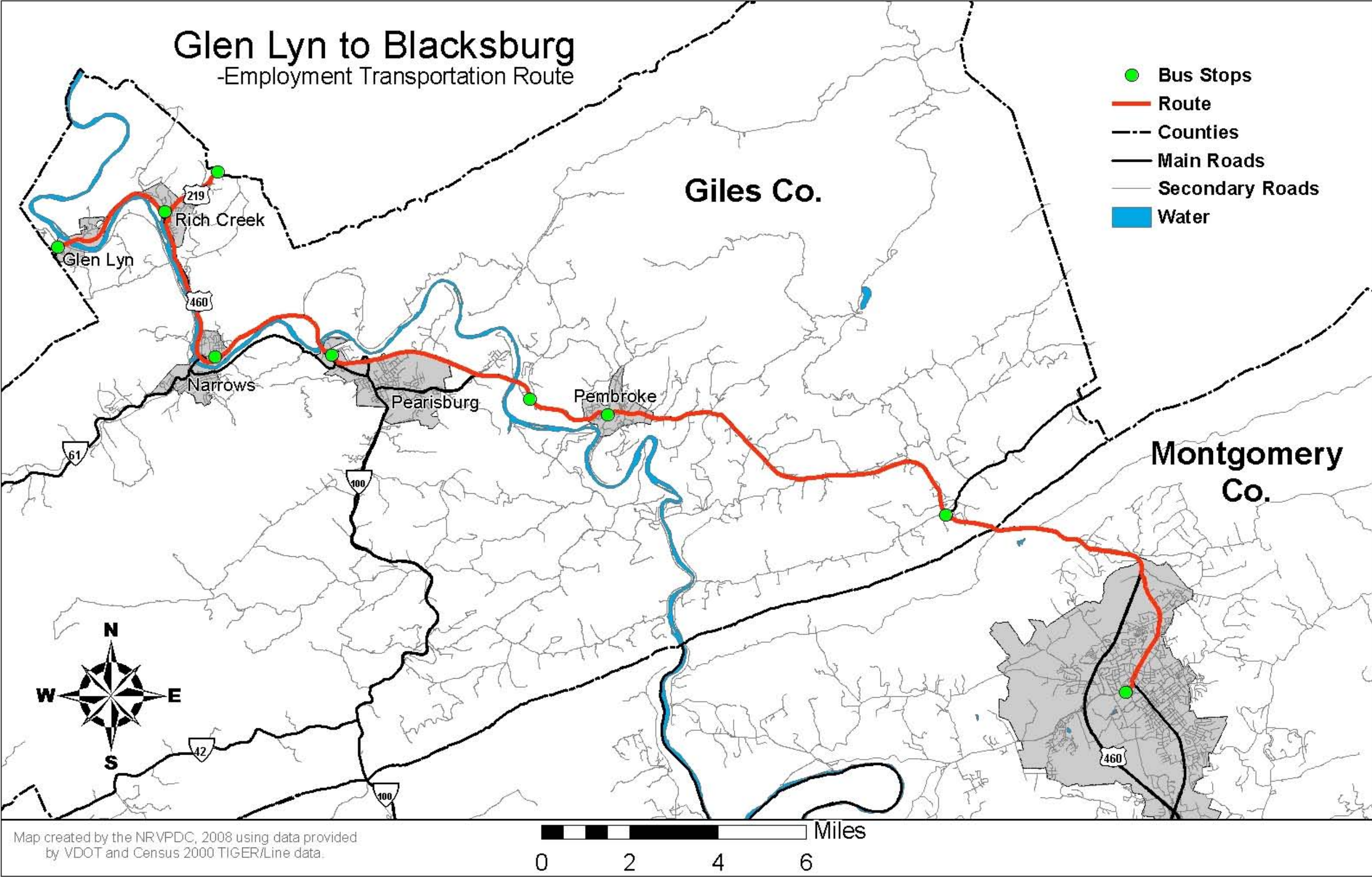
Glen Lyn to Blacksburg Stops:

1. Glen Lyn (Davis Ave)
2. WV Border
3. Rich Creek (Intersection of Old VA Avenue and Rt. 460)
4. Narrows (2nd Street)
5. Pearisburg (Magic Mart, Food Lion shopping center)
6. W. Pembroke (N. Intersection of Big Stoney Creek and Rt. 460)
7. Pembroke (Fire Station on Cascade Dr, south of 460)
8. Newport (Intersection of Rt. 42, RR 605 and Rt. 460)
9. Blacksburg (VT future Multimodal Facility on Perry Street)

Table 3

Glen Lyn to Blacksburg		
Route	Length (Miles)	Estimated Time (min.)
Glen Lyn to WV border	4.73	~7
WV border to Rich Creek Stop	1.54	~3
Rich Creek to Narrows	4.61	~8
Narrows to Pearisburg	2.95	~5
Pearisburg to West Pembroke	5.00	~7
W. Pembroke to E. Pembroke	2.06	~6
Pembroke to Rt. 42	9.15	~9
Rt. 42 to Blacksburg	8.16	~15
Total:	38.20	50

Figure 12 - Glen Lyn to Blacksburg Employment Transportation Route Map



Route II: Pearisburg to Dublin

A route from Pearisburg to Dublin (Table 4, Figure 13) would take approximately 50 to 60 minutes, including stops (assuming 3 minute stops) and traffic delays, across 31 miles.

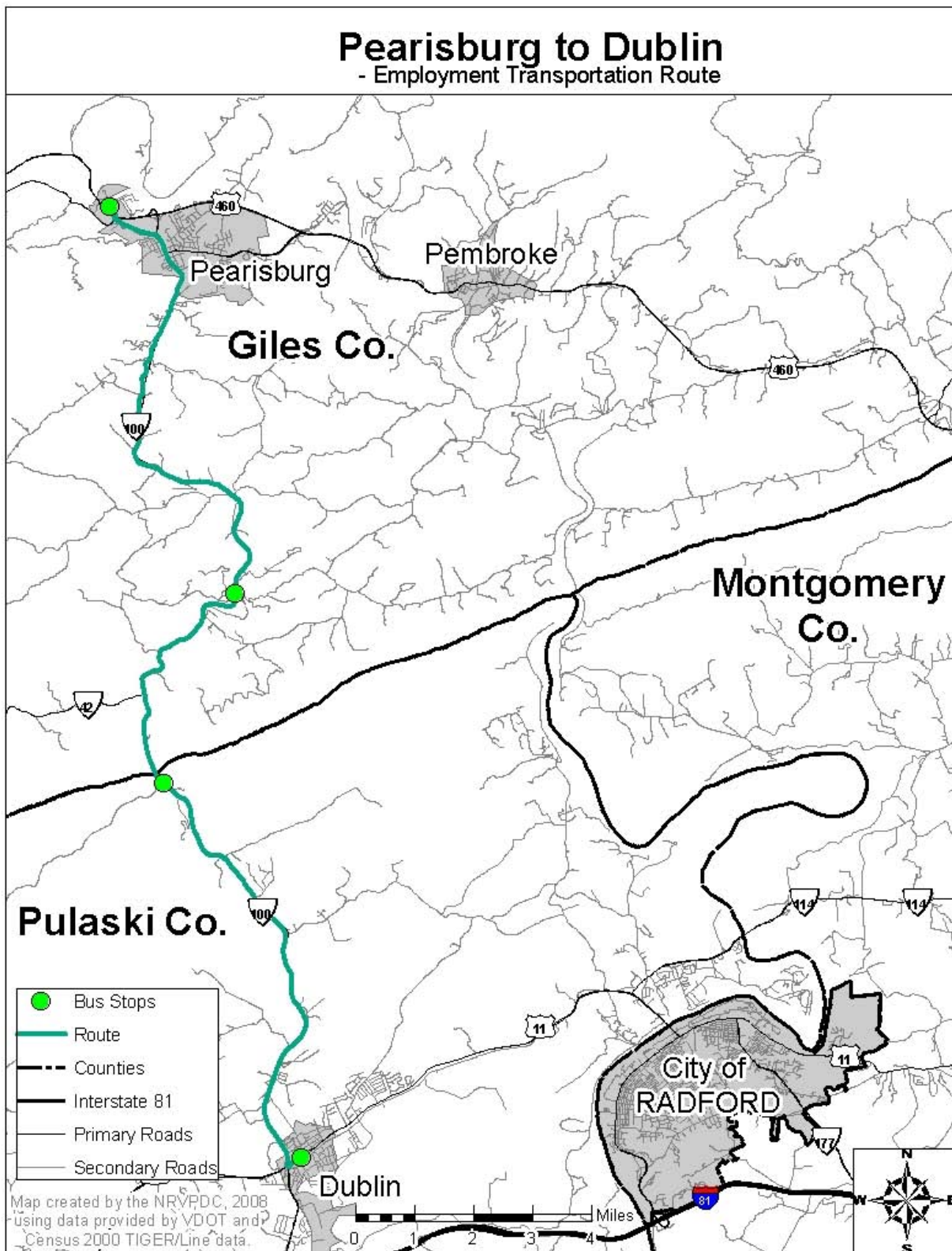
Pearisburg to Dublin Stops:

