



1. Multi-Modal Transportation Evaluation

The evaluation of multi-modal transportation for the Independence Boulevard Extension is based on the NCDOT policies for integration of multi-modal elements into transportation projects.

1.1. NCDOT Policies Relating to Multi-Modal Transportation

NCDOT has a long standing set of policies that strive to integrate bicycle and pedestrian accommodations into the planning, design and construction of highway projects. The following is a listing of the policies that apply to multi-modal transportation.

1.1.1. Resolution: Bicycling and Walking in North Carolina, a Critical Part of the Transportation System

The N.C. Board of Transportation has strongly demonstrated its commitment to improving conditions for bicycling and walking in North Carolina by passing a resolution to make bicycling and walking a critical part of the state's transportation system. Although the department incorporated bicycle and pedestrian elements — including bike lanes and sidewalks — into many of its highway projects prior to September 8, 2000, this resolution exemplifies the department's dedication to integrating these elements into its long-range transportation system. It also acknowledges the benefits that bicycling and walking offer: cleaner air, reduced congestion, more livable communities, more efficient use of road space and resources and healthier people.

The resolution also encourages cities and towns across the state to make bicycling and pedestrian improvements an integral part of their transportation planning and programming.

1.1.2. Bicycle Policy

In 1978, the North Carolina Board of Transportation adopted the nation's most comprehensive set of bicycle policies in response to the enabling legislation of 1974. These policies were unique at that time in that they detailed how the state DOT would institutionalize bicycle provisions into everyday departmental operating functions. They declared "bicycle transportation to be an integral part of the comprehensive transportation system in North Carolina" and formalized the inclusion of bicycle provisions in highway construction projects.

In 1991, the policy document was updated to clarify responsibilities regarding the provision of bicycle facilities upon and along the 77,000-mile state-maintained highway system. The newer policy details guidelines for planning, design, construction, maintenance, and operations pertaining to bicycle facilities and accommodations. All bicycle improvements undertaken by the NCDOT are based upon this policy.

1.1.3. Pedestrian Policy Guidelines

A sidewalk policy was initially developed in 1993 whereby the NCDOT may participate with localities in the construction of sidewalks as incidental features of highway improvement projects. Prior to this policy, the NCDOT participation in sidewalk construction was limited to replacing sidewalks that were disturbed during road construction. Now, at the request of a locality, state funds for a sidewalk are made available as part of an incidental project if matched by the requesting locality, which will be responsible for maintaining the sidewalk. The matching share is a sliding scale based on population.



1.1.4. Administrative Action to Include Local Adopted Greenway Plans in the NCDOT Highway Planning Process and Guidelines

In 1994 the NCDOT adopted administrative guidelines to consider greenways and greenway crossings during the highway planning process. This policy was incorporated so that critical corridors which have been adopted by localities for future greenways will not be severed by highway construction.

1.1.5. Bridge Policy

NCDOT's Bridge Policy establishes controlling design elements for new and reconstructed bridges on the state road system. It includes information to address sidewalks and bicycle facilities on bridges, including minimum handrail heights and sidewalk widths.

1.1.6. Complete Streets Policy

The NC Board of Transportation approved this policy at the July 2009 board meeting. The policy requires planners and designers to consider and incorporate multimodal alternatives in the design and improvement of all transportation projects within a growth area of a municipality unless certain circumstances exist. The implementation and guidance on how this policy will be applied are currently being developed and the determination of consistency will be made once guidance is available.

1.2. Federal Highway Administration Policies Relating to Multi-Modal Transportation

The Federal Highway Administration (FHWA) also has a long standing set of policies that strive to integrate bicycle, pedestrian and nonmotorized transportation into projects involving federal funding.

1.2.1. Guidance on Bicycle and Pedestrian Provisions of the Federal-Aid Program

This memorandum transmits the FHWA Guidance on the Bicycle and Pedestrian Provisions of the Federal-aid Program and reaffirms their strong commitment to improving conditions for bicycling and walking. The nonmotorized modes are an integral part of the mission of FHWA and a critical element of the local, regional, and national transportation system. Bicycle and pedestrian projects and programs are eligible for but not guaranteed funding from almost all of the major Federal-aid funding programs. FHWA expects every transportation agency to make accommodation for bicycling and walking a routine part of their planning, design, construction, operations and maintenance activities.

1.2.2. Mainstreaming Nonmotorized Transportation

Federal transportation policy is to increase nonmotorized transportation to at least 15 percent of all trips and to simultaneously reduce the number of nonmotorized users killed or injured in traffic crashes by at least 10 percent. This policy, which was adopted in 1994 as part of the National Bicycling and Walking Study, remains a high priority for the U.S. Department of Transportation (DOT). SAFETEA-LU continued to provide the funding opportunities, planning processes, and policy language by which States and metropolitan areas can achieve this ambitious national goal.

1.2.3. A US DOT Policy Statement: Integrating Bicycle and Walking into Transportation Infrastructure

Accommodating Bicycle and Pedestrian Travel: A Recommended Approach is a policy statement adopted by the United States Department of Transportation. USDOT hopes that public agencies, professional associations, advocacy groups, and others adopt this approach as a way of committing themselves to integrating bicycling and walking into the transportation mainstream.

The Design Guidance incorporates three key principles:



- a. a policy statement that bicycling and walking facilities will be incorporated into all transportation projects unless exceptional circumstances exist;
- b. an approach to achieving this policy that has already worked in State and local agencies; and
- c. a series of action items that a public agency, professional association, or advocacy group can take to achieve the overriding goal of improving conditions for bicycling and walking.

The Policy Statement was drafted by the U.S. Department of Transportation in response to Section 1202 (b) of the Transportation Equity Act for the 21st Century (TEA-21) with the input and assistance of public agencies, professional associations and advocacy groups.

