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June 2014

Blacksburg



New River Valley MPO

FTA S.5307 Transit Funding and Regional Coordination Study



Fairlawn

Radford

11

Christiansburg

81

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New River Valley FTA S.5307 Transit Funding and Regional Coordination Study

Executive Summary

The New River Valley Metropolitan Planning Organization (NRV MPO) is the transportation planning and policy-making body for the metropolitan area, which is comprised of the Towns of Blacksburg and Christiansburg, the City of Radford, and portions of Montgomery and Pulaski Counties. On March 27, 2012, the Census Bureau released its list of Urbanized Areas (UZAs) based on data collected in the 2010 Census. Prior to the 2010 Census the NRV MPO area did not include the City of Radford or any sections of Pulaski County. The growth of the MPO area resulted in a significant shift for transit funding in the region; where previously, Blacksburg Transit was the only transit operator in the region eligible for federal S.5307 funding, the expanded MPO area resulted in Radford Transit also being eligible for federal S.5307 funding. Radford Transit was previously funded under the federal S.5311 program, designated for rural areas, which it can no longer utilize. In UZAs with more than one designated recipient, FTA expects local officials operating through the MPO, and designated recipients to determine the allocation of S.5307 funds together. The designated recipient(s) and the MPO(s) should determine the subarea allocation fairly and rationally through a process based on local needs and agreeable to the designated recipients.

The purpose of this report was to study the FTA S.5307 split between Radford Transit and Blacksburg Transit and make recommendations on how FTA funds could be allocated. The report also provides recommendations on how transit providers who serve the New River Valley UZA can coordinate to provide a regionalized service.

FTA S.5307 TRANSIT FUNDING

With an urbanized area population of 88,561, the MPO region is classified as a “small” urbanized area, eligible for Federal Transit Administration formula grant assistance under the S.5307 funding program. This program makes Federal resources available to urbanized areas and to Governors for transit capital and operating assistance in urbanized areas and for transportation related planning.

The increase in funding for the urbanized area resulting from the addition of the City of Radford did not result in as much funding as the region was previously receiving under the S.5307 program and the S.5311 program combined. In Federal FY2013, the first year of the funding shifts for the New River Valley, the S.5307 designated funding for the region was \$1,914,239. Compared to the previous federal allocation levels of \$1,535,368 (federal S.5307 funds, Blacksburg Transit) and \$780,999 (federal S.5311 funds, Radford Transit), the financial impact to the region of “urbanizing” would be a loss of just over \$400,000 in federal financial assistance. This could represent a loss of up to \$800,000 in service, given that federal funds for operating assistance require a 50 percent local match. At the same time that the region was experiencing a decrease in federal transit operating assistance, DRPT reduced state operating assistance, some of which has since been restored.

In order to help the MPO devise an equitable, defensible, and transparent allocation formula, DRPT provided funding assistance for the MPO to hire a consultant. The MPO conducted a procurement process and hired KFH Group to help the MPO and the regional transit partners to develop a formula to split the federal S.5307 funding allocation. The development of the model took place between October 2013 and December 2013. A study advisory committee comprised of area stakeholders met five times to review interim study findings and build consensus for the eventual recommendation of an allocation model to the MPO technical and policy committees.

Recommended Model

The committee came to consensus that the FTA S.5307 allocation for the region should be split according to the FTA formula that considers population and population density. It was also recommended that a three-year phase-in from the current allocation to the new allocation be applied. The committee also decided that this funding allocation split applies only to the published FTA S.5307 allocation that is assigned annually to the Blacksburg Urbanized Area. This allocation will be in place for these funds until the 2020 Census, unless there is a significant change in the way in which FTA funds are allocated to the urbanized area. Furthermore, should additional federal or state funds become available to the region, a separation negotiation will take place for those funds.

Table 1: Recommended Funding Allocation Details

FTA Alternative:

50% apportioned based on population

50% apportioned based on population x population density

FTA S. 5307 FY2014 Funds: \$1,920,790

Operator	Pop.	%	Pop. Density	Pop. x Pop. Density	%	Funding	Formula Allocation %
Blacksburg Transit	70,193	79%	1,702	119,501,752	78%	\$1,517,424	79%
Radford Transit	18,368	21%	1,801	33,076,806	22%	\$403,366	21%
	88,561			152,578,559		\$1,920,790	

3-Year Phase - Rounded to nearest whole percent					
Year	Blacksburg Transit Allocation	% of Total	Radford Transit Allocation	% of Total	Total S.5307 Allocation
Current Allocation	\$1,273,484	66%	\$647,306	34%	\$1,920,790
1st Year	\$1,344,553	70%	\$576,237	30%	\$1,920,790
2nd Year	\$1,440,593	75%	\$480,198	25%	\$1,920,790
3rd Year	\$1,517,424	79%	\$403,366	21%	\$1,920,790

Notes: Demographic data supplied by NRV MPO Blacksburg Transit service area includes the urbanized portions of Montgomery County. Radford Transit service area includes the urbanized portion of Pulaski County. Allocations are rounded to the nearest whole percent.

REGIONAL COORDINATION OPPORTUNITIES

The intent of this section of the study was to document the coordination opportunities in the New River Valley UZA and to provide the information needed for the NRV MPO and the Advisory Committee to make decisions regarding potential options for near-term regional coordination efforts aimed at facilitating regional transit use. The goal was to identify near-term regional coordination opportunities that could facilitate regional trip-making. One aspect of this is the structure for regional coordination, and the New River Valley has already made significant strides in setting up an organizational focus of coordination activities. A second aspect is the development of a common information base about the available services, which can be developed into user-friendly information to enable regional trip-making, and to serve as a basis for planning coordination of services among the various transit systems.

While “regional transit coordination” is not new, it is important to consider the reasons for encouraging coordination among the transit providers in a region:

- Growing area, growing congestion.
- Some transit, but disparate and uncoordinated.
- Need for cross-region travel.
- Many separate transit providers competing for the same funding.

Summary of Recommendations

The New River Valley region has established a core foundation for regional transportation through the Regional Transit Coordinating Council. The next steps are to design and market service that is simple, direct and frequent to foster regional connectivity, and display this platform through a regional brand in a clearinghouse function. Key aspects of this approach are:

- Develop a “branded” regional transit website that hosts regional transit maps, information on stops (and connections), information on schedules and fares, and links to the websites of the transit systems.
- Explore and develop shared transit system real-time information.
- Service coordination - begin to view and highlight routes that share stops as “regional” service. This will require transit systems to time transfers for passenger convenience, as well as ensure overlapping routes complement each other rather than compete against the other.
- Shared stops - branded signage and future allocation of capital costs based on usage.
- Regional fare or fare integration - determine the approach the systems choose to explore and when, including a fare free option.

S.5307 Transit Funding Allocation

BACKGROUND

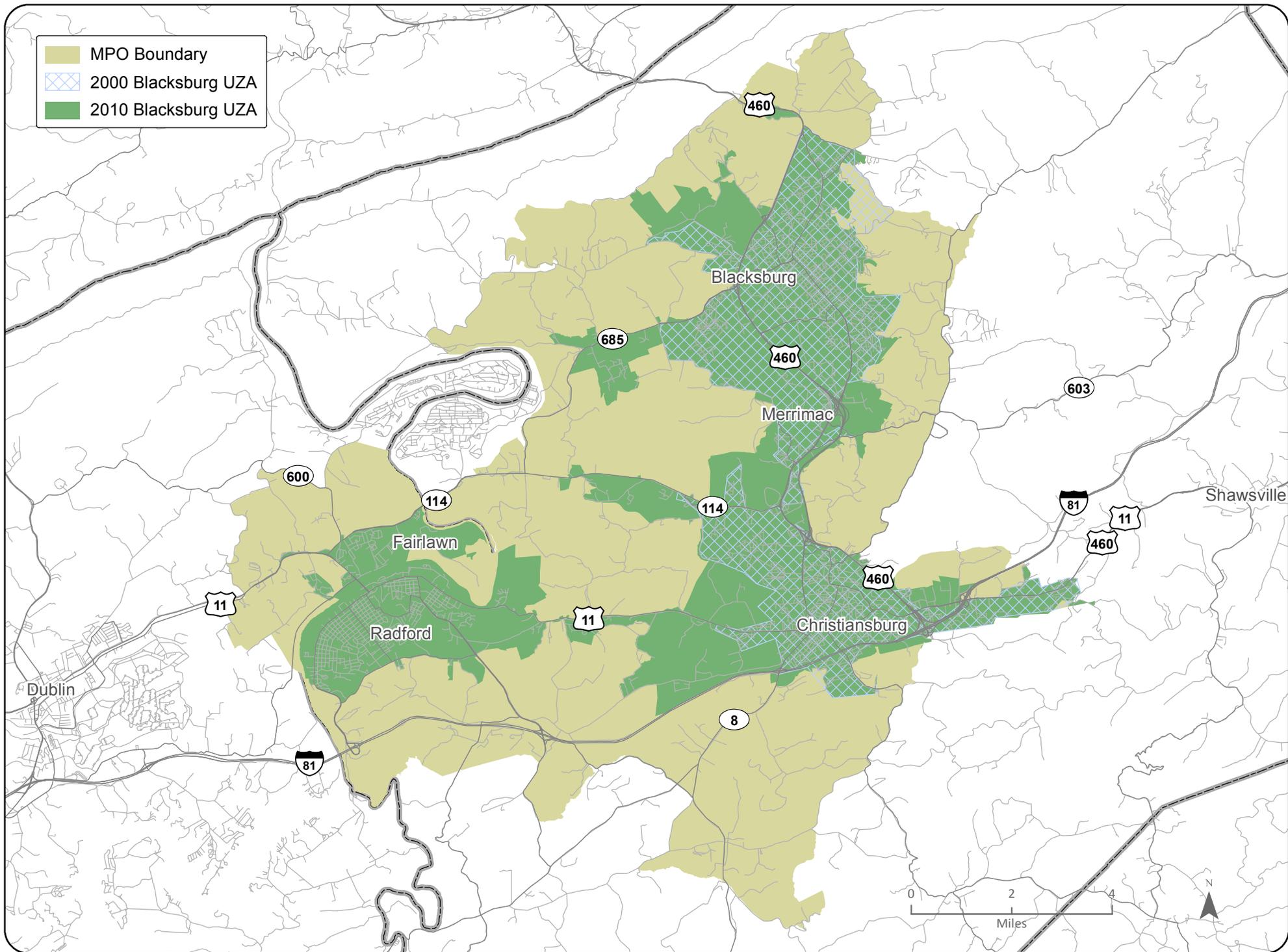
With an urbanized area population of 88,561, the MPO region is classified as a “small” urbanized area, eligible for Federal Transit Administration formula grant assistance under the S.5307 funding program. This program “makes Federal resources available to urbanized areas and to Governors for transit capital and operating assistance in urbanized areas and for transportation related planning. An urbanized area is an incorporated area with a population of 50,000 or more that is designated as such by the U.S. Department of Commerce, U.S. Census Bureau....The Governor or Governor’s designee is the designated recipient for urbanized areas between 50,000 and 200,000.”¹

Prior to the 2010 Census, the NRV MPO area did not include the City of Radford or any sections of Pulaski County. Figure 1 provides a map of the urbanized area, showing both the Census 2000 and the 2010 Census boundaries. The growth of the MPO area resulted in a significant shift for transit funding in the region; where previously, Blacksburg Transit was the only transit operator in the region eligible for federal S.5307 funding, the expanded MPO area resulted in Radford Transit also being eligible for federal S.5307 funding. Radford Transit was previously funded under the federal S. 5311 program, designated for rural areas, which it can no longer utilize.

