D R A F T

Mount Rogers Planning District Commission
2035 Rural Long Range Transportation Plan
Technical Report

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CHAPTER 1 – INTRODUCTION

The *Mount Rogers Planning District Commission 2035 Rural Long Range Transportation Plan* (the Plan) provides a blueprint for the development and maintenance of a rural multi-modal transportation system that supports existing and projected travel demands to the year 2035 and complements previously established metropolitan area plans throughout the State. This Technical Report provides details on the identification of existing transportation needs, forecasting of future travel demands, identification of future travel needs, and the development of transportation improvement recommendations for the region's transportation system. Recommendations were developed to satisfy both current and future needs.

Purpose and Scope

The Plan was developed as a cooperative effort between the Virginia Department of Transportation (VDOT), the Mount Rogers Planning District Commission (MRPDC), and the member jurisdictions represented. The purpose of the study was to evaluate the region's rural transportation system and recommend a set of transportation improvements that could best satisfy existing and future travel needs. The study identified needs for all modes of transportation, and interaction between modes where a reduction in vehicle trips might be possible.

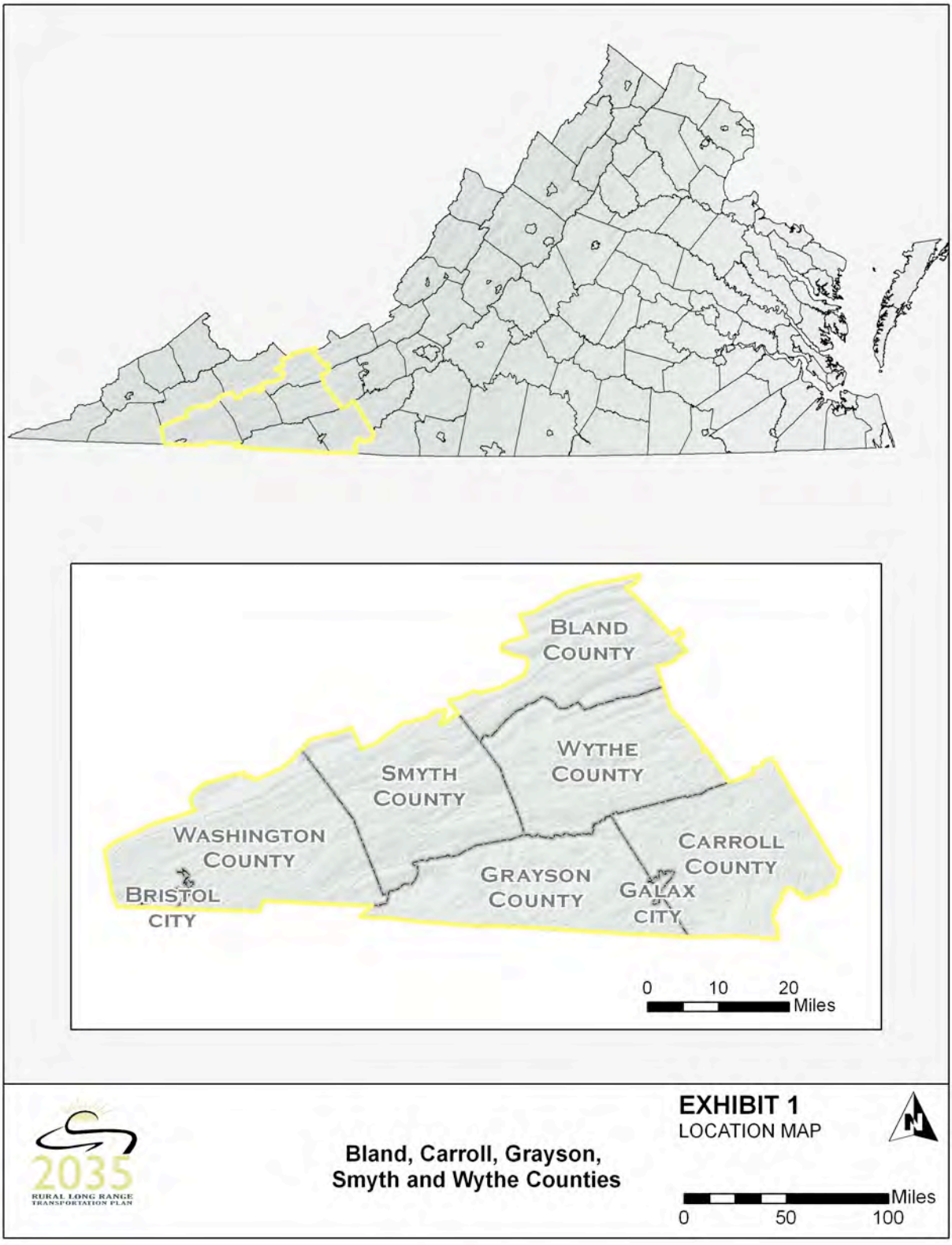
Improved transportation systems remain vital to Virginia's, as well as the region's, continued economic growth and development. The provision for the effective, safe, and efficient movement of people and goods is a basic goal of all transportation programs in the Commonwealth of Virginia. This guiding principle, together with consideration of environmental issues, local mobility needs, and associated development policies, was the basis for the development of this transportation Plan.

The region, its member localities, and VDOT will use this Plan when initiating or evaluating requests for specific transportation projects. The list of recommendations will also be used in the statewide transportation planning process in order to better quantify the magnitude of statewide needs.

Study Area

The MRPDC serves the Counties of Bland, Carroll, Grayson, Smyth, Washington, and Wythe, the Cities of Bristol and Galax, and the Towns of Abingdon, Chilhowie, Damascus, Fries, Glade Spring, Hillsville, Independence, Marion, Rural Retreat, Saltville, Troutdale, and Wytheville (Exhibit 1). The MRPDC region is a predominantly rural area with denser development occurring around the cities and towns. The geography of the region is primarily influenced by the topography. The PDC lies between the ridge and valley system of the Appalachian Mountains and the Blue Ridge Mountains. In the ridge and valley system, the towns, cities, and almost all development, including the transportation network, are situated along the river valleys. The valleys and more rolling hills of the southeastern part of the PDC have allowed slightly more development. There is one urbanized area whose transportation needs are coordinated by a metropolitan planning organization. The Bristol Metropolitan Planning Organization (BMPO) conducts the transportation planning not only for the City of Bristol, Virginia and the immediately adjacent urbanized portions of Washington County, but also for jurisdictions in Tennessee:

the City of Bristol, Bluff City, and the urbanized areas of Sullivan County. The transportation needs of this area are analyzed in the MPO's 2035 Long Range Transportation Plan, which is a separate component of the 2035 Surface Transportation Plan. For the purposes


BLAND COUNTY
WYTHE COUNTY
SMYTH COUNTY
WASHINGTON COUNTY
BRISTOL CITY
GRAYSON COUNTY
CARROLL COUNTY
GALAX CITY
0 10 20 Miles
2035
RURAL LONG RANGE TRANSPORTATION PLAN
Bland, Carroll, Grayson, Smyth and Wythe Counties
EXHIBIT 1
LOCATION MAP
N
Miles
0 50 100

of this Plan, the transportation network outside of the MPO is analyzed and addressed in this report.

I-77 and I-81 both traverse the region. I-81 runs northeast to southwest through Smyth, Washington, and Wythe Counties and I-77 runs north-south through Bland, Carroll, and Wythe Counties. The transportation network is influenced by the ridges and valleys which generally travel northeast to southwest and by access to the interstates. Many of the primary arterials also follow the valleys such as US 11, US 58, US 221, VA 42, and VA 61. Corridors that provide connections to the north and south include US 19, US 21, US 52, Alternate US 58, VA 16, and VA 80 (Exhibit 2). There is one primary Norfolk Southern rail line within the area, that parallels I-81. It is a part of the company's Crescent Corridor. This Corridor has two segments that generally parallel I-81 and US 29, respectively, through the state and carry intermodal trains, general cargo, and auto trains (DRPT, *Virginia*, 2008). Within the MRPDC, the line traverses Smyth, Washington, and Wythe Counties.

Demographic Overview

The MRPDC region has experienced a slow down in its population growth. Population in all jurisdictions, except for the City of Bristol, grew by a higher percentage between 1990 and 2000 than between 2000 and 2008. Grayson and Smyth Counties and the City of Galax have all experienced a decrease in population since 2000. Total population for the region in 2008 was just over 190,000. Current projections for 2010 have only Smyth and Wythe Counties experiencing any increase in population. By 2030, the population projections forecast that Bland, Washington, and Wythe Counties are expected to have growth in population. However, the decreases in population forecasted for the remaining jurisdictions are relatively minimal.

Exhibit 3. Current and Projected Population

	1990	2000	2008	2000-2008	2010	2020	2030	2008-2030
Bland County	6,514	6,871	7,051	2.62%	6,959	7,085	7,285	3.32%
Carroll County	26,594	29,245	30,125	3.01%	29,289	29,420	29,592	-1.77%
Grayson County	16,278	16,881	16,144	-4.36%	15,789	15,310	15,311	-5.16%
Smyth County	32,370	33,081	31,868	-3.67%	32,184	31,864	31,856	-0.04%
Washington County	45,887	51,103	53,223	4.15%	52,566	54,138	55,837	4.91%
Wythe County	25,466	27,599	27,927	1.19%	28,929	30,280	31,773	13.77%
Bristol City	18,426	17,367	17,438	0.41%	17,106	17,078	17,075	-2.08%
Galax City	6,670	6,837	6,706	-1.92%	6,639	6,567	6,573	-1.98%
Mount Rogers PDC	178,205	188,984	190,482	0.79%	189,461	191,742	195,302	2.53%

Sources: US Census, 1990, 2000; Weldon, 2009; and VEC, 2009.

The three largest employment sectors within the region are manufacturing, government,

and retail trade (VEC, 2009). The unemployment rate in the region's jurisdictions ranged from 8.5% to 12.7% in June 2009 and have generally ranged above the rate in the Commonwealth. Median household income in the counties had a range of $27,389-$32,742 in 2000, which was below the Commonwealth median of $46,677 (US Census, 2000).

