



CHAPTER 6 OUTLINE:

Overview
 Comprehensive Plan
 Zoning and Local Codes
 Mode Share, Health and Safety Goals
 Complete Streets Policy

CHAPTER 6: CODE + POLICY ANALYSIS

OVERVIEW

The purpose of this task is to evaluate existing federal, NCDOT and Raleigh policies, codes and ordinances to determine how these documents support bicycling. Existing land use policies, codes and other documents were reviewed to identify areas where conflicts exist or new concepts can be adopted. This report summarizes these findings and makes recommendations for the City on which local codes, ordinances and policies should be strengthened to better support bicycling. These items can be either integrated into the Bicycle Master Plan and included by reference in the Comprehensive Plan, or specifically included in the Comprehensive Plan and city codes.

It is also important to note that there are 10 planning districts within the City of Raleigh. For each planning district there is a district plan that provides details on existing conditions including land use, zoning, and demographic projections. The system plans and urban form guidelines are also provided in greater detail for each district. District-based Streetscape Plans include standards for improvements to street right-of-ways, vehicular areas and building facades that reinforce the unique character and pedestrian orientation of an area. Streetscape standards may address unifying design features for sidewalks, paving, curbing, street trees, building facades, setbacks, vehicular parking areas, building heights, bicycle parking, signage, awnings, street furniture, overhead utilities, streetlights, and other elements of a streetscape. The general recommendations of this report can be integrated into the district planning process.

COMPREHENSIVE PLAN

The Raleigh Comprehensive Plan is an official long range policy document adopted and amended by formal resolution of the City Council. The plan is currently being updated under the title “Planning Raleigh 2030” (www.planningraleigh2030.com). The plan guides the long-range, comprehensive decision making process involving primarily physical development and those city actions expected to influence development in the long-term. The comprehensive plan contains goals, objectives, policies and guidelines for growth and redevelopment for the city.

The Plan Overview includes an introduction and a summary of the population and employment characteristics of the City of Raleigh. The Plan Framework provides an explanation of Comprehensive Plan goals, objectives, policies, and guidelines as well as a discussion of the urban form principles upon which the plan is based. The Systems Plans include goals and policies for





public infrastructure systems such as the water and wastewater systems, stormwater management, parks and recreation, and transportation systems. The Raleigh Comprehensive Plan contains significant references to bicycling throughout the document, including the elements for Transportation and Parks and Recreation. A review of the document provides the following analysis and recommendations:

Part 4: Parks, Recreation and Greenways Plan

This chapter has a direct connection to bicycling, especially in terms of promoting physical activity, bicycle touring, mountain biking and shared-use paths. The Parks, Recreation and Greenways Plans can also help to achieve some of the goals of the Transportation Plan so long as the facilities are accessible to non-motorized travel. The access points to the parks and greenways should be designed so that local users can travel to the facilities without needing to travel by car. Specific notes include:

Recommendation – Capital Area Greenways: set goals to complete the facility as a connected multi-use path for recreation and transportation use.

Recommendation - Equitable Distribution of Facilities Across the Community: include having a bicycle facility within 1 mile of all residences in Raleigh.

Recommendation – Parks Classification: include mountain bike trails and other natural surface trails as part of the “Natural Areas” designation.

Recommendation - Encourage Public Involvement / Provide Environmental Education Opportunities: include physical activity promotion, support of bicycle clubs, National Bike Month events, Share-the-Road safety programs, community bike programs, summer bike camps, etc.

Part 5: Economic Development Strategy

This section provides good references to diverse transportation systems, including bicycle and pedestrian facilities.

Recommendation – Financial and Community Resources: bicycle tourism can play a role in attracting visitors to the area and providing non-motorized tourism options within the city and along planned greenways.

Recommendation - Maintain and Improve the City’s Physical Environment: an increased emphasis on multi-modal transportation choices or the promotion of a city-bike program can help to achieve targets in the reduction of air pollution.





Recommendation - Institutional Resources / Economic Development Program: recycle-a-bicycle programs offer the opportunity for entry level jobs which teach the needed and valuable skill of bicycle repair. The program can be geared as a youth development program or as a tool to provide skills to unemployed workers looking for jobs.

