

*VISION*

*“Rolesville will be a Town where it is safe to ride a bicycle both on and away from the roads as part of an integrated policy framework and transportation system that connects us with each other and the places we want to reach.”*

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*Note: Unless otherwise noted, figures and images are accredited to J. S. Lane Company, LLC.*



*Executive Summary*

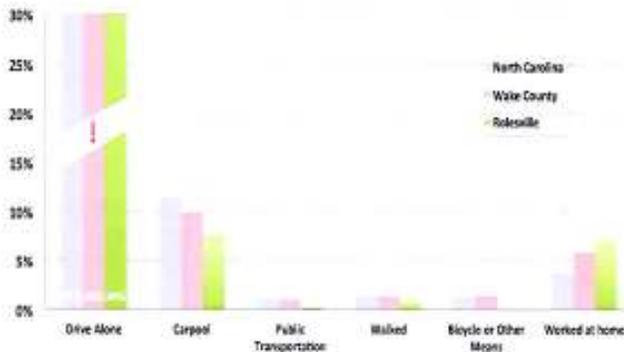




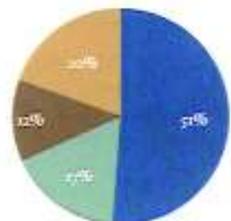
## Executive Summary

The Town of Rolesville undertook the development of a Comprehensive Bicycle Plan over the course of 2012. Appropriately, this was also the year of the 175<sup>th</sup> anniversary of Rolesville, and a year that would be a crossroads of sorts as the Rolesville Bypass (US 401) was starting construction. Bicycling is also located squarely at the juncture of the past and present: the first paved roadways were built to accommodate the old "boneshaker" bicycles, and the presence of cycling in America was starting to emerge again due to a renewed interest in exercise and physical fitness; a recovering economy that prompted more people to consider alternatives to owning and maintaining a car; and a general recognition that Rolesville is laid out in such a way that bicycling seems a natural way to connect a main street, businesses, schools and homes – many of which are located within two miles of each other.

Yet cycling in Rolesville has not been a popular choice: the streets are holdovers from a time when many fewer people lived or passed through them. Often narrow and carrying speed limits in excess of 35mph, these streets prove too daunting for casual cyclists, although long-distance cyclists frequently pass through town to reach the nearby, lower-volume roadways of northern Wake County. A lack of supporting signage, sidewalks, landscaping, and a steady stream of through traffic on US 401 – Rolesville's Main Street – makes cycling an unlikely activity for many people. The graph at left tells the story: no one cited cycling as a means to work during the most recent five-year Census sampling, and driving alone was a popular (literally, off-the-chart) choice. When we asked people how often they rode a bicycle, fully 68% said that they did so at least once a month, and over half said that they ride at least one or two times each week. A lack of connectivity to places that they would like to go (39%) and cars traveling too fast for them to feel secure (30%) led the reasons of why Rolesville residents don't ride even more often. Obviously, there is work that remains to be done.



- 1-2 Times/Week
- 1-2 Times/Month
- 1-2 Times/Year
- Less than Once/Year



How Often Do You Ride a Bicycle?



## Executive Summary

The North Carolina Department of Transportation Division of Bicycle and Pedestrian Transportation, the Town of Rolesville, and the J. S. Lane Company, LLC (along with subconsultants of Kostelec Planning and Lagniappe Planning) came together in 2012 to develop a plan to change this dynamic. The Town assigned a steering committee to help guide the planning process and, with the assistance of the consulting team, engaged the public through a project website, presence at public events, and attendance at Town Council and Planning Board meetings. The public spoke clearly at these meetings: people do bicycle in Rolesville (38% at least 1-2 times a week), they feel that traffic moves too fast or dangerously for them, or that there are not easy connections to the places that they wish to go.

This *Comprehensive Bicycle Plan* hopes to support our citizens and future generations of cyclists by assigning priorities to improvements on the street; signage and pavement markings; and developing programs that can help Rolesville achieve a safer and supportive cycling environment. The Plan has some unique features worth mentioning: bicycle levels-of-service were measured for the major roadways; high-priority widening segments were identified near schools and curves; and Main Street was treated with substantial attention to detail to accommodate a future (2014) when much of the through traffic now will migrate to the new bypass to the south and east.

The following page describes the important projects, programs, and policies contained in this Plan to achieve the Town's objectives. In addition, the reader is encouraged to review Chapter Five, where a number of financing options are discussed including an option to leverage stream and wetland mitigation credits to help finance improvements or encourage private developers to participate in their construction. Short-Term (1-5 years), Mid-Term (6-10 years) and Long-Term (More than 10 years) are identified for the project recommendations.

### Information by Chapter

#### Chapter 1: Making a Case for Cycling

- Describes the benefits of cycling
- Describes the results of the public survey
- Steering Committee composition
- Field review of current conditions of major cycling routes
- Goals and Vision Statement development

#### Chapter 2: Policies and Programs

- Details the relevancy of each plan and the Town's Ordinance, noting the places where they could be more supportive of cycling objectives
- Describes a number of programs in detail, including potential partnerships for implementation

#### Chapter 3: Project Recommendations

- Definition of Term Projects and Priorities
- Details of Project Recommendations
- Details of Main Street Improvements
- Origins and Destinations identified by the Steering Committee

#### Chapter 4: Design and Operations

- Describes maintenance tasks and responsibilities
- Design elements and considerations are discussed in detail

#### Chapter 5: Implementation and Priorities

- Pavement markings and signage recommendations
- Bicycle Program and evaluation tool is discussed
- Program financing options are described in detail, including priority options



#### **Policies** (refer to Chapter 2.1 for additional details)

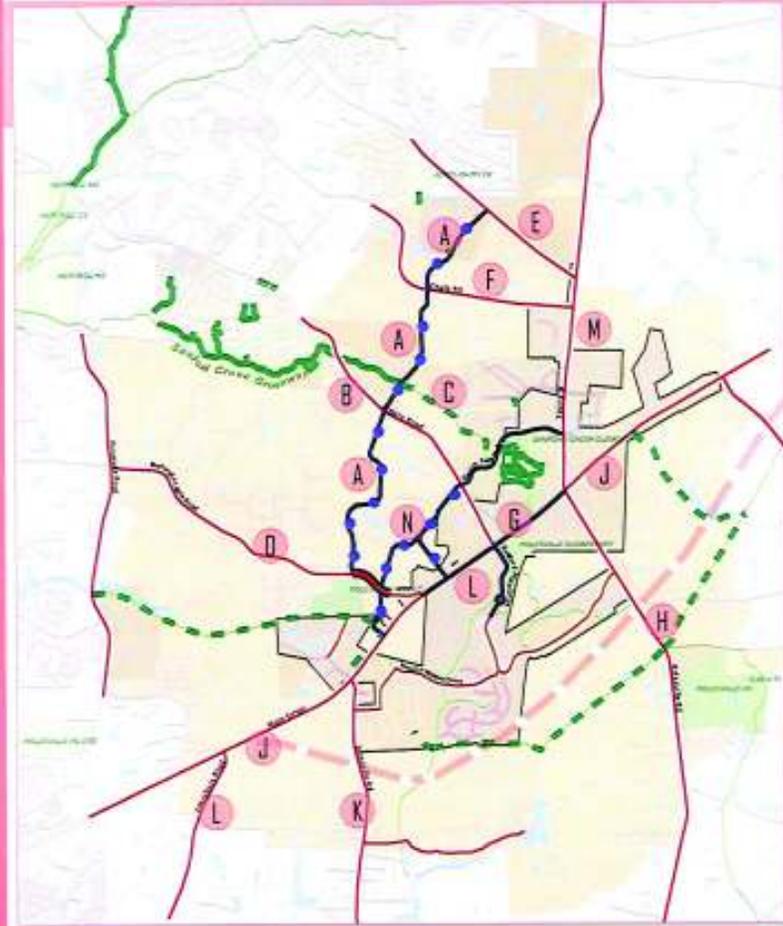
- A. Reference and echo recommendations in the Bicycle Plan in various locations throughout the Town's *Community Plan*
- B. The *Open Space and Greenways Plan* (2002) should be updated, including more attention to detail and road/greenway intersections
- C. Strengthening the Town's position on connecting roads in various planning documents will be crucial to ensuring good access by bike
- D. The *Thoroughfare Plan* (2002) needs to be updated, and really a complete re-write, to reflect ROW constraints and Complete Streets policy
- E. A number of recommendations were suggested for the current development ordinance, including bicycle parking, modifying traffic impact studies to focus on bicycle (and pedestrian) impacts from development actions, and require adherence to adopted plans
- F. The Town should be an active participant in the MPO's (CAMPO) planning actions, particularly the upcoming Northeast Area Study
- G. The *Imagine 2040 Plan*, focusing on Main Street, needs to be refined and propose interim solutions as well as describe updates to current overlay ordinances for Main Street and the Rolesville Bypass

#### **Programs**

- A. Education: Safety Video Promotion
- B. Education: Expand the Bicycle Rodeo Program
- C. Enforcement: Warning Tickets and Follow-Up
- D. Enforcement: Traffic Calming in the Hands of the People
- E. Enforcement: Helping the Police
- F. Encouragement: Get On Board the Bicycle Train
- G. Encouragement: Continue to Develop the St. Patrick's Day Bicycle Parade
- H. Engineering: Plan Ahead to Participate in NCDOT Improvements
- I. Encouragement and Education: Collaboration Opportunities with Wake Forest

#### **Projects** (see also map on following page)

| <b>Projects</b>  | <b>Term/Priority</b> | <b>Opinion of Probable Cost</b>                      |
|--|----------------------|--|
| A. Connector from Jones Dairy Rd. to Burlington Mills Rd.    | Long/1               | Phase I: \$9.9m; Phase II: \$6.5m; Phase III: \$4.7m |
| B. Rogers Rd. from Main Street to Town limits                | Mid/1                | \$354,000  |
| C. Greenway from New Collector street to Main St. Park       | Short/2              | \$680,000  |
| D. Burlington Mills Rd. Bike Lane or Sidepath                | Mid/4                | \$367,000  |
| E. Jones Dairy Rd. Wide Striped Shoulder                     | Mid/3                | \$196,000  |
| F. Chalks Rd. Wide Striped Shoulder                          | Long/7               | \$237,000  |
| G. High Visibility Crosswalk at Rolesville Elementary School | Short/1              | \$45,000   |
| H. Rolesville Road Wide Striped Shoulder                     | Long/2               | \$339,000  |
| I. Jonesville Road Wide Striped Shoulder                     | Long/6               | \$187,000  |
| J. Main Street (North and South) Wide Striped Shoulder       | Long/3               | \$570,000  |
| K. Louisbury Road Wide Striped Shoulder                      | Long/4               | \$193,000  |
| L. Main Street (Downtown) Improvements                       | Mid/2                | Cost requires additional, detailed design study      |
| M. Young Street Wide Striped Shoulder                        | Long/5               | \$503,000  |
| N. Granite Boulevard Extension/Burlington Mills Realignment  | Short/3              | \$8.7m   |



