

ABERDEEN

Bicycle Transportation Plan



*Prepared for the Town of Aberdeen, North Carolina
Prepared by Alta/Greenways*

Aberdeen

ACKNOWLEDGEMENTS

Town of Aberdeen Mayor & Board of Commissioners

Betsy Mofield
Robert A. Farrell
Jim Thomas
Pat Ann McMurray
Walter H. Wright
J. Alan Parker

Town of Aberdeen Planning Board

Bob Rigsby
Johnny Ransdell
Sarah Amad
Mary Anne Morrone
Owen Gallagher
Joe Dannelley
Janet Peele

Bicycle Plan Steering Committee

Melissa Watford, First Health Community Health Services and Healthy Kids/Healthy Communities
Cindy Layton, First Health Community Health Services and Healthy Kids/Healthy Communities
Roxanne Loepper, First Health Community Health Services and Moore Health Board
Kathy Liles, Town of Aberdeen project staff
Pam Graham, Town of Aberdeen project staff
Sarah Ahmad, Aberdeen Planning Board Member
Owen Gallagher, Aberdeen Planning Board Member
PatAnn McMurray, Aberdeen Town Commission
Chuck Dumas, NCDOT
Brooks Lockey, Citizen Representative
Hal Harkess, Citizen Representative
Matt Day, Triangle Area Regional Planning Organization
Leigh Baggs, Town of Aberdeen Parks and Recreation Director
Rickie Monroe, Town of Aberdeen Public Works Director
Patrick Coughlin, Moore County Chamber of Commerce
Debbie Warren, Principal of Aberdeen Elementary School

Project Consultants

Lindsay Smart, AICP, Alta/Greenways
Matt Hayes, AICP, Alta/Greenways



TABLE OF CONTENTS

Chapter 1: Project Overview & Purpose

Overview	1-1
Planning Process	1-1
Benefits of a Bicycle-Friendly Community	1-2

Chapter 2: Current Conditions

Overview	2-1
Field Inventory & Observations	2-1
Geographic Information Systems (GIS) Analysis	2-2
Summary of Existing Plans	2-8

Chapter 3: Recommendations

Overview & Methodology	3-1
Recommended Bicycle Facility Network	3-3

Chapter 4: Implementation

Overview	4-1
Implementation Priorities	4-1
Staffing	4-3
Performance Measures (Evaluation And Monitoring)	4-4
Bicycle Facility Development Methods	4-4
Implementation Resources	4-5
Action Steps Table	4-6

Appendix A: Design Resources

Overview	A-1
Neighborhood Streets	A-2
Shared Lane Marking	A-3
Bicycle Lanes	A-4
Striped/Paved Shoulder	A-7
Wide Outside Lanes	A-7
Bicycle Boulevards	A-8
Bicycle-Friendly Intersections	A-9
Roundabouts/Traffic Circles	A-14
Bicycle Facilities at Railroad Crossings	A-15
Bicycle Friendly Drainage Grates	A-16
Bicycle Access on (future) Transit	A-17
Bicycle Parking	A-18
Design Resources	A-20

[Blank Page for Double-Sided Printing]



1. PROJECT OVERVIEW & PURPOSE

Overview

In 2011, the Town of Aberdeen commissioned planning and design consultants, Alta/Greenways, to conduct bicycle planning services, building upon work completed for the Town's Pedestrian Plan. This Bicycle Plan provides an overall vision and strategy for the Town of Aberdeen to grow into a bicycle-friendly community. This Plan's Steering Committee met in September 2011 to confirm project visions and goals, identify desired outcomes of the Plan, and determine areas of need for bicyclists. The vision statement is as follows:

"The Town of Aberdeen will become a bicycle-friendly community by developing a combination of infrastructure, education programs, and policies that support and encourage bicycling as a safe means of transportation to schools, downtown, retail areas, healthy foods and offers connections to neighboring communities."