The increase in funding for the urbanized area resulting from the addition of the City of Radford did not result in as much funding as the region was previously receiving under the S.5307 program and the S.5311 program combined. This was in part due to a shift in the way that the Virginia Department of Rail and Public Transportation (DRPT) allocates the “Governor’s designee” funding throughout the Commonwealth. In previous years, DRPT would use its permitted discretion to shift funds among the small UZAs based on their funding needs. Beginning in FY14, DRPT shifted its internal policies with regard to S.5307 funding, allocating the funds based entirely on the federal funding formula as published in the Federal Register. In Federal FY2013, the first year of the funding shifts for the New River Valley, the S.5307 designated funding for the region was \$1,914,239. Compared to the previous federal allocation levels of \$1,535,368 (federal S.5307 funds, Blacksburg Transit) and \$780,999 (federal S.5311 funds, Radford Transit), the financial impact to the region of “urbanizing” would be a loss of just over

¹ U.S. Department of Transportation, Federal Transit Administration, Grant Programs, Program Overview (website).

Figure 1: Current Metropolitan Planning Organization (MPO) Boundary and the Blacksburg Urbanized Area (UZA)



\$400,000 in federal financial assistance. This could represent a loss of up to \$800,000 in service, given that federal funds for operating assistance require a 50 percent local match. At the same time that the region was experiencing a decrease in federal transit operating assistance, DRPT reduced state operating assistance, some of which has since been restored.

It was in this context that DRPT asked the NRV MPO to develop a financial allocation model to equitably split the federal S.5307 allocation between Blacksburg Transit and Radford Transit. The MPO was initially inclined to use the same formula that the FTA uses to develop the regional allocation; however, this would result in a dramatic loss of funds for Radford Transit. As a relatively new and growing transit program, it would have been very difficult for Radford Transit to absorb such a significant loss of funding assistance within one year.

In order to help the MPO devise an equitable, defensible, and transparent allocation formula, DRPT provided funding assistance for the MPO to hire a consultant. The MPO conducted a procurement process and hired KFH Group to help the MPO and the regional transit partners to develop a formula to split the federal S.5307 funding allocation. This interim report documents the development of the formula. A final report for the study will also be prepared and will address the additional study tasks of coordination and regionalization.

The development of the model took place between October 2013 and December 2013. A study advisory committee comprised of area stakeholders met five times to review interim study findings and build consensus for the eventual recommendation of an allocation model to the MPO technical and policy committees. KFH Group was tasked with conducting the technical task work, meeting individually with stakeholders, and helping the study task force come to consensus. Several tasks were involved during the development of the model, and these are described below.

KEY ISSUES

At the initial meeting with the project Advisory Committee, a number of issues with the S.5307 allocation (to the Urbanized Area) and sub-allocation (within the Urbanized Area to the different transit operators) were discussed. In particular, the Committee felt that notice from the state regarding the change in boundaries of the Urbanized Area to include Radford and associated changes in state policy regarding discretionary re-allocation of S.5307 statewide had not provided very much time for local reaction or adjustment, and that was one reason for performing this project. This study, it was noted, needs to be even-handed (in terms of consideration of the interests of the regional operators and funders), transparent, and data-driven.

There was also discussion of the proper focus of the study. Although DRPT is revising its state transit funding programs, the Steering Committee and the NRV MPO staff both indicated that the primary focus should be limited to the allocation of FTA S.5307 funding within the Urbanized Area, rather than addressing the potential impact of state program funding or other federal grants. It was noted that the boundaries of the Urbanized Area should be mapped in the study along with the transit routes of Radford Transit and Blacksburg Transit. It was decided that Pulaski Transit should not be considered as a transit system within the Urbanized Area for S.5307 funding, as its primary origin area is Non-Urbanized (though some of its services take passengers into the Urbanized Area. Given the directive to be even-handed, transparent and data-driven, the study team began by focusing on transit needs and population served (and unserved) as revealed by the most recent Census data.

DEMOGRAPHICS AND TRANSIT NEEDS CHARACTERISTICS

This section of the Interim Report provides an overview of basic demographic and transit needs characteristics that could be considered in the development of the model. The basic demographic characteristics are presented first, followed by the transit needs analysis.

Basic Demographics

Any cost allocation model that is developed for the NRV MPO is likely to consider population and population density, as these factors are used by the FTA in its allocation formula. The primary population characteristics of the urbanized area are presented in Table 2.

As this data indicates, about 79% of the urbanized area population live within the general service area of Blacksburg Transit (Towns of Blacksburg and Christiansburg and the portion of Montgomery County that is within the urbanized area); and 21% live within the general service area of Radford Transit (City of Radford and the portion of Pulaski County that is within the urbanized area).

Table 2: Urbanized Area Population Characteristics

Jurisdiction	2010 Population	Population % total	Land Area	Land Area % total	Population Density
<i>Within the urbanized area</i>					
Montgomery County (1)	7,214	8%	12.58	24%	573
Town of Blacksburg	42,330	48%	15.77	31%	2,684
Town of Christiansburg	20,649	23%	12.88	25%	1,603
Subtotal, Blacksburg Transit	70,193	79%	41.23	80%	1,702
Pulaski County (2)	2,450	3%	2.35	5%	1,043
City of Radford	15,918	18%	7.85	15%	2,028
Subtotal, Radford Transit	18,368	21%	10.2	20%	1,801
Totals	88,561		51.43		1,722

(1) The area of Montgomery County that is within the urbanized area, but not in the Towns of Blacksburg or Christiansburg or the City of Radford.

(2) The portion of Pulaski County that is in the urbanized area.

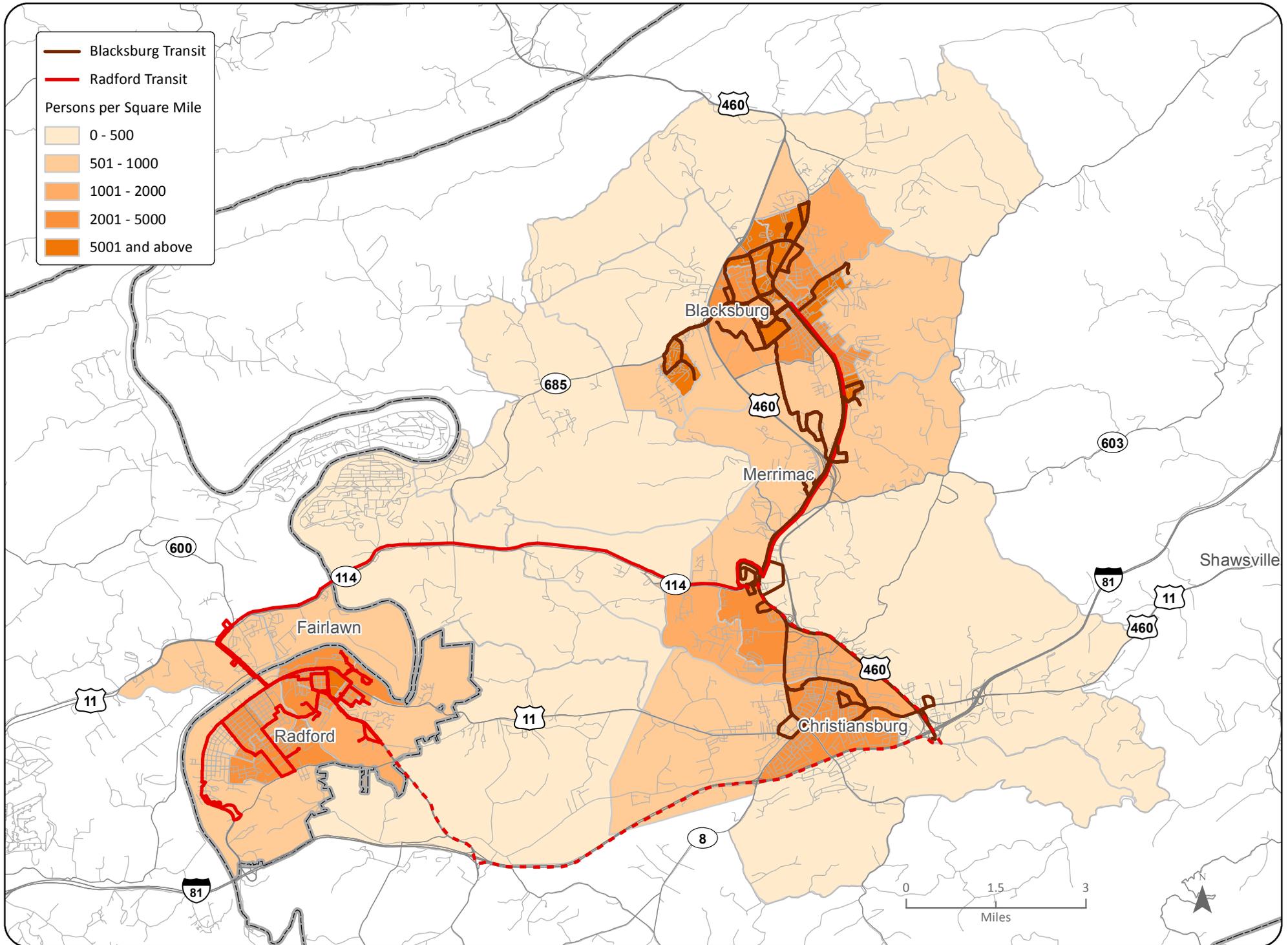
Population Density

Population density is often an effective indicator of the types of public transit services that are most feasible within a study area. While exceptions exist, an area with a density of 2,000 persons per square mile will generally be able to sustain frequent, daily fixed-route transit service. Conversely, an area with a population density below this threshold but above 1,000 persons per square mile may be better suited for demand-response or deviated fixed-route services.

Figure 2 portrays the NRV MPO population density by Census block group. The block groups that have a population density greater than 2,000 persons per square mile are generally clustered in the municipalities of Blacksburg, Christiansburg, and Radford.

While the Town of Blacksburg exhibits the highest population density in the NRV MPO area (2,684 people per square mile); the Radford Transit service area exhibits higher population density than the Blacksburg Transit service area due to the relatively large land area and lower population density associated with the portion of Montgomery County that is associated with Blacksburg Transit. Both the Town of Blacksburg and the City of Radford exhibit population densities that are considered to be appropriate for fixed route transit (over 2,000 people per square mile).

Figure 2: 2010 Population Density in the New River Valley



Institutional Population

In addition to the collection of basic demographic data, the study team also collected data concerning the total student enrollments at the two major higher education institutions in the region (Virginia Polytechnic Institute and State University (Virginia Tech) and Radford University). These data are important, as each of the two transit operators provides a significant level of transit service oriented to the needs of these two institutions. Table 3 shows the student enrollment for each of these universities for the Fall 2013. As this data shows, about 38,300 students are enrolled in either Virginia Tech or Radford University. Of these students, 76% attend Virginia Tech and 24% attend Radford. The students who live in the urbanized area, including those who live on campus in student housing, are also included in U.S. Census population.

Table 3: Institutional Population

Total Student Enrollment- Blacksburg Area Campuses Only- Fall 2013

Institution	# Students	% of Total
Radford University	9,228	24%
Virginia Tech	29,071	76%
Total	38,299	

Sources: Virginia Tech Website; Radford University website

Transit Needs Characteristics

Public transportation needs are defined in part by identifying the relative size and location of those segments within the general population that are most likely to be dependent on transit services. These include individuals who may not have access to a personal vehicle or are unable to drive themselves due to age, disability, or income status. Determining the location of transit dependent populations allows for an evaluation of current transit services and the extent to which they meet community needs.