1.3. Local Plans Relating to Multi-Modal Transportation

1.3.1. The City of Wilmington – Walk Wilmington: A Comprehensive Pedestrian Plan (2009)

The City of Wilmington developed Walk Wilmington: A Comprehensive Pedestrian Plan in August 2009. The plan splits Wilmington into four character zones; Central Business District, Urban Core, Traditional Suburban and Automobile-Oriented Suburban. The proposed Independence Boulevard Extension (U-4434) is located entirely within the Traditional Suburban character zone. Table 6 of the plan includes a listing of NCDOT STIP projects; however the listing only includes those with construction funds allocated in the 2009-2015 time period. Therefore, U-4434 is not included in the table, nor mentioned specifically in the plan. The plan notes that the City of Wilmington does not have a formal policy for requesting sidewalks and crossing facilities on all state road projects; however the recommendation to develop a policy is one of the Plan findings. The plan recommends limiting speed limits to 35 mph for arterials and the 85th percentile speed for limited access arterials or freeways, with the Independence Boulevard Extension and Martin Luther King Jr. Parkway being shown with a proposed speed limit based on the 85th percentile speed, while Market Street, Princess Place Drive and Randall Parkway are all proposed as having a 35 mph speed limit. Portions of the study area are identified as having a moderately high pedestrian demand (Page 131), especially at the Independence Boulevard/Randall Parkway intersection and between Market Street and Princess Place Drive. The northern portion of the study area, along Martin Luther King Jr. Parkway shows a low pedestrian demand with demand dropping as you move north of Maides Park. The Walk Wilmington Recommended Sidewalk and Pedestrian Signal Improvements (Figure 1) within the U-4434 study area do not consider the proposed project and are based entirely on the existing conditions.

1.3.2. Wilmington MPO BikePed Committee Bicycle Routes

The Wilmington MPO website includes a map developed by the Bicycle and Pedestrian Advisory Committee in February 2008. The map (Figure 2) shows both signed and unsigned bicycle routes. The study area for U-4434 includes one designated bicycle route. The route is listed as “University” and designated as Route 12 with a total length of 12.0 miles. The route begins in the vicinity of the New Hanover County Arboretum and continues through UNC-Wilmington, crossing College Road to Randall Parkway. Within the U-4434 study area the route enters from the East along Randall Parkway, crosses Independence Boulevard/Covil Avenue to Mercer Avenue, continues north along Mercer Avenue to Wakefield Road where it then turns west to Wayne Drive, turning again to the south and exiting the study area. The route continues westward and runs all the way to Front Street near the Cape Fear River.



1.3.3. Wilmington Metropolitan Area Bicycle Map (2008)

The Wilmington MPO, in cooperation with the Cape Fear Breeze alternative transportation program, published the first bicycle map (Figure 3) for the Wilmington area in over 16 years in 2008. This map, intended for bicycle commuters and enthusiasts, identifies area attractions and bicycle facilities, local bike routes and NC Bicycling Highways. Within the U-4434 study area, Independence Boulevard, south of Randall Parkway and Princess Place are shown as facilities with an on-road outside lane for bicycles. The map also shows a future off road path along Randall Parkway east of Independence Boulevard. The map also shows the Bicycle and Pedestrian Committee Bicycle Routes as dashed lines.

1.3.4. City of Wilmington – Gary Shell Cross-City Trail

The Gary Shell Cross-City Trail is primarily an off-road, multi-use trail which will provide bicycle and pedestrian access to numerous recreational, cultural and educational destinations in Wilmington. The Gary Shell Cross-City Trail is a spur in a developing city-wide trails and greenways system which makes alternative transportation in Wilmington a safer, more convenient option for every citizen. It will also make up part of the East Coast Greenway, a multi-use path that will run all the way from Maine to Florida and will be like an "urban Appalachian Trail." The most recent trail map (Figure 4; accessed September 2011) depicts an existing trail in the vicinity of southern edge of the U-4434 study area. The trail travels through Empie Park, across Wrightsville Avenue, along Rosement Avenue to McCrary Park. At McCrary Park the existing trail ends and a future trail heading east along the south side of Randall Parkway is shown. A map of the Cross City Trail from December 2009 (Figure 5) includes the future trail traversing the length of Randall Parkway, beginning at the Independence Boulevard Intersection and traveling east toward Kerr Avenue. The Wilmington MPO also adopted an alignment for the East Coast Greenway in 2009 (Figure 6) that shows a similar facility along Randall Parkway from Independence Boulevard eastward as funded NC Coast Corridor.

1.3.5. Wilmington MPO Cape Fear Commutes 2035 Transportation Plan (2011)

This Long Range Transportation Plan details how transportation needs should be addressed over the next twenty-five years. The plan establishes the goals and objectives for the improvement of travel conditions within the WMPO planning area and makes specific recommendations for transportation projects and funding sources. In accordance with federal regulations, the plan must be fiscally-constrained. In other words, the plan must identify funding sources for all of the proposed projects. The plan considers all modes of transportation, including automobiles, trucks, buses, trains, airplanes, ferries, bicycles, and walking.

The Plan includes a chapter on bicycles where over 200 individual bicycle improvement projects were identified. These include striping bicycle lanes on new and existing roadways, developing bicycle boulevards, and constructing multi-use paths. Projects were prioritized based on a series of criteria to assist in applying limited funding opportunities to the most needed projects. The Plan notes that existing bicycle facilities are provided along Princess Place Drive, Randall Parkway and Independence Boulevard, south of Randall Parkway. The Plan does not appear to include the construction of the proposed project as it is not shown in any of the figures, nor are any recommendations made relating to the proposed project. The Plan includes recommendations for bicycle facilities (Figure 7) within the study area for U-4434 including two along Market Street, Project Number 88 (Ranked #22 - Horizon Period 2010-2015) which begins at S. 17th street and ends at Covil Avenue where Project #233 (Ranked #85 – Horizon Period 2021-2025) begins and extends to Cinema Drive, with both facility types being designated as having on-road bicycle lanes via restriping. Additionally, the bicycle recommendations include two projects that are parallel to the proposed U-4434 project. Project #109 (Ranked #75 – Horizon Period 2016-2020) begins at Park Avenue and ends within the southern portion of the study area at the dead end portion of Mercer Avenue, where Project #111 (Ranked #53 (Horizon Period 2016-2020)



begins with a new greenway connection and extends along Mercer Avenue, Wakefield Road and Wayne Drive, ending at Market Street. Both projects are designated as on-road bicycle lanes utilizing new pavement. The Plan also includes a new multi-use path (Project #268-270 – Horizon Year 2031-2035) parallel to Martin Luther King, Jr. Parkway that connects from west of 30th Street to Maide Park and then east toward Kerr Avenue.

