



# **Western Piedmont Bicycle Plan Executive Summary**

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## Acknowledgements

Developing the Western Piedmont Bicycle Plan (WPBP) involved cooperation from the Steering Committee, local government, the public, and technical staff. The Western Piedmont Council of Government expresses gratitude to those who have assisted with the plan's development.

### WPBP Planning Staff

Todd Stroupe  
Kelly Larkins  
Shelley Stevens  
John Marshall

### Steering Committee Members:

Rick French	Alexander County	Christina Kliesch	Cooperative Christian Ministry
Chad Ritchie	Alexander County	Rob Dickerson	Hickory Velo Club
Scott Carpenter	Burke County	Jeff Welch	Luna Cycles
Jason May	Burke County Senior Center	Kelly Russell	Morganton Cycling Club
Merlin Perry	Caldwell County Pathways	John Vine-Hodge	NCDOT DBPT
Barbara Beatty	Catawba County Board	Dean Ledbetter	NCDOT Division 11
Chris Timberlake	Catawba County Planning	David Keilson	NCDOT Division 12
Scott Millar	Catawba County EDC	Kristina Solberg	NCDOT Division 13
Amy McCauley	Catawba County Public Health	Angie Lambert	Rock n Road Bicycles
Kelsey Johnston	Catawba County Public Health	Lanny Lambert	Rock n Road Bicycles
Lance Hight	City of Conover	Greg Wilson	Town of Granite Falls
Andrea Surratt	City of Hickory	Gary McClure	Town of Rutherford College
Shamaury Myrick	City of Hickory	Wayne Annas	Town of Rutherford College
Jenny Wheelock	City of Lenoir	George Holleman	Town of Taylorsville
Mark Young	City of Morganton	Chip Black	Town of Valdese
Colleen Anderson	Cooperative Christian Ministry	Bryan Duckworth	Town of Valdese Public Works





## Introduction

The Western Piedmont Bicycle Plan provides a framework for improving bicycle transportation in the counties of Alexander, Burke, Caldwell, and Catawba. The plan acts as a blueprint for improving both regional and local connectivity with a comprehensive toolbox.

## Scope

### Geographic Scope

The Western Piedmont region is located in the foothills of western North Carolina about 45 miles north of Gastonia, 50 miles northwest of Charlotte, 70 miles west of Winston-Salem and 75 miles east of Asheville. As of 2014, the urbanized area is comprised of 162 square miles containing 24 municipalities: Brookford, Catawba, Claremont, Conover, Hickory, Long View, Newton, Maiden, Connelly Springs, Drexel, Glen Alpine, Hildebran, Morganton, Rutherford College, Valdese, Cajah's Mountain, Cedar Rock, Gamewell, Granite Falls, Hudson, Lenoir, Rhodhiss, Sawmills, and Taylorsville.

The rural area encompasses 1,502 square miles and contains both unincorporated communities, agricultural land, and several recreational areas and parks. Of all major parks in the region, the largest are Lake James State Park at 4.89 square miles, South Mountain State Park at 27.76 square miles, and Pisgah National Forest (located in both Burke and Caldwell Counties) at 168.67 square miles.

### Project Scope

The Western Piedmont Bicycle Plan addresses the following:

#### **Route Networks**

The Plan identifies a bicycle route network based on information gathered from public input.

#### **Economic Impact of Cycling**

The Plan examines the impact increased bicycling can have on the region.

#### **Safety Analysis**

The Plan reviews bicycle accident data from 2007-2012.

#### **Laws/Enforcement**

The Plan outlines recommendations for the inte-

gration of bicycle-friendly policies into codes and ordinances.

#### **Roadway Design and Signage**

The Plan provides recommendations on the placement of signage along the identified routes.

#### **Implementation**

A prioritized list of recommended strategic and low-cost improvements is included along with a discussion about future project programming, facility maintenance, and funding sources.

## Vision, Goals, and Policies

As part of the public input process, the Steering Committee created a vision, goals, and policies to guide the development of the Western Piedmont Bicycle Plan and bicycle planning in the region for years to come. The following was developed over several months. Each goal has related policies that have been prioritized by the public.