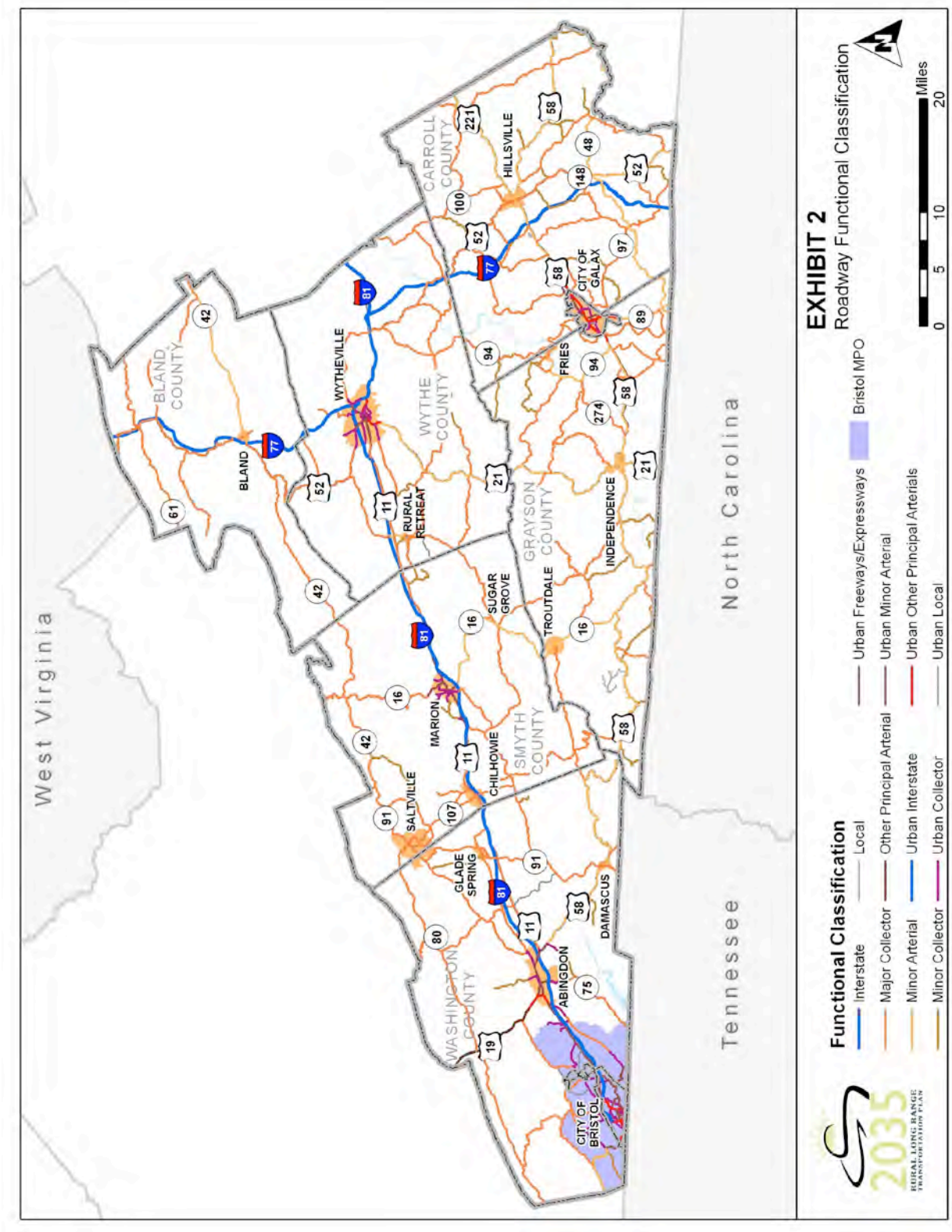


EXHIBIT 2
Roadway Functional Classification
Functional Classification
Interstate
Local
Urban Freeways/Expressways
Bristol MPO
Major Collector
Other Principal Arterial
Urban Minor Arterial
Minor Arterial
Urban Interstate
Urban Other Principal Arterials
Minor Collector
Urban Collector
Urban Local
Miles
0 5 10 20
West Virginia
North Carolina
Tennessee
BLAND COUNTY
WYTHE COUNTY
CARROLL COUNTY
GRAYSON COUNTY
SMYTH COUNTY
WASHINGTON COUNTY
BLAND
WYTHEVILLE
RURAL RETREAT
HILLSVILLE
CITY OF GALAX
FRIES
INDEPENDENCE
TROUTDALE
SUGAR GROVE
MARION
SALTVILLE
CHILHOWIE
GLADE SPRING
ABINGDON
DAMASCUS
CITY OF BRISTOL
2035
RURAL LONG RANGE TRANSPORTATION PLAN

CHAPTER 2 - STUDY APPROACH AND ANALYSIS METHODS

The Transportation Plan was developed as part of a structured approach including:

- Development of regional transportation goals and objectives,
- Public involvement,
- Data compilation and collection,
- Data analysis,
- Identification of transportation deficiencies and recommendations, and
- Environmental overview.

Goals and Objectives

Common Rural Regional Long Range Plan Goals

It is important for each region to develop transportation goals and objectives to serve as a guide for future development. Included are goals with direct impacts upon transportation that could possibly include improvements to various modes of travel, greater multi-modal coordination, and enhanced ridesharing opportunities among others; and other goals with indirect impacts upon transportation, examples of which include designated growth and development areas, preservation of conservation areas, and the enhancement of tourism.

Each of the 20 PDCs in Virginia that include rural areas within their boundaries established goals and objectives as a part of this project. Similar concepts within the goals of the PDCs were found and used to shape common regional long range plan goals to address rural transportation planning across the Commonwealth. The goals and objectives served as a guide in the transportation needs assessment and development phases of the Plan. These goals are also consistent with the goals of *VTrans 2035*:

Goal 1. Enhance the connectivity of the existing transportation network within and between regions across all modes for both people and freight.

Objectives

Enhance access and connections to ports, airports, transit stations, or other modal facilities, as well as between neighborhoods and subdivisions, in order to enhance and optimize the efficiency of the region's transportation system.

Encourage the development of passenger rail service in regions where it is limited or unavailable.

Improve roadways and intersections on key trucking corridors.

Support existing and expand fixed-route rural transit, park and ride lots serving designated growth areas, and demand-responsive services.

Ensure adequate access to major activity centers for vehicles, mass transit, pedestrians, and bicyclists.

Evaluate alternative transportation modes during the development of transportation plans.

Goal 2. Provide a safe and secure transportation system.

Objectives

Identify dangerous transportation mode/user conflicts within the transportation system.

Increase safety awareness of users and providers of transportation systems.

Use traffic calming measures at appropriate locations.

Use intelligent transportation systems, such as variable message signs, on appropriate roadways.

Increase visibility on roadways as an additional safety measure.

Goal 3. Support and improve the economic vitality of the individual regions by providing access to economic opportunities, such as industrial access or recreational travel and tourism, as well as enhancing intermodal connectivity.

Objectives

Encourage projects within all modes of transportation that improve the global competitiveness of the region.

Encourage regional transportation planning, investment, and projects that support new and/or expanding economic development opportunities.

Develop individual bicycle and pedestrian trails within the PDCs that have been identified as priorities for tourism and recreation as well as coordinating with local park and recreation plans and the small urban area plans.

Designate additional scenic byways as recommended by local decision to promote tourism.

Emphasize commercial rail as an increasingly important means of goods movement.

Promote and establish attractive gateway/entrance corridors where reasonable.

Goal 4. Ensure continued quality of life during project development and implementation by considering natural, historic, and community environments, including special populations.

Objectives

Design and build developments and transportation facilities that are compatible with the aesthetic, historic, and physical characteristics of area localities using a commonsense approach.

Minimize transportation impacts to historic, cultural, and environmental resources and local communities.

Include public awareness and outreach in planning and development of projects.

Consider developing a set of design criteria, including landscaping, setbacks, and buffers, specifically for rural roadways that improve mobility and safety while keeping rural aesthetic conditions intact.

Formulate and adopt Context Sensitive Design criteria, preserving existing businesses and other structures, in transportation planning and project development.

Goal 5. Preserve the existing transportation network and promote efficient system management in order to promote access and mobility for both people and

freight.

Objectives

Coordinate transportation planning between jurisdictions and between PDCs to improve mobility.

Support the implementation of traffic flow measures to alternative routes through the region in times of highway accidents, congestion, and lane closures.

Support and expand alternative passenger transportation efforts such as public transit, transit programs for the elderly or disabled within and between regions, ride sharing, and other alternative transportation options.

Consider congestion management techniques in transportation planning, such as using secondary roads, inter-parcel connection, and shared commercial streets/entrances.

Ensure corridor preservation by identifying and preserving right-of-way for future transportation improvements where feasible, while respecting existing community standards.

Goal 6. Encourage land use and transportation coordination, including but not limited to, development of procedures or mechanisms to incorporate all modes, while engaging the private sector.

Objectives

Promote the coordination of transportation improvements as land use changes and focus the majority of improvements within designated growth areas.

Within designated growth areas, encourage mixed-use developments with adequate internal circulation systems to minimize the length and number of vehicular trips and optimize traffic flow.

Promote street design in proposed new developments that facilitates non-motorized trips and investments in an interconnected transportation network (transit and bicycle/pedestrian facilities).

Consider innovative land development patterns and site designs to prevent additional congestion and improve accessibility.

Promote coordinated planning and development with Indian Tribal governments, governmental transportation agencies at all levels, and environmental land use plans and regulations.

Mount Rogers PDC Goals and Objectives

While it is crucial for the well-being of the general public and important for economic development purposes to have a safe and efficient statewide and regional fully integrated multi-modal transportation system, it is also recognized that each region has its own unique perspective on how this can best be accomplished. Rural transportation planning in the Mount Rogers PDC is guided by the Rural Technical Committee, which was formed in 2006. The tech committee has reviewed the needs of the region and formulated goals and objectives. Information contained here served as a guide in the transportation needs assessment and development phases of the Plan. These goals and objectives, when

combined with the analysis of the transportation network, support the plan recommendations.

Goal 1. Provide efficient and smooth movement through the Mount Rogers region of passenger and commercial vehicles along safe, well-maintained highways with capacity sufficient for all anticipated circumstances.

Objectives

The separation of the concurrent portions of I-81 and I-77 in Wythe County.

Improvements to I-81 interchanges at Exits 7, 14, 17, and 35.

The creation of climbing lanes for trucks on long grades of I-77 both northbound and southbound.

Continued planned improvements to US Route 58 within the Mount Rogers PDC.

Goal 2. To provide improved conditions for economic development, tourism, and existing business and industrial hubs in the Mount Rogers region by highway and by rail.

Objectives

Improvements to the utilization of rail for industrial access and public transportation.

Creation of intermodal exchange locations for rail and truck movement of goods.

Public Involvement

The advancement and acceptance of the study depended greatly upon outreach to the public, local governing bodies, and the PDCs. An effective and efficient communications effort must be well-planned and flexible. Public involvement elements incorporated into this study included:

- Development of a Master Communications Plan,
- Information sharing with the general public and public officials through meetings and use of the VDOT website,
- Provision of media relations through the development and use of press kits, press releases, and the coordination of media-related events,
- Focus groups to determine needs of the traditionally underserved, and
- Public meetings and public hearings.

Events held to date include the public meeting introducing the project to the public on August 19, 2009. A meeting was held to present the draft Plan to the public on XX, 2011. Comments on the draft Plan obtained from the public meeting have been addressed in this report.

Data Compilation and Collection

An extensive effort was made to compile and collect data to be used in the study analysis. The information obtained and how it was used included:

- Socioeconomic, US Census, and employment data was used not only to determine where trip origins and destinations occur, but also to assist in determining those

areas where the greatest demands for improvements might take place.

- Previously identified needs from other studies (by mode of travel) were reviewed to determine how the needs were identified and recommendations defined, and as a tool to identify those potential improvements that are still applicable.
- Capital improvement programs (by mode of travel) were needed to gain insight on modal deficiencies receiving top priority for improvement through the assignment of funding. These funded improvements automatically qualify for the top tier of needs due to their advanced status as active projects.
- Facility inventory (by mode of travel) was used to determine what currently exists and to help assess how much of the inventory may be deficient.
- Roadway accident data were used in the determination of high accident locations in need of improvement to reduce the levels of occurrence.
- Freight generator inventory information was crucial both in the determination of work activity destination centers and the goods movement analysis.
- Location and attributes of major activity centers and high growth areas were necessary to assist in the determination of areas likely having the greatest current needs and where additional needs might exist in the future.
- Location and attributes of water and sewer infrastructure proved useful as a tool in determining areas within the MRPDC where future growth can be anticipated.
- Data on commuting patterns and labor market trends were used in the determination of trip origins and destinations and the analysis for ridesharing potential.
- Mapping of disadvantaged population groups was used in the determination of recommendations for improvements to accommodate those groups.
- Summaries and copies of existing regional and local plans and studies provided insight on regional and local development scenarios, and proposals for the accommodation of transportation needs.
- Aerial photography was used for a myriad of needs from determination of development patterns to serving as a check on mapping accuracy.
- Traffic count data (roadway segments and intersections) were necessary to determine existing needs for both mobility and safety and to serve as the basis for determination of future traffic growth and how that growth could best be accommodated.

