

# WalkBikeNC

NORTH CAROLINA STATEWIDE PEDESTRIAN AND BICYCLE PLAN



 Mobility



 Safety



 Health



 Economy



 Environment



## Summary Document

December 2013

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- » **DWM Advisors, LLC**
- » **NC Department of Commerce**
- » **NC Department of Environment and Natural Resources**
- » **NC Department of Health and Human Services**
- » **NC Department of Transportation**
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*Special thanks are also due to the more than 10,000 people who were involved via e-mail and the WalkBikeNC website.*

*Thank you to the NCDOT Board of Transportation members who participated in steering committee meetings during the development of this plan.*

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- » **Alta Planning + Design (Lead Consultant)**
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# Introduction

## Plan Purpose: Why a Statewide Pedestrian and Bicycle Plan?

WalkBikeNC is North Carolina's first statewide master plan to define a vision, goals and strategies for improving walking and bicycling for residents and visitors. North Carolina is ideally positioned to increase its walking and bicycling activity. We are blessed with weather favorable to outdoor activity; the core of our towns and cities were developed with dense street grid networks that create acceptable travel distances for pedestrians and cyclists; we have the nation's oldest state agency-led pedestrian and bicycle program, which has been working for the past four decades to improve conditions for walking and biking; and most importantly, **our residents (NCDOT's customers) want to walk and bike more.**

Bicycling has been part of transportation in North Carolina for more than 100 years. Bicyclists helped champion North Carolina's "Good Roads" movement in the early 1900's. Formal planning for bicycle accommodation in North Carolina began with passage of the Bicycle and Bikeway Act in 1974 and establishment of the North Carolina Bicycle Committee in 1977. In the past two decades, more attention has also been given to improving conditions for walking. For example, the Safe Routes to School Program promotes walking to and from school as a way of improving the health and wellness of our children.

North Carolina, however, faces significant challenges in becoming more friendly to pedestrian and bicycling activities. First and foremost, **walking and bicycling are not equivalent quality transportation choices for the vast majority of North Carolinians.** Most people prefer to transport by automobile because that is the highest quality choice and is where the vast majority of investment has been made in our transportation network. Given present conditions throughout our state, it is often not safe, convenient, nor efficient for residents and visitors to walk and bike within or between our communities. We also have not invested enough in programs that inform, educate and promote walking and bicycling.

Despite the obstacles, there has never been a better time than the present to build on prior achievements and define the future for walking and bicycling. WalkBikeNC is for all North Carolinians, and it is a call to action. **This Plan identifies current conditions for walking and bicycling in North Carolina and serves as a guide for state agencies, local governments, and private sector interests to develop a transportation system that safely and efficiently accommodates walking and bicycling.** This Plan bridges the gap between current conditions and what North Carolinians desire for walking and bicycling, in terms of safety, mobility, and connectivity. This Plan defines the walking and bicycling needs of North Carolinians, as well as the policies, projects, and programs that must be implemented to meet these needs. WalkBikeNC also defines appropriate infrastructure standards and defines a method for measuring success.

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## About this document:

**This 44-page summary of the full plan provides an overview of the key findings and recommendations.**

**Two-page handouts were also developed for the five goals and core values of the plan.**

## Vision and Goals

Based on input received from thousands of North Carolinians, it is clear that there is a high level of interest and desire to embrace all of the benefits that are derived from walking and bicycling. The vision and goals for WalkBikeNC have been shaped by this input. The vision is also built on a foundation established by NCDOT to improve the quality of transportation for all North Carolinians.

## NCDOT Mission Statement:

*“Connecting people and places safely and efficiently, with accountability and environmental sensitivity to enhance the economy, health, and well-being of North Carolina.”*

Working committees, established by NCDOT, that included representatives from the North Carolina General Assembly, state agencies that championed and partnered to craft this Plan, and advocates in the fields of health, economic development, public safety, environmental stewardship and mobility, contributed to defining the vision and goals for WalkBikeNC.

## WalkBikeNC Vision Statement:

*“North Carolina is a place that incorporates walking and bicycling into daily life, promoting safe access to destinations, physical activity opportunities for improved health, increased mobility for better transportation efficiency, retention and attraction of economic development, and resource conservation for better stewardship of our environment.”*

## WalkBikeNC Pillars/Principles:

Five main principles, or plan ‘pillars’, are derived from the vision statement, defining major themes of interest and emphasis within the Plan. Principle statements, goals, and first action steps are provided below. Detailed implementation strategies are found in Chapter 8. To achieve these goals will require a collaboration of efforts from multiple agencies, governments, and private partners.



**Improve mobility** and accessibility and reduce traffic congestion through greater investment in walking and biking infrastructure, improved transportation equity and choice, connectivity among transportation modes, and reduced traffic congestion through coordinated land use and transportation planning.

**Goal: Increase percentage of new and existing roadways that include pedestrian and bicycle facilities.**

**Action: Continue bicycle and pedestrian planning work, improve data inventory and analysis, and implement Complete Streets.**



**Promote safety** for all roadway and non-roadway users through strategic, consistent, and coordinated pedestrian and bicycle facility improvements, education, and enforcement strategies.

**Goal: Reduce per capita pedestrian and bicycle crash rate.**

**Action: Use safety data to focus safety improvements and evaluate performance.**



**Contribute to improved public health** by providing active living environments with safe, connected, accessible facilities along with programs that encourage walking and bicycling.

**Goal: Improve coordination and data sharing for better evaluation and monitoring of success for health indicators.**

**Action: Make health a priority in transportation decisions and continue NCDOT (SRTS)-DHHS (CTG) partnership to create healthy communities statewide.**



**Maximize economic competitiveness**, return on investment and employment opportunities by creating more attractive walkable and bikable communities through increased public and private funding.

**Goal: Increase investment in pedestrian and bicycle projects and focus where return on investment is greatest.**

**Action: Analyze economic impacts of pedestrian and bicycle projects and work with Department of Commerce to market these activities.**



**Be good stewards of our environment** by reducing automobile dependence, completing a Green Infrastructure Plan for North Carolina, and linking together the state's natural and cultural resources through a statewide network of greenways.

**Goal: Improve coordination between state agencies and conservation groups.**

**Action: Coordinate with conservation groups and DENR to establish statewide trail priorities.**

## The Planning Process

WalkBikeNC was completed over eighteen months, informed by a robust public engagement process. NCDOT, the consultant team, and stakeholders used a variety of methods to reach out to citizens and stakeholders across North Carolina to engage them in a meaningful dialogue and process for public input. NCDOT sponsored a special project web site, WalkBikeNC.com. The website was linked to Facebook, LinkedIn, Google, and Twitter in order to capture a broader range of interests, and to NCDOT's primary transportation web portal. Additional links were made to partner web sites.

NCDOT and its consultants also hosted 15 focus group meetings, 3 regional workshops, and attended 16 festivals and events across North Carolina whose total attendance exceeded 600,000 participants. Additionally, more than 30 organizations and groups from a variety of disciplines including health, safety, environment, mobility, and economic development were also engaged in the planning process. The result of this broad participation is the development of a statewide pedestrian and bicycle master plan that truly reflects the vision, ideas, concerns, and recommendations of North Carolinians.

### Project Funders and Key Stakeholders

The WalkBikeNC Plan was jointly funded by the NC Department of Transportation (NCDOT)'s federal planning funds, NC Department of Environment and Natural Resources (DENR), NC Department of Commerce, NC Department of Health and Human Services (DHHS), Blue Cross and Blue Shield of North Carolina Foundation, and the Davis Wealth

# Timeline of Plan Development

Key steps in the development of the plan are outlined below. The process included weekly NCDOT staff & consultant meetings, plus Steering Committee and Advisory Committee meetings at every stage.

2012

## July-Aug

Begin project

Meet with committees to discuss the project vision and current conditions

Launch web site, social media & online input map

Begin evaluation and interviews for updating the State Bicycle Route



Project web site

2012

## Sept-Oct

Conduct outreach at 3 Regional Workshops, 7 Focus Group Meetings, and 16 public events across North Carolina



Public outreach

2012

## Nov-Dec

Develop the first draft of the WalkBikeNC Plan  
Collect comments from staff and committee members

Launch the WalkBikeNC Blog



Draft plan & blog

2013

## Jan-Feb

Revise the Draft Plan and develop additional plan products



Plan summary & topic area summaries

2013

## Mar-May

Second round of focus group meetings and stakeholder meetings  
Continued Public Comment



Focus group/Stakeholder Meetings

2013

## June-Dec

Final plan meetings & presentations  
Final revisions to plan products  
Plan approval & adoption



Plan approval and adoption





◀ Bicycle advocacy groups from across the state met with WalkBikeNC project planners in 2012, one of many similar outreach meetings held throughout the planning process.

Management (DWM) Foundation. NCDOT assembled a Steering Committee and an Advisory Committee that comprised legislators, agency staff, Division of Bicycle and Pedestrian Transportation staff, NCDOT divisions, Metropolitan Planning Organization (MPO) and Rural Planning Organization (RPO) staff, bike/ped advocacy groups, funding partners, and county and municipal representatives. Intradepartmental and interdepartmental efforts were instrumental in guiding the development of this plan and laid the foundation for future coordination.

## What does the plan include?

WalkBikeNC provides a review of walking and bicycling in North Carolina today, including the history of pedestrian and bicycle planning in North Carolina, relevant reports and surveys, current trends, people and processes involved in pedestrian and bicycle planning, and a review of current pedestrian and bicycle facilities around the state.

The Plan includes a guide for addressing statewide pedestrian and bicycle policy in North Carolina. This information, along with public input and the guidance of the Steering Committee, was used to inform the recommendations for North Carolina pedestrian and bicycle infrastructure. Chapters on NCDOT design standards and programming for health, safety, and active living provide a comprehensive guide on how pedestrian and bicycle planning and design can more specifically support the goals of safety, health, economics, transportation efficiency, and stewardship. The implementation and tools for benchmarking and accountability sections then provide a blueprint of the steps and evaluation tools needed to monitor the plan's progress and turn its vision and goals into reality. The Plan is described through eight chapters devoted to these topics. There is also an extensive technical appendix that covers additional topics.



# Trends and Challenges

## North Carolina is Growing and Changing

North Carolina's communities have undergone significant change in the 21st century. In the coming decades, changes in population and land use development will unfold that will create opportunities and challenges for the state. One of the most important influences on North Carolina's future will be population growth, fueled primarily by influx from other states and countries. **In 2010, North Carolina ranked as the tenth most populous state in the country with 9.5 million people.<sup>1</sup> By 2030, it will be home to an estimated 12.2 million people, surpassing Michigan, Ohio, and Georgia to become the seventh most populous state.<sup>2</sup>**

This growth will be coupled with a continued population shift from rural to urban areas. **In 1990, 50.3% of North Carolina's population resided in urban areas. By 2000, that percentage had increased to 60.3% and is expected to reach over 75% by 2040.<sup>2</sup>** In addition, population density has reversed its downward trend in North Carolina's major cities. Population density (number of people living per square mile) and migration from rural areas to urban centers has increased. A larger, increasingly urban population will influence the mobility, health, lifestyle, and economic vitality of North Carolinian customers and our communities. These trends of more people living in more densely

populated communities are pointing the way towards the need for better places for North Carolina residents to walk and bike.

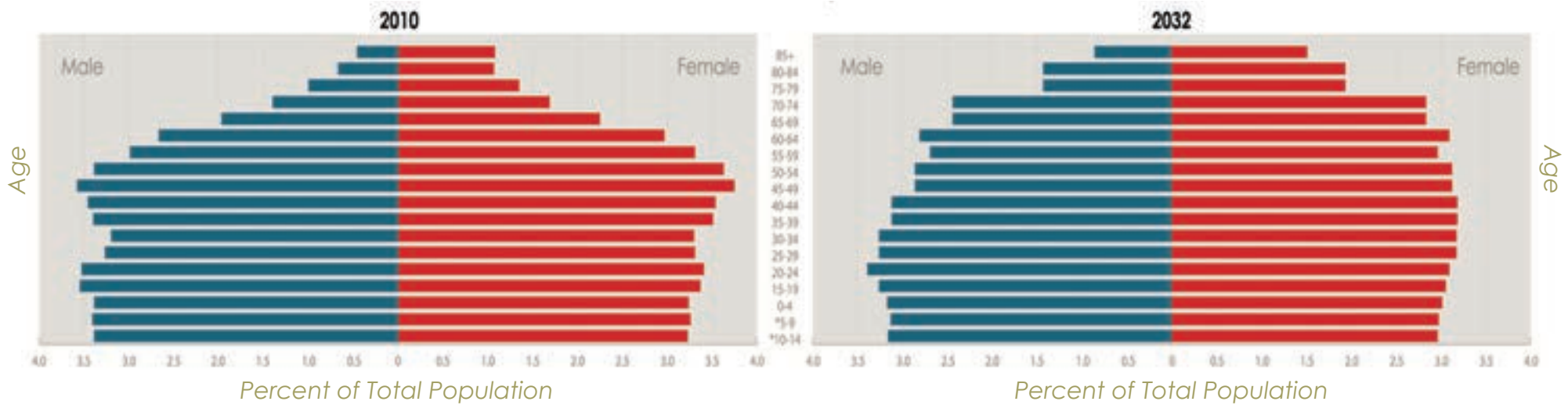
Another trend that illustrates a need for improved walking and bicycling options is our changing age composition. One of the most important emerging trends in our state is the increasing number of **North Carolinians age 65 or older: this segment of the population is anticipated to increase from 13% in 2010 to nearly 20% by 2032, an increase of more than 2.3 million people.<sup>3</sup>** An estimated one in five (21%) Americans age 65 or older do not drive due to declining health, declining mental capacity, safety concerns, lack of access to an automobile, or personal preference.