## Project Recommendations

Increasing the Freedom and Safety of Bicycling in Our Town

- A Connector from Jones Dairy Rd. to Burlington Mills Rd.
- B Rogers Rd. from Main Street to Town limits
- C Greenway from New Collector street to Main St. Park
- D Burlington Mills Rd. Bike Lane or Sidepath
- E Jones Dairy Rd. Wide Striped Shoulder
- F Chalks Rd. Wide Striped Shoulder
- G HAWK Signal and Crosswalk at Rolesville Elementary School
- H Rolesville Road Wide Striped Shoulder
- I Jonesville Road Wide Striped Shoulder
- J Main Street (North and South) Wide Striped Shoulder
- K Louisbury Road Wide Striped Shoulder
- L Main Street (Downtown) Improvements
- M Young Street Wide Striped Shoulder
- N Granite Boulevard Extension/Burlington Mills Realignment

### L E G E N D

- School
- Sidewalks
- Greenways Existing & Proposed
- Bicycle Lane
- Shared Lane w/ Sharrow Markings
- Wide Striped Shoulder
- Adjacent Sidepath
- New Location Road



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### Vision and Goals

**Rolesville will be a Town where it is safe to ride a bicycle both on and away from the roads as part of an integrated policy framework and transportation system that connects us with each other and the places we want to reach.**

1. Our Town will be **better connected** and accessible by bicycle than it is today.
2. Our Town will feature **on-road bicycle facilities that connect us** to places both within and near our borders in part to provide alternatives to making every trip with a car.
3. Our Town will **grow our greenway and trail system**, and dedicate time and resources to that end.
4. Our Town will **engage our residents proactively** to ensure that everyone - motorists and cyclists alike - will be respectful and aware of each other to ensure the safety of every cyclist.
5. Our Town will **consider bicycling and bicycle accommodations** in every new development review, policy, ordinance, and resolution adopted.

While the costs of new construction shown in the previous table may be born to a considerable extent by new development in some cases, the Town will have to work to find funding for the remaining projects in already-developed parts of Town. The final chapter describes the following preferred strategies for financing various forms of improvements:

- Municipal and County Bonds
- County Property Tax Increase
- County Sales Tax Increase
- Municipal or County Service (Business Improvement) District
- Tax Increment Financing (TIF)
- Occupancy Tax
- Spot Safety and Hazard Elimination (NCDOT)
- Powell Bill Funds
- Conservation Tax Credits
- State Transportation Improvement Program Projects (NCDOT)
- Payment-in-Lieu Fees
- Foundation Grants
- Safe Routes to Schools

### How Do We Go Forward?

Through a concerted, multi-pronged effort, cycling can be an important of Rolesville's present and its future. The people we spoke with were universally enthusiastic about cycling, and recognized its value to their lives and those of their children. Now that the Plan is completed, we hope that the people, businesses, and leaders of Rolesville will continue to work together to create a place that fulfills the vision of Rolesville, and all of the people that remember what it was like to bicycle to school on a cool autumn morning.





## Chapter 1 Making a Case for Cycling

### Section 1.1: Benefits of Bicycling



Rolesville Bike Parade, 2012

**A** lot of images may come to mind when someone mentions the words "bicycle" or "bicycling"...

... the days spent during the summer riding alone or with friends when you were younger,

... maybe the spin class at the local gym that's the closest you get to cycling these days, always leaving you feeling tired but accomplished, or

... media images of cyclists wearing sleek-fitting attire on expensive road machines or bouncing across rock-strewn trails.

What we don't think of often enough when we hear bicycling mentioned is how this simple and (usually) leisurely activity can be a serious and important form of transportation; impart major health benefits from being part of a more active lifestyle; generate economic advantages from road and trail facilities that lure cyclists to the area; or just how much fun cycling can be for adults and children. We don't have to be Lance Armstrong or even live in a place like Portland, Oregon to realize most of these benefits – although we can learn lessons from both of them that apply to our place and our people.

**HEALTH BENEFITS.** Cycling more often contributes to a reduced risk of being overweight, which leads to a reduced risk of the likelihood of a myriad of ailments that are leading causes of premature death and disability. Strokes, diabetes, some types of cancer, and heart disease are all made less likely through regular exercise - and lower health care costs, a



## Chapter 1: Making a Case for Cycling

particularly timely topic. We've listened to debates about how to manage health care in our country, but relatively little time about what we can all do to lower costs on the front end. We've also learned that you don't have to do an "insane" workout or exercise for hours on end; as little as 20-30 minutes a day is all we need to realize benefits. These benefits translate into pretty impressive outcomes: in November 2011, the National Institute of Environmental Health Sciences released a report that noted if half of all short trips of less than five miles were made by bicycle deaths would decline by 1,295 persons and \$3.8 billion each year in medical costs alone would be saved in 11 upper Midwestern metropolitan areas.

**IT'S THE ECONOMY.** When this Plan was prepared, the major topic on a national level was creating jobs and improving economic climates, preferably without risking environmental or social values. Cycling contributes an estimated \$133 billion annually to the U.S. economy, supporting 1.1 million jobs and generating nearly \$18 billion in tax revenues that we would otherwise need to find elsewhere. But for our purposes, the key statistic is this: bicycling generates nearly \$50 billion for non-cycling sector businesses in the form of meals, hotel lodging, clothing, and entertainment. The research on this topic in our state is spearheaded by a report released by the Institute of Transportation Research and Education (ITRE) studying the effects of cycling on the Outer Banks: cycling investments are returned nine-fold by extending tourist vacations, drawing new vacationers to the area, and encouraging them to return again and again. Cyclists tend to have higher-than-average incomes and educational levels, facts that businesses should be aware of when considering creating bike-friendly environments – and adding a \$350 loop-and-post bike rack out front would be a good idea, too.

**REALIZING INDEPENDENCE.** In addition to bicycling making more jobs, it helps people get to them as well. Businesses that are easily accessed by bicycle are often in neighborhoods that are desirable to an increasingly large percentage of young professionals looking for places that have trails nearby and places to which they can walk or bike independent of using a car. Schools in Rolesville are also a focus of our Plan, and getting to them

33

24

Commuter time, in minutes, for Rolesville (top) and North Carolina (2010)



### Schools in Rolesville

**Rolesville Elementary School**  
K-5 | Traditional | 643 | 91.7 | 38.9 | 9

**Sanford Creek Elementary School**  
K-5 | Year-Round | 640 | 83.7 | 20.6 | 0

**Rolesville Middle School**  
Opened in 2012

**Rolesville High School**  
Opening in 2013

*Key to statistics:  
Grades | Calendar | Enrollment | Crowding % |  
Free-Reduced Lunch Eligible Students % | Mobile  
Units in Use*

can and should be a family affair. Rolesville (as of 2012) has three public schools inside its borders, and another one, Jones Dairy Elementary School, close by in the adjoining Town of Wake Forest. Each of these schools should have the goal of being readily accessible by bicycle within one mile of the campus. When children get to where they are going by bicycle – even if accompanied by an adult – it is a boost to their self-confidence. One of our objectives is to promulgate ways of accessing schools that are safe and get parents as well as teachers and students involved in a healthy outing.

**RELIEF FROM TRAFFIC, AND TRAFFIC RELIEF.** Bicycling offers the most energy-efficient way of getting from one place to another, and combines the “reach” of a short automobile trip with the health and cost-efficiency of a long walk trip. Short trips are readily made by bicycle, and 28% of all trips in the U.S. are one mile or less in length (we would assume this number to be a little smaller for Rolesville given the longer commute times compared to North Carolina and the Nation). However, only 2.25% of these trips are made by bicycle and 60% made by driving (35% are walked). These statistics communicate clearly one reason that we have both traffic

congestion and overweight and obesity issues in abundance in the U.S. In Rolesville, no one biked to work in the most recently available (2006-2010 sampling) Census survey. Not only do people in Rolesville, Wake County and North Carolina drive almost exclusively to work, they overwhelmingly choose to do so by themselves (Figure 1-1). However, work trips only account for 20% to 25% of all the trips made on a typical day for most households, and many of the destinations that aren't work-related – schools, shopping, or recreation – are located within one mile of many of Rolesville's neighborhoods, making them strong candidates for conversion to bicycle trips.

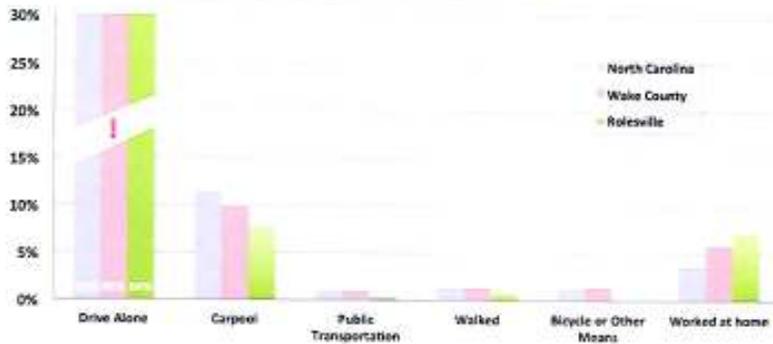


Figure 1-1. Means of Transportation to Work, 2006-2010



## Chapter 1: Making a Case for Cycling

**PURPOSE OF THIS BICYCLE PLAN.** In 2012, Rolesville, in cooperation with NCDOT and J. S. Lane Company, LLC, developed a comprehensive bicycle planning document and process by studying Rolesville and its zoning jurisdiction (called an Extra-Territorial Jurisdiction, or ETJ). The purpose of the Plan was to provide recommendations on physical infrastructure, programs, policies, and implementation concepts that would help Rolesville improve its cycling environment in terms of safety and the encouragement of more cycling. This planning process was greatly facilitated by both the staff of Rolesville and a dedicated Steering Committee that aided in identifying priorities, raising awareness of the Plan, and reviewing draft reports (Table 1-1).

