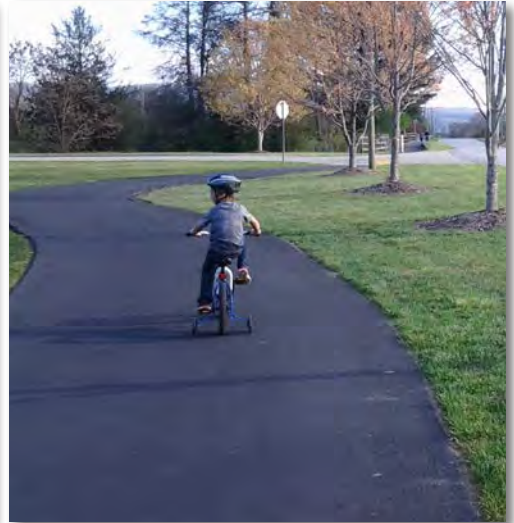




Transylvania County

B I C Y C L E P L A N



Prepared for Transylvania County
Prepared by Alta Planning + Design

2019

ADOPTED NOVEMBER 12, 2019

The Transylvania County Bicycle Plan was adopted on November 12th, 2019, with the following clarification: The Transylvania County Board of Commissioners supports the bicycle and pedestrian facilities throughout the county for health and safety concerns as articulated in this plan. This support does not reflect the Board's full priorities of the facilities as they are all important. The Board will continue to pursue due diligence as funding and advocacy opportunities present themselves.

ACKNOWLEDGEMENTS

Thanks to the local residents, business leaders, community leaders, and government staff who participated in the development of this study through meetings, events, volunteering, interviews, and review. Special thanks to the Blue Ridge Bicycle Club for providing the match for this planning grant, and to those stakeholders who participated as stakeholder group members, listed below.

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*Cover photos courtesy of Carmichael Training Systems
(upper left and bottom photo)*



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2019

TRANSYLVANIA COUNTY BICYCLE PLAN EXECUTIVE SUMMARY

planning.transylvaniacounty.org

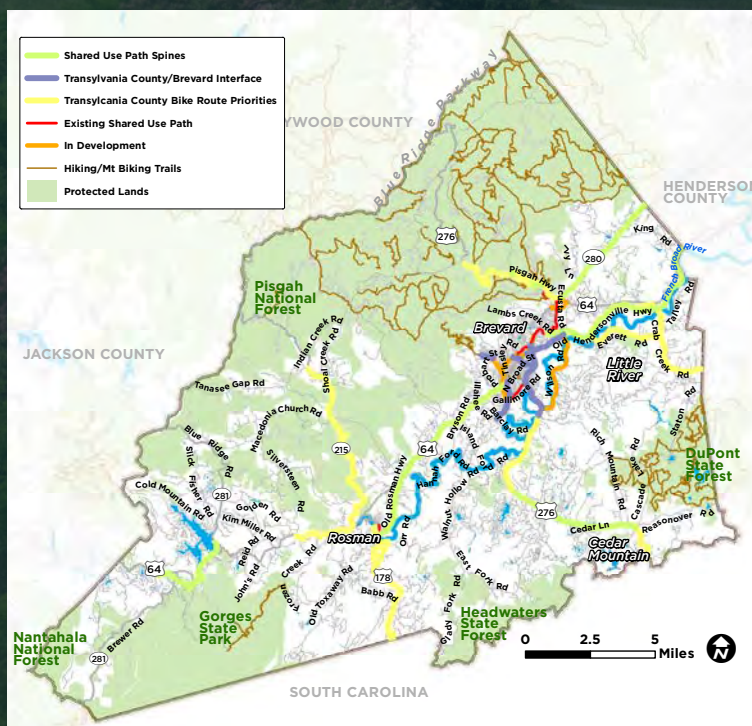
In 2017, Transylvania County was awarded a grant from the North Carolina Department of Transportation (NCDOT), Division of Bicycle and Pedestrian Transportation (DBPT), to develop a comprehensive bicycle plan. The local match for the grant was provided by the Blue Ridge Bicycle Club. This was only the third time a North Carolina county received such an award to-date.

The Transylvania County Bicycle Plan provides a framework for the county, residents, developers, NCDOT, and other regional planning partners to strategically build better connections for bicycling in the county. The plan provides detailed recommendations for bicycle facilities, policies, programs, and implementation. This plan aims to use bicycling as a tool for improvements in mobility, safety, health, economy, environment, and overall quality of life.

PLAN VISION

Transylvania County will have an interconnected network of paved paths, bike lanes, and other bike infrastructure that will provide greater safety, health, connectivity, and alternative transportation routes between communities and destinations in Transylvania County and throughout the region.

PRIORITY NETWORK: MAP 3.2



INFRASTRUCTURE

This map shows an overview of the priority network recommendations for bicycle infrastructure in Transylvania County. For details, please see Chapter 3 of the full plan; available at: planning.transylvaniacounty.org

GOALS



INCREASE SAFETY

Address the safety and level of comfort of the transportation system for bicyclists and motorists; Reduce the number of bicycle crashes, injuries, and fatalities over time.



ENHANCE HEALTH

Provide transportation options and recreational opportunities that promote an active lifestyle.



ENHANCE CONNECTIVITY

Create a well-connected network of bicycle-friendly streets and paths as part of a diverse network of transportation options in Transylvania County.



INCREASE LIVABILITY THROUGH ALTERNATIVE TRANSPORTATION

Implement infrastructure to accommodate all modes of transportation to improve the overall quality of life in Transylvania County.



POSITIVELY IMPACT ECONOMIC HEALTH

Recognize the economic benefits of a bicycle-friendly community, and capitalize on the return on investment for bikeways and greenways.



PROMOTE EQUITY

Create a network of bike routes that allow ALL county residents to access parks and activity centers by biking.



PROTECT THE ENVIRONMENT

Promote access to natural resources through strategic implementation of future shared use paths.

PROGRAMS AND POLICIES

Program and policy recommendations are essential and complementary to improvements in infrastructure. For details, please see Chapter 3 of the full plan; available at: planning.transylvaniacounty.org



POLICY CONSIDERATIONS

The policy considerations presented in the tables on the following pages were developed through the lens of the project vision and goals, specifically, the vision of making Transylvania County a place where: *Transylvania County will have an interconnected network of paved paths, bike lanes, and other bike infrastructure that will provide greater safety, health, connectivity, and alternative transportation routes between communities and destinations in Transylvania County and throughout the region.*

TABLE 4.1

Topics/Strategies	General Recommendations
Support bike accommodations by roadway type	See Chapter 4 of the NACTO Complete Streets Planning and Design Guidelines for recommendations of bikeway type by roadway type. Consider including these guidelines by reference in local design guidance or requirements. The NACTO Urban Bikeway Design Guide provides additional design details for various on-street bikeway treatments and could be adopted by reference in regional ordinances and/or engineering standards. Many cities have taken this approach. Resources: FHWA Small Town and Rural Multimodal Network Guide: http://www.fhwa.dot.gov/infrastructure/multimodal_network_guide/ NACTO Urban Bikeway Design Guide: http://nacto.org/other-for-cycling/design-guide/ FHWA Separate Bikeway Planning and Design Guide: https://www.fhwa.dot.gov/environment/bicycles_publication/separate_bikeway_guide/
During the future amendments to the subdivision ordinance consider requiring dedication, reservation or development of greenways with new development, redevelopment, and roadway projects for subdivisions with over 50 lots.	Consider requirements for greenway reservation, dedication, or provision in new developments where a greenway or trail is shown on an adopted plan or where a property connects to an existing or proposed greenway. Where greenway construction cannot practically be required, consider offering incentives in the form of reduced fees, cost sharing, density bonuses, or reduction in other open space requirements when adopted greenway alignments are constructed through private developments. See the incentives offered by the City of Asheville to promote public policy goals. For example: http://www.asheville.gov/department/sustainability/resources.htm For additional examples of incentives, see also: https://www.law.ufl.edu/~pdf/academic_centers-clinics/conservation/responses/conservation_strategies.pdf Ideally, development regulations should require the construction and maintenance of greenways to local standards unless a maintenance agreement is established with a local government. See requirements in Wake Forest, NC UD, Section 6.8.2 Greenways: "When required by Wake Forest Open Space & Greenways that or the Wake Forest Transportation Plan, greenways and multi-use paths shall be provided according to the provisions [that follow in the section cited above]." http://www.wakeforestnc.gov/osp.aspx Good Model: (New Hanover County Zoning Ordinance) The Riverfront Mixed Use District includes the following provision: "Riverfront facilities shall provide multi-modal transportation opportunities, including public boating, walking, bicycling, and public bus or water taxi uses and the facilities necessary for such uses."
Require new bike lanes, greenways, etc., to connect to existing facilities when located along a priority project identified in Chapter 3.	Connectivity of facilities is critical for walking and biking conditions. New commercial development should be required to connect to or extend existing bicycle and pedestrian facilities. See: Chapters 6 of Wake Forest, NC UD for recommendations for bikeways and greenways, esp. sections 6.5.3, 6.8.2, 6.5.10: http://www.wakeforestnc.gov/osp.aspx Chapter 7 of the Wilson, NC UD regarding greenways. http://www.wilsonnc.org/wp-content/uploads/2014/12/Ch-7-Active-Open-Space.pdf Good Model: (New Hanover County Zoning Ordinance) The EZDZ Zoning District provides points for new developments that connect to the existing bikeway network and key destinations and provides a good definition of the bikeway network. (Section 54.2.1.4 and following.)
Adopt traffic calming programs, policies, and standards in areas of the county where the community has identified this as a need	Traffic calming tools are especially important where bike routes or bike boulevards are proposed on local residential or sub-collector streets. The National Complete Streets Coalition provides good guidelines for traffic calming through their best practices manual: (https://www.nacstreets.org/resources/) See also the NACTO Urban Bikeway Design Guide section on Bicycle Boulevards and the FHWA Traffic Calming Primer: https://www.fhwa.dot.gov/transportation/traffic_calming/ Consider requiring other traffic calming measures that improve the pedestrian and biking environment such as street trees, narrow street width standards, and T-intersections.



CHAPTER 1: INTRODUCTION

Photo courtesy of Carmichael Training Systems

PROJECT BACKGROUND

In 2017, Transylvania County was awarded a grant from the North Carolina Department of Transportation (NCDOT), Division of Bicycle and Pedestrian Transportation (DBPT), to develop a comprehensive bicycle plan. The local match for the grant was provided by the Blue Ridge Bicycle Club. This was only the third time a North Carolina county received such an award to-date.

The Transylvania County Bicycle Plan provides a framework for the county, residents, developers, NCDOT, and other regional planning partners to strategically build better connections for bicycling in the county. The plan provides detailed recommendations for bicycle facilities, policies, programs, and implementation. This plan aims to use bicycling as a tool for improvements in mobility, safety, health, economy, environment, and overall quality of life.

Transylvania County has long supported the goal of improving bicycle transportation and recreation as evident in formally adopted plans, hosting events such as the 2011 Southern Regional Mountain Biking Summit, and in public feedback. World class mountain biking in Transylvania County has been featured in numerous publications including Bike Magazine's Bible of Bike Tests.

Most importantly, the recent [2025 Transylvania County Comprehensive Plan](#) identified the themes of economic health, environment, land use and livability, and health/culture/equity as priorities for the county. This bicycle plan and its recommendations support each of these themes. One of the Comprehensive Plan's action steps is to: "Develop appropriate infrastructure and educational programs for bikes and pedestrians to ensure safer roads." This action step supports Objective 2 under Land Use and Livability that states "Ensures public safety efforts are financially supported, well-coordinated and prepared for future growth."

[The Transylvania County Strategic Plan](#) outlines six goals with implementation strategies. While this plan supports all six goals in some manner, Goal #5 would be most directly supported by this bicycle plan, with Goal #5 stating that "The community's quality of life includes resources that promote health, transportation connectivity, a sense of place, cultural heritage and public safety."

Lastly, the provision of more walking, biking trails, and greenways was the number one priority that came out of the stakeholder engagement process for the [Transylvania County Parks & Recreation Plan](#).

PLANNING PROCESS

The planning process for the bike plan began in early 2018 with a project kickoff meeting. A Stakeholder Group, formed of representatives from multiple agencies, along with citizens, guided the process and provided input and critical feedback. The public was invited to participate through multiple events, including public open house workshops, stakeholder group meetings, and the county's website.

Project planners collected local data and analyzed existing conditions. From there, the team developed a draft bicycle network, based on past plans, existing conditions analysis, and initial public feedback. The proposed network was refined through a process of multiple draft reviews and revisions, with feedback from county staff, NCDOT, a public workshop, and review by the Stakeholder Group.

The Stakeholder Group met at key stages throughout development of the plan, with members representing multiple perspectives. The full list of Stakeholder Group members can be found in the acknowledgments section of this plan. The bicycle planning process flowchart is found on page 6.

STUDY AREA

The Transylvania County Bicycle Plan focuses on unincorporated portions of Transylvania County. However, the county worked closely with the incorporated communities of Brevard and Rosman to ensure that efforts were tied together and compatible. The county also includes large sections of Pisgah National Forest. Again, the county worked closely with representatives from the NC and US Forest Service to understand the need and opportunities for bikeway improvements.

The county includes some of the most beautiful areas of North Carolina, from rural rolling hills and farms, to small towns, to stunning mountains, with abundant recreational activities. With unique topography and high elevations, the study took into account the significant constraints that exist for expanding a bicycle network in the rural portions of the county.

VISION AND GOALS

Using the 2025 Comprehensive Plan as a foundation, the vision and goals were developed through a combination of Stakeholder Group input and public input. The vision statement and goals are found on page 7.

TRANSYLVANIA COUNTY BICYCLE PLAN PLANNING PROCESS FLOWCHART

Community Outreach Stakeholders and General Public



Public engagement took place throughout the county to ensure geographic representation and ease of the local populations to attend. These photos feature one of the events held at the Little River Community Center.



TRANSYLVANIA COUNTY BICYCLE PLAN VISION STATEMENT

Transylvania County will have an interconnected network of paved paths, bike lanes, and other bike infrastructure that will provide greater safety, health, connectivity, and alternative transportation routes between communities and destinations in Transylvania County and throughout the region.

GOALS:



INCREASE SAFETY

Address the safety and level of comfort of the transportation system for bicyclists and motorists; Reduce the number of bicycle crashes, injuries, and fatalities over time.



ENHANCE HEALTH

Provide transportation options and recreational opportunities that promote an active lifestyle.



ENHANCE CONNECTIVITY

Create a well-connected network of bicycle-friendly streets and paths as part of a diverse network of transportation options in Transylvania County.



INCREASE LIVABILITY THROUGH ALTERNATIVE TRANSPORTATION

Implement infrastructure to accommodate all modes of transportation to improve the overall quality of life in Transylvania County.



POSITIVELY IMPACT ECONOMIC HEALTH

Recognize the economic benefits of a bicycle-friendly community, and capitalize on the return on investment for bikeways and greenways.



PROMOTE EQUITY

Create a network of bike routes that allow ALL county residents to access parks and activity centers by biking.



PROTECT THE ENVIRONMENT

Promote access to natural resources through strategic implementation of future shared use paths.

THE VALUE OF BIKEABLE COMMUNITIES

Potential benefits for Transylvania County in supporting and implementing this plan include improvements in safety, health, economic impact, mobility, and environmental stewardship.

SAFETY

Trends and Challenges

According to a survey of 16,000 North Carolina residents for the 2011 North Carolina Bicycle and Pedestrian Safety Summit, the most commonly reported safety issue for walking and bicycling was inadequate infrastructure (75%).¹ A lack of bicycle facilities, such as bicycle lanes, sidepaths, greenways, and safe crossings, lead to unsafe conditions for bicyclists.

- From 2007-2015, there were 17 documented bicycle crashes within Transylvania County. This leaves Transylvania County 49th out of 100 NC counties in bicycle crashes per capita (lowest to highest).
- In 2017, 15% of all traffic fatalities in North Carolina were bicyclists and pedestrians.²
- North Carolina is ranked as one of the least safe states for bicycling (44th).³

Improving Safety

Separate studies conducted by the Federal Highway Administration and the University of North Carolina Highway Safety Research Center demonstrate that installing pedestrian and bicycle facilities directly improves safety by reducing the risk and severity of pedestrian-automobile and bicycle-automobile crashes (see examples to the right). Some facilities improve safety for both bicyclists and pedestrians, such as sidepaths, paved shoulders, bicycle/pedestrian overpasses or underpasses, and intersection crossing improvements. The following web addresses link to more comprehensive research on safety.

- <http://www.walkbikenc.com/>
- http://www.pedbikeinfo.org/data/factsheet_crash.cfm



193

Average number of bicyclists and pedestrians killed each year in North Carolina (169 pedestrians & 24 bicyclists)

Source: National Highway Traffic Safety Administration: Fatality Analysis Reporting System (FARS). (American Community Survey 3-yr estimates for 2007, 2010, and 2013).

60%



Shared use paths (like the Brevard Greenway) reduce injury rates for cyclists, pedestrians, and other nonmotorized modes by 60% compared with on street facilities.

Source: Teschke, Kay. "Route Infrastructure and the Risk of Injuries to Bicyclists". (2012). American Public Health Association.

Bicycle Facilities with Bicyclist/Pedestrian Crash Countermeasures

FACILITY TYPE	PEDESTRIAN/ BICYCLIST CRASH REDUCTION FACTOR
Install bicycle & pedestrian overpass/underpass	90%
Install sidewalk or sidepath (to avoid walking along roadway)	88%
Provide paved shoulder (of at least 4 feet)	71%
Install raised median at unsignalized intersection	46%
Install bike lanes	35%
Install separated bike lanes	74%

Source: Federal Highway Administration. Desktop Reference for Crash Reduction Factors. <http://safety.fhwa.dot.gov/>

HEALTH

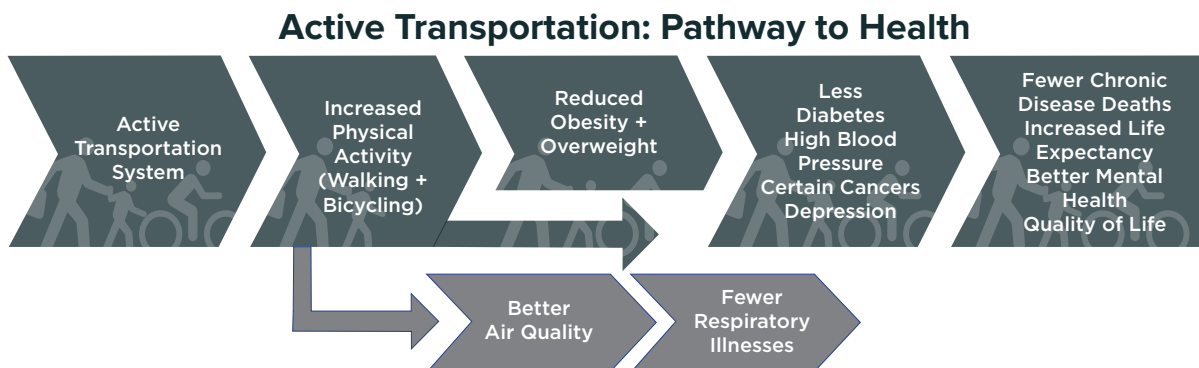
North Carolina ranks 33rd compared to other states in core determinants of health.⁴ Two key measures in that ranking are cardiovascular deaths and obesity, for which North Carolina is ranked 30th and 35th, respectively. Other key trends and challenges related to health and transportation in North Carolina and Transylvania County:

- 66% of North Carolina adults are either overweight or obese.⁵ The state is also ranked 5th worst in the nation for childhood obesity.⁶
- The annual direct medical cost of physical inactivity in North Carolina is estimated at \$3.67 billion, plus an additional \$4.71 billion in lost productivity.⁷ However, every dollar invested in pedestrian and bicycle trails can result in a savings of nearly \$3 in direct medical expenses.⁸
- Of North Carolinians surveyed, 60% would increase their level of physical activity if they had better access to sidewalks and trails.¹
- Nutrition, physical activity, and weight was a priority issue identified in the Transylvania County Community Health Assessment (2015). According to the assessment, only half of county residents say they get the recommended amount of daily physical activity.⁹

Better Health through Active Transportation

Transylvania County can make strides to support community health by developing bicycle lanes and shared use paths to increase safe opportunities for recreation and active transportation. Using active transportation to and from school, work, parks, restaurants, and other routine destinations is one of the best ways that children and adults can lead measurably healthier lives. Increasing one's level of physical activity through bicycling reduces the risk and impact of cardiovascular disease, diabetes, chronic disease, and some cancers. It also helps to control weight, improves mood, and reduces the risk of premature death.¹⁰

- Two 14-year studies of more than 60,000 people investigated if total physical activity, as well as different types of physical activity, were associated with heart failure risk. It found that walking or bicycling at least 20 minutes per day was associated with the largest risk reduction of heart failure.¹¹



Source: Alta Planning + Design; WalkBikeNC



20 MINUTES WALKING OR BIKING
each day is associated with a

21% LOWER RISK OF HEART FAILURE FOR MEN
and
29% LOWER RISK FOR WOMEN

Rahman, 2014 and 2015

ECONOMIC HEALTH

The economic benefits of active transportation come in the form of increased property values, tourism, sales, and infrastructure savings. Many people today move to where they want to live, and bicycle infrastructure and trails are an increasingly important part of that decision.

There are many examples, both nationally and in North Carolina, that affirm the positive connection between trails, active transportation, and property values. Studies have demonstrated a range of increases in property values, from 2% up to 20%. For example, a study from Asabere and Huffman, "The Relative Impacts of Trails and Greenbelts on Home Price", analyzed 10,000 home sales and found that trails, greenbelts/greenways, and trails with greenbelts/greenways were associated with roughly 2, 4, and 5 percent price premiums, respectively.

Bicyclists, pedestrians, and trail users can also add real value to local economies:

- The five-mile Brevard Greenway in the City of Brevard in Transylvania County, according to a three year study (2015-2017) by the NCDOT Division of Bicycle and Pedestrian Transportation, generates approximately \$1.5 million annually in business output. See Executive Summary of the full study on the following page.¹²
- The Greenville Health System Swamp Rabbit Trail Year 3 Findings by Furman University (Clemson International Institute for Tourism & Research & Development), has demonstrated that the 20-mile Swamp Rabbit Trail's economic impact in the county is approximately \$6.7 million per year.¹³
- In Damascus, VA, the self-proclaimed 'Friendliest Trail Town', features 34 miles of trail, where approximately \$2.5 million is spent annually related to recreation visits according to a US Forest Service study, The Virginia Creeper Trail: An Assessment of User Demographics, Preferences, and Economics.¹⁴
- Blood, Sweat, and Gears is an annual long distance ride in Valle Crucis, NC, with over 1,000 participants. According to an Appalachian State University Department of Economics study, "Economic Impact of the 2015 Blood, Sweat, and Gears", the 2015 event had an over \$1 million economic impact on the local economy.¹⁵

- The cost of purchasing and maintaining a bicycle to an individual, and the cost of building and maintaining bicycle facilities to a community, is negligible compared to those same costs for cars and highways.
- Bicycling, when it can be used in a community as a viable form of transportation, can at least partially replace car use and maintenance, keeping household disposable income available for other important wants and needs.



\$8,220

**Average Cost of
Operating a Car Per
Year**



\$308

**Average Cost of
Operating a Bike
Per Year**

Source: Mohn, T. "Pedaling to Prosperity: Biking Saves U.S. Riders Billions a Year." (2012). Forbes. <goo.gl/YX2r1R>



**Bikes
in Beds** How to maximize bicycle
tourism in Haywood County
and Western North Carolina

March 2015

EXECUTIVE SUMMARY

Evaluating the ECONOMIC IMPACT of SHARED USE PATHS in North Carolina

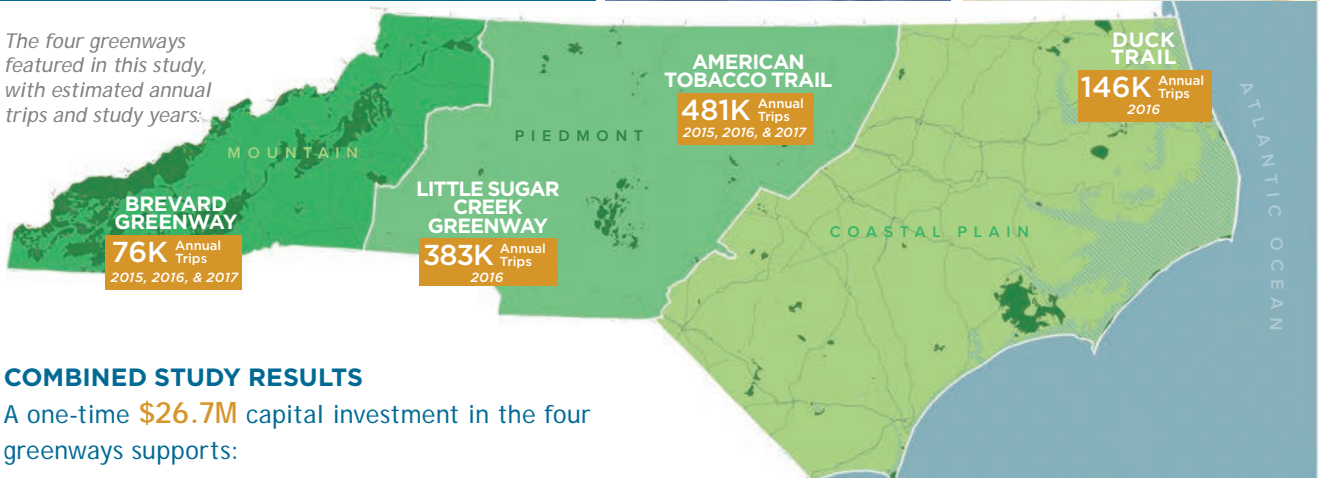
MARCH 2018



Shared use paths, also known as GREENWAYS, provide a shared space for bicycle and pedestrian travel outside of the roadway. This project's objective was to design and test an approach for measuring the economic contributions of greenways in North Carolina.



The four greenways featured in this study, with estimated annual trips and study years:



COMBINED STUDY RESULTS

A one-time **\$26.7M** capital investment in the four greenways supports:



\$19.4M

Estimated annual sales revenue at local businesses along the four greenways



\$684K

Estimated annual local and state sales tax revenue from businesses along the greenways



\$25.7M

Estimated annual savings due to more physical activity, less pollution and congestion, and fewer traffic injuries from use of the greenways



\$48.7M

Estimated business revenue from greenway construction



790 JOBS

Are supported annually through greenway construction

RETURN ON INVESTMENT: Every **\$1.00** of trail construction supports **\$1.72 annually** from local business revenue, sales tax revenue, and benefits related to health and transportation.



By: The Institute for Transportation Research and Education and Alta Planning + Design

For: NCDOT Division of Bicycle and Pedestrian Transportation

FULL REPORT: go.ncsu.edu/sharedusepaths

MOBILITY

Opportunity to Increase Bicycling Rates

According to the 2011 Bicycle and Pedestrian Safety Survey, at least 70% of North Carolinians would walk or bike more for daily trips if walking and bicycling conditions were improved.¹ Furthermore, public input during the development of the Transylvania County Parks and Recreation Plan also shows walking is the number one recreational activity needed by Transylvania County residents. With appropriate accommodations, walking and bicycling can provide alternatives to driving for commuting to work, running errands, or making other short trips.

Commute rates for bicycling in Transylvania County are currently above the statewide average, with 0.5% of Transylvania County commuters bicycling to work and 0.2% commuters bicycling to work statewide. The nationwide average is 0.6% and North Carolina ranks 43rd for bicycling commute rates in nationwide state rankings.³

There are local residents who commute by bike in Transylvania County, and the potential for more people to enjoy a safe bicycle commute could really benefit area households, schools and colleges, and businesses.

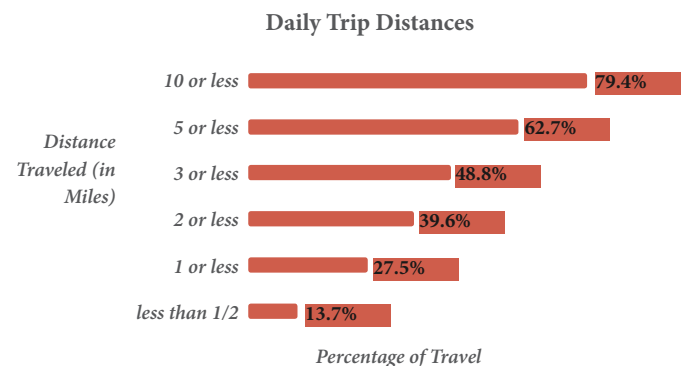
These mobility benefits go beyond commuting as well. Transylvania County has numerous destinations that are accessible, and residents can benefit from safe facilities that increase the rate of walking and biking for short trips to these destinations. Furthermore, other aspects of mobility and accessibility also apply to children and those who can no longer drive due to advanced age. Moreover, improved walking/biking paths benefit those who use wheelchairs or scooters, as well as people who have visual impairments. Currently, Transylvania County has 0 miles of greenways outside of the City of Brevard and the Town of Rosman.

Reduced Vehicle Miles Traveled (VMT) & Congestion

Taking short trips by foot or by bike can help to greatly reduce motor vehicle miles driven and traffic congestion. **Under the Nonmotorized Transportation Pilot Program, walking and bicycling investments contributed to an estimated 23% increase in the number of walking trips and an estimated 48% increase in the number of bicycling trips in four pilot communities between 2007 and 2013.**¹⁶ These individual changes in travel behavior can add up to produce significant societal benefits. Traffic on arterials and other streets can be mitigated as people use bike lanes, paths, and other alternatives to get around. Parking areas can also be made less congested by reducing crowding, circling, and waiting for open spots.

The following web addresses link to more comprehensive research on transportation efficiency.

- <http://www.walkbikenc.com/>
- http://www.pedbikeinfo.org/data/factsheet_general.cfm



Most driving trips in the U.S. are for a distance of five miles or less. Chart from the Bicycle and Pedestrian Information Center, www.pedbikeinfo.org

ENVIRONMENT

Environmental stewardship addresses the impact that transportation decisions (both at the government/policy level and individual level) can have on the land, water and air that Transylvania County residents and visitors enjoy.

Below are some key trends and challenges related to stewardship and transportation in North Carolina:

- According to the National Association of Realtors and Transportation for America, 89% of Americans believe that transportation investments should support the goal of reducing energy use.¹⁷
- North Carolina's 2009-2013 Statewide Comprehensive Outdoor Recreation Plan (SCORP) found "walking for pleasure" to be the most common outdoor recreational activity, enjoyed by 82% of respondents, and bicycling by 31% of respondents.¹⁸
- Public input during the development of the Transylvania County Parks and Recreation Plan also shows that walking is the number one recreational activity needed by Transylvania County residents.

Providing safe accommodations for walking and bicycling in Transylvania County can help to reduce automobile dependency, which in turn leads to a reduction in vehicle emissions – a benefit for County residents and visitors and the environment. As of 2016, 28.5% of U.S. greenhouse gas emissions are attributed to the transportation sector, and personal vehicles account for almost two-thirds (60%) of all transportation emissions.¹⁹ Primary emissions that pose potential health and environmental risks are carbon dioxide, carbon monoxide, volatile organic compounds (VOCs), nitrous oxides (NOx), and benzene. Children and senior citizens are particularly sensitive to the harmful affects of air pollution, as are individuals with heart or other respiratory illnesses. Increased health risks such as asthma and heart problems are associated with vehicle emissions.²⁰

Even a modest increase in walking and bicycling trips (in place of motor vehicle trips) can have significant positive impacts for the environment. For example, replacing two miles of driving each day with walking or bicycling will, in one year, prevent 730 pounds of carbon dioxide from entering the atmosphere.²¹

The following web addresses link to more comprehensive research on active transportation and stewardship.

- <http://www.walkbikenc.com/>
- http://www.pedbikeinfo.org/data/factsheet_environmental.cfm



IF 8% MORE CHILDREN LIVING WITHIN 2 MILES OF A SCHOOL WERE TO WALK OR BIKE TO SCHOOL, THE AIR POLLUTION REDUCED FROM NOT TAKING A CAR WOULD BE EQUIVALENT TO REMOVING 60,000 CARS FROM THE ROAD FOR ONE YEAR, NATIONALLY.

Pedroso, 2008, SRTS

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CHAPTER 2: EXISTING CONDITIONS

EXISTING CONDITIONS

Transylvania County is located in the mountains of Western North Carolina and is situated between Asheville to the northeast, Hendersonville to the east, and Greenville, South Carolina to the southeast. Transylvania County is bisected by the French Broad River valley, flowing from the southwest to northeast toward Asheville - this valley and tributary valleys are where most of the development lies, including the City of Brevard and the Town of Rosman. The Blue Ridge Parkway, a major bicycling destination, follows the ridge line and border of Transylvania County to the northwest, and elevations climb as one travels in Transylvania County to the west and south.

The recently completed 2025 Transylvania County Comprehensive Plan includes detailed insight to existing conditions. Several are highlighted below, pointing to the unique character of the rural, mountainous nature of Transylvania County:

- Nearly half of Transylvania County lies in public/conservation lands, including Pisgah National Forest, DuPont State Forest, Headwaters State Forest, Gorges State Park, Nantahala National Forest, and other protected lands.
- When considering the amount of land that is already developed, publicly owned, in the floodplain, or with slopes of over 25%, it is estimated that there is less than 20% of the County that can be developed.
- As several large manufacturers left in the early 2000's, tourism, outdoor related businesses, and many of the County's smaller manufacturers have experienced steady growth in the past two decades.
- Transylvania County continues to grow steadily, with population growth rates projected anywhere from 7% (low estimate), 15% (moderate estimate), and 20% (high estimate) between now and 2030, adding to the approximately 33,000 full-time residents. Another 7,000 seasonal residents add to the year-round population, pointing to the high quality of life that draws many people to Transylvania County throughout the year.

The 2025 Transylvania County Comprehensive Plan can be found on the County's website here - <https://www.transylvaniacounty.org/departments/planning-and-community-development/2025-comprehensive-plan>.

BICYCLING IN TRANSYLVANIA COUNTY TODAY

Transylvania County attracts a thriving outdoor industry, including recreational mountain biking and road bicycling - 8 mountain and road bicycling races were scheduled in or through the County in 2018. With hundreds of miles of stunning mountain biking trails and scenic, lower traffic volume mountainous roads used by recreational bicyclists, a culture supportive of bicycling not just for recreation, but also for transportation, is emerging in the county.

NCDOT designated bike routes, the 2017 *Ride Transylvania County* bike map, and Strava heat maps indicate popular routes used mostly by recreational bicyclists across the County. Many of these are highlighted in yellow in the Existing Facilities & Destinations maps beginning on page 18.

The 4.8 mile Brevard Greenway is one of the highlights of the existing bicycle network, connecting downtown Brevard and Pisgah National Forest (Davidson River Campground), and many local destinations in-between. With 0 miles of bike lanes in Transylvania County and only another 1.4 miles of shared use path (1 mile along Gallimore Road, and 0.4 miles in downtown Rosman), the Brevard Greenway serves as the longest segment of paved, dedicated bicycle facility in Transylvania County. The 2015-2017 bicycle counts as part of the "Evaluating the Economic Impact of Shared Use Paths" study by NCDOT on the Brevard Greenway estimated 76,000 annual trips along the greenway, which averages out to 208 trips per day.

Unlike automobile traffic volume counts, relatively few bicycle traffic volume counts are conducted across North Carolina (and the US), including Transylvania County. However, the Land of Sky RPO has initiated a counting system that includes bicycles, conducting counts in three separate locations in Brevard over a one week period in late winter/early spring 2018. The percentages below provide a snapshot of the portion of all vehicular traffic that were bicycles at these locations.

Railroad Avenue near McLean Road	4.5%
Parkview Drive near Park Ave	5%
Park Avenue near Parkview Drive	2%

Average percentage of traffic that are bicycles at these locations, counted over a one week period in early 2018 by the Land of Sky RPO.

These relatively high proportions of bicyclists are likely due to the fact that these are popular commuting and recreational bicycle routes in Brevard as a result of their lower automobile traffic volumes, generally lower speed limits, and connectivity to other locations in Brevard.

Traffic counts from 2016 and 2017 as part of upcoming roadway improvement projects at the US 64/US 276/NC 280 intersection, as well as along Wilson Road, counted a very small percentage of bicyclists at 0.3% of total traffic or less. This is likely related to the low bicycle comfort levels at these

locations due to higher automobile traffic volumes and speeds combined with no dedicated space for bicyclists.

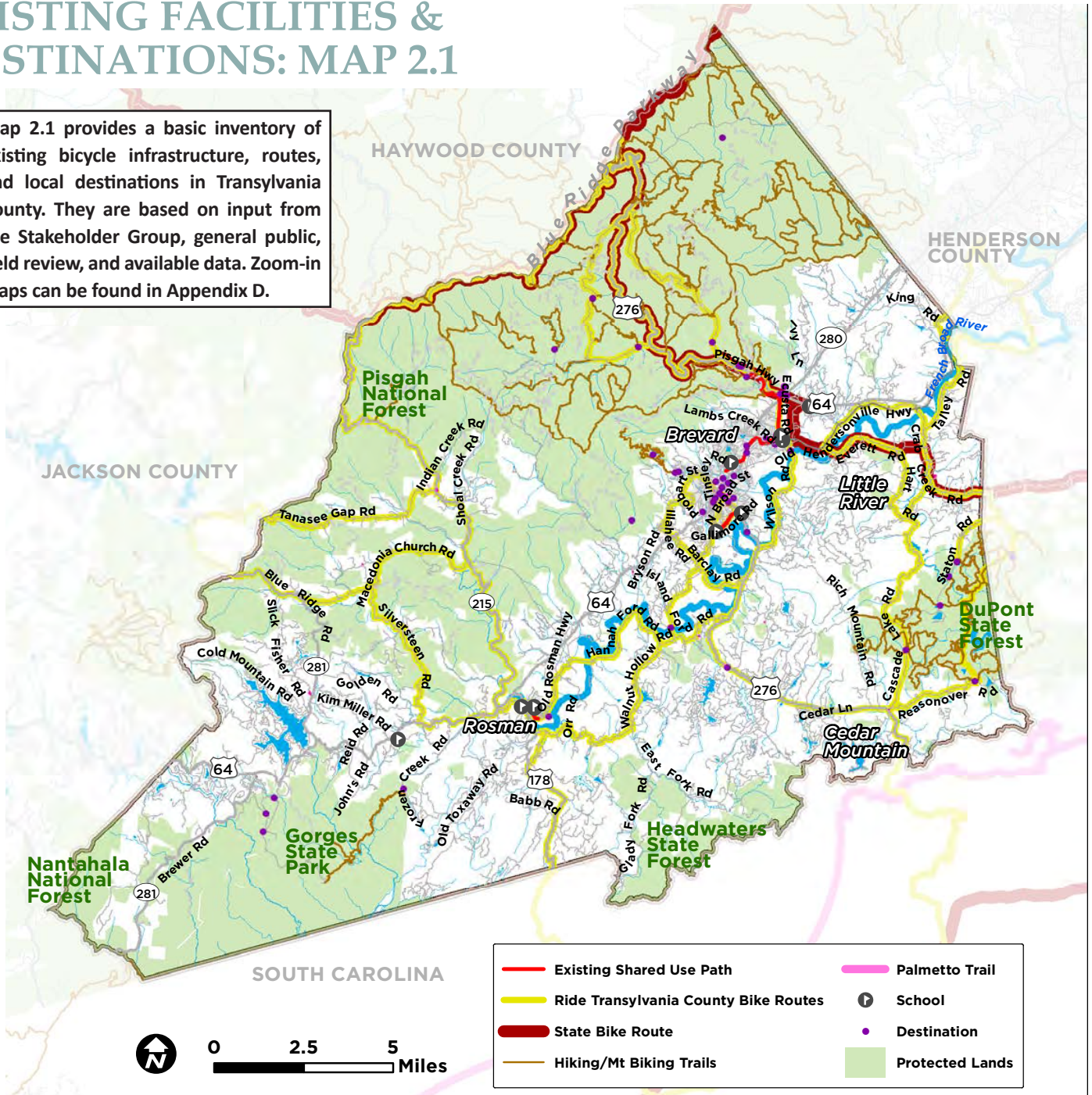
As highlighted in Chapter 1, the US Census also collects commuting statistics by mode of travel to work. The table below highlights the relatively low levels of bicyclists currently commuting to work by bicycle in Transylvania County, North Carolina, and nationwide.

Transylvania County	0.5%
NC Average	0.2%
US Average	0.6%

*% Bike to Work:
US Census
Bureau, 2012-
2016 American
Community Survey*

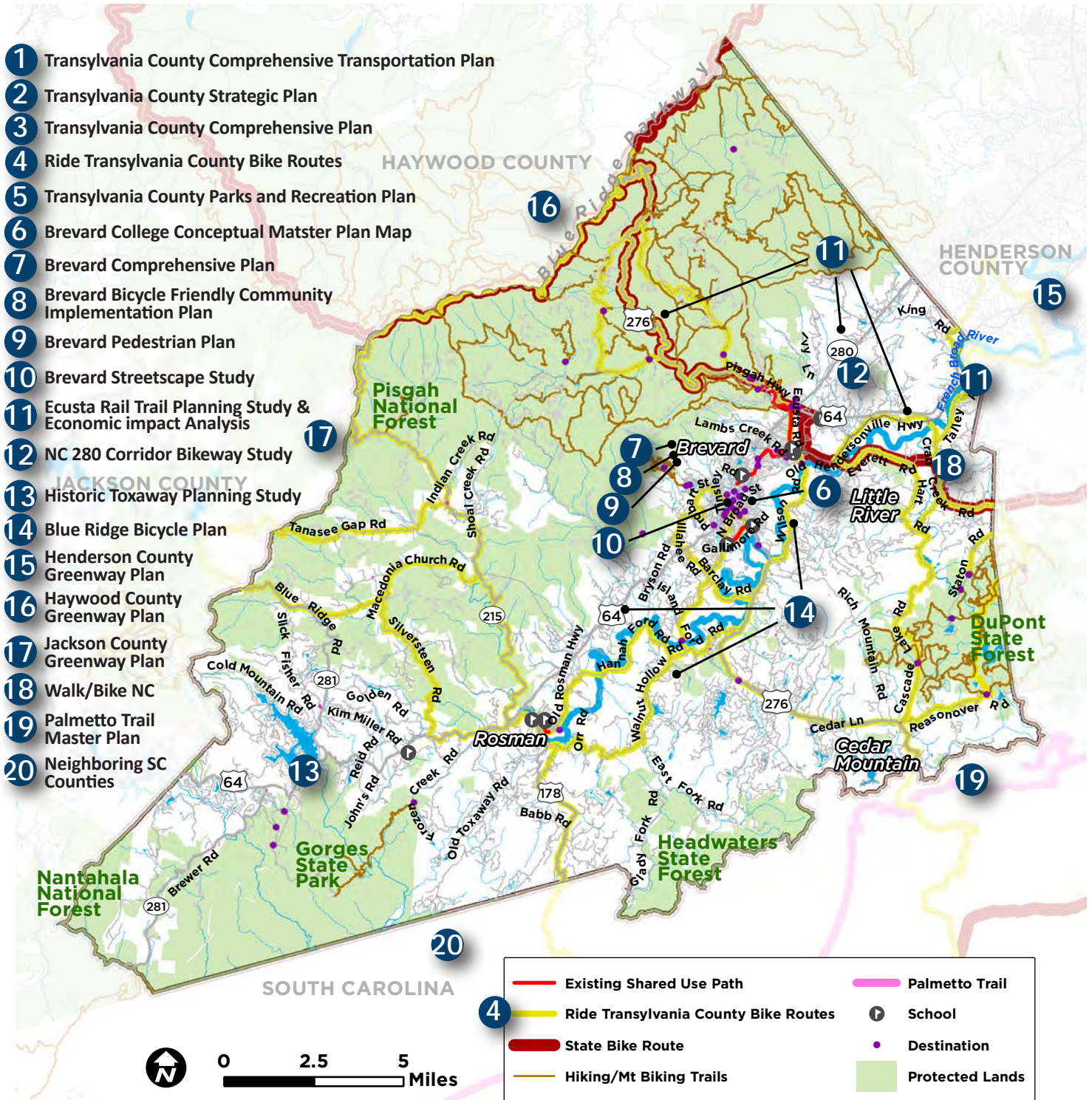
EXISTING FACILITIES & DESTINATIONS: MAP 2.1

Map 2.1 provides a basic inventory of existing bicycle infrastructure, routes, and local destinations in Transylvania County. They are based on input from the Stakeholder Group, general public, field review, and available data. Zoom-in maps can be found in Appendix D.



PLAN REVIEW: MAP 2.2

This map highlights past planning efforts and key recommendations from those plans that are relevant to this planning process. These are important elements from which to build recommendations for Transylvania County. Further plan review detail can be found in Appendix D.



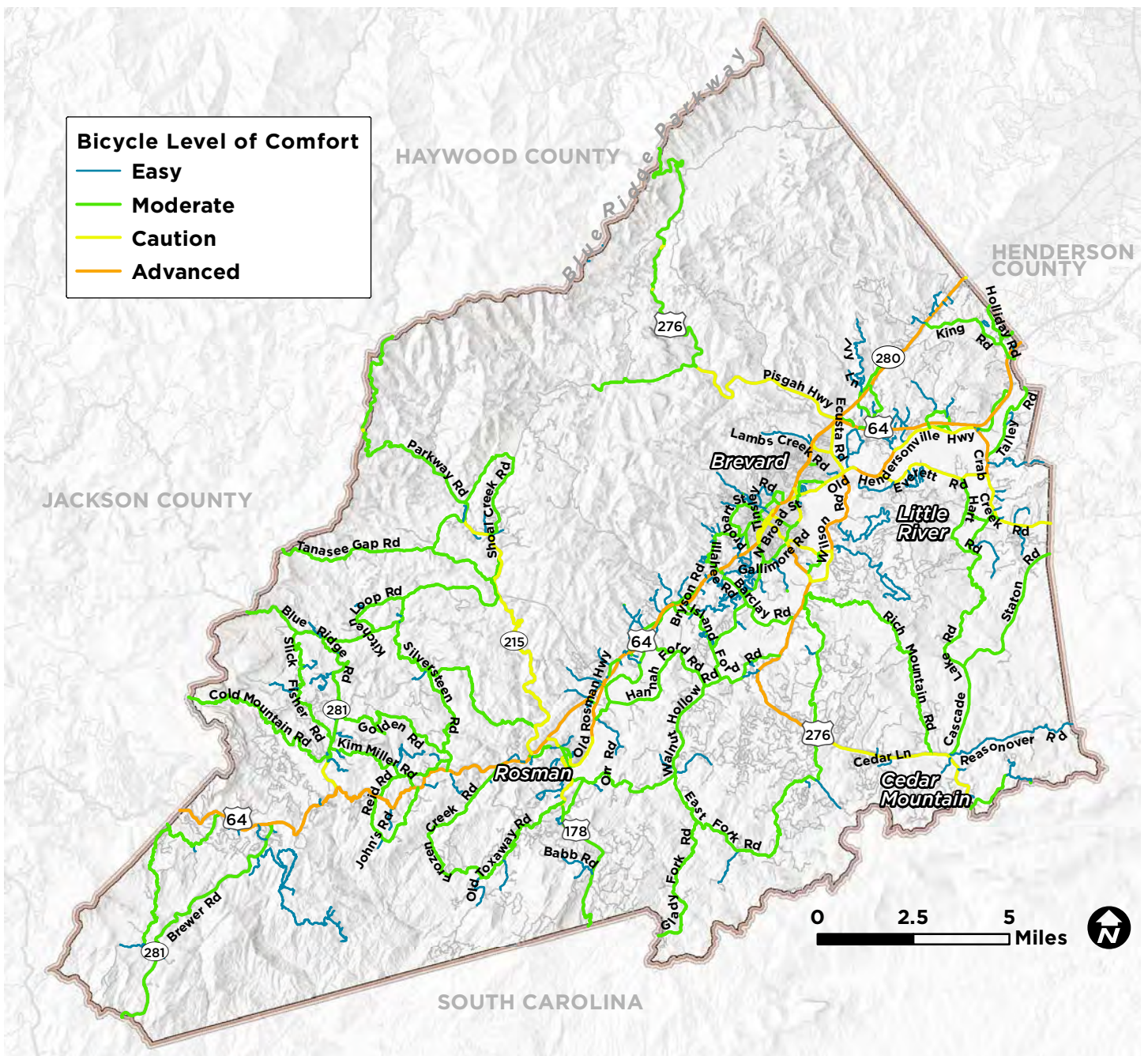
BICYCLE LEVEL OF COMFORT: MAP 2.3

The project team developed a rating system to evaluate roads across Transylvania County to determine biking suitability. In addition to using this data in developing recommendations, this system was used to create a suitability map, classifying each roadway by comfort level for a moderately experienced bicyclist. The data available to classify those roadways includes traffic volumes, speed limits, presence of 4' or wider paved shoulder or bike lane, and designated truck routes.