Part 8: Transportation Plan

The *Roadway System Plan* serves as a basis for the coordinated implementation of roadway improvements to protect the integrity and safety of the street and highway network and provide an acceptable level of mobility to the citizens of Raleigh. There is an opportunity to include a “Complete Streets” policy approach that integrates bicycle and pedestrian facilities into all roadway, transit and public works projects.

The *Public Transportation Plan* serves as a guide for the provision of desirable transit and paratransit modes of travel. This section could include intermodal connections for pedestrians and bicyclists – such as bike stations /rental / repair locations, bicycle lockers, bike racks, transit shelters and amenities.

The *Pedestrian and Bicycle Circulation Plan* provides for increased walking opportunities as an alternative to the automobile and for recreational purposes. Additional topics such as Context Sensitive Design and Public Art and Design Overlay Districts could be included.

The *Bicycle Plan* also provides recreational and alternative opportunities for non-automotive travel. The Bicycle Plan is a detailed bicycle element that provides the basis for the Comprehensive Bicycle Master Plan. It is carefully written and includes a wide range of important references to bicycling. However, there are a number of key issues that could be strengthened as part of the Bicycle Master Plan process. A core issue is that the Transportation Plan does not include specific mode share or safety goals. This is an important opportunity to provide a primary benchmark for the City’s quality of life. In addition, health and physical activity are not adequately addressed, and this is important in light of the national obesity epidemic and the prominence of the health industry in the Research Triangle area. Another area that is not addressed in the plan is people working at home, which represents a rapidly growing sector of transportation in the region, and can have a significant effect on walking and bicycling. Additional facility types that need to be considered include: high crash locations, intersection improvements, traffic signal actuation, bicycle parking, bike stations / rental shops, and intermodal / transit connections.

Recommendation: Include a mode share and safety goal, based on the USDOT national goal of doubling the amount of walking and bicycling in the U.S. and improving safety by 10%.





Recommendation: Include health and physical activity as a priority element in the Comprehensive Plan, with a goal of having all Raleigh residents meet or exceed the U.S. Surgeon General’s recommendations for daily physical activity.

Recommendation: Include working from home as a planning element, specifically to address the potential changes in bicycle and pedestrian transportation that can result from more people working at home.

Recommendation: Proposed New Section on Bicycle Friendly Communities (BFC) Program – Raleigh will participate in the League of American Bicyclists BFC Program with a goal of earning official designation within the next 5 years. The program provides a useful set of benchmarks for implementing a comprehensive bicycle program.

Recommendation: Raleigh has an important opportunity to adopt a “Complete Streets” policy approach that integrates bicycle and pedestrian facilities into all roadway, transit and public works projects. This type of policy has been adopted by numerous communities throughout the U.S. Model policy language is provided by the NCDOT (based on North Carolina statutes) and the US Department of Transportation design guidelines. Copies of the NCDOT and USDOT policies are provided in the appendix of this report.

Additional Topics to be Included in Future Revisions of the Comprehensive Plan:

Conservation and Environment: presents an opportunity to capitalize on the energy savings, fossil fuel reductions and air quality benefits that can be attributed to bicycle and pedestrian transportation. The number of trips made by bicyclists and pedestrians is a fundamental benchmark of the quality of the City’s environment. Raleigh should participate annually in the National Bicycle and Pedestrian Documentation Project to standardize a bicycle traffic count program.

Schools: The national Safe Routes to Schools (SR2S) Program provides funding to increase opportunities for children to walk or bicycle to school (or to the school bus, or during the day at school). Mode share data for the number of children who walk, bike, ride the bus or are driven to school should be collected as part of the annual data collected for school transportation. School site location should be considered a priority factor with reference to the potential for children to walk or bike to school.





Public Safety: Consider including a chapter on “Public Health and Safety” to provide an appropriate role for issues ranging from cardiovascular disease prevention, increased physical activity and reductions in traffic injuries and fatalities.