1. Pearisburg Park & Ride (Thomas Drive and Cord Drive)
2. Staffordsville Park & Ride (Staffordsville Rd & Rt. 100, carpool parking area)
3. Little Creek Park & Ride (just beyond Little Creek Rd, Rt. 100, “Jim’s Drive In”)
4. Dublin (Wade’s Food Market parking lot, Route 11)

Table 4

Pearisburg to Dublin		
Route	Length (Miles)	Estimated Time (min.)
Pearisburg Park & Ride to Staffordsville Park & Ride	8.97	~15
Staffordsville Park & Ride to Little Creek Park & Ride	8.14	~15
Little Creek Park & Ride to Dublin (Wade’s)	4.51	~7
Total:	30.59	~37

Figure 13 - Pearisburg to Dublin Route Employment Transportation Route Map



Route III: Draper to Fairlawn

A route from Draper to Fairlawn (Table 5, Figure 14) would take approximately 55 to 65 minutes, including three minute stops and traffic delays, across 22 miles.

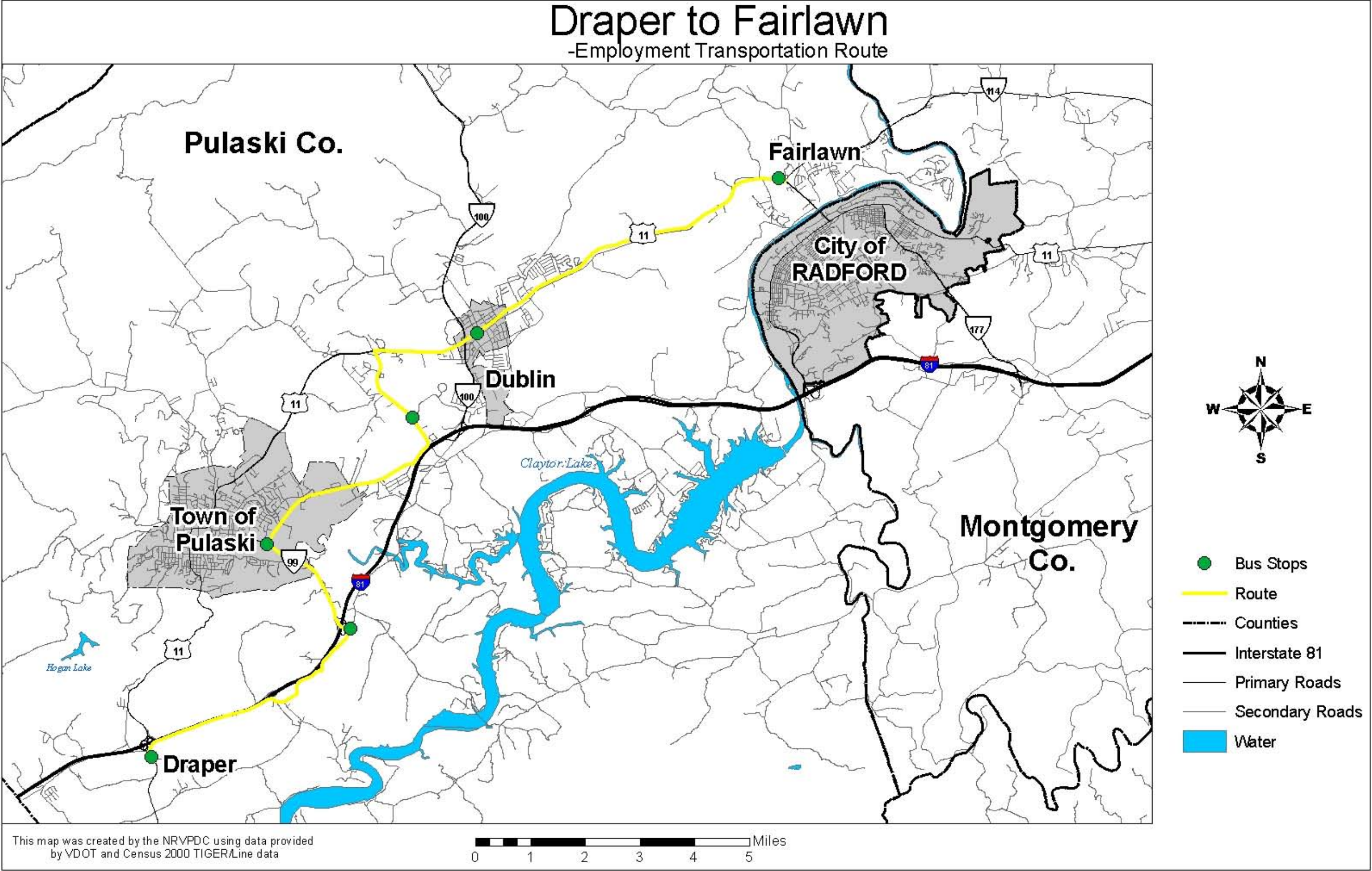
Draper to Fairlawn Stops:

1. Draper Park & Ride lot (Kirby Rd and Wysor Rd)
2. Exit 94 Park & Ride lot (Old Rt. 100 and Rt. 99)
3. Town of Pulaski (Rt. 99 & Bobwhite Blvd)
4. Volvo (Cougar Trail & Alexander Rd)
5. Dublin (Wade's Food Market parking lot, Route 11)
6. Fairlawn (Pepper's Ferry & Rt. 11)

Table 5

Draper to Fairlawn		
Route	Length (Miles)	Estimated Time (min.)
Draper Park & Ride to Exit 94 Park & Ride	4.84	~6
Exit 94 Park & Ride to Town of Pulaski	2.37	~6
Town of Pulaski to Volvo	4.23	~8
Volvo to Dublin	3.54	~7
Dublin to Fairlawn	6.71	~10
Total:	21.69	37

Figure 14 - Draper to Fairlawn Employment Transportation Route Map



Route IV: Radford to Christiansburg/Falling Branch

A route from Radford to Christiansburg Industrial Park (Table 6, Figure 15) would take approximately 45 to 50 minutes, including three minute stops and traffic delays, across 17 miles.