Much of Transylvania County is covered by easy and moderate (blue and green) routes - generally, these are relatively lower traffic volume/speed neighborhood streets (blue) or low traffic volume/higher speed rural roadways such as East Fork Road (green). The majority of the roadways that provide lower comfort levels are found along Transylvania County's arterial roadways that separate most areas of Transylvania County from one another and carry the highest traffic volumes and speeds.

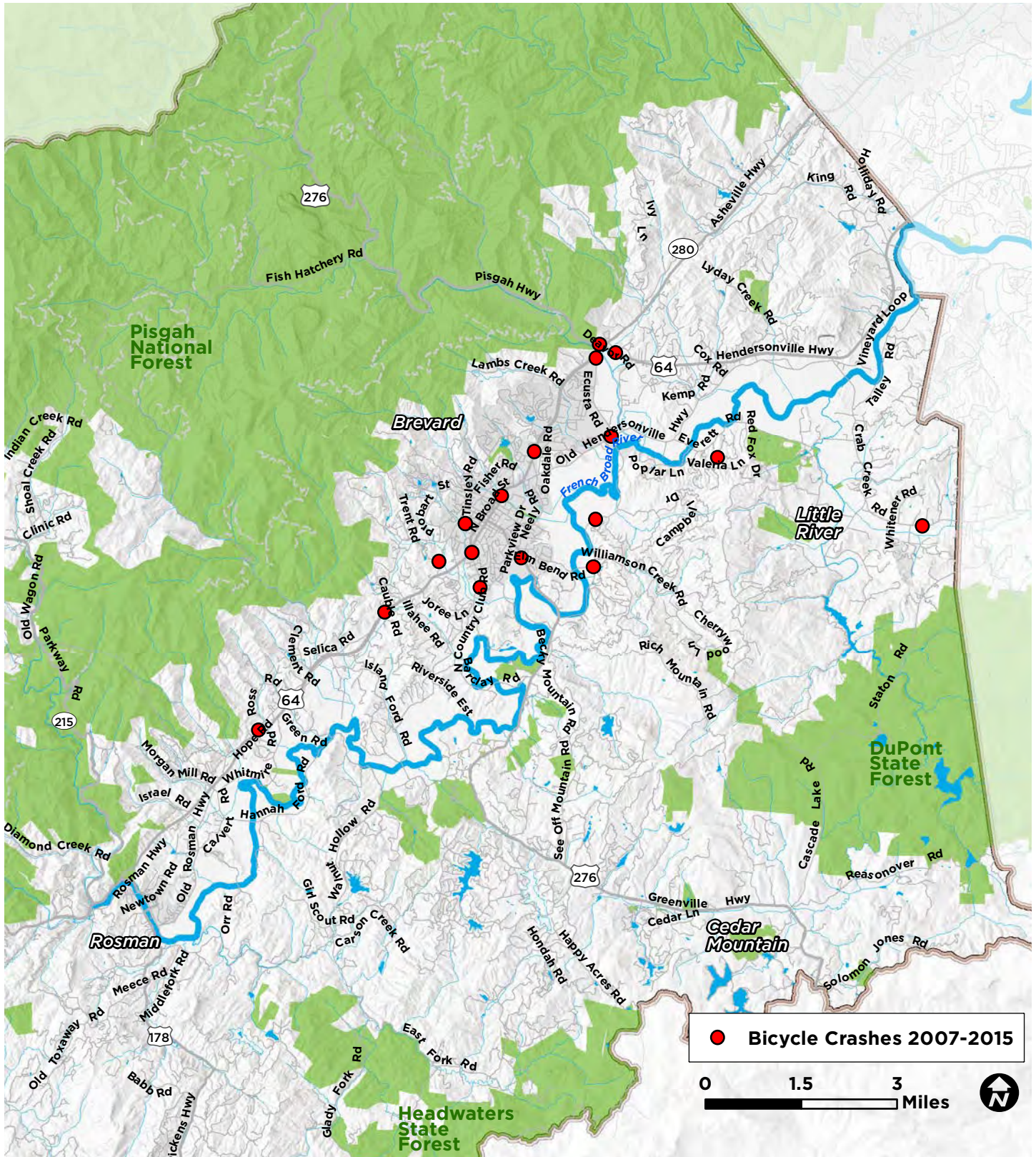
Topography also plays a key role in Transylvania County. While topography is not directly included in this analysis, many roadways in Transylvania County have steep hills that impact a bicyclist experience. Particular examples include Pisgah Highway (US 276), Parkway Road (NC 215), Walnut Hollow Road, and Rich Mountain Road.

See Appendix D further detail to the characteristics of key roadways across Transylvania County.



BICYCLE CRASHES 2007-2015: MAP 2.4

This map examines the most recently available bicycle crash data for Transylvania County from 2007-2015. During this time period, 17 crashes were reported, eight of which were either along or very close to US 64 and US 276. Three out of the 17 crashes were along Wilson Road.



PUBLIC INPUT SUMMARY

Public input during this planning process was recorded and incorporated into this document. Stakeholder group members helped spread the word about the plan in order to garner responses about existing conditions and areas for improvement. During public meetings, stakeholder group members and residents marked up maps and completed open comment sheets to share their ideas and preferences with respect to bicycling in Transylvania County.

Feedback was incorporated from the following:

- Existing Conditions and Draft Plan public open house workshops for the Transylvania County Bicycle Plan
- SPOT 5.0 Bicycle and Pedestrian Project survey results
- Brevard College Bicycle Survey
- Transylvania County/City of Brevard Parks & Recreation Master Plan Survey Results
- 2025 Transylvania County Comprehensive Plan survey results



Photo from the open house workshop at the Little River Community Center.

TRANSYLVANIA COUNTY OPEN HOUSE WORKSHOPS

Four open house workshops were held during the existing conditions phase of the Transylvania County Bicycle Plan to gather input from the public specific to bicycle infrastructure, programming, and the bicycle planning process in general. After the release of the draft plan, four additional workshops were held for comment and review of the draft plan. These workshops were advertised through social media, flyers, and a press release. All of the public input sessions were drop-in formats. Below are the dates and locations of the eight public open house workshops. The following pages provide a summary of the workshop feedback received. All comments received are compiled in Appendix C.

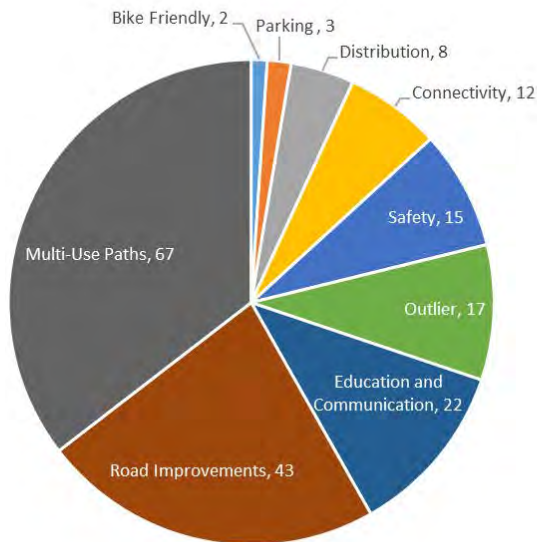
<p>Public Input Wanted!</p> <p>Future Bicycle Infrastructure to be Determined</p>  <p>828.884.3205 http://planning.transylvaniacounty.org/</p>	<p>Drop-In Sessions will be held:</p> <ul style="list-style-type: none"> • June 26th 6:30-8:30 Little River Community Center, • June 28th 4:30-6:30 Rosman Town Hall, • July 9th 4:30-6:30 Rogow Room of the Transylvania Library • July 16th 4:30-6:30, Cedar Mountain Community Center
<p>Transylvania County Planning and Community Development is working with Alta Planning and Design to develop a Comprehensive Bicycle Plan for the County</p>	

Four public open house workshops were held in different parts of Transylvania County during the existing conditions phase of the planning process. Four open house workshops were also held in January, 2019 to review and comment on the draft plan.

<p>Public Input Wanted!</p> <p>Draft Bicycle Plan Ready for Your Review</p>  <p>828.884.3205 http://planning.transylvaniacounty.org</p>	<p>Drop-In Sessions will be held:</p> <ul style="list-style-type: none"> January 7th 6:30- 8:30 County Library, Rogow Room January 10th 4:30-6:30 Little River Community Center January 14th 4:30-6:30 Cedar Mountain Community Center January 15th 4:30-6:30 Quebec Community Center
<p>The Transylvania County Bicycle Plan is an effort by the Transylvania County Planning and Community Development Department & Alta Planning, funded by a grant from the NC DOT</p>	

Open Ended Response Question about Share your Thoughts, concerns, priorities and results

What would you like to see?
189 open ended responses



For data categorization purposes, the term "multi-use paths" includes greenways, trails, bike paths, shared use paths, Ecusta Trail and NC280 Trail



TYPES OF BICYCLE INFRASTRUCTURE

Which do you like best? Vote with your dots & leave comments below.



Shared Lanes*	Bicycle Passing Lane	Paved Shoulder	Bicycle Lane	Buffered Bicycle Lane	Separated Bicycle Lane	Shared Use Path: Sidepath	Shared Use Path: Greenway
<p>With limited sight lines, narrow roadway widths, steep grades, and geographical constraints, opportunities to find a cycle or group of cyclists can be dangerous. Cycle passing lanes or periodic segments of paved shoulder along the course of steep roads are solutions that can provide frequency relief where cyclists will be able to shift further to the right or pull over.</p>							
<p>Travel Lane: 4'</p>	<p>Travel Lane: 13'</p> <p>Side Path: 4'</p>	<p>Travel Lane: 4'</p> <p>Shoulder: 4'</p>	<p>Travel Lane: 5'</p> <p>Side Path: 5'</p>	<p>Travel Lane: 2'</p> <p>Buffer: 5'</p> <p>Side Path: 5'</p>	<p>Travel Lane: 7'</p> <p>Buffer: 5'</p> <p>Side Path: 5'</p>	<p>Travel Lane: 3.5'</p> <p>Side Path: 10'</p>	<p>Path: 10'</p>
3	19	38	13	15	8	39	74

A child wearing a blue helmet and a dark shirt is riding a small blue and white bicycle on a paved path that winds through a forest. The path is covered with fallen brown leaves. The trees are mostly bare, suggesting a late autumn or winter setting. The overall lighting is dim and overcast.

CHAPTER 3: RECOMMENDATIONS

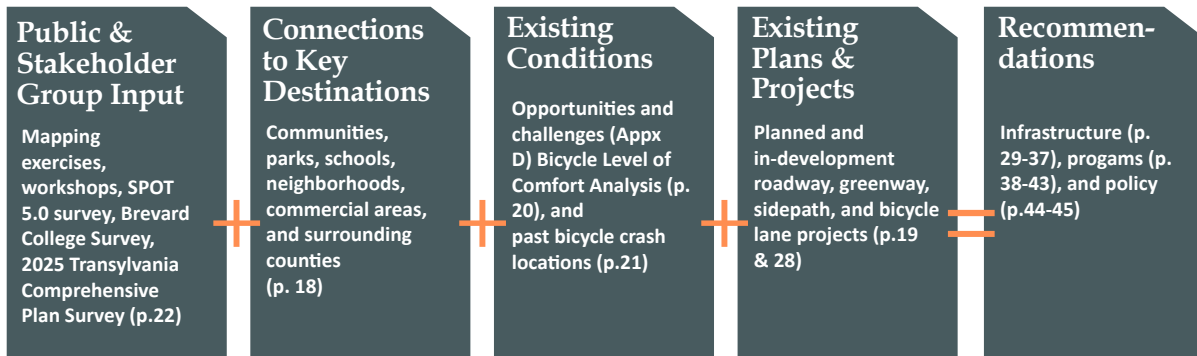
OVERVIEW

This chapter outlines the recommendations for making Transylvania County safer and more enjoyable for bicycling, with improved connections across the county. A diverse mix of bicycle facilities (such as different types of bike lanes, paved shoulder, shared lanes, and shared use paths) are recommended to make these connections, taking into account the needs of different types of bicyclists. In addition to the infrastructure recommendations that make up the bulk of this chapter, program and

policy recommendations are also included to further meet the goals of this plan. These recommendations also promote greater positive relations between bicyclists and motorists.

Recommendations were developed based on information from several sources: Public and stakeholder group input, in-person public open house workshops; connectivity to destinations; review of current roadways and bicycle facilities; existing plans and projects, and a prioritization process combining these inputs.

BASIS OF RECOMMENDATIONS

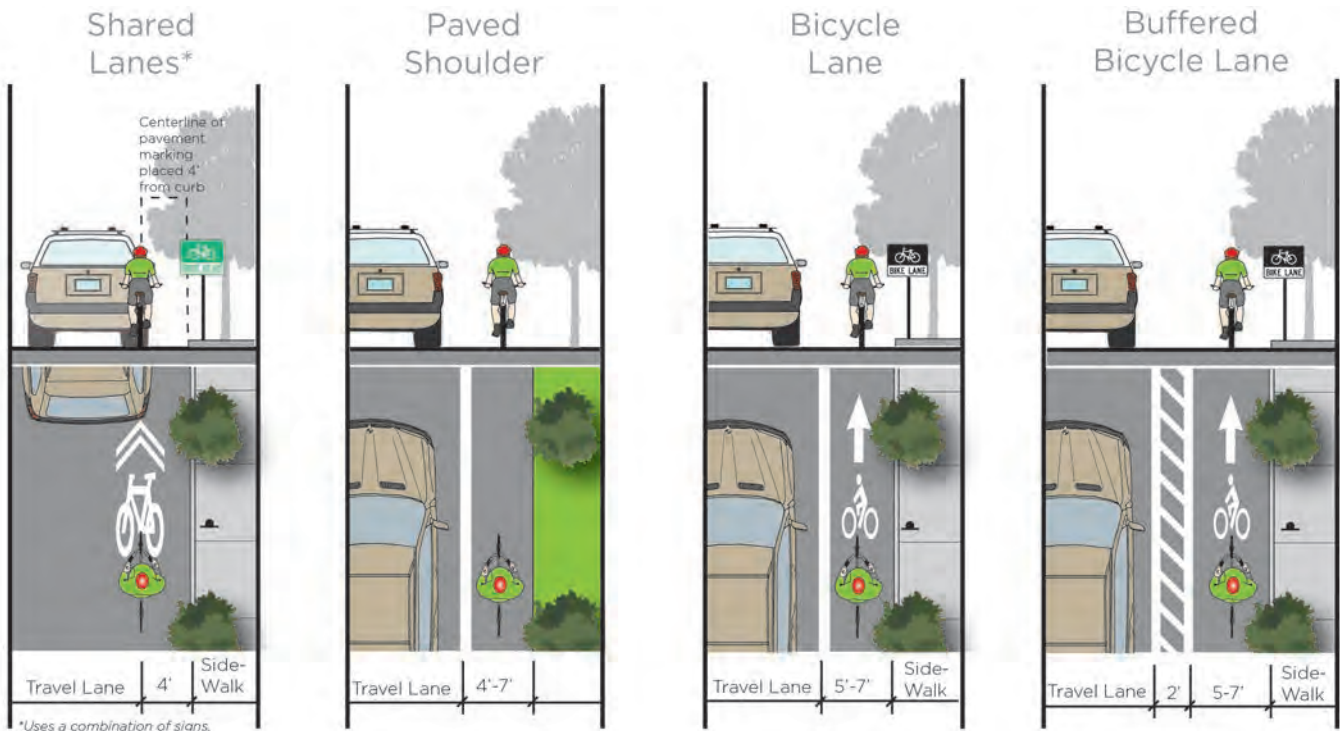


Bicyclists along Pisgah Hwy/US 276 - this section of road between US 64 and Avery Creek Rd connects several popular Pisgah National Forest destinations and the northern limits of Brevard and is a key corridor needing improvement.

BICYCLE FACILITY TYPES

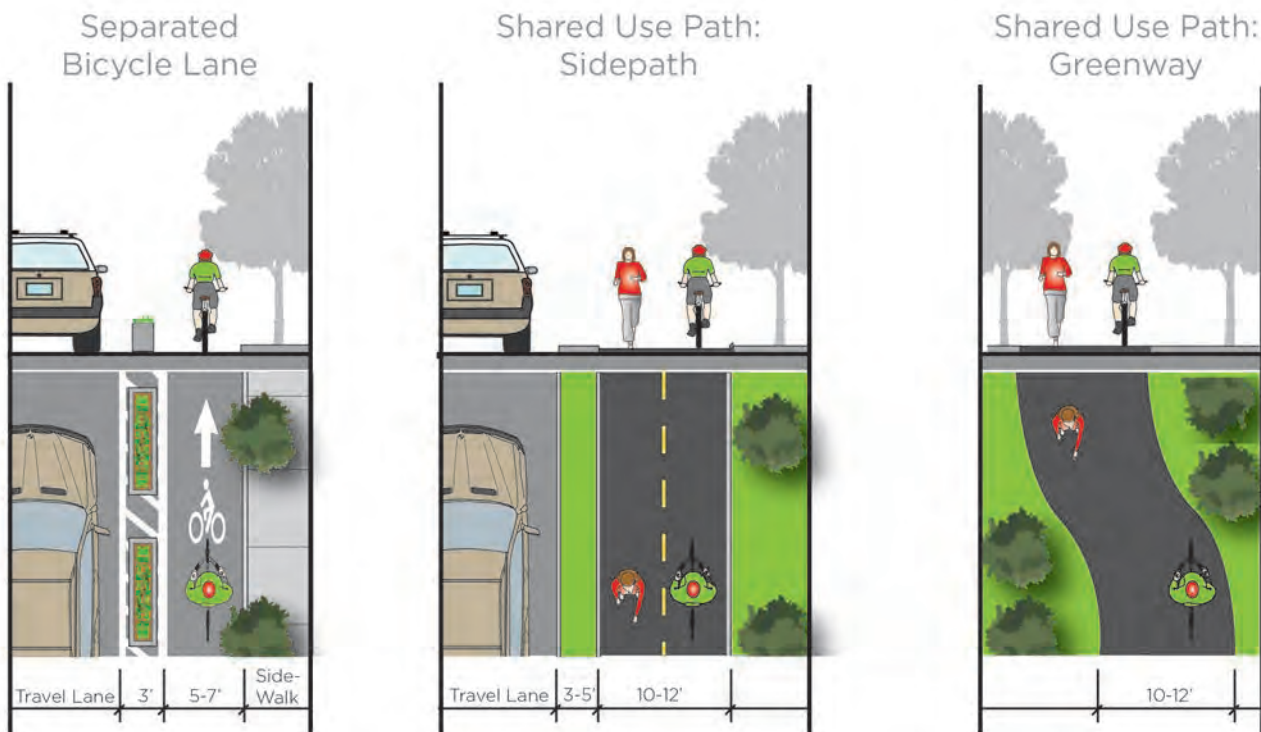
These are the primary facility types recommended in this plan. See the maps (and legends) in this chapter to see where these different types of facilities are recommended in Transylvania County. For roadway corridors in general, as traffic volumes and speeds increase, greater separation is needed for bicyclists and motorists. For more information on facility design, please see Appendix A.

least separated



*Uses a combination of signs, pavement markings, and speed and volume management measures to create safe bicycle travel.

most separated





KEY RECOMMENDATIONS:

- 1 KEEP MOMENTUM ON BICYCLE PROJECTS THAT ARE ALREADY IN-DEVELOPMENT.**

Map 3.1 features existing facilities along with projects that have some level of funding, design, or construction in progress. These “in-development” projects should be fully funded first, as the lowest hanging fruit for new bicycle infrastructure.
- 2 STRATEGICALLY AND PROACTIVELY FUND AND BUILD THE PRIORITY NETWORK.**

Map 3.2 features a priority network developed out of this planning process and previous planning processes. The priority network is displayed in three cutsheets (starting on page 30) that summarize why each element is a priority, and what the key opportunities and challenges are to its development.
- 3 USE THE COMPREHENSIVE NETWORK OF RECOMMENDATIONS TO BUILD OTHER PROJECTS INCREMENTALLY OVER TIME.**

As Transylvania County continues to grow, new development and roadway construction projects should incorporate facilities recommended in Map 3.3. As progress is made on the priority network, new priorities should be selected from this comprehensive map of recommendations.
- 4 IMPLEMENT NEW PROGRAMS AND POLICIES THAT SUPPORT AND ENCOURAGE BICYCLING.**

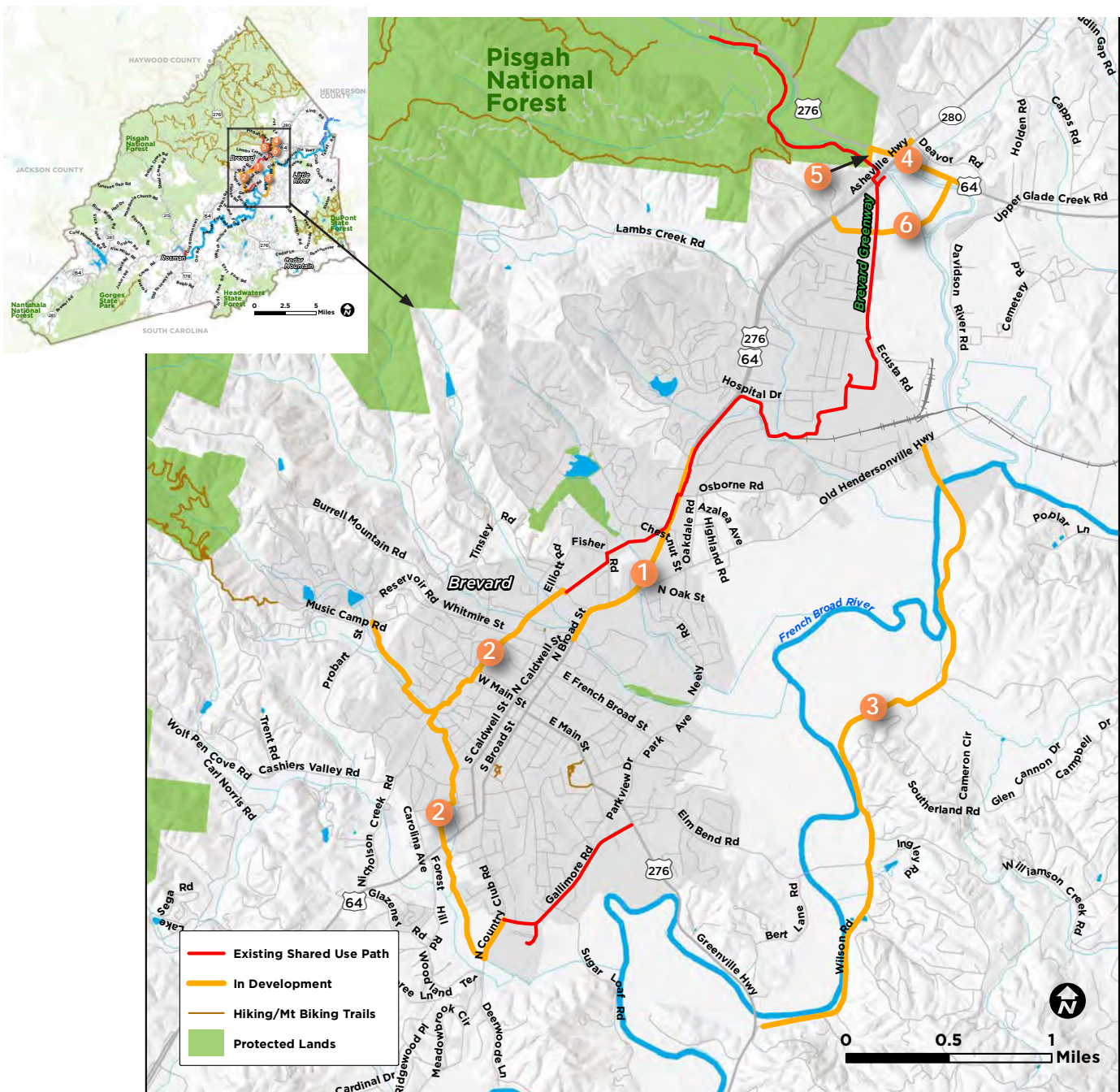
As new facilities are built, they will need to be maintained with coordination between agencies for multi-jurisdictional projects; strategically lowering posted speed limits, identifying solutions for steep hills, capitalizing on numerous bicycle-related events and continuing the Watch for Me NC educational campaign will add to a comprehensive effort toward both bicyclist and motorist safety.

Together, these recommendations make up the core of this plan, as featured in Chapter 3. They are supplemented by detailed implementation guidance in Chapter 4, including a list of resources for the latest information on bicycle facility design and bicycle-related policy.

PROJECTS IN DEVELOPMENT: MAP 3.1

This map features existing facilities along with key projects that have some level of funding, design, or construction in progress. These “in development” projects should be fully funded first, and are critical to improving bicycle infrastructure connectivity in Transylvania County:

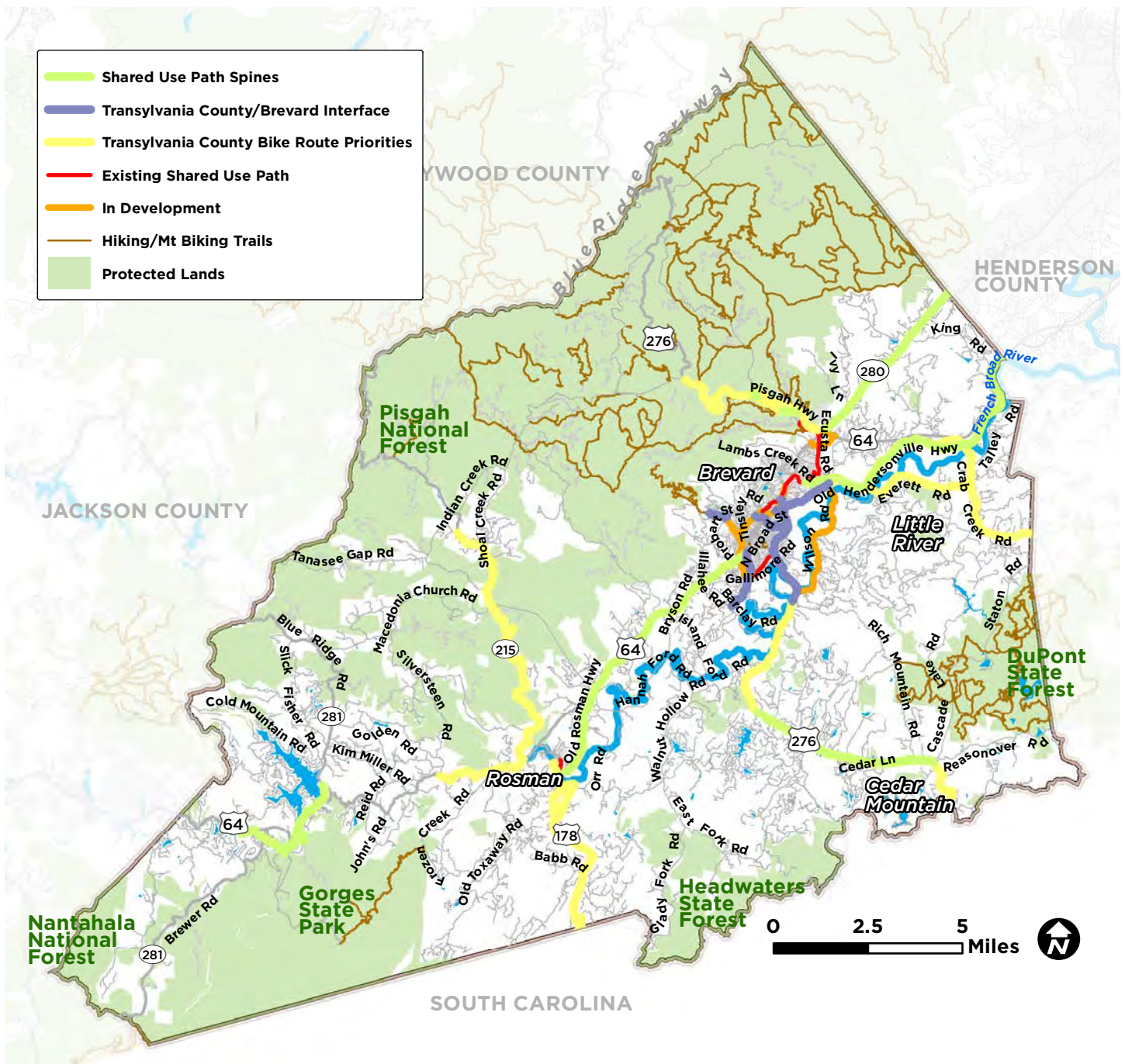
- 1 N. Broad Street from Fortune Cove Road to North Caldwell Street bike lanes and sidepath (R-5800)
- 2 Brevard priority greenway development, committed to completion in summer 2021
- 3 Wilson Road improvements, paved shoulders (R-5763)
- 4 US 64/US 276/NC 280 intersection improvements, including bicycle and pedestrian accommodations (R-5799)
- 5 Davidson River bicycle/pedestrian bridge from Brevard Greenway across Davidson River to businesses at the US 64/US 276/NC 280 intersection (EB-5858)
- 6 Davidson River Village Connector to include bike lanes (new road construction from Asheville Hwy (US 64/US 276) to Hendersonville Hwy (US 64) (R-5605)



PRIORITY NETWORK: MAP 3.2

Over time, opportunities to implement this priority network will involve multiple jurisdictions and funding sources. The elements of this priority network were the most consistently mentioned in stakeholder group meetings and public outreach, and each component strategically adds value by connecting key destinations across Transylvania County. This map includes the following elements.

- Shared Use Path 'Spines' - These projects reach out in each direction of Transylvania County, providing a physically separated 'spine' that can form the key building blocks for comprehensive connectivity between or through Transylvania communities.
- Transylvania County/Brevard Interface - As the Brevard bicycle network continues to develop, multijurisdictional efforts will be needed to connect this network beyond the City of Brevard municipal limits.
- Transylvania County Bike Route Priorities - Higher traffic volume, higher speed sections of these routes should be improved first with higher degrees of separation from automobile traffic to the extent possible.



PRIORITY PROJECTS - TRANSYLVANIA COUNTY SHARED USE PATH SPINES:

Several shared use path connections were identified in this planning process and previous planning processes that can serve as 'spines' of connectivity through or between Transylvania communities. These projects provide physical separation between bicyclists and motorists, providing options for all ages and abilities of bicyclists (and pedestrians). The priority spines are not ranked against each other and will be developed as resources and funding allow.

Brevard to Rosman - This connection includes a proposed shared use path between Brevard and Rosman along the US 64 corridor. This would provide a link between the two incorporated population centers in Transylvania County, and serve as an essential passageway to the southwestern portion of Transylvania County, including Gorges State Park and the Lake Toxaway community. This corridor is also identified as a designated growth area in the 2025 Transylvania County Comprehensive Plan.

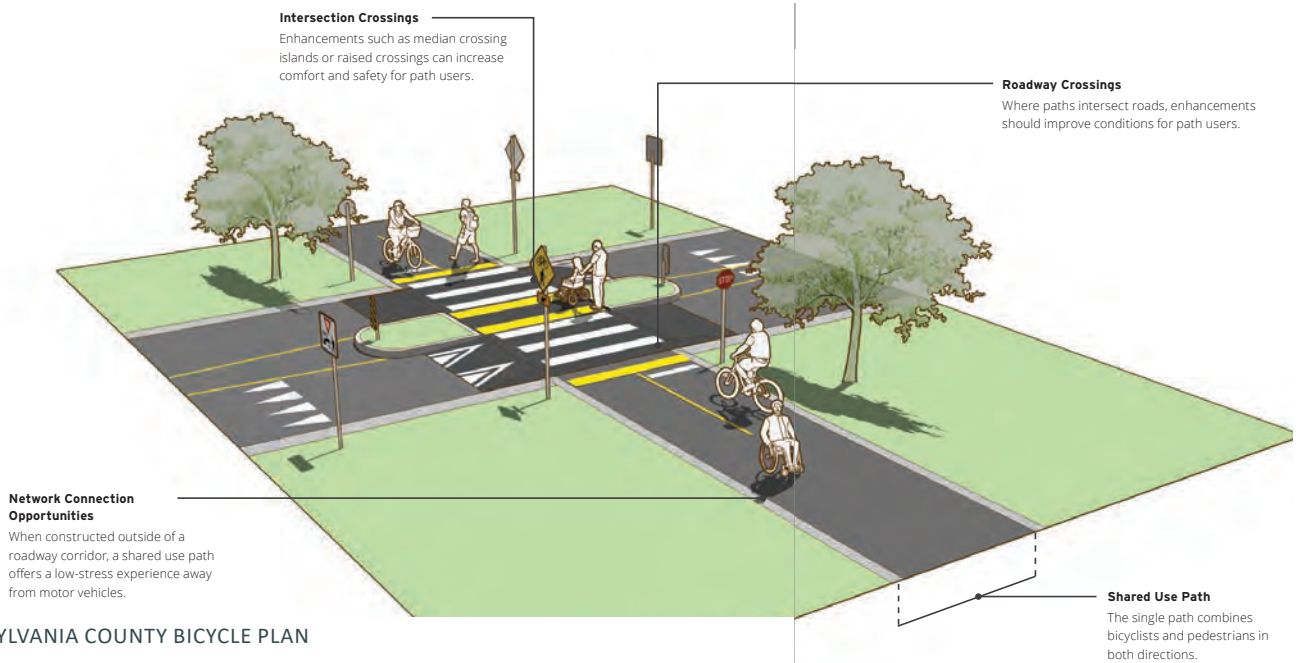
Brevard to Mills River - NC 280 serves as a direct commercial link from Brevard through the northern/northeastern end of Transylvania County to Mills River, and eventually Asheville. This project would consist of a shared use path along or near the NC 280 corridor as identified in the 2014 Mills River NC 280 Corridor Study. This corridor also serves as a gateway into Transylvania County and Pisgah National Forest from the north. The southern terminus of this project could connect into the future NC 280/US 64/US 276 intersection improvements and Davidson River bike/ped bridge that will also connect to the Brevard Greenway and Pisgah National Forest.

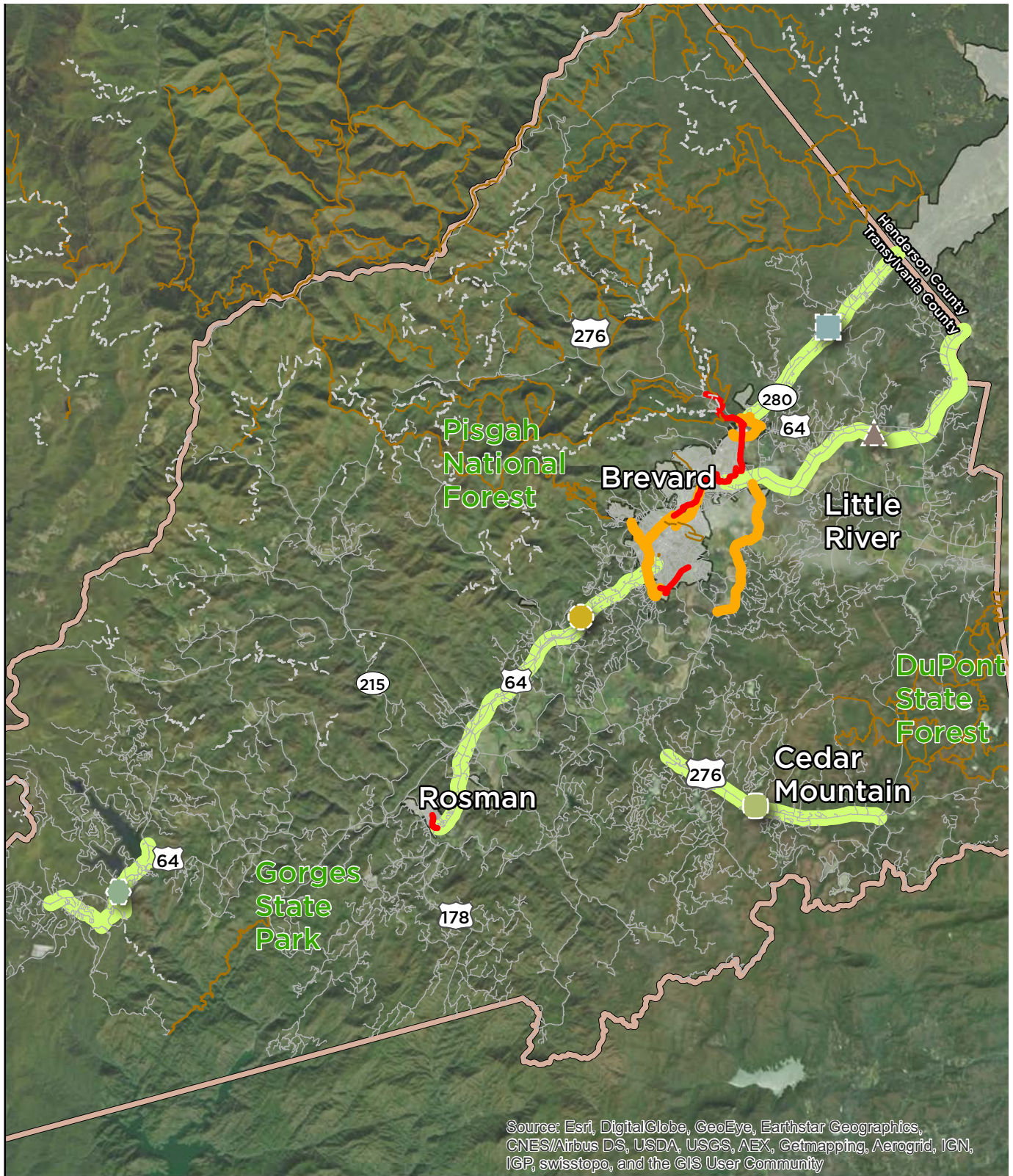
Ecusta Rail Trail - The proposed Ecusta Rail Trail was the most often cited improvement needed for bicycling in Transylvania County during this planning process. Completely separated from roadways, this project would utilize the former Norfolk Southern railroad corridor that is currently owned by Watco Transportation Services. It provides a flat, direct connection from the Brevard Greenway through north-eastern Transylvania County, Little River, and eventually Hendersonville. US 64, Old Hendersonville Hwy, Crab Creek Road, and Everett Road, which carry high traffic volumes and speeds, provide a low level of comfort for the average bicyclist and are currently the only bicycling alternatives through this part of the County.

Lake Toxaway Trail - The proposed shared use path through Lake Toxaway highlights an opportunity to create a spine through the heart of the community as identified in the Historic Toxaway Planning Study. This project would connect businesses, residential areas, Lake Toxaway dam, and Gorges State Park, along or near the US 64 corridor. This corridor is also identified as a designated growth area in the Transylvania County Comprehensive Plan.

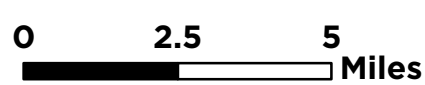
Cedar Mountain Trail - This proposed shared use path would connect from the Connestee Falls Overlook to Cascade Lake Road along US 276. This project would connect businesses, the Cedar Mountain Community Center, and residences through the heart of the Cedar Mountain community. This trail could also serve as a connection to Cascade Lake Road toward DuPont State Forest trails. This corridor is also identified as a designated growth area in the Transylvania County Comprehensive Plan.

See the *Small Town and Rural Multimodal Networks design guide* for further detail regarding design best practices and options: shared use paths and sidepaths - <http://ruraldesignguide.com/physically-separated>





- Priority Shared Use Path Projects
- Existing Shared Use Path
- Hiking/Mt Biking Trails
- In Development






PRIORITY PROJECTS - TRANSYLVANIA COUNTY/ BREVARD INTERFACE:


As the Brevard bicycle network continues to develop, multijurisdictional efforts will be needed to connect this network to other areas beyond the City of Brevard's municipal limits. Aside from the Greenville Hwy segment connecting to Hap Simpson Park and the French Broad River Greenway, all of these projects are currently under consideration for Strategic Transportation Investments funding in SPOT 5.0 and could be completed as part of future roadway improvement projects. Incorporating bicycle facilities into the design of these projects now will save significant money down the road, due to the high degree of difficulty in adding bicycle facilities after a roadway corridor has been improved.


While all of these projects will not be funded during this round of SPOT 5.0, the remaining unfunded projects should remain on the priority list to create a comprehensive bicycle network over time. The priority projects are not ranked against each other and will be developed as resources and funding allow.


These projects include:


-  **Greenville Hwy/US 276** - link from Gallimore Road sidepath/Brevard High School and Elementary to Hap Simpson Park/Wilson Road/Rich Mountain Road: This stretch of Greenville Hwy is a critical link between neighborhoods and schools in southeastern Brevard to Hap Simpson Park, Wilson Road, Rich Mountain Road, and eventually Cedar Mountain and DuPont State Forest. Bicycle improvements should include physical separation from automobile traffic as a sidepath along the roadway or along a potential future sewer easement away from the roadway. One of the key challenges for this segment is the likely need for constructing a bike/ped bridge across the French Broad River.
-  **Old Hendersonville Hwy** - links to northeast Transylvania County: This link would provide a significant improvement in connectivity between the Brevard Greenway, future improvements to N. Broad Street, Wilson Road, and the neighborhoods, businesses, schools, and recreation opportunities in the immediate area (in addition to the northeastern portion of Transylvania County). Because these segments carry higher traffic volumes and speeds, physical separation from the roadway is recommended (consider sidepath and separated bike lane options during the design phase).

 **N. Country Club Road from S. Broad Street to Illahee Road** - links to south/southwest Transylvania County: These short links would provide a significant improvement in connectivity from the southern part of Brevard to county bike routes and destinations to the south including Rosman. This is a key pinch-point for bicyclists heading south because of the relatively higher traffic volumes and narrow roadway corridor. Because these segments carry higher traffic volumes and speeds, physical separation from the roadway is recommended where possible.

 **Parkview Dr/Park Ave/Neely Rd from US 276 to Old Hendersonville Hwy** - links north/south along the east side of Brevard/Transylvania County boundary: This corridor would provide a direct link from the Brevard Greenway and future bike lanes along N. Broad Street to the Gallimore Road sidepath. Part of Neely Road is currently 35 mph - it is recommended to lower this to 25 mph. Buffered bike lanes are recommended due to higher traffic volumes.

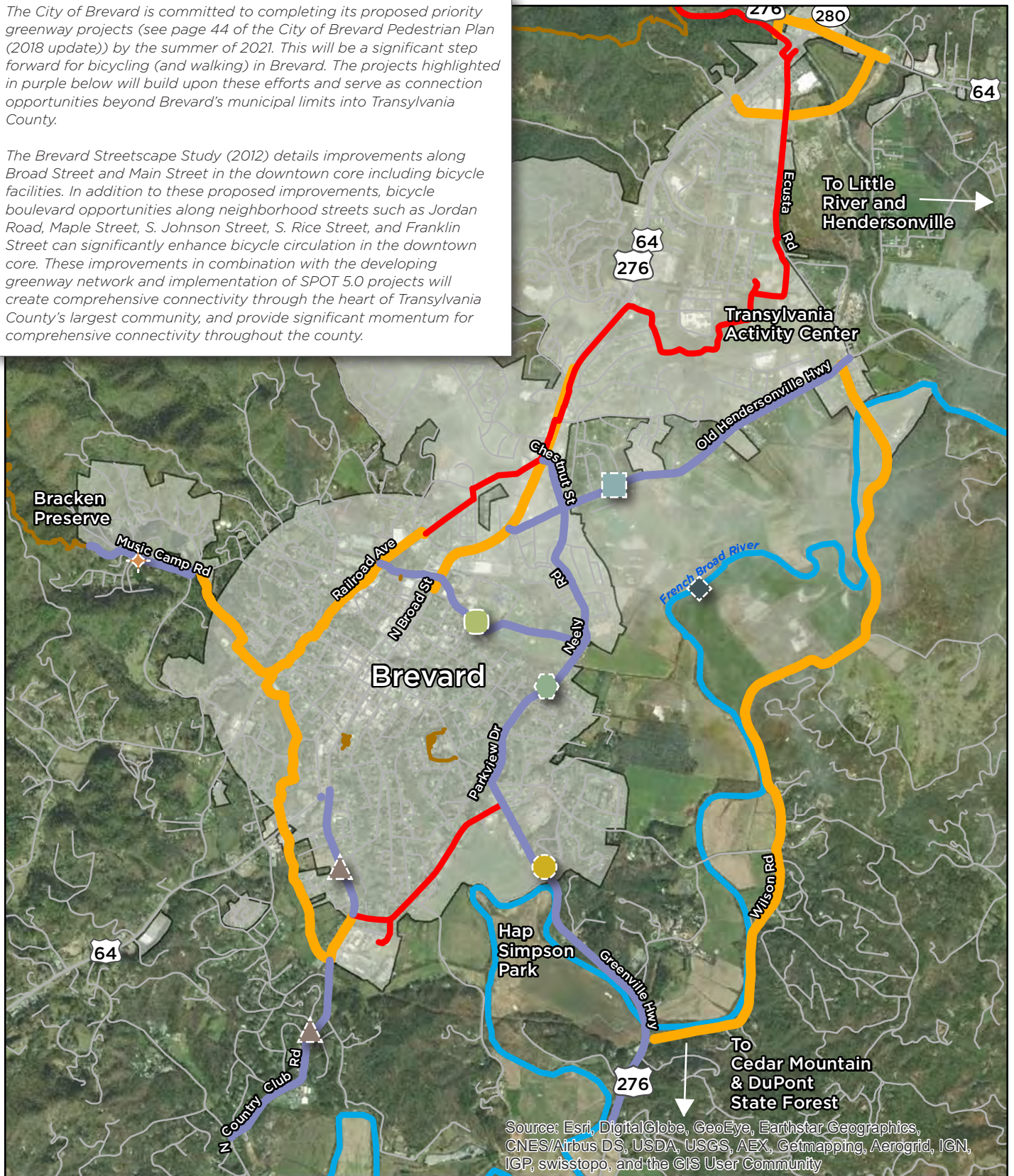
 **Brevard College Greenway** - links Brevard College campus to the developing Brevard bike network as well as potential future connectivity to Neely Road and the French Broad River corridor. The Brevard College greenway through the heart of campus is a top priority for Brevard College.

 **Music Camp Road** - link to Bracken Preserve: Music Camp Road is a low traffic volume roadway that provides the final, steep link from the developing Brevard greenway system to Bracken Preserve. Bicycle improvements along Music Camp Road should include shared lane markings and wayfinding signage. Traffic calming elements such as speed tables should be considered as well.

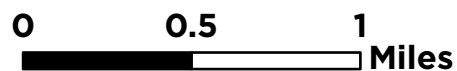
 **French Broad River Greenway** - the French Broad River Greenway should be developed over time through Transylvania County. A potential first phase could be developed as part of a linear park in the floodplain area between Wilson Road and the river. Access to the French Broad River and trail development along the river is recommended in the Transylvania County/City of Brevard Parks and Recreation Strategic Plan (2016). Furthermore, it is a priority for Henderson County in the Henderson County Greenway Plan (2018).

The City of Brevard is committed to completing its proposed priority greenway projects (see page 44 of the City of Brevard Pedestrian Plan (2018 update)) by the summer of 2021. This will be a significant step forward for bicycling (and walking) in Brevard. The projects highlighted in purple below will build upon these efforts and serve as connection opportunities beyond Brevard's municipal limits into Transylvania County.

The Brevard Streetscape Study (2012) details improvements along Broad Street and Main Street in the downtown core including bicycle facilities. In addition to these proposed improvements, bicycle boulevard opportunities along neighborhood streets such as Jordan Road, Maple Street, S. Johnson Street, S. Rice Street, and Franklin Street can significantly enhance bicycle circulation in the downtown core. These improvements in combination with the developing greenway network and implementation of SPOT 5.0 projects will create comprehensive connectivity through the heart of Transylvania County's largest community, and provide significant momentum for comprehensive connectivity throughout the county.