All information and data obtained were reviewed for sufficiency in extent and quality through the consideration of its comprehensiveness, age, and degree of geographic coverage. Through this review, identification was made of the extent to which the available data supported analysis that either quantified or qualified transportation and safety concerns, along with regional goals and objectives. The information and data obtained were supplemented with input received from meetings held with local elected and other government officials and the general public, whereby additional transportation and safety

concerns were discussed.

CHAPTER 3 – TRANSPORTATION DATA ANALYSIS

Data for each mode were analyzed for the current and forecast year conditions.

Roadways

Traffic data collected for the priority locations were incorporated into the VDOT Statewide Planning System (SPS) data base. Traffic forecasts were developed for 2035 based on appropriate trend lines obtained through a "best fit" of traffic count historical data points and further modified with consideration given to available information on projections for growth areas and water and sewer line extension. Forecast year peak hour to daily travel demand ratios generally followed existing peak hour to daily volume ratios, unless available information indicated a different ratio was appropriate.

Roadway analysis consisted of four separate reviews:

- Roadway link-level mobility performance, measured through Level-of-Service (LOS) analysis. Relevant information available in the VDOT SPS database and other travel data collected for this Plan was reviewed for reasonableness for both the base year and forecast year conditions. Deficiencies noted from the database and additional analysis, coupled with information received at public meetings and from local officials, constituted those roadway locations considered deficient based on mobility.
- Safety and accidents. Safety and crash database information and input from local officials and the public were used to identify fifteen locations within the MRPDC for which field safety assessments were conducted. The assessments identified physical features, traffic control features, operational issues, and other factors contributing to safety concerns.
- Structure sufficiency. Any structure with a current sufficiency rating of less than 50 (out of 100) was considered deficient and in need of structural upgrade or replacement. Sufficiency evaluates factors such as load, visual structural deficiencies (cracks, concrete visibly missing), adequacy of the foundation, and the remaining life of the superstructure including pavement condition). The methods used for assessing structural sufficiency can be found in Appendix H.
- Roadway geometric sufficiency. Roadway segments were reviewed for geometric sufficiency, such as insufficient lane or shoulder width; inadequate horizontal or vertical alignment, passing sight distance, and/or crossover spacing; and availability of turn lanes. The methods used for assessing geometric sufficiency can be found in Appendix H.

Roadways analyzed for all four categories of deficiencies were those assigned a Federal Functional Classification as an arterial or collector, which together generally comprise between 30-40 percent of total jurisdictional mileage. The remaining mileage, functionally classified as local roadways, was not included in this study. Appendix H includes the full definition of functional classification.

MRPDC, in conjunction with the local jurisdictions, prepared a list of roadway detailed study locations based on reviews of available data sources, input at public meetings, and information provided by local and regional officials. The list is based on roadway performance measures, safety considerations, or a combination of the two. Some priority locations had current improvement recommendations from recent studies and required no further analysis. Other priority locations required a new or updated analysis. Within the MRPDC, eleven detailed study locations were identified and traffic count data (24 hour machine counts and/or peak hour intersection turning movements) were collected at these locations; these locations were also analyzed during the safety assessments (Exhibits 4 and 5). Data appear in Appendix H.

Exhibit 4. Roadway Detailed Study Locations

Jurisdiction	Detailed Study Location
Carroll County	Intersection of VA 607 and VA 721
Smyth County	Intersection of VA 16 South and US 11 in Marion
	Intersection of US 11 and VA 107 in Chilhowie
	Intersection of VA 16 and VA 601 in Sugar Grove
	Intersection of VA 107 and VA 610 (Rich Valley Road)
	I-81 Exit 35 in Chilhowie at VA 107
Washington County	Intersection of VA 75 (Cummings Street) and Cook Street and Green Spring Road in Abingdon
	Intersection of VA 75 (Cummings Street) south of I-81 and Commerce Drive
	US 11 from I-81 Exit 19 Southbound On Ramp to Hillman Highway
	Intersections of US 11 with I-81 Exit 19 Southbound Off Ramp and US 11 with Empire Drive SW
Wythe County	Intersection of US 11 and VA 90 north of Rural Retreat
	Intersection of US 21 with VA 749 (Cedar Springs Rd)/VA 619 (Saint Peters Rd) in Speedwell

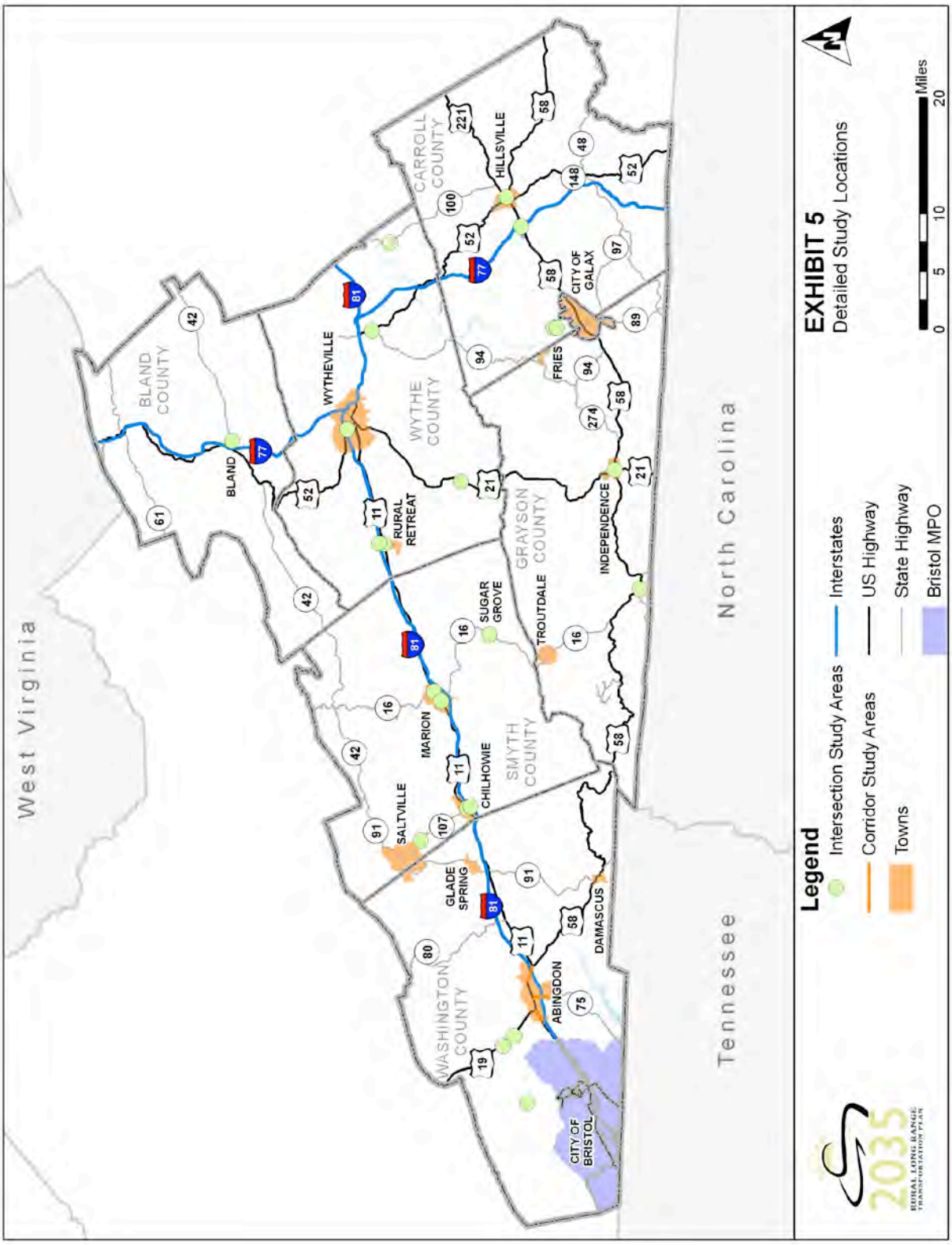


EXHIBIT 5
Detailed Study Locations
Legend
Intersection Study Areas
Corridor Study Areas
Towns
Interstates
US Highway
State Highway
Bristol MPO
Miles
0 5 10 20
West Virginia
North Carolina
Tennessee
BLAND COUNTY
WYTHE COUNTY
CARROLL COUNTY
GRAYSON COUNTY
SMYTH COUNTY
WASHINGTON COUNTY
BLAND
WYTHEVILLE
RURAL RETREAT
HILLSVILLE
CITY OF GALAX
FRIES
INDEPENDENCE
TROUTDALE
SUGAR GROVE
MARION
CHILHOWIE
SALTVILLE
GLADE SPRING
DAMASCUS
ABINGDON
CITY OF BRISTOL

Regional Plans and Studies

I-81 is one of the primary truck freight corridors on the eastern seaboard. A tiered Environmental Impact Statement (EIS) process has been used for addressing the needs and deficiencies of the I-81 corridor. The Tier 1 EIS assessed the entire corridor within the Commonwealth and separated the corridor into eight Sections of Independent Utility (SIU) for further study. The effects of tolls and truck to rail diversion, as well as environmental impacts, were studied in the Tier 1 EIS. Studies have begun on several of the SIUs. One of these is the overlap of I-81 and I-77 in Wythe County. The Tier 2 study for the I-81/77 Overlap section is examining various alignments through this area for either I-81 or I-77. A preferred alignment has not yet been selected. The alignments developed are to the north or south of the existing section, in addition to an alternative in which the Overlap section would be widened from 6 to 8 lanes. As this study progresses through the NEPA process and approval, including public consultation, a preferred alternative will be selected.

Public Transportation

The District Three Governmental Cooperative is a government agency owned and operated by the MRPDC member jurisdictions. It is the region's primary transit agency, as well as the Area Agency on Aging, and provides a myriad of services for residents. Fixed-route and demand-responsive services are currently available in Abingdon, Galax, Marion, and Wytheville, with flexible, fixed routes throughout the counties. The fare is $0.50 for both fixed-route and demand-responsive service. Ridership in Fiscal Year 2006 was 185,000. The Mount Rogers Community Services Board Employment Services Division offers fixed-route and demand-responsive service to adults with disabilities. The City of Bristol also has fixed-route transit service, which lies entirely within the MPO.

In addition, there are five fixed routes provided by the District Three Governmental Cooperative that originate or travel through the region that serve long-distance trips. These New Freedom routes are $1 round trip and access major shopping centers and medical facilities in Virginia, North Carolina, and Tennessee. The Bland to Winston-Salem route along I-77 and US 52, and the Bristol to Roanoke route along I-81 both operate on Mondays. The Twin Counties (Troutdale) to Roanoke route along VA 16, US 58, US 52, I-77, and I-81, and the Wytheville to Tri-Cities route along I-81 and I-26 both operate on Tuesdays. The Marion to Winston-Salem route along VA 16, US 58, and US 52 operates on Fridays. Transfer is available between the Bland/Winston-Salem route and the Bristol/Roanoke route near Wytheville.

Two of these New Freedom routes also connect to the Veterans Transport to Veterans Administration Hospitals provided in the Cumberland Plateau PDC. Riders can contact District Three Public Transit to arrange transportation on the Wytheville to Tri-Cities route or the Bristol to Roanoke route. Riders then contact Four County Transit within the CPPDC to coordinate their transfer.