An increase in the percentage of households with a single occupant is another change that will affect the transportation needs and preferences of North Carolina's population. The rise in single person households will influence where people choose to live, the types of housing they prefer, and how they get around their community. Smaller housing units in more walkable neighborhoods will be in greater demand, and households with a single income will likely desire more affordable transportation options

than the private automobile. Two-thirds of Americans already consider the walkability of an area in their housing decision, with grocery stores, pharmacies, hospitals, and restaurants being the most desired places within a short walk from home.<sup>4</sup> North Carolina can accommodate this growing demographic by creating communities where residents can safely and regularly walk and bike for fun or utility.

These trends, in addition to a preference for improved health, economics, and safety, underscore the need for targeted, forward-thinking investments that will make North Carolina's communities safer, healthier, more economically robust, and more accessible for everyone.

### North Carolina Population Pyramids, 2010 and 2032



Age Group	2010	Percentage
Under 18	2,281,635	23.9%
18-24	938,618	9.9%
25-44	2,573,744	27.0%
45-64	2,507,407	26.3%
65+*	1,234,079	12.9%

Age Group	2032	Percentage	Change from 2010
Under 18	2,614,632	22.1%	14.6%
18-24	1,083,644	9.1%	15.5%
25-44	3,017,305	25.5%	17.2%
45-64	2,786,665	23.6%	11.1%
65+	2,328,177	19.7%	88.7%

◀ Age Population Pyramid for North Carolina, 2010; and projected for 2032. Sources: US Census Bureau, 2010; [http://www.osbm.state.nc.us/demog/countytotals\\_agegroup\\_females\\_2032.html](http://www.osbm.state.nc.us/demog/countytotals_agegroup_females_2032.html)



## Mobility

### Needs versus Funding

In recent years, NCDOT programmed less than 1-2% of total transportation funding toward pedestrian and bicycle infrastructure development. The 2040 North Carolina Statewide Transportation Plan (2012) reports pedestrian and bicycle conditions to be at the low end of level of service, at grade “D.”

Recognizing the immense need for infrastructure improvement, local governments and NCDOT must set priorities given limited funding resources. NCDOT continues to provide planning grant funding to develop local bicycle and pedestrian plans. Over 150 planning grants have been awarded by NCDOT to local governments and regions of the state to create plans with specific priorities and creative funding strategies. These plans have identified millions of dollars of pedestrian and bicycle infrastructure

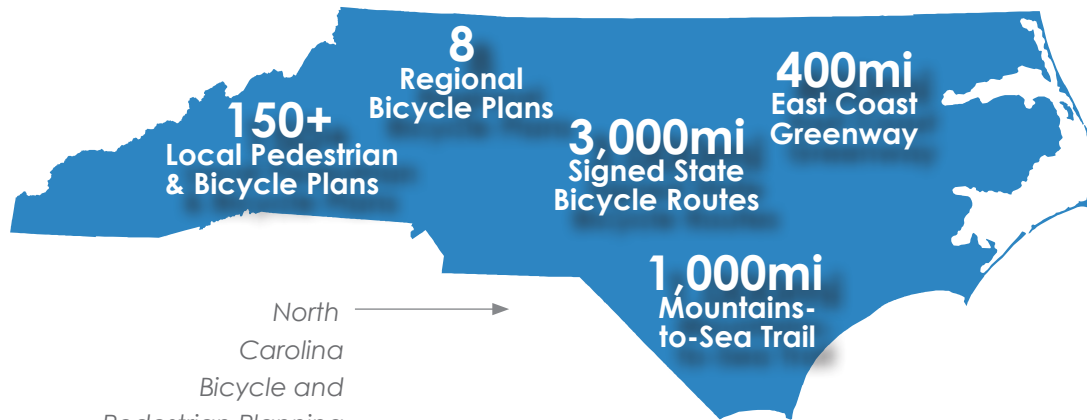
As defined by NCDOT, Level of Service (LOS) is the “quality of service from the perspective of the user” and can vary from a “desired state” of LOS A to a failing state of LOS F.

need. In addition to the plans created by regional and local governments, NCDOT and other statewide organizations plan for bicycle and pedestrian travel at the statewide level. Examples include the NCDOT statewide bicycle route program, East Coast Greenway connecting all states along the Atlantic coast, and the Mountains-to-Sea Trail traversing the state on foot.

### Opportunity to Increase Walking and Bicycling Rates in North Carolina

Commute rates for walking and bicycling in North Carolina currently fall below the national average, with just 0.2% of North Carolina commuters bicycling to work and 1.8% walking to work, compared to 0.6% bicycling and 2.9% walking nationwide. **This places North Carolina 42nd for walking commute rates and 41st for bicycling commute rates in nationwide state rankings.**<sup>5</sup> When compared to neighboring states, North Carolina is slightly above average with higher rates than all of its neighbors except Virginia.

An estimated 40% of all trips (commute and non-commute) taken by Americans each and every day are less than two miles, equivalent to a bike ride of 10 minutes or less; however, just 13% of all trips are made by walking or bicycling nationwide.<sup>5</sup> To put these numbers into perspective, 34% of all trips are made by walking or bicycling in Denmark and Germany, and 51% of all trips in the Netherlands are by foot or by bike.<sup>6</sup> Germany, Denmark, and the Netherlands are wealthy countries with high rates of automobile ownership, just like the United States. Yet, an emphasis has been placed on providing quality walking and bicycling environments which has alleviated the reliance on motor vehicles for short trips.



North Carolina Bicycle and Pedestrian Planning as of October 2013, By the Numbers





## Safety

### Safety Trends and Challenges in North Carolina

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%).<sup>7</sup> The figures below show that the respondents have cause for concern:

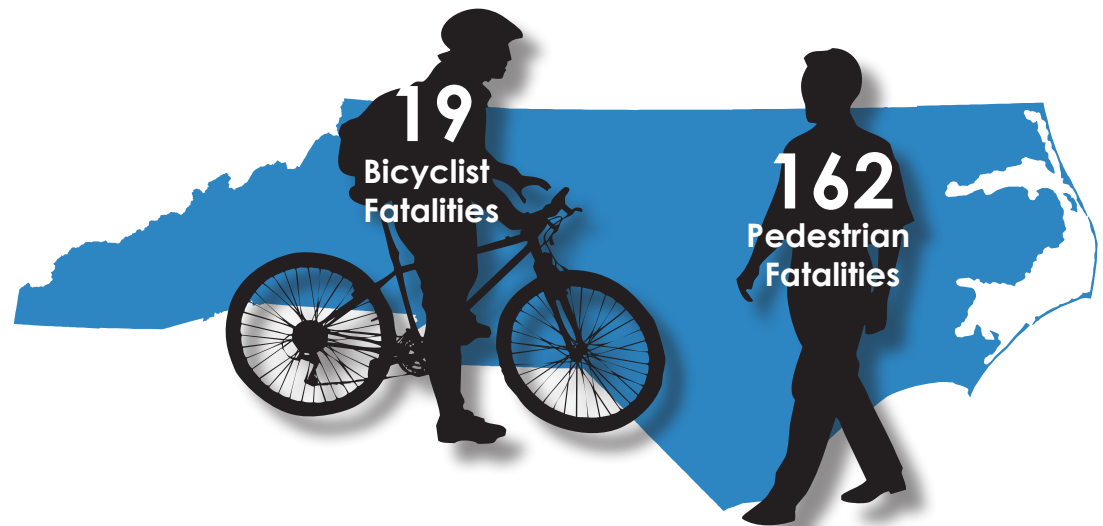
- Each year on average (2007-2011), 162 pedestrians and 19 bicyclists are killed in collisions with motor vehicles on North Carolina roads, with many more seriously injured.<sup>8</sup>
- North Carolina is ranked as one of the least safe states for walking (41st) and bicycling (44th).<sup>5</sup>
- 13% of all traffic fatalities in North Carolina are bicyclists and pedestrians.<sup>9</sup>
- In North Carolina, 10 bicyclists are killed per year per 10,000 daily bicyclists\* (which ranks sixth worst in the country). Similarly, nine pedestrians are killed per year per 10,000 daily pedestrians\* (which ranks 10th worst in the country).<sup>5</sup>
- During the five-year period from 2007 to 2011, a total of 4,700 bicycle-motor vehicle crashes and 12,286 pedestrian-motor vehicle crashes were reported to North Carolina authorities.<sup>8</sup>

\* "Daily bicyclists and pedestrians" - Numbers generated through weighting, or multiplying, by share of the population biking and walking to work—to adjust for exposure.

### Improving Safety in North Carolina

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 of pedestrian-automobile and bicycle-automobile crashes. Furthermore, according to the aforementioned survey, 70% of respondents said they would walk or bicycle more if safety issues were addressed, citing a lack of bicycle and pedestrian facilities as the top issues.<sup>7</sup>

Average yearly fatalities due to motor vehicle collisions (2007-2011).<sup>8</sup> This represents approximately 13% of all traffic fatalities in North Carolina.<sup>9</sup>



### Safest States for Bicycling

- |                   |                           |
|-------------------|---------------------------|
| 1. South Dakota   | 26. Virginia              |
| 2. Vermont        | 27. Arizona               |
| 3. Oregon         | 28. Kansas                |
| 4. Nebraska       | 29. New Hampshire         |
| 5. North Dakota   | 30. Connecticut           |
| 6. Colorado       | 31. New York              |
| 7. Montana        | 32. Kentucky              |
| 8. Wyoming        | 33. Michigan              |
| 9. Idaho          | 34. Maryland              |
| 10. Washington    | 35. Ohio                  |
| 11. Massachusetts | 36. Indiana               |
| 12. Wisconsin     | 37. New Jersey            |
| 13. Rhode Island  | 38. Nevada                |
| 14. Minnesota     | 39. Oklahoma              |
| 15. Utah          | 40. Texas                 |
| 16. Hawaii        | 41. Georgia               |
| 17. Maine         | 42. Tennessee             |
| 18. Alaska        | 43. Louisiana             |
| 19. Pennsylvania  | <b>44. North Carolina</b> |
| 20. California    | 45. Florida               |
| 21. Illinois      | 46. Alabama               |
| 22. West Virginia | 47. Arkansas              |
| 23. Missouri      | 48. Delaware              |
| 24. Iowa          | 49. South Carolina        |
| 25. New Mexico    | 50. Mississippi           |