Table 1-1: Rolesville Bicycle Plan Steering Committee

|                  | Name                   | Representation                 | Affiliations                             |
|------------------|------------------------|--------------------------------|--|
| Town Staff       | Thomas Lloyd           | Planning Department            | Town of Rolesville                       |
|                  | Tim Stoker             | Police Department              | Town of Rolesville                       |
|                  | Brian Hicks            | Town Manager                   | Town of Rolesville                       |
|                  | J.G. Ferguson          | Parks & Recreation             | Town of Rolesville                       |
| Stakeholders     | Paul D. May            | Resident                       | Hampton Pointe Subdivision               |
|                  | Patrick Delaney        | Resident                       | Granite Falls Athletic Club              |
|                  | Terry Marcellin-Little | Chairperson                    | Rolesville Open Space & Greenways        |
|                  | Mike Honkomp           | Resident                       | Rolesville OSAG/PARAB                    |
|                  | Tracy Doherty          | Resident                       | Granite Falls Athletic Club/Rex Hospital |
|                  | Timothy Hellwig        | Resident                       | Rolesville OSAG                          |
|                  | Mike Szafran           | Resident                       | Wall Creek Neighborhood                  |
|                  | Alan Walker            | Resident                       | Wall Creek Neighborhood                  |
|                  | Mark Powers            | Vice-chairperson               | Rolesville Planning Board                |
|                  | Angie Coyle            | Resident                       | BB&T Bank                                |
|                  | Gil Hartis             | Commissioner                   | Rolesville Town Board of Commissioners   |
| Jenny Rowe       | Director               | Rolesville Chamber of Commerce |  |
| Consulting Staff | Robert Mosher          | NCDOT                          | Division of Bicycle & Pedestrian Transp. |
|                  | J. Scott Lane          | J.S. Lane Company              | Owner (reporting, public engagement)     |
|                  | Don Kostelec           | Kostelec Planning              | Owner (field review, recommendations)    |
|                  | Melissa Guilbeau       | Lagniappe Planning             | Owner (mapping, policy review)           |

In the following sections, we translate these concepts about the benefits of cycling as well as what we have learned by studying Rolesville's current conditions and surveying a sample of the population into a vision statement, goals and strategies for the Rolesville Bicycle Plan. We will also discuss the main purposes of the Rolesville Bicycle Plan, as well as long- and short-range objectives.



Rolesville Bicycle Plan Steering Committee, 2012

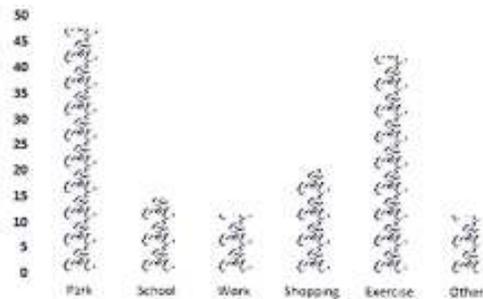


Figure 1-2. Check the places where you bike now or would like to ride a bicycle

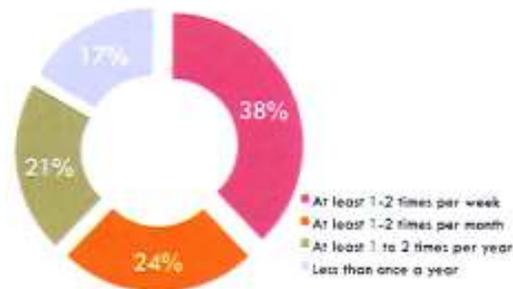


Figure 1-3. Check the one answer that best describes how often you bicycle

### Section 1.2: Evaluating Current Conditions – Survey

Field observations and a public survey were conducted to provide a greater understanding of the local conditions for bicycling as well as the attitudes of Rolesville’s residents towards cycling.

A total of 66 people responded to a survey that was conducted from February 2012 through May 2012. This total represents approximately 1.7% of the total population of the Town. Approximately half of the surveys were gathered at the Rolesville St. Patrick’s Day Bicycle Parade on March 17<sup>th</sup> as staff was there to promote the Plan at the parade.

The survey instrument was relatively brief, as specific destinations are limited in Rolesville currently, as is total roadway mileage. In some cases, additional cross-tabulations of results are discussed to provide a more detailed perspective of the responses.

**Destinations.** When asked where the respondents bike to now or would like to bike in the future, “parks” and “exercise” options were chosen 71% and 64% of the time, respectively (Figure 1-2).

**Frequency.** The frequency of riding by the respondents was relatively high, with 62% of the people responding saying that they ride a bike at least one or two times each month. Thirty-eight percent (38%) of respondents noted that they rode at least one-to-two times each week (Figure 1-3).

Respondents that rode bikes frequently responded only slightly differently to these two questions as compared to the rest of the respondents. For example: 15% of the respondents that cited their bicycling riding frequency as less than 1-2 times per week cited riding to work as their preferred destination, while 20% of those people that cited a frequency of 1-2 times per week cited work as a preferred destination. Frequent riders



## Chapter 1: Making a Case for Cycling

tended to ride less often to parks, shopping and for exercise than the less-frequent riders.

**Wearing a Helmet.** The severity and ultimate outcome of any injury suffered during a bicycle crash is, for the rider, highly dependent on whether or not he or she was wearing a helmet. Of the 523 cyclists killed in the U.S. in 2010 where it was known if they were wearing a helmet or not, 82% of them were known to not be wearing a bike helmet at the time of the crash while only 18% were wearing a helmet.<sup>1</sup> In Rolesville, the survey respondents indicated that nearly two-thirds of people that rode a bike wore a bicycle helmet (Figure 1-4). Three-quarters (75%) of the people that responded “no” when asked if they wore a bicycle helmet said that they did not wear a helmet because they did not own one. The remainder cited helmets as being unnecessary or uncomfortable as the reasons that they did not wear a helmet.

**Barriers.** When asked what prevents survey respondents from riding a bicycle more often, none of the survey respondents cited not knowing how to ride or otherwise being unable to ride as a factor. The most commonly cited factor for not riding a bike more often was the lack of “convenient connections” to places that they would like to travel (52%) followed closely by automobile traffic being too fast (41%). Notably, respondents that selected “other” cited busy schedules or a lack of time most frequently in their responses as the reason they did not ride more often (Figure 1-5).

Frequent bicycle riders wear helmets much more often (78%) than those respondents that ride one or two times a month or less (59%). These frequent riders also cite fast auto traffic as being less of a barrier to them riding more often (32%) compared to less-frequent riders (46.3%). A lack of convenient connections is cited more often as a barrier to frequent cyclists (56%) than to infrequent cyclists (49%).

The age of the respondent did affect helmet usage, with 64% of people aged 26 to 65 saying that they wore a helmet when they rode a bicycle.

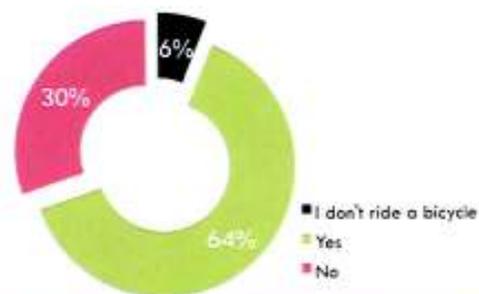


Figure 1-4 When you ride a bicycle do you wear a helmet?

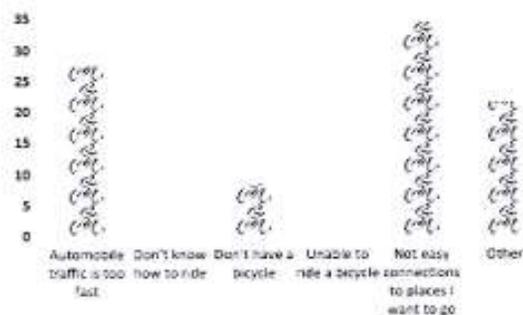


Figure 1-5. What prevents you from riding a bicycle more often?

## Chapter 1: Making a Case for Cycling



Compared to the Rolesville population as a whole, the age of the survey respondents was skewed heavily in favor of this age bracket [26 to 65], which represented nearly 90% of all survey respondents (Figure 1-6).

The results of the survey, although obtained from a limited number of participants, indicate both a strong desire to engage in bicycling as well as the potential for creating better cycling environments through improved facilities, both on-road and off-road. These conclusions were supported by the field review discussed in the following section.



Figure 1-6. Age of Survey Respondents and Rolesville Population (2010)



## Chapter 1: Making a Case for Cycling

### Section 1.3: Evaluating Current Conditions – Field Review

A field review of every street in Rolesville was conducted by bicycle during May 2012. During this field review, notes, still pictures and video were gathered and used to help create an assessment of current conditions on the major roadway facilities as well as to ascertain the existence of off-road facilities (greenways and trails) and supporting facilities such as bicycle parking stations. For major streets in Rolesville that provide important connections for cars as well as cyclists, a bicycle level-of-service (BLOS) was calculated (see text box on this page for an explanation of the BLOS measure).

The following paragraphs describe the physical infrastructure of the Plan study area. On each page there are one or more pictures of the roadway, the level-of-service measure, and existing cross-section. If the roadway changes along its length, more than one cross-section may be shown.

#### Bicycle Level-of-Service?

##### How the BLOS Works

A level-of-service, or quality of cycling experience, was generated using FDOT's Quality/LOS multi-modal scoring system for the major roads in Rolesville. This system creates a score and letter "grade" (A-F) that objectively evaluates the bicycle-ability of these roadways based on traffic volumes, truck traffic, lane widths, speeds, and bicycle accommodations. Higher scores are worse; below are how the scores and letter grades relate.

- A = Less than 1.5
- B = 1.5 to 2.5
- C = 2.5 to 3.5
- D = 3.5 to 4.5
- E = 4.5 to 5.5
- F = More than 5.5

Part of our goal for the Rolesville Bicycle Plan is to change these scores for the better.



Main Street (US 401, Louisburg Road)

Bicycle LOS: E (5.2 – 5.4)  
 Posted Speed: 35 – 45mph  
 Traffic Volumes: 12k – 18k  
 Typical Section(s):



**Main Street/Louisburg Road/US 401.** Rolesville's Main Street is also the historical main connection between the Town and Raleigh, as well as Wake Technical College's east campus, I-540, and destinations to the north of Town including Louisburg and I-85 just south of the Virginia State line. This road has created the axis along which the Town has grown, as well as providing the major commercial centers for residents to shop.

Main Street makes a remarkable transition between an almost rural (but suburbanizing) area on the south and north ends of Town, to a traditional, "strip"-style of development between Burlington Mills Road and Young Street. The intersection with Young Street is the traditional downtown core for Rolesville, although the majority of government functions are now situated well to the south. This street has access to Rolesville's Main Street Park and Rolesville Elementary School as well. The combination of these destinations plus the commercial attractions and nearby residential neighborhoods makes Main Street a premier cycling route for transportation purposes. However, the current facility does not facilitate cycling well or at all, with accommodations ranging from narrow, one-foot striped shoulders to twelve-foot outside lanes sandwiching a center turn lane in the commercial sections.

An opportunity exists now to re-think how US 401 can transition back to a true main street for the Town due to the construction of the Rolesville Bypass, which will circumvent the Town on its southeast side. Rolesville did undertake a streetscaping plan to describe how the Main Street could be transformed using roundabouts, landscaping, lighting, and decorative construction materials to create a stronger sense of place.