- Transylvania County/Brevard Interface
- Existing Greenway
- Hiking/Mt Biking Trails
- In Development



PRIORITY PROJECTS - TRANSYLVANIA COUNTY BIKE ROUTES:

The Transylvania County bike routes recently updated in 2017 and presented in the *Ride Transylvania County* bike map connect much of Transylvania County. These roadways should be standardized, ideally with physically separated bicycle lanes. At a minimum, they should include paved shoulders/dedicated bike lanes. Higher traffic volume, higher speed sections of these routes (highlighted in dark green in map on the following page), should be improved first with higher degrees of separation from automobile traffic, to the extent possible. Wide paved shoulders/bike lanes with bicycle friendly rumble strips may be the best option for improving comfort along these corridors and should be explored further during the design phase.

These higher traffic volume sections include the following (note: N. Country Club Road, and Greenville Hwy/US 276 north of Rich Mountain Road are included in the previous priority project page). These priority sections are not ranked against each other and will be developed as resources and funding allow.

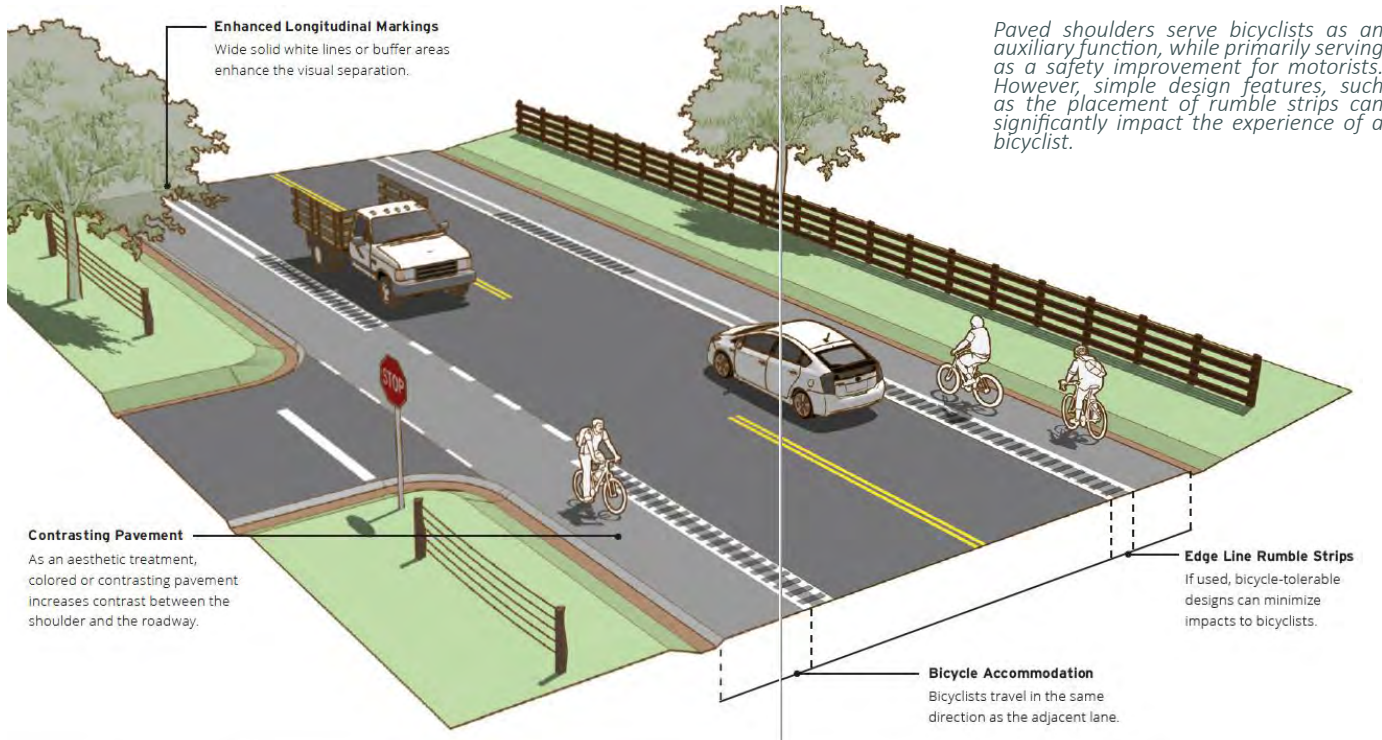
Greenville Hwy/US 276 - from Rich Mountain Road to the South Carolina border (note: section north of Rich Mountain Road to the Gallimore Road sidepath is covered in the Brevard/Transylvania County Interface project sheet above): This section of US 276 provides the flattest, direct link to Cedar Mountain, with further connectivity to DuPont State Park.

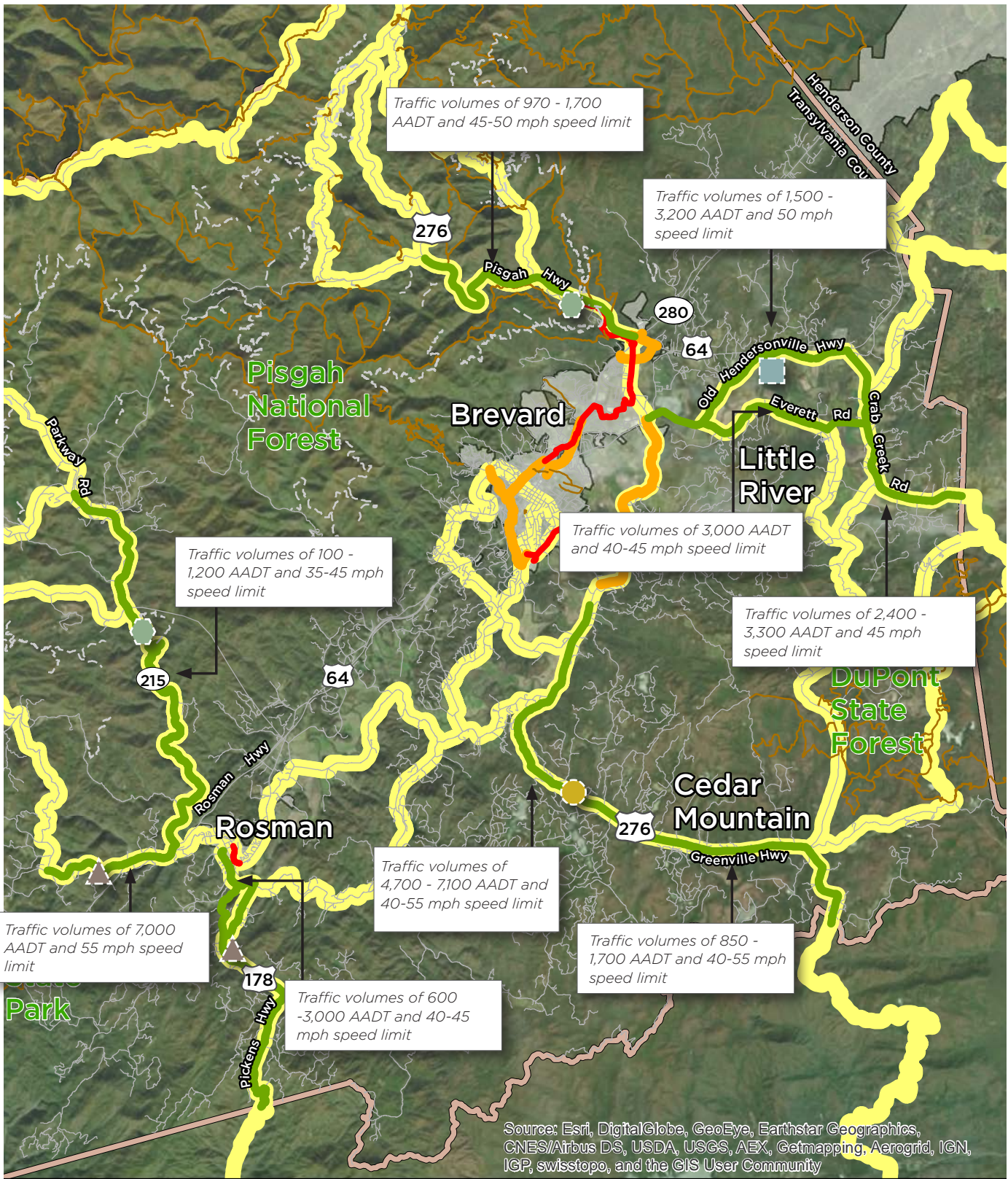
Old Hendersonville Hwy/Everett Road/Crab Creek Road - from the Wilson Road/Ecusta Road intersection, these roads serve as the main arteries to Little River and beyond to DuPont State Forest and Henderson County. Improvements to Everett Rd are currently under consideration in SPOT 5.0.

Rosman Hwy - US 64 southwest of Rosman and US 178 south of Rosman are the main corridors connecting to the south and far southwest sections of Transylvania County. As such, they carry higher traffic volumes and speed limits along these stretches in particular. Improvements to US 178 south of Rosman is currently under consideration in SPOT 5.0.

NC 215/Parkway Dr and US 276 Pisgah Hwy - these two corridors carry higher levels of traffic volumes and speeds. Traffic volumes drop substantially closer to the Blue Ridge Parkway. Furthermore, these roads are very steep and narrow, and are popular bicycling routes due to connectivity to the Blue Ridge Parkway. Improvements to US 276 Pisgah Hwy from the NC 280 intersection to Avery Creek Rd are under consideration for federal funding at this time.

See the *Small Town and Rural Multimodal Networks design guide* for further detail regarding design best practices and options: paved shoulder and bike lanes - <http://ruralsdesignguide.com/visually-separated>





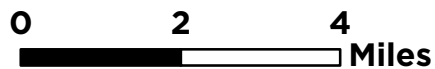
 Ride Transylvania County Routes with Highest Traffic Volumes

 Ride Transylvania County Bike Routes

 Existing Greenway

 Hiking/Mt Biking Trails

 In Development



REGIONAL TRAILS AS AN ECONOMIC DEVELOPMENT OPPORTUNITY

Transylvania County is uniquely positioned as not only part of the NC Statewide Bike Route System (NC 8 Southern Highlands Bike Route), but also the Hellbender Regional Trail that will eventually connect Transylvania County to Asheville. Both NC and SC's Mountains to Sea Trail connect along Transylvania County's border as well. There are several existing features from which to build (the signed NC 8 Southern Highlands Bike Route, the existing NC Mountains to Sea Trail along the Blue Ridge Parkway, and the existing SC Mountains to Sea Trail (Palmetto Trail) that runs along Transylvania County's southeastern border with South Carolina in Headwaters State Forest), but regional bicycle connectivity will only come with connected/continuous, dedicated bicycle facilities. Building dedicated bicycle infrastructure along the NC 8 Southern Highlands Bike Route and working to complete regional links to surrounding counties is critical for the positive economic impact often associated with popular trails. This type of impact can come in the form of increased property values and revenue from increased tourism (in addition to savings associated with health benefits of active living). A research group (Headwaters Economics) compiled 120 studies on the impacts of trails in a single library, searchable by type of benefit, use, year, and region.

For more on this topic, please refer to this research available at: <https://headwaterseconomics.org/economic-development/trails-pathways/trails-research/>.

NC 8 SOUTHERN HIGHLANDS BIKE ROUTE

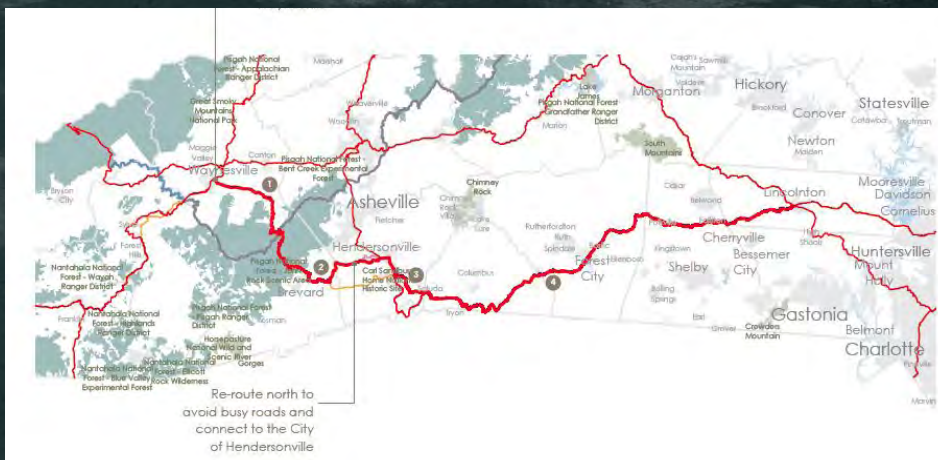
From the NC Bikeways website (<https://www.ncdot.gov/bikeped/ncbikeways/routes/nc8-southern-highlands/default.aspx>):

This ~120 mile route begins northwest of Brevard with a 15-mile downhill from its connection with NC 2 Mountains to Sea on the Blue Ridge Parkway, passing through small mountain towns such as Brevard, Saluda, Flat Rock, and Tryon. It traverses the foothills of the Blue Ridge Mountains southeast toward the South Carolina border before turning northeast through Forest City and finishing at its intersection with the NC 6 Piedmont Spur Bike Route in Lincolnton.

The existing signage for NC 8 Southern Highlands Bike Route follows Pisgah Highway from the Blue Ridge Parkway to US 64, Davidson River Road, Everett Road, and Crab Creek Road through Transylvania County. North Carolina's Statewide Pedestrian and Bicycle Plan (Walk/Bike NC) recommends amending the route to utilize Talley Road into Henderson County to connect directly to Hendersonville.

THE HELLBENDER REGIONAL TRAIL

The Hellbender Regional Trail is a concept that would feature trail connectivity across Western North Carolina counties, including Transylvania County. The Brevard to Mills River (NC 280), Rosman to Brevard, and Ecusta Rail Trail shared use path projects are proposed as part of this regional trail network. These would link into Henderson County's network as identified in the Henderson County Greenway Plan.



NC 8 Southern Highlands Bike Route is detailed in Walk/Bike NC section 9.3.

- <https://www.ncdot.gov/bikeped/walkbikenc/plan-resources/default.aspx#recommendations>

COMPREHENSIVE NETWORK: MAP 3.3

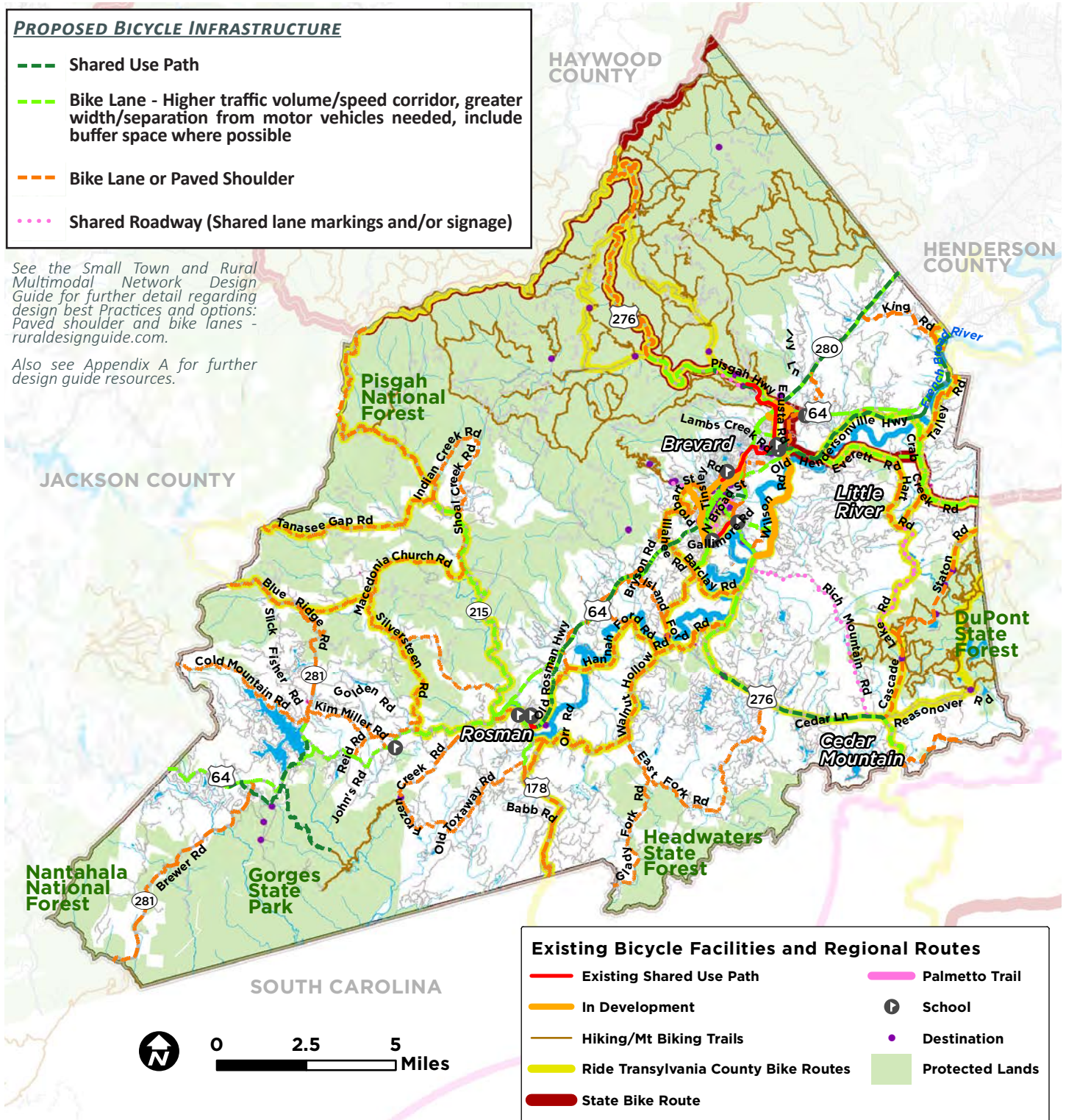
These are long term recommendations for a comprehensive bike network that should be implemented in conjunction with future roadway projects, new development, and/or a myriad of potential public/private/non-profit sector partnerships. While longer term, they are an important vision of this plan, as they show what the potential is for any given future development or roadway construction that may provide an opportunity for incorporating bicycle facilities. As progress is made on the priority network, new or revised priorities should be selected from this comprehensive map of recommendations.

PROPOSED BICYCLE INFRASTRUCTURE

- Shared Use Path
- Bike Lane - Higher traffic volume/speed corridor, greater width/separation from motor vehicles needed, include buffer space where possible
- Bike Lane or Paved Shoulder
- Shared Roadway (Shared lane markings and/or signage)

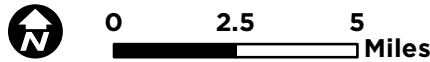
See the Small Town and Rural Multimodal Network Design Guide for further detail regarding design best Practices and options: ruralsdesignguide.com.

Also see Appendix A for further design guide resources.



Existing Bicycle Facilities and Regional Routes

- Existing Shared Use Path
- In Development
- Hiking/Mt Biking Trails
- Ride Transylvania County Bike Routes
- State Bike Route
- Palmetto Trail
- School
- Destination
- Protected Lands



PROGRAM RECOMMENDATIONS

These program recommendations are essential and complementary to future infrastructure projects. Each of the following program ideas were presented at stakeholder group meetings and public open house workshops to gauge interest among Transylvania County residents. The program ideas that follow were the highest rated by the public.

WATCH FOR ME NC: MEDIA CAMPAIGN

In 2018, Transylvania County’s Planning Department pulled together a number of organizations to assist with the Watch for Me NC campaign (<https://www.watchformenc.org/>). The City of Brevard’s Police Department is a great advocate for the program and the Blue Ridge Bicycle Club works hard to help educate the public. Other Watch for Me NC partners include:

- Brevard College
- Blue Ridge Bicycle Club
- City of Brevard
- Friends of Ecusta Trail
- Land of Sky Regional Council
- Transylvania County Health Department
- Transylvania County Parks and Recreation Department
- Transylvania County Sheriff’s Department



EDUCATIONAL AND ENFORCEMENT ACTIVITIES

Watch for Me NC materials were distributed to insurance companies, displayed at local bike shops and outfitters, and made available at Pisgah National Forest, DuPont State Forest, and Gorges State Park. Children and young adults in Transylvania County received information at elementary schools and summer camps.

Transylvania County kicked off their Watch for Me NC campaign at a Fourth of July festival, where thousands of locals and visitors received program materials. Staff were also on hand with a public safety booth at the Oskar Blues Festival in late July. The county worked to introduce the goals of Watch for Me NC to both the area’s diverse rural and municipal enforcement agencies, and spent time communicating with the county Transportation Advisory Board and to the regions’ Safe Routes to School coordinator.

KEY OUTCOMES

Watch for Me NC billboards created a buzz around Transylvania County. Officials also took an innovative approach to spreading the word about safety by pressure washing stencils into the sidewalk of US 64. Awareness about bicycle and pedestrian safety issues were raised in the county through staff interviews on WSQL and press releases. Two targeted enforcement campaigns were held in the latter part of 2018.

LESSONS LEARNED AND RECOMMENDATIONS

Transylvania County should continue engaging and expanding upon the Watch for Me NC campaign (such as incorporating programmatic elements from Vision Zero (visionzeronetwork.org), Safe Routes to School (saferoutesinfo.org) and Strive Not to Drive (strivenottodrive.org)). Improving bicycle infrastructure will increase the effectiveness of education, as multi-faceted efforts are needed to increase bicycle friendliness of Transylvania County.



COMMUNITY FORUMS FOR EDUCATION AND COMMUNICATION

Education for both bicyclists and motorists should include an open forum for interested citizens (both bicyclists and non-bicyclists) to come together and discuss current challenges regarding bicyclist/motorist safety and behavior. Knowledgeable representatives from the local bicycle industry, law enforcement, and concerned citizens could learn about different perspectives from Transylvania

County's roadway users and explore solutions to problems that are identified. During this planning process, it was clear that both motorists and bicyclists care deeply about the safety and well-being of fellow residents and visitors, and that an open forum would help to create a safer environment for both bicyclists and motorist by identifying issues and solutions.

These meetings could take place quarterly or as deemed necessary by participants. This could also be a regular function of the Bicycle and Pedestrian Advisory committee that is recommended in this plan (see pages 49 & 51).

Information such as traffic laws and safe driving and bicycling behavior (see graphic to the left) should be shared at these meetings. Local bicycle industry professionals and law enforcement can help bicyclists and motorists better understand the rules of the road and the needs of all roadway users, increasing safety across the county.

LET'S RIDE & DRIVE SAFELY in Transylvania County!



Produced by
Alta Planning + Design, 2019

OBEDIENCE TRAFFIC SIGNALS & SIGNS

RIDE WITH TRAFFIC

BE BRIGHT AT NIGHT

Motorists & Bicyclists: Be aware of your surroundings. Do not use your phone or headphones while riding or driving.

Motorists & Bicyclists: Watch for turn signals and hand signals, but do not count on them.

Bicyclists: Use the through lane to go straight, not the turn lane.

Bicyclists: Ride in a straight line & avoid weaving.

Bicyclists: When biking on sidewalks, be aware of risks at driveways & intersections.

Bicyclists: Never ride against traffic.

Bicyclists: When necessary, use the entire travel lane. With sharrow markings, ride through the center of the arrows.

LOOK BEFORE ENTERING TRAFFIC & CHANGING LANES

USE HAND SIGNALS

WEAR A HELMET

Bicyclists: A front light & rear red light are required at night in NC. A bright vest can replace a rear light if visible from 300 feet.

Bicyclists: At intersections, use the lane farthest to the right that points where you're going (this keeps you on the right for the next street).

Bicyclists: Watch for cars on your left who might turn right.

Motorists: Yield to bicycles as you would to other vehicles on the roadway.

Motorists: Pass at least two feet away by law in NC, and at least four feet when in a no pass zone.

Use hand signals.

Bicyclists: Watch for people in parked cars. Move outside of the door zone or slow down and pass carefully.

Bicyclists: Be aware. Scan traffic ahead and behind you. Don't use audio devices that limit your hearing.

BICYCLE RIDES AND RACES: CAPITALIZING ON BICYCLE EVENTS

In 2018, there were at least eight bicycle rides and races in Transylvania County. Future race events are excellent opportunities to promote and celebrate bicycling through the communities in which these events cross. The following rides/races were held in 2018 that are within or partially cross through Transylvania County:

- Assault on the Carolinas
- Looking Glass Tour
- Hunter Subaru WNC Flyer
- Etowah Time Trial
- Tour de Cashiers
- White Squirrel Cycling Classic
- Pisgah Monster Cross
- Dirt Diggler

Combined, these events bring thousands of bicyclists and tourists to the county each year, presenting an opportunity for communities and businesses to capture tourism dollars and market local destinations and rural amenities.

“Bikes in Beds”, a 2015 report in Haywood County, NC details bicycle tourists and specifically bicyclists that participate in these types of rides and events. Many cyclists that engage in these types of events:

- Ride on 30-, 50-, or 100-mile single-day or multi-day organized events and may do this with a group, a spouse/partner or friends.
- Seek scenic areas or locations that offer some type of “reward” in terms of scenic beauty or historic value.
- May seek these events in places where they are also planning a vacation.
- Will identify pre-event ride cue sheets from local bike clubs to scout the route.
- Find events that contribute to a charity that matches their values.

Challenges for Event Bicyclists in Western NC include:

- Lack of bike lanes/shoulders
- Lack of signage/wayfinding
- Terrain
- Limited published routes

Event Cyclists’ needs may include:

- Well-organized events
- Convenient access
- Bathrooms and parking
- A safe, dry place to store their bike overnight
- Healthy breakfast at lodging
- Camping near event start
- Scenic vistas or routes
- Cool places to eat and drink
- Maps or cue sheets
- Bike shop for repair or rental

Ways in which communities, partner organizations, and businesses across Transylvania County can expand upon these event-based tourism opportunities include:

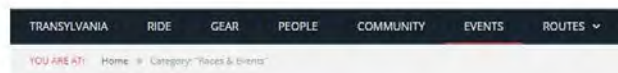
- Create a local/regional brand for promotional purposes.
- Develop an education campaign for hospitality industry, cyclists, and motorists.
- Identify/promote bicycle-friendly businesses.
- Cross-market with other outdoor activities.

Transylvania County is well positioned to grow this market opportunity into the local and regional tourism strategies. Combined with bicycle infrastructure improvements, this is a key way in which communities and businesses across Transylvania County can efficiently move towards a more bicycle friendly region and diversified economy. Furthermore, rides and races have an economic impact through lodging, food and supplies in particular. An economic impact study of these events should be conducted to better understand the extent of this impact.

Further Information:

- Assault on the Carolinas - <https://www.assaultonthecarolinas.com/>
- Looking Glass Tour - <https://www.blueridgeadventures.net/looking-glass-tour/race-7/>
- Hunter Subaru WNC Flyer - <http://wncflyer.com/>
- Lung Buster Time Trial Series - <https://idaph.net/events/lung-buster-time-trial-series/>
- Tour de Cashiers - <https://tourdecashiers.com/>
- White Squirrel Cycling Classic - https://www.blueridgeadventures.net/white_squirrel_cycling_classic/race-8/
- Pisgah Monster Cross - <http://www.pisgahproductions.com/events/pisgah-monster-cross-challenge/>
- Dirt Diggler - <https://www.blueridgeadventures.net/dirt-diggler/race-2/>

BIKE



Bike Transylvania is a publication of the Transylvania Times that hosts a website and publishes a yearly magazine in collaboration with the Transylvania County Tourism Development Authority. Both the website and magazine serve as a comprehensive guide to bicycling in Transylvania County, including as a resource for all rides and races in and near Transylvania County.

MOUNTAIN BIKING INFRASTRUCTURE

While Transylvania County includes over 200 miles of mountain biking trails in Pisgah National Forest, DuPont State Forest, and Gorges State Park, additional opportunities for mountain biking trails and parks should be explored and connected through the county. Transylvania County Parks and Recreation should consider including mountain biking trails in future park development and programming. To allow families to enjoy mountain biking together, beginning routes suitable for children and adults need to be added to complement the intermediate and advanced facilities found in the state and national forests.

Infrastructure specific to mountain biking is generally not considered during roadway/transportation improvement projects. However, bicycle infrastructure projects recommended in this plan will enhance connectivity to mountain biking trails and destinations. Transylvania County has become a world class mountain biking destination, and mountain biking infrastructure connectivity should continue to be a priority.

Representatives of the mountain biking industry that have participated in this process should be included on the Bicycle and Pedestrian Advisory Committee recommended in this plan (see pages 49 & 51).



Above: Highly detailed maps, for purchase, have been produced by the Pisgah Map Company showing all mountain biking trails in Pisgah National Forest Ranger District and DuPont State Forest.



Left: The mission of the Transylvania County Schools Cycling Club for middle and high school students, is "To assist kids in finding a lifelong love of the outdoors through mountain biking, within a supportive community." (Image from the Transylvania County Schools Cycling Club website).

Below and to the left: The Brevard College Cycling Team competes at the highest levels collegiately, winning seven team national championships and nine individual national titles since 2007 (Image from the Bike Transylvania website).

Further information on existing programs and resources, including mountain biking, can be found on pages 12 & 13 in Appendix D.



VOLUNTARY FUNDING PROGRAM

Funding for bicycle infrastructure can come from numerous sources. Appendix B details funding sources across different levels of government as well as private/non-profit sector sources. While some bicycle infrastructure projects in Transylvania County could be implemented as part of NCDOT roadway projects (State Transportation Improvement projects - see page 4 of Appendix B), a 20% local match will be required. Creating a voluntary bicycle infrastructure funding program for bicycle infrastructure can help support projects that require a match, or even fully finance independent bicycle infrastructure projects.

An ideal vehicle for managing a voluntary funding pool would be a local non-profit organization. The Blue Ridge Bicycle Club, who supported the local match required for this planning process, or a similar organization, could serve as the manager of a local voluntary funding pool.

With a robust bicycling and outdoor industry in Transylvania County, a voluntary funding program that is well advertised could be successful in creating seed money for bicycle infrastructure projects.

See Appendix B for further information on potential funding sources.

BICYCLE FACILITIES ON STEEP HILLS

Steep hills and mountain roads are often places where limited shoulder and narrow overall road widths occur for significant distances. Bicyclists climbing these sections of road will be traveling at slower speeds. Even with lower traffic volume levels, cars may have difficulty passing bicyclists, and traffic may begin to accumulate behind a bicyclist. Pisgah Highway/US 276 and Parkway Road/NC 215 are salient examples.

Limited sight lines, narrow roadway widths, and steep grades contribute to this problem. Because of steep drop-offs and geographical constraints, a bicyclist may not have a safe opportunity to pull off to the side of the road and allow cars to pass. With cars sometimes traveling at higher speeds downhill in the opposite direction, opportunities to pass a cyclist (or group of cyclists) can be dangerous.

Bicyclist waiting areas/pull-offs or periodic segments of paved shoulder are a potential solution that could ameliorate this problem. This type of roadway feature could provide temporary refuge along the ascent of steep roads where bicyclists will be able to shift further to the right or pull over altogether, allowing a line of cars to pass. These may be more feasible solutions in places where geographical constraints and/or funding may limit the addition of paved shoulder along the entirety of a steep section of roadway.

FURTHER STUDY NEEDED

NCDOT policy (and lack of Federal policy) currently does not allow for periodic segments of paved shoulder along steep sections of roadway to serve as bicycle or automobile pull-offs. Paved shoulder along the length of a steep roadway is permitted. However, very long sections of steep roadway such as Pisgah Highway and Parkway Road in Transylvania County present particular problems since adding shoulder space along the length of the climb will be very difficult to implement due to geographical constraints and expense. Periodic segments of paved shoulder or pull-off areas could present a solution.

Further study is recommended to develop specific guidance for where and when periodic paved shoulder sections or designated bicycle pull-off areas may be appropriate and safe. Current engineering guidance does not specifically address this particular need and further research is needed before NCDOT may be able to apply such facilities.

Numerous mountainous roadways in Western North Carolina could benefit from such guidance and a detailed study should be conducted.



Long, steep, winding climbs can be problematic for both bicyclists and automobiles wishing to pass slower moving traffic. If limited space is available to pass, this can cause significant traffic congestion for faster vehicles wishing to pass. Photo courtesy of Carmichael Training Systems.

SPEED LIMIT REDUCTION AND TRAFFIC CALMING

Lowering speed limits has enormous safety benefits for all users, including bicyclists, by lowering both the rate and severity of crashes. In addition to a media campaign spreading awareness, enforcement of existing speed limits as well as strategic speed limit reduction and traffic calming measures (the latter typically found on local streets), can save lives.

Speed reduction requests can be submitted by citizens and public agencies to the NCDOT Division 14 Traffic Engineer. See NCDOT Division 14 contact information here - <https://apps.ncdot.gov/dot/directory/authenticated/UnitPage.aspx?id=653>

A PEDESTRIAN HIT BY A VEHICLE TRAVELING AT
25 MPH



HAS AN **89%** CHANCE OF SURVIVAL

A PEDESTRIAN HIT BY A VEHICLE TRAVELING AT
35 MPH



HAS A **68%** CHANCE OF SURVIVAL

A PEDESTRIAN HIT BY A VEHICLE TRAVELING AT
45 MPH



HAS A **35%** CHANCE OF SURVIVAL

Tefft, B. C. *Impact speed and a pedestrian's risk of severe injury or death.* Accident Analysis & Prevention 50 (2013) 871-878.



Without dedicated bicycle infrastructure separated from roadways, speed limits become very important for bicyclists (and motorists) wishing to use the roadway.

POLICY CONSIDERATIONS

The policy considerations presented in the tables on the following pages were developed through the lens of the project vision and goals, specifically, the vision of making Transylvania County a place where: *Transylvania County will have an interconnected network of paved paths, bike lanes, and other bike infrastructure that will provide greater safety, health, connectivity, and alternative transportation routes between communities and destinations in Transylvania County and throughout the region.*

TABLE 4.1

Topics/Strategies	General Recommendations
<p>Support bike accommodations by roadway type</p>	<p>See Chapter 4 of the NCDOT Complete Streets Planning and Design Guidelines for recommendations of bikeway type by roadway type. Consider including these guidelines by reference in local design guidance or requirements.</p> <p>The NACTO Urban Bikeway Design Guide provides additional design details for various on-street bikeway treatments and could be adopted by reference in regional ordinances and/or engineering standards. Many cities have taken this approach.</p> <p>Resources: FHWA Small Town and Rural Multimodal Network Guide: http://ruralsdesignguide.com/ NACTO Urban Bikeway Design Guide http://nacto.org/cities-for-cycling/design-guide/ FHWA Separated Bikelane Planning and Design Guide: https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/separated_bikelane_pdg/page00.cfm</p>
<p>During the future amendments to the subdivision ordinance consider requiring dedication, reservation or development of greenways with new development, redevelopment, and roadway projects for subdivisions with over 10 lots.</p>	<p>Consider requirements for greenway reservation, dedication, or provision in new developments where a greenway or trail is shown on an adopted plan or where a property connects to an existing or proposed greenway. Where greenway construction cannot politically be required, consider offering incentives in the form of reduced fees, cost sharing, density bonuses, or reduction in other open space requirements when adopted greenway alignments are constructed through private development. See the incentives offered by the City of Asheville to promote public policy goals. For example: http://www.ashevilenc.gov/departments/sustainability/resources.htm</p> <p>For additional examples of incentives, see also: https://www.law.ufl.edu/_pdf/academics/centers-clinics/clinics/conservation/resources/incentive_strategies.pdf</p> <p>Ideally, development regulations should require the construction and maintenance of greenways to local standards unless a maintenance agreement is established with a local government.</p> <p>See requirements in Wake Forest, NC UDO, Section 6.8.2 Greenways: “When required by Wake Forest Open Space & Greenways Plan or the Wake Forest Transportation Plan, greenways and multi-use paths shall be provided according to the provisions [that follow in the section cited above].” http://www.wakeforestnc.gov/udo.aspx</p> <p>Good Model: (New Hanover County Zoning Ordinance): The Riverfront Mixed Use District includes the following provision: “Riverfront facilities shall provide multi-modal transportation opportunities, including public boating, walking, bicycling, and public bus or water taxi uses and the facilities necessary for such uses.”</p>
<p>Require new bike lanes, greenways, etc., to connect to existing facilities when located along a priority project identified in Chapter 3.</p>	<p>Connectivity of facilities is critical for walking and biking conditions. New commercial development should be required to connect to or extend existing bicycle and pedestrian facilities.</p> <p>See: Chapters 6 of Wake Forest, NC UDO for recommendations for bikeways and greenways, esp. sections 6.5.3, 6.8.2, 6.9, 6.10. http://www.wakeforestnc.gov/udo.aspx Chapter 7 of the Wilson, NC UDO regarding greenways. http://www.wilsonnc.org/wp-content/uploads/2014/12/CH-7-Parks-Open-Space.pdf</p> <p>Good Model: (New Hanover County Zoning Ordinance): The EDZD Zoning District provides points for new developments that connect to the existing bikeway network and key destinations and provides a good definition of the bikeway network. (Section 54.1-14 and following.)</p>
<p>Adopt traffic calming programs, policies, and standards in areas of the county where the community has identified this as a need</p> <p>Traffic calming on local streets increases safety and comfort for all roadway users, including cyclists. It also increases neighborhood livability.</p>	<p>Traffic calming tools are especially important where bike routes or bike boulevards are proposed on local residential or sub-collector streets.</p> <p>The National Complete Streets Coalition provides good guidelines for traffic calming through their best practices manual: (https://smartgrowthamerica.org/resources/).</p> <p>See also the NACTO Urban Bikeway Design Guide section on Bicycle Boulevards and the FHWA Traffic Calming Primer: https://safety.fhwa.dot.gov/speedmgt/traffic_calm.cfm</p> <p>Consider requiring other traffic calming measures that improve the pedestrian and biking environment such as street trees, narrow street width standards, and T intersections.</p>

Topics/Strategies (continued)	General Recommendations
<p>Adopt bicycle parking requirements for new Parks and open space developments.</p>	<p>Bicycles should receive equal consideration when calculating parking needs with specific calculations provided for determining the amount of bicycle parking provided by district type or land use type. Design and location standards for bicycle parking should be clearly stated to provide for safe and convenient access to destinations. Different standards of bicycle parking are needed for short-term visitors and customers and for longer term users like employees, residents, and students.</p> <p>See City of Wilson UDO, Chapter 9: Parking & Driveways, Section 9.4 and 9.6: http://www.wilsonnc.org/wp-content/uploads/2014/12/CH-9-Parking-Driveways-.pdf</p> <p>Good standards for bicycle parking design can be found through the Association of Pedestrian and Bicycle Professionals' Bicycle Parking Guidelines. (www.apbp.org)</p> <p>Bicycle Parking Model Ordinance, Change Lab Solutions: http://changelabsolutions.org/publications/bike-parking</p>
<p>Consider limiting dead end streets or cul-de-sacs when revising the subdivision ordinance</p> <p>Dead end streets or Cul-de-sacs, while good at limiting motor vehicular traffic in an area, are a severe hindrance to pedestrian and bicycle connectivity and overall neighborhood accessibility, including for emergency access and other services.</p>	<p>Make the maximum length for Cul-de-sacs 250-300 feet to limit the distance that a person would have to travel along a cul-de-sac.</p> <p>For good model language, see City of Wilson, NC UDO, Section 6.4: Connectivity: http://www.wilsonnc.org/wp-content/uploads/2014/12/CH-6-Infrastructure-Standards.pdf</p> <p>Or City of Wake Forest, NC UDO, Section 6.5, Connectivity: http://www.wakeforestnc.gov/udo.aspx</p>
<p>The documents to the right were referenced for this policy and regulatory review.</p>	<p>REFERENCED DOCUMENTS AND RESOURCES:</p> <ul style="list-style-type: none"> • NCDOT Complete Streets Planning and Design Guidelines (July 2012): http://www.completestreetsnc.org/wp-content/themes/CompleteStreets_Custom/pdfs/NCDOT-Complete-Streets-Planning-Design-Guidelines.pdf • NCDOT Traditional Neighborhood Development (TND) Guidelines: https://connect.ncdot.gov/projects/Roadway/RoadwayDesignAdministrativeDocuments/Traditional%20Neighborhood%20Development%20Manual.pdf • City of Wilson, NC UDO: https://www.wilsonnc.org/development-services/unified-development-ordinance/ • Town of Wendell, NC UDO: http://www.townofwendell.com/departments/planning/development/zoning/udo-unified-development-ordinance • City of Wake Forest, NC UDO: http://www.wakeforestnc.gov/udo.aspx • Association of Pedestrian and Bicycle Professionals' Bicycle Parking Guidelines. (www.apbp.org) • Making Neighborhoods More Walkable and Bikeable, ChangeLab Solutions: http://changelabsolutions.org/sites/default/files/MoveThisWay_FINAL-20130905.pdf • Getting the Wheels Rolling: A Guide to Using Policy to Create Bicycle Friendly Communities, ChangeLab Solutions http://changelabsolutions.org/bike-policies <p>....And other documents noted in this column in the preceding tables.</p>

SUPPORTIVE STATE AND FEDERAL POLICIES AND GUIDELINES:

These policies describe how bicycle and pedestrian improvements are to be implemented in North Carolina. For full policies, visit: <https://connect.ncdot.gov/projects/BikePed/Pages/Policies-Guidelines.aspxDevelop>.

- **Complete Streets:** N.C. Department of Transportation policy on when and how planners and designers should design streets and roads to accommodate all users, including accommodations for bicyclists and pedestrians, in transportation projects.
- **Bicycle Policy & Guidelines:** N.C. Department of Transportation policy and guidelines for planning, designing, building, maintaining and operating bicycle facilities and accommodations.
- **Greenway Accommodations Memo:** Approved in 2015, N.C. Department of Transportation guidelines, approaches and cost-sharing recommendations for proposed greenways under bridges.
- **Administrative Action to Include Greenway Plans:** N.C. Department of Transportation administrative guidelines for considering greenways and greenway crossings during the highway planning process to ensure that critical corridors for future greenways are not severed by highway construction.
- **Pedestrian Policy & Guidelines:** N.C. Department of Transportation policy and guidelines for planning, designing, building, maintaining and operating pedestrian facilities and accommodations.
- **Bridge Policy:** N.C. Department of Transportation policy establishing design elements for new and reconstructed bridges on the state's road system, including requirements for sidewalks and bicycle facilities on bridges.
- **Traffic Engineering Policies, Practices and Legal Authority:** N.C. Department of Transportation policies and federal design guidelines for specific pedestrian and bicycle safety accommodations.

A photograph of a cyclist riding away on a paved road that curves through a dense, green forest. The cyclist is wearing a blue helmet and a red top. The road has a double yellow line on the left side. The background is filled with tall trees and lush greenery, creating a sense of a quiet, natural setting.

CHAPTER 4: IMPLEMENTATION

OVERVIEW

This chapter defines a structure and the action steps for managing the implementation of the Transylvania County Bicycle Plan. The award-winning 2025 Comprehensive Plan for Transylvania County identified four focus areas: economic health, environment health, land use and livability, and health, culture, and equity. Arguably, a more bikable Transylvania County helps to address all of these focus areas in terms of economy, environment, livability, and health. One of the specific objectives is: “Promote[s] the health and well-being of its citizens, by providing and actively supporting high-quality and well maintained parks, recreational facilities, programs and services throughout the county.” In addition, the Comprehensive Plan states that in and around Brevard has a large bicycling population with higher than typical rates of bicycle commuting.

Currently, the ordinances in place that guide development, zoning, and land use are the County Subdivision Regulations and the Pisgah Forest Community Zoning Ordinance. The zoning ordinance, however, only exists for a very small area in Pisgah Forest and there is no zoning for the rest of the county. Today, within these ordinances, there are no land use and development regulations that promote bikeable new development, programs, and capital projects. See Appendix E for further detail on comprehensive policy considerations related to complete streets and greenways, bicycle-oriented design, and connectivity.

Implementing the recommendations within this plan will require leadership and dedication to bicycle facility and program development on the part of a variety of agencies and partners. Equally critical, and perhaps more challenging, will be meeting the need for a recurring source of revenue. Success will be realized through collaboration with regional and state agencies, local municipalities, the private sector, and non-profit organizations. Funding resources that may be available are presented in Appendix B of this plan.

KEY STEPS

The following represent key, immediate action steps for Transylvania County and its partners:

ADOPT THE PLAN.

Adoption does not obligate the county financially, but signals an intent to support the vision, goals, and projects of this plan in the coming years and decades.

FORM A COUNTY BICYCLE AND PEDESTRIAN ADVISORY COMMITTEE.

The Transportation Advisory Committee, should serve as the bicycle and pedestrian advisory committee, to assist in plan implementation and evaluation. This will ensure that recommendations for bicycle and pedestrian infrastructure will be consistent, and the potential for conflicting projects and programs will be limited. At a minimum, the Committee should have one position dedicated to a bicycle and pedestrian advocate.

UPDATE COUNTY POLICIES.

Policy recommendations are presented in Table 4.1 in Chapter 3. In their essence, new policies and updated existing policies are low-cost or zero-cost means for the county to influence or enforce bikeable transportation corridors and development. Priority network recommendations should be implemented as part of roadway projects that align with the priority recommendations in Chapter 3.

BEGIN WORK ON PRIORITY PROJECTS.

The implementation of bikeway infrastructure projects will take time and will happen through multiple mechanisms including the NCDOT SPOT process, rails to trails, park and open space development, and incidental improvements that can happen during scheduled roadway reconstruction, resurfacing, or maintenance. Because infrastructure is the high dollar item (and most critical) part of this plan, the county and bicycle advocates should consider setting aside a revenue stream for local match or standalone projects.

ENGAGE NEW PROGRAMS AND RESEARCH.

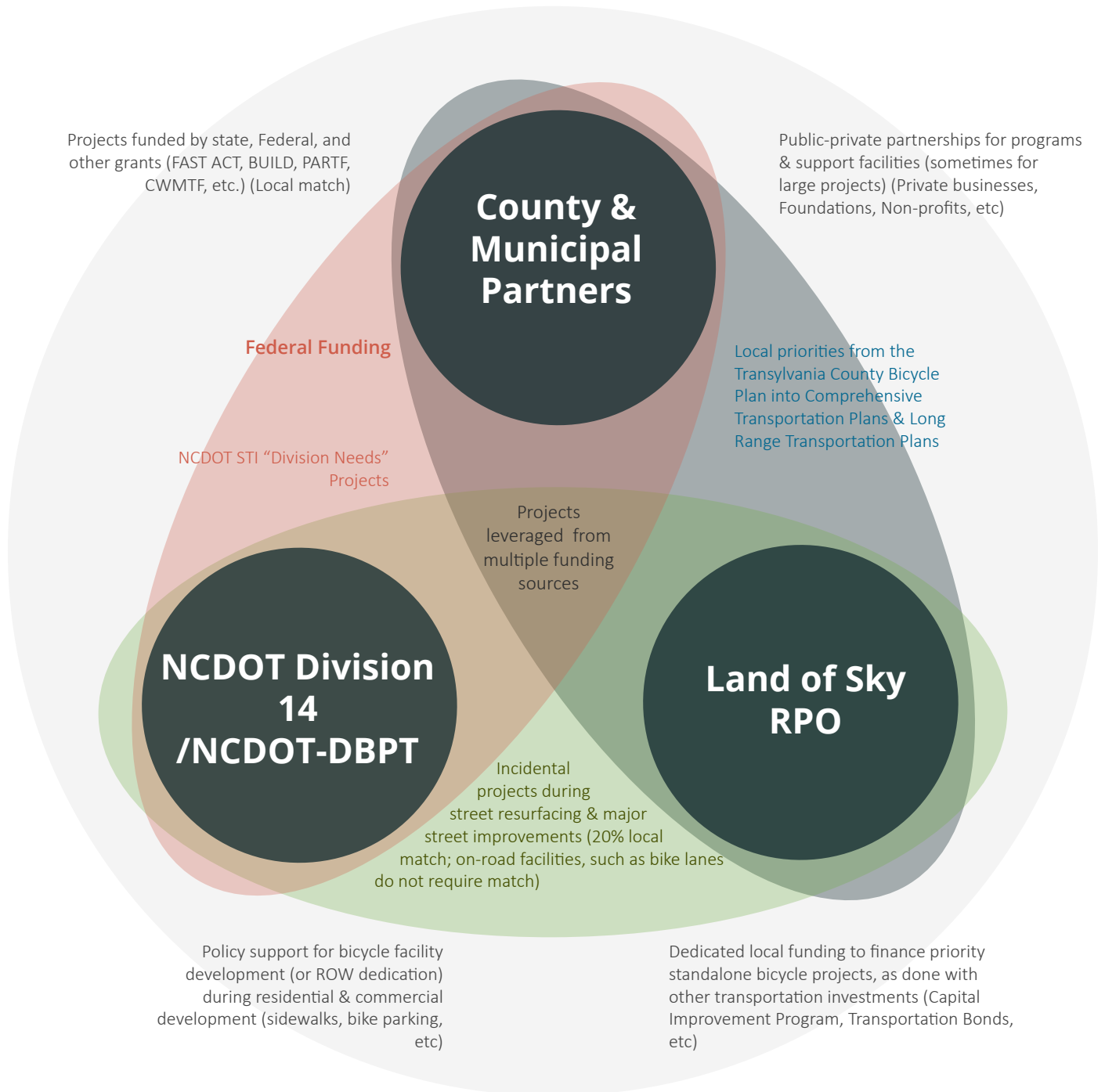
Program recommendations can be found in Chapter 3. The county is already involved in the Watch for Me NC campaign and should begin engaging all program recommendations in 2019, working closely across departments, including Parks and Recreation, Planning, and the Sheriff’s Office. Research bicycle “pull-outs” or respites along bicycle routes, especially where paved shoulder cannot be provided due to topographical or other constraints.