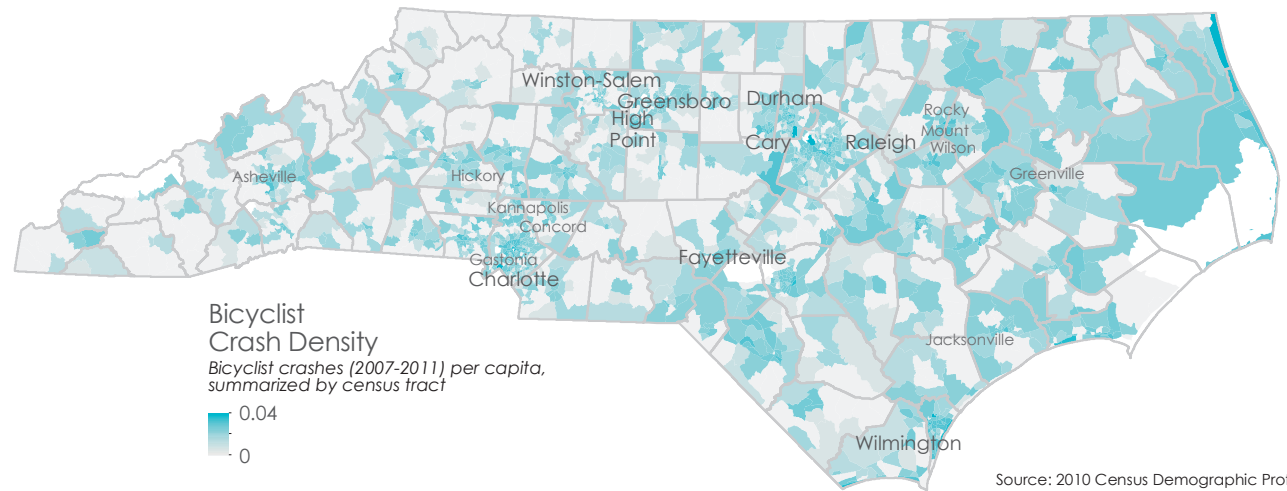
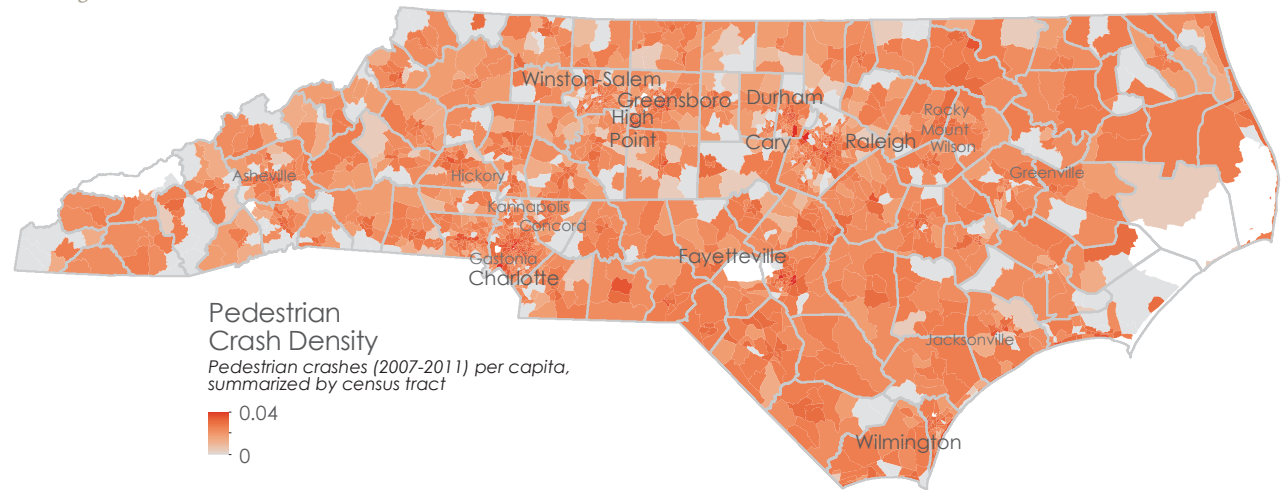
### Safest States for Walking

- |                   |                           |
|-------------------|---------------------------|
| 1. Vermont        | 26. Indiana               |
| 2. Nebraska       | 27. West Virginia         |
| 3. Alaska         | 28. Rhode Island          |
| 4. Wyoming        | 29. Virginia              |
| 5. Iowa           | 30. Kentucky              |
| 6. South Dakota   | 31. New Jersey            |
| 7. North Dakota   | 32. Michigan              |
| 8. Maine          | 33. Missouri              |
| 9. Massachusetts  | 34. California            |
| 10. Minnesota     | 35. Oklahoma              |
| 11. New Hampshire | 36. Tennessee             |
| 12. New York      | 37. Nevada                |
| 13. Wisconsin     | 38. Arkansas              |
| 14. Washington    | 39. Maryland              |
| 15. Idaho         | 40. Delaware              |
| 16. Kansas        | <b>41. North Carolina</b> |
| 17. Montana       | 42. Texas                 |
| 18. Pennsylvania  | 43. New Mexico            |
| 19. Oregon        | 44. Arizona               |
| 20. Colorado      | 45. Georgia               |
| 21. Illinois      | 46. Mississippi           |
| 22. Connecticut   | 47. Alabama               |
| 23. Utah          | 48. South Carolina        |
| 24. Hawaii        | 49. Louisiana             |
| 25. Ohio          | 50. Florida               |

◀ Tables from the 2012 Benchmarking Report by the Alliance for Biking & Walking. Ranking was developed using a rough approximation of exposure levels that takes both population and cycling levels into account. Note that exposure data are rough approximations and fatalities can vary greatly from year to year.

### 2007-2011 Pedestrian and Bicycle Crash Density Maps, NC

Source: 2013 NCDOT Crash Data\*



Source: 2010 Census Demographic Profile

\*Maps show geographic density of pedestrian and bicycle crashes from 2007-2011 normalized by population and summarized at the census tract level.



## Health Trends and Challenges in North Carolina

North Carolina's transportation system is one of the most important elements of our public environment, and it currently poses barriers to healthy living through active transportation. In 2012, NCDOT's Board of Transportation revised its mission statement to include "health and well-being" and passed a "Healthy Transportation Policy," which declares the importance of a transportation system that supports positive health outcomes. Below are some key trends and challenges related to health and transportation in North Carolina.

- 65% of adults in North Carolina are either overweight or obese.<sup>10</sup> The state is also ranked 5th worst in the nation for childhood obesity.<sup>11</sup>
- Recent reports have estimated the annual direct medical cost of physical inactivity in North Carolina at \$3.67 billion, plus an additional \$4.71 billion in lost productivity.<sup>12</sup> However, every dollar invested in pedestrian and bicycle trails can result in a savings of nearly \$3 in direct medical expenses.<sup>13</sup>

- Of North Carolinians surveyed, 60% would increase their level of physical activity if they had better access to sidewalks and trails.<sup>10</sup>
- A Charlotte study found that residents who switched to walking by using light rail for their commute weighed an average of 6.5 pounds less than those who continued to drive to work.<sup>14</sup>

### Better Health through 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 walking and 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.<sup>15</sup>

In recent years, health professionals and advocates have become new partners in promoting and planning for active transportation and environments that support active transportation. **See Appendix 9.4 of the full plan for more on health and transportation including a quantitative health impact assessment (HIA) completed as part of this study.**

### Active Transportation: Pathway to Health





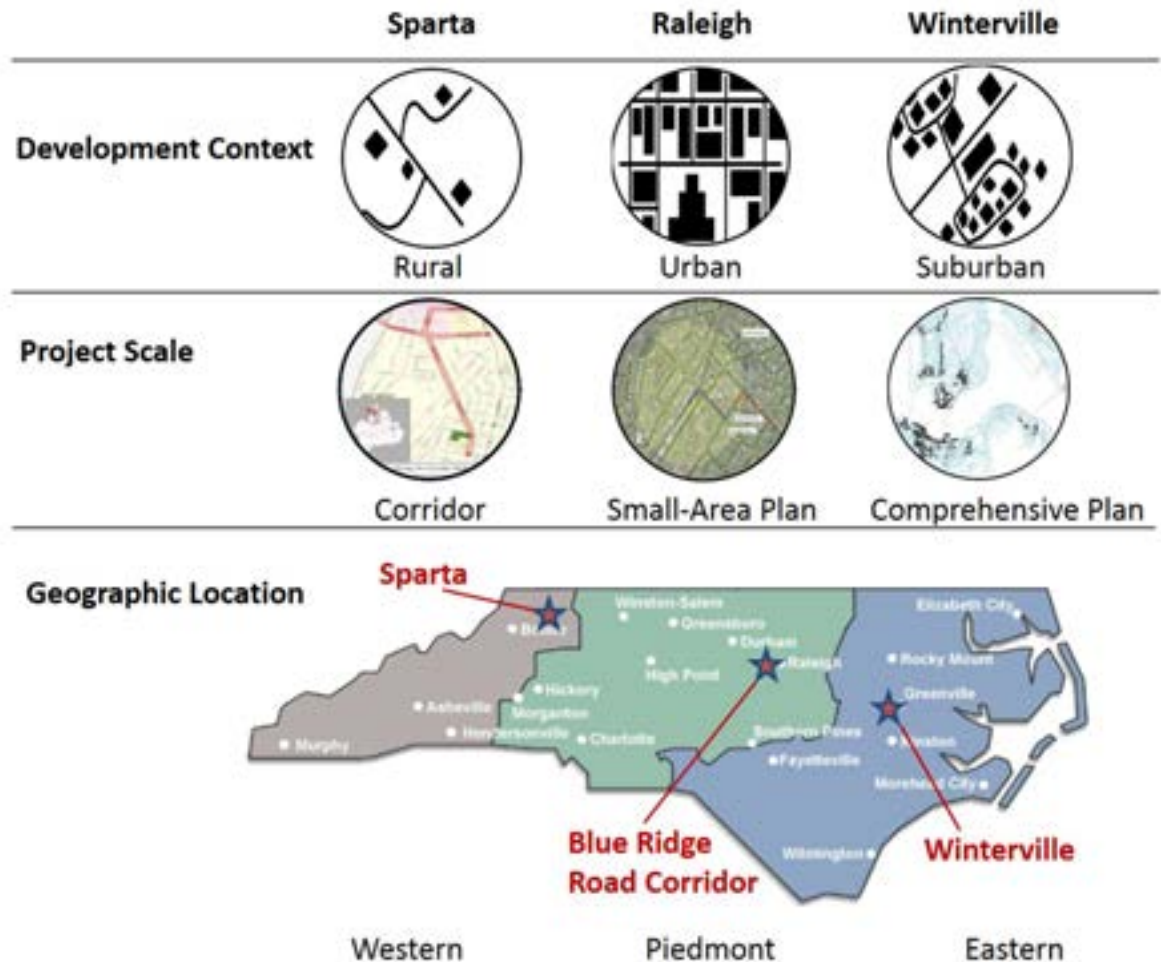
## A Health Impact Assessment for WalkBikeNC

Health Impact Assessment (HIA) can be a powerful tool to help state and local decision makers assess the future value of transportation investments that can impact health. As part of WalkBikeNC, an HIA was conducted to estimate the health and financial impacts of pedestrian and bicycling infrastructure on individuals and communities in our state. Quantitative methods, such as those included in this HIA, enable health and transportation planners to determine the economic

value of “active transportation” and for decision makers to consider such investments in a cost-benefit analysis framework.

Three North Carolina communities were chosen as demonstration HIAs: Sparta, Raleigh and Winterville. In all three communities, the HIAs predict that building sidewalks and making other improvements in pedestrian safety increase walking and lower the risk for CHD, diabetes, hypertension, stroke and early death (see table on following page).

The communities were selected from many candidates because of their balance of geography and community scale as well as the nature of their planned projects. ▶



### Health Impact Assessment Predicted Impacts Following Pedestrian Project Completion

	Raleigh	Winterville	Sparta
Percent Change in Total Sidewalk Length	+388%	+360%	N/A
Change in Pedestrian Environment Factor	N/A	N/A	Low to Medium
Walking for Transportation (150+ min per week)	+7.1%	+2.3%	+1.4%
No Walking for Transportation	-2.5%	-0.9%	-8.8%
Health Care Dollars Saved at 20 Years	\$25.6 million	\$9 million	\$13 million
Health Care Dollars Saved at 40 Years	\$36.3 million	\$12.6 million	\$15 million
Benefit-to-Cost Ratio at 20 Years	6:1	0.8:1	19:1
Benefit-to-Cost Ratio at 40 Years	9:1	1.1:1	22:1

▲  
Results of the quantitative health impact assessment (HIA) conducted as part of this planning process. See Appendix 9.4 in full plan for full report and analysis.

Source: Mansfield and McDonald (2013)



## Economics

### Economic Trends in North Carolina

Facilities for bicyclists and pedestrians generate economic returns through improved health, safety, and environmental conditions, raise property values, and attract visitors. Below are some key economic trends related to walking and bicycling in North Carolina:

- North Carolina is the 6th most visited state in the United States, and 2011 was a record year as visitors spent \$18 billion, many of whom partook in activities related to walking or biking.<sup>16</sup>
- In North Carolina's Outer Banks alone, bicycling is estimated to have an annual economic impact of \$60 million and 1,407 jobs supported from the 40,800 visitors for whom bicycling was an important reason for choosing to vacation in the area.<sup>17</sup>
- The annual return to local businesses and state and local governments on bicycle facility development in the Outer Banks is approximately nine times higher than the initial investment.<sup>17</sup>
- Walking and biking are also economically efficient transportation modes. Many North Carolinians cannot afford to own a vehicle and are dependent on walking and biking for transportation (6.7% of occupied housing units in North Carolina do not own a vehicle).<sup>18</sup>

See Appendix 9.5 of the full plan for a detailed economic impact analysis of walking and biking in North Carolina.



These economic estimates were derived under the assumption of adding 300 miles of greenway statewide. The full economic impact analysis can be found in the full document, in Appendix 9.5.



## Gas Prices & Bicycling for Transportation

The bicycle is becoming a more popular personal transportation vehicle as worldwide population grows, as more people move to cities, and communities become more densely populated. In addition, the rising gas prices of recent years have had an impact on Americans at all income levels. Although this increase cannot be attributed to gas prices alone, 2008 was the year with the highest recorded rate of increased bicycle commuting in the last decade in the United States. During the 2008 gasoline price spike, many bicycle shops benefited from this rise in bike commuting. In August 2008, Bikes Belong surveyed more than 150 bike retailers from 40 states. Seventy-three percent of retailers said they were selling more transportation-related bicycles. Nearly every shop (95%) had customers citing high gas prices as a reason for their purchase, and four in five retailers said gas prices were helping them sell more bikes.<sup>19</sup> According to a 1997 survey of bike commuters, 46% said they ride to save money on gasoline.<sup>20</sup> **During the first quarter of 2009, more bicycles were sold in the United States than cars and trucks combined.** Around 2.6 million bicycles were purchased during the quarter, outselling the 2.5 million cars and trucks purchased in the same period. Worldwide production of bicycles in 2012 outnumbered automobile production 130 million units to 50 million units.