Regardless, the Town will need to strongly consider how to make cycling (and pedestrian) activity a more viable option on this critical street.



## Chapter 1: Making a Case for Cycling

**Young Street.** If US 401 is Rolesville's figurative and literal main street, then Young Street provides the historical crossroad counterpart. Further to the south, Young Street changes name to Rolesville Road, connecting with other small municipalities in eastern Wake County; to the north, Wait Avenue/NC 98,

Young Street transitions from very rural settings on a cross-section using scant 10-foot lane widths with no or less than one-foot shoulders to brief stretches of three-lane sections near Sanford Creek Elementary School and at the historic crossroads with Main Street. Traffic volumes are moderate throughout its length, ranging from 4,600 at either end to a high of 6,000ADT (Average Daily Traffic) closer to the intersection with Main Street. Ditch sections (instead of curb-and-gutter) predominate Young Street, making future, typical sidewalk construction a more costly proposition.

This intersection, which is surrounded by small commercial buildings, a church, and occasional government-owned properties, is worthy of a major redesign effort due to unusual geometries, large turning radii that promote higher speeds, and near-zero setbacks from existing parking areas and the street. The aforementioned Main Street streetscape plan called for this location to be converted to a roundabout (Figure 1-7). Once the volumes are reduced due to the influence of the Rolesville Bypass project, a single-lane roundabout could handle traffic here more efficiently and provide a better opportunity to establish a gateway marker into the core area of the Town.



Young Street

Bicycle LOS: E [4.7 – 4.8]  
Posted Speed: 35 – 45mph  
Traffic Volumes: 4k – 6k  
Typical Section(s):

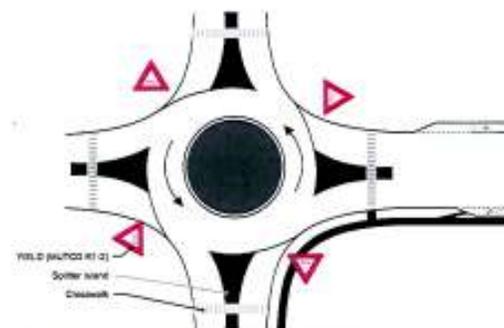


Figure 1-7. Modern Roundabout Design

## Chapter 1: Making a Case for Cycling



### Rogers Road

Bicycle LOS: E (4.5 – 4.8)  
 Posted Speed: 35 – 45mph  
 Traffic Volumes: 4k – 6k  
 Typical Section(s):



**Rogers Road.** Some residents might now consider that the new, primary crossroad to Main Street is Rogers Road, which connects the commercial centers on Main Street to Wake Forest and its (South) Main Street. Crossing to the southeast side of Main Street, Rogers Road changes name and character as Redford Place Drive, the principal street for the Villages of Rolesville subdivision. Redford Place Drive is discussed separately later in this section.

Rogers Road is a nice challenge for cyclists, too, having several small, rolling hills to navigate from Marshall Farm Road (entrance to the large Heritage subdivision) to Main Street in Wake Forest (refer to Figure 1-8).

However, much like the other roads that link Wake Forest to Rolesville, the cross-section typically has a one-foot or less paved shoulder. The downtown section has a 35 mph speed limit, sidewalks, and connects some banking and retail opportunities together. Beyond the State Credit Union, Rogers Road changes to a simple two-lane ditch section with 10-foot lanes. Although ADT counts were not available, they were estimated based on surrounding roads to be in the range of 4,000 to 6,000 vehicles per day.

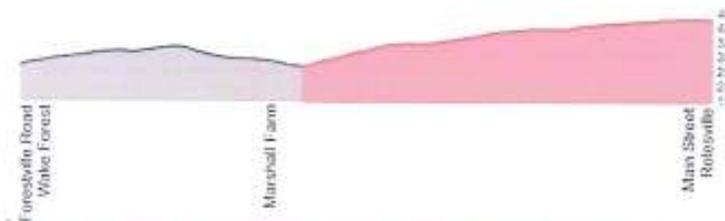


Figure 1-8. Rogers Road Elevation Change (photo credit: MapMyRide)



## Chapter 1: Making a Case for Cycling

**JONES DAIRY ROAD.** Jones Dairy Road, while existing only for a short distance in the current Town limits, provides another important east-west connection to Wake Forest and points west of Main Street and Young Street. The Wake Forest subdivisions of Willow Deer, Northampton, Jones Dairy Farm, and Heritage are all accessed by Jones Dairy Farm Road. Just as importantly, the Jones Dairy Elementary School, while not in Rolesville's planning jurisdiction, lies just beyond and is frequented by Rolesville children on a daily basis.

However, Jones Dairy Road is hampered with respect to cycling by a 45mph speed limit and no (or negligible) paved shoulders. Even a small but consistent paved shoulder can provide an important recovery zone for cyclists. There are only very short stretches of sidewalk (near the school, for example) but otherwise the shoulder is unpaved and served by a drainage ditch with trees set well back from the roadway. Land uses are predominantly rural with scattered home sites and driveways.



**Jones Dairy Road**

Bicycle LOS: D (4.5)  
Posted Speed: 45mph  
Traffic Volumes: 4k (est.)  
Typical Section(s):





**Chalk Road**

Bicycle LOS: E (4.3 – 4.4)  
 Posted Speed: 35 – 45mph  
 Traffic Volumes: 4k (est.)  
 Typical Section(s):



**CHALK ROAD.** Chalk Road, like Jones Dairy Road, has 10-foot travel lanes and is generally unsuitable for cycling except for the most experienced road rider. Chalk Road also connects to numerous subdivisions in Wake Forest, but does not feature a premier destination like a school. Land uses are generally rural in nature, with active farming occurring along the roadside, interspersed with single-family homes and major residential subdivision entrances.

Unlike Jones Dairy, Chalk Road does change character slightly as it draws closer to Town. The speed limit drops to 35mph, and sight distances are very good all the way to the three-way intersection of Averette Road (which changes names to West Young Street closer to Main Street).

An important observation can be made that providing interconnectivity between Jones Dairy Road, Chalk Road, Rogers Road, and Burlington Mills Road (discussed next) could greatly enhance the bicycling environment in this vicinity. Large subdivisions could access various points in Rolesville while bypassing long stretches of these east-west connectors (see also the textbox on this page for more on the virtues of connecting streets).

### The Importance of Connectivity

#### Connectivity Helps Everyone

Connecting streets together helps every traveler, whether by bike, on foot, by bus or by car. More connected street systems reduce travel times between points, reduce emergency response times that save lives, provide alternative ways of getting around construction/maintenance, and reduce traffic at congested intersections.

Most importantly for our purposes, improving connectivity allows for shorter bicycle trips and, if the connecting roads are designed properly, allows for a chance to create a road with bicycle lanes or other accommodations that Rolesville generally doesn't possess now.



## Chapter 1: Making a Case for Cycling

**BURLINGTON MILLS ROAD.** While Burlington Mills Road is another east-west connector, its western endpoint turns sharply west to connect with Forestville Road, and then continues to the major roadways of Ligon Mill Road and US 1. The subdivisions of Tuckahoe and Laura Lakes Estates are both accessed by Burlington Mills Road, and the east end connects with Main Street, emerging near the Rolesville Town Hall and the Rolesville Commons shopping center. Importantly for this Plan, a new middle school (Rolesville Middle School) opened in 2012. One of the nice features of this school site is that a trail connection bridges the rear parking area of the school to Pristine Lane, a primary axis street of the Hampton Pointe subdivision. The frontage of this school also has sidewalks (see photo this page).

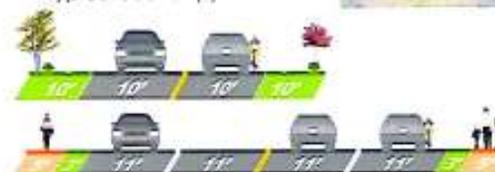


The characteristics of the roadway geometry are very much like the other east-west roadways discussed previously: narrow (10-foot) travel lanes, ditch drainage, and no shoulders on a 45mph speed limit. As the road enters the existing Rolesville town limits, the speed limit drops to 35mph and sidewalks appear along a brief (less than 900 feet) section of four-lane roadway. The relatively low traffic volumes (2,600 average daily traffic in 2011) create one of the better bicycle level-of-service ratings in this assessment. However, the 45mph segment of Burlington Mills Road features two sharp curves that limit the otherwise long sight distance.



Burlington Mills Road

Bicycle LOS: C/D (2.6 – 4.0)  
 Posted Speed: 35 – 45mph  
 Traffic Volumes: 3k  
 Typical Section(s):

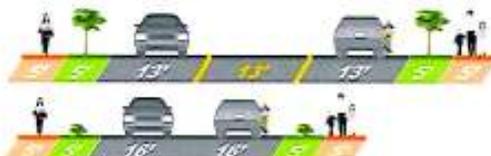


## Chapter 1: Making a Case for Cycling



**Redford Place Dr (Virginia Water Dr, Bendemeer Ln)**

Bicycle LOS: A (0.5 – 1.3)  
Posted Speed: 25mph  
Traffic Volumes: 1k  
Typical Section(s):



**REDFORD PLACE DRIVE-VIRGINIA WATER DRIVE-BENDEMEER LANE.** This combination of streets, which exits eastward off of Main Street at the intersection of Rogers Road, provides an important alternative to Main Street for the southeast quadrant of Rolesville. The streets through this residential subdivision, although having frequent driveway entrances, are wide (usually over 13 feet) and with very low traffic volumes. The frequency of on-street parking was low during the field observations conducted on this route. Sidewalks are typically found on both sides of the roadway, with five-foot planted buffer strips, some of which have trees. These buffers (both sidewalks and the planting strip) serve to create a visual cue to motorists of the presence of pedestrians, which in turn helps to slow traffic and raise awareness of cyclists. Two roundabouts on this route help to discourage high-speed and cut-through traffic to Jonesville Road, which is where the route exits at its western end. These features, combined with a 25mph speed limit, produce an excellent bicycle level-of-service rating.

Excellent opportunities exist in these neighborhoods to further augment the already very good conditions by using sharrow markings to reinforce the presence of bicycles in the community.



## Chapter 1: Making a Case for Cycling

**JONESVILLE ROAD.** Jonesville Road lies at the extreme southern tip of Rolesville, and provides connections to the south of the Town. The road travels from the Carlton Pointe subdivision to Mitchell Mill Road before changing names to Peebles Road. On the north end, the roadway begins at Main Street / US 401 and directly across from the entrance to the Hampton Pointe residential subdivision. Note that this subdivision has direct bicycle/pedestrian access to Rolesville Middle School as well as Burlington Mills Road if one traveled through the school property (see also the Burlington Mills Road description previously).

