

Pender County Bicycle & Pedestrian Plan

July 2023



WILMINGTON URBAN AREA
METROPOLITAN PLANNING ORGANIZATION

Board of County Commissioners
Jacqueline A. (Jackie) Newton – Chair
Wendy Fletcher-Hardee – Vice Chair
Archibald (Fred) McCoy
Jerry Groves
Brad George



County Manager
David Andrews
Assistant County Manager
Allen Vann
County Attorney
Carl W. (Trey) Thurman
Staff Attorney
Patrick Buffkin

A RESOLUTION
ADOPTING THE 2023 PENDER COUNTY BICYCLE AND PEDESTRIAN PLAN

WHEREAS, the Wilmington Urban Area Metropolitan Planning Organization (WMPO), in partnership with Pender County, has conducted a study of bicycle and pedestrian needs in the urbanized portion of Pender County; and

WHEREAS, the planning and engineering consulting firm, WSP, was contracted to write and develop the Pender County Bicycle and Pedestrian Plan; and

WHEREAS, funding for the Pender County Bicycle and Pedestrian Plan was provided by the Wilmington Urban Area Metropolitan Planning Organization (WMPO); and


WHEREAS, the guiding values of the plan development process are connectivity, safety, health, equity, provision of transportation choices, and reduction of traffic congestion; and

WHEREAS, the Pender County Bicycle and Pedestrian Plan is found to be consistent with the Pender County Unified Development Ordinance, Pender 2.0 Comprehensive Plan, and Pender County Parks and Recreation Master Plan, and Pender County Streets Plan; and

WHEREAS, the result of this study is a plan that identifies recommendations for bicycle and pedestrian facilities in the study area, as well as specific policies and programs to implement these recommendations.

NOW THEREFORE, BE IT RESOLVED that Pender County has adopted the Pender County Bicycle and Pedestrian Plan to guide policy, administration, and implementation of a broader and safer network of bicycle and pedestrian facilities in Pender County.

ADOPTED at a regular meeting of the Pender County Board of County Commissioners on October 16, 2023.


Jacqueline A. Newton, Chair
Pender County Board of Commissioners

ATTEST:

David Andrews, Clerk to the Board

**WILMINGTON URBAN AREA METROPOLITAN PLANNING ORGANIZATION
BOARD**

**RESOLUTION ADOPTING THE PENDER COUNTY BICYCLE AND PEDESTRIAN
PLAN**

WHEREAS, the Wilmington Urban Area Metropolitan Planning Organization provides transportation planning services for the City of Wilmington, Town of Carolina Beach, Town of Kure Beach, Town of Wrightsville Beach, Town of Belville, Town of Leland, Town of Navassa, New Hanover County, Brunswick County, Pender County, Cape Fear Public Transportation Authority, and the North Carolina Board of Transportation; and

WHEREAS, Pender County seeks to improve safety, encourage alternative forms of transportation, stimulate economic development, create opportunities for active and healthy lifestyles, enhance the overall quality of life, and improve the County's chances to qualify for funding opportunities to design and construct bicycle and pedestrian facilities; and

WHEREAS, to assist in meeting these desired goals, Pender County requested funding from the Wilmington Urban Area Metropolitan Planning Organization for the development of the County's first comprehensive bicycle and pedestrian plan; and

WHEREAS, the planning effort began in Fall 2022 and included comprehensive stakeholder and public engagement, the culmination of this effort resulting in the final plan; and

WHEREAS, the plan is intended to assist the County in guiding the policies and priorities for bicycle and pedestrian transportation investments and programs to include capital improvements, future County Ordinance amendments, and general guidance for facility design; and

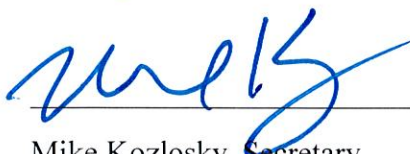
WHEREAS, the Pender County Board of Commissioners adopted the Pender County Bicycle and Pedestrian Plan on October 16, 2023.

NOW THEREFORE, be it resolved that the Board of the Wilmington Urban Area Metropolitan Planning Organization hereby adopts the Pender County Bicycle and Pedestrian Plan.

ADOPTED at a regular meeting of the Wilmington Urban Area Metropolitan Planning Organization's Board on November 29, 2023.



Henry E. Miller III, Chair



Mike Kozlosky, Secretary

Acknowledgments

Acknowledgments

Pender County

Justin Brantley, MPA, Senior Planner
Greg Feldman, CZO, Long Range Planner (Former)
Adam Moran, MA, MS, Long Range Planner



Wilmington Urban Area Metropolitan Planning Organization

Abby Lorenzo, Deputy Director
Emma Stogner, Associate Transportation Planner
Vanessa Lacer, MPA, AICP, Senior Transportation Planner



Steering Committee

Damien Buchanan, Pender County Planning Board
Beth Burns, Pender County Board of Education
Brad Cannon, Wave Transit
Adrienne Cox, NCDOT Division 3
Ruth Glaser, Novant Health
Eileen McConville, Cape Fear Cyclists
Carol Stein, WMPO Bicycle and Pedestrian Advisory Committee
Jen Webster, Beach Mamas Bootcamp

Consultant Team

Fred Frank, PMP, Project Manager
Alexa Kennedy, AICP, Transportation Planner
Sarah Parkins, AICP, Communications and Public Involvement Lead
Shivang Shelat, AICP, Senior Transportation Planner



Executive Summary

The Wilmington Urban Area Metropolitan Planning Organization (WMPO), in partnership with Pender County, has conducted a study of bicycle and pedestrian needs in the urbanized portion of Pender County. The final result of this study is this plan that identifies recommendations for bicycle and pedestrian facilities in the study area, as well as specific policies and programs to implement these recommendations. Funding for this study was provided by WMPO.

The study area for this Pender County Bicycle & Pedestrian Plan includes the WMPO urbanized area of Pender County only due to funding restrictions, however, several policy recommendations to improve bicycle and pedestrian conditions are applicable to the entire county. The below figure portrays the study area for this plan.

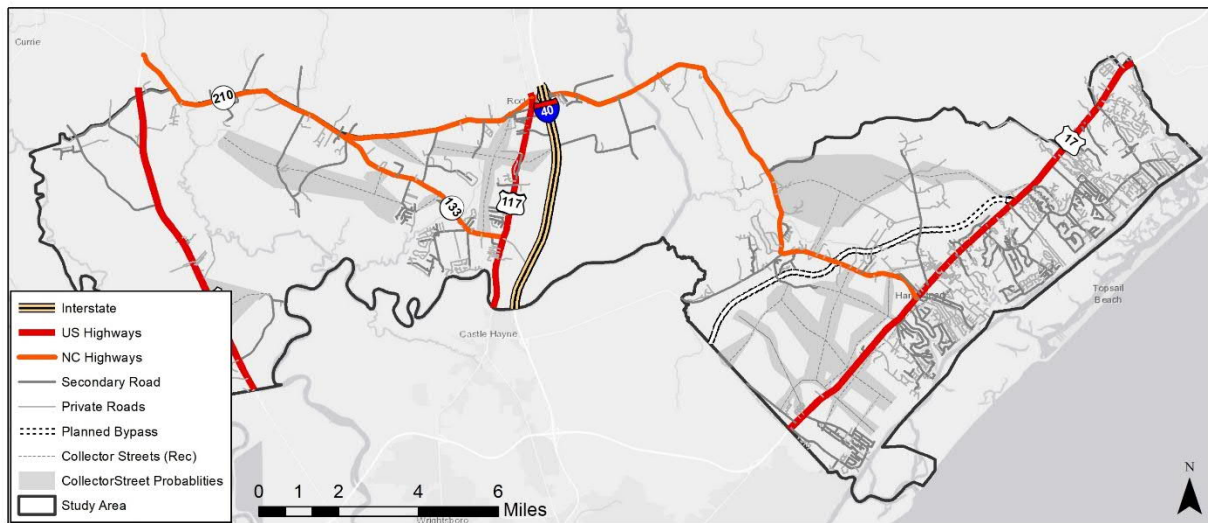


Table of Contents

1.	Existing Conditions	1
1.1	Findings from Existing Plans	1
1.2	Review of Development Codes.....	5
1.3	Demographic and Socioeconomic Analysis	6
1.4	Travel Characteristics	14
1.5	Community Resources	16
1.6	Land Use.....	17
1.7	Recent Developments.....	17
1.8	Current and Proposed Transportation Network	18
1.9	Bicycle and Pedestrian Crash Assessment.....	19
2.	Network Assessment.....	20
2.1	Public Engagement Summary.....	20
2.2	Steering Committee Meetings.....	26
3.	Proposed Network	28
3.1	Bicycle and Pedestrian Network Recommendations	28
3.2	Network Priorities.....	32
3.3	Bicycle and Pedestrian Network Recommended Facility Types	36
4.	Policy Review and Recommendations	49
4.1	Policy Review.....	49
4.2	Policy Recommendations	58
4.3	Example Policies	62
5.	Implementation	72
5.1	Implementation Methods	72
5.2	Funding	72
5.3	Maintenance	73
5.4	Checklist	74
	Appendix A: Public Engagement Summaries.....	76

1. Existing Conditions

Existing plans were reviewed to determine locations where bicycle and pedestrian facilities had already been proposed. Demographic data was then analyzed for the study area to determine the demographic makeup and population characteristics. This data helped determine the areas of highest need for bicycle and pedestrian facilities.

1.1 Findings from Existing Plans

NC 210 East Coast Greenway Corridor Feasibility Study (2023)

The East Coast Greenway is a 3,000-mile route from Maine to Florida with the purpose of connecting cities and towns along the east coast with a safe walking and biking facility. The greenway crosses the study area in two locations. The main line is along US 421 and the coastal route enters from Jacksonville and passes through Wilmington. The NC 210 East Coast Greenway Corridor Feasibility Study concerns the coastal route along NC 210 and determines the feasibility of creating a dedicated facility separated from the roadway and alternative routes. This study identified a preferred alignment and connector routes.

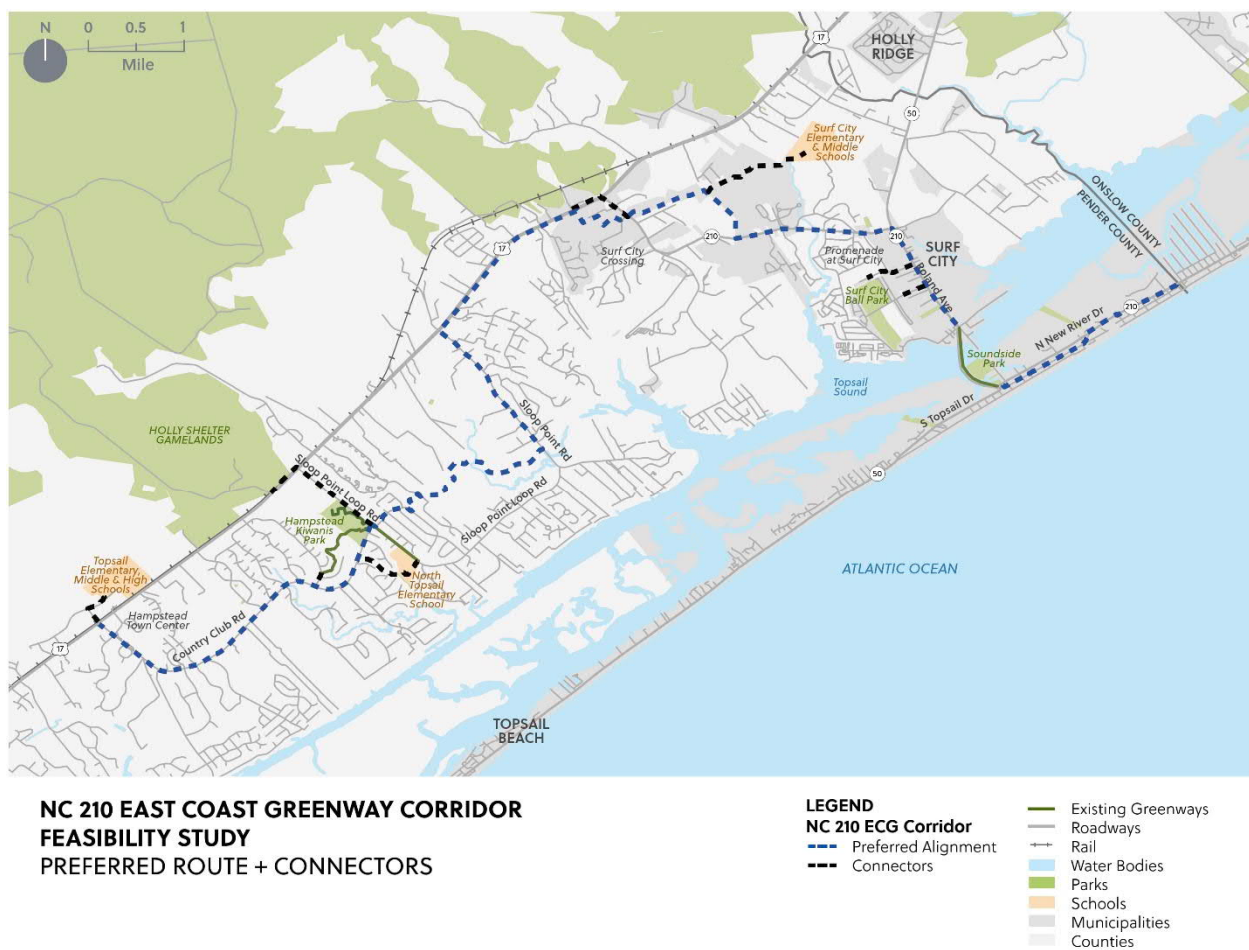


Figure 1.1: Preferred Route for the NC-210 East Coast Greenway Corridor

Existing Conditions

Pender County Comprehensive Parks and Recreation Master Plan (2022)

There are very few bicycle or pedestrian facilities identified as existing within the project study area, but the masterplan does identify several planned parks just outside of the area that could serve as points of connection. The proposed Canetuck Community Park is just west of the Black River and looks to encompass the inland spur of the Mountains to Sea trail. It is also a Federal Emergency Management Agency buyout property. At the northwestern extent, the proposed Long Creek Community Park straddles NC 210 at the Montague community and is on county-owned property.

Great Trails State Plan (2022)

The Great Trails State Plan provides recommendations for a network of strategic trails and greenways throughout North Carolina. Within the project study area, this plan proposes a shared use path along US 17, adjacent to US 117, and adjacent to US 421. The plan also identifies a gap along Lodge Road in the study area, where a connection is desired, but more planning efforts are needed to determine the feasibility along this route.

Pender County Streets Plan (2021)

The Pender County Streets Plan is an update to the 2016 Pender County Collector Street Plan for the determination of future transportation needs as it relates to connectivity. The plan identified opportunities for new collector street alignments and corresponding bicycle and pedestrian facilities. To incorporate non-motorized facilities, each recommended street section provided the option to add either a multi-use path or a bike lane and sidewalk combination.

There was significant support for the addition of these facilities for any new streets. Public input from the plan indicated that 58% of respondents would walk or bike more often if better, safer facilities were provided. Another 20% were receptive to utilizing facilities if they were present. Furthermore, almost 35% of responses indicated a desire for the installation of bike lanes, multi-use paths and sidewalks whenever new streets are added to the network.

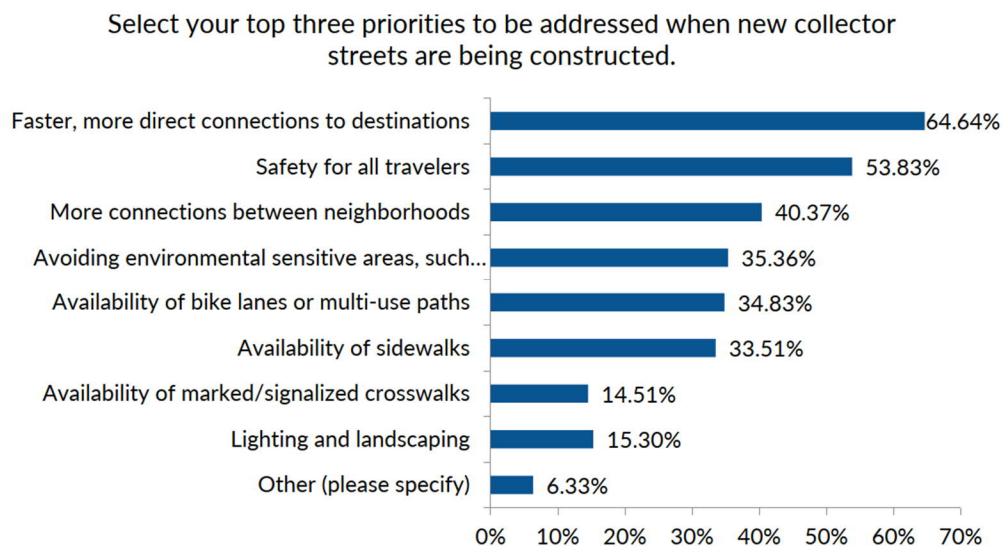


Figure 1.2: Transportation Priorities Identified in the First Public Survey for the Pender County Streets Plan

Existing Conditions

Cape Fear Moving Forward 2045 (2020)

The Cape Fear Moving Forward 2045 plan provided an assessment of all modes of transportation and provided an overview of potential projects. The study area is included in this assessment but very few projects have been identified for the more rural portion of the Wilmington Area Metropolitan Planning Organization urban planning area. The plan identified one bicycle and pedestrian project for the study area: bicycle and pedestrian improvements to Jenkins Road.

Pender 2.0: Comprehensive Land Use Plan (2018)

The Pender 2.0: Comprehensive Land Use Plan was developed in 2018 with the goal of guiding the direction of future growth and other needs within unincorporated areas in the County. The plan addresses the role of transportation alternatives in the county and identifies the increasing desirability of non-motorized alternatives. Transportation alternatives, like biking and walking, are increasingly utilized to access community resources as well as for recreational uses according to current trends. Unincorporated Pender County lacks pedestrian and bicycle facilities outside of those provided within planned subdivisions to support the growth in these trends. The plan identified several projects, which, at the time, were not under construction and the specific alignments had not been determined.

- Mountains-to Sea Trail
- Coastal Pender Greenway
- Coastal Pender Rail Trail
- Central Pender Rail Trail
- East Coast Greenway

Cape Fear Regional Bicycle Plan (2017)

The Cape Fear Regional Bicycle Plan identifies several proposed bicycle recommendations in the study area, including a proposed on-road bike network along Island Creek Road, NC 210, Lodge Road, Hoover Road, Godfrey Creek Road, and Navillus Boulevard. The East Coast Greenway is currently being planned through the eastern side of the study area and along US 17. The plan identifies planned and existing paths to the north and south that terminate at the borders of the study area. The plan also includes policy recommendations including developing a complete streets policy and guidelines, including bicycle facility requirements for new developments, expanding requirements for greenway reservation or dedication in new developments, and requiring new facilities to connect to existing facilities.

Pender County Comprehensive Transportation Plan (2016)

NCDOT Transportation Planning Branch completed a study of Pender County's transportation needs through 2040. The transportation plan assessed highway, public transportation, rail, bike, and pedestrian facilities within Pender County. The project study area was not included in the Pender County Transportation Plan because it exists in the northern portion of the Wilmington Metropolitan Planning area. Nevertheless, several recommendations for pedestrian and bike facilities were provided within the plan that may be relevant to this study.

- A multi-use path recommended along Shaw Hwy (SR 1522) terminating at its intersection with NC 210.
- A multi-use path recommended along US Hwy 117 terminating at its intersection with NC 210.
- A multi-use path recommended along NC 210 between Malpass Corner Road (SR 1120) and terminating at Montague Road.

Existing Conditions

- A multi-use path recommended near the intersection of Blueberry Road and Malpass Corner Road that terminates near the vicinity of the Pender County Solid Waste facility on Montague Road.
- An on-road bike facility recommended along Blueberry Road (SR 1114) terminating at Montague Road.

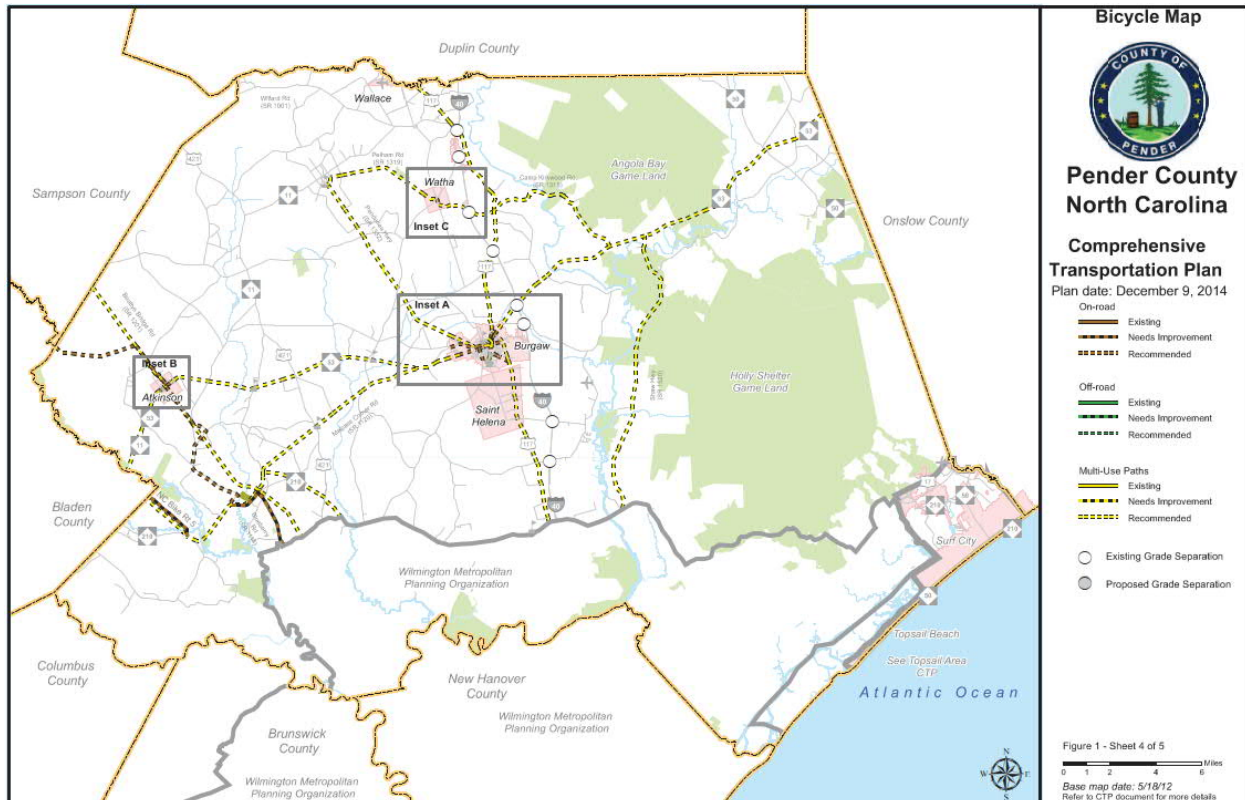


Figure 1.3: Pender County Transportation Plan Bicycle Map

1.2 Review of Development Codes

The Pender County Unified Development Ordinance (UDO) was last updated in December of 2022 where there are supportive bicycle and pedestrian codes throughout. Below is a summary:

- Bicycle and Pedestrian Improvement Overlay District (BPIOD)
 - Overlay districts will be determined on a case-by-case basis depending on existing studies and plans, development patterns, and other factors.
 - Facility type shall be in accordance with adopted plans.
 - A payment-in-lieu of bicycle and pedestrian facility construction shall be provided as an option to all applicants if construction is impractical or if genuine hardships caused by the construction requirement.
- Site designs cannot degrade existing bike and pedestrian infrastructure or the bicycle and pedestrian friendliness of the community.
- Planned Development districts must address street connectivity, sidewalk and greenway requirements, and design standards for bicycle and pedestrian circulation.

More information on existing and recommended policies can be found in Policy Review and Recommendations.

1.3 Demographic and Socioeconomic Analysis

A demographic and socioeconomic analysis was carried out for the study area based on the data obtained from American Community Survey (ACS) 2020 5-year estimates. The study area does not overlap completely with the Census Tracts and Census Block Group (CBG) boundaries in the ACS data; therefore, this section may contain data from parts of the census tracts and CBGs partially outside the study area. Figure 1.4 shows the Census Tracts and CBGs considered for this analysis.

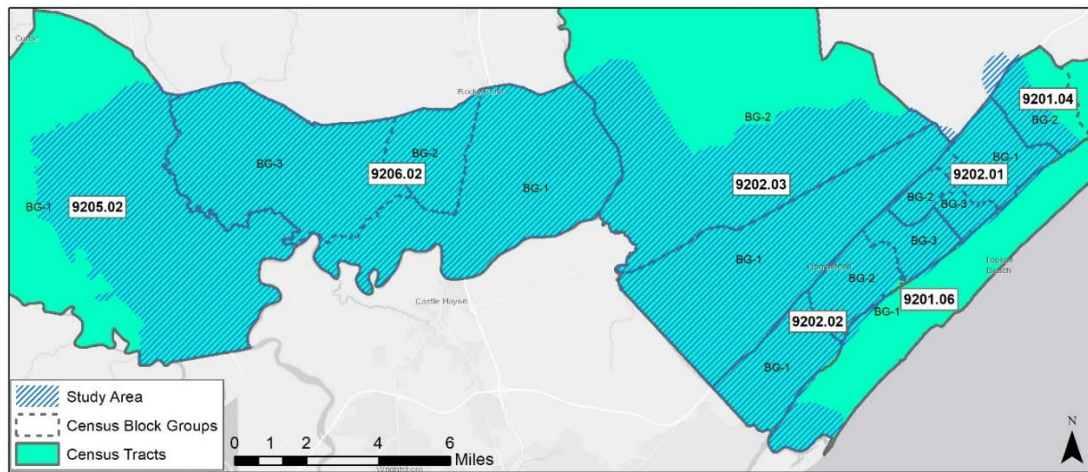


Figure 1.4: Census Block Groups in the Study Area

Population

In 2020, the population of the study area was 36,027, which is not distributed equally across the study area. The areas west of US 17 are sparsely populated with an overall density of fewer than 1 person per 10 acres. East of US 17, the population density is between 1.1 to 2.2 persons per acre which leads to 57% of the area’s population living in 17% of the total study area. This is because most development in the study area is concentrated between US 17 and the Atlantic Ocean. Figure 1.5 shows the population in each CBG (shown as number) and the density (shown in color).

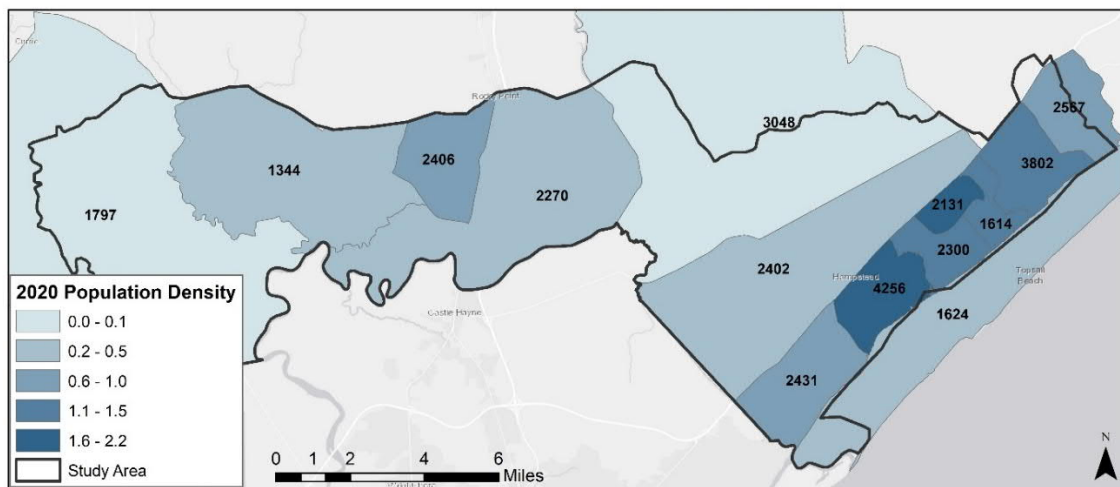


Figure 1.5: 2020 Population Density

Existing Conditions

The Wilmington MPO Travel Demand Model (TDM) contains the population forecast for 2045. This is considered to be the official forecast on which transportation projects are based. According to this forecast, the population of the study area is projected to increase to 48,574 in 2045, which is an increase of approximately 33% from 2020. The geographic distribution of this growth is shown in Figure 1.6 where the colors show the population density, and the numbers show the population in the Traffic Analysis Zones (TAZs). TAZs are geographic divisions smaller than CBGs specially created for analyzing travel behavior in TDMs. The population density distribution in 2045 is projected to be similar to that in 2020, with a key exception of the area between US 17 and US 17 bypass in the southeast of the study area.

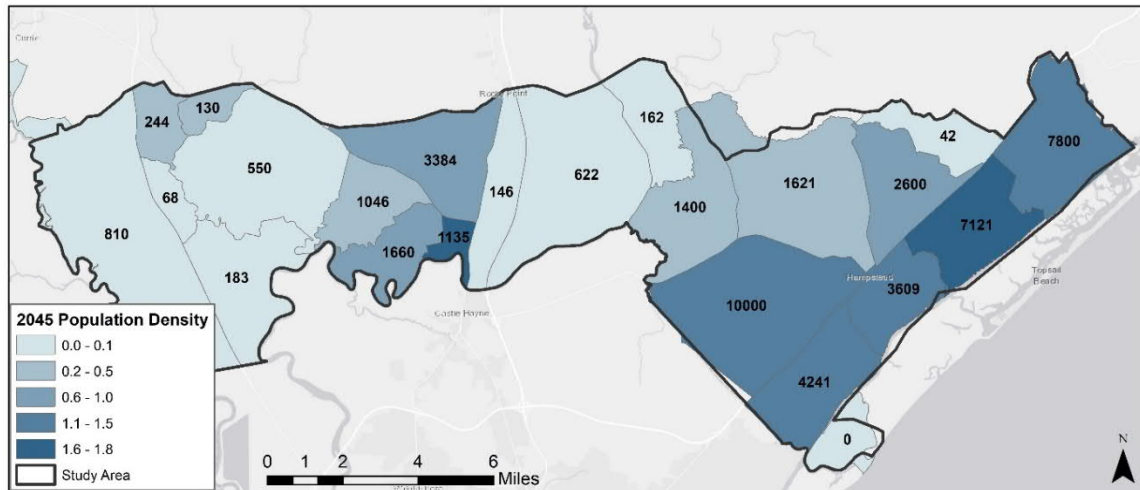


Figure 1.6: 2045 Population Density

The Pender County Comprehensive Plan (PCCP) was developed prior to the Wilmington MPO TDM being adopted. The Future Land Use in the PCCP allows for a significantly higher level of density than what was later assumed in the TDM. This issue was realized during the preparation of the Pender County Collector Street Plan (PCCSP) and population projections were calculated based on the density assumed in the PCCP. According to those calculations, even at 50% buildout of the adopted land use, the future population of the study area was projected to be higher than 200,000 which is four times that of the official projections (Figure 1.7).

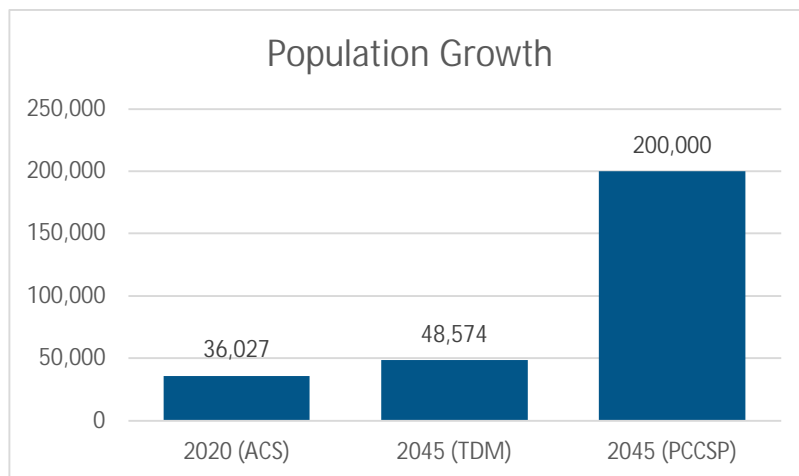


Figure 1.7: Population Growth

Existing Conditions

Age and Sex

Of the total population in 2020, 17,001 (49.3%) were male and 17,456 (50.7%) were female. The median age of the study area is 42.2 years which was higher than North Carolina's median age of 38.9 years. The median age varies significantly within the study area as shown in Figure 1.8. The areas to the northeast have the highest concentration of younger population.

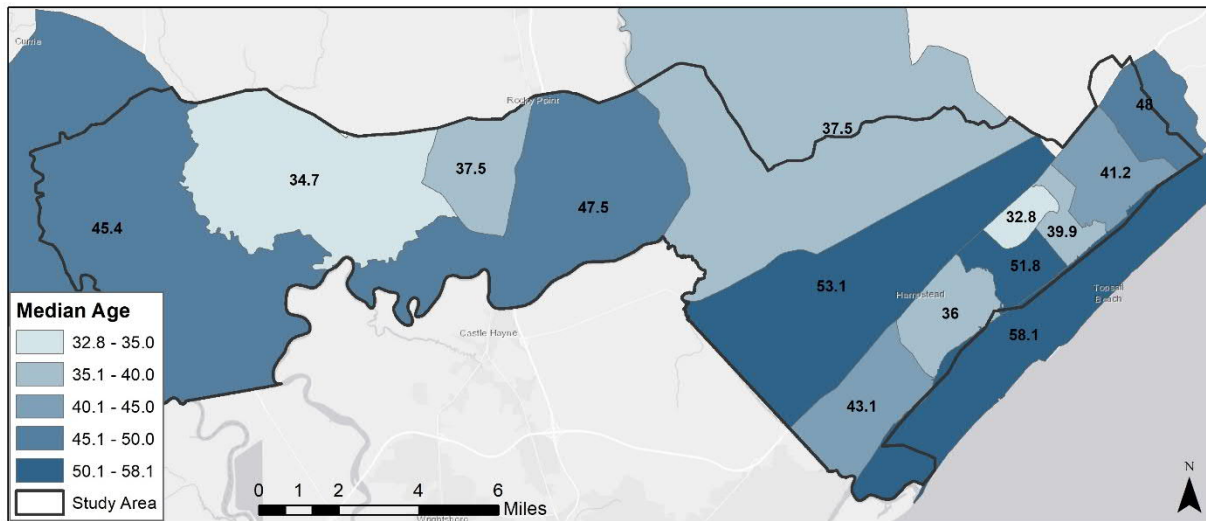


Figure 1.8: Median Age

Of the total population, 17.7% were under the age of 15, 64.5% were between the ages of 15 and 64, and 17.8% were of 65 years of age or above. Figure 1.9 shows the population pyramid of the study area.

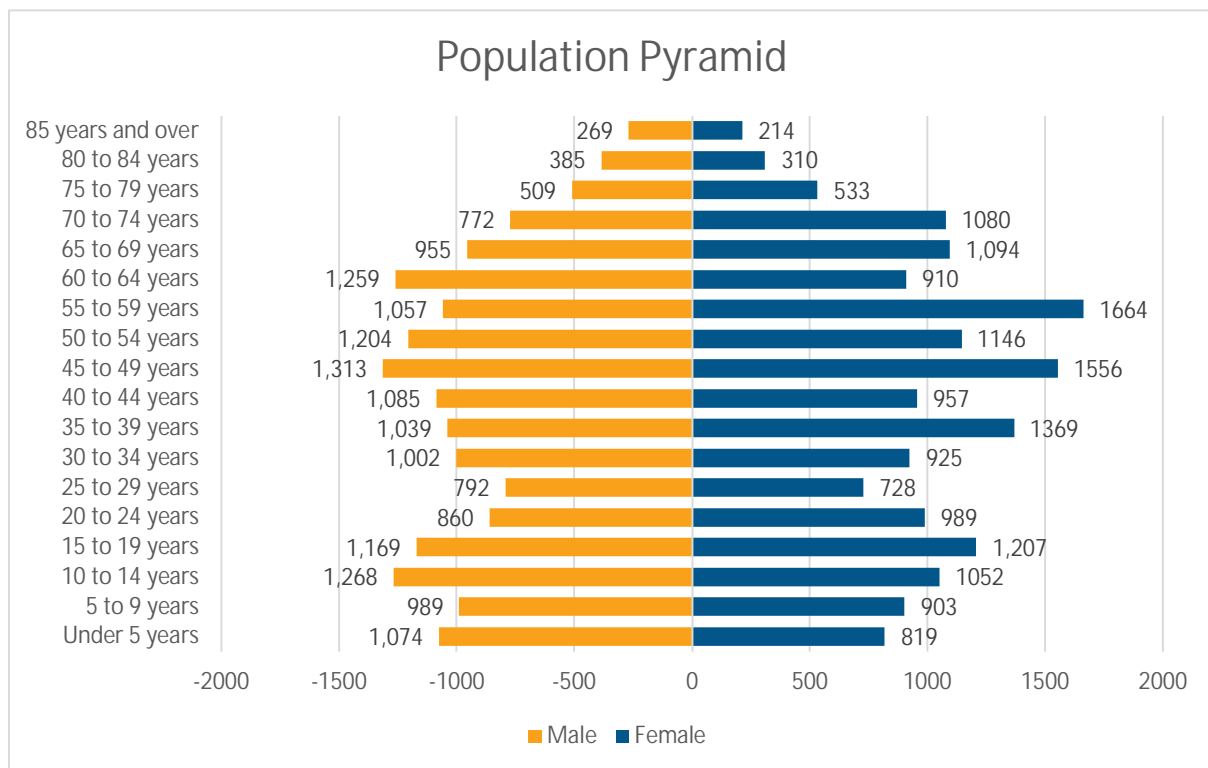


Figure 1.9: Population Pyramid

Existing Conditions

Race

The racial breakdown of the population in the study area in 2020 was as follows: 90% White, 3.4% African American, 2.7% Two or more races, 2.6% some other race, 0.9% Asian, 0.2% Native American, and 0.2% Pacific Islander or Native Hawaiian. 4.6% of the total population identified as of Hispanic or Latino origin. The racial makeup of the area is very different from the overall makeup of North Carolina where 67.6% of the population is White, and 22.3% is African American, and more than 10% of the population identifies as Hispanic or Latino. Figure 1.10 shows the comparison of the racial makeup between the Study Area and North Carolina.

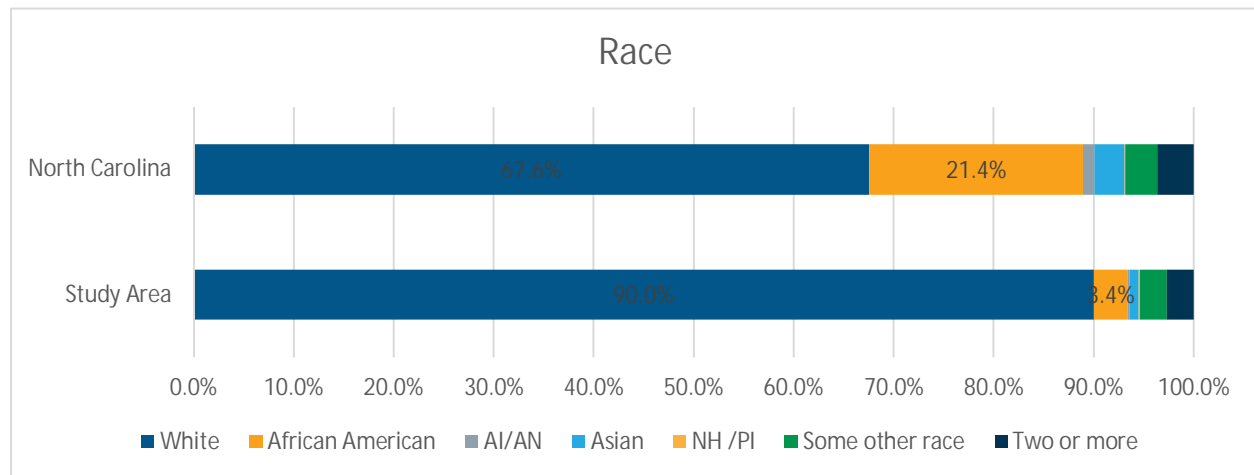


Figure 1.10: Racial makeup of the study area compared to North Carolina

Income and Poverty

The Median Household Income (MHHI) of the Study Area in 2020 was approximately \$69,500, which was significantly higher than that of the state (\$56,642) which suggests that overall, the study area is wealthier than the state as a whole. However, as shown in Figure 1.11, there are significant regional variations in income distribution. The MHHI of areas to the west of the Northeast Cape Fear River trends lower than the statewide MHHI while the converse is true for the areas to the east. The areas to the east of US 17 have a higher MHHI than the rest of the study area.

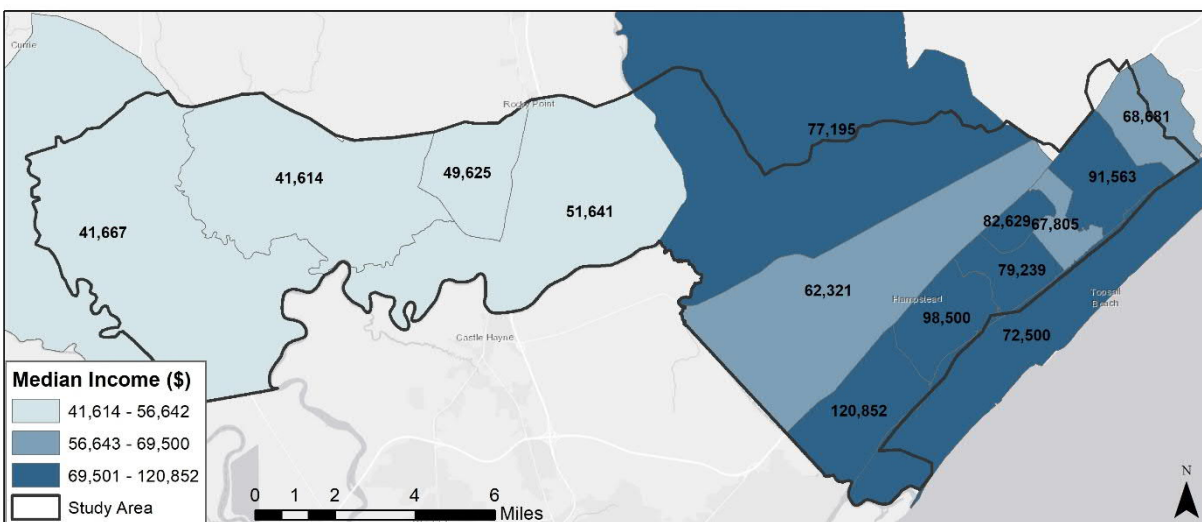


Figure 1.11: Median Income

Existing Conditions

Figure 1.12 shows the comparison of household income distribution between the study area and the state of North Carolina. The study area has fewer proportions of households with a MHHI less than \$50,000 than the state and has higher proportions of households with a MHHI above \$50,000 than the state. This is in line with the fact that the MHHI of the study area is higher than that of the state.