The Virginia Department of Rail and Public Transportation (DRPT) also recently completed a Coordinated Human Service Mobility Plan for each PDC in the Commonwealth. The plan for the MRPDC examined and analyzed the existing fixed-route and demand-responsive transit services and identified strategies to address existing unmet transit needs of the region's population (DRPT, 2008). The Plan identified the following unmet transportation

needs in the region:

- Local and long-distance transportation for non-emergency medical trips for people not eligible for Medicaid;
- Expanded access to specialized services, i.e. one-on-one trips and door-through-door assistance;
- Rideshare options and vanpools to enable people with low incomes to access employment opportunities;
- Expanded transportation options on evenings and weekends;
- Expanded same-day transportation service for people with disabilities;
- Transportation to clinics and regional medical facilities in Roanoke, Bristol, Charlottesville, Johnson City, and Winston-Salem;
- Expanded public transportation out of the region;
- Connection between Bristol City Transit and regional system;
- Expanded inter-system connections to access more destinations in the region;
- Transportation to places of worship;
- Mobility manager to contact various agencies, providers, and customers, especially to coordinate occasional weekend/evening service or service to special events;
- Information to taxi companies about funding, leasing, and coordinating opportunities;
- Better brand image and marketing of human services transportation to riders, local government, businesses, and colleges;
- Have an attendant or aide on vehicle as needed;
- Expanded access to accessible vehicles;
- Designated regional coordinator for transportation;
- Funding to expand or establish volunteer driver programs;
- Better funding opportunities and sources; and
- Better alternative transportation infrastructure (bus shelters, sidewalks) and multi-modal options.

Disadvantaged population groups were studied not only as a part of the DRPT Mobility Plan but also as a part of this Plan's process in order to determine deficiencies in the transportation network which affect these groups. For the purposes of this Plan, disadvantaged groups include persons with low-income, minorities, the elderly, and persons with disabilities. US Census 2000 data at the block group level was examined in order to determine locations and densities of all these groups. These are graphically displayed in Exhibits 6-9. This information was reviewed to identify potential areas of service expansion for all transit providers.

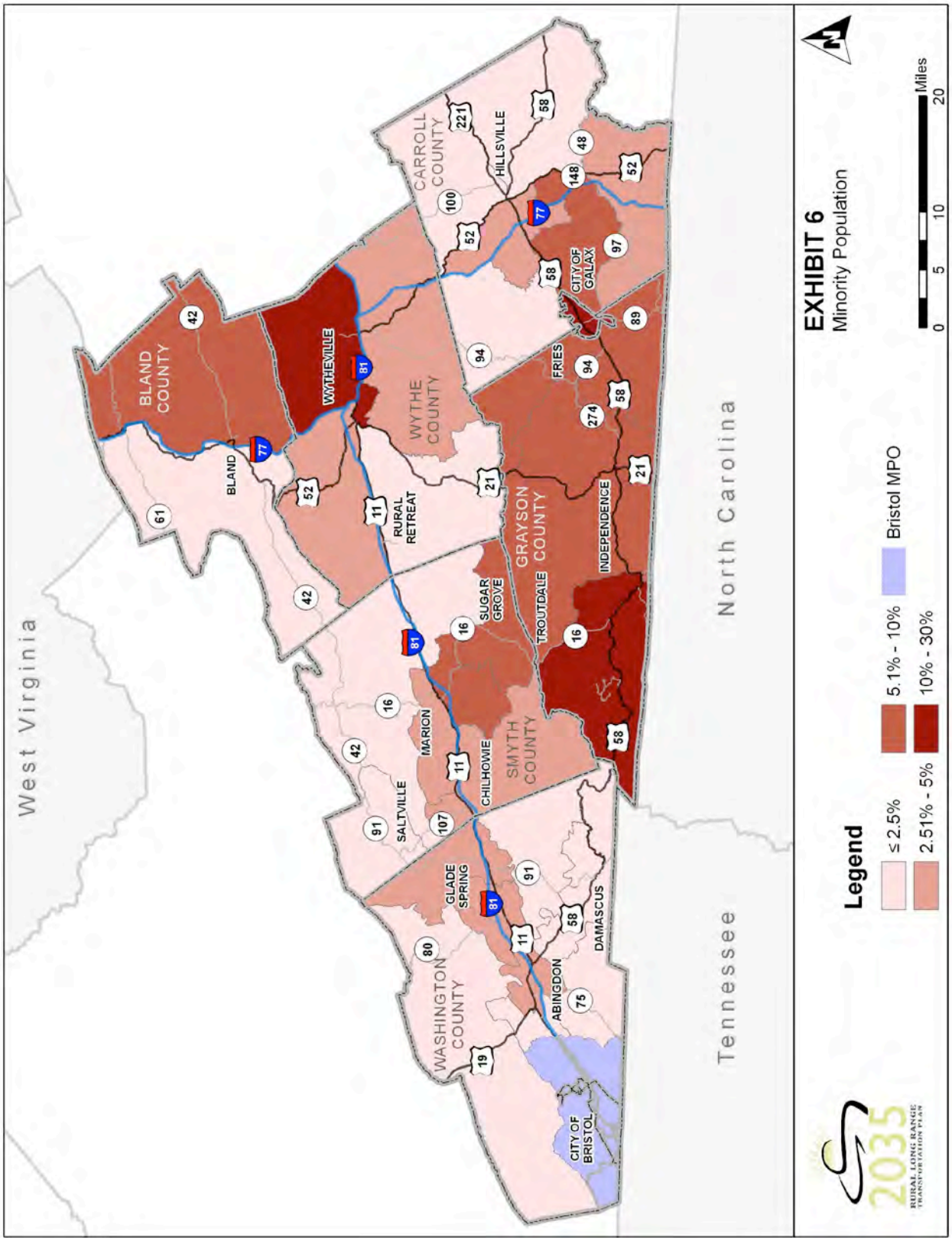


EXHIBIT 6
Minority Population
Legend
≤ 2.5%
2.51% - 5%
5.1% - 10%
10% - 30%
Bristol MPO
Miles
0
5
10
20
West Virginia
North Carolina
Tennessee
BLAND COUNTY
BLAND
WYTHEVILLE
WYTHE COUNTY
RURAL RETREAT
CARROLL COUNTY
HILLSVILLE
CITY OF GALAX
FRIES
GRAYSON COUNTY
INDEPENDENCE
TROUTDALE
SUGAR GROVE
MARION
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RURAL LONG RANGE TRANSPORTATION PLAN

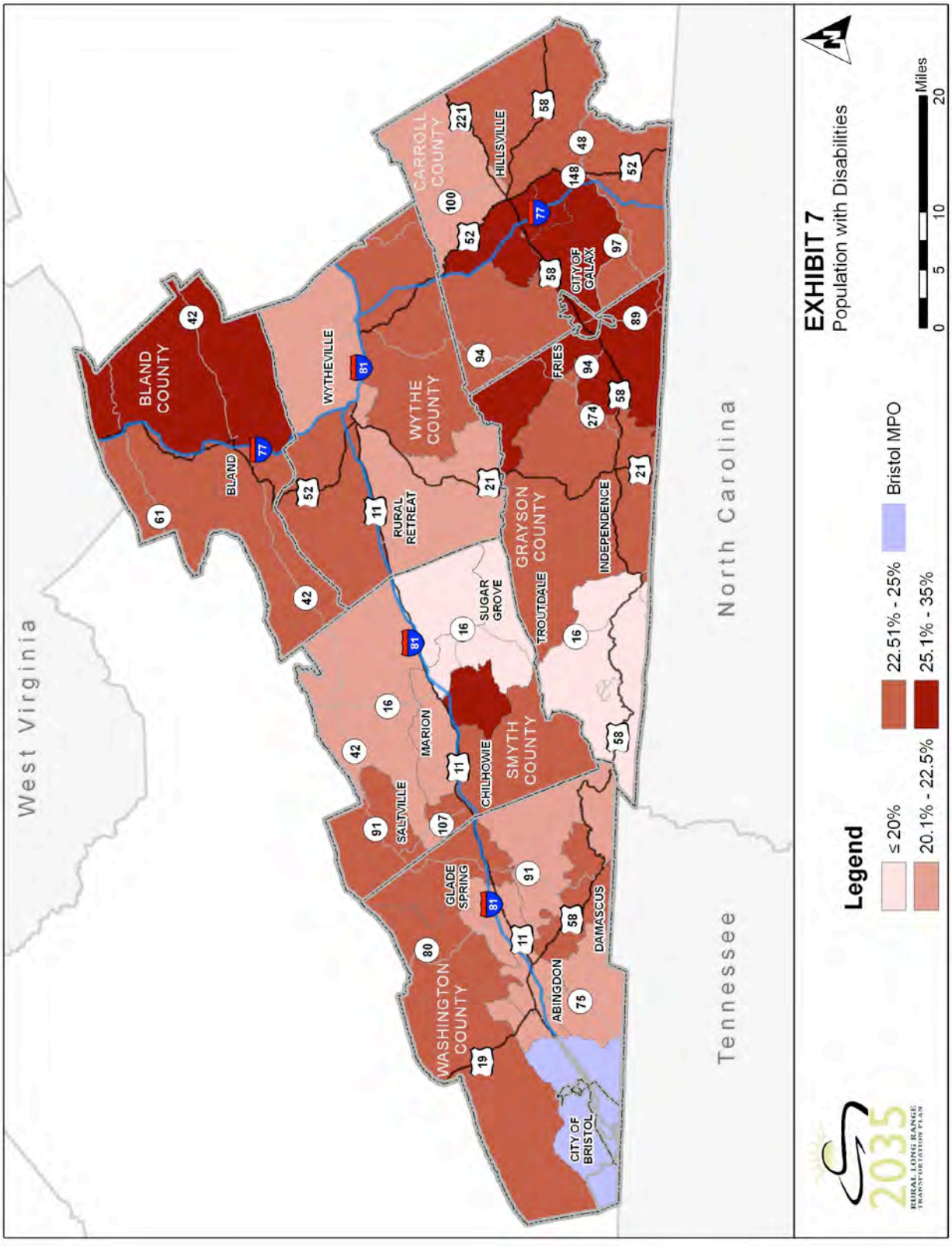
EXHIBIT 7
Population with Disabilities
Legend
≤ 20%
20.1% - 22.5%
22.51% - 25%
25.1% - 35%
Bristol MPO
Miles
0 5 10 20
West Virginia
North Carolina
Tennessee
BLAND COUNTY
WYTHE COUNTY
GRAYSON COUNTY
SMYTH COUNTY
WASHINGTON COUNTY
CARROLL COUNTY
BLAND
WYTHEVILLE
RURAL RETREAT
SUGAR GROVE
TROUTDALE
INDEPENDENCE
FRIES
HILLSVILLE
CITY OF GALAX
MARION
CHILHOWIE
SALTVILLE
GLADE SPRING
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ABINGDON
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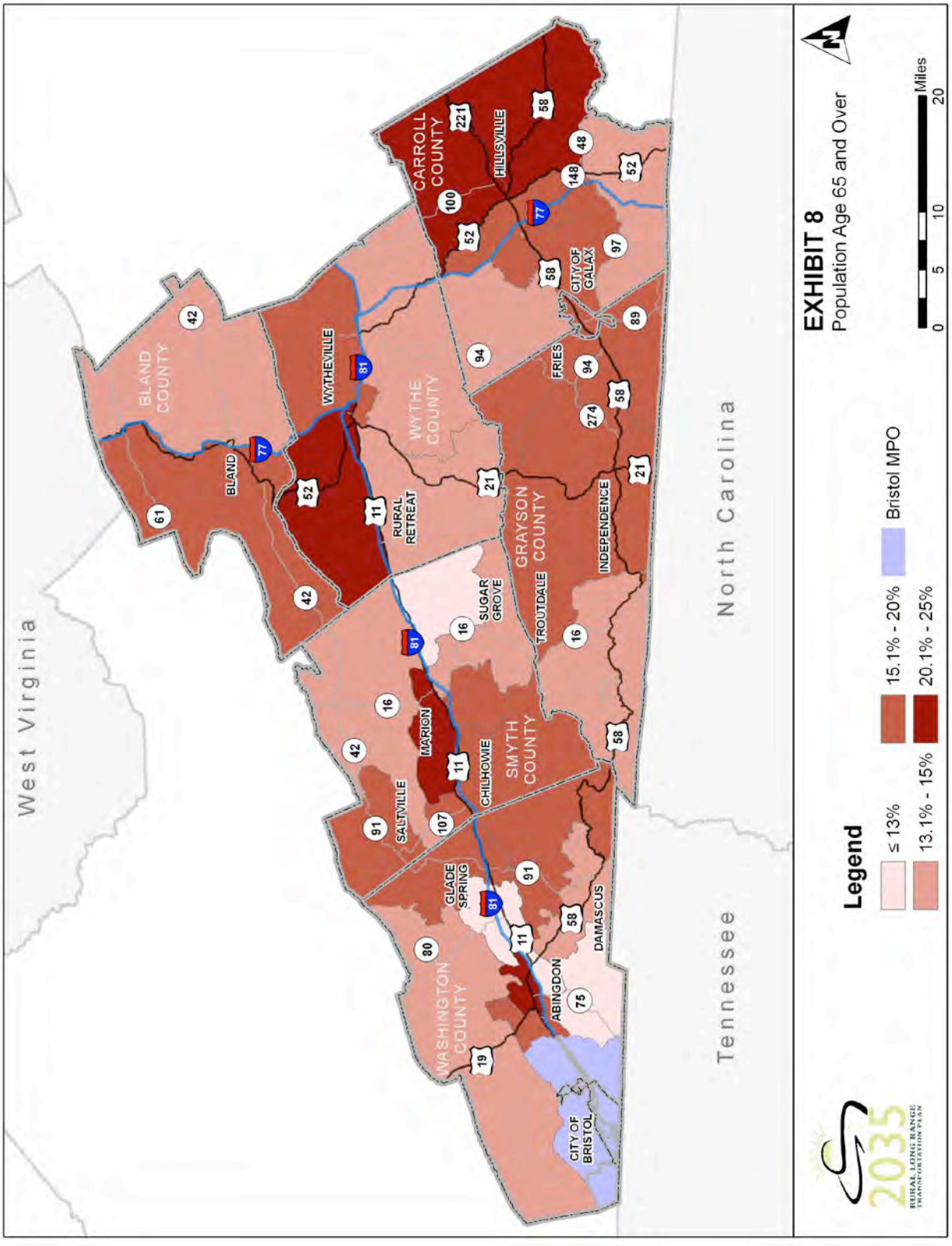


