

Executive Summary

Pender County is located just north of New Hanover County and the City of Wilmington. The Wilmington Urban Area Metropolitan Planning Organization (WMPO) recently became a Transportation Management Area (TMA); the expanded boundaries that resulted from this new designation now include a larger portion of southern Pender County. As the WMPO area of Pender County (hereafter “CSP Area”) continues to develop, the WMPO and Pender County commissioned this Pender County Collector Street Plan to help program new collector streets in the CSP area.

Collector streets are defined as streets that connect neighborhoods and local roads to the arterial roads. There are some existing collector streets in the CSP area, but higher levels of traffic and substantial new development is putting these roads and the major arterials in the area under increasing strain.

With new development adding further pressure to the existing roadway network in the CSP study area, the need for a Collector Street Plan that prioritizes roadway investments, is based on community input, and focuses new roadway construction in areas away from sensitive natural features cannot be overstated.

Mission Statement and Purpose

The primary goal of the Pender County Collector Street Plan is to guide investment in new collector streets with the ultimate intention of improving connectivity, focusing land development in suitable areas, encouraging all modes of transportation, maintaining levels-of-service on existing roadways, promoting safety, ensuring that significant natural areas are conserved, and providing a safe and high-quality transportation system for existing and future residents, businesses, and visitors. This plan provides substantial background information on southern Pender County, details the public outreach process undertaken as part of the project, and provides a number of recommendations for new collector streets, existing roads that should be added to the collector street network, and roads that will require upgrades to meet collector street standards.



Steering Committee Members during a Project Meeting.

The final recommendations for this project include a collector street map, cross-sections of roadway types, policy strategies, and a summary of potential funding sources and implementation actions.

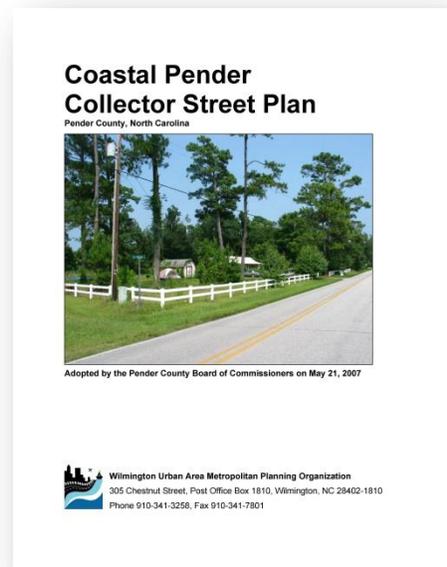
History and Existing Conditions

Pender County has a rich cultural history, supporting diverse Native American groups and European settlers. In the CSP area, multiple early plantations were constructed, with farming, fishing, and other

professions continuing to flourish in the area, even to the present day. Currently, Pender County remains a predominantly rural county, though the CSP area is rapidly developing with new housing developments, industry, and shopping amenities. In terms of transportation, many people living in the CSP area commute to work elsewhere, often to Wilmington, but also to Jacksonville, other areas of Pender County, and to counties to the west. Employment in educational services, health care and social assistance, retail trade, and construction are the most notable employment categories in the CSP area. Employment is focused in the areas along US 17 in the CSP area, though some noteworthy employment nodes are also located along US 117, NC-133, and US 421.

Previous Planning Efforts

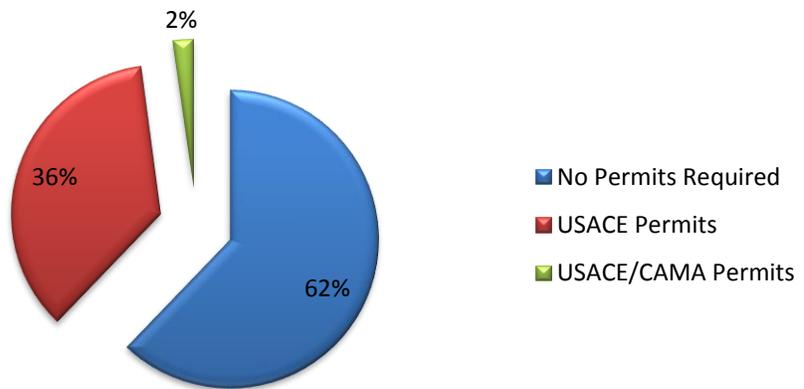
- A number of plans were examined in detail to provide a robust understanding of the study area and the existing planning framework, most notably the precursor to the current planning effort, the 2007 Coastal Pender Collector Street Plan. Additionally, the following plans were also examined
- 2010 Pender County Comprehensive Parks and Recreation Master Plan,
- 2012 US 17/NC 210 Corridor Study,
- Cape Fear Transportation 2040 (Metropolitan Transportation Plan),
- 2010 Pender County Comprehensive Land Use Plan.



