



# SOUTHERN SHORES BICYCLE + PEDESTRIAN PLAN

*Final Draft - October 2014*



Prepared for the Town of Southern Shores & NCDOT  
Prepared by Alta Planning + Design







## ACKNOWLEDGEMENTS

Thanks to the local residents, business leaders, community leaders, and government staff that participated in the development of this plan through meetings, events, volunteering, interviews, comment forms, and plan review. Special thanks to those who participated as steering committee members, listed below.

## PROJECT STEERING COMMITTEE

The Steering Committee is made up of local residents, government staff, and community and business leaders.

Tom Bennett	Mayor, Town of Southern Shores
Gray Berryman	Resident
Blake Buchert	Resident
Gretchen Byrum	North Carolina Department of Transportation, Division 1
David Kole	Chief of Police, Southern Shores Police Department
Bill Gleason	Resident
Wes Haskett	Town Planner, Town of Southern Shores
Jodi Hess	Town Council Member, Town of Southern Shores
Steve Hotchkiss	Resident
George Hull	Resident
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Joe McGraw	Resident
Elizabeth Morey	Resident
Janet Owen	Resident
Rachel Patrick	Public Works Director, Town of Southern Shores
Sherman Pierce	Silver Riders Bike Club
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Prepared for the Town of Southern Shores, North Carolina

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# 1 INTRODUCTION

## Chapter Contents:

### **Project Background**

### **Planning Process & Public Involvement**

### **Why This Plan is Important**

## **PROJECT BACKGROUND**

In 2013, Southern Shores was awarded a matching grant from the North Carolina Department of Transportation (NCDOT) Bicycle and Pedestrian Planning Grant Initiative. The purpose of the grant is to encourage municipalities to develop comprehensive bicycle and pedestrian plans that establish strategies for promoting and improving bicycle and pedestrian safety and facilities. To date, the initiative has funded planning efforts in more than 130 municipalities across the state, and is administered through NCDOT's Division of Bicycle and Pedestrian Transportation.

## **PLANNING PROCESS & PUBLIC INVOLVEMENT**

The planning process began with a Kick-Off Meeting in late 2013, which was the first of four project Steering Committee meetings. The plan's Steering Committee included a combination of local residents, town staff, and regional representatives from different points of view and interests related to bicycle and pedestrian issues in Southern Shores. This Steering Committee provided the Town and project consultants with guidance throughout the plan's development. Key steps in the planning process included developing the overall vision for the plan, identifying existing opportunities and constraints for biking and walking in Southern Shores, and providing feedback on plan recommendations.

In addition to Steering Committee input, the planning process included several other important methods of public outreach and involvement. The project website, public comment form, public workshops, and press releases were all used to inform and gather input from the public for plan development. Aspects of the plan and planning process were also communicated through social media, such as the Town's Facebook page and Twitter account. Key outreach events in the process included:

- Project Kick-Off Meeting - December 2013
- Public Workshop #1 - February 2014
- Draft Bicycle and Pedestrian Plan (released online) - August 2014
- Public Workshop #2 - August 2014
- Final Plan Public Hearing Presentation - October 2014





## WHY THIS PLAN IS IMPORTANT

Through this plan, the Town of Southern Shores aims to increase pedestrian and bicyclist safety, foster better access to community destinations, and create opportunities for active and healthy lifestyles. The following Vision Statement combines input from the Steering Committee, outlining the overall vision for the outcomes of this plan:

### Vision Statement

*The Town of Southern Shores offers its residents and visitors **safe, comfortable, and attractive choices** for walking and bicycling. A network of **sidewalks, trails, bicycle routes, safe streets, and safe street crossings** connect people from north to south and from sound to shore. This complete network enables residents and visitors to choose walking and bicycling as a common, enjoyable, and viable option for **transportation, recreation, and health**, while also providing a **higher overall quality of life**.*

#### Key Benefits of this Plan



*The following sections discuss the many benefits of planning for and creating a walkable and bicycle-friendly community. Resources to more comprehensive research on each topic are provided at the end of each section.*



## Safety for Pedestrians and Bicyclists

### Safety Trends and Challenges

According to a survey of 16,000 North Carolina residents for the 2011 North Carolina Bicycle and Pedestrian Safety Summit, the most commonly reported safety issue for walking and bicycling was inadequate infrastructure (75%).<sup>1</sup> A lack of bicycle and pedestrian facilities, such as sidewalks, bike lanes, trails, and safe crossings, lead to unsafe conditions for bicyclists and pedestrians:

- Each year on average (2007-2011), **162 pedestrians and 19 bicyclists are killed** in collisions with motor vehicles on North Carolina roads, with many more seriously injured.<sup>2</sup>
- North Carolina is ranked as **one of the least safe states** for walking (41st) and bicycling (44th).<sup>3</sup>
- **13% of all traffic fatalities** in North Carolina are bicyclists and pedestrians.<sup>4</sup>
- During the five-year period from 2007 to 2011, a total of **4,700 bicycle-motor vehicle crashes and 12,286 pedestrian-motor vehicle crashes** were reported to North Carolina authorities.<sup>2</sup>
- **In Southern Shores (or along the border of Kitty Hawk along US 158) from 2007-2011, there were nine bicyclist-motor vehicles crashes**, six of which were along the US 158 corridor. One pedestrian-motor vehicle crash was recorded during this same time period.<sup>2</sup>

### Improving Safety

Separate studies conducted by the Federal Highway Administration and the University of North Carolina Highway Safety Research Center demonstrate that installing pedestrian and bicycle facilities directly improves safety by reducing the risk of pedestrian-automobile and bicycle-automobile crashes. For example, installing a sidewalk along a roadway reduces the risk of a pedestrian "walking along roadway" crash by 88 percent. Furthermore, according to the aforementioned Southern Shores survey, 70 percent of respondents said they would walk or bicycle more if these safety issues were addressed.<sup>1</sup>

Source: Federal Highway  
Administration. Desktop Reference  
for Crash Reduction Factors.  
<http://safety.fhwa.dot.gov/>

#### Pedestrian-Motor Vehicle Crash Countermeasures

#### Pedestrian Crash Reduction Factor

- |  |     |
|--|-----|
| • Install pedestrian overpass/underpass              | 90% |
| • Install sidewalk (to avoid walking along roadway)  | 88% |
| • Provide paved shoulder (of at least 4 feet)        | 71% |
| • Install raised median at unsignalized intersection | 46% |
| • Install pedestrian refuge island                   | 36% |
| • Install pedestrian countdown signal heads          | 25% |

The following web addresses link to more comprehensive research on safety.

- <http://www.ncdot.gov/bikeped/planning/walkbikenc/>
- [http://www.pedbikeinfo.org/data/factsheet\\_crash.cfm](http://www.pedbikeinfo.org/data/factsheet_crash.cfm)



## Health Impacts of Active Transportation

### Health Trends and Challenges

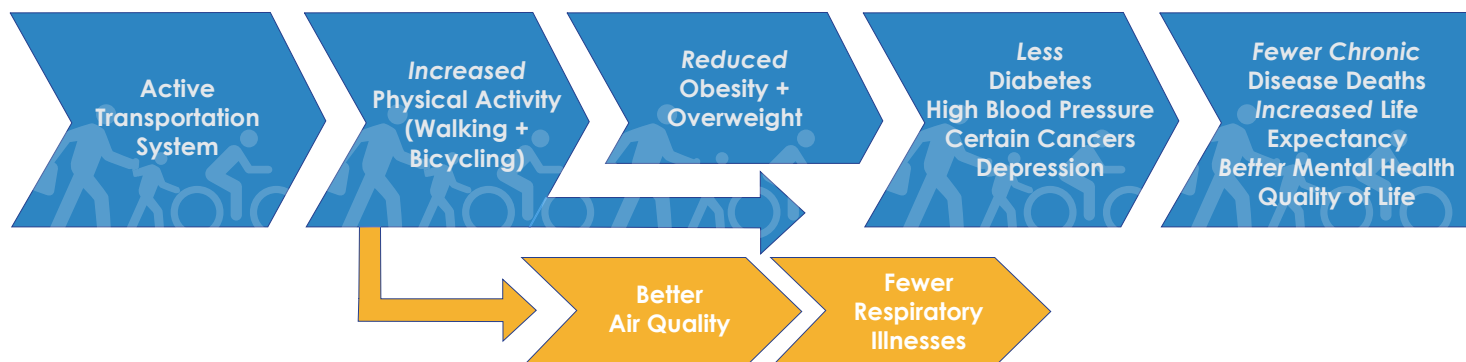
North Carolina's transportation system is one of the most important elements of our public environment, and it currently poses barriers to healthy living through active transportation. In 2012, NCDOT's Board of Transportation revised its mission statement to include "health and well-being" and passed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

- **65% of adults in North Carolina are either overweight or obese.**<sup>5</sup> The state is also ranked **5th worst in the nation** for childhood obesity.<sup>6</sup>
- Recent reports have estimated the annual direct medical cost of physical inactivity in North Carolina at **\$3.67 billion**, plus an additional \$4.71 billion in lost productivity.<sup>7</sup> However, every dollar invested in pedestrian and bicycle trails can result in a savings of nearly \$3 in direct medical expenses.<sup>8</sup>
- Of North Carolinians surveyed, **60% would increase their level of physical activity if they had better access to sidewalks and trails.**<sup>5</sup>
- A Charlotte study found that residents who switched to walking by using light rail for their commute weighed an average of 6.5 pounds less than those who continued to drive to work.<sup>9</sup>

### Better Health through Active Transportation

Using active transportation (e.g., walking and bicycling) to and from school, work, parks, restaurants, and other routine destinations is one of the best ways that children and adults can lead measurably healthier lives. Increasing one's level of physical activity through walking and bicycling reduces the risk and impact of cardiovascular disease, diabetes, chronic disease, and some cancers. It also helps to control weight, improves mood, and reduces the risk of premature death.<sup>10</sup>

### Active Transportation: Pathway to Health



Source: Alta Planning + Design; WalkBikeNC

## Health Impact Assessment

In recent years, health professionals and advocates have become new partners in promoting and planning for active transportation and environments that support active transportation. **Health Impact Assessment (HIA)** can be a powerful tool to help state and local decision makers assess the future value of transportation investments that can impact health. An example HIA was conducted in 2012 to estimate the health and financial impacts of pedestrian and bicycling infrastructure on individuals and communities in North Carolina. HIAs enable health and transportation planners to determine the economic value of active transportation and for decision makers to consider such investments in a cost-benefit analysis framework.

Although an HIA was not conducted for this plan (due to the scope and budget of the planning grant) lessons can be learned from three North Carolina communities that were chosen as demonstration HIAs: Sparta, Raleigh and Winterville (population 1,770, 431,746, and 8,586, respectively). In all three communities, the **HIAs predict that building sidewalks and making other improvements in pedestrian safety increase walking and lower the risk for coronary artery disease, diabetes, hypertension, stroke and early death.**

The following web addresses link to more comprehensive research on health.

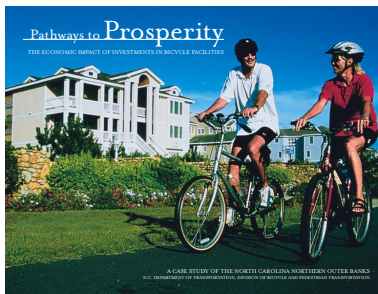
- <http://www.ncdot.gov/bikeped/planning/walkbikenc/>
- [http://www.pedbikeinfo.org/data/factsheet\\_health.cfm](http://www.pedbikeinfo.org/data/factsheet_health.cfm)

## Economic Impacts of Active Transportation

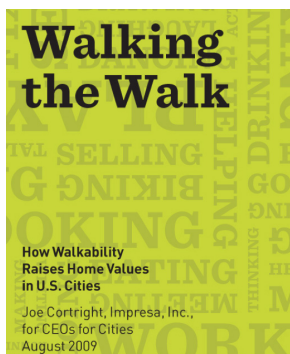
### Economic Trends in North Carolina

Bicycle and pedestrian facilities generate economic returns by raising property values, supporting local businesses and jobs, and attracting visitors. Below are some key economic trends related to walking and bicycling in North Carolina:

- North Carolina is the 6th most visited state in the United States. Visitors spend as much as **\$18 billion a year**, many of whom partake in activities related to walking or biking.<sup>11</sup>
- In North Carolina's Outer Banks alone, bicycling is **estimated to have an annual economic impact of \$60 million and 1,407 jobs supported by the 40,800 visitors for whom bicycling was an important reason for choosing to vacation in the area.**<sup>12</sup>
- The annual return to local businesses and state and local governments on bicycle facility development in the Outer Banks is **approximately nine times higher than the initial investment.**<sup>12</sup>
- Walking and biking are also economically efficient transportation modes. Many North Carolinians cannot afford to own a vehicle and are dependent on walking and biking for transportation (6.7% of occupied housing units in North Carolina do not have a vehicle).<sup>13</sup>
- The report, *Walking the Walk: How Walkability Raises Housing Values in U.S. Cities*, analyzed data from 94,000 real estate transactions in 15 major markets provided by ZipRealty and found that **in 13 of the 15 markets, higher levels of walkability, as measured by Walk Score, were directly linked to higher home values.**



Download the full report at:  
[www.ncdot.gov/bikeped/researchreports](http://www.ncdot.gov/bikeped/researchreports)



Download the full report at:  
[www.ceosforcities.org/research/walking-the-walk/](http://www.ceosforcities.org/research/walking-the-walk/)

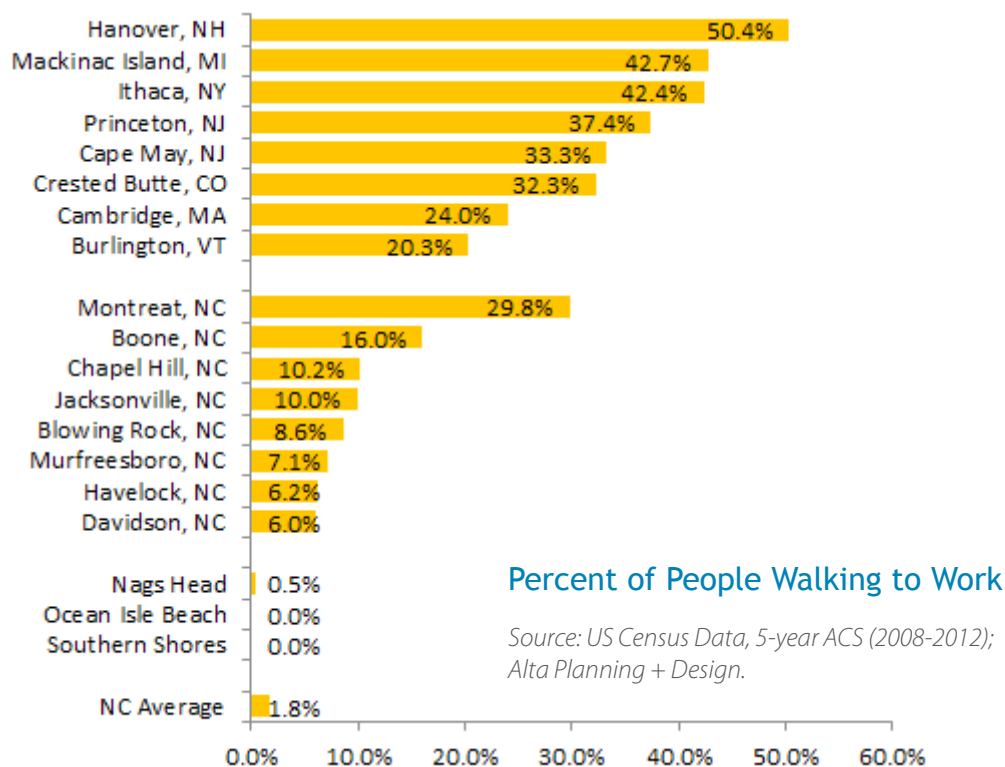


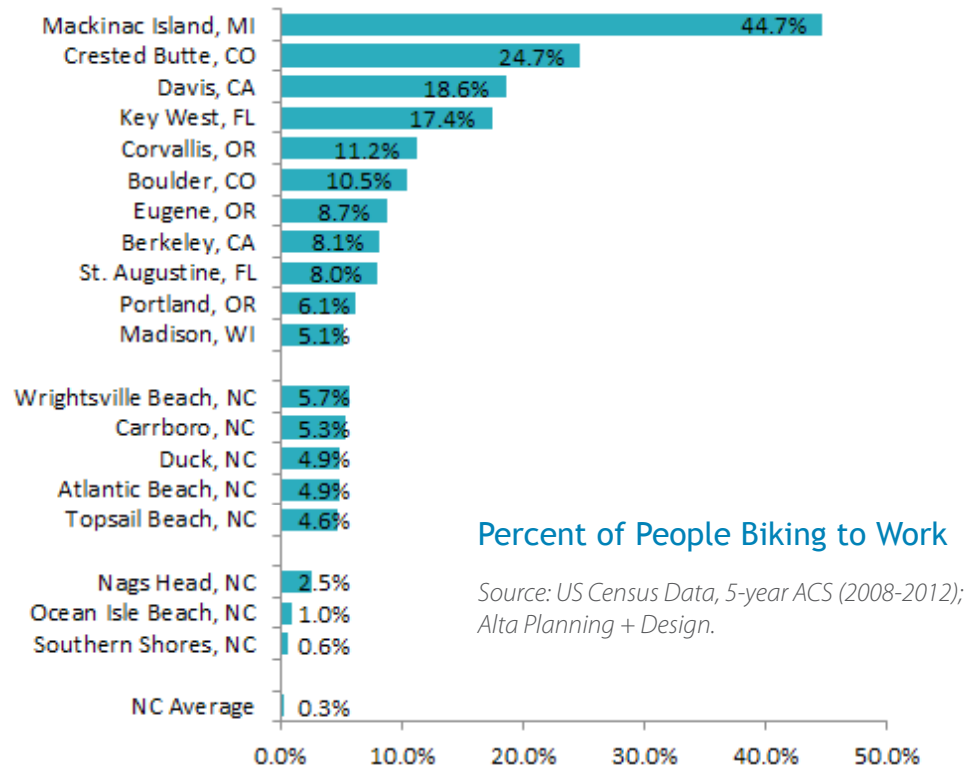
## Mobility and Accessibility Benefits of Walking & Biking

### Opportunity to Increase Walking and Bicycling Rates

According to the 2011 Bicycle and Pedestrian Safety Survey, **at least 70 percent of North Carolinians would walk or bike more for daily trips if walking and bicycling conditions were improved.**<sup>1</sup> With appropriate accommodations, walking and bicycling can provide alternatives to driving for commuting to work, running errands, or making other short trips.

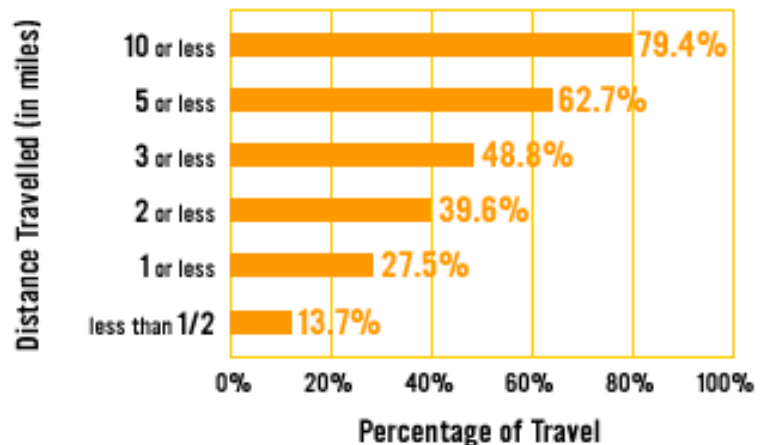
Commute rates for walking and bicycling in North Carolina currently fall below the national average, with just 0.2% of North Carolina commuters bicycling to work and 1.8% walking to work, compared to 0.6% bicycling and 2.9% walking nationwide. This places North Carolina 42nd for walking commute rates and 41st for bicycling commute rates in nationwide state rankings.<sup>3</sup> The charts below and right show communities with top walking and biking rates nationally, top rates in North Carolina, and rates in peer beach communities. In many communities, walking and biking commute rates are used as an indicator of overall walking and bicycling (the rates shown here are for commuting only). These rates also do not reflect Southern Shores's large seasonal tourist population and their vacation travel behavior. Still, for those who do live and work in Southern Shores, there is obvious room for improvement as compared to other communities statewide and nationally.





An estimated 40% of all trips (commute and non-commute) taken by Americans each and every day are less than two miles, equivalent to a bike ride of 10 minutes or less; however, just 13% of all trips are made by walking or bicycling nationwide.<sup>3</sup> To put these numbers into perspective, **34% of all trips are made by walking or bicycling in Denmark and Germany, and 51% of all trips in the Netherlands are by foot or by bike.**<sup>17</sup> Germany, Denmark, and the Netherlands are wealthy countries with high rates of automobile ownership, just like the United States. Yet, an emphasis has been placed on providing quality walking and bicycling environments which has alleviated the reliance on motor vehicles for short trips.

### Daily Trip Distances



Right: Average daily trip distances in the U.S.. Chart from the Bicycle and Pedestrian Information Center website, [www.pedbikeinfo.org](http://www.pedbikeinfo.org)





## Reduced Vehicle Miles Traveled (VMT) & Congestion

Taking short trips by foot or by bike can help to greatly reduce motor vehicle miles driven and traffic congestion. For example, under the Nonmotorized Transportation Pilot Program, walking and bicycling investments **averted an estimated 32 million driving miles in four pilot communities between 2007 and 2010.**<sup>18</sup> These individual changes in travel behavior can add up to produce significant societal benefits. Traffic on arterials and other streets can be mitigated as people use sidewalks, bike lanes, paths, and other alternatives to get around. Parking lots can also be made less congested by reducing crowding, circling, and waiting for open spots.

The following web addresses link to more comprehensive research on mobility.

- <http://www.ncdot.gov/bikeped/planning/walkbikenc/>
- [http://www.pedbikeinfo.org/data/factsheet\\_general.cfm](http://www.pedbikeinfo.org/data/factsheet_general.cfm)

## Stewardship Benefits of Active Transportation

Stewardship addresses the impact that transportation decisions (both at the government/policy level and individual level) can have on the land, water and air that residents of Southern Shores and tourists enjoy.

Providing safe accommodations for walking and bicycling can help to reduce automobile dependency, which in turn leads to a reduction in vehicle emissions – a benefit for residents and visitors and the surrounding environment. As of 2003, **27 percent of U.S. greenhouse gas emissions are attributed to the transportation sector, and personal vehicles account for almost two-thirds (62 percent) of all transportation emissions.**<sup>19</sup> Primary emissions that pose potential health and environmental risks are carbon dioxide, carbon monoxide, volatile organic compounds, (VOCs), nitrous oxides (NOx), and benzene. Children and senior citizens are particularly sensitive to the harmful affects of air pollution, as are individuals with heart or other respiratory illnesses. Increased health risks such as asthma and heart problems are associated with vehicle emissions.<sup>20</sup>

Below are some key trends and challenges related to stewardship and transportation in the U.S. and North Carolina:

- Even a modest increase in walking and bicycling trips (in place of motor vehicle trips) can have significant positive environmental impacts. For example, replacing two miles of driving each day with walking or bicycling will, in one year, prevent 730 pounds of carbon dioxide from entering the atmosphere.<sup>21</sup>
- According to the National Association of Realtors and Transportation for America, **89% of Americans believe that transportation investments should support the goal of reducing energy use.**<sup>22</sup>
- North Carolina's 2009-2013 Statewide Comprehensive Outdoor Recreation Plan (SCORP) found **"walking for pleasure" to be the most common outdoor recreational activity, enjoyed by 82% of respondents, and bicycling by 31% of respondents.**<sup>23</sup>



- The natural buffer zones that occur along greenways protect streams, rivers, and lakes, preventing soil erosion and filtering pollution caused by agricultural and roadway runoff.<sup>24</sup>

The following web addresses link to more comprehensive research on stewardship.