CONTINUE BUILDING COUNTY-MUNICIPAL PARTNERSHIPS.

For Transylvania County to improve bicycle connectivity, coordination will be important with the City of Brevard, Town of Rosman, and others. The City of Brevard, at the time of this study, is pursuing greenway and bikeway development that will feed towards the county. As the region grows and new bike facilities are added, there should be regular coordination in planning and implementation.

PROJECT DEVELOPMENT OPPORTUNITIES FOR IMPLEMENTING THE TRANSYLVANIA COUNTY BICYCLE PLAN

Project development opportunities and key players are summarized in this graphic. To implement the recommendations of this plan will require a comprehensive, well-rounded approach with public and private partnerships.



KEY PARTNERS IN IMPLEMENTATION

ROLE OF THE COUNTY BOARD OF COMMISSIONERS

The County Board should be responsible for understanding and adopting this plan. The Board will ultimately determine the timing of action steps, dedication of resources, and policy updates to implement this plan.

ROLE OF THE CITY/TOWN COUNCILS

Brevard, Rosman, and township leaders should be responsible for understanding and endorsing (or adopting) this plan. Through adoption, the municipalities and townships signal support and cooperation with Transylvania County to assist with plan implementation.

ROLE OF THE TRANSYLVANIA COUNTY PLANNING BOARD

The Planning Board serves as an advisory board to the Board of Commissioners on matters of planning and zoning. The Planning Board should be prepared to:

- Become familiar with the recommendations of this plan, and consider supporting its implementation.
- During subdivision master plan review, ensure required space for priority projects if applicable.
- Consider bicycle infrastructure needs when updating ordinances.
- Learn about bicycle-related policies in North Carolina. (see: <https://connect.ncdot.gov/projects/BikePed/Pages/Policies-Guidelines.aspx>)

ROLE OF THE BICYCLE AND PEDESTRIAN ADVISORY COMMITTEE

The Transportation Advisory Committee will serve as the bicycle and pedestrian advisory committee (recommended in this plan), and should be prepared to:

- Meet with county and municipal staff and evaluate progress of the plan's implementation and offer input regarding bicycle and trail-related issues.
- Assist county staff in applying for grants and organizing bicycle-related events and educational activities (such as programs recommended in Chapter 3).
- Build upon current levels of local support for bicycle issues and advocate for local project funding.

PARKS AND RECREATION COMMISSION

Supporting this plan will assist the commission in implementing the Parks and Recreation Master Plan.

ROLE OF THE LOCAL NCDOT DIVISION 14

Division 14 of the NCDOT is responsible for the construction and maintenance of bicycle facilities on NCDOT-owned and maintained roadways in Transylvania County, or is expected to allow for the municipalities to do so with encroachment agreements. The county and its communities should be proactive and take the lead in communicating with and working with Division 14, but Division 14 should also be prepared to do the following, as they are able:

- Recognize this plan as not only an adopted plan of the county, but also as an approved plan of the NCDOT.
- Become familiar with the bicycle facility recommendations for NCDOT roadways in this plan (Chapter 3); take initiative in incorporating this plan's recommendations into the Division's schedule of improvements whenever possible.
- Become familiar with the design standards listed in Appendix A of this plan; construct and maintain recommended facilities using the highest standards allowed by the State (including the use of innovative treatments on a trial basis).
- Notify county staff of all upcoming roadway reconstruction or resurfacing/restriping projects in Transylvania County, no later than the design phase. Provide sufficient time for comments from county staff, advisory boards, and elected officials.
- If needed, seek guidance and direction from the NCDOT Division of Bicycle and Pedestrian Transportation on issues related to this plan and its implementation.

ROLE OF THE SHERIFF'S OFFICE

Sheriff and police departments are responsible for providing the community the highest quality law enforcement service and protection to ensure the safety of the citizens and visitors. The Sheriff's Office should be prepared to:

- Become experts on bicycle related laws in North Carolina (see: <https://www.ncdot.gov/divisions/bike-ped/Pages/bike-ped-laws.aspx>).
- Continue to enforce not only bicycle- and pedestrian-related laws, but also motorist laws that affect bicycling, such as speeding, running red lights, aggressive driving, etc.
- Participate in bicycle-related education programs.
- Review safety considerations as projects are implemented.

ROLE OF DEVELOPERS

Developers in Transylvania County can play an important role in facility development whenever a project can include the enhancement of transportation facilities or the dedication and development of on-road bicycle facilities, sidewalks, trails or crossing facilities. Developers should be prepared to:

- Become familiar with the benefits, both financial and otherwise, of providing amenities for biking (including trails) in residential and commercial developments.
- Consider voluntary installation of bike infrastructure and/or contribute in-lieu fees as part of the subdivision review and approval process.
- Be prepared to account for bicycle circulation and connectivity in future developments.

ROLE OF LOCAL & REGIONAL STAKEHOLDERS

Stakeholders for bicycle facility development and related programs, such as Transylvania Transportation Advisory Committee, Land of Sky RPO, Brevard College, Friends of the Ecusta Trail, and other local organizations play important roles in the implementation of this plan. Local and regional stakeholders should be prepared to:

- Become familiar with the recommendations of this plan, and communicate & coordinate with the county for implementation, specifically in relation to funding opportunities, such as grant writing and developing local matches for facility construction.
- Land of Sky RPO should work with the Transylvania County on submitting bicycle infrastructure projects for evaluation within the State Transportation Improvement Program (STIP).
- Transylvania County should coordinate with its municipalities on trail development.
- Business owners and organizations should look for opportunities to partner on specific projects, such as trail connectivity, streetscape improvements, or comprehensive signage and wayfinding projects.

ROLE OF LOCAL RESIDENTS, CLUBS AND ADVOCACY GROUPS

Transylvania County has a solid foundation of local businesses and organizations that support bicycling. This groups will also play a key role in the success of this plan. Bicycle advocates should be prepared to engage local residents and groups by:

- Asking for input regarding bicycling issues
- Enlisting volunteers for bicycle-related events and educational activities and/or to participate in such activities.

- Encouraging people to speak at Board meetings and advocate for local bicycle project and program funding.
- Fundraising for project implementation.
- Attend the Transportation Advisory Committee meetings and encourage transportation projects that are multi-modal.

ROLE OF VOLUNTEERS

Services from volunteers, students, and seniors, or donations of material and equipment may be provided in-kind, to offset construction and maintenance costs. Formalized maintenance agreements, such as adopt-a-trail/greenway or adopt-a-highway can be used to provide a regulated service agreement with volunteers.

Other efforts and projects can be coordinated as needed with senior class projects, scout projects, interested organizations, clubs or a neighborhood's community service to provide for many of the program ideas outlined in Chapter 3 of this plan. Advantages of utilizing volunteers include reduced or donated planning and construction costs, community pride and personal connections to the county's trail, bicycle, and pedestrian networks.

PERFORMANCE MEASURES (EVALUATION AND MONITORING)

Transylvania County should establish performance measures to benchmark progress towards fulfilling the recommendations of this plan. Advocates and advisory boards should play a key role in presenting these performance measures in an annual evaluation update. Performance measures could address the following aspects of bicycle transportation and recreation:

- *Safety.* Measures of bicycle-related crashes and injuries.
- *Facilities.* Measures of how many bicycle facilities have been funded and constructed since the plan's adoption.
- *Maintenance.* Measures of existing bicycle facility deficiency or maintenance needs.
- *Counts.* Measures of bicycle traffic at specific locations.
- *Education, Encouragement and Enforcement.* Measures of the number of people who have participated in part of a bicycle-related program since the plan's adoption.
- The League of American Bicyclists website should be consulted for further information on performance measures - <https://bikeleague.org/content/5-es>.

FACILITY DEVELOPMENT METHODS

This section describes different construction methods for the proposed bicycle facilities outlined in Chapter 3. Note that many types of transportation facility construction and maintenance projects can be used to create new bicycle facilities. It is much more cost-effective to provide bicycle facilities during roadway construction and reconstruction projects than to initiate the improvements later as “retrofit” projects.

To take advantage of upcoming opportunities and to incorporate bicycle facilities into routine transportation and utility projects, Transylvania County should keep track of NCDOT’s projects and any other local transportation improvements. While doing this, county staff should be aware of the different procedures for state and local roads.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION (NCDOT) STRATEGIC TRANSPORTATION INVESTMENTS (STI)

The NCDOT’s State Transportation Improvement Program is based on the Strategic Transportation Investments Bill, signed into law in 2013. The Strategic Transportation Investments (STI) Initiative introduces the Strategic Mobility Formula, a way to fund and prioritize transportation projects.

All independent bicycle projects are placed in the “Division Needs” category, and are currently ranked based on 50% data (safety, access, demand, connectivity, and cost effectiveness) and 50% local input. See Appendix B for more information.

RESIDENTIAL AND COMMERCIAL DEVELOPMENT

The construction of bicycle facilities and trails should be considered during structural/commercial development. Construction of facilities that corresponds with site construction is more cost-effective than retrofitting. In commercial development, emphasis should also be focused on safe bicyclist access into, within, and through large parking lots. This ensures the future growth of the bicycle networks and the development of safe communities.

LOCAL ROADWAY CONSTRUCTION OR RECONSTRUCTION

Bicyclists should be accommodated any time a new road is constructed or an existing road is reconstructed that aligns with the priority recommendations in chapter 3. In the longer-

term, all new roads with moderate to heavy motor vehicle traffic should have bicycle facilities and safe intersections. However, sidepaths can be an acceptable solution when a road has few driveways and high-speed, high-volume traffic.

REPAVING

If right of way allows, repaving projects provide a clean slate for revising pavement markings. When a road is repaved, the roadway should be restriped to create narrower lanes and provide space for bike lanes and shoulders, where feasible. In addition, if the spaces on the sides of non-curb and gutter streets have relatively level grades and few obstructions, the total pavement width can be widened to include paved shoulders.

While many roadways in Transylvania County are narrow with little right of way space, this is important to note for roads such as US 64 where the right of way is very wide.

NCDOT provides three-year plans that include resurfacing schedules. Please see the following website - <https://connect.ncdot.gov/resources/Asset-Management/HMIP-Plans/Pages/HMIP.aspx>.

BRIDGE CONSTRUCTION OR REPLACEMENT

Provisions should always be made to include a bicycling facility as a part of vehicular bridges. All new or replacement bridges should accommodate two-way travel for all users. Even though bridge construction and replacement does not occur regularly, it is important to consider these policies for long-term bicycle planning.

EASEMENTS

The county does not own water and sewer infrastructure but should consider encouraging utility companies to allow public use of their easements. Sewer easements are very commonly used for this purpose, offering cleared and graded corridors that easily accommodate trails. This approach avoids the difficulties associated with acquiring land, and it better utilizes the county’s resources.

Transylvania County Bicycle Plan

Prepared for Transylvania County & NCDOT
Prepared by Alta Planning + Design

2019



Transylvania County

B I C Y C L E P L A N
A P P E N D I X

DESIGN RESOURCES
Appendix A

FUNDING RESOURCES
Appendix B

PUBLIC INPUT
Appendix C

EXISTING CONDITIONS
Appendix D

RECOMMENDATIONS
Appendix E



APPENDIX A: DESIGN RESOURCES

DESIGN GUIDELINE RESOURCES

Planners and project designers should refer to these standards and guidelines in developing the infrastructure projects recommended by this plan. The following resources are from the NCDOT website, for “Bicycle & Pedestrian Project Development & Design Guidance”, located here:

<https://connect.ncdot.gov/projects/BikePed/Pages/Guidance.aspx>

All resources listed below are linked through the web page listed above, retrieved in November 2018.

NATIONAL GUIDELINES

American Association of State Highway and Transportation Officials (AASHTO):

- Guide for the Development of Bicycle Facilities
- Guide for the Planning, Design, and Operation of Pedestrian Facilities

The Federal Highway Administration (FHWA):

- Accessibility Guidance
- Design Guidance
- Facility Design
- Facility Operations

Manual on Uniform Traffic Control Devices (MUTCD):

- 2009 NC Supplement to MUTCD
- Part 4E: Pedestrian Control Features
- Part 7: Traffic Controls for School Areas
- Part 9: Traffic Controls for Bicycle Facilities

National Association of City Transportation Officials (NACTO):

- Urban Bikeway Design Guide
- Urban Street Design Guide

Safe Routes to School (SRTS) Non-Infrastructure:

- National Center for Safe Routes to School
- National Partnership for Safe Routes to School

US Access board:

- ABA Accessibility Standards
- ADA Accessibility Guidelines
- ADA Accessibility Standards
- Public Rights-of-Way, Streets & Sidewalks, and Shared Use Paths

NORTH CAROLINA GUIDELINES

North Carolina Department of Transportation (NCDOT):

- WalkBikeNC: The Statewide Pedestrian and Bicycle Plan
- Glossary of North Carolina Terminology for Active Transportation
- NCDOT Complete Streets, including the Complete Streets Planning and Design Guidelines
- Evaluating Temporary Accommodations for Pedestrians
- NC Local Programs Handbook
- Traditional Neighborhood Development Guidelines

Greenway Construction Standards:

- Greenway Standards Summary Memo
- Design Issues Summary
- Greenway Design Guidelines Value Engineering Report
- Summary of Recommendations
- Minimum Pavement Design Recommendations for Greenways
- Steps to Construct a Greenway or Shared-Use Trail

Route Signing & Mapping

- Bike Maps and Routes
- Share the Road Initiative
- How to Select Routes
- NCDOT Bicycle Route Signing & Mapping Program

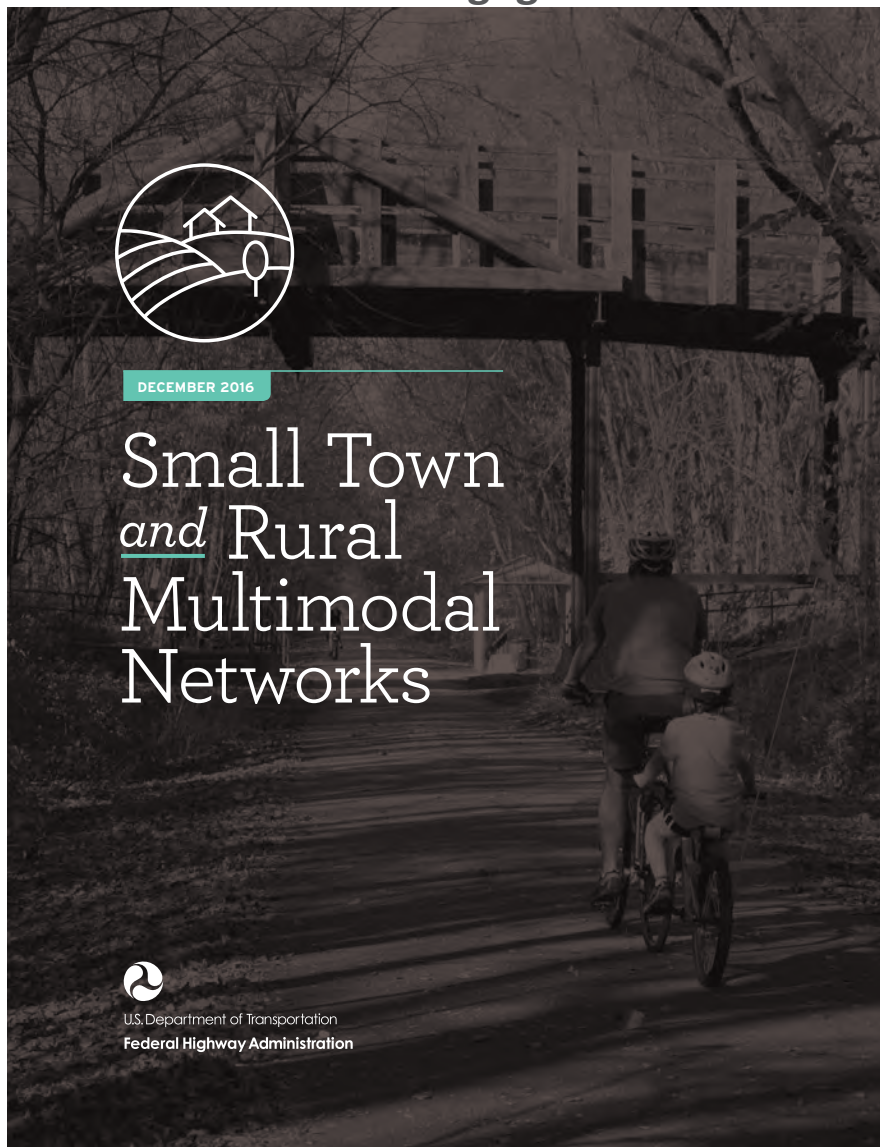
Additional FHWA resources not currently linked through the main NCDOT link above:

- Achieving Multimodal Networks (2016)
https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/multimodal_networks/
- Separated Bike Lane Planning and Design Guide (2015)
https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/separated_bikelane_pdg/page00.cfm
- Incorporating On-Road Bicycle Networks into Resurfacing Projects (2016)
https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/resurfacing/
- Small Town and Rural Multimodal Networks Design Guide (2017)
<http://ruraldesignguide.com/>

SMALL TOWN AND RURAL MULTIMODAL NETWORKS DESIGN GUIDE

The Small Town and Rural Multimodal Networks guide is a design resource and idea book to help small towns and rural communities support safe, accessible, comfortable, and active travel for people of all ages and abilities. In general, design guidelines for bicycling have been geared towards the urban context. The Small Town and Rural Multimodal Networks design guide is a recent publication by the FHWA that builds upon past design guidance, but is tailored to the rural context. Highlights from the guide are included below and on the following page. Several examples pulled from the priority network are shown on the following pages, referencing design considerations from the Small Town and Rural Multimodal Networks guide.

www.ruraldesignguide.com



The guide is intended to:

- Provide a bridge between existing guidance on bicycle and pedestrian design and rural practice.
- Encourage innovation in the development of safe and appealing networks for bicycling and walking in small towns and rural areas.
- Provide examples of peer communities and project implementation that is appropriate for rural communities.

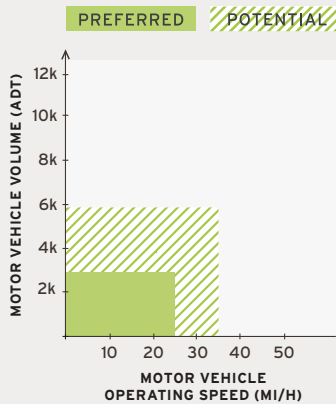
For more information on facility design, please see the Small Town and Rural Multimodal Networks Design Guide (www.ruraldesignguide.com) as well as a list of design resources in the previous page (A-1).

HOW TO USE THE SMALL TOWN AND RURAL MULTIMODAL NETWORKS DESIGN GUIDE

EXAMPLE APPLICATION

Speed and Volume

Most appropriate on streets with low to moderate volumes and moderate speed motor vehicles.⁽¹⁾



A Speed and Volume

Where is the facility type most appropriate, based on typical speed and volume of motor vehicles?

A Speed and Volume

Motor vehicle operating speeds and the volumes on a roadway are key considerations in selecting the most appropriate bicycle and pedestrian facilities along a particular roadway. Generally speaking, the greater the speed and volume of motor vehicle traffic, the greater the amount of separation is desired for comfortable biking and walking facilities. Where streets have low volumes and low speeds, the need for separation is less critical, and mixing modes may be appropriate.

The speed and volume chart summarizes how speed and volume affect possible facility options.

Network

Applies to constrained connections between built-up areas.



B Network

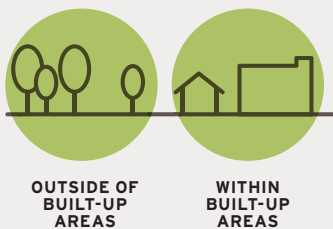
On which part of a roadway network is the facility type likely to be applicable?

B Network

The collection of roadways and multimodal facilities in a community creates a network. Networks are interconnected pedestrian and/or bicycle transportation facilities that allow people of all ages and abilities to safely and conveniently get to where they want to go. The network not only connects to destinations within a community, but also creates connections between communities and to external destinations. There are varying levels of comfort associated with roadways within the network, ranging from low-volume, low-speed local streets to high-speed, high volume arterial roadways. Successful networks also provide equitable access regardless of income level.

Land Use

For use outside, between and within built-up areas with bicycle and pedestrian demand and limited available paved roadway surface.



C Land Use

Is this facility type most appropriate in built up developed rural areas, or less-developed basic rural areas?

C Land Use

Land use describes the manner and intensity in which land is developed or modified from its natural state. Built-up areas, such as commercial districts in a small town, contain a higher density of attractions, destinations, and people, and may support a greater diversity of bicycle and pedestrian amenities. Outside of built-up areas, the land use patterns are much less dense, with more space between destinations.

See Chapter 1 of the Small Town and Rural Multimodal Networks design guide for further information - www.ruralsdesignguide.com

PROJECT EXAMPLE: BREVARD TO AVERY CREEK ROAD CIRCULATION

Avery Creek Road is a popular connection point to Pisgah National Forest Trails and is a little over a mile from the northern terminus of the Brevard Greenway (Art Loeb Trailhead) at the Davidson River Campground. Furthermore, the Pisgah Ranger Station/Visitor Center is along the north side of US 276 across from the Davidson River Campground. Two complementary bicycle infrastructure connections are proposed for this section to improve bicycle connectivity and circulation:

DAVIDSON RIVER CAMPGROUND DR SECTION:

- » From the Brevard Greenway (just before the Art Loeb Trailhead), construct a short greenway connection to Schenck Drive. Implement shared lane markings and signage along Schenck Drive and Davidson River Campground Dr to the northwestern edge of Davidson River Campground - from here, it is a short distance across the Davidson River to the entrance of Avery Creek Road entrance off US 276. Construct a short bike/ped bridge across the Davidson River at this location.
- » This option provides a true 'all ages and abilities' connection by keeping bicyclists away from the US 276/Pisgah Hwy corridor and utilizing a combination of greenway and very low speed/low traffic volume roads through the campground and Schenck Rd.

DISTANCE = 1.3 MILES

US 276 SECTION:

- » Construct buffered bike lanes along US 276/Pisgah Hwy from the US 276/NC 280/US 64 intersection project footprint (STI: R-5799 - currently in development, to include bike lanes to the western edge of the project footprint) - this is also the location of the future Davidson River bike/ped bridge connection (STI: EB-5858).
- » Lower the speed limit from 50 mph to 35 mph.
- » Key challenges with this section of US 276/Pisgah Hwy are the geographical constraints - space is limited by the Davidson River along the southern edge of the roadway and steep slopes along sections of the northern edge of the roadway.

DISTANCE = 1.4 MILES

CONNECTION OPPORTUNITIES

- » Pisgah National Forest Ranger Station and Visitor Center
- » Multiple Pisgah National Forest Trails
- » Brevard Greenway and Art Loeb Trailhead (This section also referred to as the Estatoe Trail)
- » Businesses at the US 64/US 276/ NC 280 intersection
- » Davidson River Campground
- » Schenck Job Corps Civilian Conservation Center
- » Sycamore Flats Recreational Area
- » NC 8 - Southern Highlands Bike Route
- » Ride Transylvania County Bike Route #6 (Tour de Transylvania) and #7 (Looking Glass Rock Loop)

PREVIOUS PLANS

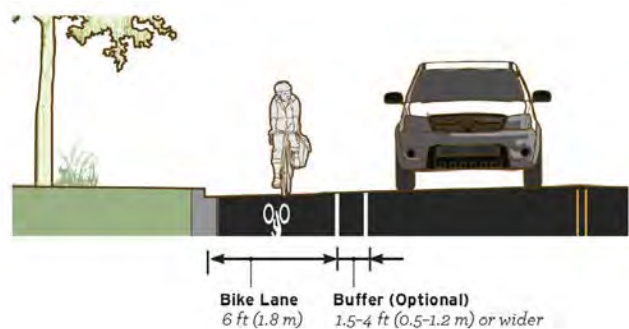
- » Transylvania County CTP (2012)
- » Walk/Bike NC (2013)
- » Ride Transylvania County Bike Routes Map (2017)
- » Blue Ridge Bicycle Plan (2013)

See the *Small Town and Rural Multimodal Network Design Guide* and *National Association of City Transportation Officials (NACTO)* for further detail regarding design best practices and options:

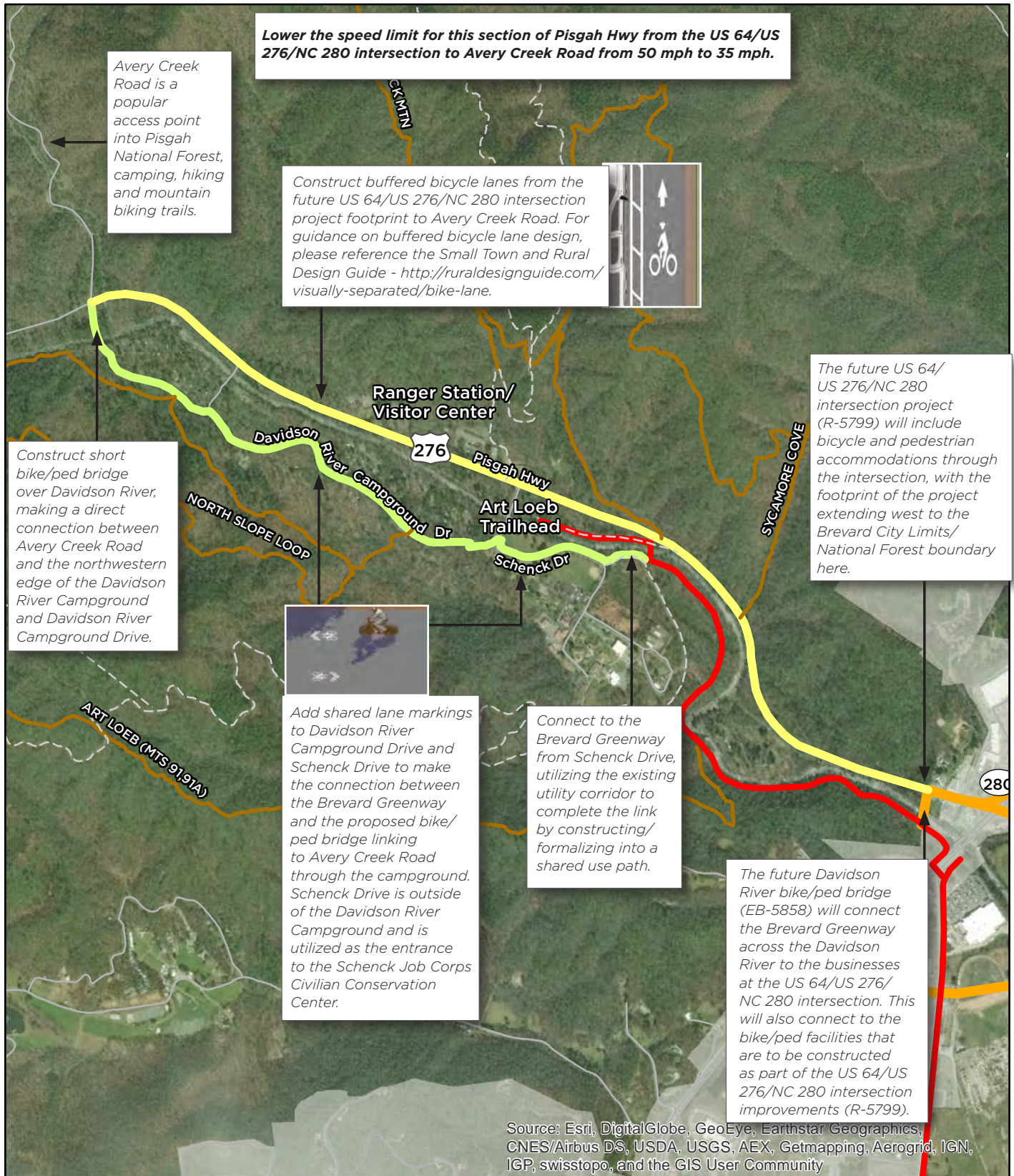
Bike Lanes - <http://ruralsdesignguide.com/visually-separated/bike-lane>

Shared Lane Markings - <https://nacto.org/publication/urban-bikeway-design-guide/bikeway-signing-marking/shared-lane-markings/>

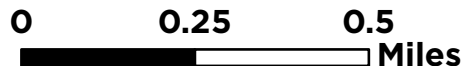
Shared Use Paths - <http://ruralsdesignguide.com/physically-separated/shared-use-path>



Bike lane with buffer example from the Small Town and Rural Multimodal Network Design Guide. Ideally, the proposed bike lanes along US 276 would be designed with additional buffer space.



- US 276 Section
- Davidson River Campground Section
- Hiking/Mt Biking Trails
- Brevard Greenway
- In Development



PROJECT EXAMPLE: ECUSTA RAIL TRAIL

The proposed Ecusta Rail Trail was the most often cited improvement needed for bicycling in Transylvania County during this planning process. Completely separated from roadways, this project would utilize the old Ecusta railroad corridor. It provides a relatively flat, direct connection from the Brevard Greenway through northeastern Transylvania County, Little River, and eventually Hendersonville. US 64, Old Hendersonville Hwy, Crab Creek Road, and Everett Road, which carry high traffic volumes and speeds, provide a low level of comfort for the average bicyclist and are currently the only bicycling alternatives through this part of the county.

ECUSTA RAIL TRAIL:

- » The City of Hendersonville, North Carolina initiated the Ecusta Rail Trail Planning Study and Economic Impact Analysis (2012) to determine the feasibility of converting an existing inactive rail corridor into a paved shared-use trail for the purposes of providing alternative transportation, recreation, and economic development. This railroad corridor would connect Brevard to Hendersonville (approximately 20 miles). This study recommends utilizing the railbanking process for acquiring the railroad corridor from Watco Transportation Services and a phasing plan for implementation.
- » Residents owning property along the Ecusta corridor expressed concern over the interaction between their property and the proposed trail. For the Ecusta Rail Trail to be successful, design of the rail trail will need to incorporate adjacent landowners requests during the design phase, and build upon recommendations from the Ecusta Rail Trail Planning Study & Economic Impact Analysis that highlight specific locations for vegetative screening along residential development.

» Friends of the Ecusta Trail is a 501(c)3 non-profit created for the purpose of completing the Ecusta Trail. The organization has helped to raise funding and research feasibility. They have received resolutions, endorsements, and statements of support from the following entities:

- » Carolina Mountain Land Conservancy
- » Brevard/Transylvania County Chamber of Commerce
- » Cradle of Forestry in America Interpretive Association
- » City of Brevard
- » City of Hendersonville
- » City of Fletcher
- » Village of Flat Rock
- » Town of Laurel Park
- » Henderson County Commissioners
- » Henderson County Chamber of Commerce
- » Henderson County Tourism Development Authority
- » Hendersonville Family YMCA
- » League of Women Voters of Henderson County
- » NC-Rail Trails
- » Transylvania County Tourism Development Authority
- » Resolution by City of Hendersonville to Add the Ecusta Trail to the Metropolitan Transportation Plan

DISTANCE: 20 MILES TO HENDERSONVILLE, 8 MILES TOTAL WITHIN TRANSYLVANIA COUNTY



Rail trail example from the Ecusta Rail Trail Planning Study and Economic Impact Analysis (2012) - Appendix D of study completed in 2012 includes further design guidance. Additional guidance on shared use paths can also be found at <http://ruralsdesignguide.com/physically-separated/shared-use-path>.

Phasing map example from the Ecusta Rail Trail Planning Study & Economic Impact Analysis.

The Ecusta Rail Trail Planning Study & Economic Impact Analysis recommends trailhead locations, scenic overlooks, vegetative screening along residential developments, and connectivity to specific destinations along the corridor. A phasing plan is detailed in the document as well. The study and its recommendations can be accessed through the City of Hendersonville website here - <https://www.hendersonvilenc.gov/ecusta-rail-trail-planning-study-economic-impact-analysis>.

The Ecusta Rail Trail was identified as a priority in Henderson County's Greenway Master Plan (2018)

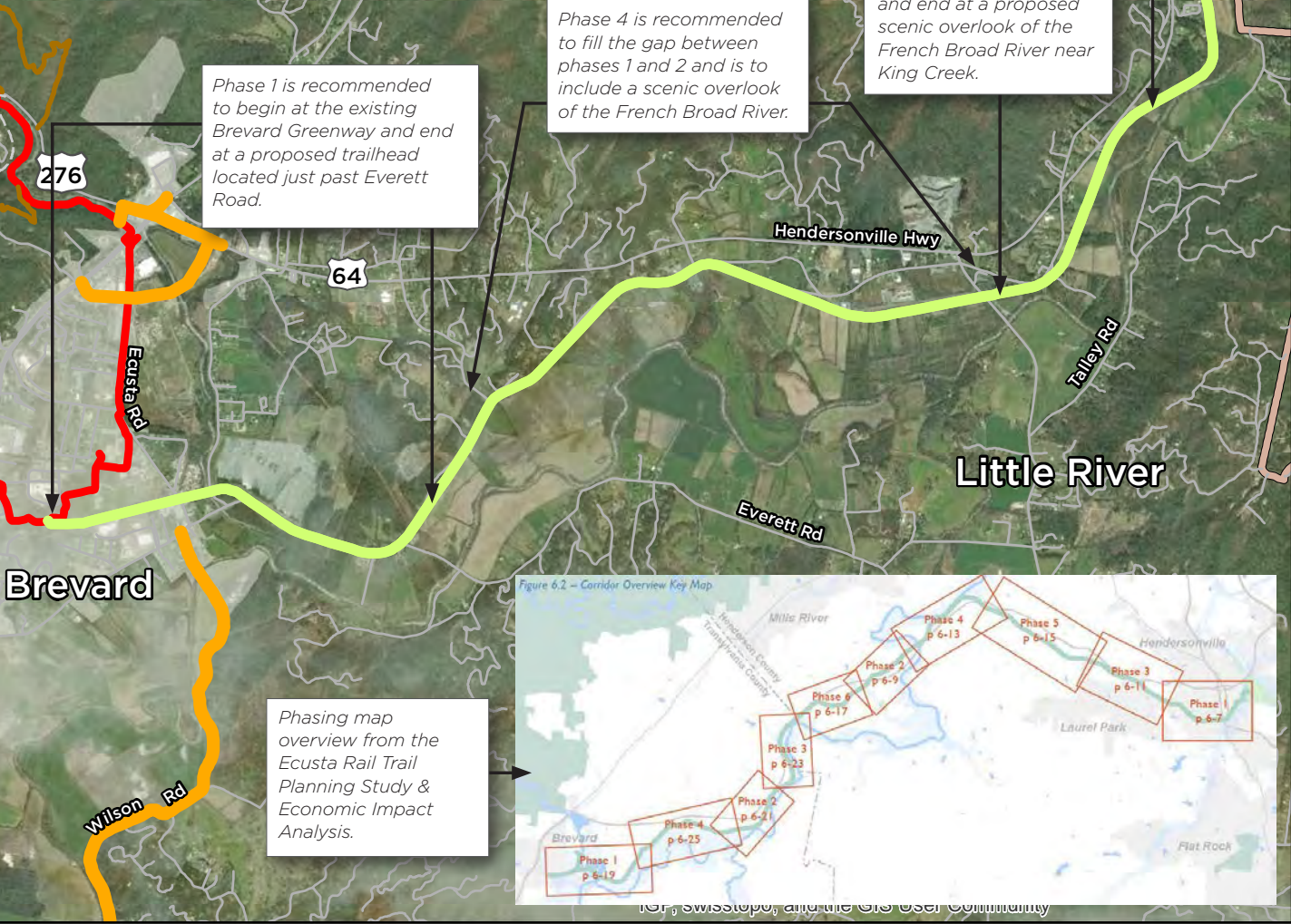


Phase 3 is recommended to begin at the eastern terminus of Phase 2 and end at the Henderson County line.

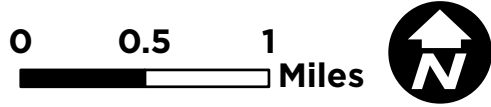
Phase 2 is recommended to begin at a proposed trailhead at the Crab Creek Road intersection and end at a proposed scenic overlook of the French Broad River near King Creek.

Phase 4 is recommended to fill the gap between phases 1 and 2 and is to include a scenic overlook of the French Broad River.

Phase 1 is recommended to begin at the existing Brevard Greenway and end at a proposed trailhead located just past Everett Road.



- Proposed Ecusta Rail Trail
- Brevard Greenway
- Hiking/Mt Biking Trails
- In Development



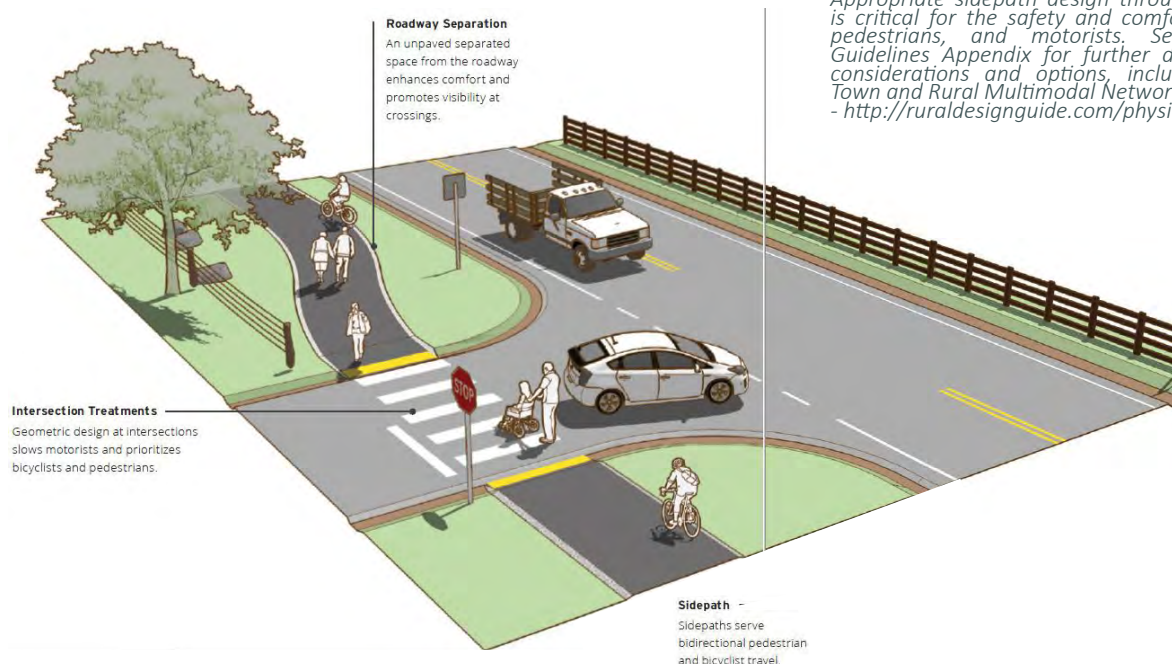
PROJECT EXAMPLE: BREVARD TO ROSMAN SIDEPATH/GREENWAY

This project sheet details considerations for the proposed sidepath/greenway between Brevard and Rosman. This would provide a link between the two largest population centers in Transylvania County, and serve as an essential passageway to the southwestern portion of Transylvania County, including Gorges State Park and the Lake Toxaway community. This corridor is also identified as a designated growth area in the Transylvania County Comprehensive Plan.

BREVARD TO ROSMAN SIDEPATH/GREENWAY

- » From the developing Brevard greenway system, this option would utilize the US 64 corridor to construct a sidepath within the existing ROW. Due to high traffic volumes and speed limits, physical separation from automobile traffic is needed. This option could be completed with future improvements to the US 64 corridor or as a standalone project.
- » This project could be built in phases based on opportunities that may arise with future roadway work along the US 64 corridor. Presently, the predominant roadway characteristics change in certain locations along the corridor (see map to the right).
- » Catheys Creek and the bridge just south of Cashiers Valley Road are two locations where substantial bridge structures may be needed if existing bridge space cannot be reconfigured to include space for a sidepath.

DISTANCE = 8 MILES

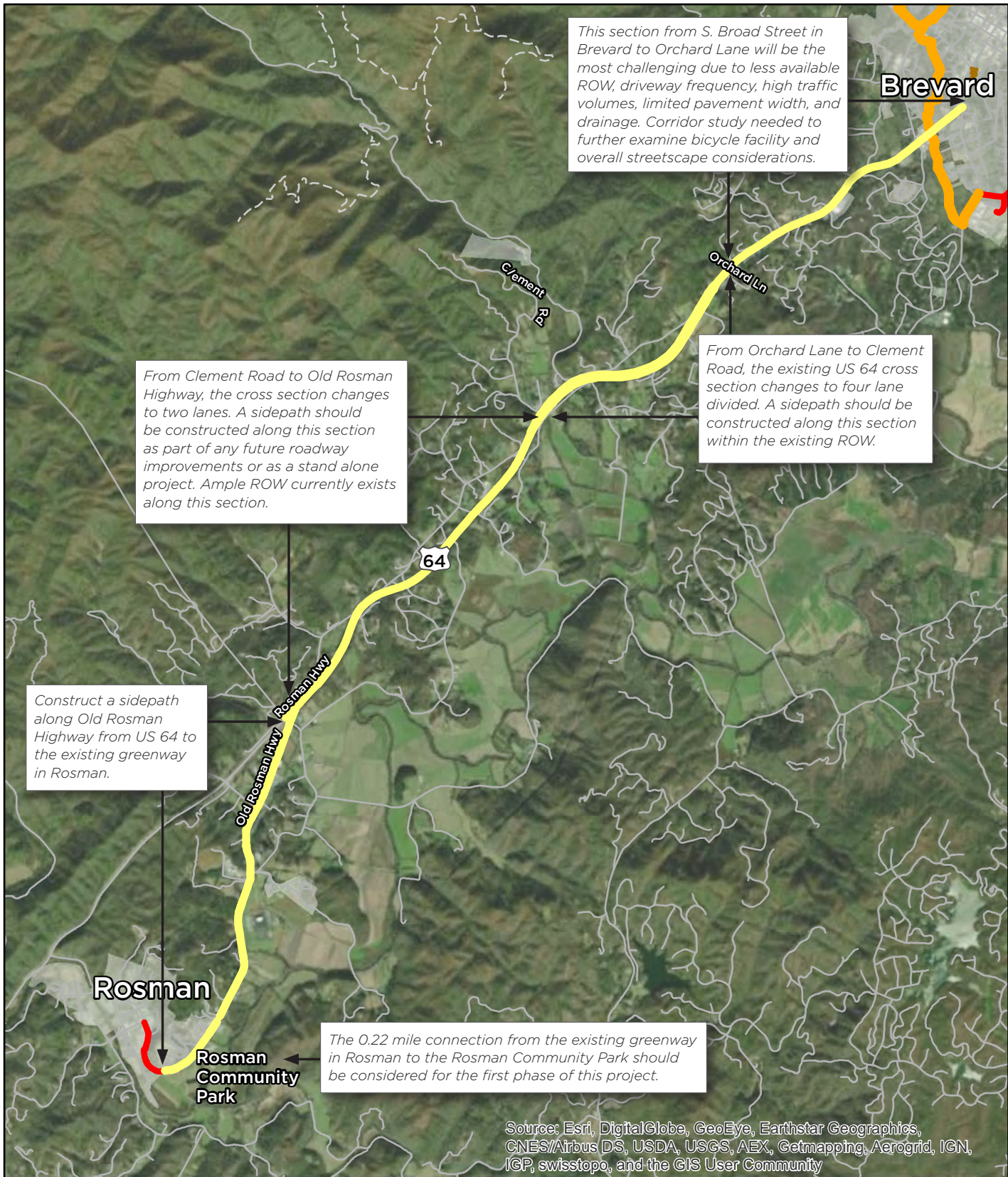


CONNECTION OPPORTUNITIES

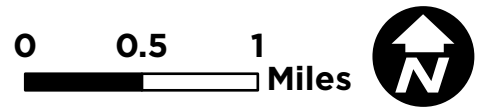
- » City of Brevard and developing greenway network
- » Downtown Rosman
- » Rosman Community Park
- » Existing Rosman Greenway
- » Multiple businesses along the corridor
- » Multiple residences along the corridor
- » Rosman and Brevard schools
- » Ride Transylvania County Bike Route #6 (Tour de Transylvania)

PREVIOUS PLANS

- » Transylvania County CTP (2012)
- » Ride Transylvania County Bike Routes Map (2017)
- » Corridor identified as a Designated Growth Area in Transylvania County's Comprehensive Plan
- » Under consideration in SPOT 5.0
- » Blue Ridge Bicycle Plan (2013)



- Brevard to Rosman Sidepath
- Existing Greenway
- In Development



PROJECT EXAMPLE: BREVARD TO MILLS RIVER - NC 280 TRAIL

NC 280 serves as a direct commercial link from Brevard through the northern/northeastern end of Transylvania County, connecting directly to Mills River, and eventually Asheville. This project would consist of a shared use path along or near the NC 280 corridor as identified in the 2014 Mills River NC 280 Corridor Study. This corridor provides the flattest connection through the valley, also serving as a gateway into Transylvania County and Pisgah National Forest from the north. The southern terminus of this project could connect into the future NC 280/US 64/US 276 intersection improvements and Davidson River bike/ped bridge that will also connect to the Brevard Greenway and Pisgah National Forest.

DISTANCE: 15 MILES TO MILLS RIVER, 5.4 MILES TO THE HENDERSON COUNTY LINE

CONNECTION OPPORTUNITIES

- » Brevard Greenway
- » Pisgah National Forest
- » City of Brevard
- » Town of Mills River
- » NC 8 - Southern Highlands Bike Route
- » Ride Transylvania County Bike Route #6 (Tour de Transylvania) and #7 (Looking Glass Rock Loop)
- » Multiple businesses along corridor
- » Multiple residences along corridor

PREVIOUS PLANS

- » NC 280 Corridor Bikeway Study (2014)
- » Resolution #05-2017 In Support of Next Steps to Determine Feasibility of NC 280 Multi-Use Path from Mills River to Brevard
- » Transylvania County CTP (2012)
- » Under consideration in SPOT 5.0
- » Blue Ridge Bicycle Plan (2013)

Appropriate sidepath design through intersections is critical for the safety and comfort of bicyclists, pedestrians, and motorists. See the Design Guidelines Appendix for further detail on design considerations and options, including the Small Town and Rural Multimodal Networks design guides - <http://ruraldesignguide.com/physically-separated>.

Photo visualization of the proposed project from the NC 280 Corridor Bikeway Study (2014)





Connect to Mills River.

The future US 64/US 276/ NC 280 intersection project (R-5799) will include bicycle and pedestrian accommodations through the intersection. The southern terminus of this project should connect into these future facilities here. In combination with the future Davidson River bike/ped bridge (EB-5858), this project would connect to the Brevard Greenway across Davidson River.

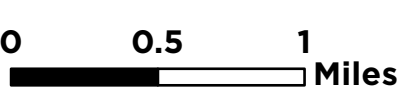
Most of this project could likely be constructed within the existing ROW. The ROW in this section just north of the US 64/US 276/ NC 280 intersection is constrained and needs further study regarding optimal alignment.