This Plan outlines a purpose (Chapter 1), an assessment of where things stand today (Chapter 2), recommendations for bicycle facilities (Chapter 3), and implementation strategies (Chapter 4). Also included in this plan is an appendix with design guidelines for bicycle facilities. For more implementation resources, such as funding sources and State & Federal policies, please refer to the Town of Aberdeen's Pedestrian Plan.

The Planning Process

The planning process was led by the Town's planning staff, with assistance from Alta/Greenways, as well as a project Steering Committee. Steering Committee members were selected by the Town of Aberdeen representing multiple city departments, regional partners, local business interests, and citizen advocates. They are listed in the Acknowledgements section of this Plan on page ii.

DATA COLLECTION AND ANALYSIS

Baseline information about the study area was collected during the planning process for the Pedestrian Plan in Spring 2011, including the review of existing plans, preliminary field analysis, and study-area base maps. In Summer 2011, project consultants held a second round of fieldwork to confirm current conditions for bicycle transportation. Consultants also used aerial photography and geographic information systems (GIS) data, to further identify opportunities and constraints for bicycle facility development.

PUBLIC INVOLVEMENT

Citizen representatives served on this Plan's Steering Committee, providing guidance during the Kick-Off meeting, draft plan review, and the final plan's presentation. The draft for this plan was also announced



Above: The Bicycle Plan Steering Committee identifies opportunities and constraints for bicycling in Aberdeen.

“Individuals must choose to exercise, but communities can make that choice easier.”

-Rails-to-Trails Conservancy

“The CDC determined that creating and improving places to be active could result in a 25 percent increase in the number of people who exercise at least three times a week.”

-U.S. Department of Health and Human Services, Centers for Disease Control and Prevention

in official press releases by the Town, and was available and on public display for comment in November 2011 (at _____ list event here).

Benefits of a Bicycle-Friendly Community

A bicycle-friendly Aberdeen will help to improve the health and fitness of residents, enhance environmental conditions, decrease traffic congestion, and contribute to a greater sense of community. Scores of studies from experts in the fields of public health, urban planning, urban ecology, real estate, transportation, and economics consistently back-up such claims and affirm the value of supporting bicycling as it relates to active living and alternative transportation. Communities across the United States and throughout the world are implementing strategies for serving the bicycle needs of their residents, and have been doing so for many years. They do this because of their obligations to promote health, safety and welfare, and also because of the growing awareness of the many benefits of bicycling.

INCREASED HEALTH AND PHYSICAL ACTIVITY

A growing number of studies show that the design of our communities—including neighborhoods, towns, transportation systems, parks, trails and other public recreational facilities—affects people’s ability to reach the recommended daily 30 minutes of moderately intense physical activity (60 minutes for youth). According to the Centers for Disease Control and Prevention (CDC), “physical inactivity causes numerous physical and mental health problems, is responsible for an estimated 200,000 deaths per year, and contributes to the obesity epidemic.”¹ The increased rate of disease associated with inactivity reduces quality of life for individuals and increases medical costs for families, companies, and local governments.

The CDC determined that creating and improving places to be active could result in a 25% increase in the number of people who exercise at least three times a week.² This is significant considering that for people who are inactive, even small increases in physical activity can bring measurable health benefits. Establishing a safe and reliable bicycle network in Aberdeen will positively impact the health of local residents.

The Rails-to-Trails Conservancy puts it simply: “Individuals must choose to exercise, but communities can make that choice easier.”³

ECONOMIC BENEFITS

Bicycling is an affordable form of transportation. According to the Pedestrian and Bicycle Information Center (PBIC), of Chapel Hill, NC, the cost of operating a bicycle for a year is approximately \$120, compared to \$7,800 for operating a car over the same time period.⁴ Bicycling becomes even more attractive from an economic standpoint when the unstable price of oil is factored into the equation (e.g., in spring 2010, gasoline prices approached \$4 a gallon).⁵ The fluctuating cost of fuel reinforces the idea that local communities should be built to accommodate people-powered transportation, such as walking and biking. Aberdeen’s current mixed-use downtown area and surrounding land development patterns, combined with new strategies for improving bicycle transportation, could facilitate a substantial local reduction in auto- and oil-dependency.