## Revitalizing North Carolina's Small Town Main Streets

The North Carolina Department of Commerce's Main Street Program assists small towns in making improvements to reestablish their downtowns as thriving economic centers. **Since the Program's start in 1980, towns have experienced a total gain of \$1.66 billion in new investment and 14,600 new jobs.**<sup>21</sup> While the Main Street Program takes a wide approach to improving downtowns, many plans completed through the Program include initiatives to make streets more bicycle and pedestrian friendly. Towns have focused on improving sidewalk connectivity, creating marked walking routes, installing bike lanes, and implementing street-level design improvements for a more enjoyable walking experience. Transforming downtown shopping into an enjoyable, active experience has helped towns attract consumer spending that might previously have occurred at larger shopping centers outside their tax base and improve downtown property values.



◀ The Town of Clayton is one of many Main Street Program successes. Among recent projects, they designed and built an all-brick walkway to the Civil War Trails marker. Photo: <http://downtownclayton.blogspot.com/>

### Summation of Estimated Economic Impacts Associated with Investment in Bicycle and Pedestrian Infrastructure within the State of North Carolina

Economic Impact Category	Estimated Economic Impact	Beneficiaries
Economic stimulus from upfront construction	\$174M supporting 1,600 jobs	The entire State economy
Economic stimulus from increased tourism activity	\$128M supporting 1,600 jobs	The entire State economy
Direct use value from usage of bicycle and pedestrian infrastructure	\$228M in new direct use value	State residents who use the new bicycle and pedestrian infrastructure
Health care cost reduction from usage of bicycle and pedestrian infrastructure	\$76M in health care cost reduction	State residents who use the new bicycle and pedestrian infrastructure, and the health care cost pools to which they belong
Commuting gains from increased usage of bicycle and pedestrian infrastructure	4.9M fewer car miles driven, \$167,000 in emissions cost avoidance, \$800,000 not spent on gasoline, \$325,000 in congestion cost avoidance	Drivers within the State, as well as the State as a whole
Property value gains from proximity to bicycle and pedestrian infrastructure	\$64M one-time increase in property value, \$640,000 annual increase in property tax revenues	Property owners, municipalities and school districts

▲  
 These estimates are calculated under the assumption of an increase of 300 miles of greenway infrastructure. See Appendix 9.5 for more information.

Source: Econsult Corporation (2012)



## Environment

### Stewardship of North Carolina's Environment

Stewardship, for the purposes of this Plan, addresses the impact that transportation decisions (both at the government/policy level and individual level) can have on the land, water and air that North Carolinians and tourists enjoy. Environmental sensitivity and resource protection is one of the goals of WalkBikeNC. Below are some key trends and challenges related to stewardship and transportation in North Carolina:

- Even a modest increase in walking and bicycling trips (in place of motor vehicle trips) can have significant positive impacts. 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.<sup>22</sup>
- 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.<sup>23</sup>
- 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.<sup>24</sup>
- The natural buffer zones that occur along greenways protect streams, rivers, and lakes, preventing soil erosion and filtering pollution caused by agricultural and roadway runoff.<sup>25</sup>

### Stewardship and Transportation

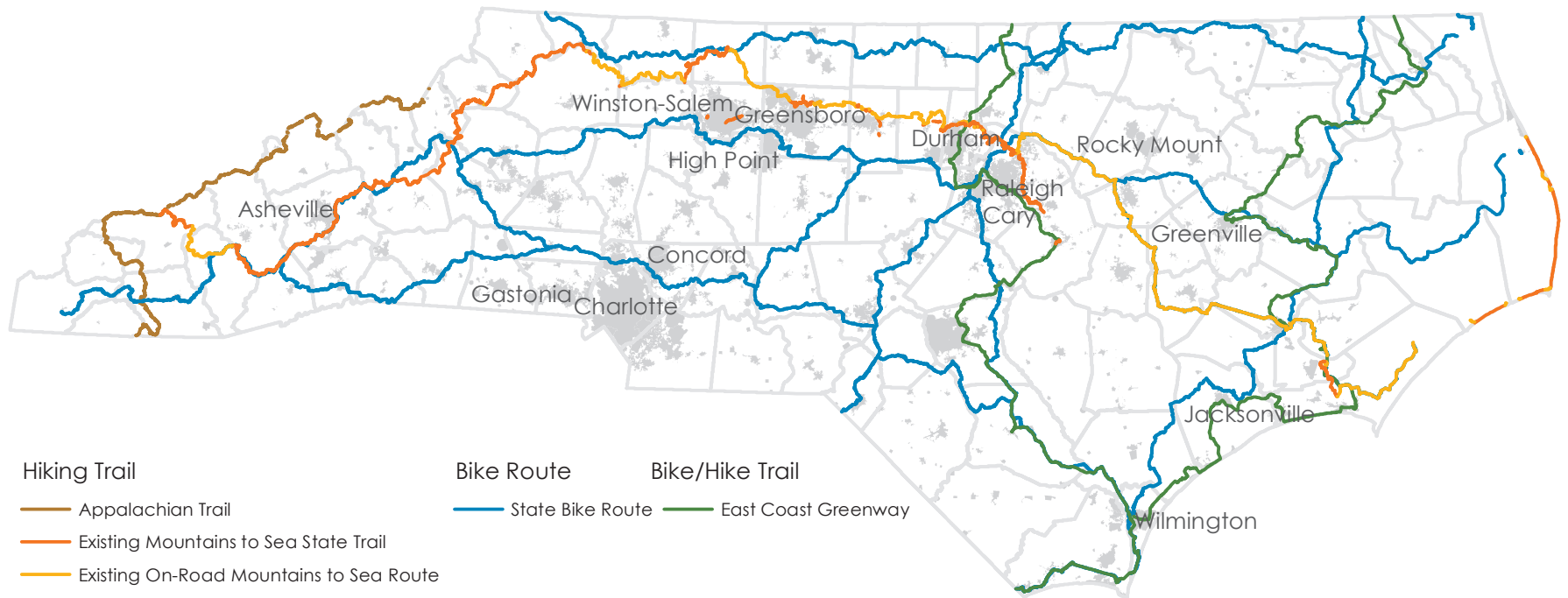
Stewardship is represented in many ways across North Carolina from transportation planning to statewide trails, recreation areas, and environmental education. Walking and bicycling trails through North Carolina landscapes, seen on page 17, enhance the visitor experience and enable tourism, recreation, and exercise opportunities.

Transportation, land use, and resource protection issues must be considered together when planning and designing North Carolina's future transportation system. Environmental education and other stewardship opportunities will be promoted in tandem with the Statewide Pedestrian and Bicycle Plan by involving the expertise and perspective of NC Division of Parks and Recreation and NC Department of Environment and Natural Resources as planning partners. See Appendix 9.6 for more on stewardship and transportation.

### Conservation Planning Tools

The North Carolina Conservation Planning Tool (CPT), developed by the North Carolina Department of the Environment and Natural Resources (DENR), and the North Carolina Wildlife Resources Commission's (WRC) Green Growth Toolbox (GGT) are being used to integrate conservation and comprehensive, long-range transportation planning in North Carolina. The CPT is used to effectively plan for green infrastructure by identifying important natural heritage features such as unique landscapes, wildlife habitats, farmlands, and high-quality forests. The GGT helps planners make more informed land use and transportation decisions to plan for future growth based on consideration of these resources.

This type of cross-collaboration between NCDENR, WRC, local land trusts, and North Carolina's transportation stakeholders will be critical to fulfilling NCDOT's mission of: "Connecting people and places safely and efficiently, with accountability and **environmental sensitivity** to enhance the economy, health, and well-being of North Carolina."



▲ Map of existing statewide trails and bicycle routes, which serve as economical, recreational, and stewardship drivers.

Promoting North Carolina's natural beauty to potential tourists will support economic competitiveness while enhancing stewardship.





# Needs and Metrics

## *The Need and Demand for Improved Walking and Bicycling Conditions*

North Carolina has both high demand and a strong need for improved walking and bicycling infrastructure, policies and programs. The need and demand can be expressed as follows:

- North Carolinians need and strongly desire the construction of more sidewalks, off-road trails (greenways), and on-road bicycle facilities within all types of communities (rural, suburban and urban) throughout our state.
- Our state and local governments have not invested enough in pedestrian and bicycle infrastructure. In fact, the historic level of investment does not even match the current usage (travel mode share) occurring throughout the state.
- Too many North Carolina pedestrians and cyclists are being killed or seriously injured annually.
- We are not doing enough to educate North Carolina pedestrians, cyclists and motorists on how to share roadways throughout the state.
- We are not doing enough to enforce traffic safety laws that impact pedestrians and bicyclists.
- North Carolinians can become healthier if we integrate walking and bicycling into daily active living and transit.
- North Carolina can become more prosperous by accommodating pedestrian and bicycle activity in all communities, regardless of size and location.
- North Carolina's natural and cultural resources can be more effectively conserved, managed, and appreciated through increased linkages and promotion of walking and bicycling.
- State agencies and local governments should work with the private sector to engage and involve North Carolinians in the future development of statewide pedestrian and bicycle facilities and programs.

## Level of Service (LOS) (defines how well a mode of transport meets public needs)

In 2012, as part of the 2040 Plan, NCDOT determined the current statewide LOS for the bicycle and pedestrian system to be LOS D, based on a bicycle/pedestrian index developed by the Division of Bicycle and Pedestrian Transportation. The 2040 Plan states that if current funding levels remain the same, the LOS would be F ("Failing") by 2022. Measures used to determine the LOS score were commute mode share, crash totals/rates, percentage of roadways with paved shoulders, percentage of municipalities with pedestrian/bicycle plans, and health (physical activity/overweight) percentages.

**In the current statewide transportation system, North Carolinians ultimately do not have a viable transportation alternative with supporting infrastructure that is equivalent to the automobile.** A distinct current and accruing need exists for safety, mobility, and infrastructure health across North Carolina in all three geographic tiers: urban, suburban, and rural. There is a lack of a consistent, connected, accessible, and safe pedestrian and bicycle network across the state, region, and cities of North Carolina, making walking and bicycling a difficult choice in transportation for most places across the state. In addition, pedestrians and bicyclists are more limited by distances to key destinations, a factor largely influenced by local land use decisions.

Pedestrians and bicyclists include a wide range of types, ages, capabilities, and skill levels. To effectively deliver pedestrian and bicycle transportation to North Carolinians, the state must consider the range of pedestrians (See Chapter 3) and bicyclists (See Chapter 4). **A customer-service approach addressing the specific needs and requirements of the broad range of pedestrians and bicyclists is necessary for NCDOT to deliver bicycle and pedestrian transportation effectively to North Carolinians.**

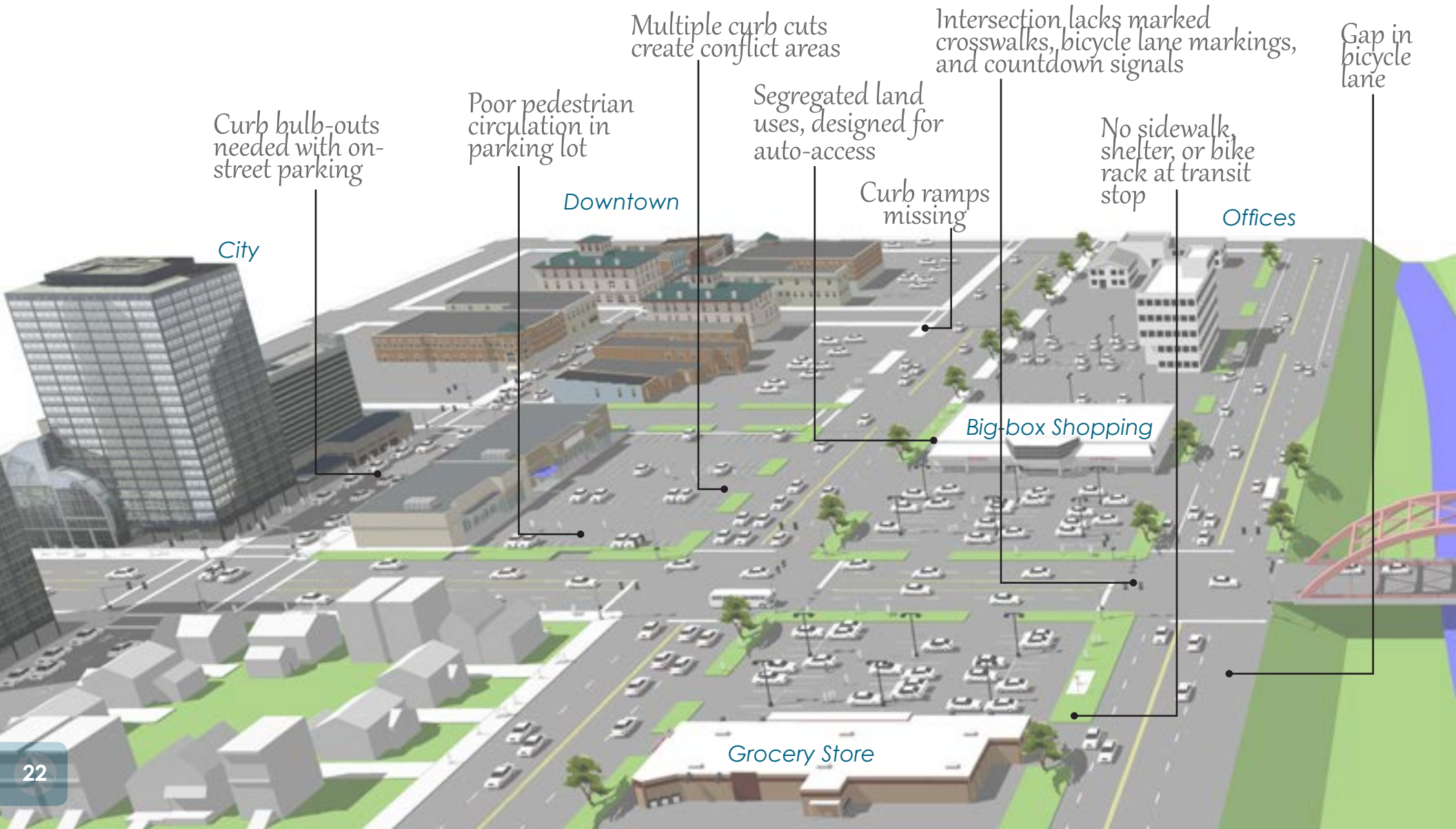
Each North Carolina transportation customer faces basic decisions for travel to destinations that are influenced by a number of factors. A motorist is not as influenced by distance because an automobile can move faster and go farther with fewer obstacles to travel, and the roadway network is interconnected and continuous, easily accessing destinations. A pedestrian or bicyclist is influenced by distance traveled and lack of interconnected facilities due to travel speed, capability of the cyclist or pedestrian, and the fact that the network of walkways and bikeways often does not exist in many places throughout North Carolina.