Environmental Conditions

Pender County, as a coastal county, includes substantial areas of wetlands. Additionally, the County is home to sensitive natural areas, including habitat for the Red Cockaded Woodpecker and the Venus Fly Trap. It was very important to consider wetlands and sensitive natural areas in programming collector streets. Indeed, 38 percent of the study area requires a permit to develop. Some areas in the vicinity of the Intracoastal Waterway, in particular, require both United States Army Corps of

Wetland Permitting Requirements



Engineers (USACE) permits as well as Coastal Area Management Act (CAMA) permits to develop. It is also important to ensure that appropriate mitigation measures are in place to treat stormwater runoff. Appendix D provides an overview of applicable stormwater Best Management Practices (BMPs) for mitigating runoff from roadways.

Existing Transportation Conditions

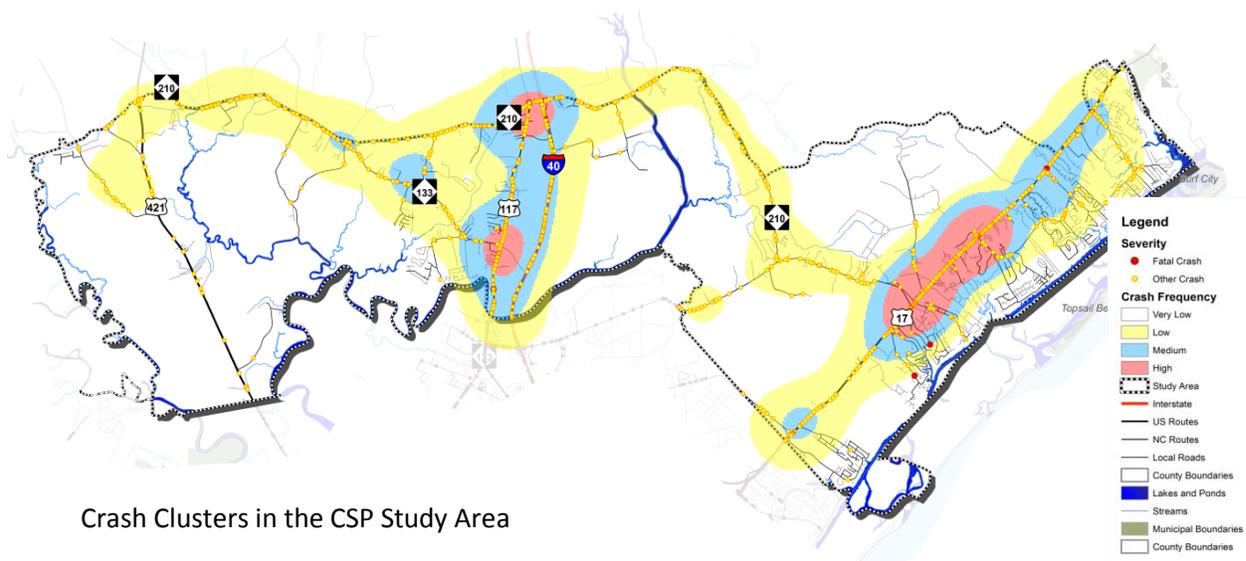
Several major arterials traverse the CSP study area, including US 17, US 117, US 421, and NC-210. Interstate 40 also bisects the study area. Many of these roadways are not currently at capacity, but are likely to experience increasing congestion as development continues to occur in the study area. There are two major roadway projects in the CSP study area, US 5732 and R 3300. US 5732 is a funded STIP project to improve access management along US 17 from Washington Acres Road to Sloop Point Loop Road, while R 3300 is the Hampstead Bypass. The Hampstead Bypass is currently unfunded.