Transit Dependence Index (TDI)

The TDI is an aggregate measure that utilizes recent data from the American Community Survey (ACS) five-year estimates and the United State Decennial Census to display relative concentrations of transit dependent populations. Six factors make up the TDI calculation, as shown in the following formula:

$$\text{TDI} = \text{PD} * (\text{AVNV} + \text{AVE} + \text{AVY} + \text{AVD} + \text{AVBP})$$

- PD: population per square mile
- AVNV: amount of vulnerability based on no vehicle households
- AVE: amount of vulnerability based on elderly populations
- AVY: amount of vulnerability based on youth populations
- AVD: amount of vulnerability based on disabled populations
- AVBP: amount of vulnerability based on below-poverty populations

In addition to population density (PD), the factors above represent specific socioeconomic characteristics of area residents. For each factor, individual block groups are classified according to the prevalence of the vulnerable population relative to the urbanized area average. The factors are then plugged into the TDI equation to determine the relative transit dependence of each block group (very low, low, moderate, high, or very high). Figure 3 displays the overall TDI rankings for the NRV MPO area, overlaid with the current transit network. The areas with the greatest potential transit need include several pockets in the Town of Blacksburg, the Hethwood/Price's Fork area, Fairlawn, and central Radford. All of the highest need block groups are currently served by transit.

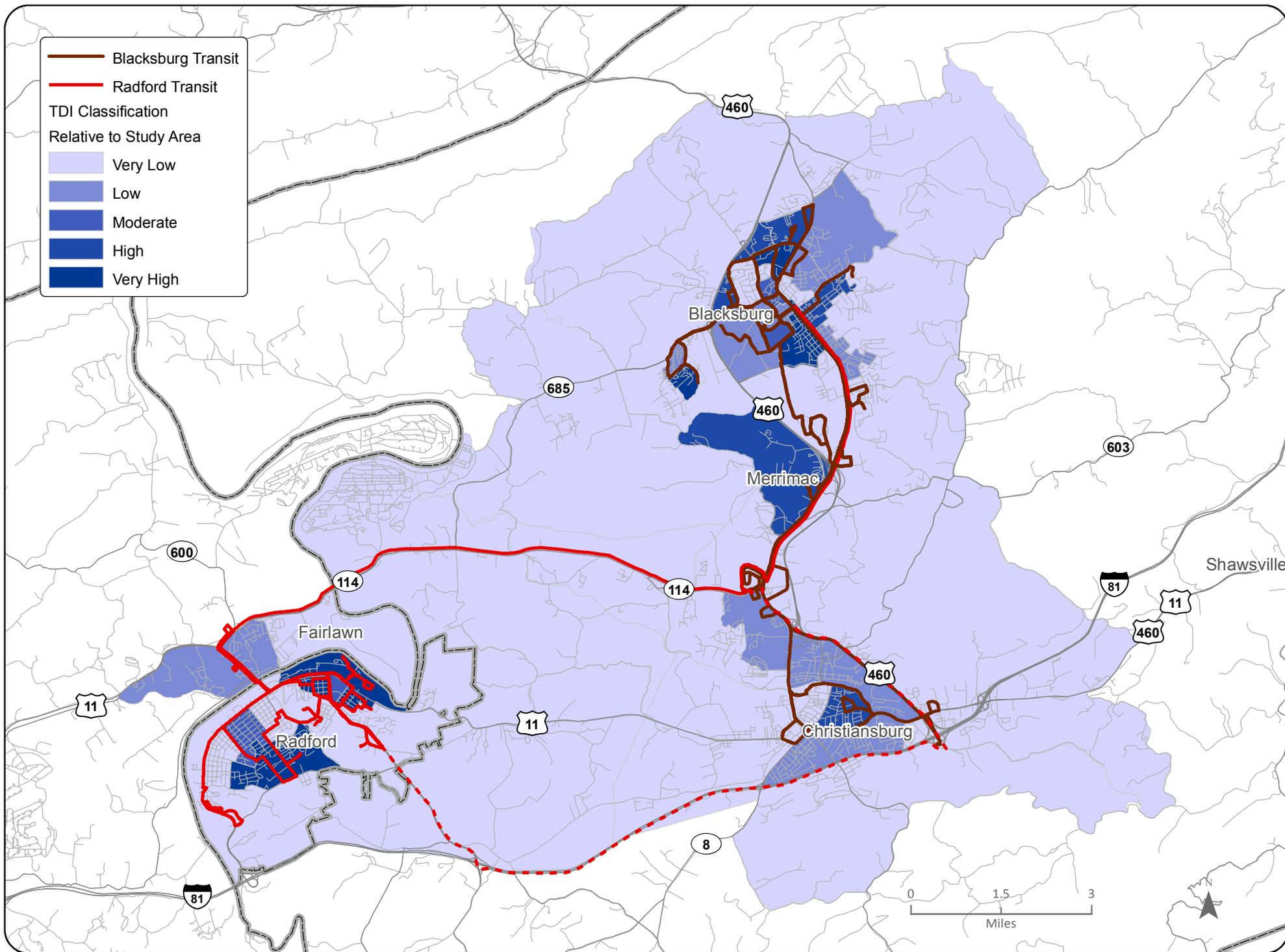
TRANSIT OPERATING AND FINANCIAL DATA

Operating Data

There is a significant level of transit service provided in the NRV MPO region, including the following:

Blacksburg Transit (BT): Provides service for the Town of Blacksburg, with a focus on the needs of the Virginia Tech community. There are 11 fixed routes that are operated with a fleet of 44 vehicles. BT also provides complementary ADA paratransit within its service area (BT Access). In addition to the Blacksburg/Virginia Tech services, BT also provides service for the Town of Christiansburg, with the assistance of a Job Access and Reverse Commute (JARC) grant. In FY13, BT operated over 92,000 revenue hours, providing almost 3.5 million passenger trips. This data does not include special/athletic services. The annual operating budget for BT's public transit services and the Christiansburg service is just over \$6.3 million. BT began operating service in 1983 and is operated directly by the Town of Blacksburg.

Figure 3: Transit Dependent Index for the New River Valley



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Radford Transit (RT): Provides service for the City of Radford, with a focus on the needs of the Radford University community. RT offers six fixed routes that are operated with a fleet of 14 vehicles. In FY13, RT operated over 30,000 revenue hours, providing just under 330,000 annual passenger trips. The annual operating budget for RT’s public transit service is just over \$1.3 million. RT is a relatively new transit program, with service initiated in 2011. The City contracts with New River Valley Community Services to operate the service. Figure 4 provides a map of the fixed route transit services that are operated in the NRV MPO area. Table 4 provides an overview of the NRV MPO area transit operating statistics.

In addition to the urbanized area providers, Pulaski Area Transit, the rural transit provider based in Pulaski County, brings riders into the urbanized area. Smartway, operated by Valley Metro, provides intercity bus service between Roanoke and the New River Valley. In addition, the area is served by Megabus.

Table 4: Transit Operating Data - FY13

Transit Provider	Revenue Hours	Hours % of Total	Revenue Miles	Miles % of Total	Route Mileage	Mileage % of Total	Passenger Trips	Trips % of Total
Blacksburg Transit (1)	92,274	75%	895,825	73%	114	56%	3,465,071	91%
Radford Transit	30,378	25%	325,849	27%	88.7	44%	328,943	9%
Totals	122,652		1,221,674		203		3,794,014	

(1) Includes Christiansburg service

Financial Data

Public transit services in the NRV MPO area are funded through a mix of federal, state, and local funds. The primary source of federal funds is the S.5307 program, which provides operating and/or capital assistance, as previously described. The predominant sources of local transit funding come from the two major universities: Virginia Tech and Radford University. The Town of Christiansburg provides local match for the Christiansburg Bus Service, which is operated by BT with the assistance of a Job Access and Reverse Commute (JARC) grant. The FY14 financial data for the MPO area transit providers is presented in Table 5.

Figure 4: Fixed Route Transit Services in the New River Valley

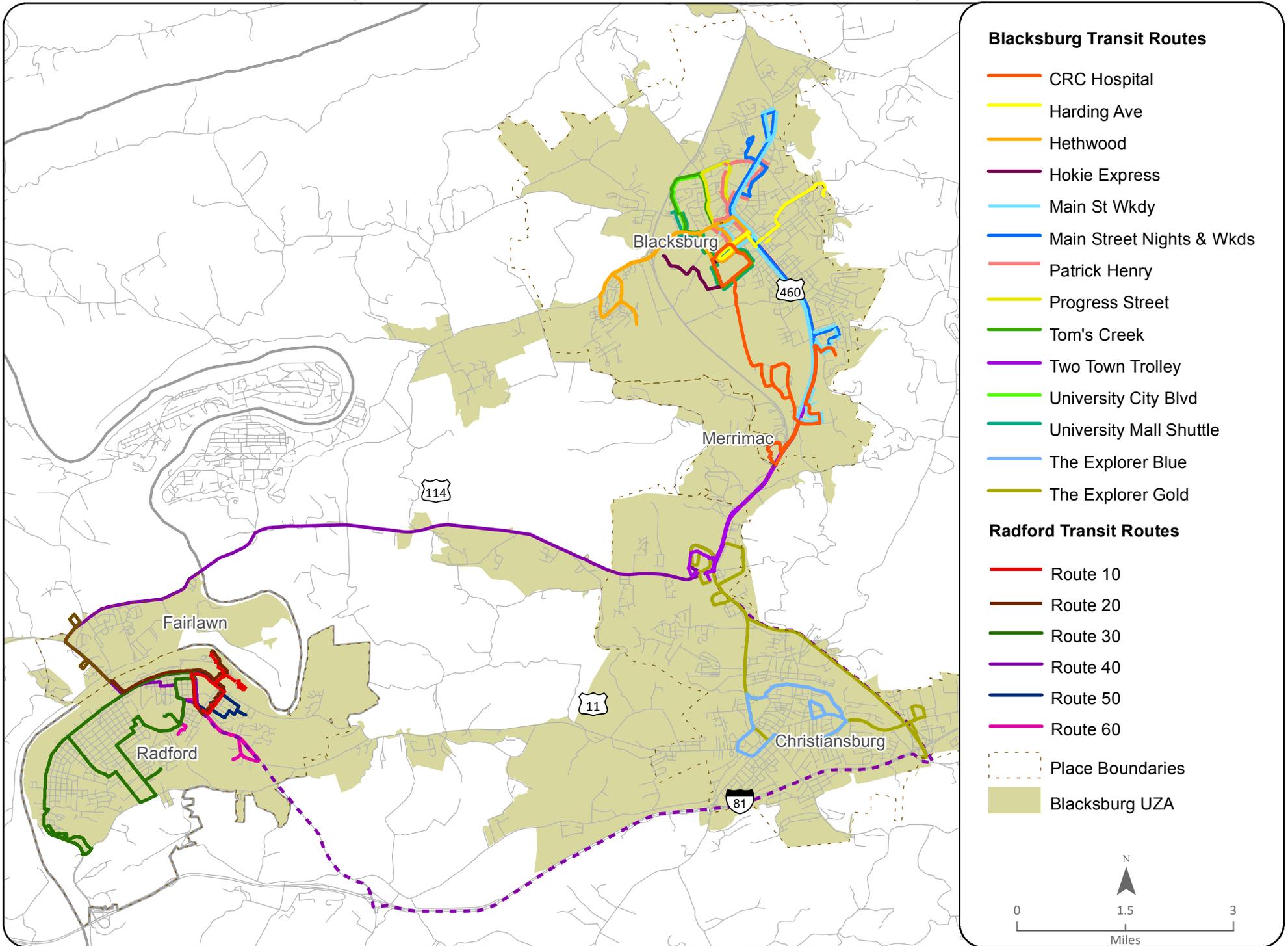


Table 5: New River Valley MPO Area Transit Services, FY14 Financial Statistics

Funding Source	<u>Blacksburg Transit</u>		<u>Radford Transit</u>
	<u>Blacksburg/ Virginia Tech</u>	<u>Christiansburg</u>	
FY14 Budget	\$ 5,858,161	\$ 448,677	\$ 1,354,543
Funding/Revenue:			
Fares (1)	\$ 905,752	\$ 27,550	\$ 15,000
Advertising	\$ 95,450	\$	\$ 15,000
Federal S.5307	\$ 1,273,484	\$	\$ 647,306
Federal S. 5316	\$	\$ 210,564	\$
State Funds	\$ 880,883	\$	\$ 160,187
Local	\$ 2,702,592	\$ 210,563	\$ 517,050
Totals	\$ 5,858,161	\$ 448,677	\$ 1,354,543

(1) The fares for BT include a portion of the annual VA Tech local match contribution

Source: DRPT

STAKEHOLDER INTERVIEWS

In order to facilitate the consensus building process and learn more about potential opportunities and challenges, the study team conducted several stakeholder interviews during the study process. The purposes for conducting the interviews were to determine, in-depth, the various stakeholders' perspectives on the allocation process, likely political and financial commitment to transit, current transit assets, and any issues for the allocation plan that were of particular concern to the affected parties.