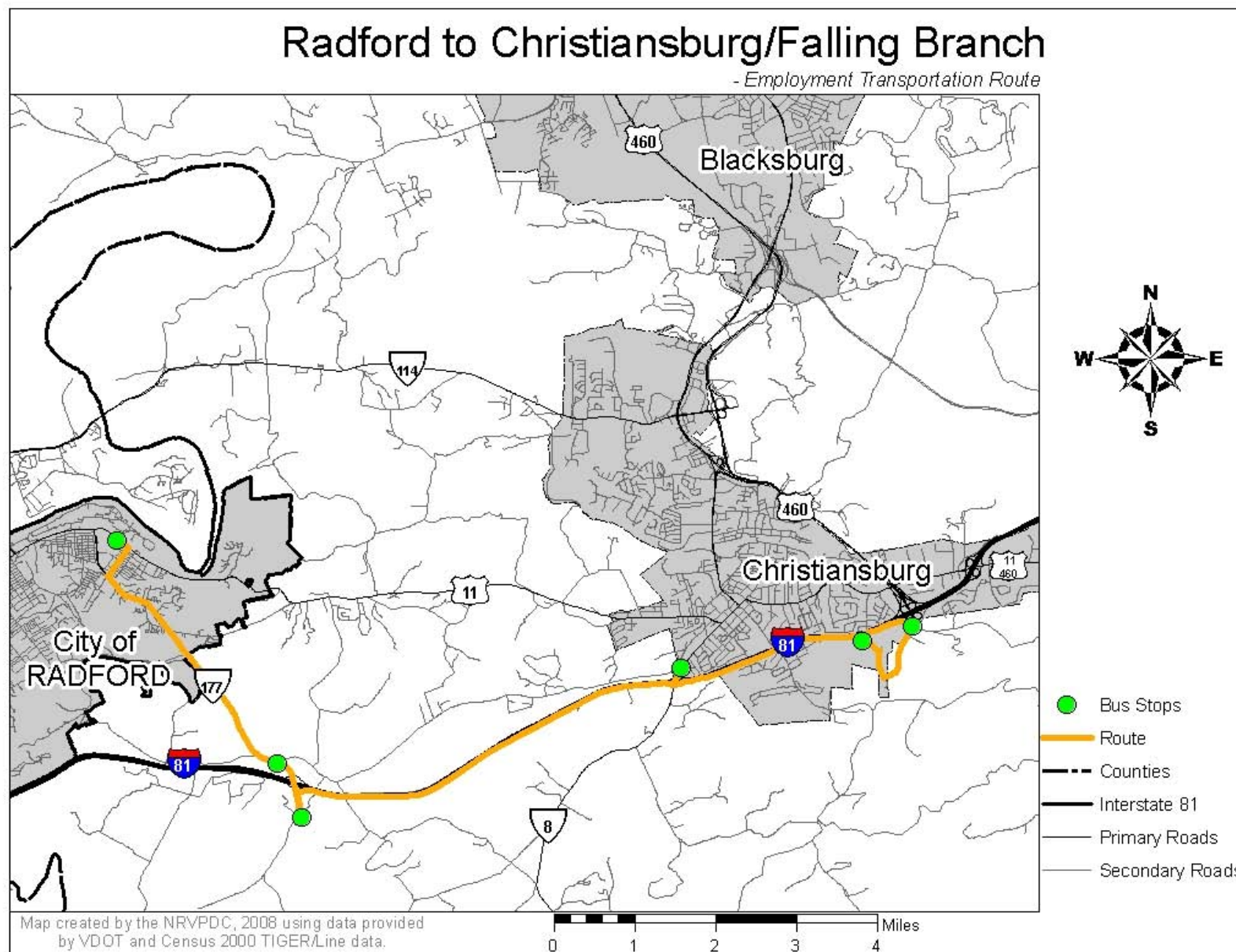
Radford to Christiansburg/Falling Branch Stops:

1. Radford University (Lot A, in front of Young Hall)
2. BP Gas Station Park & Ride Lot – (Rt. 177 and Tyler Rd., adjacent to Mud Pike Road)
3. Carilion New River Valley Medical Center (Exit 109 to 177)
4. I-81/Rt 8 Park & Ride Lot (Auburn St and W. Main St.)
5. Falling Branch Park & Ride Lot (Exit 118A at Parkway Drive)
6. 400 Technology Drive (Falling Branch Industrial Park)

Table 6

Radford To Christiansburg/Falling Branch		
Route	Length (Miles)	Estimated Time (Min.)
RU Campus to BP Gas Park & Ride Lot	3.84	~7
BP Gas Park & Ride Lot to New River Medical Center	0.84	~2
New River Medical Center to 1-81/Rt. 8 Park & Ride Lot	5.65	~7
1-81/Rt. 8 Park & Ride Lot to Falling Branch Park & Ride Lot	4.76	~7
Falling Branch Park & Ride Lot to 400 Technology Drive, Christiansburg	1.41	~3
Total:	16.50	26

Figure 15 - Radford to Christiansburg/Falling Branch Employment Transportation Route Map



Route V: Floyd to Downtown Christiansburg

A route from Floyd to Downtown Christiansburg (Table 7, Figure 16) would take approximately 50 to 60 minutes, including three minute stops and traffic delays, across 21 miles. Note that this route shares the I-81/Rt 8 stop with the Radford to Christiansburg/Falling Branch route.