The following vision statement guides the Western Piedmont Bicycle Plan:

*Our region values bicycle use for its health and recreational benefits. Bicycles represent an alternative transportation option for our community's residents and visitors as an accessible, safe, healthy and scenic way to reach places people want to go.*

To achieve this vision now and in the future, the following goals and policies were developed:

**Goal 1: Safety and Engineering** - Design our region's communities as places where bicycle use is valued as a significant transportation mode.

1. Improve bicycle safety by eliminating road conditions that present hazards for bicyclists.
2. As part of the development review process, support bicycle-friendly amenities and connectivity to local greenways and routes.
3. Encourage dialogue among engineers, planners, regional bike advocates and local governments.
4. Promote NCDOT's "Complete Streets" policy at the local and regional level.
5. Encourage the use of NCDOT'S "Watch for Me" campaign and other recognized safety education programs.
6. Encourage and promote public outreach events.



**Goal 2: Transportation** - Connect key bike routes to individual communities across the region.

1. Connect neighborhoods to schools, shopping and work places.
2. Ensure parks, community destinations, and employment centers are connected to bike facilities.
3. Develop connectivity between public transport and non-motorized modes of transportation.
4. Increase the number of "Share the Road" signs or develop a billboard/advertising campaign promoting "Share the Road."
5. Expand directional signage and pavement markings to direct bicyclists to the greenway trail network.
6. Create a logo and signage for regional bicycle routes.
7. Distribute guides for regional bike routes with location, descriptions of difficulty, and skill levels.

**Goal 3: Recreation** - Encouraging bicycle use for different purposes, ages, and skill levels.

1. Publish a regional bicycle network map.
2. Promote bike trails by listing them to the "Rails to Trails" website, and publicize their events.
3. Promote biking as a fun, low-cost family activity through region-wide events.
4. Provide bike rental to adults in various parks and urban areas across the region.

**Goal 4: Health and Education** - Bicycling provides and improves the community's physical and mental health.

1. Educate people that increased biking options contribute to healthier lives. Use data to demonstrate health improvements (such as heart health and lowering risks for diabetes) that result from bicycling.
2. Strategize between local health organizations and bike advocates about shared funding options.
3. Connect bike advocates with health-focused organizations such as YMCAs and local health departments.

**Goal 5: Economic Vitality** - Strengthen the economic impact of bicycling.

1. Emphasize that a "bike-friendly" community is an asset to the region's economic attractiveness.
2. Educate local officials and the public about the economic benefits of bicycling.
3. Market the region's bike trails through advertising campaigns.

## Trends, Challenges, and Benefits

The Western Piedmont is a diverse region with different levels of urbanization and development, household incomes, commuting patterns, health and fitness, and local economies to name a few. Chapter 2 of the plan reviews the current trends and potential challenges to creating a better bicycling environment within the Western Piedmont.

### Trends

#### Demographics

Data collected for the plan shows that the population in the Western Piedmont is quickly aging with the majority of residents (22%) in the 45 to 59 age group. Population trends over the next 25 years indicate that the majority of residents (57.1%) will be 65 and older.

#### Housing and Transportation Costs

Housing and transportation costs represent a large portion of a household's income in the region. The mean annual transportation cost for 73.6% of individuals in the Western Piedmont is \$14,300. When housing costs are added, 94.2% of people living in the region spend 50% or more annually on these expenses.

#### Mobility and Land-Use

Vehicle Miles Traveled is one measure of how many miles a vehicle may travel over a particular time period (Table 2-5). According to information provided by The Center for Neighborhood Technology, the amount of Vehicle Miles Traveled (VMT) per household annually in the Hickory MSA is between 21,000 and 26,000 miles.

#### Commuting

The overall commuting patterns for each county are divided into "out-commuters" to another

county, “in-commuters” from another county, and “non-commuters” meaning persons residing and working in the same county. Within the region, Catawba County is identified the “job magnet” because it has the highest number of in-commuters than out-commuters.

The total number of bicycle commuters in North Carolina is estimated at 10,489 which is 0.2% of all commuters. From this total, 8,079 or 77% are male and 2,410 or 23% are female. According to U.S. Census information, within the Hickory Metropolitan Area, only a small percentage of workers travel by bicycle with the majority of commuters traveling by private automobile. Bicycling comprises only 0.1% of all commuting modes for both the Hickory MSA.