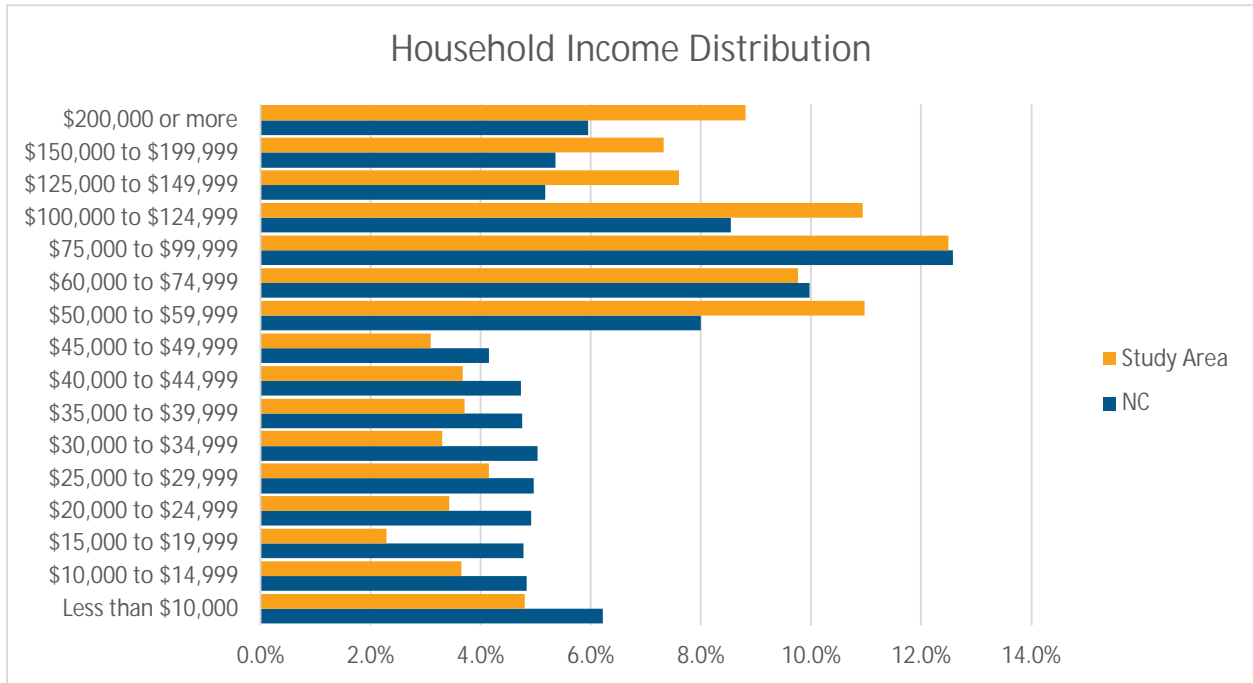


Figure 1.12: Household Income Distribution of the study area compared to North Carolina

The poverty figures of the study area show a similar outlook. 8.9% of the households in the study area are below the poverty line compared to 14.1% of the households in North Carolina. Figure 1.13 shows the regional variation between the concentration of households below poverty line. The labels show the total number of households below poverty line in each CBG in 2020.

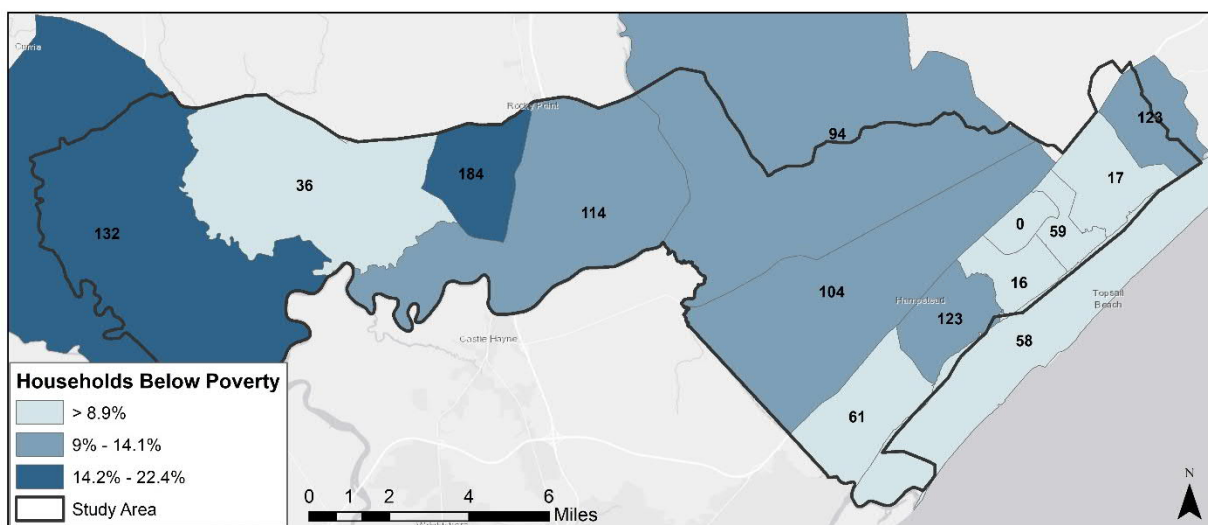


Figure 1.13: Households below Poverty

Existing Conditions

Environmental Justice Index

NCDOT's Environmental Justice (EJ) Index Score is comprised of 3 factors: people with low incomes, racial minorities, and ethnic minorities (Hispanic or Latino origin). Scores range from 0 to 12, with higher scores indicating higher concentrations of EJ populations. EJ Index scores are relatively low to moderate throughout the study area. Figure 1.14 shows the EJ Index for the study area and surrounding communities.

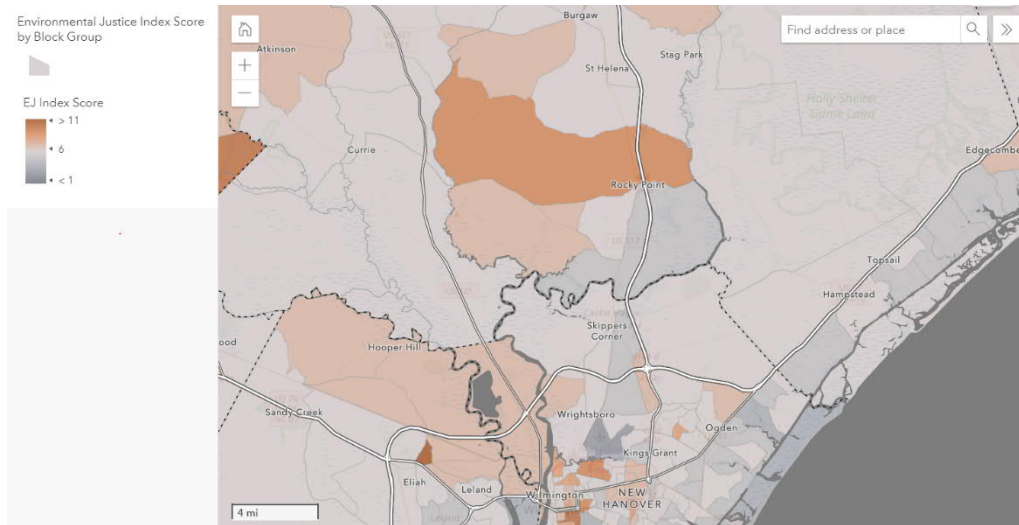


Figure 1.14: NCDOT's NC Equity and Transportation Disadvantage Screening Tool
<https://storymaps.arcgis.com/stories/7e3bbd00fe014a77b5f1620334209712>

Transportation Disadvantage Index

NCDOT's Transportation Disadvantage Index (TDI) Score is comprised of six factors: car-less households, people with low incomes, youth aged 15 and under, seniors aged 65 and over, adults with mobility impairments, and Black, Indigenous, and Persons of Color (BIPOC) populations. Scores range from 6 to 18, with higher scores indicating higher concentrations of transportation disadvantaged populations. TDI scores are relatively low throughout the study area. Figure 1.15 shows the TDI for the study area and surrounding communities.

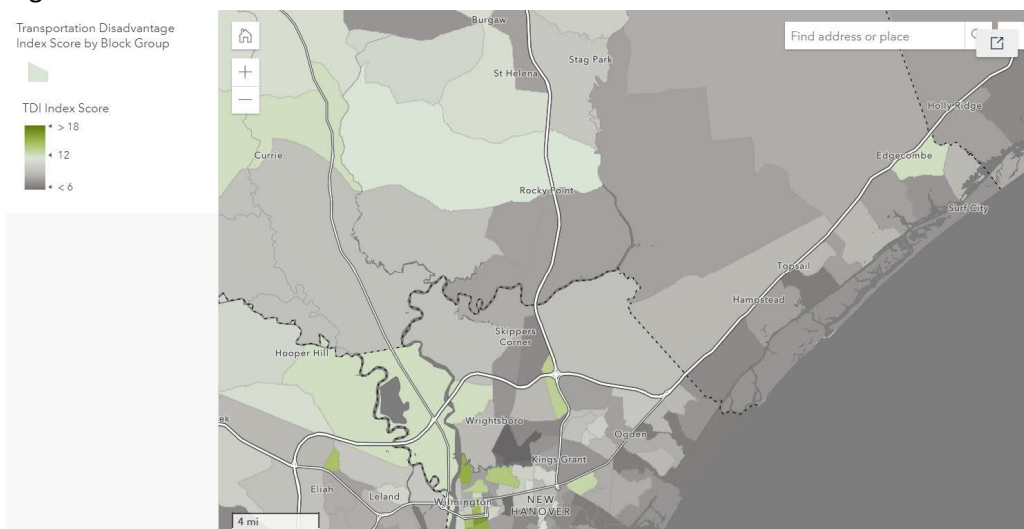


Figure 1.15: NCDOT's NC Equity and Transportation Disadvantage Screening Tool
<https://storymaps.arcgis.com/stories/7e3bbd00fe014a77b5f1620334209712>

Existing Conditions

Education

ACS provides estimates for educational attainment for residents 25 years and over. Based on these estimates, the residents in the study area have an overall higher educational attainment than the rest of the state of North Carolina. Figure 1.16 shows the relative percentages of educational attainment of the residents above 25 years in the study area and the state of North Carolina. The biggest difference between the two is the number of residents with no or some school, which is 7.3% for the study area and 11.5% for North Carolina. Similarly, those with a bachelor's degree or above form 36.1% in the study area compared to 30.2% in North Carolina.

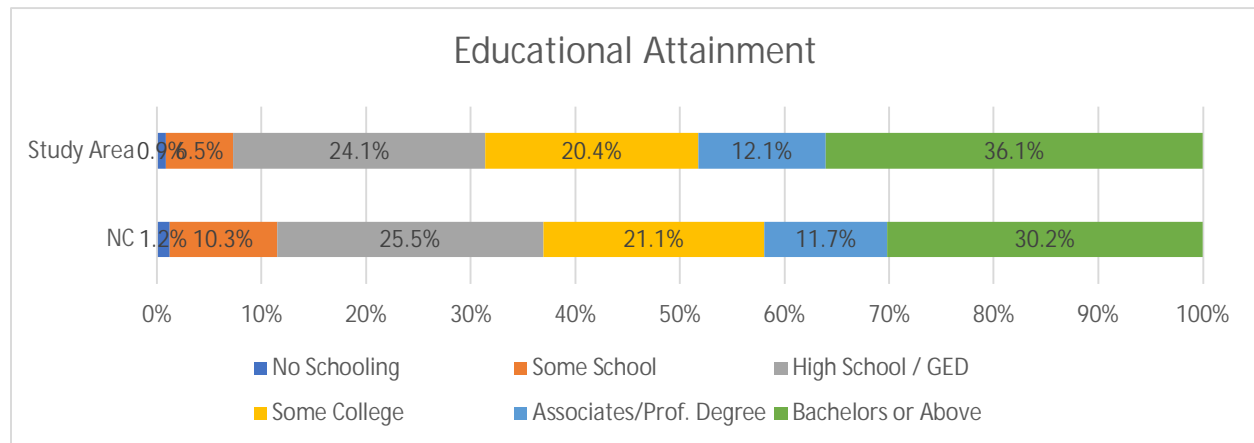


Figure 1.16: Educational Attainment for the study area and North Carolina

Employment

In 2020, 58.7% of the population of the study area 16 years and above was employed or in the armed forces, 4% was unemployed, and 37.3% was not in the labor force. These figures of the study area are at par with those of the state. The education, healthcare and social assistance industry employed the highest number of people while agriculture and ancillary industries employed lowest (Figure 1.17).

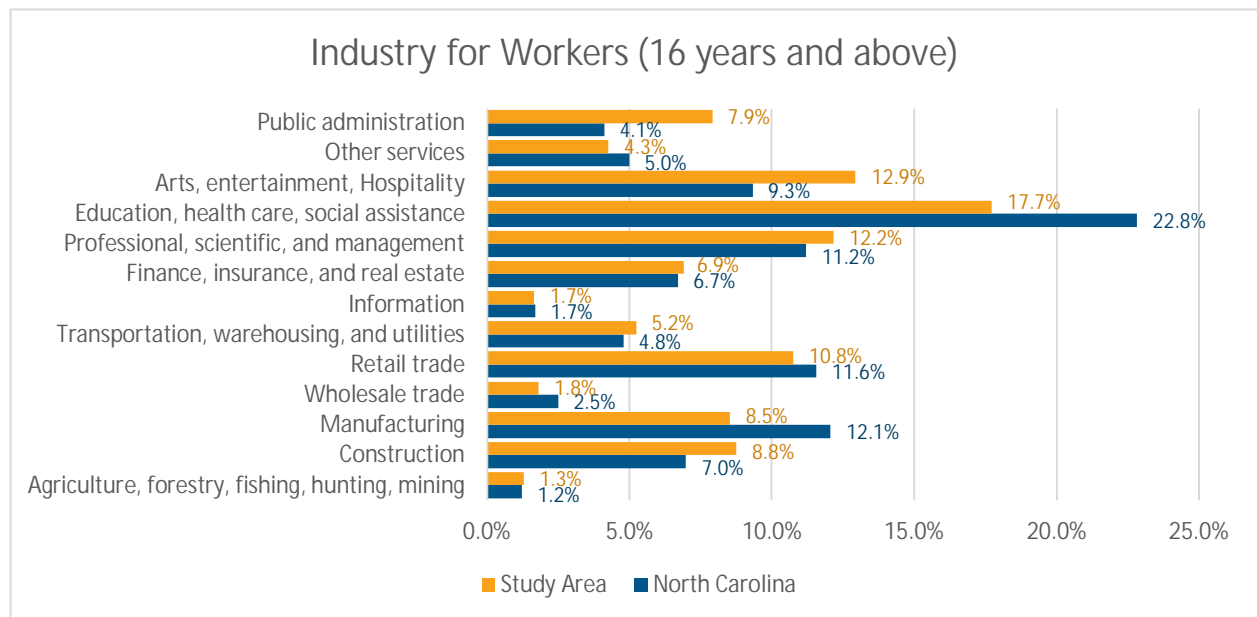


Figure 1.17: Industry for Workers for the Study Area and North Carolina

Existing Conditions

The employment data in the study area is derived from the Wilmington MPO TDM and is presented for the model's current and future years – 2015 and 2045 respectively – by TAZs in Figure 1.18 and Figure 1.19. According to this data, the total employment in the study area will reduce by approximately 10% from 6,455 in 2015 to 5,926 in 2045, which means that the employment growth will not be in line with the population growth, and more people will have longer commutes to workplaces outside the study area, primarily to the south. In addition to this reduction in overall number of jobs, they will also concentrate around US 17.

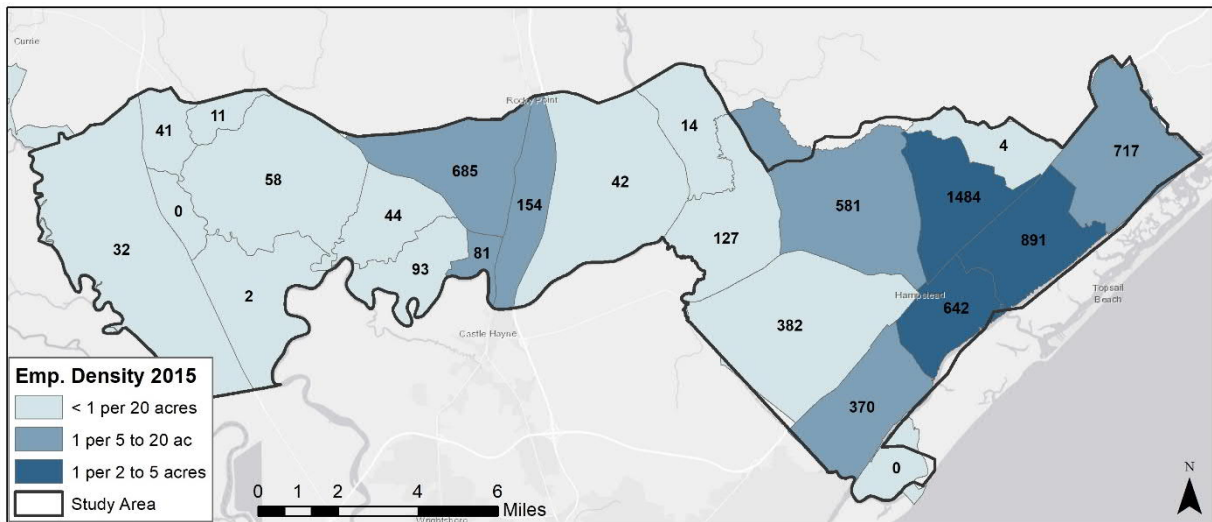


Figure 1.18: 2015 Employment Density

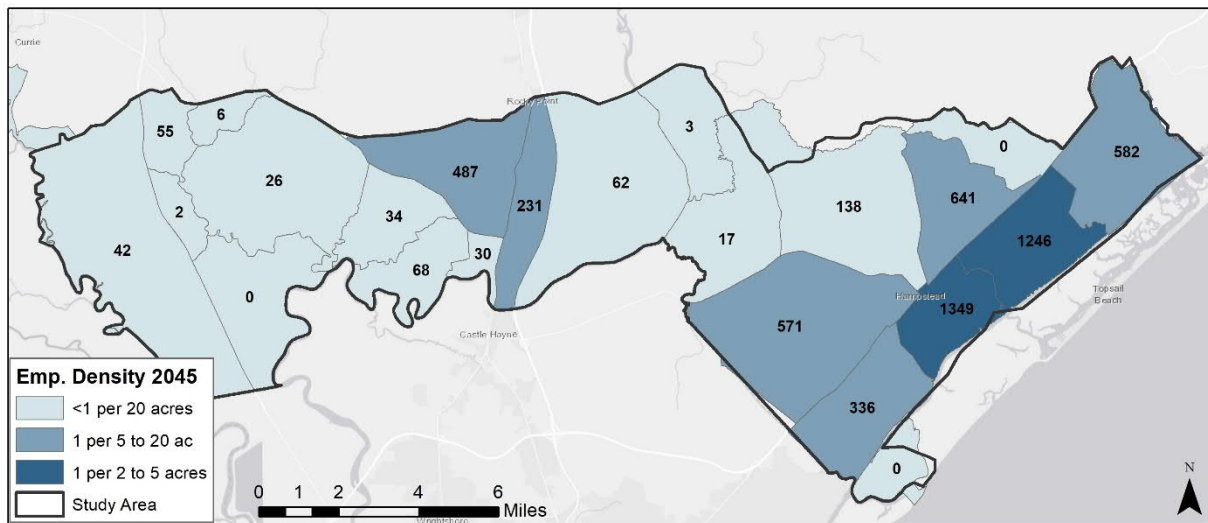


Figure 1.19: 2045 Employment Density

1.4 Travel Characteristics

Vehicle Availability

A household where there are fewer cars than workers, or that has no cars may be considered mobility constrained, especially in area where vast transit service is not readily available. This metric is reported on a Census Tract level which means that the data is not available at the level of CBGs. The Census Tract boundaries, in most cases, extend much beyond the Study Area. However, for this case, it was assumed that the mobility constrained households were evenly distributed in each Census Tract.

In 2020, there were 646 households that may be mobility constrained in the study area. Compared to the statewide proportion of 8.9%, the study area had less proportion of mobility constrained households (5%). The Figure 1.20 shows the distribution of mobility constrained households in the study area. The center of the study area between US 17 and US 421 has higher than average concentration of mobility constrained households in the study area, of which the area east of Northeast Cape Fear River is almost as much as the state average.

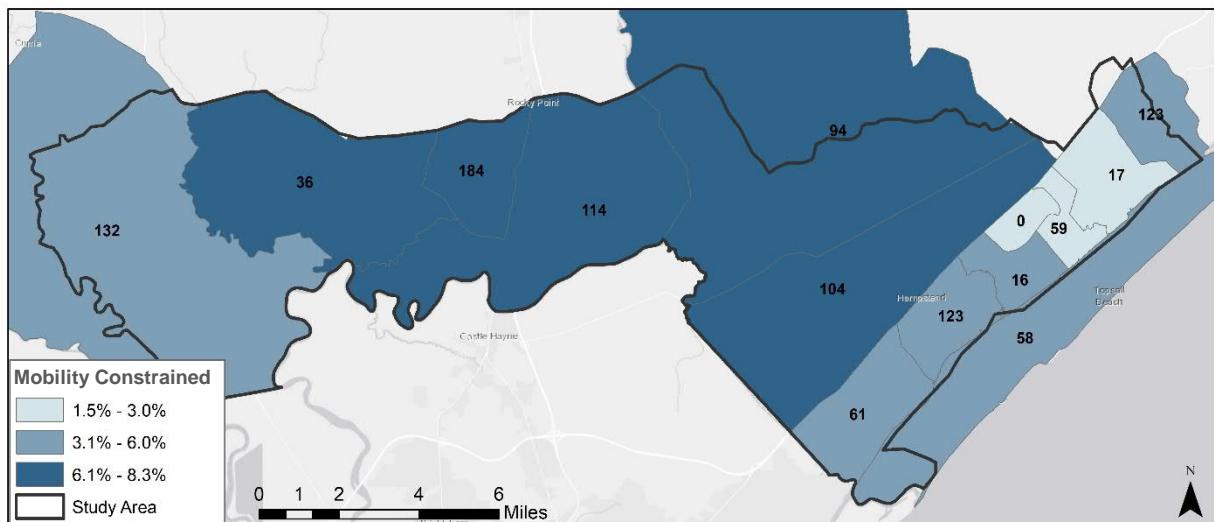


Figure 1.20: Mobility Constrained Households

Means of Transportation to Work

The study area is heavily dependent on personal vehicles as a means of transportation to work with almost 89% people driving or carpooling to work as seen in Figure 1.21. A significant portion of people (10.5%) work from home. Hybrid and remote jobs are becoming increasingly popular and provide opportunities for improving mobility in the study area. Of the remaining 1%, 92 people walked, 9 people used a bicycle, and 23 people used other means to get to work. A combination of sufficient alternative infrastructure and distance from work may make it difficult for people to not use a car to go to work.

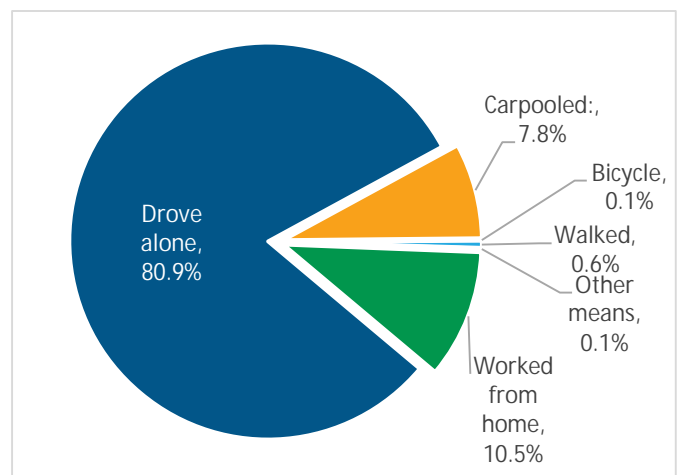


Figure 1.21: Means of Transportation to Work

Existing Conditions

Travel Time to Work

The median travel time to work for the area is approximately 31 minutes, which is at par with state and national indices. Figure 1.22 shows the distribution of travel time to work for non-work-from-home workers. There is a significant portion of workers (6%) that travel less than 10 minutes to work, which is about 960 workers that work close enough to their residence that if provided a viable alternative, could potentially switch to non-motorized modes.

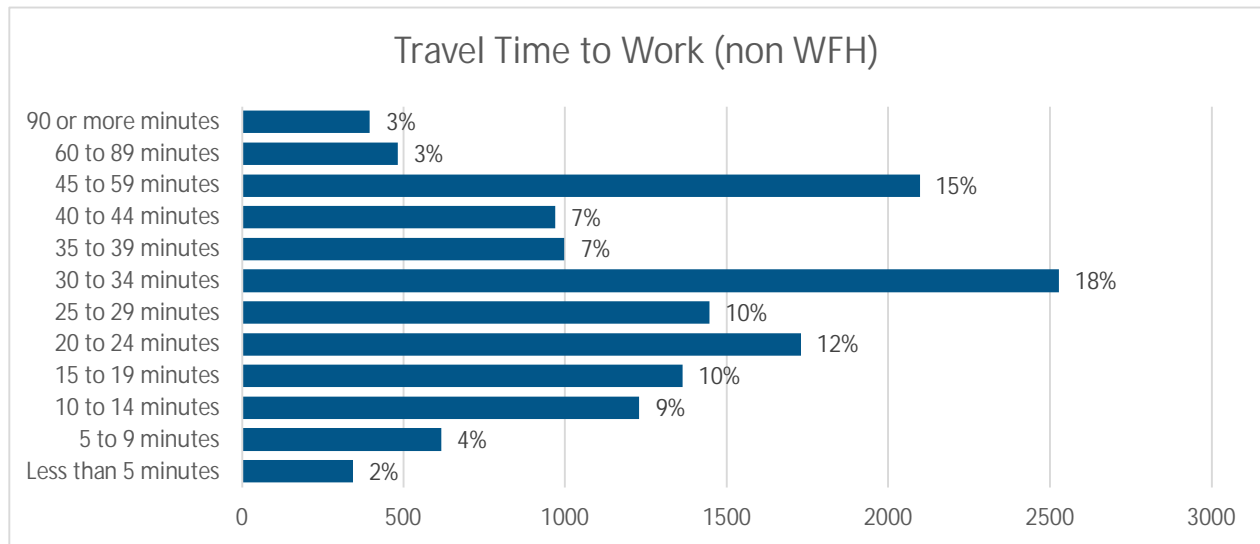


Figure 1.22: Travel Time to Work

Wilmington MPO TDM data suggests that, on an average, only 22% of the daily household trips are Home-based Work (HBW) trips. That means a majority of trips are not work trips and may or may not have a similar modal and travel time distribution as HBW trips. These trip types include home-based social trips (HBS), home-based other (HBO) trips and non-home-based (NHB) trips. It may be challenging to convert any HBS and NHB trips to non-motorized trips because of carpooling and trip-chaining that occurs more often during those trips, but HBO trips may have a higher probability of a mode-change to non-motorized modes.

1.5 Community Resources

A key part of this analysis is to identify popular destinations in the study area. Figure 1.23 shows the distribution of key destinations – businesses, schools, churches and government buildings. This data was obtained from the address points dataset provided by Pender County. Businesses and government buildings were further filtered based on the type of location that the customers would typically be able to walk to if proper infrastructure existed (e.g., Stores, pharmacies, restaurants, medical facilities, etc.). Most destination locations in the study area are situated along US 17 and NC 210.

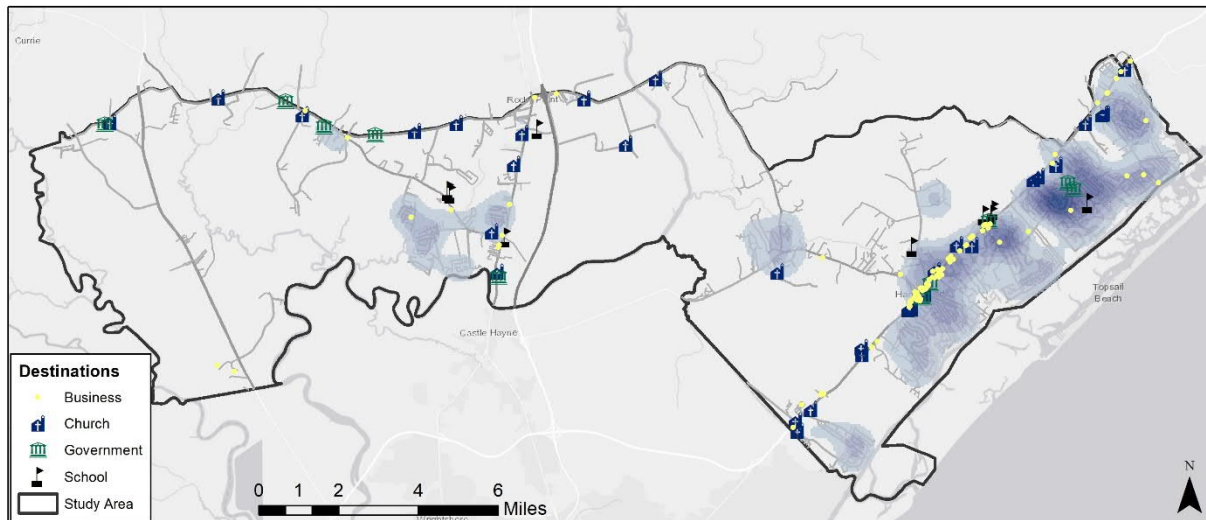


Figure 1.23: Community Resources

The shaded regions on the map correspond to density of dwelling units weighted on their propensity to use non-motorized transport. Single-family dwelling (SFD) units within half mile radius to a destination point was considered to have twice the propensity of farther SFDs. Multi-family dwelling (MFD) units were considered to have four times the base propensity (SFDs farther than ½ mile) regardless of their distance to a destination. This analysis combines the locations of potential origin-destination pairs of short Home-Based Other trips which have a high propensity to shift from motorized to non-motorized travel modes.

According to this analysis, portions of central and northern US 17 corridor and parts of US 117 display a high proportion of origin-destination pairs of a shorter, more walkable length. These areas should ideally get priority in phasing for the bicycle and pedestrian infrastructure projects that will be recommended as a part of this study.

1.6 Land Use

The future land use plan mirrors the future population and employment densities presented in the previous sections. As shown in Figure 1.24, the study area is primarily residential, with pockets of commercial and mixed-use land uses concentrated around US 17 and US 117. The development patterns suggest a higher propensity of north-south movements that could potentially consist of non-motorized trips, and a lower propensity of similar east-west movements.

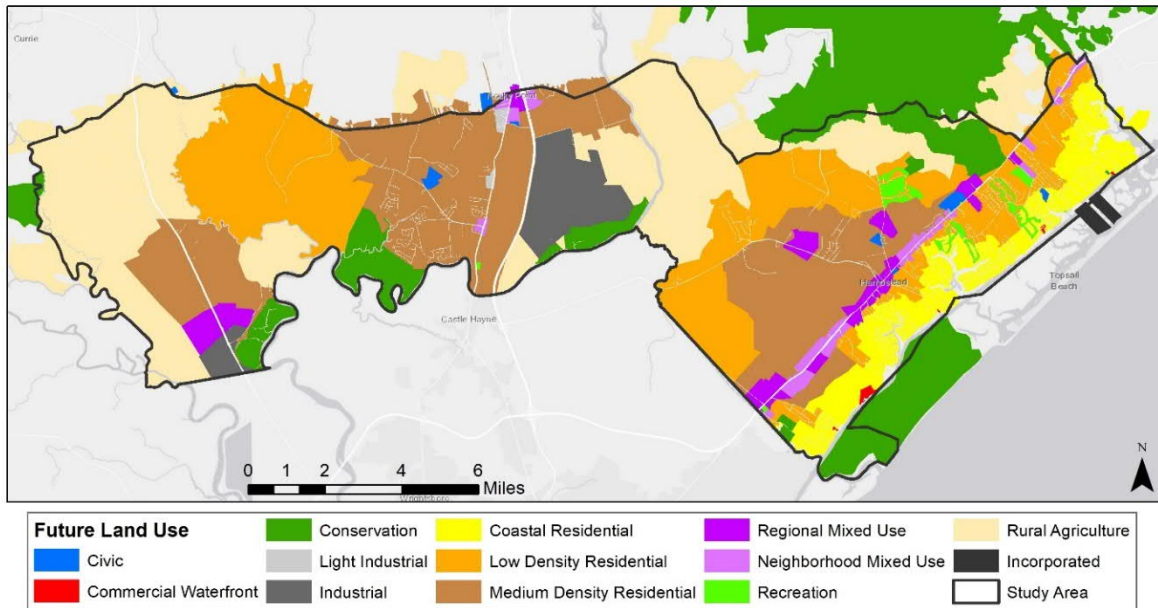


Figure 1.24: Future Land Use

1.7 Recent Developments

Several developments were under planning or construction phase at the time of writing this report. The Figure 1.25 shows the location of the recent developments in the study area. Most developments are concentrated along US 17. Overall, 27 commercial developments, 12 master development plans, and several other subdivisions were identified as of late 2022.

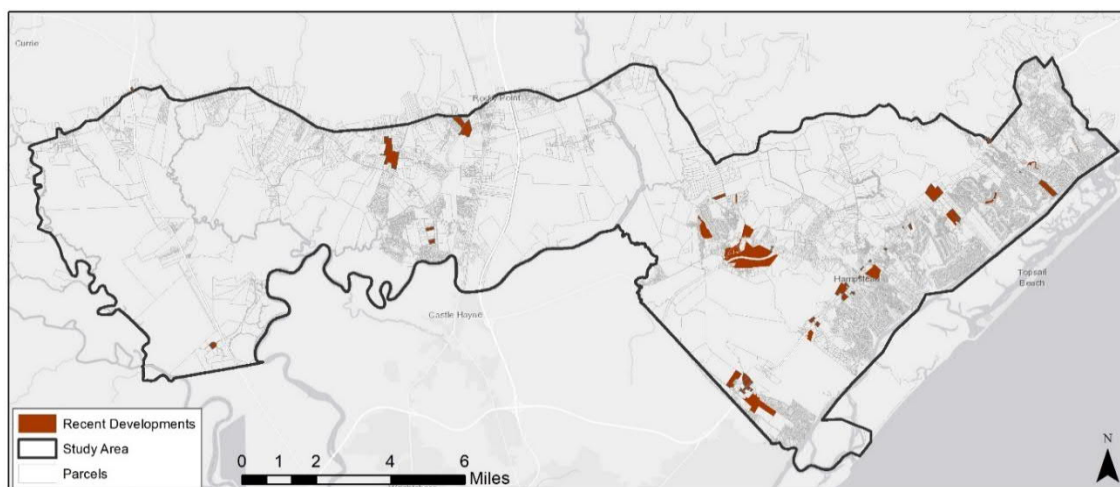


Figure 1.25: Recent Developments

1.8 Current and Proposed Transportation Network

Roadway

Major roadways throughout the study area include I-40, US 117, US 17, US 421, NC 133, and NC 210. Secondary and private roads are scattered throughout with the majority being located between US 17 and Topsail Beach. The planned Hampstead Bypass will terminate in the study area along US 17. Construction is ongoing with a completion date of 2030. Figure 1.26 also shows the collector streets recommendations derived from the PCCSP.

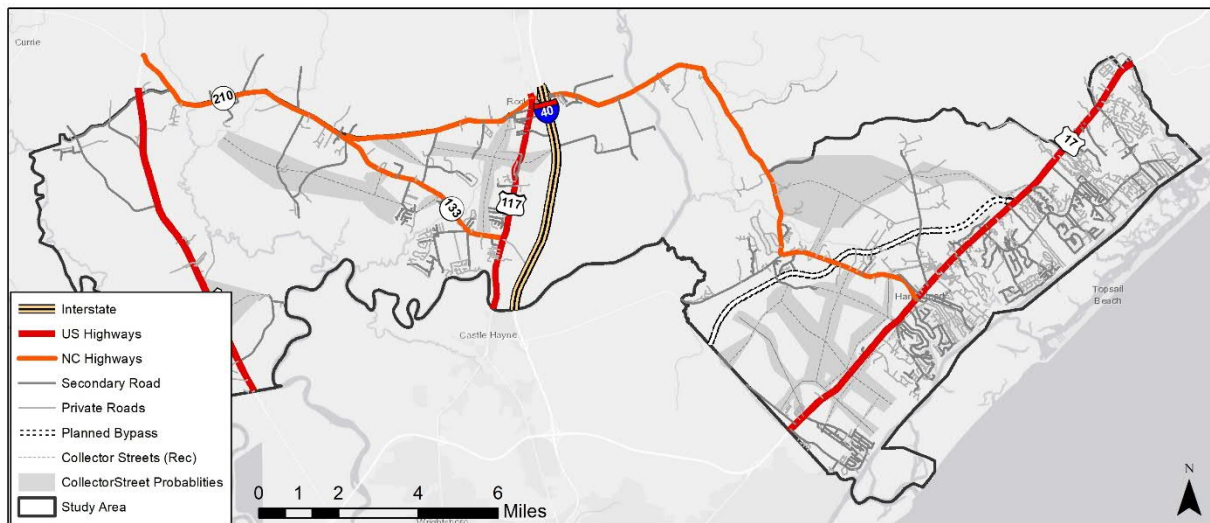


Figure 1.26: Existing Roadways and Collector Street Recommendations

Bicycle & Pedestrian

Existing sidewalks with the project area include small sections within recent neighborhood developments. Alignments for the East Coast Greenway are proposed in the western and eastern half of the study area. Other bicycle and pedestrian recommendations draw from the PCCSP and other area transportation plans. Most recommendations for bicycle and pedestrian facilities occur in the eastern half of the study area near US 17, demonstrating a strong desire for facilities here.

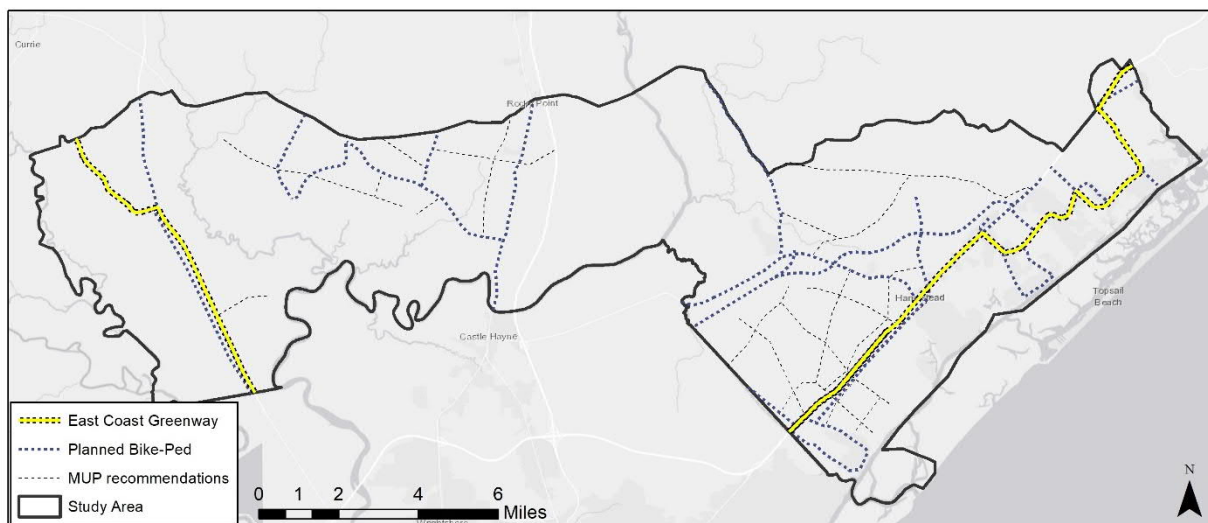


Figure 1.27: Planned Bicycle and Pedestrian Facilities

1.9 Bicycle and Pedestrian Crash Assessment

Safety is one of the key priorities for designing proper bicycle and pedestrian infrastructure. Data for the location and severity of pedestrian and bicycle infrastructure is maintained by NCDOT. Figure 1.28 and Figure 1.29 show the locations of all pedestrian and bicycle crashes respectively between 2007 and 2021 in the study area, with a heatmap created using the location and severity data. 67% of the pedestrian crashes occurred at night, while 14% of bicycle crashes occurred at night. 25% of pedestrian crashes occurred while the pedestrian was walking along the roadway and 10% occurred while the pedestrian was crossing the road. 43% of bicycle crashes occurred while the cyclist was turning/merging or failed to yield and 24% occurred while the motorist was overtaking the cyclist or failed to yield.

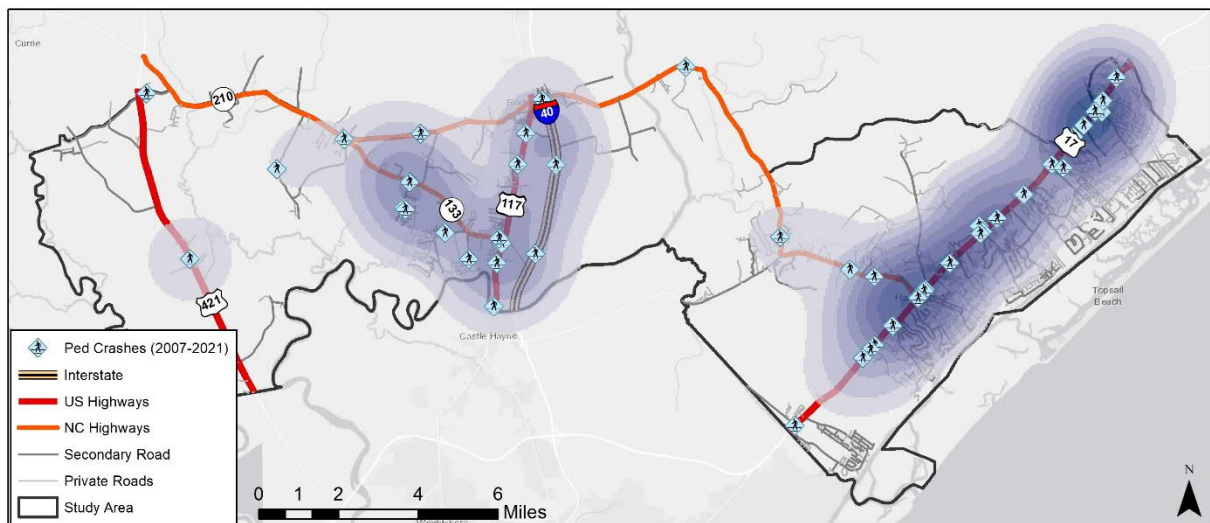


Figure 1.28: Pedestrian Crashes

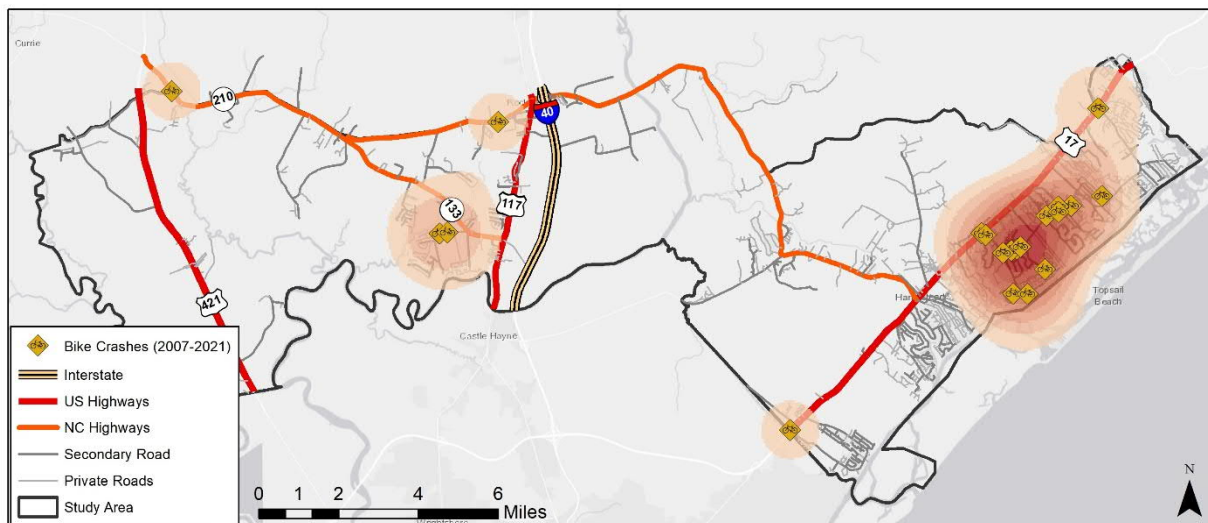


Figure 1.29: Bicycle Crashes

2. Network Assessment

2.1 Public Engagement Summary

Phase I

The initial phase of public engagement activities conducted for the project in 2022-2023 revealed bicycle and pedestrian conditions, including where users currently or would like to be able to walk and bike, where challenges exist to doing such, and ideas for improving bicycle and pedestrian conditions. 619 survey responses were collected as of March 9, 2023. The following provides a summary of public engagement responses:



Figure 2.1: A pop-up event in the Castle Bay Community

- 74% of respondents indicated they were interested but concerned with bicycling in Pender County and 69% of respondents indicated they were interested but concerned with walking in Pender County.
- Less than 30 participants currently bike and walk to commute to school, work, or connect to transit. Approximately 130 participants bike or walk to visit family and friends.
- For the purpose of running errands, 94 participants responded that they currently bike, and 77 participants responded that they currently walk.
- 31 participants said they currently bike daily, while 180 participants currently walk daily. When asked how often they would bike or walk if the network was improved, 198 participants answered that they would bike daily, and 286 participants answered that they would walk daily.
- The most used current mode of transportation is a single-occupant car. When participants were asked about desired commuting patterns, biking was ranked as the most desired mode of transportation if the system was improved.
- The option for “Safe biking/walking routes” was the most popular choice of participants to encourage more walking or biking. Participants provided 159 comments about amenities that would encourage participants to bike or walk. Among those comments, the common themes were about safety, having well-lit trails, bathroom facilities, dedicated bike lanes, sidewalks, and crosswalks.