- <http://www.ncdot.gov/bikeped/planning/walkbikenc/>
- [http://www.pedbikeinfo.org/data/factsheet\\_environmental.cfm](http://www.pedbikeinfo.org/data/factsheet_environmental.cfm)

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*Multi-use trail along NC 12*



# 2 CURRENT CONDITIONS

## Chapter Contents:

### Local Context

### Current Conditions, Opportunities & Constraints

### Existing & Past Programs

### Related Plans & Initiatives

### Public Input on Existing Conditions

*Please see Chapter 3 and  
Appendix A for descriptions  
of facility types.*

## LOCAL CONTEXT

The Town of Southern Shores is located in northern Dare County on the Outer Banks of North Carolina bordered by the Atlantic Ocean to the east and the Currituck Sound to the west. With an area of approximately four square miles, the Town of Southern Shores is a quiet seaside residential community comprised primarily of small low density neighborhoods consisting of single-family homes primarily on large lots (i.e., at least 20,000 sq ft) interspersed with beach accesses, walkways, open spaces, and recreational facilities such as marinas, tennis facilities, athletic fields, and parks. A small commercial district, located on the southern edge of town, focuses on convenience shopping and services.

The Town is served by approximately forty miles of roads along the beach, in the dunes or in the sound-side maritime forest. U.S. Highway 158 runs along the southern end of town and N.C Highway 12 runs north/south in the eastern portion of Town. The population of Southern Shores includes permanent residents (full time and part time) and nonresidents (property owners and seasonal/holiday visitors). According to the 2010 U.S. Census for the Town of Southern Shores, 56% of persons were 18 to 64 years old, 27.% were 65 years old or older, 14% were 5 to 17 years old, and 3% were 0 to 4 years old. This population, along with a high number of seasonal/holiday visitors and non-resident property owners, uses the Town's limited bicycle and pedestrian facilities.

The Town's publicly owned and maintained bicycle and pedestrian facilities consist of multi-use paths which run along Highway 158, NC 12, and a portion of South Dogwood Trail. Other walkways, beach accesses, and multi-use paths are privately owned and maintained by the Southern Shores Civic Association or the Chicahawk Property Owners Association. South Dogwood Trail (contains a portion of a sidewalk), East Dogwood Trail (no bicycle or pedestrian facilities), and NC 12 (and the multi-use path along NC 12) are high-use bicycle and pedestrian corridors and have reported bicycle and pedestrian crashes. **Through the development of a Bicycle and Pedestrian Plan, the Town will be able to establish a strategy for promoting and improving bicycle and pedestrian safety and facilities.**

## CURRENT CONDITIONS, OPPORTUNITIES & CONSTRAINTS

Southern Shores has 41 miles of streets within its town limits, with three miles of multi-use trails and 2.5 miles of sidewalk. The multi-use trails along NC 12 and US 158 are the widest facilities and are the most used of the publicly owned and maintained trails. These facilities are often used for exercise, sightseeing, beach access, and shopping. The popularity of these trails and the demand for bicycle and pedestrian facilities can be seen by the high use of mixed traffic on the trails, from walkers and casual bicyclists to joggers, road bicyclists, skaters, and others.

### Opportunities

The existing facilities in Southern Shores provide the beginnings of a bicycle and pedestrian network and are shown on Map 2.1 on the following page. Some strengths of the system include:

- **Existing NC 12/Duck Road/Ocean Boulevard multi-use trail:** This multi-use trail provides a north-south separated facility for bicyclists and pedestrians that connects to neighboring towns. The trail connects to shorter segments of east-west multi-use trails and also connects to or near several of the nearly 40 beach access points in Southern Shores.
- **Existing US 158/Croatan Highway multi-use trail:** This trail connects users east-west between the western edge of town and the beach. Pedestrians and bicyclists can reach Kitty Hawk Elementary School, shopping centers, and restaurants along the trail. It also links to the popular NC 12 trail.
- **Existing sidewalk:** A few streets in town have sidewalks that, along with the multi-use trails, provide the beginnings of a sidewalk network (for example, see S. Dogwood Trail, Chicahauk Trail, Trinite Trail, Juniper Trail, and Spindrift Trail). Extending the facility along Dogwood Trail and providing better connections between neighborhoods, the beach, and shopping areas would make it more possible for people to walk for transportation and recreation in Southern Shores.



*NC 12 Multi-Use Trail (a.k.a. a 'sidepath')*



*Ginguite Trail Sidewalk*



## MAP 2.1: EXISTING CONDITIONS



(Letters correspond to Table 2.1)

## Current Conditions

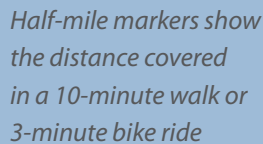




TABLE 2.1 SIGNALIZED INTERSECTION INVENTORY

(Letters correspond to Map 2.2)

	Road 1	Road 2	Destinations Served	Signage (Y/N)	Curb Ramp (Y/N)	Curb Ramp (Complete/Incomplete/None)	Curb Radius (Wide, Typical, Narrow)	Marked Crosswalk (Y/N)	Number and Location of Crosswalks Adequate (Y/N)	Highly Visible (Y/N)	Sides of Street with Sidewalk	Median island - Width and Type	Speed Limit	Other Notes/Ideas for Recommendations
A	US 158	Dogwood Trail/The Woods Rd	Kitty Hawk Elementary School; Link between neighborhoods in Southern Shores and Kitty Hawk	"Turning Traffic Must Yield to Pedestrians"; "Begin [bike route] 1"; "Bike Stop" (at sidepaths)	N	None (paths flush with edge of pavement)	Typical	Y	Y	Y (one of three only)	4 of 8 (2 are sidepaths)	None	50	Plastic flexible bollards near intersection along sidepaths
B	US 158	Cypress Knee	Food Lion Shopping Center; Wall Mart Shopping Center; Multiple restaurants, stores, and services	"Bike Stop" (at sidepaths)	N	None (paths flush with edge of pavement)	Typical; Could use reduction on NW corner to match X-walk with sidepath	Y	N; Need crosswalk on southside at end of existing path	Y (one of two only)	3 of 8 (all sidepaths)	2' concrete median on west side; 3' between existing painted median	50 + shopping center parking areas	Need new sidewalk into shopping area on south side; Sight distance note: Slight crest blocking view to the east
C	US 158	Juniper Trail	Food Lion Shopping Center; Harris Teeter Shopping Center; Multiple restaurants, stores, and services	"Bike Stop" (at sidepaths)	Y (w/ truncated domes)	Complete (north side only)	Wide	Y (north side only)	N; Need crosswalks on north, south, and (most critically) on west sides	N	3 of 8 (2 are sidepaths)	4' landscaped median on south side (in shopping center) + 2' concrete median island on east side	50 + shopping center parking areas	Need new crosswalk on west side and new sidewalk into shopping area on south side; No countdown signals present.
D	Virginia Dare Trail	NC 12	Town Hall; Restaurants, shops, convenience store, pharmacy, and small businesses; Residences and rental properties; Link between beaches and neighborhoods in Southern Shores and Kitty Hawk	"Turning Traffic Must Yield to Pedestrians"; "No Turn on Red"	Y, one side only	Incomplete (missing on east side near gas station)	Wide and narrow (see notes)	Y (north side only)	Y, until other sidewalks or paths are built to the intersection	Y	2 of 8 (both sidepaths)	2' concrete median island at NW corner	35	Intersection is not at right angles, creating unique turning movements; Sight Distance is good with some limitations to the west.
E	NC 12	Chicahauk Trail	Chicahauk Neighborhood; Direct beach access	"Turning Traffic Must Yield to Pedestrians"; Sidepath signage	N	None (paths flush with edge of pavement)	Typical	Y (south and west sides)	Y, until other sidewalks or paths are built to the intersection	Y (south side only)	4 of 5 (including the beach access sidewalk)	6' landscaped median island on west side (neighborhood side)	45	
F	NC 12	Dogwood Trail	Residential neighborhood; Beach access	"Turning Traffic Must Yield to Pedestrians"; Sidepath signage	N	None (paths flush with edge of pavement)	Typical to Narrow	Y (south and east sides)	Y, until other sidewalks or paths are built to the intersection	N (south side, across NC 12 should be highly visible)	2 of 8 (both sidepaths)	8' landscaped median on west side (neighborhood side)	45	Poor conditions for pedestrians waiting to cross on the SE corner (crowded by utilities and signage)
G	NC 12	Hillcrest Drive	Residential neighborhood; Major beach access	"Turning Traffic Must Yield to Pedestrians"; Sidepath signage	N	None (paths flush with edge of pavement)	Typical	Y (south and east side (setback from NC 12)	Y, until other sidewalks or paths are built to the intersection	N (south side, across NC 12 should be highly visible)	2 of 8 (both sidepaths)	None	45	Path is set back from intersection on east side; Advanced stop line is on NC 12 only
H	NC 12	Sea Oats Trail	Residential neighborhood; Beach access	"Turning Traffic Must Yield to Pedestrians"; Sidepath signage; "Traffic Laws Strictly Enforced"; Nearby: "State Law Yield to Pedestrian in Sidewalks"	N	None (paths flush with edge of pavement)	Typical to Narrow	Y (south and east sides)	Y, until other sidewalks or paths are built to the intersection	N (south side, across NC 12 should be highly visible)	2 of 8 (both sidepaths)	None	45	Could use sidewalk or sidepath into neighborhood along Sea Oats



[Layout designed for 11x17 fold-out  
with double-sided printing]

## MAP 2.3: CRASHES INVOLVING PEDESTRIANS

(As reported by NCDOT, 2007-2011)

(As reported by NCDOT, 2007-2011)







*Bicyclist on NC 12 Sidepath*



*US 158 at Cypress Knee high-visibility crosswalk*

- **Loop routes:** Residential roads that parallel NC 12 provide alternative north-south opportunities to NC 12. Wayfinding signage would be an important part of making these routes visible and accessible, particularly for bicycle tourists and visitors.
- **Pedestrian and bicycle demand:** Walking and bicycling are already popular activities in Southern Shores, and the majority of residents believe that improving walking and bicycling conditions is very important (see pages 2-15 to 2-16). Roadways are popular with recreational and touring cyclists, and sidepaths are used by many in the community for jogging, walking, bicycling, and accessing the beach and other popular destinations. With heavy traffic along the major roads in Southern Shores, there is a demand for safe, separated walking and bicycling facilities throughout town, including high-visibility crossings.

## Constraints

The following list is an overview of key issues of the existing network in Southern Shores. These observations are based on input from the Steering Committee, general public, field review, and available data.

- **Limited connectivity:** Some bicycle and pedestrian facilities lack connectivity – an example includes the unconnected northern terminus of the Dogwood Trail sidewalk. Other areas where better connectivity is needed in Southern Shores include:
  - Beach accesses
  - Access to commercial areas and school along US 158
  - Residential neighborhoods
- **High speeds and traffic volumes:** NC 12 (45mph) and US 158 (50mph) carry higher speeds and volumes of automobile traffic, constraining bicycle and pedestrian travel. Lack of safe crossings are especially an issue (see Map 2.2 and Table 2.1 for information on the Signalized Intersection Inventory).
- **Lack of safe crossings:** Some intersections serve a high volume of pedestrian and bicycle traffic, but do not have a signal or other sufficient treatment to provide a safe crossing. The Hickory Trail/NC 12 intersection is an example of one intersection that lacks a signal. This crossing is frequently used by people traveling between the beach and the residential area west of NC 12.
- **Facility design:**
  - Narrow sidepaths can present challenges for mixing walkers with faster bicyclists.
  - Pooling water is an issue in some places.
  - Paved shoulders along NC 12 are too narrow for safe bicycling in some places.
  - The grass buffer between NC 12 and the multi-use sidepath is narrow in places.
- **Bicycle/pedestrian crashes** (see Map 2.3 on page 2-6):
  - Between 2007-2011, there were 9 motor vehicle crashes involving a bicyclist and 3 involving a pedestrian, mostly along US 158. These are highlighted as safety issues affecting Southern Shores residents and visitors, even though some of the crashes are technically outside Southern Shores.
  - Two pedestrian crashes occurred in shopping center parking lots



*Worn stop lines and crosswalk markings at Sea Oats Trail and NC 12*





*Right of way constraints along Dogwood Trail*



*Vehicles stopped across crosswalk at Duck Woods*



*Dead end of Dogwood Trail sidewalk*



*Pedestrian walking in shoulder on Dogwood Trail*

- **Narrow roads and right-of-way (ROW):** Several roads are narrow and do not have sufficient current width for on-road bicycle facilities. Public ROW is also limited along many roads.
  - Roadway widths are narrow in many neighborhoods, including on streets such as South Dogwood Trail.
  - Topography, trees, landscaping, and structures present challenges within the ROW for implementation.
  - Hillcrest Drive and Hickory Trail are examples of streets that are wide with low traffic speeds, providing opportunities for improving bicycle and pedestrian travel.
- **Narrow bridges:** Narrow bridges over small canals and inlets have limited options for bicyclists and pedestrians.
- **Frequently blocked crossings:** Motorists often pull into a crosswalk or pathway before stopping, blocking bicycle and pedestrian travel. Warning signage for bicycle and pedestrian travel is lacking.



## EXISTING AND PAST PROGRAMS

The Town of Southern Shores has initiated multiple programs to promote bicycle and pedestrian safety and encourage residents and visitors to bike and walk more.

- The Town of Southern Shores has hosted several **races and walks/runs associated with the OBX GO FAR program**. The purpose of the program is to combat childhood obesity through a curriculum that focuses on physical activity, goal setting, and healthy eating.
- The Town hosts a **fall and spring 5K and Fun Run race** as well as an **annual Turkey Trot and Fun Run** (Thanksgiving Day). In March 2013, the Town hosted the second **BK Hot Pursuit Run** which benefits families of law enforcement officers who have fallen in the line of duty and recognizes those in particular from the Outer Banks.
- The Southern Shores Police Department holds an annual **Bicycle Rodeo**, where children and their parents learn bicycle traffic laws, proper helmet fitting, and safe riding skills. During the event, officers set up a road course with cones and stop signs so that children can **practice safe riding and following the rules of the road**. Programs such as these encourage an active and healthy lifestyle while promoting a safe and fun atmosphere for residents and visitors of all ages.

### Outer Banks Bicycle/Pedestrian Safety Coalition

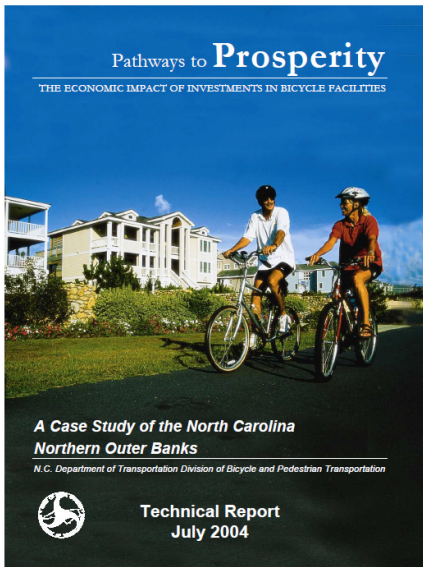
This is a group of committed and concerned citizens from the Outer Banks that is interested in **promoting and improving pedestrian and bicycle safety**. Their mission is to help facilitate the education and awareness of practical bicycle and pedestrian safety to drivers, pedestrians, cyclists and all those who live or visit the Outer Banks in a positive and proactive manner. The coalition worked closely with Dare County in creating a **training and awareness video** that aired on public service television and YouTube, and is used in many **employee packets** that are distributed to businesses interested in providing safety materials to their students and employees. They are also involved in **community events throughout the year with local schools and organizations**. More information can be found on the organization's Facebook page: [www.facebook.com/obxbps](https://www.facebook.com/obxbps)



5K Race/Fun Run, photo credit: OBX GO FAR

## RELATED PLANS & INITIATIVES

The following local and regional plans relate to bicycle and pedestrian planning in Southern Shores. The text under each plan covers the purpose and relevance of each document, with a link to an online version where possible.



### 2004 Case Study of the Northern OBX: Economic Impacts of Investments in Bicycle Facilities

This study was conducted by the Institute for Transportation Research and Education (ITRE) at North Carolina State University. Researchers surveyed bicyclists riding on the bicycle facilities – paths and wide paved shoulders – and also obtained data from self-administered surveys of tourists at three visitors' centers in the region. The study found that the **economic impact of bicycling visitors is significant**. A conservative estimate of the **annual economic impact is \$60 million, with 1,400 jobs created/supported per year**. This compares favorably to the estimated \$6.7 million of federal, state and local funds used to construct the special bicycle facilities in the area.

Full report: [http://www.ncdot.gov/bikeped/download/bikeped\\_research\\_eiaoverview.pdf](http://www.ncdot.gov/bikeped/download/bikeped_research_eiaoverview.pdf)

### 2005 Southern Shores Long Range Planning Report

Since 1980, Southern Shore's **permanent resident population has increased from 520 to 2,500 in the year 2005, nearly a 500 percent rise**. This brings new challenges and new opportunities; more homes and more people, more traffic, evacuation needs during natural disasters, fires and increased crime to name just a few. This places greater stresses on roads, utilities, education, volunteers, social services, town administration, fire department, law enforcement, and emergency medical services, as well as waterways, beaches and forests. The Long Range Planning Report serves as a guideline for the ongoing operations of Southern Shores. For more information, contact Town of Southern Shores Planning & Code Enforcement.

### 2009 Dare County Land Use Plan Update

The State of North Carolina requires all local governments located within the twenty-county coastal region to prepare and periodically update land use plans for use in the review and issuance of Coastal Area Management Act (CAMA) major permit applications and federal consistency reviews. The type of land use plan required is based primarily on the growth rate and population of a county/municipality. Using these factors, Dare County is required to prepare a "core" plan. The land use plan must contain a vision statement and general objectives for the community, policies and implementation strategies to support the vision statement and objectives, demographic information and population projections, and associated maps of existing land use patterns and desired future land use patterns. **This plan offers support for the development of bike/trail/greenway facilities.**

Full report: <http://www.darenc.com/planning/lup.asp>





## 2012 Southern Shores CAMA Land Use Plan

The Southern Shores CAMA Land Use Plan was prepared in accordance with 15A North Carolina Administrative Code (NCAC) 07B and 07L and the DCM guidance document, entitled "Technical Manual for Land Use Planning." The planning effort involved collecting and analyzing data on the economy, population, land use, land suitability, and natural systems of Southern Shores and other data available for the study area. The Plan addresses issues pertaining to future land use and development and natural resource protection. Relevant information includes, "Bicycle paths and walkways are located along some of the Town's streets, NC 158 and NC 12. These pathways are used by large numbers of Town residents and visitors. **Southern Shores wants to maintain, expand and connect the multi-use path system throughout the Town.** This convenient multi-use pathway system will **encourage and support a variety of recreational activities and promote health for the Town's citizens and visitors.** It is Town policy that when a Town street must be replaced or upgraded, consideration will be given to potential upgrades to maintain or improve pedestrian and bicyclists safety. Although not associated with the multi-use/bike paths, improvements have been made to several crosswalks along NC12. These crosswalks connect the multi-use/bike path along NC 12 to beach access paths (some improved, some un-improved). The safety of these crosswalks is being evaluated. **The goal is to make pedestrian access to the beach as safe as possible.**"

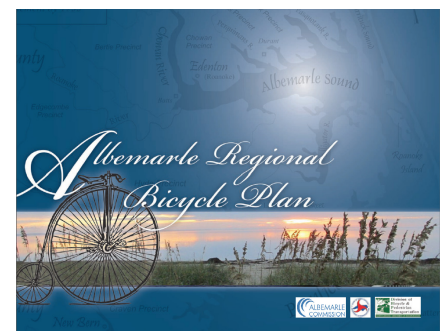
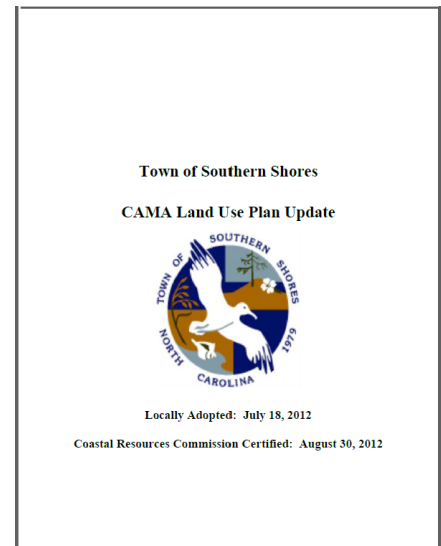
Full report: <http://southernshores-nc.gov/wp-content/uploads/2012/07/8-30-12CertifiedAdoptedLandUsePlan.pdf>

## 2013 Albemarle Regional Bicycle Plan

The Albemarle Regional Bicycle Plan provides a framework for improving bicycle transportation and recreation in the Albemarle Rural Planning Organization (RPO) region. This plan acts as a blueprint for improving both regional and local connectivity through recommendations for physical infrastructure, policies, programs, and an implementation strategy. **Recommendations specific to Southern Shores include the addition of multi-use trails, signed routes, and corridor improvements:**

- Multi-use trail:
  - Connect Dogwood Trail bicycle and pedestrian facilities to NC 12
  - Build multi-use trail along west side of NC 12 from the Dogwood Trail intersection through the northern extent of Southern Shores
- Signed route:
  - Sign Juniper Trail, Trinitie Trail, and Chicahauk Trail connecting US 158 to Dogwood Trail
- Corridor Improvements:
  - Full roadway design with driveway consolidation, landscaping, intersection improvements, and possible lane reconfiguration needed along US 158

Full report: <http://www.albemarlecommission.org/planning/plans/>





## 2014 Town of Duck Pedestrian Plan (Ongoing)

The Town of Duck Pedestrian Plan focuses on infrastructure improvements as well as safety and education programs. Recommendations relevant to Southern Shores include a **multi-use path along the west side of NC 12 to the Southern Shores border**. The Town of Southern Shores coordinate with the Town of Duck on this and any other projects that jointly affect the two towns.

Plan website: <http://www.townofduck.com/communitydevelopment/pedplan/>

## Dare County Comprehensive Transportation Plan Study (Ongoing)

The Town is currently assisting in the development of the Dare County Comprehensive Transportation Plan Study. The study is intended to produce a long range planning document that will assist local governments and its representatives in making transportation decisions in the next 25-30 years. The plan is a joint effort between Dare County, Town of Duck, Town of Southern Shores, Town of Kitty Hawk, Town of Kill Devil Hills, Town of Nags Head, Town of Manteo, Albemarle RPO, and the North Carolina Department of Transportation.

Website: <http://www.ncdot.gov/doh/preconstruct/tpb/planning/DARECTP.html>

*Note: The Tall Pines Bridge Replacement project should be included below (project noted by Town after the table was developed)*

## Southern Shores CIP Projects

The Town of Southern Shores CIP projects for streets in FY 2014-2015 are listed below, as well as a list of potential future street projects.

### Street CIP Package FY 2014-2015

Roadway	Location	Notes
Fairway Drive	Entire road	Asphalt failure, roots undermining road, tree removal
N Dogwood Trail	#280-293	500' of alligator cracking, potholes, block cracking
Pintail Court	Entire road	Asphalt & subgrade
Scuppernong Lane	Entire road	Asphalt & subgrade, tree removal
N, S & E Dogwood	Intersection	Asphalt failure
Yaupon	Entire road	Rebuild and widen. Asphalt failure, edge failure, roots undermining road

### Future Project Pool

Roadway	Location	Notes
Beechtree	From 155/157 north	Already designed, was not included in project when south end was rebuilt
Hollow Beach Court	Entire road	Asphalt & subgrade
Osprey	#95-105	Alligator cracking, root upheaval, sidewalk issues
Land Fall Loop	Entire road	Alligator cracking
Happy Indian Lane	Cul de sac	Alligator cracking, eroded areas, rebuild
Ocean Blvd	Mockingbird/Periwinkle to 228 A Ocean	Block cracking
Clamshell Trail	Entire road including intersection at Otter Slide	Asphalt & subgrade
Bear Track Lane	Entire road	Asphalt & subgrade
Wild Swan	#75-79	Cracking, root upheaval, potholes, sidewalk issues
Fox Grape	End of road/cul de sac	Sinkholes, root issues, edge failure, cracking
Teal Court	Portion leading to cul de sac	Cracking
Wax Myrtle	Entire road	Block and alligator cracking, edge failures
Ginguete Trail	Entire road	



## PUBLIC INPUT ON EXISTING CONDITIONS

Public input for this plan was collected through the project website, public comment forms, public workshops, and social media. Generally, the feedback from residents, visitors and property owners is that they feel the current walking and bicycling conditions are fair and that improving them is very important. **The issues most commonly identified from the public and the steering committee are safety and connectivity** throughout Southern Shores. Residents repeatedly voiced concern over the **lack of facilities along Dogwood Trail, the lack of connectivity between existing trails, and the lack of safe crossings**. People are most interested in walking and biking in order to **access the beach, the sound, parks and recreation facilities, and restaurants, shopping, and other destinations along Croatan Highway/US 158**. Below are some highlights of quotes from the public:

*“Dogwood Trail needs a multi-use path for its entire length.”*

*“Any street that doesn’t have a safe way to travel on foot or bicycle should be assessed.”*

*“I would like to see crosswalks enforced. Traffic does not obey the signs about stopping for pedestrians.”*

*“I have to drive as walking and biking are too dangerous.”*

*“Safety is the biggest concern.”*

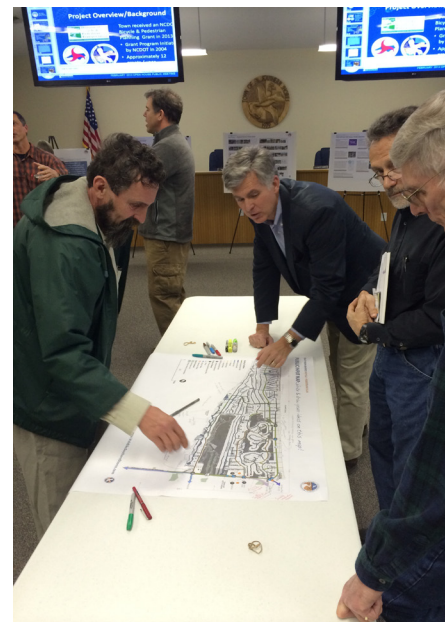
*“Bike trails are intermittent and too crowded.”*

*“I walk twice a day with my dog. I really think all the sidewalks and trails in my neighborhood are great! Thanks!!!”*

## Public Input Materials & Events

A variety of materials were used to gather input for this plan, including a plan website, project display boards, large format maps for public input and markup, project information cards, and a public comment form made available both online and in hard copy. Two public events were held during the planning process to learn residents’ major concerns, challenges, and ideas for improving the walking and bicycling environment in Southern Shores.