### Health

Current health risk behaviors, such as lack of physical activity, are determinants of future health. An estimated one in four (or 26.98%) of adults in the Western Piedmont Region does not participate in any physical activity or exercise (with no leisure-time physical activity).

### Safety

Crash data at national, state, and county levels has not shown a positive or negative trend. From 2007

to 2008, national and statewide crashes increased, though the percent change for state-level crashes was only 1.17%. Burke and Catawba Counties saw decreases in crashes between 2007 and 2008, and the number of crashes in Caldwell County remained the same. Alexander County has had only one recorded crash between 2007 and 2012.

### Environment

Current and past air quality issues in the Western Piedmont region come from having high-levels of ground-level ozone (O<sub>3</sub>) and particulate matter (PM 2.5) in the atmosphere. Ozone (O<sub>3</sub>) is a gas created by chemical reaction when solar radiation interacts with nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds (VOC) in the atmosphere. Nitrogen oxide (NO<sub>x</sub>) is formed when fuel is burned at high temperatures by both on-road (cars, trucks, buses) and non-road vehicles (boats and construction equipment, for example) as well as from industrial sources such as turbines, power plants, cement kilns, and industrial boilers. Volatile organic compounds (VOC) can enter the atmosphere through various sources from either vehicle engine operation or fuel evaporation.

### Challenges

Mobility and Land-Use



*Bicyclists in Downtown Morganton. Source: City of Morganton*

The high number of VMTs per household is a symptom of a larger challenge facing the Western Piedmont region. In a report published by Smart Growth America in April 2014, the Hickory MSA was ranked the worst region for sprawl out of the 221 regions currently in the United States. Smart Growth America measured development by using four separate factors which include development density, land use mix, activity centering, and street accessibility. These measures were then used by researchers who developed for each region a Sprawl index score. The highest Index score of 203.4 was earned by the New York/White Plains/Wayne, NY-NJ metro region in comparison to the Hickory metro region which earned a score of 24.9. Other metro regions in the state also ranked low in the Sprawl Index including Durham/Chapel Hill (Index score: 73.8), Charlotte/Gastonia-Rock Hill (Index score: 70.5) and Greensboro/High Point (Index score: 63.5).

## Health

The Western Piedmont Region's current and future health is significantly determined by the current levels of physical inactivity, overweight levels, and obesity rates. These current levels indicate an increased risk of heart disease, diabetes, and other chronic diseases.

## Benefits

### Economy

Bicycling is one of the most efficient and cost-effective means of travel. Bicycles require hardly any upkeep and allow people to commute without the inefficiency of moving a two-ton vehicle with them. Placing an emphasis on bicycling also helps in other ways like increasing property values, assisting cities and towns in revitalizing their downtowns, and attracting tourists from both within and outside the region.

### Environment

Creating bicycling infrastructure and promoting bicycling for commuting, tourism, and recreational purposes can greatly reduce the negative effect of environmental impacts produced by motor vehicle use. Bicycles do not burn fossil fuels, are more energy efficient to make, and do not require toxic batteries or motor oil to operate.

## Planning Process

In the summer of 2013, the Western Piedmont Council of Governments received funding from the North Carolina Department of Transportation to begin developing a regional bicycle plan for the four-county region of Alexander, Burke, Caldwell, and Catawba Counties. The purpose of this bicycle plan provides a clear framework for the development of new facilities, programs, and policies that will support safe and efficient bicycling throughout the region.

The development of the Western Piedmont Bicycle Plan included an open, participatory process, with residents providing input through public events, stakeholder meetings, the project Steering Committee, social media, and online surveys.

## Selection Methodology

The routes discussed in this plan are organized into three different tiers. Assignment into a tier depended on several different factors led by attendees at the public workshops, by the planning staff, and eventually the steering committee. The process for determining route tiers was as followed:

- April 2014: Members of the public identified commonly used routes at regional workshops.
- September 2014: Routes were prioritized by attendees at public regional workshops.
- September/October 2014: WPBP Staff ranked routes by using internal scoring methodology.
- October 2014: Steering Committee members from each county made final recommendations using information gathered through both workshops and the staff rankings.