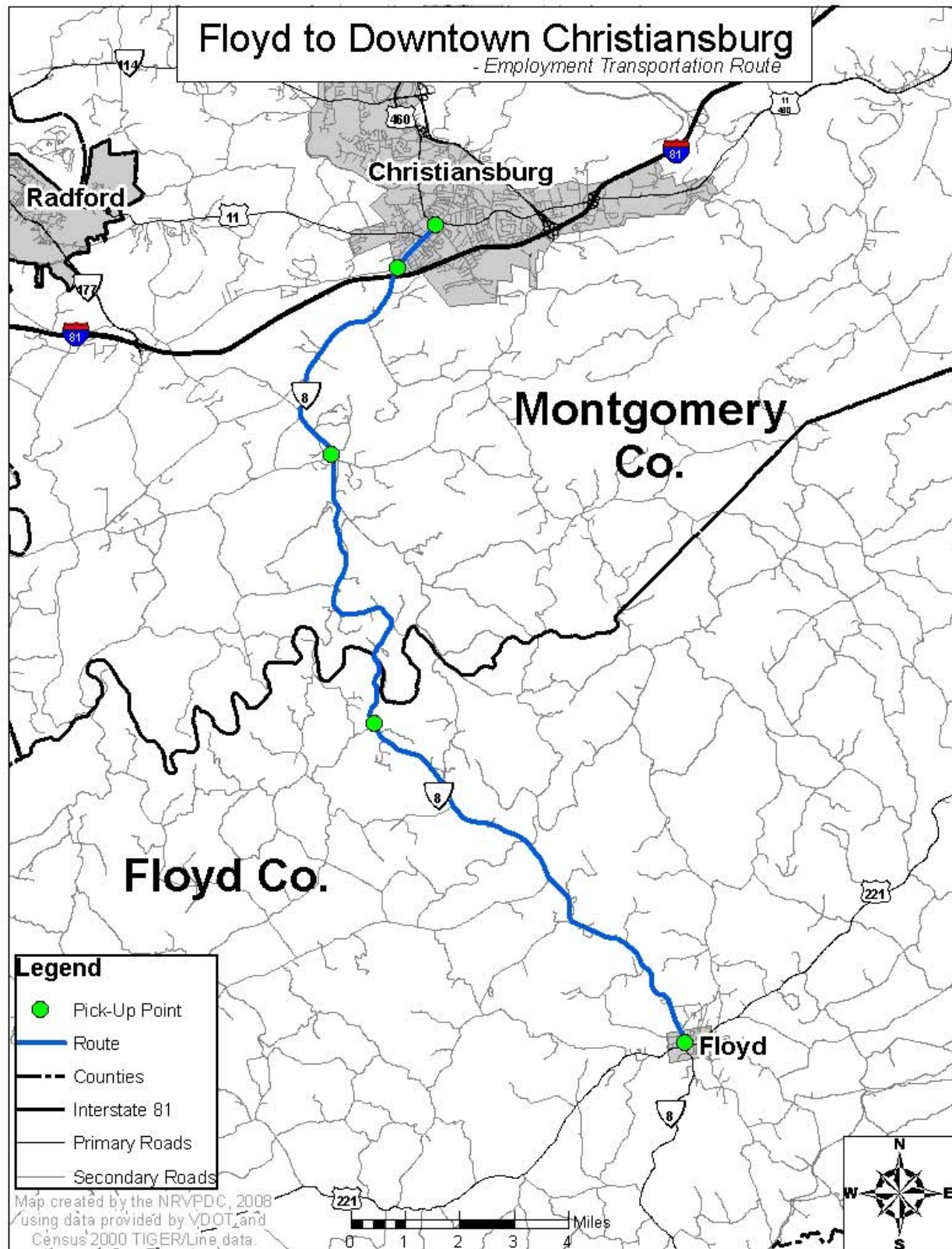
Floyd to Downtown Christiansburg Stops:

1. Floyd Courthouse (Oxford St and Locust St)
2. Floyd Park & Ride Lot (Alum Ridge and Rt. 8)
3. Riner Food Center (off Rt. 8, between Cloverleaf & Fairview Church Rd)
4. I-81/Rt 8 Park & Ride Lot (Auburn St and W. Main St., Christiansburg)
5. Main St and Franklin St.

Table 7

Floyd to Downtown Christiansburg		
Route	Length (Miles)	Estimated Time (Min.)
Floyd Courthouse to Route 8/Alum Ridge Park & Ride Lot	8.91	~15
Route 8/Alum Ridge Park & Ride Lot to Riner Food Center	6.34	~10
Riner Food Center to i-81/Rt. 8 Park & Ride Lot	4.52	~8
I-81/Rt. 8 Park & Ride Lot to Intersection of Franklin and Main Street	1.09	~4
Total:	20.86	~37

Figure 16 - Floyd to Downtown Christiansburg Employment Transportation Route Map



Route VI: Blacksburg-Radford-Christiansburg Loop

A looped route from Blacksburg to Radford to Christiansburg (Table 8, Figure 17) would take approximately 70 to 80 minutes, including three minute stops and traffic delays, across 32 miles.

Blacksburg-Radford-Christiansburg Loop Stops:

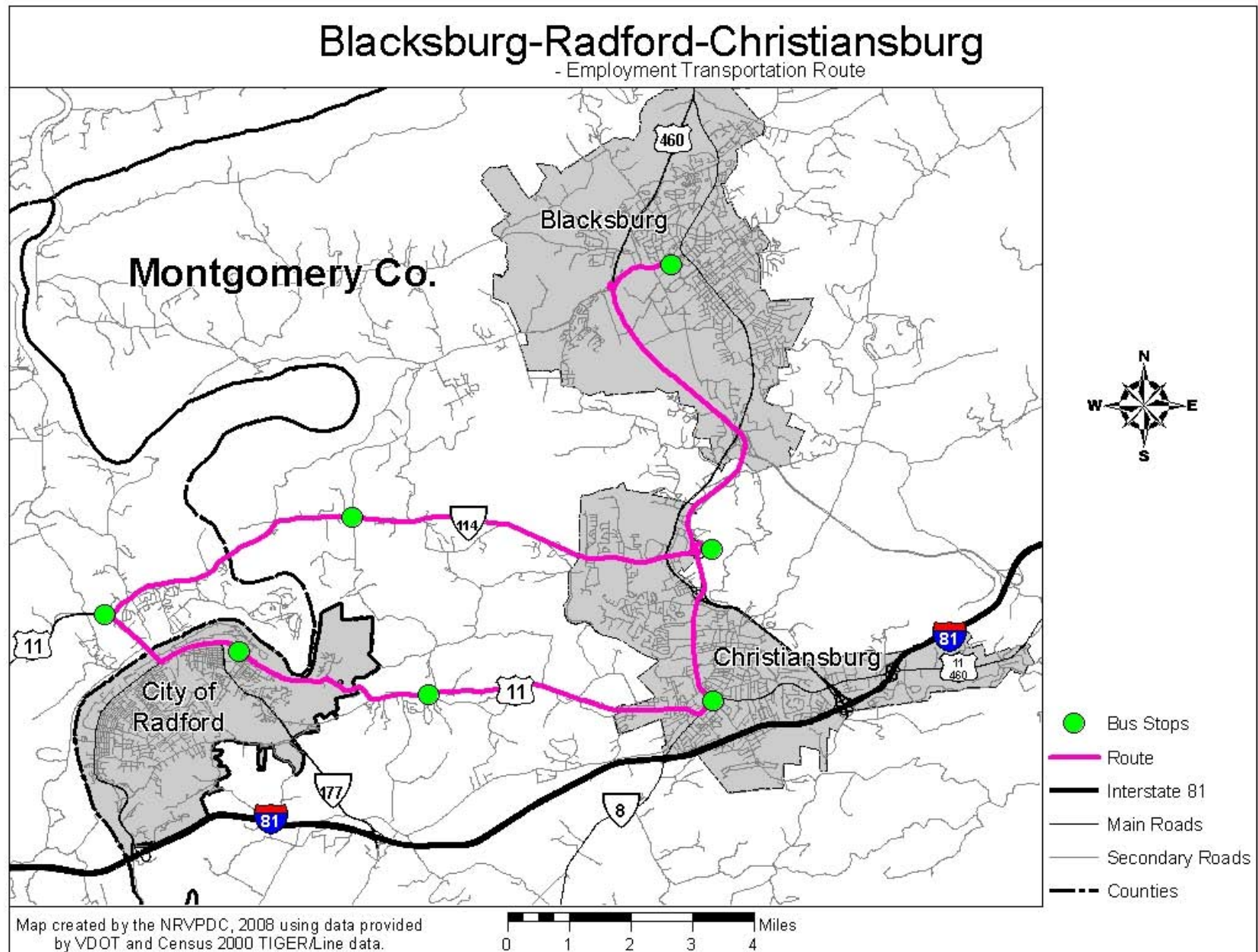
1. Blacksburg Hub (VT future Multimodal Facility on Perry Street)²⁰
2. Marketplace (Cinnabar & Pepper's Ferry Road)
3. Belview (Price's Fork & Pepper's Ferry)
4. Fairlawn (114 and Rt. 11)
5. Radford University (Lot A, in front of Young Hall)
6. Plum Creek (Plum Creek Rd & Rt. 11)
7. Downtown Christiansburg (Main St. and Franklin St.)
8. Marketplace (Office Max/former Books a Million) (via Route 11 and 460)