Although Jonesville Road does not differ substantially from the several narrow lane/no shoulder cross-sections described earlier, the roadway's bicycle-friendliness is somewhat enhanced by the virtue of having relatively low traffic volumes presently. This low traffic volume is primarily responsible for the relatively sound "C" bicycle level-of-service rating. Speeds on Jonesville Road appeared to be higher than the 45mph speed limit would indicate during the field observation period. The Rolesville Bypass will interchange with Jonesville Road. This new access may have the effect of increasing traffic on this roadway as well as creating new development pressure adjacent to Jonesville Road.



**Jonesville Road**

Bicycle LOS: C (3.3)  
Posted Speed: 45mph  
Traffic Volumes: 1k – 2k  
Typical Section(s):





**Granite Falls Boulevard**

Bicycle LOS: C (2.7)  
 Posted Speed: 35mph  
 Traffic Volumes: 2k – 3k (est.)  
 Typical Section(s):



**GRANITE FALLS BOULEVARD.** Granite Falls Boulevard is a relatively newer street in the Rolesville system, and its design reflects more current design principles. Sidewalks run for more than 50% of the street's length between Rogers Road and West Young Street, and on both sides of the street in the vicinity of Sanford Creek Elementary School. A continuous two-way, left-turning lane in the center separates the 12' wide outside lanes. These wider lanes translate into a 0.2 difference on the Bicycle Level-of-Service scale, and make an even more noticeable difference on this street when it is being ridden. The low (estimated) traffic volumes on this street also help to create a sense of security. This street represents an example of badly needed connections between the major secondary streets (e.g., Jones Dairy, Chalk, Young, Burlington Mills, and Rogers). Using this street also accesses a recreation center and an elementary school, and Granite Park Drive provides connections into Granite Falls and Main Street Park.

While the cycling conditions are sufficient for adult riders of moderate skills to navigate safely, a redesign of this street in the future would move the south-side sidewalk away from the edge of curb, increase the buffer (planting) strip between the north side sidewalk and back of curb, and widen the road and shrink the lane sizes to accommodate a 3' or 4' bicycle lane. Alternatively, a side path removed at least 10' from the roadway (except at intersections) would provide a better connection for younger riders as well.



## Chapter 1: Making a Case for Cycling

**GREENWAYS IN ROLESVILLE.** Rolesville is just beginning to actuate its plan for creating a greenway system, but it has made some notable strides. An extension of the Sanford Creek Greenway system extending out of the Heritage South residential subdivision offers the best opportunity to create a dedicated, paved greenway between Rolesville and Wake Forest. The **Sanford Creek Greenway** is a 10-foot-wide asphalt greenway featuring boardwalk over the several sections that cross wetland areas along the trail. A section of this trail in Rolesville's planning jurisdiction is under construction due to a private residential development currently underway north of Rogers Road. In total, Sanford Creek Greenway will be nearly 2.5 miles in length within the planning jurisdiction of Rolesville once it is completed. The major missing section would cross Granite Falls Boulevard, and then tie this greenway into Main Street Park. This connection would also create a connection to the Granite Falls Swim & Athletic Club as well as the Sanford Creek Elementary School (Figure 1-9).

The only other existing length of greenway or trail facility in Rolesville existing now is within Main Street Park itself. The **Main Street Park trail system** is asphalt-surfaced, and loops within the Park for just over 1.2 miles through stands of pine. Coupled with the extension of the Sanford Creek Greenway, this park trail system provides a critical connection to Main Street. From this point, the core commercial area and two other schools are within relatively easy reach of cyclists, although on-road improvements are going to be necessary to make this riding experience tolerant of children.

The field review did indicate some "unofficial" pathways that are being used for walking and, presumably, biking for those with off-road bicycles. People will always find a way to reach the places that they want and need to go on foot or by bicycle, and will not hesitate to cut new pathways through fields, along the edges of roads, or across parking areas. These are unpaved connections between developments that indicate a "desire line" between existing facilities and destinations. One such connection is between Hampton Lake Drive and the recently constructed Bojangles restaurant to the north. This short connection

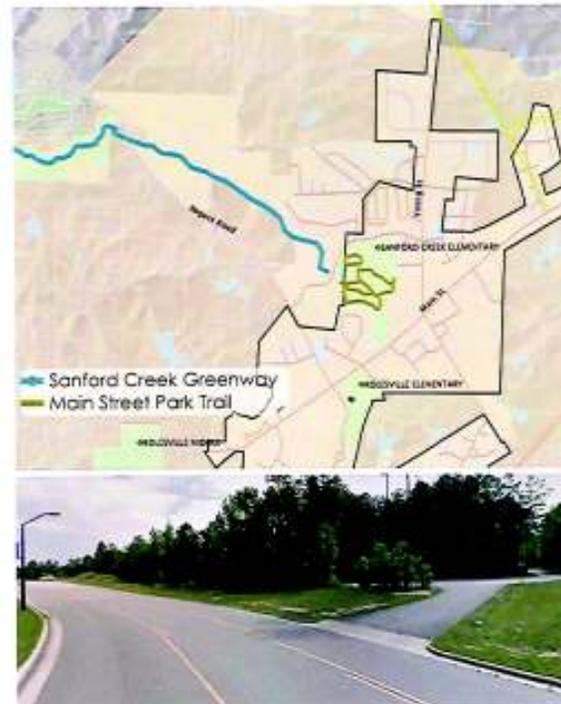


Figure 1-9. Main Street Park Entrance  
(Sanford Creek Elementary School in distance on left)

## Chapter 1: Making a Case for Cycling



Jogger and friend on a portion of the Sanford Creek Greenway

parallels Louisburg Road / US 401. Another connection is one that links Big Willow Way with a newly constructed street in the Granite Falls subdivision. This connection provides access to Main Street Park, Sanford Creek Elementary School, and the Granite Falls Swim & Athletic Club (see image at right). Without this connection, people would have to walk or ride an additional 400 feet on paved subdivision roads.



Unplanned Connection in Granite Falls Subdivision

**Other Bicycle-Related Facilities in Rolesville.** While bicycle lanes and greenways tend to get the most attention, the quality of the cycling experience in any place is partially attributable to other amenities such as bicycle parking, pedestrian (or cyclist-) activated signals, and crosswalks that might enable a less experienced rider to dismount and cross a busy street while "walking" her bicycle.

Apart from school grounds, no public bicycle parking is currently available in Rolesville, even in commercial areas. Intersections are generally oriented towards the movement of automobile traffic, although there are crosswalks noted at the following locations:

- Main Street at Young Street (high visibility, but in need of restriping)
- Main Street near Perry Street at Rolesville Elementary School (high visibility)
- Main Street at Rogers Road (pedestrian-activated signal interrupts are also present at this location)
- Granite Falls Boulevard connecting the Granite Falls Swim & Athletic facility and Sanford Creek Elementary School (high visibility).

Occasional driveway entrances are marked with crosswalks as well, but these are relatively infrequent occurrences.



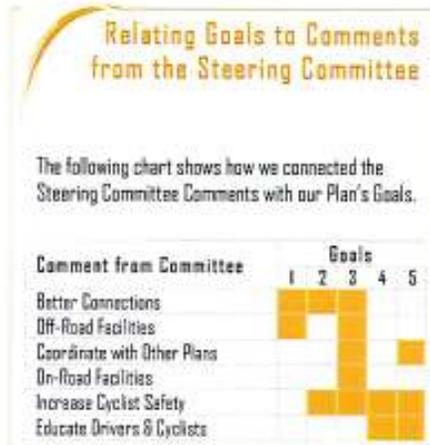
## Chapter 1: Making a Case for Cycling

### Section 1.4: The Vision and Goals for Bicycling in Rolesville

Creating a vision statement – a very short description of how we envision our place to look with respect to bicycling at some point in the future – helps to not only articulate the sentiments and input from people in our community, but greatly aids in our development of goals and strategies for the Bicycle Plan.

The Bicycle Plan Steering Committee described previously provided input through a listing of key words that collectively formed the backbone of their opinions on how cycling should be in Rolesville. Combined with the previous review of survey comments as well as insights gained from the field review, the following is a description of the Vision and Goals for the Rolesville Bicycle Plan. Each member of the committee was provided with both white (favor) and red (disfavor) chips to assign to various goal statements. The following is a summary of how the Steering Committee responded collectively to the goals they stated. Note that the green numbers indicate the number of positive votes assigned to that goal, while the red numbers indicate the number of votes against that goal.

- Connect streets and other bicycle facilities together to create better connectivity with schools, parks, shopping and residences (9)
- Better off-road facilities, like greenways and soft trails (8)
- Coordinate the Bicycle Plan with other plans/policies as well as anticipated private sector developments (8)
- Better on-road facilities, such as bicycle lanes, wide outside lanes and shoulders (8)
- Increase cyclist safety (5)
- Education to teach drivers and cyclists about proper behavior and safety (4)
- Provide alternatives to single-occupant automobile travel (2)
- Invest in long-term improvements (1 / 2)
- Increase awareness of the potential for cycling for fitness (2)
- Better accommodations for long-distance riders (5)



The Steering Committee did not necessarily see the benefit to the Town of facilities to accommodate longer-distance riders, but did not feel that they entirely were outside the scope of the Town's Plan. Increasing the level of physical fitness was also not favored for emphasis in the Plan.

Areas of strong emphasis included improving connectivity, a concept that was reinforced during the field review of existing roadways and greenways. Coordination with other plans and policies was also a priority, as was the need for better off-road facilities such as greenways. Equally important was the need to improve on-road facilities. Of less importance, but still favored by the Committee, were the need to increase the safety of cyclists and improve the awareness and education levels of both motorists and cyclists in Rolesville.

Based on this input and considering the priorities identified in the public survey, the following Vision and Goals were developed for the Rolesville Bicycle Plan.

**VISION STATEMENT:**

Rolesville will be a Town where it is safe to ride a bicycle both on and away from the roads as part of an integrated policy framework and transportation system that connects us with each other and the places we want to reach.

**GOAL STATEMENTS:**

In order to achieve our Vision, we need to make sure our Bicycle Plan addresses each of the following goals, and that every recommendation contained in this Plan will further at least one of the five Plan Goals:

1. Our Town will be **better connected** and accessible by bicycle than it is today.
2. Our Town will feature **on-road bicycle facilities that connect us** to places both within and near our borders in part to provide alternatives to making every trip with a car.



## Chapter 1: Making a Case for Cycling

3. Our Town will **grow our greenway and trail system**, and dedicate time and resources to that end.
4. Our Town will **engage our residents proactively** to ensure that everyone – motorists and cyclists alike – will be respectful and aware of each other to ensure the safety of every cyclist.
5. Our Town will **consider bicycling and bicycle accommodations** in every new development review, policy, ordinance, and resolution adopted.