ZONING AND LOCAL CODES

Raleigh has adopted zoning ordinances, subdivision regulations, transportation codes, and design guidelines for land use and transportation modes within the city. In general the zoning ordinances are good, but they need to emphasize a stronger connection between land use and transportation, especially bicycle and pedestrian travel. Ongoing efforts to integrate form-based codes and improved guidelines for the City’s public realm will support this process. The current Raleigh Code of Ordinances is available on-line at: <http://www.municode.com/resources/gateway>

General Recommendation: Modify the local ordinances to provide a balanced approach to both on and off-street bicycling, transportation, recreation and support facilities including a stronger connection between mixed use zoning, compact land use and a more detailed guideline for bicycle parking and amenities at large work sites.

Individual sections of the Code of Ordinances are reviewed as follows:

Code of Ordinances, Part 9: Parks, Recreation and Cultural Affairs

This section of the code includes the goals of the Recreation Division, which are stated as follows:

“The recreation division of the Department of Parks and Recreation shall have as its objectives the planning, administering and supervising of a wide variety of recreation program opportunities and the fulfilling of the leisure needs of all ages and skill levels including programs for youth, the elderly, the mentally retarded, and the physically and visually handicapped.” (Sec. 9-3001)

With an increased emphasis on the need for physical activity and outdoor recreation, bicycling can play a significant role in supporting these objectives. Programs for utilitarian cycling, competitive racing, BMX, mountain biking, greenways, bicycle touring and local club programs can all be part of this effort.





Part 9 also includes the following section regarding bicycles and the use of greenways:

Sec. 9-2027. Regulation of the Use of Bicycles and Other Non-motorized Vehicles on the Greenway System

(a) *Definitions.* As used in this section, except where the context clearly requires otherwise, the words and terms used in this section shall have the following meanings:

(1) *Bicycle.* A non-motorized vehicle with two (2) or three (3) wheels tandem, a steering handle, one (1) or two (2) seats, and pedals by which the vehicle is propelled, and also bicycles with helper motor rated less than one (1) brake horsepower which produce only ordinary pedaling speed up to twenty (20) miles per hour.

(b) *Use of the Greenway System.* Non-motorized vehicles as defined herein may use the system of Greenway trails designated as such by the City so long as any user of such a vehicle complies with all traffic regulations applicable and so long as the operator shall stop or otherwise yield the right-of-way to pedestrian traffic. No non-motorized vehicle shall exceed a speed of ten (10) miles per hour while being operated on the Greenway Trail system.

(Ord. No. 1993-249, §1, 8-3-93)

Code of Ordinances, Part 10: Planning and Development

Chapter 2: Zoning Ordinances; Article A. General Provisions

This section is important because it sets the tone for planning and development in Raleigh. Health, safety, and convenience are significant issues for bicycling; these requirements are explicitly mentioned in the first paragraph of the Raleigh zoning code under the declaration of necessity as follows:

“It is deemed necessary in order to preserve and promote the health, comfort, convenience, good order, better government, safety and morals and in order to promote the systematic future development of the City”

The declaration of necessity further calls out the need to prevent congestion:

“prevent or relieve congestion, either of population or traffic”





In addition to relieving traffic congestion, the general provisions should be amended to provide high-quality bicycle and pedestrian facilities. Further, traffic should be specifically defined to include “pedestrians, bicyclists, public transit, and motorized vehicles.”

Sec. 10-2002. Definitions:

Consider making the following changes to definitions of words and terms within the zoning codes to ensure that bicyclists, pedestrians, and transit are emphasized in any reference to traffic, transportation, or mode of travel (changes underlined):

Modify:

Passenger transit station or stop. “The location of a passenger transit station or stop and its associated automobile or bicycle parking, all under the control of a public entity.”

New Definitions:

Traffic: “Pedestrians, motor vehicles, bicycles, and other conveyances either singly or together using any highway, street, or public right-of-way for purposes of travel.”

Traffic Impact Analysis: “Traffic engineering analysis which considers all modes of travel, including motor vehicles, walking, bicycling, and transit.”

This language is based on a combination of the Uniform Vehicle Code (UVC), the national model code which forms a basis for most state codes, and the North Carolina General Statutes. The NC Statutes do not include a definition of the term traffic, but they do define a bicycle as a vehicle. The UVC includes a broad definition of traffic, but does not explicitly mention bicycles. The text of these two sections of code is provided below:

Uniform Vehicle Code § 1-207 Traffic

Pedestrians, ridden or herded animals, vehicles, streetcars and other conveyances either singly or together while using any highway for purposes of travel.