The first public engagement event was held in February 2014 at the Pitts Center. Southern Shores residents were encouraged to attend to learn about the plan, fill out the comment form, provide feedback on improvements needed, mark up maps, and talk with town staff and the consultant team about key opportunities, constraints, and issues. A second public workshop was held in August 2014 to gather feedback on the draft plan recommendations in a similar meeting format. About 40 residents total attended the two events. Public input gathered at these events and through the public comment form results, shown on the following pages, played a key role in forming the recommendations of this plan.



*Residents at first public event*

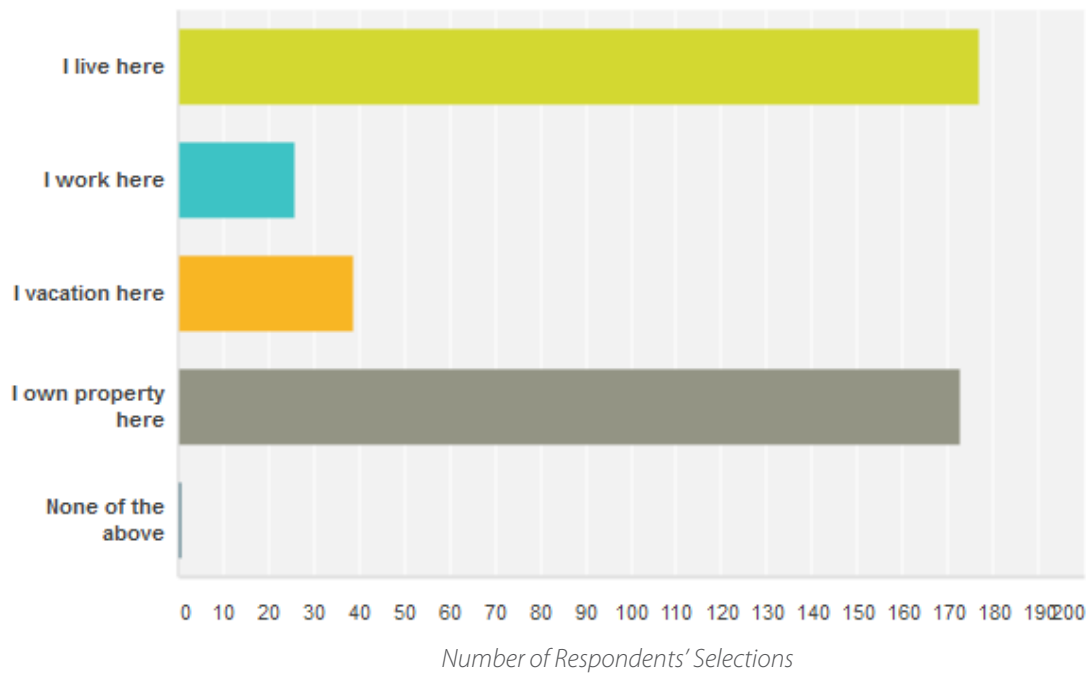


## Public Comment Form Results

The charts below summarize public input collected through the public comment form during this planning process in Spring 2014. The charts include information about questions that were skipped by respondents, and generally either show the *percentage* of people who selected various answers, or the *number* of people who selected various answers. **All together, about 300 local residents, property owners, employees, and visitors contributed their input.**

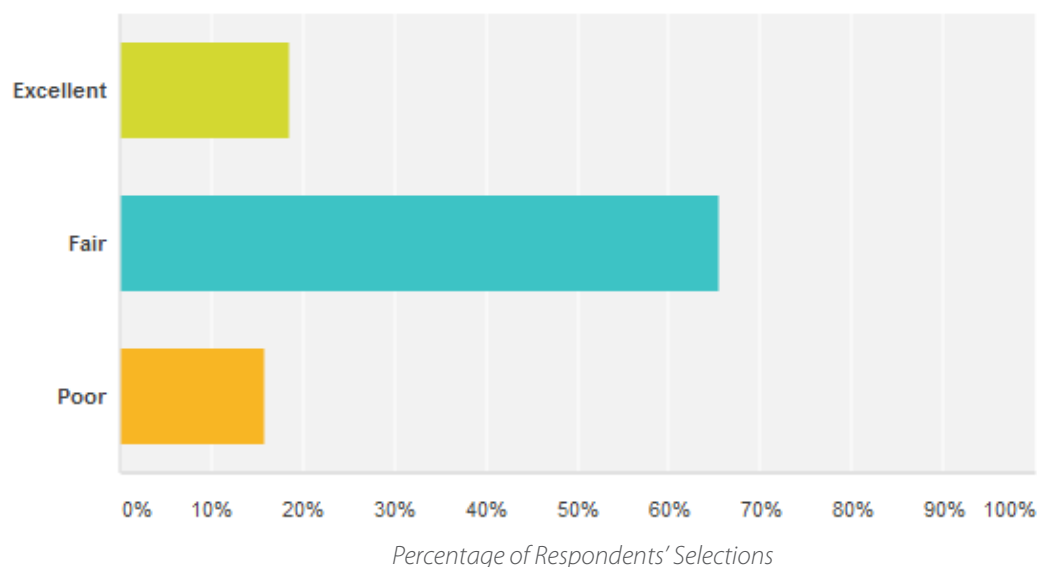
### What is your relationship to Southern Shores? *(check all that apply)*

Answered: 281 Skipped: 21



### How do you rate present bicycling conditions in Southern Shores?

Answered: 290 Skipped: 12

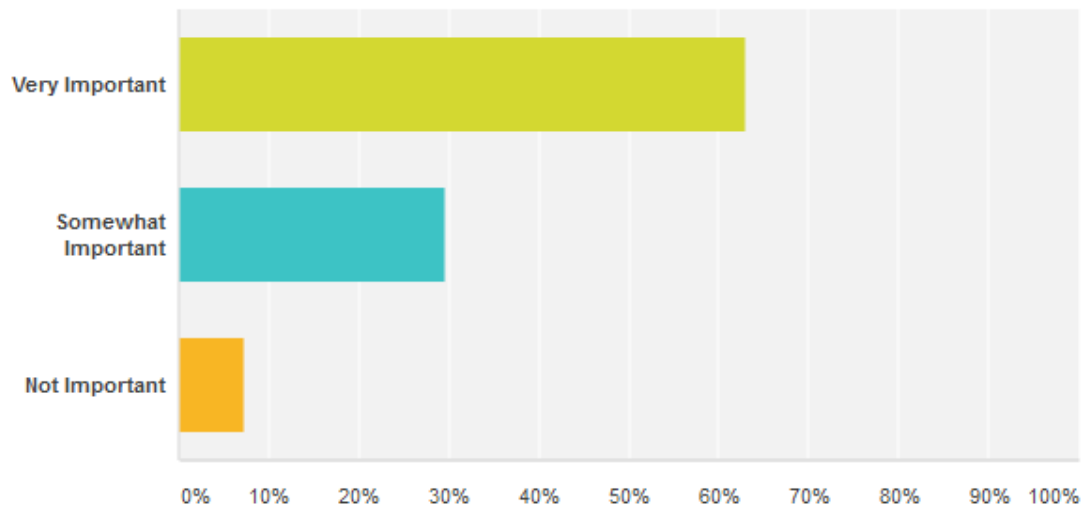






## How important to you is improving bicycling conditions in Southern Shores?

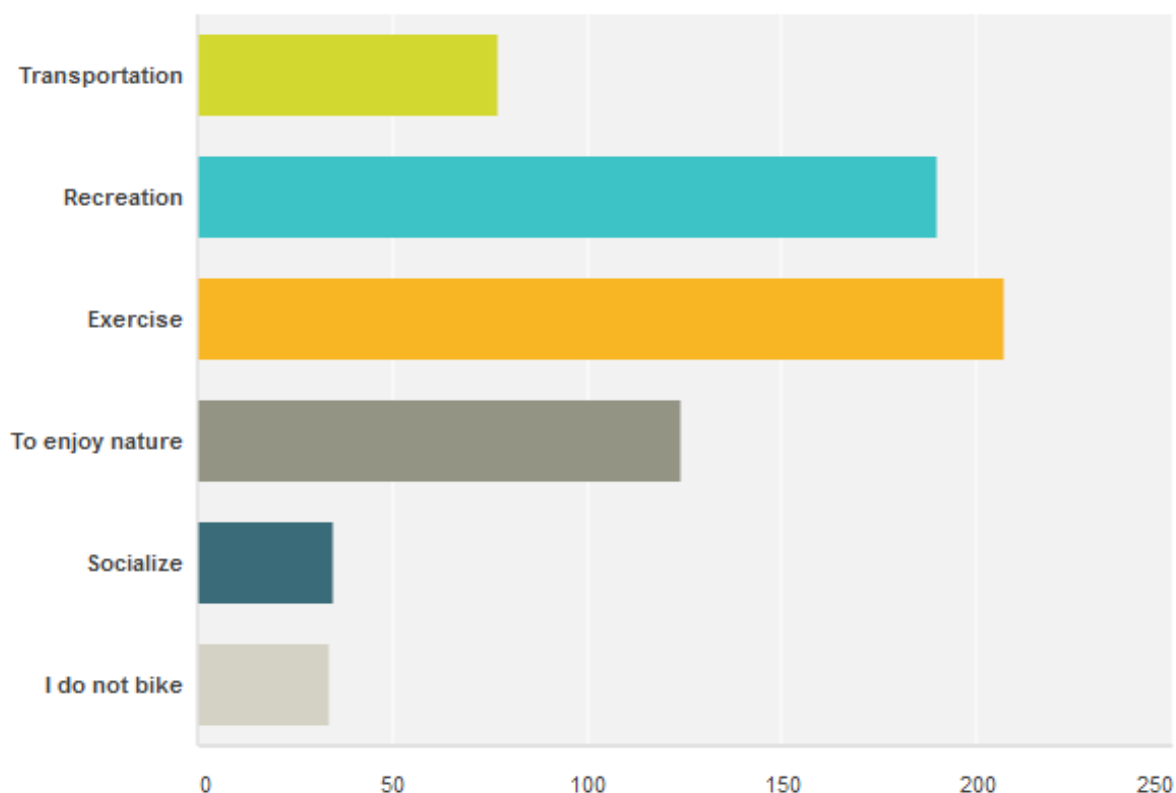
Answered: 290 Skipped: 12



Percentage of Respondents' Selections

## When you ride your bicycle in Southern Shores, what is the primary purpose of your trip? (check all that apply)

Answered: 294 Skipped: 8

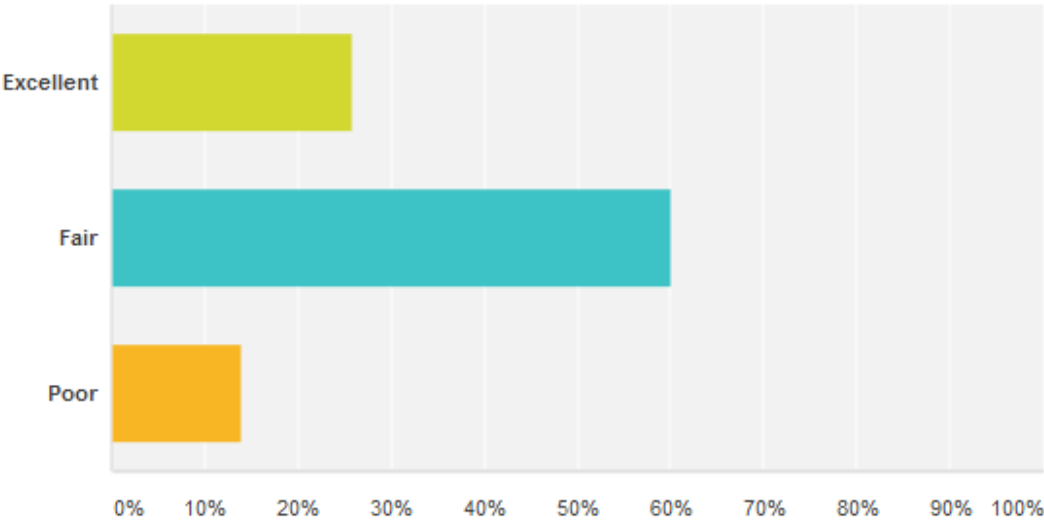


Number of Respondents' Selections



# How do you rate present walking conditions in Southern Shores?

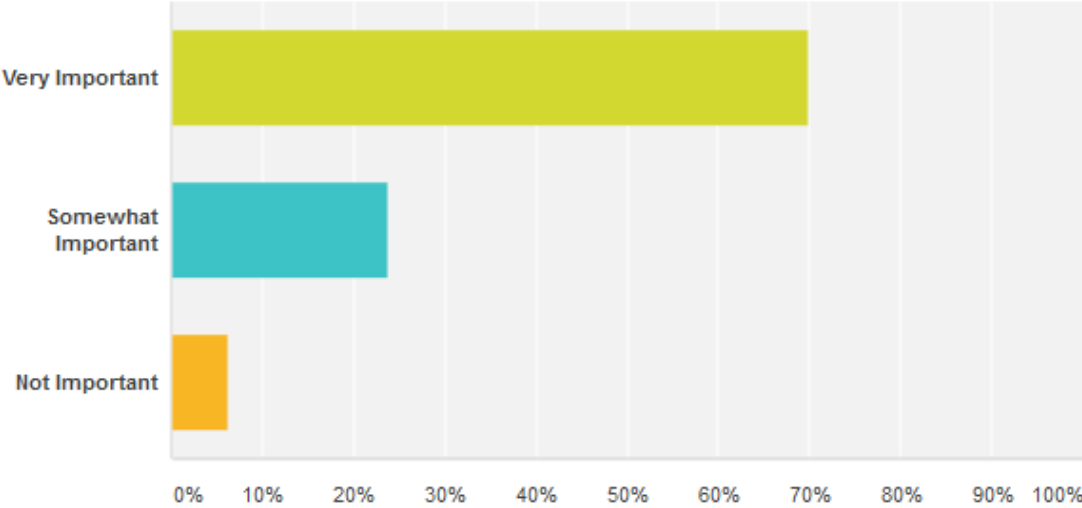
Answered: 286 Skipped: 16



Percentage of Respondents' Selections

# How important to you is improving walking conditions in Southern Shores?

Answered: 290 Skipped: 12



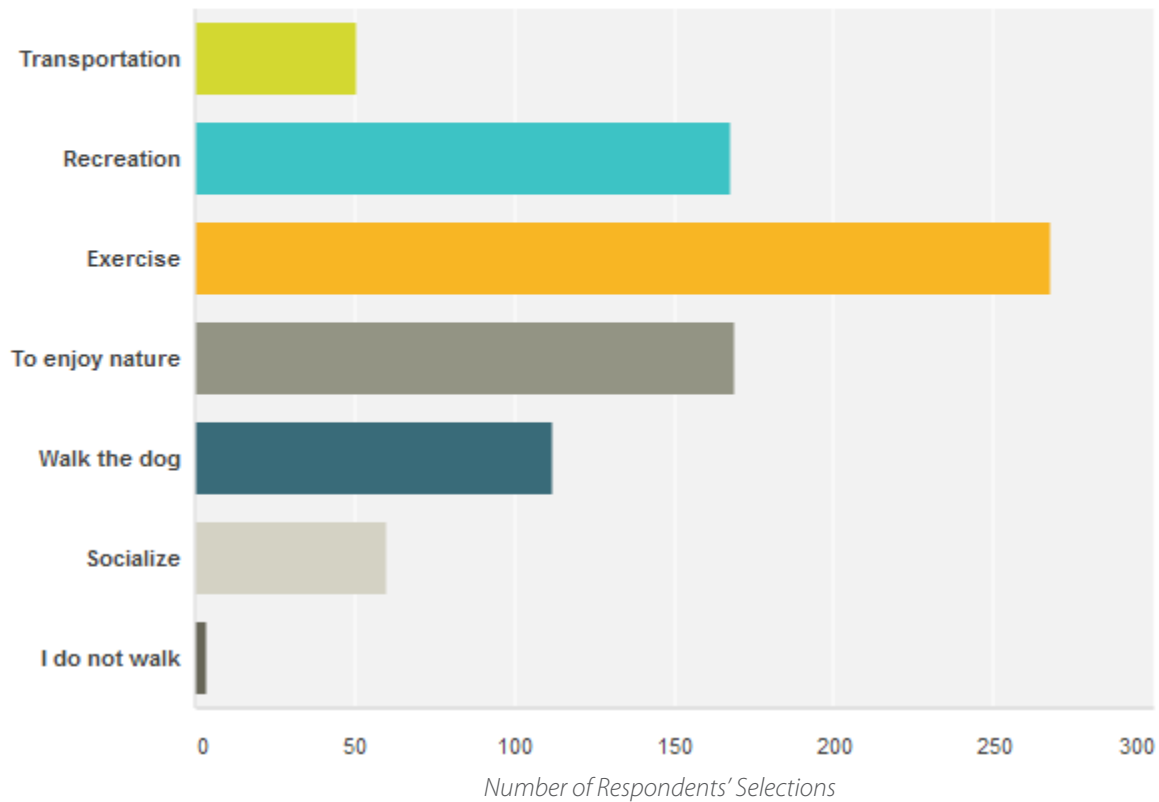
Percentage of Respondents' Selections





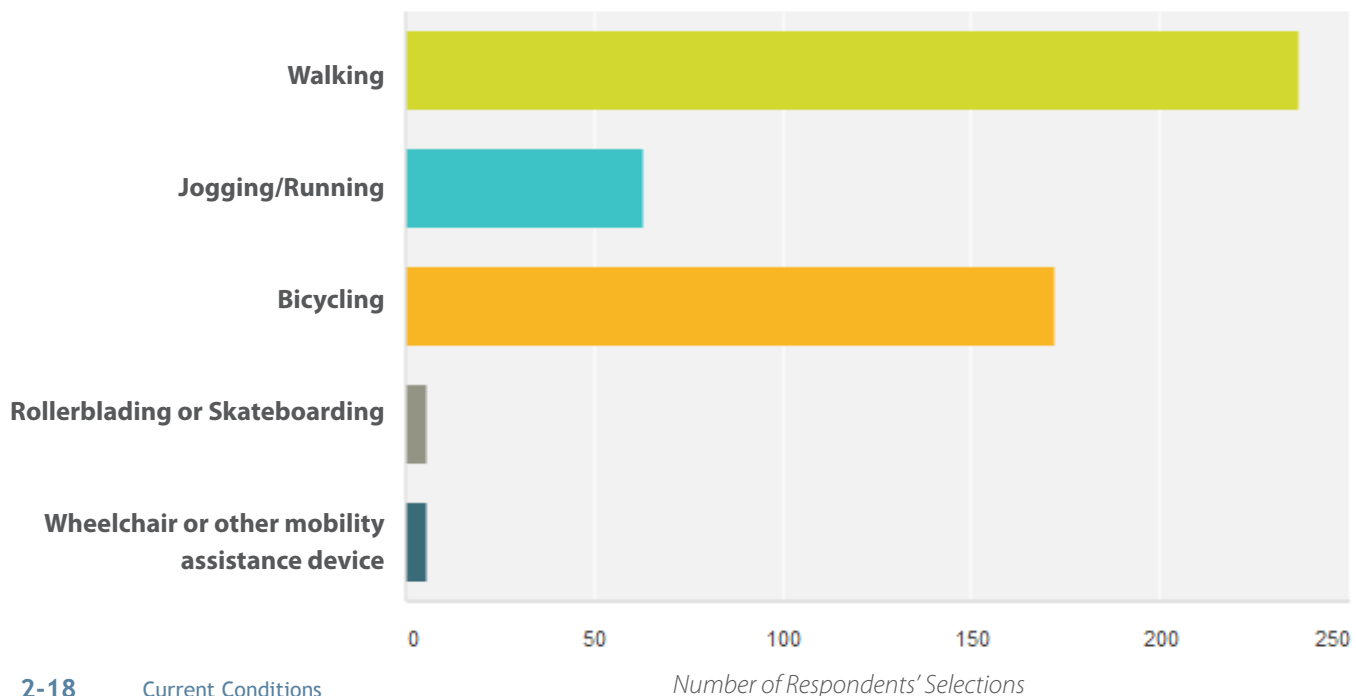
## When you walk in Southern Shores, what is the primary purpose of your trip? (check all that apply)