The Plan includes a chapter on Pedestrian Facilities with pedestrian improvements, such as sidewalks, crosswalks, and pedestrian signalization, as part of many of the roadway improvement projects. In many cases, the improvements are included as part of roadway projects to promote the development of complete streets and also provide opportunities to make connections between different modes of travel. The Plan recommends the construction of new or improved pedestrian facilities as part of all transportation projects within the Wilmington Urban Area (with the exception of new freeways and limited-access roadways) and to include marked crosswalks and pedestrian signal heads at all new traffic signals within the Wilmington Urban Area (with the exception of new freeways and limited-access roadways). The Plan does not include detailed recommendations on specific improvements, but recommends that the WMPO work to construct the pedestrian projects and implement the policies identified in several adopted plans, including Walk Wilmington: A Comprehensive Pedestrian Plan and the Market Street Corridor Study.

The Plan includes a chapter on transit that will improve transit through enhancing the local bus system, adding new express routes to capture regional commuters, and developing a bus rapid transit network in the urban area. The Plan notes that six fixed bus routes provide service within the project study area including: Route 101 (Brooklyn/Princess Place), Route 104 (East), Route 105 (Medical Center), Route 106 (West), Route 202 (Independence) and Route 207 (Castle Hayne). The recommended mass transit projects (Figure 8) from the Plan that are within the U-4434 Study Area include Express Bus Routes along Martin Luther King Jr. Parkway and both Local Bus Service and Bus Rapid Transit (BRT) along Market Street. Based on the figure included in the Plan, the proposed project is not considered; therefore, transit service is not planned for the Independence Boulevard Extension corridor.

In addition to the chapters on bicycles, pedestrians and mass transit, the WMPO included multi-modal recommendations to roadway projects, including a portion that were designated as projects to improve the quality of life within the area. One project within the Study Area for U-4434 is included on the quality of life listing within the fiscally constrained plan. Project #Q11 (Quality of Life Ranking #4 – Horizon Period 2016-2025) is a road diet along Market Street from S. 17th Street to Covil Avenue, including the reduction to one lane in each direction with a two-way left turn lane and sidewalks and bicycle lanes on both sides of the roadway.

1.3.6. Ongoing and Future Studies

The WMPO 2011-2012 Unified Planning Work Program includes funding for the development of a comprehensive greenway plan for New Hanover County.



2. Multi-modal Considerations for Functional Design

The development of guidance with regard to how multi-modal elements will be considered during the functional design stage of the project is a critical element in the implementation of the proposed project. Determining how bicycles, pedestrians and transit will be integrated into the functional design plans should be based on how the local plans in Section 1.3 meet the NCDOT and FHWA policies included in Sections 1.1 and 1.2.

For the most part, the local plans included in Section 1.3 do not include the implementation of the proposed project and make the determination of how to implement multi-modal solutions more difficult due to the nature of the proposed project. A meeting with NCDOT Division 3 and the Wilmington MPO was held on August 10, 2011 to discuss the project. The Wilmington MPO stated that they were in the process of beginning a greenway plan and that it was envisioned that a north-south multi-modal connection would be an element of the new plan that would connect Empie Park, McCrary Park and Maides Park. The Wilmington MPO further stated that it was likely that the location of the greenway would be located along the same corridor as the proposed project.

Based on an evaluation of the local plans and the August 10, 2011 meeting the following multi-modal elements will be considered when the functional design plans are developed:

- All connections to and crossings of side streets should not preclude pedestrian facilities and should allow for sidewalks and pedestrian signals at intersections. Any reconstruction of side street connections should include sidewalks consistent with the Walk Wilmington
- The Randall Parkway/Independence Boulevard intersection shall include accommodations for pedestrians and on-road bicycle lanes to allow for the east-west crossing of Independence Boulevard. Bicycle lanes will not be provided along Independence Boulevard north of Randall Parkway due to the limited access nature of the project.
- Due to the grade separation of the railroad at the southern end of the project, consideration should be given to providing a grade separated crossing for a multi-use path under Independence Boulevard; however additional coordination is needed to determine the intent of several of the local plans and the compliance with the NCDOT Administrative Action to Include Local Adopted Greenway Plans in the NCDOT Highway Planning Process.
- Any reconstruction along Mercer Avenue, south of Wakefield Road shall include on-road bicycle lanes within the limits of construction.
- Market Street shall include on-road bicycle lanes and sidewalks on both sides of the roadway. Additional coordination is needed to determine the design criteria for the bicycle lanes (wide outside shoulder, exclusive lanes, etc.).
- The integration of transit along Market Street requires additional coordination. The current plan to include BRT along Market Street will require additional coordination to determine how the grade separated crossing will be constructed such that it does not interfere with the future BRT plans along Market Street.
- The integration of the proposed multi-use path south of Martin Luther King Jr. Parkway will also require additional coordination to determine if a grade separated crossing would be needed and



in compliance with the NCDOT Administrative Action to Include Local Adopted Greenway Plans in the NCDOT Highway Planning Process.

- Due to the limited access nature of the project, the design should allow for a continuous north-south corridor that allows for bicycle and pedestrian operations. It is likely that either a new off road facility will be included in the design or a parallel route that can provide adequate access will be designated as bicycle and pedestrian routes.