NC General Statutes, Chapter 20, §.20.4.01 (49) Vehicle

Every device in, upon, or by which any person or property is or may be transported or drawn upon a highway, excepting devices moved by human power or used exclusively upon fixed rails or tracks; provided, that for the purposes of this Chapter bicycles shall be deemed vehicles and every rider of a bicycle upon a highway shall be subject to the provisions of this Chapter applicable to the driver of a vehicle except those which by their nature can have no application.





This term shall not include a device which is designed for and intended to be used as a means of transportation for a person with a mobility impairment, or who uses the device for mobility enhancement, is suitable for use both inside and outside a building, including on sidewalks, and is limited by design to 15 miles per hour when the device is being operated by a person with a mobility impairment, or who uses the device for mobility enhancement. This term shall not include an electric personal assistive mobility device as defined in G.S. 20-4.01(7a).

Chapter 2: Zoning Ordinances; Article B. Establishment of Zoning Districts

This section defines general and conditional use zoning districts and establishes specific zoning districts adopted by the city. The section further calls out overlay districts and defines the purpose of each overlay area. These sections should be evaluated to highlight their provisions for or impact on bicycle and pedestrian traffic.

Overlay districts are defined as “special districts that are created to achieve unique physical characteristics or promote specific planning or urban design objectives.” These districts should make special provisions for promoting bicycle or pedestrian travel.

Section 10-2011 (b) (3) b. Downtown Overlay District: The ordinance currently highlights the need for “reductions in peak hour commuter congestion.” Consider adding statements such as “support all modes of transportation, including pedestrians, bicycles, and transit” and “provide bicycle parking.”

Section 10-2011 (b) (3) c. Historic Overlay District: This district promotes “education, pleasure and enrichment” of residents. Consider adding “health” to this list to further encourage walking and cycling within historic districts.

Section 10-2011 (b) (3) f. Pedestrian Business Overlay District: This district is good and the objectives of the pedestrian areas, including “respecting and improving the pedestrian environment,” should be applied throughout city zoning codes to help promote walking throughout the city. Also the bicycle parking requirements found here should be considered for other districts as well: “Bicycle parking spaces shall be provided for all new uses, new buildings, and for existing buildings and uses whenever those existing buildings and uses undergo any one (1) or more of the expansions, expenditures, or changes listed in subsections a. through c. of §10-2055(e)(2) ...Bicycle spaces shall be provided at a rate of at least one (1) bicycle space for every twenty (20) required automobile spaces. Bicycle parking facilities shall be located within easy access from the street right-of-way, and shall be designed in





accordance with the Streetscape Plan or Streetscape and Parking Plan.” (Ord. No. 1992-111-TC-42, §21, TC-19-92, 12-8-92; Ord. No. 2000-740-TC-190, TC-1-99, §5, 2-18-00).

Section 10-2011 (b) (3) i, j, k, l Special Highway Overlay District: The Special Highway Overlay Districts currently cite “protect and preserve the natural scenic beauty” and “encouraging tourism and trade” as primary goals of the districts. Bicycling travel should be recognized as a means to protect the natural areas and attract tourism to the city and surrounding areas. Consider adding provisions for bikeable shoulders, bicycle lanes, shared-use paths, or off-road cycling facilities to allow for safe and efficient bicycle travel along major road and highway corridors.

Section 10-2011 (b) (3) m. Transit Oriented Development Overlay District: The ordinance currently highlights “pedestrian oriented land uses”; consider changing to “pedestrian and bicycling oriented uses” in this definition. Consider changing “provides convenient pedestrian and vehicular access” to “provides convenient pedestrian, bicycling, and motor vehicle access.” In addition, consider calling out bicycle parking as a support service for transit station users.

Chapter 2: Zoning Ordinances; Article C. Summary of Requirements by Zoning District

The notes above outline changes to descriptions of specific overlay districts. All zoning districts should be closely examined to ensure that they are consistent with the above descriptions and specifically provide facilities or amenities for bicyclists and pedestrians. Bicycle parking requirements should be provided in all commercial, office, and recreational areas.