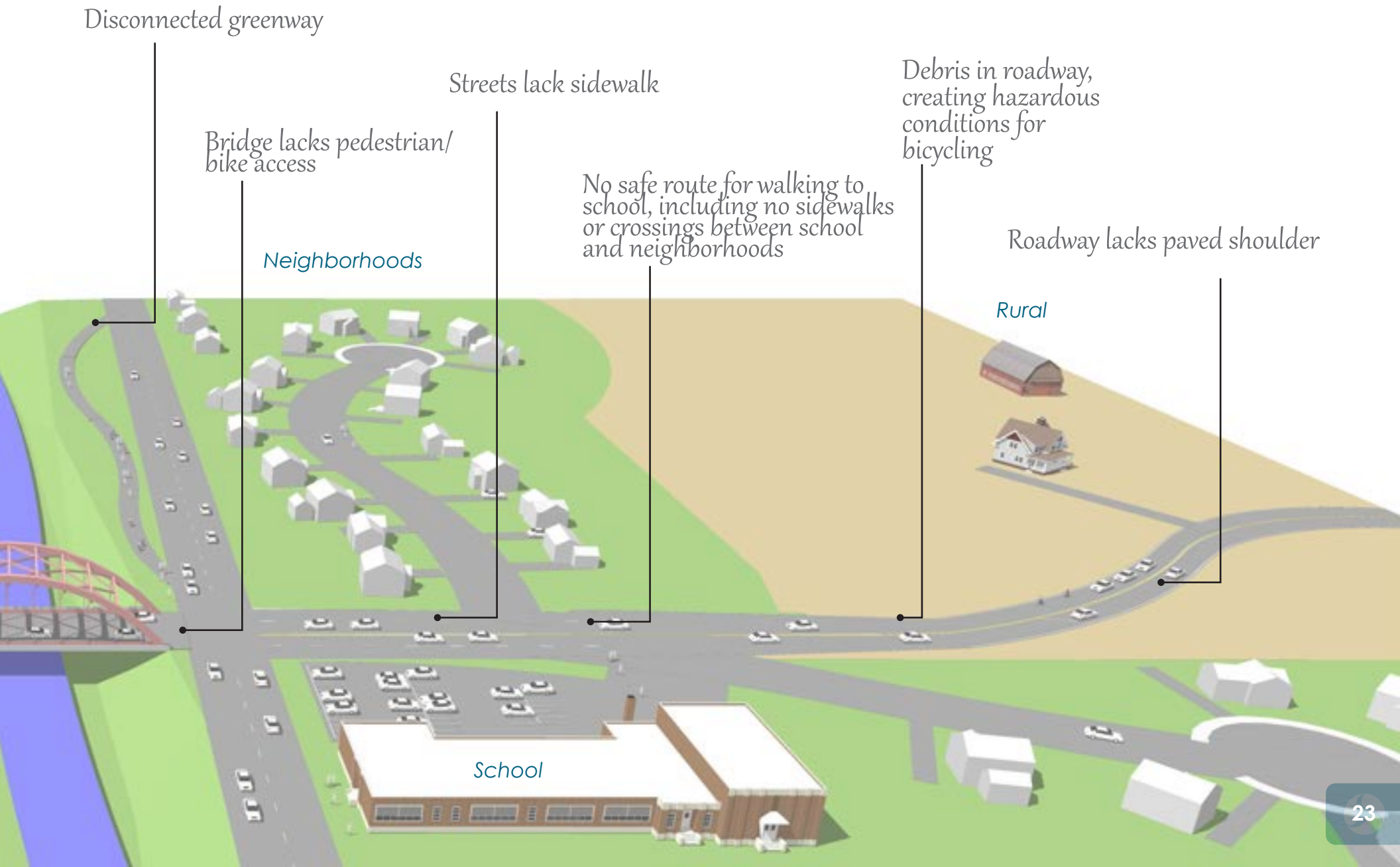
Bicycle and Pedestrian Needs (Target LOS) (billions of 2011 dollars)			
Investment Goal	Current Deficiencies	Accruing	30-Year Total
Mobility	0.32	0.07	0.39
Safety	0.32	0.07	0.39
<b>Total</b>	<b>0.63</b>	<b>0.14</b>	<b>0.77</b>

*Bicycle and Pedestrian needs from NCDOT's 2040 Plan*

## TRANSPORTATION CHOICES IN NC TODAY: *THE AUTOMOBILE*

This graphic illustrates how most urban, suburban, and rural areas in North Carolina are designed primarily for the automobile. Driving an automobile is currently the most convenient mode of travel for many North Carolinians because our roadway network is designed for driving and our land uses tend to be segregated and separated by long distances, making walking and bicycling from origin to destination challenging. North Carolina currently lacks a contiguous, interconnected and consistent network of pedestrian and bicycle facilities and services that would encourage walking and bicycling as a viable choice for transportation.





Disconnected greenway

Bridge lacks pedestrian/  
bike access

Streets lack sidewalk

No safe route for walking to  
school, including no sidewalks  
or crossings between school  
and neighborhoods

Debris in roadway,  
creating hazardous  
conditions for  
bicycling

Roadway lacks paved shoulder

Neighborhoods

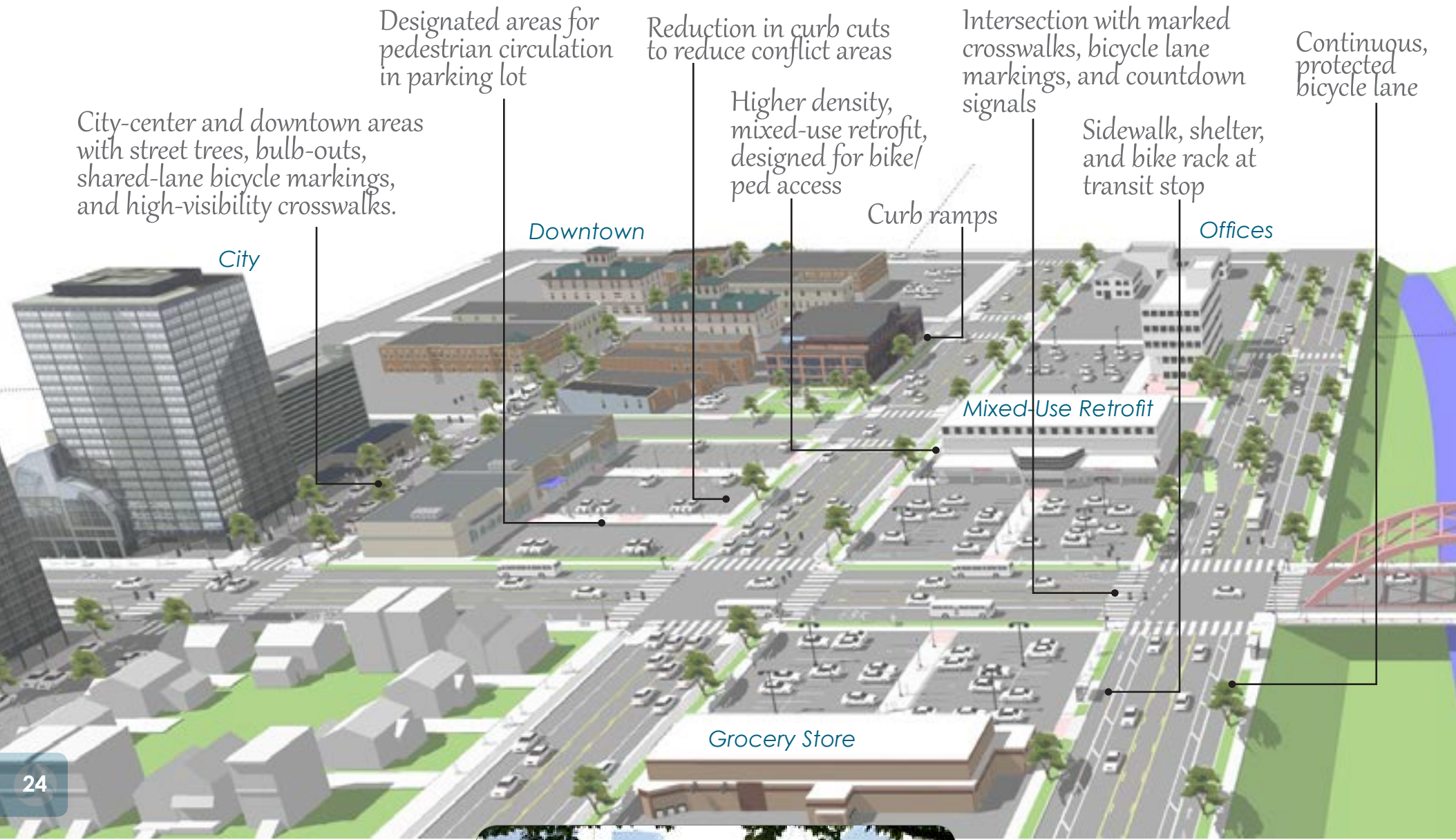
Rural

School



## NEW TRANSPORTATION CHOICES FOR NC: CUSTOMER SERVICE FOR ALL ROADWAY USERS, INCLUDING PEDESTRIANS AND BICYCLISTS

This graphic illustrates how most urban, suburban, and rural areas in North Carolina can be retrofitted to better serve all of NCDOT's transportation 'customers'. In addition to the transportation project examples below, issues with land use and trip distances will also need to be addressed, mostly on the local and regional level. This could include a greater mix of land uses, higher densities of development, infill development, and reinvestment in NC's downtown areas. Land use and development strategies such as these serve to not only reduce infrastructure costs and preserve open space, but they also shorten daily trip distances, making walking and bicycling a more viable choice for everyday transportation.



