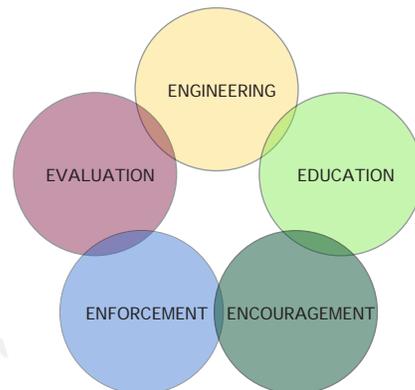


*Chapter Outline:*

- 6.0 Overview
- 6.1 Opportunities and Strategies
- 6.2 Adopting this Plan
- 6.3 Key Steps in Implementation
- 6.4 Staffing Recommendations
- 6.5 Evaluation, Monitoring and Planning
- 6.6 Physical Project Priorities
- 6.7 Methods for Developing Facilities
- 6.8 Maintenance



## CHAPTER 6: IMPLEMENTATION

### 6.0 Overview

The text and action steps table in this chapter describe how the Town of Carrboro can turn the vision of becoming a Platinum-level bicycle-friendly community into a reality. The detailed recommendations of the previous three chapters focused on physical bicycle improvements (engineering solutions) along with program and policy recommendations (education, encouragement, and enforcement solutions). This chapter ties all of those recommendations together, and adds the fifth “E”: Evaluation. Key recommendations, based on Carrboro’s existing conditions, are summarized in Tables 6-1 - 6-5 (see pages 6-4 through 6-11). The tables are based on the American League of Bicyclists Bicycle Friendly Community (BFC) framework, as described in Chapter 2.

### 6.1 Opportunities and Strategies

Improving bicycle transportation and bicycle-friendly community status in the Town of Carrboro will build on previous efforts to build bicycle facilities and multi-use off-road paths or greenways. Three main opportunities available to the Town of Carrboro are: 1) taking advantage of the Town’s relative small size and land use patterns that have placed many residents within bicycling distance of activities and destinations; 2) improving bicycle programming to educate and encourage more users; and 3) building on the already high bicycle mode-share of over 5% experienced in Carrboro currently. Improvements for bicycling should become a primary, rather than secondary, strategy for improving transportation for thousands of residents.

### 6.2 Adopting this Plan

Before any other action takes place, the Town of Carrboro should adopt this Plan. This should be considered the first step in implementation. Through adoption of this document as the Town’s official bicycle plan, the community will be better able to shape transportation decisions so that they fit with the goals of this plan. The Town, County and NCDOT also will more appropriately shape future land development so that the resulting built form achieves the goals and vision of this plan. Most importantly, adoption is key to securing funding from NCDOT and other state and federal agencies in support of implementing the recommendations of this plan.

### 6.3 Key Steps in Implementation

The nine strategic action steps listed below encompass a mixture of broad and specific early strategies that the Town of Carrboro should undertake. These steps will continue momentum from the planning process and kick-off the implementation process.

- 1) **Implement priority bicycle network projects in accordance with the recommendations of this plan.** Specifically, these recommendations are broken into bicycle network, intersection, and multi-use path or greenway improvements. The priority cutsheets are found in Chapter 3: Bicycle Network Plan.
- 2) **Create the necessary governance capability and administration capability** to oversee the implementation of this plan and the proper maintenance of the facilities that are developed. This includes the creation of a Bicycle Advocacy Group, formed of volunteers from this Plan’s Steering Com-



Fig. 6-1. Greenway in the Roberson Place neighborhood.



mittee and other members of the public who have shown interest. Additionally, it is recommended that a Bicycle, Pedestrian and Trails Coordinator be hired by the Town of Carrboro to oversee the day-to-day implementation of this plan along with other duties. A description of this position is described in Section 5.4.

3) **Secure the funding necessary to immediately begin the short-term phase work**, and start working on a funding strategy that will allow the community to incrementally complete many of the suggested physical, policy and program modifications over a 5-10 year period. The Town should have a budget line item for bicycle improvements in order to implement the top priority facility and program recommendations. Funding sources are provided in Appendix C: Funding.

4) **Produce a user-friendly Carrboro Bicycle Map** that shows the existing bicycle lanes and multi-use paths, along with the recommended cycling routes throughout the community that serve a transportation purpose. This map would be available online and as a foldable hard copy version with bicycle safety and education information.

#### **Case Study: Implementation/Dedicated Funding**

(largely taken from <http://www.walkinginfo.org/funding/sources-government.cfm>)

*There are many examples of local communities creating revenue streams to improve conditions for bicycling and walking. Three common approaches include: special bond issues, dedications of a portion of local sales taxes or a voter-approved sales tax increase, and use of the annual capital improvement budgets of Public Works and/or Parks agencies. Some examples follow:*