The following series of heat maps were created using the public survey responses. Areas that are blue had a low number of responses from survey participants, while areas that are yellow had a moderate number of responses, and areas that are red had the highest number of responses. These red areas are also referred to as hot spots and indicate a high concern area.

Network Assessment

Public survey participants were able to identify where their trips start and where their trips end. As shown in Figure 2.2, most trips originate in Hampstead, specifically just east of US 17. Figure 2.3 shows that most trip destinations are also in Hampstead and are concentrated along US 17. Trips destinations along US 17 include grocery stores, shopping, and restaurants.

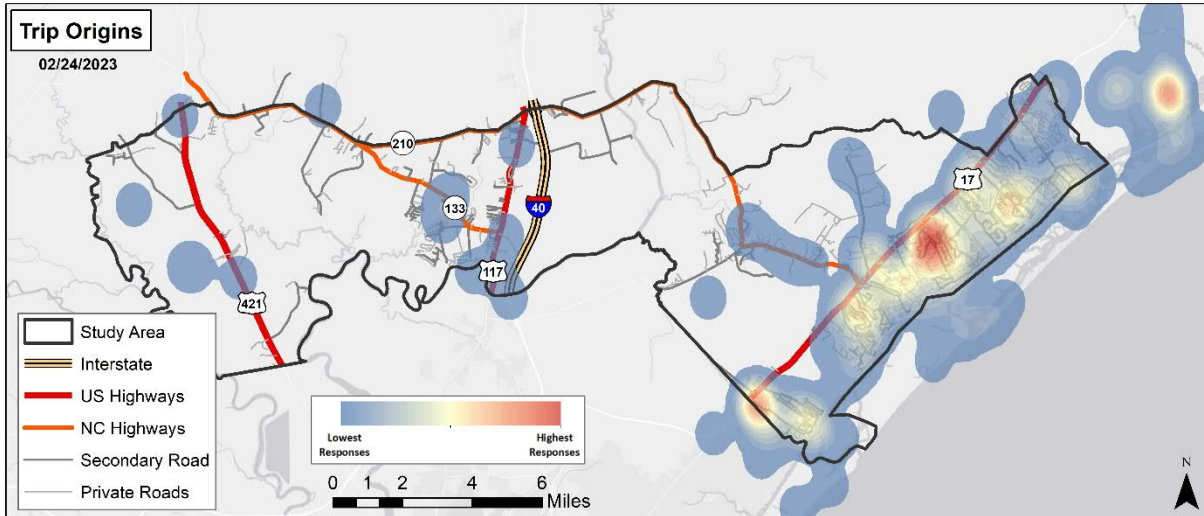


Figure 2.2: Trip Origins

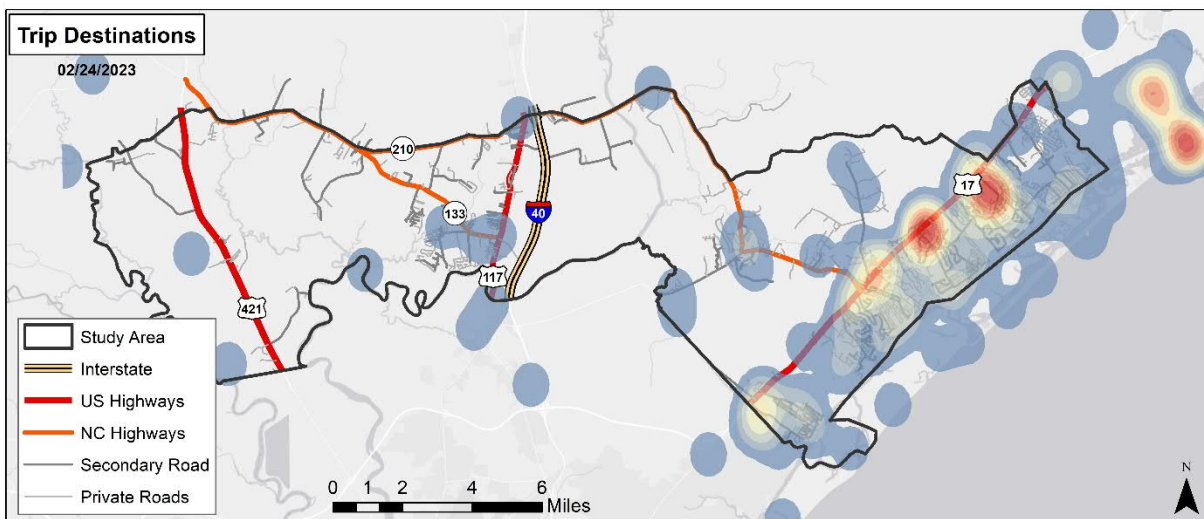


Figure 2.3: Trip Destinations

Figure 2.4 shows the destinations that survey participants would like to bike or walk to. These destinations are concentrated along US 17 and into the residential areas east of US 17. Figure 2.5 shows places of interest in the project area including schools, recreational facilities, and commercial destinations. Grocery stores, like Food Lion and Lowes Food, along US 17 are high priority destinations for residents. In the western half of the project area, the Food Lion shopping center and Millers Pond Park are noted as destinations individuals would like to bike or walk to.

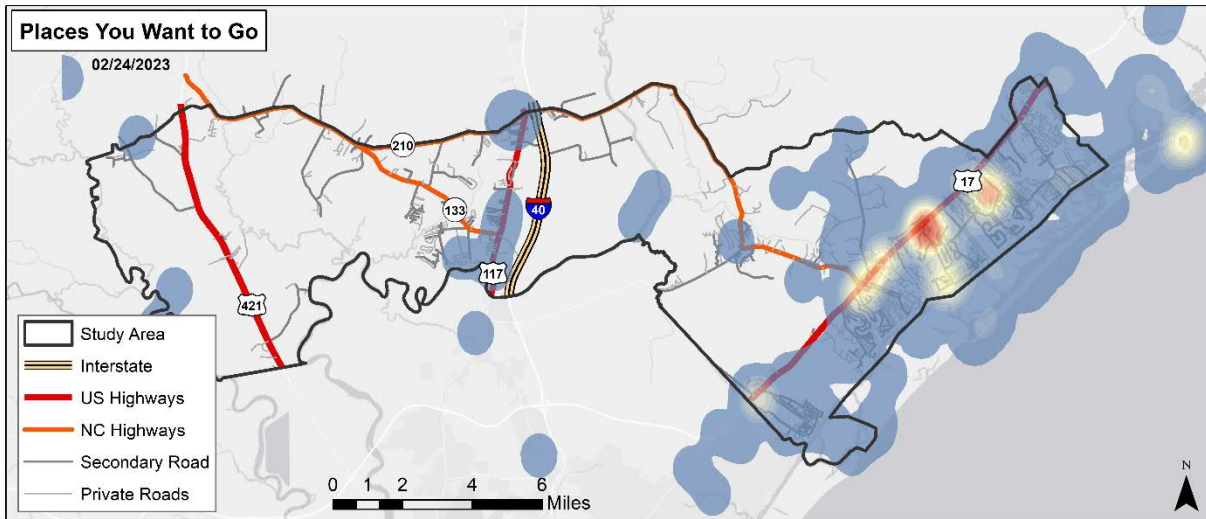


Figure 2.4: Places participants want to walk or bike to

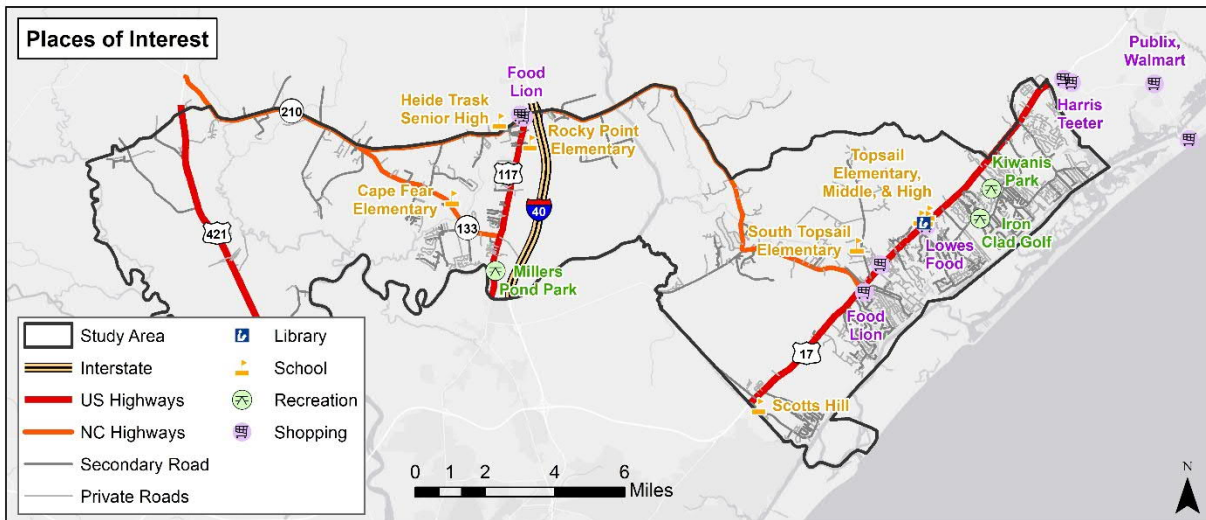


Figure 2.5: Places of Interest

Figure 2.6 and Figure 2.7 show areas that participants identified as biking or walking challenges. US 17, particularly around Lowes Food, Topsail Elementary, Topsail Middle, and Topsail High, is a hotspot for biking challenges. The area around Scotts Hill and near the US 17/NC 210 intersection were also identified as challenge areas for biking. The area around Kiwanis Park is a hotspot for walking challenges. The areas around Lowes Food and Topsail schools, the US 17/NC 210 intersection, and Scotts Hill were also identified as moderate concern areas for walking.

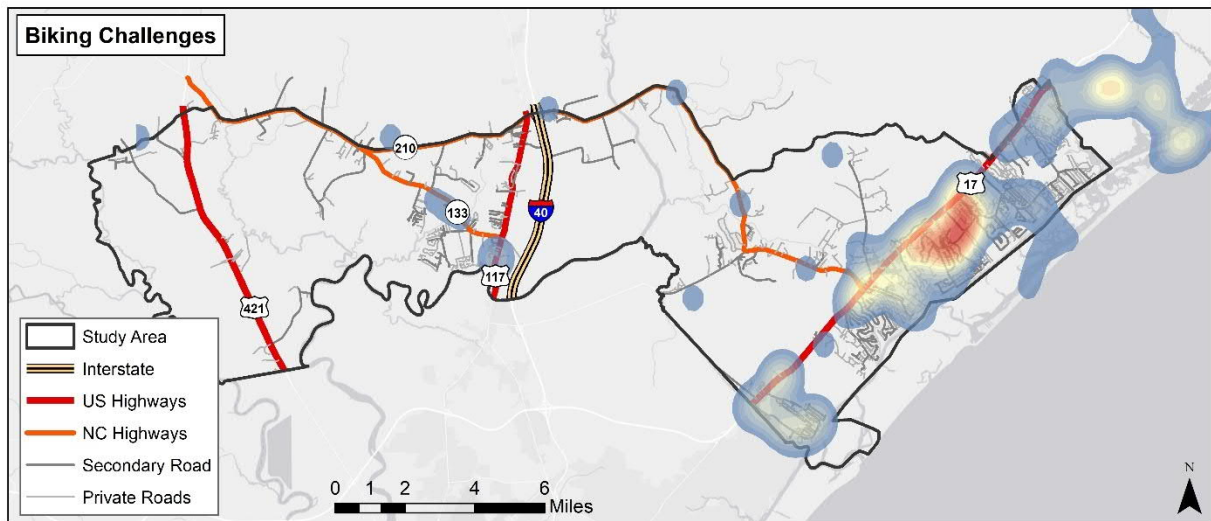


Figure 2.6: Biking Challenges

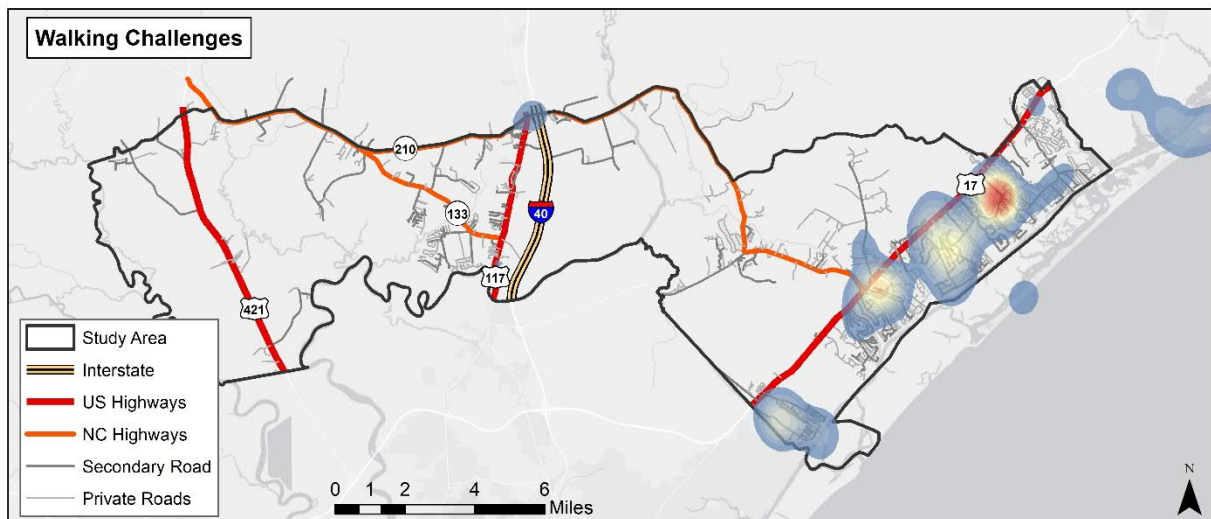


Figure 2.7: Walking Challenges

Figure 2.8 shows areas where needed improvements were identified. Hot spots are noted along US 17 near Lowes Food and Topsail schools, the US 17/NC210 intersection, and Scotts Hill. Other noted improvements needed included east of US 17 near Kiwanis Park and along US 117.

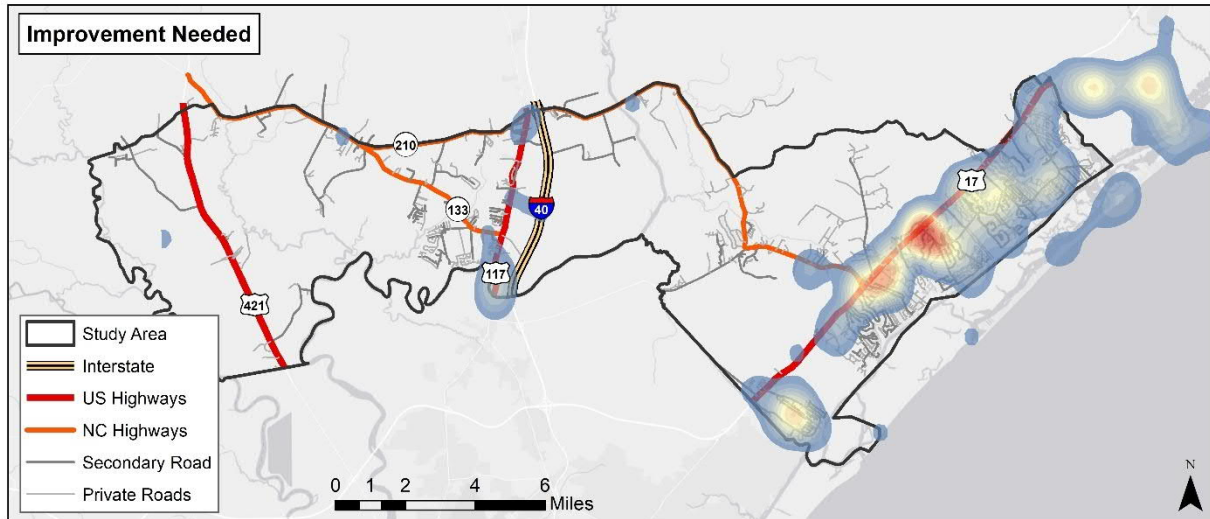


Figure 2.8: Improvements Needed

Participants were asked to rate their level of comfort using different bicycle and pedestrian facilities including shared lanes, wide shoulders, sidewalks, and greenways. As noted in Figure 2.9, participants are most comfortable using a greenway or buffered bikeway for biking and least comfortable using a shared lane.

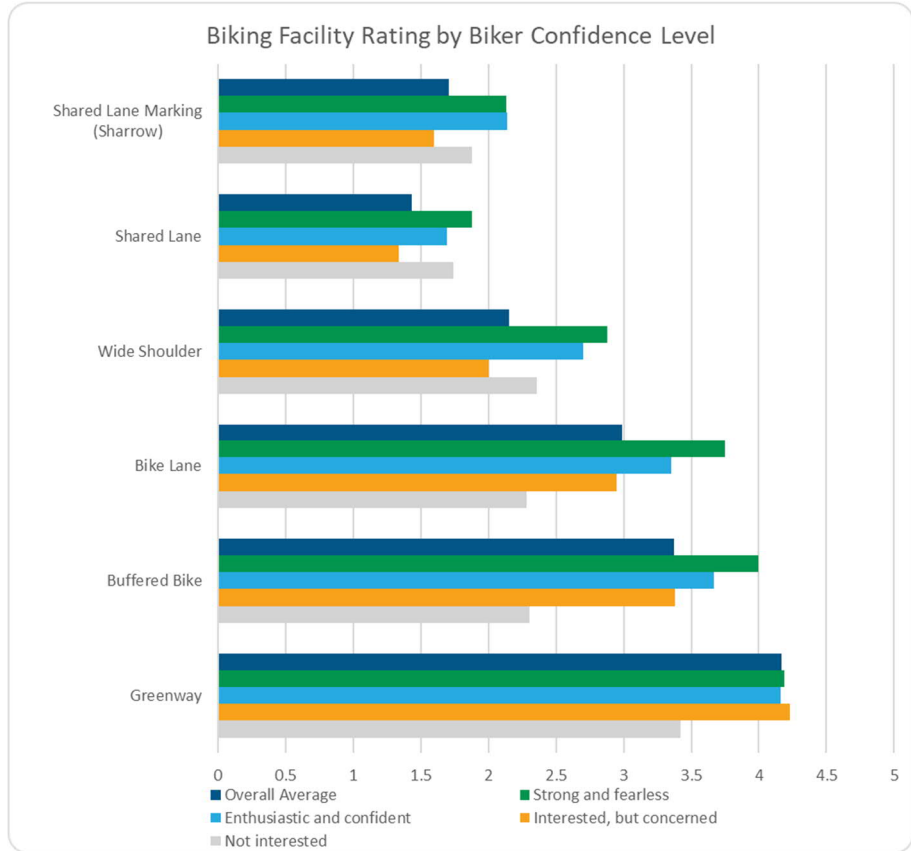


Figure 2.9: Bicycle Facility Rating by Biker Confidence Level

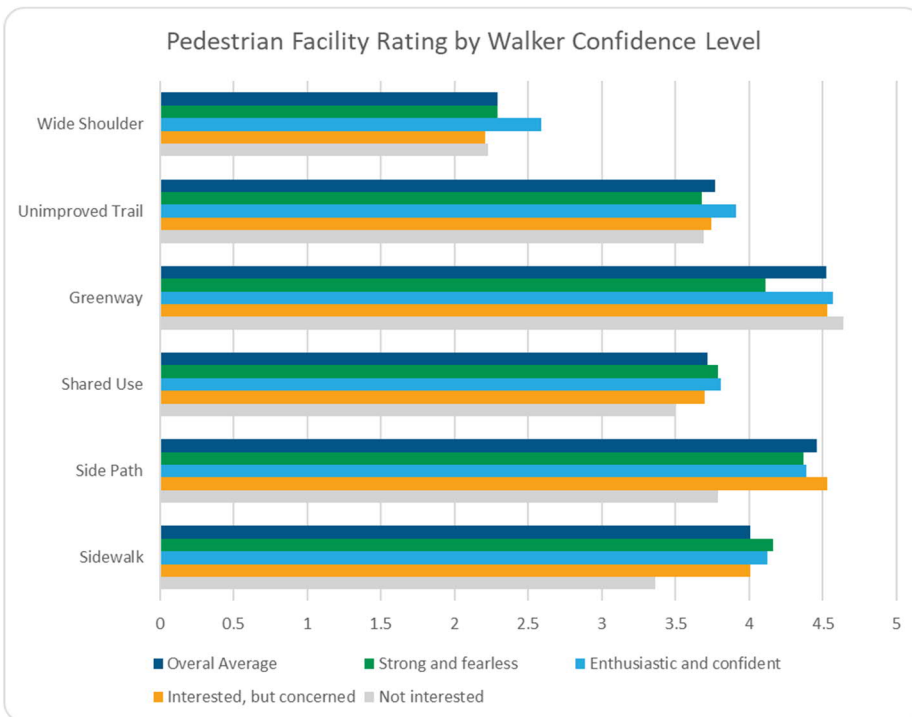


Figure 2.10: Pedestrian Facility Rating by Walker Confidence Level

As noted in Figure 2.10, participants are most comfortable using a greenway, sidewalk, or side path for walking. Participants are least comfortable using a wide shoulder for walking.

Phase II

The final phase of public engagement activities conducted in June 2023 focused on presenting the findings from Phase I and the draft recommendations, explaining the next steps, and sharing the draft report. 44 comments were received as of June 23, 2023. The following provides a summary of comments received:

- Of the relevant comments, the majority supported the draft recommendations and expressed excitement for the proposed bicycle and pedestrian infrastructure. Several comments suggested edits; one recommended looking at additional improvements for NC 50 (which is outside of the study area) and another recommended including a bicycle path on US 210.
- Comments of support were provided for Hoover Road (one comment), Country Club Drive (five comments), while an additional five comments generally supported the recommendations. One comment opposed recommendations on Doral Road, and one was in opposition to any bicycle or pedestrian improvements in the study area.
- The majority of comments received were regarding Scotts Hill Loop Road. Of the comments received 22 were in favor of the recommendations to add bicycle and pedestrian improvements, while five were in opposition.

These comments were reviewed by the technical team when finalizing the network recommendations. The full public engagement summaries can be found in Appendix A: Public Engagement Summaries.

2.2 Steering Committee Meetings

A steering committee, comprised of Wilmington MPO staff, NCDOT staff, WAVE transit staff, residents, cyclists, business owners, and healthcare workers, met three times throughout the project to provide the team with input on the current and proposed network. The following provides summaries from each of these meetings.

February 1, 2023: Nine steering committee members, along with the project team, met to discuss the plan goals and implementation. Some key goals identified include safety for all users, reducing bicycle and pedestrian crashes, and network connectivity. The committee then identified desired locations for bicycle and pedestrian accommodations which include health care centers, schools, recreational spaces, US 17, and high development areas.

April 3, 2023: Seven steering committee members, along with the project team, met to discuss the public input received and further prioritize locations for improvements. Steering committee members completed two exercises during the meeting. The first exercise determined the top corridors they felt should be prioritized for improvements. The second exercise determined what type of facilities were preferred for specific corridor segments and locations. The results of these exercises showed that US 421, US 117, US 17, Hoover Road, and the eastern portion of NC 210 were the highest priorities for steering committee members. Spot improvements at the US 17/NC 210 intersection, US 17/Hoover Road intersection, and along US 17 at the Topsail schools were also identified as high priorities.

As part of this exercise, committee members were asked to rank their top values for the bicycle and pedestrian network out of a list of guiding values. The following guiding values were evaluated:

- Complementary: Complement and support other county initiatives and development.
- Choice: Desire to not use vehicles for every trip and opportunities for walking and biking.
- Comfort: Increase in facilities and amenities for walkers and bikers of all ages and abilities.
- Safety: Improved bicycle and pedestrian safety and improved connections across US 17.
- **Connectivity:** Enhanced access to commercial areas, health centers, and schools.
- Equity: While most activity occurs near US 17, equitably distribute bike and pedestrian facilities across the county.
- Health: Support the region's goals to improve public health.
- Readiness: The plan should respond to current needs, show community supports, help prepare the county for future growth, and be fiscally feasible.

Connectivity and safety ranked the highest, with six committee members ranking each as a top priority. Two committee members ranked readiness as a top priority. One committee member ranked comfort as a top priority and one committee member ranked complementary as a top priority.



Figure 2.11: Steering Committee members completing a network prioritization exercise.

3. Proposed Network

Input from the public engagement efforts and steering committee exercises, combined with criteria for the use of pedestrian and bicycle facilities taken from various technical resources, was used to develop a desired network of bicycle and pedestrian facilities across the urbanized portion of Pender County. Recommendations focused on providing a connected and safe network for all users as top priorities, with emphasis on safe access to commercial areas along US 17, including safe crossings of US 17, access to the Rocky Point area, and access to schools and parks.

The public input results and steering committee discussion emphasized that a bicycle and pedestrian network would not only provide needed mobility options for residents, but the ability to connect residential areas within a mile of US 17 would offer an opportunity for those wanting to access commercial areas to walk or bike, thus helping to reduce the vehicle traffic on US 17.

Facility type was determined using local input, as well as context considerations such as roadway speed and volume, network connectivity, and adjacent land use. Technical resources that were considered in the development of the network include:

- NCDOT Highway Typical Sections for Use in SPOT Online, 2019
- NCDOT Complete Streets Policy, 2019
- NCDOT Roadway Design Manual, 2018
- FHWA Guidance on Bicycle and Pedestrian Accommodation, 2011

3.1 Bicycle and Pedestrian Network Recommendations

Figure 3.1 and Figure 3.2 on the following pages show the bicycle and pedestrian network recommendations for the study area. Table 3.1 lists the bicycle and pedestrian network recommendations for the study area. These recommendations are considerate of the fiscal constraint associated with constructing and maintaining a network of bicycle and pedestrian facilities, the general rural character of many roadways in the study area, the right-of-way constraints associated with several roadways, and the rate of population growth across the study area.

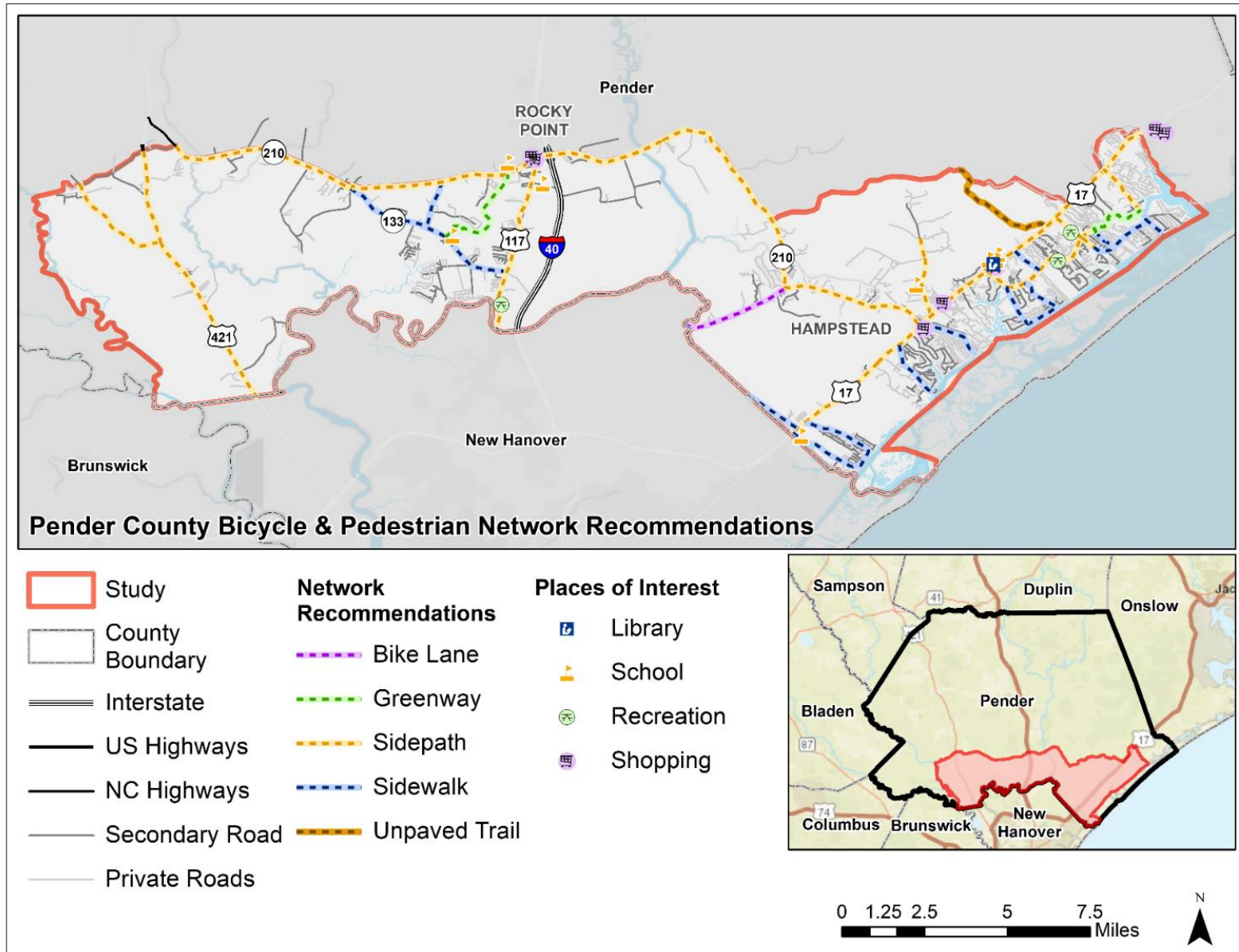


Figure 3.1: Network Recommendations

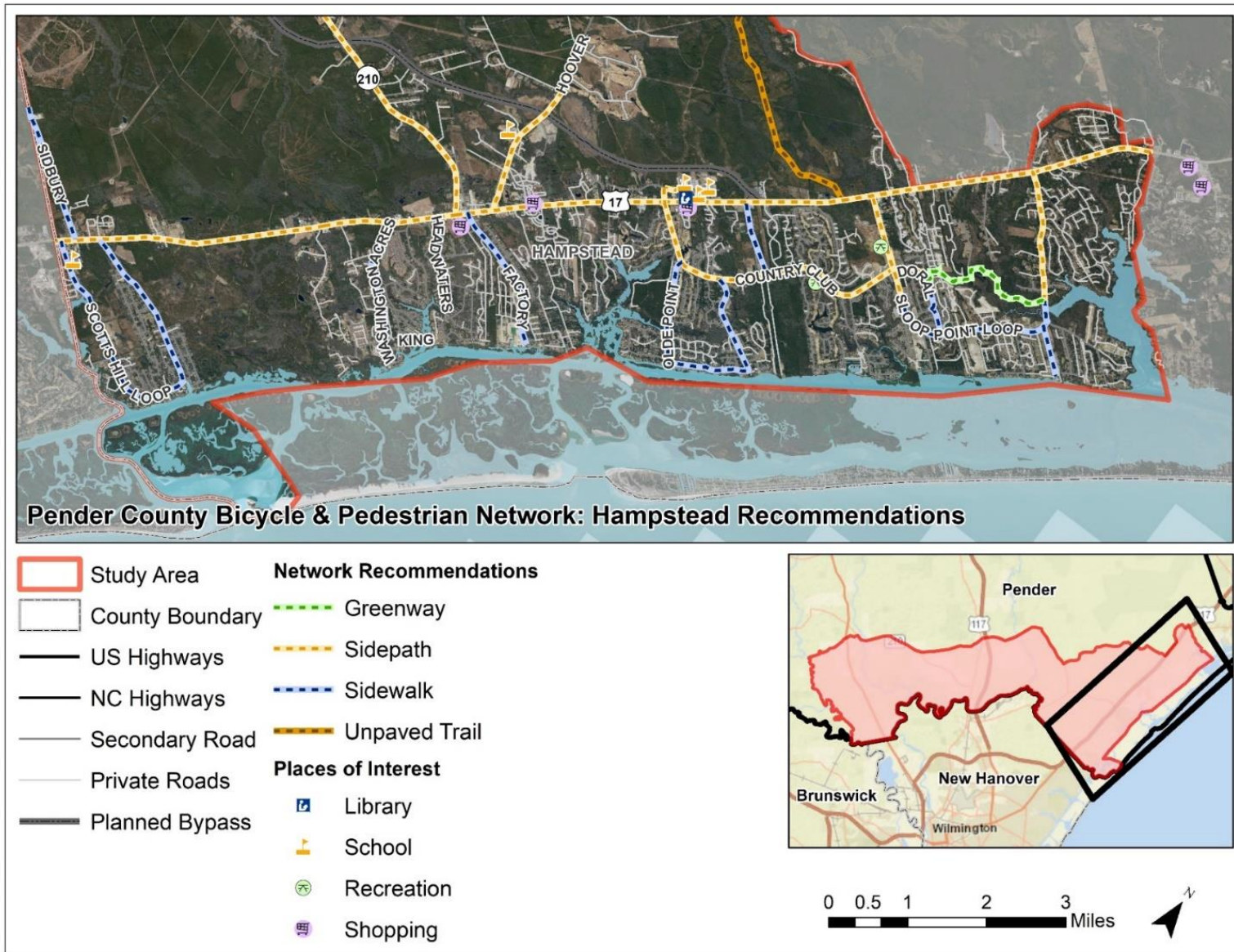


Figure 3.2: Network Recommendations for Hampstead

Table 3.1: List of Bicycle and Pedestrian Network Recommendations

CORRIDOR	FROM	TO	FACILITY RECOMMENDATION
Avila Drive Extension	US 17	Country Club Road	Sidewalk
Blueberry Road	US 421	Montague Road	Sidewalk
Cheshire Road	NC 133	NC 210	Sidewalk
Country Club Road	US 17	Sloop Point Loop Road	Sidewalk
Doral Drive	Sloop Point Loop Road	East Coast Greenway	Sidewalk
Doral Drive	East Coast Greenway	Masters Lane	Sidewalk
East Coast Greenway	Doral Drive	Sloop Point Road	Greenway
Factory Road	US 17	Waterfront Circle	Sidewalk
Holly Shelter Road/Island Creek Road	New Hanover County line	NC-210	Bike lane
Hoover Road	Highlands Drive	Godfrey Creek Road	Sidewalk
Hoover Road	Godfrey Creek Road	US-17	Sidewalk
Jenkins Road	US 17	N St Johns Church Road	Sidewalk
Kings Landing Road	Country Club Road	Olde Point Road	Sidewalk
Lewis Road	Sloop Point Loop Road	Sloop Point	Sidewalk
Lodge Road	US 17	Study area limits	Unpaved Trail
Masters Lane	Doral Drive	Sloop Point Loop Road	Sidewalk
N St Johns Church Road	Jenkins Road	Topsail Middle School	Sidewalk
NC 133	NC 210	US 117	Sidewalk
NC 210	Shaw Highway	Royal Oak Drive	Sidewalk
NC 210	Dallie Futch Road	US 17	Sidewalk
NC 210	NC 133	Shaw Highway	Sidewalk
NC 210	Montague Road	NC 133	Sidewalk
Olde Point Road	Country Club Road	Kings Landing Road	Sidewalk
Scotts Hill Loop Road	US 17	US 17	Sidewalk
Shaw Highway	Study area limits	NC 210	Sidewalk
Sidbury Road	US 17	Study area limits	Sidewalk
Sloop Point Loop Road	Doral Drive	North Topsail Elementary School	Sidewalk
Sloop Point Loop Road	US 17	Doral Drive	Sidewalk
Sloop Point Loop Road, Sloop Point Road	North Topsail ES	Tidewater Court	Sidewalk
Sloop Point Road	US 17	Tidewater Court	Sidewalk
Turkey Creek Greenway	NC 210	NC 133	Greenway
US 117	New Hanover County line/Northeast Cape Fear River	NC 210	Sidewalk
US 17	Whitebridge Road	NC 210	Sidewalk
US 17	NC 210	Country Club Road	Sidewalk
US 17	Sloop Point Road	Cornel Lane	Sidewalk

CORRIDOR	FROM	TO	FACILITY RECOMMENDATION
US 17	New Hanover County line	Whitebridge Road	Sidepath
US 17	Lodge Road	Sloop Point Road	Sidepath
US 17	Country Club Road	Lodge Road	Sidepath
US 421	New Hanover County line	Blueberry Road	Sidepath
US 421	Blueberry Road	Montague Road	Sidepath
Washington Acres Road	US 17	End of roadway	Sidewalk

Facilities on US 17 are recommended on both sides of the roadway. Other roadways should be evaluated on a case-by-case basis to determine if facilities on one or both sides are recommended during project planning.

3.2 Network Priorities

The steering committee used input from the public engagement efforts along with project values to prioritize bicycle and pedestrian facilities that should be at the forefront of planning in Pender County. Figure 3.3 and Figure 3.4 show the high priority bicycle and pedestrian projects for the study area. Understanding that there are limited financial resources, these are projects that the steering committee felt have the highest desire and need and would result in the greatest impact.

Highly desirable destinations, like grocery stores, restaurants, businesses, medical offices, and schools, are concentrated along and near US 17. Residential developments both west and east of US 17 are growing and residents have a desire to access these destinations along US 17 by bike and walking. These high priority projects were selected because they would prioritize safe bicycle and pedestrian access between these locations while helping to reduce vehicle trips on US 17.

Table 3.2 lists these high priority projects. Three intersection projects were identified as part of these high priorities. These improvements would improve safety and accessibility across US 17 near active commercial areas and Topsail schools. The intersection near Lowes Food and Topsail Elementary, Topsail Middle, and Topsail High schools was especially identified as a safety concern. Improvements could come in the form of high visibility crosswalks, improved ADA accessibility, median pedestrian islands, curb extensions, lighting, and improved bicycle and pedestrian signalization such as countdown timers, Rectangular Rapid-Flashing Beacons (RRFB), and High-Intensity Activated (HAWK) crosswalk.

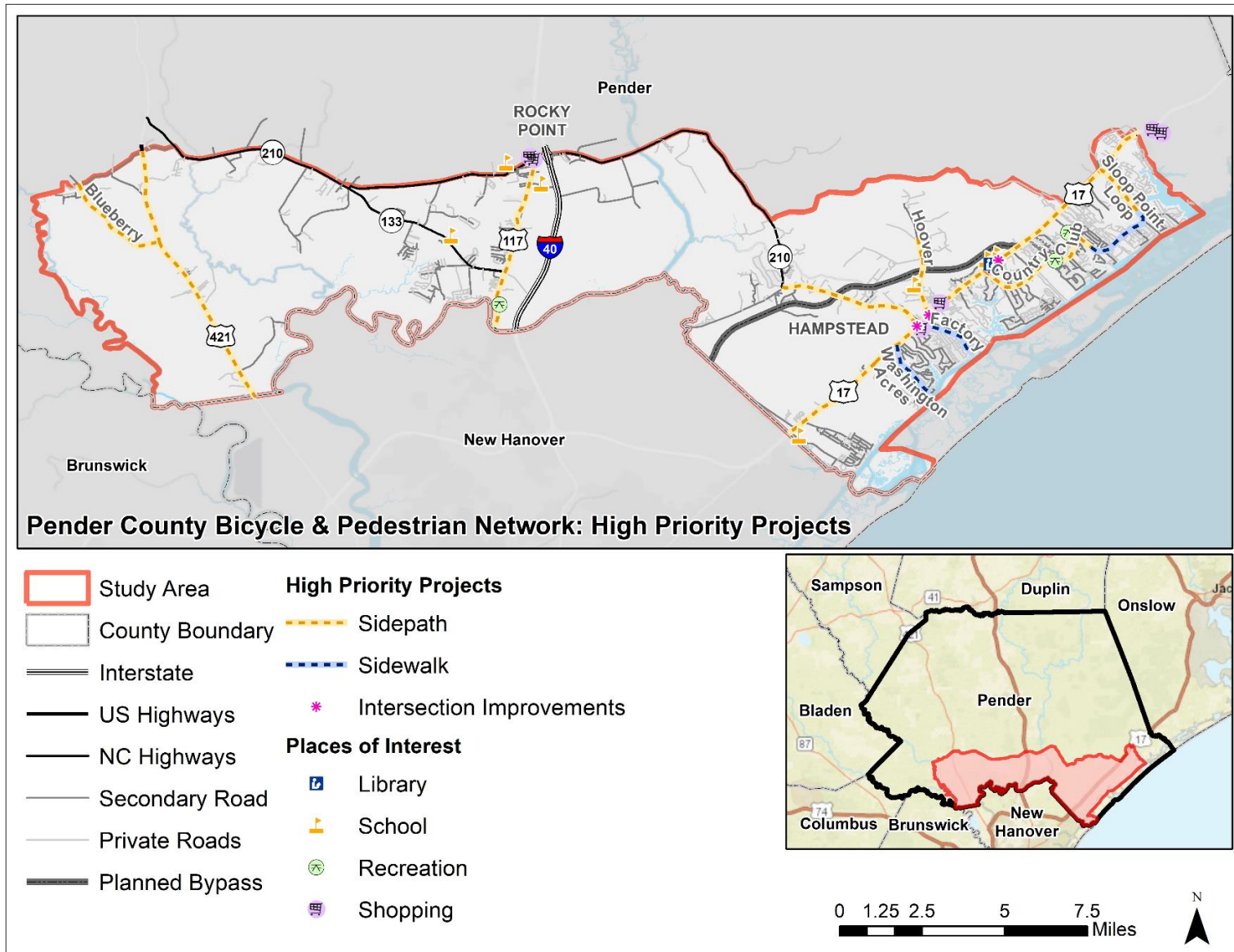


Figure 3.3: High Priority Projects

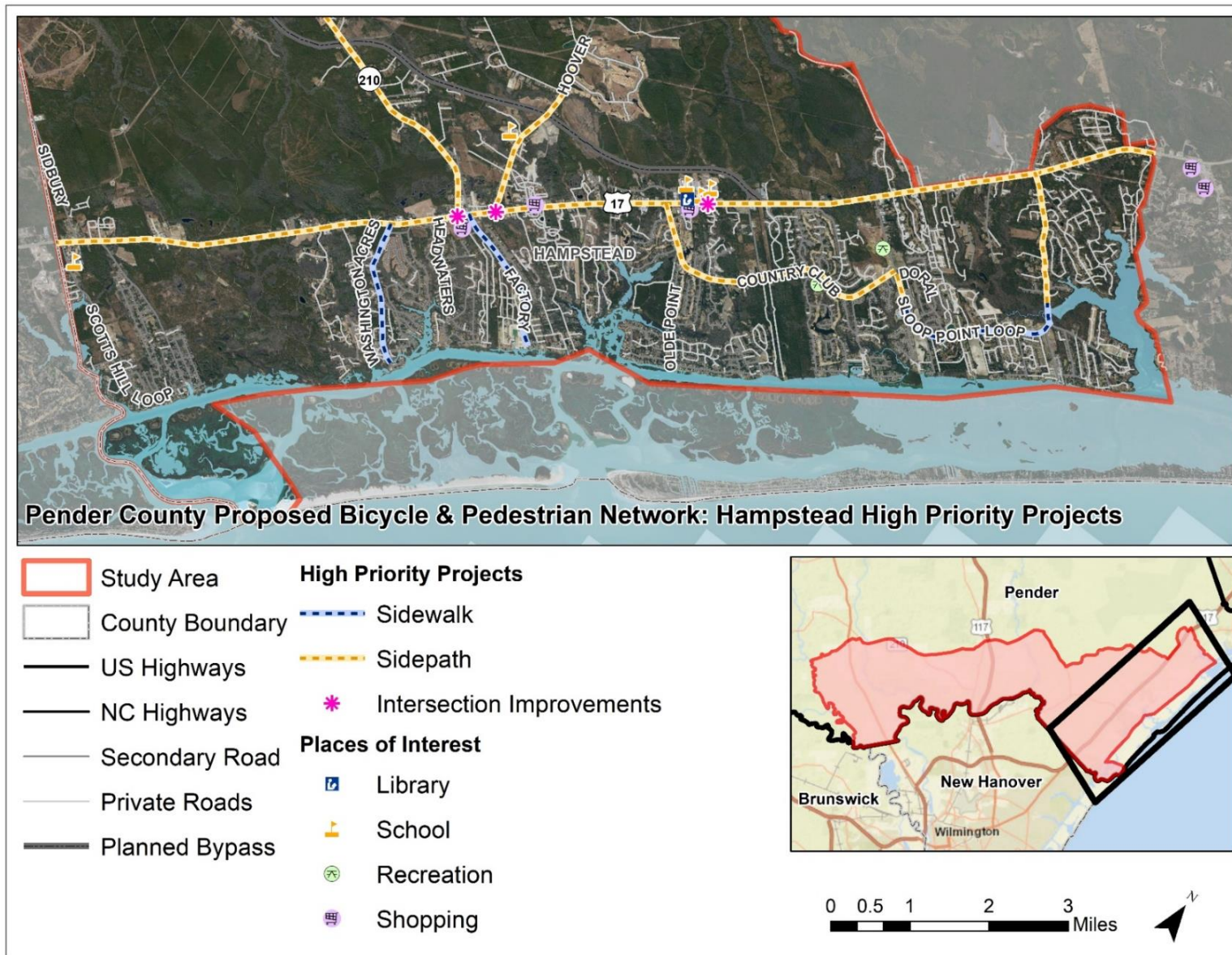


Figure 3.4: High Priority Projects for Hampstead

Proposed Network

Table 3.2: Priority Bicycle and Pedestrian Projects

CORRIDOR	FROM	TO	PRIORITY RECOMMENDATION
Blueberry Road	US 421	Montague Road	Sidepath
Country Club Road	US 17	Sloop Point Loop Road	Sidepath
Factory Road	US 17	Waterfront Circle	Sidewalk
Hoover Road	Godfrey Creek Road	US 17	Sidepath
NC 210	Dallie Futch Road	US 17	Sidepath
Sloop Point Loop Road	Doral Drive	North Topsail Elementary School	Sidepath
Sloop Point Loop Road, Sloop Point Road	North Topsail ES	Tidewater Court	Bike Lane
Sloop Point Road	US 17	Tidewater Court	Sidepath
US 117	New Hanover County line/Northeast Cape Fear River	NC 210	Sidepath
US 17	Whitebridge Road	NC 210	Sidepath
US 17	NC 210	Country Club Road	Sidepath
US 17	Sloop Point Road	Cornel Lane	Sidepath
US 17	New Hanover County line	Whitebridge Road	Sidepath
US 17	Lodge Road	Sloop Point Road	Sidepath
US 17	Country Club Road	Lodge Road	Sidepath
US 421	New Hanover County line	Blueberry Road	Sidepath
US 421	Blueberry Road	Montague Road	Sidepath
Washington Acres Road	US 17	End of roadway	Sidewalk
NC 210/US 17 Intersection	--	--	Intersection improvements
Hoover Road/US 17 Intersection	--	--	Intersection improvements
Lowes Food/Topsail Schools Intersection	--	--	Intersection improvements

3.3 Bicycle and Pedestrian Network Recommended Facility Types

Greenway / Shared Use Path

A greenway, or shared use path, provides a travel area separate from motorized traffic for bicyclists, pedestrians, wheelchair users, skaters, joggers, and other users. Greenways offer network connectivity opportunities beyond the roadway network, as they are often located along streams, in utility corridors and parks.