Answered: 293 Skipped: 9



## How do you most often use trails? (check all that apply)

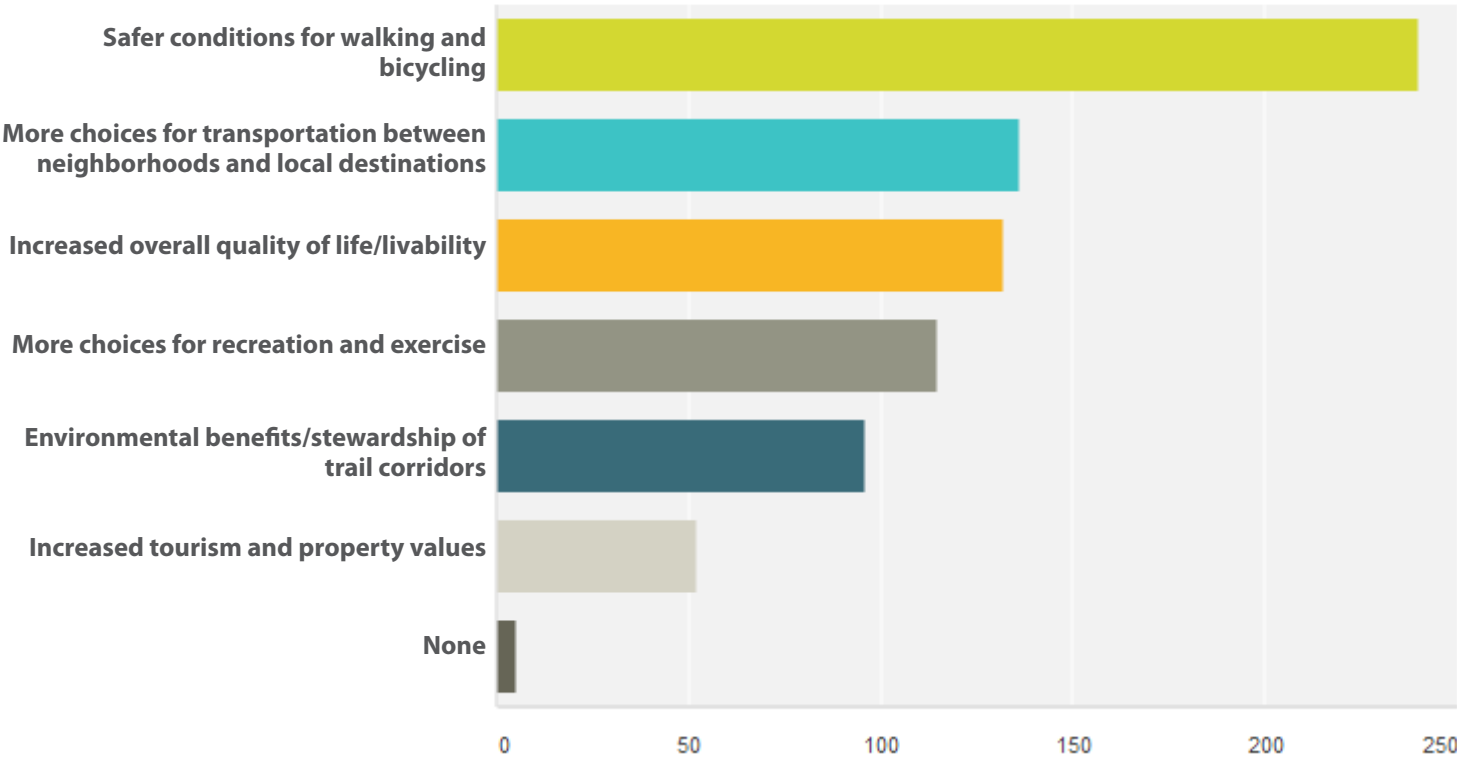
Answered: 282 Skipped: 20





# What should be the most important goals and outcomes of this plan? (check all the apply)

Answered: 275   Skipped: 27



Number of Respondents' Selections





## What destinations would you most like to be able to reach by bicycling or walking?

Column 1:  
Destinations

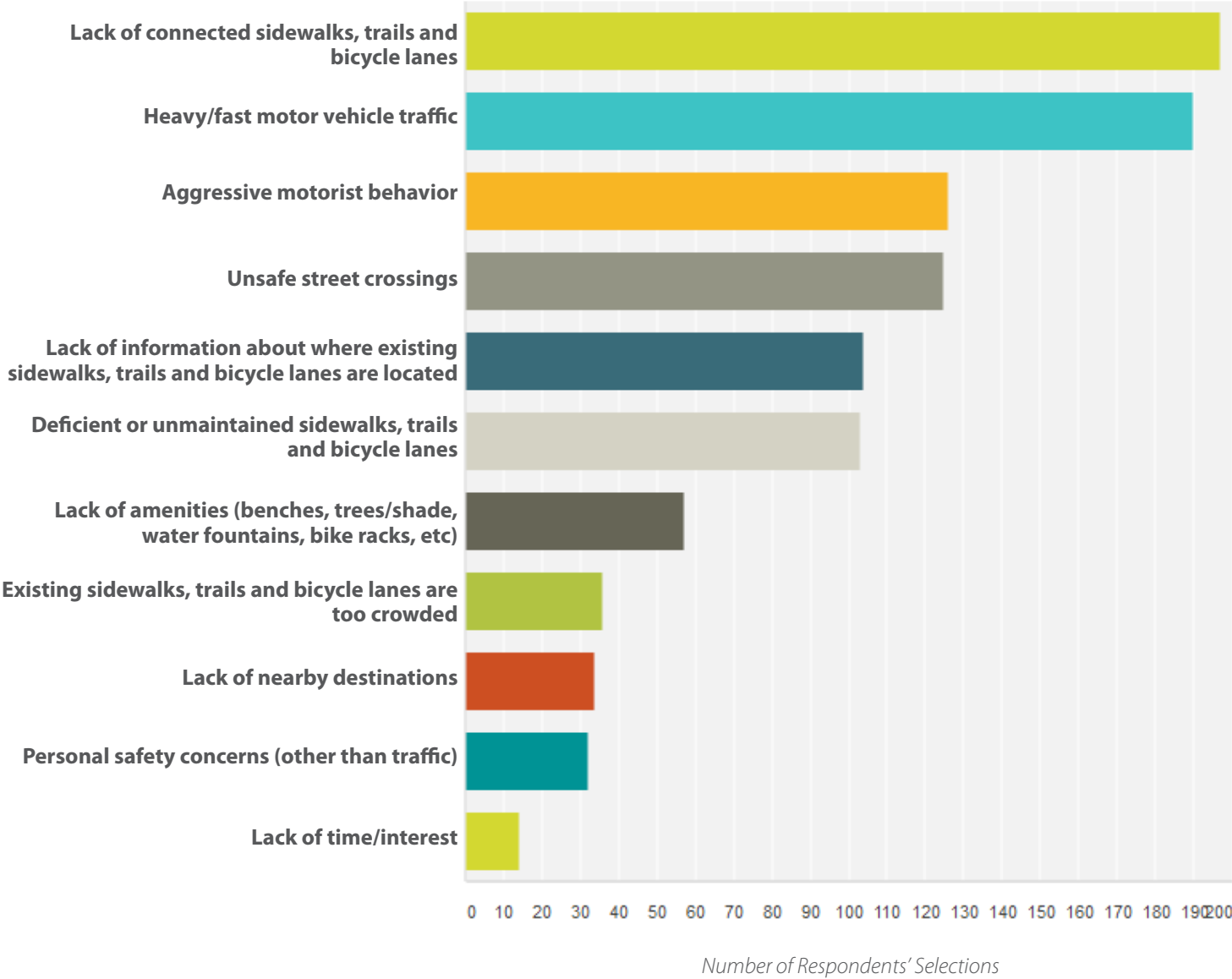
Column 2: Percentage &  
number of respondents  
who selected the  
destinations at left as  
their #1 choice

<b>Beach</b>	<b>74.37%</b> 177
<b>Sound</b> (Currituck)	<b>13.22%</b> 23
<b>Restaurants, shopping, and other destinations along Croatan Hwy/158</b>	<b>8.20%</b> 21
<b>Duck and points north</b>	<b>7.66%</b> 19
<b>Parks and recreation areas</b>	<b>4.58%</b> 11
<b>Kitty Hawk and points south</b>	<b>4.56%</b> 12
<b>Country Club</b>	<b>2.57%</b> 7
<b>Local schools</b>	<b>1.85%</b> 5
<b>Wright Memorial Bridge and points west</b>	<b>1.81%</b> 5



What do you think are the factors that most DISCOURAGE bicycling or walking in Southern Shores? Please select up to five factors.

Answered: 281 Skipped: 21







**What are the top three locations for improving conditions for walking and bicycling in Southern Shores? Examples include locations where we need a new or improved sidewalk, trail, bicycle lane or intersection/street crossing.**

**#1 Top Response:**

**South Dogwood Trail (with 38 responses)\***

**#2 Top Response:**

**East Dogwood Trail (with 34 responses)\***

**#3 Top Response:**

**NC 12 (with 24 responses)**

***\*There were an additional 39 responses for "Dogwood Trail" that did not indicate a specific portion of Dogwood Trail.***

# 3 NETWORK RECOMMENDATIONS

## Chapter Contents:

### Overview

### Methodology for Network Design

### Pedestrian Facility Types

### Types of Cyclists

### Bicycle Facility Types

### Recommendations Overview

### Priority Project Alternatives

### Steering Committee Discussion of Alternatives

### Program Recommendations

## OVERVIEW

This chapter presents the infrastructure improvements that are recommended to create a safer, more comfortable, and better connected bicycle and pedestrian network in Southern Shores. A diverse mix of facilities are recommended to create this comprehensive network, including sidewalks, crossing improvements, shared lane markings, bicycle lanes, and multi-use paths. Conceptually, the network recommendations and the destinations they connect can be seen as a network of 'hubs and spokes'. Restaurants, shops, beach access points, parks, neighborhoods, and other places where people walk or bike to and from are the 'hubs', whereas the pedestrian and bicycle facilities are the 'spokes' that connect them (see below).



## METHODOLOGY FOR NETWORK DESIGN

The recommended pedestrian and bicycle network was developed based on information from several sources: input from the staff and Steering Committee, public input obtained through public comment forms and in-person workshops, previous plans and studies, review of existing facilities, noted bicycle and pedestrian destinations, and the consultant's field analysis. Field work examined the potential and need for pedestrian, on-road bicycle, and multi-use trail facilities along and across key roadway corridors and to make connections between key destinations in Southern Shores. Input sources for the plan are summarized by the diagram on page 3-8, in the Recommendations Overview.



## PEDESTRIAN FACILITY TYPES

### Sidewalks

The sidewalks recommended for Southern Shores are shown in dashed orange on Map 3.1 on page 3-9 (with existing sidewalk shown in solid orange lines). These recommendations were chosen to fill in gaps in the existing sidewalk network and to better connect pedestrians and bicyclists to destinations and neighborhoods.

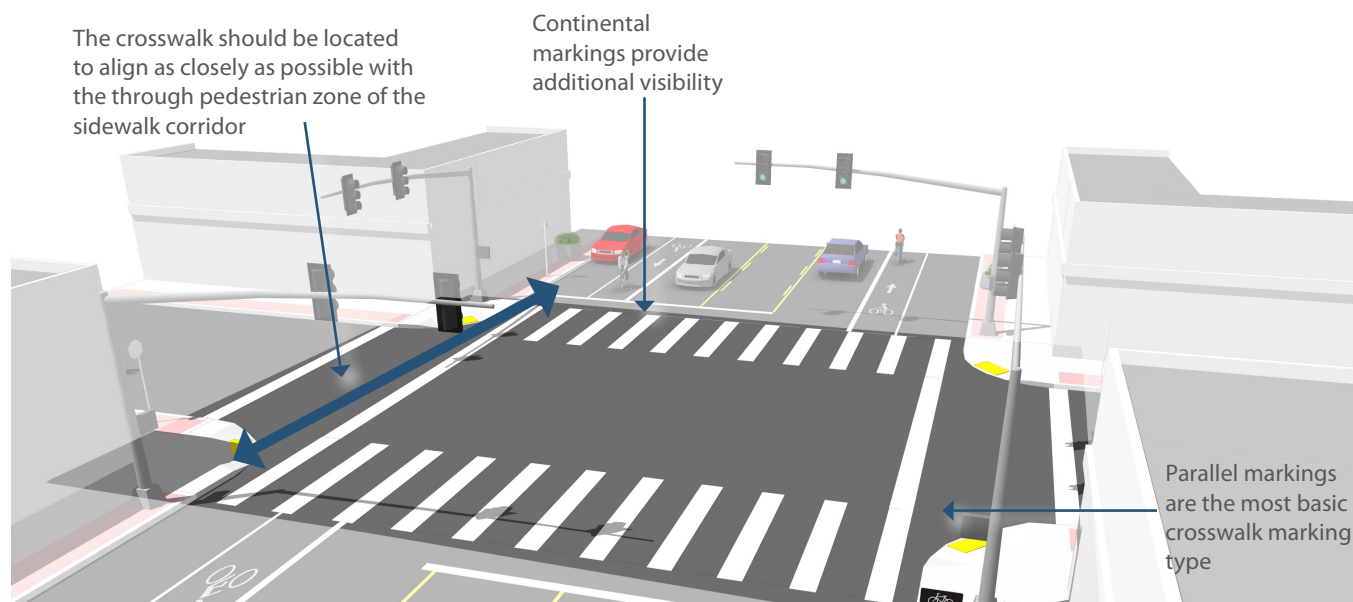
- Sidewalks in Southern Shores should be at least 5' wide, and, where possible, should include a landscaped buffer between the sidewalk and roadway.
- Areas of higher pedestrian volume may require 7' wide sidewalks, and sidewalks serving as part of the multi-use path system should be at least 10' in width.

### Pedestrian-Friendly Crossings

Consultant fieldwork, committee input, and previous planning efforts helped to identify important pedestrian crossing points that are in need of minor to significant improvements (see Map 3.2 and Table 3.2 on pages 3-10 and 3-11, respectively).

- Crossings that link to sidewalks on each side of the road should possess curb cuts with ramps and marked crosswalks (which helps to satisfy the standards set forth by the American Disability Act of 1991).
- Busy intersections could be improved with high-visibility crosswalks, crosswalk signage, pedestrian-activated crossing signals, median islands, and curb extensions.

Some of these treatments have been proven to reduce crashes, as shown in the 2007 FHWA *Crash Reduction Factors Study* (<http://safety.fhwa.dot.gov>).



For more information on designing pedestrian-friendly crossings, see Appendix A: Design Guidelines

*'Fast and Experienced' cyclists*

## TYPES OF CYCLISTS

Bicyclists' skill levels greatly influence expected speeds and behavior, both on separated paths and on shared roadways. Each type of cyclist has different bicycle facility needs, so it is important to consider how a bicycle network will accommodate each type of cyclist when creating a non-motorized plan or project. The bicycle infrastructure should accommodate as many user types as possible, with decisions for separate or parallel facilities based on providing a comfortable experience for the greatest number of people. In the US population people are generally categorized into one of four cyclist types based on comfort level and riding skills. The characteristics, attitudes, and infrastructure preferences of each type are described below.

### Fast and Experienced (Approximately 1% of population)

These bicyclists are experienced with riding with automobile traffic in a variety of roadway conditions or weather. They can ride faster than other user types, prefer direct routes, and will typically choose roadway connections even if shared with vehicles over separate bicycle facilities such as multi-use paths.

*'Enthusied and Confident' cyclists*

### Enthusied and Confident (5-10% of population)

This user group includes bicyclists who are fairly comfortable riding on all types of bikeways but usually choose low traffic streets or multi-use paths when available. These bicyclists may deviate from a more direct route in favor of a preferred facility type. This group includes all kinds of bicyclists such as commuters, recreational riders, racers, and utilitarian bicyclists.

### Interested but Concerned (Approximately 60% of population)

This user type comprises the bulk of the cycling population and represents bicyclists who typically only ride a bicycle on low traffic streets or multi-use paths under favorable weather conditions. These bicyclists perceive significant barriers to their increased use of cycling, specifically automobile traffic volumes, speed, and other safety issues. These people may become "Enthusied & Confident" with encouragement, education, experience, and improved facilities.

*'Interested but Concerned' cyclists*

### No Way, No How (Approximately 30% of population - Not pictured here)

Persons in this category are not bicyclists and perceive severe safety issues with riding a bicycle, especially with automobile traffic. Some people in this group may eventually become cyclists with encouragement, education, experience, and improved facilities. A significant portion of these people will never ride a bicycle other than on rare occasions or under special circumstances, such as in a park or with a child.

## BICYCLE FACILITY TYPES

The descriptions on this page offer a brief overview of the primary facility types recommended in this plan. For more information on facility design, please see Appendix A: Design Guidelines.

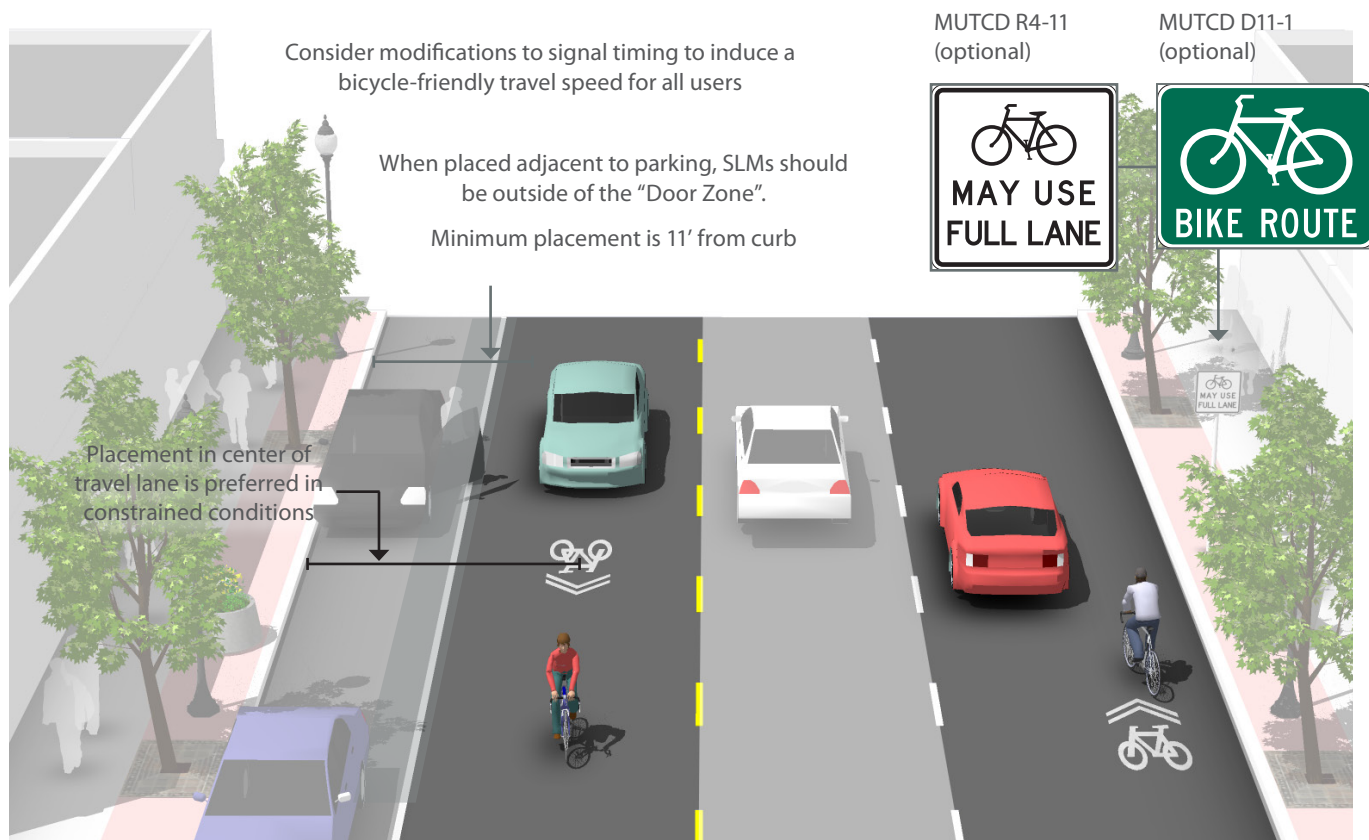
### Shared Roadway with Shared Lane Markings (Sharrows)

Shared lane markings, 'SLMs', or "sharrows", are pavement markings used to indicate shared space for bicyclists and motorists. Sharrows are recommended on roads with speed limits of 35 mph or lower where dedicated bicycle lanes are desirable but not possible due to constraints (roadway width, on-street parking, etc). Proposed shared roadways with sharrows are shown as a dashed purple line on Map 3.1 on page 3-9.

- Placed every 100 to 250 feet along a corridor, sharrows make motorists aware of the potential presence of cyclists, direct cyclists to ride in the proper direction, and remind cyclists to ride further from parked cars to avoid 'dooring' collisions.
- As roadways are widened or reconfigured, roadways with sharrows may be reassessed for upgrades to dedicated bicycle facilities, such as bicycle lanes.
- For additional design guidance on these methods, see the Appendix A: Design Guidelines section titled 'Shared Roadways.'



Shared Lane Marking (Sharrow)



For more information on designing shared roadways, see Appendix A: Design Guidelines



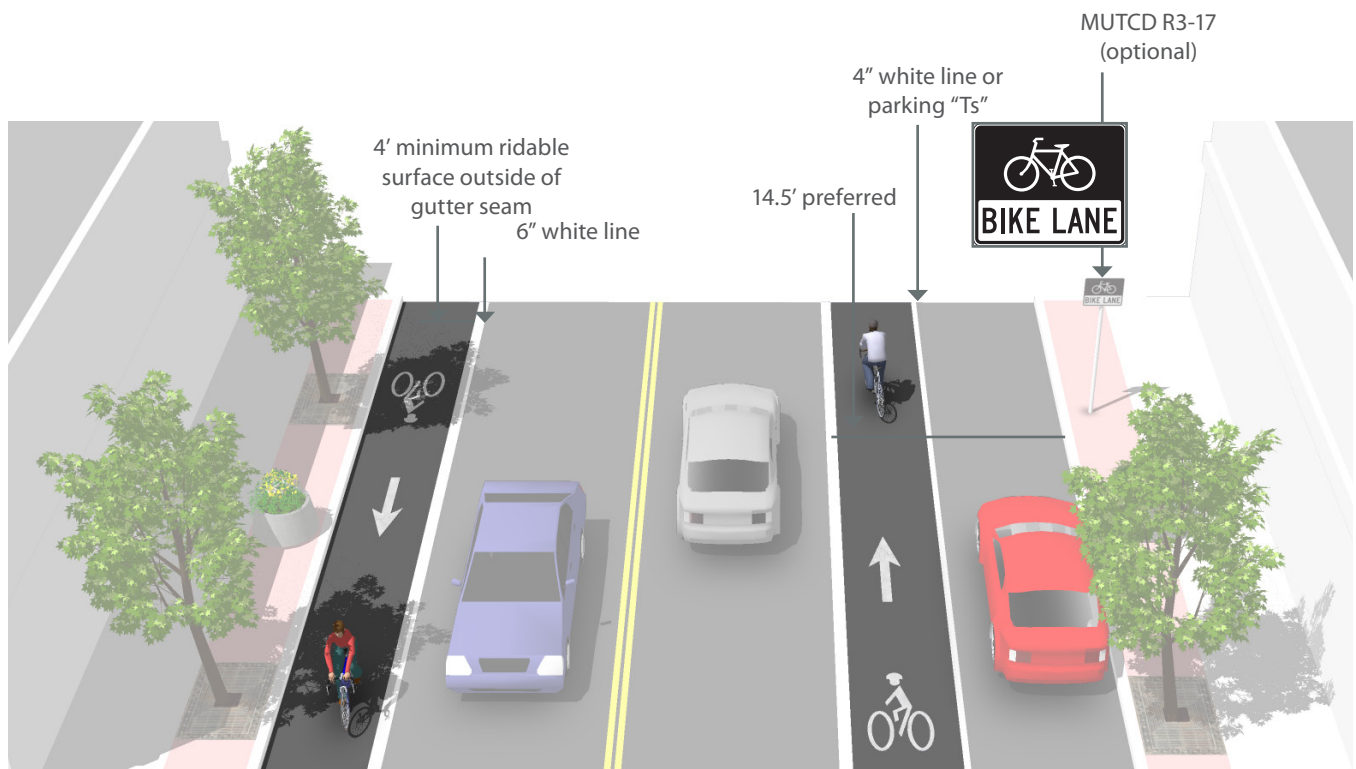


Bicycle Lane

## Bicycle Lanes

Bicycle lanes are described as a portion of the roadway that has been designated by striping, signing, and pavement markings for the preferential and exclusive use of bicyclists. Bicycle lanes are almost always located on both sides of the road (except on one way streets), and carry bicyclists in the same direction as adjacent motor vehicle traffic. Due to roadway space constraints, bicycle lanes are not recommended in this plan in the short-term. As roadways are widened or reconfigured in the future, they should be assessed for upgrades to bicycle lanes.

- The minimum width for a bicycle lane is four feet when no curb and gutter is present.
- Five- and six-foot bicycle lanes are typical for collector and arterial roads to give bicyclists greater separation from faster moving vehicles, with a five-foot minimum for roads with curb and gutter.
- For additional design guidance on these methods, see Appendix A: Design Guidelines.