- *The City of Albuquerque, New Mexico, and Bernalillo County, have 5 percent of street bond funds set aside which go to trails and bikeways. For the City, this has amounted to approximately \$1.2 million every two years. City voters last year passed a 1/4 cent gross receipts tax for transportation which includes approximately \$1 million per year for the next ten years for trail development. Many on-street facilities are developed as a part of other road projects.*
- *Pinellas County, Florida, built much of the Pinellas Trail system with a portion of a one cent sales tax increase voted for by county residents.*
- *Seattle, Washington, approved a nine year levy (property tax) in the fall of 2006 that provides five million dollars a year for pedestrian and bicycle projects.*
- *Denver, Colorado, invested \$5 million in its emerging trail network with a bond issue, which also funded the city's bike planner for a number of years.*
- *Eagle County, Colorado, (which includes Vail) voters passed a transportation tax that earmarks 10 percent for trails, about \$300,000 a year.*
- *In Colorado Springs, Colorado, 20 percent of the new open space sales tax is designated for trail acquisition and development - about \$5-6 million per year.*
- *The City of Portland, Oregon, provides dedicated funding for bicycle facility and programming through its Capital Improvement Plan. Set asides for bicycle funding include: \$150,000-\$250,000 per year for Safe Routes to School; \$150,000 each year for general bicycle improvements; often millions of dollars for specific bicycle projects each year that have been identified by the Bicycle Plan, City staff, or advocacy group.*
- *The Town of Cary dedicates \$20,000 each year for marking one mile of bicycle lanes per year, enhancing the motorist and bicyclist biking safety education campaign, installing bicycle racks, and updating the Town's bikeways map to accurately reflect changes to the Town's road network.*

5) **Start the process of education and awareness building** by holding a public event to announce the adoption of the bicycle plan and some of the upcoming projects.

6) **Coordinate the policy recommendations** in this plan with future Land Use Ordinance updates.

7) **Coordinate with Town of Chapel Hill and Orange County** to develop connected bicycle networks across administrative boundaries.

8) **Ensure that bicycle planning is integrated with other transportation planning efforts** in the community as well as long-range and current land use planning, economic development planning, and environmental planning. Communicate regularly with local NCDOT Division 7 to ensure future roadway projects incorporate bicycle recommendations of this Plan.

9) **Begin a signage program** to include wayfinding and route signage to bicycle routes.

10) **Begin short-term, high-priority projects** as described in the following Five E's tables.

Tables 6-1 - 6-5 on the following pages list the detailed recommendations, reference locations of recommendation descriptions in this Plan, and provide phasing. Short-term refers to projects within 0-2 years. Medium-term refers to 3-5 years and long-term refers to 6+ years. The recommendations in the tables were generated from the Steering Committee, general public, consultant efforts, and from Portland, OR, and Davis, CA (both Platinum designation-level BFC communities) case studies.



<b>ENGINEERING</b>				
<b>Detailed BFC* Audit</b>	<b>Key Recommendations</b>	<b>Detailed Description</b>	<b>Responsible Agency(s)</b>	<b>Phase</b>
New Road Construction	Utilize new bicycle policy (in Chapter 5) to consider additional bicycle facility treatments.	Chapter 5	Town of Carrboro	Short-term
Town Staff Training Programs	Create in-reach training sessions for Town engineers and planners.	Chapter 4	Town of Carrboro	Long-term
	Partner with Orange County, Town of Chapel Hill, and NCDOT representatives for training programs.	Chapter 4	Town of Carrboro	Long-term
Bridges	Ensure bicycle facilities are part of new and reconstructed bridge design.	Chapters 5, 6, & 7	Town of Carrboro; NCDOT	Long-term
Bike Parking	Expand bicycle parking ordinance (as described in Chapter 5). Add additional bicycle parking as described in Chapter 3.	Chapter 3 & 5	Town of Carrboro	Short-term
Bike Racks/ Storage Units	Upgrade at some destinations as described in Chapter 3.	Chapter 3	Town of Carrboro	Medium-term
Transit Service & Bikes	Continue to ensure bicyclists are accommodated in future transit services.	Chapter 6 & 7	Town of Carrboro, Chapel Hill Transit (CHT)	Long-term
Bike Facility Mileage	Begin implementing bicycle network recommendations to lengthen system.	Chapter 3	Town of Carrboro; NCDOT	Short-term
Arterial Streets	Begin implementing bicycle network recommendations in this Plan and utilize new bicycle policy in Chapter 5.	Chapters 3, 5, & 7	Town of Carrboro; NCDOT	Short-term
Bike Routes	Begin implementing bicycle route and signage recommendations in this Plan.	Chapters 3, 6, & 7	Town of Carrboro; NCDOT	Medium-term
Maintenance Programs	Create a bicyclist-request response system for maintenance needs.	Chapter 6	Town of Carrboro; NCDOT	Medium-term
	Continue routine and remedial maintenance tasks and consider expansion of tasks.	Chapter 6	Town of Carrboro; NCDOT	Short-term
Intersections	Begin implementing bicycle intersection recommendations in this Plan.	Chapters 3 & 7	Town of Carrboro; NCDOT	Medium-term
(Table continued on next page)				
*BFC=Bicycle Friendly Community				

Table 6-1. Illustrates the *Engineering* components of the Plan.