EXHIBIT 8
Population Age 65 and Over
Legend
≤ 13%
13.1% - 15%
15.1% - 20%
20.1% - 25%
Bristol MPO
0 5 10 20
Miles
West Virginia
North Carolina
Tennessee
BLAND COUNTY
BLAND
WYTHEVILLE
WYTHE COUNTY
RURAL RETREAT
CARROLL COUNTY
HILLSVILLE
CITY OF GALAX
FRIES
GRAYSON COUNTY
INDEPENDENCE
TROUTDALE
SUGAR GROVE
SMYTH COUNTY
MARION
CHILHOWIE
SALTVILLE
GLADE SPRING
WASHINGTON COUNTY
ABINGDON
DAMASCUS
CITY OF BRISTOL
2035
RURAL LONG RANGE TRANSPORTATION PLAN

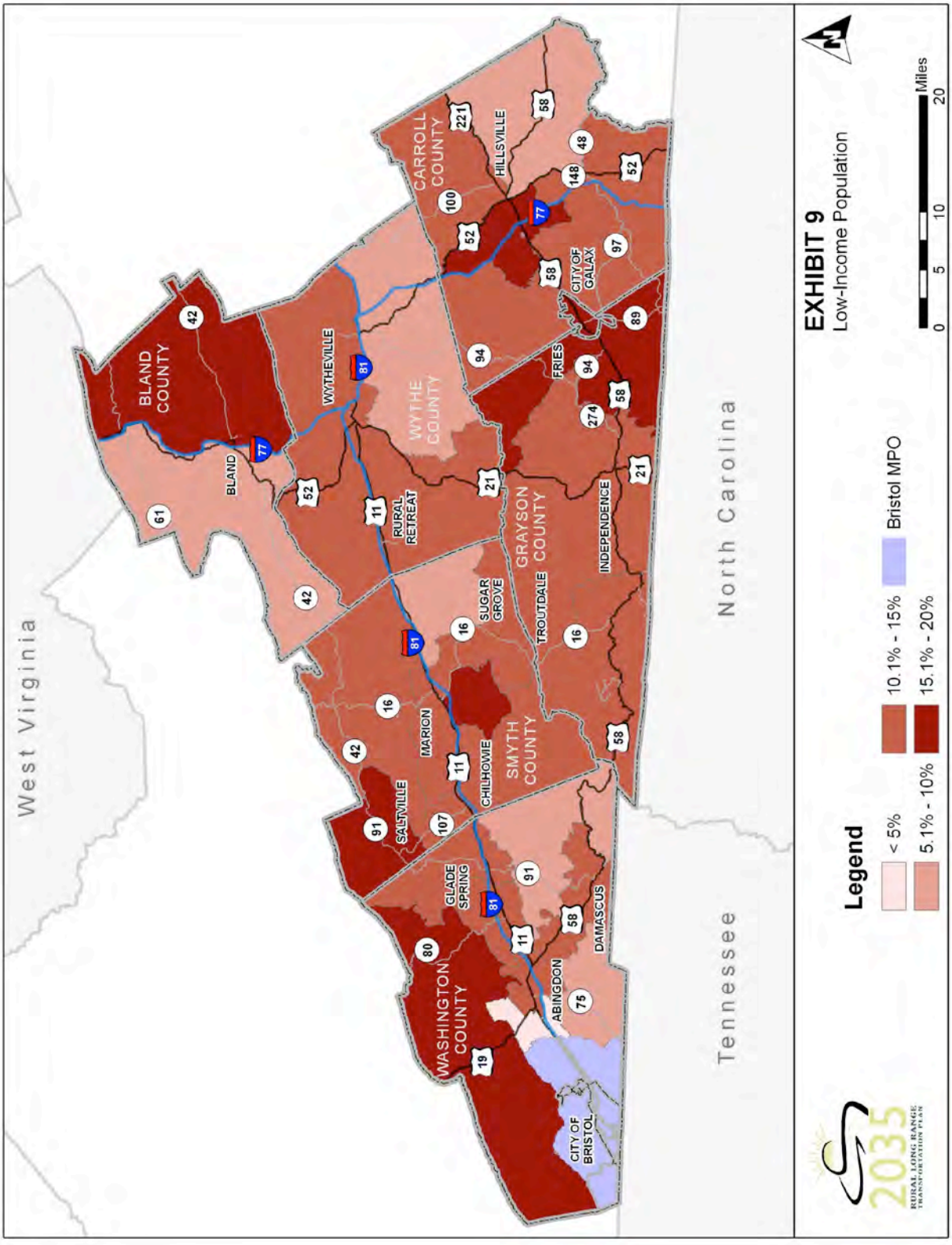


EXHIBIT 9
Low-Income Population
Legend
< 5%
5.1% - 10%
10.1% - 15%
15.1% - 20%
Bristol MPO
Miles
0 5 10 20
West Virginia
North Carolina
Tennessee
BLAND COUNTY
WYTHE COUNTY
CARROLL COUNTY
GRAYSON COUNTY
SMYTH COUNTY
WASHINGTON COUNTY
BLAND
WYTHEVILLE
RURAL RETREAT
HILLSVILLE
CITY OF GALAX
FRIES
SUGAR GROVE
TROUTDALE
INDEPENDENCE
MARION
CHILHOWIE
SALTVILLE
GLADE SPRING
DAMASCUS
ABINGDON
CITY OF BRISTOL
2035
RURAL LONG RANGE TRANSPORTATION PLAN

Bicycle and Pedestrian Facilities

The topography in the MRPDC is not as conducive as in other PDCs for numerous recreational trails on gentle terrain used by casual bikers and pedestrians. However, the PDC currently does have a range of relatively easy trails to more rugged trails for more advanced bicycle users and pedestrian users (Exhibit 10), including:

- Appalachian Trail in Bland, Grayson, Smyth, Washington, and Wythe Counties (pedestrian only);
- US Bike Route 76 in Grayson, Smyth, Washington, and Wythe Counties;
- Jefferson National Forest trail system in all counties;
- Grayson Highland State Park trails in Grayson County;
- New River Trail in Carroll, Grayson, and Wythe Counties;
- Virginia Creeper Trail in Grayson and Washington Counties;
- Iron Mountain Trail in Smyth and Washington Counties;
- Chestnut Knob, Wolf Creek, and Little Wolf Creek Trails in Bland County;
- Hungry Mother State Park trail system in Smyth County;
- Salt Trail in Saltville, Smyth County; and
- Bear Tree Recreation Area trails in Washington County.

The Grayson, Smyth, Washington, and Wythe County Comprehensive Plans include objectives to provide designated bicycle and pedestrian facilities. The Grayson County plan supports "the construction of bike lanes as a safety feature on all future road improvement projects" (Grayson, 2005). The Smyth and Wythe County plans include objectives to provide designated facilities for pedestrian and bicycle transportation. The Washington County Comprehensive Plan refers to the recreation plan for the county *Plan Today for an Active Tomorrow*, which includes current inventories of all facilities. There are XX miles of existing bicycle and pedestrian facilities in the MRPDC.

Airports

There are no commercial airports in the region. The nearest commercial airports are Roanoke Regional Airport and Tri-Cities Regional. Roanoke is approximately 90 miles from the eastern part of the region. Tri-Cities Regional is located south of the region in Blountville, Tennessee, approximately 20 miles south of the southern portion of the region. There are three general aviation airports in the region: Mountain Empire Airport, jointly owned by Smyth and Wythe Counties and the Towns of Marion and Wytheville; Twin County Airport, jointly owned by Grayson and Carroll Counties and the City of Galax; and Virginia Highlands Airport in Abingdon (Exhibit 11). The Virginia Air Transportation System Plan Update includes data on changes in the number of based aircraft at airports. The average annual growth rate between 1990 and 2000 was -1.1% at Mountain Empire, 0.4% at Twin County, and -0.5% at Virginia Highlands (DOAV, 2003).