Walk Wilmington

Recommended Sidewalk and Pedestrian Signal Improvements

Quadrant 1

Figure 1

Legend

Short-Term Signal Improvement

- New Traffic Signal (with Pedestrian Signal)
- New Hybrid Signal
- New Rapid Flash Beacon
- Add Pedestrian Signals To Existing Signal

Mid-Term Signal Improvement

- Add Pedestrian Signals To Existing Signal

Long-Term Signal Improvement

- Add Pedestrian Signals To Existing Signals

Signal Improvement Concurrent with Trail Construction

- Add Pedestrian Signals to Existing Signal
- New Hybrid Signal
- New Rapid Flash Beacon

Potential Bicycle and Pedestrian Connections

- Short-term Sidewalk Project
- Mid-term Sidewalk Project
- Long-term Sidewalk Project

Cross City Trail

- Existing
- Planned

Other Multi-Use Path

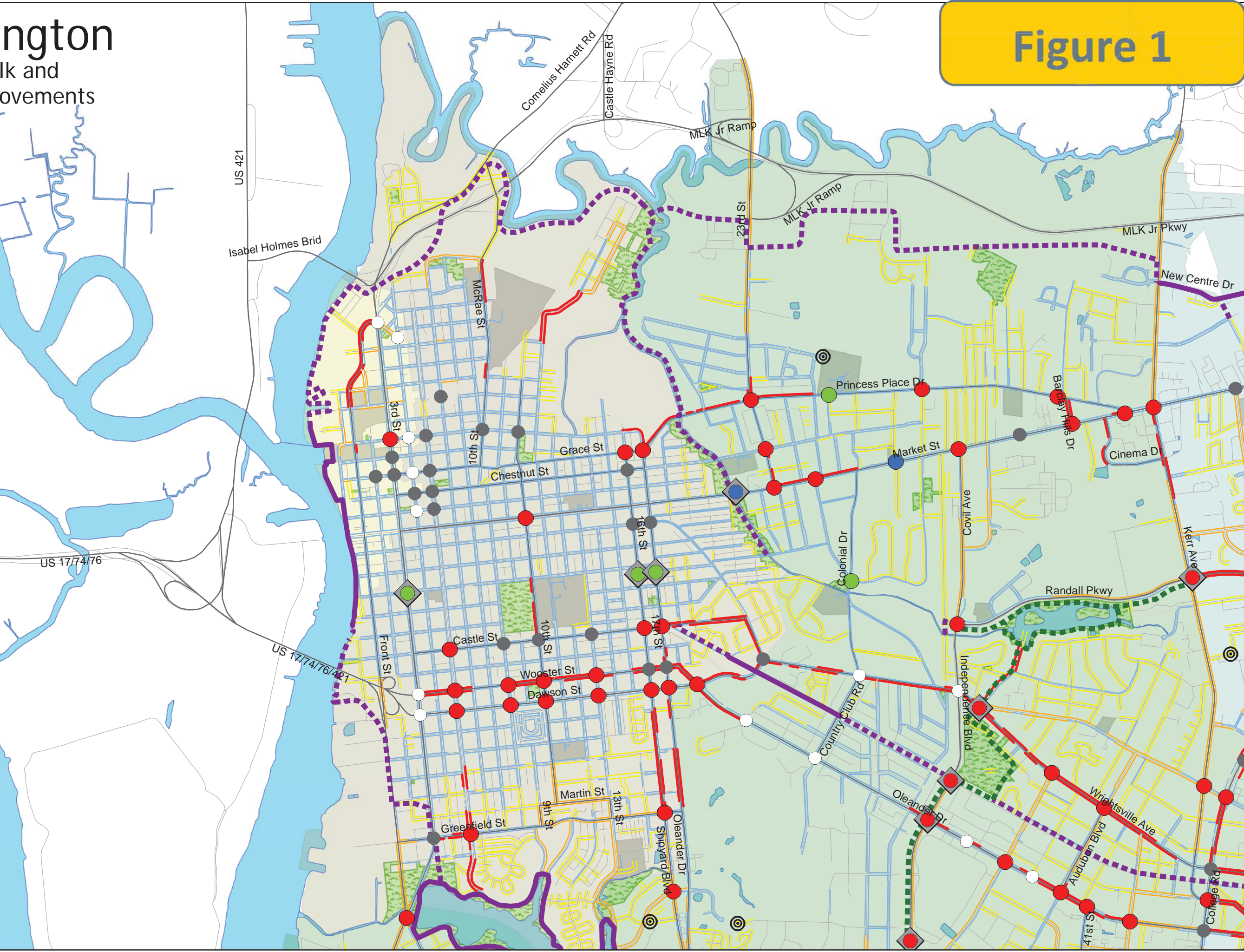
- Existing
- Planned

Infrastructure

- Existing Sidewalk
- Road
- School
- Park

Character Zone

- Central Business District
- Urban Core
- Traditional Suburban
- Automobile-Oriented Suburban