US 17 in the CSP study area

Some collector streets are also extant in the CSP study area, including NC-133, Washington Acres Road, Country Club Drive, and Hoover Road, among others. Naturally, a system of local roads provides access to residents and businesses across the CSP study area. Pedestrian and bicycle facilities are generally not present to a large degree in the CSP study area, with some developer-built sidewalks present in some areas. However, there are plans for three rails-to-trails multi-use paths, the Coastal Pender Rail Trail, the Central Pender Rail Trail, and the East Coast Greenway, while two other trails, the Mountains-to-Sea Trail and Coastal Pender Greenway, are also planned. In terms of public transportation, no existing facilities can be found in the CSP study area, though three park-and-ride locations and transit stop amenity upgrades are planned in the WMPO Cape Fear Transportation 2040 plan.

With regard to transportation safety in the CSP study area, motor vehicle crashes are clustered along major arterial roads, with significant clusters along US 17, near NC-210 and US 117, and at US 117 and



Crash Clusters in the CSP Study Area

NC-133. The graphic below provides further detail.

Public Input

A key component of this plan was outreach to the public. It was very important to get feedback from residents, business owners, and visitors to the CSP study area. The Steering Committee for the project met four times, while two general public meetings were also held. A survey was also created to solicit feedback from people. Over 110 people responded, providing the project team with a great deal of useful data. Generally, the public wants to see pedestrian and bicycle amenities on collector streets, are not concerned about the impact of collector streets if designed well, and rate wetlands as the most important features to avoid.

Recommendations

Using data from the public outreach and from the thorough examination of existing plans, while also remaining sensitive to the needs of emergency/school vehicles, the project team prepared a recommended collector street network for the CSP study area. Using spacing standards, which provide a metric for how many collector streets to provide based on the intensity of land use in an area, the project team assigned collector streets to specific locations in the CSP study area. Particular respect was given to avoiding sensitive natural areas, floodplains, and wetlands, while still ensuring that future development provides adequate back access and connectivity. The map on the following page displays the alignments, while Appendix B provides detailed aerial maps of the entire CSP study area.

Cross-Sections

A series of cross-sections were developed as part of this plan, ranging from a rural cross-section (best suited to areas with sparse development) to a neighborhood cross-section (designed to accommodate automobiles, pedestrians, and bicyclists in a more densely populated area). Using colors, each cross-section was assigned to a specific group, based on the intensity of land use in the area. If the roadway is programmed to be constructed by a developer, they may increase the cross-section to any higher level designation (group), but must construct collector streets to the minimum standards, in accordance with NCDOT standards and to the specifications provided in the cross-sections. More information and greater detail is provided in the Design Requirements section of this