Collectively, the Vision and Goals speak to creating a place that is much more tightly woven and less car-centric than the Rolesville of today, but also describe a place very much alive in the image of our Town that its residents and history convey.

The remainder of this Plan will focus exclusively on the recommendations for projects, programs, and policies that have to be implemented or changed to make this Vision become a reality. Our citizens, businesses, visitors, and especially our children deserve to grow and grow up in a place like this.



## Chapter 1: Making a Case for Cycling



### RESOURCES

**U.S. Census Bureau, 2006-2010** American Community Survey. Commute to Work by Vehicles Available.

**Insurance Institute for Highway Safety, Highway Loss Data Institute.** "Fatality Facts 2010." [www.iihs.org/research/fatality.aspx?topicName=Bicycles](http://www.iihs.org/research/fatality.aspx?topicName=Bicycles) accessed July, 2012.

**Bureau of Transportation Statistics.** "Survey Documentation for the Bureau of Transportation Statistics Omnibus Survey Program," October 2009.

**MapMyFITNESS, Inc.,** Map My Ride website. [www.mapmyride.com/my\\_home](http://www.mapmyride.com/my_home).

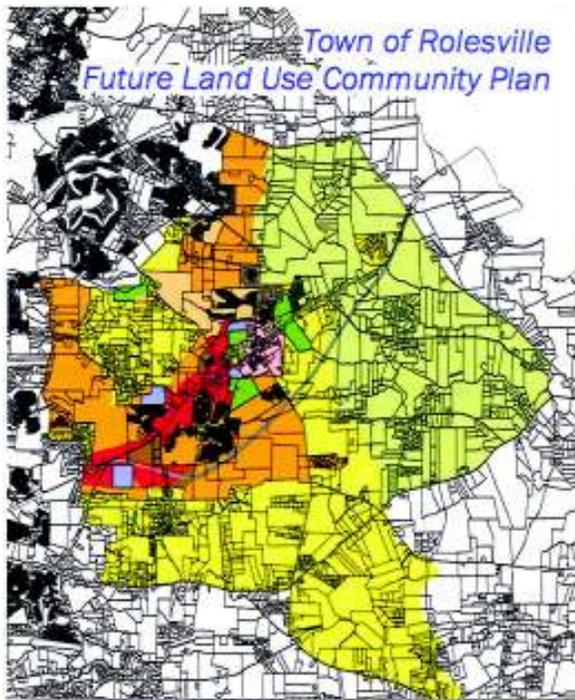


## Chapter 2 Policies and Programs

### Section 2.1: Bicycling Policy Environment

Policies act like a set of instructions for how governments interact with private developers, other government agencies, and the public. Policies describe how, where, and when bicycle improvements “hit the street” and who pays for those improvements. Policies can be encoded in adopted plans; ordinances; or even in unwritten or written procedures that staff and appointed or elected officials look towards to complete their daily business. While some policies that greatly affect the cycling environment are encoded at federal or state levels and are therefore more difficult to alter (but they are not intractable), most of the policies that influence development actions and procedures happen at the local level here in Roesville. A change in a policy should be carefully considered, and only after consulting closely with the people most likely to benefit or be harmed by a proposed change. While some people may think it’s reasonable to shift the burdens of construction costs as much as possible to private sector players, for example, there are obvious impacts to how those changes would be viewed by all the people that depend directly or indirectly on private sector investments for their livelihoods. Hence, a balanced approach that looks towards prioritizing needs, taking into account the volume (or demand) of private development, and encouraging non-profit and volunteer efforts to distribute the costs and benefits across many people over time is generally viewed as the most appropriate course of action.

The following are brief descriptions of the adopted plans and existing policies that are the biggest influencers on how bicycle development occurs in Roesville. Again, actually making these changes would be the follow-up work of Roesville’s planning staff, Planning Board, and Board of Commissioners. A Board of Adjustment also considers requests for variances to the zoning ordinance requested by developers, so that if the



Town of Rolesville Community Plan (2007) Land Use Map

specifics of a particular site or development make any requirement infeasible then the sponsors of that development action have a clear course of appeal. Adopting this Comprehensive Bicycle Plan does not translate into these changes going into effect, but they do point the way towards changes that individually or collectively improve the quality of life of Rolesville's citizens, and particularly those that would like to ride a bicycle. Ultimately, the importance of government policies is simply this: the results of policies create the legacy we leave behind, the places we want to travel, and how we interact with those places and other people in our town.

This chapter first covers the existing policies and plans already in place in Rolesville, and specific ways that they influence or could be made better to reflect a desire to improve the cycling environment.

**Town of Rolesville Community Plan (March 2007)**

Rolesville's Community Plan provides a vision, goals and objectives to guide future growth in the town. It specifically addresses neighborhoods, the downtown, commercial centers, community facilities, open space and recreation, and transportation.

*Relevancy to Rolesville Bicycle Plan*

- Establishes a plan for future development in the town, including transportation, recreation and land use.
- Includes many goals, objectives and policies that specifically mention issues that are relevant to bicycling, such as establishing trails, connecting neighborhood streets, promoting bicycle travel and including a bike path along a portion of the new US 401 Bypass.

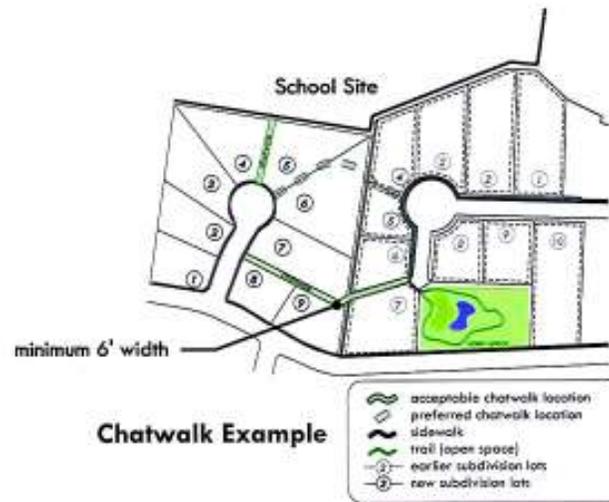
*Potential Issues/Areas of Improvement for Bicycling Environment*

- Neighborhoods Policy 1.2A could be reworded to call for "biking trails" or "multipurpose trails" in addition to walking trails.



## Chapter 2: Policies and Programs

- A new policy could be added to Neighborhoods Objective 1.2 similar to the following: The street network will be designed to encourage active forms of transportation, such as walking and biking.
- Amend Neighborhoods Policy 2.1D to include the Bicycle Plan, once adopted.
- Consider adding a new objective to Neighborhoods Goal 3 (or modify Objective 3.2) to ensure that neighborhoods are safe for biking, especially for inexperienced riders and children. The use of "chatwalks" and connectivity policies are examples.
- Consider adding a new policy to Downtown Objective 1.1 (or modify Policy 1.1A) to create a downtown that is bicycle friendly, including appropriate street design and bicycle parking.
- Downtown Policy 1.2A could be reworded to include "bicyclist" connectivity to adjacent districts.
- Downtown Policy 1.2C could also include consideration of bicyclist safety and bicyclist/automobile interactions.
- Consider adding a new policy to Commercial Center Objective 1.2, under Site Design, to encourage bicycle parking and describe the desired location of such parking.
- Community Facilities Policy 2.2A could be reworded to add convenient access to the bicycle network.
- Consider adding a new policy to Transportation Objective 1.1 to support NCDOT's Complete Streets policy and call for all streets in Rolesville to be constructed or rebuilt according to those guidelines.
- Consider modifying Transportation Objective 1.2 (or adding a new objective) to create a bicycle-friendly environment, including on- and off-road bicycle facilities and bicycle parking.



Pedestrian connections like "chatwalks" are easier to accomplish if planned and regulated before development begins.



**Rolesville Open Space and Greenways Plan (January 2002)**

The Open Space and Greenways Plan was developed to protect the natural and cultural resources that community residents value most. It does this by identifying parcels and corridors in need of protection, establishing a comprehensive approach to link greenspace areas and corridors to the broader community, and defining strategies to protect these corridors while providing public access to them. The Plan was developed to be consistent with Wake County's 1999 Open Space Plan. One of the most important and lasting contributions of this Plan was to recommend underpasses of the future Rolesville Bypass project. Without these multipurpose underpasses Rolesville's citizens would have no way to get back-and-forth across this access-controlled freeway. Cycling through interchanges is one of the most intense actions that cyclists – even very experienced cyclists – find challenging, so having separated grade alternatives is critical to creating a friendly cycling environment.

**Relevancy to Rolesville Bicycle Plan**

- Provides a detailed plan and considerations for future greenways.

**Potential Issues/Areas of Improvement for Bicycling Environment**

- In the Greenway Trail Types section (pages 4-3 and 4-4), which discusses design issues, consider adding language about the importance of properly designing greenway road crossings and any transitions between greenways and on-road bicycle facilities.
- Updating this Plan or replacing it with a more modern version that incorporates other recreational opportunities as well as school-based destinations would be an important addition to the policy library of the Town.
- Strengthen the stance on connectivity, building on successes that exhibited in recent neighborhood development projects. Requiring connections between neighborhoods, extending sidewalks to nearest corner, and requiring connections to greenway facilities are commonplace examples.



Rolesville Greenways and Open Space Map



## Chapter 2: Policies and Programs

### Rolesville Thoroughfare Plan (2002)

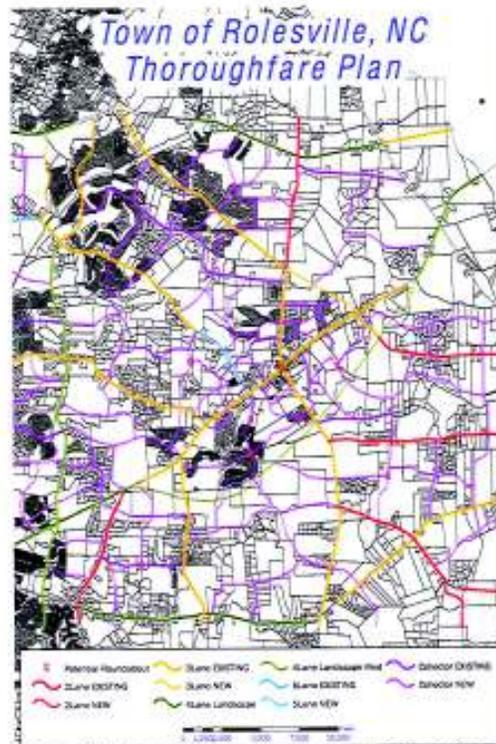
The Town's Thoroughfare Plan shows the location and desired cross-section of existing major streets as well as planned new major street corridors. It also shows the location of potential roundabouts. Thoroughfare Plans were brought into existence in North Carolina in the late 1950's, and are gradually being replaced by Comprehensive Transportation Plans (CTPs) that consider active modes of travel and public transportation more inclusively.