<b>ENGINEERING, CONTINUED</b>				
<b>Detailed BFC* Audit</b>	<b>Key Recommendations</b>	<b>Detailed Description</b>	<b>Responsible Agency(s)</b>	<b>Phase</b>
	(Continued from previous page)			
Paved Bike Trails	Begin expanding paved trails as recommended in Plan and prioritized by Greenways Commission.	Chapters 3, 6, & 7	Town of Carrboro	Short-term
Mountain Biking	Improve signage and mapping.	Chapter 4	Town of Carrboro	Long-term
Bicyclist Open Space	Improve signage and mapping.	Chapter 4	Town of Carrboro	Long-term
Employer Bike Ordinance	<i>See Encouragement Table</i>	Chapters 4 & 5	Town of Carrboro	Short-term
Recreational Facilities	Begin implementing bicycle network recommendations in this Plan (rural paved shoulders, route signage, etc.).	Chapter 3, 6 & 7	Town of Carrboro, Orange County; NCDOT	Short-term

\*BFC=Bicycle Friendly Community

Table 6-1 (cont'd). Illustrates the **Engineering** components of the Plan.



EDUCATION				
Detailed BFC* Audit	Key Recommendations	Detailed Description	Responsible Agency(s)	Phase
Motorist Education	Develop brochures, newspaper articles, and newsletters.	Chapter 4	Town of Carrboro†	Medium-term
	Review traffic calming public education program to ensure that it targets motorists, pedestrians, and bicyclists.	Chapter 4	Town of Carrboro	Medium-term
	Enhance enforcement of unsafe behavior.	Chapter 4	Town of Carrboro	Medium-term
Adult Bicycle Education	Launch traffic calming program to target motorists, pedestrians, and bicyclists.	Chapter 4	Town of Carrboro	Medium-term
	Conduct brown-bag events, lecture series, and clinics for adults.	Chapter 4	Town of Carrboro†	Short-term
	Enhance enforcement of unsafe behavior.	Chapter 4	Town of Carrboro	Medium-term
Safety Programs for Children	Continue "Basics of Bicycling" course.	Chapter 4	CHCCS	Short-term
	Launch traffic calming program to target youth motorists, pedestrians, and bicyclists.	Chapter 4	Town of Carrboro	Medium-term
	Enhance enforcement of unsafe behavior.	Chapter 4	Town of Carrboro	Medium-term
	Develop programs such as earn-a-bike programs, bicycle rodeos, and summer camps.	Chapter 4	Town of Carrboro†	Medium-term
	Organize bicycle rides as part of Carrboro Day.	Chapter 4	Town of Carrboro†	Short-term
Public Safety	Develop bicycle safety materials, newsletters, and brochures.	Chapter 4	Town of Carrboro†	Medium-term
	Develop educational bicycle map.	Chapter 4	Town of Carrboro	Short-term
Routine Local Safety Education	Produce education messages in distributions and media.	Chapter 4	Town of Carrboro	Medium-term
Internal Education**	Create in-reach events such as brown bags and training sessions for Town departments.	Chapter 4	Town of Carrboro	Medium-term
	Develop training sessions for local-law enforcement.	Chapter 4	Town of Carrboro	Medium-term
Bicycle Ambassador Program	Begin ambassador program formed of Advocacy Group members and citizens.	Chapter 4	†	Short-term
	Make ambassadors visible through educational and encouragement programs and events.	Chapter 4	†	Short-term
League Cycling Instructors	Increase number of League Cycling Instructors in area.	Chapter 4	†	Short-term

\*BFC=Bicycle Friendly Community \*\*Item not part of BFC application, but added for the Town of Carrboro †Possible role for Citizens' Bicycle Advisory Group

Table 6-2. Illustrates the Education components of the Plan.

ENCOURAGEMENT				
Detailed BFC* Audit	Key Recommendations	Detailed Description	Responsible Agency(s)	Phase
Employer Programs**	Employers should provide incentives for employees for commuting by bicycle.	Chapter 4	Town of Carrboro†	Short-term
	Town should provide information to employers for programs.	Chapter 4	Town of Carrboro†	Short-term
School Programs (Safe Routes to School)	Apply for additional Safe Routes to School funding for planning and implementation.	Chapter 4	Town of Carrboro	Medium-term
	Complete implementation of current action planning efforts.	Chapter 4	Town of Carrboro	Medium-term
	Develop after-school programs, summer camps, and family rides.	Chapter 4	Town of Carrboro†	Medium-term
Youth Recreation** Intervention	Develop bicycle rodeos, summer bicycle camps, and events/camps that require bicycles.	Chapter 4	Town of Carrboro†	Medium-term
	Continue "Basics of Bicycling" course.	Chapter 4	CHCCS	Short-term
<b>Awareness Days</b>				
National Bike Month	Promote the month and create additional activities.	Chapter 4	Town of Carrboro†	Short-term
Bike to Work Day	Promote the day and create additional activities, especially for commuters.	Chapter 4	Town of Carrboro†	Short-term
Annual Bike Tour	Host own bicycle riding tours/races.	Chapter 4	Town of Carrboro	Long-term
League Cycling Instructors	Increase number of League Cycling Instructors in area.	Chapter 4	†	Short-term
Bicyclist Breakfast**	Establish monthly bicyclist breakfast to build support and camaraderie.	Chapter 4	Town of Carrboro†	Medium-term
Other Days**	Promote bicycling at other annual days.	Chapter 4	Town of Carrboro†	Medium-term
Facilities to Promote Other Causes**	Utilize greenways and bicycle facilities to host events for causes.	Chapter 4	Town of Carrboro†	Medium-term
(Table continued on next page)				
*BFC=Bicycle Friendly Community ** Item not part of BFC application, but added for the Town of Carrboro †Possible role for Citizens' Bicycle Advisory Group				

Table 6-3. Illustrates the *Encouragement* components of the Plan.