Mills River & Transylvania County

Public Preference for Shared Use path
 Alternative in NC 280 Right-of-Way: At the project design workshop, the public and stakeholders were presented with a number of bikeway alternatives for NC 280 including: roadway shoulders, bike lanes, and physically separated bikeways and greenways. The overwhelming response from the workshop attendees was a preference for a separated shared-use path adjacent to the roadway. An example of a shared-use path adjacent to the roadway is shown on this page.

Image above from page 20 of the NC 280 Corridor Bikeway Study (2014)

- NC 280 Sidepath
- Brevard Greenway
- Hiking/Mt Biking Trails
- In Development



PLANNING LEVEL COST ESTIMATES FOR PROJECTS IN TRANSYLVANIA COUNTY

To develop planning level cost estimates for bicycle and pedestrian infrastructure projects, NCDOT has developed a cost estimator tool to provide a starting point for local practitioners, with help as needed from local engineering and NCDOT Division staff. The bicycle/pedestrian cost estimator tool can be accessed here - <https://connect.ncdot.gov/projects/BikePed/Pages/Guidance.aspx>. Inputs for the cost estimator tool are tailored to different infrastructure types including sidewalks, bike lanes, shared use paths, midblock crosswalks, paved shoulder, intersection treatments, bike/ped bridges, and shared lane markings.

Below is a list of bike/ped projects in Transylvania County that have been assigned a planning level cost estimate using the bicycle/pedestrian cost estimator tool, and were submitted for consideration in STI process (SPOT 5.0.).

A map of all bike/ped projects (as well as highway projects) that have been considered in SPOT 5.0 for Transylvania County (and all of North Carolina) can be accessed here - <http://ncdot.maps.arcgis.com/home/webmap/viewer>. Further information on the costs associated with bike/ped projects (and highway projects) in Transylvania County can be found through the Land of Sky RPO website at <http://www.landofsky.org/rpo.html> or contacting the Land of Sky RPO.

Costs for bicycle infrastructure vary greatly county to county and site to site. Cost information should be used only for estimating purposes and not necessarily for determining actual bid prices for a specific infrastructure project.

Aside from the Davidson River Bike/Ped Bridge (previously funded and scheduled for construction in 2022) and the Brevard greenway projects (City of Brevard is committed to completing priority greenways by 2021), no funding has been dedicated to these projects at this time.

TABLE A1 - Bike/Ped projects that have previously been assigned a planning level cost estimate and submitted for consideration through the STI process.

<i>Proposed Project</i>	<i>Cost Estimate</i>	<i>Distance (Miles)</i>
Brevard to Rosman Sidepath/Greenway	\$7,126,000	7.73
Brevard College Greenway	\$753,000	0.96
Brevard Greenway (McLean Rd to Main St)	\$585,000	0.65
Brevard Greenway (Main St to Mills Ave)	\$285,000	0.24
Brevard Greenway (Hillview St to Probart St)	\$525,000	0.56
Brevard High School Greenway	\$930,000	1.18
Rosman Main St Connector	\$182,000	0.19
Rosman Community Park Connector	\$275,000	0.24
Davidson River Bike/Ped Bridge	\$600,000	n/a

*Separate from the STI process, the Ecusta Rail Trail Planning Study & Economic Impact Analysis includes a detailed cost estimate (in 2012 dollars) for the entire length of the proposed Ecusta Rail Trail. This cost estimate can be accessed here - <https://www.hendersonvillenc.gov/ecusta-rail-trail-planning-study-economic-impact-analysis>.

Proposed Ecusta Rail Trail	*Planning Level Cost Estimate - \$13,500,000 (2012 Dollars)	19 miles
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Highway projects, such as the Wilson Road improvement project, that are developed primarily for the purpose of improving motorist safety, roadway maintenance, and emergency support can also serve bicyclists as an auxiliary function. 4' paved shoulders included in the design, while primarily serving as a safety improvement for motorists, can improve safety for bicyclists along Wilson Road by providing additional pavement space outside of the travel lanes.

Multiple roadway projects in Transylvania County have been proposed and/or funded through the STI process. The table below provides a summary of projects that may also include improvements that benefit bicyclists. See the previous page for further information on these projects that can be found through the NCDOT and/or Land of Sky RPO websites.

TABLE A2 - Highway projects (with potential benefit to bicyclists) that have previously been assigned a planning level cost estimate and submitted for consideration through the STI process.

<i>Proposed Project</i>	<i>Description</i>	<i>Cost Estimate</i>	<i>Status</i>
Davidson River Village Connector (US 64 to US 276/US 64)	New roadway construction (bike lanes to be constructed as part of this project).	\$10,700,000	Under construction
Wilson Road (Old US 64 to US 276)	Upgrade Roadway. Proposed Typical Is 22' Paved Roadway with 4' Paved Shoulders.	\$32,000,000	Scheduled construction year - 2021
US 64/US 276/NC 280 intersection	Dual roundabout construction with bike/ped improvements	\$13,600,000	Scheduled construction year - 2021
N. Broad Street (Caldwell St to Fortune Cove Rd)	Access management improvements. Project design includes bike lanes and wide sidewalks (sidepaths).	\$16,450,000	Scheduled construction year - 2024
Neely Rd/Parkview Dr/ Chestnut St	Modernize roadway, improve intersections, include curb and gutter, bike lanes and sidewalk.	\$24,947,000	Unfunded
Ecusta Road (Old US 64 to US 64)	Upgrade Roadway; install curb and Gutter, Build to complete streets standards.	\$11,510,000	Unfunded
North Country Club Rd (US 64 to Barclay Rd)	Upgrade Roadway to NCDOT standards, include curb and gutter, bike and pedestrian accommodations.	\$24,197,000	Unfunded
US 64/Rosman Hwy (Clement Rd to Park n Ride lot appx 800 feet past US 178)	Widen existing roadway to 4 lane divided. Consider addition of shared use path within right of way.	\$36,000,000	Unfunded
Everett Road (Old US 64 to Crab Creek Rd)	Upgrade Roadway. Proposed Typical Is 22' Paved Roadway with 4' Paved Shoulders.	\$25,033,00	Unfunded

A person wearing a blue shirt and a green helmet is riding a red bicycle on a gravel path. The path is surrounded by dense green trees and foliage. The scene is captured from a low angle, looking down the path. The overall tone is natural and serene.

APPENDIX B: FUNDING RESOURCES

OVERVIEW

When considering possible funding sources for bicycle projects, it is important to remember that not all construction activities or programs will be accomplished with a single funding source. It will be necessary to consider several sources of funding that together will support full project completion. Funding sources can be used for a variety of activities, including: programs, planning, design, implementation, and maintenance. This appendix outlines the most likely sources of funding from the federal, state, and local government levels as well as from the private and non-profit sectors. Note that this reflects the funding available at the time of writing. Funding amounts, cycles, and the programs themselves may change over time.

FEDERAL FUNDING SOURCES

Federal funding is typically directed through state agencies to local governments either in the form of grants or direct appropriations. Federal funding typically requires a local match of five percent to 50 percent, but there are sometimes exceptions. The following is a list of possible Federal funding sources that could be used to support construction of bicycle improvements.

FIXING AMERICA'S SURFACE TRANSPORTATION (FAST ACT)

In December 2015, President Obama signed the FAST Act into law, which replaces the previous Moving Ahead for Progress in the Twenty-First Century (MAP-21). The Act provides a long-term funding source of \$305 billion for surface transportation and planning for FY 2016-2020. Overall, the FAST Act retains eligibility for big programs - Transportation Investments Generating Economic Recovery (TIGER - now called BUILD), Surface Transportation Program (STP), Congestion Mitigation and Air Quality (CMAQ), and Highway Safety Improvement Program (HSIP).

In North Carolina, federal monies are administered through the North Carolina Department of Transportation (NCDOT) and Metropolitan /Rural Planning Organizations (MPOs/RPOs). Most, but not all, of these programs are oriented toward transportation versus recreation, with an emphasis on reducing auto trips and providing inter-modal connections. Federal funding is intended for capital improvements and safety and education programs, and projects must relate to the surface transportation system.

For more information, visit: <https://www.transportation.gov/fastact>

TRANSPORTATION ALTERNATIVES

Transportation Alternatives (TA) is a funding source under the FAST Act that consolidates three formerly separate programs under SAFETEA-LU: Transportation Enhancements (TE), Safe Routes to School (SRTS), and the Recreational Trails Program (RTP). Funds are available through a competitive process. These funds may be used for a variety of pedestrian, bicycle, and streetscape projects. These include:

- SRTS programs - infrastructure and noninfrastructure programs--
- Construction, planning, and design of on-road and off-road trail facilities for pedestrians, bicyclists, and other nonmotorized forms of transportation, including sidewalks, bikeways, pedestrian and bicycle signals, traffic calming techniques, and lighting and other safety-related infrastructure
- Construction, planning, and design of infrastructure-related projects and systems that will provide safe routes for non-drivers, including children, seniors, and individuals with disabilities
- Construction of rail-trails
- Recreational trails program

Eligible entities for TA funding include local governments, regional transportation authorities, transit agencies, natural resource or public land agencies, school districts or schools, tribal governments, and any other local or regional government entity with responsibility for oversight of transportation or recreational trails that the State determines to be eligible.

The FAST Act provides \$84 million for the Recreational Trails Program. Funding is prorated among the 50 states and Washington D.C. in proportion to the relative amount of off-highway recreational fuel tax that its residents paid. To administer the funding, states hold a statewide competitive process. The legislation stipulates that funds must conform to the distribution formula of 30% for motorized projects, 30% for non-motorized projects, and 40% for mixed used projects.

For more information: <https://www.fhwa.dot.gov/fastact/factsheets/transportationalternativesfs.cfm>

HIGHWAY SAFETY IMPROVEMENT PROGRAM

HSIP provides \$2.4 billion for projects and programs that help communities achieve significant reductions in traffic fatalities and serious injuries on all public roads, bikeways, and walkways. Bicycle and pedestrian safety improvements, enforcement activities, traffic calming projects, and crossing treatments for non-motorized users in school zones are eligible for these funds.

For more information: <http://www.fhwa.dot.gov/fastact/factsheets/hsipfs.cfm>

SAFE ROUTES TO SCHOOL (SRTS) PROGRAM

SRTS enables and encourages children to walk and bike to school. The program helps make walking and bicycling to school a safe and more appealing method of transportation for children. SRTS facilitates the planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity of schools. Most of the types of eligible SRTS projects include sidewalks or a shared-use path. However, intersection improvements (i.e. signalization, marking/upgrading crosswalks, etc.), on street bicycle facilities (bike lanes, wide paved shoulders, etc.) or off-street shared-use paths are also eligible for SRTS funds.

For more information: http://www.fhwa.dot.gov/environment/safe_routes_to_school/guidance/#toc123542170

OTHER FEDERAL FUNDING SOURCES

BUILD TRANSPORTATION DISCRETIONARY GRANT PROGRAM

The Consolidated Appropriations Act, 2018 appropriated \$1.5 billion, available for obligation through September 30, 2020, for National Infrastructure Investments previously known as TIGER grants, and now renamed BUILD Transportation grants. As with previous rounds of TIGER, funds for the FY2018 BUILD Transportation program are to be awarded on a competitive basis for projects that will have a significant local or regional impact.

Funding provided under National Infrastructure Investments have supported capital projects which repair bridges or improve infrastructure to a state of good repair; projects that implement safety improvements to reduce fatalities and serious injuries, including improving grade crossings or providing shorter or more direct access to critical health services; projects that connect communities and people to jobs, services, and education; and, projects that anchor economic revitalization and job growth in communities. DOT intends to award a greater share of FY2018 BUILD Transportation grants to projects located in rural areas that align well with the selection criteria than to such projects in urban areas.

For more information: <https://www.transportation.gov/BUILDgrants/2018-build-application-faqs>

ECONOMIC DEVELOPMENT ADMINISTRATION

Under Economic Development Administration's (EDA) Public Works and Economic Adjustment Assistance programs, grant applications are accepted for projects that promote economic development. State and local entities may apply for funding for projects that address a wide range of economic challenges. Under this program, Implementation Grants support infrastructure improvements, including site acquisition, site preparation, construction, and rehabilitation of facilities. Selection criteria emphasize projects that are able to start quickly, create jobs faster, and that will enable the community or region to become more economically prosperous.

For more information: <https://www.eda.gov/funding-opportunities/index.htm>

FEDERAL LANDS TRANSPORTATION PROGRAM (FLTP)

The FLTP funds projects that improve transportation infrastructure owned and maintained by the following Federal Lands Management Agencies: National Park Service (NPS), U.S. Fish and Wildlife Service (FWS), USDA Forest Service, Bureau of Land Management (BLM), U.S. Army Corps of Engineers, Bureau of Reclamation, and independent Federal agencies with land and natural resource management responsibilities. FLTP funds are available for program administration, transportation planning, research, engineering, rehabilitation, construction, and restoration of Federal Lands Transportation Facilities. Transportation projects that are on the public network that provide access to, adjacent to, or through Federal lands are also eligible for funding. Under the FAST Act, \$335 - \$375 million has been allocated to the program per fiscal year from 2016 - 2020.

For more information: <https://flh.fhwa.dot.gov/programs/fltp/documents/FAST%20FLTP%20fact%20sheet.pdf>

FEDERAL LAND AND WATER CONSERVATION FUND

The Land and Water Conservation Fund (LWCF) provides grants for planning and acquiring outdoor recreation areas and facilities, including trails. Funds can be used for right-of-way acquisition and construction. The program is administered by the Department of Environment and Natural Resources as a grant program for states and local governments. Maximum annual grant awards for county governments, incorporated municipalities, public authorities, and federally recognized Indian tribes are \$250,000. The local match may be provided with in-kind services or cash.

For more information: <https://www.nps.gov/subjects/lwcf/stateside.htm>

RIVERS, TRAILS, AND CONSERVATION ASSISTANCE PROGRAM

The Rivers, Trails, and Conservation Assistance Program (RTCA) is a National Parks Service (NPS) program that provides technical assistance via direct NPS staff involvement to establish and restore greenways, rivers, trails, watersheds and open space. The RTCA program only provides planning assistance; there are no implementation funds available. Projects are prioritized for assistance based on criteria, including conserving significant community resources, fostering cooperation between agencies, serving a large number of users, encouraging public involvement in planning and implementation, and focusing

on lasting accomplishments. Project applicants may be state and local agencies, tribes, nonprofit organizations, or citizen groups. National parks and other federal agencies may apply in partnership with other local organizations. This program may benefit trail development in North Carolina indirectly through technical assistance, particularly for community organizations, but is not a capital funding source.

For more information: <https://www.nps.gov/orgs/rtca/index.htm>

ENVIRONMENTAL CONTAMINATION CLEANUP FUNDING SOURCES

EPA's Brownfields Program provides direct funding for brownfields assessment, cleanup, revolving loans, and environmental job training. EPA's Brownfields Program collaborates with other EPA programs, other federal partners, and state agencies to identify and leverage more resources for brownfields activities. The EPA provides assessment grants to recipients to characterize, assess, and conduct community involvement related to brownfields sites. They also provide Area-wide planning grants (AWP) which provides communities with funds to research, plan, and develop implementation strategies for areas affected by one or more brownfields.

For more information: <https://www.epa.gov/brownfields/types-brownfields-grant-funding>

NATIONAL FISH AND WILDLIFE FOUNDATION: FIVE STAR & URBAN WATERS RESTORATION GRANT PROGRAM

The Five Star & Urban Waters Restoration Grant Program seeks to develop community capacity to sustain local natural resources for future generations by providing modest financial assistance to diverse local partnerships for wetland, riparian, forest and coastal habitat restoration, urban wildlife conservation, stormwater management as well as outreach, education and stewardship. Projects should focus on water quality, watersheds and the habitats they support. The program focuses on five priorities: on-the-ground restoration, community partnerships, environmental outreach, education, and training, measurable results, and sustainability. Eligible applicants include nonprofit organizations, state government agencies, local governments, municipal governments, tribes, and educational institutions. Projects are required to meet or exceed a 1:1 match to be competitive.

For more information: <http://www.nfwf.org/fivestar/Pages/home.aspx>

STATE FUNDING SOURCES

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION (NCDOT) STRATEGIC TRANSPORTATION INVESTMENTS (STI)

The NCDOT's State Transportation Improvement Program is based on the Strategic Transportation Investments Bill, signed into law in 2013. The Strategic Transportation Investments (STI) Initiative includes the Strategic Mobility Formula, a way to fund and prioritize transportation projects.

The Strategic Mobility Formula assigns projects for all modes into one of three categories: 1) Statewide Mobility, 2) Regional Impact, and 3) Division Needs.

All independent bicycle and pedestrian projects are placed in the "Division Needs" category, and are currently ranked based on 50% data (safety, access, demand, connectivity, and cost effectiveness) and 50% local input, with a breakdown as follows:

SAFETY 15%

- Definition: Projects or improvements where bicycle or pedestrian accommodations are non-existent or inadequate for safety of users
- How it's measured: Crash history, posted speed limits, and estimated safety benefit
- Calculation:
 - Bicycle/pedestrian crashes along the corridor within last five years: 40% weight
 - Posted speed limits, with higher points for higher limits: 40% weight
 - Project safety benefit, measured by each specific improvement: 20% weight

ACCESS 10%

- Definition: Destinations that draw or generate high volumes of bikes/pedestrians
- How it's measured: Type of and distance to destination

DEMAND 10%

- Definition: Projects serving large resident or employee user groups
- How its measured: # of households and employees per square mile within 1 ½ mile bicycle or ½ mile pedestrian facility + factor for unoccupied housing units (second homes)

CONNECTIVITY 10%

- Definition: Measure impact of project on reliability and quality of network
- How it's measured: Creates score per each Strategic Transportation Investments based on degree of bike/ped separation from roadway and connectivity to similar or better project type

COST EFFECTIVENESS 5%

- Definition: Ratio of calculated user benefit divided by NCDOT project cost
- How it's measured: Safety + Demand + Access + Connectivity)/Estimated Project Cost to NCDOT

LOCAL INPUT 50%

- Definition: Input from MPO/RPOs and NCDOT Divisions, which comes in the form points assigned to projects.
- How it is measured: Base points + points for population size. A given project is more likely to get funded if it is assigned base points from both the MPO/RPO and the Division, making the need for communicating the importance of projects to these groups critical. Further, projects that have a local match will score higher.

ADDITIONAL BICYCLE AND PEDESTRIAN PROJECT REQUIREMENTS:

- Federal funding typically requires a 20% non-federal match
- **State law prohibits state match for bicycle and pedestrian projects (except for Powell Bill). Since state law prohibits state monies from being the match for bicycle and pedestrian projects, the county will need to supply the 20% match from other sources, such as the county's own funds, matching grants, etc.**
- Limited number of project submittals per MPO/RPO/Division
- Minimum project cost requirement is \$100,000
- Bike/Ped projects typically include: bicycle lanes, side path/greenway, paved shoulders, sidewalks, pedestrian signals, SRTS infrastructure projects, and other streetscape/multi-site improvements (such as median refuge, signage, etc.)

These rankings largely determine which projects will be included in NCDOT's State Transportation Improvement Program (STIP). The STIP is a federally mandated transportation planning document that details transportation planning improvements prioritized by the stakeholders for inclusion in NCDOT's Work Program. The STIP

is updated every 2 years. The STIP contains funding information for various transportation divisions of NCDOT, including, highways, rail, bicycle and pedestrian, public transportation and aviation. A project does not have to be fully funded to be in the STIP.

For more information on STIP: <https://www.ncdot.gov/initiatives-policies/Transportation/stip/Pages/default.aspx>

INCIDENTAL PROJECTS

Bicycle and Pedestrian accommodations such as; bike lanes, wide paved shoulders, sidewalks, intersection improvements, bicycle and pedestrian safe bridge design, etc. are frequently included as “incidental” features of larger highway/roadway projects. This is increasingly common with the adoption of NCDOT’s “Complete Streets” Policy.

In addition, bicycle safe drainage grates and handicapped accessible sidewalk ramps are now a standard feature of all NCDOT highway construction. Most pedestrian safety accommodations built by NCDOT are included as part of scheduled highway improvement projects funded with a combination of federal and state roadway construction funds, and usually with a local match. On-road bicycle accommodations, if warranted, typically do not require a local match.

“Incidental Projects” are often constructed as part of a larger transportation project, when they are justified by local plans that show these improvements as part of a larger, multi-modal transportation system. Having a local bicycle or pedestrian plan is important, because it allows NCDOT to identify where bike and pedestrian improvements are needed, and can be included as part of highway or street improvement project. It also helps local government identify what their priorities are and how they might be able to pay for these projects. Under “Complete Streets” local governments may be responsible for a portion of the costs for bicycle and pedestrian projects. The cost share breakdown is based on population size as follows:

- 100,000 = 50% local match
- 50,000 - 100,000 = 40% local match
- 10,000 - 50,000 = 30% local match
- 10,000 = 20% local match

For more information: <https://connect.ncdot.gov/projects/research/Pages/ProjDetails.aspx?ProjectID=2014-06>

SPOT SAFETY PROGRAM

The Spot Safety Program is a state-funded public safety investment and improvement program that provides highly effective low-cost safety improvements for intersections and sections of North Carolina’s 79,000 miles of state maintained roads in all 100 counties of North Carolina. The Spot Safety Program is used to develop smaller improvement projects to address safety, potential safety, and operational issues. The program is funded with state funds and currently receives approximately \$9 million per state fiscal year. Other monetary sources (such as Small Construction or Contingency funds) can assist in funding Spot Safety projects, however, the maximum allowable contribution of Spot Safety funds per project is \$250,000.

The Spot Safety Program targets hazardous locations for expedited low cost safety improvements such as traffic signals, turn lanes, improved shoulders, intersection upgrades, positive guidance enhancements (rumble strips, improved channelization, raised pavement markers, long life highly visible pavement markings), improved warning and regulatory signing, roadside safety improvements, school safety improvements, and safety appurtenances (like guardrail and crash attenuators).

A Safety Oversight Committee (SOC) reviews and recommends Spot Safety projects to the Board of Transportation (BOT) for approval and funding. Criteria used by the SOC to select projects for recommendation to the BOT include, but are not limited to, the frequency of correctable crashes, severity of crashes, delay, congestion, number of signal warrants met, effect on pedestrians and schools, division and region priorities, and public interest.

For more information: <https://connect.ncdot.gov/resources/safety/Pages/NC-Highway-Safety-Program-and-Projects.aspx>

HIGHWAY HAZARD ELIMINATION PROGRAM

The Hazard Elimination Program is used to develop larger improvement projects to address safety and potential safety issues. The program is funded with 90 percent federal funds and 10 percent state funds. The cost of Hazard Elimination Program projects typically ranges between \$400,000 and \$1 million. A Safety Oversight Committee (SOC) reviews and recommends Hazard Elimination projects to the Board of Transportation (BOT) for approval and funding. These projects are prioritized for funding according to a safety benefit to cost

(B/C) ratio, with the safety benefit being based on crash reduction. Once approved and funded by the BOT, these projects become part of the department's State Transportation Improvement Program (STIP).

For more information: <https://connect.ncdot.gov/resources/safety/Pages/NC-Highway-Safety-Program-and-Projects.aspx>

GOVERNOR'S HIGHWAY SAFETY PROGRAM

Dedicated to reducing the numbers of traffic crashes and fatalities in North Carolina, the Governor's Highway Safety Program promotes efforts to reduce traffic crashes in North Carolina and promotes highway safety awareness through a variety of grants and safe-driving initiatives.

These grants as well as initiatives – like Click It or Ticket, Booze It & Lose It, BikeSafe NC, Watch For Me NC and Speed a Little. Lose a Lot. – help address issues such as impaired driving, seat belt use, speeding, distracted driving, motorcycle safety, bicycle safety, pedestrian safety and other aspects of highway safety.

GHSP also helps fund North Carolina's Vision Zero initiative, which is working to meet the goal of zero deaths on the state's roadways through community involvement and data-driven safety interventions.

For more information: <https://www.ncdot.gov/initiatives-policies/safety/ghsp/Pages/default.aspx>

SAFE ROUTES TO SCHOOL (SRTS)

SRTS is managed by NCDOT, but is federally funded; See Federal Funding Sources above for more information.

THE NORTH CAROLINA DIVISION OF PARKS AND RECREATION – RECREATIONAL TRAILS AND ADOPT-A-TRAIL GRANTS

The Adopt-a-Trail Grant Program (AAT) awards \$108,000 annually to government agencies, nonprofit organizations and private trail groups for trail projects. Funding from the federal Recreational Trails Program (RTP), which is used for renovating or constructing trails and greenways, is allocated to states. The North Carolina Division of Parks and Recreation and the State Trails Program manages these funds with a goal of helping citizens, organizations and agencies plan, develop and manage all types of trails ranging from greenways and trails for hiking, biking, and horseback riding to

river trails and off-highway vehicle trails. Grants are available to governmental agencies and nonprofit organizations. The maximum grant amount is \$100,000 and requires a 25% match of RTP funds received. Permissible uses include:

- New trail or greenway construction
- Trail or greenway renovation
- Approved trail or greenway facilities
- Trail head/ trail markers
- Purchase of tools to construct and/or renovate trails/greenways
- Land acquisition for trail purposes
- Planning, legal, environmental, and permitting costs - up to 10% of grant amount
- Combination of the above

For more information: <http://www.ncparks.gov/more-about-us/grants/trail-grants/recreational-trails-program>

NC PARKS AND RECREATION TRUST FUND (PARTF)

The Parks and Recreation Trust Fund (PARTF) provides dollar-for-dollar matching grants to local governments for parks and recreational projects to serve the general public. Counties, incorporated municipalities, and public authorities, are eligible applicants. A local government can request a maximum of \$500,000 with each application. An applicant must match the grant dollar-for-dollar, 50 percent of the total cost of the project, and may contribute more than 50 percent. The appraised value of land to be donated to the applicant can be used as part of the match. The value of in-kind services, such as volunteer work, cannot be used as part of the match. Property acquired with PARTF funds must be dedicated for public recreational use.

For more information: <http://www.ncparks.gov/more-about-us/parks-recreation-trust-fund/eligibility>

CLEAN WATER MANAGEMENT TRUST FUND

The Clean Water Management Trust Fund (CWMTF) is available to any state agency, local government, or non-profit organization whose primary purpose is the conservation, preservation, and restoration of North Carolina's environmental and natural resources. Grant assistance is provided to conservation projects that:

- enhance or restore degraded waters;
- protect unpolluted waters, and/or
- contribute toward a network of riparian buffers and greenways for environmental, educational, and recreational benefits;
- provide buffers around military bases to protect the military mission;

- acquire land that represents the ecological diversity of North Carolina; and
- acquire land that contributes to the development of a balanced State program of historic properties.

For more information: <http://www.cwmtf.net/#appmain.htm>

DUKE ENERGY WATER RESOURCES FUND

Duke Energy is investing \$10 million in a fund for projects that benefit waterways in the Carolinas. The fund supports science-based, research-supported projects and programs that provide direct benefit to at least one of the following focus areas:

- Improve water quality, quantity and conservation;
- Enhance fish and wildlife habitats;
- Expand public use and access to waterways; and
- Increase citizens' awareness about their roles in protecting these resources.

Applications are open to nonprofit organizations and local government agencies. Funding decisions are made twice a year. Local and regional government agencies could consider this resource for proposed greenways across the region.

For more information: <http://www.nccommunityfoundation.org/page/other-grant-opportunities/duke-energy-water-resource-fund-grants/applying-to-the-duke-energy-water-resources-fund>

URBAN AND COMMUNITY FORESTRY GRANT

The North Carolina Division of Forest Resources Urban and Community Forestry grant can provide funding for a variety of projects that will help plan and establish street trees as well as trees for urban open space. The goal is to improve public understanding of the benefits of preserving existing tree cover in communities and assist local governments with projects which will lead to more effective and efficient management of urban and community forests. Grant requests should range between \$1,000 and \$15,000 and must be matched equally with non-federal funds. Grant funds may be awarded to any unit of local or state government, public educational institutions, approved non-profit 501(c)(3) organizations, and other tax-exempt organizations. First time municipal applicant and municipalities seeking Tree City USA status are given priority for funding.

For more information: https://www.ncforestservice.gov/Urban/urban_grant_overview.htm

APPALACHIAN REGIONAL COMMISSION

The Appalachian Regional Commission (ARC) is a regional economic development agency that represents a partnership of federal, state, and local government. Established by an act of Congress in 1965, ARC is composed of the governors of the 13 Appalachian states and a federal co-chair, who is appointed by the president. Local participation is provided through multi-county local development districts. ARC invests in activities that address the five goals identified in the Commission's strategic plan:

- Goal 1: Economic Opportunities - Invest in entrepreneurial and business development strategies that strengthen Appalachia's economy.
- Goal 2: Ready Workforce - Increase the education, knowledge, skills, and health of residents to work and succeed in Appalachia.
- Goal 3: Critical Infrastructure - Invest in critical infrastructure—especially broadband; transportation, including the Appalachian Development Highway System; and water/wastewater systems.
- Goal 4: Natural and Cultural Assets - Strengthen Appalachia's community and economic development potential by leveraging the Region's natural and cultural heritage assets.
- Goal 5: Leadership and Community Capacity - Build the capacity and skills of current and next-generation leaders and organizations to innovate, collaborate, and advance community and economic development.

Program grants are awarded to state and local agencies and governmental entities (such as economic development authorities), local governing boards (such as county councils), and nonprofit organizations (such as schools and organizations that build low-cost housing). Contracts are awarded for research on topics that directly impact economic development in the Appalachian Region.

For more information: <https://www.arc.gov/funding/GrantsandFunding.asp>

LOCAL GOVERNMENT FUNDING SOURCES

Local governments often plan for the funding of bicycle infrastructure or improvements through development of Capital Improvement Projects (CIP) or occasionally, through their annual Operating Budgets. CIPs should include all types of capital improvements (water, sewer, buildings, streets, etc.) versus programs for single purposes. This allows decision-makers to balance all capital needs. Typical capital funding mechanisms include the capital reserve fund, taxes, fees, and bonds. Each category is described below. A variety of possible funding options available to North Carolina jurisdictions for implementing bicycle projects are also described below. However, many will require specific local action as a means of establishing a program if it's not already in place.

POWELL BILL FUNDS

Annually, State street-aid (Powell Bill) allocations are made to incorporated municipalities (applicable to Brevard and Rosman) which establish their eligibility and qualify as outlined by G.S. 136-41.1 through 136-41.4. Powell Bill funds shall be expended only for the purposes of maintaining, repairing, constructing, reconstructing or widening of local streets that are the responsibility of the municipalities. It may also be used for planning, construction, and maintenance of bikeways or sidewalks within municipal limits or within the area of a metropolitan planning organization or rural planning organization.

For more information: <https://connect.ncdot.gov/municipalities/State-Street-Aid/Pages/default.aspx>

CAPITAL RESERVE FUND

Local governments have statutory authority to create capital reserve funds for any capital purpose, including bicycle infrastructure. The reserve fund must be created through ordinance or resolution that states the purpose of the fund, the duration of the fund, the approximate amount of the fund, and the source of revenue for the fund. Sources of revenue can include general fund allocations, fund balance allocations, grants, and donations for the specified use.

OTHER LOCAL FUNDING OPTIONS

- Bonds/Loans
- Taxes
- Impact fees
- Exactions
- Installment purchase financing
- In-lieu-of fees
- Partnerships

PRIVATE AND NONPROFIT FUNDING SOURCES

Many communities have solicited funding assistance from private foundations and other conservation-minded benefactors. Below are examples of private funding opportunities.

FUNDING FOR TRAIL DEVELOPMENT

FRIENDS OF THE ECUSTA TRAIL

Friends of the Ecusta Trail has set up a fund with the Community Foundation of Henderson County in order to hold restricted funds for the purpose of purchasing the corridor or building the Ecusta Trail in Henderson and Transylvania Counties.

For more information: <https://www.ecustatrail.org/faqs.html>

RAILS-TO-TRAILS CONSERVANCY

RTC launched a grant program in 2015 to support organizations and local governments that are implementing projects to build and improve rail-trails. Under the Doppelt Family Trail Development Fund, RTC awards a total of \$85,000 per year through a competitive process, which is then distributed among several qualifying projects. Eligible applicants include nonprofit organizations and state, regional, and local government agencies. Two types of grants are available - community support grants and project transformation grants. Around three to four community support grants are awarded each year, ranging from \$5,000-\$10,000 each. Community Support Grants support nonprofit organizations or "Friends of the Trail" groups that need funding to get trail development or trail improvement efforts off the ground. Each year, 1-2 Project Transformation Grants are awarded that range from \$15,000-\$50,000. The intention of these grants is to enable an organization to complete a significant trail development or improvement project. For both types of grants, applications for projects on rail-trails and rails-with-trails are given preference, but rail-trail designation is not a requirement. The trail must serve multiple user types, such as bicycling, walking, and hiking, and must be considered a trail, greenway, or shared-use path.

For more information: <http://www.railstotrails.org/our-work/doppelt-family-trail-development-fund/>

BLUE RIDGE BICYCLE CLUB

The mission of the Blue Ridge Bicycle Club (BRBC) is to promote healthy and fun lifestyles through cycling in Western North Carolina.

A key component of BRBC's strategic plan is to increase advocacy efforts consistent with the mission. Accordingly, four advocacy strategies have been developed.

- 1) Advocate for the health benefits of cycling
- 2) Advocate for cycling relating infrastructure (ex. bike lanes, racks, signage, etc.)
- 3) Increase education (cyclists and motorists)
- 4) Support legislation to improve cycling conditions (local, state and national)

To encourage progress in the advocacy effort, the BRBC has established a grants program intended to provide financial support for individuals, governments and organizations in their efforts to achieve results consistent with the above listed strategies. Grant applications are reviewed by a committee of BRBC members and awarded based upon merit towards achieving BRBC's goals and adherence to the guidelines outlined on their website.

For more information: https://brbcnc.clubexpress.com/content.aspx?page_id=22&club_id=285841&module_id=145699

AMERICAN GREENWAYS EASTMAN KODAK AWARDS

The Conservation Fund's American Greenways Program has teamed with the Eastman Kodak Corporation and the National Geographic Society to award small grants (\$500 to \$2,500) to stimulate the planning, design, and development of greenways. These grants can be used for activities such as mapping, conducting ecological assessments, surveying land, holding conferences, developing brochures, producing interpretive displays, incorporating land trusts, planning bike paths, and building trails. Grants are primarily awarded to local, regional, or statewide nonprofit organizations. Public agencies may apply but preference is given to community organizations. Grants are awarded based on the importance of the project to local greenway development efforts, demonstrated community support, extent to which the grant will result in matching funds, likelihood of tangible results, and the capacity of the organization to complete the project. Applications can be submitted from March 1st through June 1st of each calendar year.

For more information: <http://www.rlch.org/funding/kodak-american-greenways-grants>

FUNDING FOR CONSERVATION EFFORTS

NATIONAL FISH AND WILDLIFE FOUNDATION (NFWF)

The National Fish and Wildlife Foundation (NFWF) is a private, nonprofit, tax-exempt organization chartered by Congress in 1984. The National Fish and Wildlife Foundation sustains, restores, and enhances the Nation's fish, wildlife, plants, and habitats. Through leadership conservation investments with public and private partners, the Foundation is dedicated to achieving maximum conservation impact by developing and applying best practices and innovative methods for measurable outcomes.

The Foundation provides grants through more than 70 diverse conservation grant programs. One of the most relevant programs for bicycle and pedestrian projects is Acres for America. Funding priorities include conservation of bird, fish, plants and wildlife habitats, providing access for people to enjoy outdoors, and connecting existing protected lands. Federal, state, and local government agencies, educational institutions, Native American tribes, and nonprofit organizations may apply twice annually for matching grants. Due to the competitive nature of grant funding for Acres for America, all awarded grants require a minimum 1:1 match.

For more information: <http://www.nfwf.org/whatwedo/grants/Pages/home.aspx>

THE TRUST FOR PUBLIC LAND

Land conservation is central to the mission of the Trust for Public Land (TPL). Founded in 1972, the TPL is the only national non-profit working exclusively to protect land for human enjoyment and well-being. TPL helps acquire land and transfer it to public agencies, land trusts, or other groups that intend to conserve land for recreation and spiritual nourishment and to improve the health and quality of life of American communities.

For more information: <http://www.tpl.org>

LAND FOR TOMORROW CAMPAIGN

Land for Tomorrow is a diverse partnership of businesses, conservationists, farmers, environmental groups, health professionals, and community groups committed to securing support from the public and General Assembly for protecting land, water, and historic places.

The campaign was successful in 2013 in asking the North Carolina General Assembly to continue to support conservation efforts in the state. The state budget bill includes about \$50 million in funds for key conservation efforts in North Carolina. Land for Tomorrow works to enable North Carolina to reach a goal of ensuring that working farms and forests, sanctuaries for wildlife, land bordering streams, parks, and greenways, land that helps strengthen communities and promotes job growth, and historic downtowns and neighborhoods will be there to enhance the quality of life for generations to come.

For more information: <http://www.land4tomorrow.org/>

THE CONSERVATION ALLIANCE

The Conservation Alliance is a nonprofit organization of outdoor businesses whose collective annual membership dues support grassroots citizen-action groups and their efforts to protect wild and natural areas. Grants are typically about \$35,000 each. Since its inception in 1989, The Conservation Alliance has contributed \$4,775,059 to environmental groups across the nation, saving over 34 million acres of wild lands.

The Conservation Alliance Funding Criteria:

- The project should be focused primarily on direct citizen action to protect and enhance our natural resources for recreation.
- The Alliance does not look for mainstream education or scientific research projects, but rather for active campaigns.
- All projects should be quantifiable, with specific goals, objectives, and action plans and should include a measure for evaluating success.
- The project should have a good chance for closure or significant measurable results over a fairly short term (within four years).

For more information: <http://www.conservationalliance.com/grants/?yearly=2017>

FUNDING FOR HEALTH AND ENVIRONMENTAL INITIATIVES

BLUE CROSS BLUE SHIELD OF NORTH CAROLINA FOUNDATION (BCBS)

Blue Cross Blue Shield (BCBS) focuses on programs that use an outcome-based approach to improve the health and well-being of residents. The Healthy Places grant concentrates on increased physical activity and active play through

support of improved built environments such as sidewalks and safe places to bike. Nonprofit organizations and government entities are eligible to apply. Eligible grant applicants must be located in North Carolina, be able to provide recent tax forms, and depending on the size of the non-profit, provide an audit. BCBS does not have a traditional grant cycle and announces grant opportunities on a periodic basis. Grants can range from small-dollar equipment grants to large, multi-year partnerships.

For more information: <http://www.bcbsncfoundation.org/faqs>

DUKE ENERGY FOUNDATION

Funded by Duke Energy shareholders, this foundation makes charitable grants to nonprofit organizations and government agencies. Grant applicants must serve communities that are also served by Duke Energy. The grant program has several giving priorities, including Nature, Local Impact, and Community Initiatives that could potentially support active living infrastructure.

For more information: <https://www.duke-energy.com/community/duke-energy-foundation>

FUNDING FOR COMMUNITY DEVELOPMENT INITIATIVES

NORTH CAROLINA COMMUNITY FOUNDATION

The North Carolina Community Foundation, established in 1988, is a statewide foundation seeking gifts from individuals, corporations, and other foundations to build endowments and ensure financial security for non-profit organizations and institutions throughout the state. Based in Raleigh, the foundation also manages a number of community affiliates throughout North Carolina, that make grants in the areas of human services, education, health, arts, religion, civic affairs, and the conservation and preservation of historical, cultural, and environmental resources. The foundation also manages various scholarship programs statewide. Nonprofit organizations and local government units, such as public schools, are eligible to apply. The foundation will only give consideration to applicants that serve counties within its affiliate network.

For more information: <http://www.nccommunityfoundation.org/grants-scholarships>

THE TRANSYLVANIA ENDOWMENT

The Transylvania Endowment serves donors and nonprofits. This endowment fund was established in 1998 by caring individuals who recognized the importance of a permanent charitable capital resource to support the ever-changing needs and opportunities in Transylvania County.

Contributions made to the Transylvania Endowment are pooled and invested by The Community Foundation. Proceeds from the investments are used to make grants while the original gifts remain intact, continuing to grow for the benefit of future generations.

The Transylvania Endowment supports nonprofit organizations and public institutions through grantmaking.

For more information: <https://www.cfwnc.org/Nonprofits/GrantPrograms.aspx?s=Transylvania+Endowment>

Z. SMITH REYNOLDS FOUNDATION

This Winston-Salem-based foundation has been assisting environmental projects in North Carolina for many years. Grant recipients include nonprofit organizations, colleges and universities, religious entities, and government agencies that have projects or programs that serve North Carolinians. The Foundation focuses its grant making on five focus areas: Community Economic Development; Environment; Public Education; Social Justice and Equity; and Strengthening Democracy. The “environment” focus area is the most applicable for bicycle projects. This focus area seeks to protect and restore ecosystems in the state’s mountains and coastal areas. The Z. Smith Reynolds Foundation is committed to accommodating the increasing growth demands in the state in environmentally sustainable ways, including through enhanced transportation options.

For more information: <http://www.zsr.org/grants-programs>

BANK OF AMERICA CHARITABLE FOUNDATION

The Bank of America Charitable Foundation is one of the largest in the nation. Its grantmaking activities are focused on 3 focus areas: workforce development and education, community development, and basic needs. The area of focus most relevant to increased recreational opportunities and trails is community development, which provides funding for projects that foster green communities and for transit oriented development projects. Only nonprofit organizations are eligible to apply for funding.

For more information: www.bankofamerica.com/foundation

LOCAL TRAIL SPONSORS

A sponsorship program for trail amenities allows smaller donations to be received from both individuals and businesses. Cash donations could be placed into a trust fund to be accessed for certain construction or acquisition projects associated with bicycle trails. Some recognition of the donors is appropriate and can be accomplished through the placement of a plaque, the naming of a trail segment, and/or special recognition at an opening ceremony. Types of gifts other than cash could include donations of services, equipment, labor, or reduced costs for supplies.

CORPORATE DONATIONS

Corporate donations are often received in the form of liquid investments (i.e. cash, stock, bonds) and in the form of land. Municipalities typically create funds to facilitate and simplify a transaction from a corporation’s donation to the given municipality. Donations are mainly received when a widely supported capital improvement program is implemented.

PRIVATE INDIVIDUAL DONATIONS

Private individual donations can come in the form of liquid investments (i.e. cash, stock, bonds) or land. Local governments typically create funds to facilitate and simplify a transaction from an individual’s donation to the given government entity. Donations are mainly received when a widely supported capital improvement program is implemented.

FUNDRAISING/CAMPAIGN DRIVES

Organizations and individuals can participate in a fundraiser or a campaign drive. It is essential to market the purpose of a fundraiser to rally support and financial backing. Often times fundraising satisfies the need for public awareness, public education, and financial support.

In Transylvania County, local businesses could establish a voluntary fund that help support bicycle infrastructure improvements recommended in this plan.

VOLUNTEER WORK

It is expected that many citizens will be excited about the development of greenways and bicycle infrastructure in Transylvania County. Individual volunteers from the community can be brought together with groups of volunteers from church groups, civic groups, local businesses, scout troops and environmental groups to work on project development on special community workdays. Volunteers can also be used for fundraising, maintenance, and programming needs.

A photograph of a public meeting. Several people are seated at long white tables, looking at documents and talking. The room has a plain wall with a clock showing 1:12 PM and a sign that says 'STORAGE'. There are water bottles and papers on the tables. The text 'APPENDIX C: PUBLIC INPUT' is overlaid in white on the lower left part of the image.

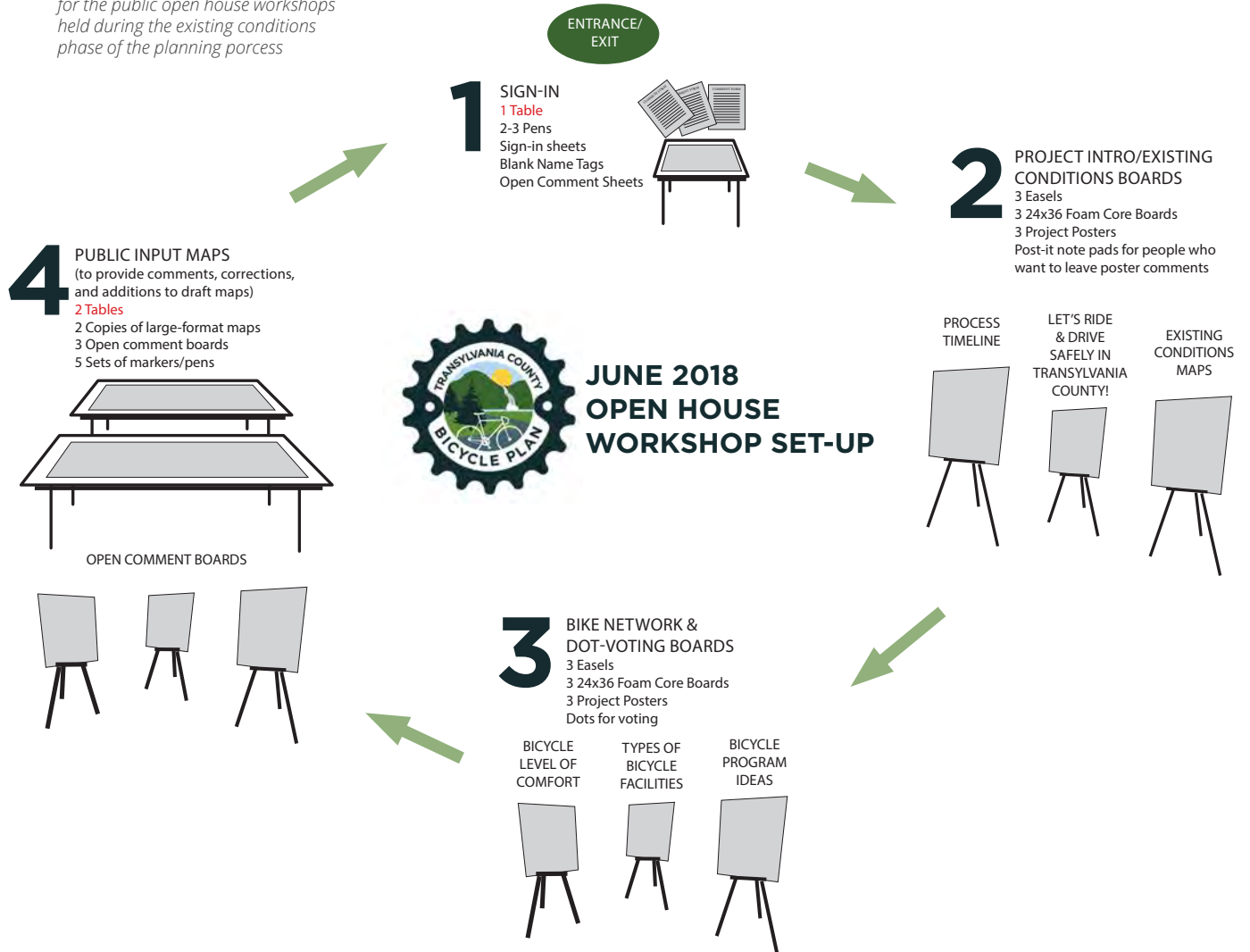
APPENDIX C: PUBLIC INPUT

OVERVIEW

At the end of the Chapter 2, a summary of public input is included. The graphic below shows the general set up for the open house workshops that took place in June 2018 and January 2019. Local insight was essential to this planning process, and all comments received are displayed on the following pages. Relevant results from the SPOT 5.0 Bicycle and Pedestrian Project survey, Brevard College Bicycle Survey, Transylvania County/City of Brevard Parks & Recreation Master Plan, and relevant results from the 2025 Transylvania County Comprehensive Plan survey are also included in this appendix.