#### Relevancy to Rolesville Bicycle Plan

- Establishes a plan for future street construction and widening, which could include on-street bicycle facilities.

#### Potential Issues/Areas of Improvement for Bicycling Environment

- Update the corridor profiles, or cross-sections, to include bicycle lanes where called for in the Bicycle Plan.
- Ultimately, this Thoroughfare Plan will need to undergo a thorough re-write and transition to a more comprehensive planning document that links transportation, land use, environmental, and economic concerns together.
- Update the planned secondary street system to reflect realistic connections that can take advantage of new developments. These secondary streets are absolutely crucial for many reasons: emergency access, better distribution of traffic, relieving overcrowded highways, and creating lower-volume streets for cyclists and pedestrians.



The proposed "collector" streets shown in the existing Thoroughfare Plan sometimes do not have the most advantageous alignments for property owners or for the traveling public, and should be updated. The Rolesville Bicycle Plan has created new alignments for several of these streets because they are so important to providing bicycle route connectivity.

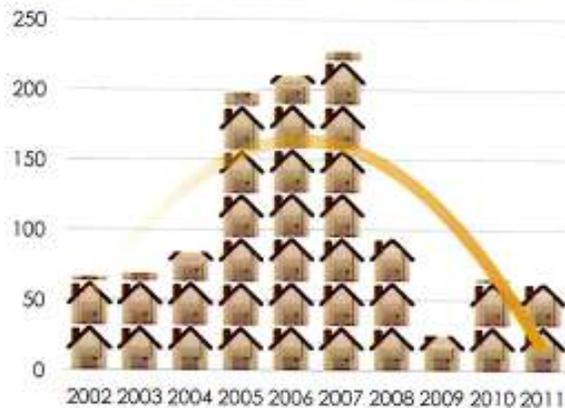


Figure 2-1. Annual Single-Family Residential Building Permits Issued in Rousesville, 2002 to 2011

**Town of Rousesville Unified Development Ordinance (October 2004)**

Private development, particularly residential development has driven Rousesville's growth, although the amount of growth has fluctuated greatly in the past ten years (Figure 2-1). The Town's Unified Development Ordinance (UDO) regulates development in the Town and in its extraterritorial jurisdiction in accordance with its Community Plan. In a nutshell, the UDO regulates the size and use of buildings, the density of population and the development or subdivision of land. This ordinance has important implications for how the Town will develop even in the short-term, since residential development projects already approved by the Town, if constructed, would essentially double the size of the Town's population and housing infrastructure – as well as ancillary infrastructure like greenways and sidewalks.

**Relevancy to Rousesville Bicycle Plan**

- Ordinances regulate the design of streets, sidewalks, greenway provisions, and bicycle parking requirements in new developments.
- Regulates all requirements for developments, such as parking and other plans a development must follow.
- Provides a fee-in-lieu for greenways.

**Potential Issues/Areas of Improvement for Bicycling Environment**

- Under Section 6.2, in Special Requirements, the design standards for bike paths in section (e) should be updated to reflect the most recent AASHTO standards. Additionally, a parallel bike path may not always be a good solution, and Town staff should be able to refer to the Bicycle Plan for guidance.
- Consider modifying Section 9.11 on Traffic Impact Studies to emphasize active modes more in terms of data collection, analysis and recommendations.
- Consider adding a requirement for bicycle parking to Section 10.1, perhaps as a percentage of vehicular parking spaces (1 bicycle



## Chapter 2: Policies and Programs

parking post-and-loop for every 100 auto parking spaces, with a minimum of at least one bicycle parking space. This section should also specify minimum design standards for bicycle parking.

- Consider adding language to Section 15.4.5 on Streets to address the design of on-street bicycle facilities.
- Consider adding language to Section 15.4.8 on Recreation and Open Space to make it clear that improved greenways may be used to fulfill the requirement.
- Consider adding language in the appropriate section or sections to require developments to adhere to other adopted Town plans, such as the Bicycle Plan.

### CAMPO 2035 Long Range Transportation Plan (May 2009)

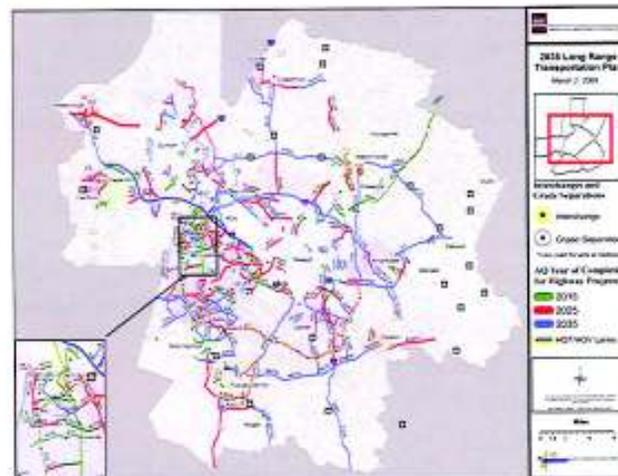
The 2035 Long Range Transportation Plan (2035 LRTP) lists future highway, bus transit, light rail, bicycle, pedestrian and other transportation projects which should be implemented by 2035 given expected revenues. The 2035 LRTP covers the Capital Area Metropolitan Planning Organization's planning area, which includes all of Wake County and portions of four surrounding counties.

#### Relevancy to Rolesville Bicycle Plan

- Provides a plan for future development of the transportation system in the Triangle region, including specific recommendations for bicycle transportation such as US 401 as a "corridor for bicycle accommodations."
- Also includes a recommendation on complete streets and context-sensitive solutions, which relate street design to adjacent land uses.

#### Potential Issues/Areas of Improvement for Bicycling Environment

- This plan is currently in the early stages of being updated, so there is an opportunity to incorporate the Rolesville Bicycle Plan into the



CAMPO 2035 Long-Range Transportation Plan (Highway Map).



updated LRTP. Rokesville staff needs to be an active and vocal part of the update process, which is being activated as of this writing in the Northeast Area Study (NEAS). The results of the NEAS will be incorporated into the long-range transportation plan for the Region.

**Imagine Rokesville Transportation Plan (2002)**

The *Imagine Rokesville Transportation Plan* was primarily focused on Main Street, although it did provide a succinct review of prior transportation plans. Key recommendations included pedestrian landscaping, lighting, and sidewalk facilities (six feet wide) to support a more appropriate main street “feel” after the completion of the Rokesville/US 401 Bypass project, now under construction.



Imagine Rokesville Plan (2002)

**Relevancy to Rokesville Bicycle Plan**

- While this Plan does not expressly consider bicyclists or bicycle facilities, the results of redesigning Main Street can have a major influence on how cycling is supported on the most critical commercial area of Rokesville.
- Lighting and driveway improvements translate into better visibility and safety for cyclists. A key recommendation in the Plan is the proposed roundabout at Young Street and Main Street.

**Potential Issues/Areas of Improvement for Bicycling Environment**

- Carefully designing this roundabout can transfer safety benefits to cyclists (as well as pedestrians and automobile travelers, where the rate of crashes typically by 50% to 60%).
- The proposed cross-section of a redesigned Main Street should include designated facilities for cyclists, including 16’ outside lanes (on-street parking would translate into 11’ travel lanes, bicycle lanes, and a buffer and parking area on the edge of the street). A median-separated facility, while not always desired by businesses,



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would dramatically reduce the number of crashes related to left-turning vehicles. A landscaped median would also improve visual character, helping to ensure that Main Street retains character and imparts a sense of place. Those characteristics will be important to remaining competitive in an upcoming era where new interchanges on the US 401/Rolesville Bypass will likely attract chain development with a greater marketshed due to the higher level of access afforded by the high-speed roadway.

- Rolesville should undertake a detailed design study, including realistic ground-level visualizations, to determine a good design and cost for all of the elements in a major streetscape project.
- Rolesville already has three overlay districts: Neighborhood Conservation, Town Center, and Proposed US 401 Bypass (Special Highway Overlay District, or SHOD). The following changes should be made to these Overlay Districts to provide a long-term, positive influence on the cycling environment in the Town Center and US 401 Bypass (and eastern side of Town in general) areas.
  - Town Center – Extend the designation to Burlington Mills Road on both sides of Main Street
  - Town Center – Reference the recommended requirements for on-site bicycle parking noted previously
  - SHOD/US 401 Bypass – Reference the recommended requirements for on-site bicycle parking noted previously
  - SHOD/US 401 Bypass [Article 1.1.] – Provide a direct connection in the form of a paved 10' trail to the nearest point on the proposed trail system, or if not yet in existence should provide an easement for a connection measuring not less than 12' in width to the edge of the property line from the closest parking area that connects to the front door of the establishment



**Section 2.2: Bicycling Programs**

There are literally hundreds of programs designed to encourage bicycling, enforce safe behavior among motorists and cyclists alike, and educate people (especially young people) about bicycling. Basic rules for creating any successful outreach program are the same for cycling as for any other topic: (1) go to where people already are, and are likely to be receptive; (2) use a combination of your own resources and other resources that are more "polished" as needed; and (3) leverage existing channels of communication and volunteer efforts to have maximum effect. The Rolesville Bicycle Plan will not attempt to create every program, but instead focus on those programs that most closely suit the resources and environment found in our Town, as well as comments received by citizenry and our Steering Committee. The following is a summary of the programs that we would like to see created or, in one instance, modified, to create more and better cyclists.



The Five E's of Bicycling. Programs, even with respect to construction or maintenance activities, typically fall into at least one of these five categories of benefit to cyclists.



**Education: Safety Video Promotion.** Use an already-prepared safety video, such as the one prepared by the League of Illinois Bicyclists (<http://www.walkinginfo.org/videos/pubdetail.cfm?picid=42>). Contact the East Wake TV station to see if they can run this video at selected times, and use it to open discussions at safety-related events as well (example: neighborhood meetings). If possible, challenge kids to create their own bicycle safety video here in Rolesville based on the Illinois example's content. Creating digital videos is very easy now, and kids can create high-quality video on their own or using school resources if conducted in concert with a willing teacher and class.



**Education: Expand the Bicycle Rodeo Program.** Rolesville's police department already conducts occasional bicycle rodeos, but these programs could be expanded occasionally to include a greater emphasis on street safety. The League of American Bicyclists (LAB) provides certification for instructors and master instructors (for teaching children's classes). The courses taught by these instructors include learning the rules of the road, signaling, and other behaviors that encourage safe bicycling

in addition to the balance and handling skills usually taught at bicycle rodeos. Volunteers with access to bicycles and equipment are now available in Wake County.