Interviews were held either in person or via telephone with representatives from the following:

- City of Radford
- Town of Blacksburg
- Town of Christiansburg
- Radford University
- Virginia Tech

Additional stakeholder input was provided at each study committee meeting. Representatives from Blacksburg Transit and Radford Transit served on the study committee.

The following standard questions were asked of the stakeholders:

1. What is your vision for public transportation in the region?
2. What are your goals for public transportation in the region?
3. Do you see opportunities/challenges to meeting these goals – what are they?
4. Do you see current/or likely future unmet transit needs in the region – if so, what are they?
5. Do you see coordination opportunities among the region’s transit providers?
6. What do you think the roles, with regard to funding and operating public transit, should be for the universities and the municipalities?
7. What factors do you think are most important in developing an equitable funding formula? (i.e. service provided (hours/miles); service consumed (ridership); population/service area parameters; performance, ease of data collection, etc.)
8. What is the source of the funds your institution/municipality provides as local match? What are the future prospects for this source growing? Shrinking?
9. In developing a methodology for splitting the Federal S.5307 allocation, what conditions would be “deal- breakers” for your institution/municipality to agree?

These base questions typically opened the discussion to a variety of other topics as well. Stakeholder opinions, based on these interviews and committee discussion, are summarized below.

- The loss of funding to the area is a major issue for both Blacksburg Transit and Radford Transit and it was compounded by a change in the way that DRPT handles the Governor’s Apportionment grantees (those in small urbanized areas with populations between 50,000 and 199,999), and a reduction in state transit operating assistance (some of which has since been restored). Given DRPT’s role in compounding the issue, local stakeholders would like to see DRPT provide financial assistance to help provide a transition from a larger federal allocation to a smaller one.
- All parties recognize that the funding reductions will have a bigger impact on Radford Transit, as federal operating assistance comprises a higher percentage of

its budget. There is a local willingness to consider a phase-in of the recommended formula, once it has been developed.

- All parties are interested in developing a formula that results in the least amount of harm to the respective transit programs.
- There are unmet transit needs throughout the region. Blacksburg Transit regularly leaves people behind at stops and their policies and planning continue to call for decreases in parking capacity and increases in transit use for the Virginia Tech campus. Radford University's Campus Master Plan also calls for additional construction on campus that will displace current parking capacity. Both Radford University and Virginia Tech consider transit services to be vital for the continued growth and development of their campuses. Va Tech expects that the eventual campus build-out will result in an enrollment of 30,000 total students at the Blacksburg Campus (a 3.2% increase over current enrollment). Radford University expects to grow to 10,000 students, an increase of 8.4% over current enrollment.
- Neither of the transit providers feel that they can cut service, given the level of transit need in the region.
- There will be a need to fold the Christiansburg service into the traditional federal/state/local funding split when the current federal JARC grant expires, which is likely to be in FY15. The federal funds are guaranteed through FY14. The net deficit for the Christiansburg service is currently funded through JARC (50%) and local (50%). Christiansburg would also like to grow their service to provide more geographic coverage and frequency so that the system is more convenient. The Town of Christiansburg provides a significant level of local financial support (\$210,563 annually).
- Significant local match contributions to both transit systems come from their respective universities. The university contributions are derived from student transportation fees. These fees have been raised recently at both institutions. There is a recognition that it is appropriate to use student transportation fees to support transit services that are used by students; however the Governor of Virginia recently indicated that there should not be additional fees placed upon students at state schools. It will be necessary for Radford University to raise its transportation fee in order to make up the loss of federal funds, if services are to be maintained at current levels. The process of increasing student fees is more likely to be feasible if spread over several years.

- Additional local match is provided by the City of Radford to help support the program. In FY13, the City provided about \$168,500 for operating expenses, which included the direct contractor's cost to the City and City-incurred expenses.
- Some stakeholders in the area think that it is most appropriate to use the FTA formula to divide the S.5307 allocation between Blacksburg Transit and Radford Transit.
- Stakeholders do not want an allocation model that results in significant funding swings from year to year. Formulas that use transit consumption (i.e., ridership) can cause significant swings.
- Stakeholders do not want an allocation model that necessitates a complex data collection and analysis process.
- Stakeholders want a method to split the S.5307 allocation that is equitable, transparent, defensible, and easy to understand.
- Connectivity between the two systems in the region is important.

EXAMPLES FROM OTHER AREAS

FTA apportions S.5307 Urbanized Area Funds to designated recipients in census designated areas (UZA) over 50,000 population, which is how DRPT is appropriating the funds for the Blacksburg-Christiansburg UZA, as discussed earlier in the report. In *TCRP Project J-07 Synthesis Topic SH-14: Sub-Allocating FTA Section 5307 Funding Among Multiple Recipients in Metropolitan Areas*, the DMP Group used surveys to document methodologies and practices for the sub-allocation of FTA S.5307 funds in UZAs of multiple types and sizes. A key finding was that “most of the respondents (63%) that sub-allocate use the exact FTA formula data and values to sub-allocate S.5307 funds.”

Another report that was reviewed to assist in KFH Group's analysis was the *Charlottesville-Albemarle Regional Transit Authority Plan: Appendix I Regional Cost Allocation Options*, authored by Nelson/Nygaard Consulting Associates. They note that for urbanized areas that do not allocate costs between partners a number of different measures are used, the most common being:

- Population
- Passengers

- Service Hours
- Service Miles
- Assignment of routes to specific entities

The Charlottesville study documents cost allocation formulas used by 10 different agencies (three from Virginia – Williamsburg Area Transport², Fredericksburg Regional Transit, and Virginia Railway Express plus the Washington Metropolitan Area Transit Authority). Of the transit systems examined, four use a single measure to allocate costs, the other six transit systems split costs based on multiple measures.

The TCRP report also included six case studies, two of which KFH Group emulated to a degree within the allocation alternatives component of this project. The first was Port St. Lucie, Florida since this UZA also encompassed two designated recipients – St. Lucie County and Martin County, each operating its own public transportation systems. Their current formula for determining the split utilizes population (50%), revenue miles (25%), and population density (25%). One additional interesting note is that the counties appear to prefer to stick with the current ratio to maintain the collegial working relationship rather than update the formula with the most recent census data. The second case study was Milwaukee, Wisconsin since ridership and service criteria were the key factors. The Milwaukee UZA includes four designated recipients – Milwaukee County, Ozaukee County, Washington County, and Waukesha County, each with its own public transportation system. Each year when FTA funding apportionments are announced, the Southeastern Wisconsin Regional Planning Commission uses the most recent NTD ridership and service data (equally weighted) reported by each operator to distribute the funds.

Chapel Hill, North Carolina is part of another UZA that was analyzed because of the significant role of the University of North Carolina in funding Chapel Hill Transit. Chapel Hill Transit has three primary partners providing local funding – the Town of Chapel Hill, the Town of Carrboro, and the University of North Carolina (UNC). Chapel Hill Transit provides local transit services throughout its service area plus university oriented services on and around the UNC campus (all services are open to any riders). UNC pays for 100% of the costs for the designated university routes, and all three of the local partners share the costs of the other services based on population (UNC's population is considered to be its number of students and faculty/employees) after state and federal funding is applied. University students, staff and faculty living in Chapel Hill and Carrboro are in effect double-counted, as they are included in both the University population and in the population of the town of residence. This reflects the dominant role of the university in the overall need for transit in the community. New services are paid by the requesting partner for the first year and after that time the costs are folded onto the overall budget if the service meets defined performance criteria. The

² Developed by KFH Group

“Chapel Hill” approach of including university students, staff and faculty was also considered in developing funding allocation options for the New River Valley.

POTENTIAL MODEL FACTORS

As the examples from other MPO areas indicate, there are a number of potential factors that could be considered for use when contemplating a fair, transparent, and data driven methodology to share the Federal Transit Administration S.5307 funds that have been appropriated for the Blacksburg-Christiansburg UZA. These factors fall into two broad categories: those associated with the demographics of the area, such as population; and those associated with the level of transit supplied and/or consumed in the region (such as revenue hours, revenue miles, and/or ridership). In order to better understand the full range of these factors and how each could affect the funding split in the New River Valley, they are defined and discussed below.

Demographic Factors

Population

- **Definition:** The number of people who live in a place (Merriam-Webster).

Resident population

- **Definition:** In Census 2010, people were counted at their "usual residence." Usual residence has been defined as the place where the person lives and sleeps most of the time. This place is not necessarily the same as the person's voting residence or legal residence. Persons temporarily away from their usual residence, such as on vacation or on a business trip on Census Day, were counted at their usual residence. People who live at more than one residence during the week, month, or year were counted at the place where they live most of the year. People without a usual residence, however, were counted where they were staying on Census Day.³

For the New River Valley, it is significant to note that the Census protocol of considering where people live most of the year results in college students being included as residents.

³ U.S. Census Bureau, 2010 Census of Population, Public Law 94-171.

- **Discussion:** Population is the most fundamental indicator regarding the level of transit need, reflecting the complete universe of potential transit riders. It is included as one of the FTA’s S.5307 formula allocation factors, along with population density (for those areas between 50,000 and 199,999 in population).

Institutional Population

- **Definition:** In the context of the S.5307 funding study, institutional population refers to the total student population of the two major higher educational institutions in the urbanized area: Virginia Tech and Radford University.
- **Discussion:** Using institutional population as a factor in the funding formula recognizes that the majority of the transit ridership in the region is associated with either Virginia Tech or Radford. The institutional population would be duplicative of the total population if both factors were included, given that students would be counted twice. This double-counting would emphasize the importance of the student ridership to the total transit ridership pool. The formula used in Chapel Hill, North Carolina uses both total population and institutional population as factors for its revenue allocation.

Population Density

- **Definition:** The number of residents per unit of land area. Population density is typically expressed in terms of the number of people per square mile. It is a measure of the intensity of residential land use in an area.
- **Discussion:** Population density is also one of the factors used by the FTA in its appropriation of S.5307 funds to the area. Population density is typically a good indicator of the potential for public transportation to succeed. Higher population densities allow public transportation services to be efficient, providing the ability to serve more riders per unit of service supplied.