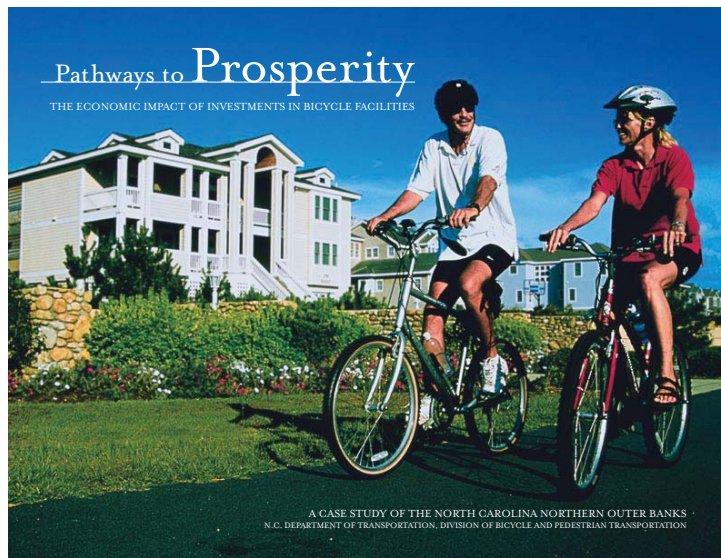
From a real estate standpoint, consider the positive impact of trails and greenways, which are essential components of a complete bicycle network. According to a 2002 survey of homebuyers by the National Association of Home Realtors and the National Association of Home Builders, trails ranked as the second most important community amenity out of a list of 18 choices.⁶ Additionally, the study found that ‘trail availability’ outranked 16 other options including security, ball fields, golf courses, parks, and access to shopping or business centers. Findings from the American Planning Association (How Cities Use Parks for Economic Development, 2002), the Rails-to-Trails Conservancy (Economic Benefits of Trails and Greenways, 2005), and the Trust for Public Land (Economic Benefits of Parks and Open Space, 1999) further substantiate the positive connection between trails and property values across the country.

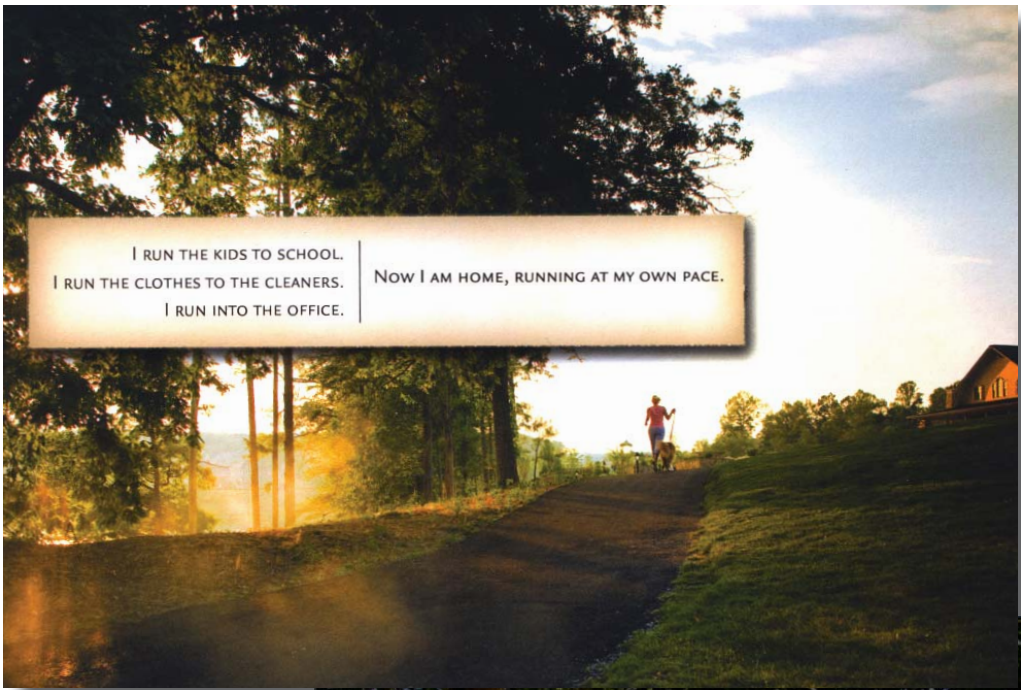
Finally, from a tourism perspective, cyclists can add real value to local economies. For example, in the Outer Banks, NC, bicycling is estimated to have an annual economic impact of \$60 million; 1,407 jobs are supported by the 40,800 visitors for whom bicycling was an important reason for choosing to vacation in the area. The annual return on bicycle facility development in the Outer Banks is approximately nine times higher than the initial investment.⁷ Similarly, Damascus, VA, the self-proclaimed ‘Friendliest Trail Town’, features 34-miles of trail where approximately \$2.5 million is spent annually related to recreation visits. Of this amount, non-local visitors spend about \$1.2 million directly into the economies of Washington and Grayson counties.⁸ While these examples feature beach and mountain destinations, the Town of Aberdeen also has key advantages, such as City Lake Park and its proximity to Falls Lake, Raleigh, and RTP.