Table 8

Blacksburg-Radford-Christiansburg Loop		
Route	Length (Miles)	Estimated Time (min.)
Blacksburg to Marketplace	7.26	~7
Marketplace to Belview	6.00	~10
Belview to Fairlawn	4.54	~8
Fairlawn to Radford University	2.89	~5
Radford University to Plum Creek	3.38	~6
Plum Creek to Downtown Christiansburg	4.80	~7
Downtown Christiansburg to Marketplace	3.08	~8
Total:	31.95	~51

²⁰ A new multi-modal facility has been proposed for the Virginia Tech campus. The proposed new facility is envisioned to accommodate long-distance intercity bus operators such as Greyhound as well as the Smart Way service from Roanoke operated by Valley Metro (Urbitrans, 2008).

Figure 17 - Blacksburg-Radford-Christiansburg Employment Transportation Route Map



Route VII: Christiansburg to Shawsville

A looped route from Christiansburg to Shawsville (Table 9, Figure 18) would take approximately 60 to 70 minutes, including three minute stops and traffic delays, across 28 miles.

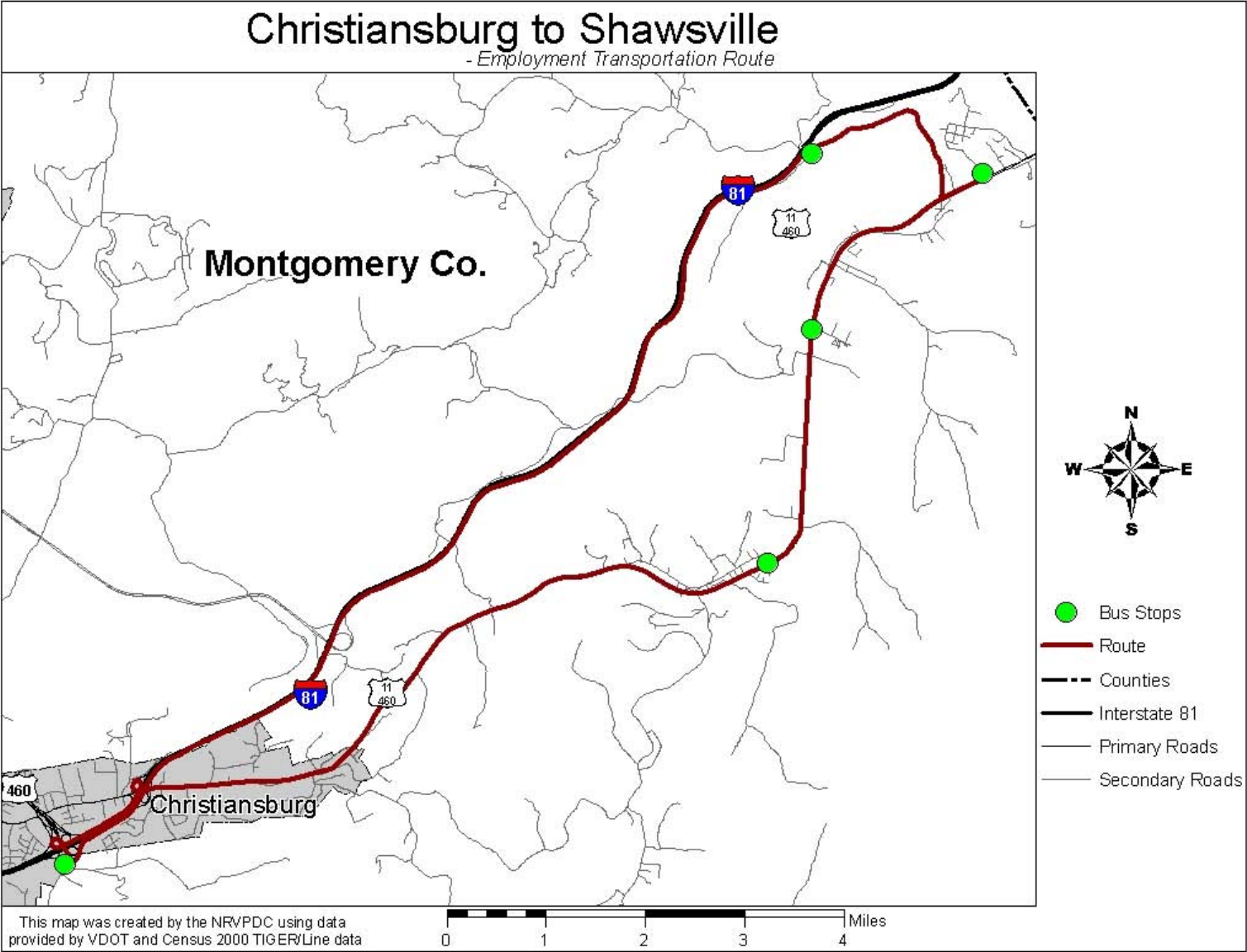
Christiansburg to Shawsville Stops:

1. Falling Branch Park & Ride Lot (Exit 118 A at Parkway Drive, Christiansburg)
2. Ironto (Pedlar Rd. and Fork Rd. just off the 128 I-81 exit)
3. Lafayette (Roanoke Rd. and Gardner St)
4. Elliston (Eastern Montgomery High School)
5. Shawsville (Roanoke Rd. and Oldtown Rd)
6. Falling Branch Park & Ride Lot (Exit 118A at Parkway Drive, Christiansburg)

Table 9

Christiansburg to Shawsville		
Route	Length (Miles)	Estimated Time (Min.)
Falling Branch Park & Ride Lot to Ironto	11.23	~17
Ironto to Lafayette	2.64	~5
Lafayette to Elliston	2.57	~5
Elliston to Shawsville	2.51	~5
Shawsville to Falling Branch Park & Ride Lot	9.25	~13
Total:	28.21	~45

Figure 18 - Christiansburg to Shawsville Employment Transportation Route Map



4.3 Semi-fixed Routes

In addition, a comprehensive system would also include transporting riders from stops to their respective work locations. It is proposed that this will be accomplished through a network of vanpools running on semi-fixed routes. The vanpools serve to set this regional transit system apart from its urban counterpart because it focuses on curb-to-curb service in conjunction with a fixed-route system. Geographical constraints of working in a rural setting require a different approach to transit, and this system addresses this.