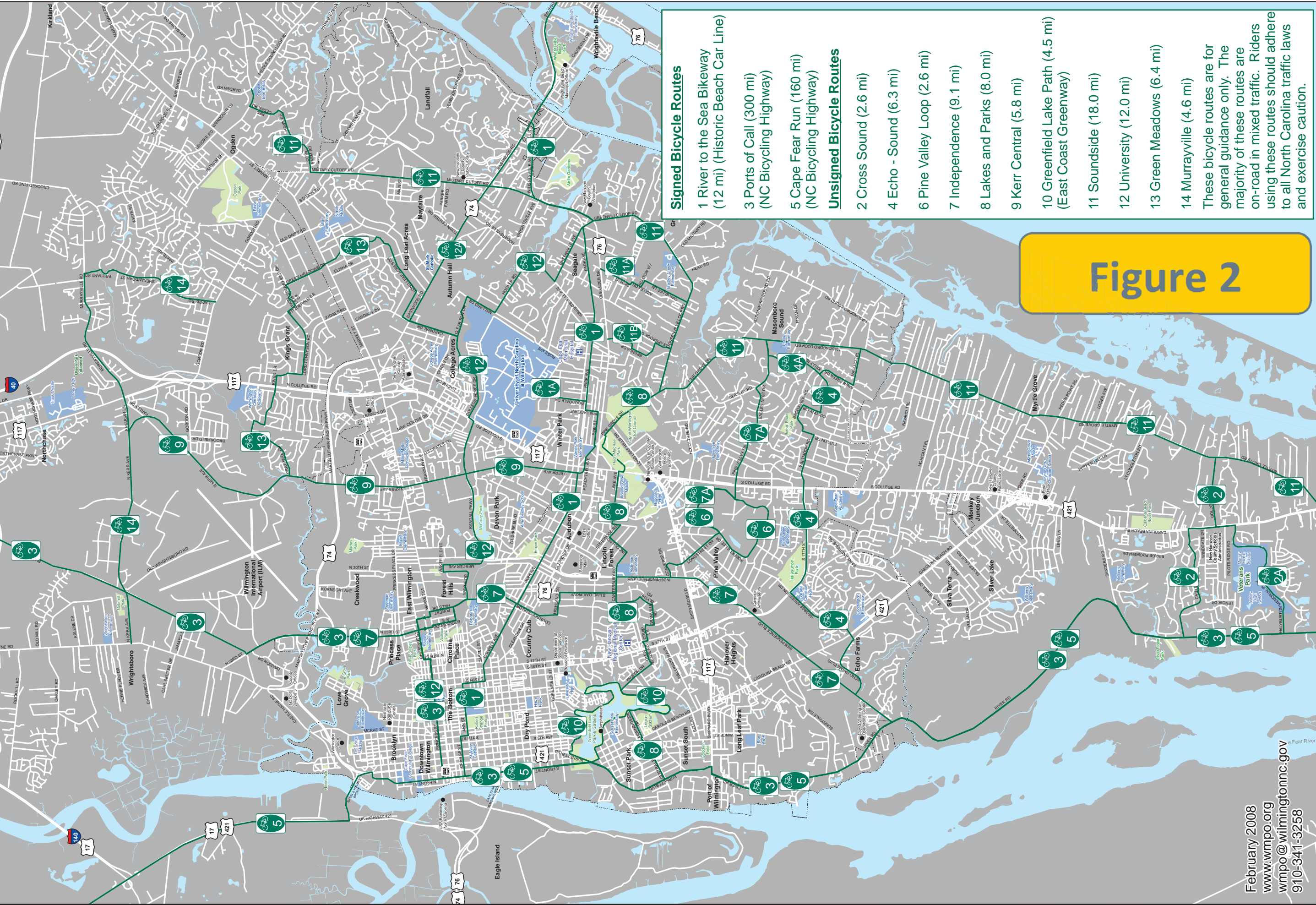




WILMINGTON URBAN AREA
Metropolitan Planning Organization

WMPO BikePed Committee Bicycle Routes

0 0.5 1 2 Miles



Signed Bicycle Routes

1 River to the Sea Bikeway (12 mi) (Historic Beach Car Line)

3 Ports of Call (300 mi) (NC Bicycling Highway)

5 Cape Fear Run (160 mi) (NC Bicycling Highway)

Unsigned Bicycle Routes

2 Cross Sound (2.6 mi)

4 Echo - Sound (6.3 mi)

6 Pine Valley Loop (2.6 mi)

7 Independence (9.1 mi)

8 Lakes and Parks (8.0 mi)

9 Kerr Central (5.8 mi)

10 Greenfield Lake Path (4.5 mi) (East Coast Greenway)

11 Soundside (18.0 mi)

12 University (12.0 mi)

13 Green Meadows (6.4 mi)

14 Murrayville (4.6 mi)

These bicycle routes are for general guidance only. The majority of these routes are on-road in mixed traffic. Riders using these routes should adhere to all North Carolina traffic laws and exercise caution.

Figure 2

Wilmington Metropolitan Area Bicycle Map



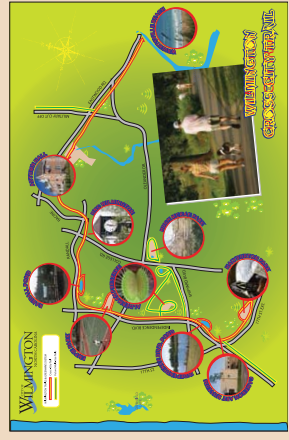
Cross-City Trail

The Cross-City Trail is a 10-mile long walking and bicycling trail planned to connect the new Bethel Road Park to the Heide-Trask Drawbridge at the Intracoastal Waterway. The majority of the Cross-City Trail will be a 10-foot wide asphalt off-road multi-use path (similar to the trails along Eastwood Road and Military Cutoff Road).

The Cross-City Trail will be constructed in phases. The first phase includes:

- multi-use path along Eastwood Road between Cardinal Drive and Military Cutoff Road
- eight-foot-wide sidewalk along Randall Drive between South College Road and Racine Drive
- multi-use path along South 17th Street between John D. Barry Drive and the Cameron Art Museum
- multi-use path along Museum Drive and Independence Boulevard between the Cameron Art Museum and Croquet Drive and South Kerr Avenue
- improved pedestrian crossings at the Independence Boulevard/Park Avenue and the Wrightsville Avenue/Wilshire Boulevard intersections.

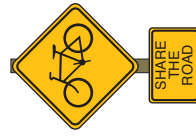
Once completed, the Cross-City Trail will connect Bethel Road Park, Haliburton Park, Cameron Art Museum, the future Independence Park, Alderman Elementary School, Independence Mall, Hanover Center, Empire Park, McCary Park, University of North Carolina - Wilmington, Autumn Hall and the Summers Rest Trail. The Cross-City Trail is expected to be completed in 5-7 years.



Share the Road and Wear a Helmet!

Cars and bicycles frequently must share the road. On roadways with high levels of bicycle traffic, but relatively demanding conditions for bicyclists, Share the Road signs have been installed. These signs are intended to increase motorists' awareness of bicyclists on a roadway without designating that roadway as a preferred route.

Bicyclists, however, must also be aware of the importance of sharing the road with motorists. If someone comes up behind you, move to the right when safe to allow them to pass. In groups, bicyclists should ride cooperatively and help motorists pass safely.

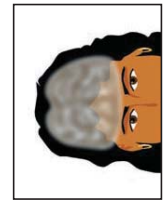


Wear a Helmet!

If you don't already have one, get a bicycle helmet today.* If you have one, wear it every time you ride. Today's helmets look good, are very light, and let in those cooling breezes... all while protecting your head and brain! Helmets cost as little as \$15 and could be your most important piece of equipment.

Why

In a word: protection. A good bike helmet can protect your brain. That's important if your head hits a hard surface... like a road, a curb, or a car. Brains are fragile and once damaged may not mend.