ENCOURAGEMENT, CONTINUED				
Detailed BFC* Audit	Key Recommendations	Detailed Description	Responsible Agency(s)	Phase
(Continued from previous page)				
<b>Bicycle Promotion Within Local Organizations</b>				
<b>Bike Clubs</b>	Expand clubs such as Carolina Tarwheels to reach less experienced bicyclists.	Chapter 4	Town of Carrboro†	Medium-term
<b>Specialty Bike Shops</b>	Bicycle shops should remain involved in Plan implementation and events.	Chapter 4	Town of Carrboro†	Short-term
<b>Bicycle Rental &amp; Upkeep</b>	Further Town support of Blue Urban Bikes (BUB) and ReCYCLERY programs.	Chapter 4	Town of Carrboro†	Short-term
	Establish Town Hall as BUB hub.	Chapter 4	Town of Carrboro†	Short-term
<b>Bike Maps</b>	Improve town-wide online maps with routing, facilities, and bicycle education information.	Chapters 4 & 6	Town of Carrboro†	Short-term
	Create foldable town-wide bicycle map with routing, facilities, and bicycle education information.	Chapters 4 & 6	Town of Carrboro†	Short-term
	Update current Bicycle Map.	Chapters 4 & 6	Town of Carrboro†	Medium-term
<b>MTB Trails Maps</b>	Develop online and hardcopy mountain bicycle trail maps.	Chapter 4	Town of Carrboro	Long-term
<b>Adopt-a-Trail**</b>	Promote and support local volunteer groups and agencies to maintain greenways.	Chapter 4	Town of Carrboro†	Short-term
<b>Revenue Generating Programs**</b>	Consider events that require fees and/or donations that would increase revenue for bicycle facilities.	Chapter 4	Town of Carrboro†	Long-term
<b>Other Efforts**</b>	Provide annual reports to community that update on bicycling improvements.	Chapter 4	Town of Carrboro†	Short-term
	Promote and advertise new programs and events.	Chapter 4	Town of Carrboro†	Short-term
	Reach out to Spanish-speaking population with education and encouragement programs.	Chapter 4	Town of Carrboro†	Medium-term
	Research and consider other encouragement methods.	Chapter 4	†	Long-term
*BFC=Bicycle Friendly Community **Item not part of BFC application, but added for the Town of Carrboro †Possible role for Citizens' Bicycle Advisory Group				

Table 6-3 (cont'd). Illustrates the *Encouragement* components of the Plan.

ENFORCEMENT				
Detailed BFC* Audit	Key Recommendations	Detailed Description	Responsible Agency(s)	Phase
Targeted Motorist Enforcement	Enforce illegal motorist actions related to bicycle safety.	Chapter 4	Town of Carrboro	Medium-term
	Develop traffic calming programs to educate and enforce.	Chapter 4	Town of Carrboro	Medium-term
Targeted Bicyclist Enforcement	Enforce illegal bicyclist actions related to bicycle safety.	Chapter 4	Town of Carrboro	Medium-term
	Target enforcement at sites of newly introduced bicycle facilities.	Chapter 4	Town of Carrboro†	Medium-term
	Create Volunteer trail patrol positions which can monitor incidences and report trail violations.	Chapter 4	Town of Carrboro†	Medium-term
Local Police Input	Include Police Department representative to report to Town.	Chapters 4 & 6	Town of Carrboro†	Short-term
Police Officer Traffic Training	Create new training sessions, especially with new facility implementation.	Chapter 4	Town of Carrboro	Long-term
	Have police officers participate in bicycle-related workshops and certification workshops.	Chapter 4	Town of Carrboro	Long-term
Bicycle Patrol	Create bicycle patrol positions.	Chapter 4	Town of Carrboro	Long-term
School Crossing Guards**	Continue school crossing guard program and consider expanding when need arrives.	Chapter 4	Town of Carrboro	Short-term
Mandatory Helmet Law	Consider helmet law for all ages.	Chapter 4	Town of Carrboro	Medium-term

\*BFC=Bicycle Friendly Community    \*\* Item not part of BFC application, but added for the Town of Carrboro    †Possible role for Citizens' Bicycle Advisory Group

Table 6-4. Illustrates the *Enforcement* components of the Plan.



<b>EVALUATION AND PLANNING</b>				
<b>Detailed BFC* Audit</b>	<b>Key Recommendations</b>	<b>Detailed Description</b>	<b>Responsible Agency(s)</b>	<b>Phase</b>
<b>Overall Mode Share and Number of Bike Trips</b>	Utilize 2010 Census Data to determine new mode share.	Chapter 6	Town of Carrboro	Medium-term
	Continue to conduct and update bicycle counts as part of Mobility Report Card.	Chapter 6	Town of Carrboro	Short-term
<b>Safety (Cyclist/Motorist Fatalities in Past 5 Years)</b>	Keep these incidences tallied and part of database.	Chapter 6	Town of Carrboro	Short-term
<b>Safety (Cyclist/Motorist Crashes in Past 5 Years)</b>	Keep these incidences tallied and part of database.	Chapter 6	Town of Carrboro	Short-term
<b>Crash Reduction Programs</b>	Research crashes and initiate crash reduction programs.	Chapter 6	Town of Carrboro†	Medium-term
<b>Bicycle Facility Improvements</b>	Measure new facilities as constructed and report on facility quality.	Chapter 6	Town of Carrboro	Medium-term
<b>Implement and Update Prioritization Improvements</b>	Implement priority projects as identified in this Bicycle Plan. Update Top 10 priority list each year.	Chapters 3 & 6; App. A	Town of Carrboro	Short-term
	Address new requests and safety issues that may arise.	Chapter 6	Town of Carrboro	Medium-term
<b>Program Successes</b>	Measure program participation, education/enforcement efforts, and evaluate success.	Chapter 6	Town of Carrboro	Medium-term
(Table continued on next page)				
*BFC=Bicycle Friendly Community				