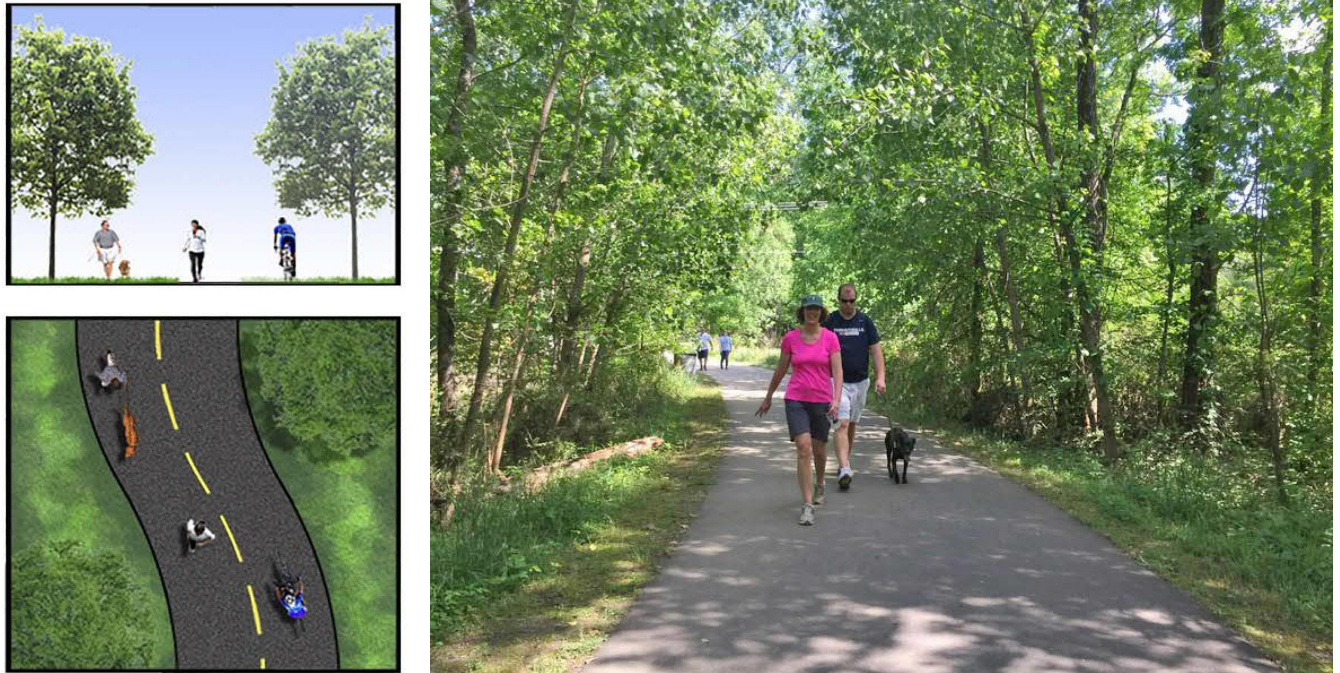


Figure 3.5: Sample greenway/ shared use path graphics

Context Considerations

Greenways operate independently of roadway corridors and are fully separated from traffic and can even become their own corridors, following features such as waterways or utility easements. However, when selecting bicycle and pedestrian facilities, greenways and shared use paths should be considered as multi-modal alternatives for roadway corridors that exceed traffic volumes of 6,000 vehicles per day and speed limits higher than 35 miles per hour. Greenways may provide network alternatives to arterial and collector roadway connections and are appropriate in low-density areas as well as high-density areas to serve as a corridor connection.

Design Considerations

Greenways should be designed to a width of 10-12 feet in most locations, with a 2-foot shoulder on either side. In areas where low volumes are expected or the corridor is constrained, an 8-10-foot greenway may be adequate. Areas where usage is expected to be very high may be built to a width of 12-14 feet.

A variety of surface treatments are available for greenways depending on expected use, context, and budget. Paved trails are often constructed with asphalt or concrete. Asphalt tends to be more popular and cost-effective than concrete, but concrete is more durable. A less expensive option is an unpaved or natural surface trail, with compacted aggregates and compacted native soil being popular and durable

alternatives. Compacted aggregates often consist of granite fines which are readily available in many locations. Natural surface trails, while less expensive to construct, require proper drainage and more careful maintenance to ensure that materials remain sufficiently compacted. In areas where floodplains or wetlands are present, boardwalk structure is often required for trail construction. Boardwalk is typically more expensive to construct but has a lower maintenance cost. Two main surface options for boardwalk include timber and concrete, with timber being less expensive but more maintenance-intensive than concrete.

Greenways typically do not require pavement marking except in certain locations and contexts. Where greenway traffic is heavy, a 4-inch dashed yellow center line stripe and 4-inch solid white edge line may be used. Solid center lines may be employed in locations where sightlines are poor or the greenway approaches a roadway crossing, and edge lines may be employed in locations where evening use is expected. Signage such as the Bikes Yield to Peds (R9-6) specified in the Manual on Uniform Traffic Control Devices (MUTCD) may be used at the entrance of a greenway segment as a reminder of user etiquette, and many communities use customized wayfinding signs to provide navigation to destinations and other greenways. Figure 3.6 provides an example cross-section of a preferred greenway facility.

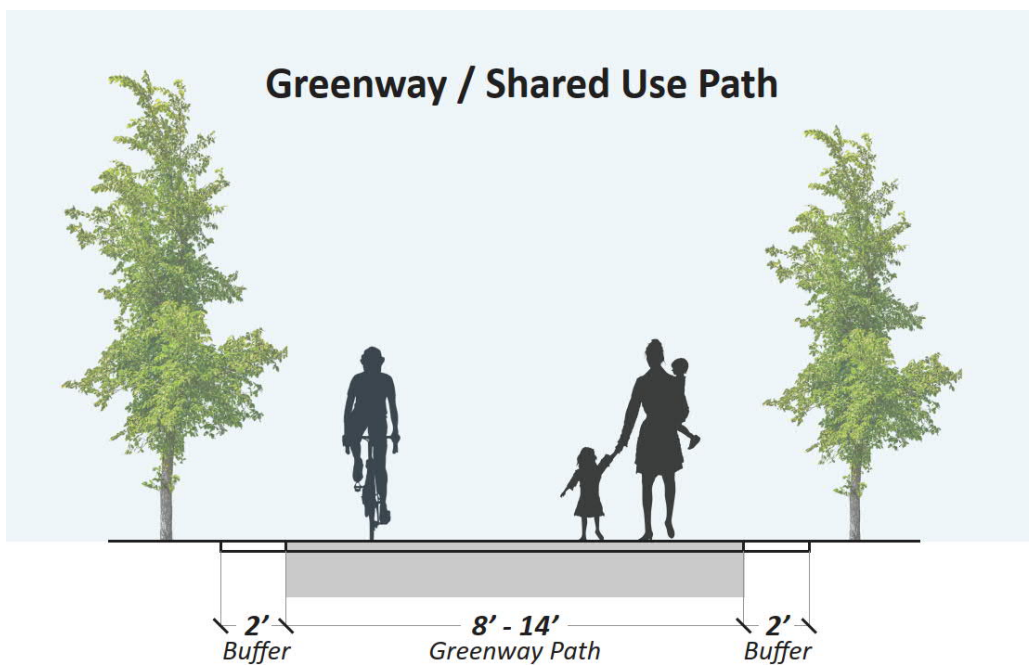


Figure 3.6: Example cross-section of a preferred greenway facility.

Sidepath

A sidepath is a bi-directional shared use path adjacent to and parallel to a roadway. Sidepaths offer a low-stress experience for bicycle and pedestrians along network routes with high-speed or high-volume traffic.



Figure 3.7: Sample sidepath graphics

Context Considerations

Sidepaths are used along roads with high volumes that exceed 6,000 vehicles per day and moderate to high speeds over 35 miles per hour. Sidepaths are used along arterial and collector roadways and are generally recommended in high-density areas to provide dedicated space for bicyclists and pedestrians.

Design Considerations

Sidepaths should be designed to a width of 10-12 feet in most locations, with 2 feet of clearance on either side. In areas where low volumes are expected or the corridor is constrained, an 8-10-foot trail may be adequate. Areas where usage is expected to be very high may be built to a width of 12-14 feet. The sidepath should be separated from the roadway by at least 5 feet, with additional separation up to 20 feet recommended along high-speed roadways.

Proposed Network

Sidepaths are commonly constructed with asphalt or concrete. Asphalt pavement tends to be the most popular and cost effective for paved trails. Concrete pavement is more durable, but costs more than asphalt pavement. As such, concrete trails are typically more common in urban settings (where projected user volumes are high or the trail may be subject to vehicular loading more often) or in areas subject to heavy flooding forces that may cause damage to the trail.

Sidepaths typically do not require pavement marking except in certain locations and contexts. Where sidepath traffic is heavy, a 4-inch dashed yellow center line stripe may be used. Edge lines may be employed in locations where evening use is expected. Signage such as the Bikes Yield to Peds (R9-6) specified in the MUTCD may be used at the entrance of a sidepath segment as a reminder of user etiquette, and many communities use customized wayfinding signs to provide navigation to destinations and other greenways. Other signs may be used to indicate the bidirectional nature of the facility, taking care that any signage is positioned such that it will not be interpreted as guidance for drivers on the adjacent roadway. Figure 3.8 provides an example cross-section of a preferred sidepath facility.

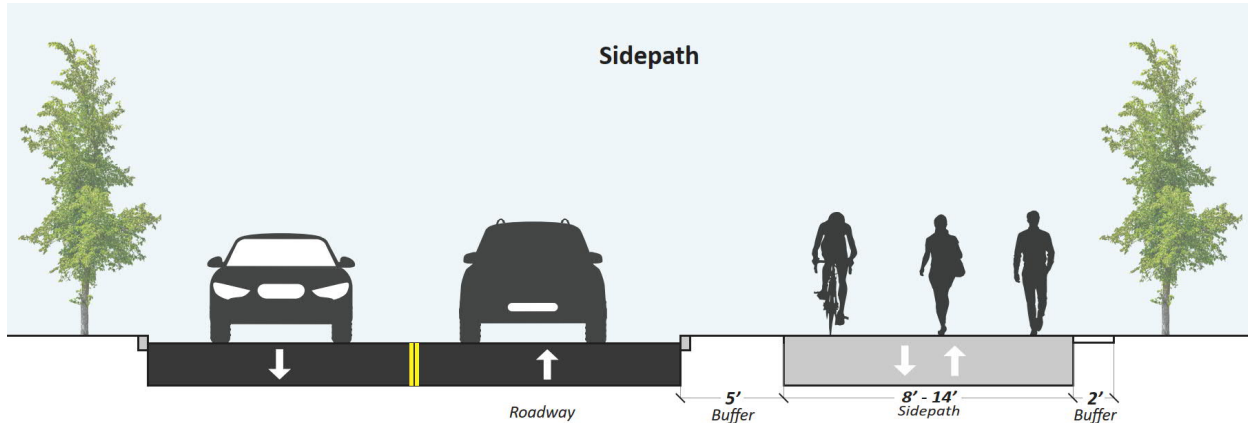


Figure 3.8: Example cross-section of a preferred sidepath facility

Proposed Network

On-Road Facilities

On-road facilities consist of bicycle and pedestrian accommodations provided directly within the roadway. These facilities can be separate or buffered from traffic, or simply striped as dedicated facilities along the outside of the road. The following provides a discussion of various bicycle lane facilities that can be considered for the roadways identified in the bicycle and pedestrian network as desiring bike lanes. When a project opportunity to implement a bike lane facility comes to fruition, the County can work with NCDOT to identify a preferred facility type based on how the character of the corridor has evolved.

Separated Bicycle Lane

A separated bicycle lane is a facility for exclusive use by bicyclists that is located within or directly adjacent to the roadway and is physically separated from motor vehicle traffic by a buffered space with a vertical separation element. Separated bicycle lanes can be designed to accommodate one-way and bi-directional travel.



Figure 3.9: Sample separated bike lane graphics

Context Considerations

Separated bicycle lanes are recommended along roadways with high volumes that exceed 6,000 vehicles per day and moderate to high speeds over 35 miles per hour. Separated bicycle lanes are recommended along major roadways and collectors that serve as primary connections to destinations. Separated bicycle lanes are appropriate in areas with moderate to high volumes of bicycle and pedestrian activity. In high-density areas, design treatments should consider potential conflicts with transit stops and driveway crossings to mitigate safety concerns for bicyclists.

Proposed Network

Design Considerations

Separated bike lanes should be designed to a minimum width of 5 feet for one-way facilities, with 7-foot lanes preferred. The bicycle lane should be separated from the roadway by at least 3 feet to provide clearance, or by a minimum of 1 foot where curb is present. Bicycle lanes can be separated from the roadway by a variety of methods, including by installing flexible delineator posts, armadillos, or placing it behind the curb. Separation from pedestrians may be required when the bike lane is immediately adjacent to and at the same level as a sidewalk.

Separated bicycle lanes should be marked with the standard bicycle lane symbol (MUTCD marking 9C-3) to clearly indicate their intended use. Where separated bicycle lanes are adjacent to a sidewalk, additional signage such as MUTCD signs D11-1a (Bicycle) and D11-2 (Pedestrian) may be necessary to indicate which users belong on which facility. Figure 3.10 provides an example cross-section of a preferred separated bike lane facility.

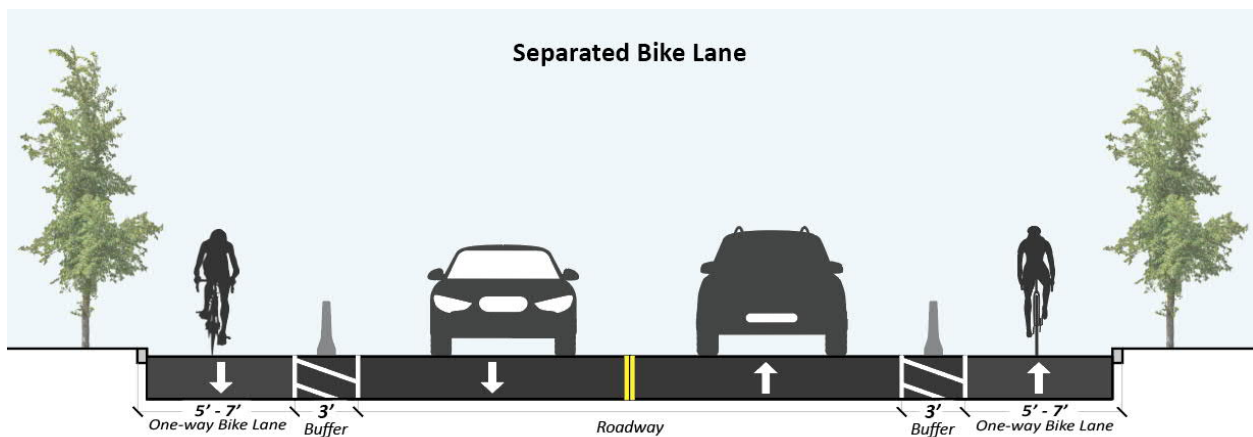


Figure 3.10: Example cross-section of a preferred separated bike lane facility

Proposed Network

Buffered Bicycle Lane

A buffered bicycle lane designates a travel space for bicyclists within the roadway corridor through use of pavement markings, optional signage, and a buffer space separating the bicycle lane from the adjacent travel lane.

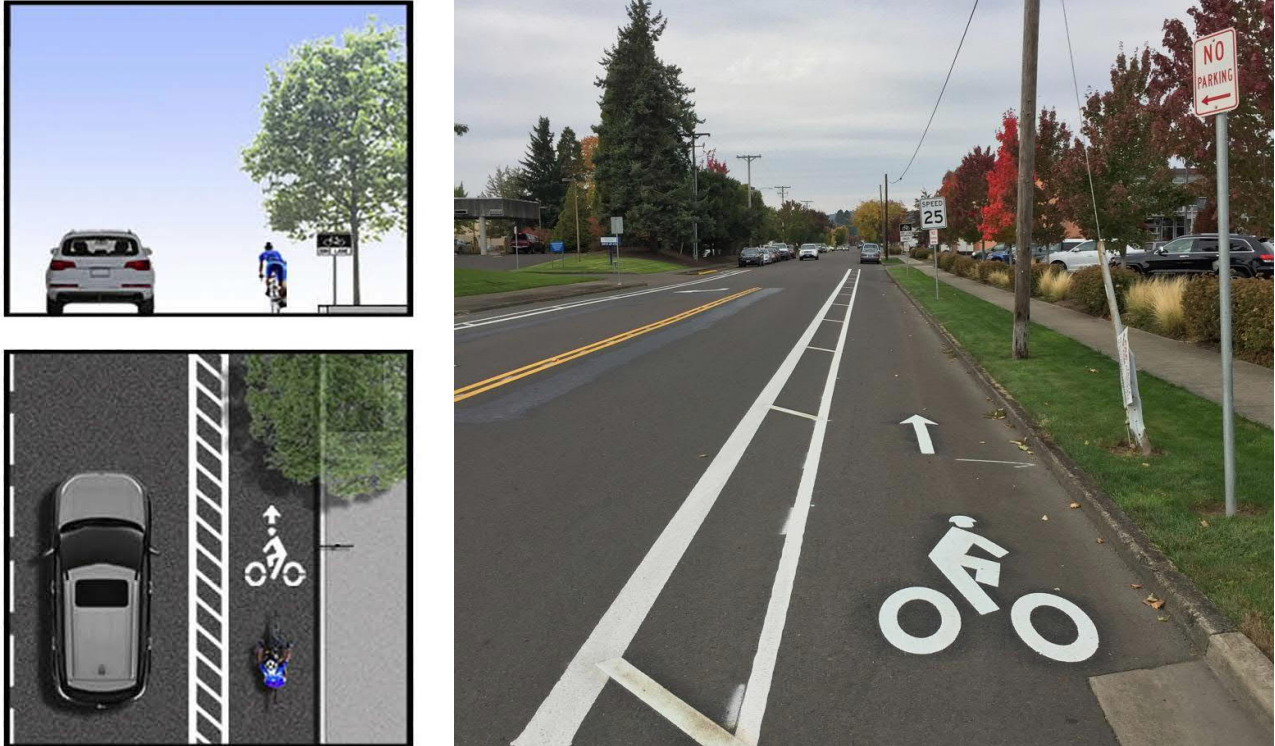


Figure 3.11: Sample buffered bike lane graphics

Context Considerations

Buffered bicycle lanes are recommended along roads with moderate volumes and speeds. Buffered bicycle lanes are appropriate treatments for roadways with traffic volumes between 3,000 and 6,000 vehicles per day and moderate speeds between 25 and 35 miles per hour. Buffered bicycle lanes are recommended in areas with increased bicycle and pedestrian activity.

Design Considerations

Buffered bike lanes should be designed to a minimum width of 5 feet, with 6 feet preferred. The bicycle lane should be buffered from other traffic by at least 18 inches by a painted double white line. If the buffer is 3 feet or more, it should be marked with diagonal stripes or chevron markings to increase visibility and motorist compliance. Markings should be between 30 to 45 degrees and striped at intervals between 10 and 40 feet.

Proposed Network

Buffered bicycle lanes should be marked with the standard bicycle lane symbol (MUTCD marking 9C-3) to clearly indicate their intended use. Where right turns are made across the buffered bicycle lane, the turn lane should be placed to the right of the bicycle lane, or a combined bicycle lane/turn lane can be used when space is limited. MUTCD sign R4-4, Begin Right Turn Lane Yield to Bikes, should be used at the start of the turn lane to alert drivers to the potential conflict with bicyclists when entering or crossing the buffered bicycle lane. Lines should be dashed where cars are expected to cross the bike lane to access turn lanes. The bike lane may be painted to increase visibility and minimize confusion with other facilities. Green is the standard paint color for bicycle lane markings, which may be applied throughout the bicycle lane, at intersections, or in conflict areas. Figure 3.12 provides an example cross-section of a preferred buffered bike lane facility.

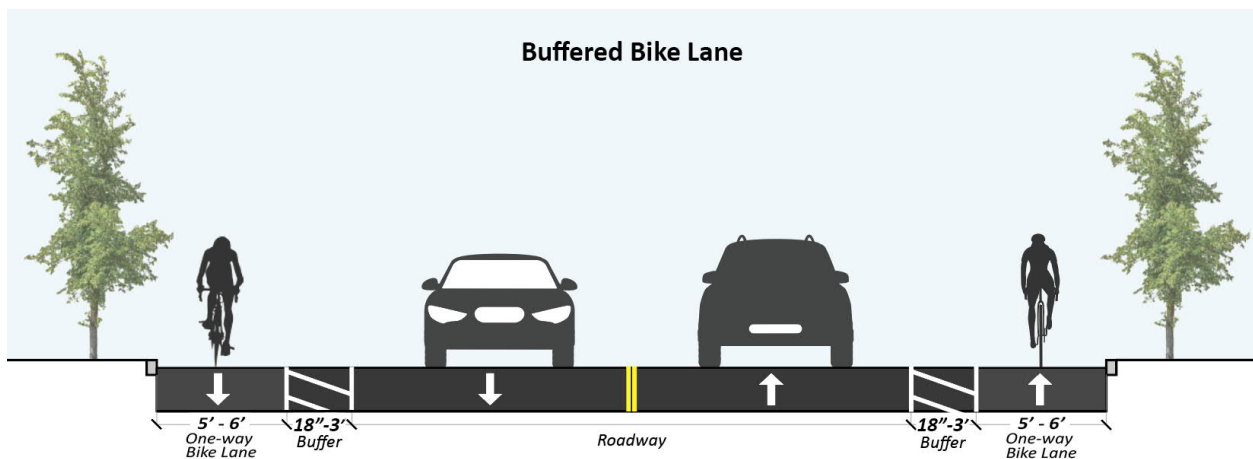


Figure 3.12: Example cross-section of a preferred buffered bike lane facility.

Proposed Network

Bicycle Lane

A bicycle lane designates a travel space for bicyclists within the roadway corridor through use of pavement markings and optional signage to provide accommodations in the absence of more separated facilities.



Figure 3.13: Sample bicycle lane graphics

Context Considerations

Bicycle lanes may be used along roads with moderate traffic volumes and speeds. Bicycle lanes are appropriate treatments along roads with traffic volumes between 3,000 and 6,000 vehicles per day and moderate speeds between 25 and 35 miles per hour. Bicycle lanes are recommended in areas with increased bicycle and pedestrian activity and in areas where right-of-way constraints limit the ability to provide a higher quality facility.

Design Considerations

Bicycle lanes should be designed to a minimum width of 5 feet, with 6 feet preferred. The bicycle lane should be marked with a solid white line and standard bike lane symbol. If the bicycle lane is more than 7 feet wide, there may be issues with drivers using the bike lane for driving or parking. The bike lane markings should not be dashed at driveway crossings, as the MUTCD does not recognize driveways as intersections.

Proposed Network

Bicycle lanes should be marked with the standard bicycle lane symbol (MUTCD marking 9C-3) to clearly indicate their intended use. Where right turns are made across the bicycle lane, the turn lane should be placed to the right of the bicycle lane, or a combined bicycle lane/turn lane can be used when space is limited. MUTCD sign R4-4, Begin Right Turn Lane Yield to Bikes, should be used at the start of the turn lane to alert drivers to the potential conflict with bicyclists when entering or crossing the bicycle lane. Lines should be dashed where cars are expected to cross the bike lane to access turn lanes. The bike lane may be painted to increase visibility and minimize confusion with other facilities. Green is the standard paint color for bicycle lane markings, which may be applied throughout the bicycle lane, at intersections, or in conflict areas. Figure 3.14 provides an example cross-section of a preferred bike lane facility.

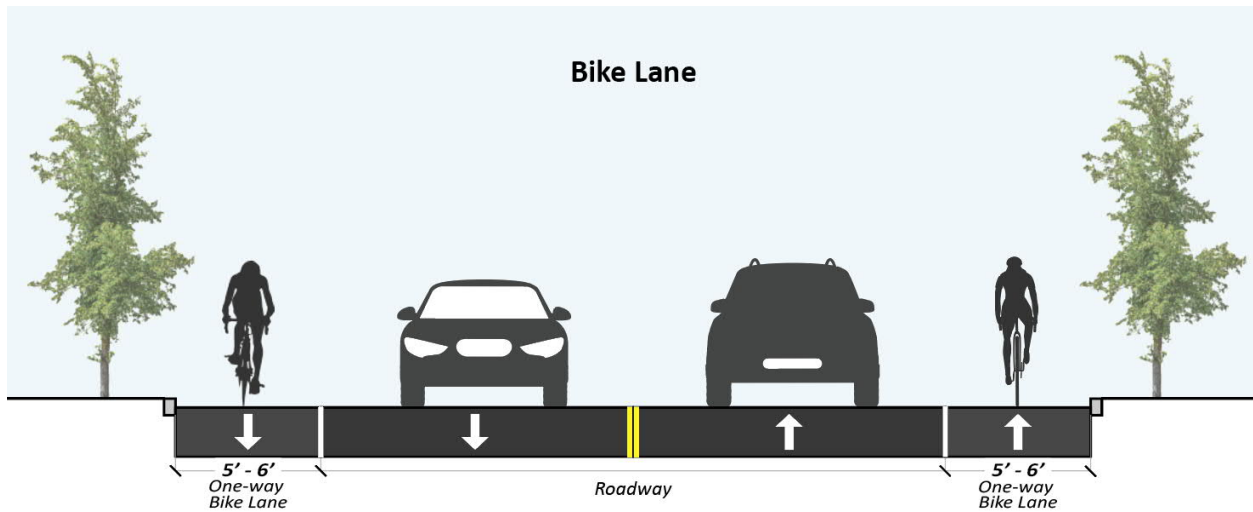


Figure 3.14: Example cross-section of a preferred bike lane facility

Proposed Network

Sidewalk

A sidewalk is a bidirectional path that provides a dedicated travel area for pedestrians in the transportation network. Sidewalks are physically separated from the roadway by a curb or unpaved buffer space.

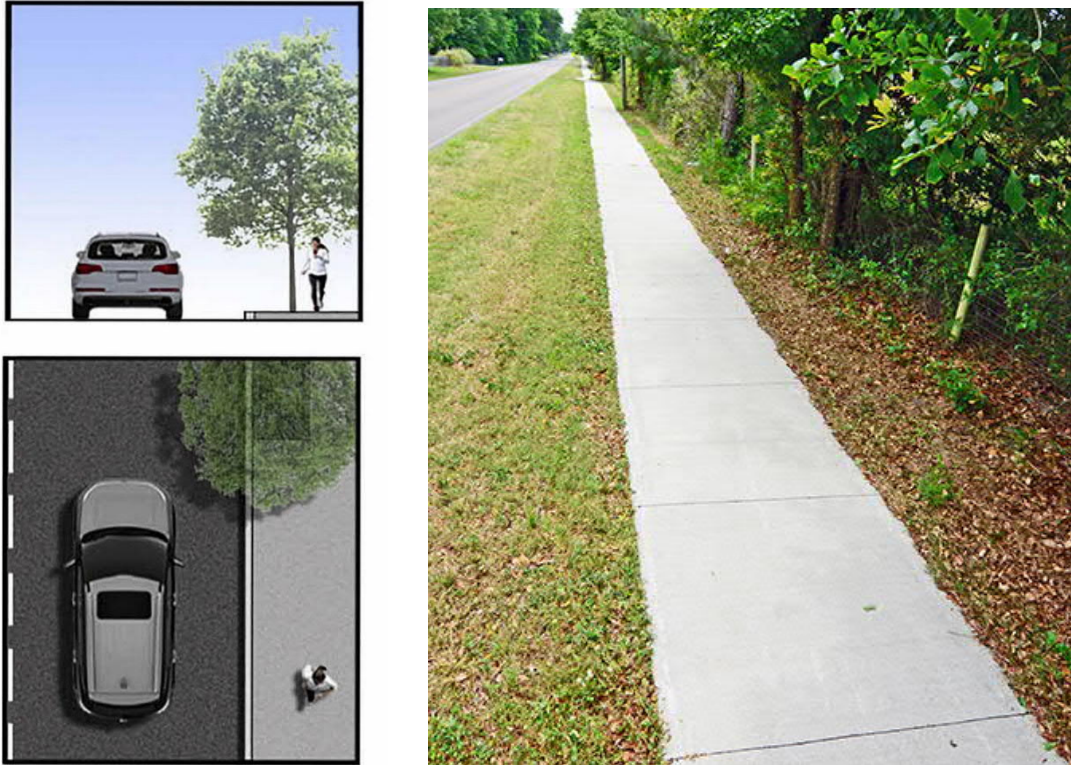


Figure 3.15: Sample sidewalk graphics

Context Considerations

Sidewalks are recommended on all but the most low-speed and low-volume roadways. Sidewalks should be considered for roadway corridors that exceed traffic volumes of 2,000 vehicles per day and speed limits higher than 10 miles per hour. Sidewalks are recommended for all types of roadways where pedestrian activity is likely. Sidewalks are also appropriate in areas with a variety of land uses and may best serve short-distance travel along roadways with pedestrian-generating development, such as neighborhoods, schools, shopping centers, and employment centers.

Design Considerations

Sidewalks should be designed to a minimum width of 6 feet, with 5 feet recommended in constrained sections. A buffer of at least 5 feet between the sidewalk and curb roadway should be included wherever possible to provide physical separation from vehicle traffic.

Sideways are commonly constructed with asphalt or concrete. Asphalt pavement tends to be the most popular and cost effective for paved trails. Concrete pavement is more durable, but costs more than asphalt pavement. As such, concrete trails are typically more common in urban settings (where projected user volumes are high or the trail may be subject to vehicular loading more often) or in areas subject to heavy flooding forces that may cause damage to the trail.

Proposed Network

Sidewalks typically do not require markings except at intersections or midblock crossings, where marked crosswalks should be provided. Crosswalk markings should be designed to a minimum width of 6 feet, and the high-visibility “continental” design is recommended. At lower volume intersections or stop signs the standard, or “transverse” crosswalk marking may be acceptable. Signage such as the MUTCD R10-15 Turning Vehicles Yield to Pedestrians may be used to alert drivers to the presence of pedestrians at crosswalks. Figure 3.16 provides an example cross-section of a preferred sidewalk facility.

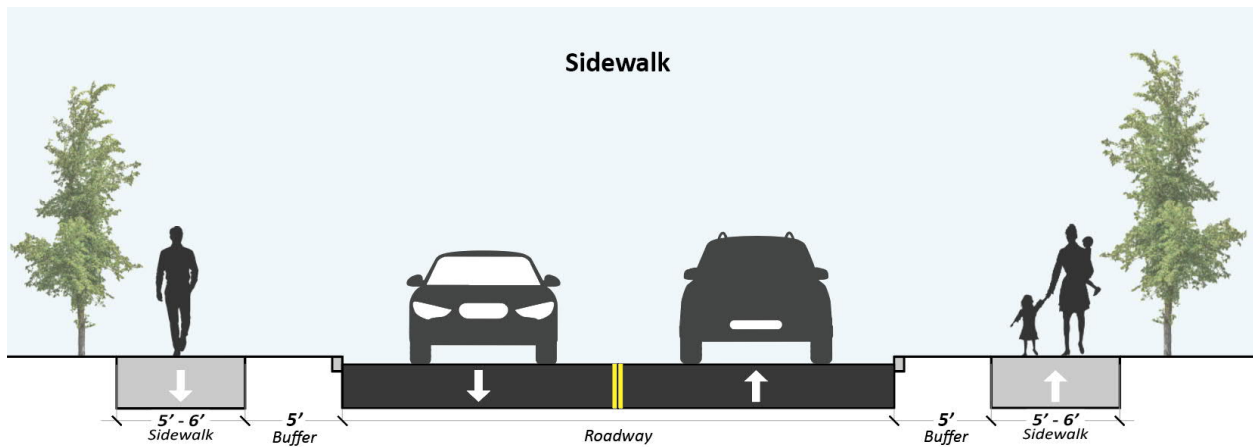


Figure 3.16: Example cross-section of a preferred sidewalk facility

Proposed Network

Intersection Improvements

There are several locations along US 17 where improved bicycle and pedestrian crossings are desired to provide safer and more comfortable access to commercial areas and schools. Improvements could come in the form of high visibility crosswalks, improved ADA accessibility, median pedestrian islands, curb extensions, lighting, and improved bicycle and pedestrian signalization such as countdown timers, Rectangular Rapid-Flashing Beacons (RRFB), and High-Intensity Activated (HAWK) crosswalk. Intersection improvements should be discussed with NCDOT as part of ongoing planning and design work for upgrades to US 17.

Figure 3.17 is an example of a RRFB that can be activated to alert motorists of a pedestrian or bicyclist crossing at a crosswalk. RRFB's are suitable for lower volume, lower speed roadways.



Figure 3.17: Rectangular Rapid Flashing Beacon



Figure 3.18: HAWK Signal

Figure 3.18 shows an example of a HAWK signal that can be activated to alert motorists of a pedestrian or bicyclist crossing at a crosswalk. These are used for corridors with high traffic volumes and high speeds where extra attention needs to be brought to a crossing.

Figure 3.19 shows an example of a median pedestrian island, high visibility crosswalk, and enhanced lighting.

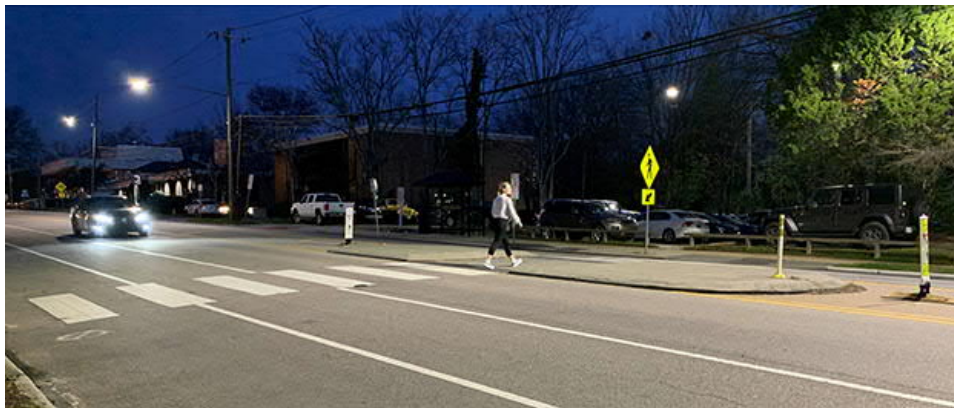


Figure 3.19: High visibility crosswalk with a median pedestrian island and enhanced lighting

4. Policy Review and Recommendations

4.1 Policy Review

Existing policies, ordinances, and design guidance documents at the county, state, and federal levels were reviewed that are relevant to walking and biking in Pender County. Findings are provided in Table 4.1.

The following policies, ordinances, and design guidance were reviewed as part of this exercise:

- Pender County Unified Development Ordinance, 2022
- Pender County Code of Ordinances, 2020
- NCDOT Highway Typical Sections for Use in SPOT Online, 2019
- NCDOT Complete Streets Policy, 2019
- NCDOT Roadway Design Manual, 2018
- FHWA Guidance on Bicycle and Pedestrian Accommodation, 2011
- NCDOT Bridge Policy, 2000

Table 4.1: Policy Review

POLICY	KEY RECOMMENDATIONS THAT RELATE TO THE PENDER COUNTY BICYCLE & PEDESTRIAN MASTER PLAN
Pender County Unified Development Ordinance (2022)	<p>The Unified Development Ordinance (UDO) regulates development within Pender County. There are several provisions in the UDO which affect the implementation of bicycle and pedestrian infrastructure in Pender County.</p> <p><i>4.6.10 Permitted Obstruction in Required Yards</i> Sidewalks, uncovered steps, and handicapped access ramps are included as permitted obstructions in any required yard.</p> <p><i>4.8.1 PD: Planned Development District</i> D. Development Standards - Development in a PD District shall be subject to all applicable regulations unless otherwise waived or modified by the County in the terms of the approved master land use plan. In no case shall the decision-making body waive or modify the following standards for a proposed PD development: 5) Street connectivity requirements; 6) Sidewalk and greenway requirements;</p> <p>E. Transportation and Circulation System 2) Pedestrian-oriented communities are encouraged to maximize opportunity for pedestrian activity and improve the quality of the pedestrian experience. Planned subdivisions must adhere to the design standards for drainage and paving in this Ordinance. 4) Adequately constructed and maintained bike and/or hiking trails shall be counted toward the open space requirement. Bicycle lanes and multi-use pathways that extend the minimum right-of-way width shall be designed in accordance with the North Carolina Bicycle Facilities Planning and Design Guidelines Manual.</p>

POLICY	KEY RECOMMENDATIONS THAT RELATE TO THE PENDER COUNTY BICYCLE & PEDESTRIAN MASTER PLAN
	<p><i>4.11.1 EC: Environmental Conservation District</i></p> <p>C. Development Standards - In order to reduce the impact of development on the existing natural environment, the following standards apply to all land disturbing activities within an EC district:</p> <ol style="list-style-type: none"> 1) With the exception of a pedestrian trail or a fence, no land disturbing activities may occur within a required yard or within one hundred (100) feet of: 2) All lands located within a designated floodway (AEFW); 3) All site area under the jurisdiction of the Army Corps of Engineers (the Corps) or the North Carolina Department of Natural Resources, Division of Water Quality (DWQ); 4) All lands located within a CAMA shoreline buffer; 5) All lands located below the high water line of an existing pond, lake, or stream; and 6) All lands with slopes steeper than twenty-five (25) percent. <p><i>4.12.6 Bicycle and Pedestrian Improvement Overlay District</i></p> <p>The Bicycle and Pedestrian Improvement Overlay District is created on a case-by-case basis and informed by development activity, current and future roadway improvement projects, current and future bicycle and pedestrian usage and demand, and all relevant adopted plans.</p> <p>E. District Requirements</p> <ol style="list-style-type: none"> 1) Provision of Facilities and Infrastructure <ol style="list-style-type: none"> a) Bicycle and pedestrian infrastructure shall be constructed as part of a development proposal within an adopted Bicycle and Pedestrian Improvement Overlay District if one or more of the following conditions are met: <ol style="list-style-type: none"> i) The proposed development is located within the jurisdiction of the Wilmington Metropolitan Planning Organization (WMPO) and is located along an existing or planned principal or minor arterial and/or major or minor collector street as defined by the WMPO Functional Classification Map, or; ii) The proposed development is located outside the jurisdiction of the Wilmington Metropolitan Planning Organization and is located along an existing or planned principal or minor arterial and/or major or minor collector street as defined by the NCDOT Functional Classification Map. iii) The proposed development is located along a road or street where bicycle and/or pedestrian improvements have been identified and included in an adopted bicycle and pedestrian plan or another adopted plan. b) The type of facility provided shall be in accordance with adopted local and regional bicycle and pedestrian, transportation,

POLICY	KEY RECOMMENDATIONS THAT RELATE TO THE PENDER COUNTY BICYCLE & PEDESTRIAN MASTER PLAN
	<p>and other plans. If a proposed development has road frontage on an existing or planned arterial or collector street as defined by the WMPO or NCDOT and is not listed on any adopted bicycle or pedestrian plan, then the required construction of bicycle and pedestrian infrastructure shall not be applied.</p> <p>2) Facility Location, Design, and Construction</p> <p>a) Where possible, bicycle and pedestrian infrastructure shall be constructed within the public right-of-way in consultation with NCDOT.</p> <p>i) If off-road bicycle and pedestrian infrastructure (sidewalks, multi-use paths, and similar) cannot be constructed in the public right-of-way, the improvement shall be constructed within a dedicated public easement and shall be along the entire length of road frontage for the appropriate facility constructed or to-be-constructed.</p> <p>b) Sidewalks shall be constructed as concrete or other like-material to minimum dimensions of 5' wide and 4" thick along the entire length of road frontage of a subject parcel not including driveways as described by AASHTO standards.</p> <p>c) Multi-use paths shall be constructed as asphalt or other like-material to minimum dimensions of 10' wide and 4" thick along the entire length of road frontage of a subject parcel not including driveways as described by AASHTO standards.</p> <p>d) Bike lanes and other on-road bicycle and pedestrian infrastructure shall be designed and constructed in accordance with AASHTO standards and in consultation with NCDOT.</p> <p>e) Off-road bicycle and pedestrian infrastructure shall generally be constructed parallel to the adjacent street. Curves and meanders shall be kept to a minimum.</p> <p>i) Deviations and meanders from the proposed route are permitted if the proposed route impacts wetlands, significant trees, creeks and streams, and/or other environmentally sensitive features or areas.</p> <p>ii) Boardwalks may also be constructed where meanders are not appropriate with required state and federal permits, should they be required.</p> <p>iii) Boardwalks shall maintain facility minimum width and design standards as described in this section and AASHTO standards and be in compliance with the Americans with Disabilities Act and as described in the United States Forest Service's Wetland Trail Design and Construction.</p> <p>3) Payment-in-Lieu: A payment-in-lieu of bicycle and pedestrian facility construction shall be provided as an option to all applicants if construction is impractical or if genuine hardships caused by the construction requirement can be shown.</p>

POLICY	KEY RECOMMENDATIONS THAT RELATE TO THE PENDER COUNTY BICYCLE & PEDESTRIAN MASTER PLAN
	<p>a) If one or more of the following conditions are met, developers must utilize this option instead of constructing a sidewalk:</p> <ul style="list-style-type: none"> i) The road or street on which a parcel has frontage is included in the NCDOT State Transportation Improvement Program or other transportation improvement plan for widening within the next five years; ii) The road or street on which a parcel has frontage is scheduled to receive bicycle or pedestrian infrastructure as part of another project. iii) If deviations from a proposed route are required as described in Section 4.12.6.D.1.D above. <p>b) Payments-in-lieu of bicycle and pedestrian facility construction shall be calculated by determining a linear foot amount of facility responsibility for a parcel.</p> <ul style="list-style-type: none"> i) The type of facility required shall be determined by locally-adopted bicycle and pedestrian plans. ii) The linear foot length of sidewalk responsibility shall be the subject parcel's frontage along an arterial or collector street as defined by the NCDOT Functional Classification Map, minus proposed driveways widths as approved by NCDOT. iii) The dollar amount per linear foot of facility responsibility for each type of facility shall be determined by the Board of Commissioners, subject to change. iv) Total payment-in-lieu contribution shall be calculated by multiplying the linear feet of facility responsibility for a subject parcel by the price per linear foot of appropriate facility as set by the Pender County Board of Commissioners. <p>c) Those individuals utilizing the payment-in-lieu option shall still be required to dedicate public easements for facility construction and use if the facility cannot be entirely located within the public right-of-way.</p> <p>4) Site Design</p> <ul style="list-style-type: none"> a) Access <ul style="list-style-type: none"> i) Pedestrians and bicyclists shall be provided with dedicated facilities to reach a building or structure from the location or point of the bicycle or pedestrian facility. ii) If pedestrian access is provided via a parking lot, said parking lot shall include islands and/or crosswalk striping to provide pedestrians with a safe corridor in which to move between sidewalk and front entrance.