Left: Apex, NC: A residential development added \$5,000 to the price of 40 homes adjacent to the greenway – and those homes were still the first to sell. (Rails to Trails Conservancy, 2005)



Far left: Download “Pathways to Prosperity” www.ncdot.gov/bikeped/researchreports





I RUN THE KIDS TO SCHOOL.
 I RUN THE CLOTHES TO THE CLEANERS.
 I RUN INTO THE OFFICE.

Now I AM HOME, RUNNING AT MY OWN PACE.

Developers are taking advantage of the positive impact of trails on property values by marketing their greenways; left and below are examples of two magazine advertisements from developers that focus their marketing on greenways.



I WANT
 top schools nearby
 my kids to get fresh air
 my kids to have lots of friends
 our TV to be ignored

A place where video games get lonely from lack of use. A place where people are always going somewhere—families hiking on the miles of trails, or kids biking to our onsite top-rated schools. A place with best-in-class amenities, including a huge Aquatic Club. A place with a natural setting and tight-knit neighbors that always seem to be doing something together. All this and beautiful homes to match? That's FishHawk Ranch.



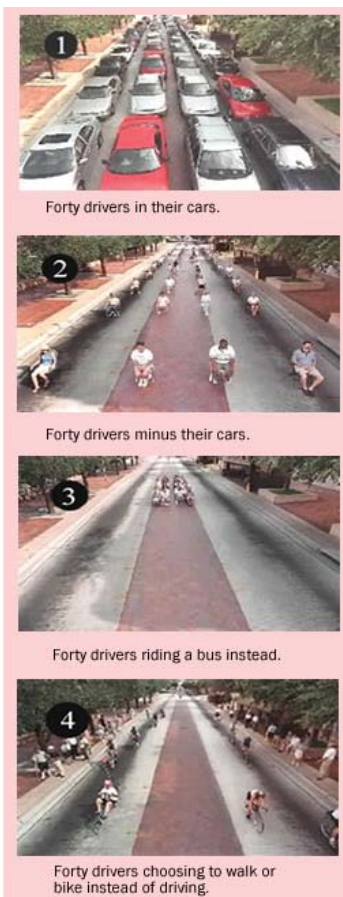
ENVIRONMENTAL IMPROVEMENTS

As demonstrated by the Southern Resource Center of the Federal Highway Administration, when people get out of their cars and onto their bicycles, they reduce measurable volumes of pollutants.⁹ Other environmental impacts include a reduction in overall neighborhood noise levels and improvements in local water quality as fewer automobile-related discharges wind up in the local rivers, streams, and lakes.