Continuous,  
connected greenway

Bridge with bike/ped  
access and facilities

Neighborhoods

Connected  
network of  
sidewalk

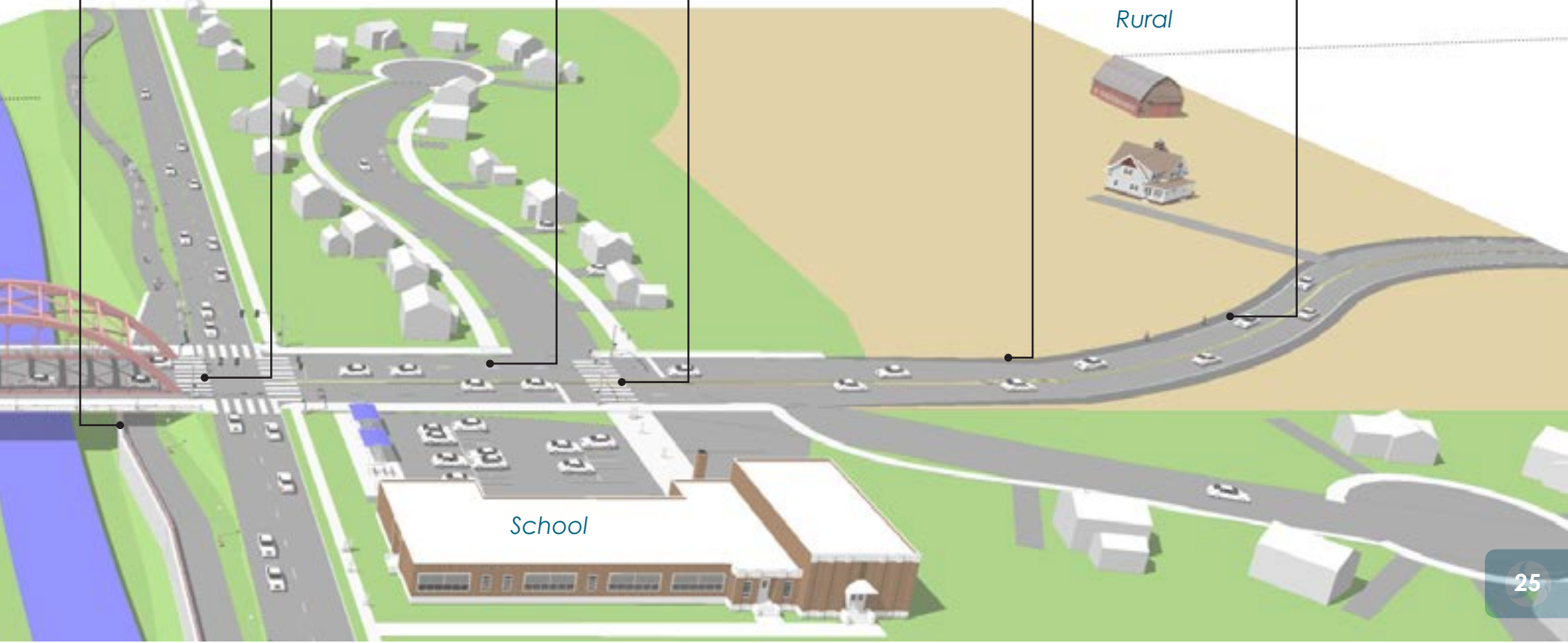
Safe route for walking to  
school, including sidewalks  
and crossings between school  
and neighborhoods

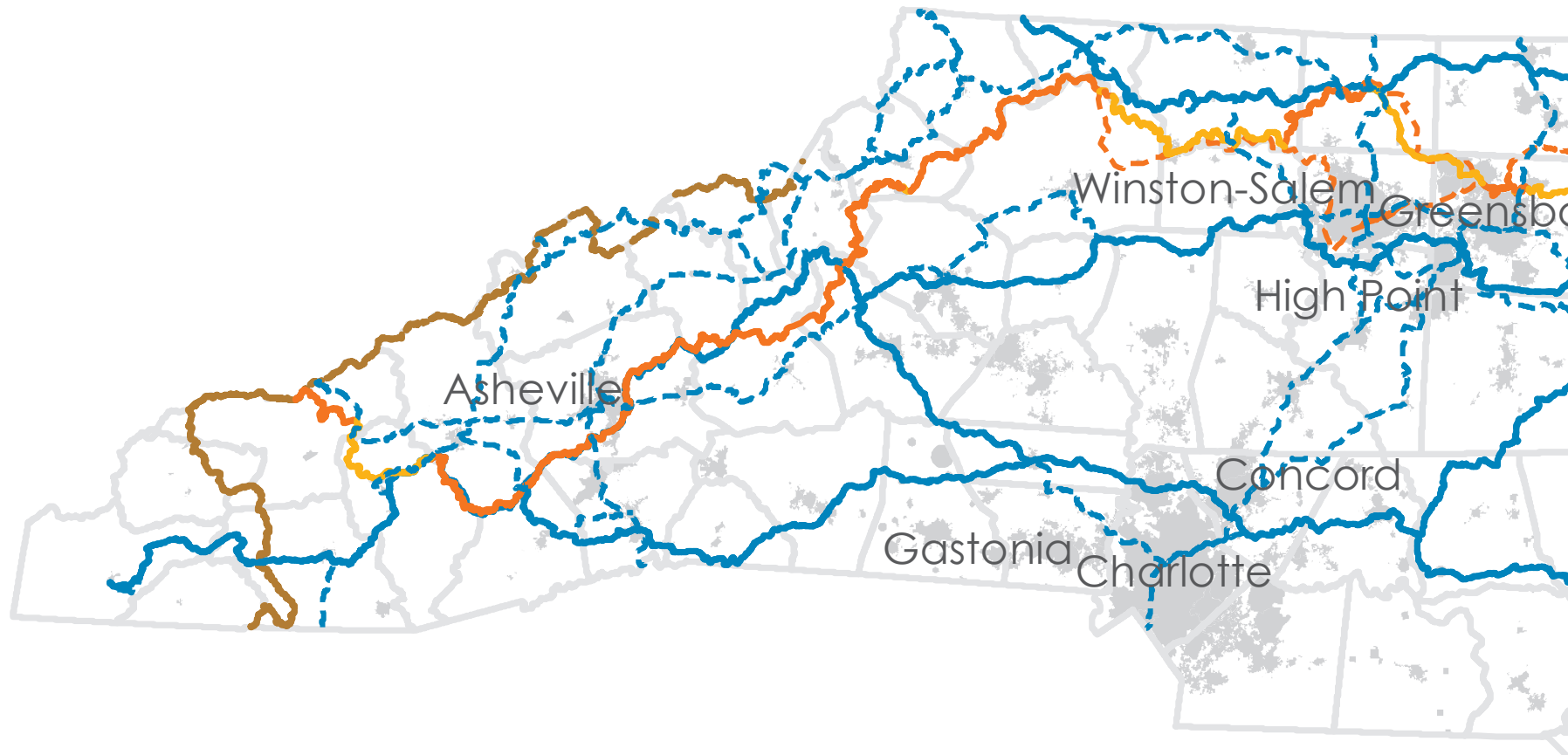
Smooth pavement,  
free of debris,  
creating better  
conditions for  
bicycling

Roadway with paved shoulder  
or sidepath

Rural

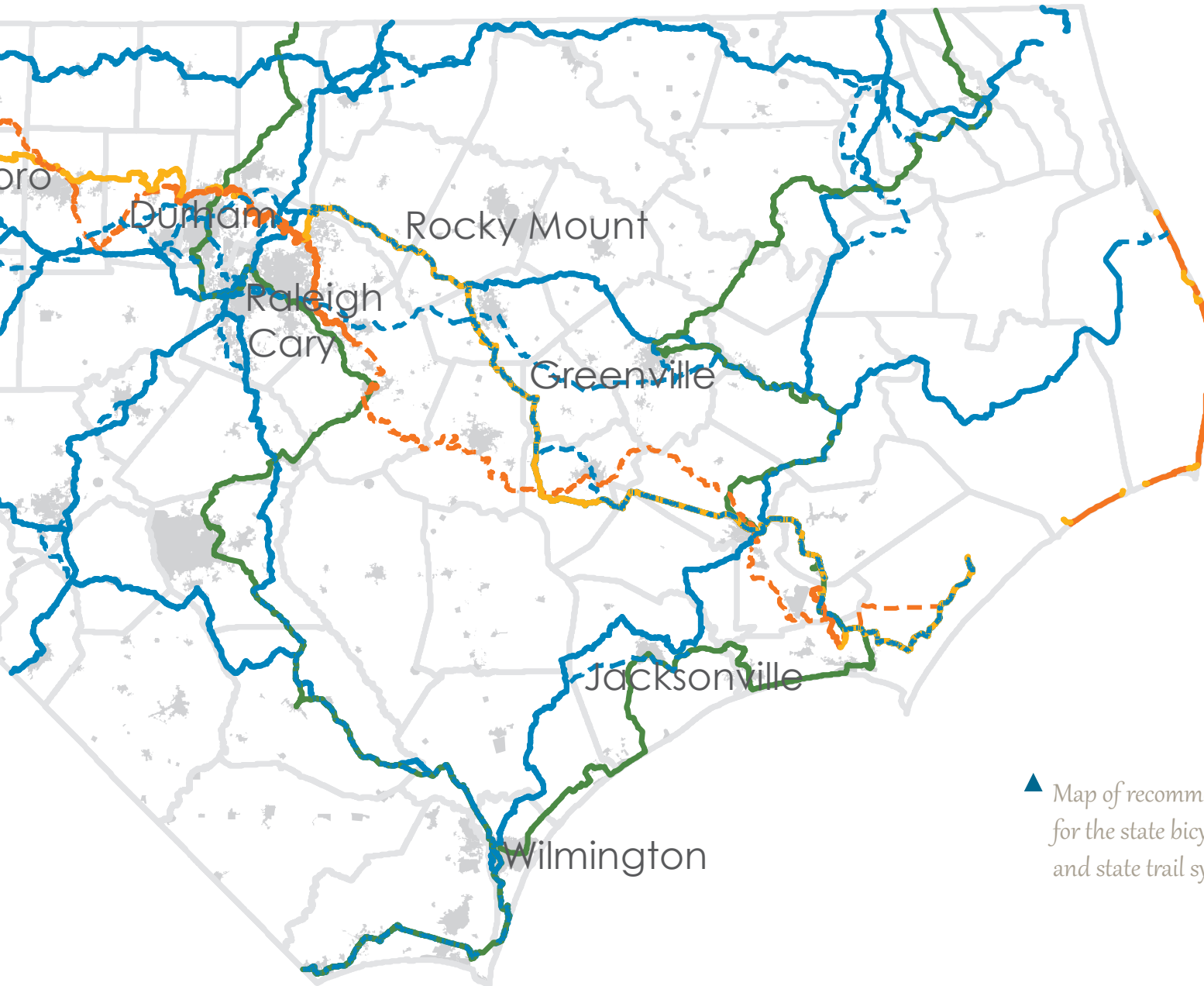
School





- Existing Mountains to Sea State Trail
- Existing On-Road Mountains to Sea Route
- Proposed Mountains to Sea State Trail
- Appalachian Trail
- Current State Bike Route
- Proposed State Bike Route
- East Coast Greenway





▲ Map of recommendations for the state bicycle routes and state trail systems.



A comprehensive approach that goes beyond facilities is needed to deliver to the pedestrian and bicyclist customers. As the 2040 Plan recommends, NCDOT will continue pursuing its mission of “connecting people and places safely and efficiently, with accountability and environmental sensitivity to enhance the economy, health, and well-being of North Carolina.” Adhering to the NCDOT mission statement and delivering quality pedestrian and bicycle accommodations includes both quantitative and qualitative metrics.

**To determine if pedestrian and bicyclist needs are being met, a more comprehensive approach to metrics and performance measures is needed to build upon current LOS measurements.** This approach should address the needs outlined above at both a system-wide (statewide/regional) level and project-specific (local) level. In many cases, this will be possible with additional data collection.



▲ Example of NCDOT-owned and maintained roadways in Belmont, NC, with low LOS for pedestrians.



▲ Photo visualization of improved NCDOT-customer service for pedestrians, including crosswalks, crossing signals, median islands, and landscaping.

# Strategies for Implementing WalkBikeNC

A collaborative, efficient, and customer-driven effort is required by NCDOT and its partners to make North Carolina a premiere state for walking and bicycling, thereby improving health, safety, transportation efficiency, economic well-being, and stewardship. The following five principles, with their associated objectives and strategies, outline the key investments and actions that North Carolina's public and private sectors should undertake to implement WalkBikeNC. A more detailed list of focused action step ideas are provided in Appendix 9.10 of the full version of the WalkBikeNC Plan.

In order to measure the success of WalkBikeNC, state agencies and local governments will be asked to improve customer service, track the progress of project delivery and program implementation, and measure accountability. To accomplish this, evaluation feedback mechanisms will be implemented including better communications with customers and annual progress reports. The percentage of Statewide Transportation Improvement Program (STIP) projects that are completed or not completed in a timely manner will be reported. User counts will be taken throughout the state to gauge pedestrian and bicycle mode share. Customers will be surveyed to ensure that the vision and goals of WalkBikeNC are being achieved.