Chapter 2: Zoning Ordinances; Article D. Use, Residential Density, Setback, Height Regulations, and Summary Schedules

This section includes important references to home occupations and accessory apartments, both of which are important elements of affordable, walkable/bikeable neighborhoods. Accessory Dwellings and Home Occupations are referenced in Section 10-2072 (b).

Suggestions for modification include the section on school site selection. This section is important for the development of Safe Routes to Schools (SR2S) programs, and for ensuring that pedestrian and bicyclist accessibility is part of the schools site decision process. The section calls for large land lots to be required for school sites; the minimum square feet regulation should be reconsidered to provide for smaller schools located within existing urban areas, thereby providing for more opportunities for walking and cycling by children. The following modification is recommended:





Section 10-2072 (b): School - private or parochial

A school, private or parochial shall meet all of the following:

- (1) Meet the curricular teaching certification of instruction approved by the State Board of Education.
- (2) Be located on a lot(s) with a total land area of five hundred (500) square feet area per enrolled pupil. *(Note: Review the square footage requirement to allow for smaller schools within existing urban areas)*
- (3) Be located outside any Airport Overlay District and a primary reservoir watershed protection area.
- (4) School site plans shall be designed to ensure that children have the choice to walk or bike to school where appropriate.
(New Item)

Chapter 2: Zoning Ordinances; Article E. Supplementary Regulations and Exceptions - Off-street Parking, Landscaping, Signage, Fences and Walls, and Other Regulations.

The zoning ordinances regulate additional aspects of land development, including off-street parking, landscaping, signage, and other development standards. Off-street parking is the most applicable regulation directly affecting bicycling.

Sec. 10-2081 Off-Street Parking. The current off-street parking regulations only provide for automobile parking and do not take bicycle parking into consideration. Bicycle parking is provided for in specific overlay districts (including Pedestrian Business District and Transit Oriented Development overlays see page 6-8 to 6-9). However bicycle parking should be considered in all off-street parking situations and included in all commercial or overlay zoning districts.

Bicycles should receive equal consideration when calculating parking needs with specific calculations provided for determining the amount of bicycle parking provided by district type. Design and location standards for bicycle parking should be clearly stated to provide for safe and convenient access to all commercial areas. Sample text is provided below:

Multi-family residential uses shall provide bicycle parking at the rate of 1 bicycle parking space for each 20 motorized vehicle spaces but no more than 50 total bicycle parking spaces are required for any single development. Non-residential uses with an off-street parking requirement for motorized vehicles of at least 15 spaces

For more information on Bicycle Parking (including "Guidelines for Bicycle Parking Locations and Quantities", "Bicycle Facilities at Transit Stops", "Bicycle Stations and Repair Stands", and "Attended Bike Parking"), see Chapter 7: Design Guidelines, pages 7-37 to 7-41.

Also, for links to model bicycle parking ordinances from other cities, go to the MassBike website:<http://www.massbike.org/bikelaw/parking.htm>

Note: These recommendations (at left) are complimentary to the City of Raleigh's 'Right Sizing' parking study, and provide additional detail on specific quantity, type and location of bicycle parking.





and not more than 40 spaces shall provide a minimum of 2 bicycle parking spaces. Non-residential uses with an off-street parking requirement greater than 40 spaces shall provide bicycle parking spaces equal to 5% of the total number of spaces required up to 100 spaces.

Bicycle parking should be located in secure, visible areas, sheltered from rain if possible. At long-term parking locations (transit stations, parking garages, park ride lots, university campuses, etc.) bicycle lockers or secured areas should be provided in addition to racks. Short term bicycle parking should also be included as a routine element in streetscape design for all commercial, institutional and mixed-use streetscapes. All schools should provide secure bicycle parking for a minimum of 10% of the student / faculty population.

Chapter 2: Zoning Ordinances; Article F. Planned Residential Development Regulations; and Article G. Planned Nonresidential Development Regulations.

Densely clustered development is a critical factor for ensuring that new developments contain the scale and vitality to support walking and bicycling. These two sections detail the regulations for large planned developments.

Consider adding the following language for all planned developments: “Land development and roadway design will support walkable and bicycle-friendly communities to encourage active lifestyles, environmental conservation and quality of life. Based on the national Trails for All Americans study, all residential areas will be within a 15 minute walk of a trail or bikeway.”