For more information on designing bicycle lanes, see Appendix A: Design Guidelines

## Multi-Use Trails

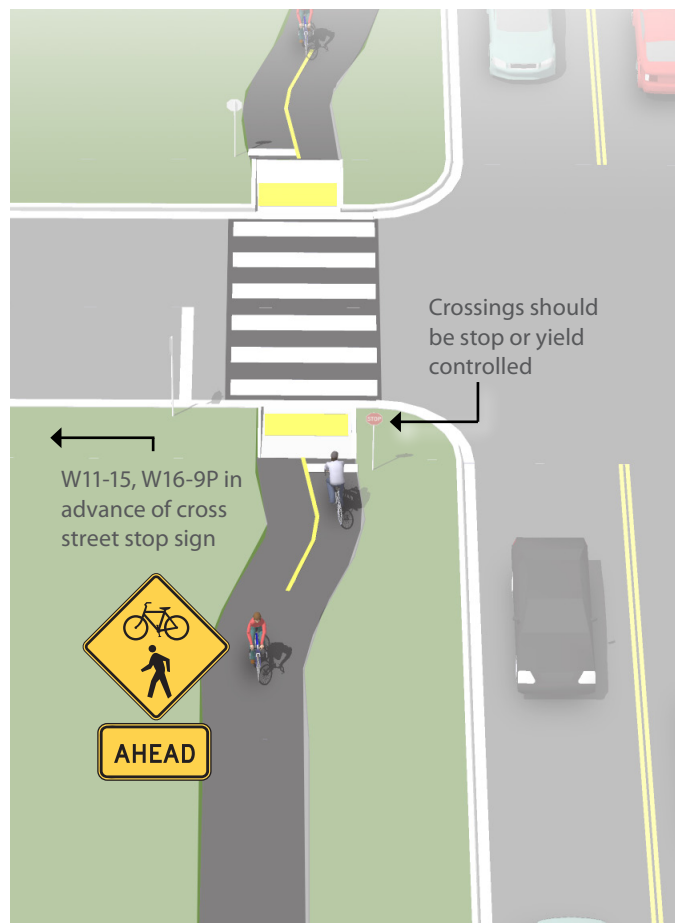
A multi-use trail is a facility that is separated from the roadway and designed for a variety of users, including bicyclists, walkers, hikers, joggers, wheelchair users, and skaters. Multi-use trails may be paved or unpaved and are the preferred facility for novice and average bicyclists. Multi-use trails located within the roadway corridor right-of-way, or adjacent to roads, are called 'side paths.'

Proposed paved multi-use trails for Southern Shores are shown as a dashed green line on Map 3.1 on page 3-9. Proposed unpaved multi-use trails, which serve as short connectors, are shown as a dark red dotted line on Map 3.1.

- Multi-use trails in Southern Shores should be a minimum of 10' in width, but environmental constraints may require a minimum of 8'. Many existing trails in Southern Shores are less than 10' in width and should be upgraded where feasible.
- Surface types vary according to use, but paved asphalt is standard for paths accommodating bicyclists and other wheeled users.
- The key difference between a multi-use side path, shown at left, and a typical sidewalk is the extra width. A 10' wide path, for example, allows for safer shared use by bicyclists, pedestrians, and other users, whereas the typical 5'-wide sidewalk does not allow for safe passing among these users.
- For additional design guidance on these methods, see the Appendix A: Design Guidelines section titled 'Multi-Use Trails.'



*Paved Multi-Use Trail*



For more information on designing multi-use trails, see Appendix A: Design Guidelines



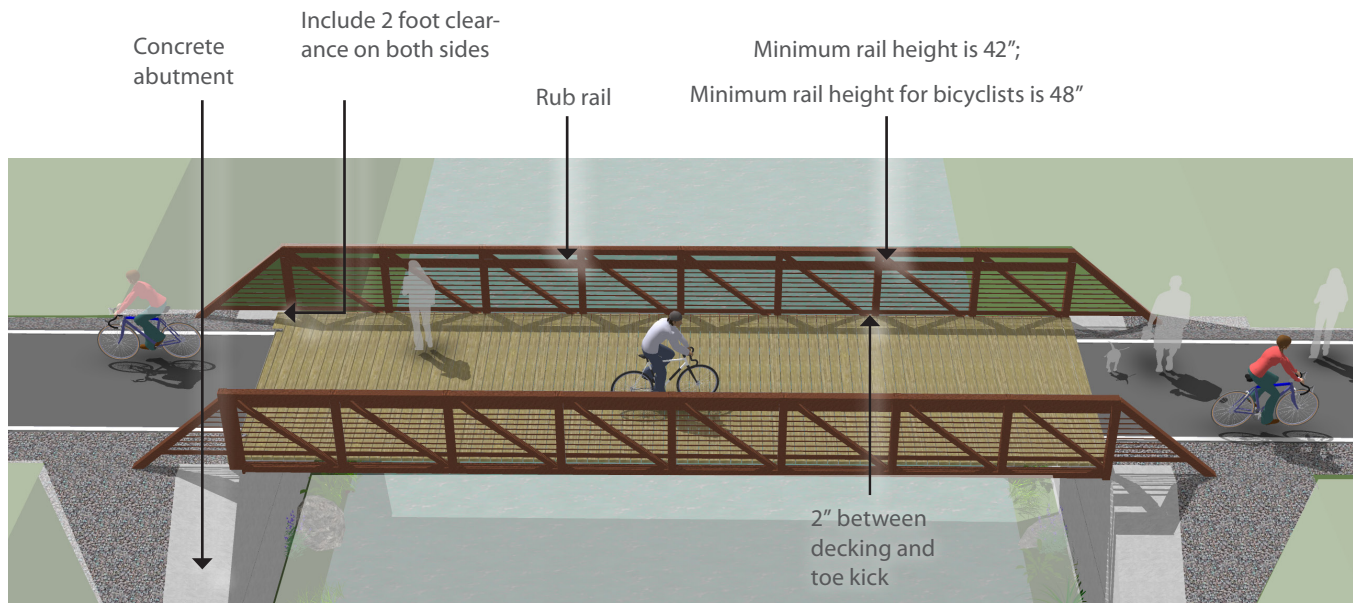
*Bicycle/Pedestrian Bridge*

## Bicycle/Pedestrian Bridges

Bicycle/pedestrian bridges serve to link facilities across barriers, such as waterways and highways, in order to provide an uninterrupted crossing. These bridges are closed to motorized traffic and can be used to connect trails, on-road bicycle facilities, sidewalks, or some combination of these.

The proposed bicycle/pedestrian bridge from Fairway Drive to Beach Tree Trail is shown in dashed brown on Map 3.1 on page 3-9. This bridge will link the proposed shared roadway facilities on Duck Woods and Fairway to the proposed shared roadway on Beech Tree Trail. This will allow neighborhoods on the south side of Southern Shores to reach the proposed paved multi-use sidepath on East Dogwood Trail.

- Greenway trail bridges are most often used to provide user access over natural features such as streams and rivers, where a culvert is not an option or the span length exceeds 20 feet.
- Bridge options include suspension bridges and prefabricated clear span bridges.
- For additional design guidance on these methods, see the Appendix A: Design Guidelines section titled 'Bridges.'



*For more information on designing bicycle and pedestrian bridges, see Appendix A: Design Guidelines*



## RECOMMENDATIONS OVERVIEW

Map 3.1 on page 3-9 shows the long-range vision for a complete network of bicycle and pedestrian facilities, followed by Map 3.2, showing recommendations for intersection improvements. Full development of these facilities could take decades depending on the availability of funding, public support, and the Town's commitment to the plan. Some recommendations, however, could be completed in the near-term without a large financial investment, such as the program recommendations towards the end of this chapter, and the administrative recommendations in the Chapter 4 Action Steps Table.

*Dogwood Trail* was identified during the planning process as the top priority bicycle & pedestrian infrastructure improvement, by the Steering Committee, in the public comment form, in past plans, and at public workshops (see key inputs for the plan below). This chapter outlines three main alternatives for *Dogwood Trail* (starting on page 3-12), taking into account the challenges in providing a safer environment for walking and bicycling along this corridor. As outlined in Chapter 4, an early step in implementation will be identification of a preferred alternative by community residents and Town leadership.





# Map 3.1 RECOMMENDED BICYCLE & PEDESTRIAN FACILITIES

Currituck Sound

**Multiple alternatives are shown for Dogwood Trail. See pages 3-12 to 3-19 for details.**

## Proposed Facilities

- Paved Multi-Use Trail
- Bicycle/Pedestrian Bridge
- Unpaved Trail
- Shared Roadway (Sharrows)
- Sidewalk

## Existing Facilities

- Paved Multi-Use Trail
- Paved Shoulder
- Bike Route
- Sidewalk
- Beach Access Paths
- Informal Paths
- Regional Bike Route

## Points of Interest

- Shopping Center/Grocery Store
- School

## Lands of Interest

- Conservation Land
- Town Limits

0 0.25 0.5 Miles



Atlantic Ocean

This scale bar shows half-mile intervals. A distance of a half mile is typically covered in a 10-minute walk or 3-minute bike ride.

# Map 3.2 INTERSECTION IMPROVEMENTS (Letters correspond to Table 3.2)

Currituck Sound

Atlantic Ocean

## Proposed Facilities

- Paved Multi-Use Trail
- Bicycle/Pedestrian Bridge
- Unpaved Trail
- Shared Roadway (Sharrows)
- Sidewalk

## Existing Facilities

- Paved Multi-Use Trail
- Paved Shoulder
- Bike Route
- Sidewalk
- Beach Access Paths
- Informal Paths
- Regional Bike Route
- A Signalized Intersection

## Points of Interest

- Shopping Center/Grocery Store
- School

## Lands of Interest

- Conservation Land
- Town Limits



Due to the crash history shown on page 2-6, consider intersections D and J for priority improvements; see Table 3.2 for recommendations.



# TABLE 3.2 INTERSECTION IMPROVEMENTS (Letters correspond to signalized intersections on Map 3.2)

	Road 1	Road 2	Destinations Served	Potential Safety Measures for Consideration
<b>A</b>	US 158	Dogwood Trail / The Woods Road	Kitty Hawk Elementary School; Link between neighborhoods in Southern Shores and Kitty Hawk	Add: High visibility crosswalks across both Dogwood Trail and The Woods Road Add: Right turn lane only Consider adding a median refuge island for pedestrians on US 158
<b>B</b>	US 158	Cypress Knee Trail	Food Lion Shopping Center; Wal-Mart Shopping Center; Multiple restaurants, stores, and services	Add: Signage - "Turning Traffic Must Yield to Pedestrians" Consider adding a median refuge island for pedestrians on US 158 Communicate to Kitty Hawk the need for a sidewalk on south side of US 158 leading into shopping center (as it affects Southern Shores residents too)
<b>C</b>	US 158	Juniper Trail	Food Lion Shopping Center; Harris Teeter Shopping Center; Multiple restaurants, stores, and services	Add: Signage - "Turning Traffic Must Yield to Pedestrians" Add: High visibility crosswalks on north, south, and west side of intersection Add: Pedestrian countdown signals Add: Median pedestrian island on west side Communicate to Kitty Hawk the need for a new sidewalk leading into shopping area on south side on US 158 (as it affects Southern Shores residents too)
<b>D</b>	US 158	NC 12 (Virginia Dare Trail)	Town Hall; Restaurants, shops, convenience store, pharmacy, and small businesses; Residences and rental properties; Link between beaches and neighborhoods in Southern Shores and Kitty Hawk	Add: Curb ramp on east side of crosswalk (northeast corner of intersection) Add: Pedestrian warning signage along road in advance of crosswalk Add: Sidewalk to gas station Communicate to Kitty Hawk the need for a sidewalk from intersection to nearby restaurants and shops (as it affects Southern Shores residents too)
<b>E</b>	NC 12	Chickahauk Trail	Chickahauk Neighborhood; Direct beach access	Add: High visibility crosswalk on west side
<b>F</b>	NC 12	Dogwood Trail	Residential neighborhood; Beach access	Add: High visibility crosswalk on south and east side Add: Flashing pedestrian activated warning sign Add: Pedestrian landing area improvements on southeast corner
<b>G</b>	NC 12	Hillcrest Drive	Residential neighborhood; Major beach access	Add: High visibility crosswalk on south and east side Add: Flashing pedestrian activated warning sign
<b>H</b>	NC 12	Sea Oats Lane	Residential neighborhood; Beach access	Add: High visibility crosswalk on south and east side
<b>I</b>	NC 12	Hickory Trail	Residential neighborhood; Beach access	Add: Flashing pedestrian activated warning sign
<b>J</b>	NC 12	Southern Shores Crossing Shopping Center Driveway	Restaurant, shops, and services	Add: High visibility crosswalk across driveway Add: Pedestrian warning signage across driveway Add: Stop signs on trail for trail users crossing driveway



## PRIORITY PROJECT ALTERNATIVE A: *Dogwood Trail with a Sidepath*

**Proposed Facility Length (Miles):** Sidepath: 3.2 miles

**Planning-level Cost Estimate:** High (at \$500K/mile average cost, a planning level estimate would be \$1.6M)

### Key Benefits of Option A:

- Bicyclists and pedestrians have dedicated space, separate from motor vehicle traffic.

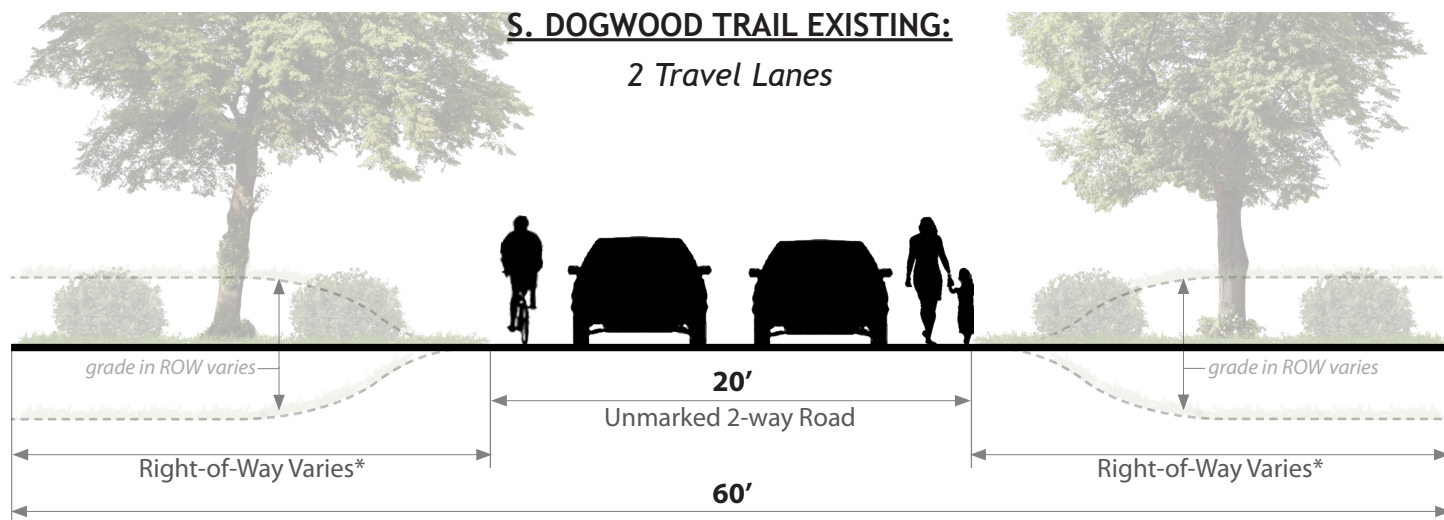
### Key Constraints of Option A:

- Costs associated with added pavement and retaining walls;
- Some trees would need to be removed;
- Easement agreements with property owners will be necessary where existing ROW is insufficient.

Source for per-mile costs on this page and following pages: 'Costs for Pedestrian and Bicyclist Infrastructure Improvements' by the UNC Highway Safety Research Center (HSRC), prepared for the Federal Highway Administration (2013).

### S. DOGWOOD TRAIL EXISTING:

#### 2 Travel Lanes

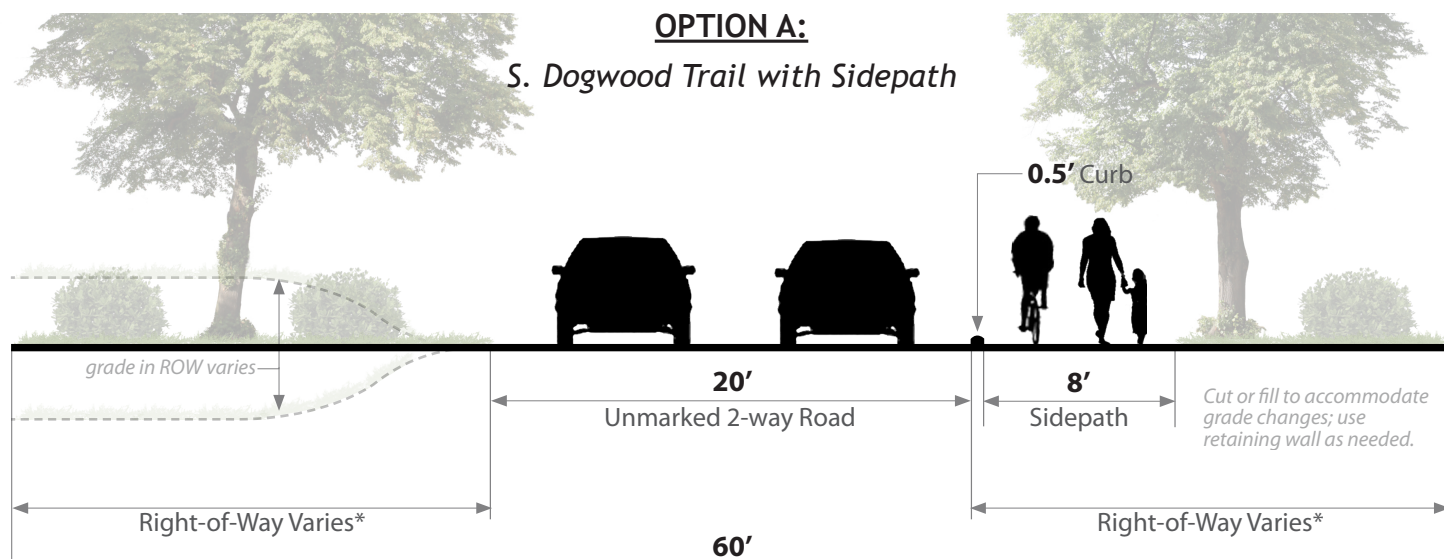


Total Right-of-Way for S. Dogwood Trail (100' on E. Dogwood)

\*The roadway is not consistently on center with the total right-of-way; available ROW on either side varies.

### OPTION A:

#### S. Dogwood Trail with Sidepath



Total Right-of-Way for S. Dogwood Trail (100' on E. Dogwood)

\*The roadway is not consistently on center with the total right-of-way; available ROW on either side varies. Easement agreements with property owners will be necessary where existing ROW will not allow for the sidepath, and where necessary, retaining walls. Location of sidepath could be flexible to avoid trees or significant roadside features.



## ALTERNATIVE A

### Proposed Facilities

- Paved Multi-Use Trail

### Existing Facilities

- Paved Multi-Use Trail
- Paved Shoulder
- Sidewalk
- Beach Access Paths
- Informal Paths
- Regional Bike Route

### Points of Interest

- Shopping Center/Grocery Store

- School

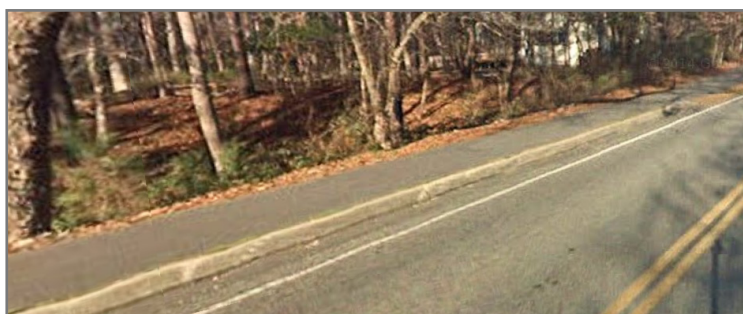
0 0.125 0.25 Miles



## PRIORITY PROJECT ALTERNATIVE A: *Dogwood Trail with a Sidepath*



Existing Conditions on S. Dogwood Trail



Example 1: Similar cross-section to the proposed Option A (The Paul Pruitt Multi-Use Path along the Woods Road in Kitty Hawk).



Example 2: Similar cross-section to the proposed Option A (along the canal bridge on Trinitie Trail in Southern Shores).



## PRIORITY PROJECT ALTERNATIVE B: *Dogwood Trail with Sharrows and Sidewalk*

**Proposed Facility Length (Miles):** Sidepath: 0.5 Sidewalk: 1.7 Shared Roadway: 2.7

**Planning-level Cost Estimate:** Medium/High (at \$500K/mile for sidepath, \$170K/mile for sidewalk, and \$12K/mile for sharrows and signage, a planning level estimate would be \$571K).

### Key Benefits of Option B:

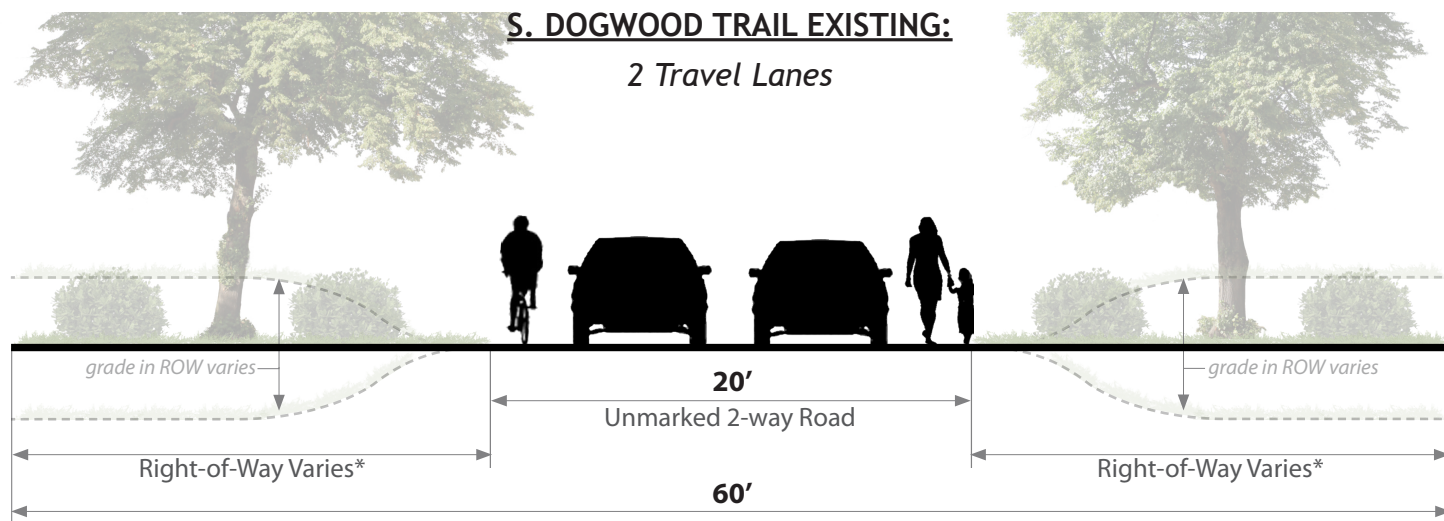
- Pedestrians have dedicated space, separate from motor vehicle traffic.
- Bicyclists have signs and in-roadway pavement markings, alerting drivers of the shared roadway space.

### Key Constraints of Option B:

- Costs associated with new sidewalk and retaining walls; Less than in Option A.
- Some trees would need to be removed, but less than in Option A (greater flexibility to meander sidewalk route).
- Easement agreements with property owners may be necessary, but less than in Option A

### S. DOGWOOD TRAIL EXISTING:

2 Travel Lanes

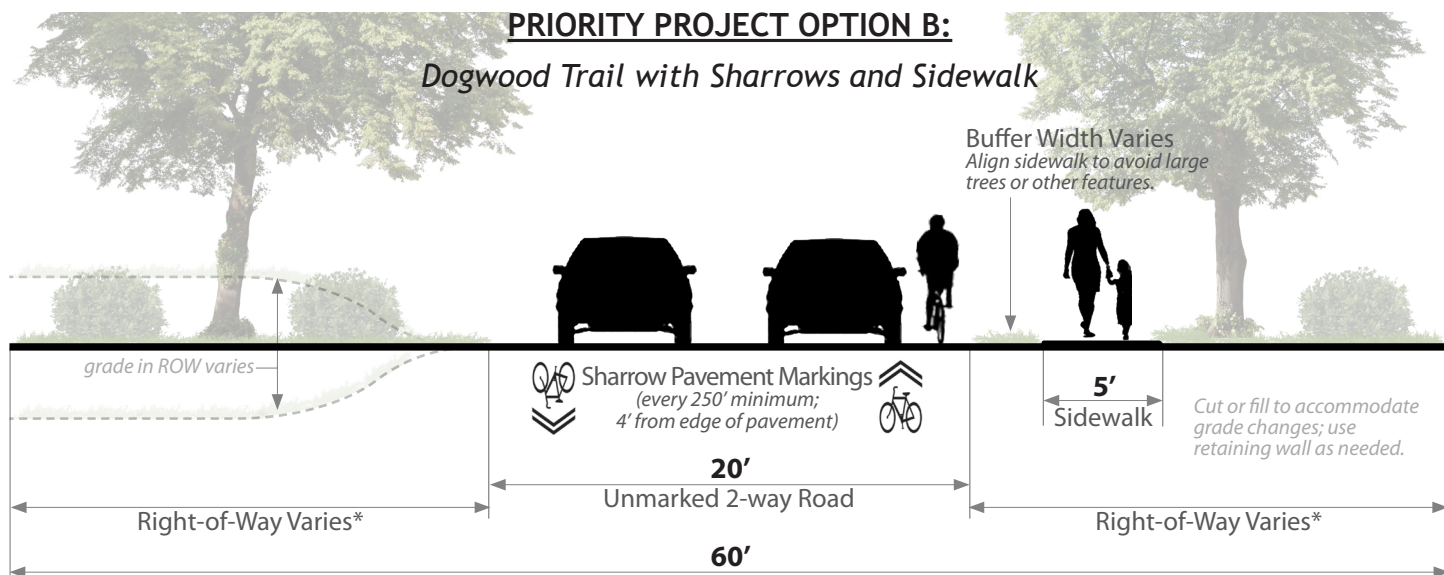


Total Right-of-Way for S. Dogwood Trail (100' on E. Dogwood)

\*The roadway is not consistently on center with the total right-of-way; available ROW on either side varies.