**ENFORCEMENT** **Enforcement: Warning Tickets and Follow-Up.** Rolesville's police force, like other police departments around the country, can provide many stories about motorists and cyclists interacting badly. Police officers may be reluctant to give a citation to motorists or bicyclists for a "near miss" or reckless behavior, but a warning ticket followed up with a printed version of a safety guide is a middle way to let people know when they have endangered themselves or others by reckless driving or riding. A great and free example of a cyclist's guide that is ready to print is from the Federal Highway Administration (<http://apps.fhwa.org/cmsteed/TRBNetProjectDisplay.asp?ProjectID=1227>). Police officers should also know key laws, such as bicycle lighting requirements and the requirements for vehicles to pass cyclists (or other vehicles) with at least a two-foot minimum separation distance.

**ENFORCEMENT** **Enforcement: Traffic Calming in the Hands of the People.** Many traffic calming programs have been created around the country that have not been successful or are no longer in operation due to their expense (City of Wilmington, as one example). An alternative solution to costly and controversial infrastructure-based programs is the pace car program. An example is shown in Figure 2-2 of the application and explanation form for such a program developed in Durham. Drivers agree to have a magnetic (or static window sticker) decal placed on the rear of their car that alerts other drivers that this driver is going to drive the speed limit. Often, speeders aren't from out of town, but are from across the street. By creating an environment where people are controlling their own speeds and those of the cars behind them, change happens gradually without costly and unwarranted four-way stop signs and speed humps.

**ENFORCEMENT** **Enforcement: Helping the Police.** Learning from the City of Raleigh's Example. Some police departments have avoided handing out tickets for the simple reason that the officers have not been properly trained on how

**The City of Durham  
Pace Car Program**

The City of Durham Pace Car Program is a volunteer-based traffic calming initiative jointly coordinated by the Core, Transportation Unit of the Durham Police Department and the Transportation Division of Public Works. Inspired after similar programs in other U.S. cities, the goal of the Pace Car program is to affect other Durham drivers by encouraging them to proactively promote roadway safety through a unique educational and awareness campaign.

Citizens and neighborhood groups can join the Pace Car program on a yearly basis by pledging and following through to:

- Drive within the speed limit of City streets—especially in residential areas.
- Stop at all Stop Signs.
- Stop at all Red Lights.
- Stop to let pedestrians cross the street.
- Be courteous to bicyclists and other motorists.
- Reduce car usage and explore alternative modes of transportation that will help improve air quality, the environment and lessen traffic congestion.
- Display the Durham Pace Car Program stickers.

**Citizens Setting the Pace**

Not only do Pace Car participants set the example by adhering to the speed limit, they do so by letting the pace for other vehicles along the road.

Citizens who opt into the Pace Car Pledge agree to display a Durham Pace Car magnet on the rear of their vehicle. This unique Pace Car magnet, featuring a tail identifying the speed, is designed to alert other motorists to the reality of the designated speed limit.

In addition, a static window sticker featuring a triangular version of the program sign is to be placed inside the Pace Car vehicle as a reminder to the driver of the Pace Car Pledge.

**Sign up to receive your Pace Car Magnet and Sticker**

**Is The Driver's Seat +100 to you?**

By joining the Durham Pace Car Program car-pooling in one year intervals, you will also be making a significant step in creating safer streets for residents and visitors and enhancing the City's overall quality of life.

**Simply fill out the information below:**

Full Name \_\_\_\_\_  
Address \_\_\_\_\_  
City/State/Zip \_\_\_\_\_  
Phone \_\_\_\_\_  
Email \_\_\_\_\_

**Sign to acknowledge Pace Car Pledge:**

"I pledge to drive within City speed limits 100% of the time, recognize and respect the authority of bicyclists and other motorists, and will share the road with them and to personally volunteer to help the City of Durham with the Pace Car program." \_\_\_\_\_

**Return completed form to address on reverse side.**

Signatures should be made in ink on this form and immediately return back to the City of Durham with an envelope or cardboard tube or parcel on the reverse side of this form.

Also, please call us if you have any questions. The City of Durham can send your Pace Car Magnet within \_\_\_\_\_.

For information about the Pace Car Program, call the Durham Police Department at 360-4382 ext 336.

Figure 2-2. Sample Pace Car Program Application (Durham)



A walking school bus is a group of children and adults that walk to school together one or more times during the month; a bicycle train is the same thing using bicycles. Both are fun, great exercise, and serve as an opportunity to get to know your neighbors better.



Before starting a walking school bus or bicycle train, there are important tips that can help make things easier and safer for everyone. (see box at right).

The map on the reverse side of this page can be used to help mark off the best walking or biking routes to Wake Forest Elementary School. The initial meet-up place should be at one end of the route you choose. Mark the best route on the attached map and hand it out to the other parents and teachers that are participating. Update the map as needed to account for new construction, changing conditions, and new bike trains/walking school buses.

Contact the Wake Forest Planning Department for additional copies of the map. (919-435.9510) and other information.

1. Contact your school to see if others are interested in helping getting the program started. However, most of the successful, long-term efforts start from a group of parents that want to get in a morning walk with their children and get to know other parents.
2. Choose a starting place that can accommodate some parking and that works with the safest route you can determine.
3. Practice the route with adults only at first and make additional notes on the map, as needed.
4. Choose a route that is 1/4-mile to 1/2-mile in length.
5. It's a good idea to have about one adult per five or six kids for a walking school bus; one adult per two or three children for a bike train.
6. Contact the school principal and police first to get their input.
7. Adopt a regular schedule to conduct the walking school bus or bike train.
8. Have fun!

a particular computer program can issue a citation to a cyclist or motorist-cyclist incident. The City of Raleigh has changed this situation and brought in assistance to help step through the citation process, and at the same time refresh the officers on key bicycle laws such as proper equipment, motorist passing requirements (true for farm equipment as well as bicycles and other vehicles), and lane sharing.

**Encouragement: Get On Board the Bicycle Train.** A bicycle train, like its cousin the walking school bus, gets parents, teachers and kids to collaborate on a once-per-month bike-to-school program. The graphic at right illustrates the steps involved in creating such a program at an elementary school in Wake Forest, which works well because it combines outreach to children and adults, while raising the visibility of cyclists in the community. Parents and kids get to spend time with each other walking or biking to school, get exercise outside, and interact with nature and each other. A key provision is that the parent or teacher that "sponsors" the first ride reviews the route themselves to understand the conditions and hazards that they will have to account for in the bike tour. Having experienced cyclists on-hand to help conduct the tour is important, as is having a good ratio (1:4 at worst) of adults to children. Prior to initiating the Bicycle Train, the coordinating parents and/or teachers need to make the school officials aware of what is being proposed and get their advice on how to safely guide the children to and through the school campus.



**Encouragement: Continue to Develop the St. Patrick's Day Bicycle Parade.** This event's first offering was a success for Rolesville. Combining this parade with promotional giveaways (e.g., helmets or bicycle), a bicycle training rodeo like the one described above, or a snail race (last one to cross the finish line wins!) can help sustain the momentum.



**Engineering: Plan Ahead to Participate in NCDOT Improvements.** With the advent of NCDOT's Complete Streets Policy and Guidelines, communities will have an expanded opportunity to see bicycle, pedestrian and transit facilities located in their town. However, the municipality will still be required to provide a "match" towards the costs of the enhanced facility



|  |  |  |
|--|--|--|
|  | <b>Wake Forest Elementary School</b><br>Walking School Bus and Bike Train Guidance                               |  |
|  | Meeting Location: _____<br>Meeting Time/Date: _____ / _____<br>Leader's Name: _____<br>Contact the Leader: _____ |  |

A sample description of bicycle trains and walking school buses (source: J.S. Lane Company)



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(probably 20% of the total cost), Rolesville should create an annual set-aside to accrue funds for this purpose so that when NCDOT embarks on a major resurfacing or improvement project to a roadway, the Town will be ready to act by providing the matching required amount. The Town may be required for example, to provide 20% of the cost for an additional two feet of pavement on outside lanes during a pavement milling and resurfacing project.



**Encouragement and Education: Collaboration Opportunities with Wake Forest.** Preliminary conversations with Wake Forest staff has indicated a willingness to work collaboratively on the annual bicycle rodeo, safety/education training, and cross-border connections. The recommendation also includes formation and participation in a combined Bicycle-Pedestrian Advisory Committee, perhaps in conjunction with existing Open Space and Parks committees.

### RESOURCES

**Town of Wake Forest, Wake Forest Safe Routes to School Program.** Prepared by J.S. Lane Company, LLC. 2010.

**City of Durham, Pace Car Program.** Website: [www.ci.durham.nc.us/departments/police/forms/form\\_pacecar.cfm](http://www.ci.durham.nc.us/departments/police/forms/form_pacecar.cfm).

**Transportation Research Board, National Academies.** Development of a Model Drivers License Handbook (Bicycles). NCHRP 20-07/Task 212. Website: <http://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=1227>.

**Pedestrian and Bicycle Information Center, bicyclinginfo.org.** Website: <http://www.bicyclinginfo.org>.

### Bicyclist Tips

- **Ride to be respected** – Just as you should never operate a motor vehicle under the influence of alcohol or other drugs, never operate a bicycle under the influence.
- **Be to be seen** – Ride predictably and follow rules of the road. Ride in a straight path in the same direction as other traffic, and don't switch back and forth from sidewalk to street. During the day, wear bright, fluorescent colors to be seen easily by motorists. Again, at night or low light times of day, use proper front and rear lighting, reflectors and reflective clothing and gear – it's the law in N.C.
- **Ride with a Helmet** – Wear an approved, properly fitted safety helmet, no matter how short the trip or whether local laws or ordinances require helmet use. A majority of head injuries can be prevented by proper helmet use in the event you're involved in a bike-only crash or a crash with a motor vehicle. This includes small children riding in trailers: start them young and they'll accept wearing a helmet later.
- **Ride in Repair** – Use a bicycle that fits you and is in good mechanical condition. Learn to do the ABC Quick Check of tires and Air pressure, Brakes and Cables, the Crank shaft, Chain, and gears, QUICK releases, and for any loose parts before every ride.
- **Ride Right** – To be safe, save play or stunt-riding for off-road, designated locations such as bicycle parks. Stunt riding interferes with safe riding practices, may reduce attention for other vehicles, persons or objects, and increase risk of a collision. Do not carry extra passengers on a bicycle unless they have a proper seat.
- **Ride with Youth** – Young children being carried on a bike should ride in an approved child bicycle seat or trailer and wear a properly fitted safety helmet. Children too young to sit up by themselves should not be transported on a bicycle.

*adapted from Sharing the Road with Bicyclists (NCHRP 20-07/Task 212)*