Chapter 2: Zoning Ordinances; Article H. Approval Procedures.

This is an important section for ensuring that bicycling and walking are fully integrated into the development review process. This section includes required plans for review and regulations for submitting plot and site plans. This section should be amended to include traffic impact analysis (TIA) and development review criteria tailored to bicycle and pedestrian access.

A multi-modal TIA will address the needs of all modes of transportation, including walking, bicycling, transit and automobiles. The level of service methods used for analysis will include motor vehicle, transit, bicycle and pedestrian level of service as performance measures, where applicable. This means that when the impacts of a proposed project are assessed, the analysis will include both motorized and non-motorized transportation.

Subdivision review should also include criteria for pedestrian and bicycle circulation.





Chapter 3: Subdivision/Site Plan Standards

The subdivision ordinance for Raleigh details the “procedures and standards for site development, subdivision of real estate, and the surveying and platting of land.” The following sections were identified for potential modifications:

Chapter 3: Subdivision/Site Plan Standards; Article A. General Provisions

Sec. 10-3002. Declaration of Purpose

- i. Provide for efficient, adequate and sufficient streets, sidewalks, and greenways with adequate capacities to move pedestrian, bicycle, transit, and automobile traffic and with proper alignment and grades, and curbs and gutters to promote the public safety and adequate drainage;
- ii. Save unnecessary expenditures of funds by requiring the initial proper construction of transportation networks, sidewalks, bikeways, greenway trails, drainage facilities and utilities;

Sec. 10-3003. Definitions

Modify:

Connective street: A street within a particular development, other than a dead-end or loop street, which will allow pedestrian, bicycle, public transportation, and automobile circulation to adjoining developments to provide for community-wide circulation.

New Definitions:

Traffic: “Pedestrians, motor vehicles, bicycles, and other conveyances either singly or together using any highway, street, or public right-of-way for purposes of travel.”

Bicyclist Facilities : “On and off-street improvements including shared-use paths, bicycle lanes, shared land markings, paved shoulders, wide curb lanes, signals, crossings, transit connections and bicycle parking designed to facilitate travel by bicycle. ”

Consider adding: Safe Routes to School, ADA and Crosswalks. Note that all of the definitions of “Streets” are automobile-centric; suggest modifying with multi-modal, “complete streets” language.





Chapter 3: Subdivision/Site Plan Standards; Article B. Procedures

Sec. 10-3012. Preliminary subdivision plan approval and final plat certification required.

Public Works staff should be responsible for reviewing subdivision site plans to ensure that bicycle and pedestrian facilities are integrated in all facility construction and renovation projects. (Note: this concept should also be applied to Site Plan review and the Building Permit application process to ensure that bicycle and pedestrian access as well as on site amenities are considered before plan approval and construction begin)

Chapter 3: Subdivision/Site Plan Standards; Article C. Reimbursement and Design Standards for Subdivisions and Site Plans

Add a section detailing sidewalk, bikeway and trail construction: include bicycle facilities, crosswalks, SR2S corridors, and link this section to the Bicycle Master Plan. Also consider including: neighborhood cul-de-sac connectors for walking/bicycling/emergency vehicle access between subdivisions.

Sec. 10-3020. Conformity to City Plans

Include review by citywide Pedestrian and Bicycle Commission to reference existing city plans, including this Bicycle Master Plan, in consideration for design standards

Sec. 10-3041. Street Design Standards

Consider adding AASHTO Bicycle and Pedestrian Guidelines as for constructing on-street and off-street bicycle facilities, in addition to the Street, Sidewalk, and Driveway Access Handbook as adopted by the city.

Chapter 7 : Driveway Access, Sidewalks and Streets

This section and its related subsections should be updated to include specification for bicycle facilities in addition to the sidewalks and driveways. The title should be modified to read, "*Driveway Access, Sidewalks, Bicycle Facilities and Streets*". This chapter includes the following section:

Sec. 10-7001. Sidewalk and Driveway Construction Specifications

This section currently states, "All sidewalks and driveways constructed in the City shall be constructed under the specifications as set out in this section." Add, "...and bicycle facilities shall be constructed according to the Design Guidelines of the adopted Bicycle Transportation Plan."