### PRIORITY PROJECT OPTION B:

*Dogwood Trail with Sharrows and Sidewalk*



Total Right-of-Way for S. Dogwood Trail (100' on E. Dogwood)

\*The roadway is not consistently on center with the total right-of-way; available ROW on either side varies. Easement agreements with property owners will be necessary where existing ROW will not allow for the sidewalk, and where necessary, retaining walls. Location of sidewalk could be flexible to avoid trees or significant roadside features.

Cross sections not to scale.

See Design Guidelines Appendix for details.

ALTERNATIVE B

Proposed Facilities

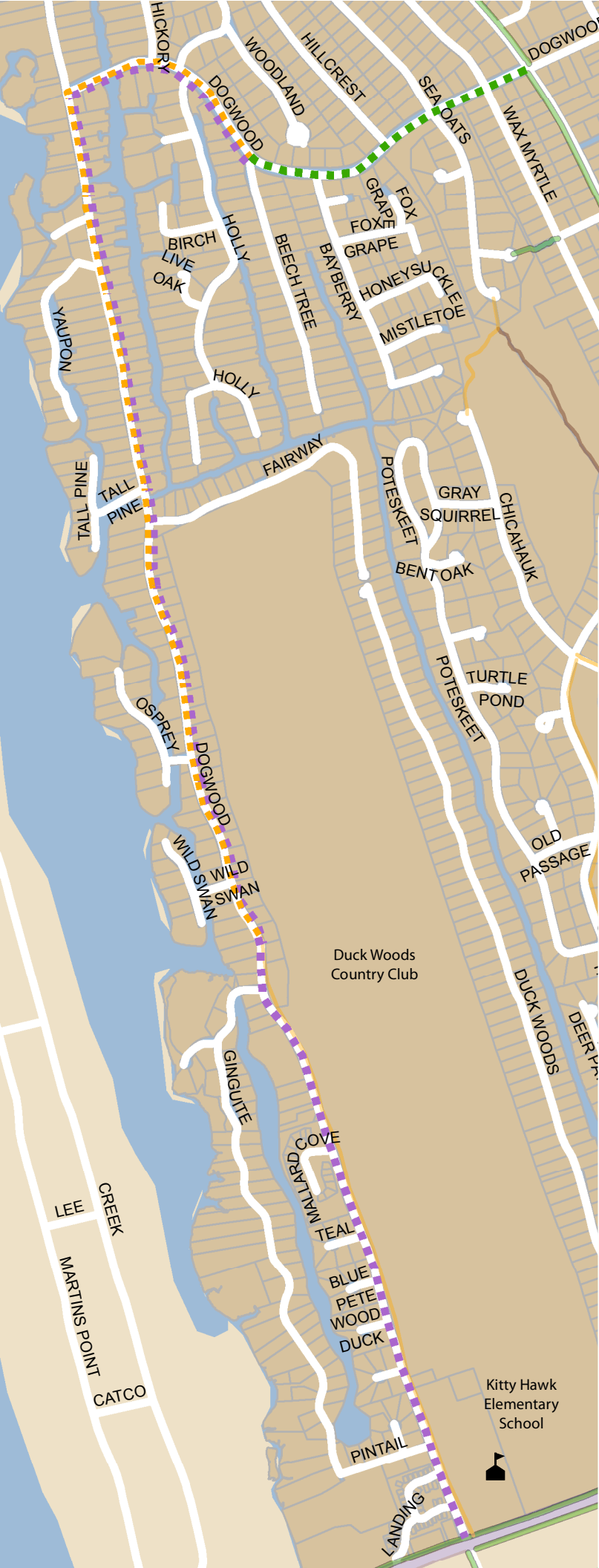
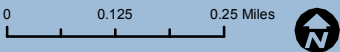
- Paved Multi-Use Trail
- Shared Roadway (Sharrows)
- Sidewalk

Existing Facilities

- Paved Multi-Use Trail
- Paved Shoulder
- Sidewalk
- Beach Access Paths
- Informal Paths
- Regional Bike Route

Points of Interest

- Shopping Center/Grocery Store
- School



PRIORITY PROJECT ALTERNATIVE B:  
*Dogwood Trail with Sharrows and Sidewalk*



Existing Conditions on S. Dogwood Trail



Example of similar sidewalk to the proposed Option B (from Trinitie Trail in Southern Shores).



## PRIORITY PROJECT ALTERNATIVE C (ALTERNATIVE TO DOGWOOD TRAIL): *Shared Roadways on Duck Woods, Fairway, and Beech Tree, with a Bicycle/Pedestrian Canal Bridge*

**Proposed Facility Length (Miles):** Sidepath: 0.5 & Shared Roadway: 2.4

**Planning-level Cost Estimate:** Medium (at \$500K/mile for sidepath, \$12K/mile for sharrows and signage, and \$125K/wooden bridge, a planning level estimate would be \$404K).

### Key Benefits of Option B:

- Pedestrians and bicyclists are routed to lower volume & lower speed roads, where sharing the road is more feasible.
- Has the least potential impact for the greatest number of property owners in terms of easements and construction.

### Key Constraints of Option B:

- Costs associated with the bicycle /pedestrian canal bridge & easements required near the bridge.
- Large part of S. Dogwood Trail not covered.

### EXISTING CONDITIONS

*The canal Between Beech Tree and Fairway*



### OPTION C:

*Bicycle/Pedestrian Bridge Over the Canal*





3-17  
UNAR



## STEERING COMMITTEE DISCUSSION OF ALTERNATIVES

During the fourth and final Steering Committee meeting for this plan, the committee members discussed their preferences for alternatives A, B, and C, as presented in the previous pages. While no consensus was formed for a single alternative, the discussion provided valuable insight about each alternative that should be reviewed by the Town Council, Planning Board, BPAC, and others involved in implementation of this plan. The main points of the discussion are listed below:

### Alternative A

- Alternative A was viewed by some committee members as too expensive and politically challenging, and/or less efficient than Alternative B, since many bicyclists (especially more experienced ones) are likely to continue to use the roadway regardless of the presence of a side path.
- Related to the above comment, it was also noted that less experienced and/or slower bicyclists could still use a smaller, five-foot wide sidewalk (as shown in Alternative B), though they should be expected to slow down and yield to pedestrians on the sidewalk.
- Others viewed Alternative A as worth the extra cost, with the rationale that building either A or B will require a significant effort both financially and politically, and that if such an effort is undertaken by the Town, they may as well provide the facility that allows for more pedestrians and bicyclists to share the space effectively, away from automobile traffic.
- The planning consultant noted that eight feet is the minimum width for a multi-use path, as it provides the minimum width for two bicyclists to pass one another safely. Ten feet would be more appropriate for Dogwood given the higher expected use of the trail, but eight is recommended mainly due to the constraints of large trees and right-of-way.

### Alternative B

- Alternative B was noted as a good compromise, as the sharrows would draw attention to the fact that bicycling is allowed on the roadway, while the sidewalk would provide space for pedestrians and slower bicyclists.
- There was also a safety concern among some members for Alternative B, regarding the potential traffic build-up behind bicyclists using the full lane, and the potential for aggressive behavior on the part of aggravated motorists.



## Alternative C

- Alternative C was noted as challenging due to the private ownership of nearby roadways, the easements required for construction, and the perceived desire on the part of residents along Fairway and Duck Woods for privacy (e.g., there is potential opposition to inviting more bicyclists and pedestrians along that route). Alternative C alone also does not provide a safe walking and bicycling solution for those living on the majority of S. Dogwood.
- Alternative C was still noted as a worthy solution to consider due to the lower relative cost; the potential for the bridge as an amenity for the nearby neighbors; and the connectivity it would provide for people on Duck Woods and Fairway to have more direct walking and bicycling access to the beach and points north and east. Alternative C could also be considered in combination with phased elements of Alternatives B and/or C.

## General Comments on the Alternatives

- It was noted that actual use and demand for paths such as these is often higher than expected, as some residents may not identify it as a need until after the facility is in place. Wilmington, NC, was mentioned as an example where local residents at first opposed a pathway that was later greatly supported by the very same residents after construction (with recorded testimony from those residents to that effect).
- It was determined that a first step in implementation may need to be a survey of S. Dogwood Trail, in order to assess the true feasibility of a path within the public ROW, and to have a better understanding of the topographic constraints involved.
- The Committee agreed that a future Town of Southern Shores Bicycle and Pedestrian Advisory Committee (BPAC) should pick up this discussion of alternatives and form a solution that may combine elements of A, B or C, taking into consideration the survey/ROW and funding availability. BPAC and the town would also discuss strategic phasing by sections. This would also take into account related roadway improvements, such as canal bridge replacements and intersection improvements.
- Finally, the design of any of these alternatives must be context-sensitive, meaning that the character of the neighborhood and streets in question must be respected and that a great level of care will be required in designing the trail or sidewalk in a way that minimizes the removal of vegetation, especially large trees.



## PROGRAM RECOMMENDATIONS

Below are program recommendations that came out of this planning process. See Chapter 4: Implementation for more information on other program ideas related to plan implementation.

### Media Campaign to Educate Motorists, Bicyclists, and Pedestrians

Watch for Me NC is a comprehensive campaign aimed at reducing the number of pedestrians and bicyclists involved in crashes with vehicles. The campaign consists of educational messages on traffic laws and safety, and an enforcement effort by area police in several Triangle communities: Raleigh, Durham, Chapel Hill, and Carrboro. The pilot campaign is programmed to expand statewide; Southern Shores should contact the NCDOT Division of Bicycle and Pedestrian Transportation to request materials. The Town should distribute the educational materials made available by NCDOT at local festivals and other events, at local bike shops and other businesses, and in renters' information packets and property owners' guest information books.

Watch for Me NC website: <http://www.watchformenc.org/>

**Purpose:** To educate all road users about their rights and responsibilities to increase awareness and improve traffic safety

**Partners:** Town of Southern Shores Police Department, Bicycle and Pedestrian Advisory Committee, Town staff, Outer Banks Bicycle/Pedestrian Safety Coalition



Images targeting motorists from the 'Watch for Me NC' campaign, including ad space on a bus, messaging at the pump, and bumper stickers.



## Bike Rodeo

**Purpose:** To celebrate bicycling, teach children and their parents traffic laws and safe riding skills, and improve bicycling confidence and awareness

**Partners:** Town of Southern Shores Police Department, Local cycling groups and advocates, local bike shops, Bicycle and Pedestrian Advisory Committee, Outer Banks Bicycle/Pedestrian Safety Coalition, Dare County Department of Public Health

A Bike Rodeo is an event where children can learn and practice bicycling skills in a controlled, supervised environment. Depending on the age of the children involved, a bike rodeo event can include educational components, such as teaching hand signals, proper helmet fitting, and even basic maintenance skills such as pumping up a tire. The highlight of any bike rodeo event is a skills course, where children ride through a designed obstacle course to practice turns, braking, and coasting. Some bike rodeo leaders hand out awards to positively reinforce good bicycling habits.

Bike Rodeo resources:

- National Center for Safe Routes to School: <http://www.saferoutesinfo.org/program-tools/organizers-guide-bicycle-rodeos>
- Safe Kids Worldwide: <http://www.safekids.org/sites/default/files/documents/Bike-Rodeo-Station-Guide.pdf>



Photos from the Holly Springs Bike Rodeo, Holly Springs, NC. Volunteers conducted helmet fittings, bicycle education, and a parking lot obstacle course to provide a safe place for children to practice safe riding skills.





## One-Stop Website

Many current and potential bicyclists and pedestrians do not know where to find information on traffic laws, events, maps, tips, and recreation groups. The Town of Southern Shores could develop a “one-stop” website that houses all bicycle- and pedestrian-related information and promotions. A website is not difficult to set up, but it will only be successful if the site is easy to use, easy to find, and updated frequently. The site should be reviewed and updated regularly with the most current information. The Bicycle and Pedestrian Advisory Committee and the bicycling community can assist in keeping the site up to date. Other recommended programs could be housed on the website, such as a hike and bike map, Watch for Me NC materials and links, local discounts for bicyclists, and a calendar of upcoming events.

Sample bicycle information websites:

- Portland, OR: <http://www.portlandoregon.gov/transportation/60164>
- Austin, TX: <http://austintexas.gov/bicycle>
- Duck, NC: <http://www.townofduck.com/ducktrail/>

**Purpose:** To provide a single, accessible source of all bicycle- and pedestrian-relevant information for Southern Shores residents and visitors

**Partners:** Bicycle and Pedestrian Advisory Committee, Southern Shores Public Works Department, Southern Shores Planning & Code Enforcement Department



The screenshot shows the 'Duck Trail' page of the Town of Duck website. The header features the 'TOWN of DUCK NORTH CAROLINA' logo and a navigation menu with links: Home, Newsroom, Emergency Preparedness, Services, Town Government, Development, Visitors & Recreation, and Events. The main content area is titled 'Duck Trail' and includes social media sharing options (Facebook Like, Twitter Tweet, Google+ +1, LinkedIn Share, Email, and a generic Share button). Below this is a section titled 'Duck Trail Usage and Safety' which describes the trail as a seven-mile long, multi-use path. It also lists safety guidelines for users, including using marked crosswalks, yielding to cars, and following posted rules. A sidebar on the right contains a 'CONTACT US' section with the town's address and phone numbers, a 'NEWS CATEGORIES' dropdown menu, and an 'EVENT NEWS' section listing recent events. At the bottom, there is an 'UPCOMING EVENTS' section listing 'Yoga on the Green' and 'Children's Theater - The Mystery of'.

The Town of Duck has a great example website for town trail information. The Duck Trail page presents safety information, route information, and other tips for residents and tourists to enjoy walking and bicycling on the trails in Duck.

[www.townofduck.com/ducktrail](http://www.townofduck.com/ducktrail)



**Purpose:** To encourage walking and bicycling by providing route and facility information and highlighting walking and bicycling destinations

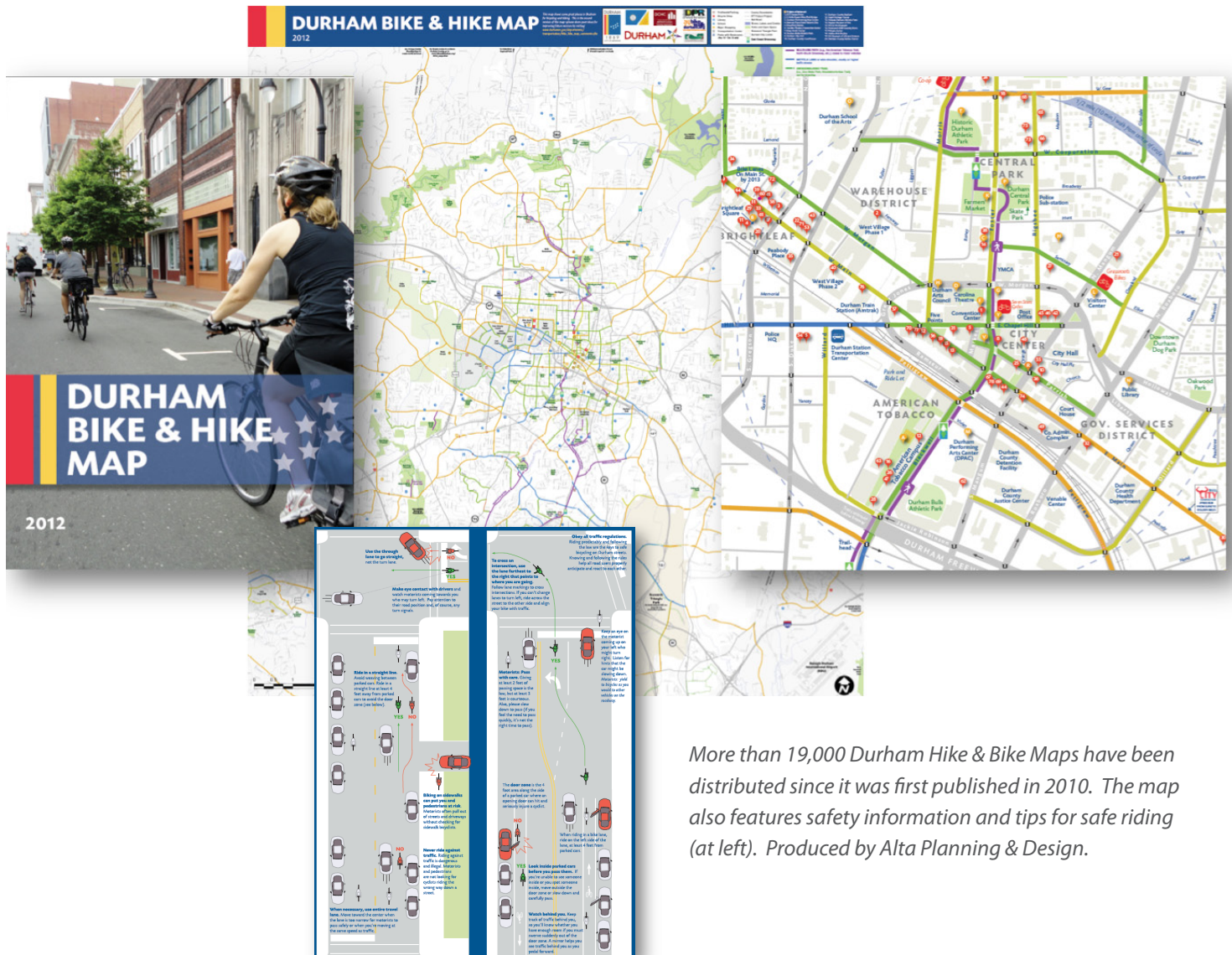
**Partners:** Town of Southern Shores, Outer Banks Chamber of Commerce, Southern Shores GIS staff

## Hike & Bike Map

One of the most effective ways of encouraging people to walk and bicycle is through the use of maps and guides to show where you can walk and bike, and to guide people to enjoyable routes and destinations for walking and biking. The Town should create a Southern Shores Hike and Bike Map to reflect the most current public bicycle and pedestrian infrastructure in town, with a list of bicycle rental locations, suggestions for self-guided bike rides and walks around town, and recommended routes. The map should be made available online and printed as needed to be actively distributed to residents and visitors. It should also be updated on a regular basis as new facilities are implemented.

Sample Self-Guided Rides and Maps:

- [http://www.durham-nc.com/resources/pdf/dtwt2012\\_printer-friendly.pdf](http://www.durham-nc.com/resources/pdf/dtwt2012_printer-friendly.pdf)
- <http://www.bikewalktwincities.org/maps-routes/walking-maps>



More than 19,000 Durham Hike & Bike Maps have been distributed since it was first published in 2010. The map also features safety information and tips for safe riding (at left). Produced by Alta Planning & Design.

## Local Business Discounts for Bicyclists

The Bicycle and Pedestrian Advisory Committee and the Town should encourage local businesses to offer discounts to patrons who bicycle to their business. The discount could be a daily or once-weekly promotion that encourages residents and visitors to visit local businesses by bike. This could be especially popular with businesses in areas that have limited motor vehicle parking and overly congested lots. In return for businesses' participation, the Town could develop a list of "Bicycle-Friendly Local Businesses" to feature, along with discount information, on its one-stop website for bicycle and pedestrian information.

**Purpose:** To encourage and reward residents and visitors for making short local trips by bike and to promote a bicycle-friendly culture among businesses in Southern Shores.

**Partners:** Local restaurants, shops, bars, and other businesses; Town of Southern Shores staff; Bicycle and Pedestrian Advisory Committee



Images of an example bicycle discounts program

## Public Bicycle Maintenance Stand

Public maintenance stands have become a popular amenity in bicycle friendly communities because they provide bicyclists with access to tools on-the-go and encourage people to teach and learn bicycle maintenance in an informal setting. They can also help to reduce the number of abandoned or trashed bikes in a community; bikes are often abandoned by their owners when they have a minor mechanical issue that they do not have the tools or knowledge to fix. Public maintenance stands encourage people to learn bicycling skills from one another and send a message to residents and visitors that bicycling is supported in the community. These fixtures can be placed in a park or in another public place and require little upkeep or oversight, since the tools and stand are designed to be self-contained and theft-resistant.

**Purpose:** To provide an easy to use bicycle stand and tool kit that encourages people, particularly youth, to learn bicycle maintenance and fix minor bicycle issues on-the-go, and to make bicycling a visible part of the community

**Partners:** Local businesses, Town of Southern Shores



Public bicycle maintenance stand at Cambridge Public Library, Cambridge, MA



## Wayfinding Signage Program

**Purpose:** To enhance resident and visitor orientation by directing pedestrians, bicyclists, and motorists to popular destinations around town

**Partners:** Town of Southern Shores  
Public Works Department, Outer Banks Chamber of Commerce, Town of Southern Shores Visitor's Center

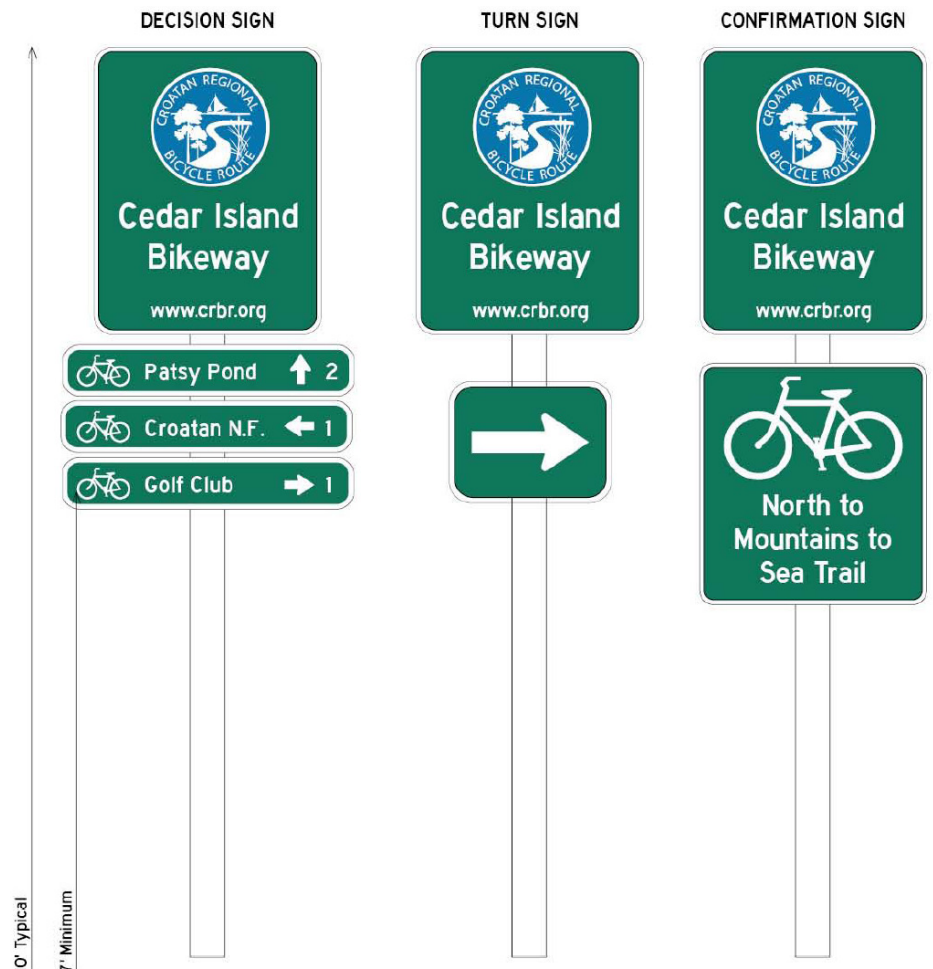
Wayfinding signage, as part of a signage program that also includes warning and regulatory signage, enhances resident and visitor orientation. The Town of Southern Shores should develop a customized wayfinding program that includes directional signage to destinations and bicycle and pedestrian travel times. A clear wayfinding system should contribute to economic development by pointing visitors to key destinations around town.