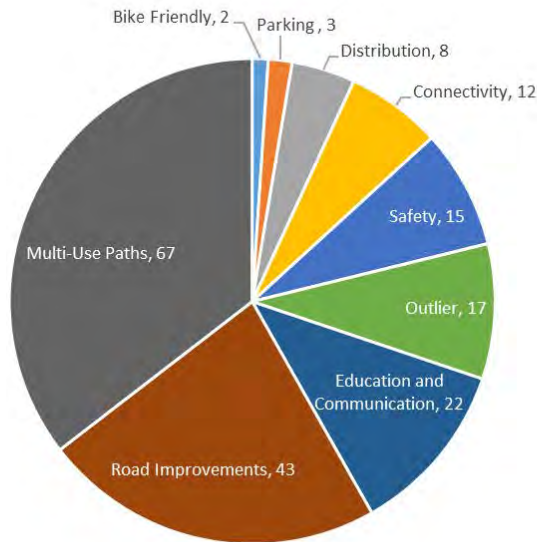
Graphical representation of the set-up for the public open house workshops held during the existing conditions phase of the planning process

Red Items = Transylvania County to Provide



Open Ended Response Question about Share your Thoughts, concerns, priorities and results

What would you like to see?
189 open ended responses



For data categorization purposes, the term "multi-use paths" includes greenways, trails, bike paths, shared use paths, Ecusta Trail and NC280 Trail

Share your thoughts: What would you like to see?	
1	want access points to DuPont Forest along roadways like 276 and Reasonover and Rich Mountain Road
2	make downtown Brevard bike- friendly
3	thank you for doing this work - I'd love to see our city become more friendly and safe for bike commuters
4	Bikes level the playing field - I would love to see one or two relatively accessible thoroughfares to allow folks in the Little River / Penrose area to get to Brevard or Henderson County on bikes - if a car breaks down or is not attainable for some, let's get them on a bike - this county needs more equitable access to population centers.
5	Ride to work
6	connect Neely Road safely to the city
7	more safe trails from Pisgah Forest area to current bike trail at Lowe's
8	more trails that go somewhere
9	create bike entrance from US 64 in Lake Toxaway into Gorges State Park
10	need bike path from high school to Roadway Avenue path
11	Rosman to Hendersonville
12	Tannery Park Connectivity
13	kids riding to school and recreation fields will encourage daily cycling: kids riding + parents = community
14	add bicycle entrance to Gorges State Park from Hwy 64
15	the map is missing a connection in Rosman area
16	Distribute bikes across all roads
17	get bike shops to send people everywhere
18	Steve T - Economics being what runs this county, I see no scenario presented in the 'plan' that does anything but increase the number of bicycles in the county - that being said, I see most of the traffic on Crab Creek Rd, Everett Rd, Old H'ville Hwy, and of course DuPont Rd - they impede traffic flow and create dangerous situations - limit group sizes to no more than six in one pack - less traveled roads could be designated bike routes - our taxes maintain roads for so many who don't share the cost - not to mention insurance needed for any vehicle on the road.

Share your thoughts: What would you like to see? (Continued)	
19	better system for their bike competitions on Sunday after 10am when people in Sunday School and 11am worship - more notification - I worry about my granddaughter behind bicycle riders.
20	I don't like large groups riding together on small Little River roads and if the roads are widened, then people lose their land.
21	not to have large groups blocking the entire road
22	We have a lot of people that ride from Henderson County into Transylvania County in the Little River area that is a huge problem because there is a large group of them and nothing the community can do about it - we have had several issues - I do personally ride a bike - I go to the campground to do my bike riding where I know it is a little 'safer' for bikers.
23	I don't appreciate the Tuesday evening rides in Little River
24	Ecusta Trail
25	Ecusta Trail - We want it - The Swamp Rabbit is fantastic and we are sorely behind not making that happen for our county yet.
26	Ecusta Trail
27	Ecusta Trail - get us through our awesome valley and exploring up to Hendersonville
28	Ecusta Trail will be a huge economic benefit to this county
29	Ecusta Trail would be a wonderful cycling trip
30	looking forward to the completion of the Ecusta Bike Path
31	Build Ecusta Trail
32	Ecusta Trail is perfect solution - my husband and I just drove to WV to ride the Greenbrier River Trail and spent of \$500 on lodging, good, gasoline and shuttles
33	I would recommend maketing the Ecusta Trail as a greeway benefiting multiple user groups, including walkers, hikers, runners, and both recreational and serious cyclists - the more users see the path as viable and vital to themselves, the better odds we can get full buy-in from the county
34	the Ecusta Trail will benefit the most user groups - pedestrians/bikes/seniors and all in-between, plus economic impact
35	we need the jobs and health benefits that will come from the Ecusta Trail
36	Ecusta Trail
37	we've lived in places where rails to trails was done - wonderful and very family friendly
38	Ecusta Trail could be a starter
39	please get the Ecusta Trail built ASAP I've lived near a major greenway in SW Ohio for decades - it was my go-to for cycling - now I cannot ride my bike for safety reasons because our roads are too dangerous - I've also seen what a great boost such a trail is to all earea economies - small businesses boom
40	fully support Ecusta Trail and request that it be included as part of this plan
41	must expedite Ecusta Trail - the county commissioners need to know that their argument that the railroad right-of-way should be reserved for 'big industry' is only a red herring - lack of land owner uderstanding and cooperation is the real issue
42	please fast-track the Ecusta Trail - it will help residents and young families ride safely - I also think it will attract cyclists and families from out of town - a good thing
43	Ecusta Trail please
44	can the Ecusta Trail Project be decided by a vote of the residents of Transylvania County?
45	I love the idea of the Ecusta Trail - similar projects have brought prosperity to many other towns/regions like ours (Swamp Rabbit, Virginia Creeper) - creates a safe place for riders and families - also allows walkers a safe place to go - connect us to Hendersonville - gives lots of opportunity for economic development - gets riders off unsafe streets - less accidents - go for it.
46	support for Ecusta Trail - Rail to Trails Brevard to Hendersonville
47	the Ecusta Trail is the perfect answer - how can we make it happen soon - it will het bikes off the road, make people healthier, safer and happier - it is flat enough for all ages and abilities to enjoy - if money were the only issue, I would want the Ecusta Trail made even if nothing else for biking could be funded
48	Ecusta Trail
49	Ecusta Trail pretty please
50	Ecuta Trail please
51	better education for both sides
52	regular rides are designed to let motorists and cyclists know that the ride is happening
53	license for bikes to require knowledge of laws

Share your thoughts: What would you like to see? (Continued)	
54	Education must be a vital part of this plan - once a plan is constructed, please prioritize time with knowledgeable cycling advocates to teach new cyclists, concerned citizens and Transylvania County residents how cyclists and cars and pedestrians can coexist
55	Keep fighting the fight - We need to coexist and I appreciate all you are doing to make travel and roadways safer for all.
56	eliminate "Share the Road" signs - they don't help either motorists or cyclists
57	Bicycle riders should not motion cars around them - they can see oncoming traffic - I never go around.
58	when I see bicycles obeying rules and not hogging the lanes, I have more respect for them
59	help community reframe concept of biking - less "us versus them" (community vs. tourists/races) - more transportation, health initiative, eco-friendly solutions
60	I don't like when roads are blocked and the people in that area have not been informed - not everyone reads the newspaper or watches tv
61	The bike path isn't used by bicyclists much and that was a large expense to the county, so why accommodate for them when they don't use what was built for them?
62	North Carolina General Statute 20-141 was printed and submitted
63	normalize biking as a means of daily transportation
64	it's difficult to see cyclists dressed in dark color and riding at night or in 1/2 shade and 1/2 sun - need rules on visibility if on road
65	there should be guidelines / req's for groups riding on roads
66	events to enhance relations between cyclists and motorists
67	how do we change the perception that cars and bikes can't co-exist - expand patience of drivers - changing the culture (Knowledge, Attitudes, Beliefs, Behaviors)
68	really push this - banner across the street stuff - the more folks that know, the better - we need better road etiquette / education in this county
69	as a landowner / farmer in Transylvania County, we would like to stay informed on what will be done about livestock, farm animals, dogs along proposed greenways - we have people who get out and take pictures with our livestock putting themselves in danger for a photo - how will this things be managed along community trails - please keep landowners informed, especially with potential Ecusta Project
70	please ask the landowners first before putting in Ecusta Trail - the railroad/path runs through our land and is about 50 feet from parts of our house - we have some that is only 10 feet away - we don't want people coming and going all day 0 we have 70 acres of land and we like to keep it private - thank you - please be sure to reach out - also this could open doors up for crimes when people are not at home.
71	better education for motorists who do not ride - they need to learn/understand traffic laws regarding cyclists, pedestrians, and other non-motorized vehicles - and also an understanding that cyclists do pay taxes - you'd think folks would be happy to have fewer cars on roads
72	we need better education / publicity regarding how bicycle riders and drivers should interact on roads - a few bad actors can create real dangers to life and limb
73	paved shoulders and/or bike pull-offs along Wilson Road, US 276, and NC 215 would be great
74	utilize Old H'ville Highway to move bikes
75	East Fork Road
76	I really believe that some bike lanes and wide shoulders added in to the appropriate roads will make both cyclists and motorists happier - it will also enhance the appeal of Transylvania County to tourists and we all benefit from this
77	roads are not wide enough to pass bikes when they are on the white line
78	Some roads (276, Crab Creek, etc.) do not need bikes without a designed lane which they must use - not enough passing areas - especially for large vehicles or those pulling trailers / equipment
79	We need bike lanes - Everett Road and Crab Creek are way too curvy in sharing the space - not sure how to bring harmony to cars, walkers and bikers - I always slow down and use my flashers to alert drivers - I cannot count the times I have flashed lights to oncoming vehicles speeding on these roads - traffic is getting heavier and I worry about the bikers visiting our area - thanks
80	since the county promotes itself as a bike riding destination, it should then take measures to make the roads more compatible for both bikes and cars - there should be bike lanes in some areas and wider lanes in some curves and hills - I would support a tax increase to help pay for road upgrades.
81	bike lane on Country Club Road to Brevard Raquet Club (the hill is unsafe for riders)
82	Little River's many, many bikes: Everett Rd, Hart Rd, Cascade Rd - please put bike lanes for safety of all
83	loop on Hart Rd, Everet Rd, Cascade Lake, Crab Creek gets heavy use - good place for bike lanes
84	Crab Creek Rd is beautiful, but very scary to ride - if it could be widened that would be good

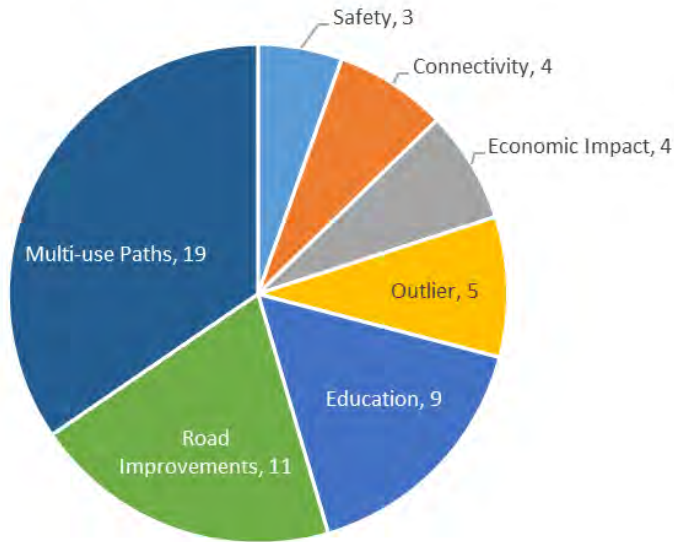
Share your thoughts: What would you like to see? (Continued)	
85	if not possible to have bike lane for all of Wilson Rd, please put one on the curvy sections
86	road riding is so dangerous here I only feel comfortable in a large mob like a race, etc.
87	bike lanes along Wilson Rd and Crab Creek Rd and any other road would be a step in the right direction.
88	bike lane both ways Rosman Hwy
89	need wider roads for cyclists
90	shoulder on 276 up toward the Blue Ridge Parkway
91	dedicated even farther east to Highland, etc. US 64
92	bike land along old 64 from Cherry Street or Ecusta to downtown
93	shoulders on roads without rumble strips would be helpful
94	as a cyclist, I've noticed a significant increase in auto volume on 280 and 64 - a dedicated lane from Brevard / Pisgah Forest to Hendersonville and Mills River would be so much more safe
95	brochures now advertise bike routes that use narrow roads - advertised routes should be on roads with bike lanes
96	roads are not wide enough - I don't think it's doable.
97	roads should be wider
98	bike lanes / wider shoulders are needed on all secondary roads where bikes can travel - Old Hendersonville Hwy and Crab Creek Road
99	widen Cummings Road, US 64, shoulders, separate bike lane - anything - Brickyard Rd, Turnpike Rd, Station Rd, Banner Farm, Ladson Rd
100	would love to see 3 foot shoulders on main roads
101	I'm all for bike lanes, not a trail on railroad
102	would like to see and support paved shoulders for bicycles especially Wilson Rd, Old Hendersonville Hwy, Neely Road, etc.
103	Need to expand roads like Wilson that have heavy traffic with bicycles
104	buffered bike lane along Neely Road
105	bike lane from intersection of Turnpike Road to Brevard Raquet Club (the hill past high school makes this area unsafe for cyclists and slows traffic)
106	East Fork Road is a beautiful ride - it needs "Share the Road" signs and needs to be widened
107	Wilson Road is the first priority - paved bike lane
108	paved bike lane needed on Everett Road, Hart Road
109	paved dedicated bike lane on Crab Creek is first priority
110	paved dedicated bike lane for Talley Road
111	any type of improvements along NC 215, Macedonia Church Road and 281
112	any type of improvements along Country Club Road, Wilson Road, US 276 entire length, Cascade Lake Road, Staton/DuPont Road
113	improvements along US 276 from Gallimore to Wilson Road
114	floodplain route
115	no one can pass packs of bikes
116	best use of money is to build bypass road from the entrance to Pisgah Forest to Ecusta to Wilson Road to Barclay to Selica School
117	connect Franklin Park with existing shared use path
118	multi-use path connecting Cedar Mountain to DuPont State Forest along Cascade Lake Road
119	Look at using powerline corridors along US 276 for multi-path
120	gas line corridor could also be a multi-use path
121	I believe extending the multi-use trail on Ecusta to Old 64 along Wilson and down Elm Bend to Main Street would possibly be cheaper than converting the railroad to a trail and would serve other purposes than just recreational - however, Wilson is a bypass that lots and lots of commercial operators speed on in wide trucks so congestion is an issue - the railroad conversion would be relaxing.
122	places for families and new cyclists to learn and be safe
123	If Ecusta Trail is approved, it needs to be a truly multi-use system - not exclude a major segment such as equestrians.
124	bike baths, but not in Little River
125	want a multi-use path Brevard to Rosman, along 280, and Brevard to Penrose
126	bike path on Wilson Road
127	Greenville's Swamp Rabbit Trail is a good model
128	bike path on Wilson Road

Share your thoughts: What would you like to see? (Continued)	
129	connect bike path from Gallimore to Hap Simpson Park
130	hike/bike path along US 64 in Lake Toxaway
131	use old rail paths/track for safe bike path
132	I'd like to see the bike/walking trail to Hendersonville
133	I've volunteered for Ecusta Trail, Asheville on Bikes for over 10 years - greenways are positive for communities to stay active, walking running, skating
134	one of my priorities is having a multi-use trail and the Ecusta Trail - I'm not a big biker, but I own a business and it will help me attract new employees - this is what they are looking for when deciding where to move
135	we need a safe place for all ages to bike away from cars - bike lanes along roads would be better than nothing, but with all the inattentive drivers it is still not safe - the Ecusta Trail would be the perfect trail - flat and safe and beautiful. The real answer is the Ecusta Trail. short greenways help get you where you need to go by bike, but are not long enough to actually go for a recreational bike ride.
136	Build Sierra Nevada Trail
137	any trails are better than no trails - need access trails - Thank you for public input
138	need a place in Breard that you can ride safely for exercise - current bike path/walking path is too short - need something you can ride on for more than 30 minutes before it runs out
139	I wish we had a trail like Swamp Rabbit
140	add greenway trail along Greenville Hwy and the French Broad River into Brevard
141	love paths for safe commuting everywhere
142	consider bike path along Wilson Road
143	bike path along railroad tracks
144	lengthen bike trail from Oskar Blues
145	would like to see a bike path/lane from Brevard to DuPont
146	multi-use path anywhere would be great
147	get Brevard bike path to downtown and connect it to the high school and Franklin Park
148	my wife and I just moved to the area for the abundance of outdoor activities, primarily mountain biking and hiking - we would love to see more paved trails, gravel trails and MTB trails - we prefer trails that are separate from the highway instead of bike lanes.
149	I come from two sides - one is that of an avid cyclist who has found Transylvania County to be cycling paradise both on and off road - the second is as a father looking for isolated, safe riding for my kids/family - The Ecusta Trail or other greenways separated from the road are paramount to that - the truth is though that regardless of trails, serious cyclists are going to use the roads and this area is going to grow with cyclists so you have to prepare for that and attempt to alleviate conflict - bike lanes on busier roads will help with the vast majority of that - Old Hwy 64, Wilson, Crab Creek, DuPont/Staton are probably first priority - bike lanes on secondary highways and more miles of greenways would help alleviate a lot of stress - happy to share more in conversation
150	enhanced bike paths please
151	A common sense answer to bikes on the road and in harm's way plus aggravating drivers would be to create a more complete greenway trail - the Ecusta rail line has been defunct for 14 years and what better use than make it a bike path - follow the success of Traveler's Rest and the Swamp Rabbit Trail
152	a separated greenway like the Ecusta Trail will prevent crashes and keep bikes and cars from annoying each other
153	would like wider paths to accommodate walkers also
154	want a multi-use path on Old Hendersonville Highway to Hendersonville
155	connect Brevard bike path sections along Main Street to Johnson Street to England Street
156	US 64 between Rosman and Brevard needs bike lanes on both sides and a multi-use path
157	porta-johns needed at church where people park on Talley Road - church has a sign not to use cemetery as bathroom
158	we need to require bike riders to register their bikes so they contribute to the costs associated with trail maintenance and bike lanes and so those who fail to observe the rules of the road or trail can be identified
159	Solomon Jones Road is good as it is
160	make a 'start' in or near downtown Brevard for BATS
161	I've seen plans for a bike lane on 280 to Mills River - what a waste of money with so many more beautiful, less traffic areas
162	have bikers help pay for construction and maintenance

Share your thoughts: What would you like to see? (Continued)	
163	why do officials always wait until problems ensue after the city/county sidely promoted this area for biking - knowing full well the city/forest/county were unprepared for the large numbers of outdoor folk that have inundated this once quiet area?
164	Headwaters State Forest needs mountain biking and trails
165	moving farm equipment at night
166	Infrastructure: is there a device that can be triggered by a bike that would signal cars?
167	deputies stop traffic for bikes and I have to stop
168	paved shoulders are a waste of money
169	paved shoulders take farmland and people's land
170	Pisgah Labs - security issue for Ecusta Trail
171	most people I meet biking are actually staying in Hendersonville or Asheville because of lack of hotel rooms here.
172	Little River: Bikers park on private property
173	need parking for present greenway usage
174	need places to park to get on greenway
175	the section of existing shared use path from Jackson Court to Blue Ridge Community College is unsafe and bikers avoid it (driveways and traffic)
176	Why aren't cyclist and motorist reporting all incidents? - there is no rule saying it has to be done immediately - if it is such an inconvenience, call it in later and describe the car, driver and license plate - with no real stats, how can authorities responsd appropriately - don't complain - report.
177	there are visibility issues in curves
178	Concerned about emergency vehicles and bikes not moving over
179	stupid - bikes in traffic
180	bikes are not safe
181	common sense: use parks, not roads
182	I'd like to see bikes abide by the rules when there is an emergency vehicle
183	Bob H - bikes do not belong on public roads - period. Too dangerous.
184	Stay in their lane - I have had riders in my lane - on the yellow line - they do not move over - I do - I have to swerve.
185	stay off public highways
186	safe crossing across Asheville Hwy toward the forest
187	even with allowing 10 minutes extra, I am often rushing to get to my destination due to bikes - let's make the roads safe for all bikes where a 10-year old can safely ride
188	must concentrate on bike / car safety - most recent example of how this is being ignored is Caldwell Street 'improvements'
189	without a tag, how can their insurance be billed if the cause an accident?
190	add "share the road" signs on major roads

Opportunities for bicycling in Transylvania County include...

55 open ended responses



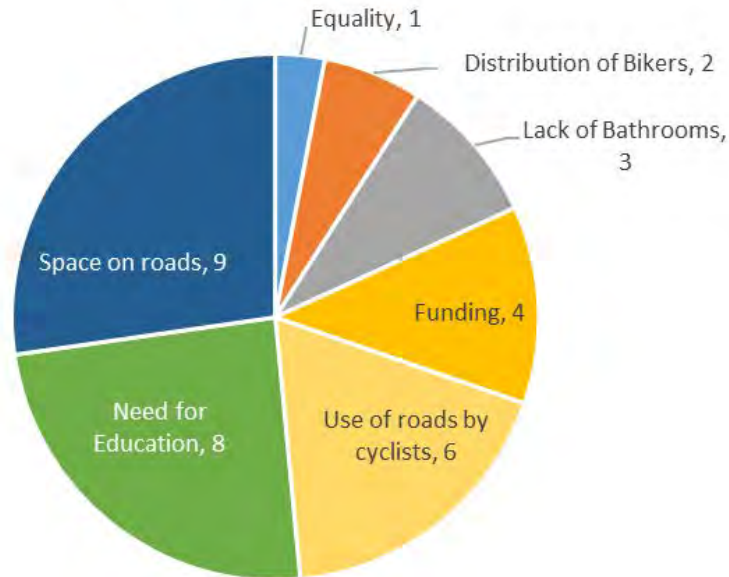
For data categorization purposes, the term “multi-use paths” includes greenways, trails, bike paths, shared use paths, Ecusta Trail and NC280 Trail

Opportunities for bicycling in Transylvania County include...	
1	Ecusta Trail - economic engine
2	bike commuting and reducing gasoline use improving our environment
3	can Brevard be a small city example of how people can go from home to school to work to errands with driving? I think we can.
4	strongly support bicycling as an integrated part of our communities
5	would love to see safe biking as transportation options geared at everyday life (connectivity between Roasman and Brevard, eg) - biking is a viable transportation optin in a county with limited public transit - help reframe the community conversation as less contentious
6	trails will increase business revenues
7	Tourists in Portland, ME love our trails - they rent bikes and pedal to the restaurants
8	People want to live in places that support an active lifestyle - employers need to be able to market location and quality of life to employees - this improves economic diversity and creates a stronger tax base.
9	facilities and bicycle routes to increase bicycle 'tourism' - economic impact
10	Ecusta Trail - yes
11	Ecusta Trail - yes
12	Ecusta Trail - what does it take to get the railroad owner to sell, lease, or allow banking the railroad
13	Ecusta Trail is a 20 mile park and will be used mostly by local folks
14	Ecusta Trail will draw local folks to live in the area and they will spend money - this will keep taxes low and increase revenue for local businesses
15	support Ecusta Trail - clearly convey to the railroad that you are interested in the right-of-way
16	Rails to Trails - Hendersonville to Brevard on Hwy 64
17	Ecusta Trail - no brainer, keeps bikes off roads, keeps cyclists safe, improves local economy for all if it is truly multi-use for all - why hasn't this happened yet?
18	work with Henderson County using railroad to link trails
19	we need the Ecusta Trail

Opportunities for bicycling in Transylvania County include...(Continued)	
20	educate drivers as to rights of bicycles to share roads
21	more awareness for bike events - websites and newspaper
22	bike shoulder and pull-off on 276 from Brevard to Hwy 11 in SC
23	have a website which can be checked by auto drivers to find out when and where bike races or bike riding groups or clubs will be - especially on weekends and evenings - bike groups and organizers would be required to post their planned rides
24	Love This: have a website which can be checked by auto drivers to find out when and where bike races or bike riding groups or clubs will be - especially on weekends and evenings - bike groups and organizers would be required to post their planned rides
25	yes - help reframe the community conversation as less contentious
26	agree - help reframe the community conversation as less contentious
27	education must be part of the plan both for veteran and new cyclists and drivers - is passing a cyclist included in driver's ed or in DOT tests for driver's licenses?
28	I find most roads very rideable, but sometimes cars are taking chances - there needs to be discussion with bikers and drivers - enlighten drivers that 10 seconds of being behind a rider is not so inconvenient.
29	infrastructure improvements needed - bicycling is here to stay
30	make roads identified on Transylvania County Tourism Map as #1 priority for addition of shoulders, turn-outs, re-paving, eliminating grooved white lines, etc.
31	paved pull-offs - longer and narrow - 5 foot wide max with bike painted on it for bikes
32	NCDOT - US 64 Toxaway to Indian - 4 foot paved shoulders
33	Safety funds - bike lanes
34	They want roads, not trails.
35	more roads with shoulders to make biking safer, and less inconvenience to cars / traffic
36	focus on connecting an infrastructure artery system first to build better habits for bikers
37	215 and 276 into forest need bike lanes to parkway
38	need a loop from Brevard, 276 South to Island Ford Road and back to town - need room for bikes
39	Hwy 276 - bike from Cedar Mountain to the Blue Ridge Parkway
40	More greenway trails like the one near Lowe's that goes through park
41	type of bicycling paths depends on circumstances and who will use them (families, enthusiasts, clubs, competitive racing)
42	more dedicated paths throughout county for general use
43	support NC 280 multi-use trail
44	paved shoulders - shared paths - 281 N & S; 64, 215 - Jackson County line; show traffic 281S / 64E / to Toxaway Falls Dam; Historic Toxaway Falls (HTS) work with County & NCDOT; more comments to come via HTF, Tessier and Siteworks
45	I would like to ride from Penrose to Brevard and Hendersonville - could park cars near river - I live in Crab Creek - entire area would prosper with bike trails - small businesses and B&B's - I've seen it in Virginia - I'm not a big biker, but it would be good for families and kids.
46	multi-use path from Brevard to Rosman - trees living along the road for beauty and safety for cyclists
47	I do not ride road in Brevard often, but do to get to the mountain biking in Bracken, Pisgah - never DuPont) - to be a truly bike friendly community, all bikers need to be considered (mountain bike enthusiasts, road cyclists, recreational path riders and kids) - there should be more opportunity for safe commuting for daily needs like school, work, yoga, shopping, breweries, and restaurants - the mountain biking here is world-class - the word Pisgah is legendary and gaining popularity among more recreational mountain bikers as well - there is no reason why the county should ignore this opportunity for bike-related tourist money coming into the county
48	I don't know, but I'm pretty concerned about giving up our railroads - what if we decide to develop a reasonable transit system?
49	Of course, this doesn't include incidents within DuPont and Pisgah National Forest - I'm both a biker and a hiker and would like to see more of the trails specifically for one or the other - this would increase overall safety in the parks - thanks
50	only public need a park
51	bike rest area with toilet and paved circle for laps to let cars pass
52	let's include railriding in the discussion (like in New Port, RI and Oregon)
53	taking your life in your hands - I wish I could leave my house and safely get into town
54	the deep cut rumble strips on the outsides of 276 going from Wilson Road to Calvert are so very deep, they can throw me off my bike
55	more "Share the Road" signs on 215, 276, 178, 64

Conflict points between cars and bikes include...

33 open ended responses

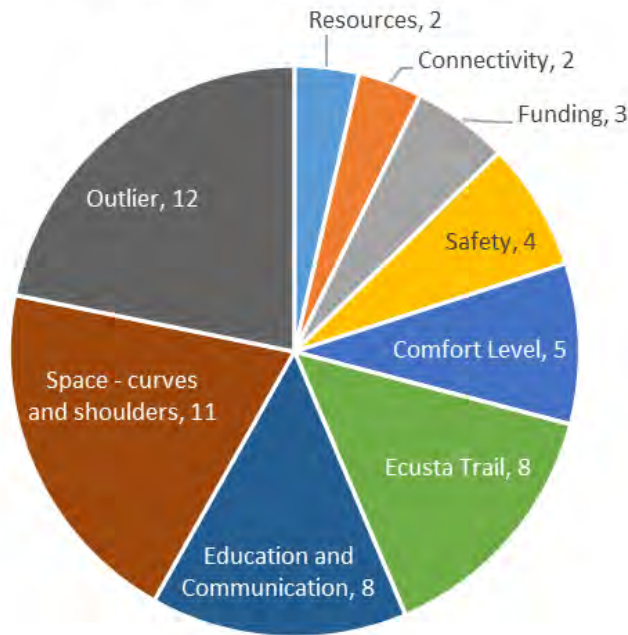


Conflict points between cars and bikes include...	
1	Rick - this process is skewed - the conflict is with more than cars, it's with the community: 1- bikers inappropriate urinating and defecating on the road; 2- races lock down the community; 3- NC GS Chapter 20 should apply equally to all vehicles; 4- roads are very dangerous - particularly in curves; 5- more time needed by citizens to get to town or church; 6- 1 bike = 34 vehicles held up
2	Denise - portajohns are needed
3	Roland: 1- bikers need to follow the laws; 2- be courteous; 3- help pay for roads and infrastructure; 4- using the side of the road for bathrooms
4	Rick - bike routes need to be in other areas - not concentrated in a few areas like Little River
5	especially since a lot of older neighbors who need to ride are on blood thinners - peace symbol
6	education needed for both motorists and cyclists
7	impatience and lack of education by drivers about cyclists rights
8	how do you get bikers to use paved shoulders instead of lanes?
9	each finds the other anxiety producing, distraccting and confusing
10	Inconsiderate cyclists and inconsiderate motorists are the minority on both sides, however I have greatly reduced by road riding due to feeling unwelcome on the roads - I'm a cyclist, but large group rides make our case hard to argue
11	challenges of people riding bikes in their community that don't have driver's licenses (ie, children) and thus they haven't been tested to see if they know the rules of the road.
12	include lack of understanding of each other's points of view - need education for both sides - understanding - we need to work together to understand
13	I agree that motorists get too close, but believe most motorists are unaware of the law
14	Where are the stats on the number of tickets handed out by police to those drivers passing bikers too close? - I'm with the guy who said he'll just kick the car if it's too close, which would get me a ticket or jail time
15	investigate additional funding options
16	funding for Ecusta Trail: private donations like the library, grants, fundraising efforts, taxes - it is a park
17	bed / tourist tax

Conflict points between cars and bikes include...(Continued)	
18	Rick - pay for tags/taxes and property tax (county tax)
19	intersections, narrow roads, rude behavior
20	cars pass unsafely on narrow windy roads
21	road width adds to the problem - both riders and cars need room - bike shoulders can provide some relief
22	any large load or vehicle pulling a trailer cannot pass in areas usual cars may be able to use - curvy roads - need a designated lane for bikes and they need to be expected to use them
23	Taylor - bikes in blind curves, no reflective gear, bikers going through stop signs
24	Riding south from Brevard to Cedar Mountain on 276 (especially on curves) is dangerous - this would be a fantastic area for a wide bike lane added to keep bikers and cars safer.
25	276, Wilson Road have no room for cyclists and motorists to coexist due to no buffer space - these are thoroughfares.
26	other roads that need bike lanes are Elm Bend, Old H'ville Hwy, Everett and Crab Creek
27	The differences in speed and the proximity in a shared space is a conflict
28	keep bikes off major highways - make bike only paths
29	Steve - NC General Statute 20 - 141 needs to be revised to apply to bikes for impeding traffic - common courtesy - riding in tandem good/bad depending on where - do away with "Share the Road" signs - concern about water quality from bikers on trails
30	Jackie - house trailers / conflict with bikes
31	People who live in areas with bicycles must leave early everytime so as to never break laws or mortally endanger other law abiding citizens
32	bikes can make people late to work, church, play
33	bikes in groups should ride single-file always

Barriers for bicycling in Transylvania County include...

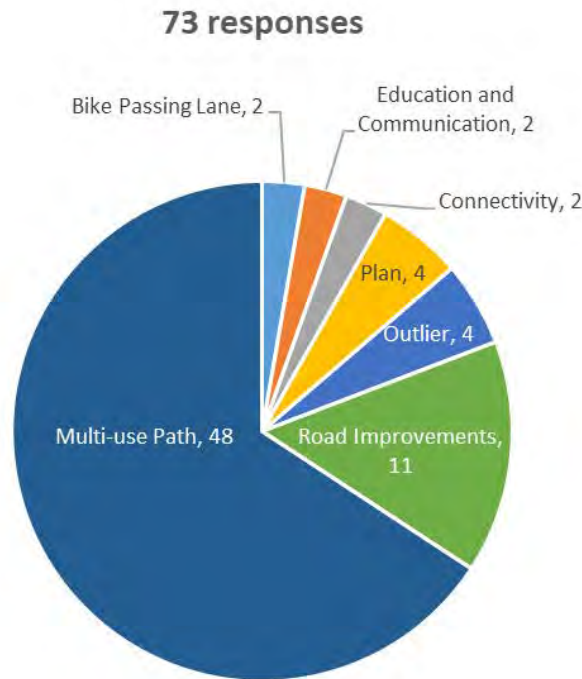
55 open ended responses



Barriers for bicycling in Transylvania County include...	
1	many people feel unsafe on narrow roads without shoulders and/or on any mountain bike trails in the forests - the Ecusta Trail would solve so many issues for so many users
2	access to trails where there are no cars - none at all
3	barriers: attitudes against bikers and group riders not flattening out
4	Yes - many people feel unsafe on narrow roads without shoulders and/or on any mountain bike trails in the forests - the Ecusta Trail would solve so many issues for so many users
5	I agree - many people feel unsafe on narrow roads without shoulders and/or on any mountain bike trails in the forests - the Ecusta Trail would solve so many issues for so many users
6	ditto - many people feel unsafe on narrow roads without shoulders and/or on any mountain bike trails in the forests - the Ecusta Trail would solve so many issues for so many users
7	yes - many people feel unsafe on narrow roads without shoulders and/or on any mountain bike trails in the forests - the Ecusta Trail would solve so many issues for so many users
8	Lack of pedestrian, mountain bike and road bike connecting communities with DuPont Forest
9	downtown Brevard need to be connected to the places and businesses people want to get to like schools, grocery, breweries, restaurants, farmer's market so people can ride around town easier than they can drive
10	build the Ecusta Trail that will take a large number of road cyclists off the narrow, curvy and shoulderless roads - this would make road travel safer for both cars and bikes
11	build the eEcusta Trail priority
12	Ecusta Trail - win for cyclists, others and the economy
13	yes - Ecusta Trail - win for cyclists, others and the economy
14	amen - a great first step with no downside - Ecusta Trail - win for cyclists, others and the economy
15	Rails to Trails works - I have ridden on a few and it boosts tourism, exercise and safety and brings jobs
16	Ecusta Trail
17	Please support the Ecusta Trail from Brevard to Hendersonville. It supports riders and walkers alike - promotes community, offers potential for lots of economic development like cafes, B&B's, rider support services, etc. - great tourism draw
18	we in Transylvania County need an education program for both cyclists and drivers - each needs to know their responsibilities and safe practices
19	yes to education program - licensing like fishing to include education on hazard of biking our roads

Barriers for bicycling in Transylvania County include...(Continued)	
20	narrow-minded provincial locals don't understand the concept of exercise / cycling
21	misinformation about the Ecusta Trail
22	motorists often don't see cyclists as having a right to share roadways - we need to work together to help everyone feel safe, welcome, and able to travel
23	education on motor vehicle lanes and bicycle lanes that are in many cases the same
24	biggest barrier is communication and education that cyclists are not bad people and all drivers do not want to run cyclists off the roads - education and communication need to be number one to prevent future conflicts
25	consideration of riders for the hikers/horses - verbal education (people get sick of written stuff - need teaching by other cyclists, shop salespeople, bike shops, Chamber, festivals to 1- let drivers pass as they may have jobs or sick kids, etc; 2- bikes should be carried over muddy areas of over-used trails; 3- do not expose yourself urinating on roadside (use a restroom); 4- follow rules of 'give-way' where horses are first, hikers second, bikers 3rd and let people know you are coming behind
26	why don't bikers get tickets for impeding traffic, but ag/log trucks do?
27	as a 70-yr native of Carolina, not a transplant - if people want to bike let them 1- pay for their own bike paths/roads (that we are for vehicle users feel no demand to share it, "share the road" sign on eg. Old Hwy 64); 2- be required to take a Trans-Co-Specific orientation program available on-line that will enumerate Trans-Co-Specific info, eg aging population; narrow winding rural hiways; then, they will register/confirm that they have received the orientation and allowed, after paying their per-capita use tax based on the number of bikers registering for the previous fiscal quarter and receive a 3-M reflective sticker for their equipment and a garment, eg t-shirt, stating same.
28	let us have the option of paying a supplement annually to our car tax to raise money for projects and shut up its haters that cyclists don't pay
29	how are we going to pay for these improvements when the roads we have are in poor shape - Country Club, Old 64, East French Broad
30	not every road in Transylvania County should be looked on as a potential bike route
31	motorcycles on Ceasar's Head 276
32	will building the Ecusta Trail create more bad feeling in drivers against cyclists who still ride roads?
33	none (barriers) - we have a trail just like Ecusta in Portland, ME and we love it - we ride to work - the snow doesn't stop us - what is stopping us here?
34	make bike only paths - keep off major highways
35	county needs to have a high insurance policy ready to act for lawsuit when county gets sued for bike accidents - ask town of Biltmore Forest about speeding bicyclist who sued town and country club when he got hurt
36	look at existing railroad tracks as resources
37	rails to trails - keep rails for light railcar then bike path
38	encourage kids to ride to school - make bike friendly and covered bike racks at school - start the next generation of cyclists
39	remove metal posts on existing bike path - people have hit them and got hurt - need retractable or plastic posts
40	bikes are not safe on our narrow roads - how can bikes be identified - they have no tags or identification
41	need large groups to have following van with warning on back
42	signage - bike visibility - lots of things could help connect us
43	Narrow roads that do not accommodate bikes and cars
44	too many curves on most roads
45	no shoulders, paved or other, on Everette or Hart Roads - these roads are heavily used by bicycle riders
46	Everett should be a high priority for shoulders and/or bike lanes
47	Crab Creek is scary to bike on, but it is a main connection point for the Little River Valley - please make safer for cyclists / pedestrians or provide an alternative route like Ecusta Trail or other pathway
48	Country Club Road and Barkley Road need improved conditions to bike home from high school
49	barriers: sight-lines
50	Narrowness of roads and curves with blind spots - not enough room on side of road where line is (the line is butted up next to the dirt/grass, most times less than three inches to the edge - this applies to Wilson Road and 276, both major thoroughfares and parts of Ecusta Elm Bend and Old Hendersonville Hwy
51	blind curves and no shoulders
52	shoulders on 276 too high for bikes to get over - also blind curves
53	barriers are speed, shoulders and sight-lines and challenging terrain on most roads.
54	speeding on 276 from Ceasar's Head to Brevard
55	too much traffic

The result of this bicycle planning process should be...



The result of this bicycle planning process should be...	
1	make downtown bike friendly
2	loop trails on roads with paved shoulders and/or bike pull-offs
3	bike pull off areas where they could pull off road while still moving and let cars pass
4	great walking and biking routes for community
5	promote cycling as healthy lifestyle and expand it to include more commuting by bike
6	would love to see the Ecusta Trail go forward
7	focus on the Ecusta Trail first - 12 years and no progress
8	ditto - focus on the Ecusta Trail first - 12 years and no progress
9	yes - focus on the Ecusta Trail first - 12 years and no progress
10	Ecusta Trail first - all others seem to be with width of roads
11	Ecusta Trail - connectivity, economic impact, most accessible to "interested but concerned riders" - so many advantages
12	Ecusta Trail please
13	ditto - Ecusta Trail please
14	Ecusta Trail #1
15	Ecusta Trail #1
16	Focus on Ecusta Trail
17	Ecusta Trail first - all others seem to be with width of roads
18	Ecusta Trail #1 priority
19	yes - Ecusta Trail #1 priority
20	a decision to let the public vote on the Ecusta Trail
21	Ecusta Trail please
22	ditto - Ecusta Trail please
23	amen - Ecusta Trail please
24	yes - Ecusta Trail please

The result of this bicycle planning process should be...(Continued)	
25	multi-use Ecusta Trail #1
26	Ecusta Trail to connect Brevard and Hendersonville is top priority - provides safe, off-rad access, excellent opportunities for new economic development for small entrepreneurial businesses - let's make this happen
27	Ecusta Trail - pass a resolution in support of the Ecusta Trail development and fund initial engineering study
28	rails to trails - Ecusta to Hendersonville
29	hopefully support of Ecusta Trail and truly creating infrastructure to support our 'bike friendly' community
30	80% of why we moved here and pay taxes here are clean air/water and keeping more cars off the road when a bike could be used would help ensure others get to enjoy clean air too - I so want to bike the Ecusta Trail someday
31	request land owner first about Ecusta Trail please
32	public education campaign - ongoing to help educate drivers to the fact that cyclists are taxpayers and do have a right to use roadways
33	short - medium - long range plan - just get started
34	3 foot shoulders
35	276 may be good for cars, not great for bikes
36	road improvements on routes featured on TCTDA's Ride Transylvania County Map - this includes repavement (not tar-chip), shoulders, bicycle turn-outs, frequent road sweeping, etc.
37	minimum of 3' shoulders on all us highways, state highways and major two-lane roads including 276, 215, 64, Wilson Road, Crab Creek, Old Henderson Highway.
38	enhancements to safe cycling will attract more bicycle tourist and promote economic growth
39	safe thoroughfares for bikes from Little River / Penrose to Brevard for commuting and recreation
40	safe travels for all concerned
41	to give bikes a shoulder to separate traffic
42	safe bike trails out of traffic and pedestrian way
43	bottom line is we need bike trails and shoulders
44	multi-use path on Chestnut Neely, Park, Parkview Roads
45	multi-use path on Chestnut Neely, Park, Parkview Roads - yes - connect Gallimore to Brevard Area Trail System (BATS)
46	multi-use path on Chestnut Neely, Park, Parkview Roads - I would love that
47	extend Brevard path into and past downtown Brevard
48	yes - extend Brevard path into and past downtown Brevard
49	yes - extend Brevard path into and past downtown Brevard
50	ditto - extend Brevard path into and past downtown Brevard
51	a way to ride to work
52	fund NC 280 mutipath
53	kids should be able to bike safely from Brevard High to Brevard Middle and Pisgah Elementary - BHS to BES already safe
54	yes - kids should be able to bike safely from Brevard High to Brevard Middle and Pisgah Elementary - BHS to BES already safe
55	multi-use path on Neely Park Chestnut
56	connect bike path downtown
57	more multi-use paths in town and toward Rosman
58	NC 280 multi-use path
59	greenways - connectivity - safe bike lanes
60	A boom to the Transylvania economy when bike paths and bike lanes are allowing everyone to travel safely along as the aesthetics are nice, more people will spread the word, more money will enter the area - a win-win for Transylvania County
61	agree - A boom to the Transylvania economy when bike paths and bike lanes are allowing everyone to travel safely along as the aesthetics are nice, more people will spread the word, more money will enter the area - a win-win for Transylvania County
62	paved greenways where possible
63	yes - paved greenways where possible

The result of this bicycle planning process should be...(Continued)	
64	more dedicated bike paths, lanes, education and safety - consider the economic impact of cycling - tourists (on and off road) realizing that these people will revive communities and bring money to the county
65	to determine feasibility of alternatives to road use such as the Ecusta Trail
66	build the multi-use Ecusta Trail
67	develop a trail way for gravel road rides with ratings
68	creation of a document that is used collectively with the other planning documents in the city and county decisions
69	check - creation of a document that is used collectively with the other planning documents in the city and county decisions
70	just like building permits, require life safety design elements - this plan should be used by the county as a life safety document for building a beautiful county
71	a model that is available for public viewing and critique, open to multiple iterations of design until the communities affected reach rough consensus
72	don't forget railroad tracks for railriders
73	We need more than "Share the Road" signs



TYPES OF BICYCLE INFRASTRUCTURE

Which do you like best? Vote with your dots & leave comments below.



Types of Bicycle Infrastructure, additional comments	
1	Bike passing lanes would be good for Hwy 276 and other roads
2	Paved shoulder - this and bike passing lane are most practiced for Transylvania County outside of town
3	Bicycle lane - good for in-town
4	Bicycle lane - we need these to be all throughout Brevard so it's clear who goes where
5	Greenway - I would gladly pay more taxes for the safest solution.
6	Greenway - This is an amazing community resource
7	Greenway - would be great to ride Rosman
8	Bike passing lanes - the chances of a cyclist pulling over on a climb, is slim - the passing lane would need to be long enough for traffic to pass



BICYCLE PROGRAM IDEAS

Which do you like best? Vote with your dots & add new ideas.

 <p>Brochure Map of Top Priorities</p> <p>8</p>	 <p>Increased Police Bicycle Patrol on Greenways</p> <p>4</p>	 <p>Increased Trail Maintenance</p> <p>15</p>	 <p>Demo/Pop-up Bike Projects (temporary low-cost, trial runs to test new street designs)</p> <p>7</p>
 <p>Public Bicycle Maintenance Stands</p> <p>8</p>	 <p>Public Art as Traffic Calming (temporary or permanent)</p> <p>6</p>	 <p>Open Street Events (single day street closures that encourage active use of public space)</p> <p>11</p>	<p>Other Program Ideas? (list them below!)</p> <p>Education & Conversation Programs</p> <p>3</p>
 <p>Watch for Me NC (bicyclist & motorist safety & enforcement campaign)</p> <p>26</p>	 <p>Bicycle-Transit Integration (bikes on buses & quality bike storage at park & ride lots)</p> <p>4</p>	 <p>Bike Lane Sweeping (for future bike lanes)</p> <p>19</p>	<p>Rail Banking</p> <p>22</p>
 <p>ACTIVE ROUTES TO SCHOOL</p> <p>Bike-to-School Events & Bicycle Education/Encouragement at Schools</p> <p>25</p>	 <p>BICYCLE FRIENDLY COMMUNITY</p> <p>Bicycle Friendly Community Application & Designation (by the League of American Bicyclists)</p> <p>13</p>	 <p>Bike Share Program</p> <p>22</p>	

Program Ideas, additional comments	
1	car free afternoons on some roads
2	permitting bikers to raise money for road (bike) improvements on said roads
3	Ecusta Trail with 16 dots
4	use railroad beds for bike trails - connect to Henderson County, like the Virginia Creeper Trail
5	yes - use railroad beds for bike trails
6	Ecusta Trail
7	private property rights
8	educational program, share the road with emphasis on courtesy on trails/roads, US Safety
9	Ecusta
10	Education to both pro/con bike parties is key - without, resentment will grow
11	railriding on existing tracks
12	railroad to trail around DuPont and connecting Cedar Mountain
13	protected bike lanes downtown and connecting schools and shopping and breweries and other recreation
14	educate and communicate why bikes are on roads and pathways - make sure people realize that Transylvania County is a bike riding tourist destination for the entire country and Canada - promote it and grow it - make it safer

NCDOT STRATEGIC TRANSPORTATION INVESTMENTS (STI): SPOT 5.0 SURVEY RESULTS

The NCDOT's State Transportation Improvement Program is based on the Strategic Transportation Investments Bill, signed into law in 2013. The Strategic Transportation Investments (STI) Initiative includes the Strategic Mobility Formula, a way to fund and prioritize transportation projects.

The Strategic Mobility Formula assigns projects for all modes into one of three categories: 1) Statewide Mobility, 2) Regional Impact, and 3) Division Needs. All independent bicycle and pedestrian projects are placed in the "Division Needs" category, and are currently ranked based on 50% data (safety, access, demand, connectivity, and cost effectiveness) and 50% local input.

On the following page are the results of the public survey for proposed bicycle and pedestrian projects in Transylvania County, as well as roadway improvement projects. A total of 910 responses were collected. Below is a screen shot of the Land of Sky website where a map of these proposed projects and further information on SPOT 5.0 is advertised. These are important potential projects and public responses to consider for this planning process.

[LOS RPO Prioritization SPOT5.0 Methodology](#) [SPOT 5.0 - LOS RPO Draft Project List for NCDOT Project Prioritization, SPOT 5.0](#)

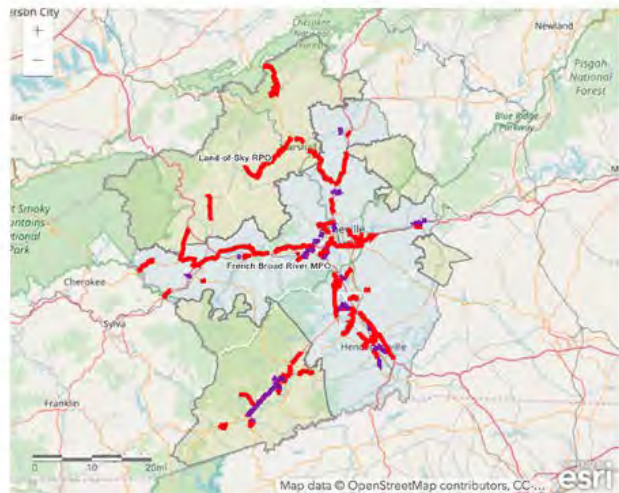
A Little Time On These Surveys Will Influence Transportation Projects For Years To Come

Thanks for your interest in transportation project public input. Take any or all surveys below for counties that you live in or travel through regularly. The projects in each survey are merely proposed, not promised, but your opinions will figure into a scoring process that makes them more or less likely to become funded. Likewise, the descriptions and images associated with each project are just guidelines. The planned projects will be shaped by transportation engineers, physical restraints of terrain and property, costs, and further public input.