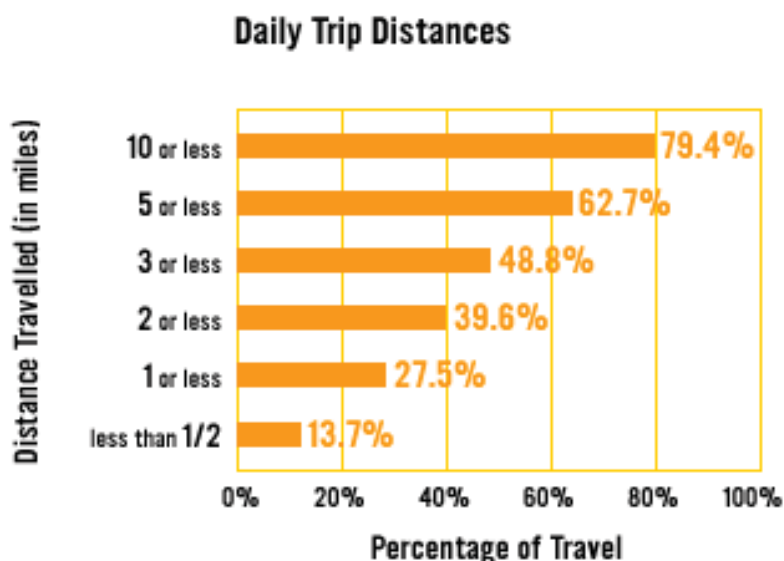
Trails and greenways are also part of any bicycle network, conveying unique environmental benefits. Greenways protect and link fragmented habitat and provide opportunities for protecting plant and animal species. Aside from connecting places without the use of air-polluting automobiles, trails and greenways also reduce air pollution by protecting large areas of plants that create oxygen and filter air pollutants such as ozone, sulfur dioxide, carbon monoxide and airborne particles of heavy metal. Finally, greenways improve water quality by creating a natural buffer zone that protects streams, rivers and lakes, preventing soil erosion and filtering pollution caused by agricultural and road runoff.

TRANSPORTATION BENEFITS

In 2001, the National Household Travel Survey found that roughly 40% of all trips taken by car are less than 2 miles (see chart at bottom right). By taking these short trips on a bicycle, rather than in a car, citizens can substantially impact local traffic and congestion. Traffic congestion reduces mobility, increases auto-operating costs, adds to air pollution, and causes stress. Bicycle users can help alleviate overall congestion because each cyclist is one less car on the road. Incidentally, cyclists take up significantly less space on the road (see image below).



Additionally, many people do not have access to a vehicle or are not able to drive. According to the National Household Travel Survey (NHTS), one in 12 U.S. households does not own an automobile and approximately 12 percent of persons 15 or older do not drive.¹⁰ An improved bicycle network provides greater and safer mobility for these residents.



Source: *The Association for the Advancement of Sustainability in Higher Education*, 2007.

Above: 'Daily Trip Distances' chart from the *Bicycle and Pedestrian Information Center* website, www.pedbikeinfo.org

QUALITY OF LIFE

Many factors go into determining quality of life for the citizens of a community: the local education system, prevalence of quality employment opportunities, and affordability of housing are all items that are commonly cited. Increasingly though, citizens claim that access to alternative means of transportation and access to quality recreational opportunities such as parks, trails, greenways, and bicycle routes, are important factors for them in determining their overall pleasure within their community. Communities with such amenities can attract new businesses, industries, and in turn, new residents. Furthermore, quality of life is positively impacted by bicycling through the increased social connections that take place by residents being active, talking to one another and spending more time outdoors and in their communities.