Code of Ordinances, Part 11: Transportation

The City's transportation ordinances (Code of Ordinances, Part 11) detail regulations for motor vehicles, traffic, bicycles, pedestrians, public transportation, private bus service, and street maintenance. The sections below address specific sections regarding bicycle and pedestrian elements of the ordinances.

Chapter 3: Bicycles

This chapter is generally good, but was adopted as the City of Raleigh Bicycle and Bikeway Ordinance of 1974. Some of the language is outdated and should be reconsidered in light of current best-practices. The full text of the chapter is provided in the appendix of this report.

The chapter should be cross referenced to the streets maintenance chapter to specifically detail additional maintenance standards for bike lanes and paths. This chapter should also explicitly detail bicycle parking guidelines, standards, and be cross referenced to applicable zoning ordinances to routinely require new bicycle parking facilities in commercial, office, or recreational areas. Comments on specific sections below:

Sec. 11-3002. Purpose

The stated purpose of the chapter is good but should be amended to provide for the implementation, maintenance, and operation of facilities and amenities, such as bicycle parking, in addition to bikeways.

The purpose of this chapter is to adopt policies, procedures and standards for planning, designing, constructing, maintaining, marking and operating bikeways and bicycle parking in the City of Raleigh's jurisdiction for the safety of bicyclists, motorists and the public.

Sec. 11-3003. Definitions

The definitions should be amended to recognize bicycles as vehicles on par with motorized traffic. Specifically, references to bicycle lanes should not allow for automobile parking

Sec. 11-3003 (2) (b) Bicycle Lanes

Vehicular parking may or may not be allowed or it may be restricted to certain hours of each day.

Sec. 11-3007. Bicycle Lanes Established/Sec. 11-3008. Bicycle Paths Established

The sections establishing specific bicycle lanes, routes and paths should be reexamined for consistency with more recent plans as well as current development and future goals of transportation within the city. The section should be rewritten to highlight high-





priority commuter or recreational routes within the city, but further outline “complete streets” language that promotes bicycle facilities or accommodations along any street within the city that is deemed feasible or appropriate for bicycle travel. Bicycle facilities should not be limited to specific streets, but considered routinely throughout the city whenever new construction is planned along city streets.

The following language should be applied within the bicycle chapter to ensure that bicycle facilities and amenities are designed and implemented consistently.

- Either wide outside travel lanes, paved shoulders, bicycle boulevards, shared use paths, cycle tracks, bicycle lanes, or other bikeway facilities, as determined by the City Public Works Department or the North Carolina Department of Transportation, shall be a part of any road improvements made on roadways which are indicated as bicycle routes facilities on either the City’s Raleigh Urban Trails and Greenways Master Plan, the City of Raleigh Bicycle Master Plan or the Metropolitan Planning Organization’s Regional Bicycle Plan.
- In addition to linear bikeways, new and modified traffic signals, roadway crossings, trailheads, transit stops and other improvements will be designed to be accessible to bicyclists.
- All bicycle facilities shall be designed in compliance with the AASHTO Guidelines for the Development of Bicyclist Facilities, the Manual of Uniform Traffic Control Devices, NCDOT design guidelines, and the City of Raleigh Bicycle Transportation Plan.
- At worksites with more than 50 employees, lockers and showers will be provided for people who walk or bike to work or during the workday.

Chapter 5: Street Maintenance

The street maintenance chapter should add bicycle lanes and paths in addition to sidewalks for receiving specific treatments during roadway improvement. The city should consider adding “complete streets” language that routinely examines the feasibility of implementing bikeways during any regularly scheduled roadway maintenance.

Specific language should be inserted detailing a schedule for implementing regular sweeping, repainting, and repaving along bicycle lanes, paths, and sidewalks. Bike lanes regularly collect road debris and need sweeping more often than adjacent roadways. Likewise, off-street paths or greenways need specific maintenance schedules to clean, repair cracks, and remove overgrowing brush. These maintenance schedules should be included officially in the city’s street maintenance chapter of the transportation ordinances.