Employment Density

- **Definition:** The number of jobs per unit of land area.
- **Discussion:** According to some researchers, employment density is more strongly associated with transit ridership than is residential density.⁴ Higher employment densities allow for common destinations and also allow public

⁴ Kolko, Jed, et.al. 2011. “Making the Most of Transit- Density, Employment Growth, and Ridership around New Stations,” Public Policy Institute of California. 21-22.

transportation services to be efficient, providing the ability to serve more riders per unit of service supplied. Employment numbers at the town level are not as readily available as are some other demographic characteristics.

For the New River Valley, the effect of Virginia Tech and Radford would be evident in the employment numbers, but Christiansburg would likely benefit through the use of this factor with its strong retail base.

Transit Service Supply Factors

Transit service supply factors reflect the level of transit service supplied by the operators. These factors include revenue hours, revenue miles, and route miles. Including a transit service supply factor acknowledges how much or how little service the transit system is providing in the service area, potentially rewarding systems that provide high levels of service.

Revenue Hours of Service

- **Definition:** A revenue hour is one hour of one vehicle being in service for passengers. Revenue hours of service include those provided for passenger service regardless of the type of revenue payment (i.e., fares, contracts, subsidy arrangements). Layover and recovery time are included, but deadhead time is not.

Revenue Miles of Service

- **Definition:** A revenue mile is one mile of one vehicle being in service for passengers. Similar to revenue hours, revenue miles include those provided for passenger service regardless of the type of revenue payment (i.e., fares, contracts, subsidy arrangements). Deadhead mileage is not included.

Route Mileage

- **Definition:** Route mileage refers to the total one-way mileage of all of the system's routes. It measures the geographic coverage of the transit system, rather than the level of service.
- **Discussion:** Each of the transit service supply factors measures some aspect of how much transit service is being supplied. The intensity of service can be derived from studying these factors, as very busy services will likely exhibit lower revenue miles per hour, reflecting the time required to stop to pick up and deliver passengers. For example, an urban route that operates 3,500 revenue

hours per year may travel an average of only 8 miles per hour, for a total of 28,000 annual revenue miles. A more suburban route that also operates 3,500 revenue hours may average 13 miles per hour, for a total of 45,500 annual revenue miles. To account for different types of service areas fairly, it may be appropriate to use both measures, if a transit service supply measure is used.

Using route mileage would favor a system that has a large geographic footprint, rather than one that concentrates service in a smaller service area. Route mileage does not take into account how many times the vehicle traverses the route, but is simply the sum of the mileage for each route.

Transit Service Consumption Factors

The transit service consumption factors reflect system usage and can include passenger trips and passenger miles.

Passenger Trip

- **Definition:** A passenger trip is one passenger boarding a vehicle one time. The number of passenger trips summed is referred to as the ridership.
- **Discussion:** This measure of transit ridership is not straightforward, because of the difference between linked and unlinked trips and the impact of route structure on ridership. A linked trip is one person's travel from point A to point B, regardless of how many times that person transfers from one route to another to make the trip. An unlinked trip is one passenger boarding one route. If unlinked trips are used, a system that includes a hub and spoke pattern would tend to have ridership that is over-stated. For example if a person's trip from home to work on transit includes a transfer from one route to another, two passenger trips would be recorded. In addition, counting trips (as linked or unlinked) accurately on systems with substantial fare-free ridership (as is the case for both BT and RT) is potentially a problem with this factor.

Passenger Miles

- **Definition:** Passenger miles are a measure of transit service consumption that is used by the Federal Transit Administration. These data are collected through the National Transit Database. A passenger mile is one passenger traveling one mile.
- **Discussion:** This data is typically collected using a sampling methodology, as it is necessary to count passenger loads and mileage between stops to tabulate this

statistic. High passenger miles can result from either high ridership or long trip lengths, or from a combination of both. If a system has high ridership, but the trip lengths are short, the passenger mile total may be lower than for a system that has fewer, but longer trips. For these reasons the use of passenger miles as an allocation factor may be problematic.

ALLOCATION ALTERNATIVES

At the November 20, 2013 Advisory Committee Meeting KFH Group presented the potential formula allocation factors (described above), which aided our initial allocation alternatives. Nine alternatives were designed for consideration, evaluation, and input. These alternatives were (not reflecting any order of preference):

1. Using US Census Population only for the UZA
2. FTA Formula
 - 50% apportioned based on population
 - 50% apportioned based on population times population density
3. Combined Population and Student Population
 - 50% apportioned based on population
 - 50% apportioned based on student population (Virginia Tech & Radford University)
4. "Chapel Hill" Model
 - 50% apportioned based on population
 - 50% apportioned based on population plus student population combined
5. Population and Employment
 - 50% apportioned based on population
 - 50% apportioned based on employment
6. Rider Equity – Based Solely on Ridership
7. Service Supplied – Based Solely on Revenue Miles
8. Population/Student Population/Revenue Miles
 - 50% apportioned based on population
 - 25% apportioned based on student population
 - 25% apportioned based on revenue miles
9. Population/Employment/Revenue Miles
 - 50% apportioned based on population
 - 25% apportioned based on employment
 - 25% apportioned based on revenue miles

Based on input received at the Advisory Committee Meeting, four additional alternatives were developed (listed below).

10. Population Density and Student Population
 - 50% apportioned based on population density
 - 50% apportioned based on student population
11. Population/Student Population/Revenue Hours
 - 50% apportioned based on population
 - 25% apportioned based on student population
 - 25% apportioned based on revenue hours
12. Population/Ridership/Revenue Miles
 - 75% apportioned based on population
 - 10% apportioned based on ridership
 - 15% apportioned based on revenue miles
13. Population/Student Population/Revenue Miles/Ridership
 - 25% apportioned based on population
 - 25% apportioned based on student population
 - 25% apportioned based on revenue miles
 - 25% apportioned based on ridership

Summary of Alternatives

Presented in Table 6 are the potential Blacksburg UZA FTA S.5307 allocation split details that would result from each of the alternative formulas. This exercise solidified that, with the exception of a few outlier options, the split falls between 77% - 81% for Blacksburg Transit and 19% - 23% for Radford Transit.

All of the alternatives presented will result in increased federal S.5307 funding for BT as compared to the FY14 interim funding allocation agreement, whereas RT will experience a decrease in federal S.5307 funding as compared to current levels under all scenarios studied.

RECOMMENDED MODEL

Based on a number of meetings, discussions, and some negotiation regarding a phase-in period and assignment of specific geographic areas that are within the urbanized area, but not within Blacksburg, Christiansburg, or Radford, the committee came to consensus that the FTA S.5307 allocation for the region should be split according to the FTA formula that considers population and population density. It was further decided that the population and land area of Montgomery County that is part of

the urbanized area (the Merrimac area) should be assigned to Blacksburg Transit and the population and land area of Pulaski County that is part of the urbanized area (the Fairlawn area) should be assigned to Radford Transit. The committee also recommended a three-year phase-in from the current allocation to the new allocation. This phase-in period will allow Radford University more time to raise the student transportation fee to offset the decrease in federal funding. Table 7 provides the financial details of the recommended allocation split and the phase-in period.

The committee also decided that this funding allocation split applies only to the published FTA S.5307 allocation that is assigned annually to the Blacksburg Urbanized Area. This allocation will be in place for these funds until the 2020 Census, unless there is a significant change in the way in which FTA funds are allocated to the urbanized area (i.e., if the passage of the new federal transportation bill changes the way in which funds are allocated, or if DRPT changes its policy regarding discretionary allocation of the Governor's Apportionment S.5307 funds). In addition, should additional federal or state funds become available to the region, a separation negotiation will take place for those funds.

Table 6: New River Valley S.5307 Potential Formula Allocation Models

Alternative	Blacksburg Transit		Radford Transit		FTA FY14 Allocation Total
	Allocation	% of Total	Allocation	% of Total	
<i>FY13-14 Agreement</i>	\$ 1,273,484	66%	\$ 647,306	34%	\$ 1,920,790
#1 Population: US Census Population in Urbanized Area	\$ 1,517,424	79%	\$ 403,366	21%	\$ 1,920,790
#2 Population/FTA Formula: 50% Population/50% Population Density	\$ 1,517,424	79%	\$ 403,366	21%	\$ 1,920,790
#3 Population/Student Population: 50% Population/50% Student Population	\$ 1,488,612	77%	\$ 432,178	23%	\$ 1,920,790
#4 Population/Population/Students: 50% Population/50% Population + Student Population	\$ 1,507,820	78%	\$ 412,970	22%	\$ 1,920,790
#5 Population/Employment: 50% Population/50% Employment	\$ 1,546,236	81%	\$ 374,554	19%	\$ 1,920,790

Alternative	Blacksburg Transit		Radford Transit		FTA FY14 Allocation
	Allocation	% of Total	Allocation	% of Total	Total
#6 Rider Equity-Ridership Only: 100% Ridership-based	\$ 1,747,919	91%	\$ 172,871	9%	\$ 1,920,790
#7 Service Supplied- Revenue Miles: 100% Revenue Miles	\$ 1,402,177	73%	\$ 518,613	27%	\$ 1,920,790
#8 Combination- Population/Student Population/Revenue Miles: 50% Pop/25% Student Pop/25% Revenue Miles	\$ 1,473,752	77%	\$ 447,038	23%	\$ 1,920,790
#9 Combination-Population/ Employment/Revenue Miles: 50% Pop/25% Employment/25% Revenue Miles	\$ 1,503,018	78%	\$ 417,771	22%	\$ 1,920,790
#10 Population Density/Student Population: 50% Population Density/50% Student Population	\$ 1,507,820	78%	\$ 412,969	22%	\$ 1,920,790
#11 Combined -Population/Student Population/ Revenue Hours: 50% Pop/25% Student Pop/25% Revenue hours	\$ 1,483,356	77%	\$ 437,434	23%	\$ 1,920,790
#12 Combined- Population/Ridership/Revenue Miles: 75% Pop/10% Ridership/15% Revenue miles	\$ 1,494,374	78%	\$ 426,415	22%	\$ 1,920,790
#13 Combined- 25% Population/25% Student Population/ 25% Revenue Miles/ 25% Ridership	\$ 1,531,830	80%	\$ 388,959	20%	\$ 1,920,790

Notes: For each of the alternatives the population numbers allocate the urbanized portion of Montgomery County to Blacksburg Transit and the urbanized area of Pulaski County to Radford Transit. The student population includes VA Tech and Radford University.

Table 7: Recommended Funding Allocation Details

FTA Alternative:

50% apportioned based on population

50% apportioned based on population x population density

FTA S. 5307 FY2014 Funds: \$1,920,790

Operator	Pop.	%	Pop. Density	Pop. x Pop. Density	%	Funding	Formula Allocation %
Blacksburg Transit	70,193	79%	1,702	119,501,752	78%	\$1,517,424	79%
Radford Transit	18,368	21%	1,801	33,076,806	22%	\$403,366	21%
	88,561			152,578,559		\$1,920,790	

<i>3-Year Phase - Rounded to nearest whole percent</i>					
Year	Blacksburg Transit Allocation	% of Total	Radford Transit Allocation	% of Total	Total S.5307 Allocation
Current Allocation	\$1,273,484	66%	\$647,306	34%	\$1,920,790
1st Year	\$1,344,553	70%	\$576,237	30%	\$1,920,790
2nd Year	\$1,440,593	75%	\$480,198	25%	\$1,920,790
3rd Year	\$1,517,424	79%	\$403,366	21%	\$1,920,790

Notes: Demographic data supplied by NRV MPO Blacksburg Transit service area includes the urbanized portions of Montgomery County. Radford Transit service area includes the urbanized portion of Pulaski County. Allocations are rounded to the nearest whole percent.