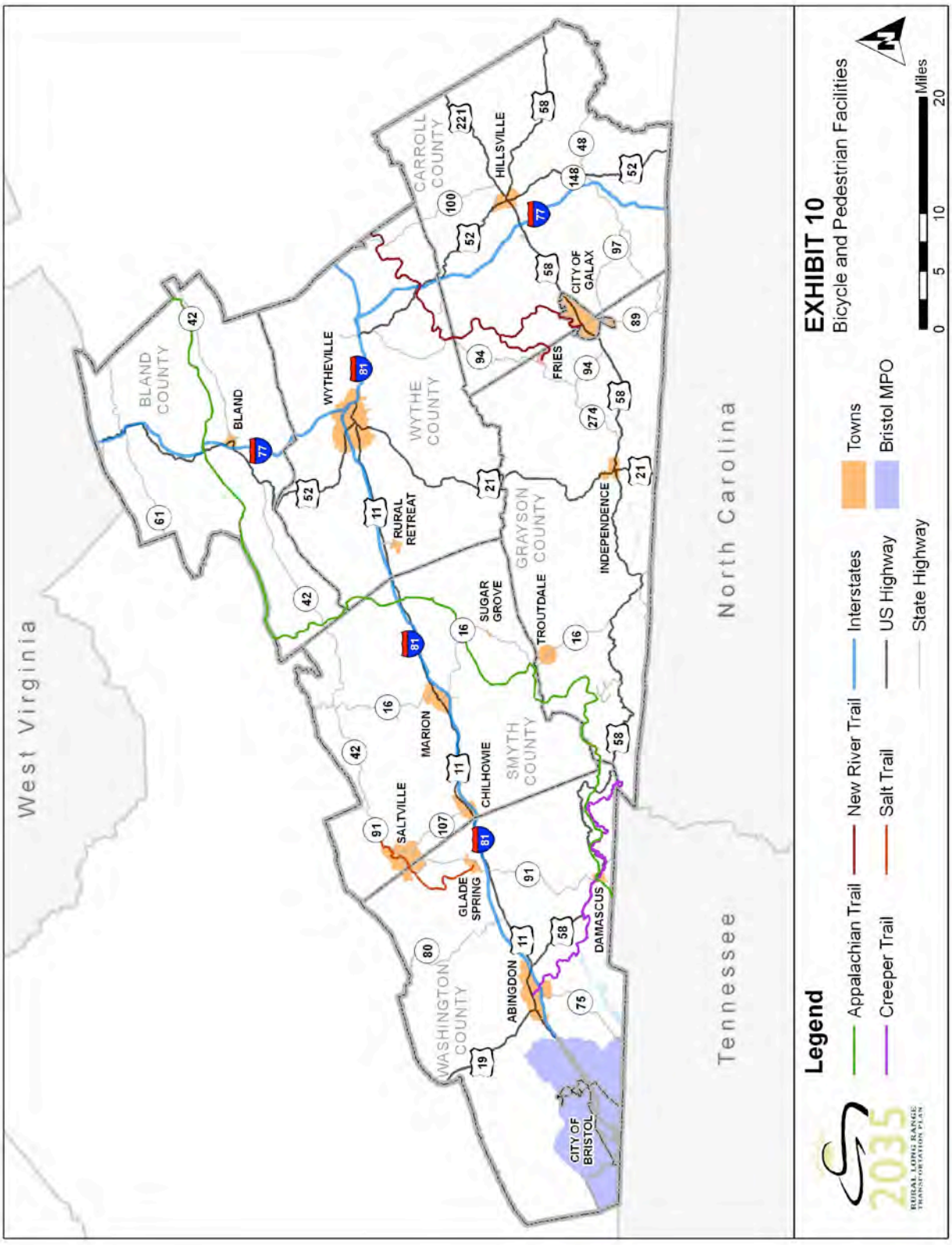
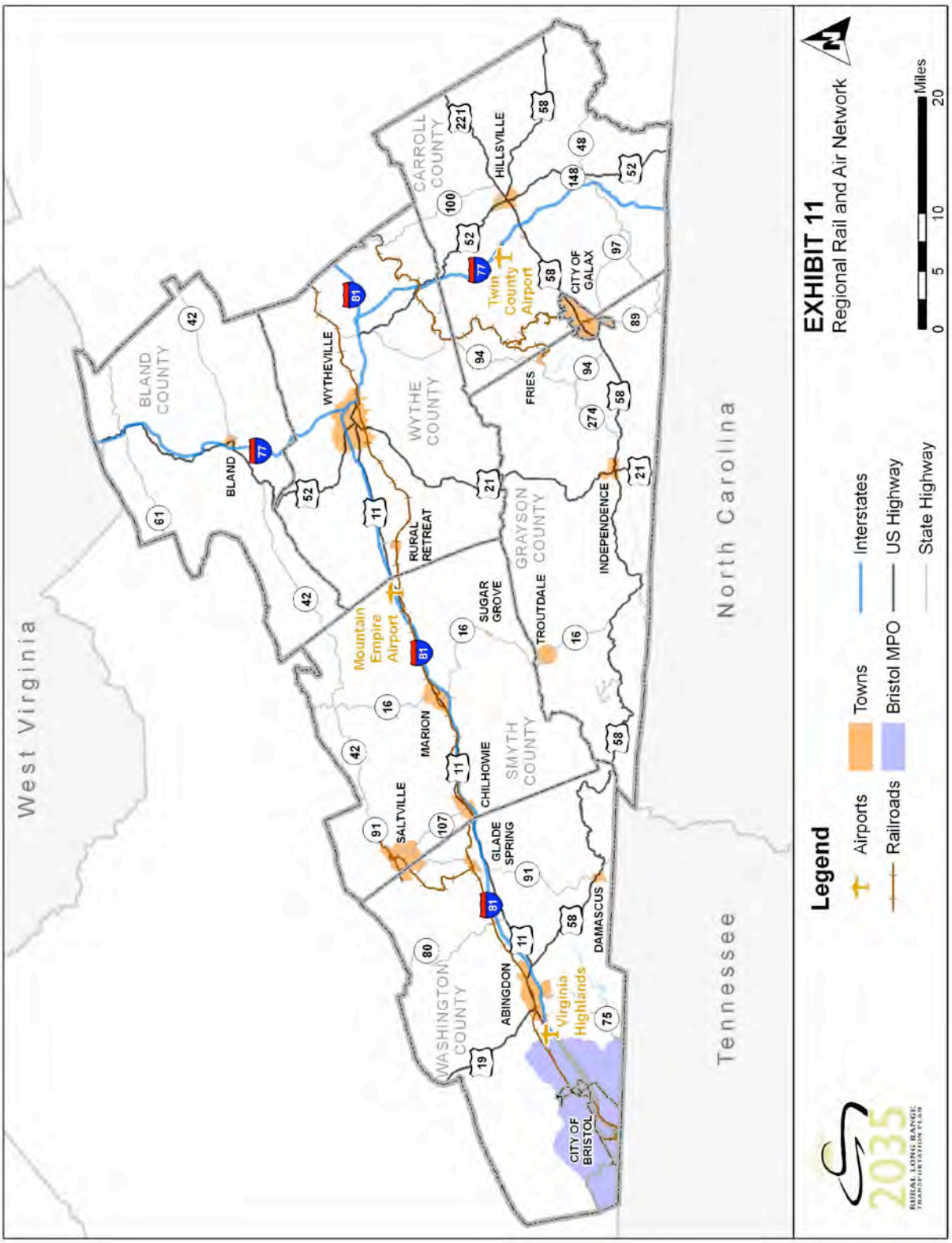


EXHIBIT 10
Bicycle and Pedestrian Facilities
Legend
Appalachian Trail
New River Trail
Interstates
Towns
Creeper Trail
Salt Trail
US Highway
Bristol MPO
State Highway
Miles
0 5 10 20
West Virginia
North Carolina
Tennessee
BLAND COUNTY
WYTHE COUNTY
CARROLL COUNTY
GRAYSON COUNTY
SMYTH COUNTY
WASHINGTON COUNTY
BLAND
WYTHEVILLE
RURAL RETREAT
HILLSVILLE
CITY OF GALAX
FRIES
INDEPENDENCE
TROUTDALE
SUGAR GROVE
MARION
CHILHOWIE
SALTVILLE
GLADE SPRING
ABINGDON
DAMASCUS
CITY OF BRISTOL


West Virginia
North Carolina
Tennessee
BLAND COUNTY
WYTHE COUNTY
CARROLL COUNTY
GRAYSON COUNTY
SMYTH COUNTY
WASHINGTON COUNTY
BLAND
WYTHEVILLE
HILLSVILLE
CITY OF GALAX
FRIES
INDEPENDENCE
RURAL RETREAT
SUGAR GROVE
TROUTDALE
MARION
CHILHOWIE
SALTVILLE
GLADE SPRING
DAMASCUS
ABINGDON
CITY OF BRISTOL
Twin County Airport
Mountain Empire Airport
Virginia Highlands
EXHIBIT 11
Regional Rail and Air Network
Legend
Airports
Railroads
Towns
Bristol MPO
Interstates
US Highway
State Highway
0 5 10 20
Miles
2035
RURAL LONG RANGE TRANSPORTATION PLAN

Goods Movement

The majority of goods movement in the region is by truck and utilizes I-77, I-81, US 21, US 52, US 58, and US 221. As stated above, I-81 is one of the primary corridors on the eastern seaboard, not only for passenger cars but also particularly for truck freight. The alternatives already identified as a part of the Tier 2 process for the I-77 and I-81 overlap include widening or additional lanes on new location. As the study proceeds through the NEPA process, a preferred alternative will be identified.

There is one primary rail line within the area, that parallels I-81 (Exhibit 11). It currently only carries freight; there is no Amtrak service in the region. The rail line is owned by Norfolk Southern and is a part of the company's Crescent Corridor. This Corridor has two segments that generally parallel I-81 and US 29, respectively, through the state and carry intermodal trains, general cargo, and auto trains (DRPT, *Virginia*, 2008). Within the MRPDC, the line traverses Smyth, Washington, and Wythe Counties.

Land Use and Future Growth

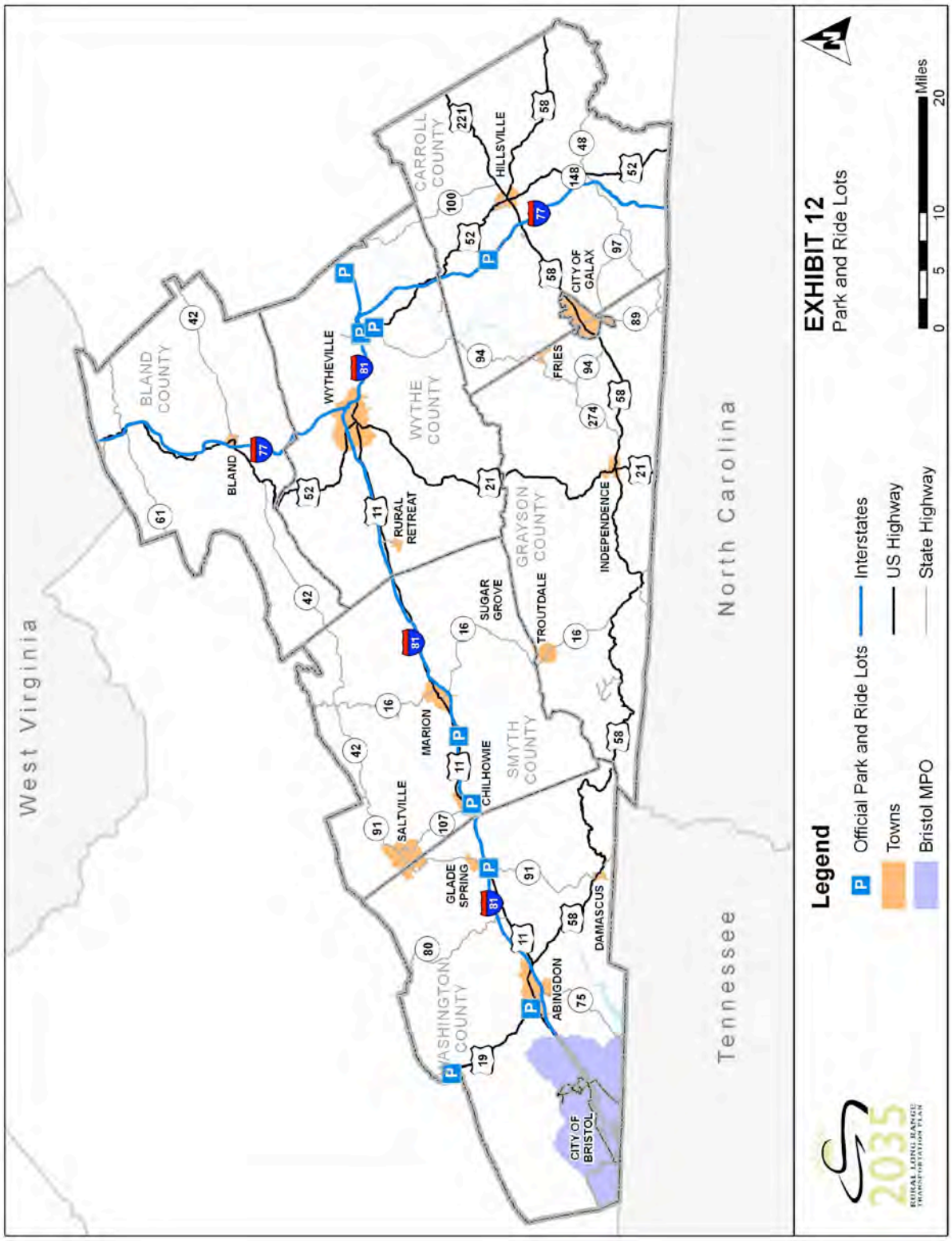
The land use/land cover in the MRPDC region is generally forested and rural residential, with more dense residential and commercial uses centered around I-81 and the existing cities and towns. The location and extent of land use and development throughout the region is reviewed as a part of traffic analysis. Changes in existing land use and geographic shifts of land use and development can have a long-term effect on traffic forecasts and demand on the transportation network. Land use in the region has been influenced primarily by the topography. Steep slopes in some areas have discouraged development in favor of stream beds and valleys where roads are located. Growth areas and activity centers are within the existing cities and towns and have not changed dramatically in recent years.