Table 6-5. Illustrates the *Evaluation and Monitoring* components of the Plan.

EVALUATION AND PLANNING, CONTINUED				
Detailed BFC* Audit	Key Recommendations	Detailed Description	Responsible Agency(s)	Phase
	(Continued from previous page)			
Policy for Bicycle & Network Future Development	Update policies with this Plan.	Chapters 5 & 6	Town of Carrboro	Short-term
	Regularly review and update bicycle-related policies.	Chapter 6	Town of Carrboro	Medium-term
Public Comments System for Officials	Create a bicyclist-request response system for maintenance needs and other requests and concerns.	Chapter 6	Town of Carrboro†	Medium-term
	Encourage citizens to attend Bicycle Advocacy Group meetings.	Chapter 4	Town of Carrboro†	Short-term
Greenways Master Plan	Develop Design Plans for Morgan Creek and Bolin Creek greenway trails.	Chapter 6	Town of Carrboro; Greenways Commission	Short-term
	On-going review and revision (as necessary) of the greenway sections of the Recreation and Parks Master Plan	Chapter 6	Town of Carrboro; Greenways Commission	Medium-term
Comprehensive Bicycle Plan	Make updates when necessary.	Chapter 6	Town of Carrboro	Short-term
	Completely update Plan within 5-10 years.	Chapter 6	Town of Carrboro	Long-term
*BFC=Bicycle Friendly Community †Possible role for Citizens' Bicycle Advisory Group				

Table 6-5 (cont'd). Illustrates the *Evaluation and Monitoring* components of the Plan.





*Fig. 6-2. The new Rose Walk neighborhood has installed bike lanes and enforcement signage.*

## 6.4 Staffing Recommendations

### *Bicycle, Pedestrian and Trails Planner*

The Town of Carrboro should create and fund the position of Bicycle, Pedestrian and Trails Planner to handle the day-to-day implementation of recommended policies, programs and activities described within this plan. Other responsibilities could include updating the sidewalk policy document, taking on transportation demand management (TDM) planning, and working with the Greenways Commission. This position could initially be part time in nature but may become full time as dictated by workload. The Planner could lead efforts to apply for funding, oversee planning, mapping, design and development of bicycle, pedestrian and trail projects. The Planner should assist with programming, public outreach, and policy development. This new position is necessary given the existing responsibilities of the Town Planning staff and the additional responsibilities that would come with implementing this Plan, as well as the other duties as described above. The Planner should report to the Town of Carrboro Planning Administrator.

## 6.5 Evaluation, Monitoring, and Planning

The Town of Carrboro should establish an official evaluation and monitoring program. The fifth “E,” Evaluation, will allow the Town of Carrboro to monitor the implementation of this Plan and the performance of bicycle facilities and programs. Evaluation can be used to determine if the goals of this Plan are being met and to assure that resources are directed towards efforts that show the greatest likelihood of success. It can also identify needed adjustments to the program underway. Evaluating the network sys-

tems and programming in place will help the Town determine when to make adjustments.

Performance measures should benchmark progress toward achieving the goals and objectives of this plan. Some goals and objectives can be measured in a more subjective manner while others can be measured quantitatively. When establishing performance measures, the Town should consider utilizing data that can be collected cost effectively and reported at regular intervals, such as in a performance measures report that is published annually or bi-annually. A number of performance measures are already quantitatively tallied as part of the Mobility Report Cards. These analyses and reports should continue regularly in the future. These performance measures should also be stated in an official report, prepared by the Bicycle, Pedestrian and Trails Coordinator, and filed with the Town, within one to three years after this Plan is officially adopted by the local government. The performance measures should address the following aspects of bicycle facility development.

**1) Overall Mode Share and Bicycle Trips** - With the updated 2010 census, calculate the new bicyclist mode-share numbers for the Town of Carrboro. As in previous years and as part of the Mobility Report Card, conduct bicycle counts at specific targeted facilities. The number of bicycle trips daily is estimated in Chapter 2 of this Bicycle Plan. This table should be updated when new data becomes available.

### **Goal and Objectives Measured:**

**GOAL 1** – *To have bicycling as a viable transportation alternative throughout the Town and for all trip purposes.*

**OBJECTIVE** – Increase Carrboro’s mode share of bicycling for all trip purposes.



*Fig. 6-3. Construction of a new bridge in Rose Walk has included bike lanes.*

**2) Safety (Crashes and Fatalities)** – Measure the number of bicycle and pedestrian crashes on an annual basis. Keep fatality and injury incidences tallied and mapped. With a focus and research on crash incidences, the Bicycle Advocacy Group should initiate crash reduction programs.