Regional Coordination Opportunities

BACKGROUND

A key element of the MPO's responsibilities is providing information, tools and public input necessary to improve the performance of the transportation systems of the region. As noted on their website, "Future transportation needs are addressed, giving consideration to all possible strategies and the community's vision." While "regional transit coordination" is not new, many transit providers throughout the United States already have a history of pooling resources and working together to accomplish their mutual service objectives. Reasons for encouraging coordination among the transit providers in a region include the following:⁵

- ***Growing area, growing congestion.*** While public transit tends to represent only a small percentage of the total travel in any given community, transit trips during the heaviest travel times have the potential to relieve congestion along major travel corridors. In areas where those travel corridors extend beyond the urban transit provider's service boundary, coordination between the urban transit provider and adjacent suburban or rural provider(s) will allow transit to remain or become a viable travel option for more area residents.
- ***Some transit, but disparate and uncoordinated.*** Small cities, towns, and rural areas, faced with a geographically scattered population, can have trouble stretching transit resources to cover all of the area and potential riders. The result can be "pockets" of transit service that leave significant numbers of potential destinations and riders unserved or underserved.
- ***Need for cross-region travel.*** Patients who must travel across counties to a medical center, residents of one city that work in another, non-drivers who want to travel to retail or services not available in their own area – these are just some of the people who benefit from transportation services that can travel past the usual county or city boundaries of a single transit provider. Small urban or rural transit providers also benefit when long trips can be shared or linked among neighboring jurisdictions.
- ***Many separate transit providers competing for the same funding.*** Transportation funds are limited with greater demand for dollars than dollars available. A portion of funds from the Federal Transit Administration is calculated on the

⁵ "Regional Transit Coordination Guidebook," January 2009, Texas Transportation Institute.

basis of a formula, which includes the region's population as one determinant of the amount received. Predetermined coordination arrangements can specify how funding will be allocated, decreasing competition and increasing efficiency resulting in more service within the available funding.

The benefits resulting from coordination efforts depend on the type and degree of coordination and on the characteristics of the region. In developing coordination opportunities, stakeholders need to consider current and future regional transit needs. Building off of this, stakeholders need to anticipate and track how "more efficient" coordination of transportation services are employed, including the effective integration of land use and transit planning. When successful, potential benefits of transit coordination efforts include:⁶

Benefits to transit riders/travelers:

- More travel alternatives for commuters.
- Increased mobility and independence to people who do not or cannot drive.
- Improved availability and convenience of medical trips.

Benefits to transit providers:

- Improved cost-effectiveness and use of resources.
- Expansion of service area and client base.
- Improved visibility of transit service in the community.
- Ability to leverage new funding sources.

Benefits to transportation system:

- Congestion relief on major travel corridors.
- Reduction in vehicle emissions.
- Additional travel capacity without building more lane miles.

Benefits to employers and the workforce:

- Opportunity to attract new workers.
- Reduced need for parking facilities.
- Potential element of corporate pollution-reduction programs.

Previous tasks in this study have addressed regional funding allocation issues, but this task will focus on near-term regional coordination opportunities that could facilitate regional trip-making. One aspect of this is the structure for regional coordination, and the New River Valley has already made significant strides in setting up an organizational focus of coordination activities, which is documented below. A second aspect is the development of a common information base about the available

⁶ Ibid.

services, which can be developed into user-friendly information to enable regional trip-making, and to serve as a basis for planning coordination of services among the various transit systems. This effort is also underway.

The intent of this task of the study is to document the coordination opportunities in the New River Valley UZA and to provide the information needed for the NRV MPO and the Advisory Committee to make decisions regarding potential options for near-term regional coordination efforts aimed at facilitating regional transit use.

REGIONAL COORDINATION ORGANIZATION

Recent History

The successful initiation of Smart Way Bus services connecting Blacksburg, Christiansburg and Roanoke, and the development of local public transit in Radford, led to the realization that regional approaches to providing and using public transportation are now possible in the New River Valley. Opportunities to create new services, establish partnerships, and increase funding competitiveness for the benefit of each community in the region became a highlighted focus. To explore this further, a *Regional Transit Organization Study* was prepared by the New River Valley Planning District Commission (NRVPDC) and the Blacksburg-Christiansburg-Montgomery Area Metropolitan Planning Organization.

The purpose of the study was to evaluate the long-term organization models available for the region, specifically partnerships that would benefit local communities. Aiding NRVPDC and the NRV MPO was a committee comprised of members from Montgomery County, Pulaski County, City of Radford, Town of Christiansburg, Town of Blacksburg, Blacksburg Transit, Pulaski Area Transit, Community Transit, and The Smart Way (Valley Metro). The study determined that there was a desire among regional stakeholders to evaluate the development of a regional entity. The level of authority or precise role of the new organization was not determined, however interest was conveyed in developing a regional resource. The bridge connecting this study to creating a more inclusive agency was the establishment of a Regional Transit Coordinating Council.

Organizational Structure for Regional Transit Coordination: Regional Transit Coordinating Council

On April 26, 2012, NRVPDC passed a Resolution of Endorsement to create a Regional Transit Coordinating Council (RTCC). The purpose of the RTCC is to facilitate regional dialogue, coordinate planning efforts, and to inform transit partners. To

accomplish this, regional stakeholders meet regularly to discuss public transportation and serve as coordinators for government entities, stakeholders, and service providers. The RTCC is comprised of local governments, transit operators, transit managers, funding partners, and regional stakeholders. The Council receives staff support through a partnership between the PDC and MPO.

Planning to Support Regional Service Connections: Regional Connection Study

The NRV MPO will soon be funding a “Regional Connection Study.” The concept is to “investigate existing and prospective future enhances or changes to regional connections provided by Radford Transit, Blacksburg Transit and Pulaski Area Transit.” The objective of the study is to expand the findings/recommendations from the MPO Split Funding Study, the soon-to-be-completed Radford Transit TDP, as well utilizing the Blacksburg Transit TDP and Pulaski Area Transit TDP that were completed in the last couple of years. Particular attention will be placed on each the current and planned services that could be used to make regional connections, and plans to improve or provide improved user information that could also include information supporting regional transit trips.

Improved Information about Regional Transit: Creating a Regional Service Inventory

Given that there are multiple transportation providers in the New River Valley and that it is possible for persons to use more than one provider to make a trip, a key question is how one would determine where and when to make the connection? This fundamental question occurs at two levels. At one level basic data about routes, stops and services needs to be developed for use by both the systems (for service planning) and by users (online or in timetables)—this information defines that a regional trip is theoretically possible. Real-time information about the actual time at which a particular bus will arrive at a particular stop is the higher level of information that enables transit customers to make regional connections. Efforts are underway in the New River Valley to develop the basic data regarding the possible regional connections, and the potential exists to provide real-time information for users as the next step in developing a regionally-coordinated system.

The MPO funded a regional GIS project that began in January 2014 to inventory all transit and transit-related GIS Layers for the Towns of Blacksburg and Christiansburg, City of Radford, and Pulaski and Montgomery Counties. Roanoke files have been included as well, plus Smart Way Commuter, and Smart Way Connector

routes. Routes and stops are included, as well as bike, pedestrian, and pathways/sidewalks, and a few park and rides, where data/layers were available. The intent is for a single resource that can be produced to access all of the files, and updates can regularly be posted and maintained. Over 130 files have been inventoried thus far, and the project is due to be completed in May of 2014. The final report will include information for maintaining the inventory in the future. The NRVPDC envisions using the information to create a regional map posted on websites that would be shared among the stakeholders. The ARC GIS map package used to create the route files will enable updates to occur via a drag and drop application.

A POSSIBLE MODEL FOR REGIONAL COORDINATION

The New River Valley region has a wealth of transportation options available to residents and visitors alike – transit, rideshare, and biking and walking. Regional transit planning efforts have seen increasing coordination and cooperation across multiple municipalities, transit providers, and counties. The reality is that not everyone either knows about this or where to find information about these various services/options. The ideal structure for the region would be a collaboration of transit agencies, organizations and localities funded to promote commuter options and benefits in the New River Valley region, ideally with a single brand that would let the public know that this one source provides information on all the transit options.

A possible model is the GoTriangle program in the Triangle region of North Carolina. GoTriangle is a partnership of public transportation agencies and organizations providing commuter benefits and outreach. The website acts as a clearinghouse of information by mode, with descriptions and links to the transit agencies involved and the commute alternatives by location. The program is funded through a combination of government grants (federal, state, and local), user fees, and private contributions.

Similar to the New River Valley region it all stemmed from an *Organizational Alternatives for Transit Systems in the Triangle* report in 1995. In 2003 the www.GoTriangle.org website launched with trip planner and printable schedules and maps for all of the region's transit systems. Additionally, GoTriangle has partnered in:

- A regional monthly transit pass issued by Raleigh, Durham, Orange County and Triangle Transit, and a
- Joint procurement issued for fare boxes by Raleigh, Durham, Chapel Hill, Cary and Triangle Transit.

Following this, the *Triangle Region Consolidation-Implementation Plan* in 2003 recommended consolidation of the region's transit systems into one entity by 2007.

However, consolidation was not achievable at that point, but the participants in the plan felt that many of the advantages of consolidation from the user perspective could be obtained by regional cooperation on individual elements of the proposed consolidation. This led to the 2005 Memorandum of Understanding for Triangle Seamless Public Transportation Service, which was signed by the mayors of Durham and Raleigh and TTA's General Manager, with designated demonstration activities that could be undertaken to enhance the customer experience without mergers or consolidation, including:

- Regional marketing activities
- Preparing "seamless service bus plan"
- Developing regional customer service program
- Developing "seamless service paratransit program"
- Centralizing capital procurements of buses, signs, shelters, etc.
- Regionalize installation and maintenance of bus stops, shelters, etc.
- Centralize specialized maintenance services
- Implement regional IT plan

Then, in 2011 Triangle Transit, Capital Area Transit, Durham Area Transit Authority, Chapel Hill Transit, NCSU Wolfline, and Duke Transit introduced GoLive services, which used TransLoc to aggregate the data provided by the transit agencies' different Automatic Vehicle Locator (AVL) systems into one unified customer-facing solution, making arrival data for all systems available by smartphone app, web, or text.

Currently GoTriangle offers a transit trip planner (for the region); transit map, fare and alert information; guides to walking and biking in the region; telework and condensed workweek support; rideshare matching and vanpool leasing. It works with six transit systems in the region. Its services and role have been growing since the original 2005 memorandum between the systems, so in that sense it offers a vision of what could develop in the New River Valley.

RECOMMENDATIONS FOR THE NEAR-TERM

Develop Public Information on Transit in the Region

Given that there are possibilities for regional trip-making that did not exist in the past, and that potential users may not be aware of these possibilities, first steps in regional coordination are to develop information on the availability of connection, and to make it available to potential users. Current plans to develop and maintain detailed GIS-based data on transit systems will support that effort, but the next step would require some means of depicting the possibilities to potential users. An initial

recommendation is that a web page with regional transit maps, information on the stops where connections may be made, and information on schedules and fares should be created, with links to/from the websites of the individual transit systems. This page could be hosted by the MPO or the PDC, but it should have its own identity. Through the coordinating council, the transit systems would need to take on the obligation of updating the information on the regional site. In addition their own website and brochures could include information about potential regional connections, pointing out routes and stops that offer connecting services. These steps would at least enable users to access information to plan regional trips themselves. To some extent the need for trip planning is also met by Google Transit. Both RT and BT provide data on their services to Google Transit, and a user can get information on the scheduled connections (assuming the data provided to Google is correct and current).