Travel Demand Management

With diminishing resources of fossil fuels coupled with increasing travel demand and a need to preserve and enhance environmental quality, every effort needs to be made to reduce the number of vehicle trips, especially single-occupant trips. In some rural areas, low population densities and dispersed trip attractors may not be conducive to major shifts to mass transit. In the MRPDC, this is generally true. There is concentration of employment destinations in Bristol, Galax, and the towns. There is the potential that some decreases in single-occupant vehicle trips could occur. According to the 2000 US Census, workers traveling outside their county of residence for employment ranged from 20% in Smyth County to 68% in Grayson County. These workers are targets for travel demand management strategies already in place. Public transit, a key component of commuter transportation, is discussed above.

Additional commuter-oriented pieces of the transportation network in the region include park and ride lots. There are twelve VDOT maintained park and ride lots in the region (Exhibit 12). There is one in Carroll County at I-77 Exit 19. There are four lots in Smyth County: three at I-81 Exit 35 and one at US 11 and VA 660 in McMullin. There are three lots in Washington County: one at US 11 and VA 91 at I-81 Exit 29; one on US 19 and US 58 in Abingdon; and one on US 19 at VA 690. There are four lots in Wythe County: one on US 52 in Farmers Store; two at I-81 Exit 80; and one at I-81 Exit 86. There are no lots in Bland

and Grayson Counties or the Cities of Bristol and Galax.


West Virginia
North Carolina
Tennessee
BLAND COUNTY
WYTHE COUNTY
CARROLL COUNTY
GRAYSON COUNTY
SMYTH COUNTY
WASHINGTON COUNTY
BLAND
WYTHEVILLE
RURAL RETREAT
HILLSVILLE
CITY OF GALAX
FRIES
INDEPENDENCE
TROUTDALE
SUGAR GROVE
MARION
CHILHOWIE
SALTVILLE
GLADE SPRING
ABINGDON
DAMASCUS
CITY OF BRISTOL
EXHIBIT 12
Park and Ride Lots
Legend
Official Park and Ride Lots
Towns
Bristol MPO
Interstates
US Highway
State Highway
Miles
0 5 10 20
2035
RURAL LONG RANGE TRANSPORTATION PLAN

There is currently no passenger rail service within the MRPDC. The nearest station is in Danville, approximately 90 miles east of the eastern part of the region. Service from Danville is on the Crescent Service (New York to New Orleans), which travels daily through the region.

CHAPTER 4 – TRANSPORTATION DEFICIENCIES AND RECOMMENDATIONS

The products of the transportation data compilation/collection and analysis resulted in a determination of deficiencies and recommendations for improvements. These are discussed by mode.

Roadways – Base Year

Deficiencies and recommendations were determined both for the base year and forecast year (2035) conditions. Deficiencies were identified based on mobility measures (LOS), safety concerns, a determination of structures requiring improvement or replacement, and a determination of geometric deficiencies. The road system analyzed included facilities functionally classified as arterials and collectors. When the short-, mid-, and long-term recommendations are combined, the totals of the recommendations include: XX of additional lanes; XX structures to be upgraded or replaced; and XX intersections to be improved.

Mobility

Within the MRPDC, XX roadway segments and intersections were combined from the following studies/projects: the detailed study locations, the Statewide Mobility System (SMS), private development Traffic Impact Analysis (TIA), the STARS component of this project, local recommendations, other separate studies, and projects currently programmed for funding in the Six Year Transportation Improvement Program (SYIP) FY 2010-2015. For some of the locations, recommendations have already been proposed, which were reviewed to determine if any updates needed to be made. The remaining locations were analyzed for a determination of current mobility LOS and degree of congestion encountered. Deficiencies based on these analyses or input provided are presented in Exhibit 13.

Possible recommendations for improvements included measures such as:

- Addition of a new, parallel facility;
- Grade separation (new interchange) of current at-grade intersection;
- Additional lanes to the existing facility;
- Widen existing lanes;
- Improved horizontal and/or vertical alignment;
- Improved shoulders;
- Addition of turn lanes;
- Crossover (addition or closing);
- Signalization (new or updated);
- Removal of parking;
- Roundabouts;
- Replacing shoulders with curb-and-gutter sections;
- Possible reduction in traffic levels to improve LOS; and

- Conversion of two parallel roadways with two-way traffic to a one-way pair.

Exhibit 13. Roadway System Deficiencies and Recommendations 2009-2035

Large Recommendation Table to be inserted here.

Safety

Roadway segments and intersections with high levels of incidents were supplied by VDOT and supplemented with additional information obtained from MRPDC. Within the MRPDC, XX road segments and intersections were reviewed for causes of high incident rates, and recommendations offered to reduce or eliminate the concerns. Possible remedial measures included many of those noted for LOS deficiencies, and supplemented by others, for example:

- Improved sight distance;
- Reduced speed limit;
- Advance signage with safety-related messages; and
- Removal of objects within the roadway right-of-way.

The safety analysis is limited to the base year condition (Exhibit 13).

Structures

Information on structures and their current degree of adequacy was obtained from inventory information provided by VDOT. Within the MRPDC, 208 structures were considered structurally deficient, with recommendations offered for their upgrade or replacement (Exhibit 14).

Exhibit 14. Bridge Deficiencies

	Functionally Obsolete			Structurally Deficiency		
	Replace	Upgrade/Repair		Replace	Upgrade/Repair	
Bridge Sufficiency Rating	**0-50**	**51-80**	**80+**	**0-50**	**51-80**	**80+**
Bland County	3	13	3	14	9	0
Carroll County	3	19	12	12	11	0
Grayson County	1	26	4	18	25	0
Smyth County	5	37	6	31	10	1
Washington County (Outside of MPO)	10	41	5	31	12	0
Wythe County	2	27	11	19	12	3
City of Galax	0	3	1	0	0	0
MRPDC Total	24	166	42	125	79	4

Roadway Geometrics

Data related to roadway geometrics provided by VDOT was compared to adequacy criteria, also made available by VDOT, to determine road segments and spot locations considered deficient. Geometric deficiencies were noted for XX road segments and spot locations. Recommendations for improvements included many of the remedial actions noted for mobility and safety improvements.

Deficiencies, Recommendations and Cost Estimates

Base year deficiencies (mobility, safety, structures, geometrics) and recommendations to alleviate the deficiencies are listed in Exhibit 13 and mapped by jurisdiction in Exhibits 15-28.

Exhibit 15
Roadway System Deficiencies (2009-2035)
Bland County
- Legend has mobility; safety; geometric deficiency; structures

Exhibit 16
Roadway System Deficiencies (2009-2035)
Carroll County
- Legend has mobility; safety; geometric deficiency; structures

Exhibit 17
Roadway System Deficiencies (2009-2035)
Grayson County
- Legend has mobility; safety; geometric deficiency; structures

Exhibit 18
Roadway System Deficiencies (2009-2035)
Smyth County
- Legend has mobility; safety; geometric deficiency; structures

Exhibit 19
Roadway System Deficiencies (2009-2035)
Washington County
- Legend has mobility; safety; geometric deficiency; structures

Exhibit 20
Roadway System Deficiencies (2009-2035)
Wythe County
- Legend has mobility; safety; geometric deficiency; structures

Exhibit 21
Roadway System Deficiencies (2009-2035)
City of Galax

- Legend has mobility; safety; geometric deficiency; structures

Exhibit 22
Roadway System Recommendations
Bland County
- Legend has mobility; safety; geometric deficiency; structures

Exhibit 23
Roadway System Recommendations
Carroll County
- Legend has mobility; safety; geometric deficiency; structures

Exhibit 24
Roadway System Recommendations
Grayson County
- Legend has mobility; safety; geometric deficiency; structures

Exhibit 25
Roadway System Recommendations
Smyth County
- Legend has mobility; safety; geometric deficiency; structures

Exhibit 26
Roadway System Recommendations
Washington County
- Legend has mobility; safety; geometric deficiency; structures

Exhibit 27
Roadway System Recommendations
Wythe County
- Legend has mobility; safety; geometric deficiency; structures
Exhibit 28
Roadway System Recommendations
City of Galax

- Legend has mobility; safety; geometric deficiency; structures

Roadways - Forecast Year (2035)

Deficiencies were based on mobility analysis (LOS) only. The same roadway segments and intersections analyzed for the base year condition, together with any new roadways (arterials or collectors) expected to be constructed in the MRPDC were analyzed again using year 2035 traffic projections. For the XX segments and intersections analyzed, XX segments and intersections are anticipated to need improvements. If some segments and intersections are determined to be deficient for both the base year and forecast year, the recommendation for 2035 will override the recommendation for the base year (Exhibit 13).

Public Transportation

One set of deficiencies and recommendations (base year and forecast year) was developed for both fixed-route and demand-responsive transit. They were developed primarily from the Coordinated Human Service Mobility Plan prepared by DRPT in conjunction with the MRPDC. These are vision goals/recommendations for improvements that the plan identified:

- Continue to support capital needs of coordinated human service/public transportation providers;
- Expand availability of demand-response service and specialized transportation services to provide additional trips for older adults, people with disabilities, and low-income populations;
- Build coordination among existing public transportation and human service transportation providers;
- Provide targeted shuttle services to access employment opportunities;
- Establish a ride-sharing program for long-distance medical transportation;
- Expand outreach and information on available transportation options in the region;
- Implement new public transportation services or operate existing public transit services on a more frequent basis;
- Provide flexible transportation options and more specialized transportation services or one-to-one services through the use of volunteers;
- Expand access to taxi services and other private transportation operators;
- Establish or expand programs that train customers, human service agency staff, medical facility personnel, and others in the use and availability of transportation services; and
- Bring new funding partners to public transit/human service transportation.

The review of disadvantaged population groups determined that there is good access to public transportation by these populations through both fixed-route and demand-responsive service. Even though the area is very rural, the fixed routes extend into most of the PDC and provide access and mobility for these populations. In addition, demand-responsive service is available throughout most of the PDC, which is not always common in

rural areas.

Bicycle and Pedestrian Facilities

Determination of the need for bikeways and pedestrian facilities is dependent on several factors. One is to define areas for development that have numerous trip generators and attractors, such as neighborhoods, parks, schools, and shopping areas. Another factor in development is the determination of areas appropriate for extensions of existing routes and paths to provide better links between facilities. Analysis is more qualitative than quantitative in nature with recommendations closely aligned with local desires.

Even though the topography in the MRPDC is mountainous, there is a basic network of bicycle and pedestrian facilities. The Virginia Creeper and Appalachian trails are particularly popular facilities. Using these facilities as the foundation of a regional system is already underway. The Washington County Recreation Plan proposed establishing connections between Glade Spring and Abingdon along Middle Fork or I-81 to connect with Virginia Creeper Trail and developing links between Bristol and Abingdon. All of these would link existing public facilities and the county's population centers. The development of new walking and multi-use trails would help to relieve some of the current use pressure on the Virginia Creeper trail. The plan proposed that an overall greenways master plan should be developed with public input to identify a phased approach for new greenways development in the county (Washington, 2000).