**Goal and Objectives Measured:**

**GOAL 3** - *A robust bicycle program that incorporates engineering, education, encouragement, enforcement and evaluation programs.*

**OBJECTIVE** - Reduce the number of crashes involving bicycles, both single vehicle crashes and crashes involving motor vehicles and bicyclists.

**3) Bicycle Facility Improvements** – Measure how many facilities are constructed, in accordance with the recommendations of this Plan. Also report on the quality of these facilities. Also examine new facility types and their effectiveness (intersection improvements and sharrows).

**Goals and Objectives Measured:**

**GOAL 1** - *To have bicycling as a viable transportation alternative throughout the Town and for all trip purposes.*

**OBJECTIVE 1** – Increase connectivity of on-street and off-street bicycle facilities to provide access to all destinations in Carrboro, including community hubs such as schools, transit stops, parks, civic spaces, and commercial and residential areas.

**OBJECTIVE 2** - Increase connectivity of the bicycle network with surrounding communities.

**OBJECTIVE 3** - Fully integrate the bicycle and greenway networks.

**OBJECTIVE 4** – Fill in network gaps identified through the bicycle transportation plan.

**GOAL 4** - *A safe and accessible network of bicycle facilities.*

**OBJECTIVE 1**- Improve existing high-use “bottle-neck” bicycling areas so that they are safe, efficient, and convenient for all users.

**OBJECTIVE 2** - Improve intersection crossings that safely and comfortably accommodate bicyclists of all levels.

**OBJECTIVE 3** - Design bicycle facilities and ancillary features to ensure clear communication with cyclists of all ages and experience levels, including Carrboro residents and visitors alike.

**4) Implement and Update Prioritization Improvements** - Implementation facilities in accordance with priorities put forth in this Bicycle Plan. Address new requests, safety issues, and upcoming roadway reconstruction projects that may arise during implementation of this Plan.

**Goals and Objectives Measured:**

**GOAL 1** –*To have bicycling as a viable transportation alternative throughout the Town and for all trip purposes.*

**OBJECTIVE 1** – Increase connectivity of on-street and off-street bicycle facilities to provide access to all destinations in Carrboro, including community hubs such



as schools, transit stops, parks, civic spaces, commercial and residential areas.  
OBJECTIVE 2 – Fill in network gaps identified through the bicycle transportation plan.

**GOAL 2** – *A continuing process for reviewing, updating, and implementing bicycle-related policies.*

OBJECTIVE – Monitor bicycle plan implementation progress on a schedule that allows identification and funding of new projects, as appropriate for the CIP, annual budget and other funding opportunities.

**GOAL 4** – *A safe and accessible network of bicycle facilities.*

OBJECTIVE - Improve existing high-use “bottle-neck” bicycling areas so that they are safe, efficient, and convenient for all users.

**5) Program Successes** – Work with local law enforcement and advocacy groups to measure the number of people that participate in education programs and the number that are stopped for violations of motor vehicle and bicycle laws. Evaluate success and interest in new education and encouragement programs.

**Goals and Objectives Measured:**

**GOAL 3** – *A robust bicycle program that incorporates engineering, education, encouragement, enforcement and evaluation programs.*

OBJECTIVE 1 - Increase enforcement of traffic rules that apply to bicycling for motorists and bicyclists.

OBJECTIVE 2 - Actively promote Bike to Work Day and other bicycle commuting incentive programs to reach the community workforce.

OBJECTIVE 3 - Refine motorist and bicyclist education outreach about the laws of the road and bicycle safety.

OBJECTIVE 4 – Develop, distribute, and maintain current bicycle facilities maps.

OBJECTIVE 5 – Implement a Safe Routes to School program in all elementary and middle schools, and develop programs for high school students.

OBJECTIVE 6 - Initiate community endeavors such as bike exchanges, “public” bikes, the ReCYCLery, and additional Blue Urban Bikes bike-share hubs around town.

**6) Policy for Bicycle Network and Future Development** - Regularly review and update bicycle-related policies. Implement policies recommended in this Bicycle Plan.

**Goal and Objectives Measured:**

**GOAL 2** – *A continuing process for reviewing, updating, and implementing bicycle-related policies.*

OBJECTIVE 1 - Regularly review and update bicycle-related policies.

OBJECTIVE 2 - Increase bicycle facilities and ancillary features in newly annexed areas.

OBJECTIVE 3 - Require bicycle facilities and ancillary features in future developments.





Fig. 6-4. The bike lanes on Pathway Dr. should be clear at all times of mulch piles, debris, and litter.

OBJECTIVE 4 – Monitor bicycle plan implementation progress on a schedule that allows identification and funding of new projects, as appropriate for the CIP, annual budget and other funding opportunities.

OBJECTIVE - Create a defined community response and participation system that allows for comments on bicycle planning, implementation, and maintenance concerns.

**7) Institutionalization** – Measure the total budget spent by local governments on bicycle projects and programs along with grant accomplishments.

In addition to an evaluation and monitoring process, planning should continue in the near future as well with the following items:

**Goals and Objectives Measured:**

**Greenways Master Plan**

**GOAL 2** – *A continuing process for reviewing, updating, and implementing bicycle-related policies.*

Work with developers and the Greenways Commission to implement the greenway system as outlined in the Recreation and Parks Master Plan.