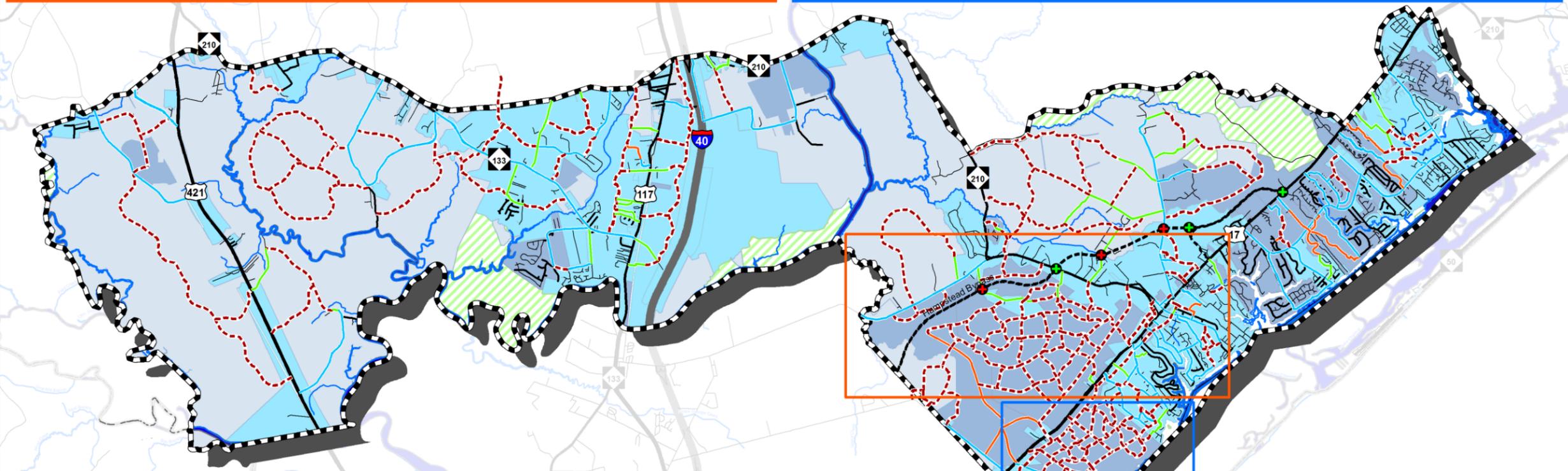
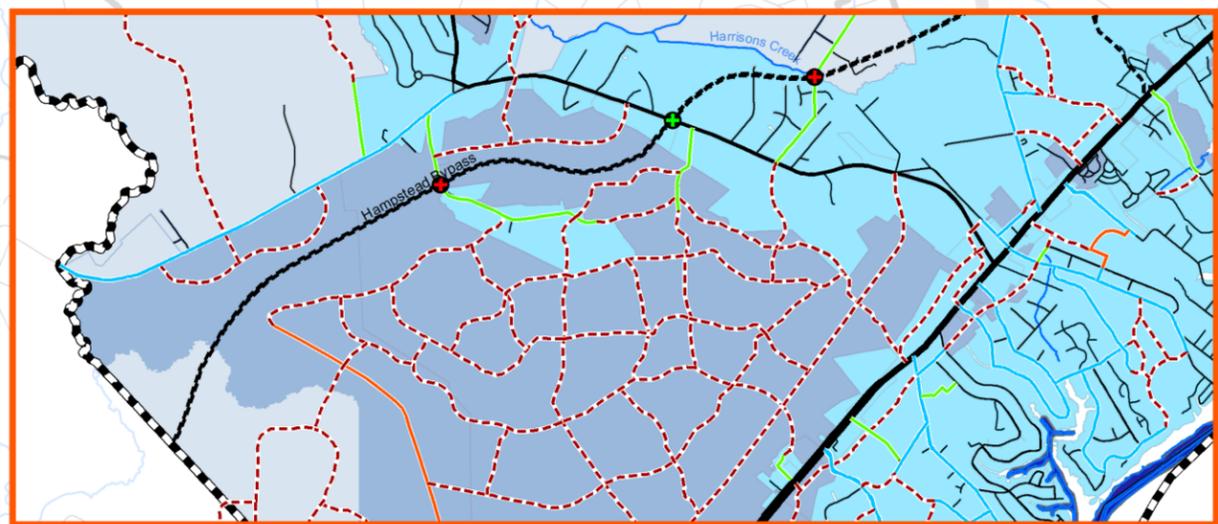
The image shows a survey form titled "Pender County Collector Street Plan Survey". At the top, there is a disclaimer: "The project is being prepared for the Pender County Planning and Development Department in cooperation with the Strategic Infrastructure Planning Organization. It is not to be used for any other purpose. The project is for a future development that is a low impact on the environment, support other public projects, and transportation systems across the county. Please do not use this survey for other purposes." Below the disclaimer, there are seven numbered questions with multiple-choice options. Question 1 asks "How long have you lived in Pender County?" with options: 0-2 Years, 3-5 Years, 6-10 Years, 11-20 Years, More than 20 Years, and N/A. Question 2 asks "Overall, how would you rate your experience traveling (by car, bike, or foot) in southern Pender County?" with options: Excellent, Very Good, Fair, Not great, Terrible, and N/A. Question 3 asks "Why is traveling in Pender County good/bad?" with a blank line for an answer. Question 4 asks "How far is your commute to work?" with options: 0-10 minutes, 10-20 minutes, 20-30 minutes, 30-40 minutes, 40 minutes or greater, I do not work, and I work from home. Question 5 asks "What are the most important considerations when prioritizing which collector streets to construct first? (choose top two)" with options: Work, School, Fire, Police, Hospital, Shopping, Avoiding a problematic intersection, Cost of construction, Avoiding a Wetland/Natural Feature, Preservation of community character, and Safety of pedestrians/bicyclists. Question 6 asks "When designing collector streets, what features should they include? (choose top two)" with options: Sidewalks, Bike Lanes or Bikeways, Lighting, Curb and Gutter, Street Trees, Parking, and Other. Question 7 asks "Do you have concerns about how collector streets would impact your community?" with options: No, No, if well designed, and Yes.