This Plan's principles (mobility, safety, health, economy, and environment) are used to organize related objectives, strategies and performance measures on the following pages. ▼





## Principle One:

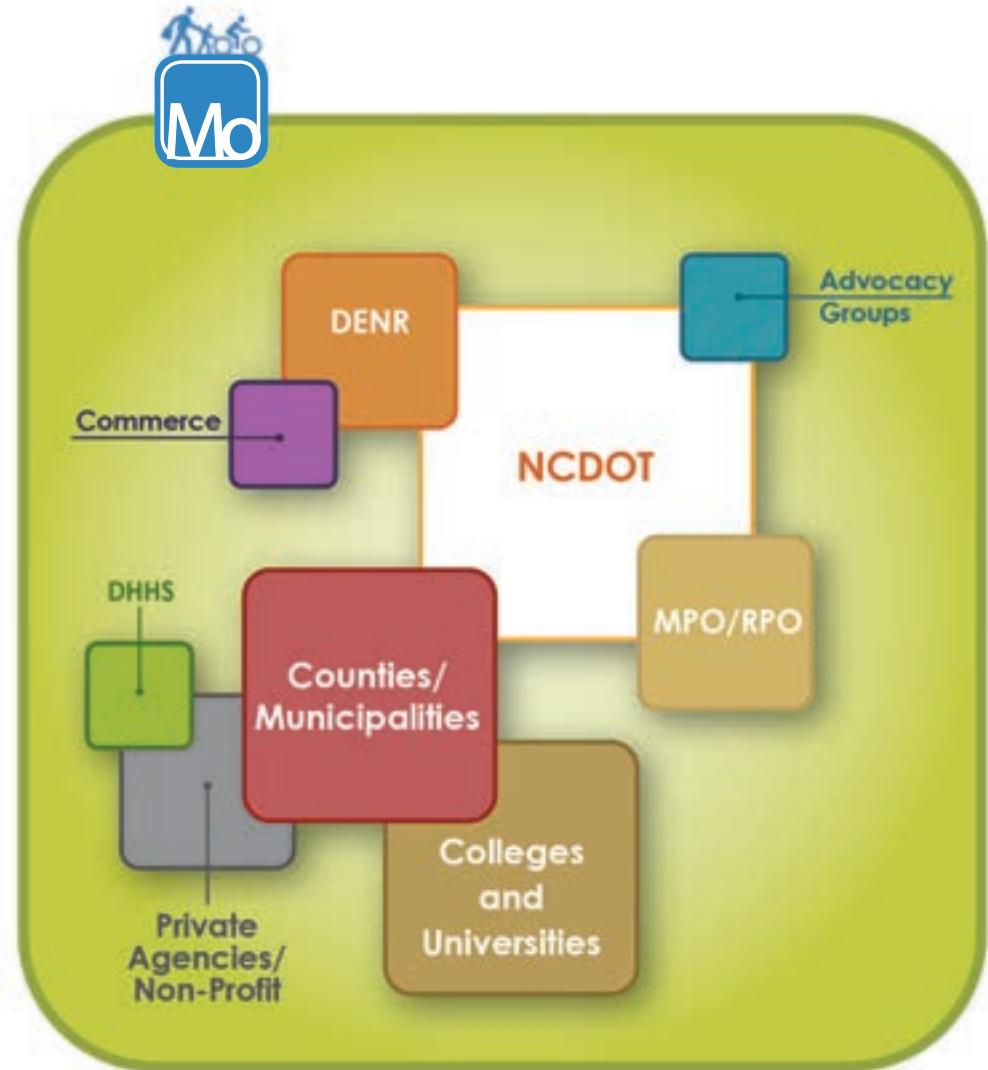
### Expand Walking and Bicycling Network

NCDOT will work with public and private sector partners to improve the quality of transportation choice for pedestrian and bicycle travel throughout North Carolina by expanding and connecting the local, regional and intrastate network of bicycle facilities, supporting the expansion of community-oriented pedestrian facilities, providing better access to transit, and meeting the needs of the disabled in all project work. NCDOT, in partnership with local governments and the private sector, will work collaboratively to streamline pedestrian and bicycle project delivery through a multi-prong approach that focuses on identifying available funding, reducing encumbrances, and implementing the NCDOT Complete Streets Policy.

NCDOT will update the Division of Bicycle and Pedestrian Transportation planning grant program to modernize its function and purpose, create a new category of funding that supports ADA, and focus on corridor and small area grant awards.

NCDOT will work with colleges and universities to improve data, technology, and web applications that make planning and customer communication more efficient.

Finally, NCDOT and local partners will focus on land use and transportation integration. Cities will improve best practices and consider incentives for infill development and walkable/bikable development.



This diagram represents the partnerships and lead agencies necessary to address this principle.

**Mobility:** Equity, choice, connectivity among transportation modes

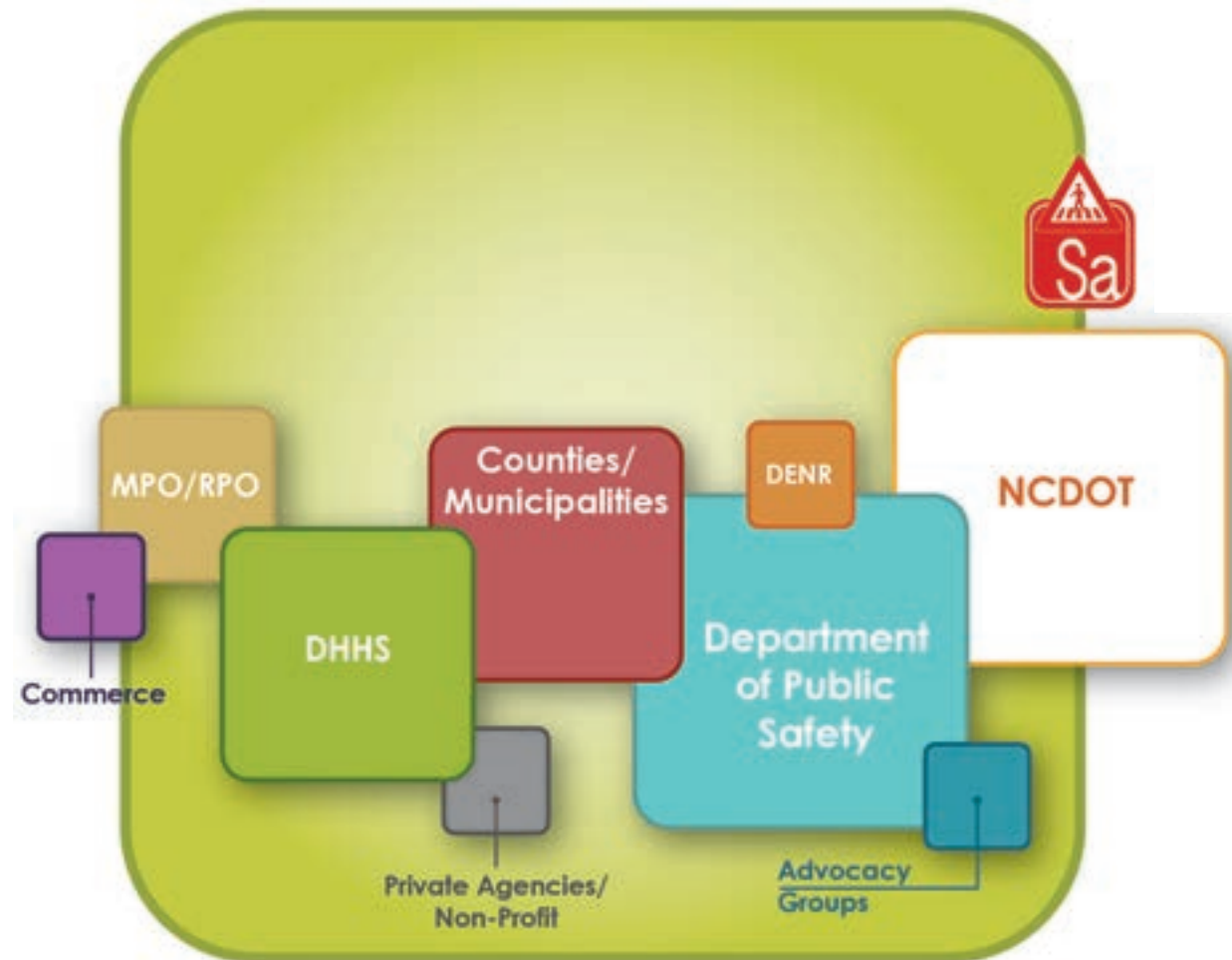
Objectives (The WHAT)	Performance Measures (The EVALUATION)	Example Strategies (The HOW)
<ul style="list-style-type: none"> <li>Expand and connect the local, regional and intrastate network of bicycle facilities</li> <li>Expand community-oriented pedestrian facilities</li> <li>Improve transportation equity (fairness in transportation choice and facilities across communities)</li> <li>Provide pedestrian and bicycle access to transit</li> <li>Reduce traffic congestion</li> <li>Improve performance-based program delivery</li> <li>Improve efficiency of technology and planning</li> </ul>	<ul style="list-style-type: none"> <li>Pedestrian and bicyclist mode share</li> <li>Percentage of trips made by bicycling and walking</li> <li>Percentage of non-controlled roadway mileage that has sidewalks</li> <li>Percentage of non-controlled roadway mileage that has designated and/or separated bicycle facilities</li> <li>Percentage of signalized intersections with pedestrian crosswalks and crossing signals</li> <li>Regions/MPOs/RPOs/Counties/Municipalities with bicycle/pedestrian/greenway plans</li> <li>Regions/MPOs/RPOs/Counties/Municipalities implementing local bike/ped policies</li> <li>Percentage of eligible roadway projects built as Complete Streets</li> <li>Percentage of transit, rail and ferry hubs with complete access amenities for bike/ped</li> <li>Percentage of state bike routes with paved shoulders</li> <li>Customer pedestrian and bicycle counts</li> </ul>	<ul style="list-style-type: none"> <li>Increase investment in walking and biking infrastructure</li> <li>Streamline project planning and delivery</li> <li>Complete Streets implementation                         <ul style="list-style-type: none"> <li>Update Roadway Design Manual and Bicycle/Pedestrian Facility Design Guidelines</li> <li>Pass Complete Streets as law</li> </ul> </li> <li>Coordinate land use and transportation planning</li> <li>Enhance transit access policies and design to make transit accessible, attractive, and safe for pedestrians and bicyclists</li> <li>Update NCDOT's Bicycle and Pedestrian Transportation planning grant program                         <ul style="list-style-type: none"> <li>modernize its function and purpose</li> <li>create a new category of funding that supports ADA</li> <li>focus on corridor and small area grant awards</li> </ul> </li> <li>Partner with the League of American Bicyclists to improve the Bicycle Friendly State Program ranking                         <ul style="list-style-type: none"> <li>Annual evaluations and response to successful and unsuccessful programs appropriately to ensure sustainable future investments</li> </ul> </li> <li>Establish an evaluation/benchmarking program</li> <li>Partner with colleges, universities, and others to improve data development and technology</li> </ul>





## Principle Two: Improve Public Safety for Walking and Bicycling

A primary goal of this Plan is to improve safety for all roadway users through strategic, consistent and interconnected pedestrian and bicycle facility improvements, along with appropriate policies and strategies for accident prevention, education and enforcement. NCDOT and public safety agencies will work cooperatively to implement the recommendations defined within this Plan.



This diagram represents the partnerships and lead agencies necessary to address this principle.

**Safety:** Public safety for pedestrians and bicyclists

Objectives (The WHAT)	Performance Measures (The EVALUATION)	Example Strategies (The HOW)
<ul style="list-style-type: none"> <li>• Create a strategic, consistent, and connected pedestrian and bicycle network</li> <li>• Improve safety of pedestrians and bicyclists</li> <li>• Increase and improve enforcement of motorist/bicyclist/pedestrian laws to ensure law abidance</li> <li>• Improve crash data reporting and mapping and preventative/pro-active safety strategies</li> </ul>	<ul style="list-style-type: none"> <li>• Pedestrian and bicyclist crash and fatality rates (per capita)</li> <li>• Pedestrian and bicyclist crash and fatality rates (per capita) relative to other states</li> <li>• Number of schools, universities, and colleges participating in pedestrian and bicycle safety education/encouragement programs</li> <li>• Cities, businesses, and universities designated as Bicycle and Walk Friendly by the League of American Bicyclists and the Highway Safety Research Center</li> <li>• Improvements at bicycle and pedestrian crash hotspots and the subsequent impact on crash reduction</li> </ul>	<ul style="list-style-type: none"> <li>• Make strategic facility improvements</li> <li>• Evaluate the factors considered as part of bicycle and pedestrian HSIP projects</li> <li>• Improve enforcement efforts</li> <li>• Continue education programs (including rights of the road)</li> <li>• Develop policies and strategies for accident prevention</li> <li>• Sustain Safe Routes to School program</li> <li>• Use FHWA Crash Modification Factors to support decision-making</li> <li>• Build partnerships between transportation and public safety agencies</li> <li>• Establish evaluation/benchmarking program</li> </ul>



### Principle Three: Embrace Public Health and Wellness as a Significant Factor in Transportation Decisions

North Carolina must embrace a diversified statewide transportation program that contributes significantly to improved public health and wellness by providing and supporting the development of active living environments with safe, connected and accessible transportation facilities. The NC Department of Health and Human Services and NCDOT will work cooperatively with local health organizations, insurance companies and health care providers to implement the recommendations in this Plan to ensure that North Carolina's transportation system becomes part of successful youth/adult education and intervention solutions.



This diagram represents the partnerships and lead agencies necessary to address this principle.