To be effective, this project would need to include an effort to:

- 1) identify or develop local or private transportation service to transport commuters from main bus stops to their place of employment, and
- 2) in conjunction with this effort, there would be a need to identify potential sponsors, partners, or other funding mechanisms or agencies to fund such services, so that employers can support their employees in using the system, in a convenient, timely manner, on a daily basis.

Figures 19, 20, and 21 illustrate conceptual service areas that would need service by vanpools in coordination with employers or public transit connection services. This shows conceptually how a commuter would be transported to his or her workplace by using one of the seven main commuter routes in conjunction with a service such as the one illustrated. These show vanpool service areas (shaded circles), employment centers (blue dots), and the main route bus stops (larger green dots).

As this study progresses, the vanpool system would also need to finalize details such as the appropriate vehicles to use, pick-up/drop off points, funding mechanism, and operations (e.g. scheduling, routing, staffing, training) before implementing such a system. Note that Floyd County is not included in these figures, and service within that area would also be needed.

Figure 19 – Vanpool Service Area within Radford, Blacksburg, and Christiansburg

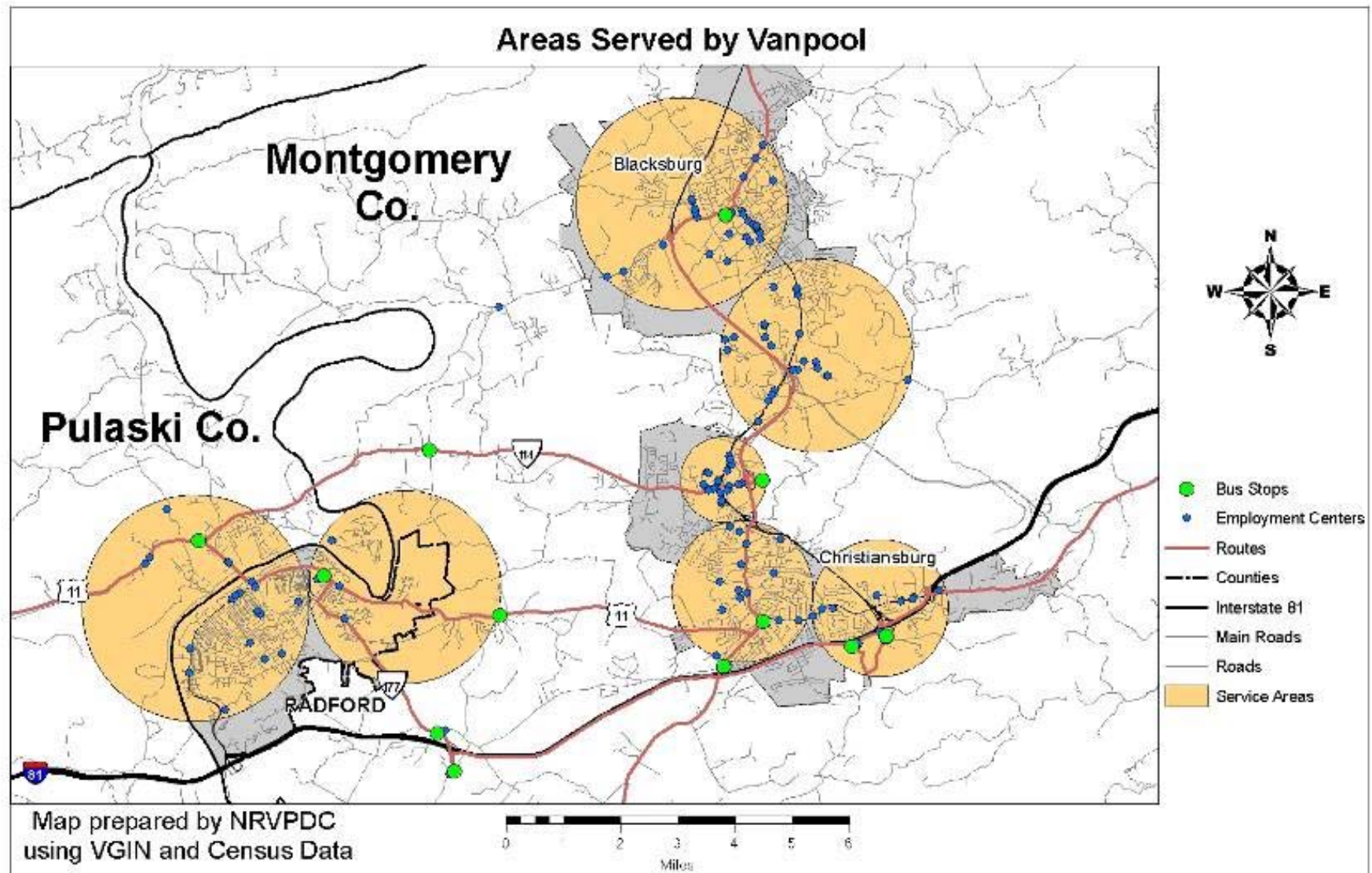


Figure 20 - Vanpool Service Areas with the Towns of Pulaski and Dublin

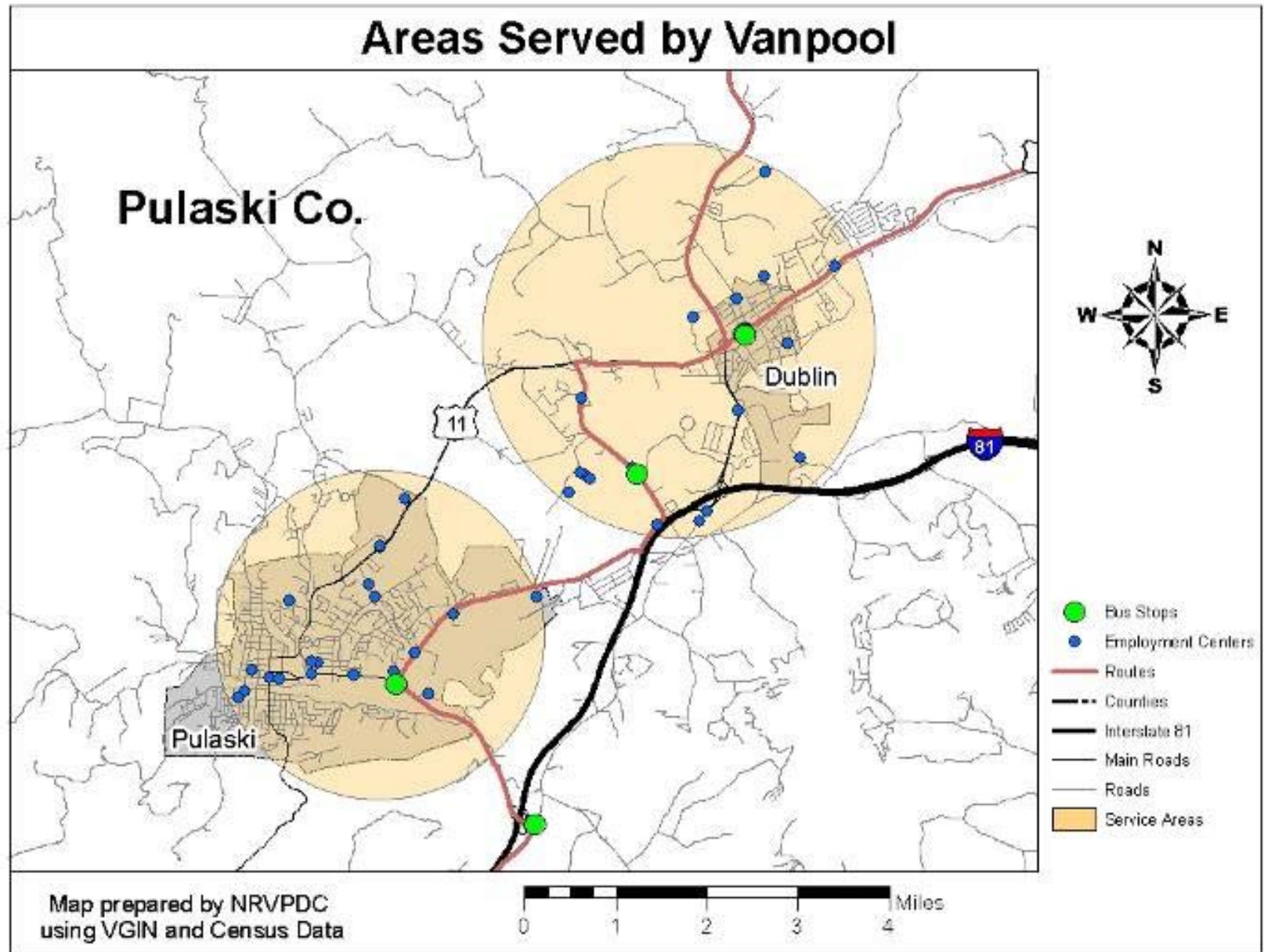
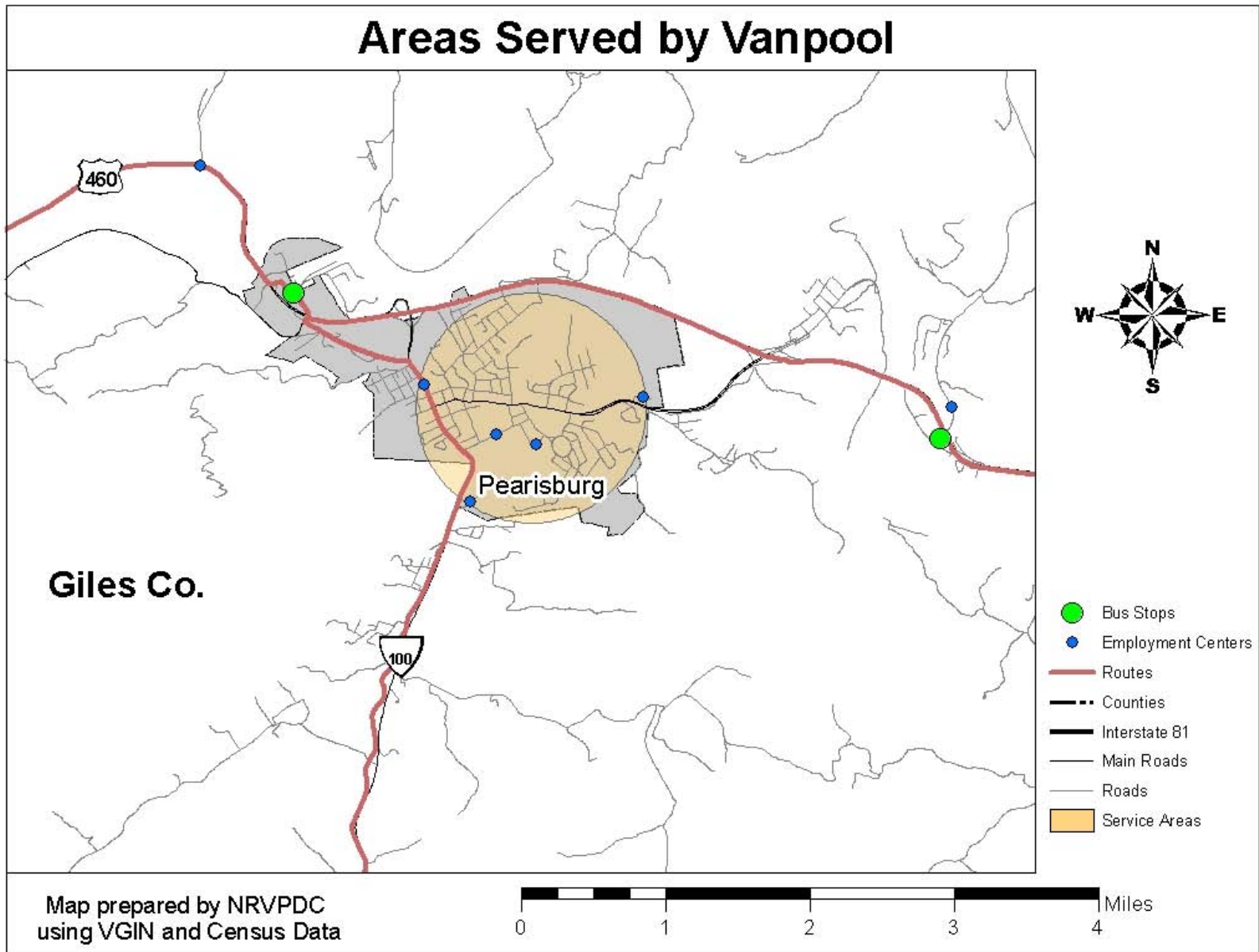


Figure 21 – Vanpool Service Area within the Town of Pearisburg



4.4 Transit Hubs

Connectivity among routes is another priority of this transit system. Much like urban transit systems, these transit "hubs" will provide commuters with access to destinations beyond the destination of their route of origin. As this plan shows, there are already potential hubs built into this system, as more than one route makes stops in the same location. These hubs include the I-81/Rt 8 stop