You're encouraged to weigh in on the projects that are most relevant to you. Feel free to skip any project that you don't care about, jump right to the projects that you care most about, and quit a survey at any time. We appreciate any amount of effort and every opinion that you care to offer. THANKS!

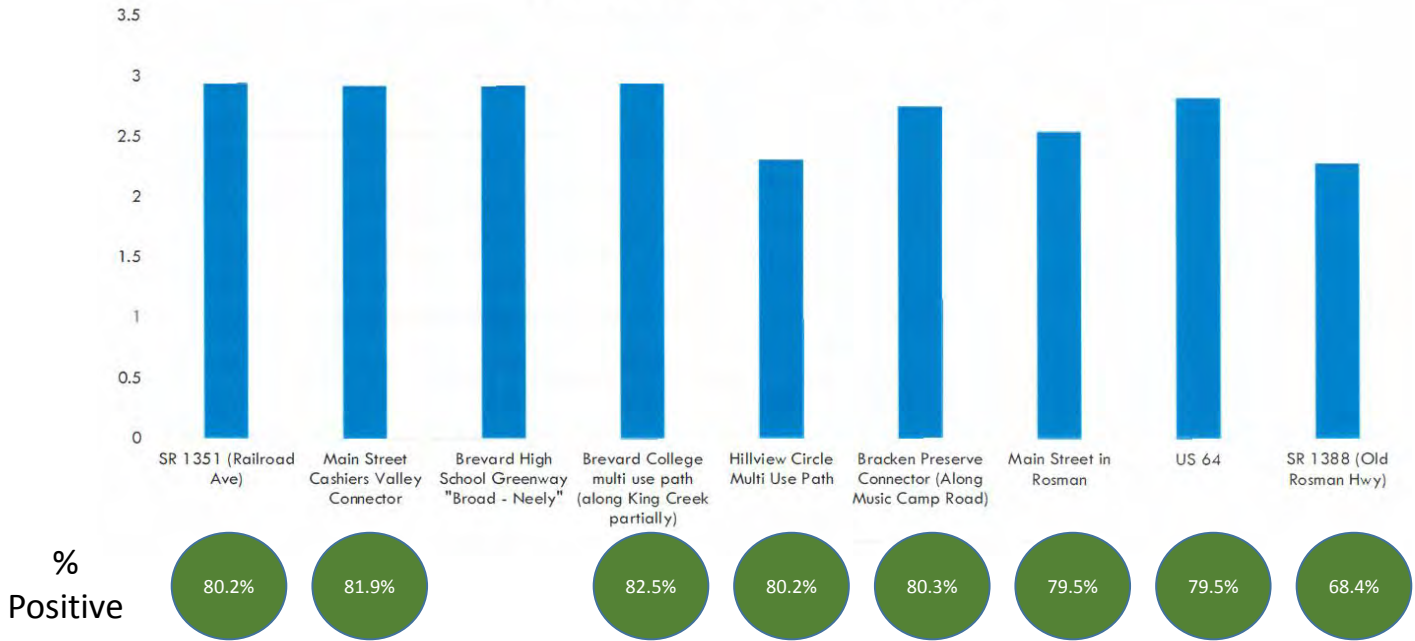
Surveys are now closed!

- [Buncombe County](#)
- [Transylvania County](#)
- [Madison County](#)
- [Haywood County](#)



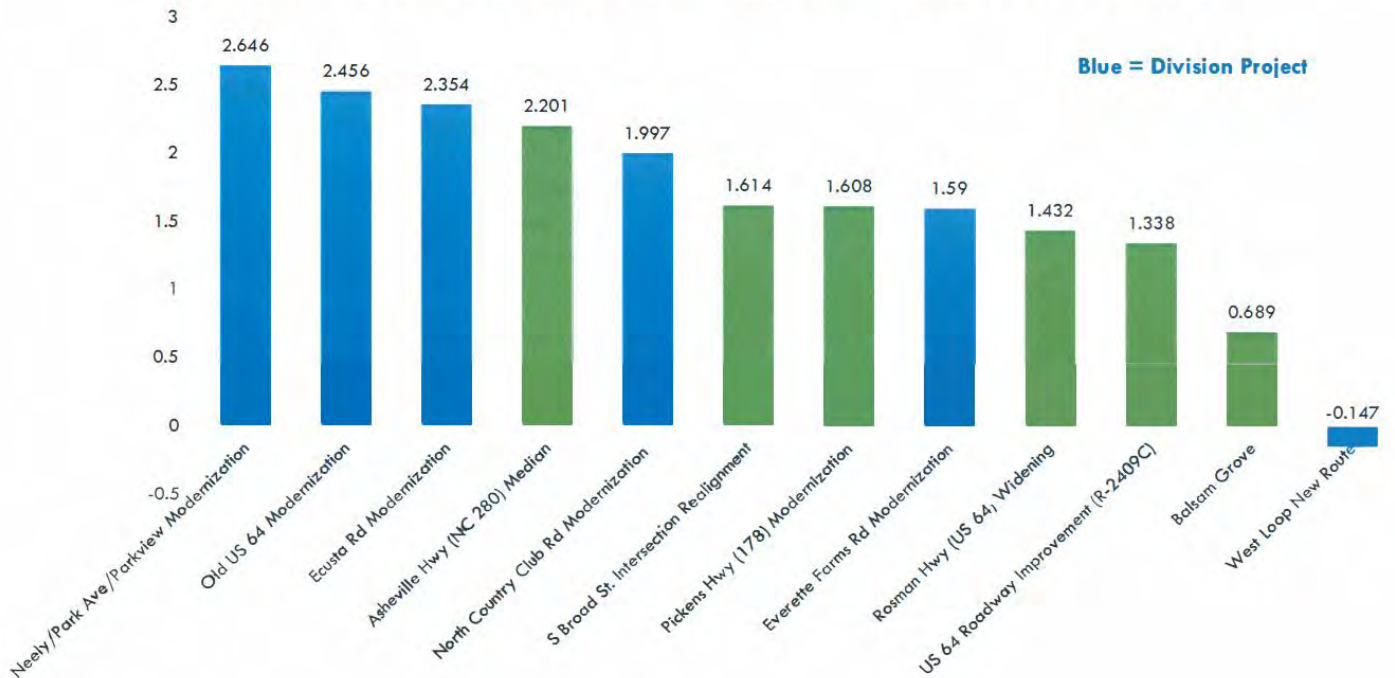
Screen shot of the Land of Sky RPO of proposed projects and further information on SPOT 5.0.

Average Score of Bike/Ped Projects



The scoring allowed users to go project-by-project to give both positive and negative responses. Users could rate a project from a "5" (most positive) to "-5" (most negative). The results are averaged below from most to least positively received (left-to-right).

Positive/Negative Scores for Regional Impact and Division Needs Projects



BREVARD COLLEGE SURVEY RESULTS

Brevard College's ENV 220 "Sustainable Cities" class from the Spring 2018 semester conducted a campus bike survey that was completed by 18% of all students, 29% of all staff, and 48% of all faculty (152 total surveys completed). Key themes from the final class presentation of the survey are shown below.

Discussion of Campus Bike Survey Results

- **Most People want:**
 - Access to bikes
 - Pleasant, safe places to ride
 - Storage options on campus
- **Few people said:**
 - I will never bike
 - Nothing could make me bike more
- **Some people want:**
 - Training classes
 - Cheap bike maintenance on campus



Common Concerns

- Not enough quality storage on campus
- Campus roads/sidewalks are in disrepair
- Access to affordable bikes
- Unsafe drivers

What's next?

- Cater to the people!
 - Connect existing **bike paths**
 - **Multi-use trail** from Brevard to Rosman
 - **Access to bikes** on campus
 - Better **storage** options on campus
 - Storage in buildings?*
 - How to encourage cycling?*



TRANSYLVANIA COUNTY/CITY OF BREVARD PARKS & RECREATION MASTER PLAN SURVEY RESULTS

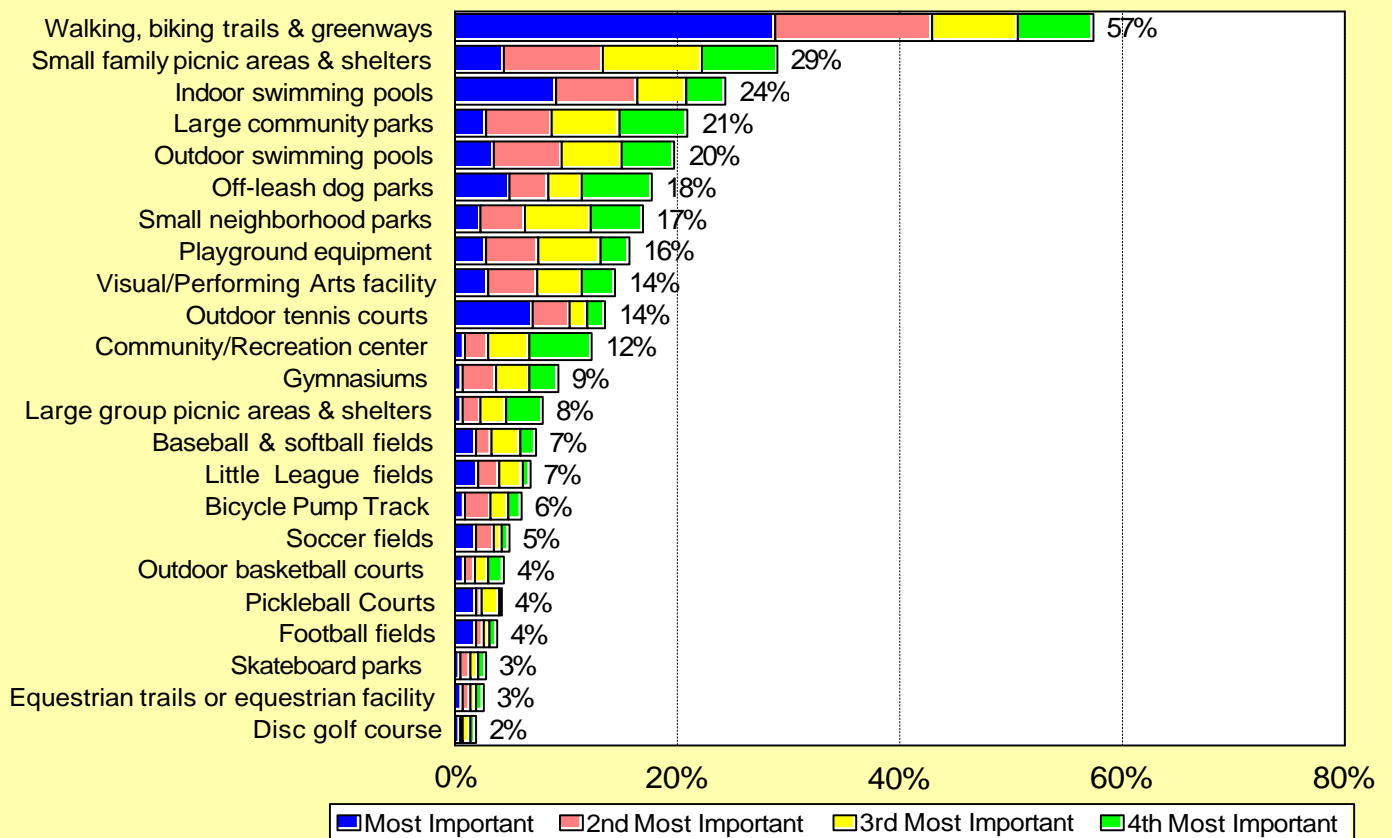
During the Transylvania County/City of Brevard Parks & Recreation Master Plan process, completed in 2016, a survey was conducted to better understand residents' priorities for parks, trails, sports and recreation facilities, programs, and services within the community. A goal was set to obtain a minimum of 400 completed surveys within Transylvania County boundaries. A total of 3,000 surveys were sent out to a random selection of households throughout the County. Of the 3,000 households that were requested to participate in the survey, 427 respondents participated. The results for the sample of 427 households have a 95% level of confidence with a precision rate of at least +/- 4.7%.

Question #6 (results pictured below) highlighted the desire for the importance of walking, biking trails, and greenways in Transylvania County.

The full plan document and survey results can be found here - <https://tcpr.recdesk.com/Community/Page?pageId=8546>

Q6. Parks and Recreation Facilities That Are Most Important to Households

by percentage of respondents who selected the item as one of their top four choices



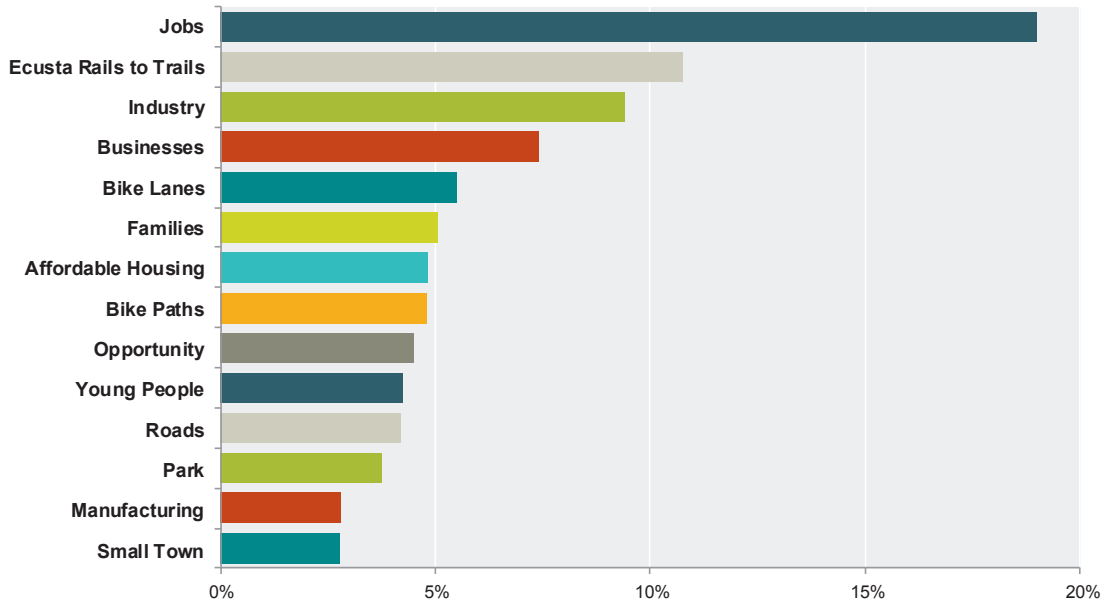
Source: Leisure Vision/ETC Institute (2015)

2025 TRANSYLVANIA COUNTY COMPREHENSIVE PLAN SURVEY RESULTS

Transylvania County’s Comprehensive Plan, completed in 2017, included an extensive survey that received over 2,000 responses. Several questions provided insight into bicycling in Transylvania County and these are included below and on the following page. The entirety of the 2025 Transylvania County Comprehensive Plan and survey results can be accessed through the County website here - <https://www.transylvaniacounty.org/departments/planning-and-community-development/2025-comprehensive-plan>

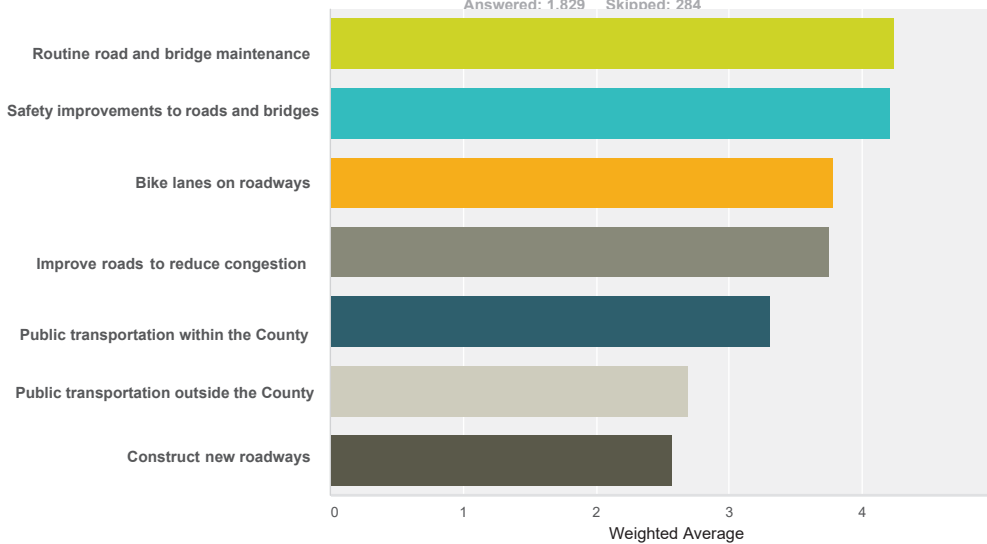
Q11 Thinking about the next 10 years, what would you like to see in the County that is not here now? Please list:

Answered: 1,771 Skipped: 342



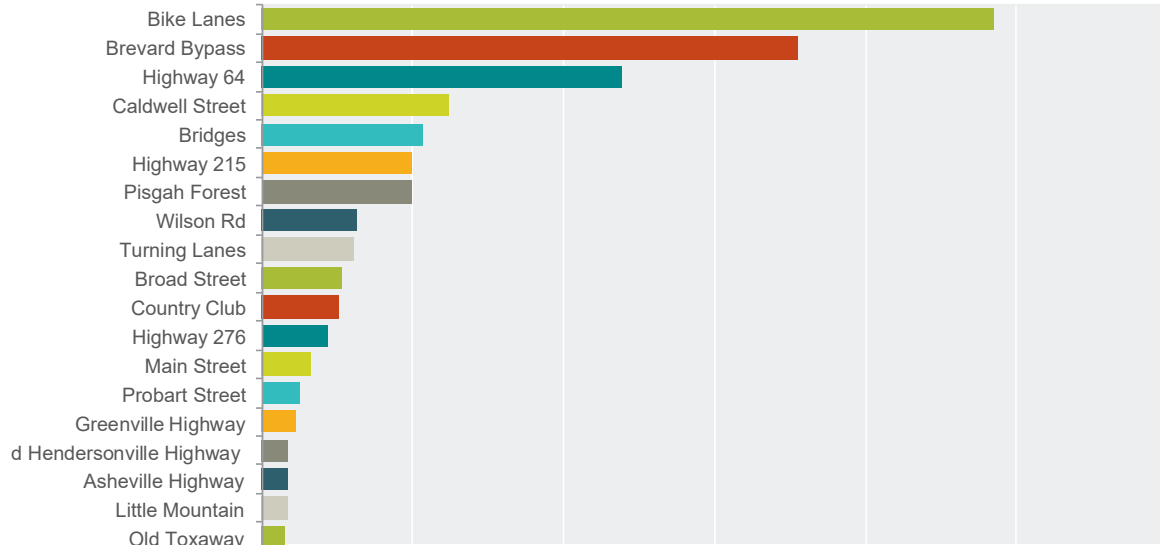
Q17 Where do you think Transylvania County should concentrate its resources in supporting safe and efficient transportation?

Answered: 1,829 Skipped: 284



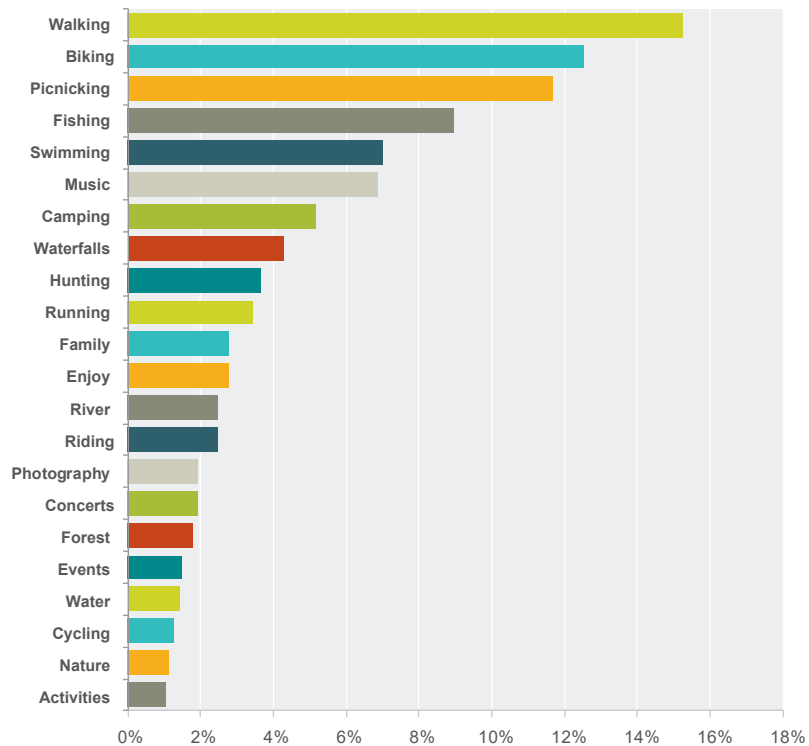
Q18 Road improvement and construction requires many years to plan. In your opinion, what one road or road improvement is needed in 10 years?

Answered: 1,388 Skipped: 725



Q20 What is your favorite activity to do in forests, parks and cultural facilities in Transylvania County?

Answered: 1,749 Skipped: 364





**APPENDIX D:
EXISTING CONDITIONS**

OVERVIEW

The information displayed in this appendix provides further detail to the summary information presented in Chapter 2: Existing Conditions. The table below describes key opportunities and challenges in Transylvania County related to existing conditions for bicycling. It is based on input from the Stakeholder Group, general public, field review, and available data. Information in this Appendix includes:

- Existing Facilities & Destinations maps
- Plan Review
- Bicycle Level of Comfort
- Roadway Inventory
- Existing Programs & Resources

Existing Conditions Assessment

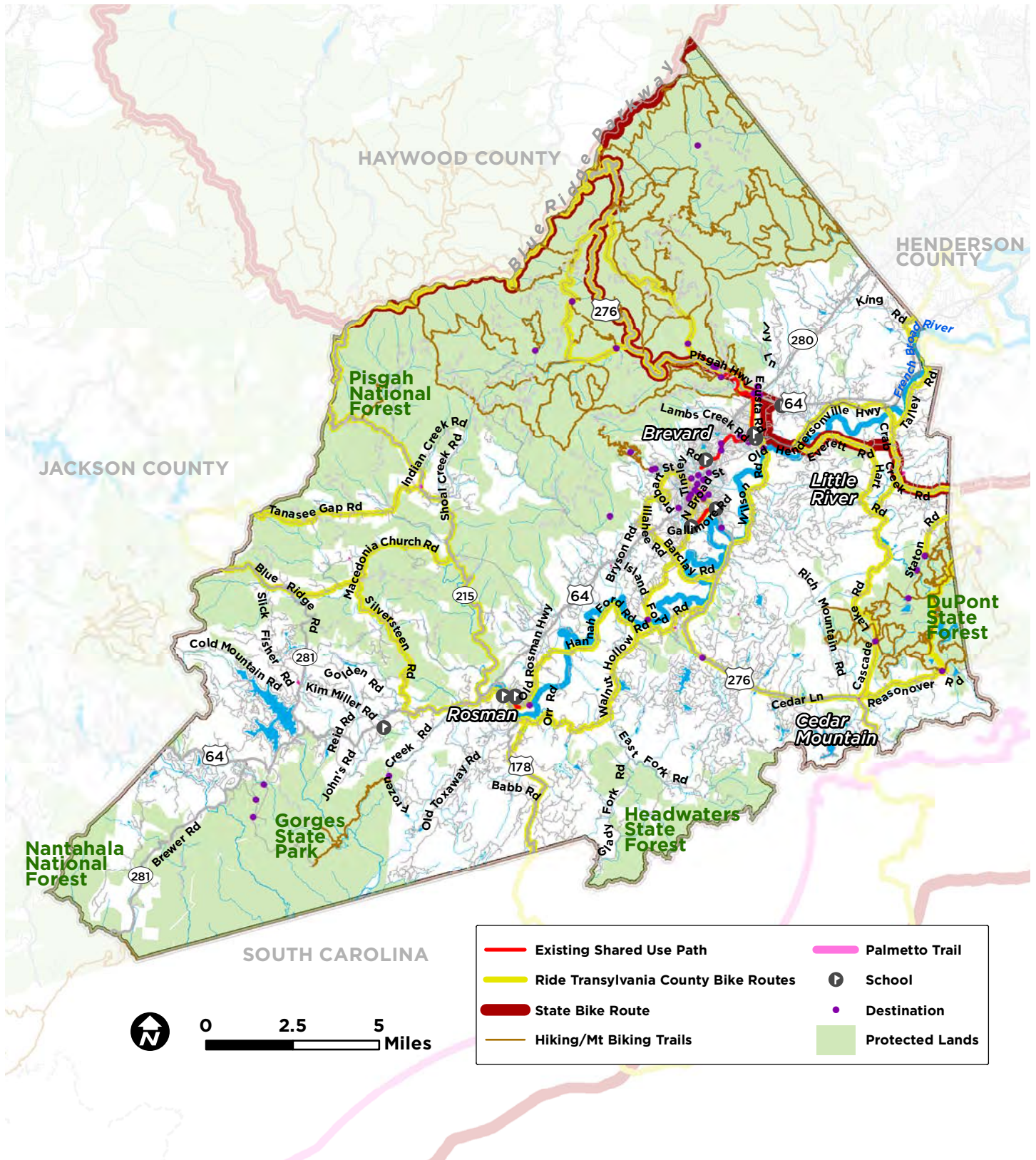
Opportunities and Challenges	Assessment
Designated Bicycle Routes (see Map 2.1)	North Carolina's state bike route system traverses Transylvania County via the NC 8 Southern Highlands route. The 1998 Transylvania County Bike Map details the six signed County bike routes. These routes were updated in 2017 in the <i>Ride Transylvania County</i> bike map, although signage across the county has not been updated. The signed state bike route and signed county routes are designated only through signage, and do not consist of any dedicated bicycle facilities.
Existing Paved Shared Use Paths (see Map 2.1)	Dedicated bicycle facilities in Transylvania County are currently limited, with 6.2 miles of shared use paths in the County. This includes 4.8 miles along the Brevard Greenway, one mile of sidepath along Gallimore Road connecting to Brevard High School, and 0.4 miles of greenway in Rosman. Currently, no bike lanes exist in the County.
Existing Mountain Bike Trails	With over 200 miles of mountain biking trails combined in Pisgah National Forest, DuPont State Forest, Bracken Preserve, and Gorges State Park, Transylvania County is well endowed with incredible recreational biking opportunities. With approximately half of the county preserved as national forest, state forest/park, and state game land, Transylvania County has attracted, and continues to attract, a significant amount of outdoor enthusiasts and tourism dollars. Limited bicycle infrastructure (see above) exists between these areas of existing mountain bike trails.
Local Cycling Community	With 8 road bike and mountain bike races scheduled for 2018, and numerous businesses and organizations involved with bicycle advocacy, education, repair, rental, training, or programming, the bicycling community is already very large and continuing to grow. Furthermore, the Brevard College cycling team is nationally competitive and adds another significant layer of interest to bicycling in Transylvania County. Strava heat highlight many of the popular routes through Transylvania County used by recreational riders (https://www.strava.com/heatmap#12.09/-82.73624/35.22448/hot/all), including many of the routes depicted in the <i>Ride Transylvania County</i> bike map.
Roadway Network: Traffic Volumes and Speed limits	<p>Transylvania County's roadway network consists of miles of rural, scenic, winding roads connected by US routes and NC routes that spread to each corner of the County. Some of the key roadway corridors in the county include:</p> <ul style="list-style-type: none"> • US 64 generally runs northeast/southwest through the heart of the valley that lies at the base of Pisgah National Forest. US 276 generally runs northwest/southeast from the Blue Ridge Parkway to the South Carolina border. The busiest section of roadway is US 64/US 276 from the NC 280 intersection south through downtown Brevard, with traffic volumes of 20,000-30,000 AADT. Some of the other highest traffic volume corridors include NC 280 north of US 64 (17,000 AADT), and US 64 east of NC 280 (8,000-10,000 AADT). • Other higher traffic sections stemming from Brevard include connectors to the northeast such as Old Hendersonville Hwy between US 64 and Ecusta Road (6,000 AADT), Ecusta Road (6,000 AADT), and Parkview Dr/ Park Ave/Neely Rd (5,000 AADT). • US 64 and US 276 split in downtown Brevard heading south - Greenville Hwy/US 276 east of downtown Brevard to East Fork Road carries traffic volumes of 4,500-6,300 AADT, and US 64 from downtown Brevard carries 16,000 AADT, gradually dropping to 3,000 by the time it reaches the Jackson County line. • Of the miles of scenic, rural roadway throughout the county, Crab Creek Road (3,600-5,000 AADT), Everett Road (3,000 AADT), and Wilson Road (1,700-3,700 AADT), carry the highest amounts of traffic. • US 276 and NC 215 make the long, steep, winding climb from US 64 and the valley to the northwest and the Blue Ridge Parkway and ridgeline. • Brevard downtown street grid - In downtown Brevard, the street grid network provides connectivity options along lower traffic volume streets such as Probart Street, W. Main Street, and Main Street to name a few.

Existing Conditions Assessment (Continued)

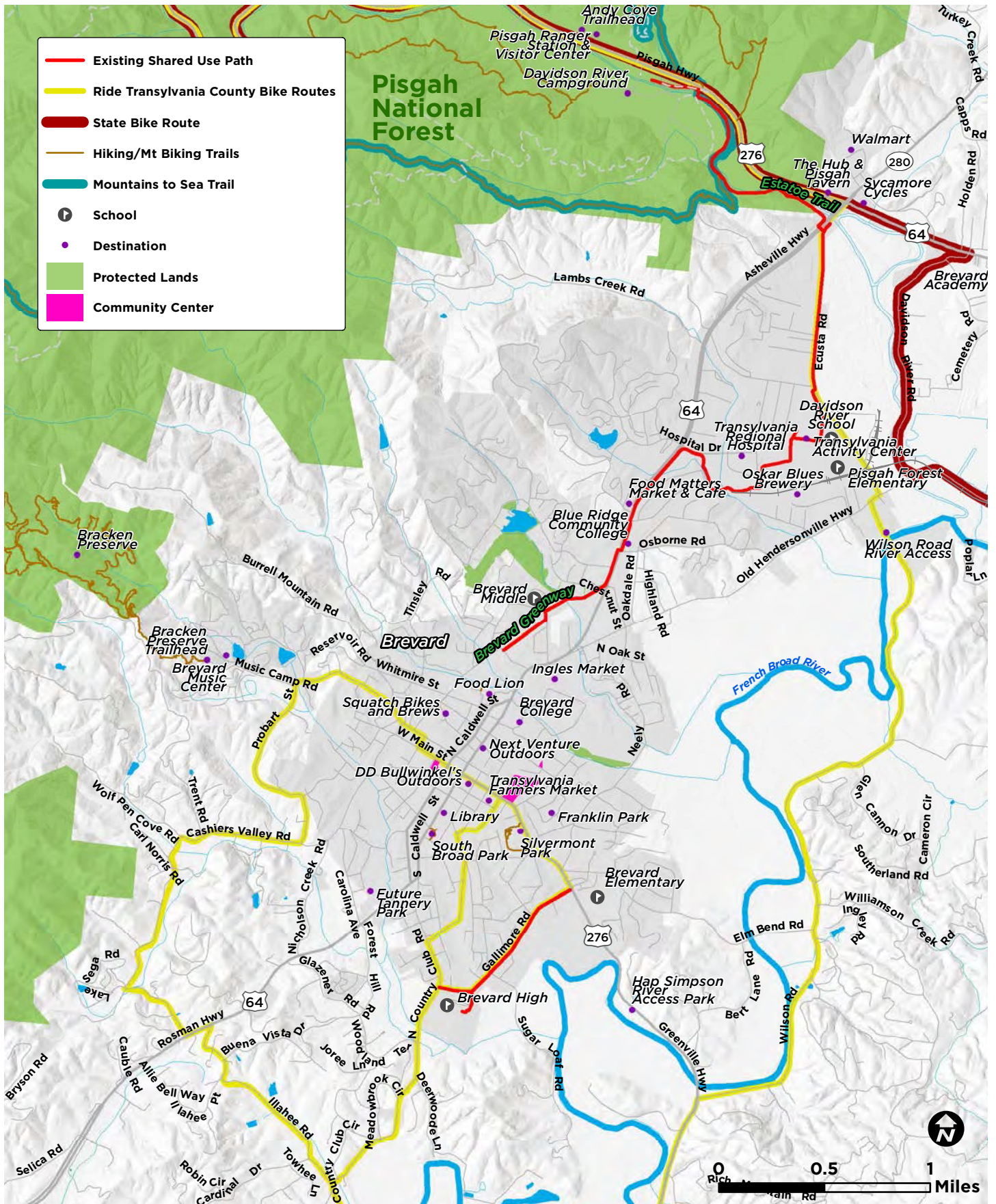
Opportunities and Challenges	Assessment
City of Brevard Bicycle Friendly Community Development	The City of Brevard has embarked on becoming a more bicycle friendly community through the League of American Bicyclists’ Bicycle Friendly Community program. The City is currently in the development process of implementing its priority greenway network and expanding on-street bicycle connectivity with the implementation of dedicated bike lanes and strategic bicycle boulevards. Furthermore, the City of Brevard passed a Complete Streets Resolution in 2018. As Brevard continues to improve bicycle comfort throughout the City, Transylvania County will continue to have opportunities to partner on multi-jurisdictional bicycle connectivity projects.
Climate	North Carolina’s climate is very well-suited for bicycling, with bicycling possible almost year-round, aside from a few stretches of the year during the peak extremes of summer and winter. The most bike-friendly community in the U.S. (Davis, CA), has similar annual average temperatures, the key difference being humidity levels.
Topography	The Transylvania County landscape is characterized by mountainous terrain. Bicyclists are likely to encounter significant topographical variation when bicycling across the County. However, development tends to occur in the flattest areas of a given area and this is true for Transylvania County. While even in the population centers you will find hills, these tend to be some of the flatter spaces in the County. The French Broad River valley also offers some of the flattest space across Transylvania County.
Rails to Trails	Trails converted from former rail lines can be opportunities for bicycling (especially in mountainous areas) because they are typically flat, graded, connect community destinations, and are completely separated from automobile traffic. While most communities do not have such opportunities, the currently inactive Blue Ridge Southern Railway in Transylvania County connects 20 miles from Brevard to Hendersonville and serves as a potential opportunity in Transylvania County. Bicyclists and motorists currently have to share narrow roadway space along roads that carry higher traffic volumes and speeds such as Everett Road, Old Hendersonville Hwy, Crab Creek Road, and US 64.
Major Infrastructure/ Physical Barriers to Bicycling	Like most counties, the major barriers to bicycle travel in Transylvania County are the network of higher traffic volume/higher speed roadways that do not have dedicated space for bicycle travel. These barriers to bicycling divide Transylvania County, and create “bikeable islands” between these roadways in residential areas and lower traffic volume roads. See map 2.7 Bicycle Level of Comfort, in which these somewhat isolated bikeable areas are visible. With only 6.2 miles of greenways and 0 dedicated bicycle lanes in Transylvania County, connectivity across the County is lacking.
Opportunity with New Growth and Development	New growth in the coming decades offers an opportunity to design future development and new roadways to accommodate bicycling the first time around, rather than as retrofit projects which tend to be considerably more complicated and expensive to implement. Several projects currently in development, including Wilson Road improvements and N. Broad Street improvements will include space for bicyclists with bike lanes and paved shoulder. Transylvania County population growth is expected to be 10%-20% from 2020 to 2030, according to statistics cited in Transylvania County’s Comprehensive Plan.
Varying Needs of Different Types of Bicyclists	Transylvania County’s over 200 miles of mountain biking trails and miles of on-road bike routes are geared towards recreational riders that are comfortable tackling rough and varied terrain as well as riding in the roadway with automobile traffic. While recreational bicyclists flock to this area to ride, the average adult and especially children will not likely feel comfortable enough to commute by bicycle along the existing roadway environment.
Regional Connectivity	Transylvania County has several regional bicycle trails/routes that connect through or near the county. These include: <ul style="list-style-type: none"> • NC Mountains to Sea Trail • Palmetto Trail (SC) • NC 8 Southern Highlands Bike Route (NC State Bike Route System) • Northern Crescent Bike Route (SC State Bike Route System) • Oklawaha Greenway (Henderson County) • Pisgah National Forest Mountain Biking Trails - miles of trails currently connect across the Transylvania County border into neighboring Jackson, Haywood, and Henderson Counties through Pisgah National Forest Property. • Ride Transylvania County Bike Route #5: Assault on the Carolinas Course connects into Greenville and Pickens Counties in South Carolina.

EXISTING FACILITIES & DESTINATIONS: TRANSYLVANIA COUNTY

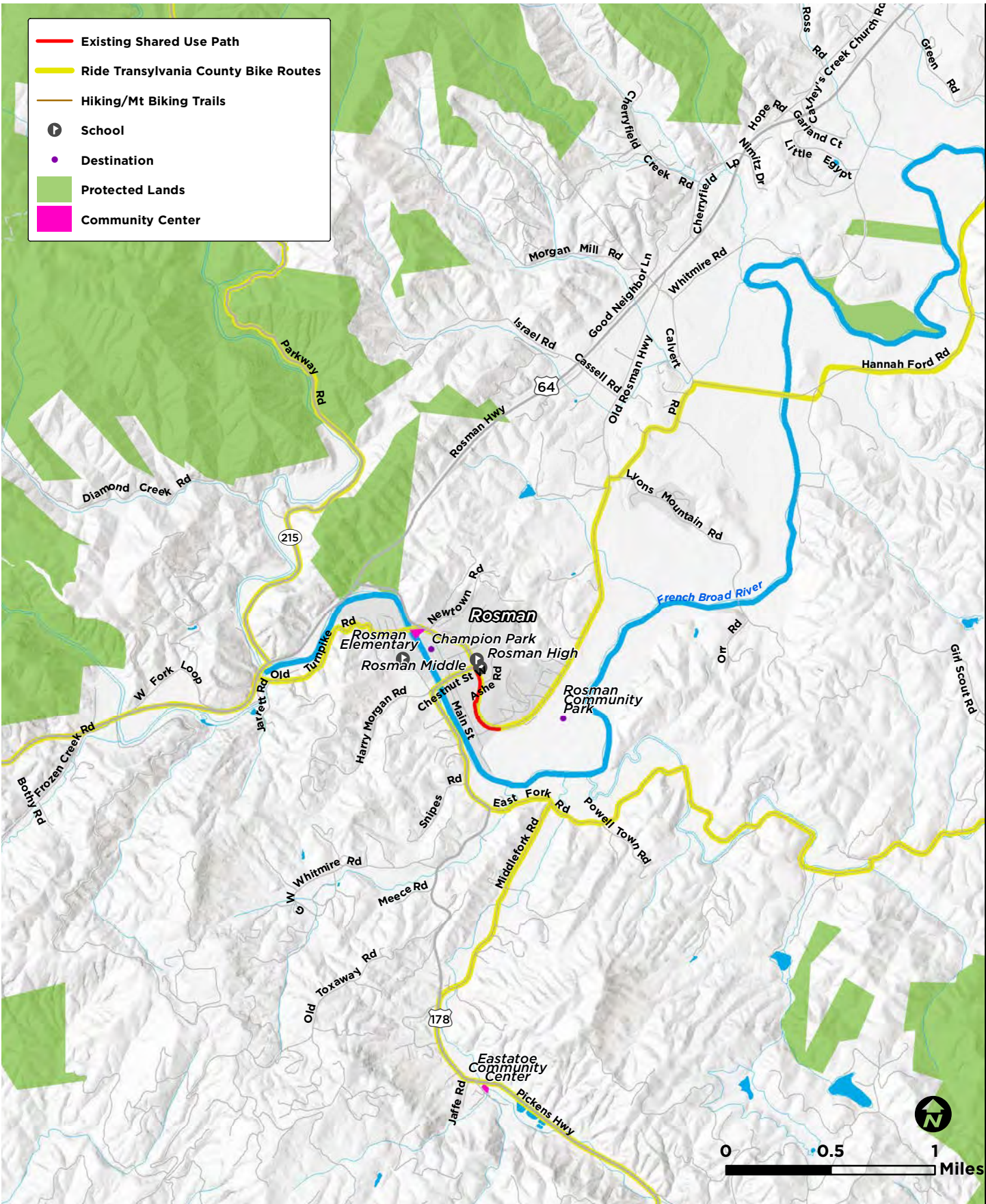
The following maps provide a basic inventory of existing bicycle infrastructure, routes, and local destinations in Transylvania County. They are based on input from the Stakeholder Group, general public, field review, and available data. These maps provide further detail to Map 2.1 in Chapter 2.



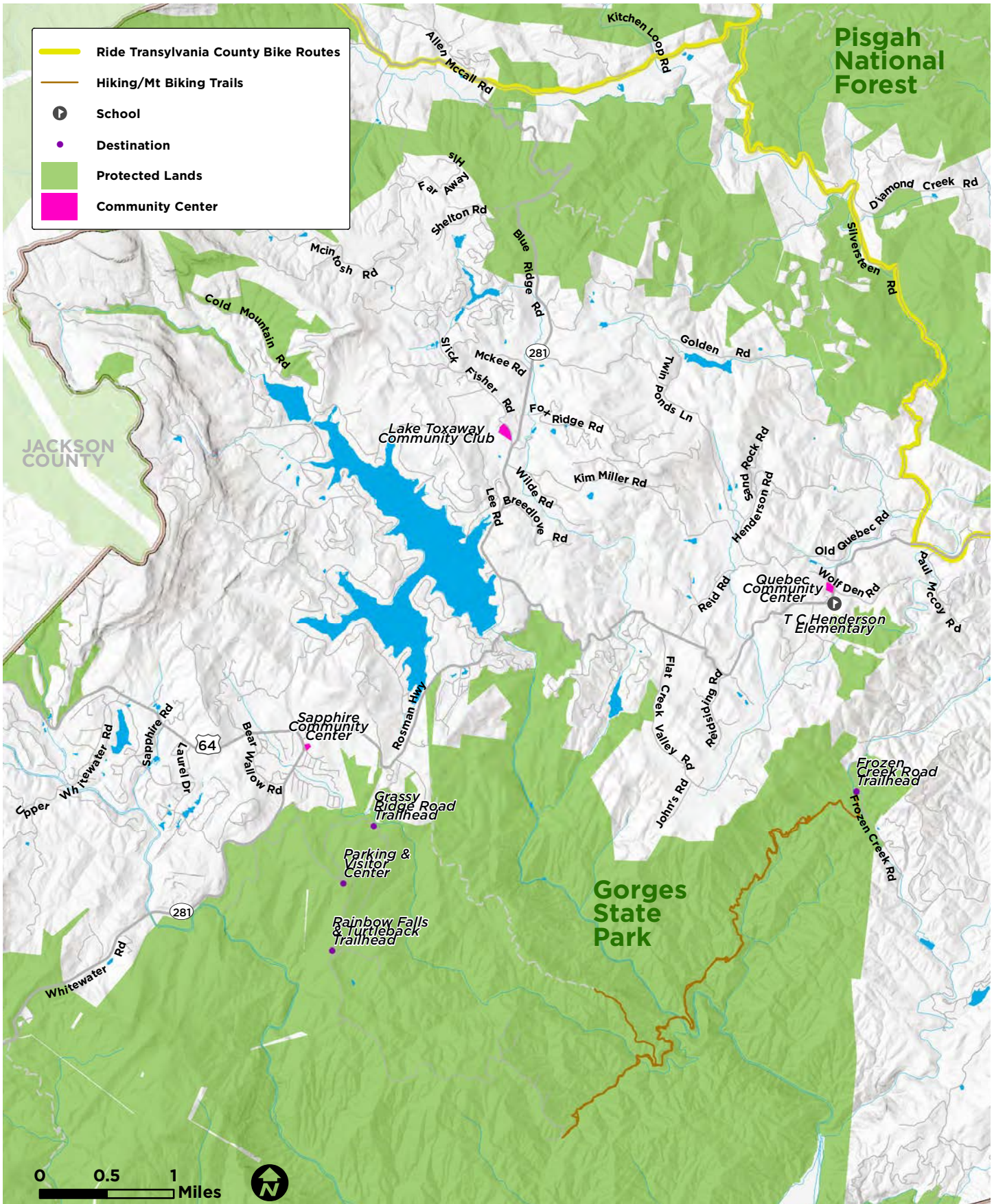
EXISTING FACILITIES & DESTINATIONS: BREVARD



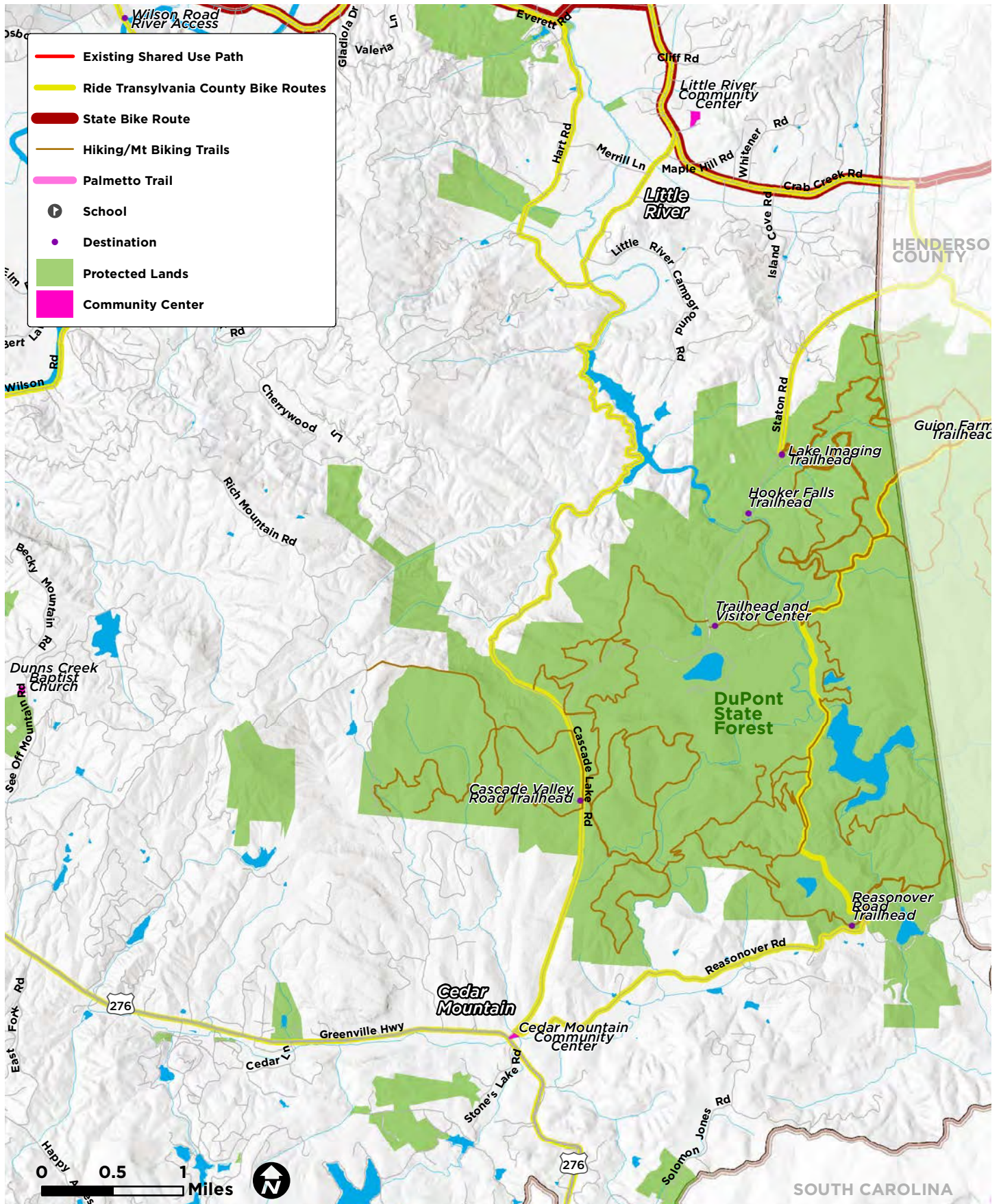
EXISTING FACILITIES & DESTINATIONS: ROSMAN



EXISTING FACILITIES & DESTINATIONS: SW TRANSYLVANIA



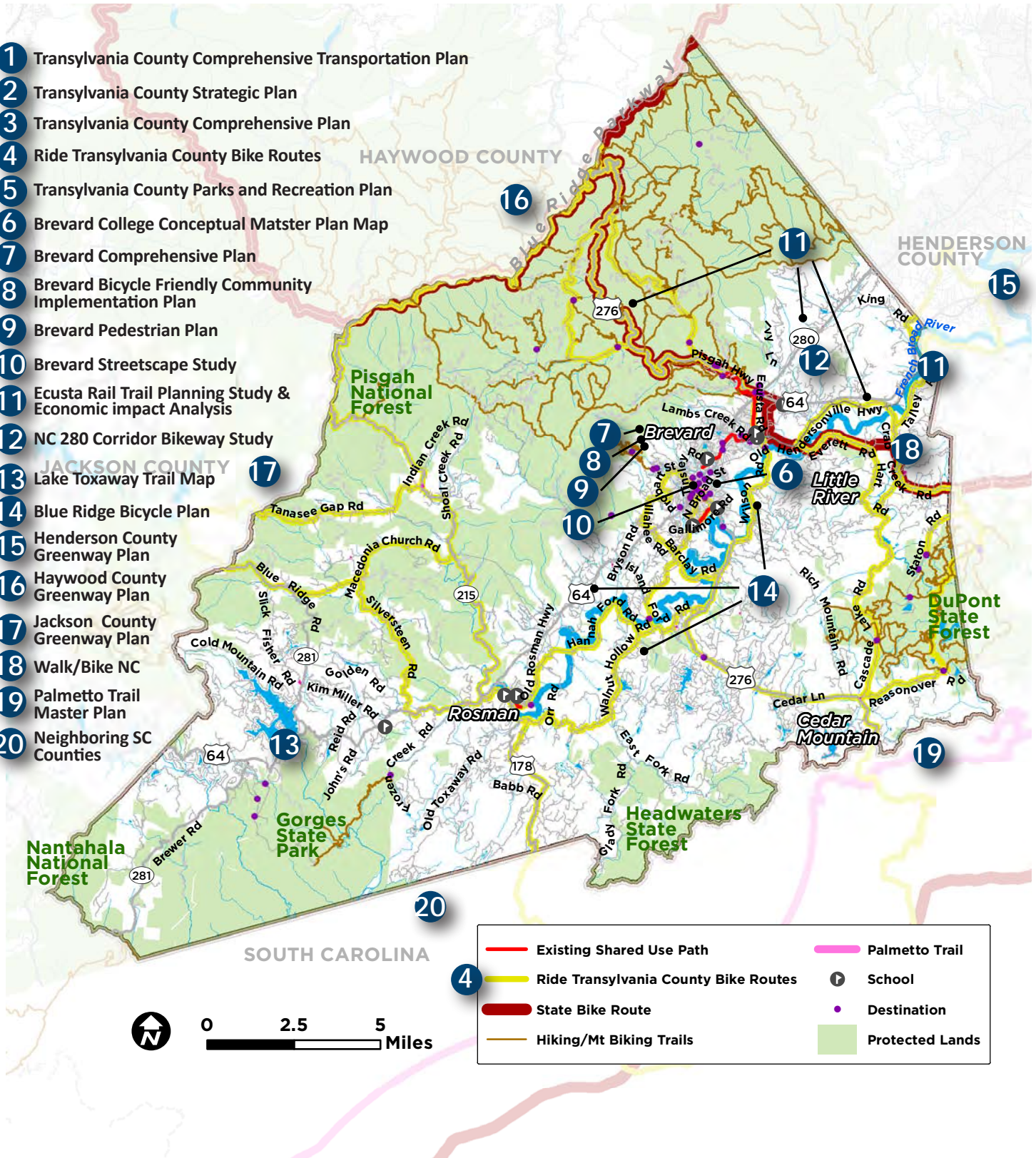
EXISTING FACILITIES & DESTINATIONS: EAST TRANSYLVANIA



PLAN REVIEW

This map (Map 2.2 from Chapter 2), and the corresponding table on the following page, highlight past planning efforts and key recommendations from those plans that are relevant to this planning process. These are important elements from which to build recommendations for Transylvania County.