**Public Health:** Public health and wellness

Objectives (The WHAT)	Performance Measures (The EVALUATION)	Example Strategies (The HOW)
<ul style="list-style-type: none"> <li>• Increase active living environments</li> <li>• Increase the safety, connectivity and accessibility of the bicycle and pedestrian network</li> <li>• Improve public health outcomes</li> <li>• Increase ADA compliance</li> </ul>	<ul style="list-style-type: none"> <li>• Physical inactivity rates</li> <li>• Obesity rates</li> <li>• Pedestrian and bicyclist crash and fatality rates (per capita) relative to other states</li> <li>• Health care costs (attributable to inactivity and sedentary lifestyle)</li> <li>• Percent of existing facilities brought into compliance with Americans with Disabilities Act (ADA) requirements</li> <li>• Inclusion of transportation planning questions as part of existing surveillance questionnaires used by the NC Department of Health (tracking health and wellness principle)</li> </ul>	<ul style="list-style-type: none"> <li>• Implement programs that encourage walking and bicycling</li> <li>• Involve health policy practitioners in comprehensive transportation planning, project scoping, and development</li> <li>• Continue DHHS and NCDOT Active Routes to School (ARTS) partnership</li> <li>• Incorporate Health Impact Assessments (HIAs) into transportation decision-making</li> <li>• Expand education, encouragement, and enforcement programs</li> <li>• Build and maintain partnerships between transportation and health professionals</li> <li>• Incorporate Public Right of Way Accessibility Guidelines into transportation development practices, strategies, and implementation</li> <li>• Establish evaluation/benchmarking program</li> </ul>





## Principle Four: Foster Robust Economic Growth and Development by Promoting Walking and Bicycling

North Carolina can maximize economic competitiveness and return on transportation investment by creating more accessible, attractive, walkable and bikeable communities. Walking and bicycle facilities and programs have been shown to stimulate job growth, reduce health care costs, increase home values, and expand tourism across North Carolina. Livable communities where people want to live and businesses want to locate tend to become more prosperous communities. The Department of Commerce will work with NCDOT, North Carolina visitors and convention bureaus, chambers of commerce, local governments, and private sector interests to build on the broad partnership that was created to prepare this WalkBikeNC Plan and explore ways in which we transform our state to become a national and international destination for bicycle and pedestrian tourism.



This diagram represents the partnerships and lead agencies necessary to address this principle.

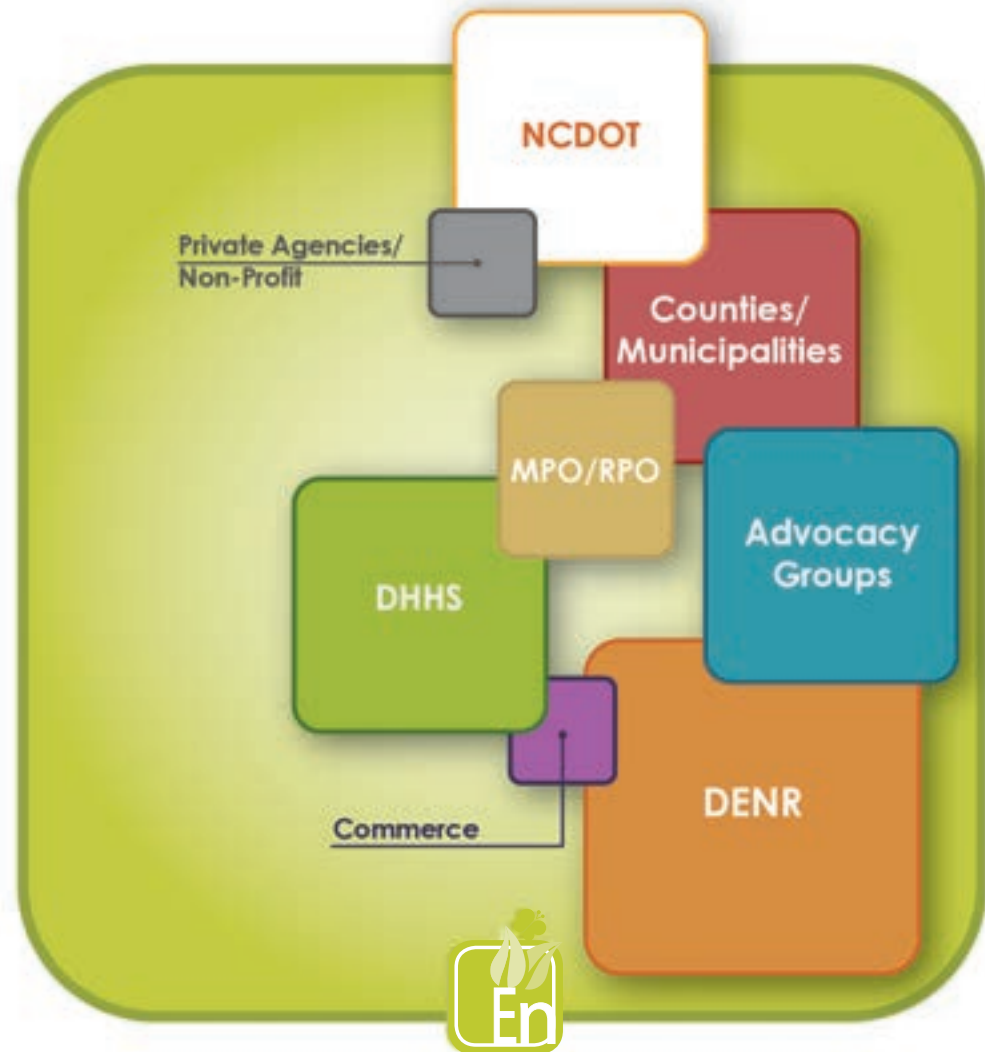
## Economic Competitiveness: A Robust Economy

Objectives (The WHAT)	Performance Measures (The EVALUATION)	Example Strategies (The HOW)
<ul style="list-style-type: none"> <li>• Use transportation investment to support economic development and job creation</li> <li>• Increase attractiveness and quality-of-life through walkable and bikable communities</li> <li>• Increase return on investment for bike/ped facilities</li> <li>• Increase active transportation investment to meet long term needs</li> <li>• Become a national and international destination for bicycle and pedestrian tourism</li> </ul>	<ul style="list-style-type: none"> <li>• Return-on-investment measures               <ul style="list-style-type: none"> <li>» Tourism</li> <li>» Property Values</li> <li>» Job Creation</li> <li>» Small business development</li> <li>» Individual quality-of-life measures</li> </ul> </li> <li>• Percentage of active transportation project costs supported by local funding, public-private partnerships, and/or other cost recovery mechanisms</li> <li>• New business start-ups due to walkability and bikability of community</li> </ul>	<ul style="list-style-type: none"> <li>• Promote walking and bicycling</li> <li>• Enhance web presence at <a href="http://www.visitnc.com">www.visitnc.com</a> and <a href="http://www.accessnc.com">www.accessnc.com</a></li> <li>• Expand Main Street Program to include Complete Streets design elements</li> <li>• Build partnerships between NCDOT, Department of Commerce, visitors and convention bureaus, chambers of commerce, local governments, and private sector</li> <li>• Initiate North Carolina-based return on investment analyses and post-construction assessment for active transportation infrastructure to inform decision-making</li> <li>• Diversify the funding stream that supports investment in bicycle and pedestrian facility and program development</li> <li>• Use return on investment analyses to inform transportation decision-making</li> <li>• Leverage effective funding strategies for active transportation investment to meet long-term needs</li> <li>• Establish evaluation/benchmarking program</li> </ul>

## Environment

### Principle Five: Encourage Stewardship of North Carolina's Natural & Cultural Resources

North Carolina's land, air and water resources are the foundation of quality living, economic prosperity and community identity. NCDENR will utilize the Conservation Planning Tool (CPT). North Carolina should continue its national leadership in local, regional and statewide greenway development by completing a Green Infrastructure Plan for North Carolina. North Carolina should continue to plan and construct a statewide pedestrian and bicycle network that incorporates green infrastructure where possible and maximizes its environmental co-benefits, such as providing wildlife habitat corridors, mitigating flooding, and protecting air and water quality.



This diagram represents the partnerships and lead agencies necessary to address this principle.

**Stewardship of our Environment:** Conserve and protect North Carolina’s natural and cultural heritage

Objectives (The WHAT)	Performance Measures (The EVALUATION)	Example Strategies (The HOW)
<ul style="list-style-type: none"> <li>• Reduce automobile dependence</li> <li>• Increase the active transportation linkages between the state’s natural and cultural resources</li> <li>• Conserve and protect North Carolina’s natural resources</li> <li>• Expand statewide greenway network</li> </ul>	<ul style="list-style-type: none"> <li>• Percentage of planning and design efforts that utilize Conservation Planning Tool</li> <li>• Reduction in transportation-related emissions due to increase in walking/bicycling trips</li> <li>• Miles of greenways/shared-use paths</li> <li>• Measure of connectivity between park assets</li> </ul>	<ul style="list-style-type: none"> <li>• Complete a Green Infrastructure Plan (blueprint for improving ecological footprint and targeting areas that need protection) for North Carolina</li> <li>• Expand the statewide network of greenways that links key natural and cultural resources</li> <li>• Build partnerships between NCDOT, NCDENR, land trusts and non-profits to promote collaboration</li> <li>• Utilize the Conservation Planning Tool (CPT) and Green Growth Toolbox (GGT) for transportation planning and design</li> <li>• Update and coordinate trail design guidelines (NCDOT, DENR)</li> <li>• Establish evaluation/benchmarking program</li> </ul>



# Funding

## Introduction

Perhaps, the most important strategy to building a more efficient bicycle and pedestrian transportation system is leveraging and maximizing funding to construct priority projects to fill gaps within that planned system. Traditional funding sources, such as federal transportation appropriations, are shrinking. Meanwhile, the need for bicycle and pedestrian improvements in North Carolina is increasing based on population changes.

One of the greatest challenges of North Carolina's transportation infrastructure is paying for the cost of network expansion, recurring operations, and maintenance. It is necessary to diversify the funding stream that supports investment in bicycle and pedestrian facility and program development by inviting and encouraging a broader range of public and private sector funding partners at the local, subregional, regional and state level. The NCDOT 2040 Plan defines the need to better relate revenues and funding to mode share. Currently, there is a significant unmet need for pedestrian and bicycle facilities throughout North Carolina. NCDOT and its local partners are committed to funding pedestrian and bicycle projects and programs in a manner that reduces the unmet customer need. Financial support is needed from local governments and the private sector to address and resolve this unmet need.

As discussed previously, infrastructure funding is not the only solution. Land use and transportation integration is a key element to make walking and bicycling trips feasible and safe for the majority of North Carolina customers. Land use decisions at the state, regional, and especially local level impact the bikability and walkability of a place.

## Key Steps

The development of an integrated, safe and convenient bicycle and pedestrian system is dependent on several key steps, as described in this plan. The first step is to articulate a local, regional or statewide vision into a long-range plan with short-term goals. Bicycle and pedestrian plans can be stand-alone or integrated within other planning functions or comprehensive transportation plans. The planning process is critical to engaging stakeholders to help define the future of their community, organizing public support for future bicycle and pedestrian improvements, and focusing efforts on a list of priority projects and programs.

The best way to capitalize on a local bicycle or pedestrian plan is to begin developing engineering documents for priority projects, in order to have good information for future land acquisition, cost estimates for fund-raising, and preparedness in the event of immediate funding opportunities. The term "shovel ready" (coined in the mid-2000s as part of

federal stimulus legislation) has been institutionalized into transportation investment planning. NCDOT now uses terms like “constructability” and “schedule-ready” to identify projects eligible for quick funding—a more frequent than not occurrence given today’s economic climate.

The next step is to consider changes to policies affecting the inclusion, funding and preparation for planned bicycle and pedestrian facilities. At the statewide level, the NCDOT Complete Streets Policy adopted in 2009 will make the construction of bicycle and pedestrian projects much more affordable in the long-run where incorporated into the design of a roadway project. Local governments should also look to policies governing the dedication of rights-of-way or easements for future bicycle and pedestrian improvements and connections as a key means of funding projects. Local funding policies, such as Capital Improvement Programs, can set aside dollars for match funds to leverage federal and other funding sources for bicycle and pedestrian projects.

Lastly, local governments must count the cost of maintaining their bicycle and pedestrian network. Setting expectations for routing trail clearing, volunteer clean-up programs, and significant upgrades or replacement are key to maintaining community support for bicycling and walking. Well planned maintenance also maximizes the original investment, lessening the time for replacement. Changes in commuter travel patterns, environmental conditions, land use changes, and technology improvements

are all factors to consider when planning funding for maintenance of a variety of bicycle and pedestrian facilities.

When considering the financial need for planning, project construction, programming and maintenance, communities need to understand the investment for bicycle and pedestrian projects is similar to that for any transportation project. Funding opportunities come by setting strategic local and state policies and competing well for federal funding or other grant sources. The need is much greater than the funding availability, so communities will have to use multiple strategies and set specific priorities in order to see change.

## **Federal and State Funding Future**

Effective as of federal fiscal year 2013, new transportation legislation called the Moving Ahead for Progress in the 21st Century Act (MAP-21) contains a new funding program called the Transportation Alternatives Program (TAP). The TAP program is very similar to the Transportation Enhancements program in previous transportation authorizations, but there are some differences of significance to North Carolina DOT and local government partners. This is described in detail in Chapter 8 of the full plan document.

## Endnotes

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