POLICY	KEY RECOMMENDATIONS THAT RELATE TO THE PENDER COUNTY BICYCLE & PEDESTRIAN MASTER PLAN
	<ul style="list-style-type: none"> iii) Any bicycle or pedestrian infrastructure that crosses a driveway or curb cut shall include cross-walk striping or other similar markings to denote the path of the facility and to alert motorists. iv) If required facility to be constructed is a bike lane or multi-use path, bike racks shall be provided. <p>b) Building Design</p> <ul style="list-style-type: none"> i) All commercial structures within the Bicycle and Pedestrian Improvement Overlay District shall have at least one (1) public entrance that directly faces the public street. <p>c) Amenities</p> <ul style="list-style-type: none"> i) Pedestrian amenities, such as benches and seating areas, are encouraged in all scenarios and shall be required to be included in site designs when distance between front property line and main structure entrance is greater than 50 feet. ii) Other amenities, such as those providing shade and lighting, are encouraged. Any provided shade trees shall be in accordance with Article 8 'Landscaping and Buffering' of this ordinance. iii) In accordance with standards in approved bicycle and pedestrian plans, amenities such as pet waste stations and bike repair stations shall be provided at regular intervals depending upon type of facility constructed. iv) Any provided amenities shall not be placed in the public right-of-way unless those amenities can be placed in such a way that does not obstruct the minimum facility width. Provided amenities placed in public rights-of-way shall be done so in consultation with NCDOT. v) Any provided amenities shall complement the design of other bicycle and pedestrian elements, nearby buildings and structures, and the character of the community. vi) Any provided amenities shall be constructed of durable, high-quality materials. Such materials include treated wood, metal and steel, and hardened plastics. Amenities shall be designed specifically for outdoor use. Indoor furniture shall not satisfy the requirements of this ordinance.

POLICY	KEY RECOMMENDATIONS THAT RELATE TO THE PENDER COUNTY BICYCLE & PEDESTRIAN MASTER PLAN
	<p>vii) The property owner assumes all liability and all maintenance and upkeep responsibility for all provided amenities.</p> <p>viii) Any proposed amenities shall be clearly shown and labelled on all submitted site plans.</p> <p>d) Any bicycle and pedestrian improvements made to a site shall be in compliance with the Americans with Disabilities Act and all other applicable federal, state, and local legislation.</p> <p><i>7.6 Open Space</i> Whenever land is subdivided for residential purposes in excess of ten units, a portion of the land must be dedicated for open space.</p> <p>B. Open space areas can be defined by active or passive open space as follows: 2) Passive Open Space areas must consist of undisturbed, unique and sensitive natural features when available, that may include streams, floodplains, wetlands (excluding tidal marsh) conservation resources, and natural heritage areas if identified. These natural spaces will be characterized by undisturbed soils and natural vegetative cover for wildlife habitat. Passive Open space may become part of designated County greenways. Amenities such as walking paths, piers, picnic areas and other passive recreational uses will be allowed with minimal disturbance of the vegetation.</p> <p>C. Required Open Space: All new residential subdivisions shall provide open space in the amount of 0.03 acres per dwelling unit within the subdivision. No more than 50% of the required open space shall be designated as passive open space. 50% or more of the required open space shall be designated as active open space.</p> <p>E. Standards for Park, Recreation and Open Space Areas: Except as otherwise approved by the Planning Board, all park, recreation and open space areas shall meet the following criteria: 3) Greenways: If open space is a greenway, the land shall be a continuous linear parcel through the subdivision of at least 30 feet in width.</p>
<p>Pender County Code of Ordinances (2020)</p>	<p>While many regulations related to bicycle and pedestrian facility development in Pender County are contained in the UDO, there are a few relevant sections of the Code of Ordinances.</p> <p><i>14.190. – Watershed buffer areas required</i> (a) A minimum 30-foot vegetative buffer for development activities is required along all perennial waters indicated on the most recent versions of U.S.G.S. 1:24,000 (7.5 minute) scale topographic maps or as determined by local government studies. Desirable artificial streambank or shoreline stabilization is permitted.</p>

POLICY	KEY RECOMMENDATIONS THAT RELATE TO THE PENDER COUNTY BICYCLE & PEDESTRIAN MASTER PLAN
	<p>(b) No new development is allowed in the watershed buffer except for water-dependent structures and public projects such as road crossings and greenways where no practical alternative exists. These activities should minimize built-upon surface area, direct runoff away from the surface waters and maximize the utilization of stormwater best management practices.</p>
<p>NCDOT Complete Streets Policy (2019)</p>	<p>The NCDOT Complete Streets Policy Update was adopted by the Board of Transportation in August 2019. This policy requires NCDOT to consider and incorporate multimodal facilities in the design and improvement of all transportation projects in North Carolina. The adopted Comprehensive Transportation Plan (CTP) is considered the controlling plan for the identification of nonmotorized facilities to be evaluated as part of a roadway project. The CTP may include and/or reference locally adopted plans for public transportation, bicycle and pedestrian facilities, and greenways. Bicycle, pedestrian, and public transportation facilities that appear in the CTP directly or by reference will be included as part of the proposed roadway project, and NCDOT is responsible for the full cost of the project. Bicycle, pedestrian, and transit facilities incidental to a roadway project where a need has been identified through the project scoping process but not identified in an adopted plan may be included in the project. Inclusion of these incidental facilities requires the local jurisdiction to share the incremental cost of constructing the improvements based on population thresholds. The policy also establishes maintenance responsibility for active transportation facilities. Bicycle, pedestrian, and transit improvements inside a municipal boundary are subject to local maintenance. For bicycle, pedestrian, and transit improvements outside of a municipal boundary where a county maintenance agreement has not been executed to maintain the facility, NCDOT will maintain the facility after construction if the bicycle or pedestrian facility lies within NCDOT right-of-way. Projects that have not completed environmental review prior to August 2019 are subject to the Complete Streets Policy.</p> <p>Maintenance of Multimodal Facilities: A local maintenance agreement will be executed within the timeframe identified in the PDN for all separated bicycle and pedestrian improvements (e.g., sidewalk or shared-use path) inside or outside a municipal boundary. In the event an agreement cannot be reached, the next highest non-separated facility type will be evaluated for inclusion in the project. Exceptions may be made on a case-by-case basis and NCDOT may agree to maintain separated facilities when a maintenance agreement is not in place in unique project areas of high pedestrian/bicycle demand or high risk related to crossing distance or other conditions.</p>
<p>NCDOT Highway Typical Sections for Use in SPOT Online (2019)</p>	<p>This document contains 57 different highway typical cross sections for use in SPOT Online. The typical sections listed in this guidance provide a variety of options for users to choose from when entering the desired cross section for a new project in the application. Each typical section includes several data elements, such as the</p>

POLICY	KEY RECOMMENDATIONS THAT RELATE TO THE PENDER COUNTY BICYCLE & PEDESTRIAN MASTER PLAN
	<p>number of lanes, median type, and amount of right-of-way needed. These data elements are used to calculate quantitative scores for the Prioritization process, as well as calculate a planning-level cost estimate for the project.</p> <p>This guidance contains typical sections (2F and 2P) for 2-lane undivided roads with paved shoulders and sidewalks in Coastal Area Management Act (CAMA) designated counties. These typical sections prescribe design speeds of 25 to 45 miles mph and minimum clear zones of 20 ft. Pender County is considered a CAMA county.</p>
<p>NCDOT Roadway Design Manual (2018)</p>	<p>The Roadway Design manual provides general design information, design criteria, and plan preparation guidance for NCDOT roadways. Guidance on clear zones can be referenced in Part 1, Chapter 1-4N. Guidance states that the recommended clear zone range for flat, level terrain adjacent to a straight section of a 60mph highway with an average daily traffic of 6000 vehicles is a width of 30 to 32 feet. For steeper slopes on a 70-mph roadway, the clear zone range increases to 38 to 46 feet. Additional clear zone guidance is provided for roadway facilities based on design speed, design ADT, and roadside slope.</p> <p>Guidance on multimodal design elements can be referenced in Part 1, Chapter 4 Sections 4.14, 4.15, and 4.16. Guidance states that shared-use paths, often referred to as greenways, are paths physically separated from motor vehicle traffic and used by pedestrians, bicyclists, and other non-motorized users. The width of a shared-use path may vary, based on expected user volumes and context.</p> <ul style="list-style-type: none"> • <i>Desirable width – 12 to 14 feet</i> • <i>Minimum width – 10 feet; 8 feet in exceptionally constrained areas</i> <p><i>Vertical clearance, minimum – 8 feet</i></p>
<p>FHWA Guidance on Bicycle and Pedestrian Accommodation (2011)</p>	<p>Under the US Department of Transportation Policy Statement on Bicycle and Pedestrian Accommodation, "The DOT policy is to incorporate safe and convenient walking and bicycling facilities into transportation projects. Every transportation agency, including DOT, has the responsibility to improve conditions and opportunities for walking and bicycling and to integrate walking and bicycling into their transportation systems...transportation agencies are encouraged to go beyond minimum standards to provide safe and convenient facilities for these modes." There are no Federal laws or regulations that prohibit shared use paths or bicycle use along or near Interstate highways or other freeways. Bicycle and pedestrian accommodations may be allowed on Interstate and other major highways and freeways. Bridges are essential in any transportation network, and many Interstate or other freeway bridges often are the only possible bridges across rivers, canyons, railroads, other highways, or other major barriers. Major highway bridges often are necessary links for nonmotorized transportation networks.</p>

Policy Review and Recommendations

POLICY	KEY RECOMMENDATIONS THAT RELATE TO THE PENDER COUNTY BICYCLE & PEDESTRIAN MASTER PLAN
	<p>Under 23 U.S.C. 217(g), transportation plans must consider bicycle and pedestrian accommodations.</p> <p><i>23 U.S.C. 217(g) Planning and Design. --</i></p> <ol style="list-style-type: none"> <i>1. In General. --Bicyclists and pedestrians shall be given due consideration in the comprehensive transportation plans developed by each metropolitan planning organization and State in accordance with sections 134 and 135, respectively. Bicycle transportation facilities and pedestrian walkways shall be considered, where appropriate, in conjunction with all new construction and reconstruction of transportation facilities, except where bicycle and pedestrian use are not permitted.</i> <p><i>Safety considerations. --Transportation plans and projects shall provide due consideration for safety and contiguous routes for bicyclists and pedestrians. Safety considerations shall include the installation, where appropriate, and maintenance of audible traffic signals and audible signs at street crossings.</i></p>
<p>NCDOT Bridge Policy (2000)</p>	<p>This policy establishes design elements of new and reconstructed bridges on the North Carolina Highway System. Vertical clearances for new structures shall be designed above all sections of pavement including the useable shoulder. Future widening and pavement cross slope will be considered in design clearance. Vertical clearances for facilities are as follows: over interstates, freeways, and arterials: 16'-6" to 17'-0"; over local and collector roads and streets: 15'-0" to 15'-6"; over all railroads: 23'-0" to 23'-6" or less if approved by Railroads; pedestrian overpasses and sign structures vertical clearance: 17'-0" to 17'-6". Sidewalks shall be included on new bridges with curb and gutter approach roadways that are without control of access. A minimum handrail height of 42" is required.</p>

4.2 Policy Recommendations

The following policy recommendations were developed for Pender County to improve bicycle and pedestrian infrastructure within the County and to help implement the recommended bicycle and pedestrian network projects. Key recommendations for bicycle and pedestrian-related policies, ordinances, and design considerations are included in Table 4.2.

Table 4.2: Policy Recommendations

POLICY RECOMMENDATION	DESCRIPTION
Define active transportation facilities	<p>Pender County should establish definitions for active transportation facilities including greenways, sidepaths, bike lanes, and sidewalks. Defined facilities will support consistent terminology across all future policies, ordinances, and design guidelines. The County could amend its UDO to incorporate a glossary with these new definitions.</p> <p><i>Please refer to the 3.3 Bicycle and Pedestrian Network Recommended Facility Types within this plan for recommended facility definitions.</i></p>
Expand the number of Bicycle and Pedestrian Improvement Overlay Districts to require developer-built bicycle and pedestrian facilities in high-growth and other priority areas of the County	<p>According to the County’s UDO, bicycle and pedestrian infrastructure shall be constructed as part of a development proposal within an adopted Bicycle and Pedestrian Improvement Overlay District. Each Bicycle and Pedestrian Improvement Overlay District is created on a case-by-case basis and informed by development activity, current and future roadway improvement projects, current and future bicycle and pedestrian usage and demand, and all relevant adopted plans.</p> <p>Pender County should expand its Bicycle and Pedestrian Improvement Districts in high-growth areas of the County, especially areas of regional significance, and in areas identified as high-priority for pedestrian and bicycle facilities (see Figure 3.3).</p> <p>An existing Bicycle and Pedestrian Improvement Overlay District was created along the US-17 corridor between Washington Acres Rd and Sloop Point Loop Rd in 2018. The County should consider the following:</p> <ol style="list-style-type: none"> 1.) Expand Bicycle and Pedestrian Improvement Overlay Districts along all corridors identified in the Network Plan, or at a minimum, those corridors identified as high priority corridors. 2.) Evaluate adopting new and expanding existing Overlay Districts in areas proposed as Regional Mixed Use in the Pender 2.0 Comprehensive Plan, which include US 17, NC 210, US 117, US 421, Washington Acres Road, Factory Road, Hoover Road, and sections of the East Coast Greenway running along Blueberry Road, Country Club Road, and Sloop Point Loop Road.
Adopt active transportation-related policies that are consistent with	<p>Pender County is considered a Coastal Area Management Act (CAMA) county; therefore, it should adopt policies (including design considerations for bicycle and pedestrian facilities) that are consistent with the goals of the CAMA. The CAMA of 1974 mandates all 20 coastal counties to have a land use plan and</p>

POLICY RECOMMENDATION	DESCRIPTION
<p>the goals of the CAMA</p>	<p>requires permits for any development in specially designated areas called Areas of Environmental Concern (AEC).</p> <p>According to Pender County’s Land Use Plan (2018), AECs are generally those areas that are in close proximity to water (e.g., ocean, ICWW, creeks, etc.) or marsh (wetlands). A CAMA permit must be acquired if a development project meets all of the following conditions:</p> <ul style="list-style-type: none"> • The project is located within one of the 20 coastal counties of North Carolina • The project is considered "development" under CAMA • The project is within, or affects, an Area of Environmental Concern established by the Coastal Resources Commission • The project does not qualify for an exemption <p>The 2018 Pender County Land Use Plan states that Pender County strongly supports the designation and preservation of all remaining coastal wetlands. Acceptable land uses within coastal wetlands may include utility easements, fishing piers, and docks. Under the Environmental Conservation District in the UDO, the County states that pedestrian trails are exempt from the list of land disturbing activities within the EC district.</p> <p>The County should consider expanding their list of permitted and non-permitted land uses within coastal wetlands to consider bicycle and pedestrian facilities like boardwalks and bridges. If both fall within “pedestrian trails” then the terminology should be defined in a glossary or expanded further upon to clearly articulate the permitted uses.</p>
<p>Establish an active transportation facility maintenance plan</p>	<p>Pender County will need to consider establishing an active transportation facility maintenance plan that includes debris removal and schedules for facility clean-up coordination, routine and special maintenance, and re-striping and resurfacing schedules for paved greenways, sidepaths, and sidewalks along roadways where NCDOT has not assumed maintenance responsibilities. This could fall under the purview of the Parks & Recreation Department or another county department that could either take on the responsibility in-house, or procure a contractor through procurement to conduct the routine maintenance.</p>
<p>Include a Provision of Public Access policy in the Unified Development Ordinance (UDO)</p>	<p>The County should consider a provision within the UDO to allow public access greenways, sidepaths, and sidewalks within easements or rights-of-way of all new utility corridors. According to Rails-to-Trails Conservancy, greenways and trails may be co-located with the following types of utilities:</p> <ul style="list-style-type: none"> • Electric transmission lines • Gas lines • Sewer lines • Water pipelines

Policy Review and Recommendations

POLICY RECOMMENDATION	DESCRIPTION
	<ul style="list-style-type: none"> • Broadband/fiberoptic • Irrigation canals/districts <p>Working with landowners may be essential to acquiring property and constructing a continuous and comprehensive greenway network. Standard greenway easement widths vary between 20-30 ft with 30 ft as the preferred width, 20 ft constrained.</p> <p>Establishing this policy provides an avenue for greenways, sidepaths, and sidewalks to be incorporated into new developments as services are established, as opposed to retroactively granting public access to easements.</p>
<p>Promote bicycle and pedestrian connections at existing cul-de-sacs</p>	<p>Cul-de-sacs and single-entry developments limit walkability due to their lack of connectivity. Constructing roadway connections to existing cul-de-sacs or stub streets is also challenging, therefore bicycle and pedestrian facility connections can help address limitations in terms of connectivity and walkability.</p> <p>An adopted code would mandate that bicycle and pedestrian connections be made between any proposed development and an adjacent existing or proposed development, or at a minimum, a 20 to 30-foot right-of-way be stubbed to a property line and reserved for future bicycle and pedestrian connections. The County could mandate that a preferred greenway, sidepath, or sidewalk facility be constructed between a proposed development and an adjacent development, or require that connections be made to an existing greenway, sidepath, sidewalk, recreational area, commercial area, or school.</p>
<p>Adopt outdoor lighting ordinances or codes</p>	<p>Pender County should adopt outdoor lighting ordinances or codes that minimize costs, promote energy conservation, support safe trail systems and healthy habitat environments for threatened and endangered species within the County. The County should add its new provisions to 7.11 OUTDOOR LIGHTING in the UDO.</p> <p>A Model Lighting Ordinance exists to address the need for strong, consistent outdoor lighting regulation in North America. Several municipalities throughout the nation have adopted similar codes to control light pollution, including glare, light trespass, and skyglow.</p> <p>Visit the link to learn more about the Model Lighting Ordinance: https://www.darksky.org/our-work/lighting/%20public-policy/mlo/</p> <p>Rails-to-Trails also provides a toolbox on bicycle and pedestrian lighting design: https://www.railstotrails.org/build-trails/trail-building-toolbox/design/lighting/</p>
<p>Establish wayfinding standards</p>	<p>Pender County should consider establishing county-wide bicycle and pedestrian facility wayfinding standards to foster consistent branding, placement, use, and design of wayfinding signage (including route</p>

Policy Review and Recommendations

POLICY RECOMMENDATION	DESCRIPTION
	confirmation, directional, and kiosk signage). Wayfinding standards should complement the existing greenways, sidepaths, and park wayfinding standards to create a comprehensive multi-modal wayfinding system.

4.3 Example Policies

A peer review of policies from other areas regarding overall developer responsibilities for bicycle and pedestrian facilities was conducted to provide Pender County with examples that can be used to guide policy recommendations in Pender County. Findings are provided in Table 4.3.

Table 4.3: Example Policies

POLICY	RELEVANT LANGUAGE									
<p>City of Durham and Durham County Unified Development Ordinance (2023)</p>	<p>12.4 Pedestrian and Bicycle Mobility 12.4.2 Sidewalk Requirements</p> <p>A. A sidewalk shall be provided along public or private right-of-way as shown in the table below.</p> <table border="1" data-bbox="488 615 1143 724"> <thead> <tr> <th>Street Type</th> <th>Rural Tier</th> <th>All Other Tiers</th> </tr> </thead> <tbody> <tr> <td>Freeways; Expressways</td> <td>None</td> <td>None</td> </tr> <tr> <td>All other streets</td> <td>None</td> <td>Both Sides</td> </tr> </tbody> </table> <p>B. Preliminary and minor plats, and developments required to improve existing right-of-way to City or NCDOT standards, as applicable, shall provide public sidewalk within right-of-way pursuant to paragraph 12.4.2A, Sidewalk Requirement.</p> <p>C. For all other development except as exempted pursuant to paragraph 12.4.2D, Exemptions, required sidewalk along the right-of-way frontage of the development site shall be provided, as applicable per paragraph 12.4.2A, through only one of the following two methods. The following methods shall not be used in combination:</p> <ol style="list-style-type: none"> 1. Sidewalk located within the right-of-way and/or on-site <ol style="list-style-type: none"> a. Sidewalk shall connect to external sidewalks that extend to the property of the subject development, including connectivity to crosswalks and end of pavement at all adjacent intersections. b. Sidewalk located on-site shall meet the following criteria: <ol style="list-style-type: none"> (1) The sidewalks shall be located within a public access easement; (2) The maximum distance from the right-of-way, measured to the closest edge of the sidewalk to the right-of-way, shall be 20 feet; and (3) Lighting per Sec. 7.4, Outdoor Lighting, shall be provided either by proposed or existing on-site lighting, or street lights within the right-of-way. 2. Payment-in-lieu (City only) <ol style="list-style-type: none"> a. Payment-in-lieu of constructing required sidewalk shall be made at the rate set by the City Council. b. In order to accommodate future sidewalk, a recorded easement shall be provided along frontage of the subject property where no sidewalk is proposed if the existing right-of-way is not of sufficient width to accommodate a sidewalk. 	Street Type	Rural Tier	All Other Tiers	Freeways; Expressways	None	None	All other streets	None	Both Sides
Street Type	Rural Tier	All Other Tiers								
Freeways; Expressways	None	None								
All other streets	None	Both Sides								

	<p><i>12.5 Recreation Land</i></p> <p><i>12.5.2 Dedication, Impact Fees, and Payment-in-Lieu</i></p> <p>A. In the County</p> <ol style="list-style-type: none"> 1. The applicant for a residential development shall be responsible for either: <ol style="list-style-type: none"> a. Dedicating 1,150 square feet of land for recreation purposes (including active and passive recreation areas, including trails) for each proposed dwelling unit; or b. Making payment-in-lieu equivalent to the tax value of 1,150 square feet of comparable property per dwelling unit. 2. One of the following shall be required: <ol style="list-style-type: none"> a. Dedication of land; or b. Payment-in-lieu of dedication. <p>B. In the City</p> <ol style="list-style-type: none"> 1. The applicant for a residential development shall be responsible for: <ol style="list-style-type: none"> a. Paying a recreation impact fee or dedicating 575 square feet of land for parks and active recreation areas for each proposed dwelling unit; and b. Paying a resource based recreation impact fee or dedicating 575 square feet of land for passive recreation areas (including trails) for each proposed dwelling unit. 2. Where recreation service districts have been established, payments made under this section shall be expended within the respective district from which collected. 3. The following, individually or in combination, shall be required based upon jurisdiction and whether the development is located on the Durham Trails and Greenways Master Plan or the Durham Comprehensive Bicycle Transportation Plan: <ol style="list-style-type: none"> a. Payment of an impact fee; b. Dedication of land; or c. Payment-in-lieu of dedication.
<p>Town of Wake Forest Unified Development Ordinance (2022)</p>	<p><i>6. Subdivision and Infrastructure Standards</i></p> <p><i>6.8 Sidewalks and other Pedestrian Facilities</i></p> <p><i>6.8.1 Sidewalks</i></p> <p>A. General Standards/Location: Sidewalks are required in accordance with the Town of Wake Forest Transportation and Pedestrian Plan, and the Town Street Classifications in Section 6.7.2. Alternative facilities or a payment in lieu may be considered in accordance with C and D below.</p> <p>C. Alternative Compliance: Alternative provisions for pedestrian movement meeting the intent of this section may be used where unreasonable or impractical situations would result from application of these requirements. Such situations may result from significant street trees, impending road widening, topography, utility easements, lot configuration or other unusual site conditions. In such instances, the Administrator may approve an alternate</p>

	<p>plan that proposes different pedestrian amenities provided that the intent of this section is fulfilled.</p> <p>D. Payments in Lieu: In lieu of alternative compliance in C above, the Administrator may approve a payment in lieu (in accordance with an adopted annual fee schedule) where any one or a combination of factors render compliance impractical:</p> <ol style="list-style-type: none">1. Steep slopes2. Absence of existing sidewalks along the corridor and in the general neighborhood3. Where sidewalks are not shown on the town’s adopted Pedestrian Plan. <p><i>6.9 Bicycle Facilities</i></p> <p><i>6.9.1. Requirement For Installation</i></p> <p>A. Bike lanes or separate off-street multi-use paths shall be installed on new or modified roadways where designated for such by the Town of Wake Forest Transportation Plan or similarly adopted plan; and/or as specified in Section 6.9.3 below where the adopted plan does not provide sufficient guidance.</p> <p>B. Where a proposed development does not include new or widening of existing collector or thoroughfare streets, the developer shall reserve right-of-way sufficient to accommodate the appropriate bikeway facility.</p>
<p>City of Salisbury Land Development Ordinance (2022)</p>	<p><i>4. Subdivisions and Infrastructure</i></p> <p><i>4.9 Sidewalk Program</i></p> <p>A. Sidewalk Requirements.</p> <ol style="list-style-type: none">1.Existing Streets. As part of a proposed subdivision or new development along an existing publicly-maintained street in the corporate City limits, sidewalks shall be constructed along all applicable street frontages per the standards of Section 4.7 of this Chapter.2.Infill Lots. Sidewalk construction may not be required if the new development lot is considered an infill lot pursuant to Section 6.3.1, Infill Provisions, Sidewalk Compatibility Standards.3.New Streets. As part of new street construction, sidewalks shall be constructed along both sides of the new street per the standards of Section 4.7 of this Chapter. <p>B. Sidewalk Alternatives for Existing Streets. When the approving authority determines that the construction of a required sidewalk along an existing publicly-maintained street is unfeasible due to special circumstances, including but not limited to: an impending road widening; impracticality due to topography, streams, or other environmental limitations, or if constructed it would not connect with a similar existing or proposed improvement therefore would not provide an immediate or future or future transportation or public safety benefit, the approving authority may approve a payment in lieu of sidewalk construction.</p> <p>C. Sidewalk Payment In Lieu Program. As authorized under this section, a payment may be made to the City of Salisbury in lieu of sidewalk construction. The value of the payment shall equal the average linear foot sidewalk project</p>

	<p>cost, as determined by the Engineering & Development Services Department of the City of Salisbury and calculated per time and material cost at the time of the request. The applicant is informed of the amount to be paid upon issuance of the zoning permit, or adoption of the ordinance for a Conditional District Overlay development, and payment shall be made prior to issuance of the Certificate of Occupancy.</p> <p>Payments received in lieu of construction shall be placed in a restricted fund and set aside in a deferred revenue account to be used to install or repair sidewalks within the general area of the corporate City limits.</p> <p><i>7. Recreational Open Space</i></p> <p><i>7.6 Payment in Lieu of Allocation</i></p> <p>Development that meets all of the following criteria shall be eligible for payment in lieu of allocation of recreational open space:</p> <ul style="list-style-type: none"> ■ Contains less than 50 proposed dwelling units, and ■ Is located less than one-fourth-mile radius from an existing or planned public park (or public school with recreational facilities accessible to the general public), and ■ Includes a proposed connection to the park or school by sidewalk or greenway trail. <p>A. The value of such payment shall be 300 percent of the predevelopment tax value of the required recreational open space area. A combination of recreational open space allocation and payment in lieu of allocation shall be permitted.</p> <p>B. All payments shall be made prior to Final Plat approval. Failure to submit the required payment prior to Final Plat approval will delay approval until payment is rendered.</p> <p>C. All funds received for payment in lieu shall be deposited into a special Parks and Recreation Development fund. Collected payments, including accrued interest, shall be expended solely for the acquisition, development, or rehabilitation of the existing or planned public park that was employed for payment in lieu eligibility.</p> <p>D. An amount of land, equivalent to the payment in lieu value, located elsewhere within the City's Parks and Recreation Master Plan planning area may be accepted subject to City Council approval.</p>
<p>City of Wilson Unified Development Ordinance (2022)</p>	<p><i>7. Parks & Open Space</i></p> <p><i>7.3 Payment in Lieu of Park Space Dedication</i></p> <p>Any person developing and/or subdividing property subject to this chapter may, upon approval of the Administrator, make a payment in lieu of any required dedication of public recreational space, except that the dedication requirement for any areas designated as future greenways on an adopted plan are not eligible to be met by payments in lieu of dedication.</p> <p><i>7.3.1 Fee Determination and Disbursement</i></p> <p>A. Determination of Payment In Lieu: Payment in lieu of dedication shall be the product of the post-development appraised value of the land (per gross acre) to be developed multiplied by the number of acres to be dedicated. The following formula shall be used to determine the fee:</p>

	<p>Post Development Appraised Value of Entire Development (per gross acre) X Required Park space Dedication (acres) =Payment in Lieu Dedication Fee</p> <p>B. Determination of Post Development Appraised Value: The Post Development Appraised Value of the Entire Development shall be established prior to Preliminary Plat approval by an Appraiser who is a Member of the Appraisal Institute (MAI) or a North Carolina General Certified Appraiser.</p> <p>C. Credit for Park and Greenway Connections: Credit toward a payment in lieu shall be given for the cost of constructing pedestrian/bicycle accessways that connect to existing parks or greenways, up to a maximum of 50% of the required payment in lieu. Such pedestrian/bicycle accessways shall meet the standards of Section 6.7.2 and the City of Wilson Manual of Specifications, Standards and Design.</p> <p>D. Disagreements Regarding Payments In Lieu: Any disagreement in the amount of required payment shall be resolved by conducting a professional appraisal of the fair market value of the property. The professional appraiser shall be mutually agreed upon by the developer and city. An appraiser shall be appointed by the city, at the developer’s expense, should an agreement not be reached.</p> <p>E. Disbursement of Payments In Lieu: All payments made in lieu of dedication shall be made at the time of Final Plat approval or prior to the issuance of the first Certificate of Occupancy (whichever comes first as appropriate). Failure to submit the required fee along with such applications will delay approval of such submissions until payment is rendered. All funds received for payment in lieu of dedication shall be deposited in a special fund or line item to be used only for the acquisition, development, or redevelopment of public recreation space by the city.</p> <p><i>7.3.2 Required Payments in Lieu</i></p> <p>A payment in lieu of dedication may be required by the Administrator. Reasons for requiring payments in lieu of dedication may include, but are not limited to, sufficient proximity to existing public parks as determined by the Director of Parks and Recreation and/or existing topographic or geographic conditions as determined by the Administrator.</p>
<p>Town of Mooresville Unified Development Ordinance (2022)</p>	<p><i>5. Development Standards</i></p> <p><i>5.1 Access and Connectivity Standards</i></p> <p><i>5.1.4. Landowner or Developer Responsible for Improvements</i></p> <p>A. The landowner or developer of the development, subject to the requirements of this section shall provide the road, street, bikeway, sidewalk, greenway, and other access and circulation improvements, both on the development site and, as appropriate; off the site, as required by the approved development approval or permit, in accordance with the standards of this section, the engineering requirements in the Land Development Design Standards manual, which is incorporated herein by reference, the regional Comprehensive Transportation Plan, the Mooresville Transportation Master Plan, and the standards of Chapter 6: Subdivision Standards.</p>

B. The landowner or developer of the development, as appropriate, shall dedicate any on-site required rights-of-ways or easements, as appropriate, for transportation system improvements, such as streets and bicycle and pedestrian facilities, identified in local and regional plans such as Mooresville Transportation Master Plan, the Comprehensive Plan, and the regional Comprehensive Transportation Plan (CTP), and where appropriate, construct such facilities in accordance with the standards of this UDO.

5.1.6 Street, Sidewalk, and Greenways Standards

C. Bicycle Facilities

1. Bicycle Facility Requirements

- a. All development that includes street construction shall include a combination of bicycle facilities and low-speed local streets, where applicable, that provide a safe, comfortable, and convenient route within the development and to bicycle facilities outside the development.
- b. Bicycle facilities shall be installed on new streets in accordance with the CTP and/or the Town's Bicycle Plan. Any collector or higher street not within such plan shall provide an on-street bicycle lane and appropriate buffer. Sharrows and bicycle lanes are strongly encouraged on all local streets.
- c. For development along existing streets for which bicycle facilities are identified in the CTP and/or the Town's Bicycle Plan, the developer shall dedicate additional right-of-way as necessary to accommodate the bicycle facility.
- d. Where appropriate due to anticipated traffic volumes or conflicts with vehicular traffic, on-street bicycle facilities shall include features that enhance separation from motor vehicles such as physical buffering through means such as bollards, parked cars, or by being placed behind the roadway curb; or use of a separate shared sidepath or greenway trail, in accordance with the standards of the Town's Bicycle Plan.
- e. Greenways and bicycle-pedestrian bridges shall be constructed to the standards of this UDO and the Town's Bicycle Plan.

2. Exceptions

- a. The Planning Director may waive or modify the requirement to install bicycle facilities if the Planning Director determines:
 - i. Development of the bicycle facility is impractical or infeasible due to the presence of topographic conditions or because of existing development patterns and the applicant makes a payment to the Town in-lieu of the installation;
 - ii. Adding a greenway or other bicycle facility will exceed more than five percent of the land area within the overall site;

iii. The street is under construction or a contract for construction has been signed and the planned improvement would remove the bicycle facilities; or
iv. When a connection between properties requires a bicycle or pedestrian bridge and there is no legally established right-of-way or easement to complete the connection to the other side, a fee-in-lieu payment may be permitted for 50 percent of the bridge cost; however, legal access shall be provided to the property line allowing a future connection to be made.

b. The Planning Director may adjust the sidewalk width standards in this section or the street tree and planting width standards in the landscape and buffer standards in this chapter, to facilitate inclusion of a bicycle facility along a street due to the conditions identified in this section.

D. Sidewalks

1. Sidewalk Requirement

Sidewalks are required in accordance with the following:

- i. Except in the RC and RLS districts, sidewalks shall be constructed on both sides of all new streets. In the RC and RLS districts, sidewalks shall be constructed on at least one side of all new streets.
- ii. Sidewalks shall be constructed along the entire frontage of a proposed development with an existing street, unless there already is an existing sidewalk that complies with the standards of this section. A sidewalk that does not comply with the ADA or other standards of this section shall be upgraded to comply.
- iii. Except in the TD and DE districts, sidewalks shall be a minimum of five feet wide. In the TD and DE districts, the minimum sidewalk width shall be six feet or the width of the sidewalk along the street frontage adjoining the site, whichever is greater.

2. Exceptions

The Planning Director may modify or waive the requirement to install sidewalks if:

- i. The applicant provides a facility that provides equivalent or better pedestrian access, such as a sidepath or similar facility; or
- ii. Installation of sidewalk on a single residential lot used for not more than two dwellings that is more than 500 feet away from any existing sidewalks;
- iii. Topographic conditions or natural features, such as steep grades do not allow connections to be made without stairs, or because of existing development patterns, and the applicant makes a payment to the Town in-lieu of the installation. All fees collected by the Town pursuant to this section shall be

	<p>deposited in a dedicated Town fund used only for construction of bicycle pedestrian facilities that provide sufficient benefit to the development providing the in-lieu fee.</p>
<p>Orange County Unified Development Ordinance (2023)</p>	<p><i>6. Development Standards</i> <i>6.10 Roadway Improvements & Multi-modal Transportation</i></p> <p>A. Economic Development Districts (2) Pedestrian Circulation (a) Walkways or sidewalks must be provided along all new collector and arterial streets. (b) A minimum four-foot wide planting strip between sidewalk and curb shall be provided. (c) In all cases, public sidewalks, and walkways on private property, must be at least four feet in width and clearly marked with paint or a contrasting surface material. (d) In addition, barrier-free design must be incorporated into sidewalk and walkway systems for use by the handicapped. (e) Buildings must be sited in ways which make their entries or intended use clear to approaching users and visitors. Clear pedestrian entries from the street and not just from adjacent parking areas are to be provided. (f) Locate parking areas to the side or rear of buildings and relate building facades to the street, public sidewalks, and transit stops. (g) In the area between the public realm of the street and the private realm of the residential complex or commercial building, provide a transition consisting of a well landscaped front yard, a low fence or wall, a recessed entry, a courtyard, or other device that promotes privacy but visibility from the street.</p> <p>(3) Bicycle Circulation (a) Development projects which abut a proposed bicycle route must make provision for bicycle parking/storage as part of the comprehensive site development plan. (b) In addition, such facilities are to be provided in conjunction with designated transit stops. (c) Bicycle parking and storage facilities, as well as the installation and/or delineation of bike lanes must be done in accordance with the standards contained in The Regional Bicycle Plan - Durham and Orange Counties North Carolina Bicycle Facilities Planning and Design Criteria. (d) In each instance where bicycle parking/storage is provided, the number of bicycles for which space is provided must be appropriate to the location and expected clientele. Where such facilities are provided, safe and sheltered parking</p>

	<p>and storage is to be provided as close and convenient to building entrances as vehicular parking.</p>
<p>Wilmington Urban Area MPO Model Ordinance (2021)</p>	<p><i>1. Bikeways, Sidewalks, and Greenways</i></p> <p><i>1.02 Applicability</i></p> <p>(a) This Article applies to all development within the [JURISDICTION] jurisdiction.</p> <p>(b) No construction shall commence until all required plans and designs have been reviewed and approved by the [JURISDICTION] or other governmental approving agency.</p> <p>(c) No [JURISDICTION] services or utilities shall be extended to any development until the applicant has installed the infrastructure specified in this chapter.</p> <p><i>1.03 Easements</i></p> <p>(a) Easements shall be provided in locations and dimensions required by the [JURISDICTION] in order to:</p> <ul style="list-style-type: none"> (i) Allow for adequate pedestrian access. (ii) Allow for adequate bicycle access. (iii) Allow for adequate right-of-way for street types. (iv) Allow for adequate storm drainage facilities. (v) Allow for adequate access to service bicycle and pedestrian infrastructure (vi) Allow for adequate right-of-way for construction of bicycle and pedestrian infrastructure. <p>(b) Whenever a piece of land in a proposed site plan includes any part of a greenway designated in the comprehensive plan, bicycle plan, or pedestrian plan, the greenway shall be platted and dedicated as a greenway easement.</p> <p><i>1.04 Exemptions and Appeals</i></p> <p>(a) Fee-in-Lieu</p> <ul style="list-style-type: none"> (i) Where the [JURISDICTION] determines that construction of public improvements would not be feasible, a fee in lieu may be permitted. (ii) Right-of-way and easements may still be dedicated to the [JURISDICTION] to allow access. <p>(b) Surety</p> <ul style="list-style-type: none"> (i) Required improvements identified in this chapter that are not completed prior to the issuance of a building permit will be bonded in accordance with [JURISDICTION] development standards in an amount of 125% of the estimated construction cost. (ii) All required improvements secured by a surety shall be installed prior to the issuance of the first certificate of occupancy. <p><i>1.05 Overlay District</i></p> <p>(a) Greenway Overlay District</p>

	<ul style="list-style-type: none">(i) The purpose of the Greenway Overlay District is to promote health, safety, convenience, and welfare by providing increased connectivity and infrastructure to surrounding parks, neighborhoods, businesses, and bicycle and pedestrian networks.(ii) A multi-use path shall be installed by the developer in accordance with the comprehensive plan.(iii) Where sidewalks and multi-use paths meet the street ADA compliant ramps shall be installed.(iv) Bicycle and pedestrian infrastructures shall be installed in accordance with [JURISDICTION] design standards. <p>(b) Pedestrian Benefit Zone</p> <ul style="list-style-type: none">(i) The purpose of the pedestrian benefit zone is to promote safe and convenient pedestrian infrastructure in designated zones with high density.(ii) Concrete sidewalks shall be constructed along the entire frontage of all commercial, residential, industrial, and park sites within the pedestrian benefit zone.(iii) If concrete sidewalks currently exist but are in poor deteriorated condition, the sidewalk shall be replaced to [JURISDICTION] design standards.
--	--

5. Implementation

5.1 Implementation Methods

Bicycle and pedestrian facilities can be implemented through several methods:

- As part of capital projects, like roadway or utility improvements. Whenever there are improvements to a roadway, such as widening, adding turn lanes, or safety improvements, the capacity to add the recommended bicycle or pedestrian facility should be evaluated at the same time. This will require early coordination with NCDOT to ensure the facilities are included in the planning and environmental phase of the process.
- Through NCDOT, FHWA, and other grants. Project-specific grants should be pursued, especially for high priority projects. NCDOT Multimodal planning grants and FHWA RAISE grants may be pursued for project construction. In addition, the MPO can seek grant funding through NCDOT's paved trails and sidewalks feasibility study grant program to fund a feasibility study for specific projects.
- As development occurs either through actual construction or payment in lieu of construction for later construction. Policies should be implemented to set these requirements. Recommended policies are detailed in the previous sections.

5.2 Funding

North Carolina Department of Transportation: NCDOT offers several funding programs for bicycle-related projects. One key program is the Multimodal Planning Grant Program, which provides financial support for municipalities, counties, and planning organizations to develop comprehensive bicycle plans and multimodal plans, as well as provide updates to existing plans.

Safe Routes to School: NCDOT's IMD administers the federally funded Safe Routes to School Program using funds from SAFETEA-LU and the Bipartisan Infrastructure Law. The program aims to encourage school-aged children to walk and bike to school safely through projects that improve safety and reduce traffic and car pollution. Funding amounts range from \$50,000 to \$500,000 per project.

Surface Transportation Block Grant: WMPO receives annual Surface Transportation Block Grant Program (STBG) funds from FHWA. The STBG Direct Attributable program provides funding for bicycle and pedestrian infrastructure. The STBG Carbon Reduction program provides funding for projects reducing carbon emissions. The STBG Transportation Alternatives Set Aside program provides funding for projects that enhance non-motorized transportation, including bicycle and pedestrian facilities.

NC Parks and Recreation Trust Fund: The NC Parks and Recreation Trust Fund (PARTF) provides matching grants for parks, recreational, and public beach access projects.

Safe Streets and Roads for All: USDOT administers the Safe Streets and Roads for All grant program which funds the development of a safety action plan, as well as planning, engineering, and construction activities associated with projects identified in the safety action plan. The safety action plan should focus on solutions to improve roadway safety for all users, including pedestrians and bicyclists.

Highway Safety Improvement Program: FHWA provides a calculated percentage of Highway Safety Improvement Program funds to NCDOT each year. These funds may be used for pedestrian and bicycle

Implementation

facilities that are designed to improve road safety, including protected bike lanes, intersection improvements, and traffic control devices for pedestrians and bicyclists.

Carbon Reduction Program: FHWA administers the Carbon Reduction Program which provides funding for transportation projects designed to reduce carbon dioxide emissions for roadway sources. These projects may include on and off-road trail projects for pedestrian and bicyclists, as well as micro-mobility projects.