Beyond the provision of route, schedule and fare information; and trip-planning tools, the next level of public information would be real-time transit information to allow users to know the time that a particular bus would reach a particular stop. Transit systems in the New River Valley currently provide some real-time transit information for users. However, each of the systems currently uses a different platform. Blacksburg Transit (BT) uses BT4U, and Radford Transit uses the Nextbus system of real-time transit information.

BT4U

BT4U is BT's text messaging program that will allow bus customers to use their cell phone to get up to the next three scheduled times the bus will depart their stop. This program has been deployed on all routes.

Users can access BT4U in three different ways, by phone, by internet or by text:

- Phone: CALL-4-RIDE - Users phone 540-443-RIDE (7433) and follow a series of prompts.
- Website: URL-4-Ride - Users access a mobile website at www.bt4u.org, enter the route code and stop number.
- Text: Txt-4-Ride - Users text the route code and stop number to info@bt4u.org and then receive a text message with the next bus departure times.

NextBus

Radford Transit employs NextBus technology to assist their passengers by providing real-time bus arrival information. It uses GPS satellite technology to find the specific location of a bus; then sends the estimated arrival time of the bus to a particular stop via cell phone, website or other mobile device.

Users can access NextBus on their computer or mobile phone in several ways:

- Phone: The user calls 540-267-8046, and follows the prompts.
- Website: The user visits www.RTNextBus.com or www.RadfordTransit.com/Nextbus.
- Text/SMS: The user texts “radford” and the stop number to 41411, leaving a space between the word “radford” and the stop number when entering text.

As it becomes more possible that users would be making trips that involve more than one provider, the advantages of having a single, uniform system for providing real-time route and schedule information will become more apparent. Not only are their advantages in marketing a single source, but there are economies of scale in having one information system that can provide information on all the services. Given the existing systems, one way of doing this would be to expand the Nextbus system used by Radford Transit to BT and Smart Way Bus. Other methods might be developed that would allow the different systems to work together.

To determine if this is feasible, the regional providers need to explore what data formats are currently being used and if shared application programming interface (API) are possible. API specifies how software components should interact with each other. For this to occur it requires common format/standards. Unfortunately these APIs are typically proprietary to the developers.

As noted above, Blacksburg Transit internally developed their API. Radford Transit uses Nextbus API. All the other local transit providers currently do not offer real-time data for their service. Interestingly, Nextbus Inc. is under contract with the Washington Metropolitan Area Transit Authority (WMATA) to use their internally developed API data for bus predictions.

As more service develops, development of real-time information for regional trips would be desirable, and as discussed above this might be possible if the Nextbus and BT4U systems could interface or if each system used the same platform for real-time transit information. Appendix A presents information about a state initiative for regional provision of real-time information that might be an alternative means of addressing this need. However, the incremental costs of creating a regional real-time information system would need to be justified by an increased number of potential connections (from expanded services) and regional trips. In terms of timing, such investments might make more sense after initial implementation of more regional services.

Service Coordination

The New River Valley region hosts a number of public transportation services in and between its various communities. As these different systems have developed and matured, transit connectivity has become a reality. What needs to be explored further are:

- Are transfers between systems being timed appropriately?
- Is there overlapping service from more than one system provider? If so, could service be adjusted so that they would be complementary and thus increasing service levels?
- How are transfers handled?
- Could more shared stops be developed?

Table 8 presents the schedules of BT and RT for the routes that currently connect or might be seen to overlap. The table clarifies that although service in the region is plentiful, timed connection opportunities are still very limited.

Table 8 - Schedules for Connecting Blacksburg Transit & Radford Transit Routes at the New River Valley Mall

NRV Mall (Weekday)					NRV Mall (Weekend)		
Route 40		Two Town Trolley		The Explorer	Route 40		Two Town Trolley
to Bburg Thu. & Fri.	to Rford Thu. & Fri.	Thu.	Fri.	Fri.	to Bburg Sat.	to Rford Sat.	Sat.
				8:00 AM			10:45 AM
				8:52 AM	11:15 AM	11:55 AM	11:45 AM
				9:45 AM	12:15 PM	12:55 PM	12:45 PM
				10:45 AM	1:15 PM	1:55 PM	1:45 PM
				11:45 AM	2:15 PM	2:55 PM	2:45 PM
		12:45 PM	12:45 PM	12:45 PM	3:15 PM	3:55 PM	3:45 PM
		1:45 PM	1:45 PM	1:45 PM	4:15 PM	4:55 PM	4:45 PM
		2:45 PM	2:45 PM	2:45 PM	5:15 PM	5:55 PM	5:45 PM
3:15 PM	3:55 PM	3:45 PM	3:45 PM	3:45 PM	6:15 PM	6:55 PM	6:45 PM
4:15 PM	4:55 PM	4:45 PM	4:45 PM	4:45 PM	7:15 PM	7:55 PM	7:45 PM
5:15 PM	5:55 PM	5:45 PM	5:45 PM		8:15 PM	8:55 PM	8:45 PM
6:15 PM	6:55 PM		6:45 PM		9:15 PM	9:55 PM	9:45 PM
7:15 PM	7:55 PM		7:45 PM		10:15 PM	10:55 PM	10:45 PM
8:15 PM	8:55 PM		8:45 PM		11:15 PM	11:55 PM	11:45 PM
9:15 PM	9:55 PM		9:45 PM		12:15 AM	12:55 AM	12:45 AM
10:15 PM	10:55 PM		10:45 PM		1:15 AM	1:55 AM	
11:15 PM	11:55 PM		11:45 PM				
12:15 AM	12:55 AM		12:45 AM				
1:15 AM	1:55 AM						

Specifically, RT's Route 40 connects Radford and Christiansburg/Blacksburg on Thursdays, Fridays and Saturdays. This provides the only transit link in the region between two "transit regions" of Radford/Pulaski and Blacksburg/Christiansburg/Roanoke.

The New River Valley Mall, located in Christiansburg, acts as the central geographic hub for transit services in the New River Valley. BT's Two Town Trolley provides the connection between the mall and Blacksburg while The Explorer allows for connections to and from downtown Christiansburg. RT's Route 40 operates Thursday through Saturday during the Radford University academic year providing the connection to and from Radford. The potential for transfers between the routes occurs on Thursdays and Fridays, in the afternoon, while all three routes are operational. The Christiansburg based Explorer stops at the mall every hour on the 45th minute with its last stop at 4:45 p.m. The Radford based Route 40 stops at the mall in route to Radford on the 55th minute of the hour beginning at 3:55 p.m.; this allows riders three opportunities to connect to and from Christiansburg and Radford on Thursdays and Fridays. Additionally, BT's Two Town Trolley serves the mall every hour from 12:45 p.m. to 12:45 a.m. linking Blacksburg to Radford and Christiansburg.

The positive component of the existing schedules is that BT's and RT's services between Blacksburg and Christiansburg are complimentary, thus providing the possibility for greater service levels for all who want to ride. The obvious weakness is the limited transfer opportunities both in locations and, where transfers are possible, the timing at those locations.

As RT matures and BT continues to grow to meet demand, regional service will become more prevalent. This vision is supported by the Radford Transit TDP which recommends daily service to Christiansburg and Blacksburg with connections to Roanoke. The proposed operation enhancement explores the idea of expanding the 40 Route to operate daily, with extended hours. This expansion of service would significantly improve regional connectivity. By adding daily morning and afternoon/early evening hours the 40 Route evolves into a viable option for commuters—providing a car free option for those traveling to school or work (in addition to the current social/recreational trips) from Christiansburg/Blacksburg, as well as a daily connector to Roanoke via the Smart Way Bus.

Shared Stops

The routes described above, and other services as well, currently share stops, as shown in Figure 5. It displays the New River Valley region and the shared stops served by different transit systems. In all, there are eleven shared stops currently being served

by at least two transit systems. Table 9 details each stop, which jurisdiction the stop is located in, the transit systems that serve the stop, and when the connections are available (Monday to Friday, etc.). Even with the implementation of the expanded 40 Route service days and hours, the stop locations are likely to remain as they are today.

Currently there is no particular branding or information at these locations to point the potential for regional connections, nor are there shelters that could be of use to patrons waiting for connecting services.

Recommended improvements for these shared stops include signage and potentially shelters. Shared stops should be signed in such a way that potential users know that a connection can be made at this location—whether that is by having signs from each system, or by having a sign with a regional connection branding. If ridership at a stop increases because of regional connections (and wait times increase because of the need to make connections) will need to develop a policy on the allocation of capital costs, maintenance responsibilities and maintenance costs.