- 1 Transylvania County Comprehensive Transportation Plan
- 2 Transylvania County Strategic Plan
- 3 Transylvania County Comprehensive Plan
- 4 Ride Transylvania County Bike Routes
- 5 Transylvania County Parks and Recreation Plan
- 6 Brevard College Conceptual Master Plan Map
- 7 Brevard Comprehensive Plan
- 8 Brevard Bicycle Friendly Community Implementation Plan
- 9 Brevard Pedestrian Plan
- 10 Brevard Streetscape Study
- 11 Ecusta Rail Trail Planning Study & Economic impact Analysis
- 12 NC 280 Corridor Bikeway Study
- 13 Lake Toxaway Trail Map
- 14 Blue Ridge Bicycle Plan
- 15 Henderson County Greenway Plan
- 16 Haywood County Greenway Plan
- 17 Jackson County Greenway Plan
- 18 Walk/Bike NC
- 19 Palmetto Trail Master Plan
- 20 Neighboring SC Counties



Previous Planning

Map ID	Plan Name	Key Recommendations related to the Transylvania County Bicycle Plan
1	Transylvania County Comprehensive Transportation Plan (CTP) (2012)	The CTP bicycle map includes recommended improvements to the signed Transylvania County bike route system, proposed greenways in Brevard, and on-street connections through Brevard.
2	Transylvania County Strategic Plan (2016-2021)	The Transylvania County Strategic Plan outlines six goals with implementation strategies. While this plan supports all six goals in some manner, Goal #5 would be most directly supported by this bicycle plan, with Goal #5 stating that <i>"The community's quality of life includes resources that promote health, transportation connectivity, a sense of place, cultural heritage and public safety."</i>
3	2025 Transylvania County Comprehensive Plan (2017)	The 2025 Transylvania County Comprehensive Plan identified the themes of economic health, environment, land use and livability, and health/culture/equity as priorities for the County. Included under Action Step G under Objective 2 of the Land Use and Livability theme is to: <i>"Develop appropriate infrastructure and educational programs for bikes and pedestrians to ensure safer roads."</i>
4	Ride Transylvania County Bike Routes (2017)	This road cycling map produced for the Transylvania County Tourism Development Authority overlaps with much of Transylvania County's signed bike route system (see Transylvania County CTP (2012) and the Transylvania County Bike Map (1998)). It includes eight routes (two on predominantly gravel surfaces) that connect to each corner of Transylvania County and into neighboring counties. These eight routes total 282.5 miles. These routes are not currently signed and do not include dedicated bicycle facilities.
5	Transylvania County Parks and Recreation Plan (2016)	The provision of more walking, biking trails, and greenways was the number one priority that came out of the stakeholder engagement process for the park and recreation plan. Accordingly, the development of 3-5 miles of new multi-use paths should be a top priority in Transylvania County. The County currently falls short of the recommended service levels for greenway acreage per resident. Currently the county has 0.24 acres of greenways per 1,000 residents, and the recommended level is 0.5 acres per 1,000 residents.
6	Brevard College Conceptual Master Plan Map (2014)	The Brevard College Conceptual Master Plan Map includes a proposed greenway through the heart of campus.
7	Brevard Comprehensive Plan (2015)	The Brevard Comprehensive Plan specifically cites improving bicycle infrastructure, policies, and programming as part of several objectives in the plan. These include becoming a Bicycle Friendly Community by the League of American Bicyclists and improving the greenway system as well as on-street bicycle facilities.
8	Brevard Bicycle-Friendly Community Implementation Plan (2018)	In 2017, the City of Brevard received honorable mention as a Bicycle Friendly Community through the League of American Bicyclists Bicycle Friendly community program. This implementation plan outlines specific policy, infrastructure, and programmatic actions that can efficiently improve bicycling options in the City of Brevard, and move the City closer to a Bronze Bicycle Friendly Community Award.
9	Brevard Pedestrian Plan (2006) - Multi-use path priorities updated 2018	The 2006 Pedestrian Plan recommended 10 priority multi-use path projects, four of which have been implemented to-date. The 2018 update identifies the remaining priority multi-use path projects as the current top priorities. Nearly four miles of greenways are scheduled to be constructed in Brevard over the next three years in an effort to provide improved connectivity citywide, implementing the 2018 update.
10	Brevard Streetscape Study (2012)	The Brevard Streetscape Study includes an assessment of the existing streetscape concepts and recommendations for a proposed streetscape prototype along Main Street and Broad Street and other general recommendations for the creation of a more vibrant downtown. Recommendations include bicycle lanes along N. Broad Street.
11	Ecusta Rail Trail Planning Study & Economic Impact Analysis (2012)	The City of Hendersonville, North Carolina initiated the Ecusta Rail Trail Planning Study and Economic Impact Analysis to determine the feasibility of converting an existing inactive rail corridor into a paved shared-use trail for the purposes of providing alternative transportation, recreation, and economic development. This railroad corridor would connect Brevard to Hendersonville (approximately 20 miles). This study recommends utilizing the railbanking process for implementation.
12	NC 280 Corridor Bikeway Study: Town of Mills River and Transylvania County (2014)	This study investigates the feasibility of providing active transportation facilities along the length of NC 280 from Brevard through Mills River. It recommends a multi-use sidepath along the length of the corridor, from Westfeldt Park in Mills River to the US 64 intersection in northern Brevard.
13	Historic Toxaway Planning Study (2018)	A proposed shared use path is planned through the heart of the Lake Toxaway community, roughly paralleling the US 64 corridor. This proposed trail would connect the multiple residential areas and businesses across the community as well as Gorges State Park.
14	Blue Ridge Bicycle Plan (2013)	The Blue Ridge Bicycle Plan covers seven counties in Western North Carolina, including Transylvania County. Recommendations include policy, programming, and infrastructure. Three priority regional corridors and five priority Transylvania County corridors are identified in the plan.
15	Henderson County Greenway Plan (2018)	The Henderson County Greenway Plan identifies three priority greenways: the Oklawaha Greenway, Ecusta Trail, and French Broad River Greenway. Regarding the Ecusta Trail, the plan recommends that the County should work in cooperation with Transylvania County, the City of Brevard, the City of Hendersonville, and the Town of Laurel Park to develop the proposed Ecusta Trail, if it is reasonably determined that the rail line from Hendersonville to Brevard has no viable future rail use. As part of this effort, the County, in conjunction with the above local governments, should consider requesting the State acquire the rail line for the purpose of establishing a greenway. The County and its partners should also review the federal rail banking statute as a means of securing and preserving the line.
16	Haywood County Bicycle Plan (2011)	The Haywood County Bicycle Plan includes county-wide recommendations with shared lanes recommended along NC 215, US 276, and the Blue Ridge Parkway to the Transylvania County border.
17	Jackson County Greenway Plan (2009) and CTP (2017)	Greenway recommendations from the Jackson County Greenway Plan include several hiking/mountain biking connections to the Transylvania County border. The CTP includes bicycle improvements along Charley's Creek Road/Explorer Road to the Transylvania County border.
18	Walk/Bike NC: Statewide Pedestrian and Bicycle Plan (2013)	Walk/Bike NC included recommendations for updating the state bike route system, including the NC 8 Southern Highlands bike route which crosses through Transylvania County. NC 8 is currently signed through Transylvania County along US 276 from the Blue Ridge Parkway to the US 64 intersection, continuing east along US 64, Davidson River Rd, Old Hendersonville Hwy, Everett Rd, and Crab Creek Rd into Henderson County. Walk/Bike NC recommends amending the route to utilize Talley Rd into Henderson County instead of Crab Creek Rd.
19	Palmetto Trail Statewide Master Plan (SC)	The Palmetto Trail is South Carolina's hiking/biking mountains to sea trail that partially runs along the Transylvania County border. This includes the Foothills Trail (hiking only) in Headwaters State Forest that runs along the NC/SC border.
20	Neighboring South Carolina Counties	Greenville, Pickens, and Oconee Counties in South Carolina are adjacent to Transylvania County's southern border. Two notable existing rails to trails, the 20 mile Swamp Rabbit Trail and the 7.5 mile Doodle Trail are both within 15 miles of the Transylvania County border. Greenville County completed a greenway plan in 2010.

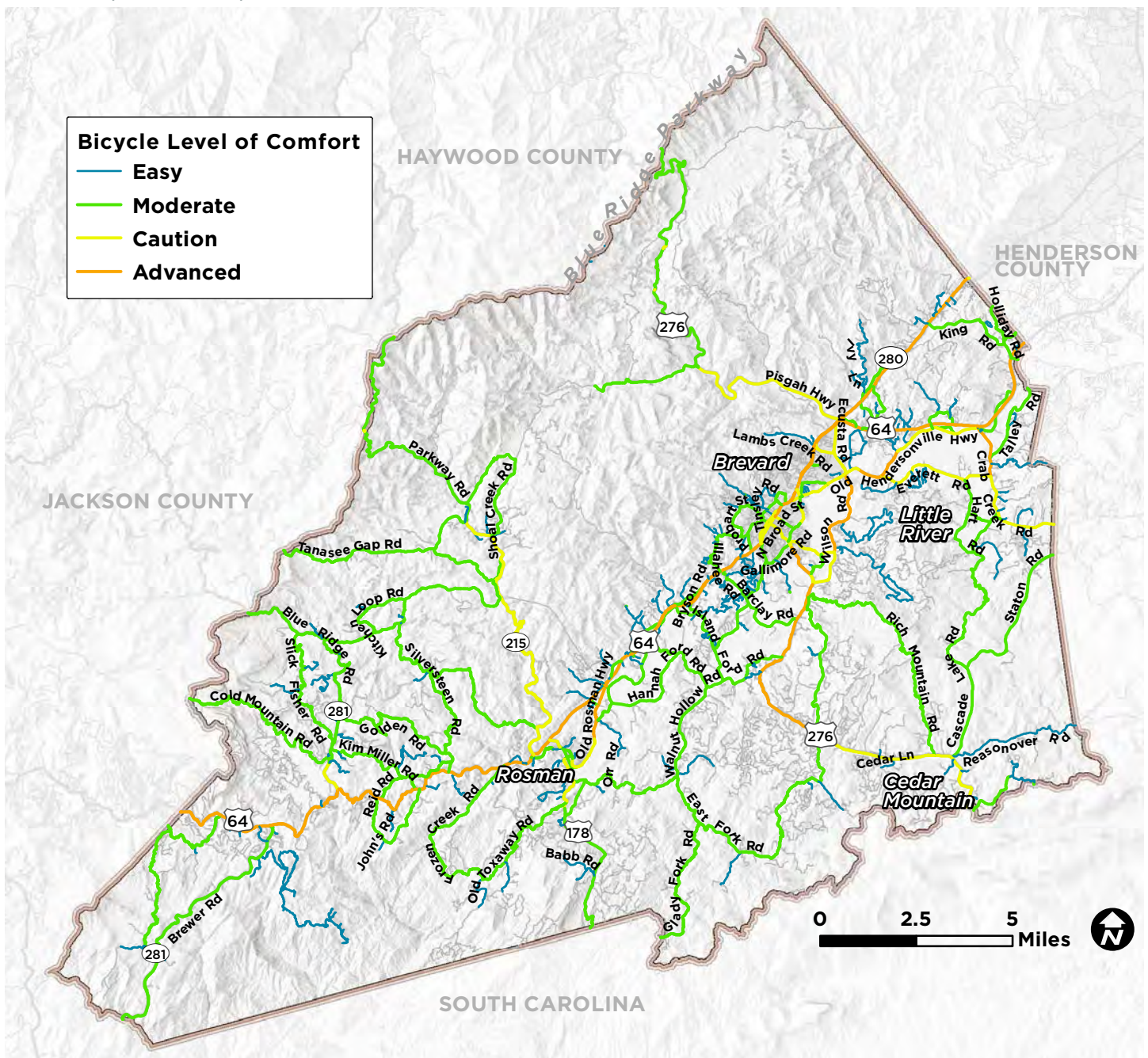
BICYCLE LEVEL OF COMFORT

The project team developed a rating system to evaluate roads across Transylvania County to determine biking suitability. In addition to using this data in developing recommendations, this system was used to create this suitability map, classifying each roadway by comfort level for a moderately experienced bicyclist. The data available to classify those roadways includes traffic volumes, speed limits, presence of 4' or wider paved shoulder or bike lane, and designated truck routes.

Much of Transylvania County is covered by easy and moderate (blue and green) routes - generally, these are relatively lower traffic volume/speed neighborhood streets (blue) or low traffic volume/higher speed rural roadways such as East Fork Road (green). The majority of the roadways that provide lower comfort levels are found along Transylvania County's arterial roadways that separate most areas of Transylvania County from one another and carry the highest traffic volumes and speeds.

Topography also plays a key role in Transylvania County. While topography is not directly included in this analysis, many roadways in Transylvania County have steep hills that are an important factor in the experience of a bicyclist. Particular examples in Transylvania County include Pisgah Highway (US 276), Parkway Road (NC 215), Walnut Hollow Road, and Rich Mountain Road.

The map below (Map 2.3 from Chapter 2) and table on the next page provide further detail to the characteristics of key roadways across Transylvania County.



Roadway Inventory

Road Name	Predominant Width (feet)	Number of Lanes	AADT (Annual Average Daily Traffic)	Speed Limit (mph)
Barclay Road	18	2	420	40
Caldwell Street	24-30	3	7,500-12,000	20-35
Cascade Lake Road	16-20	2	70-670	55
Cashiers Valley Road (Probart St to Rosman Hwy)	16	2	1,200	30
Crab Creek Rd (Hendersonville Hwy to county line)	18-22	2	2,400-3,300	45
E. Main Street (Broad St to Franklin St)	51	2	6,000	20-25
East Fork Road	16-20	2	280-1,600	35
Ecusta Road	21	2	4,200-5,600	35
Everett Road	18	2	3,000	40-45
French Broad Street	18	2	3,100	35
Gallimore Road	20	2	2,500-3,100	35
Greenville Hwy (Franklin St to Wilson Rd)	22-32	2	6,200-7,100	35-55
Greenville Hwy (Wilson Rd to East Fork Rd)	22-24	2	4,700-7,100	40-55
Greenville Hwy (East Fork Rd to SC border)	22	2	850-1,700	45-55
Hannah Ford Road	18	2	500	30-55
Hart Road	16	2	1,700	35
Illahee Road	19	2	580-770	25-35
Island Ford Road	16-18	2	740-1,300	30-45
Macedonia Church Road	18-20	2	350	35
Main Street (Broad St to Oaklawn Ave)	36	2	2,800-3,500	20
Main Street (Rosman)	18-20	2	2,100-2,900	25
Maple Street	20-25	2	N/A	25
McLean Road	20	2	2,900	25
Middlefork Road	18	2	330	35-45
N. Broad Street (French Broad St to NC 280)	48-60	4	15,000-30,000	35-45
N. Broad Street (Main Street to French Broad St)	47-50	3	15,000	20-35
N. Country Club Road (Broad St to S. Country Club Rd)	16-24	2	2,500-6,000	35
NC 215 (Rosman Hwy to Tanasee Gap Rd)	16-20	2	890-1,200	35-45
NC 215 Tanasee Gap Road to Blue Ridge Parkway)	20	2	90-100	45-55
NC 280	48-60	4	14,000-17,000	40-55
NC 281 (US 64 north to county line)	20	2	110-1,700	45-55
NC 281 (US 64 south to county line)	20	2	520-950	55
Old Hendersonville Hwy (Broad St to Crab Creek Rd)	18-20	2	1,500-6,600	35-55
Old Rosman Hwy (Chestnut St to US 64)	18	2	1,600-3,100	25-45
Old Turnpike Road	16	2	100-250	25
Park Ave/Parkview Dr/Neely Rd	18-30	2	4,700-5,400	25-35
Pickens Hwy (Main St to SC border)	19-24	2	290-2,500	40-55
Pickens Hwy (US 64 to Main St)	18-24	2	1,400-3,300	25-35
Probart Street (Brevard Town Limits to Cashiers Valley Rd)	16-22	2	590	25-55
Probart Street (Oaklawn Ave to Brevard Town Limit)	16	2	590-2,200	25
Railroad Avenue	24	2	2,600	25
Rich Mountain Road	14-22	2	N/A	55
Rosman Hwy (Clement Road to Broad Street)	42-64	4	11,000-19,000	35-55
Rosman Hwy (Clement Road to county line)	20-24	2	3,600-11,000	35-55
S. Broad Street (N. Country Club Rd to Main Street)	40-50	2	11,000-12,000	20-35
S. Country Club Road	16	2	480-940	35-55
Silversteen Road	18	2	350-850	35-55
Talley Road	18	2	390	45
US 276 (Fish Hatchery Rd to Blue Ridge Parkway)	21	2	210	35-55
US 276 (NC 280 to Fish Hatchery Rd)	20-21	2	1700	35-55
Walnut Hollow Road	20	2	570	55
Wilson Road	16-22	2	1,700-3,200	40

EXISTING PROGRAMS & RESOURCES

In addition to infrastructure, programmatic elements across a community play a key role in improving bicycle comfort by bringing education, encouragement, business opportunities, and diverse solutions for multi-faceted issues. Transylvania County is fortunate to have numerous programmatic elements currently in existence, and below is a list of many organizations and efforts currently in operation.

BIKE TRANSYLVANIA

Bike Transylvania is a publication of the Transylvania Times that hosts a website and publishes a yearly magazine in collaboration with the Transylvania County Tourism Development Authority. Both the website and magazine serve as a comprehensive guide to bicycling in Transylvania County, providing a thorough profile of recreational bicycling including places to ride, stay, races, County destinations, bike shops, education, and community. With over 10 bicycling races, hundreds of miles of mountain biking trails, and numerous businesses and organizations directly involved in bicycling, Bike Transylvania helps bring bicycling resources to the fingertips of residents and visitors of Transylvania County. Bike Transylvania website - <http://biketransylvania.com/>

LOCAL BICYCLING MAPS

Highly detailed, up-to-date maps are available for Pisgah National Forest and DuPont State Forest that include all mountain biking trails (over 200 miles), and for road routes in Transylvania County. The most recent maps have been produced by the Pisgah Map Company for purchase here - <https://www.pisgahmapcompany.com/shop-trail-guides/>

ACTIVE ROUTES TO SCHOOL

Active Routes to School is an NC Safe Routes to School Project supported by a partnership between the NC Department of Transportation and the NC Division of Public Health. Through this project, there are ten Active Routes to School project coordinators working across North Carolina to make it easier for elementary and middle school students to safely walk and bike to school.

Jackie Moore serves as the Region 1 coordinator which includes Transylvania County (as well as seven other counties). She has helped coordinate bike to school day events in Brevard in both 2017 and 2018. She has also helped coordinate several Walk to School Day events and other educational

programs and resource materials in the Let's Go NC curriculum to staff at Elementary and Middle Schools in Transylvania County. The Active Routes to School Program is funded into 2019. Active Routes to School website - https://www.communityclinicalconnections.com/What_We_Do/Active_Routes_To_School/map-arts.php

WATCH FOR ME NC

Watch for Me NC is a comprehensive campaign aimed at reducing the number of bicyclists and pedestrians hit and injured in crashes with vehicles. The campaign consists of educational messages on traffic laws and safety, and an enforcement effort by area police. Watch for Me NC is an ongoing statewide grant program administered by the NCDOT Division of Bicycle and Pedestrian Transportation (NCDOT DBPT). Currently, both the City of Brevard and Transylvania County have been partnering with NCDOT in the Watch for Me NC program since 2016. Further information can be found here - <https://www.transylvaniacounty.org/departments/planning-and-community-development/active-transportation>

STRIVE NOT TO DRIVE

Strive Not to Drive (Strive) began back in 1991 as a Bike to Work Day with the goal of encouraging bicycle commuting in Buncombe County. Over the years as concerns about air quality, physical inactivity (and related health concerns), and traffic congestion have grown, the campaign has broadened to encourage any form of transportation beyond driving alone in your car, including carpooling, shuttles, and transit.

In recent years the scope of Strive has expanded across a more broad area of Western NC, with Strive actions in Buncombe, Henderson, Haywood, and Transylvania counties. Further information can be found here - <http://www.strivenottodrive.org/>

BREVARD ACADEMY SPECIALIZED FOUNDATION BIKE GRANT PROGRAM AWARD

For the 2018-2019 school year, Brevard Academy was one of 36 schools across the nation selected by the Specialized Foundation to receive a grant to begin the Riding for Focus cycling program. The Riding for Focus curriculum integrates cycling into education classes as a way to help students achieve academic, health, and social success. Through this program, Brevard Academy will also receive a fleet of bikes, a starter maintenance kit, and helmets to help activate the program. Further information can be found here - <https://www.specializedfoundation.org/school-grant-program/>

FRIENDS OF THE ECUSTA TRAIL

The mission of the Friends of the Ecusta Trail is to develop the Ecusta Trail, a rail trail project connecting Brevard and Hendersonville, NC, and to promote a local network of multi-use trails. They are organized as a nonprofit 501(c)3 organization.

The Ecusta Trail is a proposed 19 mile rail trail between Hendersonville and Brevard. It is envisioned as a multi-use walking, hiking and biking greenway along the railway corridor connecting Hendersonville, Laurel Park, Horse Shoe, Etowah, Pisgah Forest and Brevard. Once complete, it will connect with the existing Brevard Bike/Walk Path, the Estatoe path leading into Pisgah Forest, and the Oklawaha greenway connecting Jackson Park, Patton Park and Berkeley Park in Hendersonville. Friends of the Ecusta Trail website - <https://www.ecustatrail.org/>

TRANSYLVANIA COUNTY SCHOOLS CYCLING CLUB

The Transylvania County Schools (TCS) Cycling Club's mission is to assist kids in finding a lifelong love of the outdoors through mountain biking, within a supportive community. Started in 2008, the program includes weekly organized rides in the spring and fall for middle and high school students, with three different levels of riding ability. TCS Cycling Club website - <https://www.tcsnc.org/cycling>

BREVARD COLLEGE CYCLING TEAM

The Brevard College Cycling team was formed in 2007 and has won a number of Division I and Division II titles since its inception (seven team national championships and nine individual national titles). This team brings students from all over the world into Transylvania County to compete at the highest levels of collegiate cycling. Brevard College Tornados website - <http://www.bctornados.com/sports/cycle/index>

PISGAH CYCLING

Pisgah Cycling is a non-profit social club dedicated to promoting cycling in and around Transylvania County through education, advocacy, support, and most of all, riding. They provide volunteering to support area races and rides, participate in area community events, and strive to spread educational information. Pisgah Cycling website - <http://pisgahcycling.org/>

BLUE RIDGE BICYCLE CLUB

The mission of the Blue Ridge Bicycle Club is to promote healthy and fun lifestyles through cycling in Western North Carolina. They accomplish this by providing education, providing cycling opportunities, working with health and fitness organizations, working with existing organizations and their cycling programs, working with governments on transportation planning, and developing new cycling programs. The Blue Ridge Bicycle Club website - <http://www.blueridgebicycleclub.org/>

PISGAH AREA SOUTHERN OFF-ROAD BICYCLE ASSOCIATION

Pisgah Area Sorba (PAS) is a non-profit, completely volunteer-based organization in the Asheville, Brevard and Hendersonville, NC area. The Pisgah Area Sorba is a volunteer organization dedicated to improving technical off-road biking recreational opportunities through advocacy for quality trail systems. PAS fosters relationships with community leaders, and promotes volunteerism and outdoor recreation that is consistent with environmental protection, thereby strengthening the community and quality of life. PAS website - <https://www.pisgahareasorba.org/>

BICYCLE RELATED BUSINESSES

Transylvania County is home to numerous businesses directly involved with bicycling. Some these businesses are listed below.

- Squatch Bikes & Brews
- The Hub & Pisgah Tavern
- Sycamore Cycles
- Carmichael Training Systems
- Next Venture Outdoors
- Oskar Blues
- DD Bullwinkel's
- The Bike Farm
- REEB Tours
- Red Wolf Tours
- Pura Vida Adventures



**APPENDIX E:
RECOMMENDATIONS**

COMPREHENSIVE NETWORK

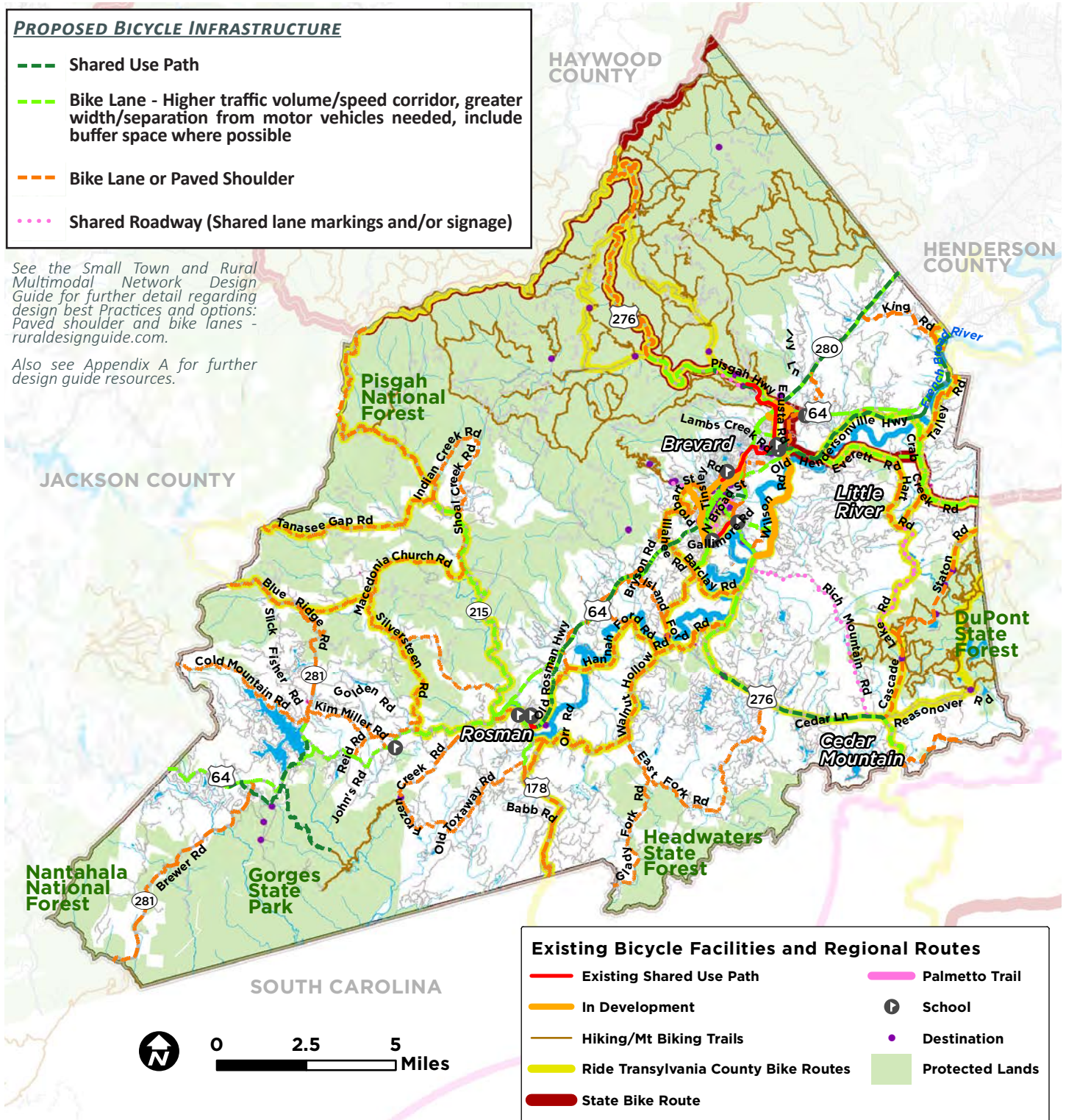
This comprehensive network should be built incrementally over time. These are long term recommendations that may be implemented in conjunction with future roadway projects, new development, and/or a myriad of potential public/private/non-profit sector partnerships. While longer term, they are an important vision of this plan, as they show what the potential is for any given future development or roadway construction that may provide an opportunity for incorporating bicycle facilities. As progress is made on the priority network, new priorities should be selected from this comprehensive map of recommendations. Below is Map 3.3 (from Chapter 3), with zoom-in maps provided on the following pages.

PROPOSED BICYCLE INFRASTRUCTURE

- Shared Use Path
- Bike Lane - Higher traffic volume/speed corridor, greater width/separation from motor vehicles needed, include buffer space where possible
- Bike Lane or Paved Shoulder
- Shared Roadway (Shared lane markings and/or signage)

See the Small Town and Rural Multimodal Network Design Guide for further detail regarding design best Practices and options: ruraldesignguide.com.

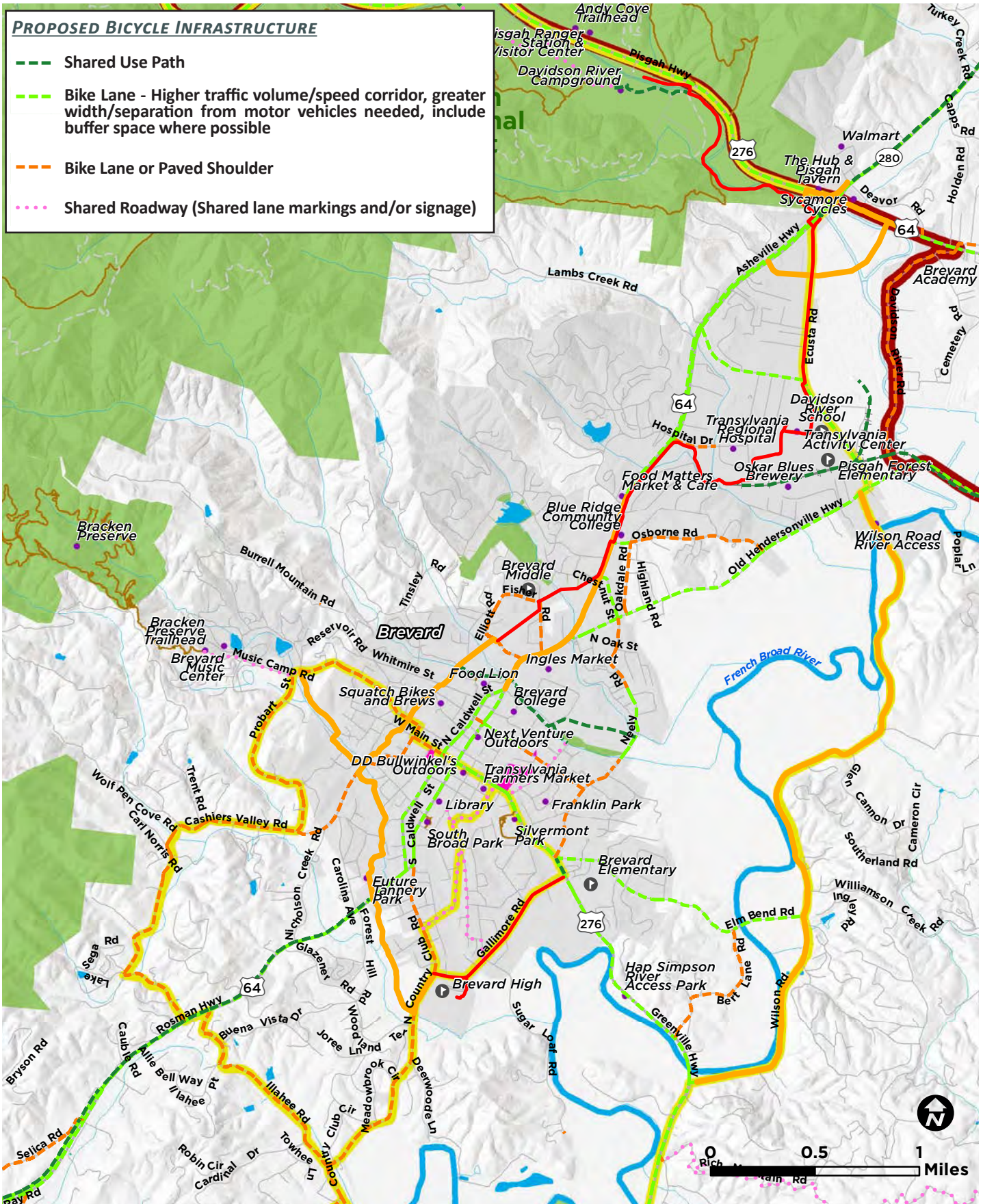
Also see Appendix A for further design guide resources.



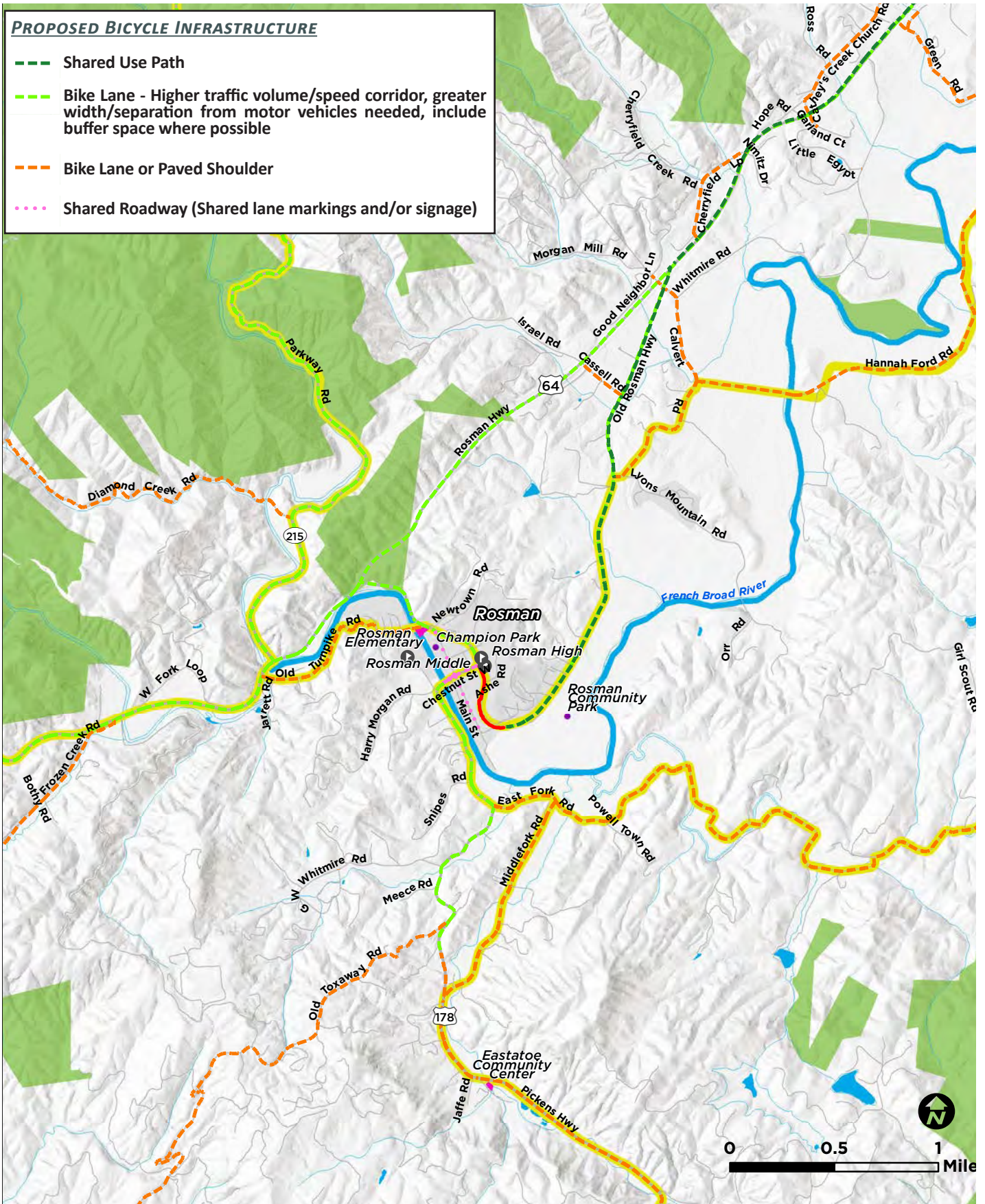
Existing Bicycle Facilities and Regional Routes

- Existing Shared Use Path
- In Development
- Hiking/Mt Biking Trails
- Ride Transylvania County Bike Routes
- State Bike Route
- Palmetto Trail
- School
- Destination
- Protected Lands

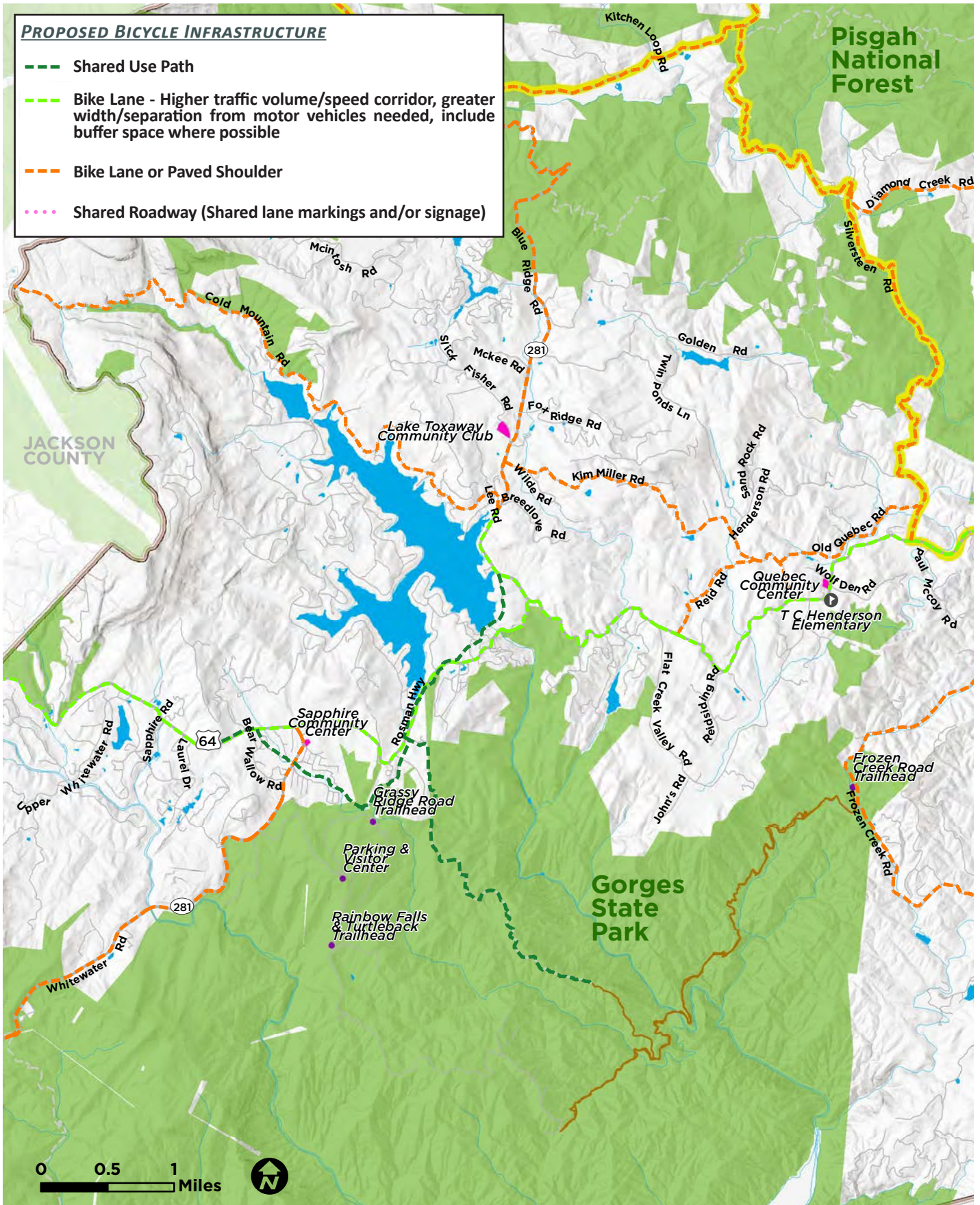
COMPREHENSIVE NETWORK: BREVARD



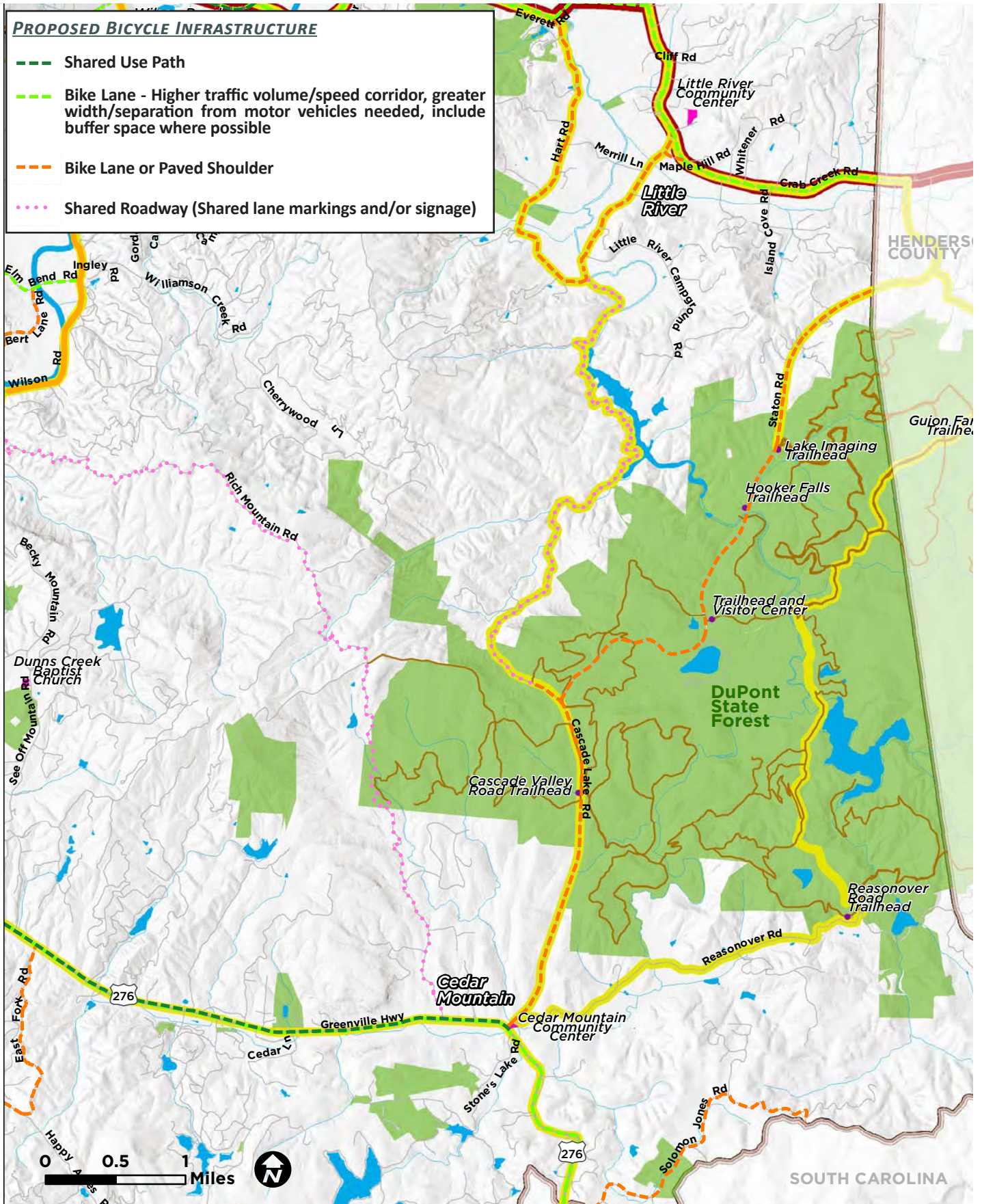
COMPREHENSIVE NETWORK: ROSMAN



COMPREHENSIVE NETWORK: SOUTHWEST TRANSYLVANIA



COMPREHENSIVE NETWORK: EAST TRANSYLVANIA



Transylvania County Bicycle Plan

Prepared for Transylvania County & NCDOT
Prepared by Alta Planning + Design

2019