5.3 Maintenance

Maintenance of bicycle and pedestrian facilities is crucial for ensuring their safety, functionality, and longevity. Regular upkeep and proactive maintenance practices help preserve the quality of infrastructure, enhance user experience, and promote active transportation. Here are some key aspects to consider when it comes to maintaining bicycle and pedestrian facilities:

- **Inspection and Assessment:** Conduct routine inspections of bicycle and pedestrian facilities to identify any signs of wear, damage, or hazards. This includes assessing the condition of bike lanes, sidewalks, crosswalks, signage, lighting, benches, and other amenities.
- **Repairs and Upgrades:** Address any maintenance needs promptly, including repairing potholes and uneven surfaces on bike paths and sidewalks. Ensure that signage and markings are clearly visible and replace them when necessary.
- **Vegetation and Landscape Maintenance:** Manage vegetation and landscaping along bicycle and pedestrian routes to maintain clear visibility and prevent overgrowth that may impede users. Regularly trim trees and shrubs, clear debris, and ensure that vegetation does not obstruct sightlines or encroach on pathways.
- **Lighting and Safety:** Adequate lighting is essential for ensuring the safety and visibility of bicycle and pedestrian facilities, particularly during low-light conditions or at night. Regularly inspect and maintain lighting fixtures, replace burnt-out bulbs promptly, and ensure that lighting levels meet the required standards.
- **Trash and Debris Control:** Regularly clean and maintain bicycle and pedestrian facilities to keep them free of trash, debris, and litter. This includes emptying trash bins, sweeping pathways, and addressing any dumping or unauthorized waste disposal.

By implementing a proactive and comprehensive maintenance strategy for bicycle and pedestrian facilities, communities can ensure that these vital infrastructure elements remain in good condition, provide a positive user experience, and continue to promote active and sustainable transportation options.

Maintenance Management

Maintenance of bicycle and pedestrian facilities may be managed through several options:

- Establishing a new maintenance department specifically dedicated to bicycle and pedestrian facilities. This can ensure proper upkeep and safety of facilities. This department would be responsible for the regular inspection, repair, and improvement of bike lanes, side paths, sidewalks, and other facilities. Key considerations when setting up a new maintenance department for bicycle and pedestrian facilities include department structure and staffing,

Implementation

budget and resources, maintenance procedures, facility management, and collaboration with other departments.

- Adding bicycle and pedestrian facility management to an existing department. This process will require many of the key considerations identified above, as well as continuous collaboration with the existing department. Key steps in this process may include:
 - Identify which department will be responsible for bicycle and pedestrian facility management. Considerations include facilities and fleet services, parks and recreation, and planning and community development.
 - Assess the departments current resources, such as staff and budget to determine if any existing resources can be used for facility management or if additional resources will be required.
 - Create a proposal outlining the goals and objectives of incorporating facility management into the existing department. The proposal should include outcomes, staffing needs, and project budget. Present the proposal to governing bodies as needed.
 - Secure funding and additional resources needed for implementation of the proposal.
 - Establish policies and procedures, including maintenance guidelines and facility management.
 - Work with staff within the existing department to fully integrate bicycle and pedestrian management into their department.
- Through a contractor. By managing bicycle and facility maintenance through a contractor, you can leverage external expertise and resources while maintaining flexibility and potentially reducing costs. The contractor would be responsible for regular maintenance tasks, repairs, inspections, safety checks, and any other specific requirements. Once a contractor has been selected, performance monitoring measures, including regular inspections, progress meetings, performance reviews, and feedback from users or stakeholders, should be implemented to ensure quality work.

5.4 Checklist

The following checklist provides a list of action items for Pender County and WMPO to begin implementation of the plan. This is not a comprehensive list, but rather, provides the high-level action items that should be completed in order to ensure successful implementation of this plan.

SHORT-TERM (0-3 YEARS)

Plan Adoption: Pender County and Wilmington Urban Area Metropolitan Planning Organization should adopt this plan. In addition, the Board of Commissioners and other appropriate bodies should adopt the Bicycle and Pedestrian Plan.

Comprehensive Transportation Plan and Metropolitan Transportation Plan Updates: WMPO should add the network recommendations to their Comprehensive Transportation Plan and their Metropolitan Transportation Plan at the next update. Pender County should add the network recommendations to their Comprehensive Transportation Plan.

Define Active Transportation Facilities: Pender County should establish definitions for active transportation facilities. Defined facilities will support consistent terminology across all future guidelines. Add definitions to the Unified Development Ordinance (UDO).

Expand the Number of Overlay Districts: Pender County should adopt bicycle and pedestrian overlay districts along network recommended corridors.

Implementation

Define Facility Dimensions and Designs: Determine the appropriate dimensions for facility types and any special considerations for design, such as landscaping requirements. Add requirements to the UDO.

Adopt Active Transportation Policies Consistent with Coastal Area Management Act Goals: Pender County should expand their list of permitted and non-permitted land uses within coastal wetlands to consider certain bicycle and pedestrian facilities.

Project Funding Plan: Develop a long-term plan for project implementation and funding for high priority projects, including grants to pursue, responsible party for grant writing, and timeline.

MEDIUM-TERM (3-5 YEARS)

Identify the Responsible Party for Maintenance Management: Pender County should evaluate and identify the best party to conduct maintenance activities of bicycle and pedestrian facilities given fiscal and personnel constraints. See the previous section for potential maintenance management structures.

Establish A Maintenance Plan: Establish a maintenance plan that would include maintenance responsibilities and schedules. The party responsible for performing maintenance activities should be identified in this plan.

Developer Requirements: Add developer requirements or fee in lieu provisions to the Pender County UDO. Require that bicycle and pedestrian facilities along new developments connect to adjacent existing facilities or reserve right-of-way to allow for a future connection.

Include a Provision of Public Access Policy in the UDO: Pender County should add a provision in the UDO to allow public access facilities within easements or rights-of-way of new utility corridors.

LONG-TERM (5-10 YEARS)

Adopt Outdoor Lighting Ordinances: Pender County should add lighting codes to the UDO that promote a safe and sustainable trail system.

Establish Wayfinding Standards: Pender County should establish county-wide bicycle and pedestrian facility wayfinding standards.

Plan Revisions and Updates: Re-evaluate and update the Pender County Bike/Pedestrian Plan as needed. This includes evaluating policy recommendations, development pressures, and network constraints. Establish performance indicators to measure each project's success and impact on the community.

Appendix A: Public Engagement Summaries

Public Engagement Phase I Summary

1. Introduction

In the late Fall of 2022 into early Winter of 2023, the Pender County Bicycle and Pedestrian Plan team conducted the first phase of public engagement. The goal of this phase was to educate the public on the plan's purpose and need, and seek input on a vision and goals for the plan; identify the bicycle and pedestrian conditions, including where users currently or would like to be able to walk and bike, where challenges exist to doing such, and ideas for improving bicycle and pedestrian conditions; and identify evaluation criteria that will be used for the prioritization of potential projects to be included as part of the plan. This report summarizes the activities and feedback received during this phase.

2. Promotion and Outreach

To reach a wide range of the study's targeted audiences, several outreach tools were used. Both print and digital means were necessary to promote the study to the public who use the corridor frequently and to the public who may receive information mostly from digital sources. These tools included a study-specific webpage, informational flyers, social media, and press releases. The webpage was hosted on WMPO's website: <https://www.wmpo.org/pender-county-bicycle-and-pedestrian-plan/>

To reach key audiences where they currently frequent rather than require them to seek out opportunities for in-person engagement, pop-up events were hosted. The purpose of these pop-up events was to share materials developed for the study and to engage participants in engagement opportunities, including the survey. Two events were hosted on February 4th, the first at Food Lion at Hampstead Station and the second at the Castle Bay Community. Participants that stopped by at the pop-up events could have conversations with the study team, fill out a paper survey, or provide comments on a map of the county.



Figure 1. Pop-up at Food Lion



Figure 2. Pop-up in the Castle Bay Community

3. Survey Results

A public survey was used during this phase of public engagement to solicit public input. The survey was available on MetroQuest, an online platform. A portion of the survey included a crowdsourcing map to seek feedback on identifying the current conditions so that participants could provide feedback on where they would like to be able to walk and bike, where challenges exist to doing such, and ideas for improving bicycle and pedestrian conditions. A paper survey was also developed to provide a non-digital means to complete the survey, for participants without access to a mobile phone or computer.

The survey was launched on November 21st and there have been 619 responses collected as of March 9, 2023. Figure 1 shows the accumulative participation by each week.

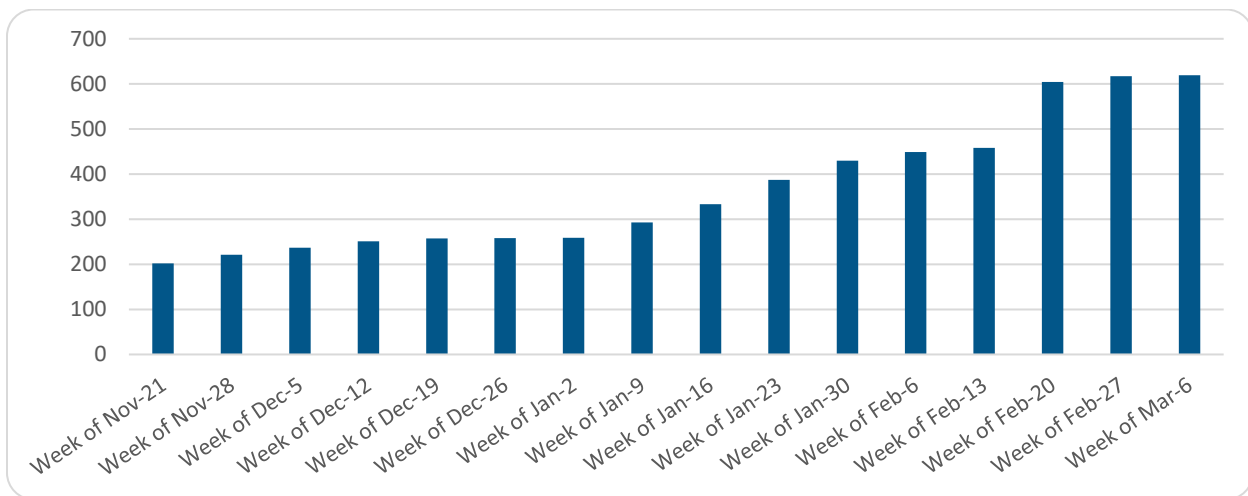


Figure 3. Survey participants by week

The following sections provide a description of the content provided on each page of the MetroQuest survey and summarizes the findings collected from participations. A demo of the survey can be found here: <https://demo.metroquestsurvey.com/d9k3e>

Screen 1: Welcome Screen

The Welcome screen provided background details on the study, the purpose of the survey, and how feedback and community input contribute to the final recommendations. The scrolling text at the bottom of this page noted that “As the development of recommendations also considers local policies and plans, as well as a significant amount of technical data, the study team and decision-makers are committed to incorporating feedback and asking the community for input before finalizing recommendations.”

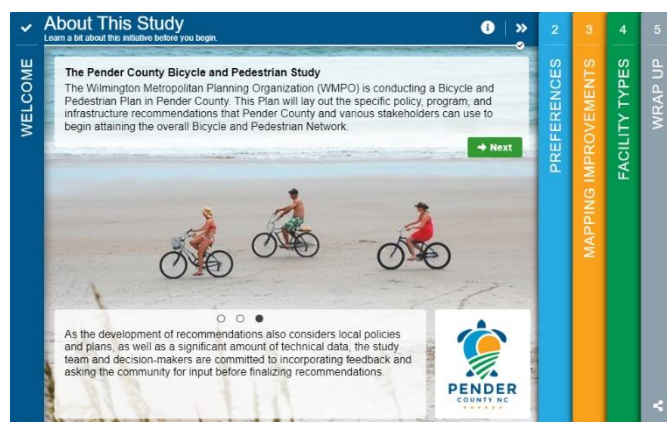


Figure 4. Welcome screen

Screen 2: How Do You Bike and Walk?

The second screen asked participants to rate their biking and walking level of confidence, typical destinations, habits, and preferred amenities. The first set of questions asked participants to describe their level of comfort with biking and walking in Pender County. There were four options: strong and fearless, enthusiastic and confident, interested but concerned, and not interested. The results of the biking and walking confidence are shown in Figures 6 and 7. The majority of participants for both biking and walking confidence selected “interested, but concerned” though it should be noted that participants were slightly more confident with walking than biking.

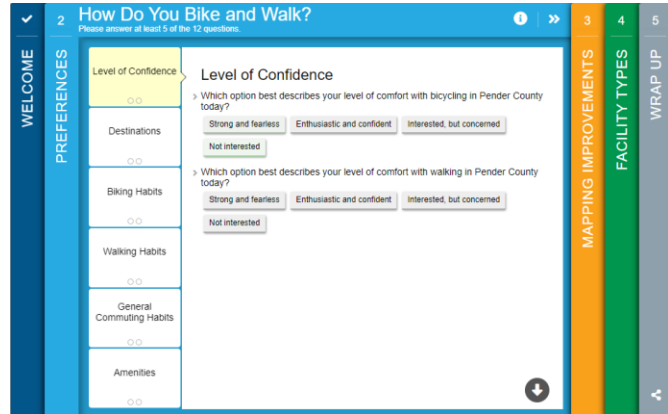


Figure 5. Preferences screen- How Do You Bike and Walk?

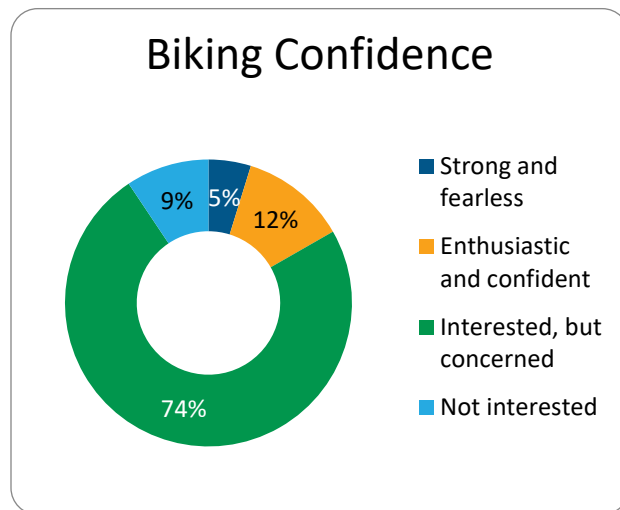


Figure 6. Which option best describes your level of comfort with bicycling in Pender County today?

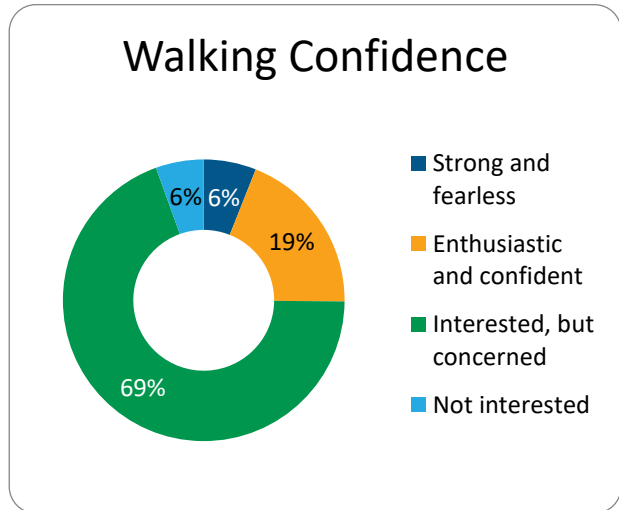


Figure 7. Which option best describes your level of comfort with walking in Pender County today?

The second set of questions asked participants about the purposes they currently bike and walk for. For both biking and walking, most participants do so as a recreational activity. Less than 30 participants currently bike and walk to commute to school, work, or connect to transit. Approximately 130 participants bike or walk to visit family and friends. For the purpose of running errands, 94 participants responded that they currently bike, and 77 participants responded that they currently walk.

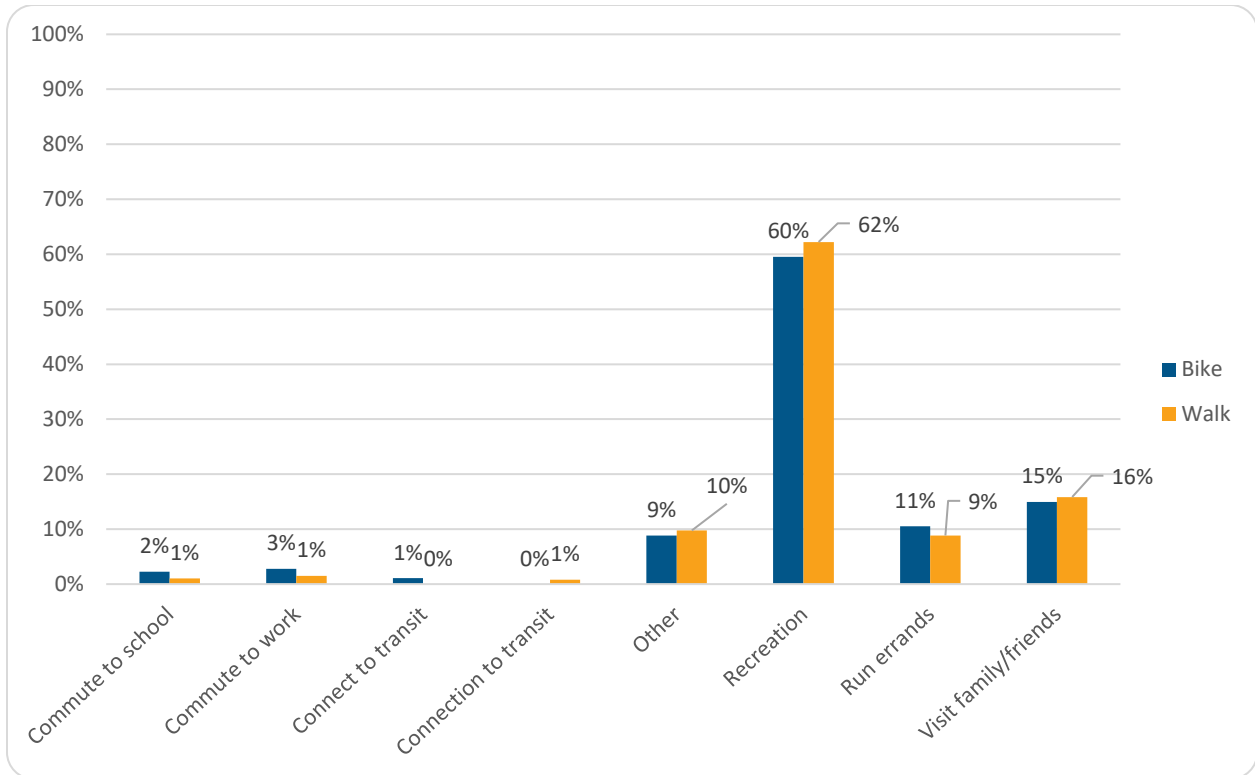


Figure 8. What purposes do you currently bike for? What purposes do you currently walk for?

The third set of questions asked about biking and walking habits. The survey asked how often participants currently bike and how often they would bike if the network was improved. The number of participants who responded that they currently bike daily is 31. When asked how often they would bike if the network was improved, 198 participants answered that they would bike daily. Therefore, the number of daily bikers would increase by six times if the network was improved. The number of participants who said they currently never bike is 59; this number decreased by 50% when participants were asked about an improved network. When asked about an improved biking network, the frequency with that participants said they would bike increased.

The survey asked participants how often they currently walk and how often they would walk if the network was improved. 180 participants said they currently walk daily. That number jumped to 286 when participants were asked about an improved network. A similar pattern is seen with the participants who selected multiple times a day for their current habits. The number of participants who selected multiple times a day went from 16 participants to 111 participants when asked about an improved pedestrian network.

Figure 9 shows the current habits for bikers and their habits if the network was improved.

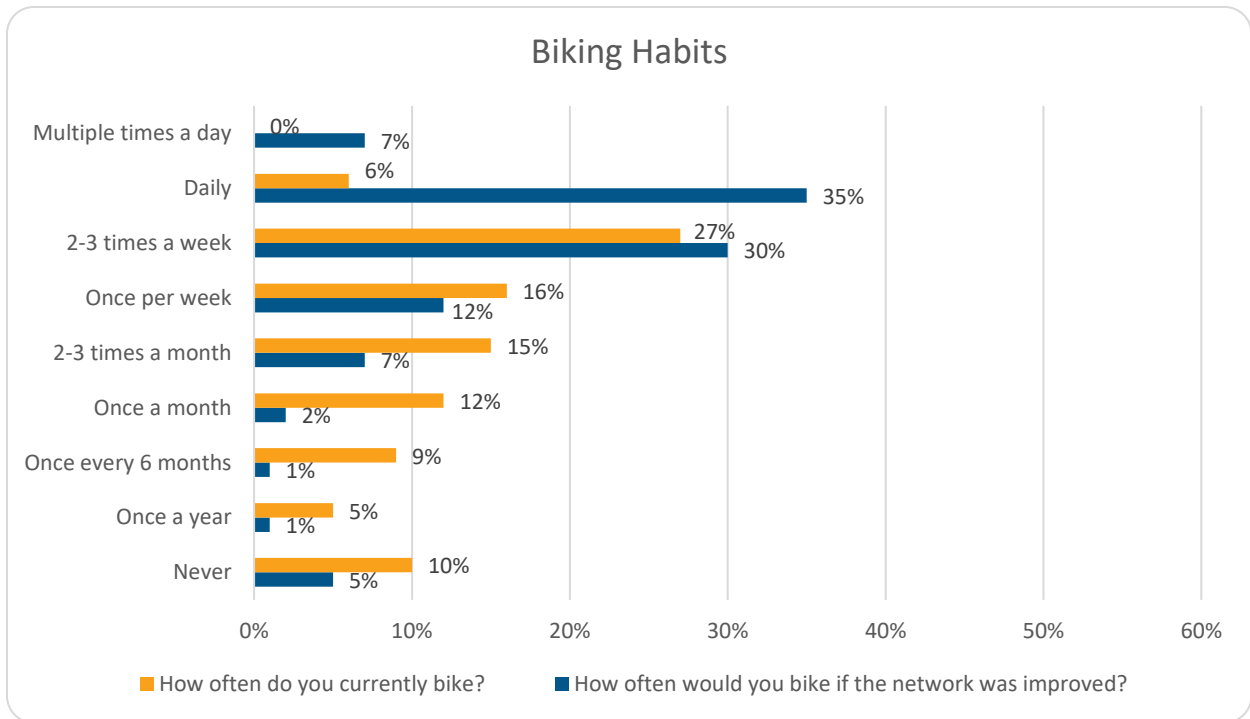


Figure 9. How often do you currently bike? How often would you bike if the network was improved?

Figure 10 shows the current habits for walkers and their habits if the network was improved.

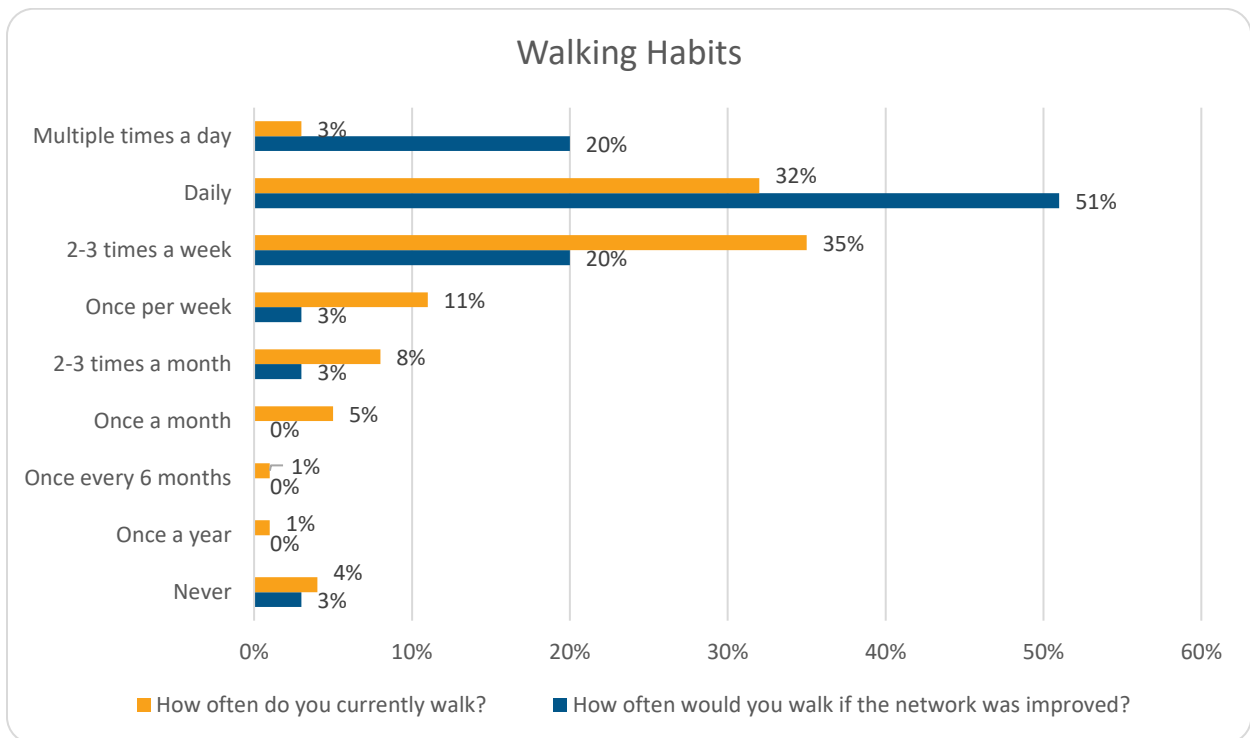


Figure 10. How often do you currently walk? How often would you walk if the network was improved?

Engagement Phase I Summary

The fifth set of questions asked about general commuting habits such as participants' most common and current mode of transportation and their desired mode of transportation. The most used current mode of transportation is a single-occupant car. When participants were asked about desired commuting patterns, biking was ranked as the most desired mode of transportation if the system was improved. Walking also saw an increase, and notably, responses for single-occupant car trips decreased.

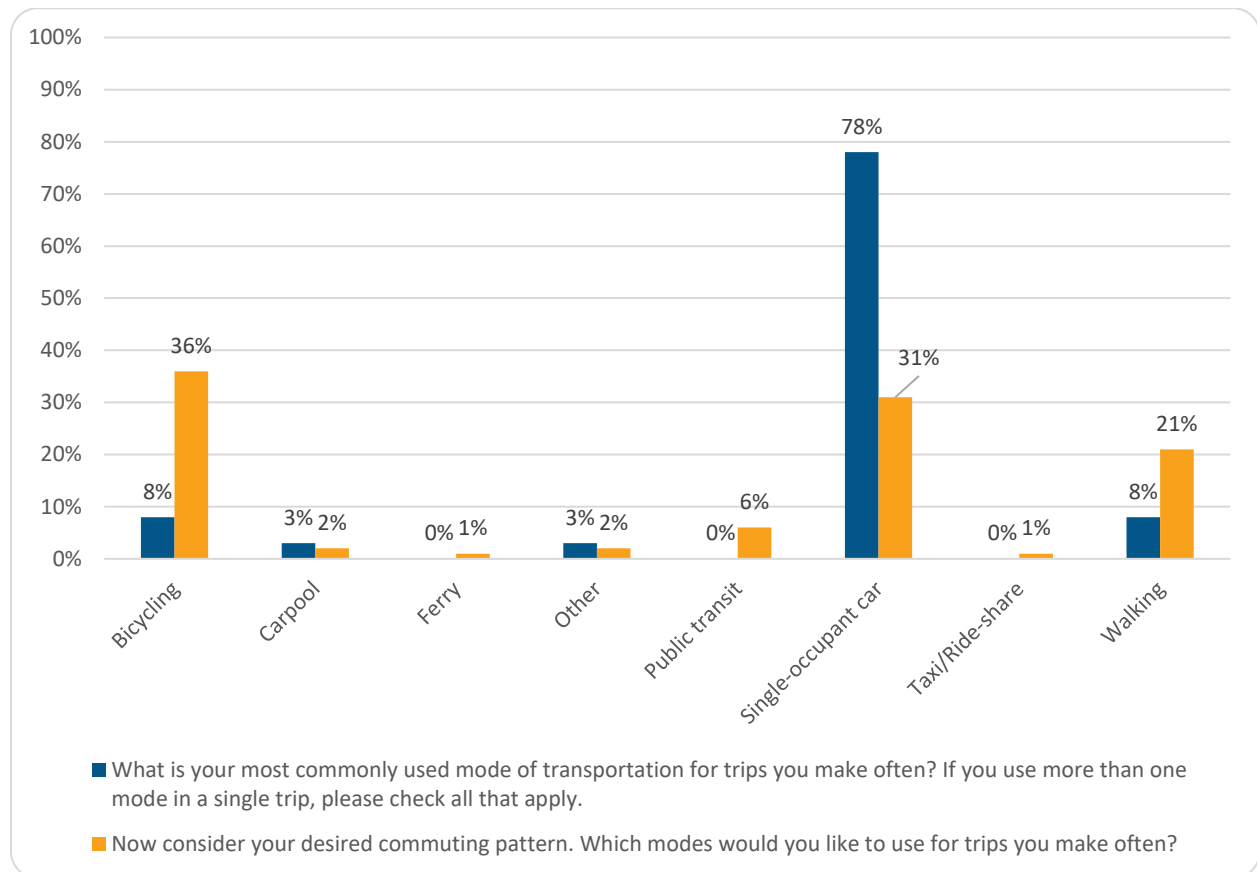


Figure 11. What is your most commonly used mode of transportation for trips you make often? Which modes would like to use for trips you make often?

Engagement Phase I Summary

The last set of questions asked participants which amenities would encourage them to bike or walk. The option for “Safe biking/walking routes” was the most popular choice of participants to encourage more walking or biking. Participants provided 159 comments about amenities that would encourage participants to bike or walk. Among those comments, the common themes were about safety, having well-lit trails, bathroom facilities, dedicated bike lanes, sidewalks, and crosswalks. There were eight comments about a path around Scoot’s Hill Loop Road.

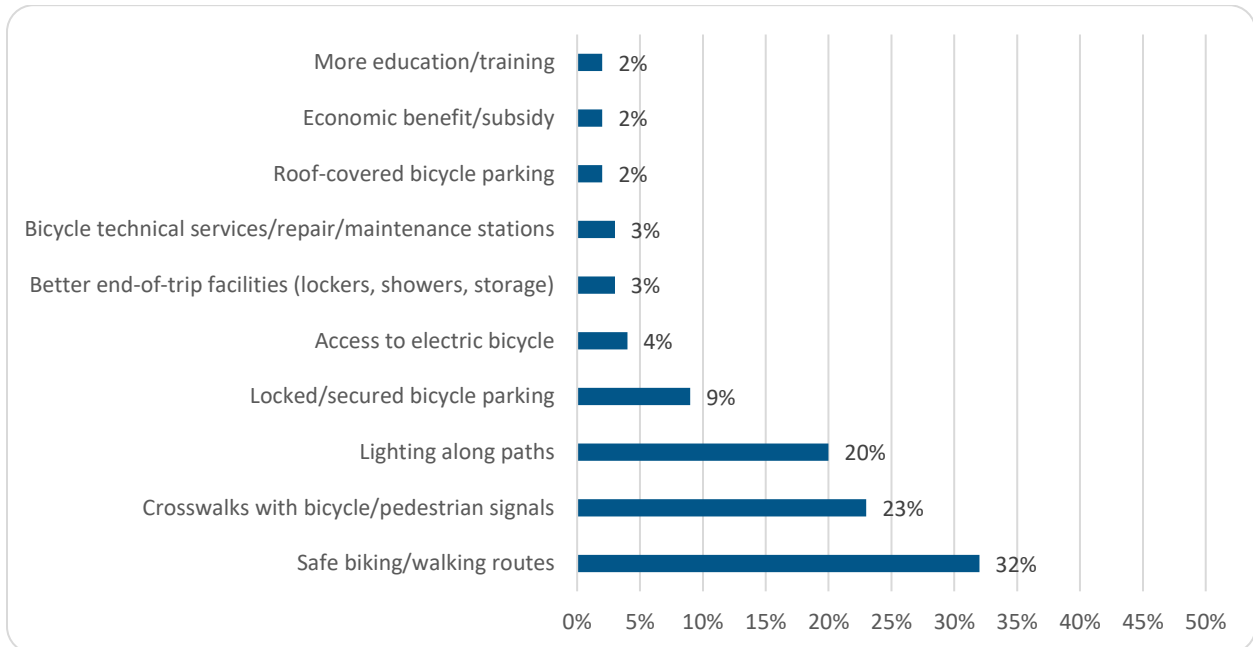


Figure 12. Which of the following amenities would encourage you to bike or walk? (Select all that apply)

Screen 3: Mapping Improvements Where You and Bike

The third screen asked participants to drag and drop pins to mark locations where they generally start walking or biking and where their destinations are for those trips. Participants also marked areas where challenges for biking and walking exist or improvements they would like to see.

A total of 1485 pins were placed on the map and over 750 comments were provided. Table 1 shows the number of pins that were placed for each type of marker, and the comments collected can be found in Appendix A. Maps showing the results of the data are shown in Figures 14 – 17. The majority of trip start locations were noted as the participants’ home location, and the majority of end destinations were categorized as for recreation. For “Places You Want To Go” the most popular option was “recreation” followed by “shopping.”

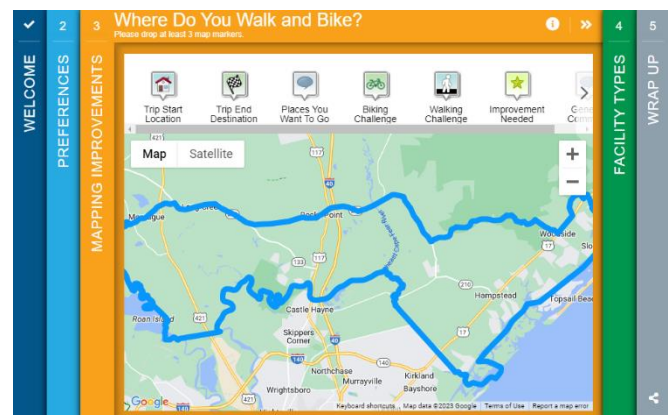


Figure 13. Mapping improvements- Where Do You Bike and Walk?

Table 1. Number of Pins Placed on Survey Map

Type of Marker	Number of pins placed
Trip Start Location	283
Trip End Destination	274
Places You Want To Go	370
Biking Challenge	154
Walking Challenge	174
Improvement Needed	186
General Comment	43

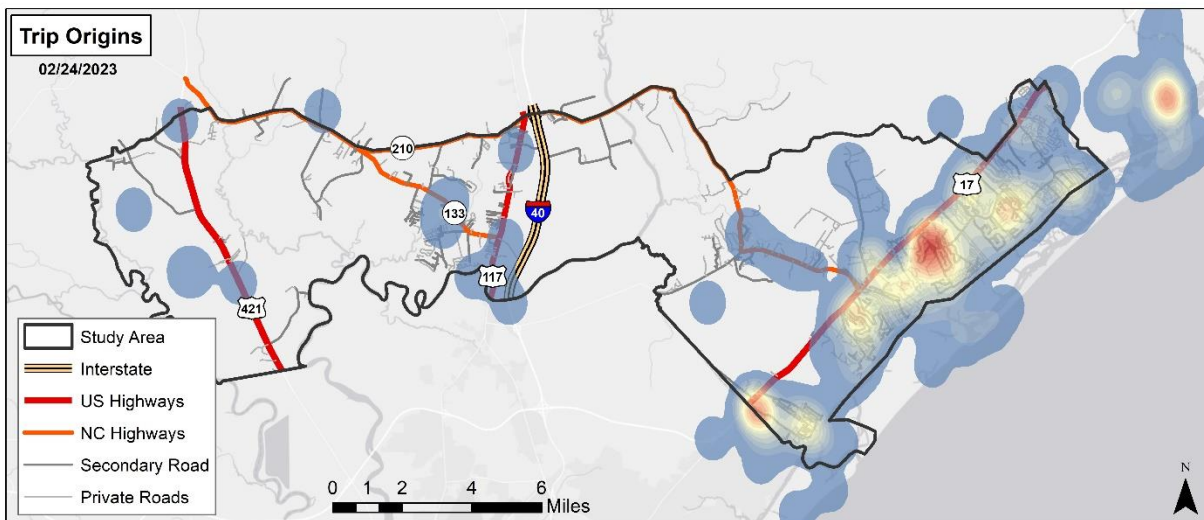


Figure 14. Map Results of pins placed for "Trip Start Location"

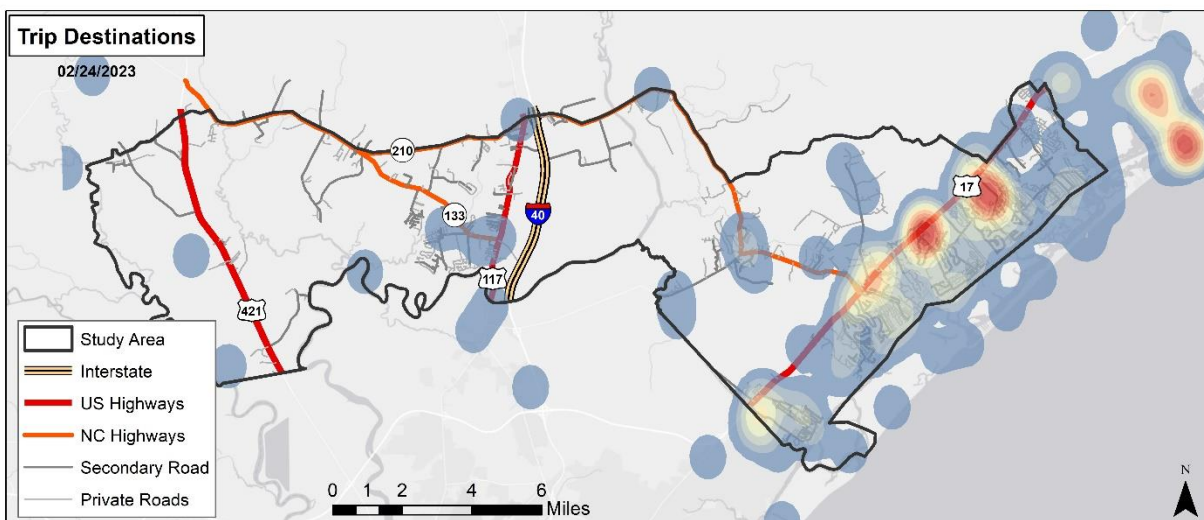


Figure 15. Map Results of pins placed for "Trip End Destinations"

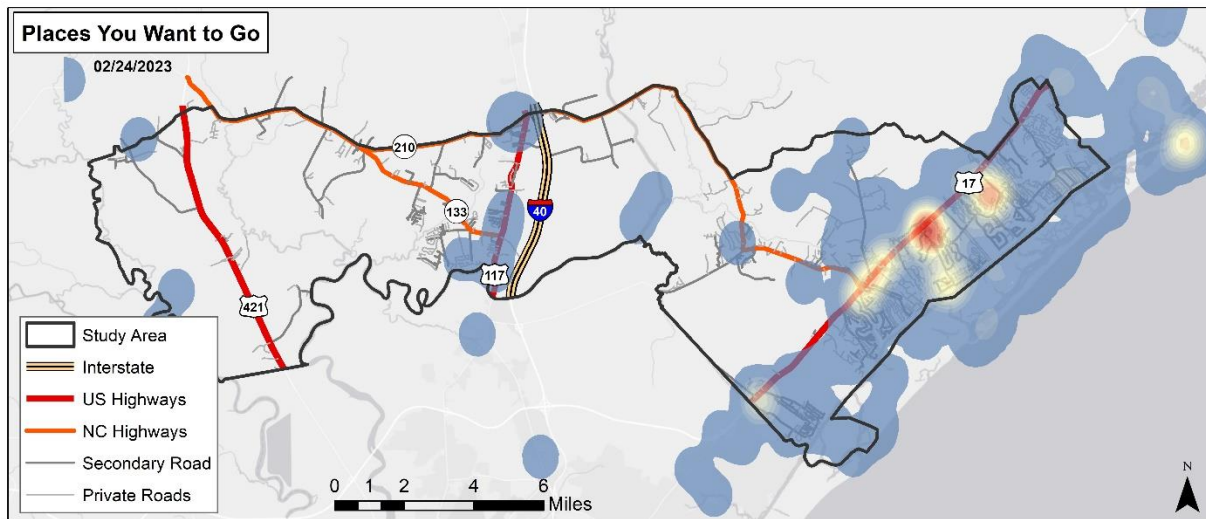


Figure 16. Map Results of pins placed for "Places You Want To Go"

When participants selected a pin for "Improvement Needed" the majority of markers were for "adding pedestrian infrastructure" followed closely by "Add bike infrastructure." Pins were also placed for "improve safety conditions" as shown in Figure 17.

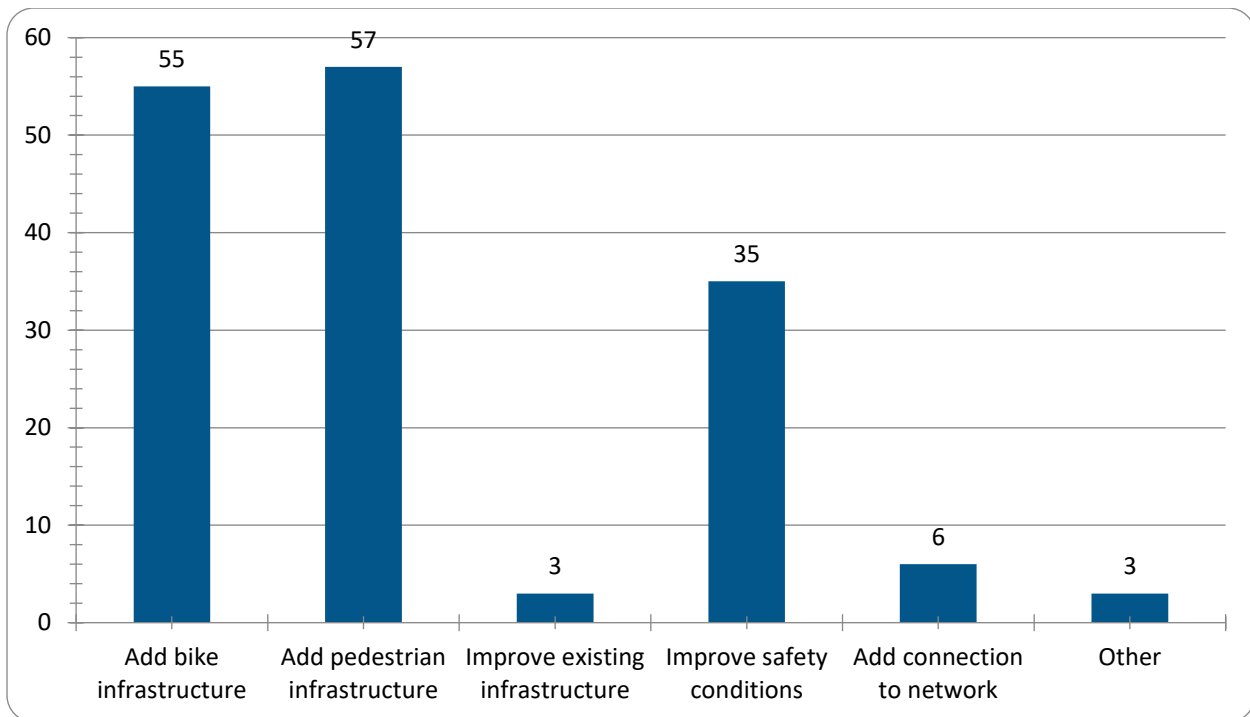


Figure 17. Result of pins placed for "Improvements Needed"

Screen 4: Facility Preferences

The fourth screen asked participants to consider their comfort level using different types of bike and pedestrian facilities. For each facility, a description and image were included to help inform the participant about the facility type. There are six bike facilities included (greenway trail, buffered bike lane, bike lane, wide shoulder, shared lane, and shared lane marking or sharrow) and six pedestrian facilities included (sidewalk, side path, shared-use path, greenway trail, unimproved trail, and wide shoulder). Participants could rate how comfortable they feel about each facility type on a scale from very uncomfortable, uncomfortable, neutral, comfortable, to very comfortable. Participants could also optionally provide comments on each facility type.



Figure 18. Facility Preferences screen- Which Facilities Do You Prefer?

The comfort levels have been placed on a scale from 1-5. The closer to 5, the more confident the participant is about using the facility. The table below shows the comfortability scale used to demonstrate the results.