Survey Document



Example Color-Coded Cross-Section

document. These cross-sections embody the desire of Pender County residents to see a Complete Streets design focus, i.e. a desire to include all users of the transportation system in street design, in any new streets constructed in the CSP study area.



Legend

Proposed Collectors	Roadways	Land Use Intensity	Other Symbols	Proposed Structure Type
Existing Collector Standards	Interstate	Environmental Conservation	Study Area	Interchange
Existing Roads - Need Improvement	NC and US Routes	Low Intensity	Lakes and Ponds	Overpass
Planned Connections	Local Roads	Medium Intensity	Streams	
Preferred Scenario	Hampstead Bypass	High Intensity	County Boundaries	

Land Use Intensity/Type of Collector Street	Intensity	Access Function	Approximate Street Spacing
No Collector Streets (Environmental Conservation)	Little to No Development	N/A	N/A
Lowest Intensity (Rural Agricultural)	Less than 2 Dwelling Units per Acre	Highest	3,000 to 6,000 feet apart
Medium Intensity (General Business, General Industrial, Industrial Transition, Manufactured Housing Community, Residential Performance)	2 to 4 Dwelling Units per Acre	High	1,500 to 3,000 feet apart
High Intensity (Residential Mixed, Office Institutional, Planned Development)	More than 4 Dwelling Units per Acre/Activity Nodes	Medium	750 to 1,500 feet apart

Policy Strategies

In order to enact the recommendations and ensure that the proposed collector street connections are designed to a high quality standard, the project team prepared documentation of 11 policy measures. Each of these tables included a description of the policy, target performance measures, sample language, and a comments section. The policies examined as part of this plan can be found in the Policy Strategies section of this document and are listed below.

- Stormwater/Green Streets Policy Requirements
- Street Spacing and Access Standards
- Traffic Impact Studies Requirement
- NCDOT Complete Streets Design Manual
- Environmental Conservation Policy
- Tri-Party Agreement
- General Connectivity
- Stub-Out Requirements
- Bicycle and Pedestrian Accommodation
- Right-of-Way (ROW) Preservation
- “Paper Street” Reservation

In addition to examining policy measures, the project team also provided some design guidance with respect to a problematic intersection, NC-210 and Island Creek Road. This analysis follows the policy discussion section.

Funding and Action Plan

The final sections of this plan present an overview of some possible funding measures that Pender County can consider to support collector street construction and provide an action plan for implementing this plan. The funding options suggested as part of this planning effort include transportation bonds, impact fees, TIGER grants, private grants, and FAST Act funding. As Pender County does not build roads, it is anticipated that many of these collector streets will be constructed by the development community as available land continues to be developed in the CSP study area.

The Action Plan section provides a broad timescale for plan implementation. The following actions are programmed for the upcoming decade.

Action	Responsible Party	Timing
Adopt Pender County Collector Street Plan	Pender County Commissioners	Spring 2016
Research and Apply for FAST Transportation Funding (in coordination with the WMPO)	WMPO, Pender County Planning and Community Development Department	Ongoing
Pursue Funding to Implement Collector Street Recommendations (local, state, private)	Pender County Planning and Community Development Department	Ongoing
Pursue Grants, including TIGER and SRTS, to implement marquee projects, pedestrian and bicycle facilities	WMPO, Pender County Planning and Community Development Department	Ongoing
Adopt Policy Measures into County Ordinances	Pender County Planning and Community Development Department	Spring 2017
Develop Bicycle and Pedestrian Plan to Reflect Collector Street Plan Recommendations	WMPO, Pender County Planning and Community Development Department	2018-2020