The Wythe County Comprehensive Plan discusses opportunities to encourage bicycle and pedestrian transportation. These opportunities are primarily links between existing pedestrian and bicycle facilities, such as the New River Trail, and public facilities, similar to the efforts in Washington County. Examples include a link between Wytheville and Fort Chiswell and the New River State Park via a hiking/biking trail; continued support of the New River Trail as a hiking, biking, and horseback trail; pedestrian-friendly walkways in the form of cultural or heritage paths in downtown Wytheville; and encouraging the construction of bike lanes on US 52/21 north and US 21 south to provide a link to the Jefferson National Forest and the Mount Rogers National Recreation Area (Wythe, 2007).

Airports

The Virginia Air Transportation System Plan Update forecasted average annual growth rates of based aircraft through 2020 for the three general aviation airports in the region (DOAV, 2003). Aircraft based at Twin County are expected to grow by 0.5% annually, but no growth in based aircraft is projected for both Mountain Empire and Virginia Highlands airports (DOAV, 2003). Future growth at these airports is not expected to have long-term effects on the existing transportation network.

Goods Movement

The transfer of some goods shipments from roadway to rail has the potential to strengthen rail freight services offered, while also reducing the number of long-haul tractor-trailers trips, and preserving or possibly enhancing roadway Level-of-Service (LOS). This transfer is possible when rail sidings are available both at the origin and destination of the goods. Even with this transfer, short-distance truck shipments are still necessary between the shipper and the siding. Because there is existing access to the rail network in the MRPDC region, particularly the Norfolk Southern Crescent Corridor, these type of transfers may

occur in the future. Key truck freight corridors will continue to include the major arterials and collectors in the region: I-77, I-81, US 21, US 52, US 58, and US 221.

There are currently improvements proposed for the Norfolk Southern rail corridor in the region. Added capacity along the Crescent Corridor, which generally parallels I-81 through the region, is expected to transfer more truck shipments from I-81 to this rail corridor (DRPT, *Virginia*, 2008).

Land Use and Future Growth

Existing land use/land cover in the MRPDC region is generally forested and rural residential with more dense residential and commercial uses centered around I-81 and the existing cities and towns. Growth areas were developed by the MRPDC in conjunction with the individual jurisdictions. These areas were used in the analysis of the roadway network to review existing traffic forecasts for the individual roadways and to produce new forecasts. The analysis was then used to prepare the recommendations. Future development is expected to focus in existing towns, along major roadway corridors, and where general infrastructure, particularly water and sewer service, is currently available (Exhibit 29). Most of the counties state in their current comprehensive plans that they wish to temper growth and development while preserving existing forested or agricultural areas. These two land uses are currently the largest in every county in the PDC.

Travel Demand Management

In rural areas, low residential densities and dispersed work destinations are generally not conducive to high public transportation use and/or other travel demand management strategies. In the MRPDC, this is somewhat the case, however there is some concentration of employment locations, particularly Bristol, Galax, and the towns. Some decreases in single-occupant vehicle trips are possible through the promotion and continued use of park and ride lots throughout the region. A survey of existing lots and their amenities and usage would be useful to assess any changes that may be needed to better serve commuters. Assessment of the use of the fixed-route transit routes and the New Freedom routes could also prove useful in meeting the regional access and mobility needs.

The TransDominion Express (TDX) is a proposed rail service that crosses the Commonwealth from Bristol with a split at Lynchburg into two branches, one to Richmond and one to Washington, DC on existing freight rail lines. The DRPT Resource Allocation Plan (2008) identifies improvements to the state's rail corridors. The I-81/US 29 Corridor discussed in the report is the TransDominion Express corridor. In Phase I, to be completed by 2014, service is proposed to be extended to Lynchburg with additional analysis of service to Roanoke. Proposed stops in Mount Rogers include Bristol, Abingdon, Marion, and Wytheville. The newly expanded Northeast Regional service from Lynchburg north to Washington, DC and beyond implements part of the full service planned by TDX.

Environmental Overview

The environmental analysis utilized the Alternatives and Purpose and Need templates provided by VDOT to assess and document potential environmental impacts at a general overview level and to provide coordination (Exhibit 30). This broad brush review of environmental issues is not considered to be a complete review in terms of any future NEPA documents required for any proposed recommendations.

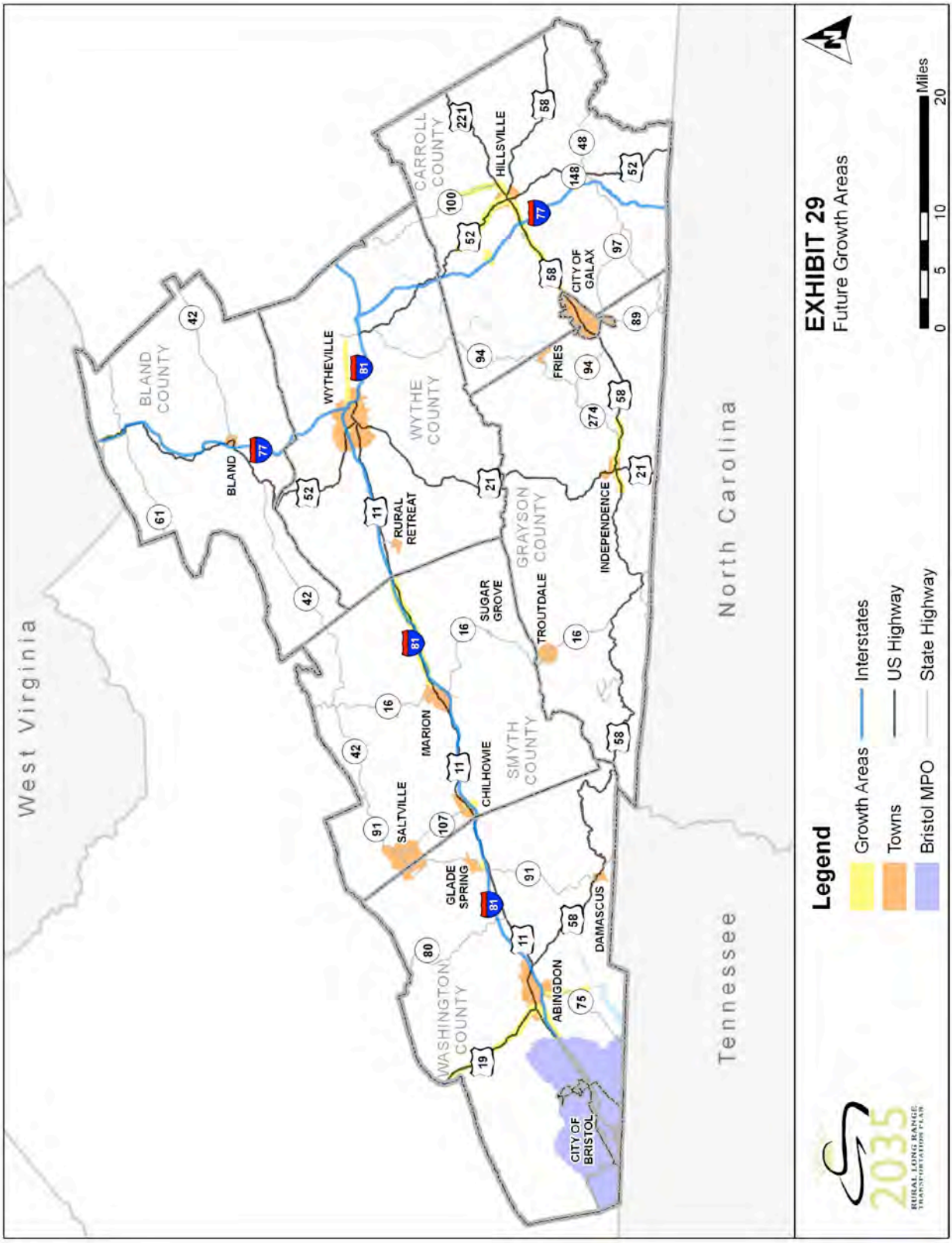


EXHIBIT 29
Future Growth Areas
Legend
Growth Areas
Towns
Bristol MPO
Interstates
US Highway
State Highway
Miles
0 5 10 20
West Virginia
North Carolina
Tennessee
BLAND COUNTY
WYTHE COUNTY
CARROLL COUNTY
GRAYSON COUNTY
SMYTH COUNTY
WASHINGTON COUNTY
BLAND
WYTHEVILLE
RURAL RETREAT
HILLSVILLE
CITY OF GALAX
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TROUTDALE
SUGAR GROVE
MARION
CHILHOWIE
SALTVILLE
GLADE SPRING
DAMASCUS
ABINGDON
CITY OF BRISTOL
2035
RURAL LONG RANGE TRANSPORTATION PLAN

Exhibit 30. Environmental Review of Recommendations

Jurisdiction	Recommendation	Potential Environmental Issue
Bland County		
Carroll County		
Grayson County		
Smyth County		
Washington County		
Wythe County		
City of Galax		

REFERENCES

Grayson County, *Grayson County Comprehensive Plan*. Independence, VA: Grayson County, 1981, as amended, 1998, and 2005.

U.S. Department of Commerce, Bureau of the Census, SF3, 1990, 2000.

Virginia Department of Aviation, *The Virginia Air Transportation System Plan Update: 2003 Technical Report*. Richmond, VA: DOAV, 2003.

Virginia Department of Rail and Public Transportation, *Mount Rogers Coordinated Human Service Mobility Plan*. Richmond, VA: DRPT, 2008.

Virginia Department of Rail and Public Transportation, *Virginia Statewide Rail Plan - Draft*. Richmond, VA: DRPT, 2008.

Virginia Employment Commission, *Community Profile: Bland County*. Richmond, VA: VEC, 2009.

Virginia Employment Commission, *Community Profile: Bristol City*. Richmond, VA: VEC, 2009.

Virginia Employment Commission, *Community Profile: Carroll County*. Richmond, VA: VEC, 2009.

Virginia Employment Commission, *Community Profile: Galax City*. Richmond, VA: VEC, 2009.

Virginia Employment Commission, *Community Profile: Grayson County*. Richmond, VA: VEC, 2009.

Virginia Employment Commission, *Community Profile: Smyth County*. Richmond, VA: VEC, 2009.

Virginia Employment Commission, *Community Profile: Washington County*. Richmond, VA: VEC, 2009.

Virginia Employment Commission, *Community Profile: Wythe County*. Richmond, VA: VEC, 2009.

Virginia Employment Commission, *State Demographer Projections Decennial Population Data*, www.vec.virginia.gov. Richmond, VA: VEC, 2009.

Washington County Recreation Department, *Plan Today for an Active Tomorrow*. Abingdon, VA: Washington County, 2000.

Wythe County, *Wythe County Comprehensive Plan*. Wytheville, VA: Wythe County, 2007.

Weldon Cooper Center for Public Service, University of Virginia, *Population Estimates for Virginia Localities, Planning Districts, and Metropolitan Areas: Final 2007 and Provisional 2008*. Charlottesville, VA: Weldon Cooper Center for Public Service, January 2009.

APPENDICES

Appendix A – Bland County Plan Summary

Appendix B – Carroll County Plan Summary

Appendix C – Galax City Plan Summary

Appendix D – Grayson County Plan Summary

Appendix E – Smyth County Plan Summary

Appendix F – Washington County Plan Summary

Appendix G – Wythe County Plan Summary

Appendix H – Methods

- Level of service definitions
- SPS database and planning definition for network deficiencies