Materials for signage should reflect the character of Southern Shores and be selected for longevity and ease of maintenance. A wayfinding program could include directional signage, on-road markings, and kiosks with town maps. If funding is not immediately available to develop a complete wayfinding program, a good first step is temporary wayfinding signage that is colorful and informative. The Outer Banks Chamber of Commerce may be willing to partner based on the nexus with tourism and economic development.

Sample wayfinding signage programs:

- Oakland, CA: <http://www2.oaklandnet.com/oakca/groups/pwa/documents/report/oak025118.pdf>
- London, England: <http://www.tfl.gov.uk/microsites/legible-london/>
- 2014 Croatan Regional Bicycle + Trails Plan; Signage Appendix (NCDOT)

NCDOT and the Eastern Carolina Council recently completed the 2014 Croatan Regional Bicycle + Trails Plan. This plan included guidance for bicycle route and trail signage. Southern Shores could take a similar approach, using a local logo or symbol in conjunction with the required standards for signage on NCDOT roadways like NC 12 and US 158.







## “20’s Plenty” Campaign

Lowering residential speeds to 20 MPH has enormous safety benefits for all users, including pedestrians and bicyclists, by lowering both the rate and severity of crashes. One campaign, from the United Kingdom, is called “20’s Plenty.”

A successful campaign will bring together several different strategies, including:

- Making residents aware of the benefits of 20 MPH roadways and engaging their partnership on raising awareness and buy-in from their neighbors.
- Identifying specific streets on which a 20 MPH speed limit is appropriate. Likely candidates would include roads identified in pedestrian or bicycle plans as important corridors for those uses and residential streets whose residents request inclusion in a 20 MPH program.
- Traffic engineering to ensure that the design speed of the street matches the new posted speed.
- Partnership with law enforcement to issue warnings and moving violations on designated 20 MPH streets.
- Evaluation of vehicle speeds and reported crashes (number and severity) before and after the integrated campaign is implemented to the effort to measure results and correct course.
- Changing the legal guidelines around minimum speed and/or authority to set speed limits. For example, the State Legislature may consider passing a law that would permit towns and cities to set speed limits on certain types of roadways, based on classification or designation in an adopted plan.

**Purpose:** To reduce crashes and crash severity by lowering vehicle speeds island-wide to 20 MPH

**Partners:** Southern Shores Police Department, Bicycle and Pedestrian Advisory Committee, Outer Banks Bicycle/Pedestrian Safety Coalition, Southern Shores Public Works Department

Video about UK “Twenty’s Plenty” campaign:

- <http://www.streetfilms.org/no-need-for-speed-20s-plenty-for-us/>

### The effect of speed

	Average for all ages	Over 60 year olds
At <b>40</b> mph	• 31% are killed	• 98% are killed
At <b>30</b> mph	• 7% are killed	• 50% are killed
At <b>20</b> mph	• 1% are killed	• 5% are killed

Data from Road Safety Web Publication No. 16 *Relationship between Speed and Risk of Fatal Injury: Pedestrians and Car Occupants* - Department for Transport (September 2010)





*High-visibility crosswalks, sidepaths, and sidewalk connections to neighborhoods and the beach are some key recommendations to improve the walking and biking environment in Southern Shores.*  
Above: Crosswalk at NC 12 near Chicahawk Trail.







# 4 IMPLEMENTATION

## Chapter Contents:

### **Overview**

### **Organizational Framework for Implementation**

### **Implementation Action Steps Table**

### **Key Action Step Descriptions**

### **Key Partners in Implementation**

### **Performance Measures (Evaluation and Monitoring)**

### **Facility Development Methods**

## **OVERVIEW**

This chapter defines a structure for managing the implementation of the Town of Southern Shores Bicycle and Pedestrian Plan. Implementing the recommendations within this plan will require leadership and dedication to pedestrian and bicycle facility development on the part of a variety of agencies. Equally critical, and perhaps more challenging, will be meeting the need for a recurring source of revenue. Even small amounts of local funding could be very useful and beneficial when matched with outside sources. Most importantly, the town need not accomplish the recommendations of this plan by acting alone; success will be realized through collaboration with regional and state agencies, the private sector, and non-profit organizations. Funding resources that may be available to Southern Shores are presented in Appendix B of this plan.

Given the present day economic challenges faced by local governments (as well as their state, federal, and private sector partners), it is difficult to know what financial resources will be available at different time frames during the implementation of this plan. However, there are still important actions to take in advance of major investments, including key organizational steps, the initiation of education and safety programs, and the development of strategic, lower-cost sidewalk and on-road bicycle facilities. Following through on these priorities will allow the key stakeholders to prepare for the development of larger pedestrian and trail projects over time, while taking advantage of strategic opportunities as they arise.



## ORGANIZATIONAL FRAMEWORK FOR IMPLEMENTATION

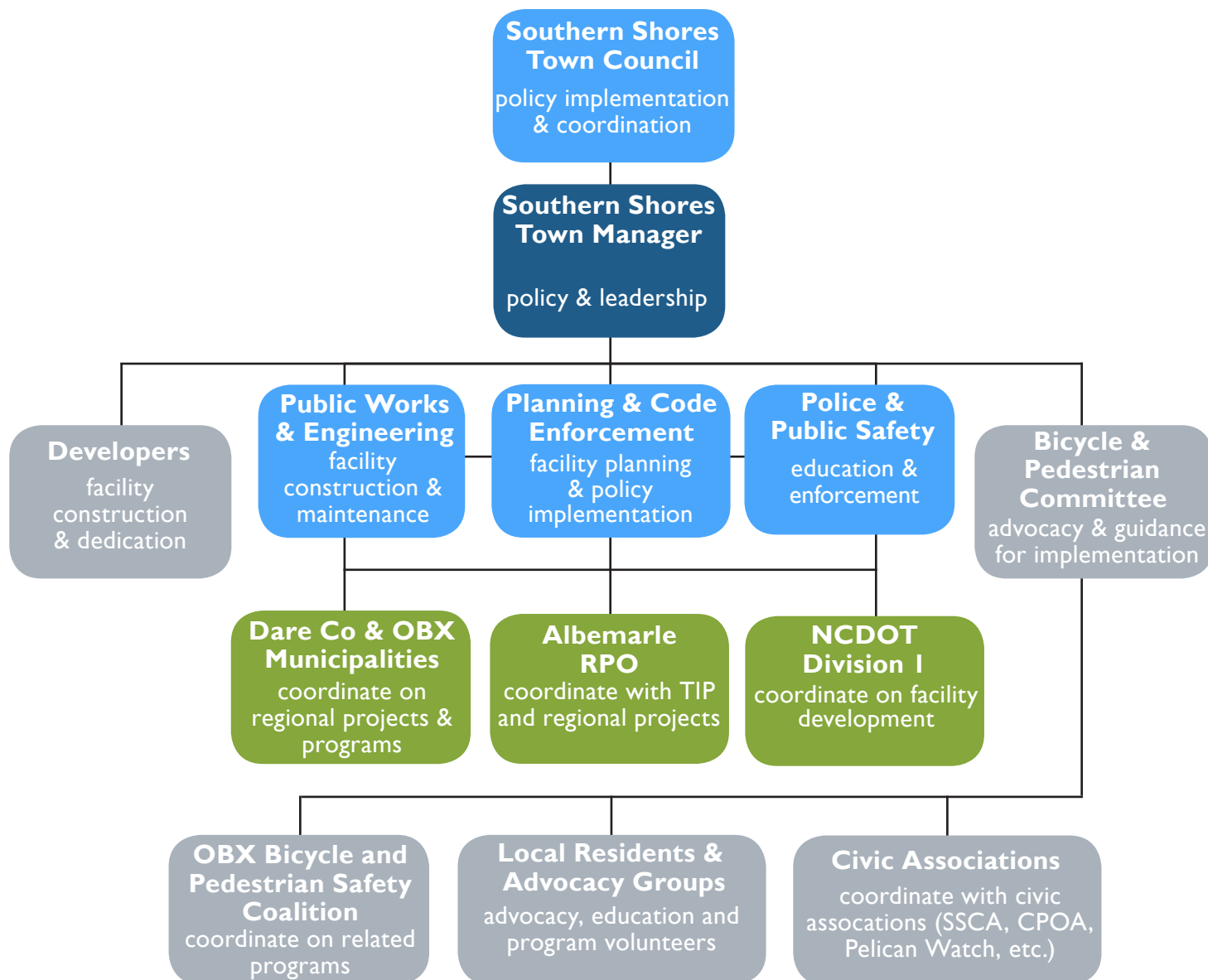






TABLE 4.1 IMPLEMENTATION ACTION STEPS

## Administrative and Programmatic Action Steps

TASK	LEAD AGENCY	SUPPORT	DETAILS	PHASE
<b>Present Plan to Town Council</b>	Project Consultants	Planning & Code Enforcement	Presentation to Town Council	Q4 2014
<b>Approve this plan</b>	NCDOT Bike/Ped Division	Project Consultants	Official letter of approval	Q4 2014
<b>Adopt this plan</b>	Town Council	Planning & Code Enforcement, Project Consultants	Through adoption, the Plan becomes an official planning document of the Town. Adoption shows that the Town of Southern Shores has undergone a successful, supported planning process.	Q4 2014
<b>Designate Staff</b>	Town Manager	Leadership of Town Departments	Designate staff to oversee the implementation of this plan and the proper maintenance of the facilities that are developed. It is recommended that a combination of existing staff from Planning & Code Enforcement and Public Works oversee the day-to-day implementation of this plan.	Q4 2014
<b>Form and confirm the goals of the Bicycle and Pedestrian Advisory Committee (BPAC)</b>	Town Council	BPAC, Planning & Code Enforcement	Form the Bicycle and Pedestrian Advisory Committee and confirm the goals of the BPAC to include the implementation of this plan.	Q4 2014
<b>Solicit further input from the public on a preferred alternative for Dogwood Trail</b>	BPAC	Planning & Code Enforcement, Town Council	Collect input from citizens and Council about actual location of recommendations on Dogwood Trail, drawing upon this Plan's discussion of alternatives. The survey does not have to be complete before this discussion begins, but it should be available before a preferred alternative is selected.	Begin collecting input in Q4 2014, after the BPAC is formed.  Aim to develop a preferred alternative by the end of Q1 2015.
<b>Seek multiple funding sources and facility development options for the S. Dogwood Trail project (see Appendix B)</b>	Planning & Code Enforcement	Town Council, BPAC (a sub-committee of BPAC could focus on grant writing and seeking funding partnerships)	A reliable cost estimate will not be possible until a survey is completed and an alternative is selected. Still, a ballpark figure could be used as a target for funding. Assuming the highest cost alternative is selected (a multi-use sidepath), the Town could aim for \$2M in funding. This reflects a trail construction cost of \$600K/mile for the full lengths of South and East Dogwood Trail (3.2 miles).	Begin in Q4 2014.  Grant and partnership research should be ongoing, beginning in Q4 2014.



## Administrative and Programmatic Action Steps (continued)

TASK	LEAD AGENCY	SUPPORT	DETAILS	PHASE
<b>Present this plan to other local and regional bodies and agencies</b>	Planning & Code Enforcement	BPAC, Public Works	Present this plan to other local and regional bodies and agencies, such as the Albemarle RPO, regional transportation planners, Dare County planners, Dare County Health Department, and local cycling/walking/running clubs, advocacy groups, and homeowners associations.	Ongoing, begin Q1 2015
<b>Design, develop and distribute bicycle and pedestrian safety information in rental check-in packages</b>	Planning & Code Enforcement	Police Department, BPAC, OBX Bicycle and Pedestrian Safety Coalition	Info should include safety tips for motorists, bicyclists and pedestrians, with a focus on trail use etiquette and caution at trail-driveway crossings. Other methods of distribution could include web sites, social media, and 'on-the-ground' in trail kiosks.	Design/develop materials by Q3 2015  Print/distribute throughout main tourist season in 2015
<b>Begin Annual Meeting With Key Project Partners</b>	Planning & Code Enforcement	Public Works, NC-DOT, BPAC, and local & regional stakeholders	Key project partners (see org. chart on page 4-2) should meet on an annual basis to evaluate the implementation of this Plan. Meetings could also occasionally include on-site tours of priority project corridors.	Ongoing, begin in Q2 2015
<b>Coordinate with regional partners on funding, programming, and regional trail/bike route connections when possible</b>	BPAC, Planning & Code Enforcement	Albemarle RPO, Dare County, OBX Bicycle and Pedestrian Safety Coalition, neighboring municipalities, NCDOT	Combining resources and efforts with surrounding municipalities, regional entities, and stakeholders is mutually beneficial. Communicate and coordinate with regional partners on regional trails, bicycle, and pedestrian facilities; partner for joint-funding opportunities. After adoption by the Town, this document should also be recognized in future updates to the Dare County CTP.	Ongoing, begin in Q2 2015
<b>Policy Orientation</b>	All Stakeholders	NCDOT Bike/Ped Division	Become familiar with State and Federal bicycle and pedestrian policies.	Ongoing, begin in Q2 2015
<b>Apply for Safe Routes to School Grants and Infrastructure Funding</b>	BPAC	Albemarle RPO, NCDOT Division 1, Dare County Schools; Southern Shores Police Department	Establish 'bike-to-school' groups, 'walking school buses' or other similar activities for children through the Safe Routes to School Program. Inquire about bicycle and pedestrian infrastructure funding for projects through NCDOT Division 1.	Coordinate schedule Albemarle RPO & NCDOT Division 1
<b>Improve Existing Programs and Launch New Programs</b>	BPAC	Planning & Code Enforcement, Public Works, Southern Shores Police Department, Dare County Health Department, OBX Bicycle and Pedestrian Safety Coalition	These groups should coordinate to improve existing bicycle and pedestrian programs and to launch new programs, such as those described in Chapters 2 & 3. Utilize available WatchForMeNC materials, and request that Southern Shores be included when WatchForMeNC is integrated statewide.	Ongoing, begin in Q3 2015





## Administrative and Programmatic Action Steps (continued)

TASK	LEAD AGENCY	SUPPORT	DETAILS	PHASE
<b>Establish a Monitoring Program</b>	Planning & Code Enforcement, BPAC	Public Works, local advocates, general public	Planning & Code Enforcement and the BPAC should brainstorm specific benchmarks to track through a monitoring program and honor the completion of projects with public events and media coverage.	Ongoing, begin in Q3 2015
<b>Provide Enforcement and Education Training for Police Officers</b>	Police Department	NCDOT Bike/Ped Division	Provide police officers with training through free online resources available from the National Highway Traffic Safety Administration, and through webinars available through the Association of Pedestrian and Bicycle Professionals. Provide police officers with an informational handout to be used during bicycle and pedestrian-related citations and warnings.	Ongoing, begin in Q3 2015
<b>Develop a long term funding strategy</b>	Planning & Code Enforcement	Town Council and Administration	To allow continued development of the overall system, capital funds for bicycle and pedestrian facility construction should be set aside every year. Powell Bill funds should be programmed for facility construction. Funding for an ongoing maintenance program should also be included in the Town's operating budget.	Q1 2015 through Q4 2015
<b>Communication &amp; Outreach</b>	BPAC, local bike shops, local advocacy groups	Planning & Code Enforcement, Albemarle RPO, OBX Bicycle and Pedestrian Safety Coalition	The BPAC should establish a communication campaign to celebrate successes and raise awareness of the benefits of walking and bicycling. One option is to design and launch a website (or a page on the Town's website) that provides information to residents and tourists on bicycling and walking in town. To begin, the website can include the maps from this plan.	Aim to launch the website/page by Q3 2015, or the beginning of the 2015 tourist season.
<b>Seek designation as a Walk-Friendly and Bicycle-Friendly Community</b>	Planning & Code Enforcement	Town Council, Public Works, BPAC	The development and implementation of this plan is an essential first step toward becoming a designated Walk-Friendly or Bicycle-Friendly Community. With ongoing efforts and the short-term work program recommended here, the Town should be in a position to apply for and receive recognition within a few years.	Q1 2016 through Q4 2016



## Design &amp; Development Action Steps

TASK	LEAD AGENCY	SUPPORT	DETAILS	PHASE
<b>Design Orientation</b>	Public Works and NCDOT Division 1	NCDOT Bike/Ped Division	Become familiar with the standards set forth in Appendix A of this Plan, as well as state and national standards for bicycle and pedestrian facility design.	Q4 2014
<b>Survey the ROW along S. Dogwood Trail to better inform the discussion of proposed alternatives.</b>	Public Works and/or private surveyor	Planning & Code Enforcement, Town Council	Total Right-of-Way for S. Dogwood Trail is 60'. The roadway is not consistently on center with the total right-of-way, meaning available ROW on either side varies. A survey should be conducted to determine exact ROW to better inform the discussion of alternatives.	Identify a surveyor & begin survey work immediately. Aim to complete survey in early Q1 2015.
<b>Begin design process for the preferred alternative on Dogwood Trail</b>	Public Works and/or a Project Consultant	Planning & Code Enforcement, Town Council	Preliminary design of the corridor could begin by the Town as soon as the preferred alternative is selected. Final design and construction documents may be more efficiently completed by a private engineer specializing in trail design & development.	Q2 2015 - Q4 2015
<b>Begin construction process for the preferred alternative for Dogwood Trail</b>	Public Works and/or a Private Contractor	Planning & Code Enforcement, Town Council	Construction may begin after 1) design is completed, 2) funding is available, 3) ROW is secured, and 4) permits are secured.	Begin Q1 2016
<b>Maintain Bicycle and Pedestrian Facilities</b>	Public Works, NCDOT Division 1	BPAC, general public (for reporting maintenance needs), Planning & Code Enforcement	Public Works and NCDOT should maintain existing sidewalks, crosswalks, and shoulders and address crosswalks that are missing.	Ongoing, begin Q1 2015
<b>Notify Public Works of all upcoming roadway reconstruction/resurfacing/re-striping projects no later than the design phase</b>	Public Works Supervisor, NCDOT Division 1	Planning & Code Enforcement, NCDOT Bike/Ped Division	Provide sufficient time for comments; Incorporate recommendations from this Plan into future project design plans. If a compromise to the original recommendation is needed, contact NCDOT Division of Pedestrian and Pedestrian Transportation for guidance on appropriate alternatives.	Ongoing, begin Q1 2015





## Design & Development Action Steps (continued)

TASK	LEAD AGENCY	SUPPORT	DETAILS	PHASE
<b>Develop wayfinding system with directional signage</b>	Public Works, Planning & Code Enforcement	BPAC, Albemarle RPO, OBX Bicycle and Pedestrian Safety Coalition	Develop a wayfinding system for Southern Shores to direct bicyclists & pedestrians to destinations and to safe places to cross busier roads. Place signage along sidepaths with bicycle and pedestrian travel times to destinations. The Town could consider working with 'Walk [Your City]' as an innovative and low-cost solution to wayfinding: <a href="https://walkyourcity.org/">https://walkyourcity.org/</a> . Also, nearby Currituck County is currently developing a new wayfinding system that could be referred to for ideas.	Q1 2016 through Q4 2016
<b>Consider opportunities for informal trail connections</b>	Public works & Home Owners Associations, as applicable	Planning & Code Enforcement, BPAC	Consider opportunities to develop a north-south informal unpaved trail to link all beach accesses along streets from Hickory Trail north to Thirteenth St. This would provide an uninterrupted walking corridor between beach access points.	Begin discussions between Town & HOAs by Q3 2015
<b>Consider upgrades to Chicahawk Trail and Juniper Trail/Trinitie Trail facilities</b>	Public works & Home Owners Associations, as applicable	Planning & Code Enforcement, BPAC	Consider upgrading sidewalks on Chicahawk Trail and Juniper Trail/Trinitie Trail to sidepath to provide a wider multi-use facility for bicyclists and pedestrians	Begin discussions between Town & HOAs by Q3 2015
<b>Partner with the Town for the improvement of existing sidewalks and trails</b>	Property Owners Associations, as applicable	Town Council, Planning & Code Enforcement, Public Works	Consider developing a strategy to partner with the Town, as appropriate, for the improvement of association-maintained sidewalks and trails that need widening, resurfacing or rebuilding (one example is the connector trail between the south end of Sea Oats and the north end of Chicahawk Trail).	Begin discussions between Town & HOAs by Q3 2015
<b>Conduct a detailed corridor study for the re-design of US 158</b>	NCDOT	Dare County, Planning & Code Enforcement, Public Works, Albemarle RPO	The Albemarle Regional Bicycle Plan and the Dare County CTP recommend a detailed corridor study to investigate opportunities for a full roadway design of US 158 involving driveway consolidation and reduction, landscaping, intersection improvements, and possible lane configuration.	Coordinate long-term schedule with Dare County, NCDOT Division 1, and Albemarle RPO
<b>Identify new action steps and next infrastructure projects based on the projects completed to-date and the overall network recommendations in Chapter 3.</b>	BPAC	Town Council, Planning & Code Enforcement, Public Works	When the preferred alternative for Dogwood Trail is near completion, identify the next priorities for bicycle and pedestrian infrastructure development.	Ongoing, as appropriate. Consider a full Bicycle & Pedestrian plan update in 2020.



## KEY ACTION STEP DESCRIPTIONS

### Policy Action Steps

Several policy steps are crucial to the success of future facility development. These steps will legitimize the recommendations found in this plan and enable the right-of-way acquisition necessary to carry out those recommendations.

#### Adopt This Plan

Before any other action takes place, the Town of Southern Shores should adopt this plan. This should be considered the first step in implementation. Through adoption of this plan and its accompanying maps as the Town's official pedestrian and bicycle plan, Southern Shores will be better able to shape transportation and development decisions so that they fit with the goals of this plan. Most importantly, having an adopted plan is extremely helpful in securing funding from state, federal, and private agencies. Adopting this plan does not commit the Town of Southern Shores to dedicate or allocate funds, but rather indicates intent to implement this plan over time, starting with these action steps.

The Planning Board should review and recommend the plan to the Town Council, which in turn must consider and officially incorporate the recommended infrastructure improvements of this plan into its land-use plans. The following entities should adopt this plan:

- The Town of Southern Shores
- Albemarle Rural Planning Organization

Adoption of this plan also signifies that the design guidelines provided in Appendix A are established as pedestrian and bicycle facility standards. This will establish consistency in design across jurisdictional boundaries, ensuring that future facilities will be developed with consistency and will accommodate a variety of user types.

This plan and its recommended on- and off-road facilities should be approved by the NCDOT, and they should be included in the future planning of NCDOT. This plan's recommendations should be integrated into an update to the Comprehensive Transportation Plan for Dare County. NCDOT should refer to this document when assessing the impact for future projects and plans.

#### Coordinate Development Plans

The Town of Southern Shores should ensure that adopted bicycle, pedestrian, and multi-use path recommendations from this plan are included in future residential and commercial developments that connect with such proposed facilities.

### Program Action Steps

While policies provide a legal basis for on- and off-road facility development, the program recommendations included in Chapter 3 of this plan will build community support for the creation of new facilities and establish a strong bicycling and walking culture.



## Designate Staff

Designate staff to oversee the implementation of this plan and the proper maintenance of the facilities that are developed. It is recommended that a combination of existing planning staff and public works staff oversee the day-to-day implementation of this plan. In many municipalities, a full-time bicycle and pedestrian coordinator covers this task, but in smaller towns, such as Southern Shores, it makes more sense to fold these responsibilities into current staff responsibilities.

*A key initial action step for the BPAC is to solicit further input from the public on a preferred alternative for Dogwood Trail.*

## Form a Bicycle and Pedestrian Advisory Committee

The Town of Southern Shores should form a bicycle and pedestrian advisory committee (BPAC) to assist in the implementation of this plan. This committee could be formed out of this Plan's steering committee, or the members could be sought and appointed through the Town Council or Planning Commission. The BPAC should have representation from active pedestrians and commuting and recreational cyclists and should champion the recommendations of this plan. The formation of this group would be a significant step in becoming designated as a Walk- and Bicycle Friendly Community (see information below). The committee would provide a communications link between the citizens of the community and local government. They should also continue to meet periodically, and be tasked with assisting the Town of Southern Shores staff in community outreach, marketing, and educational activities recommended by this plan.