What

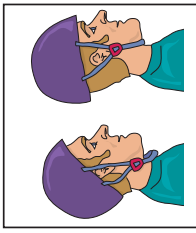
Get one that fits snugly but is not tight. Make sure it has CPSC stickers, which prove that it's passed the tests.



How

You should be able to see the front edge of your helmet when you look up. If your helmet tips back, it won't protect your forehead. Also, your neck strap should be snug but not too tight.

Make sure your helmet is the right size and doesn't rock from side to side. You can add interior pads to fine tune a fit.



Adjust the straps with the plastic slider to make your helmet sit level. It should be just under your ear with no slack in the straps.

*In North Carolina, children under the age of 16 are required to wear an approved bicycle helmet.

Routes

1 River to the Sea Bikeway (Historic Beach Car Line): The River to the Sea Bikeway stretches from Riverfront Park at the foot of Market Street in Wilmington to Wrightsville Beach, a ride of just over 10 miles. The bikeway follows the route of the historic trolley line. Most of the bikeway follows quieter tree-lined residential streets. However, portions of the route are along off-road bicycle paths and there are a few busy roadway crossings.

3 Ports of Call (NC Bicycling Highway): The Ports of Call Route is a 31.9-mile seaside excursion from the Virginia border to the South Carolina state line. Approximately 110 miles of it are along the southern coast, giving access to miles of beaches and downtown Wilmington.

5 Cape Fear Run (NC Bicycling Highway): The Cape Fear Run links Raleigh to Southport. This 160-mile route crosses the Cape Fear River twice and intersects the Ports of Call Route in downtown Wilmington. To obtain maps and descriptions of all of the North Carolina Bicycling Highways, contact NCDOT Division of Bicycle and Pedestrian Transportation.

East Coast Greenway: The East Coast Greenway is the nation's first long-distance urban trail. It is 3,000-mile city-to-city, hiker, and other non-motorized trail. It will incorporate water trails, abandoned railroad corridors, and other paths. Already 21% of off-road trail in Wilmington, the Rte. 17, Carolina Beach Greenway and other trails have been designated as part of the East Coast Greenway.

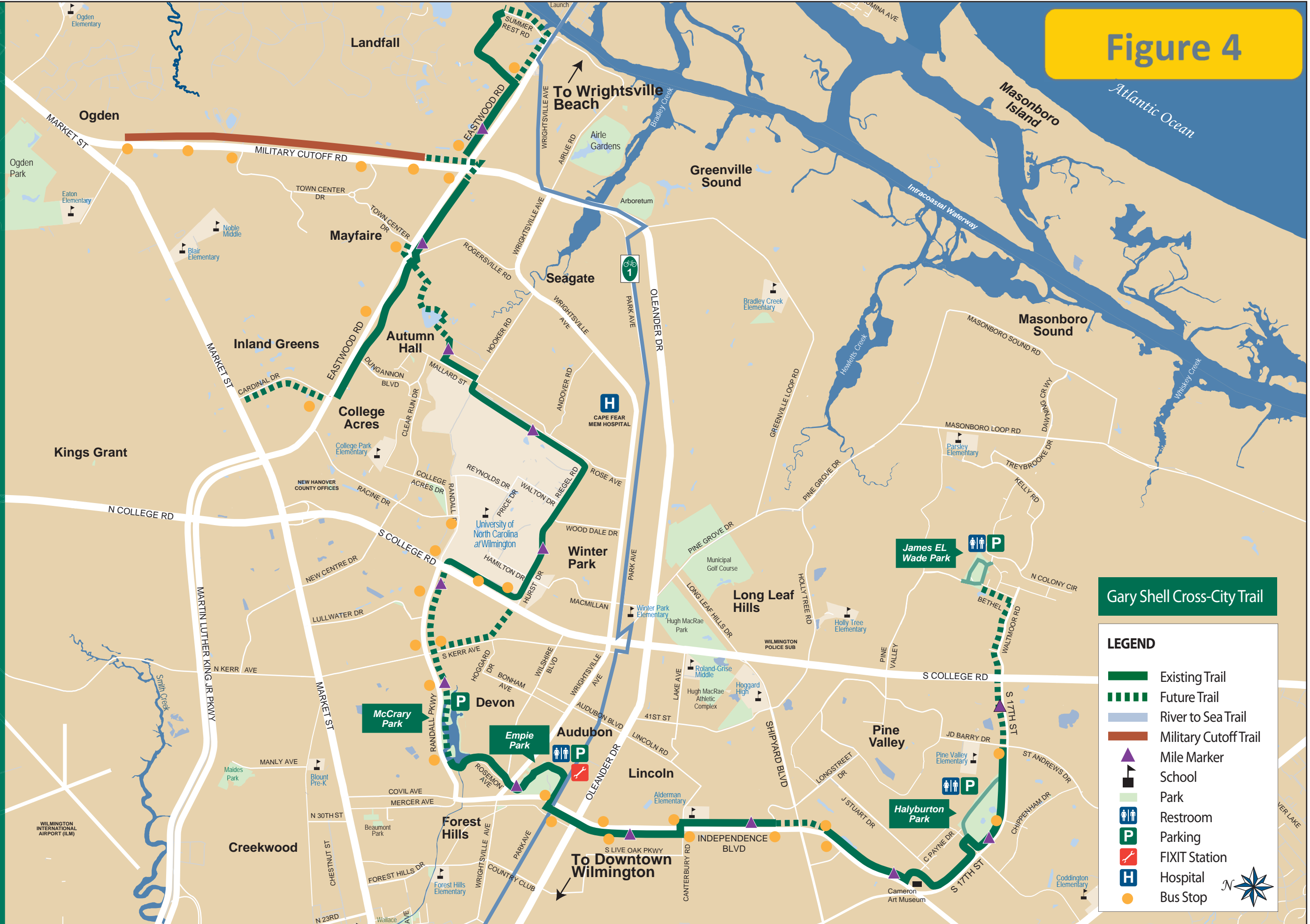
WMPO BikePed Committee Routes: The WMPO BikePed Committee Routes use city streets and other roads developed by the WMPO BikePed Committee. Maps and route descriptions are available at www.bikewilmington.com.