that serves both the Radford to Christiansburg/Falling Branch and Floyd to Downtown Christiansburg routes. Also the Falling Branch Park & Ride stop is located on the Radford to Christiansburg/Falling Branch and the Christiansburg to Shawsville routes, as well as the Smart Way Commuter Bus route, operated by Valley Metro (see Figure 11).

4.5 Costs

This section includes a discussion of the potential costs, based on 2009 cost-estimates and various assumptions. There are several budgetary considerations related *only to the operation of the seven employment mobility routes* proposed. These estimates do not consider the costs for the concept of vanpool service as illustrated by Figures 19, 20, and 21. Floyd County would also need a separate service area.

There are two major budgetary categories to consider:

- 1) Capital (vehicles, equipment) and
- 2) Operations (salaries, operational costs). Assumptions are that the cost of vehicles is based on 2009 pricing, that operating costs would be approximately \$45 per hour, and that this funding would apply to the seven, main commuter routes described. Additional funds and resources would be required for any additional routes and to provide for vanpool service directly to major employers or destinations not currently served by existing transportation providers. Additional costs may also exist.

Estimated Capital Costs

At current 2009 prices, the anticipated cost of vehicles range from \$50,000 to \$360,000 per vehicle, depending on the vehicle chosen for a particular route or area. This assumes that the vehicles selected are diesel (or biodiesel) fueled vehicles. The cost of a hybrid vehicle is estimated

to be 1.5 to 2 times the cost of a diesel vehicle. One to three spare vehicles would also be recommended for seven routes. Based on a \$230,000 per-vehicle price, for a total of 10 vehicles, the total estimated capital cost could be \$2.3 million, or approximately \$3.45 million for hybrid vehicles. Additional funding would also need to be set aside for replacement vehicles, within 7-12 years, depending on the vehicles selected.