Very Uncomfortable	Uncomfortable	Neutral	Comfortable	Very Comfortable
1	2	3	4	5

The results in Figure 19 show the participants’ comfort ratings for using bike facilities. The responses shown include only the participants who responded to the second screen question about biking confidence levels. Greenway has the highest comfortability rating across confidence levels. Participants who rated themselves strong and fearless, had the highest comfortability rating of all facility types. Shared lane had the lowest comfortability rating across all confidence levels.

Participants had the option to leave comments on the facility types. The common themes on the greenway comments include having a well-maintained facility that is clear of debris, and concerns about golf carts as an added hazard (six comments). Comments left on the Buffered Bike Lane facility included concerns about drivers not paying attention to bikers, having a speed limit of 35 mph or less, and educating motorists (13 comments). Participants who left comments on Bike Lane said it was not ideal for families and are concerned about motorists not paying attention as well as cars parking in the bike lanes (10 comments). For the buffered bike lane and bike lane, participants noted that it depends on the road used. Wide shoulder and shared lane both had the largest number of comments of all the bike facilities. These comments were about safety and the potential for accidents (nine Wide Shoulder comments) (11 Shared Lane comments). Shared lane marking had similar comments as the wide shoulder and shared lane with notes that the marked lanes will not alleviate their safety concerns (6 comments).

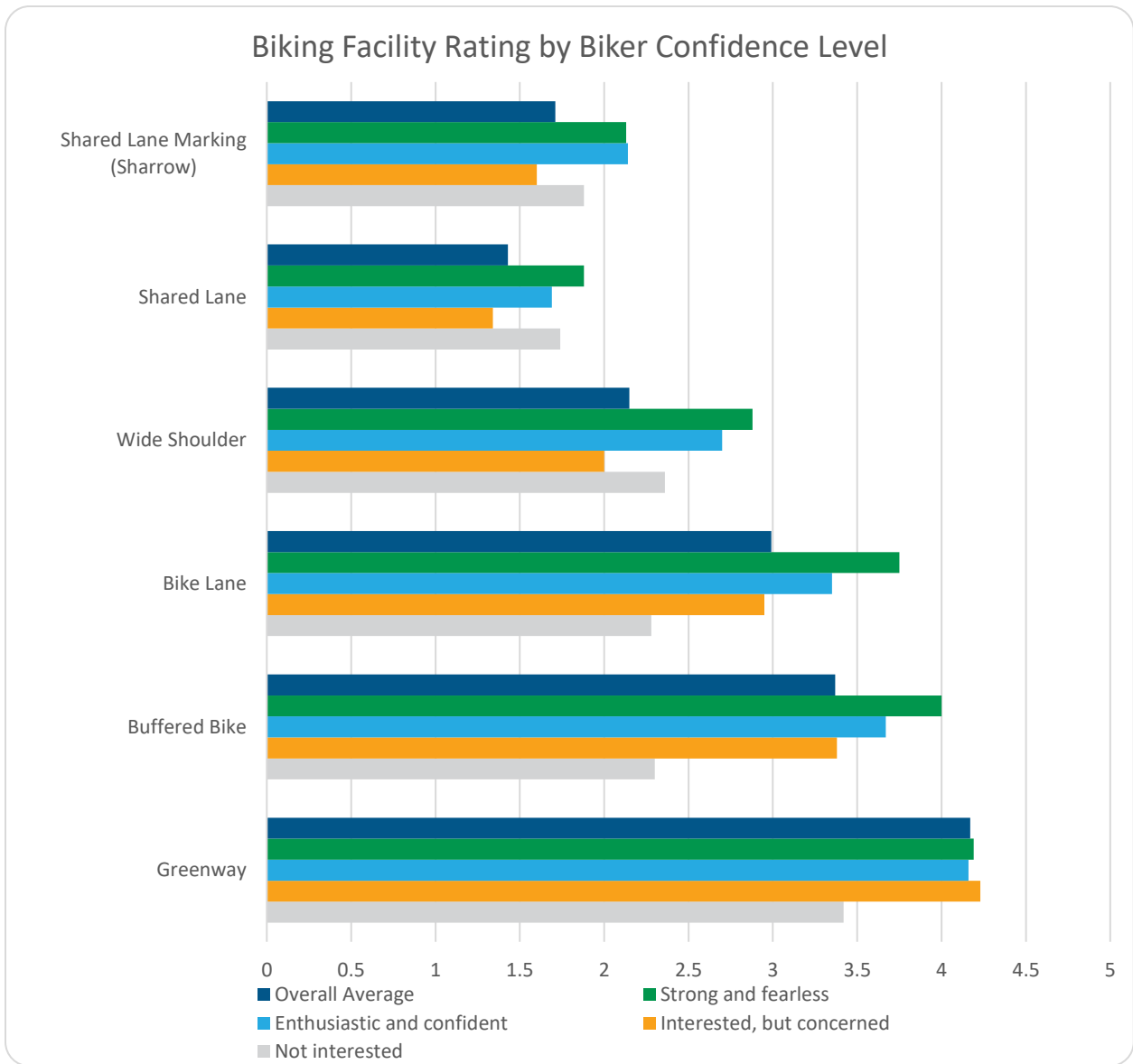


Figure 19. Bicycle Facilities: How comfortable do you feel on this facility type?

Engagement Phase I Summary

Figure 20 shows the participants' comfort ratings for using pedestrian facilities. The responses shown include only the participants who responded to the question on the second screen about walking confidence levels. Similar to the bike facility rating, greenway had the highest comfort rating among pedestrians across all confidence levels. The pedestrian facility with the lowest comfortability rating is wide shoulders. Participants could also leave comments on the biking facility ratings. There were fewer comments left on the pedestrian facilities than the biking facilities. Participants who left comments on the sidewalk were concerned about not having a raised curb with higher speed limits on the side streets and concerned about kids and inattentive motorists (two comments). The side path comments mentioned that side paths provide a large safe space and are the best solution for walkers (two comments). The comment themes on the share-use path include concerns about the interaction between all road users. One comment mentioned considering the use of electric bikes. Participants who left comments on the greenway were concerned about lighting on the paths and mixing bikers, walkers, and other traffic (two comments). The unimproved trail received comments concerning cameras at the entrance on the rails, trail markings, rattlesnakes, and that the unimproved trail would not improve pedestrian commuting (six comments). The participants who left comments on the wide shoulder were all concerned for the potential for accidents (six comments).

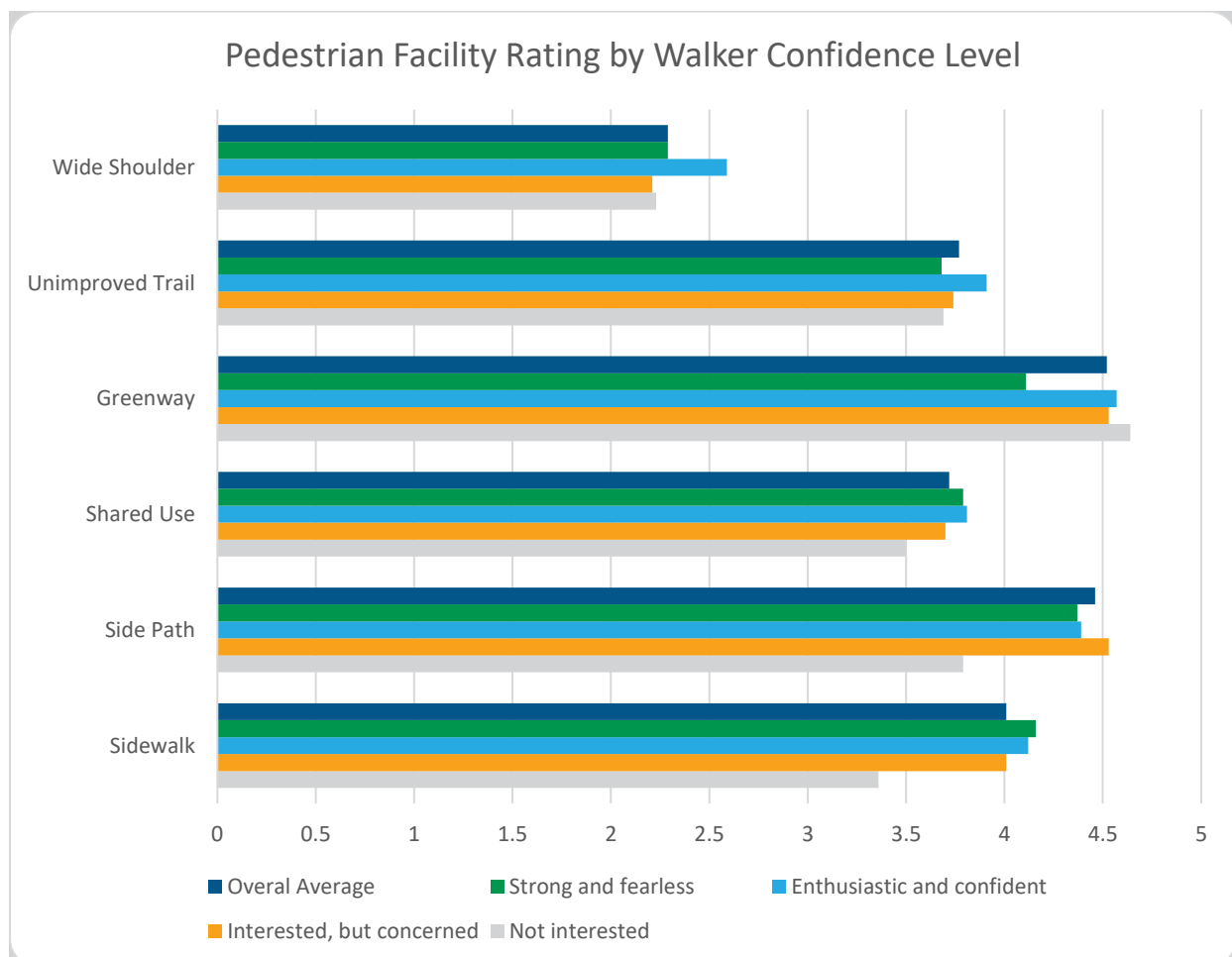


Figure 20. Pedestrian Facilities: How comfortable do you feel on this facility type?

Screen 5: Demographics

The final screen gave the respondents the option to provide their demographics, share the survey on social media, and visit the project website. The following figures show the results for each of the demographic questions.

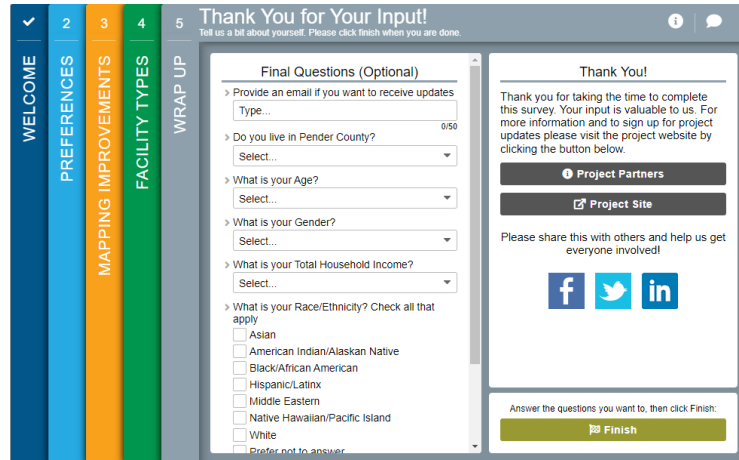


Figure 21. Wrap Up screen- Tell us a bit about yourself.

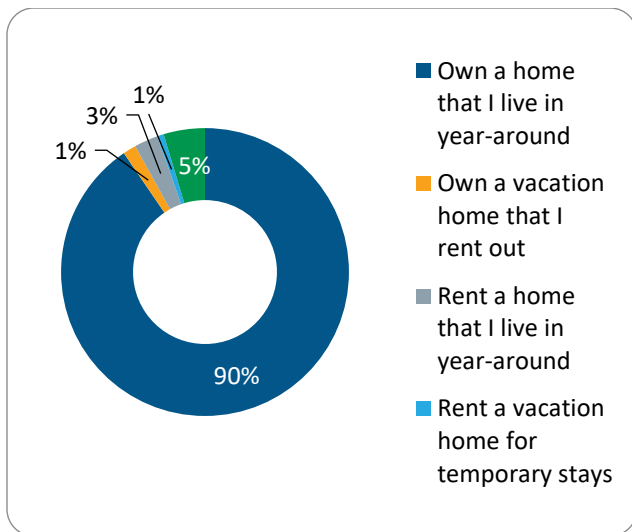


Figure 22. Do you live in Pender County?

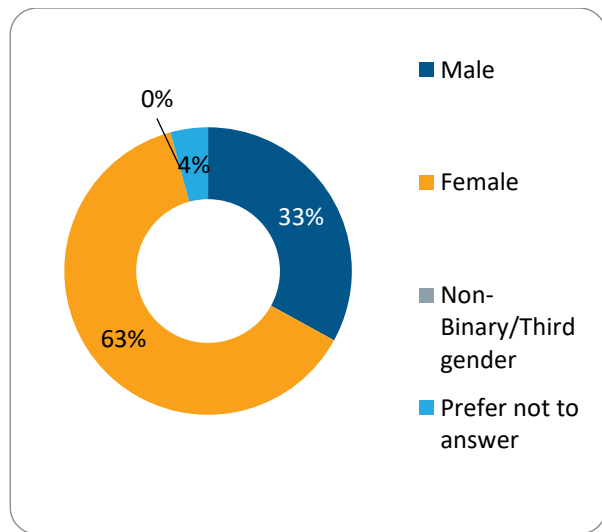


Figure 23. What is your Gender?

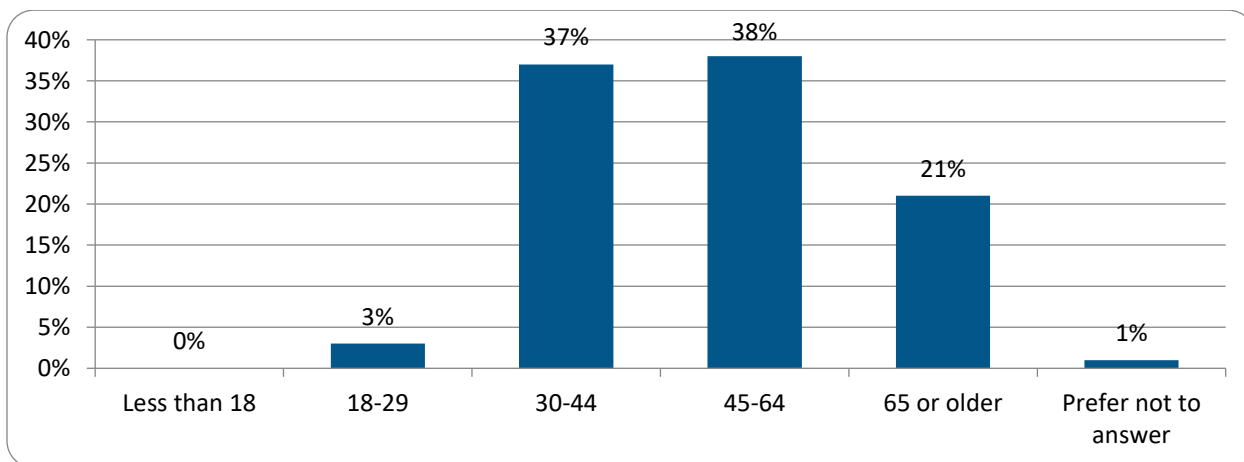


Figure 24. What is your Age?

Engagement Phase I Summary

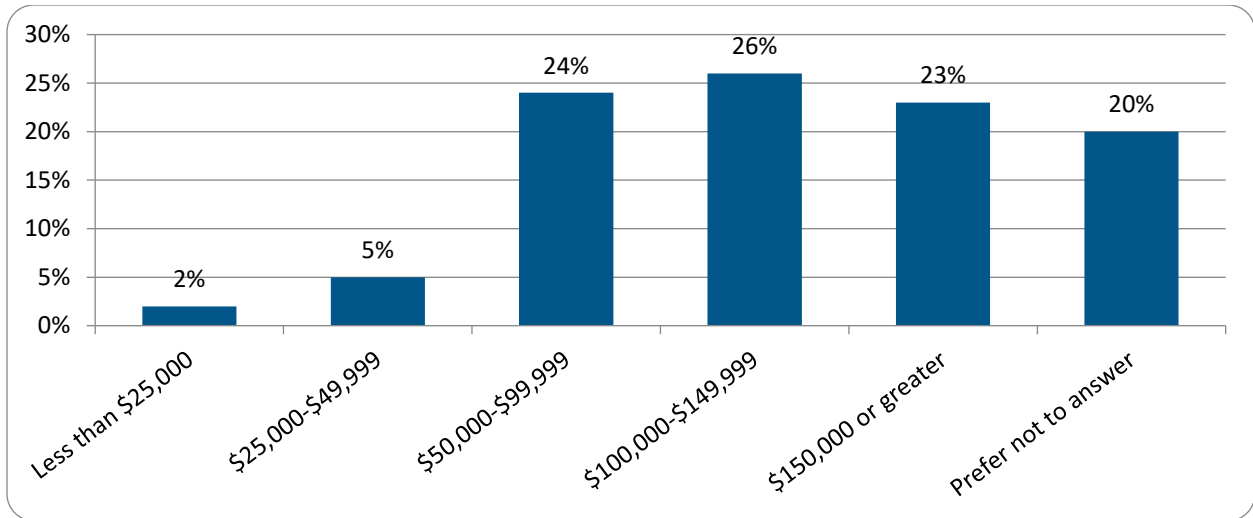


Figure 25. What is your total household income?

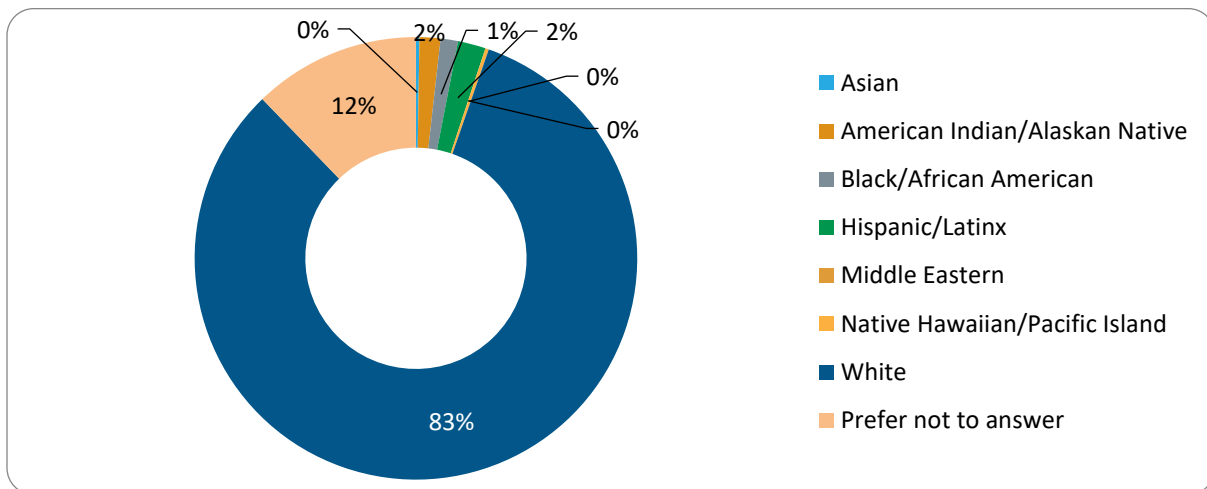


Figure 26. What is your Race/Ethnicity? Check all that apply.

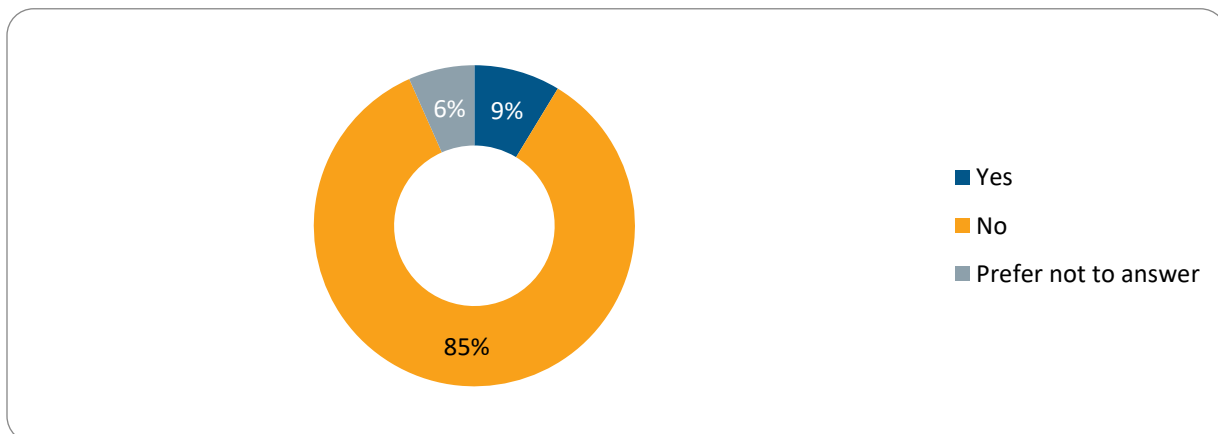


Figure 27. Do you have a Disability?

Engagement Phase I Summary

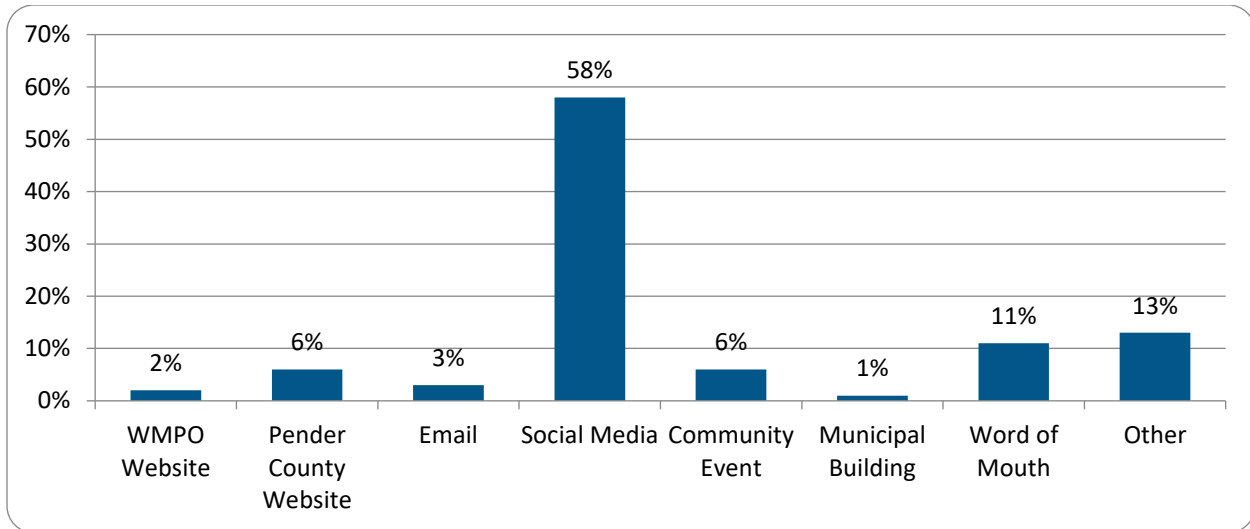


Figure 28. How did you hear about this survey?

Appendix A. Mapping Screen Comments

Please note comments have not been edited to fix spelling or grammar.

Marker Type	Comment
Biking Challenge	Traffic. I am not confident in using the bike lane.
Walking Challenge	Too dangerous
Biking Challenge	Too dangerous
Walking Challenge	Need paths
Walking Challenge	Lack of sidewalks
Biking Challenge	No safe bike lanes
Improvement Needed	Improve / install wider bike lane / road shoulder along Hwy 133
Improvement Needed	Add bike lane or widen road shoulder along Hwy 210
Improvement Needed	Develop the abandoned rail corridor into a multi-use trail between Castle Hayne and Burgaw.
Improvement Needed	Add bike lane or widen road shoulder on Hwy 210
Improvement Needed	Add bike lane or widen road shoulder on Sidbury Rd
Improvement Needed	Utilize route as proposed by Cape Fear Council of Governments to connect to the East Coast Greenway
Improvement Needed	Add bike lanes or widen road shoulders
General Comment	Develop the abandoned rail corridor between Castle Hayne & Burgaw into a multi-use path.
Walking Challenge	No bike lane or storage
Biking Challenge	Lots of redneck drivers, no bike lanes, drivers are hostile towards bikers
Walking Challenge	No sidewalks other than on Anderson, drivers speed and do not pay attention, narrow roads and not enough enforcement of dangerous driving
Improvement Needed	Need bike lanes and signs, enforcement against aggressive and hostile car drivers who target bikes (eg Coal Rolling)

Engagement Phase I Summary

General Comment	17 is no man's land if you are not in a car. It is extremely dangerous to bike or walk on this stretch of road in Pender County-- 210 is the same way.
Walking Challenge	marked path
Biking Challenge	Sloop point loop does not have sidewalk or path
Walking Challenge	Sloop point loop does not have sidewalks or path
General Comment	A turning lane is needed for this section of road from millers pond park to pauls place. Many who live in this stretch have to wait PARKED ON THE HIGHWAY waiting to turn left onto their road bc of the long line of traffic blocking them from turning... due to the housing developments down hwy 133 past Pauls Place. All that traffic is coming and going into and out of wilmington via castle hayne exit to I40. Its very dangerous, lots of wrecks happen in this area.
Biking Challenge	no room for bike
Walking Challenge	no room to walk
Walking Challenge	It feels unsafe bc it is set back in the woods without cameras. People have been living here, dropped off dead here, and a suspicious bomb looking thing was detonated here. Please put some cameras up along the trail, near the shelter, and parking lot. Get a patrol car to visit the area more frequently. It's a nice, wooded trail but we need to be and feel safe while using it.
Improvement Needed	Cameras please
Improvement Needed	Make a sidewalk along hwy 117 to the intersection of hwy 210 & hwy 117
Walking Challenge	No shoulder
Biking Challenge	Traffic
Biking Challenge	Country club rd is a challenge for drivers, walkers and riders. Narrow with no room to miss.
Walking Challenge	Busy fast rd.
General Comment	Find a way to connect similarly to that done at Kiwanis, NTElementary and Plantation Point/azalea rd. It's a beautiful bike path. A wonderful example
Walking Challenge	car traffic
Biking Challenge	Hwy 17 is unsafe to bike along
Walking Challenge	Hwy 17 has almost no sidewalks and is therefore unsafe to walk along.
Improvement Needed	All listed above applies to this area
Biking Challenge	Route 17 is the major way to get from Hampstead to anywhere else and route 17 is NOT a good option for biking therefore I stay close to home
Improvement Needed	This area is just not biker or walker friendly. Eventually Hampstead will have more stores and restaurants and I be want to be able to bike to those locations
General Comment	Preferably do not construct bike paths immediately next to route 17, there are more pleasant places
Biking Challenge	Bloodworth Curve is dangerous period. Cars or bicycles. Traffic on this thoroughfare is heavy
Improvement Needed	Lighting along pedestrian trail
Walking Challenge	with the exception of the nature conservancy, I haven't found interesting safe walks in Hampstead
Biking Challenge	I don't feel safe on most roads. Need bike lines and/or multiuse trails
Biking Challenge	Scotts hill loop road dangerous for biking
Walking Challenge	Scotts hill loop road dangerous for walking
Improvement Needed	Scotts hill loop road perfect for a walking and biking trail.

Engagement Phase I Summary

Walking Challenge	Need some sidewalks and crosswalks at traffic lights in commercial stretch of Hampstead so we can walk or bike the area rather than have to drive.
Walking Challenge	No crosswalk to get to the other side. No sidewalks you have to walk on uneven terrain risking injury. It's a very busy street and currently unsafe for pedestrians or bicyclists. Shame on the county for not considering the residents needs and safety.
Walking Challenge	No walking path or bike lane on Scott's hill loop road
Improvement Needed	No walk or bike path on Scott's Hill Loop road
Improvement Needed	Sidewalks,bike paths
Walking Challenge	Safe sidewalks
General Comment	Need safe sidewalks for walking,jogging,biking. Very popular area to do these things but very unsafe due to winding rd and traffic.
Biking Challenge	Insane to walk or ride along 17. No bike/walking lanes. No traffic control.
Walking Challenge	No sidewalks/ bike lanes. Excessive traffic due to uncontrolled growth with no increase in infrastructure (along country club, sloop point, sloop point loop)
Improvement Needed	Scotts Hill Loop Rd needs bike/walking paths throughout the entire area, connections to Porter's Nevk would be great!
Walking Challenge	Nearly impossible to walk safely along the loop rd or any of the side roads.
Biking Challenge	Not safe to bike on the Loop Rd and on many of the side streets.
Walking Challenge	Must drive to a park with walking pathways due to lack of sidewalks. Walking along Country Club Drive is very dangerous due to increasingly heavy traffic.
Walking Challenge	Lack of sidewalks increasingly heavy traffic.
Biking Challenge	Narrow road with lots of curves. Would be a beautiful area to bike but it's pretty dangerous feeling.
Walking Challenge	Narrow road, lots of curves
Improvement Needed	sidewalks around Scott's Hill Loop.
Walking Challenge	little shoulder and no sidewalk - dangerous to walk and ride.
Improvement Needed	Sidewalks in the Scott Hill area would be wonderful!
Walking Challenge	No sidewalks and traffic
Biking Challenge	No sidewalks or bike paths and traffic
Biking Challenge	To much traffic and at a high speed.
Walking Challenge	Along HWY 17, there is to much traffic and the traffic is at a high speed.
Improvement Needed	Currently you have to ride your bike on the shoulder of HWY 17, very unsafe.
General Comment	All along HWY 17 needs to be improve with a separate path, both for walking and biking. Some areas of HWY 17 have a bike lane, but is not safe nor enjoyable to use. A path 10 to 20 yards from HWY 17 will increase usage and enhance the health benefits of exercising. After the initial cost of paving a biking/walking path, the cost to maintain the path is minimal. Then in the future other paths can be spurred off of the main path.
Walking Challenge	Lack of Sidewalks and Motorists constantly exceeding posted Speed Limit of 45 MPH... Lack of law enforcement patrolling in this area to ticket violators. (NOTE: Given the frequency and number of motorists who speed through Scotts Hill, the fines could be a significant contribution toward funding the cost of bike lanes and sidewalks...)
Biking Challenge	Lack of Bike Lanes and Motorists constantly exceeding posted Speed Limit of 45 MPH... Lack of law enforcement patrolling in this area to ticket violators... (Note: Given the frequency and number of motorists who speed through Scotts Hill, the

Engagement Phase I Summary

	fines could be a significant contribution toward funding the cost of bike lanes and sidewalks...)
Improvement Needed	Addresses Safety concerns
General Comment	Motorists constantly exceed posted Speed Limit of 45 MPH and enforcement of speed limit is lacking --- Huge Safety Concern... (Note: Given the frequency and number of motorists who speed through Scotts Hill, the fines could be a significant contribution toward funding the cost of bike lanes and sidewalks...)
Improvement Needed	Unsafe conditions due to hills and speeding motorists
Biking Challenge	No bike lanes
Improvement Needed	Scotts Hill Loop is dangerous to bike on because of speed limit and no bike lane. 5mile loop road would be awesome to bike on with bike lane.
Walking Challenge	No path
Biking Challenge	No shoulder on road, fast drivers, no sidewalk or bike path. Not safe for our children to walk along or bike on any part of the loop, which is a beautiful area with views of wetlands / nature.
Walking Challenge	No shoulder on road, fast drivers, no sidewalk or bike path. Not safe for our children to walk along or bike on any part of the loop, which is a beautiful area with views of wetlands / nature.
Improvement Needed	Wider shoulders at a minimum, but a walking or bike path would be preferred. Not currently safe for biking or walking so we don't do either with our kids. I get surprised by both joggers and cyclists, especially at dusk / dawn, when driving. If cars are coming in both directions, there is no room for vehicles to get out of way, and pedestrians and cyclists are forced off into the grass. Just not a safe road to walk or cycle with all the turns and narrow road.
Biking Challenge	Path or sidewalk Scott's hill loop rd
Walking Challenge	Path sidewalk Scott's hill loop road
General Comment	This road is dangerous to bike or walk due to traffic
Biking Challenge	to much traffic and traveling at a high rate of speed
Walking Challenge	I feel unsafe walking on the side of an highway.
Improvement Needed	A bike/ walking path will greatly enhance this area.
General Comment	a separate path for walking and cycling is the safest and best option.
Improvement Needed	This road has dangerous curves and no where to bike or walk
Biking Challenge	The whole island needs work on safe bike and walk patha
Improvement Needed	Very hard to get from island to mainland on bike. Only one narrow walk path. Very dangerous in dark with excessive tourist traffic
Biking Challenge	Need a safe way to get to Porters Neck Shopping Area from here. Heavy traffic on Hwy 17
Biking Challenge	Ned a bike lane on Country Club Rd. Traffic has become very heavy as this area gets developed.
Biking Challenge	Sidewalks or a Multiple Use Trail are needed in downtown Hampstead. Traffic is very heavy and there are lots of shops, stores and schools that could be accessed by bike or walking
Biking Challenge	Land use, dangerous vehicle use inside gamelands
Biking Challenge	Only way out of Wilmington, no cycle path and extremely dangerous intersections and no dedicated lanes
Biking Challenge	Use of 210 is part of many cycling routes but this side is unsafe, no shoulder and demarcation, signage and dangerous driving

Engagement Phase I Summary

Biking Challenge	No bike path
Walking Challenge	No walking path for recreation
Biking Challenge	Too narrow. No shoulder. Very unsafe and unenjoyable.
Walking Challenge	The entire county lacks walking and biking infrastructure. Improvements are desperately needed.
Improvement Needed	A bike path to the beach would be wonderful.
General Comment	The entire county needs pedestrian and bicycle infrastructure.
Biking Challenge	High speed motor vehicle traffic
Improvement Needed	Need overall education of drivers/riders/walkers . Also need traffic law enforcement
Improvement Needed	There is no shoulder on hwy 17 in Hampstead making for dangerous riding
Biking Challenge	Country club is a backbone of group rides in area but difficult to navigate at time as a single rider
Improvement Needed	Restrooms and water station needed
Improvement Needed	Restroom and water station needed
Biking Challenge	No sidewalks
Walking Challenge	No sidewalks.
General Comment	Many residential houses being built (no sidewalks) and many young, active families moving into the area. We need more safe ways (sidewalks everywhere and crosswalks) to get out and stay active with kids and dogs. There are too many wrecks and accidents daily so it doesn't feel safe walking or biking on the street with the family.
Walking Challenge	Crossing road
Biking Challenge	THE BIKE LANE IS PART OF THE ROAD, HWY 17.
Improvement Needed	HAVE THE BATH OFF THE ROADWAY
General Comment	HAVING SAFE PATHS BOTH FOR WALKING AND BIKE RIDING PROMOTES A HEALTHY AND INVITING COMMUNITY, IN WHICH THE BENEFITS CAN NOT BE CALCULATED.
Biking Challenge	Not enough paths
Walking Challenge	no sidewalks
Biking Challenge	no sidewalks
Walking Challenge	No crosswalk, even though there is an elementary and sidewalk across the street.
Walking Challenge	Dangerous intersection for vehicles and pedestrians.
Biking Challenge	Dangerous intersection for vehicles and pedestrians.
Walking Challenge	No public sidewalk outside of Kiwanis park. This prevents walking pets because Kiwanis doesn't allow pets.
Walking Challenge	No public sidewalk outside of Kiwanis park. This prevents walking to the BP which is a popular walking destination for young teens, teens, and some adults.
Walking Challenge	Dangerous intersection for pedestrians, especially children and young teens.
Walking Challenge	No lighting, very dark at night.
Walking Challenge	No public sidewalk outside of Kiwanis park. This prevents walking to the Iron Clad which is a popular walking destination for young teens, teens, and adults.
Walking Challenge	All of Country Club should have sidewalks all the way to Topsail High/Middle/Elementary Schools. Kids walk to school and it is very dangerous.
Walking Challenge	All of Sloop Point would benefit from having sidewalks.
Biking Challenge	no shoulder and high speed traffic

Engagement Phase I Summary

Improvement Needed	build it and they will come- look at Pinellas county FL bike paths- amazing- we don't want to be pissing off drivers on the road- we would prefer a safe way to ride
Improvement Needed	road shoulder improvement/ bike lanes
General Comment	It is too dangerous to bike or walk on any of the roads in Hampstead. Bike lanes or designated paths are so needed.
Biking Challenge	Pine Straw & Sand need off-road bike
Biking Challenge	45 miles per hour. No bike path or shoulder to ride. Lots of kids in neighborhoods and it can be dangerous to cross Hoover Rd near Sparrows Bend
Biking Challenge	Can be dangerous to cross 17
Biking Challenge	Hoover Rd speed limit 45 and no bike/ walking path.
Walking Challenge	Zero sidewalks to school
Biking Challenge	Dangerous road for bikes
General Comment	There's nothing about this area of Pender that's good for biking or walking. It's part bad land use and part bad planning.
Biking Challenge	Roland Avenue, high speed, dangerous shoulder
Biking Challenge	17. High speed, no shoulder crazy to try to ride here
Improvement Needed	no shoulder
Biking Challenge	High speed, no shoulder
Improvement Needed	Please add separated cycling infrastructure. Being swerved at or nearly hit is terrifying.
Improvement Needed	Please add separated cycling infrastructure. Being swerved at or nearly hit is terrifying.
Biking Challenge	Car traffic on Country club is too dangerous for families to ride on safely
General Comment	Sooed bumps would go a LONG way toward making the road safer and would be much less expensive than multiuse paths or sidewalks. Drivers don't obey the speed limit.
Biking Challenge	Something of a blind curve and drivers travel too fast and need to slow down.
Walking Challenge	Would like to be able to safely walk to Kiwanis Park
Improvement Needed	This whole area (Country Club Road and tributary roads) is unsafe to bike or walk. It's unsafe to even walk a quarter mile to Lowes Foods.
Biking Challenge	Speed on Country Club is too dangerous ... a bike path is needed for safety! (35-45 mph)
Biking Challenge	This is a dangerous road to ride a bike due to 35-45 mph, but an important pathway to lots of safe neighborhoods.
Biking Challenge	Narrow Road
Walking Challenge	Narrow Road
Improvement Needed	Narrow Road
Biking Challenge	Country Club Rd is very dangerous to ride a bike because there is no shoulder and has a lot of bends
Walking Challenge	Sidewalks would make safer
General Comment	I prefer not to have any updates constructed. The neighborhoods we currently live in do not need additional traffic from individuals that do not live in them and do not pay the dues.
Walking Challenge	There are no paths to ride or walk. There are narrow roadways with zooming cars and not where for a bike or human to fit. Very dangerous.