Figure 3

Gary Shell Cross-City Trail



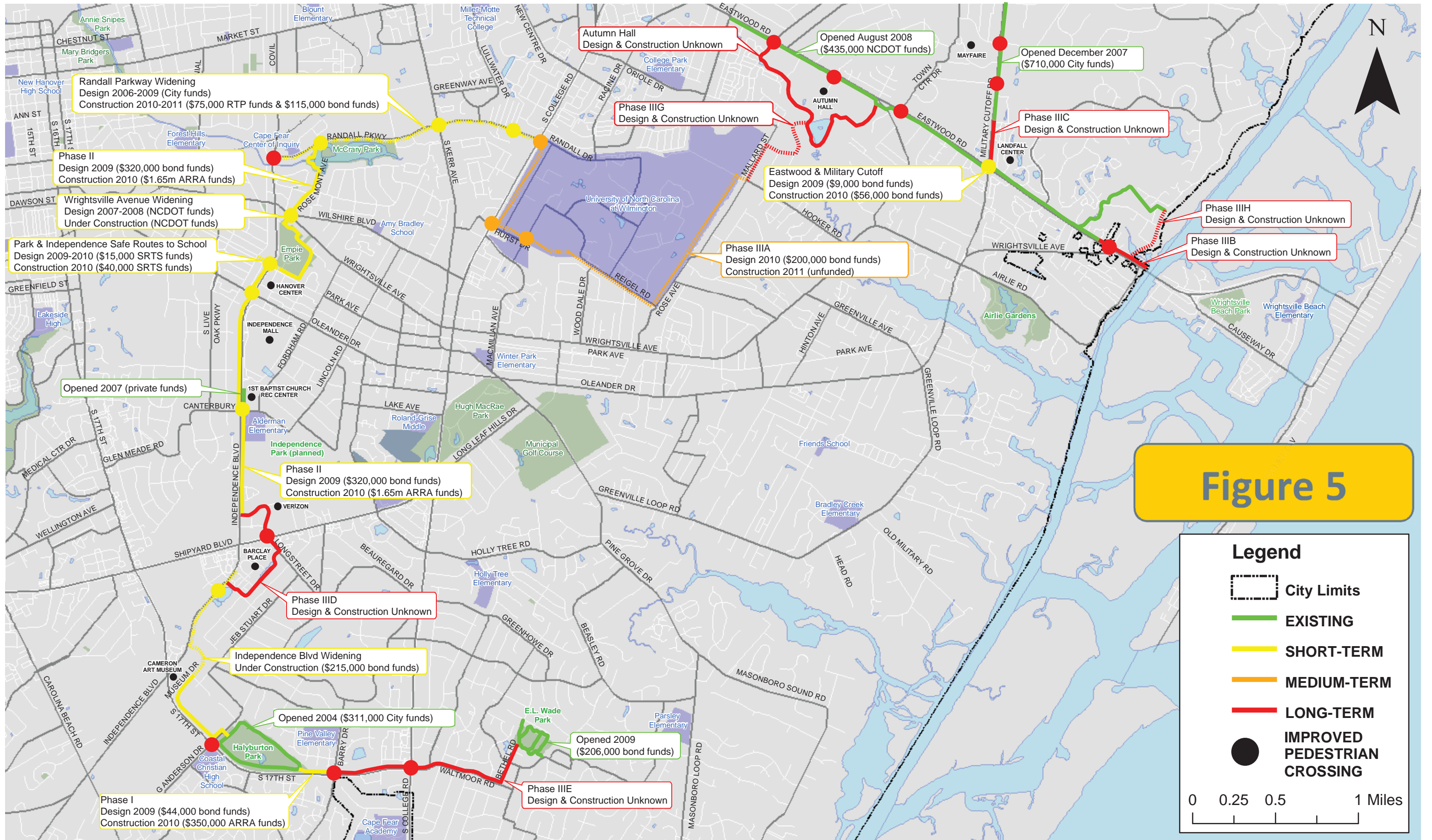
Figure 4



Gary Shell Cross-City Trail

LEGEND	
	Existing Trail
	Future Trail
	Military Cutoff Trail
	Mile Marker
	School
	Park
	Restroom
	Parking
	FIXIT Station
	Hospital
	Bus Stop