## **Final Route Selection**

The final priority list for each county was divided into thirds with the top third being assigned to Tier 1, the middle third assigned to Tier 2, and the bottom third assigned to Tier 3. While roadway recommendations outlined in this plan apply only to Tier 1 routes, future plan updates will include recommendations for Tier 2 and Tier 3.

The routes found in Tier 1 form the spine of the overall system and connect municipalities across the region. Tier 2 and Tier 3 routes fill in the remaining areas of the region which are primarily rural.

## **Route Descriptions**

### **Tier 1 Routes**

- Total Tier Length (in Miles): 173.47
- Roadway Miles Maintained by NCDOT: 169.09
- Number of Projects: 17
- Municipalities Impacted: 21

### **Tier 2 Routes**

- Total Tier Length (in Miles): 191.59
- Roadway Miles Maintained by NCDOT: 189.04
- Number of Projects: 17
- Municipalities Impacted: 16

### **Tier 3 Routes**

- Total Tier Length (in Miles): 211.88
- Roadway Miles Maintained by NCDOT: 211.88
- Number of Projects: 17
- Municipalities Impacted: 10

## **Facility Type Recommendations**

Recommendations for each Tier 1 roadway are based on several factors.

- Public feedback gathered at workshops.
- Right-of-way availability.
- Consultation of NCDOT Division Planning Engineer Dean Ledbetter, PE.
- Expected improvement costs per mile.
- Roadway characteristics such as width, traffic volume, and speed.
- Characteristics of the surrounding built environment.
- Staff reconnaissance of routes.

## **Implementation**

### **First Steps**

The first step towards implementation is the adoption of the WPBP. All four counties should adopt this plan and use it as a guiding document for improving bicycling conditions in the region. Having an adopted plan will help each county and local municipality when securing funding for specific projects.

The second step is to form the Greater Hickory Metropolitan Planning Organization's Bicycle and Pedestrian (BiPed) Advisory Committee. The membership of the BiPed Advisory Committee should be members of the WPBP Steering Committee along with community advocates. The primary responsibility of the members should be campaigning for the changes outlined in this plan and any additional projects that may arise in the region. The BiPed Advisory Committee should also be the communication link between citizens, local government, and the Greater Hickory Metropolitan Planning Organization. It is also recommended that the BiPed Advisory Committee hold meetings every quarter and become responsible for starting the educational activities recommended by this plan.

### **Key Steps**

- Approval and adoption of WPBP by counties.
- Start public outreach efforts to promote the plan to residents.
- Establish the Western Piedmont Bicycle and Pedestrian (BiPed) Advisory Committee.
- Set up regional BiPed website.
- Update website with bicycling information as it becomes available.
- Schedule time to evaluate projects with Greater Hickory MPO and each highway division.

### **Partnership Opportunities**

The Action Steps will be carried out by partnerships between various organizations and groups including regional planning organizations, municipal governments, local nonprofits, county health departments, civic organizations, business owners, and law enforcement agencies. Creating strong partners in

the regional effort to improve bicycling infrastructure and awareness will help spread the message about the importance of bicycling in the community and lead to effective programs in the future.

Potential partners for implementation of the Western Piedmont Bicycle Plan include:

- Bicycling clubs (on-road and off-road)
- Chambers of Commerce
- County departments of social services
- Downtown associations
- Economic development corporations
- Hospitals, medical centers, and their foundations
- Local bicycle shops
- Local non-profits
- Major employers
- Municipal engineering, planning, recreation, and police departments
- North Carolina Department of Commerce
- NCDOT's Division 11, 12, and 13
- NCDOT's Division of Bicycle and Pedestrian Transportation
- Public health departments
- Public school systems
- Service clubs
- Sheriff departments
- Tourism authorities
- Universities and community colleges
- Veteran groups
- Western Piedmont Council of Governments

## Administrative Structure

The figure below presents an organizational structure for plan implementation. All of the groups and agencies shown in this diagram will be necessary to successfully implement the extensive program, policy, and infrastructure recommendations of the WPBP.



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# Route Segments

