## Become Designated as a Walk-Friendly and Bicycle Friendly Community

A goal for Southern Shores should be to seek a "Bicycle Friendly Community" (BFC) designation from the League of American Bicyclists. The BFC campaign is an award program that recognizes municipalities that actively support bicycling activities and safety. A Bicycle Friendly Community provides safe accommodation for bicycling and encourages its residents to bicycle for transportation and recreation. Carrboro, Wilmington, and Davidson are examples of North Carolina communities that have become designated as Bicycle Friendly Communities.

Similarly, Southern Shores should apply for a "Walk Friendly Community" (WFC) designation. The WFC Campaign is an awards program that recognizes municipalities that actively support pedestrian activity and safety. A Walk Friendly Community provides safe accommodation for walking and encourages its residents to walk for transportation and recreation. The program is maintained by the UNC Highway Safety Research Center's Pedestrian and Pedestrian Information Center, with support from a variety of national partners.

Becoming designated as a Bicycle- and Walk-Friendly Community signals to current residents, potential residents, and visitors that the town is a safe and welcoming place for individuals and families to live and recreate. The development and implementation of this plan is an essential first step toward becoming a Walk- and Bicycle Friendly Community. With ongoing efforts and the short-term work program recommended here, the Town should be in a position to apply for and receive BFC and WFC status within a few years.





## Communication and Outreach

The BPAC should lead the effort to establish a communication campaign to celebrate successes as facilities are developed and otherwise raise awareness of the overall pedestrian and bicycle network and its benefits. A key first task of this group is to design and launch a one-stop website.

Many current and potential pedestrians and bicyclists do not know where to turn to find out about traffic laws, events, maps, tips, and groups. Developing a “Walk and Bike Central” website provides information to a wide audience and encourages people to walk and bicycle. This would be especially useful in attracting visitors who are seeking out a vacation destination where walking and bicycling are safe and enjoyable. A one-stop website is not usually difficult to set up, but it will only be successful if the site is both easy to use and updated frequently. All website content should be reviewed regularly for accuracy. Walking groups, the bicycling community, and volunteer organizations interested in safety and health can assist in keeping the site up to date.

## Establish a Monitoring Program

From the beginning, and continuously through the life of a pedestrian or bicycle facility project, the BPAC should brainstorm specific benchmarks to track through a monitoring program and honor the completion of projects with public events and media coverage. Benchmarks should be revisited and revised periodically as the pedestrian and bicycle facility network evolves.

## Begin Annual Meeting With Key Project Partners

Coordination between key project partners will establish a system of checks and balances, provide a level of accountability, and ensure that recommendations are implemented. This meeting should be organized by the designated Town staff, and should include representatives from the Organizational Chart shown on page 4-2. The purpose of the meeting should be to ensure that this plan’s recommendations are integrated with other transportation planning efforts in the region, as well as long-range and current land use planning, economic development planning, and environmental planning. Attendees should work together to identify and secure funding necessary to immediately begin the first year’s work, and start working on a funding strategy that will allow the Town to incrementally complete each of the suggested physical improvements, policy changes and programs over a 5-10 year period. A brief progress benchmark report should be a product of these meetings, and participants should reconfirm the plan’s goals each year. The meetings could also occasionally feature special training sessions on bicycle, pedestrian, and trail issues.

## Seek Multiple Funding Sources and Facility Development Options

Multiple approaches should be taken to support pedestrian and bicycle facility development and programming. It is important to secure the funding necessary to undertake priority projects but also to develop a long-term funding strategy to allow continued development of the overall system. The recommendations of this plan should be evaluated against transportation projects that are currently programmed in the State Transportation Improvement Program (STIP) to see where projects overlap, compliment, or conflict with each other. The Town should also evaluate which of the proposed projects could be added to future STIP updates.



Capital and local funds for bicycle and pedestrian facilities and trail construction should be set aside every year, even if only for a small amount. Small amounts of local funding can be matched to outside funding sources or could be used to enhance NCDOT projects with bicycle or pedestrian features that may otherwise not be budgeted for by the state. A variety of local, state, and federal options and sources exist and should be pursued. These funding options are described in Appendix B.

### Develop Bicycle and Pedestrian Facility Designs and Specifications for Proposed Projects

Town of Southern Shores staff could prepare these in-house to save resources, using the design guidelines of this plan and the project cut-sheets as starting points. The public should have an opportunity to comment on the design of new facilities.

### Improve Existing Programs and Launch New Programs

The program recommendations found in Chapter 3 provide a set of programmatic resources that will support the goals of the Southern Shores Bicycle and Pedestrian Plan. The Town should reference the recommendations to expand and improve upon existing programs, as well as to develop new programs that promote bicycling and walking.

Through cooperation between the Town, the BPAC, and groups such as walking, running, and bicycling clubs, strong education, encouragement, and enforcement campaigns could also occur as new facilities are built. When an improvement has been made, the roadway environment has changed and proper interaction between motorists, bicyclists, and pedestrians is critical for the safety of all users. A campaign through local television, on-site enforcement, education events, and other methods will bring attention to the new facility, and educate, encourage, and enforce proper use and behavior. Chapter 3 provides program ideas to choose from, many of which are also included in the action steps table starting on page 4-3.

### Provide Enforcement and Education Training for Police Officers

Law enforcement officers have many important responsibilities, yet pedestrians and bicyclists remain the most vulnerable forms of traffic. The Southern Shores Police Department has been aware of this planning process, and should be involved in implementation. In many cases, citizens (and even sometimes officers) are not fully aware of state and local laws related to bicyclists and pedestrians. Training on this topic can lead to additional education and enforcement programs that promote safety. Training for Southern Shores Police officers could be done through free online resources available from the National Highway Traffic Safety Administration (NHTSA) (see links at [www.bicyclinginfo.org/enforcement/training.cfm](http://www.bicyclinginfo.org/enforcement/training.cfm)) and through webinars available through the Association of Pedestrian and Bicycle Professionals (APBP).

### Infrastructure Action Steps

While establishing the policies and programs described, Southern Shores should move forward with the design and construction of priority projects. They should also work to identify funding for long-term, higher-cost projects.



## Identify Funding

Achieving the vision defined within this plan will require, among other things, a stable and recurring source of funding. Communities across the country that have successfully engaged in pedestrian and bicycle programs have relied on multiple funding sources to achieve their goals. No single source of funding will meet the recommendations identified in this Plan. Instead, stakeholders will need to work cooperatively with municipality, state, and federal partners to generate funds sufficient to implement the program.

A stable and recurring source of revenue is needed that can then be used to leverage grant dollars from state, federal, and private sources. The ability of local agencies to generate a source of funding for pedestrian and bicycle facilities depends on a variety of factors, such as taxing capacity, budgetary resources, voter preferences, and political will. It is very important that these local agencies explore the ability to establish a stable and recurring source of revenue for facilities.

Donations from individuals and private organizations or companies are another potential source of funding. The BPAC should establish an "Adopt a Trail" program as a mechanism to collect these donations for the development of the greenway trail and sidepath recommendations discussed in Chapter 3. Organizations and clubs could also sponsor fund raising events for specific projects. In addition to a formalized program, the town's website should be set up as an easy way for individuals to donate smaller amounts.

Federal and state grants should be pursued along with local funds to pay for necessary right-of-way acquisition and project design, construction, and maintenance expenses. "Shovel-ready" designed projects should be prepared in the event that future federal stimulus funds become available. Additional recommended funding sources may be found in Appendix B.

## Complete Short-Term Priority Projects

By quickly moving forward on priority projects, Southern Shores will demonstrate its commitment to carrying out this plan and will better sustain the enthusiasm generated during the public outreach stages of the planning process. Refer to Chapter 3: Network Recommendations for priority project ranking and the prioritization methodology.

## KEY PARTNERS IN IMPLEMENTATION

### Role of the Southern Shores Town Council

The Town Council is responsible for adopting this plan. Through adoption, the Town's leadership is further recognizing the value of bicycle and pedestrian transportation and is putting forth a well-thought out set of recommendations for improving public safety and overall quality of life (see the 'Why This Plan is Important' section in Chapter 1). By adopting this plan, the Town Council is also signifying that they are prepared to support the efforts of other key partners in the plan's implementation, including the work of Town departments and NCDOT.





Adoption of this plan is in line with public support. Southern Shores' online comment form for the planning process yielded over 300 responses and showed strong support for improving walking and bicycling conditions.

### Role of the Southern Shores Planning Board

The Town of Southern Shores Planning Board serves as an advisory board to the Council on matters of planning and zoning. The Planning Board should be prepared to:

- Adopt this plan and recommend adoption by the Town Council.
- Become familiar with the recommendations of this plan, and support its implementation.
- Become experts on pedestrian-related policies in North Carolina. (see: [www.ncdot.gov/bikeped/lawspolicies/policies/](http://www.ncdot.gov/bikeped/lawspolicies/policies/) )

### Role of the Town of Southern Shores Public Works Department

The Public Works Department handles the responsibility for the construction and maintenance of pedestrian and bicycle facilities on locally owned and maintained roadways, as well as on NCDOT roadways, where encroachment agreements are secured. Public Works staff should be prepared to:

- Communicate and coordinate with other town departments and the BPAC on priority bicycle and pedestrian projects.
- Become familiar with the standards set forth in Appendix A of this plan, as well as state and national standards for bicycle and pedestrian facility design.
- Secure encroachment agreements for work on NCDOT-owned and maintained roadways.
- Design, construct, and maintain pedestrian and bicycle facilities.
- Communicate and coordinate with Dare County, Albermarle RPO, and neighboring municipalities on regional facilities; partner for joint-funding opportunities, such as Safe Routes to School.
- Communicate and coordinate with NCDOT Division 1 on this plan's recommendations for NCDOT-owned and maintained roadways. Provide comment and reminders about this plan's recommendations no later than the design phase.
- Work with NCDOT Division 1 to ensure that when NCDOT-owned and maintained roadways in Southern Shores are resurfaced or reconstructed, that this plan's adopted recommendations for bicycle and pedestrian facilities are included on those streets. If a compromise to the original recommendation is needed, then contact NCDOT Division of Bicycle and Pedestrian Transportation for guidance on appropriate alternatives.



## Role of the Town of Southern Shores Planning & Code Enforcement

Planning & Code Enforcement planning staff will take primary responsibility for the contact with new development to implement the plan (with support from the Public Works Department). For example, the staff should be prepared to:

- Communicate and coordinate with local developers on adopted recommendations for bicycle and pedestrian facilities, including paved multi-use trails.
- Assist the Public Works Department in communicating with NCDOT and regional partners.
- Become experts on pedestrian-related policies in North Carolina. (see: [www.ncdot.gov/bikeped/lawspolicies/policies/](http://www.ncdot.gov/bikeped/lawspolicies/policies/))

## Role of the Bicycle and Pedestrian Advisory Committee

The Committee should be prepared to:

- Meet with staff from Planning & Code Enforcement and the Public Works Department; evaluate progress of the plan's implementation and offer input regarding pedestrian, bicycle, and trail-related issues; assist Town of Southern Shores staff in applying for grants and organizing bicycle- and pedestrian-related events and educational activities.
- Build upon current levels of local support for pedestrian and bicycle issues and advocate for local project funding.

## Role of the Local NCDOT Division 1

NCDOT is expected to allow the Town to construct and maintain pedestrian and bicycle facilities on NCDOT-owned and maintained roadways in the Town of Southern Shores, with encroachment agreements. Division 1 should be prepared to:

- Recognize this plan as not only as an adopted plan of the Town of Southern Shores, but also as an approved plan of the NCDOT.
- Become familiar with the bicycle and pedestrian facility recommendations for NCDOT roadways in this plan (Chapter 3); take initiative in incorporating this plan's recommendations into the Division's schedule of improvements whenever possible.
- Become familiar with the standards set forth in Appendix A of this plan, as well as state and national standards for facility design; construct and maintain recommended facilities using the highest standards allowed by the State (including the use of innovative treatments on a trial basis).
- Notify the Town of Southern Shores Public Works Department of all upcoming roadway reconstruction or resurfacing/restriping projects in town, no later than the design phase. Provide sufficient time for comments from the planning staff.



- If needed, seek guidance and direction from the NCDOT Division of Bicycle and Pedestrian Transportation on issues related to this plan and its implementation.

### Role of the Town of Southern Shores Police Department

The Town of Southern Shores Police Department is responsible for providing the community the highest quality law enforcement service and protection to ensure the safety of the citizens and visitors. The Police Department should be prepared to:

- Become experts on bicycle- and pedestrian-related laws in North Carolina. (see: [www.ncdot.gov/bikeped/lawspolicies/laws/](http://www.ncdot.gov/bikeped/lawspolicies/laws/) )
- Continue to enforce not only bicycle- and pedestrian-related laws, but also motorist laws that affect walking and bicycling, such as speeding, running red lights, aggressive driving, etc.
- Participate in bicycle- and pedestrian-related education programs.
- Review safety considerations with the Public Works Department as projects are implemented.

### Role of Developers

Developers in Southern Shores can play an important role in facility development whenever a project requires the enhancement of transportation facilities or the dedication and development of on-road bicycle facilities, sidewalks, trails or crossing facilities. Developers should be prepared to:

- Become familiar with the benefits, both financial and otherwise, of providing amenities for walking and biking (including trails) in residential and commercial developments.
- Become familiar with the standards set forth in Appendix A of this plan, as well as state and national standards for facility design.
- Be prepared to account for bicycle and pedestrian circulation and connectivity in future developments.

### Role of Local & Regional Stakeholders

Stakeholders for bicycle and pedestrian facility development and related programs, such as Dare County, the Albemarle RPO, and local organizations play important roles in the implementation of this plan. Local and regional stakeholders should be prepared to:

- Become familiar with the recommendations of this plan, and communicate & coordinate with the Town for implementation, specifically in relation to funding opportunities, such as grant writing and developing local matches for facility construction.





- The RPO should work with the Town of Southern Shores on populating the Transportation Improvement Program (TIP) with pedestrian and bicycle infrastructure projects.
- Dare County should coordinate with the Town on trail development and Safe Routes to School grants.
- Business owners and organizations should look for opportunities to partner for sponsorship of specific projects, such as streetscape improvements, or comprehensive signage and wayfinding projects.

## Role of Local Residents, Clubs and Advocacy Groups

Local residents, clubs, and advocacy groups play a critical role in the success of this plan. They should be prepared to:

- Continue offering input regarding pedestrian and bicycling issues in Southern Shores.
- Assist Town staff and the BPAC by volunteering for bicycle- and pedestrian-related events and educational activities and/or participate in such activities.
- Assist Town of Southern Shores staff and the BPAC by speaking at Town Council meetings and advocating for local pedestrian and bicycle project and program funding.

## Role of Homeowner Associations

Homeowner associations such as the Southern Shores Civic Association (SSCA), Chicahauk Property Owners Association (CPOA), Pelican Watch Homeowners Association( PWHOA), Mallard Cove Patio Hoes Association (MCPHA), and the Fairway Drive Homeowners Association (FDHOA) should have leaders that are prepared to:

- Learn about the benefits of a walkable and bicycle-friendly community.
- Learn about the recommendations of this Plan, and how they serve and affect their respective neighborhoods.
- Listen to the bicycle- and pedestrian-related needs of your members and communicate them to the Town through BPAC.
- Consider developing a strategy to partner with the Town, as appropriate, for the improvement of association-maintained sidewalks and trails that need widening, resurfacing or rebuilding (one example is the connector trail between the south end of Sea Oats and the north end of Chicahauk Trail).

## Role of Volunteers

Services from volunteers, student labor, and seniors, or donations of material and equipment may be provided in-kind, to offset construction and maintenance costs. Formalized maintenance agreements, such as adopt-a-trail/greenway



or adopt-a-highway can be used to provide a regulated service agreement with volunteers. Other efforts and projects can be coordinated as needed with senior class projects, scout projects, interested organizations, clubs or a neighborhood's community service to provide for many of the program ideas outlined in Chapter 3 of this plan. Advantages of utilizing volunteers include reduced or donated planning and construction costs, community pride and personal connections to the town's greenway, bicycle, and pedestrian networks.

## PERFORMANCE MEASURES (EVALUATION AND MONITORING)

The Town of Southern Shores should establish performance measures to benchmark progress towards fulfilling the recommendations of this plan. These performance measures should be stated in an official report within the first year after the plan is adopted. Performance measures could address the following aspects of pedestrian and bicycle transportation and recreation in Southern Shores:

- *Safety.* Measures of pedestrian- and bicycle-related crashes and injuries.
- *Facilities.* Measures of how many pedestrian and bicycle facilities have been funded and constructed since the plan's adoption.
- *Maintenance.* Measures of existing sidewalk/crosswalk or bicycle facility deficiency or maintenance needs.
- *Counts.* Measures of pedestrian and/or bicycle traffic at specific locations.
- *Education, Encouragement and Enforcement.* Measures of the number of people who have participated in part of a pedestrian- or bicycle-related program since the plan's adoption.

## FACILITY DEVELOPMENT METHODS

This section describes different construction methods for the proposed pedestrian and bicycle facilities outlined in Chapter 3. Note that many types of transportation facility construction and maintenance projects can be used to create new bicycle and pedestrian facilities. It is much more cost-effective to provide bicycle and pedestrian facilities during roadway construction and re-construction projects than to initiate the improvements later as "retrofit" projects.

To take advantage of upcoming opportunities and to incorporate bicycle and pedestrian facilities into routine transportation and utility projects, the Town of Southern Shores should keep track of NCDOT's projects and any other local transportation improvements. While doing this, town staff should be aware of the different procedures for state and local roads and interstates.

## North Carolina Department of Transportation (NCDOT) State Transportation Improvement Program

The NCDOT's State Transportation Improvement Program is based on the Strategic Transportation Investments Bill, signed into law in 2013. The Strategic



Transportation Investments (STI) Initiative introduces the Strategic Mobility Formula, a new way to fund and prioritize transportation projects.

The new Strategic Transportation Investments Initiative is scheduled to be fully implemented by July 1, 2015. Projects scheduled for construction before then will proceed as scheduled under the current Equity Formula. Projects slated for construction after that time will be ranked and programmed according to the new formula. The new Strategic mobility formula assigns projects for all modes into one of three categories: 1) Statewide Mobility, 2) Regional Impact, and 3) Division Needs. All independent bicycle and pedestrian projects are placed in the "Division Needs" category, and are ranked using the following criteria:

- Safety
- Access
- Demand or density
- Constructability
- Benefit/cost ratio

These rankings largely determine which projects will be included in NCDOT's State Transportation Improvement Program (STIP). The STIP is a federally mandated transportation planning document that details transportation planning improvements prioritized by the stakeholders for inclusion in NCDOT's Work Program over the next 10 years. The STIP is updated every 2 years. The STIP contains funding information for various transportation divisions of NCDOT, including, highways, rail, bicycle and pedestrian, public transportation and aviation.

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For more information on STIP: [www.ncdot.gov/strategictransportationinvestments/](http://www.ncdot.gov/strategictransportationinvestments/)

To access the STIP: <https://connect.ncdot.gov/projects/planning>

For more about the STIP process: <http://www.ncdot.org/performance/reform/>

## Local Roadway Construction or Reconstruction

Pedestrians and bicyclists should be accommodated any time a new road is constructed or an existing road is reconstructed. In the longer-term, all new roads with moderate to heavy motor vehicle traffic should have sidewalks, bicycle facilities, and safe intersections. However, side paths can be an acceptable solution when a road has few driveways and high-speed, high-volume traffic.



Also, case law surrounding the ADA has found that roadway resurfacing constitutes an alteration, which requires the addition of curb ramps at intersections where they do not yet exist. The Department of Justice and the Federal Highway Administration recently released guidance on the Title II of the Americans with Disabilities Act requirement to provide curb ramps when streets, roads, or highways are altered through resurfacing. More information is available on the following website:

<http://www.ada.gov/doj-fhwa-ta.htm>.

## Residential and Commercial Development

The construction of sidewalks, bicycle facilities, trails, and safe crosswalks should be required during development. Construction of facilities that corresponds with site construction is more cost-effective than retrofitting. In commercial development, emphasis should also be focused on safe pedestrian and bicyclist access into, within, and through large parking lots. This ensures the future growth of the pedestrian and bicycle networks and the development of safe communities.

## Removing Parking

Some neighborhood collector roadways are wide enough to add pedestrian and bicycle facilities, 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 rarely 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 facilities 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.

## Repaving

Repaving projects provide a clean slate for revising pavement markings. When a road is repaved, the roadway should be restriped to create narrower lanes and provide space for bike lanes and shoulders, where feasible.

In addition, if the spaces on the sides of non-curb and gutter streets have relatively level grades and few obstructions, the total pavement width can be widened to include paved shoulders.



## Installing Shared Lane Markings

The Town of Southern Shores should adopt the use of shared lane markings, or “sharrows,” as one of its bicycle facility types. Shared lane markings have been newly incorporated into the Manual on Uniform Traffic Control Devices (MUTCD). They take the place of traditional bicycle lanes where travel lanes cannot be narrowed, where speeds do not exceed 35 mph, and/or where there is on-street parking. The intent of the shared lane marking is threefold:

- They draw attention to the fact that the roadway is accommodating bicycle use and traffic;
- They clearly define the direction of travel for both bicyclists and motorists; and
- With proper placement, they remind bicyclists to bike further from parked cars to prevent “dooring” collisions.

While shared-lane markings are not typically recommended or needed on local, residential streets, they are sometimes used along such streets when part of a signed route or bicycle boulevard. It should be noted that sharrows are not a replacement for bicycle lanes in their effectiveness or use.

## Retrofit Roadways with New Bicycle and Pedestrian Facilities

There may be critical locations in the pedestrian and bicycle network that have safety issues or are essential links to destinations. In these locations, it may be justifiable to add new pedestrian and bicycle facilities before scheduling a roadway to be repaved or reconstructed. In some other locations, it may be relatively easy to add sidewalk or to add extra pavement for shoulders, but other segments may require removing trees, relocating landscaping or fences, or re-grading ditches. Retrofitting roadways with side paths creates similar challenges.

## Bridge Construction or Replacement

Provisions should always be made to include walking and bicycling facilities as a part of vehicular bridges. All new or replacement bridges should accommodate two-way travel for all users. Even though bridge construction and replacement does not occur regularly, it is important to consider these policies for long-term bicycle and pedestrian planning. NCDOT bridge policy states that sidewalks shall be included on new NCDOT road bridges with curb and gutter approach roadways. A determination of providing sidewalks on one or both sides is made during the planning process. Facility design standards such as widths of facilities and heights of handrails are presented in Appendix A: Design Guidelines.

## Signage and Wayfinding Projects

A relatively low-cost, short-term action that the Town of Southern Shores can pursue immediately is to develop and adopt a wayfinding signage style policy and procedure, to be applied throughout the entire community, to make it easier for people to find destinations. Bicycle route signs are one example of these wayfinding signs, and should be installed along routes independently of other

signage projects or as a part of a more comprehensive wayfinding improvement project. Posting signage that includes bicycle and walk travel times to major destinations can help to increase awareness of the ease and efficiency of bicycle and pedestrian travel. The Town could consider working with 'Walk [Your City]' as an innovative and low-cost solution to wayfinding: <https://walkyourcity.org/>. Also, nearby Currituck County is currently developing a new wayfinding system that could be referred to for ideas. See Appendix A: Design Guidelines for more detailed guidance on signage and wayfinding improvements.

For a step-by-step guide to help non-professionals participate in the process of developing and designing a signage system, as well as information on the range of signage types, visit the Project for Public Places website: [www.pps.org/info/amenities\\_bb/signage\\_guide](http://www.pps.org/info/amenities_bb/signage_guide)

### Town Easements

The Town of Southern Shores should explore opportunities to revise existing easements to accommodate public access greenway trail facilities. Similarly, as new easements are acquired in the future, the possibility of public access should be considered. Sewer easements are very commonly used for this purpose, offering cleared and graded corridors that easily accommodate trails. This approach avoids the difficulties associated with acquiring land, and it better utilizes the Town's resources.

*A bicyclist waits for the signal to cross at the intersection of US 158 and S. Dogwood Trail.*







## SOUTHERN SHORES BICYCLE + PEDESTRIAN PLAN

Prepared for the Town of Southern Shores & NCDOT

Prepared by Alta Planning + Design