Estimated Operational Costs

Operations are estimated to cost between \$60,000 and \$100,000 annually per route. This depends upon various factors including hours of operation, pre-trip inspection protocols, number of unbillable or “deadhead” miles or hours, travel time/distance to route-start/end, number of stops, price of fuel, etc. For a total of seven routes, the total estimated capital cost could be \$700,000 annually. Affected municipalities and partners would need to make matching contributions as required for most grants. It is possible that the percentage required for such grants may fluctuate based on changes in both the federal and state government policies, associated programs, and budgetary cuts.

4.6 Cost Sharing and Matching Funds

One of the main advantages of operating transportation as a public system is that the government municipality can apply for and receive assistance from the federal and state government. Such assistance is usually in the form of grants such as the Federal Transit Administration's Job Access and Reverse Commute (JARC) program, established to help low-income individuals access to employment and related activities and to fund "reverse commute transit services" available to the general public.²¹ Reverse commuting includes transportation services for the general public from urban, suburban, and rural areas to suburban employment opportunities.

Federal and state funds are used to "match" those contributed by local government (and/or partnerships) to help pay for public transportation. These matching grants are strongly

²¹ Federal Transportation Administration. (2009). Job Access and Reverse Commute Program (5316). Online at: http://www.fta.dot.gov/funding/grants/grants_financing_3550.html.

recommended to extend local funding to the maximum. Such grants could bring the vision of the NRV seven route commuter system to reality.

4.7 Scheduling

Based on the survey data and on typical commuter driving habits observed in the New River Valley, it is recommended that a morning and evening schedule be developed. Initially this schedule would serve the 8:00 AM to 5:00 PM workforce, assuming that the final destination of that route was where the rider worked. Tables 10 and 11 illustrate an example time schedule for the Glen Lyn to Blacksburg route. The times are estimates based on the mileage between stops and assume a three minute wait time at each stop. Exact schedules would need to be developed, tested, and refined for each of the seven employment mobility routes.

Table 10 - Example Morning Schedule for Glen Lyn to Blacksburg

Glen Lyn to Blacksburg		
<i>Morning Schedule</i>		
Location	Arrival	Departure
Glen Lyn	6:20	6:23
WV border	6:30	6:33
Rich Creek	6:36	6:39
Narrows	6:47	6:50
Pearisburg	6:55	6:58
W. Pembroke	7:05	7:08
Pembroke	7:14	7:17
Rt. 42	7:26	7:29
Blacksburg	7:44	End of Route

Table 11 - Example Evening Schedule for Blacksburg to Glen Lyn

Blacksburg to Glen Lyn		
<i>Evening Schedule</i>		
Location	Arrival	Departure
Blacksburg	5:15	5:18
Rt. 42	5:33	5:36
Pembroke	5:45	5:48
W. Pembroke	5:54	6:00
Pearisburg	6:06	6:07
Narrows	6:12	6:15
Rich Creek	6:23	6:26
WV border	6:29	6:32
Glen Lyn	6:39	End of Route

4.8 Vehicles

The vehicles for each of the seven routes need to be researched further. As discussed in the section on cost, a variety of vehicles could be used, based on funding available, plans for expansion, road types, and location of bus stops. The Consultants assume that the vehicles would be diesel or biodiesel fueled vehicles, or hybrid vehicles.

Vehicles could range from standard 12 person vans, to 15 or 21-passenger body on chassis (BOC) vans, which allows for wheelchairs and includes a high ceiling so that passengers can easily stand upright while entering or exiting the vehicle. Larger, more comfortable vehicles would likely be desirable for routes of long duration (e.g., Glen Lyn to Blacksburg) such as a Freightliner bus (similar to the blue Smart Way Commuter buses). Other options include using 30, 35, or 40-foot buses such as those used by Blacksburg Transit or even a 60-foot articulated bus.

4.9 Implementation

It is recommended that a phased approach be taken for implementation.

- Phase 1: Identify roles and services for each agency including BT, CT, PAT, RADAR, and Greater Roanoke Transit Company (GRTC)
- Phase 2: Form a PDC-MPO collaboration focused on expanding this vision, including key players from all agencies and relevant partners such as VT, RU, City of Radford, etc., as well as the DRPT and VDOT; create refined long-term plan with timeline/milestones.
- Phase 3: Identify potential sponsors, partners, or other funding mechanisms or agencies to fund such services, so that employers can support their employees in using the system; identify appropriate funding sources and potential documents to serve as written agreements amongst involved organizations; determine the percent of local match funds required, based on the funding source sought.
- Phase 4: Refine, solidify, and market the vision with a focus on: 1) improving and developing connections to other agencies and services (e.g., Greyhound, Smart Way, Rail) via hubs, 2) evaluating and improving facilities (e.g., bus stops, shelters, park and ride locations); 3) facilitating connections into neighborhoods by working with local organizations to perform a needs assessment for each locality; 4) developing service to less populated, but important, more rural locations such as Willis, Check, Eggleston, Pilot, and McCoy; 5) identifying or developing local or private transportation service (e.g., vans sponsored by local government, private businesses, or partnerships) to get people from the main bus stops to their place of employment, 6) marketing the service, and 7) develop a mechanism for continuous improvement.
- Phase 5: Launch Commuter Transportation Service based on the seven routes identified as: 1) Glen Lyn to Blacksburg; 2) Pearisburg to Dublin; 3) Draper to Fairlawn; 4) Radford to Christiansburg/Falling Branch; 5) Floyd to Downtown Christiansburg; 6) Blacksburg to Radford to Christiansburg; and 7) Christiansburg to Shawsville.

Ideally, a collaboration between the MPO and the PDC would assist in further development and expansion of this vision for employment transportation options in the New River Valley. This collaboration would consider views from representatives of relevant and interested parties in each of the localities, as well as the BT, CT, PAT, and others such as RADAR, DRPT, VDOT, and GRTC, as well as other Federal and State organizations.

The five phases suggested may be further refined based on subsequent meetings of the Consultants. The phased approach works well in that various grants for funding could be pursued in association with each phase. The approach also lends itself to the building of a solid foundation upon which Phase 5 can stand and survive. To keep the momentum going toward the launch of Phase 5, the Consultants intend to continue meeting on a regular basis, and will continue to revisit and refine this vision.

Implementation of the routes can take place gradually, and it is most likely that each route would be launched separately. Ideally however, all of the routes would be launched within a relatively short time frame (e.g. 2-3 years), as the need for employee commuter transportation is apparent, and the need will likely grow as the population increases and economic conditions continue to change in the region.

V. CONCLUSION



The Consultants selected the seven routes based on data provided, a review of history in the region, and upon the experience of those involved in this effort. To that end, the Planning District Commission recognizes the importance of keeping the region's service providers and other interested organizations involved in future discussions on regional employee transit. These recommendations serve as the first of many planning phases, and the PDC will be working to procure ongoing funding in order to continue this study. Both from this study's findings as well as the many other plans and studies sited, there is a documented demand for public transportation in the New River Valley.

In the immediate future, the PDC intends to disseminate the concepts of this vision to its Commissioners for adoption, along with other organizations throughout the New River Valley and state and federal organizations.