OBJECTIVE – Monitor bicycle plan implementation progress on a schedule that allows identification and funding of new projects, as appropriate for the CIP, annual budget and other funding opportunities.

**Updates to this Bicycle Plan**

**GOAL 3** – *A robust bicycle program that incorporates engineering, education, encouragement, enforcement and evaluation programs.*

This Bicycle Plan should be updated when necessary and completely updated within the next 5-10 years. It will be the responsibility of the Bicycle, Pedestrian, and Trails Coordinator, in cooperation with the Bicycle Advocacy Group, to evaluate and monitor the implementation of this Plan. The Town should use the evaluation and review process to evolve and adapt as needed. Land use, transportation, development, the economy, and the overall landscape will continue to change as Carrboro changes. Also, new opportunities or input from an on-going monitoring and evaluation process may emerge, leading to the need to adapt and update the recommendations of this Plan.

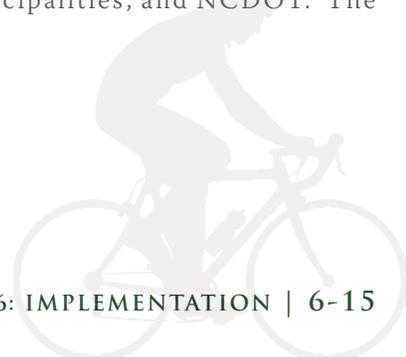
OBJECTIVE - Seek varied resources for maintenance and expansion of plan and bicycle network.

**8) Public Comments System** - Create means in which residents can submit ideas and concerns along with maintenance requests. Also encourage residents to attend meetings of the Bicycle Advocacy Group.

**6.6 Physical Project Priorities**

**GOAL 3** – *A robust bicycle program that incorporates engineering, education, encouragement, enforcement and evaluation programs.*

The entire Carrboro Bicycle Network is described in Chapter 3. However, the system will be developed incrementally. Development will occur piece by piece, in a coordinated effort between the Town, surrounding municipalities, and NCDOT. The



Corridor	From	To	Facilities	Cost
Smith Level Rd.	NC 54	Culbreth Rd.	Bicycle Lanes	\$330,000
Estes Dr.	N. Greensboro St.	Town limits	Bicycle Lanes	\$186,000
Homestead Rd.	High School Rd.	Stratford Dr.	Bicycle Lanes	\$564,000
S. Greensboro St.	Weaver St.	NC 54	Bicycle Lanes	\$408,000
Old Fayetteville Rd.	Hillsborough Rd.	NC 54	Bicycle Lanes	\$600,000
Smith Level Rd.	Rock Haven Rd.	Damascus Church Rd.	Bicycle Lanes	\$378,000
Old NC 86	Homestead Rd.	Hillsborough Rd.	Paved Shoulders	\$342,000
Shelton St.	N. Greensboro St.	Hillsborough Rd.	Signed Route	\$500
N. Greensboro St.	Estes Dr.	Shelton St.	Maintenance	\$2,080
N. Greensboro St.	Shelton St.	Weaver St.	Sharrows	\$520

Table 6-6. Top ten bicycle corridor recommendations.

top 10 bicycle corridor recommendations are shown in Table 6-6.

### 6.7 Methods for Developing Facilities

This section describes types of transportation facility construction and maintenance projects that can be used to create new bicycle facilities. Note that roadway re-construction projects offer excellent opportunities to incorporate facility improvements for bicyclists. It is much more cost-effective to provide a bicycle facility when these road projects are implemented than to initiate the improvement as a “retrofit.”

In order to take advantage of upcoming opportunities to incorporate bicycle and pedestrian facilities into routine transportation projects, the Town should continue to track the NCDOT repaving schedules, and other lists of projects. As the long-range transportation plan is updated in future years, bicycle and pedestrian improvements should be included in all programmed projects. The recommended network in Chapter 3 is accompanied by segmented corridors and intersections presenting the recommended method for developing each facility. These methods and additional methods are described below.

#### 6.7.1 Re-striping and Pavement Markings

When room allows, the simplest type of restriping project is the addition of bicycle lanes, edgelines, or shoulder stripes to streets without making any other changes to the roadway. Bicycle lanes, edgelines and shoulder stripes can also be added by narrowing the existing travel lanes or removing one or more travel lanes. In some locations where the existing lanes are 12- or 13-foot wide, it may be possible to nar-

row them to 10 feet. This requires changing the configuration of the roadway during a resurfacing project.

#### 6.7.2 Removing Parking

Some neighborhood collector roadways are wide enough to stripe with bike lanes, but they are used by residents for on-street parking, especially in the evening. In locations like this, removing parking is likely to create considerable controversy and is not recommended unless there is no other solution (unless the parking is never used). In the rare case that removing parking is being considered, the parking should not be removed unless there is a great deal of public support for the bike lanes on that particular roadway, and a full public involvement process with adjacent residents and businesses is undertaken prior to removing parking.

If it is not practical to add a bike lane, edgelines and shared lane markings may be considered. On roads where the outside lane and parking area combined are more than 17 feet wide, 10-foot-wide travel lanes can be striped with an edgeline, leaving the rest of the space on either side for parking. The stripe would help slow motor vehicles and provide extra comfort for bicyclists, especially during the daytime when fewer cars would be parked along the curb. On roads with outside lane and parking areas that are narrower than 17 feet wide, shared lane markings can be provided every 100 to 200 meters on the right side of the motor vehicle travel lane to increase the visibility of the bike route.