Figure 5: New River Valley - Transit Connectivity

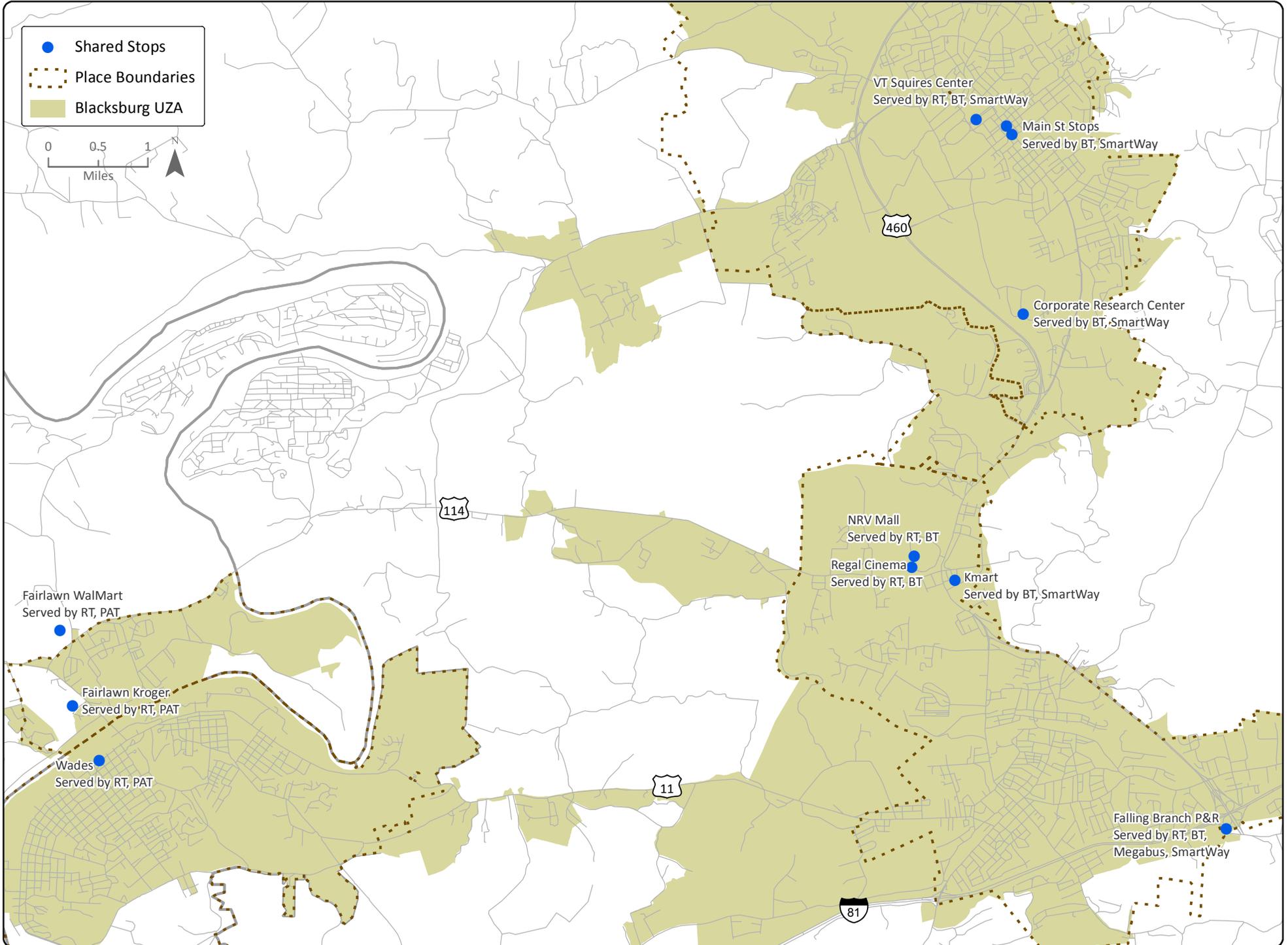


Table 9 – Shared Bus Stops in the New River Valley Region

Stop Name	Jurisdiction	Served By					Feasible Connections?
		RT	BT	Smart Way	PAT	Megabus	
VT Squires Center	Blacksburg	Thurs/Fri, 3:35pm to 1:35am hourly; Sat 11:35am to 1:35am hourly	Multiple routes, ~15min headways	Mon-Sat, approx. 6am-8pm, approx. hourly			Yes; Thurs to Sat only to/from Radford
300 S. Main	Blacksburg		Multiple routes, ~15min headways	Mon-Sat, approx. 6am-8pm, approx. hourly			Yes
117 S. Main	Blacksburg		Multiple routes, ~15min headways	Mon-Sat, approx. 6am-8pm, approx. hourly			Yes
Corporate Research Center	Blacksburg		CRC Shuttle, Mon-Fri, ~15min headways	Mon-Sat, approx. 6am-8pm, approx. hourly			Yes
NRV Mall	Christiansburg	Thurs/Fri, 3:35pm to 1:35am hourly; Sat 11:35am to 1:35am hourly	Two Town Trolley/The Explorer, Mon-Sun, approx. hourly				Thurs to Sat only
Regal Cinema	Christiansburg	Thurs/Fri, 3:35pm to 1:35am hourly; Sat 11:35am to 1:35am hourly	Two Town Trolley/The Explorer, Mon-Sun, approx. hourly				Thurs to Sat only
Christiansburg Kmart	Christiansburg		The Explorer, 730am to 530pm, hourly	Mon-Sat, approx. 6am-8pm, approx. hourly			Yes
Falling Branch P&R Exit 118	Christiansburg	40 Route, 1 run Thurs-Sat afternoon, Sunday return trip only	The Explorer, 7am to 4pm, 2 hour headways	Mon-Sat, approx. 6am-8pm, approx. hourly		2:55pm and 3:25am	Yes; Thurs to Sat only to/from Radford
Fairlawn Walmart	Fairlawn	20 Route: Mon-Fri 7am to 8pm; Sat 10am to 8pm; 40 Route: Thurs, Fri, Sat evening (hourly)			Mon-Fri, 4xs b/w 8am and 5pm		Mon to Fri
Fairlawn Kroger	Fairlawn	20 Route: Mon-Fri 7am to 8pm; Sat 10am to 8pm (hourly)			Mon-Fri, 4xs b/w 8am and 5pm		Mon to Fri
Wades	Radford	30/31 Route: Mon-Fri 7am to 8pm; Sat 10am to 8pm (hourly)			Mon-Fri, 8xs between 8am and 5pm		Mon to Fri

Fare Policy

Integrating multiple agencies has been shown to be a complicated undertaking, likely requiring fundamental changes from the way each individual agency manages fare collection on its own. Complex partnership agreements are typically needed to establish responsibilities, ownership, and allocation of costs and revenues. A separate clearinghouse or back-end payment settlement system can be developed to manage these processes, but all participating agencies must reach agreement on revenue management policies and procedures.

With regard to regional fare integration, agencies operating in the same region are moving from simple interagency transfer agreements to more comprehensive integrated regional payment options as technology becomes commonplace. In other cases, agencies have transfer—or fare upgrade—provisions with agencies with which they intersect; in other words, Agency 1 accepts a transfer from someone coming from Agency 2, or else charges only the difference between the two base fares.

The first step is to define "seamless" transit travel within a multi-operator region. Basically there are two options:

1. Technology-based approach (i.e., common stored value fare medium).
2. Non-technology-based approach (e.g., uniform fare/transfer structure and/or regional pass).

Below are basic implementation steps to guide this development based on the approach that the region chooses.

Technology approach:

- Establish lead agency (i.e., MPO or largest transit agency)
- Establish inter-agency revenue allocation/distribution methodology and agreement
- Identify acceptable common fare medium and fare collection technology (including means to integrate proof-of-payment systems)
- Acquire/install new equipment (each participating operator does independently)

Non-technology approach:

- Establish lead agency (i.e., MPO or largest transit agency)
- Establish uniform fare structure (including transfer agreements) if feasible
- Establish regional monthly pass if feasible
- Establish inter-agency revenue allocation/distribution methodology and agreement (for transfers)

Another alternative that would potentially be less complicated for both the passengers and transit agencies is to implement fair free service thus eliminating the transfer charge dilemma (except for the long-distance bus service – Smart Way and Mega Bus). The two largest providers in the region are both adept at this approach due to the dominant university ridership from Virginia Tech and Radford Universities. Each permit students, faculty, and employees to ride for “free” by displaying their university IDs. A similar ID could be established for the “general public” rider, thus enabling them to ride for free but at the same time enabling the transit system a means for collecting general public ridership data.

Implications:

- Would increase ridership routes, drawing new riders and making residents more aware of available services.
- Offers additional mobility for residents, especially those individuals whose financial situation would have caused them to not otherwise make the trip.
- Places a small financial burden on the local funders of transit.
- Fare would still need to be charged for Smart Way and Mega Bus service, however free transfers from those services could be offered.

Regional coordination among systems can often involve coordinated fares that will enable a passenger to make trips involving two more systems without having to pay the full fare on each. In the Research Triangle region described above this was accomplished by offering a single \$4.00 day pass good on all systems, from those with a free fare to those with a \$2.00 base fare. There is also a monthly regional pass option for regular users.

However, in the New River Valley under current conditions the need for such a regional fare option may be minimal. On both RT and BT the overwhelming majority of riders do not pay a fare, but show university identification. Currently a Radford University identification provides a free ride on RT, and a Virginia Tech identification on BT. As can be seen in Table 10, a Virginia Tech student going to Radford would use the id to board the BT bus for free, and then pay the cash fare (\$1.00) when boarding the RT bus. Returning home, they could pay the RT fare, and then show the identification when boarding the BT bus in Christiansburg for a total cost of \$2.00. A Radford student would face the same situation in the opposite direction, except the BT fare is only \$0.50.

Table 10 – Fares for the Systems in the New River Valley Region

	Blacksburg Transit	Radford Transit	The Smart Way
One-Way Trips			
General Public	\$0.50	\$1.00	\$4.00
Children	Free (3 yrs & younger)	Free (12 yrs & younger)	Free (5yrs & younger)
Ages 3 to 17	\$0.25	-	-
Ages 65 & Older	\$0.25	Free	\$2.00
Disabled & Medicare Recipients	\$0.25 (not valid on BT ACCESS)	-	\$2.00
Radford University (Students, Faculty & Staff)	-	Free (with ID)	-
Virginia Tech and Town of Blacksburg (Students, Faculty & Staff)	Free (with ID)	-	-
Transfers	Free (valid for 1 hr on any Blacksburg Transit Bus)	Free (valid for 1 hr on any Radford Transit Bus)	Free (valid for 1 day on any Valley Metro Bus)
One Month Pass			
General Public	\$8.00	\$20.00	\$120.00
Ages 3 to 17	\$4.00	-	-
Ages 65 & Older	\$4.00	-	\$60.00
Disabled & Medicare Recipients	\$4.00	-	\$60.00
Six Month Pass			
General Public	\$37.50	-	-
Ages 3 to 17	\$18.75	-	-
Ages 65 & Older	\$18.75	-	-
Disabled & Medicare Recipients	\$18.75	-	-

For most riders on these systems, using two transit providers is still only one fare. If the universities agreed, potentially even this fare could be eliminated if it was accepted that the rides netted out, which could perhaps be accounted for by accepting transfers from the other system. So for the majority of passengers the cost of a regional trip is not prohibitive now, and could potentially be minimized if the universities agreed.

For non-university passengers, with the existing services there are likely to be relatively few trips that would involve paying fares on two or more providers, and the question in that case is whether or not the accounting costs of either a regional ticket or accepting each other’s transfers would outweigh the potential benefit. A test period would be the best way to determine the revenue impacts, or whether mutual acceptance of free transfers would essentially net out. But overall, a regional fare solution should probably be addressed only as more potential regional connections are developed.

Summary of Recommendations

The New River Valley region has established a core foundation for regional transportation through the Regional Transit Coordinating Council. The next steps seem logical, and even simple, but often difficult to carry out. They are to design and market service that is simple, direct and frequent to foster regional connectivity, and display this platform through a regional brand in a clearinghouse function. Key aspects of this approach are:

- Develop a “branded” regional transit website that hosts regional transit maps, information on stops (and connections), information on schedules and fares, and links to the websites of the transit systems.
- Explore and develop shared transit system real-time information.
- Service coordination – begin to view and highlight routes that share stops as “regional” service. This will require transit systems to time transfers for passenger convenience, as well as ensure overlapping routes complement each other rather than compete against the other.
- Shared stops – branded signage and future allocation of capital costs based on usage.
- Regional fare or fare integration – determine the approach the systems choose to explore and when, including a fare free option.

Appendix A

Potential for Regional Coordination of Real-Time Transit Information in Virginia

Another option if the local systems' API's will not interact is via the State's initiative. DRPT is leading an effort for the State to make real-time and historical data available to the public and 3rd party developers. To implement in Virginia, the Virginia regional architecture would need the following:⁷

- Jurisdictional agreements.
- Standard real-time data format.
- Hosting locations for static and real-time data.
- Responsibility of the participating local agencies to:
 - Format all local data defined in the API specification.
 - Integrate the required data with the regional format.
 - Provide a location within each agency's infrastructure for retrieving the data required for the API.
 - Periodically update the data and provide to other agencies.

The Virginia regional API concept is exploring the following four regional approaches:

1. Individual agency publishes its own API:
 - This is the current practice. Here the burden is on the application developer to pull various sources.
 - The potential regional responsibility would be to ensure that each agency is truly standards-based and interoperable.
2. All the regional data would be fed into a regional API:
 - This would require investment/support for this regional API.
3. A regional directory of agency API feeds, but each agency would be responsible for building and maintaining its own API:
 - This would require less regional investment/support, though more burden on the agencies.
4. A hybrid approach in which the regional API would aggregate data from each local API:
 - Information clearinghouse, pulling static and real-time schedule from various transit agencies and using the consolidated data.

⁷ *Real-Time Transit Information 101*, TPM Management, Operations, and Intelligent Transportation Systems (MOITS) Technical Subcommittee Meeting Report, August 7, 2013.