MODE SHARE, HEALTH AND SAFETY GOALS

To be a truly national leader in alternative transportation policy, Raleigh will need to set clear goals and benchmarks for achieving them. In 1993, the National Bicycling and Walking Study set a goal for the United States to “double the amount of bicycling and walking, and increase the safety of these modes by 10%.” Numerous communities have adopted versions of this combined mode share and safety goal. As shown in the table below from the U.S. Census, Wake County experienced a 13.3% increase in walking and bicycling over the past decade but the total percentage of walking and bicycling trips decreased from 2.3% to 1.8%.

Table 6.1: Selected Characteristics By Place Of Work (1990 and 2000, Including Travel Time)

Selected Characteristics (Universe: All Workers)	1990		2000		Change 1990 to 2000	
	Number	Percent	Number	Percent	Number	Percent
Workers 16 years or over	249,943	100	360,165	100	110,222	44.1
Sex						
Male	133,480	53.4	195,945	54.4	62,465	46.8
Female	116,463	46.6	164,225	45.6	47,762	41.0
Mode to work						
Drove alone	196,816	78.7	287,165	79.7	90,349	45.9
2-person carpool	28,103	11.2	33,040	9.2	4,937	17.6
3-or-more-person carpool	8,253	3.3	14,100	3.9	5,847	70.8
Bus or trolley bus	3,302	1.3	3,280	0.9	-22	-0.7
All other transit ¹	23	0.0	85	0.0	62	269.6
Bicycle or walked	5,769	2.3	6,535	1.8	766	13.3
Taxicab, motorcycle, or other mode	2,343	0.9	3,225	0.9	882	37.6
Worked at home	5,334	2.1	12,735	3.5	7,401	138.8
Travel time to work (Universe = Workers who did not work at home)						
Less than 5	6,664	2.7	7,155	2.1	491	7.4
5 to 9	24,466	10.0	27,455	7.9	2,989	12.2
10 to 14	38,336	15.7	42,965	12.4	4,629	12.1
15 to 19	47,125	19.3	53,050	15.3	5,925	12.6
20 to 29	58,421	23.9	78,110	22.5	19,689	33.7
30 to 44	45,214	18.5	80,185	23.1	34,971	77.3
45- 59	14,698	6.0	31,220	9.0	16,522	112.4
60 or more	9,685	4.0	27,290	7.9	17,605	181.8
Mean travel time (minutes)	21.7	(X)	27.6	(X)	5.9	(X)
Median travel time (minutes)	20.7	(X)	20.8	(X)	0.1	(X)

Source: U.S. Census Bureau, Census 2000 Census Transportation Planning Package (CTPP 2000)
Geographic Area: Working in Wake County, North Carolina; Source: <http://ctpp.transportation.org/part2/37183.htm>





As part of the effort to reverse this trend, potential goals for Raleigh could include:

- Increase bicycling / pedestrian mode share to 5% of all trips by 2020, and 10% of all trips by 2030.
- Improve pedestrian and bicyclists crash rate by 10% by 2015, and 25% by 2020.
- Ensure that all residents meet or exceed the U.S. Surgeon General's recommendations for daily physical activity, including at least 30 minutes of exercise 5 days a week.

Measuring these goals can be accomplished by routine travel surveys, systematic data collection and annual reporting on objectives derived from these goals.

COMPLETE STREETS POLICY

There is a growing national trend towards integrating bicycling, walking and transit as a routine element in highway and transit projects. This movement has developed under the name of "Complete Streets," which is defined by the Complete the Streets Coalition as follows:

"Complete Streets are designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists and bus riders of all ages and abilities are able to safely move along and across a complete street."

(<http://www.completethestreets.org/>)

While the Raleigh Comprehensive Plan and Zoning Codes address non-motorized transportation in a number of important ways, Complete Streets could be a new framework for integrating the Bicycle Master Plan into a more systematic approach to implementation. A number of similar cities, including Columbia, MO; Santa Barbara, CA; Ft. Collins, CO and others have taken this approach to non-motorized transportation policy. One interesting example is the DuPage County Healthy Roads initiative (Illinois), which links public health with roadway improvements for pedestrians and bicyclists. A review of Complete Streets policies from throughout the U.S. is provided in the appendix of this report.

See Appendix E: Related Planning Efforts for more information on related plans and policies.