According to the Brookings Institution, the number of older Americans is expected to double over the next 25 years.¹¹ All but the most fortunate seniors will confront an array of medical and other constraints on their mobility even as they continue to seek both an active community life, and the ability to age in place. Trails built as part of the bicycle transportation network generally do not allow for motor vehicles; however, they do accommodate motorized wheelchairs, which is an important asset for the growing number of senior citizens who deserve access to independent mobility.

Children under 16 are another important subset of our society who deserve access to safe mobility and a higher quality of life. According to the U.S. Environmental Protection Agency, fewer children walk or bicycle to school than did so a generation ago. In 1969, 48% of students walked or bicycled to school, but by 2001, less than 16% of students between 5 and 15 walked or bicycled to or from school.¹²

According to the National Center for Safe Routes to School, “Walking or biking to school gives children time for physical activity and a sense of responsibility and independence; allows them to enjoy being outside; and provides them with time to socialize with their parents and friends and to get to know their neighborhoods.”¹³ In a 2004 CDC survey, 1,588 adults answered questions about barriers to walking to school for their youngest child aged 5 to 18 years.¹⁴ The main reasons cited by parents included distance to school, at 62%, and traffic-related danger, at 30%. Strategic additions to Aberdeen’s bicycle and trail system could shorten the distance from homes to schools, and overall bicycle improvements can improve the safety of our roadways.



Utility bicycle for everyday trips, like grocery shopping (image from www.yubabike.com)

Footnotes from, “*The Value of Bicycle Transportation*”:

1. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. (1996). *Physical Activity and Health: A Report of the Surgeon General*.
2. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. (2002). *Guide to Community Preventive Services*.
3. Rails-to-Trails Conservancy. (2006) *Health and Wellness Benefits*.
4. Pedestrian and Bicycle Information Center. (2008). *Economic Benefits: Money Facts*. Retrieved 8/8/2008 from www.bicyclinginfo.org/why/benefits_economic.cfm
5. King, Neil. *The Wall Street Journal: Another Peek at the Plateau*. (2/27/08): In February 2008, the *Wall Street Journal* quoted industry experts, stating, “supply constraints could push the price of oil to \$150 a barrel by 2010”.
6. National Association of Realtors and National Association of Home Builders. (2002). *Consumer’s Survey on Smart Choices for Home Buyers*.
7. NCDOT and ITRE. (2006). *Bikeways to Prosperity: Assessing the Economic Impact of Bicycle Facilities*.
8. Virginia Department of Conservation. (2004). *The Virginia Creeper Trail: An Assessment of User Demographics, Preferences, and Economics*.
9. Federal Highway Administration, Southern Resource Center. (1999). *Off-Mode Air Quality Analysis: A Compendium of Practice*. To calculate air quality benefits of bicycling, first calculate the Daily VMT reduction. $VMT\ Reduction = PD * Area * L * BMS$, where PD = Population density, persons/mile; $Area$ = Project length * 1 mile radius, mile; L = Round trip length, one-half of the project length times 2 daily trips, miles; BMS = Bike mode share, %. Last, calculate the Daily Emission reductions for a pollutant. $Ed = EFx * VMT\ Reduction$, where Ed = Daily Emissions, grams/day; EFx = Emission factor for pollutant x , grams/mile; VMT = vehicle mile/day.
10. U.S. Department of Transportation (DOT), Bureau of Transportation Statistics (BTS) and the Federal Highway Administration (FHWA). (2002). *National Household Travel Survey*.
11. Brookings Institution. 2003. *The Mobility Needs of Older Americans: Implications for Transportation Reauthorization*.
12. US EPA. (2003). *Travel and Environmental Implications of School Siting*.
13. National Center for Safe Routes to School. (2006). *National Center for Safe Routes to School Talking Points*.
14. Centers for Disease Control and Prevention. *The Importance of Regular Physical Activity for Children*. Accessed 9/16/05 at http://www.cdc.gov/nccdphp/dnpa/kidswalk/health_benefits.htm.

[Blank Page for Double-Sided Printing]