#### 6.7.3 Repaving

Repaving projects provide a clean slate for revis-

ing pavement markings. When a road is repaved, the roadway should be restriped to create narrower lanes and provide space for bike lanes and shoulders whenever possible. In addition, if the space on the sides of the roadway has a relatively level grade and few obstructions, the total pavement width can be widened to include paved shoulders. Not all repaved roadways, however, will be candidates for bike facilities such as restriping.

**6.7.4 Roadway Construction and Reconstruction**

Bicyclists should be accommodated any time a new road is constructed or an existing road is reconstructed. In the long-term, all roadways should have on-road bicycle facilities. However, sidepaths can be an acceptable solution in the short-term when a road has few driveways and high-speed, high-volume traffic.

**6.7.5 Bridge Replacement**

All new or replacement bridges should accommodate bicycles with on-road facilities on both sides of the bridge.

Federal law, as established in the Transportation Equity Act for the 21st Century (TEA-21), makes the following statements with respect to bridges:

*“In any case where a highway bridge deck is being replaced or rehabilitated with Federal financial participation, and bicyclists are permitted on facilities at or near each end of such bridge, and the safe accommodation of bicyclists can be provided at reasonable cost as part of such replacement or rehabilitation, then such bridge shall be so*

*replaced or rehabilitated as to provide such safe accommodations.” (23 U.S.C. Section 217)*

On urban and suburban bridge projects, NCDOT recommends a minimum of 4-foot bridge shoulder to be provided on bridge replacements. Greater widths on local roads should be a minimum of 5.5-foot wide if traffic volumes are projected to be less than 15,000 vehicles per day. If traffic volumes are projected to be 15,000 or more vehicles per day, the shoulders should be at least 6.5-foot wide. Provide bicycle safe railings that are 54” high.

Bridge replacement projects on controlled access freeways where bicyclists are prohibited by law will generally not include facilities to accommodate bicyclists. In cases, however, where a bridge replacement project on a controlled access freeway impacts a non-controlled access roadway (e.g., a new overpass over an arterial roadway), the project should include the necessary access for bicyclists on the non-limited access roadway (e.g., paved shoulders, pedestrian/bicycle crossing improvements).

**6.7.6 Retrofit Roadways with New Bicycle Facilities**

There may be critical locations in the Bicycle Network that have bicycle safety issues or are essential links to destinations. In these locations, it may be justified to add new bicycle facilities before a roadway is scheduled to be repaved or reconstructed.

In some places, it may be relatively easy to add extra pavement for shoulders, but others may require removing trees, moving landscaping or fences, or re-



grading ditches or hills. Retrofitting roadways with sidepaths creates similar challenges. Improvements in these locations are typically recommended in the long-term.

#### **6.7.7 Signage and Wayfinding Projects**

Signage along specific routes or in an entire community can be updated to make it easier for people to find destinations. Bicycle route signs are one example of these wayfinding signs, and they can be installed along routes independently of other signage projects or as a part of a more comprehensive wayfinding improvement project.

### **6.8 Maintenance**

Creation of a successful Bicycle Network will involve more than facility improvements. The long-term success of the bicycle network will also depend on how the Town builds facility maintenance and long-term facility planning into its existing maintenance and planning practices. The subsections below detail these critical policy areas. More detailed policy examinations and language update recommendations are discussed in Chapter 5.

#### **6.8.1 Maintenance**

Regular maintenance of the community's bicycle facilities will be essential to maintain the safety of the facilities and their overall usability. To facilitate the practice of regular maintenance, the Town should integrate bicycle facility maintenance into the maintenance routines. Currently, the Town of Carrboro does have a regular sweeping program and bicycle lane re-striping is part of the Town's and NCDOT's routine maintenance. To further enhance maintenance activities, the Town of Carrboro should create

a cyclist-request response system in which anyone can report maintenance needs. For more information on maintenance routines, please see Chapter 7: Design Guidelines.

Types of maintenance required include:

- Regular inspection
- Repair of pavement
- Re-striping of lanes/remarking of pavement
- Replacement or repair of route signs due to damage caused by vandalism or general wear
- Removal of debris from roadway shoulders, bike lanes, and shared-use paths (including trash and vegetation)
- Replacement and repair of bicycle parking and storage facilities
- Citizen-response system allowing residents to report maintenance needs with active response
- Installation and replacement with bicycle friendly drainage grates

Off-road bicycle routes may require the attention of separate agencies and should be regularly maintained as well. Key maintenance types required for multi-use paved paths include:

- Sweeping and debris removal
- Vegetation trimming and mowing
- Invasive species control
- Replacing asphalt or concrete as needed
- Re-striping pavement lines
- Replacing and repairing bicycle parking and storage facilities



Volunteers may assist the Town of Carrboro in maintenance as well. Adopt-a-trail programs could be further developed with local civic groups, scouts, schools, and businesses taking responsibility for the general upkeep of both off-road paths and on-road bicycle paths. Traditionally, these programs have focused on off-road trails but could be expanded to on-road facilities as well. Adopt-a-trail programs should include credit signage and written agreements with the adopting group.