Engagement Phase I Summary

Biking Challenge	Absolutely no roadway to ride on in our area. No paths and dangerous because roads are narrow with no room for a bike on the edge of the road.
General Comment	Anywhere & everywhere needs improvements. Its so scary & dangerous. Speeding,high volume traffic w/narrow or inconvenient walking/biking paths.
Improvement Needed	Bike paths along RT 210 and Rt 210, in and around Surf City. Riding on these roads without shoulders is treacherous.
Improvement Needed	Need bike/walk path/trail along highway 50 between Holly Ridge and Surf City
General Comment	Waterfront boardwalks or marshside boardwalks would be great
Improvement Needed	We need sidewalks!
Biking Challenge	Route 17 is too dangerous for the recreational biker
Improvement Needed	Bike / walking paths that allow for alternatives to driving everywhere.
Walking Challenge	Walking / biking across US 17 to schools
Biking Challenge	No room
Biking Challenge	No room
Walking Challenge	not safe for walking
Improvement Needed	Sidewalks & streetlights
Improvement Needed	Sidewalks and streetlights
Walking Challenge	No sidewalks, dangerous roads
Improvement Needed	We need trails throughout Hampstead
Biking Challenge	US 17 traffic and no safe bike paths
Biking Challenge	no safe bike paths separating cars and pedestrians
Biking Challenge	length of ride over congested road.
Improvement Needed	Add saftey construction
Improvement Needed	Crosswalks
Walking Challenge	Heath/fitness
Biking Challenge	Highway 17 traffic and lack of sidewalk or path is an issue.
Biking Challenge	Very unsafeto bike along the 17
Walking Challenge	No place to safely walk
Biking Challenge	No place to safely bike
Walking Challenge	People fly down second street making it very dangerous to bike or walk!
Biking Challenge	Long bike ride
Improvement Needed	Enforced speed limit, stop signs
Walking Challenge	Currently no sidewalks and traffic tends to go too fast for this neighborhood
Walking Challenge	This street is so busy and cars go fast. It's very narrow as well. I'd love to be able to walk to grocery store but don't feel safe becausee of this street with no sidewalks
Walking Challenge	I live in a new neighborhood of second. Cars FLY through second street. There is a curve to the road so it's hard to see people walking / biking.
Biking Challenge	Would love a path along 17 to walk or bike. Currently don't feel safe doing so
Walking Challenge	There are no sidewalks on factory road. It would be nice to have an accessible sidewalk
Walking Challenge	Speeding cars
Improvement Needed	4 way stop sign and speed bump

Engagement Phase I Summary

Biking Challenge	Speeding cars on second
Walking Challenge	Speeding cars on second
Improvement Needed	4 way stop sign and speed bumps
Improvement Needed	4 way stop sign and speed bumps
Biking Challenge	Would love to bike but the road is too dangerous and there are no crosswalks. This is where I work.
Walking Challenge	no sidewalks
Walking Challenge	no sidewalks
Biking Challenge	Traffic and safety
Walking Challenge	No road lines in some Deerfield community roads. Speeding traffic and very little road shoulders.
Improvement Needed	Abby Foy Nature Preserve allows off leash dog walking despite Pender County leash laws. Off leash dogs always present challenges.
Biking Challenge	No path
Biking Challenge	No path
Biking Challenge	210 from 17 to island
Biking Challenge	17 from sloop point to Wilmington
Biking Challenge	All of sloop point/sloop point loop
Biking Challenge	Country club from sloop point loop to 17
General Comment	Lack of safe passage at this point for bikes or walking. Have to time traffic or risk walking through long grass with potential snakes
Improvement Needed	Drivers are dangerous around cyclists. A bike path near the beach would be ideal-separate from the traffic
Walking Challenge	Walk across the bridge most mornings
Biking Challenge	Will cycle on the gravel roads so I'm away from cars
Improvement Needed	Lighting along this section of sidewalk is needed
Improvement Needed	Bike path that doesn't impede pedestrians or risk putting bikes(including kids) on the highway just to get across the bridge
Walking Challenge	No walking or bike paths to get down this road at all.
Walking Challenge	There are no sidewalks along country club lane. Cars drive by at fast speeds and I don't allow my children to walk or bike along this path.
Biking Challenge	No sidewalks or bike lanes, cars driving fast, unsafe for biking.
Improvement Needed	Kiwanis Park would be a fantastic place to bike to with our kids but there are no bike paths along country club lane. We used to use the boardwalk into the park when we lived in a nearby community, and would love to see some type of biking walking path there from the Olde Pointe communities.
General Comment	In general, Hampstead is not a bike/walking friendly city. Most businesses on Hwy. 17 are only accessible by car. And there are no walking paths to schools either.
Improvement Needed	Needed all throughout 17 in Hampstead
Improvement Needed	Needed all throughout 17 Hampstead
General Comment	Sidewalks and bike paths would be nice along shopping areas to walk from plaza to plaza
General Comment	Need sidewalks all the way down 17
General Comment	A sidewalk from 17 connecting to Kiwanis Park would be beneficial

Engagement Phase I Summary

General Comment	Tons of neighborhoods on country Club. This road is dark and I've almost hit kids on bikes. This entire road could use a sidewalk since it's convenient to the schools and Kiwanis park
Walking Challenge	No sidewalks, no shoulder, and no lighting
Biking Challenge	No sidewalks and no shoulder to ride or walk on
Walking Challenge	No walking or bike paths
Biking Challenge	Country Club Lane needs a bike lane! Dangerous for biking - high speed cars, no shoulder
Biking Challenge	Need safe crossing at 17 to get to schools
Walking Challenge	Need bike/pedestrian crossing or bridge to the schools for all the neighborhoods south of 17
Improvement Needed	Could there be a side walk off rt 17 from one end of Hampstead to another.
General Comment	Leave open spaces and wooded trails for walking and riding. Country club Rd sidewalks to get to the different neighborhoods in that area.
Biking Challenge	Parking. We have large e-trikes and bikes with fat tires for going on sand and need safe and larger more accommodating parking options.
Biking Challenge	Would like wider sidewalks on both sides of the road to be able to get to businesses and the bridge safely. Afraid it will start getting congested and with e-bikes and trikes getting popular it will make it hard to pass others safely on sidewalks. Want it to where bikes and e-bikes and trikes can continue riding on paths instead of in the dangerous road.
Improvement Needed	Safe Sidewalks on both sides of the road. Safely away from the main road. Ease of access for bikes, e-trikes, e-bikes and bikes with kid carts and walkers to access businesses we want to be able to support.
Walking Challenge	Driving to this location, finding parking.
Biking Challenge	It is not safe to ride on the one mile strip of Hwy 53 from Tealbriar to Downtown Burgaw.
Walking Challenge	It's not safe to walk on Hwy 53 from Tealbriar to downtown Burgaw
Walking Challenge	High traffic with speed limit too high and no bicycle lane
Biking Challenge	High traffic. No bike bath and speed limit too high
Biking Challenge	Poor sidewalks and high vehicle traffic
Walking Challenge	High vehicle traffic & poor sidewalks
Improvement Needed	Move to a smooth multi use paths either part of or separated from main highways
General Comment	Need to connect with mainland
Walking Challenge	High traffic. Not safe
Biking Challenge	Not safe
Biking Challenge	With traffic from the high school, it makes biking very unsafe.
Biking Challenge	Too narrow. No safe bike lane.
Improvement Needed	Improvement is needed everywhere in Pender County.
General Comment	Overdevelopment and poor planning has made the Hwy 17 corridor a nightmare to drive, let alone walk or cycle.
Walking Challenge	High speed driving, curved road, low visibility for drivers, no even area to walk/bicycle
Walking Challenge	Bridge too narrow, no space to walk
Walking Challenge	Narrow road, high speed drivers

Engagement Phase I Summary

Walking Challenge	High speed drivers
Walking Challenge	no bike lanes or unsafe bike lanes. Separate bike path/greenway would be preferred
Walking Challenge	Country Club road - drivers go too fast and there is no sidewalk
Improvement Needed	Would like to see sidewalks on Country Club
Biking Challenge	Fast speed limit. No bike path.
Walking Challenge	No sidewalks
Improvement Needed	It is almost impossible to walk or bike on Country Club. A bike lane would be nice, but it wouldn't curb speeding or in attention to the road.
General Comment	More trails around Kiwanis would be wonderful! A dog park is a much-needed addition as well; I'd love to be able to take my dogs walking with me.
Walking Challenge	I have to drive all the way to Burgaw to have a safe place to walk. All roads near my home are 55 mph and narrow.
Walking Challenge	55 mph no room for pedestrians on the road.
Biking Challenge	No shoulder and high traffic area.
Walking Challenge	No shoulder and high traffic area
Walking Challenge	No sidewalk
Biking Challenge	High traffic area and vehicles do not care about bikers or pedestrians
Walking Challenge	High traffic area and vehicles do not care about walkers or runners.
Biking Challenge	Using 17 for any reason as a Walker or biker is extremely dangerous but a lot of the neighborhoods are isolated and can only be reached by going onto 17. A safe walk/bike path to connect resident neighborhoods would be great.
Walking Challenge	Traffic, no cross walks
Improvement Needed	designated bike and walking trails
General Comment	Country Club Road needs a seperate bike and walking trail. biking roadside is very dangerous
Biking Challenge	Dangerous curves on montague with barely any shoulder to pull off on, many blind curves that people speed through
Walking Challenge	Constant trash on the side of the road as people let stuff fly out on the way to the dump
Biking Challenge	Fast moving traffic, lots of trucks, no shoulder.
Biking Challenge	Country Club Rd dangerous when bicycling - but connects to so many areas
Biking Challenge	Too congested and no area to ride or walk on S. Shore Dr. No crosswalks either. Need better lighting at night on streets between S. Shore and S. Topsail Dr. No streetlights on side streets.
Walking Challenge	Sidewalks on S. Topsail Dr don't line up or are none existent. No crosswalks. Poor lighting around roundabout on the island. There are crosswalks but it's very dark at night and very dangerous because traffic can't see you in the crosswalks.
Improvement Needed	Sidewalks and crosswalks are needed. Most sidewalks are random and don't match up! Better lighting.
Improvement Needed	Better lighting and add crosswalks and sidewalks.
General Comment	Lots of people are walking around on the island yet we have no crosswalks and sidewalks, except in Onslow County area.
Biking Challenge	Hard to cross 17
Improvement Needed	No safe place to cross 17
Improvement Needed	Sidewalks

Engagement Phase I Summary

Biking Challenge	Road crossings
Walking Challenge	Kids walking from are not safe due to traffic
Improvement Needed	A dual use walking biking trail could really help short trip traffic in hampstead.
Improvement Needed	Country Club drive is a serious biking accident ready to happen.
Walking Challenge	High speeds, no shoulder
Biking Challenge	Heavy traffic, no room for bikes.
General Comment	Overall, Pender County area particularly all the development off 17 needs be have more for the residents to safely do outdoor activities. Driving let alone walking near many of these roads is dangerous
Biking Challenge	All of 17 is dangerous to bike
Walking Challenge	There is no way to safely cross the streets. A cross walk if some kind is needed.
Walking Challenge	Cars drive very fast on olde point. There are no sidewalks. We cannot walk our dog or bike on this road. Sidewalks would be amazing!!!!
Walking Challenge	There is no safe way to cross these streets if needed. A crosswalk or something would be helpful.
Improvement Needed	This road with its single lane of traffic in both directions heads toward a choke point for vehicle traffic just inside New Hanover County at the intersection of 117 and Holly Shelter Rd. A vehicle can be stuck creeping along 117 for about 20 minutes on a good day. This road is also unsafe for pedestrian and bicycle traffic.
Biking Challenge	A side walk or biking path would be helpful. I travel this road a lot for work into Wilmington and roughly once a month I see people riding in the grass or hugging the very edge of the road as they bike to their destination.
General Comment	Within the neighborhood
General Comment	Need a light here with all the new apartments and businesses opening here
General Comment	Need this road to actually exist
Walking Challenge	Narrow roads and no side walks
Improvement Needed	You will die if you try to walk or bike here!
Walking Challenge	Narrow/no shoulders, no sidewalks or walking paths, heavy traffic
Improvement Needed	Add pedestrian/cycle lane or sidewalks
Improvement Needed	Sloop Point area has no sidewalks or pedestrian lanes, no road shoulders and heavy traffic. Walking/biking here is DANGEROUS
Biking Challenge	No curb or sidewalk or bike path
Walking Challenge	No curb or sidewalk or bike path
Improvement Needed	Add sidewalk.. very dangerous road.
Biking Challenge	Roads are too narrow with no shoulders
Improvement Needed	This area has a curve and no shoulder for walking or biking
Improvement Needed	Need a safe crosswalk
Walking Challenge	Country Club Rd.-no safe route for walking or being - speed limit too high, no bike or pedestrian lane
Improvement Needed	needs bike/pedestrian lane and lower speed limit
Biking Challenge	For those of us living in Hampstead - it would be good to see walking and biking lanes that are separated from vehicular traffic. Many kids live close enough to walk or bike to Topsail schools if there were a safe route to travel. Many neighborhoods are not interconnected so there is no way to travel to many places for shopping, dining or appointments without getting on Hwy 17.

Engagement Phase I Summary

Improvement Needed	a crosswalk be helpful here.
Improvement Needed	a crosswalk
Improvement Needed	Roads are so dangerous.
Improvement Needed	The road is sinking down near the bridge creating a large dip
Biking Challenge	Fast MPH road, small shoulder, curves and blind spots. All of Country Club.
Biking Challenge	Busy road, with lots of speeders. Very little should space to ride on.
General Comment	School traffic is excessive, and I think it would help if children could walk or bike safely to school.
Walking Challenge	Walking paths out of this community need to be improved

Appendix B. Promotional Materials

E-blast Content

Pender County Bike/Ped Study
Phase I Engagement

Subject: Pender County Bicycle and Pedestrian Study – Public Survey Open Now!

Attachment: Promotional Flyer

Pender County, in collaboration with The Wilmington Metropolitan Planning Organization (WMPO), is conducting a Bicycle and Pedestrian Plan for portions of Pender County that lie within the WMPO urban boundary.

This Plan will identify existing challenges to bicycling and walking, propose a preferred bicycle and pedestrian network to strive for, and lay out the specific policy, program, and infrastructure recommendations that Pender County and various stakeholders can use to begin attaining the overall Bicycle and Pedestrian Network.

As the development of recommendations also considers local policies and plans, as well as a significant amount of technical data, the study team and decision-makers are committed to incorporating feedback and asking the community for input before finalizing recommendations.

We Want to Hear from You!

Help us identify bicycle and pedestrian challenges, needs, and opportunities throughout Pender County. A public survey is available now to collect information about:

- Assessing level of comfort with biking and walking in Pender County
- Identifying locations in Pender County that need improvements
- Considering preferences for different bicycle and pedestrian facilities

Take the survey now at: <https://metroquestsurvey.com/je7a7m>

Future Public Engagement Opportunities

Public engagement is an important part of this study, to ensure the public and stakeholders can provide input on current conditions, including where users currently or would like to be able to walk and bike, where challenges exist to doing such, and ideas for improving bicycle and pedestrian conditions.

Please check the study website for upcoming public engagement opportunities as we continue to make progress on the study: <https://www.wmpo.org/pender-county-bicycle-and-pedestrian-plan/>

FOR IMMEDIATE RELEASE

News Media Contact: Emma Stogner

Pender County Seeks Public Input on Bicycle and Pedestrian Study

PENDER COUNTY, N.C. — Pender County, in collaboration with The Wilmington Metropolitan Planning Organization (WMPO), is conducting a Bicycle and Pedestrian Plan for portions of Pender County that lie within the WMPO urban boundary.

This Plan will identify existing challenges to bicycling and walking, propose a preferred bicycle and pedestrian network to strive for, and lay out the specific policy, program, and infrastructure recommendations that Pender County and various stakeholders can use to begin attaining the overall Bicycle and Pedestrian Network.

As the development of recommendations also considers local policies and plans, as well as a significant amount of technical data, the study team and decision-makers are committed to incorporating feedback and asking the community for input before finalizing recommendations.

We Want to Hear from You!

Help us identify bicycle and pedestrian challenges, needs, and opportunities throughout Pender County. A public survey is available now to collect information about:

- Assessing level of comfort with biking and walking in Pender County
- Identifying locations in Pender County that need improvements
- Considering preferences for different bicycle and pedestrian facilities

Take the survey now at: <https://metroquestsurvey.com/je7a7m>

Future Public Engagement Opportunities

Public engagement is an important part of this study, to ensure the public and stakeholders can provide input on current conditions, including where users currently or would like to be able to walk and bike, where challenges exist to doing such, and ideas for improving bicycle and pedestrian conditions.

Please check the study website for upcoming public engagement opportunities as we continue to make progress on the study: <https://www.wmpo.org/pender-county-bicycle-and-pedestrian-plan/>

###

Public Engagement Phase II Summary

1. Introduction

In June 2023, the Pender County Bicycle and Pedestrian Plan team conducted the second and final phase of public engagement. The goal of this phase was to present the findings from Phase I and the draft recommendations, explain the next steps, and share the draft final report document. This phase confirmed with the community that their feedback was addressed and provided a chance to review and make comments about the draft recommendations. This report summarizes the activities and feedback received during this phase.

2. Promotion and Outreach

Building off the success from the first phase of engagement, similar outreach tools were used to announce the open comment period. These tools included:

- Updates to the study webpage
- Informational flyers
- E-blasts
- Press releases
- Social media posts

Social media posts were created using the study’s branding to ensure continued participation from the previous rounds of engagement. These posts announced the comment period as well as the locations of pop-up events.

All study promotional materials can be found in the Appendix A.

The Pender County Bicycle and Pedestrian Plan webpage was updated to provide additional information about engagement opportunities and to host the draft recommendations report. This included a link to a StoryMaps website that was developed to provide interactive maps and information about the draft recommendations. This allowed the public to review materials in a number of different formats, providing them with a range of options for how they wanted to learn about the study and recommended improvements.

<https://storymaps.arcgis.com/stories/d1030a0a35ea437e8b35a34ecb37e882>

During this round of engagement, a project video was also developed to highlight technical information that was included in the draft recommendations and encouraged participation in the comment period. The video was narrated and included text captions to ensure accessibility. The video was shared on social media for outreach within the community. The video was viewed over 350 times during the comment period.



Engagement Phase II Summary

A second round of pop-up events was hosted in different locations to target specific populations within the study area. The purpose of these pop-up events was to provide an opportunity for the public to review the draft recommendations and provide comments. Three events were hosted on June 16th:

- Family Dollar, 808 Montague Rd, Currie
- Paul's Place Famous Hotdogs, 11725 US-117, Rocky Point
- Hampstead Kiwanis Park, 586 Sloop Point Loop Rd, Hampstead



Participants that stopped by at the pop-up events had conversations with the study team, filled out paper comment forms, and were invited to provide comments on a map of the county. Hard copies of the draft recommendations were made available, and QR codes for online materials were also provided. Two participants provided paper comment forms.

3. Comment Period

The comment period was open to the public from June 1st to June 23rd, 2023. Feedback could be provided via email, phone, or mail – and in person at the pop-up events. A total of 44 comments were received. Appendix B lists the comments that were received.

Of the relevant comments, the majority supported the draft recommendations and expressed excitement for the proposed bicycle and pedestrian infrastructure. Several comments suggested edits; one recommended looking at additional improvements for **Hwy 50** and another recommended including a bicycle path on **US 210**.

Comments of support were provided for **Hoover Road** (one comment), **Country Club Drive** (five comments), while an additional five comments generally supported the recommendations. One comment opposed recommendations on Doral Drive, and one was in opposition to any bicycle or pedestrian improvements in the study area.

The majority of comments received were regarding **Scotts Hill Loop Road**. Of the comments received, 22 were in favor of the recommendations to add bicycle and pedestrian improvements while five were in opposition.

These comments will be reviewed by the technical team when finalizing the recommendations and providing the final report.

Appendix A. Promotional Materials

Social media Content



Date	Post Content
Wed, June 7	<p>The draft recommendations for the Pender County Bicycle and Pedestrian Plan are now available! Pender County, in collaboration with The Wilmington Metropolitan Planning Organization (WMPO), is conducting a Bicycle and Pedestrian Plan for portions of Pender County that lie within the WMPO urban boundary.</p> <p>The full report as well as additional information can be found on the Plan’s website at https://www.wmpo.org/pender-county-bicycle-and-pedestrian-plan/</p> <p>Comments will be accepted until June 23rd. The more voices we hear, the better we can shape the future of active transportation in Pender County.</p>
Thurs, June 15	<p>Want to talk about bicycle and pedestrian improvements for Pender County? Come chat with a planner! The Pender County Bicycle and Pedestrian Plan team will be at various pop-up locations tomorrow, June 16th, to share the draft recommendations and collect comments. Here’s where to find us:</p> <p>9:30am – 11am: Family Dollar- 808 Montague Rd, Currie 11:30am – 1:00pm: Paul’s Place Famous Hotdogs - 11725 US-117, Rocky Point 1:30 – 3:00pm: Kiwanis Park - 586 Sloop Point Loop Rd, Hampstead</p> <p>Can’t join us? The full report as well as additional information can be found on the Plan’s website at https://www.wmpo.org/pender-county-bicycle-and-pedestrian-plan/</p>
June 19	<p>This is the last week to provide comments on the draft recommendations for the Pender County Bicycle and Pedestrian Plan! The full report as well as additional information can be found on the Plan’s website at https://www.wmpo.org/pender-county-bicycle-and-pedestrian-plan/</p> <p>Help shape the future of active transportation in Pender County!</p>
June 23	<p>Today is the last day to provide comments on the draft recommendations for the Pender County Bicycle and Pedestrian Plan! The full report as well as additional information can be found on the Plan’s website at https://www.wmpo.org/pender-county-bicycle-and-pedestrian-plan/</p> <p>Help shape the future of active transportation in Pender County!</p>

E-blast Content

Pender County Bike/Ped Study
Phase 2 Engagement

Subject: Pender County Bicycle and Pedestrian Study – Draft Recommendations!

Attachment: Promotional Flyer

Pender County, in collaboration with The Wilmington Metropolitan Planning Organization (WMPO), is conducting a Bicycle and Pedestrian Plan for portions of Pender County that lie within the WMPO urban boundary.

To achieve the Plan's goal to identify existing challenges to bicycling and walking and propose a preferred bicycle and pedestrian network to strive for, the study collected input from a Steering Committee and the public to draft specific policy, program, and infrastructure recommendations to enhance walking and biking. The draft recommendations focus on providing safety, better access up and down US 17, and connections to schools, parks, shopping, and medical offices.

Provide Your Comments!

The draft recommendations are now available for review and open comment. The full report as well as additional information can be found on the Plan's website at <https://www.wmpo.org/pender-county-bicycle-and-pedestrian-plan/>

Comments will be accepted until June 23rd by email, phone, or mail. To provide your comments:

- Send an email to Vanessa.Lacer@wilmingtonnc.gov
- Leave a voice message by calling (910) 341-3234
- Mail your comments to
 - Wilmington Urban Area Metropolitan Planning Organization (WMPO)
 - 305 Chestnut Street, 4th Floor
 - Wilmington, NC 28401

Want to Talk with a Planner?

Public engagement has been an important part of this study. The study team will be hosting various pop-up events to share the draft recommendations and collect comments. Please check the study website for upcoming public engagement opportunities.

We believe that community engagement is crucial for the success of this plan, so we encourage you to share this information with your friends, family, and neighbors. The more voices we hear, the better we can shape the future of active transportation in Pender County.

FOR IMMEDIATE RELEASE

News Media Contact: Emma Stogner

Pender County Bicycle and Pedestrian Plan - Draft Recommendations Available for Public Comment

PENDER COUNTY, N.C. — Pender County, in collaboration with The Wilmington Metropolitan Planning Organization (WMPO), is conducting a Bicycle and Pedestrian Plan for portions of Pender County that lie within the WMPO urban boundary.

This Plan’s goal is to identify existing challenges to bicycling and walking, propose a preferred bicycle and pedestrian network to strive for, and lay out the specific policy, program, and infrastructure recommendations.

Public and stakeholder engagement played a vital role throughout the study. The study team collected input from a Steering Committee and the public to draft recommendations that focus on providing safety, better access up and down US 17, and connections to schools, parks, shopping, and medical offices. The Plan also includes research on existing conditions, an assessment of the network, and provides near- and long-term recommendations.

Provide Your Comments!

The draft recommendations are now available for review and open comment. The full report as well as additional information can be found on the Plan’s website at <https://www.wmpo.org/pender-county-bicycle-and-pedestrian-plan/>

Comments will be accepted until June 23rd by email, phone, or mail. To provide your comments:

- Send an email to Vanessa.Lacer@wilmingtonnc.gov
- Leave a voice message by calling (910) 341-3234
- Mail your comments to
 - Wilmington Urban Area Metropolitan Planning Organization (WMPO)
 - 305 Chestnut Street, 4th Floor
 - Wilmington, NC 28401

Public Engagement Opportunities

Community engagement is crucial for the success of this plan, and the study team encourages residents to spread the word and encourage their friends, family, and neighbors to participate. The Pender County Bicycle and Pedestrian Plan relies on a collaborative approach to ensure that it truly reflects the needs and aspirations of the community.

The study team will be hosting various pop-up events to share the draft recommendations and collect comments. Please check the study website for upcoming public engagement opportunities.

###

Pender County Bicycle & Pedestrian Plan

About This Study

Pender County has conducted a Bicycle and Pedestrian Plan to **identify existing challenges** to bicycling and walking, **propose a preferred bicycle and pedestrian network** to strive for, and **lay out the specific policy, program, and infrastructure recommendations** that Pender County and various stakeholders will use to attain the overall Bicycle and Pedestrian Network.

Learn more on the plan website:

www.wmpo.org/pender-county-bicycle-and-pedestrian-plan/



Provide Your Comments!

The draft recommendations are now available for review and open comment. The full report as well as additional information can be found on the Plan's website. Comments will be accepted until June 23rd by email, phone, or mail. To provide your comments:



Send an **email** to Vanessa.Lacer@wilmingtonnc.gov



Leave a **voice message** by calling (910) 341-3234



Mail comments to
Wilmington Urban Area MPO
305 Chestnut Street, 4th Floor
Wilmington, NC 28401



Appendix B. Public Comments Received

Please note comments have not been edited to fix spelling or grammar. Names and personal information were removed for the distribution of this summary.

Comment
<p>I cannot stress enough how valuable a path along Country Club Dr in Hampstead would be. Right now it's a death trap trying to walk or ride a bike along there. Considering how much of Hampstead that one road connects, this really needs to happen.</p>
<p>The current proposals are missing a very important section within Pender County - there is an URGENT need for a safe walking and bike path (preferably separate) on 210 from 17 to route 50. This short section of road is just on the edge of the study area but is a key portion of the Mountain To Sea trail. Currently this portion of 210 has no pedestrian walkway nor bicycle lanes and is a very busy road. It is currently unsafe to walk this stretch and hazardous to cycle on. Providing these paths would connect the proposed foot and cycle paths to Topsail Island where more cycle and footpaths already exist, the majority of which are also within Pender County. We live just off this section of road and are avid walkers and cyclists and would love to be able to safely access the proposed new pathways.</p>
<p>Realistically, how far out is the ped improvement along Country Club Road (US 17 to Sloop Point Loop)? This is of great interest to me as I reside along this corridor and I can't stand the fact I have to drive to both restaurants along this corridor when they are only minutes away on a bike or walking.</p>
<p>Also, not sure what you all classify as a "recreation" area but I see you have included the former Belvedere Golf Course (now Iron Clad Golf) but didn't include Olde Pointe CC Golf Course and Restaurant. Not sure it makes a difference.</p>
<p>We live on Doral Road in Hampstead. We DO NOT WANT A BIKE PATH GONG THROUGH OUR NEIGHBORHOOD. We do not have sidewalk or sewers as it is. We do not want the traffic and people spreading on our already unsafe streets. Corrections: Doral Drive, sidewalks, speeding. Why are the meetings for this in the afternoons when people are at work?</p>
<p>Good Morning,</p> <p>I hope you are doing well.</p> <p>I am writing in response to the study for the multi-use paths in Pender County (sidewalks, bike paths, etc.). I recently moved to the Hampstead area from Wilmington. While in Wilmington, I lived just a few short steps away from the cross city trail. While living near there, I experienced individuals using the path for activities it was not meant for. It brought uncomfot to my place of residence and at many times I felt unsafe. In addition to this, it lured individuals to my place of residence which resulted in needing additional security, people using amenities they did not pay to be able to use, and etc. While I understand the purpose of the research for main roads, I fear that implementing these paths in residential neighborhoods can be harmful to the community and the residents. My neighborhood and its residents work hard to maintain a clean and safe community. We also have a mutual understanding and respect for each other when it comes to our neighborhood and the amenities it offers. One of the main reasons I moved to Pender county was because of the feeling of safety I had in my neighborhood and I hope that won't go away.</p>
<p>Thanks for taking the time to listen to these concerns.</p>
<p>Ms Lacer, I am a resident and f Hampstead in Pender County and am pleased to see the plan that is being developed includes Pender County. I live at XXXHighlands Dr, Hampstead, which is off Hoover Rd.</p>
<p>My feedback includes:</p> <ul style="list-style-type: none">- I'm happy to see that a sidewalk is being considered for Hoover, which could connect the neighborhoods here.

Engagement Phase II Summary

My grandsons live in Sparrows Bend and this would allow them to ride their bikes to visit us.

- I'm happy to see the sidewalks being considered to run along route 17. That would connect the small businesses to each other and allows for another transportation option along that route.

Information

- Unfortunately, I'm disappointed to see the limited plan for adding bicycle routes, with none planned for Pender County. Outside of Topsail Island, there is nowhere to ride safely.

Thank you for your consideration.

I totally agree with putting a sidewalk on Scotts Hill Loop Rd. Wilmington. It is terribly unsafe to walk on the rd right now and this is long overdue. With all the new building in this area this would be very beneficial to the community.

The Scotts Hill Loop Rd. would be a fantastic place to have a bike/pedestrian trail.

The benefit to this community would be tremendous, as we have no other park/ recreational facilities for our area.

Please consider.

Vanessa:

I live in Surf City on the beach road on Hwy 50 or South Shore drive.

I'd like to see specific plans in place for widening the road and allowing for bicycle and pedestrian traffic.

The sidewalks and the highway are currently the only passable way for bikes and the road traffic delays and has hazardous potential for injuries.

Hopefully this can be addressed in your proposal as well as a detailed greenway program in Surf City for all the bicycle traffic.

Thanks for taking a listen.

I'm leaving this comment because you've solicited opinions on how to increase bicycle and walking access to 17. The best way is what you should have done 10/15 years ago and stop clearing woodland areas and building more houses and more apartments and more houses and more apartments more driveways with no thought whatsoever of how what the impact this is going to be on Hwy. 17. Thank you.

I would love it Scott's Hill Loop Road had a sidewalk/bike path.

Good morning. I hope this finds you well.

I understand there is a possibility that we may receive a sidewalk along Scotts Hill Loop Rd....or that it is being considered. Personally, I believe this is a great idea...if affordable. We have people walking, jogging, biking and golf-carting regularly. Given the design of this road, it is hard to see these people at times...or hard to slow down once you see them, especially in the evenings. Sharing the road can be tough at times. For safety reasons, I ask that this be considered.

Is there something the community can do to raise funds for this???

Thank You.

XXX Wyndham Way
Wilmington NC

I'm sending this email to express my support in having a bike lane/path on Scott's Hill Loop. I travel and live off off this road and know that the path would be beneficial to the community. As you know this area is growing

Engagement Phase II Summary

rapidly and we need to keep pedestrians safe. Wilmington/Hampstead should be made more walkable. Thank you

My feedback is short and direct. This can't happen soon enough. Walking and biking in the county is woefully inadequate. As a society, we have and continue to evolve in to more bike/walk centric activities.

Good afternoon,

My name is XXX and I've been a resident of Scotts Hill for the past six years. Although we love our house, living right on Scott's Hill Loop Rd has had some challenges. With this email, I'm hoping you will consider a solution to our biggest concern.

Over the past couple of years, traffic in Scott's Hill Loop has increased substantially. This has caused a significant safety concern for our family, which we feel could easily be taken care of if a sidewalk was put in.

My husband, a dedicated marathon runner, runs on the Loop Rd in the mornings. Although he tries his best to stay to the side and visible to drivers, he has almost gotten hit or has been run off the road many a times. If he had a sidewalk to run on, he would be much safer.

Also, our two children attend Scotts Hill Christian Academy right across from our house. One of the reasons why we selected this school is because it is such a short walk from our house. Our nanny usually walks them over to the playground to play daily. I'm grateful for the ability to do this, but it is also worrisome to try to push a stroller or have our young children walk right on the side of the road.

Many drivers on that road are unaware of their surroundings and don't pay attention to pedestrians or the speed limit. I know it may not seem like a big deal to others, but having a sidewalk would be a wonderful relief to the residents of Scotts Hill so we can exercise safely while enjoying our beautiful area. I implore you to consider pushing through with this decision and greatly appreciate you taking the time to read this email.

To whom it may concern,

I am a Scotts Hill resident and reside in Salem Woods. I have been saying for years that the loop road needs a sidewalk/bike path. Personally, it would be such a benefit to bike or walk to the new hospital/doctors offices that they are building right off of Hwy 17. For further down the loop road, it would benefit bikers and walkers to be able to safely stay off of the road as there have been fatalities in the past. With the up coming building of more homes (that's a whole other dreadful topic!!!) we need this to keep our fellow neighbors safe. Wilmington as a whole needs to be more biker/walker friendly.

I hope this will be taken into consideration!

Hi,

I am a Scott's hill resident that lives directly on the loop road. I do not believe a bike path nor sidewalk should be top priority to the neighborhood. In stead bringing in septic to the neighborhood would be a much greater benefit. The neighborhood has so many roads inside the loop that are great for walking and biking. I am not against it I just think there are other things on the top of the list before we have something put in for the pleasure of the community. A lot of residents in the neighborhood have septic issues and many lots do not perk. Bringing in septic would be a huge relief to the neighborhood. A bike path or sidewalk would be lovely just would like to see other things done first.

Good afternoon,

My family and I live off Scotts Hill Loop Rd, on Poplar Grove Rd. A sidewalk and/or bike path for Scotts Hill Loop Road would be an incredible addition to our community. I'm all for it!

Hello Vanessa. I just wanted to send my support on the need for bike/ped improvements along Scotts Hill Loop. The area is heavily utilized by pedestrians already and as the traffic on the roadway increases with development, the need for a safe off road alternative will be that much more important. I know we are further down the list on improvements but I would be happy to assist in any way to help expedite the loop (ie, ROW acquisition

Engagement Phase II Summary

advocacy). With the charter school, connection to the nature preserve/Popular Grove amenities and the hospital park close by, it's a perfect place to encourage bike and pedestrian use. Thanks, Tara

I am in favor of the sidewalk. We live directly on the loop rd and it's very dangerous to walk or bike since you would have to do it directly on the road. People speed through here all the time and a sidewalk would provide at least some sense of safety. As it is now, I have to drive my dog to the inside of the community to be safe to walk. Thx for asking. My very best regards!

Hi Vanessa,

I hope this email finds you well.

I would like to express my strong desire for a walking/ biking path to be incorporated along Scotts Hill Loop Road. There are so many small and wonderful communities along the Loop and the majority of these are active. There are so often walkers/joggers/bikers/ moms with strollers traveling the side of SHL Road and there is no room for pedestrians and vehicles simultaneously. Actually, it's concerning and dangerous with the speed and little to no room for error or foot traffic as its currently constructed. I have no concern that this path would go unutilized but pay off for years to come to keep us all safe.

I encourage you to please consider incorporating a path along SHL Road for the enjoyment and safety of all our Loop residents.

Hello, I am a resident of Scotts Hill and our family supports having a bike/trail/walking path for our areas in Pender co. The growth since we have been a resident over the last 14 years and as a local resident in New Hanover County in years past the area we have seen an explosion of growth and we see daily the need for safe running/walkiing/biking paths around Scootts Hill Loop. I can't count the number of times I have had to stop to wait for cars to pass due to a bicycle or runner in the road way. It has increased as popularity of the area grows. I worry there is going to be individuals who are involved in vehicle collision due to that. So I support having any recommendation for trails/paths for the safety of everyone.

Thank you for consideration and time.

With a new hospital being built and a NH Co School on Pandion it would be nice to have a trail for this community. Please consider Scotts Hill Loop Road for the new project. PA: A park with tennis/Pickleball courts would be nice too!

Thanks for the consideration

Hey Vanessa, I was just calling to comment about the need for bicycle paths and going through Hampstead. If you'd like, please give me a call back. Thank you. Bye. [Staff retuned the call and XXX expressed support for bicycle facilities through Hampstead but elected not to record an additional VM or send a email.]

Please consider Scotts Hill for this project. We have the privilege of having the Abby Nature Trail available to us and many folks Walk or bike to get to the trails. With the many turns in our loop road it is often difficult to see a pedestrian or bicycle. Dog walkers, bicyclers and runners would benefit from a trail around the loop rd! Parking at a nearby church or nature trail would give a nearly 5 mile round of walking or biking. I heard that Scotts Hill Loop Road was on the schedule for resurfacing this year it would be such a great time to add a trail.

Thank you for any consideration you may show to this area.

Karen Allen

919-620-1798

Good morning!

I strongly support a sidewalk around Scotts Hill Loop Road. Our community enjoys walking and running year round and this would be a huge benefit.

Good Morning,

Great plan to have sidewalks/bicycle lanes added in our area! Honestly, it's much safer for all of us . Hoping the greenway project will make it through , all the way up to Surf City. I did participate in the survey when it first came out.

Have a great day, Jennifer guderian

I live at XXX Great Pine Ct, in Scott's Hill Bluffs. The entire Scott's Hill community needs a sidewalk / bike path to stop someone from getting hit by a car on the loop rd. I see people walking the loop rd everyday and fear for their lives. A neighbor was hit by a car a couple years ago on Futch Creek Rd and they have a bike lane. That is why I believe we need a sidewalk that runs off the road to avoid any chance for people to get hit by cars that are often going 45 to 50 mph.

Hello,

I live on Scotts Hill Loop Rd and do not want to see a bike or walking path built around the loop. The road is not great for walking and biking, this is true, but we all bought property here very much aware of this fact. Very few people in Scotts Hill are walking/biking to school or work and the majority of responses in the survey indicate people want to bike/walk for recreation not work and school which are the main reasons given in the proposal for making this improvement. It seems like a greenbelt for recreation could have been provided if the county had bought the land around Abbey Nature Preserve. There is currently a lot of theft going on in the Abbey Nature Preserve parking lot, we could spend money policing our current recreational areas so we feel safe. Instead, the county has approved a huge development going in, more traffic, and more flooding. How much will this cost? I couldn't find that number, but I am not willing to pay higher taxes to build and maintain this. Our water, electric, wind and hail and homeowners have all gone up significantly already, we have overdevelopment and infrastructure issues that need to be addressed before considering this type of project. The only way this would be of significant benefit is if it lowered the number of cars and accidents on 17. I understand there are people on Scotts Hill Loop Rd who support this, but how much feedback have you actually received from residents of our road? I would want to hear from the people whose property is directly on the loop. This is going to eat into their property and be very disruptive.

Dear Council Member Lacer,

I hope this email finds you well. I am writing to express my strong support for the addition of a sidewalk/bike path along Scotts Hill Loop Rd. in Wilmington, North Carolina. As a resident of this vibrant community, I believe that investing in this infrastructure would bring numerous benefits to our neighborhood, fostering a safer and more inclusive environment for all residents and visitors.

First and foremost, a sidewalk/bike path would greatly enhance pedestrian safety. Currently, individuals, including children and seniors, are forced to share the road with vehicles, posing a significant risk to their well-being. By constructing a dedicated path, we can mitigate the dangers associated with walking or biking alongside traffic and promote a culture of active transportation. Encouraging physical activity and reducing car dependency aligns with our city's commitment to sustainability and public health.

Moreover, a sidewalk/bike path would foster a stronger sense of community and connectivity. It would provide a safe and accessible route for residents to walk, run, or bike, allowing them to explore our beautiful surroundings while promoting a healthier lifestyle. Additionally, the path would facilitate connections to nearby schools, parks, and local businesses, stimulating economic growth and boosting the local economy. By prioritizing the needs of pedestrians and cyclists, we can create a more vibrant and livable community that benefits everyone. In conclusion, I urge you to consider the implementation of a sidewalk/bike path along Scotts Hill Loop Rd. The advantages it would bring, such as improved safety, community connectivity, and enhanced quality of life, cannot be overstated. I kindly request that you support this initiative and work towards securing the necessary funding and resources to make it a reality. Together, we can create a city that prioritizes the well-being and needs of all its residents.

Thank you for your attention to this matter, and I look forward to seeing positive progress in making our community safer and more inclusive.

Hello. Vanessa. XXX and responding to input for the feasibility study for the pedestrian and maybe bike path. It would be phenomenal to. I live off the Country Club road in Hampstead and doctor, dentist and grocery are three miles away. But at this stage of my life seventy years old. I don't feel comfortable riding on Country Club. I did ten years ago. Congestion was not the traffic was not nearly so bad. It would it would be huge to have a way to get to services without using a car and the feasibility study to go to the beach. We would ride to the beach as well. I mean it would it would make our lives so much, so much more. So much more improved. So if you need need me and call me or e-mail me. Thank you very much. And I hope this goes through. Take care. Bye.

Engagement Phase II Summary

I want to comment about the feasibility study for the Pender County path initiative. We live three miles from our doctor, dentist, grocery, pharmacy, and restaurants. But, we rode 300 feet on Country Club Road today and had to get off our bikes and walk. It's so dangerous. I am seventy and intend to age in place. It would change our lives dramatically for the better if we could ride our bikes (and eventually e-bikes) to the corner of 17 and County Club Road.

I would like to take this opportunity to express my feelings about the proposed bike path enhancement in Pender county; specifically Hampstead, where I live. I was riding my bicycle on **Country Club Road** today and fearing for my life. Should I just not do that, ride my bike, or should I have access? I believe I should have access and I will support any measure to improve the quality of life for my fellow citizens.

Hi! My husband and I have lived on the North side of SHLR for 25 years and we would LOVE to see a sidewalk be put around the whole loop. This would greatly increase the value of our beautiful neighborhood, but most importantly, it would make it SO much safer. So many people run, ride bikes and walk the loop.

Thanks.
Debbie Gutch

Hello,

I live on Scotts Hill Loop, I do not want a sidewalk, or more people coming thru my neighborhood. What is this going to do to my property, my trees, drainage, my septic field along the loop. Will it give me increased noise, trash, undesirable people going thru. You have taken the woods away, made 17 more of a parking lot than a highway (no, the bypass will not help), we have to pay to park now to go to the beach, if you can FIND a space, you made it miserable to live here. My wife and I moved here when we retired. Now I question WHY!

All your studies were done during COVID. They are meaningless and don't reflect real numbers. They only favor the builders to get things thru. More crooked politicians than ever. What's in your bank account, or under the mattress. You show demographics with income level, race, etc. WHY? So the small time crooks will know where to target. The BIG crooks steal from you legally. They take everything you worked your whole life for and get away with it. Kids will reflect their peers, more than their parents. They will be on the trails. I don't want that element in my neighborhood. You have destroyed everything around us to line your pockets with no regard for us or nature. I was never asked about this or surveyed. Yet, you said you did it. This is NOT for the community good, only money. What happens at the next storm, or flood, or power outage. Start doing things the right way, develop responsibility.

My wife spent countless hours and hundreds of dollars on plants and flowers for the front of our house. It looked great. Now, because of you and your apartments on the other side of 17 from us, the deer, which you drove from their home and tore down their food supply, are feeding on her plants, leaving only a stub sticking up from the ground. Maybe you will get lucky and will meet one of them up close, as they cross the road looking for food.

We avoided the SUPER Circle K that we don't need. Your irresponsible building causes the accidents on 17 from the people tired of waiting for a break in traffic to get across the road, then blindly cut across the road, putting innocent people at risk. We DONT need a station on THIS side of the road because the other one is TOO hard to get to. FIX the real issue. Eventually, you have to turn around and go home crossing the road.

WAKE UP and smell the flowers that are no longer there.

I find it is impossible to walk or bicycle in Pender County. This area, at present, cannot support the current vehicle traffic. The roads are too narrow to share. You take your life in peril due to rude drivers, speeding well over the speed limit and the lack of enforcement of traffic laws. Also the extensive wait times entering Hwy 17 adds to driver safety. The roads themselves have little or no shoulders.

Vanessa,

Saw a post that Wilmington Metropolitan Planning Organization (WMPO) was proposing a possible sidewalk around Scotts Hill Loop Rd. I wanted to drop an email supporting the idea. I know some may be opposed due to

the misconception that this would be build on residents private property. I am in favor of this proposal as I watch numerous individuals maneuver the traffic while walking, running, biking, and taking part in many other activities. This proposal would allow residents to safely move about the various neighborhoods in a safe manner as opposed to using the already busy road. New construction behind the plantation and from summertime marina traffic does not make this any easier. I navigate this road in the early mornings while running before work and know that it would certainly be safer with a sidewalk. I have had this conversation with others who would like to see this project come to fruition. Many call me crazy for running on SHL Rd. in the current state. Thanks for reading my input and hope to see this project move forward.

Have a great day.

Doug

Good afternoon,

I'd like to add a comment to the record in support of the Scotts Hill Loop Rd sidewalk. I feel this project should be included on the high priority list. This is especially important now given the expected high density development in the Loop. There will be increased traffic in an already congested area. There are no shoulders or other established walking/biking areas along this road. There is no safe way to travel other than by automobile to Abbey Preserve, Poplar Grove Plantation, the existing and planned Novant hospital facilities, the marina, etc. One either drives, or walks along the edge of the street...jumping out of the way of traffic.

Hello, this laser. I'm responding to the proposed location of a bicycle and walk path around Scottsville Loop Rd. I am definitely against it. I live in Scotts Hill and it's already has enough traffic moving through Scotts Hill Loop and we really do not want any bicycle paths as far as everyone that I've spoken to. So I'm hoping that you're hearing from other people. The idea sounds good, but it is not a good plan. It's very dangerous and basically what I'm hearing is nobody wants it. We don't want the input. We've had a really peaceful neighborhood here and it's just getting more and more disrupted. Give me a call if you have any other thoughts or information you want to provide. I'm really tired after working all day today but I'll try to e-mail you as well. Thank you. Bye bye.

Good morning Vanessa,

I hope you are doing well. I currently live at XXX Marshfeild drive. I wanted to let you know of me and my family's support for a walking and bike path around scotts hill loop in pender county. My 5 year old daughter currently walk this to get to poplar grove as well as a way to exercise. We also ride my bike. This would only increase safety.

Thanks,

Jon Winter

Hi Vanessa!

I had worked some with Greg Feldman when he was with the Pender County Planning Department concerning all the building in Scotts Hill. I know he was working on this project as well. My understanding is that perhaps Justin Brantley (on copy) has taken over this role.

While I support having sidewalks and bike trails in the Wilmington and surrounding areas, putting in sidewalks or a bike trail around Scotts Hill Loop Road is not something I would support for the following reasons:

- The construction to put in sideways in an existing community would create additional stress and impact on a community already in turmoil due to the growth in the immediate area.
- There are existing traffic issues including blind spots when pulling out of some neighborhood roads onto Scotts Hill Loop Road. Having to navigate around pedestrians and additional cyclist which create even more obstacles.
- We've had several wrecks (even deaths) due to people traveling at high speeds along Scotts Hill Loop Road. With the speed some people travel around the loop, it could become a safety concern.
- The cost associated with putting in sideways in an existing community would be better spent purchasing land for greenways/greenspace that could provide trails that aren't cluttered with roads and driveways.

Engagement Phase II Summary

Pender County had the opportunity to purchase the trails and land surrounding Abbey Nature Preserve and Poplar Grove Plantation but for some reason, that purchase was not made. Had it been, we currently have trails for both pedestrians and cyclists with no costs to the county or local government other than maintenance and upkeep.

Having a greenway or greenspace where the trails exist is more advantageous to both those engaged in the activities and those living in the surrounding area because they don't have to intersect at roads and driveways.

Dear Ms Lacer,

My name is XXX and I live in Scotts Hill. My home is located just within Scotts Hill Loop Rd. I left a message on your voice mailbox earlier in the week expressing I am not in favor of a path for pedestrians or bikes on the loop.

The road is too dangerous and the traffic is too heavy. If you lived inside of the loop or on the loop you would understand and agree the location is not a good idea secondary to safety issues. There are too many curves, blind spots, cars jumping out, speeding, deer crossing and no lights.

A better choice for the public would be for Pender and New Hanover County to utilize any available funds to purchase Abbey Nature Preserve Trails that is now under a lease with Pender County. The lease could potentially be rescinded by the owners of the property and this beautiful pristine piece of land could possibly be destroyed in the future by the current lawless uncontrolled "residential clear cutting" that is happening in our communities.

As a closing thought: no one wants to read or hear on the news there was a collision with a bike and a vehicle on Scotts Hill Loop Road.

Thank you for your time and consideration.

Greetings Vanessa,

When I learned about the prospect of a sidewalk around Scotts Hill and Loop Road, I was hopeful such a thing was being considered. My husband and I are senior citizens and are very interested in "aging in place". He has lived in our current home for over 30 years. We both love it here and are in no hurry to relocate.

Both our doctors have recommended we both go on walks to stay fit. While we stay active doing yard work, a walk around the Loop Road on a sidewalk would be most welcome and convenient. Since traffic has certainly increased with vehicles often going too fast, it just doesn't feel safe. A sidewalk would provide that safer buffer in addition to providing more stable footing.

Based on AARP studies, sidewalks often increase home values in addition to helping build more engaged communities. People actually get out of their houses and meet their neighbors.

We look forward to updates on this potential project and hope to see this potential plan implemented sooner than later.

Hampstead desperately needs bike and pedestrian infrastructure! Any improvement would be appreciated.

My family is excited about any bike/ped improvements that can be planned and constructed in our region. Please bring them sooner than later. Good luck and let me know if I can help support these efforts. As an aside, these enhancements will provide both transportation connectivity and "leisure"/exercise travel for no other reason.