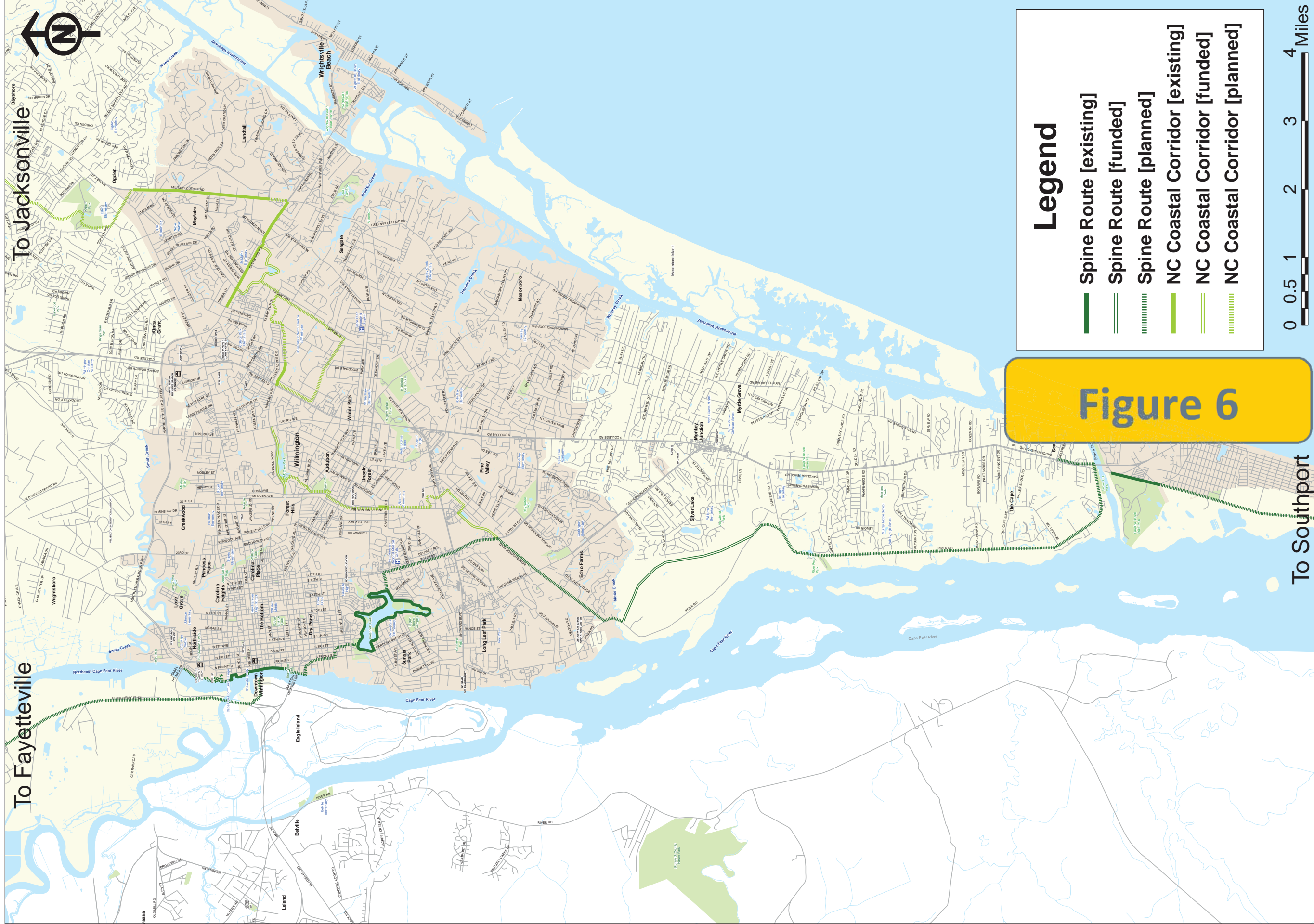






WILMINGTON URBAN AREA
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East Coast Greenway Alignment



MAP OF RECOMMENDED BICYCLE PROJECTS (WILMINGTON INSET)

Figure 7

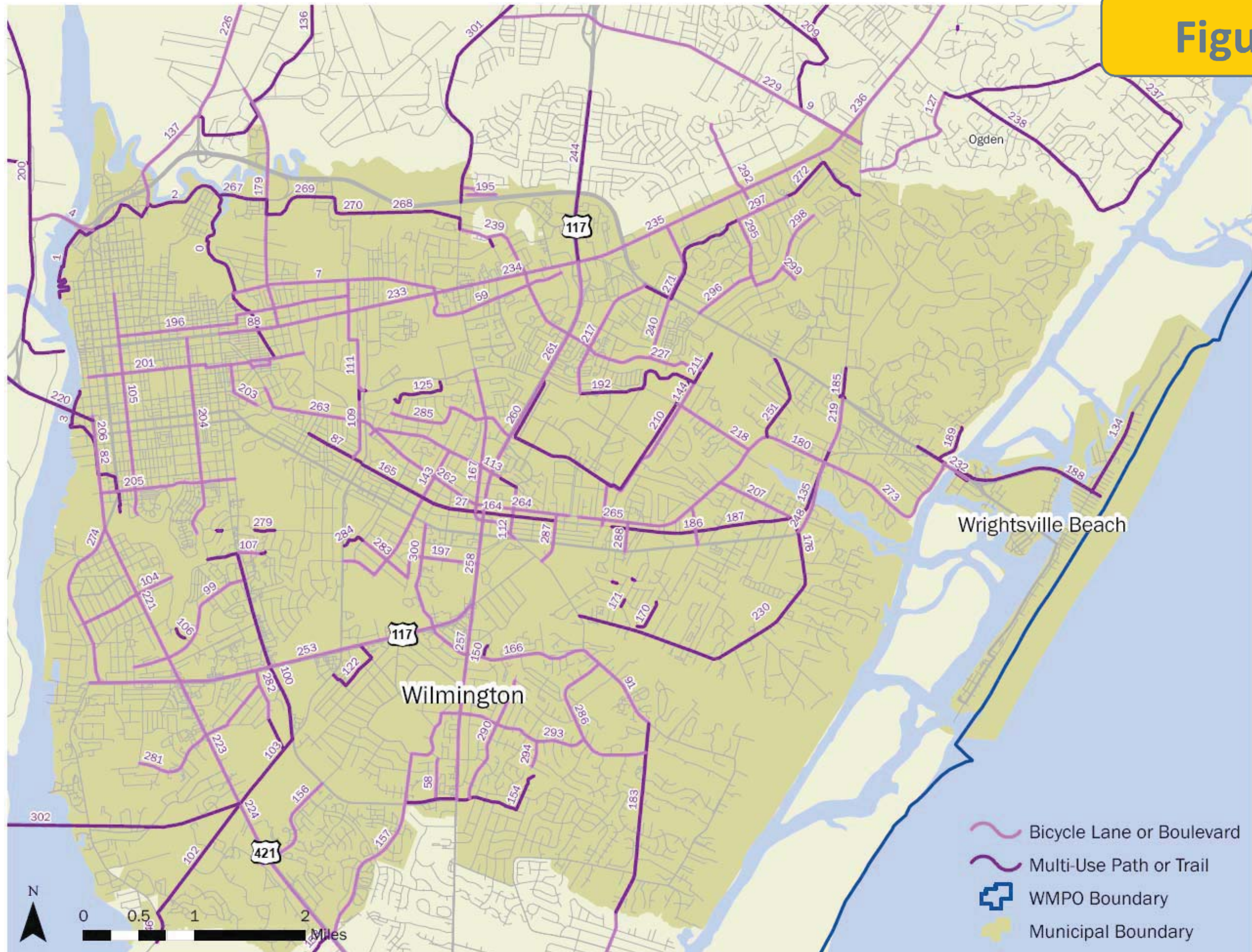


Figure 4. Recommended Mass Transportation Projects (Wilmington Inset)

Figure 8

